Bidirectional Inverter for Energy Storage System

BIW750

User Manual

User Manual

Series: BIW750

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Version	Revision	Description
2.00.XX	00	First edition.
2.01.XX	01	Addition of new functionalities (VSG and operation with multiple DC Links).

Contents

1 SAFETY INSTRUCTIONS

This section contains safety instructions that must be understood and followed in order to avoid hazardous situations when operating the BIW750 inverter, performing any installation or maintenance work.

1.1 SAFETY NOTICES

The following safety notices are used in this manual:

DANGER!
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!
Indicates a hazardous situation that can result in death, personal injury, or damage to the equipment.

NOTE!
Indicates additional information and emphasizes contents in this manual.

1.2 SAFETY LABELS

The following safety labels are attached to the product:

High voltages are present.
Caution, risk of electric shock.

Components sensitive to electrostatic discharge. Do not touch them.
Sensitive electronics can be damaged by electrostatic discharges. A wrist strap, heel strap, or other ESD protections should be used.

Mandatory connection to the protective earth (PE).
Connection to protective earth (PE) is required.

Connection of the shield to the ground.
Grounding required.

DANGER!
This product contains capacitors which store energy after de-energization. Wait for at least 15 minutes before handling the equipment to ensure that the capacitors are discharged. Voltage levels should always be verified prior to any installation or maintenance work.

Electronic waste. Do not dispose.

1.3 GENERAL INFORMATION ABOUT ASSEMBLY, LOCATION AND MOUTING REQUIREMENTS

DANGER!
Both the inverter and the battery racks must be installed in closed electrical operating areas only, i.e., access must be restricted to skilled or instructed persons.

WARNING!
Read accompanying documentation for specific information about transport, assembly and mounting.

WARNING!
The installation position shall not prevent access to the disconnection means. Ensure easy access to the disconnection means.

WARNING!
In the final installation, vents shall not be covered or obstructed.

1.4 PRELIMINARY RECOMMENDATIONS

NOTE!
Carefully read all instructions before handling, installing, or operating the inverter.

DANGER!
1. Installation and operation of BIW750 must be performed by trained and qualified personnel only.
2. These persons must follow all the security instructions of this manual and/or suggested by local standards.
3. It is important to comply with the security instructions provided to avoid any harm to oneself, others, or the equipment. Failure to do so can result in personal injury, death, and damage to the equipment.

DANGER!
1. Before working on or touching any electrical components associated with BIW750, you must first open the AC circuit breaker and DC switch, disconnect the battery racks, and also disconnect any AC voltage that supplies the product.
2. Before working on any electrical components, wait at least 15 minutes after shut down of this equipment for complete electrical discharge and stop of the fans. Many parts of this product can contain hazardous voltages or rotating components while turning off.
3. Before performing any intervention such as installation or maintenance, ensure that DC and AC link voltages are at safe levels or close to zero.
4. Always connects equipment chassis to protective earth.

WARNING!

1. The electronic boards contain components that are sensitive to electrostatic discharge (ESD).
2. Do not touch directly in components or connectors.
3. To ensure safety, please touch the grounded metal housing or use a suitable grounding wrist-band before proceeding, if necessary.

Hipot test must not be performed by the user!
Contact WEG if on-site hipot testing is necessary.

2 ABOUT THE BIW750

2.1 OVERVIEW AND APPLICABILITY

This manual describe general information and configuration of BIW750.

The BIW750 inverter is designed for use in high power energy storage systems (> 1 MW), consisting of multiple power, electronic, and control components.

The inverter can be configured with the WEG Programming Suite (WPS), Section 2.2, on a computer which communicates with the BIW750 via USB, RS485, RS232, or Ethernet.

2.2 WPS (WEG PROGRAMMING SUITE)

WPS is a software tool that integrates the creation of automation applications, enabling you to monitor, parameterize, and program various WEG product families. The version of software required for BIW750 is WPS 2.51 or higher.

The following are some of the main features that stand out in WPS:

- Parametrize equipments;
- Assistance in the creation and configuration of automation application;
- Inverter and others equipments monitoring.

2.3 FIRMWARE VERSION

The firmware version used in BIW750 determines the functionalities and configurable parameters. The information in this manual is specific to the firmware version mentioned on the cover page. For instance, version 2.00.XX falls within the range of 2.00.00 to 2.00.99, where “XX” denotes firmware upgrades that do not affect this manual’s content. Firmware version of BIW750 can be verified in parameter P2400.

2.4 CHARACTERISTICS

The BIW750 is a highly efficient DC/AC bidirectional converter designed specifically to be used in battery energy storaged systems (BESS). Figure 2.1 displays a typical BESS with a BIW750 used to manage energy between the batteries and electrical grid, the essential parts of the entire system are marked as:

1. Batteries.
2. Insulated transformer.
3. Storage energy system.
4. Electrical Power System.

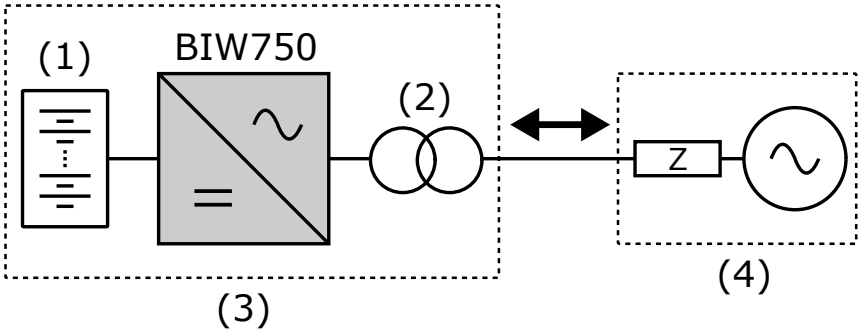

Figure 2.1: *Block diagram of a BESS system using the BIW750.*

WARNING!
Isolation transformer shall not be grounded (IT network).

To connect the BIW750 to the electrical grid, it is necessary to use an insulated transformer. For further information about the transformer, please refer to Section 2.7. Depending on the system, the transformer can either be part of the mechanical structure of BIW750 or installed separately.

Among the main functionalities of BIW750, stand out:

- Charge and discharge of batteries;
- Anti-island protection;
- Seamless transition between grid-tied to islanded or vice-versa;
- Log of 30 last faults;
- Grid support.

2.5 POWER MODULE MPBS750

The bidirectional power module labeled MPBS750 is the primary component of the power circuit used in the BIW750 product. Its main function is to efficiently convert continuous energy into alternating energy. To provide greater flexibility to the BIW750 product, the MPBS750 power module is designed to allow parallel associations, which makes it easy to scale the power specification.

The diagram shown in Figure 2.2 summarizes the electrical circuit of MPB750. Basically, it consists of a capacitor bank that forms the DC bus voltage of a 3-level NPC inverter with IGBTs (A1), an AC filter, an AC contactor (K1) used for connecting or disconnecting the MPBS750 with the electrical grid or loads, and an electronic board CMPS (A3). A2 in the diagram is a nanocrystalline core used for EMC.

Despite not being shown in Figure 2.2, the MPBS750 also has three exhaust fans. Besides that, both the NPC inverter and inductor L1 from the AC filter are cooled by a refrigerant liquid from an internal hydraulic circuit.

WARNING!
1. The MPBS750 does not include a DC pre-charge for the capacitors on the DC bus voltage. Consequently, inrush current limitation is necessary for the correct integration between MPBS750 with BIW750.
2. A DC pre-charge circuit must be accounted for in the electrical project of BIW750. The pre-charge of the AC side is made via firmware, controlling the duty cycles sent to the NPC switches.

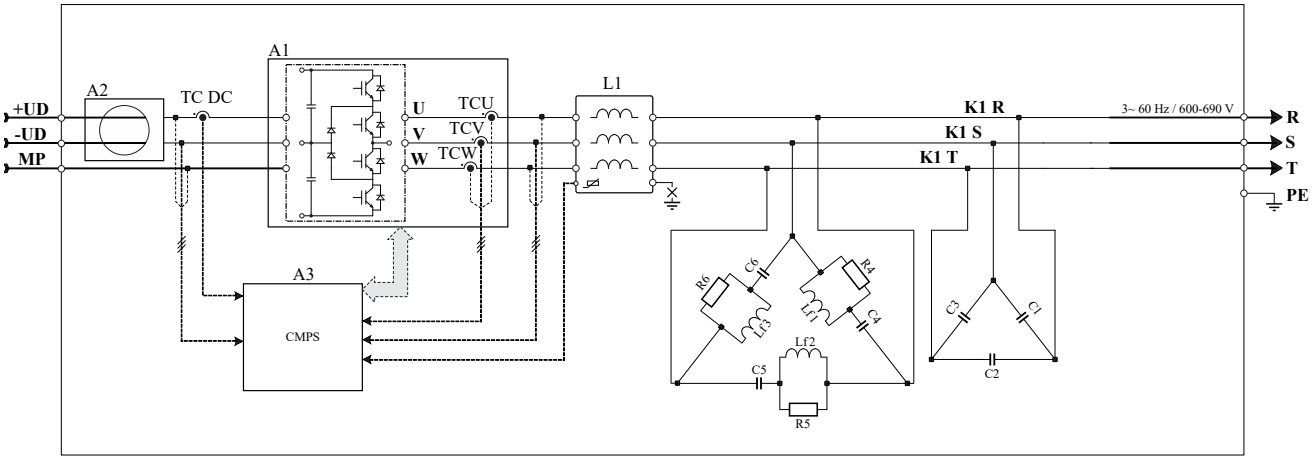

Figure 2.2: *Power Module Diagram - MPBS750.*

2.5.1 TECHNICAL SPECIFICATION OF MPBS750

Technical specification of each MPBS750 installed in BIW750 are shown in Table 2.1.

Table 2.1: *Power module MPBS750 technical specification.*

Description	Value
AC Voltage(1)	600 V ∼ 690 V
AC Nominal Current	525 A
Nominal Frequency	50 Hz ou 60 Hz
Power(2)	545 kVA
DC Voltage (V_{DC})(2)	874 V ∼ 1500 V
Power Factor (PF)(3)	-1 ∼ 1
Maximum DC current	690 A
Efficiency	98.20 %
Operating Temperature(4)	-25°C ∼ 50°C

Notas:
(1) It is possible to operate with smaller AC voltage, provided that the following conditions are adhered to:
- V_{DC} > 1.03 x $\sqrt{2}$ x V_{AC};
- The current limitations have not been exceeded.

(2) For AC Voltage of 600 V.
(3) PF inductive or capacitive.
(4) Derating for operation above 40 °C ambient temperature.

WARNING!
The installation and removal of power modules MPBS750 in BIW750 must be performed by qualified personnel.

NOTE!
For detailed mechanical and electrical description of power module MPBS750, please refer to the following document:

- Power module for AC/DC bidirectional converters MPBS750.

2.6 BIW750 MODULAR DESIGN

Multiple MPS750 power modules can be associated and integrated into a single inverter, allowing for higher operational levels of current and power. Each MPBS750 power module associated in parallel in the BIW750 is called a *book*.

Among the primary benefits of implementing this modular approach in the BIW750 are:

- Increased reliability;
- Flexibility;
- Greater overall efficiency, since less power modules are active when power generation is lower;
- Reduced maintenance costs.

2.6.1 BIW750 INVERTER FAMILY

The BIW750 inverter family is defined by the number of *books* that comprise a single inverter. In total, there are six distinct models of BIW750, where the number of *books* ranges from two to a maximum of eight.

The first model in the family is the BIW750-1.0, which has two *books*, allowing for processing of a maximum apparent power of up to 1,090 kVA. The other models of the BIW750 have power specifications that are multiples of this value. The last inverter in the family, for example, is the BIW750-4.0 with eight *books*, capable of processing a maximum apparent power of up to 4,360 kVA, which is given by 4.0 x 1.090 kVA.

2.6.2 ESW750 E-HOUSE FAMILY

There are also complete solutions of e-house (ESW750) for the inverters of the BIW750 family, which can incorporate up to two BIW750 models inside, allowing for a broader range of power capacity available in the final solution of the energy storage system.

In total, there are six distinct models of e-house ESW750, starting from ESW750-1.1, which accommodates only one BIW750-1.0, and ending at ESW750-8.0, which houses two BIW750-4.0.

Figure 2.3 shows a basic diagram representing an energy storage system using the e-house ESW750-8.0. As can be seen, the solution allows for the use of two separate battery and encompasses two unique BIW750-4.0 inverters, each with eight MPBS750 power modules.

NOTE!
1. To view the complete description of the different models of BIW750 inverter and ESW750 e-house, refer to the tables available in Section 7.1, which contain the respective specifications for each inverter model and e-house.
2. To find out about models with specifications different from those listed in the tables of Section 7.1, please consult WEG.

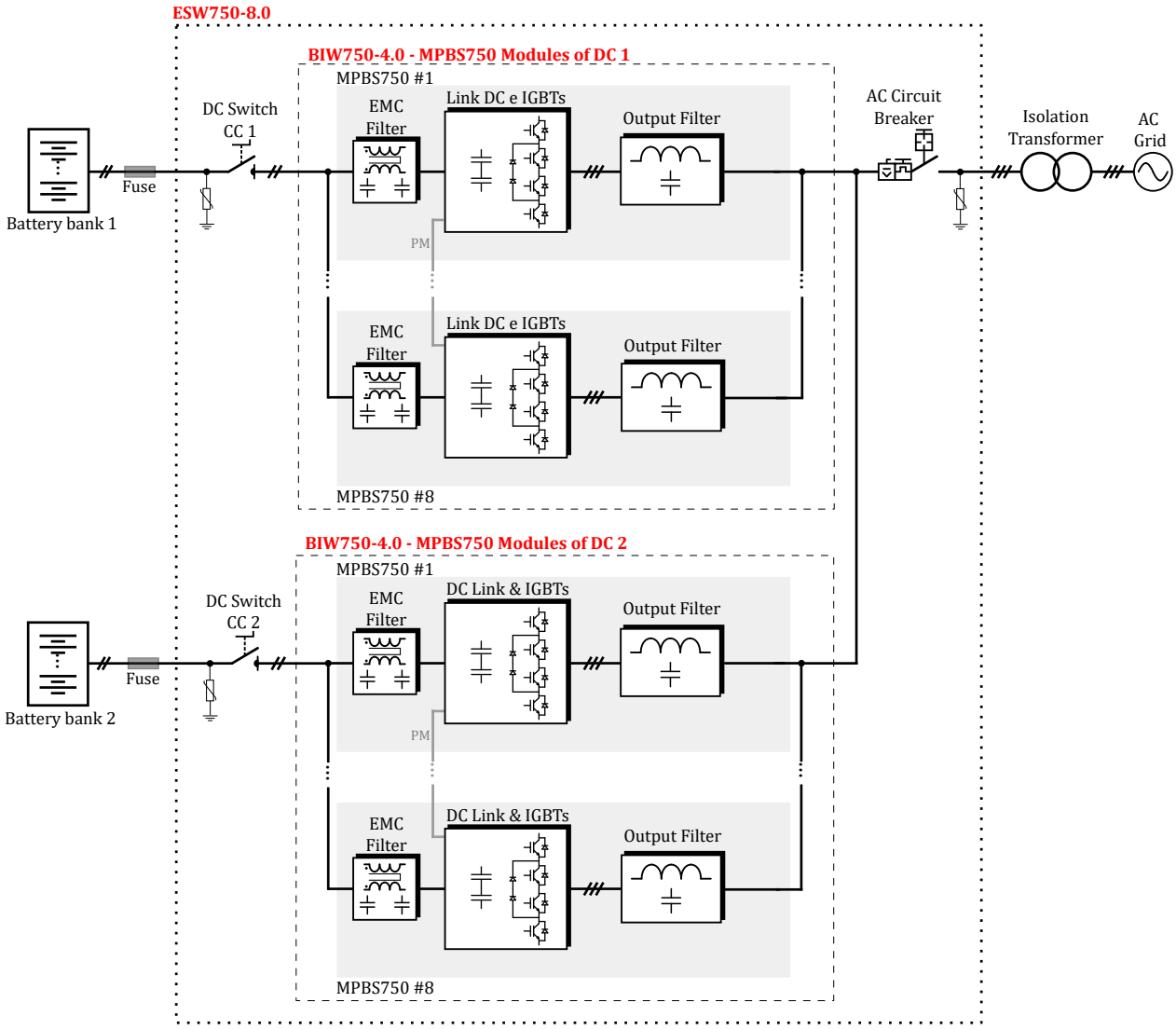

Figure 2.3: *Basic energy storage system diagram with ESW750-8.0 e-house.*

2.7 ISOLATION TRANSFORMER SPECIFICATIONS

The transformer must be dedicated to service only the inverter(s). No loads may be powered from the connection between the inverter and the transformer.

The transformer must not be grounded at the secondary side, i.e., inverter side. High-impedance grounding is also acceptable, e.g., IT network.

Furthermore, the isolation transformer must comply with the specifications listed below:

- Grounded shield between primary and secondary windings.
- Equivalent series impedance between 6% and 8% at the secondary side.
- The isolation provided by the transformer must limit the available residual current to less than 10 mA RMS per kVA of rated continuous output power, measured in accordance with IEC 62109-2:2011.
- Minimum insulation requirements: 1500Vdc working voltage, 6000V impulse withstand voltage and 2550Vpeak / 1800Vrms temporary over-voltage.
- Reinforced isolation between primary and secondary.

- If a multi-winding transformer is employed, ensure continuous operation even if only one of the secondary windings is used. In such a case, care should be taken to avoid high inrush current, current imbalance or other unwanted situations that may negatively affect the BIW750.

2.8 CABLE ESPECIFICATIONS

External power cables connected to the inverter busbars shall be specified for maximum continuous power and 50 °C ambient temperature.

Cable insulation shall be rated at 1.5x the maximum DC bus voltage or greater.

Although the maximum cable length depends on a number of factors such as cable impedance, short circuit ratio (SCR), system efficiency and mechanical limitations, it is recommended that it does not exceed 15 meters.

Protective earthing conductor shall be specified with a minimum cross-sectional area of 300 mm² (Cu) or S/2, where S is the equivalent cross-sectional area of the power cables.

DANGER!
The absence of protective earthing may result in electric shock in the event of an abnormal situation.

NOTE!
For more information about the connection of protective earthing conductors and power cables, please refer to accompanying documentation.

2.8.1 TIGHTENING TORQUE TO BE APPLIED TO WIRING TERMINALS

Table 2.2 specifies the tightening torque for busbars connections, while Table 2.3 specifies the tightening torque to be applied to other wiring terminals.

Table 2.2: *Tightening torque for busbars connections.*

Screw size	Tightening torque (N.m)
M4	2
M6	5.5
M8	15
M10	30
M12	60

Table 2.3: *Tightening torque to be applied to other wiring terminals.*

Screw size	Tightening torque (N.m)
M4	2.5
M5	5
M6	8.3
M8	19
M10	37
M12	61

2.9 COOLING SYSTEM

The BIW750 employs a liquid cooling system to achieve maximum performance. The heat is then transferred to the ambient via convective heat transfer.

The cooling system features one water pump, two ventilators that are responsible for transferring heat from the coolant to the ambient, and an extra ventilation system on the top of the inverter which helps cooling the air inside the cabinet.

The coolant temperature is maintained below 50 °C under normal operation and a system fault signal is generated if temperature rises above this level. Moreover, the inverter will cease operation if any abnormal condition is detected in the cooling system.

NOTE!
For detailed information about the cooling system, please refer to the following documentation:

- Cooling system drive BIW750 1 MW.

WARNING!
Coolant system servicing is to be done only by service personnel.

3 COMMISSIONING

DANGER!
Installation and operation of this equipment must be performed by trained and qualified personnel only.
Failure to comply with the instructions described in this manual may result in death or serious injury.

DANGER!
Ensure that all sources of power have been disconnected before performing any installation or maintenance work.

DANGER!
The absence of protective earthing may result in electric shock in the event of an abnormal situation.

DANGER!
This product contains capacitors which store energy after de-energization. Wait for at least 15 minutes before handling the equipment to ensure that the capacitors are discharged. Voltage levels should always be verified prior to any installation or maintenance work.

This chapter discusses key points for proper commissioning of the inverter. It is assumed that all the instructions from previous chapters have been followed.

3.1 INITIAL CHECKS

Review the following steps before energizing the inverter:

1. The BIW750 is installed in a safe way;
2. All connection, power, control, grounding, and cooling system are fixed and properly installed;
3. All power modules have been safely and properly mounted and installed in their designated locations;
4. The cooling systems are filled with the proper liquid and pressurized at 4 bar in a confined space;
5. Make sure that the protective earthing conductor and power cables are connected as specified by the manufacturer and properly tightened;
6. The cooling liquid flowed for at least 4 hours in order to eliminate all the air in the hydraulic circuit;
7. The product has been cleared of any installation residues, packaging, or dispensable materials.
8. All panels are properly installed and safe.
9. All panels doors are closed.

3.2 OPERATION IN HIGH HUMIDITY

If BIW750 is installed in a high humidity environment, the following considerations and precautions should be taken:

- It is important to protect the interior of BIW750 from high humidity;

- During transportation, the BIW750 is accompanied by desiccants within its interior. If the desiccant package becomes saturated, it is necessary to follow the long drying process (refer to Section 3.2.2). However, if the desiccant package is still intact, the short drying process can be followed (refer to Section 3.2.1);
- After the drying process, the control circuit must remain supplied with the panel door closed and all exterior panels properly installed.
  - If the control circuit supply has been off for more than 4 hours and the cabinet doors are closed, perform the short drying process (see Section 3.2.1) before using BIW750;
  - If control circuit supply is off for over 4 hours and cabinet doors are open, complete long drying process (see Section 3.2.2) before using BIW750.

NOTE!
When operating BIW750, the cooling liquid at the MPBS750 entrance must always remain 3°C above room temperature to prevent condensation in the internal components.

3.2.1 SHORT DRYING PROCEDURE

In order to perform the short drying process, you need to follow the steps mentioned below.

1. Close all doors;
2. Turn on the supply voltage from the control circuit;
3. Turn on the fans from BIW750;
4. Heat the cooling liquid 3ºC above the room temperature;
5. Keep the cooling liquid in circulation for 1 (one) hour.

3.2.2 LONG DRYING PROCEDURE

In order to perform the long drying process, you need to follow the steps mentioned below.

1. Put 10 (ten) new desiccants (NPS P/N 1003925) at BIW750, 2 (two) for each cabinet;
2. Close all doors;
3. Turn on the supply voltage from the control circuit;
4. Turn on the fans from BIW750;
5. Heat the cooling liquid to a temperature of at least 40ºC. However, make sure that it does not exceed a temperature of 60ºC;
6. Keep the cooling liquid in circulation for 24 (twenty-four) hour;
7. Remove the desiccants.

3.3 PREPARATION AND ENERGIZATION

Before energizing the BIW750 (DC and AC voltage), it is recommended to follow the sequence of steps below.

1. Check if the power, grounding, and control connections have the correct torque and that connectors are securely fixed.
2. Remove any material debris from inside the inverter or the drive.
3. Verify that the current and voltage specifications of the battery bank are in accordance with the BIW750 model.
4. Measure the AC voltage of the electrical grid, the DC voltage of the battery bank, and ensure they are within the permitted range for the BIW750 model.
5. Close the electrical panel doors, commission the cooling circuit (add water, pressurize, etc.), energize the command and control circuit (according to the BIW750 electrical design).
6. Check the correct operation of the fans in the MPBS750 power module(s).
7. Configure and operate the BIW750 in accordance with the installation requirements and applicable standards.

3.4 START-UP GUIDE

NOTE!
For detailed information about BIW750 start-up, operation and maintenance, please refer to the following documentation:

- WEG BIW750 Bidirectional Inverter Start-up and O&M Guide.

This section is intended to provide guidance to qualified professionals who are responsible for the start-up of BIW750. The instructions provided here are aimed at enabling these professionals to accurately adjust the inverter's main parameters and ensure proper operation. To this end, the parameters are grouped according to their functions to facilitate the adjustment process.

3.4.1 BASIC CONFIGURATION

BIW750 has multiples operations modes, thats why is extremely important that an initial configuration is made with caution and attention to details. In the text below, is described the initial configuration that must be done before any start-up of the PCS.

1. **Power modules and DC link configurations:** The BIW750 can be scalable depending on the connected power modules; each converter can operate with up to 9 power modules, providing greater flexibility in terms of power. To enable the operating modules on DC bus 1, activate them using the parameter P1014. To enable them on the second DC bus, use the parameter P1015. For more details, see 3.4.2.
2. **Nominal Voltage and Current Configuration:** It is necessary to configure the nominal voltage and current of the BIW750 considering the operational limits of the product. The nominal operating voltage is configured using P0990, with its value in volts. Meanwhile, the nominal current of each power module is defined by P0992.
3. **Nominal Frequency Configuration:** Enter the nominal frequency value of the electrical grid in the parameter P1330.
4. **Analog Input and Output Configurations:** Analog inputs and outputs must be configured according to their functionalities; see 3.4.4.
5. **Digital Input Configurations:** Digital inputs must be configured according to their functionalities; see 3.4.5.

6. **Digital Output Configurations:** Digital outputs must be configured according to their functionalities; see 3.4.6.
7. **Control Mode Selection:** If necessary, the control mode can be changed using P1340. This parameter can only be set when the converter is not operating. For more details on control modes, refer to 4.3.
8. **Configuration for Seamless:** When seamless operation is required, the PCS must be configured to perform this functionality. This feature is described in more detail in 4.5.

NOTE!
The nominal apparent power of the inverter can be checked in P0994 for DC bus 1 and P0996 for DC bus 2. The power values depend on the parameters P0990 and P0992 as well as the number of power modules enabled by P1014 (bus 1) and P1015 (bus 2).

3.4.2 POWER MODULE AND DUAL-BUS CONFIGURATION

The BIW750 supports operation with multiple MPBS750 power modules and up to two battery banks, making it essential to configure the number of power modules per battery bank.

If only one battery bank is used, the number of modules connected to the product must be configured using the parameter P1014, where each bit represents a connected module. For example, *0b00000000* represents no books connected, *0b00000001* represents 1 book connected, and *0b00000011* represents 2 books connected.

If two battery banks are used, both P1014 must be configured to enable the power modules connected to battery bank 1, and P1015 to enable the modules connected to battery bank 2.

NOTE!
It is not possible to use the same configuration in P1014 and P1015. Thus, if the operator tries to set *0b00000011* in P1014 and *0b00000110* in P1015, the BIW750 prioritizes the configuration of P1014, resulting in the value *0b00000011* for P1014 and *0b00000100* for P1015.

3.4.3 CONFIGURATION OF DATE AND TIME PARAMETERS

The date and time configuration in the format yyyy/mm/dd - hh:mm:ss is performed using the parameter P7184. A battery in the control module of the BIW750 stores the date and time information in non-volatile memory. As a result, this information will not be lost in the event of a power outage in the BIW750.

3.4.4 CONFIGURATION OF ANALOG INPUTS AND OUTPUTS

The BIW750 provides 5 analog inputs (or AI - *Analog Input*) and 4 analog outputs (or AO - *Analog Output*), with functions pre-configured according to the electrical project requirements of the BIW750. To modify these functionalities, contact WEG Technical Support.

3.4.5 MULTIPURPOSE INPUTS

The BIW750 has 16 multipurpose digital inputs that can be adjusted to meet the electrical project's requirements. The configuration of these inputs can be found in Table 3.1, based on parameters P2554 to P2573. By default, the functionalities of the digital inputs are set to "No function".

Table 3.1: *Digital inputs function.*

Function	Description
No function	No function
CCE in *standby*	Input to indicate the state of CCE board, used for redundancy.
General Enable	Enable/disable the process of connection of BIW750 the electrical grid, or the loads.
Cooling alarm(1)	Input of alarm from the cooling system.
Cooling fault(1)	Input of fault from the cooling system.
DPS Fault(1)	Input of fault from surge protection device.
Run	Start connection with the electrical grid.
Stop	Start disconnection with the electrical grid.
Fault inverter fan (1)	Input signal of fan inverter fault.
Fault pump (1)	Input of fault from pump.
Fault water leakage (1)	Input fault of fault from the leakage sensor.
External fault (1)	Input signal of fault from external device.
Open door (1)	Input signal of fault from door sensor.
Internal overtemperature (1)	Input fault signal of temperature sensor.
Fault overload fans (1)	Input fault signal from fans.
Water Flow (1)	Input signal of flow water from the cooling system.
Water pressure (1)	Input signal of the digital pressure sensor from cooling system.
Feedback of AC circuit breaker	Input digital signal of feedback from AC circuit breaker.
Feedback of DC switch A	Input digital signal of feedback from DC switch A.
Feedback of DC switch B	Input digital signal of feedback from DC switch B.
Cooling Operation Mode	Input signal of cooling operation mode.
Grid switch state	Input signal of feedback from AC switch that interconnects internal grid that BIW750 is connected to the electrical grid.
Fault QDMT(1)	Input signal of fault from medium voltage switchgear.
Fault isolation battery side(1)	Input signal of battery side isolation fault from sensor.
Fault isolation inverter side(1)	Input signal of inverter side isolation fault from sensor.
Fault emergency button(1)	Input fault signal of emergency button.
Fault Fuse DC(1)	Input fault signal of DC Fuses.
Fault Fuse AC(1)	Input fault signal of AC Fuses.
Alarm HVAC(1)	Input fault signal of High Voltage Air Conditioning.
Fault Fuse Rectifier(1)	Input fault signal of Rectifier Fuses.
Fault thermostat Rectifier(1)	Input fault signal from Rectifier's thermostat.
Fault temperature skid(1)	Input fault signal of temperatures from skid.

Note:

(1) All fault signals have inverted logic, this is done to verify broken wire.

3.4.6 MULTIPURPOSE OUTPUTS

The various purposes for which digital outputs (DO) can be used are similar to those of digital inputs. There are 10 (ten) DOs that can be adjusted with different functionalities listed in Table 3.2. This can be done by using the parameter P2510 to P2527. By default, all DOs are set to “No Function”.

Table 3.2: *Digital outputs functions.*

Function	Description
No function	No function.
Inverter Enabled	Indicates that the convert is starting operation or operating.
No fault	Indicates that the converter is not in fault.
No alarm	Indicates that the converter does not have an alarm.
DC switch (minimum inductance coil)	Digital output for minimum inductance coil of DC Switch.
Open DC switch 1	Digital output for opening coil of DC switch 1.
Close DC switch 1	Digital output for closing coil of DC switch 1.
Open DC switch 2	Digital output for opening coil of DC switch 2.
Close DC switch 1	Digital output for closing coil of DC switch 2.
DC pre charge contactor	Digital output of DC pre charge using grid AC voltage.
Synchronism contactor	Digital output of synchronism coil.
Enable fan	Digital output used for enabling the fans.
Reverse fan	Digital output use for reverting the rotation of fans.
Enable pump	Digital output used for enabling the pump.
Enable heat exchanger	Digital output used for enabling the heat exchanger.
DC bypass contactor	Digital output of DC bypass contactor.
Open AC circuit breaker	Digital output used for opening the AC circuit breaker.
Close AC circuit breaker	Digital output used for closing the AC circuit breaker.
Minimum coil AC circuit breaker	Digital output of minimum coil of AC circuit breaker.
Grid disconnector	Digital output of grid disconnector.
DC pre charge battery	Digital output of pre charge by battery.
Enable second pump	Digital output of second pump used in redundancy operation.
Turn off QDMT	Turn off medium voltage switchgear.
AC Circuit Breaker (Not pulsed)	Digital output of AC circuit breaker with signal not pulsed.
Disable Isolation Measurements	Digital output for disabling isolation detection.
Isolation Measurement Selection	Selects the side of isolation measurement.
Heat exchanger resistance	Drives the heat exchange resistance.

3.4.7 MODBUS-RTU (RS-485 / USB) SETTINGS

In the RS-485 and USB communication ports, the communication protocol available for monitoring the parameters of the BIW750 is the ModbusRTU. It is possible to perform write access and reading in the BIW750 parameters. The purpose of the BIW750 communication network is to monitor parameters regarding its func-

tioning and connectivity with the batteries. The parameters illustrated in Table 3.3 are used to configure the communication network of the BIW750.

Table 3.3: *Modbus-RTU parameters.*

Parameter	Description	Factory Settings
P4000	Serial Address	1
P4001	Serial Communication Rate	4: 115200 bits/s
P4002	Serial Bytes Setting	0: 8 bits, without, 1
P4003	Serial Protocol	0: Modbus RTU
P4004	Serial Communication Timeout	500 ms
P4006	Action in case of Serial Communication Timeout	0: Reset communication

Setting P4006 to the value “1: Fault”, a communication fault will be generated if the communication fails during the time programmed in P4004 with inverter by ramp shutdown. With parameter P4006 set to the value “0: Reset communication”, in case of communication fault, the inverter will only reset Modbus communication.

3.4.8 MODBUS-TCP (ETHERNET) SETTINGS

The BIW750 has support for 10 and 100 Mbps Ethernet connections, Half or Full Duplex, using Modbus TCP protocol. Parameters P4010 to P4010 are related to this communication and the configurable parameters are shown in Table 3.4.

Table 3.4: *Modbus-TCP parameters.*

Parameter	Description	Factory Settings
P4010	Modbus TCP Communication Port	502
P4011	Modbus TCP Device Address	1
P4014	Modbus TCP Communication Timeout	5000 ms
P4015	DHCP	0: Inactive
P4016	Ethernet IP Address	192.168.0.100
P4018	Ethernet Netmask	255.255.255.0
P4020	Gateway Ethernet	0.0.0.0

3.4.9 D.C. PROTECTIONS

In order to ensure the safety of the inverter during faults, the following DC protections are implemented. In case of a fault, the DC switch is prevented from closing or opening in order to isolate the DC bus from the batteries. This action is taken to prevent the current from the batteries from causing a short circuit or further damage.

- Voltage imbalance of the DC bus capacitors;
- Reverse DC polarity;
- Occurrence of a short-circuit in the DC bus;
- Overvoltage in the DC bus;

It is possible to adjust protective measures to meet specific installation requirements, as indicated in Table 3.5.

Table 3.5: Parameters related to DC protections.

Parameter	Description	Factory settings
P1200	Maximum voltage DC bus	1500 V
P1202	Minimum voltage DC bus	800 V
P1206	Maximum unbalanced DC bus voltage - Alarm	50.0 V
P1204	Maximum unbalanced DC bus voltage - Fault	80.0 V
P1208	DC voltage per capacitor for DC short circuit protection	200 V
P1210	DC current for DC short circuit protection while in OFF	50 A
P1212	DC current for DC short circuit protection in operation	735 A
P1216	Minimum time for DC short circuit protection	100 ms
P1214	Protection start time for DC short curcuit protection	1000 ms
P1220	Maximum batteries voltage Limit	1550.0 V
P1222	Minimum limit of batteries negative voltage	-50 V

3.4.10 ADJUSTABLE OPERATIONAL LIMITS

It is possible to set operational limits for the inverter during operation, as indicated in Table 3.6.

Table 3.6: Programable operational limits.

Parameter	Description	Valor Padrão
P1278	Apparent current Limit	100.0 %In(1)
P1280	Upper limit active power	100 %Pn(2)
P1282	Lower limit active Power	-100 %Pn(2)
P1284	Upper limit reactive power	100 %Pn(2)
P1286	Lower limit reactive power	-100 %Pn(2)
P1288	Upper limit active current	100 A
P1290	Lower limit active current	-100 A
P1292	Upper limit reactive current	100 A
P1294	Lower limit reactive current	-100 A
P1296	Maximum setpoint of DC current	7000 A
P1298	Minimum setpoint of DC current	-7000 A
P1300	Maximum setpoint of DC voltage	1420 Vcc
P1302	Minimum setpoint of DC voltage	900 Vcc
P1304	Maximum setpoint of DC power	6000 kW
P1306	Minimum setpoint of DC power	-6000 kW
P1308	Battery impedance	0.14 Ω
P1310	Slew rate of DC current limit	1 %In/s(1)
P1312	Slew rate of DC power limit	1 %Pn/s(2)
P1314	Slew rate of active and reactive current limit	1 %In/s(1)
P1316	Slew rate of active and reactive powers limit	1 %Pn/s(2)
P1318	Slew rate of DC-link voltage limit	1 %Vn/s(3)

Notas:
(1) Current related parameters that are in %In or %In/s, are a division between the electrical magnitude in A and $\sqrt{2}\times$ P0992.
(2) Power related parameters that are in %Pn or %Pn/s, are a division between the electrical magnitude in kW/kVA and P0994 or P0996.
(3) Voltage related parameters that are in %Vn or %Vn/s, are a division between the electrical magnitude in V and $\sqrt{2}\times$ P0990.

NOTE!
To define the maximum active power delivered, you can adjust the upper active power limit which is set through the P1280 parameter. This limit is determined by the grid voltage measurement and regulates the maximum active current reference. For instance, if the converter's power limit is 100%Pn and the grid voltage is 110%Vn, then the converter will deliver a maximum active current of 100%Pn / 110%Vn = 90.90%In. Similarly, the lower active power limit is set using the P1282 parameter, and it follows the same principles.

3.4.11 STARTUP MODE CONFIGURATION

It is possible to configure the BIW750 to perform its connection and disconnection in two distinct ways:

- **Local:** The startup of the BIW750 converter is allowed when two conditions are met: (1) the DI ”General Enable” must be activated, and (2) the DI ”Run” must be pulsed. With these conditions, the inverter does a blackstart or synchronizes and connects to the electrical grid. To disconnect, simply deactivate the DI ”General Enable” or pulse the DI ”Stop”. For this connection mode, the ”Remote Mode” option must be deactivated in the P1005 parameter.

- **Remote:** If the remote option in P1005 is activated, the inverter’s connection to the electrical network is allowed when the DI configured as ”General Enable” and the ”Enable Inverter” command in the P1005 parameter are both active. With these conditions, the inverter does a blackstart or synchronizes and connects to the electrical grid.

For more details about the BIW750 startup, please refer to section 4.2.

4 OPERATION CHARACTERISTICS OF BIW750

The BIW750 is designed to connect to the local electrical distribution or transmission network while complying with relevant standards. This chapter provides detailed information on the operation modes of BIW750 and its interconnection with the electrical grid.

4.1 OPERATION MODES OF BIW750

The BIW750 has five operation modes that can be chosen in parameter P1002:

0: BIW

This is the main operation mode of BIW750 and offers two control options: active/reactive power control and AC voltage control. These two options have independent control loops and cannot be active simultaneously[1].

At startup, the converter automatically detects if the electrical grid is present, displaying the grid *status* in the P0734 parameter, and automatically switches the control mode to ”Current” or ”Voltage.” This can be verified through the P1018. When in current control mode, the inverter receives active and reactive power references via the P1526 and P1528 parameters for DC bus 1, or P1532 and P1534 for DC bus 2. Conversely, when in voltage control mode, the references are voltage and frequency, configured through the P1544 and P1556 parameters.

Even if the converter changes automatically the control mode at its startup, the automatic transition when the BIW750 is in operation is just performed when the parameter P1017 is enabled.

1: Rectifier

In this mode, the converter acts as a rectifier, controlling the DC voltage at the bus. The reference is set by the value of the DC voltage adjusted in parameter P1520 for DC bus 1, and P1522 for DC bus 2.

2: Open Loop

This mode can adjust directly the duty cycle of the converter. Besides that, it contains other useful resources, such as directly enabling the digital outputs. This mode cannot be used together with a grid connection.

3: GSIM

This mode can emulate a grid simulator, and when used, is possible to configure voltage swells, sags, or other grid events for testing other devices.

3: AC Filter Test

This mode is used to verify the integrity of the AC filter from BIW750.

4.2 STARTUP OF BIW750 AND STATE MACHINE

This section details the startup operation of the converter when the **BIW** mode is used in the P1002. This mode allows the converter to operate both as a grid-forming and grid-following device. Figure 4.1 illustrates the state machine of the BIW750 startup.

[1] Except in VSG mode.

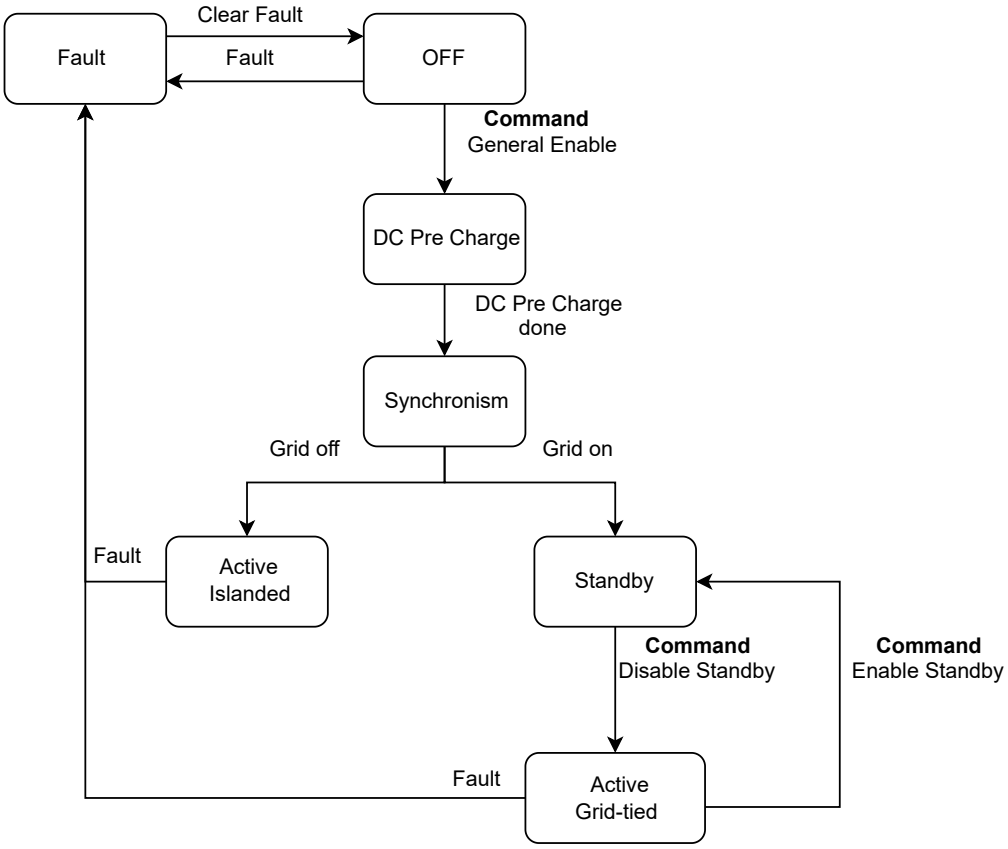

Figure 4.1: *State Machine - startup BIW750.*

A more detailed description of each state of the converter is given below:

1. **Fault:** The converter is in fault mode. To check the last failure code, refer to P7000, its date and time can be checked in P7050. If the failure is no longer present and the ”Clear Faults” command is active in P1000, the converter will transit to the ”OFF” state.
2. **OFF:** This state indicates that the BIW750 is not operating and there are no failures. If the start permission is enabled (see 3.4.11), the converter will change to ”DC Pre Charge” state.
3. **DC Pre Charge:** In this state, the converter will trigger the DC pre-charge resistors and later close the DC disconnector, connecting the batteries to the converter bus. If the bus is successfully connected, the inverter will transit to the ”Synchronization” state.
4. **Synchronization:** In this state, if the grid is available, synchronization is performed by the BIW750 and the converter will change to ”Standby” in grid-connected mode. However, if the grid is not present, the converter will transit to the ”Active” state in islanded mode.
5. **Standby:** In this state, the converter is electrically connected to the power grid, but PWM is not active. If P1006 is disabled, the converter will transit to the ”Active” state in grid-connected mode.
6. **Active Mode (Connected):** In this state, the converter is operating with PWM active, following active and reactive power references according to the mode used.
7. **Active Mode (Islanded):** In this state, the converter will perform a safe islanding via blackstart and then control voltage and frequency references.

4.3 TYPES OF PCS CONTROLS

The BIW750 features a range of controllers suitable for each application. The sections below detail the control types available in the PCS, their main characteristics, and compatibility depending on the project.

The control types can be chosen by the P1340 parameter, but adjustments may be necessary depending on the control used; consult WEG for more information.

4.3.1 CURRENT AND VOLTAGE LOOPS

By default, P1340 is set to 0: Current and Voltage Loop. In this control type, current loops are used when in grid-connected mode, while voltage loops are used in islanded operation.

This control type is characterized by low reference error, whether in active and reactive power (follower mode) or in voltage and frequency (forming mode). However, this configuration does not allow more than one BIW750 to be paralleled in forming mode without using optical fibers. For more details, consult WEG.

In seamless transitions, the BIW750 switches between the two modes. In case of islanding, the converter smoothly stops tracking active and reactive power to track voltage and frequency; while in grid return, the converter resumes tracking active and reactive power references.

4.3.2 CURRENT/VOLTAGE LOOP AND DROOP

If the P1340 parameter is set to 1: Current/Voltage Loop and Droop, the converter operates like the current and voltage loop, but with active and reactive power droops in grid-connected mode, and voltage and frequency droops in islanded mode.

With the use of droops, both active and reactive power, and voltage and frequency tracking have greater error relative to the reference. However, droops provide quick support for grid variations and allow more than one BIW750 to operate in parallel in forming mode.

In this mode, the active power droop adjustment is configured in P1728 ($\frac{P_{pu}}{Hz}$) and the reactive power droop is configured in P1730 ($\frac{Q_{pu}}{V_{pu}}$).

The voltage droop is adjusted in P1728 ($\frac{V_{pu}}{Q_{pu}}$) and frequency droop is adjusted in P1730 ($\frac{Hz}{P_{pu}}$).

4.3.3 VSG - VIRTUAL SYNCHRONOUS GENERATOR

If the P1340 is set to 2: VSG, the converter emulates the dynamics of a synchronous generator, always operating as a voltage source with inertia to grid variations and active and reactive power droops. This mode is recommended for operating more than one BIW750 forming the grid.

Since the VSG mode is also based on droops, tracking errors for active power, reactive power, voltage, and frequency are greater than in the current and voltage loop mode.

This mode does not switch between loops when transitioning from islanded to connected mode or vice versa. However, in connected mode, active and reactive power references are discarded by the PCS to improve voltage and frequency tracking.

In this mode, the active power droop adjustment is configured in P1810 ($\frac{P_{pu}}{Hz}$) and the reactive power droop is configured in P1812 ($\frac{Q_{pu}}{V_{pu}}$).

Depending on the application and the number of grid-forming converters, this mode may have adjustments. For more information, consult WEG.

4.3.4 CURRENT LOOP AND VSG

If the P1340 is set to 3: Current Loop and VSG, the converter combines the characteristics of mode 1: Current and Voltage Loop with mode 3: VSG. Thus, when the converter operates as a grid follower, current loops are used; if the converter operates as a grid-forming device, the VSG mode is used.

In this control type, the converter's follower mode provides better tracking of active and reactive power, while maintaining the characteristics of the VSG mode in islanded operation, allowing the formation of the grid with more than one BIW750 in parallel.

In this control, the converter behaves as a current source in follower mode and as a voltage source when operating as a grid-former. Therefore, during seamless transitions, a mode switch is made, which may cause small disturbances in the voltages.

4.4 BLACKSTART

In a startup where the grid is absent, the BIW750 will automatically form the grid through a configurable ramp (blackstart). Some configurations may be necessary during this operation, as described below.

In the blackstart operation, the PCS performs a ramp from 0% to the product's configured nominal voltage. The ramp time can be configured in P1092. This time may vary depending on the loads connected to the microgrid, especially by the number and power of the energized transformers, which produce inrush currents.

In operation with multiple grid-forming devices, the safe island formation should be done via ***sequential black-start***. To activate this operation, the VSG mode must be used, and the parameters P1056 and P1057 must be set to **1: Active**, with the following characteristics:

1. A BIW750 must be set as **Blackstart Leader** and the other converters as **Blackstart Followers**.
2. For both Leader and Followers, the parameter P1055 must be set to **1: Active**, to indicate that the Sequential Blackstart operation will begin.
3. Both Leader and Followers must be activated simultaneously during startup, via P1001.
4. The Leader starts the island formation with the configurable ramp.
5. Once the voltage reaches a certain level, the followers synchronize with the Leader's voltage and begin contributing to the *blackstart*.
6. The ramp finishes, and the island formation is completed.

4.5 ISLADING TRANSITIONS

The BIW750 features an automatic transition capability between current control mode (grid-tied) and voltage control mode (islanded). In oder to utilize this feature, it is necessary to enable the P1017 parameter.

For islanding detection, voltage and frequency deviations are utilized. That is, if the voltage or frequency deviations exceed configurable limits, the BIW750 automatically switches to voltage mode. Additionally, another feature called AI CONTROL is used to reduce undetectable zones, meaning load conditions that match the inverter's power, resulting in a low deviation in the system frequency. Both frequency-based islanding detection and AI CONTROL can be enabled/disabled in the P1636 parameter.

The BIW750 also includes internal detections for transitions between the follower mode and grid-forming mode, which can be enabled or disabled by P1636 for islanding detections and by P1637 for grid return detections.

For grid return, each detection should be enabled/disabled by the P1637 parameter, with each detection described below:

1. **Status of the grid via EMS or digital input:** the EMS or another device can emit a signal via Modbus to the inverter using parameter P1052. With this communication, the BIW750 alters its functionality to current control mode. If parameter P1051 is enabled (value equal to 1), the detection is performed using a digital input.
2. **Current amplitude:** in case of a grid return, the deviation between the grid angle and the internal angle generated by the inverter begins to increase. As this difference widens, the amplitude of the current starts to escalate. When the current exceeds a predefined limit, the inverter switches its mode to current control.
3. **Current variation:** during a grid return event, the variance between the angle of the grid and the microgrid can induce oscillations in the inverter current when the grid switch is closed. Consequently, the variation in the current is utilized to detect this event.

For islanding, each detection should be enabled/disabled by the P1636 parameter, with each detection described below:

1. **Signal emitted by the EMS for islanding or via digital input:** similar to the grid return, the EMS can inform the BIW750 that the grid is absent through the P1052 parameter, changing the control mode to voltage. If the P1051 parameter is active (value equal to 1), the detection is made via digital input.
2. **Voltage deviation:** if the voltage is greater than the value set in P1576 and less than P1574, the PCS will detect grid islanding.
3. **Frequency deviation:** if the frequency is greater than the value set in P1580 and less than P1578, the PCS will detect grid islanding.

For the grid return, redundancy is used for the detections[2], and this redundancy is the synchronization permission defined in the P1053 parameter. The default value of this parameter is **1: Active**, indicating that the BIW750 can return to the connected mode if any detection is triggered. On the other hand, if the permission is deactivated, the PCS will not change to the connected mode, regardless of any detection.

Transitions between islanded and grid-tied modes can be viewed in Figure 4.2.

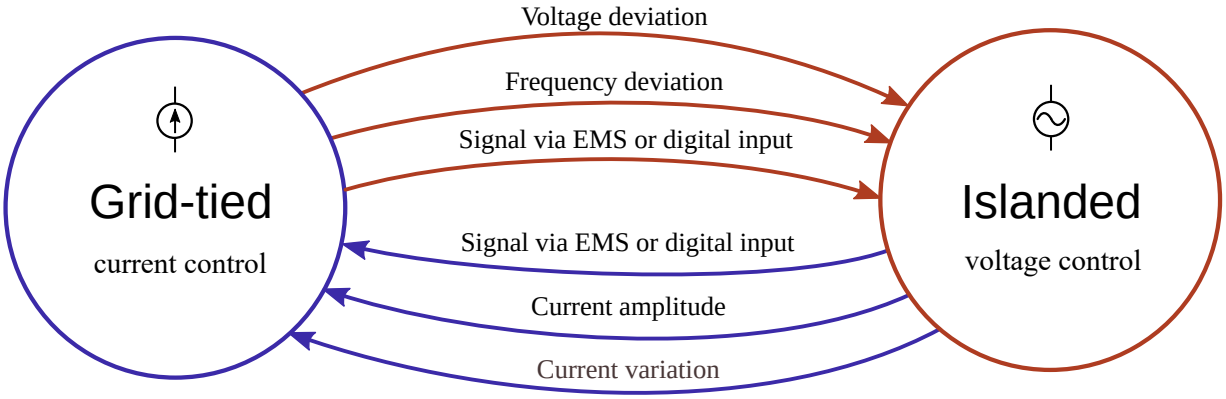

Figure 4.2: *Transitions between grid-tied and island*

NOTE!
All islanding detection functionalities can be enabled or disabled using parameter P1636. Meanwhile, grid return detection can be configured using the parameter P1637.

[2]Detections are only active by the EMS when the P1051 parameter is inactive (value equal to 0).

NOTE!
In the VSG mode, the converter does not switch between modes during transitions. For more information, see 4.3.3.

4.6 ACTIVE AND REACTIVE POWER CONTROL

The BIW750 offers six distinct modes for controlling active and reactive power, each of which can be enabled or disabled. Among these, two modes are dedicated to active power control, while four are designated for reactive power control.

For the control of active power flux, configuration of the parameter P1002 as “0:BIW” is mandated. Meanwhile, for the control of reactive power, the mode “0:BIW” or “1:Rectifier” can be used.

Active power adjustment is done through parameters P1526 for DC bus 1, and P1532 for DC bus 2. The inverter consistently regulates power using these two parameters. Additionally, two other active power modes—droop control and Volt-Watt can be activated concurrently with the aforementioned modes.

In contrast to active power, the reactive power modes are mutually exclusive, implying that only one can be active at any given time. These modes include Volt-var, Watt-Var, Reactive, and Power Factor Control.

NOTE!
All power control functionalities can be enabled or disabled using parameter P1590.

A detailed description of each active and reactive power control mode follows below.

4.6.1 FREQUENCY-DROOP

This mode governs the active power of BIW750. Through this functionality, the inverter adjusts its active power in response to deviations in frequency.

Figure 4.3 illustrates the frequency droop mode curve, demonstrating the adjustable parameters associated with this functionality.

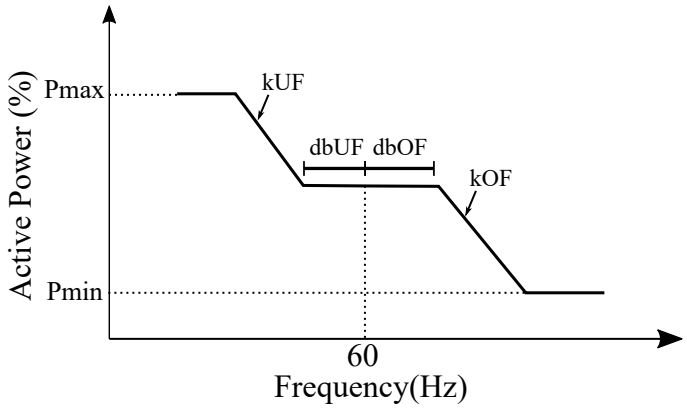

Figure 4.3: *Frequency droop curve with adjustable parameters.*

As can be seen in Figure 4.3, there are four adjustables parameters in this mode, they are:

- **dbOF:** single-sided deadband for high-frequency, in Hz, parameter P1650.

- **dbUF:** single-sided deadband for low frequency, in Hz, parameter P1652.
- **kOF:** per-unit frequency change to 1 per-unit active power change, used for frequency above nominal, parameter P1654.
- **kUF:** per-unit frequency change to 1 per-unit active power change, used for frequency below nominal, parameter P1656.

The frequency-droop control mode is in compliance with IEEE 1547.

4.6.2 VOLT-WATT MODE

This mode regulates the ACTIVE power of BIW750. With this functionality, the inverter limits its active power output in response with deviations in voltage.

To customize this mode, users can select four points that determine the characteristics of the limitation curve, as illustrated in Figure 4.4.

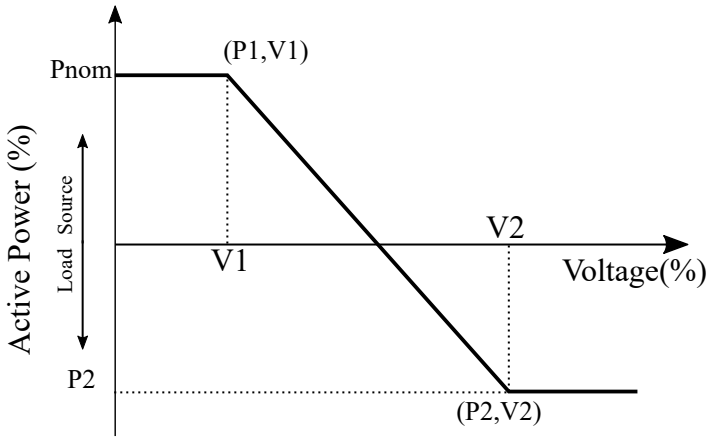

Figure 4.4: *Volt-Watt Mode: limitation curve adjustment.*

As can be seen in Figure 4.4, this mode requires adjustment of four parameters, namely:

- **P1:** adjusted upper active power, parameter P1640.
- **P2:** adjusted lower active power, parameter P1642.
- **V1:** adjusted lower voltage, parameter P1644.
- **V2:** adjusted upper voltage, parameter P1646.

In this mode, the BIW750 limits the active power based on the curve adjusted as depicted in Figure 4.4.

The Volt-Watt control mode is in compliance with IEEE 1547.

4.6.3 VOLT-VAR MODE

This mode governs the REACTIVE power of BIW750. Through this functionality, the inverter adjusts its reactive power output in accordance with the levels of AC voltage in the electrical grid.

To make adjustments in this mode, the user needs to configure the Volt-Var table, which comprises seven operational points. The levels of AC voltage are adjusted in parameter P8034 to P8048, while the reactive output is configured in P8050 to P8064.

With the adjusted Volt-Var table, the inverter regulates the reactive power based on the measured terminal AC voltage.

The Volt-Var control mode is in compliance with IEEE 1547.

4.6.4 WATT-VAR MODE

This mode governs the REACTIVE power of BIW750. With this functionality, the inverter adjusts its reactive power output based on the active power injected/absorbed by the inverter into/from the electrical grid.

To make adjustments in this mode, the user needs to configure the Watt-Var table, which comprises seven operational points. The levels of active power are adjusted in parameter P8068 to P8082, while the reactive output is configured in P8084 to P8098.

With the adjusted Watt-Var table, the inverter regulates the reactive power based on the active power injected/absorved by the inverter.

The Watt-Var control mode is in compliance with IEEE 1547.

4.6.5 REACTIVE MODE

This mode directly controls the REACTIVE power output from BIW750 using the parameters P1528 and P1534.

4.6.6 POWER FACTOR MODE

This mode governs the REACTIVE power of BIW750. With this functionality, the inverter adjusts its reactive power output based on power factor set in parameters P1530 for DC bus 1, and P1536 for DC bus 2.

5 UTILITY INTERACTION

The BIW750 bidirectional inverter is equipped with several functionalities that allows it to comply with the requirements of the power utility and local grid codes. Default factory settings are set in conformity with submodule 2.10 from ONS (National System Operator in Brazil).

5.1 PASSIVE PROTECTIONS

The BIW750 offers numerous functionalities to ensure compliance with grid codes for integration with the electrical power system (EPS). The inverter adheres to Submodule 2.10 from ONS, and aligns with the guidelines outlined in IEEE 1547.

Passive protections are distinguished by the response time for a given condition of the measured variable.

- Instantaneous protections: These protections are activated when the voltage or frequency measured by the inverter exceeds the acceptable minimum or maximum values during operation. In such instances, the BIW750 immediately trips, displaying the corresponding fault code for the associated event. Normal operation resumes once the event comes to an end and the fault is cleared;
- Timed protections: also known as Fault Ride-through (FRT), occur when the inverter operates at voltage or frequency levels beyond the limits of continuous operation, though not exceeding the limits for instantaneous protections. During such instances, the inverter continues to operate until the duration of the event surpasses a predefined time. If this time limit is exceeded, the inverter trips and displays a corresponding fault code.

Hence, the BIW750 features regions of time-delayed and instantaneous events related to voltage and frequency, as illustrated in Figure 5.1. This figure displays the adjustable parameters for voltage and frequency limits, along with the activation time.

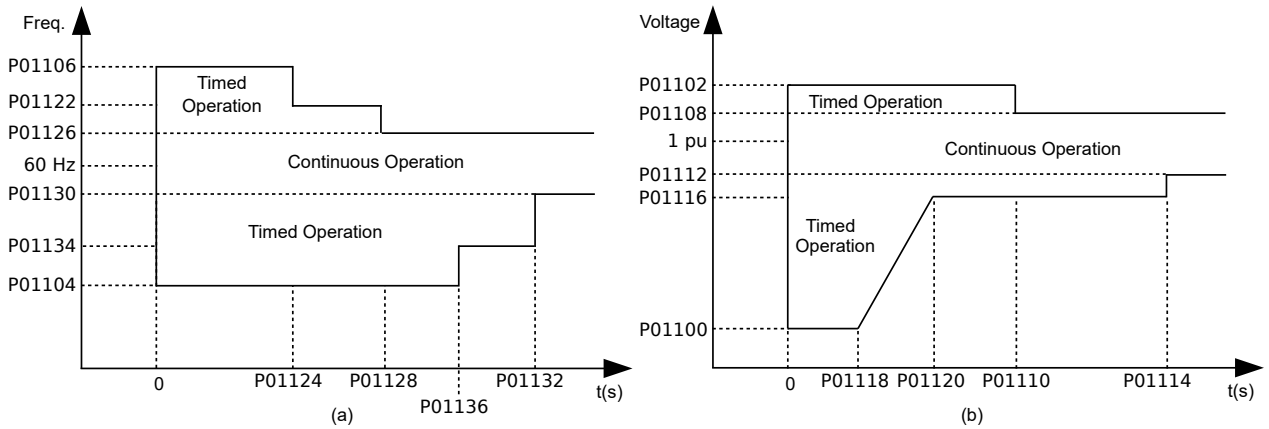

Figure 5.1: *BIW750 adjustable trip limits and trip times for (a) frequency and (b) voltage.*

Table 5.1 displays the instantaneous protection parameters depicted in Figure 5.1. Additionally, Table 5.2 outlines the time-delayed protection parameters associated with Fault Ride-through (FRT) operation. The factory settings comply with submodule 2.10 from ONS.

Table 5.1: *Instantaneous faults configuration.*

Parameter	Description	Factory Setting	Adjustable Range	Fault ID
P1100	Minimum grid voltage	20.0 %Vn	0.0 to 200.0 %Vn	F0001
P1102	Maximum grid voltage	120.0 %Vn	0.0 to 200.0 %Vn	F0004
P1104	Minimum frequency grid	56.0 Hz	0.0 to 100.0 Hz	F0006
P1106	Maximum frequency grid	63.0 Hz	0.0 to 100.0 Hz	F0008

Table 5.2: *Temporized faults configuration.*

Parameter	Description	Factory Setting	Adjustable Range	Fault ID
P1108	Timed grid overvoltage	110.00 %Vn	100.0 to 145 %Vn	F0005
P1112	Timed grid undervoltage LVRT0	90.00 %Vn	1.0 to 95.0 %Vn	F0002
P1116	Timed grid undervoltage LVRT1	85.00 %Vn	1.0 to 95.0 %Vn	F0003
P1110	Timed grid overvoltage duration	2.50 s	0.1 to 100.0 s	-
P1114	Timed grid undervoltage duration LVRT0	5.00 s	0.1 to 100.0 s	-
P1118	Timed grid undervoltage duration 1 LVRT1	0.50 s	0.1 to 100.0 s	-
P1120	Timed grid undervoltage duration 0 LVRT1	1.00 s	0.1 to 100.0 s	-
P1122	Timed grid overfrequency OFP1	62.00 Hz	61.8 to 66.0 Hz	F0012
P1124	Timed grid overfrequency duration OFP1	0.16 s	0.16 to 1000.0 s	-
P1126	Timed grid overfrequency OFP0	61.20 Hz	61.0 to 66.0 Hz	F0009
P1128	Timed grid overfrequency duration OFP0	300.00 s	180 to 1000.0 s	-
P1130	Timed grid underfrequency UFP0	58.50 Hz	50.0 to 59.0 Hz	F0007
P1132	Timed grid underfrequency duration UFP0	300.00 s	180 to 1000.0 s	-
P1134	Timed grid underfrequency UFP1	56.50 Hz	50.0 to 57.0 Hz	F0011
P1136	Timed grid underfrequency duration UFP1	0.16 s	0.16 to 1000.0 s	-

6 MAINTENANCE

DANGER!
Ensure that all sources of power have been disconnected before performing any installation or maintenance work.

Mandatory connection to the protective earth (PE).
Always connects equipment chassis to protective earth.

DANGER!
This product contains capacitors which store energy after de-energization.
Wait for at least 15 minutes before handling the equipment to ensure that the capacitors are discharged. Voltage levels should always be verified prior to any installation or maintenance work.

Components sensitive to electrostatic discharge. Do not touch them.
The electronic boards contain components that are sensitive to electrostatic discharge (ESD). Sensitive electronics can be damaged by electrostatic discharges. A wrist strap, heel strap, or other ESD protections should be used.

Hipot test must not be performed by the user!
Contact WEG if on-site hipot testing is necessary.

6.1 COMMON TROUBLESHOOTING SOLUTIONS

Table 6.1: *Frequent problems and corrective actions.*

Problem	Corrective action
No power generation	▪ Verify the current state of BIW750. ▪ The inverter may be halted due to a fault condition. ▪ Ensure that both AC and DC voltages are within the operational range. ▪ Check cables and connections. ▪ Check the AC fuses. ▪ Check the DC fuses. ▪ Check DC input polarity. ▪ Check battery state. ▪ Perform a visual inspection for damage.
Low power generation	▪ Verify the battery state of charge. ▪ Check the DC fuses.

6.2 PREVENTIVE MAINTANCE

When installed in a suitable environment, the BIW750 requires minimal maintenance to ensure optimal performance and normal operation. Table 6.2 outlines the inspections that must be conducted every 6 months after commissioning.

Table 6.2: *Periodic inspection.*

Component	Abnormality	Corrective action
Terminals, connectors	Loose screws	Tightening
	Improper connections	Connect the connectors properly
Printed Circuit Boards (PCB)	Accumulation of dust, oil, moisture	Cleaning
	Burning smell	Replacement
Power Module / Power Connections	Accumulation of dust, oil, moisture	Cleaning
	Loose screws	Tightening
Heatsink	Accumulation of dust, dirt	Cleaning

6.3 CLEANING

If it is necessary to perform a cleaning process on the BIW750, please follow the instructions below.

Ventilation system:

- First open the AC circuit breaker and DC switch, disconnect the battery racks, and also disconnect any AC voltage that supplies the product.
- Wait at least 15 minutes after shut down of this equipment for complete electrical discharge and stop of the fans. Many parts of this product can contain hazardous voltages or rotating components while turning off.
- Remove dust deposited on air inlets using a brush or duster.
- Remove the dust from heatsinks and fans using an air duster.
- Clean all air filters.

PCBs:

- Open AC circuit breaker and DC switch and wait at least 15 minutes.
- Clean the PCBs using antistatic brush and/or ionizing air gun (reference: A6030-6DESCO).
- If necessary, remove the PCBs from the converter, taking necessary precautions to avoid ESD damage to the equipment.

6.4 TECHNICAL SUPPORT

Contact WEG Technical Support team at www.weg.net for answers to technical questions and for product and application support.

Please make sure you have the following information available:

- Product model;
- Product serial number;
- Software version.

7 TECHNICAL SPECIFICATION

7.1 BIW750 MODELS

The BIW750 inverter family offers a broad range of power options, providing greater flexibility to accommodate various energy storage system designs.

Table 7.1 displays various models within the BIW750 inverter family. Additionally, Table 7.2 outlines the available e-house models for the BIW750 family.

Table 7.1: *BIW750 Models.*

Inverter Model	BIW750-1.0	BIW750-2.0	BIW750-2.5	BIW750-3.0	BIW750-3.5	BIW750-4.0
Parallel MPBS750	2	4	5	6	7	8
DC input						
Maximum DC current	1.380 A	2.760 A	3.450 A	4.140 A	4.830 A	5.520 A
Maximum DC Voltage	1.500 V					
DC voltage operating range(1)	874 V ~ 1.500 V					
DC overvoltage cat. (IEC 62109-1:2010)	II					
AC output						
Apparent Power PF = 1 (-10°C a +40°C)	1.090 kVA	2.180 kVA	2.725 kVA	3.270 kVA	3.815 kVA	4.360 kVA
Apparent Power PF = 0,95 (-10°C a +40°C)	1.000 kVA	2.000 kVA	2.500 kVA	3.000 kVA	3.520 kVA	4.020 kVA
Apparent Power PF = 1 (+50°C)	970 kVA	1.940 kVA	2.425 kVA	2.910 kVA	3.400 kVA	3.885 kVA
Apparent Power PF = 0,95 (+50°C)	920 kVA	1.840 kVA	2.300 kVA	2.760 kVA	3.230 kVA	3.690 kVA
Maximum AC current	1.020 A	2.035 A	2.545 A	3.055 A	3.565 A	4.075 A
AC voltage operating range(2)	600 V ~ 690 V					
Nominal frequency	50 Hz or 60 Hz					
PF(3)	-1 ~ 1					
THD_i(4)	<3%					
Maximum efficiency(5)	98,50%					
European efficiency(5)	98,40%					
AC overvoltage cat. (IEC 62109-1:2010)	III					
General information						
Communication	Modbus-RTU (RS485, USB), Modbus-TCP (Ethernet)					
Operating temperature range(6)	-10 ~ +50 °C					
Maximum auxiliar consumption	1.595 W	3.185 W	3.900 W	4.700 W	5.500 W	6.300 W
Standby consumption	500 W					
Standards	EN 61000 (4-2, 4-3, 4-4, 4-5, 4-6), IEC 62116, NBR IEC 62116, IEC 62109-1, IEC 62109-2					

Notes:
(1) For rated voltage of 600 V.
(2) Smaller values of voltages are possible, if respected the following conditions:

- $V_{DC} > 1.03 \times \sqrt{2} \times V_{AC}$;
- Apparent current can not be exceed.

(3) PF inductive or capacitive.
(4) Voltage measure of 600 V, and THD_V smaller than 2%.
(5) Component efficiency of electrical panel.
(6) Power derating with temperature above +40°C.

Table 7.2: *E-house models of BIW750.*

E-house model	ESW750-1.1	ESW750-4.4	ESW750-5.4	ESW750-6.6	ESW750-7.0	ESW750-8.0
Structure	Outdoor location	*Container high cube* 40’				
Ingress protection (IP)	IP 54	IP 55				
Temperature control	Forced ventilation					
Inverter						
Model	1x BIW750-1.0	2x BIW750-2.0	2x BIW750-2.5	2x BIW750-3.0	2x BIW750-3.5	2x BIW750-4.0
Rated Power	1x 1.090 kVA	2x 2.180 kVA	2x 2.725 kVA	2x 3.270 kVA	2x 3.815 kVA	2x 4.360 kVA
Operating temperature range	-10°C ~ +50 °C					
Maximum voltage	1.500 V					
Medium voltage protection cubicle						
Nominal voltage	13.8 kV / 34.5 kV					
Protective device	AC circuit breaker					
Transformer						
Rated power	1.100 kVA	4.300 kVA	5.300 kVA	6.400 kVA	7.500 kVA	8.600 kVA
Primary voltage	13.8 kV / 34.5 kV					
Secondary voltage	0.60 kV ~ 0.69 kV					

NOTE!
For other specification, please consult WEG.

WARNING!
Insulated transformer can not be grounded (IT system).

DANGER!
Both the inverter and the battery racks must be installed in closed electrical operating areas only, i.e., access must be restricted to skilled or instructed persons.

7.2 PXQ CURVE

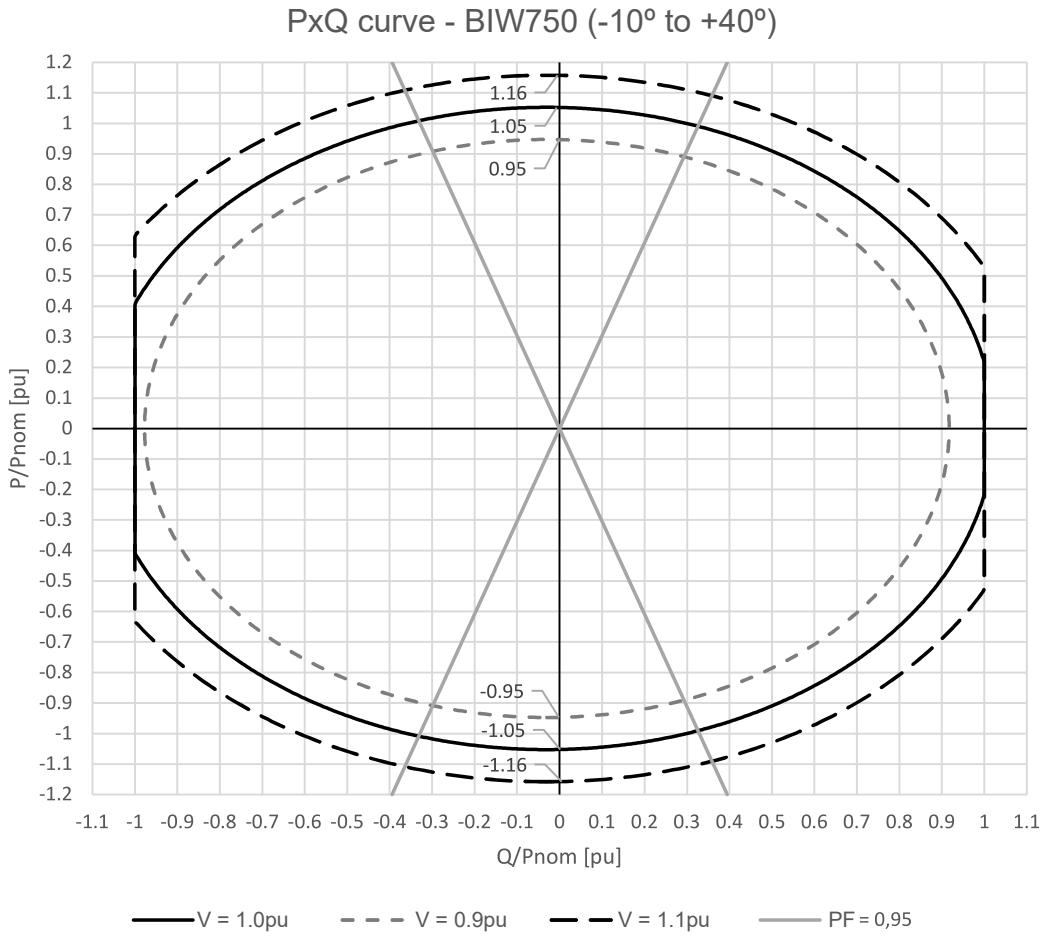

Figure 7.1: *PxQ curve from BIW750.*

7.3 BIW750 OPERATING CONDITIONS

Operating conditions	Operating temperature	▪ 0°C to +40°C: rated conditions; ▪ +40°C to +50°C: current reduction of 0,9% for each Celsius degree above +40°C.
	Relative humidity range	▪ 0 to 100%, without condensing.
	Operating altitude	▪ 0 to 1000 m: rated conditions; ▪ 1000 to 4000 m: current reduction of 1% for each 100 m above 1000 m.
	Pollution Degree	▪ 2, according to EN 50178.

7.4 GENERAL INFORMATION

Inputs	Analog	▪ 5 differential isolated inputs using differential amplifier, impedance 400 kΩ (voltage) or 500 Ω (current): • 0 to ±10 V, 0 to 20 mA / 4 to 20 mA, resolution 11 *bits* + signal.
	Digital	▪ 16 isolated digital inputs, 24 Vcc, adjustable function.
Outputs	Digital (relay)	▪ 10 NC/NO relays, 240 V, 1 A, adjustable function.
	Analog	▪ 4 analog outputs, 0 a ±10 V, adjustable function.
Safety	Protections	▪ Grid undervoltage/overvoltage. ▪ DC undervoltage/overvoltage. ▪ Grid voltage imbalance. ▪ Grid underfrequency/overfrequency. ▪ Anti-islanding protection. ▪ Undertemperature/overtemperature. ▪ Fault of CPU or in the flash memory. ▪ Short-circuit DC side.
Communication	Networks	▪ Modbus-RTU (RS-485, USB); ▪ Modbus-TCP (Ethernet).

Note: Considering one control rack as one CCE and IMPS board.

7.5 ENVIRONMENTAL CONDITIONS

The choice of the appropriate degree of protection for the inverter installation location is a determining factor in achieving correct operation and normal component lifespan. For the standard degree of protection of the inverter, it is recommended to avoid installing it under the following conditions:

- Exposure to excessive humidity or salt air.
- Explosive or corrosive gases or liquids;
- Excessive vibration;
- Dust, metallic particles, or air-suspended oils.

8 QUICK PARAMETER REFERENCE

Param.	Description	Adjustable range	Factory setting	Read Only
P0000	RMS Voltage Vab	0.0 to 1000.0 V	-	ro
P0002	RMS Voltage Vbc	0.0 to 1000.0 V	-	ro
P0004	RMS Voltage Vca	0.0 to 1000.0 V	-	ro
P0006	AVG Voltage Vab	-1000.0 to 1000.0 V	-	ro
P0008	AVG Voltage Vbc	-1000.0 to 1000.0 V	-	ro
P0010	AVG Voltage Vca	-1000.0 to 1000.0 V	-	ro
P0012	RMS Unbalanced Voltage Vab	-1000.0 to 1000.0 V	-	ro
P0014	RMS Unbalanced Voltage Vbc	-1000.0 to 1000.0 V	-	ro
P0016	RMS Unbalanced Voltage Vca	-1000.0 to 1000.0 V	-	ro
P0018	Power Grid RMS AVG Voltage	0.0 to 1000.0 V	-	ro
P0020	Power Grid Peak Voltage	-1500.0 to 1500.0 V	-	ro
P0022	Phase R RMS Current	0.0 to 6000.0 A	-	ro
P0024	Phase S RMS Current	0.0 to 6000.0 A	-	ro
P0026	Phase T RMS Current	0.0 to 6000.0 A	-	ro
P0028	Phase R AVG Current	-6000.0 to 6000.0 A	-	ro
P0030	Phase S AVG Current	-6000.0 to 6000.0 A	-	ro
P0032	Phase T AVG Current	-6000.0 to 6000.0 A	-	ro
P0034	Unbalanced Phase R AVG Current	-6000.0 to 6000.0 A	-	ro
P0036	Unbalanced Phase S AVG Current	-6000.0 to 6000.0 A	-	ro
P0038	Unbalanced Phase T AVG Current	-6000.0 to 6000.0 A	-	ro
P0040	Unbalanced Phase R RMS Current	0.0 to 6000.0 A	-	ro
P0042	Unbalanced Phase S RMS Current	0.0 to 6000.0 A	-	ro
P0044	Unbalanced Phase T RMS Current	0.0 to 6000.0 A	-	ro
P0046	Power Grid RMS AVG Current	0.0 to 6000.0 A	-	ro
P0048	Power Grid Peak Current	0.0 to 10000.0 A	-	ro
P0050	CC1 - Phase U RMS Current	0.0 to 6000.0 A	-	ro
P0052	CC1 - Phase V RMS Current	0.0 to 6000.0 A	-	ro
P0054	CC1 - Phase W RMS Current	0.0 to 6000.0 A	-	ro
P0056	CC1 - Phase U AVG Current	-6000.0 to 6000.0 A	-	ro
P0058	CC1 - Phase V AVG Current	-6000.0 to 6000.0 A	-	ro
P0060	CC1 - Phase W AVG Current	-6000.0 to 6000.0 A	-	ro
P0062	CC1 - Max. AVG Current Imbalance	-6000.0 to 6000.0 A	-	ro
P0064	CC1 - Max. RMS Current Imbalance	-6000.0 to 6000.0 A	-	ro
P0066	CC1 - Active Current	-200.0 to 200.0 %	-	ro
P0068	CC1 - Reactive Current	-200.0 to 200.0 %	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0070	CC2 - Phase U RMS Current	0.0 to 6000.0 A	-	ro
P0072	CC2 - Phase V RMS Current	0.0 to 6000.0 A	-	ro
P0074	CC2 - Phase W RMS Current	0.0 to 6000.0 A	-	ro
P0076	CC2 - Phase U AVG Current	-6000.0 to 6000.0 A	-	ro
P0078	CC2 - Phase V AVG Current	-6000.0 to 6000.0 A	-	ro
P0080	CC2 - Phase W AVG Current	-6000.0 to 6000.0 A	-	ro
P0082	CC2 - Max. AVG Current Unbalanced	-6000.0 to 6000.0 A	-	ro
P0084	CC2 - Max. RMS Current Unbalanced	-6000.0 to 6000.0 A	-	ro
P0086	CC2 - Active Current	-200.0 to 200.0 %	-	ro
P0088	CC2 - Reactive Current	-200.0 to 200.0 %	-	ro
P0090	AC Active Power	-12000.0 to 12000.0 kW	-	ro
P0092	AC Reactive Power	-12000.0 to 12000.0 kVAr	-	ro
P0094	AC Apparent Power	-12000.0 to 12000.0 kVA	-	ro
P0100	Frequency	-100.0 to 100.0 Hz	-	ro
P0102	Power Grid Connection Sequence	0 = PLL Off 1 = Positive 2 = Negative 3 = Fixed Freq 4 = PLL not synchronized	0 = PLL Off	ro
P0104	Inverter Active Power (pu)	-12000.0 to 12000.0 kW	-	ro
P0106	Inverter Reactive Power (pu)	-12000.0 to 12000.0 kVA	-	ro
P0108	Inverter Apparent Power (pu)	-12000.0 to 12000.0 kVA	-	ro
P0110		-12000.0 to 12000.0 kW	-	ro
P0112		-12000.0 to 12000.0 kVA	-	ro
P0114		-12000.0 to 12000.0 kVA	-	ro
P0120	Efficiency - DC Link 1	0.00 to 100.00 %	-	ro
P0122	Efficiency - DC Link 2	0.00 to 100.00	-	ro
P0124	Books AVG RMS Current	0.0 to 1000.0 A	-	ro
P0130	Battery Voltage 1	-2000.0 to 2000.0 V	-	ro
P0132	Battery Voltage 2	-2000.0 to 2000.0 V	-	ro
P0134	DC Bus Total Voltage 1	-2000.0 to 2000.0 V	-	ro
P0136	DC Bus Total Voltage 2	-2000.0 to 2000.0 V	-	ro
P0138	Differential Voltage DC Link 1	-2000.0 to 2000.0 V	-	ro
P0140	Differential Voltage DC Link 2	-2000.0 to 2000.0 V	-	ro
P0142	CC1 - DC Bus Current	-5000.0 to 6000.0 A	-	ro
P0144	CC1 - Neutral RMS Current	0.0 to 1000.0 A	-	ro
P0146	CC1 - Power Arrangement of PV	-6000.0 to 6000.0 kW	-	ro
P0148	CC1 - Active Power (pu)	-200.0 to 200.0 %Pn	-	ro
P0150	CC1 - Reactive Power (pu)	-200.0 to 200.0 %Pn	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0152	CC1 - Apparent Power (pu)	0.0 to 200.0 %Pn	-	ro
P0154	CC1 - Power Factor	-1.00 to 1.00	-	ro
P0156	CC2 - DC Bus Current	-5000.0 to 6000.0 A	-	ro
P0158	CC2 - Neutral RMS Current	0.0 to 1000.0 A	-	ro
P0160	CC2 - DC Power	-6000.0 to 6000.0 kW	-	ro
P0162	CC2 - Active Power (pu)	-200.0 to 200.0 %Pn	-	ro
P0164	CC2 - Reactive Power (pu)	-200.0 to 200.0 %Pn	-	ro
P0166	CC2 - Apparent Power (pu)	0.0 to 200.0 %Pn	-	ro
P0168	CC2 - Power Factor	-1.00 to 1.00	-	ro
P0250	Fundamental Voltage (RMS)	0 to 1000 V	-	ro
P0252	2nd Voltage Harmonic	0 to 100 %	-	ro
P0254	3rd Voltage Harmonic	0 to 100 %	-	ro
P0256	4th Voltage Harmonic	0 to 100 %	-	ro
P0258	5th Voltage Harmonic	0 to 100 %	-	ro
P0260	6th Voltage Harmonic	0 to 100 %	-	ro
P0262	7th Voltage Harmonic	0 to 100 %	-	ro
P0300	Phase U RMS Current - Book 1	0.0 to 1000.0 A	-	ro
P0302	Phase U RMS Current - Book 2	0.0 to 1000.0 A	-	ro
P0304	Phase U RMS Current - Book 3	0.0 to 1000.0 A	-	ro
P0306	Phase U RMS Current - Book 4	0.0 to 1000.0 A	-	ro
P0308	Phase U RMS Current - Book 5	0.0 to 1000.0 A	-	ro
P0310	Phase U RMS Current - Book 6	0.0 to 1000.0 A	-	ro
P0312	Phase U RMS Current - Book 7	0.0 to 1000.0 A	-	ro
P0314	Phase U RMS Current - Book 8	0.0 to 1000.0 A	-	ro
P0316	Phase U RMS Current - Book 9	0.0 to 1000.0 A	-	ro
P0320	Phase V RMS Current - Book 1	0.0 to 1000.0 A	-	ro
P0322	Phase V RMS Current - Book 2	0.0 to 1000.0 A	-	ro
P0324	Phase V RMS Current - Book 3	0.0 to 1000.0 A	-	ro
P0326	Phase V RMS Current - Book 4	0.0 to 1000.0 A	-	ro
P0328	Phase V RMS Current - Book 5	0.0 to 1000.0 A	-	ro
P0330	Phase V RMS Current - Book 6	0.0 to 1000.0 A	-	ro
P0332	Phase V RMS Current - Book 7	0.0 to 1000.0 A	-	ro
P0334	Phase V RMS Current - Book 8	0.0 to 1000.0 A	-	ro
P0336	Phase V RMS Current - Book 9	0.0 to 1000.0 A	-	ro
P0340	Phase W RMS Current - Book 1	0.0 to 1000.0 A	-	ro
P0342	Phase W RMS Current - Book 2	0.0 to 1000.0 A	-	ro
P0344	Phase W RMS Current - Book 3	0.0 to 1000.0 A	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0346	Phase W RMS Current - Book 4	0.0 to 1000.0 A	-	ro
P0348	Phase W RMS Current - Book 5	0.0 to 1000.0 A	-	ro
P0350	Phase W RMS Current - Book 6	0.0 to 1000.0 A	-	ro
P0352	Phase W RMS Current - Book 7	0.0 to 1000.0 A	-	ro
P0354	Phase W RMS Current - Book 8	0.0 to 1000.0 A	-	ro
P0356	Phase W RMS Current - Book 9	0.0 to 1000.0 A	-	ro
P0360	DC Link Current - Book 1	-1000.0 to 1000.0 A	-	ro
P0362	DC Link Current - Book 2	-1000.0 to 1000.0 A	-	ro
P0364	DC Link Current - Book 3	-1000.0 to 1000.0 A	-	ro
P0366	DC Link Current - Book 4	-1000.0 to 1000.0 A	-	ro
P0368	DC Link Current - Book 5	-1000.0 to 1000.0 A	-	ro
P0370	DC Link Current - Book 6	-1000.0 to 1000.0 A	-	ro
P0372	DC Link Current - Book 7	-1000.0 to 1000.0 A	-	ro
P0374	DC Link Current - Book 8	-1000.0 to 1000.0 A	-	ro
P0376	DC Link Current - Book 9	-1000.0 to 1000.0 A	-	ro
P0400	Phase U Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P0402	Phase U Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P0404	Phase U Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P0406	Phase U Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P0408	Phase U Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P0410	Phase U Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P0412	Phase U Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P0414	Phase U Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P0416	Phase U Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P0420	Phase V Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P0422	Phase V Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P0424	Phase V Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P0426	Phase V Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P0428	Phase V Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P0430	Phase V Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P0432	Phase V Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P0434	Phase V Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P0436	Phase V Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P0440	Phase W Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P0442	Phase W Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P0444	Phase W Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P0446	Phase W Temperature - Book 4	-30.0 to 300.0 °C	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0448	Phase W Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P0450	Phase W Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P0452	Phase W Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P0454	Phase W Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P0456	Phase W Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P0460	Inductor Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P0462	Inductor Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P0464	Inductor Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P0466	Inductor Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P0468	Inductor Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P0470	Inductor Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P0472	Inductor Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P0474	Inductor Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P0476	Inductor Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P0480	CMPS Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P0482	CMPS Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P0484	CMPS Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P0486	CMPS Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P0488	CMPS Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P0490	CMPS Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P0492	CMPS Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P0494	CMPS Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P0496	CMPS Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P0600	DC1 - Max. Temperature Phase U	-30.0 to 300.0 °C	-	ro
P0602	DC1 - Max. Temperature Phase V	-30.0 to 300.0 °C	-	ro
P0604	DC1 - Max. Temperature Phase W	-30.0 to 300.0 °C	-	ro
P0606	DC1 - Max. Inductor Temperature	-30.0 to 300.0 °C	-	ro
P0608	DC1 - Max. CMPS Temperature	-30.0 to 300.0 °C	-	ro
P0610	DC2 - Max. Temperature Phase U	-30.0 to 300.0 °C	-	ro
P0612	DC2 - Max. Temperature Phase V	-30.0 to 300.0 °C	-	ro
P0614	DC2 - Max. Temperature Phase W	-30.0 to 300.0 °C	-	ro
P0616	DC2 - Max. Inductor Temperature	-30.0 to 300.0 °C	-	ro
P0618	DC2 - Max. CMPS Temperature	-30.0 to 300.0 °C	-	ro
P0620	Pressão da Água	-1000.00 to 1000.00 bar	-	ro
P0622	Hot Water Temperature	-1000.0 to 1000.0 °C	-	ro
P0624	Cold Water Temperature	-1000.0 to 1000.0 °C	-	ro
P0626	Water Flow	-1000.0 to 1000.0 l/min	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0628	Cooling System Pump Speed Control	-1000.0 to 1000.0 %	-	ro
P0630	Cooling System Fan Speed Control	0.0 to 100.0 %	-	ro
P0632	CC1 - Source +15V	-30.0 to 30.0	-	ro
P0634	CC1 - Source -15V	-30.0 to 30.0	-	ro
P0638	Operation time pump 1	0 to 4294967295 h	-	ro
P0640	Operation time pump 2	0 to 4294967295 h	-	ro
P0642	Positive Voltage - P axis	-200.0 to 200.0 %	-	ro
P0644	Positive Voltage - Q axis	-200.0 to 200.0 %	-	ro
P0646	Negative Voltage - P axis	-200.0 to 200.0 %	-	ro
P0648	Negative Voltage -Q axis	-200.0 to 200.0 %	-	ro
P0650	CC1 - Active Current Reference	-200.0 to 200.0 %In	-	ro
P0652	CC1 - Reactive Current Limit	-200.0 to 200.0 %In	-	ro
P0654	CC1 - Active Current Upper Limit Reference	-200.0 to 200.0 %In	-	ro
P0656	CC1 - Active Current Lower Limit reference	-200.0 to 200.0 %In	-	ro
P0658	CC1 - Reactive Current Upper Limit Reference	-200.0 to 200.0 %In	-	ro
P0660	CC1 - Reactive Current Lower Limit reference	-200.0 to 200.0 %In	-	ro
P0662	CC2 - Active Current Reference	-200.0 to 200.0 %In	-	ro
P0664	CC2 - Reactive Current Reference	-200.0 to 200.0 %Vn	-	ro
P0666	CC2 - Active Current Upper Limit Reference	-200.0 to 200.0 %In	-	ro
P0668	CC2 - Active Current Lower Limit Reference	-200.0 to 200.0 %In	-	ro
P0670	CC2 - Reactive Current Upper Limit Reference	-200.0 to 200.0 %In	-	ro
P0672	CC2 - Reactive Current Lower Limit Reference	-200.0 to 200.0 %In	-	ro
P0680	CC1 - Active Current Control Action	-200.00 to 200.00 %	-	ro
P0682	CC1 - Reactive Current Control Action	-200.00 to 200.00 %	-	ro
P0684	CC2 - Active Current Control Action	-200.00 to 200.00 %	-	ro
P0686	CC2 - Reactive Current Control Action	-200.00 to 200.00 %	-	ro
P0688	PLL Control Action	-200.00 to 200.00 %	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0700	Digital Inputs	Bitfield: bit0 : DI 1 - CCE03 bit1 : DI 2 - CCE03 bit2 : DI 3 - CCE03 bit3 : DI 4 - CCE03 bit4 : DI 1 - IMPS750 bit5 : DI 2 - IMPS750 bit6 : DI 3 - IMPS750 bit7 : DI 4 - IMPS750 bit8 : DI 5 - IMPS750 bit9 : DI 6 - IMPS750 bit10 : DI 7 - IMPS750 bit11 : DI 8 - IMPS750 bit12 : DI 9 - IMPS750 bit13 : DI 10 - IMPS750 bit14 : DI 11 - IMPS750 bit15 : DI 12 - IMPS750		ro
P0701	Digital Outputs	Bitfield: bit0 : DO 1 (CCE) bit1 : DO 2 (CCE) bit2 : DO 1 (IMPS750) bit3 : DO 2 (IMPS750) bit4 : DO 3 (IMPS750) bit5 : DO 4 (IMPS750) bit6 : DO 5 (IMPS750) bit7 : DO 6 (IMPS750) bit8 : DO 7 (IMPS750) bit9 : DO 8 (IMPS750)	Binary = 0b0	
P0702	Forcing Digital Outputs	Bitfield: bit0 : Force DO1 (CCE03) bit1 : Force DO2 (CCE03) bit2 : Force DO1 (IMPS750) bit3 : Force DO2 (IMPS750) bit4 : Force DO3 (IMPS750) bit5 : Force DO4 (IMPS750) bit6 : Force DO5 (IMPS750) bit7 : Force DO6 (IMPS750) bit8 : Force DO7 (IMPS750) bit9 : Force DO8 (IMPS750)	Binary = 0b0	
P0704	Digital Input Accessory	Bitfield: bit0 : DI1 (Accessory 1) bit1 : DI2 (Accessory 1) bit2 : DI3 (Accessory 1) bit3 : DI4 (Accessory 1) bit4 : DI5 (Accessory 1) bit5 : DI6 (Accessory 1) bit6 : DI7 (Accessory 1) bit7 : DI8 (Accessory 1) bit8 : DI1 (Accessory 2) bit9 : DI2 (Accessory 2) bit10 : DI3 (Accessory 2) bit11 : DI4 (Accessory 2) bit12 : DI5 (Accessory 2) bit13 : DI6 (Accessory 2) bit14 : DI7 (Accessory 2) bit15 : DI8 (Accessory 2) bit16 : DI1 (Accessory 3) bit17 : DI2 (Accessory 3) bit18 : DI3 (Accessory 3) bit19 : DI4 (Accessory 3) bit20 : DI5 (Accessory 3) bit21 : DI6 (Accessory 3) bit22 : DI7 (Accessory 3) bit23 : DI8 (Accessory 3) bit24 : DI1 (Accessory 4) bit25 : DI2 (Accessory 4) bit26 : DI3 (Accessory 4) bit27 : DI4 (Accessory 4) bit28 : DI5 (Accessory 4) bit29 : DI6 (Accessory 4) bit30 : DI7 (Accessory 4) bit31 : DI8 (Accessory 4)		ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0706	Digital Output Accessory	Bitfield: bit0 : DO1 (Accessory 1) bit1 : DO2 (Accessory 1) bit2 : DO3 (Accessory 1) bit3 : DO4 (Accessory 1) bit4 : DO5 (Accessory 1) bit5 : DO6 (Accessory 1) bit6 : DO7 (Accessory 1) bit7 : DO8 (Accessory 1) bit8 : DO1 (Accessory 2) bit9 : DO2 (Accessory 2) bit10 : DO3 (Accessory 2) bit11 : DO4 (Accessory 2) bit12 : DO5 (Accessory 2) bit13 : DO6 (Accessory 2) bit14 : DO7 (Accessory 2) bit15 : DO8 (Accessory 2) bit16 : DO1 (Accessory 3) bit17 : DO2 (Accessory 3) bit18 : DO3 (Accessory 3) bit19 : DO4 (Accessory 3) bit20 : DO5 (Accessory 3) bit21 : DO6 (Accessory 3) bit22 : DO7 (Accessory 3) bit23 : DO8 (Accessory 3) bit24 : DO1 (Accessory 4) bit25 : DO2 (Accessory 4) bit26 : DO3 (Accessory 4) bit27 : DO4 (Accessory 4) bit28 : DO5 (Accessory 4) bit29 : DO6 (Accessory 4) bit30 : DO7 (Accessory 4) bit31 : DO8 (Accessory 4)	Binary = 0b0	
P0708	Forcing Digital Outputs Accessory	Bitfield: bit0 : Force DO1 (Accessory 1) bit1 : Force DO2 (Accessory 1) bit2 : Force DO3 (Accessory 1) bit3 : Force DO4 (Accessory 1) bit4 : Force DO5 (Accessory 1) bit5 : Force DO6 (Accessory 1) bit6 : Force DO7 (Accessory 1) bit7 : Force DO8 (Accessory 1) bit8 : Force DO1 (Accessory 2) bit9 : Force DO2 (Accessory 2) bit10 : Force DO3 (Accessory 2) bit11 : Force DO4 (Accessory 2) bit12 : Force DO5 (Accessory 2) bit13 : Force DO6 (Accessory 2) bit14 : Force DO7 (Accessory 2) bit15 : Force DO8 (Accessory 2) bit16 : Force DO1 (Accessory 3) bit17 : Force DO2 (Accessory 3) bit18 : Force DO3 (Accessory 3) bit19 : Force DO4 (Accessory 3) bit20 : Force DO5 (Accessory 3) bit21 : Force DO6 (Accessory 3) bit22 : Force DO7 (Accessory 3) bit23 : Force DO8 (Accessory 3) bit24 : Force DO1 (Accessory 4) bit25 : Force DO2 (Accessory 4) bit26 : Force DO3 (Accessory 4) bit27 : Force DO4 (Accessory 4) bit28 : Force DO5 (Accessory 4) bit29 : Force DO6 (Accessory 4) bit30 : Force DO7 (Accessory 4) bit31 : Force DO8 (Accessory 4)	Binary = 0b0	

Param.	Description	Adjustable range	Factory setting	Read Only
P0710	Digital Inputs and Outputs - Book 1	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0711	Digital Inputs and Outputs - Book 2	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0712	Digital Inputs and Outputs - Book 3	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0713	Digital Inputs and Outputs - Book 4	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0714	Digital Inputs and Outputs - Book 5	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	

Param.	Description	Adjustable range	Factory setting	Read Only
P0715	Digital Inputs and Outputs - Book 6	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0716	Digital Inputs and Outputs - Book 7	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0717	Digital Inputs and Outputs - Book 8	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0718	Digital Inputs and Outputs - Book 9	Bitfield: bit0 : DO1 (Pre Charge) bit1 : DO2 (Main) bit2 : Fault bit3 : Status bit4 : Overcurrent bit5 : Phase W Desaturation bit6 : Phase V Desaturation bit7 : Phase U Desaturation bit8 : Extern Fault bit9 : RSU State 1 bit10 : RSU State 2	Binary = 0b0	
P0730	Power Grid Quality	0 = No Grid 1 = Weak Grid 2 = Reasonable Grid 3 = Stable Grid	0 = No Grid	ro
P0731	Power Grid Condition	Bitfield: bit0 : High Voltage bit1 : Low Voltage bit2 : High Frequency bit3 : Low Frequency bit4 : Unsynchronized PLL		ro
P0732	Stable Power Grid Time	0 to 100000000 s	-	ro
P0734	Connection status	0 = Islanded 1 = Grid-Tied	0 = Islanded	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0740	CC1 - Forcing Digital Outputs	Bitfield: bit0 : Force DO1 (CMPS1) bit1 : Force DO2 (CMPS1) bit2 : Force DO1 (CMPS2) bit3 : Force DO2 (CMPS2) bit4 : Force DO1 (CMPS3) bit5 : Force DO2 (CMPS3) bit6 : Force DO1 (CMPS4) bit7 : Force DO2 (CMPS4) bit8 : Force DO1 (CMPS5) bit9 : Force DO2 (CMPS5) bit10 : Force DO1 (CMPS6) bit11 : Force DO2 (CMPS6)	Binary = 0b0	
P0750	Occupation Time - Control	0 to 65535 µS	-	ro
P0751	Occupation Time - State Machine	0 to 65535 µS	-	ro
P0752	Occupation Time - Signal Conditioning	0 to 65535 µS	-	ro
P0753	Occupation Time - Ethernet	0 to 65535 µS	-	ro
P0754	Occupation Time - Modbus RTU USB	0 to 65535 µS	-	ro
P0755	Occupation Time - Modbus RTU RS485	0 to 65535 µS	-	ro
P0756	Occupation Time - EEPROM	0 to 65535 µS	-	ro
P0758	Occupation Time - Cooling	0 to 65535 µS	-	ro
P0759	Occupation Time - HMI	0 to 65535 µS	-	ro
P0760	Ocupation Percentual - Background	0 to 65535 µS	-	ro
P0761	Executions - Task EEPROM	0 to 65535	-	ro
P0762	Executions - Task Fault History	0 to 65535	-	ro
P0763	Non-execution - Task EEPROM	0 to 65535	-	ro
P0770	Reset count - Ethernet Task	0 to 65535	-	ro
P0771	Reset count - Cooling	0 to 65535	-	ro
P0773	Reset count - HMI	0 to 65535	-	ro
P0774	Reset count - Background Task	0 to 65535	-	ro
P0800	Phase U AVG Current - Book 1	-1000.0 to 1000.0 A	-	ro
P0802	Phase U AVG Current - Book 2	-1000.0 to 1000.0 A	-	ro
P0804	Phase U AVG Current - Book 3	-1000.0 to 1000.0 A	-	ro
P0806	Phase U AVG Current - Book 4	-1000.0 to 1000.0 A	-	ro
P0808	Phase U AVG Current - Book 5	-1000.0 to 1000.0 A	-	ro
P0810	Phase U AVG Current - Book 6	-1000.0 to 1000.0 A	-	ro
P0812	Phase U AVG Current - Book 7	-1000.0 to 1000.0 A	-	ro
P0814	Phase U AVG Current - Book 8	-1000.0 to 1000.0 A	-	ro
P0816	Phase U AVG Current - Book 9	-1000.0 to 1000.0 A	-	ro
P0820	Phase V AVG Current - Book 1	-1000.0 to 1000.0 A	-	ro
P0822	Phase V AVG Current - Book 2	-1000.0 to 1000.0 A	-	ro
P0824	Phase V AVG Current - Book 3	-1000.0 to 1000.0 A	-	ro
P0826	Phase V AVG Current - Book 4	-1000.0 to 1000.0 A	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0828	Phase V AVG Current - Book 5	-1000.0 to 1000.0 A	-	ro
P0830	Phase V AVG Current - Book 6	-1000.0 to 1000.0 A	-	ro
P0832	Phase V AVG Current - Book 7	-1000.0 to 1000.0 A	-	ro
P0834	Phase V AVG Current - Book 8	-1000.0 to 1000.0 A	-	ro
P0836	Phase V AVG Current - Book 9	-1000.0 to 1000.0 A	-	ro
P0840	Phase W AVG Current - Book 1	-1000.0 to 1000.0 A	-	ro
P0842	Phase W AVG Current - Book 2	-1000.0 to 1000.0 A	-	ro
P0844	Phase W AVG Current - Book 3	-1000.0 to 1000.0 A	-	ro
P0846	Phase W AVG Current - Book 4	-1000.0 to 1000.0 A	-	ro
P0848	Phase W AVG Current - Book 5	-1000.0 to 1000.0 A	-	ro
P0850	Phase W AVG Current - Book 6	-1000.0 to 1000.0 A	-	ro
P0852	Phase W AVG Current - Book 7	-1000.0 to 1000.0 A	-	ro
P0854	Phase W AVG Current - Book 8	-1000.0 to 1000.0 A	-	ro
P0856	Phase W AVG Current - Book 9	-1000.0 to 1000.0 A	-	ro
P0860	Neutral RMS Current - Book 1	0.0 to 1000.0 A	-	ro
P0862	Neutral RMS Current - Book 2	0.0 to 1000.0 A	-	ro
P0864	Neutral RMS Current - Book 3	0.0 to 1000.0 A	-	ro
P0866	Neutral RMS Current - Book 4	0.0 to 1000.0 A	-	ro
P0868	Neutral RMS Current - Book 5	0.0 to 1000.0 A	-	ro
P0870	Neutral RMS Current - Book 6	0.0 to 1000.0 A	-	ro
P0872	Neutral RMS Current - Book 7	0.0 to 1000.0 A	-	ro
P0874	Neutral RMS Current - Book 8	0.0 to 1000.0 A	-	ro
P0876	Neutral RMS Current - Book 9	0.0 to 1000.0 A	-	ro
P0880	Main Contactor Time - Book 1	0 to 1000 ms	-	ro
P0881	Main Contactor Time - Book 2	0 to 1000 ms	-	ro
P0882	Main Contactor Time - Book 3	0 to 1000 ms	-	ro
P0883	Main Contactor Time - Book 4	0 to 1000 ms	-	ro
P0884	Main Contactor Time - Book 5	0 to 1000 ms	-	ro
P0885	Main Contactor Time - Book 6	0 to 1000 ms	-	ro
P0886	Main Contactor Time - Book 7	0 to 1000 ms	-	ro
P0887	Main Contactor Time - Book 8	0 to 1000 ms	-	ro
P0888	Main Contactor Time - Book 9	0 to 1000 ms	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0890	CC1 - Source of Upper Limitation P	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro
P0891	CC1 - Source of Lower Limitation P	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro
P0892	CC1 - Source of Upper Limitation Q	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0893	CC1 - Source of Lower Limitation Q	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro
P0894	CC2 - Source of Upper Limitation P	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro
P0895	CC2 - Source of Lower Limitation P	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P0896	CC2 - Source of Upper Limitation Q	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro
P0897	CC2 - Source of Lower Limitation Q	0 = Nothing 1 = Current Amplitude 2 = IGBT Temperature 3 = Inductor Temperature 4 = Maximum Ip 5 = Maximum P 6 = Frequency x High Power 7 = Max DC-link Power 8 = Max DC-link Current 9 = Min DC-link Voltage 10 = Limited by Min DC-Link 11 = Limited by Min AC 12 = Minimum Ip 13 = Minimum P 14 = Frequency x Low Power 15 = Min DC-link Power 16 = Min DC-link Current 17 = Max DC-link Voltage 18 = Limited by Max DC-link 19 = Limited by Max AC 20 = Maximum Iq 21 = Maximum Q 22 = Minimum Iq 23 = Minimum Q	0 = Nothing	ro
P0990	RMS Nominal Voltage	1 to 700 V	600 V	
P0992	Nominal Current RMS per book	1 to 600 A	525 A	
P0994	Nominal Power DC Link 1	1 to 10000 kVA	-	ro
P0996	Nominal Power DC Link 2	1 to 10000 kVA	-	ro
P1000	Inverter Logic State	Bitfield: bit0 : Enable Inverter bit1 : Alarm bit2 : Fault bit3 : Event		ro
P1001	Inverter Logic Command	Bitfield: bit0 : Enable Inverter bit1 : Fault Clean	Binary = 0b0	
P1002	Inverter Operation Mode	0 = BIW 1 = Rectifier 2 = Open Loop 3 = GSIM 4 = AC Filter Test	0 = BIW	

Param.	Description	Adjustable range	Factory setting	Read Only
P1003	Inverter Actual State	0 = Disabled 1 = Off 2 = Fault 3 = DC Pre Charge 4 = Synchronism 5 = LC Filter Pre Charge 6 = Standby 7 = Active 8 = Shutdown 9 = Rectifier 10 = Open-Loop 11 = LVFRT 12 = AC Test Filter	0 = Disabled	ro
P1004	Control State	Bitfield: bit0 : Inverter Enabled bit1 : Control Enabled bit2 : Converter Islanded bit3 : DC Voltage Control bit4 : Enabled Synchronism bit5 : Forcing Open Loop bit6 : Active LVFRT bit7 : Active Soft-start bit8 : Pre-charge LC Filter		ro
P1005	Inverter in Remote Mode	0 = Off 1 = On	0 = Off	
P1006	Standby Mode	0 = Off 1 = On	0 = Off	
P1011	Inverter Control Commands	Bitfield: bit0 : Enable Constant Current Feed-forward bit1 : Enable Notch Filter in Current bit2 : Enable Harmonics Compensator bit3 : Enable Negative Sequence Compensator bit4 : Force Ip bit5 : Force Iq bit6 : Disable AC Voltage Calibration bit7 : Disable AC Current Calibration	Binary = 0b100	
P1012	CC1 - Connected Books (PWM Active)	Bitfield: bit0 : Book 1 Connected bit1 : Book 2 Connected bit2 : Book 3 Connected bit3 : Book 4 Connected bit4 : Book 5 Connected bit5 : Book 6 Connected bit6 : Book 7 Connected bit7 : Book 8 Connected bit8 : Book 9 Connected		ro
P1013	IMPS2 - Connected Books (PWM Active)	Bitfield: bit0 : Book 1 Connected bit1 : Book 2 Connected bit2 : Book 3 Connected bit3 : Book 4 Connected bit4 : Book 5 Connected bit5 : Book 6 Connected bit6 : Book 7 Connected bit7 : Book 8 Connected bit8 : Book 9 Connected		ro
P1014	DC Link 1 - Enable Books	Bitfield: bit0 : Enable Book 1 bit1 : Enable Book 2 bit2 : Enable Book 3 bit3 : Enable Book 4 bit4 : Enable Book 5 bit5 : Enable Book 6 bit6 : Enable Book 7 bit7 : Enable Book 8 bit8 : Enable Book 9	Binary = 0b1	

Param.	Description	Adjustable range	Factory setting	Read Only
P1015	DC Link 2 - Enable Books	Bitfield: bit0 : Enable Book 1 bit1 : Enable Book 2 bit2 : Enable Book 3 bit3 : Enable Book 4 bit4 : Enable Book 5 bit5 : Enable Book 6 bit6 : Enable Book 7 bit7 : Enable Book 8 bit8 : Enable Book 9	Binary = 0b1	
P1017	Enable automatic switch between modes	0 = Off 1 = On	1 = On	
P1018	Control Mode CC1	0 = Current Mode 1 = Voltage Mode	1 = Voltage Mode	ro
P1020	CC1 - State - Book 1	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1021	CC1 - State - Book 2	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1022	CC1 - State - Book 3	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1023	CC1 - State - Book 4	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1024	CC1 - State - Book 5	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1025	CC1 - State - Book 6	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1026	CC1 - State - Book 7	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1027	CC1 - State - Book 8	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1028	CC1 - State - Book 9	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P1030	IMPS2 - State - Book 1	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1031	IMPS2 - State - Book 2	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1032	IMPS2 - State - Book 3	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1033	IMPS2 - State - Book 4	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1034	IMPS2 - State - Book 5	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1035	IMPS2 - State - Book 6	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1036	IMPS2 - State - Book 7	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1037	IMPS2 - State - Book 8	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1038	IMPS2 - State - Book 9	0 = Disabled 1 = Disconnected from Grid 2 = AC Pre Charge 3 = AC Discharge 4 = Connected to Grid	0 = Disabled	ro
P1039	Phase Sequence	0 = Positive 1 = Negative	0 = Positive	
P1040	Auto Reset Time for Faults	1.0 to 1000.0 s	300.0 s	
P1042	Enable Auto Reset	0 = Disabled 1 = Enabled	1 = Enabled	
P1044	CC1 - Enabled books stored at EEPROM	Bitfield: bit0 : Enable Book 1 bit1 : Enable Book 2 bit2 : Enable Book 3 bit3 : Enable Book 4 bit4 : Enable Book 5 bit5 : Enable Book 6 bit6 : Enable Book 7 bit7 : Enable Book 8 bit8 : Enable Book 9	Binary = 0b0	

Param.	Description	Adjustable range	Factory setting	Read Only
P1045	IMPS2 - Enabled books stored at EEPROM	Bitfield: bit0 : Enable Book 1 bit1 : Enable Book 2 bit2 : Enable Book 3 bit3 : Enable Book 4 bit4 : Enable Book 5 bit5 : Enable Book 6 bit6 : Enable Book 7 bit7 : Enable Book 8 bit8 : Enable Book 9	Binary = 0b0	
P1046	Startup Time (Off)	1.0 to 100.0 s	1.0 s	
P1048	Current to enable controls on soft-powerOn	0.0 to 100.0 %	10.0 %	
P1050	Time to enable control after AC connection	0 to 10000 ms	120 ms	
P1051	Type of Grid Return	0 = Via Communication Protocol 1 = Via Digital Input	1 = Via Digital Input	
P1052	Grid Return	0 = Islanded 1 = Grid-Tied	0 = Islanded	
P1053	Synchronism state	0 = Off 1 = On	1 = On	
P1055	Force Blackstart	0 = Off 1 = On	0 = Off	
P1056	Enable Sequential Blackstart	0 = Off 1 = On	0 = Off	
P1057		0 = Off 1 = On	0 = Off	
P1076	Min. Time of Power Grid Stability	0.0 to 600.0 s	5.0 s	
P1078	Synchronism Validation Time	0.0 to 100.0 s	5.0 s	
P1080	Time to Realize AC Voltage Calibration	0.0 to 100.0 s	5.0 s	
P1086	DC Link Pre-Charge Time	0.5 to 100.0 s	5.0 s	
P1088	Min. Voltage after DC Pre-Charge	0.00 to 100.00 %Vnp	95.00 %Vnp	
P1090	Filter LC Pre-Charge Time	0.00 to 100.00 s	0.30 s	
P1092	Ramp Time of AC Voltage on Blackstart	0.00 to 100.00 s	1.00 s	
P1094	Filter LC Discharge Time	0.00 to 100.00 s	0.20 s	
P1100	Min. Grid Voltage - Instant Fault	0.0 to 200.0 %Vn	20.0 %Vn	
P1102	Max. Grid Voltage - Instant Fault	0.0 to 200.0 %Vn	120.0 %Vn	
P1104	Min. Grid frequency - Instant Fault	0.0 to 100.0 Hz	56.0 Hz	
P1106	Max. Grid frequency - Instant Fault	0.0 to 100.0 Hz	63.0 Hz	
P1108	OVP Start Time - Timed Fault	0 to 145 %Vn	110 %Vn	
P1110	OVP Time - Timed Fault	0.00 to 100.00 s	2.50 s	
P1112	UVP0 Start Voltage - Timed Fault	0.0 to 100.0 %Vn	90.0 %Vn	
P1114	UVP0 Time - Timed Fault	0.00 to 100.00 s	5.00 s	
P1116	UVP1 Start Voltage - Timed Fault	1.0 to 100.0 %Vn	85.0 %Vn	
P1118	UVP1 0 Time - Timed Fault	0.00 to 100.00 s	0.50 s	
P1120	UVP1 1 Time - Timed Fault	0.00 to 100.00 s	1.00 s	

Param.	Description	Adjustable range	Factory setting	Read Only
P1122	OFP1 Start Frequency - Timed Fault	0.0 to 100.0 Hz	62.0 Hz	
P1124	OFP1 Time - Timed Fault	0.00 to 1000.00 s	0.16 s	
P1126	OFP0 Start Frequency - Timed Fault	0.0 to 100.0 Hz	61.2 Hz	
P1128	OFP0 Time - Timed Fault	0.00 to 1000.00 s	300.00 s	
P1130	UFP0 Start Frequency - Timed Fault	0.0 to 100.0 Hz	58.5 Hz	
P1132	UFP0 Time - Timed Fault	0.00 to 1000.00 s	300.00 s	
P1134	UFP1 Start Frequency - Timed Fault	0.0 to 100.0 Hz	56.5 Hz	
P1136	UFP1 Time - Timed Fault	0.00 to 1000.00 s	0.16 s	
P1138	LVFRT Action	0 = Normal Operation 1 = P=Q=0 2 = P=0 and Q(V) 3 = P=0 e Q=pre-disturbance 4 = P=Pmeas and Q=Qmeas	1 = P=Q=0	
P1140	Rate P Return (LVFRT)	0.0 to 3000.0 Hz	0.4 Hz	
P1142	Rate Q Return (LVFRT)	0.0 to 3000.0 Hz	0.4 Hz	
P1144	Grid scan time in LVFRT	0 to 100000 ms	500 ms	
P1146	Max. number of LVFRT resets per minute	0 to 100	5	
P1148	Maximum Numberr of LVFRT when Islanded	0 to 100	0	
P1149	Maximum Numberr of LVFRT when Islanded to change to slow ramp	0 to 100	1	
P1150	Minimal voltage to start grid connection	50.0 to 100.0 %	91.7 %	
P1152	Maximal voltage to start grid connection after grid fault	100.0 to 130.0 %	105.0 %	
P1154	Minimal frequency to start grid connection after grid fault	40.0 to 70.0 Hz	59.5 Hz	
P1156	Maximal frequency to start grid connection after grid fault	50.0 to 80.0 Hz	60.1 Hz	
P1158	Gain for LV reactive injection	0.00 to 100.00	2.86	
P1160	Gain for OV reactive injection	0.00 to 100.00	2.86	
P1162	Input signal for grid voltage faults	0 = Vac voltage 1 = Positive-sequence voltage 2 = Max and Min of line RMS voltage	0 = Vac voltage	
P1164	Time to re-enable the PWM after overcurrent	2 to 65535 ms	50 ms	
P1165	Time to re-enable the PWM after overcurrent while islanded	0 to 65535 ms	1 ms	
P1180	Maximum DC Half Voltage - Fault	0 to 1700 V	750 V	
P1182	Maximum DC Half Voltage - Alarm	0 to 1700 V	700 V	
P1184	Time to detect DC Imbalance	0.0 to 6553.5	50.0	
P1190		0 to 65535	1	
P1200	DC Bus Voltage Upper Limit	0.0 to 1700.0 V	1200.0 V	
P1202	DC Bus Voltage Lower Limit	0.0 to 1700.0 V	900.0 V	

Param.	Description	Adjustable range	Factory setting	Read Only
P1204	DC Bus Imbalance Voltage Upper Limit - Fault	0.0 to 1700.0 V	200.0 V	
P1206	DC Bus Imbalance Voltage Upper Limit - Alert	0.0 to 1700.0 V	150.0 V	
P1208	DC Voltage per Capacitor for DC Short Circuit Protection	0.0 to 2000.0	200.0	
P1210	DC Current for DC Short Circuit Protection Disabled	0.0 to 1500.0 A	50.0 A	
P1212	DC Current for DC Short Circuit Protection in operation	0.0 to 1500.0 A	735.0 A	
P1214	DC Short Circuit Protection Startup Time	5.0 to 30000.0 ms	1000.0 ms	
P1216	Min. Time for DC Short Circuit Protection	0.0 to 1000.0 ms	100.0 ms	
P1218	Min. Time for Reverse Current Protection	0.0 to 1000.0 ms	100.0 ms	
P1220	Battery Voltage Upper Limit	0.0 to 1800.0 V	1250.0 V	
P1222	Battery Negative Voltage Upper Limit	-200.0 to 0.0 V	-50.0 V	
P1224	IMPS Temperature Upper Limit - Alert	0.0 to 100.0 °C	65.0 °C	
P1226	IMPS Temperature Upper Limit - Fault	0.0 to 100.0 °C	70.0 °C	
P1228	Maximum Number of PWM Error Feedback	0 to 65535	100	
P1230	IGBT Current Upper Limit for Failure (peak)	0.0 to 1200.0 A	815.0 A	
P1232	IGBT Current Imbalance Upper Limit for Alert	0.0 to 200.0 %In	15.0 %In	
P1234	IGBT Current Imbalance Upper Limit for Fault	0.0 to 200.0 %In	20.0 %In	
P1236	IGBT AVG Current Imbalance Upper Limit for Alert	0.0 to 200.0 %In	15.0 %In	
P1238	IGBT AVG Current Imbalance Upper Limit for Fault	0.0 to 200.0 %In	20.0 %In	
P1240	Grid RMS Overcurrent Upper Limit - Alert	0.0 to 200.0 %In	110.0 %In	
P1242	Grid RMS Overcurrent Upper Limit - Fault	0.0 to 200.0 %In	120.0 %In	
P1244	Grid AVG Overcurrent Upper Limit - Alert	0.0 to 200.0 %In	15.0 %In	
P1246	Grid AVG Overcurrent Upper Limit - Fault	0.0 to 200.0 %In	20.0 %In	
P1248	Grid Imbalance RMS Overcurrent Upper Limit - Alert	0.0 to 200.0 %In	15.0 %In	
P1250	Grid Imbalance RMS Overcurrent Upper Limit - Fault	0.0 to 200.0 %In	20.0 %In	
P1252	Inductor Temperature Upper Limit - Alert	0.0 to 150.0 °C	130.0 °C	
P1254	Inductor Temperature Upper Limit - Fault	0.0 to 150.0 °C	135.0 °C	
P1256	CMPS Temperature Upper Limit - Alert	0.0 to 100.0 °C	65.0 °C	
P1258	CMPS Temperature Upper Limit - Fault	0.0 to 100.0 °C	70.0 °C	

Param.	Description	Adjustable range	Factory setting	Read Only
P1260	IGBT Temperature Upper Limit - Alert	0.0 to 100.0 °C	82.0 °C	
P1262	IGBT Temperature Upper Limit - Fault	0.0 to 100.0 °C	85.0 °C	
P1264	Communication Errors Upper Limit for Fault	0 to 65535	1	
P1266	Voltage Offset Upper Limit	0.0 to 100.0 V	50.0 V	
P1268	Current Offset Upper Limit	0.0 to 100.0 A	50.0 A	
P1270	Neutral RMS Current Upper Limit - Alert	0.0 to 1000.0	15.0	
P1272	Neutral RMS Current Upper Limit - Fault	0.0 to 1000.0	20.0	
P1274	Book RMS Current Upper Limit - Fault	0.0 to 1000.0 A	570.0 A	
P1276	Debounce for RMS overcurrent fault in the Book (Grid cycles)	0 to 65535	10	
P1278	Apparent Current Limit	0.0 to 110.0 %	100.0 %	
P1280	Upper Limit Active Power	0.0 to 110.0 %	100.0 %	
P1282	Lower Limit Active Power	-110.0 to 0.0 %	-100.0 %	
P1284	Upper Limit Reactive Power	0.0 to 110.0 %	100.0 %	
P1286	Lower Limit Reactive Power	-110.0 to 0.0 %	-100.0 %	
P1288	Upper Limit of Active Current	0.0 to 110.0 %	100.0 %	
P1290	Lower Limit of Active Current	-110.0 to 0.0 %	-100.0 %	
P1292	Upper Limit of Reactive Current	0.0 to 110.0 %	100.0 %	
P1294	Lower Limit of Reactive Current	-110.0 to 0.0 %	-100.0 %	
P1296	Maximum Setpoint of DC Current	0.0 to 7000.0 A	7000.0 A	
P1298	Minimum Setpoint of DC Current	-7000.0 to 0.0 A	-7000.0 A	
P1300	Maximum Setpoint of DC Voltage	100.0 to 1500.0 V	1500.0 V	
P1302	Minimum Setpoint of DC Voltage	100.0 to 1500.0 V	900.0 V	
P1304	Maximum Setpoint of DC Power	0.0 to 6000.0 kW	6000.0 kW	
P1306	Minimum Setpoint of DC Power	-6000.0 to 0.0 kW	-6000.0 kW	
P1308	Battery Impedance	0.001 to 200.000 mΩ	0.140 mΩ	
P1310	Slew rate of DC Current Limit	0.0 to 3000.0 Hz	1.0 Hz	
P1312	Slew rate of DC Power Limit	0.0 to 3000.0 Hz	1.0 Hz	
P1314	Slew rate of Active and Reactive Currents Limit	0.0 to 3000.0 Hz	1.0 Hz	
P1316	Slew rate of Active and Reactive Powers Limit	0.0 to 3000.0 Hz	1.0 Hz	
P1318	Slew rate of DC-Link Voltage Limit	0.0 to 3000.0 Hz	1.0 Hz	
P1320	Minimum Vdc for discharge	0.0 to 1000.0 V	500.0 V	
P1322		0.0 to 500.0	150.0	
P1324		0.0 to 500.0	200.0	
P1330	Nominal Frequency	0 = 60 Hz 1 = 50 Hz	0 = 60 Hz	

Param.	Description	Adjustable range	Factory setting	Read Only
P1332	PLL Angle Delay	0.00 to 100.00 rad	0.40 rad	
P1340	Control Strategy used	0 = Current and Voltage Loop 1 = Current Loop and Droop 2 = VSG 3 = Current Loop and VSG	0 = Current and Voltage Loop	
P1342	Current Control Mode	0 = Alpha-Beta Control 1 = DQ Control	1 = DQ Control	
P1348	DQ Decoupling Reactance i1	0.00 to 10000.00 uH	90.00 uH	
P1350	DQ Decoupling Reactance i2	0.00 to 10000.00 uH	100.00 uH	
P1352	Transition Rate between Gains (Startup/Regime)	0.00 to 3000.00 Hz	10.00 Hz	
P1354	Startup Current Integral Gain	0.000 to 100000.000	200.000	
P1356	Startup Current Proportional Gain	0.000 to 100000.000	3.000	
P1358	Current Integral Gain - Regime	0.000 to 100000.000	150.000	
P1360	Current Proportional Gain - Regime	0.000 to 100000.000	3.000	
P1362	Synchronous Filter Time Constant PR Current	0.000 to 100.000 s	0.200 s	
P1364	Voltage reference - Voltage control	95.0 to 105.0 %Vn	100.0 %Vn	
P1370	Negative Sequece Proportional Gain	0.000 to 100000.000	1.000	
P1372	Negative Sequence Integral Gain	0.000 to 100000.000	50.000	
P1374	Active Damping Gain	0.00 to 100.00	0.00	
P1380		0 = Off 1 = On	1 = On	
P1382	DC Link PI Proportional Gain	0.00 to 5000.00	19.00	
P1384	DC Link PI Integral Gain	0.00 to 5000.00	187.00	
P1390	Differential Voltage Control Mode	0 = Geometric Control (SVM) 1 = Current Offset Control	0 = Geometric Control (SVM)	
P1392	Differential Voltage PI Porportional Gain	0.000 to 100.000	0.100	
P1394	Differential Voltage PI Integral Gain	0.000 to 100.000	0.000	
P1396	Differential Voltage Control Hysteresis - High Level	0.0000 to 1.0000 %Vn	0.0100 %Vn	
P1398	Differential Voltage Control Hysteresis - Low Level	0.0000 to 1.0000 %Vn	0.0010 %Vn	
P1400	Value for Fixed Feed-Forward	0.000 to 1.000	1.000	
P1402	Weightned Varable Feed Forward Value	0.0 to 100.0 %	50.0 %	
P1410	CC1 - Modulation Index on Open Loop Mode	0.000 to 100.000 %	0.000 %	
P1412	CC2 - Modulation Index on Open Loop Mode	0.000 to 100.000 %	0.000 %	
P1414	Modulation Index Ramp Rate on Open Loop Mode	0.00 to 3000.00 Hz	0.10 Hz	
P1420	Anti-Island Reactive Current Lower Limit	-200.0 to 200.0 %In	-50.0 %In	
P1422	Anti-Island Reactive Current Upper Limit	-200.0 to 200.0 %In	50.0 %In	
P1424	Anti-Islanding Proportional Gain	0.000 to 100.000	0.000	

Param.	Description	Adjustable range	Factory setting	Read Only
P1426	Current priority	0 = Id Priority 1 = Iq Priority	0 = Id Priority	
P1431	Software Discharge	0 = Active 1 = Inactive	1 = Inactive	
P1434	CC1 - Main Contator Feedback	Bitfield: bit0 : Disable FeedBack - Book 1 bit1 : Disable FeedBack - Book 2 bit2 : Disable FeedBack - Book 3 bit3 : Disable FeedBack - Book 4 bit4 : Disable FeedBack - Book 5 bit5 : Disable FeedBack - Book 6 bit6 : Disable FeedBack - Book 7 bit7 : Disable FeedBack - Book 8 bit8 : Disable FeedBack - Book 9	Binary = 0b0	
P1436	AC Pre Charge Contactor Timeout	0 to 5000	100	
P1437	Main Contactor Timeout	0 to 5000	200	
P1440	Enable Isolation Measurements	0 = Off 1 = On	1 = On	
P1454	Unbal. time of the unbal. protection in book input/output	0 to 65535 ms	500 ms	
P1456	Min. current in the book to enable unbal. protection	0.0 to 200.0 %	20.0 %	
P1460	Hardware Instantaneous Overcurrent Limit	0 = 900 A 1 = 1000 A 2 = 1100 A 3 = 1200 A	2 = 1100 A	
P1462	Maximum Overcurrent per Book - Timed Overcurrent	0.0 to 200.0 %In	110.0 %In	
P1464	Time - Timed Overcurrent	0 to 3600 s	300 s	
P1494	Slew rate of PLL gains (islanded/grid-tied)	0.00 to 10.00 Hz	0.10 Hz	
P1496	PLL Proportional Gain Grid-Tied	0.00 to 10000.00	266.00	
P1498	PLL Integral Gain Grid-Tied	0.00 to 10000.00	3.50	
P1500	PLL Proportional Gain Islanded	0.00 to 10000.00	2.50	
P1502	PLL Integral Gain Islanded	0.00 to 10000.00	0.10	
P1504	Maximum error - PLL Locked	0.00 to 100.00 %	5.00 %	
P1506	Debounce time - PLL Locked	0 to 10000 ms	10 ms	
P1510	DC1 - Active Current Setpoint	-110.0 to 110.0 %In	0.0 %In	
P1512	DC1 - Reactive Current Setpoint	-110.0 to 110.0 %In	0.0 %In	
P1514	DC2 - Active Current Setpoint	-110.0 to 110.0 %In	0.0 %In	
P1516	DC2 - Reactive Current Setpoint	-110.0 to 110.0 %In	0.0 %In	
P1518	Slew rate of Active and Reactive References	0.0 to 10.0 Hz	1.0 Hz	
P1520	CC1 - DC Link Voltage Setpoint	0.0 to 1500.0 V	1000.0 V	
P1522	CC2 - DC Link Voltage Setpoint	0.0 to 1500.0 V	1000.0 V	
P1524	Slew rate DC-link voltage reference	0.0 to 3000.0 Hz	1.0 Hz	
P1526	CC1 - Active Power Setpoint	-110.0 to 110.0 %Pn	0.0 %Pn	

Param.	Description	Adjustable range	Factory setting	Read Only
P1528	CC1 - Reactive Power Setpoint	-110.0 to 110.0 %Pn	0.0 %Pn	
P1530	CC1 - Power Factor Setpoint	-1.00 to 1.00	1.00	
P1532	CC2- Active Power Setpoint	-110.0 to 110.0 %Pn	0.0 %Pn	
P1534	CC2 - Reactive Power Setpoint	-110.0 to 110.0 %Pn	0.0 %Pn	
P1536	CC2 - Power Factor Setpoint	-1.00 to 1.00 %Pn	1.00 %Pn	
P1538	Slew rate of PQ References	0.0000 to 3000.0000 Hz	1.0000 Hz	
P1540	Slew rate of PF Reference	0.00 to 3000.00 Hz	1.00 Hz	
P1542	Reactive Power Compensation AC Filter	-100.0000 to 100.0000 %	0.0000 %	
P1544	Setpoint AC Voltage	0.0 to 120.0 %Vn	100.0 %Vn	
P1548	Slew rate AC Voltage Setpoint	0.000 to 3000.000 Hz	30.000 Hz	
P1550	Slew rate Frequency Setpoint	0.000 to 3000.000 Hz	1.000 Hz	
P1552	Proportional Gain AC Voltage Controller	0.000 to 100000.000	1.170	
P1554	Integral Gain AC Voltage Controller	0.000 to 100000.000	589.000	
P1556	Frequency Setpoint	1.00 to 70.00 Hz	60.00 Hz	
P1560	Proportional gain Power Controller	0.000 to 10.000	0.100	
P1562	Integral gain Power Controller	0.000 to 100.000	1.000	
P1564	Slew rate DC-link current reference	0.00 to 3000.00 Hz	0.20 Hz	
P1568	Slow slew rate AC Voltage Setpoint	0.10 to 3000.00 Hz	10.00 Hz	
P1572	Time for detection after transition	0.0 to 10.0 s	5.0 s	
P1574	Lower voltage for island detection	0.0 to 95.0 %Vn	70.0 %Vn	
P1576	Upper Voltage for island detection	105.0 to 200.0 %Vn	115.0 %Vn	
P1578	Lower frequency for island detection	0.0 to 100.0 Hz	57.5 Hz	
P1580	Upper frequency for island detection	0.0 to 100.0 Hz	62.5 Hz	
P1582	Sign convention of reactive power	0 = Q+ Inductive 1 = Q+ Capacitive	0 = Q+ Inductive	
P1583	Power measure type	0 = Converter Side 1 = Grid Side	0 = Converter Side	
P1584	Compensation angle quadrant 1,3	-3.140 to 3.140 rad	0.000 rad	
P1586	Compensation angle quadrant 2,4	-3.140 to 3.140 rad	0.000 rad	
P1588	Transition time between reactive modes	5 to 300 s	5 s	
P1590	Enable Active/Reactive Power Modes	Bitfield: bit0 : Enable Volt-Watt Mode bit1 : Enable Freq-droop Mode bit2 : Enable Volt-Var Mode bit3 : Enable Watt-Var Mode bit4 : Enable Reactive Mode bit5 : Enable Power Factor Mode	Binary = 0b10000	
P1591	Type of active power measurement	0 = AC Side 1 = DC Side	0 = AC Side	
P1620	Books Operation Mode	0 = By Book 1 = By Circuit Breaker	1 = By Circuit Breaker	
P1621	Close DC switch after DC pre charge using grid	0 = Off 1 = On	0 = Off	

Param.	Description	Adjustable range	Factory setting	Read Only
P1622	DC pre charge BIW mode	0 = By Batteries 1 = By Grid	0 = By Batteries	
P1624	Maximum current ipq for detection	0.00 to 120.00 %	80.00 %	
P1626	Maximum variation of Iac for detection	0.00 to 200.00 %	1.00 %	
P1628	Debounce of variation Iac for detection	0 to 100	12	
P1630	TC Frequency Filter for Island Detection	0.00033 to 100.00000 s	0.01000 s	
P1632	TC Voltage Filter for Island Detection	0.00033 to 100.00000 s	0.01000 s	
P1634	Cut-off frequency of current filter for detection	0.0 to 1500.0 Hz	200.0 Hz	
P1636	Enable Island Detection	Bitfield: bit0 : Enable Detection by Frequency bit1 : Enable Detection by Voltage bit2 : Enable Detection by Status bit3 : Enable Anti-islanding control	Binary = 0b0	
P1637	Enable Detection Grid Return	Bitfield: bit0 : Enable Detection by Grid Return bit1 : Enable Detection by Current Variation (grid return) bit2 : Enable Detection by Current Amp (grid return)	Binary = 0b0	
P1638	TC Filter of currents for feedback when islanded	0.00000 to 100.00000 s	0.00500 s	
P1640	Volt-watt P1	-100 to 100 %	100 %	
P1642	Volt-watt P2	-100 to 100 %	0 %	
P1644	Volt-watt V1	105 to 109 %	106 %	
P1646	Volt-watt V2	105 to 110 %	110 %	
P1648	Open loop response time Volt-Watt (Tr)	0.5 to 60.0 s	10.0 s	
P1650	Upper Deadband of Freq-droop	0.017 to 1.000 Hz	0.036 Hz	
P1652	Lower Deadband of Freq-droop	0.017 to 1.000 Hz	0.036 Hz	
P1654	Upper Gain Freq-droop	0.03 to 0.05	0.05	
P1656	Lower Gain Freq-droop	0.03 to 0.05	0.05	
P1658	Open loop response time Freq-droop (Tr)	1 to 10 s	5 s	
P1660	Open loop response time Volt-Var (Tr)	1 to 90 s	5 s	
P1662	Voltage reference of Volt-var (Vref)	95 to 105 %	100 %	
P1664	TC - Voltage filter for autonomous Volt-Var	300 to 5000 s	300 s	
P1666	Volt-Var Configuration	0 = Manual 1 = Autonomous	0 = Manual	
P1668	Synchronous Filter Time Constant PR Voltage	0.00 to 100.00 s	0.20 s	
P1670	Minimum direct voltage for islanded reset	0 to 100 %	10 %	
P1672	Maximum quadrature voltage for islanded reset	0 to 100 %	30 %	
P1674		0.00 to 100.00 %	20.00 %	

Param.	Description	Adjustable range	Factory setting	Read Only
P1680	Difference limit between Idq and Idqgrid	0.0 to 200.0 %	15.0 %	
P1682	Debounce to difference faults between Idq and Idq grid (samples)	0 to 100	3	
P1684	Difference filter cutoff frequency between Idq and Idq grid	0.0 to 1500.0 Hz	500.0 Hz	
P1686	Idq variation limit between samples	0.0 to 200.0 %	15.0 %	
P1688	Debounce to Idq variation fault (samples)	0 to 100	3	
P1689	Time to enable Idq variation protecion after start	0 to 10000 ms	20 ms	
P1690	Maximum RMS voltage in Open Loop Mode	0.00 to 1000.00 V	50.00 V	
P1700	Harmonic Control Type	0 = Using Synchronous Frame 1 = Using Stationary Frame	1 = Using Stationary Frame	
P1702	Harmonics order controller resonance stat 0	3 to 15	5	
P1704	Harmonics order controller resonance stat 1	3 to 15	7	
P1706	Harmonics order controller resonance stat 2	3 to 15	11	
P1708	Harmonics controller gain stat 0	-10000.000 to 10000.000	0.050	
P1710	Harmonics controller gain stat 1	-10000.000 to 10000.000	0.000	
P1712	Harmonics controller gain stat 2	-10000.000 to 10000.000	0.000	
P1714	wc harmonics controller stat 0	0.0 to 100.0 rad	0.3 rad	
P1716	wc harmonics controller stat 1	0.0 to 100.0 rad	0.3 rad	
P1718	wc harmonics controller stat 2	0.0 to 100.0 rad	0.1 rad	
P1720	Harmonics order controller resonance sync	0 to 14	6	
P1722	Harmonics controller gain sync	-10000.000 to 10000.000	2.000	
P1724	wc harmonics controller sync	0.0 to 100.0	0.3	
P1728	Frequency Droop per Active Power (grid-tied)	-100.00 to 100.00	0.50	
P1730	Voltage Droop per Reactive Power (grid-tied)	-100.00 to 100.00	3.33	
P1732	TC Low Pass Filter Freq-Droop	0.0000 to 1000.0000 s	0.5000 s	
P1734	TC High Pass Filter Freq-Droop	0.0000 to 1000.0000 s	10.0000 s	
P1736	TC Low Pass Filter Voltage-Droop	0.0000 to 1000.0000 s	0.1000 s	
P1738	TC High Pass Filter Voltage-Droop	0.0000 to 1000.0000 s	10.0000 s	
P1740	Active power per Frequency Droop (islanded)	0.00 to 65535.00 %	10.00 %	
P1742	Reactive power per Frequency Droop (islanded)	0.00 to 65535.00 %	10.00 %	
P1744	TC low pass filter Active Power Hybrid (islanded)	0.000 to 65535.000 s	0.100 s	

Param.	Description	Adjustable range	Factory setting	Read Only
P1746	TC low pass filter Reactive Power Hybrid (islanded)	0.000 to 65535.000 s	0.050 s	
P1748	Maximum frequency droop hybrid	0.00 to 65535.00 Hz	1.50 Hz	
P1750	Maximum voltage droop hybrid	0.00 to 65535.00 %	15.00 %	
P1800	VSG - Virtual Resistance	-1000.00 to 1000.00	1.20	
P1802	VSG - Voltage Kp	-1000.000 to 1000.000	3.500	
P1804	VSG - Voltage Ki	-1000.00 to 1000.00	60.00	
P1806	VSG - Frequency Kp	-1000.0000 to 1000.0000	50.0000	
P1808	VSG - Frequency Ki	-1000.000 to 1000.000	67.000	
P1810	VSG - Active power droop	-1000.000 to 1000.000	0.909	
P1812	VSG - Reactive power droop	-1000.000 to 1000.000	5.000	
P1814		0.00 to 20.00 Hz	0.10 Hz	
P1816		0.00 to 100.00 %	2.00 %	
P1818	VSG - Voltage TC	0.00 to 1000.00 s	0.05 s	
P1900	Enable Harmonic Measures	0 = Off 1 = On	0 = Off	
P1901	DFT Calculus	0 = Using Fixed Freq 1 = Using PLL	0 = Using Fixed Freq	
P1902	Fundamental Current (RMS) CC1	0.00 to 100000.00 A	-	ro
P1904	1st Harmonic CC1	0.0 to 100.0 %	-	ro
P1906	2nd Harmonic CC1	0.0 to 100.0 %	-	ro
P1908	3rd Harmonic CC1	0.0 to 100.0 %	-	ro
P1910	4th Harmonic CC1	0.0 to 100.0 %	-	ro
P1912	5th Harmonic CC1	0.0 to 100.0 %	-	ro
P1914	6th Harmonic CC1	0.0 to 100.0 %	-	ro
P1916	Fundamental Current (RMS) IMPS2	0.00 to 100000.00 A	-	ro
P1918	1st Harmonic CC2	0.0 to 100.0 %	-	ro
P1920	2nd Harmonic CC2	0.0 to 100.0 %	-	ro
P1922	3rd Harmonic CC2	0.0 to 100.0 %	-	ro
P1924	4th Harmonic CC2	0.0 to 100.0 %	-	ro
P1926	5th Harmonic CC2	0.0 to 100.0 %	-	ro
P1928	6th Harmonic CC2	0.0 to 100.0 %	-	ro
P1950	Battery Type	0 = Lithium-Ion 1 = Lead-Acid	0 = Lithium-Ion	
P1951	Charge Mode	0 = Discharge 1 = Charge	0 = Discharge	
P1952	Charge Current	0.0 to 7000.0 A	456.0 A	
P1954	Charge Voltage	0.0 to 1500.0 V	864.0 V	
P1956	Float Voltage	0.0 to 1500.0 V	828.0 V	

Param.	Description	Adjustable range	Factory setting	Read Only
P1958	Current to change mode (Float Voltage)	0.0 to 7000.0 A	20.0 A	
P1960	Current State Charge of Batteries	0 = Constant Current 1 = Charge Voltage 2 = Floating Voltage	0 = Constant Current	ro
P1962	Minimum Active Current During Discharge Process	-100.00 to 100.00 %	-10.00 %	
P1970		0 = Lithium-Ion 1 = Lead-Acid	0 = Lithium-Ion	
P1971		0 = Discharge 1 = Charge	0 = Discharge	
P1972		0 to 7000 A	456 A	
P1974		0 to 1500 V	864 V	
P1976		0 to 1500 V	828 V	
P1978		0 to 7000 A	20 A	
P1980		0 = Constant Current 1 = Charge Voltage 2 = Floating Voltage	0 = Constant Current	ro
P1982		-100 to 100 %	-10 %	
P2000	Positive Voltage DC Book 1	-1500.0 to 1500.0 V	-	ro
P2002	Positive Voltage DC Book 2	-1500.0 to 1500.0 V	-	ro
P2004	Positive Voltage DC Book 3	-1500.0 to 1500.0 V	-	ro
P2006	Positive Voltage DC Book 4	-1500.0 to 1500.0 V	-	ro
P2008	Positive Voltage DC Book 5	-1500.0 to 1500.0 V	-	ro
P2010	Positive Voltage DC Book 6	-1500.0 to 1500.0 V	-	ro
P2012	Positive Voltage DC Book 7	-1500.0 to 1500.0 V	-	ro
P2014	Positive Voltage DC Book 8	-1500.0 to 1500.0 V	-	ro
P2016	Positive Voltage DC Book 9	-1500.0 to 1500.0 V	-	ro
P2018	Negative Voltage DC Book 1	-1500.0 to 1500.0 V	-	ro
P2020	Negative Voltage DC Book 2	-1500.0 to 1500.0 V	-	ro
P2022	Negative Voltage DC Book 3	-1500.0 to 1500.0 V	-	ro
P2024	Negative Voltage DC Book 4	-1500.0 to 1500.0 V	-	ro
P2026	Negative Voltage DC Book 5	-1500.0 to 1500.0 V	-	ro
P2028	Negative Voltage DC Book 6	-1500.0 to 1500.0 V	-	ro
P2030	Negative Voltage DC Book 7	-1500.0 to 1500.0 V	-	ro
P2032	Negative Voltage DC Book 8	-1500.0 to 1500.0 V	-	ro
P2034	Negative Voltage DC Book 9	-1500.0 to 1500.0 V	-	ro
P2100	Capacitor 1 Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P2102	Capacitor 1 Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P2104	Capacitor 1 Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P2106	Capacitor 1 Temperature - Book 4	-30.0 to 300.0 °C	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P2108	Capacitor 1 Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P2110	Capacitor 1 Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P2112	Capacitor 1 Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P2114	Capacitor 1 Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P2116	Capacitor 1 Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P2118	Capacitor 2 Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P2120	Capacitor 2 Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P2122	Capacitor 2 Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P2124	Capacitor 2 Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P2126	Capacitor 2 Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P2128	Capacitor 2 Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P2130	Capacitor 2 Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P2132	Capacitor 2 Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P2134	Capacitor 2 Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P2136	Capacitor 3 Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P2138	Capacitor 3 Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P2140	Capacitor 3 Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P2142	Capacitor 3 Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P2144	Capacitor 3 Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P2146	Capacitor 3 Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P2148	Capacitor 3 Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P2150	Capacitor 3 Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P2152	Capacitor 3 Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P2154	Capacitor 4 Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P2156	Capacitor 4 Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P2158	Capacitor 4 Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P2160	Capacitor 4 Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P2162	Capacitor 4 Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P2164	Capacitor 4 Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P2166	Capacitor 4 Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P2168	Capacitor 4 Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P2170	Capacitor 4 Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P2172	Capacitor 5 Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P2174	Capacitor 5 Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P2176	Capacitor 5 Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P2178	Capacitor 5 Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P2180	Capacitor 5 Temperature - Book 5	-30.0 to 300.0 °C	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P2182	Capacitor 5 Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P2184	Capacitor 5 Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P2186	Capacitor 5 Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P2188	Capacitor 5 Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P2190	Capacitor 6 Temperature - Book 1	-30.0 to 300.0 °C	-	ro
P2192	Capacitor 6 Temperature - Book 2	-30.0 to 300.0 °C	-	ro
P2194	Capacitor 6 Temperature - Book 3	-30.0 to 300.0 °C	-	ro
P2196	Capacitor 6 Temperature - Book 4	-30.0 to 300.0 °C	-	ro
P2198	Capacitor 6 Temperature - Book 5	-30.0 to 300.0 °C	-	ro
P2200	Capacitor 6 Temperature - Book 6	-30.0 to 300.0 °C	-	ro
P2202	Capacitor 6 Temperature - Book 7	-30.0 to 300.0 °C	-	ro
P2204	Capacitor 6 Temperature - Book 8	-30.0 to 300.0 °C	-	ro
P2206	Capacitor 6 Temperature - Book 9	-30.0 to 300.0 °C	-	ro
P2320	Analog Input Book 1	-10.00 to 10.00 V	-	ro
P2322	Analog Input Book 2	-10.00 to 10.00 V	-	ro
P2324	Analog Input Book 3	-10.00 to 10.00 V	-	ro
P2326	Analog Input Book 4	-10.00 to 10.00 V	-	ro
P2328	Analog Input Book 5	-10.00 to 10.00 V	-	ro
P2330	Analog Input Book 6	-10.00 to 10.00 V	-	ro
P2332	Analog Input Book 7	-10.00 to 10.00 V	-	ro
P2334	Analog Input Book 8	-10.00 to 10.00 V	-	ro
P2336	Analog Input Book 9	-10.00 to 10.00 V	-	ro
P2356	Analog Input 1	-10.00 to 10.00 V	-	ro
P2358	Analog Input 2	-10.00 to 10.00 V	-	ro
P2360	Analog Input 3	-10.00 to 10.00 V	-	ro
P2368	CCE - Analog Input 1	-10.00 to 10.00 V	-	ro
P2370	CCE - Analog Input 2	-10.00 to 10.00 V	-	ro
P2372	IMPS - Board Temperature	-55.00 to 150.00 °C	-	ro
P2400	Firmware Version - CCE - MCU	0.00 to 9999.99	-	ro
P2402	Firmware Version - CCE - FPGA	0.00 to 655.35	-	ro
P2403	Firmware Version - IMPS - FPGA1	0.00 to 655.35	-	ro
P2404	Firmware Version - CMPS1	0.00 to 655.35	-	ro
P2405	Firmware Version - CMPS2	0.00 to 655.35	-	ro
P2406	Firmware Version - CMPS3	0.00 to 655.35	-	ro
P2407	Firmware Version - CMPS4	0.00 to 655.35	-	ro
P2408	Firmware Version - CMPS5	0.00 to 655.35	-	ro
P2409	Firmware Version - CMPS6	0.00 to 655.35	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P2410	Firmware Version - CMPS7	0.00 to 655.35	-	ro
P2411	Firmware Version - CMPS8	0.00 to 655.35	-	ro
P2412	Firmware Version - CMPS9	0.00 to 655.35	-	ro
P2413	Hardware Version - IMPS	0.00 to 655.35	-	ro
P2414	Hardware Version - CMPS1	0.00 to 655.35	-	ro
P2415	Hardware Version - CMPS2	0.00 to 655.35	-	ro
P2416	Hardware Version - CMPS3	0.00 to 655.35	-	ro
P2417	Hardware Version - CMPS4	0.00 to 655.35	-	ro
P2418	Hardware Version - CMPS5	0.00 to 655.35	-	ro
P2419	Hardware Version - CMPS6	0.00 to 655.35	-	ro
P2420	Hardware Version - CMPS7	0.00 to 655.35	-	ro
P2421	Hardware Version - CMPS8	0.00 to 655.35	-	ro
P2422	Hardware Version - CMPS9	0.00 to 655.35	-	ro
P2500	Analog Output Function AO1	0 to 78	76 = Fan_speed	
P2501	Analog Output Function AO2	0 to 78	77 = Pump Speed	
P2502	Analog Output Function AO3	0 to 78	0 = No function	
P2503	Analog Output Function AO4	0 to 78	0 = No function	
P2510	Digital Output Function DO1 - CCE	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2511	Digital Output Function DO2 - CCE	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2512	Digital Output Function DO1 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2513	Digital Output Function DO2 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2514	Digital Output Function DO3 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2515	Digital Output Function DO4 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2516	Digital Output Function DO5 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2517	Digital Output Function DO6 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2518	Digital Output Function DO7 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2519	Digital Output Function DO8 - IMPS750	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2520	Digital Output Function DO1 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2521	Digital Output Function DO2 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2522	Digital Output Function DO3 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2523	Digital Output Function DO4 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2524	Digital Output Function DO5 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2525	Digital Output Function DO6 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2526	Digital Output Function DO7 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2527	Digital Output Function DO8 - Acessory 1	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2528	Digital Output Function DO1 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2529	Digital Output Function DO2 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2530	Digital Output Function DO3 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2531	Digital Output Function DO4 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2532	Digital Output Function DO5 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2533	Digital Output Function DO6 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2534	Digital Output Function DO7 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2535	Digital Output Function DO8 - Acessory 2	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2536	Digital Output Function DO1 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2537	Digital Output Function DO2 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2538	Digital Output Function DO3 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2539	Digital Output Function DO4 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2540	Digital Output Function DO5 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2541	Digital Output Function DO6 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2542	Digital Output Function DO7 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2543	Digital Output Function DO8 - Acessory 3	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2544	Digital Output Function DO1 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2545	Digital Output Function DO2 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2546	Digital Output Function DO3 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2547	Digital Output Function DO4 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2548	Digital Output Function DO5 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2549	Digital Output Function DO6 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2550	Digital Output Function DO7 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2551	Digital Output Function DO8 - Acessory 4	0 = Not Used 1 = Enable Inverter 2 = No Faults 3 = No Alarm 4 = AC Circuit Breaker (Minimum Inductance Coil) 5 = Open AC Circuit Breaker 6 = Close AC Circuit Breaker 7 = AC Circuit Breaker (Not pulsed) 8 = Battery 1 DC Pre Charge 9 = Battery 2 DC Pre Charge 10 = DC Disconnector (Minimum Inductance Coil) 11 = 12 = Close DC Disconnector 1 13 = Close DC Disconnector 2 14 = Open DC Disconnector 1 15 = Open DC Disconnector 2 16 = DC Pre Charge By Grid 17 = Contactor DC Pre Charge By Grid Bypass 18 = DC Bypass Pre-charge (Minimum Inductance Coil) 19 = Close DC Bypass By AC Circuit Breaker Grid 20 = Open DC Bypass By AC Circuit Breaker Grid 21 = Synchronism Switch 22 = Enable Ventilator 23 = Ventilator Reverse 24 = Enable Water Pump 1 25 = Enable Water Pump 2 26 = Enable Heat Exchanger 27 = GridSwitch 28 = Turn off QDMT 29 = Disable Isolation Measurements 30 = Isolation Measurement Selection 31 =	0 = Not Used	
P2554	Digital Input Function DI1 - CCE	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2555	Digital Input Function DI2 - CCE	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2556	Digital Input Function DI3 - CCE	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2557	Digital Input Function DI4 - CCE	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2558	Digital Input Function DI1 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2559	Digital Input Function DI- IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2560	Digital Input Function DI3 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2561	Digital Input Function DI4 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2562	Digital Input Function DI5 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2563	Digital Input Function DI6 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2564	Digital Input Function DI7 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2565	Digital Input Function DI8 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2566	Digital Input Function DI9 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2567	Digital Input Function DI10 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2568	Digital Input Function DI11 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2569	Digital Input Function DI12 - IMPS750	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2570	Digital Input Function DI1 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2571	Digital Input Function DI2 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2572	Digital Input Function DI3 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2573	Digital Input Function DI4 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2574	Digital Input Function DI5 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2575	Digital Input Function DI6 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2576	Digital Input Function DI7 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2577	Digital Input Function DI8 - Acessory 1	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2578	Digital Input Function DI1 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2579	Digital Input Function DI2 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2580	Digital Input Function DI3 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2581	Digital Input Function DI4 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2582	Digital Input Function DI5 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2583	Digital Input Function DI6 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2584	Digital Input Function DI7 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2585	Digital Input Function DI8 - Acessory 2	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2586	Digital Input Function DI1 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2587	Digital Input Function DI2 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2588	Digital Input Function DI3 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2589	Digital Input Function DI4 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2590	Digital Input Function DI5 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2591	Digital Input Function DI6 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2592	Digital Input Function DI7 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2593	Digital Input Function DI8 - Acessory 3	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2594	Digital Input Function DI1 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2595	Digital Input Function DI2 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2596	Digital Input Function DI3 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2597	Digital Input Function DI4 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2598	Digital Input Function DI5 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2599	Digital Input Function DI6 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2600	Digital Input Function DI7 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	

Param.	Description	Adjustable range	Factory setting	Read Only
P2601	Digital Input Function DI8 - Acessory 4	0 = Not Used 1 = CCEStandby 2 = Enable General 3 = Run 4 = Stop 5 = Fault Reset 6 = Cooling Alarm 7 = Cooling Fault 8 = Status DPS 9 = Ventilator Inverter Fault 10 = Water Pump Inverter Fault 11 = Water Leak Fault 12 = External Fault 13 = Open Door 14 = Internal Overtemperature 15 = Ventilators Overload 16 = Water Flow 17 = Water Pressure 18 = AC Circuit Breaker Return 19 = DC Disconnect switch Return A 20 = DC Disconnect switch Return B 21 = AC Circuit Breaker DC Bypass Return 22 = Cooling Operation Mode 23 = GridSwitchState 24 = QDMT Fault 25 = Isolation Fault Battery Side 26 = Emergency Button Fault 27 = Fault Fuse AC 28 = Fault Fuse DC 29 = Fault HVAC 30 = Fault Fuse Rectifier 31 = Fault Thermostat Rectifier 32 = Fault Temperature Skid	0 = Not Used	
P2602	CCE - Function of AI1	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2603	CCE - Function of AI2	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2604	IMPS - Function of AI1	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	1 = Water Temperature	
P2605	IMPS - Function of AI2	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	2 = Water Pressure	
P2606	IMPS - Function of AI3	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	3 = Water Flow	
P2610	Function of analog input Book 1	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	

Param.	Description	Adjustable range	Factory setting	Read Only
P2611	Function of analog input Book 2	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2612	Function of analog input Book 3	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2613	Function of analog input Book 4	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2614	Function of analog input Book 5	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2615	Function of analog input Book 6	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2616	Function of analog input Book 7	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2617	Function of analog input Book 8	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2618	Function of analog input Book 9	0 = No Function 1 = Water Temperature 2 = Water Pressure 3 = Water Flow 4 =	0 = No Function	
P2628	IMPS - Type of AI1	0 = Voltage Input 1 = Current Input	1 = Current Input	
P2629	IMPS - Type of AI2	0 = Voltage Input 1 = Current Input	1 = Current Input	
P2630	IMPS - Type of AI3	0 = Voltage Input 1 = Current Input	1 = Current Input	
P2634	Type of AI Book 1	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2635	Type of AI Book 2	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2636	Type of AI Book 3	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2637	Type of AI Book 4	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2638	Type of AI Book 5	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2639	Type of AI Book 6	0 = Voltage Input 1 = Current Input	0 = Voltage Input	

Param.	Description	Adjustable range	Factory setting	Read Only
P2640	Type of AI Book 7	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2641	Type of AI Book 8	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2642	Type of AI Book 9	0 = Voltage Input 1 = Current Input	0 = Voltage Input	
P2700	Trigger Option of Scope	0 = No trigger 1 = Trigger by comparison - Cyclic 2 = Trigger by comparison - Single 3 = Event by Trigger - Single	0 = No trigger	
P2701	Trigger Chanel of Scope	0 = Channel 0 1 = Channel 1 2 = Channel 2 3 = Channel 3 4 = Channel 4 5 = Channel 5 6 = Channel 6 7 = Channel 7	0 = Channel 0	
P2702	Trigger Decimation of Scope	0 to 65535	0	
P2703	Number of Samples after the Scope Trigger	0 to 15000	240	
P2704	Direction of the Scope Trigger	0 = Greater than 1 = Smaller than	0 = Greater than	
P2706	Value for Trigger Scope	-1000000.00 to 1000000.00	0.00	
P2707	Scope - Samples number	0 to 15000	250	
P2710	Chanel 0 Function of Scope	0 to 267	0 = No function	
P2711	Chanel 1 Function of Scope	0 to 267	0 = No function	
P2712	Chanel 2 Function of Scope	0 to 267	0 = No function	
P2713	Chanel 3 Function of Scope	0 to 267	0 = No function	
P2714	Chanel 4 Function of Scope	0 to 267	0 = No function	
P2715	Chanel 5 Function of Scope	0 to 267	0 = No function	
P2716	Chanel 6 Function of Scope	0 to 267	0 = No function	
P2717	Chanel 7 Function of Scope	0 to 267	0 = No function	
P2812	Accessories Automatic Recognition	0 = Active 1 = Inactive	0 = Active	
P2813	Accessory conected to Slot 1	0 = Non Connected Accessory 1 = ACCE_IO1_00 2 = ACCE_IO1_01 3 = ACCE_IO2	0 = Non Connected Accessory	
P2814	Accessory conected to Slot 2	0 = Non Connected Accessory 1 = ACCE_IO1_00 2 = ACCE_IO1_01 3 = ACCE_IO2	0 = Non Connected Accessory	
P2815	Accessory conected to Slot 3	0 = Non Connected Accessory 1 = ACCE_IO1_00 2 = ACCE_IO1_01 3 = ACCE_IO2	0 = Non Connected Accessory	
P2816	Accessory conected to Slot 4	0 = Non Connected Accessory 1 = ACCE_IO1_00 2 = ACCE_IO1_01 3 = ACCE_IO2	0 = Non Connected Accessory	

Param.	Description	Adjustable range	Factory setting	Read Only
P2823	Debounce to Enable Isolation Detection	0 to 50000 ms	20000 ms	
P2830	Forming Master/Slave	0 = 1 = Master Forming 2 = Slave Forming	0 =	
P2832	PWM Synchronism	0 = 1 =	0 =	
P3000	Protection Filter TC - DC Current	0.000333 to 100.000000 s	0.001000 s	
P3002	Protection Filter TC - DC Bus Total Voltage	0.000333 to 100.000000 s	0.001000 s	
P3004	Protection Filter TC - DC Bus Differential Voltage	0.000333 to 100.000000 s	0.001000 s	
P3006	Protection Filter TC - PV Voltage	0.000333 to 100.000000 s	0.001000 s	
P3008	Protection Filter TC - AC AVG Current	0.016000 to 100.000000 s	0.500000 s	
P3010	Protection Filter TC - AC RMS Current	0.016000 to 100.000000 s	0.500000 s	
P3012	Protection Filter TC - AC RMS Imbalance Current	0.016000 to 100.000000 s	0.500000 s	
P3014	Protection Filter TC - Instantaneous Currents in Modules	0.000333 to 100.000000 s	0.002000 s	
P3016	Protection Filter TC - RMS Currents Imbalance in Modules	0.016000 to 100.000000 s	0.250000 s	
P3018	Protection Filter TC - AVG Currents Imbalance in Modules	0.016000 to 100.000000 s	0.250000 s	
P3020	Protection Filter TC - Neutral Currents in Modules	0.016000 to 100.000000 s	0.250000 s	
P3022	Protection Filter TC - Temperatures	0.100000 to 100.000000 s	0.500000 s	
P3024	Protection Filter TC - Ground Fault	0.000333 to 100.000000 s	0.001000 s	
P3030	Filter TC - DC Current	0.000333 to 100.000000 s	0.004000 s	
P3032	Filter TC - DC Voltage	0.000333 to 100.000000 s	0.004000 s	
P3034	Filter TC - VAC Voltage	0.000333 to 100.000000 s	0.050000 s	
P3036	Filter TC - IAC Current	0.000333 to 100.000000 s	0.050000 s	
P3038	Filter TC - Vac Voltage - Grid Quality	0.000333 to 100.000000 s	0.020000 s	
P3040	Filter TC - Frequency - Grid Quality	0.000333 to 100.000000 s	0.020000 s	
P3042	Anti-islanding filter upper frequency	0.1 to 100.0 Hz	10.0 Hz	
P3044	Anti-islanding filter lower frequency	0.1 to 100.0 Hz	1.0 Hz	
P3050	Filter TC - PLL Voltage	0.000333 to 1.000000 s	0.016800 s	
P3052	Filter TC - PLL Frequency	0.000333 to 1.000000 s	0.100000 s	
P3054	TC Filter frequency command	0.000333 to 100.000000 s	0.003330 s	
P3060	FC Filter 1 current measurement for control	0.00 to 1500.00 Hz	1000.00 Hz	
P3070	Debounce to remove alarm after trigger	0 to 60000 ms	1000 ms	
P3072	RMS current unbal. alarm hysteresis	0.0 to 200.0 %In	2.0 %In	
P3074	AVG current unbal. alarm hysteresis	0.0 to 200.0 %In	2.0 %In	
P3076	Neutral current unbal. alarm hysteresis	0.0 to 200.0 %In	2.0 %In	

Param.	Description	Adjustable range	Factory setting	Read Only
P3078	Hysteresis temperature alarm removal	0.0 to 100.0 °C	2.0 °C	
P3080	Start TC Filter - Voltage Feed-forward	0.000010 to 1.000000 s	0.000100 s	
P3082	Steady TC Filter - Voltage Feed-forward	0.000010 to 1.000000 s	0.000100 s	
P3084	TC Slew Voltage Feed-forward	0.0 to 1.0 Hz	1.0 Hz	
P3086	Current limit for feed-forward TC reset	100.0 to 130.0 %In	105.0 %In	
P3088	Ipq limit error for feed-forward TC reset	0.0 to 100.0 %In	10.0 %In	
P3100	Current Full Scale Iu - Book 1	-1500.00 to 1500.00 A	926.31 A	
P3102	Current Full Scale Iu - Book 2	-1500.00 to 1500.00 A	926.31 A	
P3104	Current Full Scale Iu - Book 3	-1500.00 to 1500.00 A	926.31 A	
P3106	Current Full Scale Iu - Book 4	-1500.00 to 1500.00 A	926.31 A	
P3108	Current Full Scale Iu - Book 5	-1500.00 to 1500.00 A	926.31 A	
P3110	Current Full Scale Iu - Book 6	-1500.00 to 1500.00 A	926.31 A	
P3112	Current Full Scale Iu - Book 7	-1500.00 to 1500.00 A	926.31 A	
P3114	Current Full Scale Iu - Book 8	-1500.00 to 1500.00 A	926.31 A	
P3116	Current Full Scale Iu - Book 9	-1500.00 to 1500.00 A	926.31 A	
P3118	Current Full Scale Iv - Book 1	-1500.00 to 1500.00 A	926.31 A	
P3120	Current Full Scale Iv - Book 2	-1500.00 to 1500.00 A	926.31 A	
P3122	Current Full Scale Iv - Book 3	-1500.00 to 1500.00 A	926.31 A	
P3124	Current Full Scale Iv - Book 4	-1500.00 to 1500.00 A	926.31 A	
P3126	Current Full Scale Iv - Book 5	-1500.00 to 1500.00 A	926.31 A	
P3128	Current Full Scale Iv - Book 6	-1500.00 to 1500.00 A	926.31 A	
P3130	Current Full Scale Iv - Book 7	-1500.00 to 1500.00 A	926.31 A	
P3132	Current Full Scale Iv - Book 8	-1500.00 to 1500.00 A	926.31 A	
P3134	Current Full Scale Iv - Book 9	-1500.00 to 1500.00 A	926.31 A	
P3136	Current Full Scale Iw - Book 1	-1500.00 to 1500.00 A	926.31 A	
P3138	Current Full Scale Iw - Book 2	-1500.00 to 1500.00 A	926.31 A	
P3140	Current Full Scale Iw - Book 3	-1500.00 to 1500.00 A	926.31 A	
P3142	Current Full Scale Iw - Book 4	-1500.00 to 1500.00 A	926.31 A	
P3144	Current Full Scale Iw - Book 5	-1500.00 to 1500.00 A	926.31 A	
P3146	Current Full Scale Iw - Book 6	-1500.00 to 1500.00 A	926.31 A	
P3148	Current Full Scale Iw - Book 7	-1500.00 to 1500.00 A	926.31 A	
P3150	Current Full Scale Iw - Book 8	-1500.00 to 1500.00 A	926.31 A	
P3152	Current Full Scale Iw - Book 9	-1500.00 to 1500.00 A	926.31 A	
P3154	Current Full Scale Icc - Book 1	-1500.00 to 1500.00 A	926.31 A	
P3156	Current Full Scale Icc - Book 2	-1500.00 to 1500.00 A	926.31 A	
P3158	Current Full Scale Icc - Book 3	-1500.00 to 1500.00 A	926.31 A	
P3160	Current Full Scale Icc - Book 4	-1500.00 to 1500.00 A	926.31 A	

Param.	Description	Adjustable range	Factory setting	Read Only
P3162	Current Full Scale Icc - Book 5	-1500.00 to 1500.00 A	926.31 A	
P3164	Current Full Scale Icc - Book 6	-1500.00 to 1500.00 A	926.31 A	
P3166	Current Full Scale Icc - Book 7	-1500.00 to 1500.00 A	926.31 A	
P3168	Current Full Scale Icc - Book 8	-1500.00 to 1500.00 A	926.31 A	
P3170	Current Full Scale Icc - Book 9	-1500.00 to 1500.00 A	926.31 A	
P3172	Voltage Full Scale Vcc+	-1500.00 to 1500.00 V	800.00 V	
P3174	Voltage Full Scale Vcc-	-1500.00 to 1500.00 V	800.00 V	
P3176	Voltage Full Scale Vpv	-1800.00 to 1800.00 V	1600.00 V	
P3178	Water Pressure Full Scale	-1000.00 to 1000.00 bar	20.00 bar	
P3180	Hot Water Temperature Full Scale	-1000.00 to 1000.00 °C	312.50 °C	
P3182	Cold Water Temperature Full Scale	-1000.00 to 1000.00 °C	312.50 °C	
P3184	Water Flow Full Scale	-1000.00 to 1000.00 l/min	125.00 l/min	
P3300	Current Full Scale Ir	-15000.00 to 15000.00 A	2000.00 A	
P3302	Current Full Scale Is	-15000.00 to 15000.00 A	2000.00 A	
P3304	Current Full Scale It	-15000.00 to 15000.00 A	2000.00 A	
P3306	Grid Currents Configuration	0 = Use measures for Iabc 1 = Calculate Ia from Ib and Ic 2 = Calculate Ib from Ia and Ic 3 = Calculate Ic from Ia and Ib	0 = Use measures for Iabc	
P3320	Voltage Full Scale Vab	-2000.00 to 2000.00 V	1268.50 V	
P3322	Voltage Full Scale Vbc	-2000.00 to 2000.00 V	1268.50 V	
P3324	Voltage Full Scale Vca	-2000.00 to 2000.00 V	1268.50 V	
P3330		-100.00 to 100.00 V	20.00 V	
P3332		-100.00 to 100.00 V	20.00 V	
P3340	CCE - Voltage Full Scale Vab	-2000.00 to 2000.00 V	1268.50 V	
P3342	CCE - Voltage Full Scale Vbc	-2000.00 to 2000.00 V	1268.50 V	
P3344	CCE - Voltage Full Scale Vca	-2000.00 to 2000.00 V	1268.50 V	
P3350	Source Full-Scale +15V	-100.00 to 100.00 V	20.00 V	
P3352	Source Full-Scale -15V	-100.00 to 100.00 V	20.00 V	
P3361	Grid Voltages Configuration	0 = Acquisition via CCE 1 = Acquisition via CC1	1 = Acquisition via CC1	
P3364	Number of voltage measure sample	0 to 16	16	
P3400	Full scale of Voltage Vp Book 1	-1500.00 to 1500.00 V	1000.00 V	
P3402	Full scale of Voltage Vp Book 2	-1500.00 to 1500.00 V	1000.00 V	
P3404	Full scale of Voltage Vp Book 3	-1500.00 to 1500.00 V	1000.00 V	
P3406	Full scale of Voltage Vp Book 4	-1500.00 to 1500.00 V	1000.00 V	
P3408	Full scale of Voltage Vp Book 5	-1500.00 to 1500.00 V	1000.00 V	
P3410	Full scale of Voltage Vp Book 6	-1500.00 to 1500.00 V	1000.00 V	
P3412	Full scale of Voltage Vp Book 7	-1500.00 to 1500.00 V	1000.00 V	

Param.	Description	Adjustable range	Factory setting	Read Only
P3414	Full scale of Voltage Vp Book 8	-1500.00 to 1500.00 V	1000.00 V	
P3416	Full scale of Voltage Vp Book 9	-1500.00 to 1500.00 V	1000.00 V	
P3420	Full scale of Voltage Vn Book 1	-1500.00 to 1500.00 V	1000.00 V	
P3422	Full scale of Voltage Vn Book 2	-1500.00 to 1500.00 V	1000.00 V	
P3424	Full scale of Voltage Vn Book 3	-1500.00 to 1500.00 V	1000.00 V	
P3426	Full scale of Voltage Vn Book 4	-1500.00 to 1500.00 V	1000.00 V	
P3428	Full scale of Voltage Vn Book 5	-1500.00 to 1500.00 V	1000.00 V	
P3430	Full scale of Voltage Vn Book 6	-1500.00 to 1500.00 V	1000.00 V	
P3432	Full scale of Voltage Vn Book 7	-1500.00 to 1500.00 V	1000.00 V	
P3434	Full scale of Voltage Vn Book 8	-1500.00 to 1500.00 V	1000.00 V	
P3436	Full scale of Voltage Vn Book 9	-1500.00 to 1500.00 V	1000.00 V	
P3500	Current Offset Iu - Book 1	-1000.00 to 1000.00 A	0.00 A	
P3502	Current Offset Iu - Book 2	-1000.00 to 1000.00 A	0.00 A	
P3504	Current Offset Iu - Book 3	-1000.00 to 1000.00 A	0.00 A	
P3506	Current Offset Iu - Book 4	-1000.00 to 1000.00 A	0.00 A	
P3508	Current Offset Iu - Book 5	-1000.00 to 1000.00 A	0.00 A	
P3510	Current Offset Iu - Book 6	-1000.00 to 1000.00 A	0.00 A	
P3512	Current Offset Iu - Book 7	-1000.00 to 1000.00 A	0.00 A	
P3514	Current Offset Iu - Book 8	-1000.00 to 1000.00 A	0.00 A	
P3516	Current Offset Iu - Book 9	-1000.00 to 1000.00 A	0.00 A	
P3518	Current Offset Iv - Book 1	-1000.00 to 1000.00 A	0.00 A	
P3520	Current Offset Iv - Book 2	-1000.00 to 1000.00 A	0.00 A	
P3522	Current Offset Iv - Book 3	-1000.00 to 1000.00 A	0.00 A	
P3524	Current Offset Iv - Book 4	-1000.00 to 1000.00 A	0.00 A	
P3526	Current Offset Iv - Book 5	-1000.00 to 1000.00 A	0.00 A	
P3528	Current Offset Iv - Book 6	-1000.00 to 1000.00 A	0.00 A	
P3530	Current Offset Iv - Book 7	-1000.00 to 1000.00 A	0.00 A	
P3532	Current Offset Iv - Book 8	-1000.00 to 1000.00 A	0.00 A	
P3534	Current Offset Iv - Book 9	-1000.00 to 1000.00 A	0.00 A	
P3536	Current Offset Iw - Book 1	-1000.00 to 1000.00 A	0.00 A	
P3538	Current Offset Iw - Book 2	-1000.00 to 1000.00 A	0.00 A	
P3540	Current Offset Iw - Book 3	-1000.00 to 1000.00 A	0.00 A	
P3542	Current Offset Iw - Book 4	-1000.00 to 1000.00 A	0.00 A	
P3544	Current Offset Iw - Book 5	-1000.00 to 1000.00 A	0.00 A	
P3546	Current Offset Iw - Book 6	-1000.00 to 1000.00 A	0.00 A	
P3548	Current Offset Iw - Book 7	-1000.00 to 1000.00 A	0.00 A	
P3550	Current Offset Iw - Book 8	-1000.00 to 1000.00 A	0.00 A	

Param.	Description	Adjustable range	Factory setting	Read Only
P3552	Current Offset Iw - Book 9	-1000.00 to 1000.00 A	0.00 A	
P3554	Current Offset Icc - Book 1	-1000.00 to 1000.00 A	0.00 A	
P3556	Current Offset Icc - Book 2	-1000.00 to 1000.00 A	0.00 A	
P3558	Current Offset Icc - Book 3	-1000.00 to 1000.00 A	0.00 A	
P3560	Current Offset Icc - Book 4	-1000.00 to 1000.00 A	0.00 A	
P3562	Current Offset Icc - Book 5	-1000.00 to 1000.00 A	0.00 A	
P3564	Current Offset Icc - Book 6	-1000.00 to 1000.00 A	0.00 A	
P3566	Current Offset Icc - Book 7	-1000.00 to 1000.00 A	0.00 A	
P3568	Current Offset Icc - Book 8	-1000.00 to 1000.00 A	0.00 A	
P3570	Current Offset Icc - Book 9	-1000.00 to 1000.00 A	0.00 A	
P3572	Voltage Offset Vcc+	-1000.00 to 1000.00 V	0.00 V	
P3574	Voltage Offset Vcc-	-1000.00 to 1000.00 V	0.00 V	
P3576	Voltage Offset Vpv	-1000.00 to 1000.00 V	0.00 V	
P3578	Water Pressure Offset	-1000.00 to 1000.00 bar	-4.00 bar	
P3580	Hot Water Temperature Offset	-1000.00 to 1000.00 °C	-112.50 °C	
P3582	Cold Water Temperature Offset	-1000.00 to 1000.00 °C	-112.50 °C	
P3584	Offset Water Flow	-1000.00 to 1000.00 l/min	-25.00 l/min	
P3700	Current Offset Ir	-1000.00 to 1000.00 A	0.00 A	
P3702	Current Offset Is	-1000.00 to 1000.00 A	0.00 A	
P3704	Current Offset It	-1000.00 to 1000.00 A	0.00 A	
P3720	Voltage Offset Vab	-1000.00 to 1000.00 V	0.00 V	
P3722	Voltage Offset Vcb	-1000.00 to 1000.00 V	0.00 V	
P3724	Voltage Offset Vca	-1000.00 to 1000.00 V	0.00 V	
P3730		-100.00 to 100.00 V	0.00 V	
P3732		-100.00 to 100.00 V	0.00 V	
P3740	CCE - Voltage Offset Vab	-1000.00 to 1000.00 V	0.00 V	
P3742	CCE - Voltage Offset Vbc	-1000.00 to 1000.00 V	0.00 V	
P3744	CCE - Voltage Offset Vca	-1000.00 to 1000.00 V	0.00 V	
P3750	Source Offset +15V	-100.00 to 100.00	0.00	
P3752	Source Offset -15V	-100.00 to 100.00	0.00	
P3800	Voltage Offset Vp Book 1	-200.00 to 200.00 V	0.00 V	
P3802	Voltage Offset Vp Book 2	-200.00 to 200.00 V	0.00 V	
P3804	Voltage Offset Vp Book 3	-200.00 to 200.00 V	0.00 V	
P3806	Voltage Offset Vp Book 4	-200.00 to 200.00 V	0.00 V	
P3808	Voltage Offset Vp Book 5	-200.00 to 200.00 V	0.00 V	
P3810	Voltage Offset Vp Book 6	-200.00 to 200.00 V	0.00 V	
P3812	Voltage Offset Vp Book 7	-200.00 to 200.00 V	0.00 V	

Param.	Description	Adjustable range	Factory setting	Read Only
P3814	Voltage Offset Vp Book 8	-200.00 to 200.00 V	0.00 V	
P3816	Voltage Offset Vp Book 9	-200.00 to 200.00 V	0.00 V	
P3820	Voltage Offset Vn Book 1	-200.00 to 200.00 V	0.00 V	
P3822	Voltage Offset Vn Book 2	-200.00 to 200.00 V	0.00 V	
P3824	Voltage Offset Vn Book 3	-200.00 to 200.00 V	0.00 V	
P3826	Voltage Offset Vn Book 4	-200.00 to 200.00 V	0.00 V	
P3828	Voltage Offset Vn Book 5	-200.00 to 200.00 V	0.00 V	
P3830	Voltage Offset Vn Book 6	-200.00 to 200.00 V	0.00 V	
P3832	Voltage Offset Vn Book 7	-200.00 to 200.00 V	0.00 V	
P3834	Voltage Offset Vn Book 8	-200.00 to 200.00 V	0.00 V	
P3836	Voltage Offset Vn Book 9	-200.00 to 200.00 V	0.00 V	
P4000	Serial Address	0 to 247	1	
P4001	Serial Comunication Rate	0 = 9600 bits/s 1 = 19200 bits/s 2 = 38400 bits/s 3 = 57600 bits/s 4 = 115200 bits/s	1 = 19200 bits/s	
P4002	Serial Bytes Configuration	0 = 8 bits, without, 1 1 = 8 bits, even, 1 2 = 8 bits, odd, 1 3 = 8 bits, without, 2 4 = 8 bits, even, 2 5 = 8 bits, odd, 2	0 = 8 bits, without, 1	
P4003	Serial Protocol	0 = Modbus RTU Slave	0 = Modbus RTU Slave	
P4004	Serial Communication Timeout	100 to 10000 ms	5000 ms	
P4006	Action in Serial Communication Timeout Case	0 = Communication Reset 1 = Fault	0 = Communication Reset	
P4007	Enable Serial Communication	0 = Communication Disabled 1 = Communication Activated	1 = Communication Activated	
P4010	Modbus TCP - Comunication Gate	0 to 65535	502	
P4011	Modbus TCP - Device Address	0 to 255	1	
P4012	Ethernet Link Velocity (Gate 1)	0 = No Link 1 = 10 Mb/s Half Duplex 2 = 10 Mb/s Full Duplex 3 = 100 Mb/s Half Duplex 4 = 100 Mb/s Full Duplex	0 = No Link	ro
P4013	Ethernet Link Velocity (Gate 2)	0 = No Link 1 = 10 Mb/s Half Duplex 2 = 10 Mb/s Full Duplex 3 = 100 Mb/s Half Duplex 4 = 100 Mb/s Full Duplex	0 = No Link	ro
P4014	Modbus TCP - Comunication Timeout	0 to 65535 ms	5000 ms	
P4015	DHCP	0 = Off 1 = On	0 = Off	
P4016	Ethernet - IP Address	0.0.0.0 a 255.255.255.255	192.168.0.100	
P4018	Ethernet - Netmask	0.0.0.0 a 255.255.255.255	255.255.255.0	
P4020	Ethernet - Gateway	0.0.0.0 a 255.255.255.255	0.0.0.0	

Param.	Description	Adjustable range	Factory setting	Read Only
P4022	Ethernet - Assigned IP Address	0.0.0.0 a 255.255.255.255	-	ro
P4024	Ethernet - Assigned Netmask	0.0.0.0 a 255.255.255.255	-	ro
P4026	Ethernet - Assigned Gateway	0.0.0.0 a 255.255.255.255	-	ro
P4028	Mac Address	56:49:172:0:0:0 a 56:49:172:255:255:255	56:49:172:255:255:255	
P4032	Modbus TCP - Active Conections	0 to 65535	-	ro
P4033	Modbus TCP - Conection with Timeouts	0 to 65535	-	ro
P4034	Modbus TCP - Denied Conections	0 to 65535	-	ro
P4035	Modbus TCP - Received Packets	0 to 65535	-	ro
P4036	Modbus TCP - Transmitted Packets	0 to 65535	-	ro
P4037	Modbus TCP - Lost Packets	0 to 65535	-	ro
P4100	Update Firmaware via SD Card	0 = Inactive Update 1 = Load Headers 2 = Update All 3 = Update MCU CCE 4 = Update FPGA CCE 5 = Update FPGA IMPS 6 = Update All Books 7 = Update IMPS 1 Book 1 8 = Update IMPS 1 Book 2 9 = Update IMPS 1 Book 3 10 = Update IMPS 1 Book 4 11 = Update IMPS 1 Book 5 12 = Update IMPS 1 Book 6 13 = Update IMPS 1 Book 7 14 = Update IMPS 1 Book 8 15 = Update IMPS 1 Book 9 16 = Update IMPS 2 Book 1 17 = Update IMPS 2 Book 2 18 = Update IMPS 2 Book 3 19 = Update IMPS 2 Book 4 20 = Update IMPS 2 Book 5 21 = Update IMPS 2 Book 6 22 = Update IMPS 2 Book 7 23 = Update IMPS 2 Book 8 24 = Update IMPS 2 Book 9 25 = Delete Binaries 26 = Format SD	0 = Inactive Update	
P4101	Update Status	0 to 60	0 = No Packages Loaded	ro
P4102	SD Firmware Version - MCU CCE	0.00 to 9999.99	-	ro
P4104	SD Firmware Version - FPGA CCE	0.00 to 655.35	-	ro
P4105	SD Firmware Version - FPGA IMPS750	0.00 to 655.35	-	ro
P4106	SD Firmware Version - FPGA CMPS	0.00 to 655.35	-	ro
P4107	SD SVN Version - MCU CCE	0 to 65535	-	ro
P4108	SD SVN Version - FPGA CCE	0 to 65535	-	ro
P4109	SD SVN Version - FPGA IMPS750	0 to 65535	-	ro
P4110	SD SVN Version - FPGA CMPS	0 to 65535	-	ro
P4111	Firmware load status	0 to 100 %	-	ro
P4112	Package Firmware Storage	0 = Using Flash 1 = Using SD Card	0 = Using Flash	

Param.	Description	Adjustable range	Factory setting	Read Only
P4120	SD Status	0 = Off 1 = On	0 = Off	ro
P4121	Free Space SD	0.00 to 655.35 GB	-	ro
P4122	SD Capacity	0.00 to 655.35 GB	-	ro
P4200	Refrigeration Operation Mode	0 = Disable 1 = Manual 2 = Automatic	0 = Disable	
P4201	Type of Heat Exchanger	0 = Exchanger Heat - Gunter or Jartec 1MW 1 = Exchanger Heat - Jartec 3/6MW	1 = Exchanger Heat - Jartec 3/6MW	
P4202	Fan without Inverter	0 = No Inverter 1 = With Inverter	1 = With Inverter	
P4203	Fan Cleaning	0 = Active 1 = Inactive 2 = Force operation	0 = Active	
P4204	Fan State	0 = Ventilator Off 1 = Ventilator On 2 = Undefined State Ventilator	0 = Ventilator Off	ro
P4205	Pump State	0 = Pump Off 1 = Pump On 2 = Pump with Undefined State	0 = Pump Off	ro
P4206	Fan Cleaning State	0 = Stopped Cleaning 1 = Waiting Time for Cleaning 2 = Reverse Fan - 20% 3 = Fan - 20% 4 = Reverse Fan - 50% 5 = Ventilator - 50% 6 = Reverse Fan - 80% 7 = Fan - 80% 8 = Desable Cleaning - no Inverter 9 = Disable Cleaning - Inverter Fault	0 = Stopped Cleaning	ro
P4207	Measure for Ventilators Control (Automatic Mode)	0 = Water temperature 1 = IGBTs Max. Temperature	0 = Water temperature	
P4208	Fan Velocity (Manual Mode)	0.0 to 100.0 %	100.0 %	
P4210	Fan Velocity Gain (Automatic Mode)	0.0 to 100.0	1.0	
P4212	Wait Time for Cleaning (Automatic Mode)	120.0 to 7200.0 s	120.0 s	
P4214	Fan Start Temperature (Automatic Mode)	0.0 to 100.0 °C	35.0 °C	
P4216	Time between Steps for Cleaning (Automatic Mode)	10.0 to 600.0 s	60.0 s	
P4218	Debounce for Flow Measurement	0.0 to 100.0 s	30.0 s	
P4220	Debounce for Pressure Measurement	0.0 to 100.0 s	30.0 s	
P4222	Fault Limit - Very Low Water Presssure	0.00 to 100.00 bar	0.50 bar	
P4224	Alarm Limit - Low Water Presssure	0.00 to 100.00 bar	1.50 bar	
P4226	Fault Limit - High Water Presssure	0.00 to 100.00 bar	10.00 bar	
P4228	Alarm Limit - High Water Presssure	0.00 to 100.00 bar	9.00 bar	
P4230	Alarm Limit - High Water Temperature	0.00 to 100.00 °C	50.00 °C	
P4232	Alarm Limit - Very High Water Temperature	0.00 to 100.00 °C	55.00 °C	

Param.	Description	Adjustable range	Factory setting	Read Only
P4234	Fault Limit - Low Water Flow	0.00 to 1000.00 l/min	10.00 l/min	
P4236	Alarm Limit - Low Water Flow	0.00 to 1000.00 l/min	15.00 l/min	
P4238	Fault Limit - High Water Flow	0.00 to 1000.00 l/min	55.00 l/min	
P4240	Alarm Limit - High Water Flow	0.00 to 1000.00 l/min	50.00 l/min	
P4242	Time to Turn Off Cooling after Generation	0.0 to 3600.0 s	300.0 s	
P4244	Not Allowed Velocity - Upper Limit	0.0 to 100.0	55.0	
P4246	Not Allowed Velocity - Lower Limit	0.0 to 100.0	45.0	
P4248	Pump set speed	0.0 to 100.0 %	30.0 %	
P4250	Reset Pump Timer	Bitfield: bit0 : Reset	Binary = 0b0	
P4252	Debounce fan fault	0 to 65535 s	3 s	
P4254	Debounce fault pump	0 to 65535 s	3 s	
P4260	Humidity Control	0 = Off 1 = On	0 = Off	
P4262	Start temperature 3-way valve	-20.00 to 150.00 °C	25.00 °C	
P4264	Turn off temperature 3-way valve	-20.00 to 150.00 °C	35.00 °C	
P4266	Drive value 3-way valve	0.00 to 100.00 %	100.00 %	
P4268	Start temperature heater resistance	-20.00 to 150.00 °C	10.00 °C	
P4270	Turn off temperature heater resistance	-20.00 to 150.00 °C	30.00 °C	
P4300	Serial Number CMPS 1	0 to 4294967295	-	ro
P4302	Serial Number CMPS 2	0 to 4294967295	-	ro
P4304	Serial Number CMPS 3	0 to 4294967295	-	ro
P4306	Serial Number CMPS 4	0 to 4294967295	-	ro
P4308	Serial Number CMPS 5	0 to 4294967295	-	ro
P4310	Serial Number CMPS 6	0 to 4294967295	-	ro
P4312	Serial Number CMPS 7	0 to 4294967295	-	ro
P4314	Serial Number CMPS 8	0 to 4294967295	-	ro
P4316	Serial Number CMPS 9	0 to 4294967295	-	ro
P4320	Serial Number Book 1	0 to 4294967295	-	ro
P4322	Serial Number Book 2	0 to 4294967295	-	ro
P4324	Serial Number Book 3	0 to 4294967295	-	ro
P4326	Serial Number Book 4	0 to 4294967295	-	ro
P4328	Serial Number Book 5	0 to 4294967295	-	ro
P4330	Serial Number Book 6	0 to 4294967295	-	ro
P4332	Serial Number Book 7	0 to 4294967295	-	ro
P4334	Serial Number Book 8	0 to 4294967295	-	ro
P4336	Serial Number Book 9	0 to 4294967295	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P4340	Write Serial Number Book 1	0 to 4294967295	0	
P4342	Write Serial Number Book 2	0 to 4294967295	0	
P4344	Write Serial Number Book 3	0 to 4294967295	0	
P4346	Write Serial Number Book 4	0 to 4294967295	0	
P4348	Write Serial Number Book 5	0 to 4294967295	0	
P4350	Write Serial Number Book 6	0 to 4294967295	0	
P4352	Write Serial Number Book 7	0 to 4294967295	0	
P4354	Write Serial Number Book 8	0 to 4294967295	0	
P4356	Write Serial Number Book 9	0 to 4294967295	0	
P5000	Address Trace 0	0 to 150	1 = Logic Commands	
P5001	Address Trace 1	0 to 150	2 = Control Commands	ro
P5002	Address Trace 2	0 to 150	3 = Control Status	ro
P5003	Address Trace 3	0 to 150	4 = Operation Mode	ro
P5004	Address Trace 4	0 to 150	5 = CC1 - Enabled Books	ro
P5005	Address Trace 5	0 to 150	6 = IMPS2 - Enabled Books	ro
P5006	Address Trace 6	0 to 150	7 = CC1 - DC link total	
P5007	Address Trace 7	0 to 150	8 = CC1 - Differential voltage DC Link	
P5008	Address Trace 8	0 to 150	9 = IMPS2 - DC Link total	
P5009	Address Trace 9	0 to 150	10 = IMPS2 - Differential voltage DC Link	
P5010	Address Trace 10	0 to 150	11 = CC1 - Ip Setpoint	
P5011	Address Trace 11	0 to 150	12 = CC1 - Iq Setpoint	
P5012	Address Trace 12	0 to 150	13 = CC1 - Maximum Ip	
P5013	Address Trace 13	0 to 150	14 = CC1 - Minimum Ip	
P5014	Address Trace 14	0 to 150	15 = CC1 - Máximum Iq	
P5015	Address Trace 15	0 to 150	16 = CC1 - Minimum Iq	
P5016	Address Trace 16	0 to 150	17 = CC1 - Ip	
P5017	Address Trace 17	0 to 150	18 = IMPS2 - Iq	
P5018	Address Trace 18	0 to 150	19 = CC1 - Iq	
P5019	Address Trace 19	0 to 150	20 = IMPS2 - Iq	
P5020	Address Trace 20	0 to 150	21 = Voltage Vp Positive	
P5021	Address Trace 21	0 to 150	22 = Voltage Vq Positive	
P5022	Address Trace 22	0 to 150	23 = Voltage Vp Negative	
P5023	Address Trace 23	0 to 150	24 = Voltage Vq Negative	

Param.	Description	Adjustable range	Factory setting	Read Only
P5024	Address Trace 24	0 to 150	25 = PLL Frequency	
P5025	Address Trace 25	0 to 150	26 = PLL Angle	
P5026	Address Trace 26	0 to 150	27 = Vab	
P5027	Address Trace 27	0 to 150	28 = Vbc	
P5028	Address Trace 28	0 to 150	29 = Vca	
P5029	Address Trace 29	0 to 150	30 = Ia	
P5030	Address Trace 30	0 to 150	31 = Ib	
P5031	Address Trace 31	0 to 150	32 = Ic	
P5032	Address Trace 32	0 to 150	33 = CC1 - Active Power	
P5033	Address Trace 33	0 to 150	34 = IMPS2 - Active Power	
P5034	Address Trace 34	0 to 150	35 = CC1 - Reactive Power	
P5035	Address Trace 35	0 to 150	36 = IMPS2 - Reactive Power	
P5036	Address Trace 36	0 to 150	37 = CC1 - Maximum Temperature IGBT	
P5037	Address Trace 37	0 to 150	38 = CC1 - Maximum Temperate Inductor	
P5038	Address Trace 38	0 to 150	39 = IMPS2 - Maximum Temperature IGBT	
P5039	Address Trace 39	0 to 150	40 = IMPS2 - Maximum Temperature Inductor	
P5040	Address Trace 40	0 to 150	41 = CC1 - Iu	
P5041	Address Trace 41	0 to 150	42 = CC1 - Iv	
P5042	Address Trace 42	0 to 150	43 = CC1 - Iw	
P5043	Address Trace 43	0 to 150	44 = CC1 - Icc	
P5044	Address Trace 44	0 to 150	45 = IMPS2 - Iu	
P5045	Address Trace 45	0 to 150	46 = IMPS2 - Iv	
P5046	Address Trace 46	0 to 150	47 = IMPS2 - Iw	
P5047	Address Trace 47	0 to 150	48 = IMPS2 - Icc	
P5048	Address Trace 48	0 to 150	49 = CC1 - U_alpha	
P5049	Address Trace 49	0 to 150	50 = CC1 - U_beta	
P5050	Address Trace 50	0 to 150	51 = IMPS2 - U_alpha	
P5051	Address Trace 51	0 to 150	52 = IMPS2 - U_beta	
P5052	Address Trace 52	0 to 150	53 = CC1 - CMPS 1 - Data	
P5053	Address Trace 53	0 to 150	54 = CC1 - CMPS 1 - Iu	
P5054	Address Trace 54	0 to 150	55 = CC1 - CMPS 1 - Iv	
P5055	Address Trace 55	0 to 150	56 = CC1 - CMPS 1 - Iw	
P5056	Address Trace 56	0 to 150	57 = CC1 - CMPS 1 - Icc	

Param.	Description	Adjustable range	Factory setting	Read Only
P5057	Address Trace 57	0 to 150	58 = CC1 - CMPS 2 - Data	
P5058	Address Trace 58	0 to 150	59 = CC1 - CMPS 2 - Iu	
P5059	Address Trace 59	0 to 150	60 = CC1 - CMPS 2 - Iv	
P5060	Address Trace 60	0 to 150	61 = CC1 - CMPS 2 - Iw	
P5061	Address Trace 61	0 to 150	62 = CC1 - CMPS 2 - Icc	
P5062	Address Trace 62	0 to 150	63 = CC1 - CMPS 3 - Data	
P5063	Address Trace 63	0 to 150	64 = CC1 - CMPS 3 - Iu	
P5064	Address Trace 64	0 to 150	65 = CC1 - CMPS 3 - Iv	
P5065	Address Trace 65	0 to 150	66 = CC1 - CMPS 3 - Iw	
P5066	Address Trace 66	0 to 150	67 = CC1 - CMPS 3 - Icc	
P5067	Address Trace 67	0 to 150	68 = CC1 - CMPS 4 - Data	
P5068	Address Trace 68	0 to 150	69 = CC1 - CMPS 4 - Iu	
P5069	Address Trace 69	0 to 150	70 = CC1 - CMPS 4 - Iv	
P5070	Address Trace 70	0 to 150	71 = CC1 - CMPS 4 - Iw	
P5071	Address Trace 71	0 to 150	72 = CC1 - CMPS 4 - Icc	
P5072	Address Trace 72	0 to 150	73 = CC1 - CMPS 5 - Data	
P5073	Address Trace 73	0 to 150	74 = CC1 - CMPS 5 - Iu	
P5074	Address Trace 74	0 to 150	75 = CC1 - CMPS 5 - Iv	
P5075	Address Trace 75	0 to 150	76 = CC1 - CMPS 5 - Iw	
P5076	Address Trace 76	0 to 150	77 = CC1 - CMPS 5 - Icc	
P5077	Address Trace 77	0 to 150	78 = CC1 - CMPS 6 - Data	
P5078	Address Trace 78	0 to 150	79 = CC1 - CMPS 6 - Iu	
P5079	Address Trace 79	0 to 150	80 = CC1 - CMPS 6 - Iv	
P5080	Address Trace 80	0 to 150	81 = CC1 - CMPS 6 - Iw	
P5081	Address Trace 81	0 to 150	82 = CC1 - CMPS 6 - Icc	
P5082	Address Trace 82	0 to 150	83 = CC1 - CMPS 7 - Data	
P5083	Address Trace 83	0 to 150	84 = CC1 - CMPS 7 - Iu	
P5084	Address Trace 84	0 to 150	85 = CC1 - CMPS 7 - Iv	
P5085	Address Trace 85	0 to 150	86 = CC1 - CMPS 7 - Iw	
P5086	Address Trace 86	0 to 150	87 = CC1 - CMPS 7 - Icc	
P5087	Address Trace 87	0 to 150	88 = CC1 - CMPS 8 - Data	
P5088	Address Trace 88	0 to 150	89 = CC1 - CMPS 8 - Iu	
P5089	Address Trace 89	0 to 150	90 = CC1 - CMPS 8 - Iv	

Param.	Description	Adjustable range	Factory setting	Read Only
P5090	Address Trace 90	0 to 150	91 = CC1 - CMPS 8 - Iw	
P5091	Address Trace 91	0 to 150	92 = CC1 - CMPS 8 - Icc	
P5092	Address Trace 92	0 to 150	93 = CC1 - CMPS 9 - Data	
P5093	Address Trace 93	0 to 150	94 = CC1 - CMPS 9 - Iu	
P5094	Address Trace 94	0 to 150	95 = CC1 - CMPS 9 - Iv	
P5095	Address Trace 95	0 to 150	96 = CC1 - CMPS 9 - Iw	
P5096	Address Trace 96	0 to 150	97 = CC1 - CMPS 9 - Icc	
P5097	Address Trace 97	0 to 150	98 = CC1 - Control Signal Differential CC	
P5098	Address Trace 98	0 to 150	99 = IMPS2 - Control Signal Differential CC	
P5099	Address Trace 99	0 to 150	100 = CC1 - Vp Link CC	
P5100	Address Trace 100	0 to 150	101 = CC1 - Vn Link CC	
P5101	Address Trace 101	0 to 150	102 = CC1 - Vbat	
P5102	Address Trace 102	0 to 150	103 = IMPS2 - Vp Link CC	
P5103	Address Trace 103	0 to 150	104 = IMPS2 - Vn Link CC	
P5104	Address Trace 104	0 to 150	105 = IMPS2 - Vbat	
P5105	Address Trace 105	0 to 150	106 = CC1 - U0	
P5106	Address Trace 106	0 to 150	107 = CC1 - V0	
P5107	Address Trace 107	0 to 150	108 = CC1 - W0	
P5108	Address Trace 108	0 to 150	109 = IMPS2 - U0	
P5109	Address Trace 109	0 to 150	110 = IMPS2 - V0	
P5110	Address Trace 110	0 to 150	111 = CC1 - W0	
P5111	Address Trace 111	0 to 150	112 = Analog Input 1	
P5112	Address Trace 112	0 to 150	113 = Analog Input 2	
P5113	Address Trace 113	0 to 150	114 = CC1 - P ref	
P5114	Address Trace 114	0 to 150	115 = CC1 - Q ref	
P5115	Address Trace 115	0 to 150	116 = IMPS2 - P ref	
P5116	Address Trace 116	0 to 150	117 = IMPS2 - Q ref	
P5117	Address Trace 117	0 to 150	118 = CC1 - u Pi Vac	
P5118	Address Trace 118	0 to 150	119 = IMPS2 - u Pi Vac	
P5119	Address Trace 119	0 to 150	120 = CC1 - Freq Ref	
P5400	Sample Trigger	1 to 1024	-	ro
P5401	Sample number after trigger	0 to 1024	512	
P5402	Number of Signals	0 to 120	120	

Param.	Description	Adjustable range	Factory setting	Read Only
P5403	Trace State	0 = Waiting trigger 1 = Updating faultsLog.txt 2 = Saving trace file on SD card 3 = Writing on flash 4 = SD card not detected 5 = Cleaning trace buffers 6 = Error saving trace file 7 = Error updating tracesInfo.txt	0 = Waiting trigger	ro
P5404	Trigger	0 = Fault Trigger 1 = Signal Comparation Trigger 2 = Trigger by equation	0 = Fault Trigger	
P5405	Trigger Signal	0 to 119	0	
P5406	Signal Trigger Direction	0 = Smaller than 1 = Bigger then	0 = Smaller than	
P5407	Comparator Signal Value	-100000.00 to 100000.00	0.00	
P5409	Force Trigger	0 = Acquiring data 1 = Force Trigger	0 = Acquiring data	
P5410	Acquisition Frequency Decimation	0 to 10000	0	
P5411	Time to force cyclic tricgger (o=disable)	0 to 65535 min	0 min	
P5412	File manager state	0 = No file loaded 1 = Loading file 2 = FaultsLog.txt file loaded In RAM 3 = Test Trace file loaded in RAM 4 = Trace file loaded on RAM 5 = Event File Loaded in RAM 6 = Trace List of Flash loaded in RAM 7 = Flash Trace loaded on RAM 8 = Monitor Log loaded in RAM 9 = Monitor File loaded in RAM	0 = No file loaded	ro
P5413	Download file to RAM	0 to 107	0 = Off	
P5414	Save Progress	0.0 to 100.0 %	-	ro
P5415	Last trace save date and time	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	0:0:0 – 0/0/0	
P7000	Last Fault Code	0 to 1500	0 = No fault	ro
P7001	Last Alarm Code	0 to 1500	0 = No fault	ro
P7002	Last Event Code	0 to 1500	0 = No fault	ro
P7003	Fault/Alarm/Event Code 1	0 to 1500	0 = No fault	ro
P7004	Fault/Alarm/Event Code 2	0 to 1500	0 = No fault	ro
P7005	Fault/Alarm/Event Code 3	0 to 1500	0 = No fault	ro
P7006	Fault/Alarm/Event Code 4	0 to 1500	0 = No fault	ro
P7007	Fault/Alarm/Event Code 5	0 to 1500	0 = No fault	ro
P7008	Fault/Alarm/Event Code 6	0 to 1500	0 = No fault	ro
P7009	Fault/Alarm/Event Code 7	0 to 1500	0 = No fault	ro
P7010	Fault/Alarm/Event Code 8	0 to 1500	0 = No fault	ro
P7011	Fault/Alarm/Event Code 9	0 to 1500	0 = No fault	ro
P7012	Fault/Alarm/Event Code 10	0 to 1500	0 = No fault	ro
P7013	Fault/Alarm/Event Code 11	0 to 1500	0 = No fault	ro
P7014	Fault/Alarm/Event Code 12	0 to 1500	0 = No fault	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P7015	Fault/Alarm/Event Code 13	0 to 1500	0 = No fault	ro
P7016	Fault/Alarm/Event Code 14	0 to 1500	0 = No fault	ro
P7017	Fault/Alarm/Event Code 15	0 to 1500	0 = No fault	ro
P7018	Fault/Alarm/Event Code 16	0 to 1500	0 = No fault	ro
P7019	Fault/Alarm/Event Code 17	0 to 1500	0 = No fault	ro
P7020	Fault/Alarm/Event Code 18	0 to 1500	0 = No fault	ro
P7021	Fault/Alarm/Event Code 19	0 to 1500	0 = No fault	ro
P7022	Fault/Alarm/Event Code 20	0 to 1500	0 = No fault	ro
P7023	Fault/Alarm/Event Code 21	0 to 1500	0 = No fault	ro
P7024	Fault/Alarm/Event Code 22	0 to 1500	0 = No fault	ro
P7025	Fault/Alarm/Event Code 23	0 to 1500	0 = No fault	ro
P7026	Fault/Alarm/Event Code 24	0 to 1500	0 = No fault	ro
P7027	Fault/Alarm/Event Code 25	0 to 1500	0 = No fault	ro
P7028	Fault/Alarm/Event Code 26	0 to 1500	0 = No fault	ro
P7029	Fault/Alarm/Event Code 27	0 to 1500	0 = No fault	ro
P7030	Fault/Alarm/Event Code 28	0 to 1500	0 = No fault	ro
P7031	Fault/Alarm/Event Code 29	0 to 1500	0 = No fault	ro
P7032	Fault/Alarm/Event Code 30	0 to 1500	0 = No fault	ro
P7050	Last Fault Date and Time	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7054	Last Alarm Date and Time	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7058	Last Event Date and Time	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7062	Fault/Alarm/Event Date and Time 1	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7066	Fault/Alarm/Event Date and Time 2	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7070	Fault/Alarm/Event Date and Time 3	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7074	Fault/Alarm/Event Date and Time 4	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7078	Fault/Alarm/Event Date and Time 5	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7082	Fault/Alarm/Event Date and Time 6	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7086	Fault/Alarm/Event Date and Time 7	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7090	Fault/Alarm/Event Date and Time 8	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7094	Fault/Alarm/Event Date and Time 9	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7098	Fault/Alarm/Event Date and Time 10	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7102	Fault/Alarm/Event Date and Time 11	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7106	Fault/Alarm/Event Date and Time 12	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7110	Fault/Alarm/Event Date and Time 13	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7114	Fault/Alarm/Event Date and Time 14	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7118	Fault/Alarm/Event Date and Time 15	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7122	Fault/Alarm/Event Date and Time 16	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P7126	Fault/Alarm/Event Date and Time 17	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7130	Fault/Alarm/Event Date and Time 18	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7134	Fault/Alarm/Event Date and Time 19	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7138	Fault/Alarm/Event Date and Time 20	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7142	Fault/Alarm/Event Date and Time 21	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7146	Fault/Alarm/Event Date and Time 22	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7150	Fault/Alarm/Event Date and Time 23	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7154	Fault/Alarm/Event Date and Time 24	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7158	Fault/Alarm/Event Date and Time 25	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7162	Fault/Alarm/Event Date and Time 26	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7166	Fault/Alarm/Event Date and Time 27	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7170	Fault/Alarm/Event Date and Time 28	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7174	Fault/Alarm/Event Date and Time 29	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7178	Fault/Alarm/Event Date and Time 30	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7180	Inverter Data and Time	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	-	ro
P7184	Inverter Data and Time Setting	0:0:0 – 0/0/0 a 23:59:59 – 31/12/2999	0:0:0 – 0/0/0	
P7200	Last Fault Value	-100000.00 to 100000.00	-	ro
P7202	Last Alarm Value	-100000.00 to 100000.00	-	ro
P7204	Last Event Value	-100000.00 to 100000.00	-	ro
P7206	Fault/Alarm/Event Value 1	-100000.00 to 100000.00	-	ro
P7208	Fault/Alarm/Event Value 2	-100000.00 to 100000.00	-	ro
P7210	Fault/Alarm/Event Value 3	-100000.00 to 100000.00	-	ro
P7212	Fault/Alarm/Event Value 4	-100000.00 to 100000.00	-	ro
P7214	Fault/Alarm/Event Value 5	-100000.00 to 100000.00	-	ro
P7216	Fault/Alarm/Event Value 6	-100000.00 to 100000.00	-	ro
P7218	Fault/Alarm/Event Value 7	-100000.00 to 100000.00	-	ro
P7220	Fault/Alarm/Event Value 8	-100000.00 to 100000.00	-	ro
P7222	Fault/Alarm/Event Value 9	-100000.00 to 100000.00	-	ro
P7224	Fault/Alarm/Event Value 10	-100000.00 to 100000.00	-	ro
P7226	Fault/Alarm/Event Value 11	-100000.00 to 100000.00	-	ro
P7228	Fault/Alarm/Event Value 12	-100000.00 to 100000.00	-	ro
P7230	Fault/Alarm/Event Value 13	-100000.00 to 100000.00	-	ro
P7232	Fault/Alarm/Event Value 14	-100000.00 to 100000.00	-	ro
P7234	Fault/Alarm/Event Value 15	-100000.00 to 100000.00	-	ro
P7236	Fault/Alarm/Event Value 16	-100000.00 to 100000.00	-	ro
P7238	Fault/Alarm/Event Value 17	-100000.00 to 100000.00	-	ro
P7240	Fault/Alarm/Event Value 18	-100000.00 to 100000.00	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P7242	Fault/Alarm/Event Value 19	-100000.00 to 100000.00	-	ro
P7244	Fault/Alarm/Event Value 20	-100000.00 to 100000.00	-	ro
P7246	Fault/Alarm/Event Value 21,	-100000.00 to 100000.00	-	ro
P7248	Fault/Alarm/Event Value 22	-100000.00 to 100000.00	-	ro
P7250	Fault/Alarm/Event Value 23	-100000.00 to 100000.00	-	ro
P7252	Fault/Alarm/Event Value 24	-100000.00 to 100000.00	-	ro
P7254	Fault/Alarm/Event Value 25	-100000.00 to 100000.00	-	ro
P7256	Fault/Alarm/Event Value 26	-100000.00 to 100000.00	-	ro
P7258	Fault/Alarm/Event Value 27	-100000.00 to 100000.00	-	ro
P7260	Fault/Alarm/Event Value 28	-100000.00 to 100000.00	-	ro
P7262	Fault/Alarm/Event Value 29	-100000.00 to 100000.00	-	ro
P7264	Fault/Alarm/Event Value 30	-100000.00 to 100000.00	-	ro
P7300	Energized Time - Book 1	0 to 65535	-	ro
P7301	Energized Time - Book 2	0 to 65535	-	ro
P7302	Energized Time - Book 3	0 to 65535	-	ro
P7303	Energized Time - Book 4	0 to 65535	-	ro
P7304	Energized Time - Book 5	0 to 65535	-	ro
P7305	Energized Time - Book 6	0 to 65535	-	ro
P7306	Energized Time - Book 7	0 to 65535	-	ro
P7307	Energized Time - Book 8	0 to 65535	-	ro
P7308	Energized Time - Book 9	0 to 65535	-	ro
P7320	CRC Error - Book 1	0 to 65535	-	ro
P7321	CRC Error - Book 2	0 to 65535	-	ro
P7322	CRC Error - Book 3	0 to 65535	-	ro
P7323	CRC Error - Book 4	0 to 65535	-	ro
P7324	CRC Error - Book 5	0 to 65535	-	ro
P7325	CRC Error - Book 6	0 to 65535	-	ro
P7326	CRC Error - Book 7	0 to 65535	-	ro
P7327	CRC Error - Book 8	0 to 65535	-	ro
P7328	CRC Error - Book 9	0 to 65535	-	ro
P7420	IMPS - CRC Error	0 to 65535	-	ro
P7450	Disable Grid Voltages Faults	Bitfield: bit0 : AC Overvoltage Fault bit1 : AC Undervoltage Fault bit2 : AC Overfrequency Fault bit3 : AC Underfrequency Fault	Binary = 0b0	

Param.	Description	Adjustable range	Factory setting	Read Only
P7452	Disable Grid Currents Faults	Bitfield: bit0 : High IA Current Alarm bit1 : High IA Current Fault bit2 : High IB Current Alarm bit3 : High IB Current Fault bit4 : High IC Current Alarm bit5 : High IC Current Fault bit6 : High AVG IA Current Alarm bit7 : High AVG IA Current Fault bit8 : High AVG IB Current Alarm bit9 : High AVG IB Current Fault bit10 : High AVG IC Current Alarm bit11 : High AVG IC Current Fault bit12 : High IA Current Unbal. Alarm bit13 : High IA Current Unbal. Fault bit14 : High IB Current Unbal. Alarm bit15 : High IB Current Unbal. Fault bit16 : High IC Current Unbal. Alarm bit17 : High IC Current Unbal. Fault	Binary = 0b0	
P7454	Disable DC Bus Fault	Bitfield: bit0 : Low DC Voltage Fault bit1 : High DC Voltage Fault bit2 : High AVG DC Voltage Alarm bit3 : High AVG DC Voltage Fault bit4 : Low AVG DC Voltage Alarm bit5 : Low AVG DC Voltage Fault bit6 : High DC Voltage Unbal. Alarm	Binary = 0b0	
P7456	Disable Temperature Faults	Bitfield: bit0 : Inductor Temperature Broken Wire Alarm bit1 : IGBTs Temperature Broken Wire Fault bit2 : Water Temperature Broken Wire Alarm	Binary = 0b0	
P7458	Disable Feedback of PWM Faults	Bitfield: bit0 : PWM Fault Feedback	Binary = 0b0	
P7460	Disable Feedback of AC Switch	Bitfield: bit0 : Disable Feedback Circuit Breaker bit1 : Disable Grid Signal without Circuit Breaker	Binary = 0b0	
P7500	Table IGBT Temperature by Limit Current - x0	0.0 to 200.0 °C	78.0 °C	
P7502	Table IGBT Temperature by Limit Current - x1	0.0 to 200.0 °C	82.0 °C	
P7504	Table IGBT Temperature by Limit Current - x2	0.0 to 200.0 °C	82.5 °C	
P7506	Table IGBT Temperature by Limit Current - x3	0.0 to 200.0 °C	83.0 °C	
P7508	Table IGBT Temperature by Limit Current - x4	0.0 to 200.0 °C	83.5 °C	
P7510	Table IGBT Temperature by Limit Current - x5	0.0 to 200.0 °C	84.0 °C	
P7512	Table IGBT Temperature by Limit Current - x6	0.0 to 200.0 °C	84.5 °C	
P7514	Table IGBT Temperature by Limit Current - x7	0.0 to 200.0 °C	85.0 °C	
P7516	Table IGBT Temperature by Limit Current - y0	0.0 to 110.0 %In	102.0 %In	

Param.	Description	Adjustable range	Factory setting	Read Only
P7518	Table IGBT Temperature by Limit Current - y1	0.0 to 110.0 %In	100.0 %In	
P7520	Table IGBT Temperature by Limit Current - y2	0.0 to 110.0 %In	98.0 %In	
P7522	Table IGBT Temperature by Limit Current - y3	0.0 to 110.0 %In	95.0 %In	
P7524	Table IGBT Temperature by Limit Current - y4	0.0 to 110.0 %In	90.0 %In	
P7526	Table IGBT Temperature by Limit Current - y5	0.0 to 110.0 %In	85.0 %In	
P7528	Table IGBT Temperature by Limit Current - y6	0.0 to 110.0 %In	80.0 %In	
P7530	Table IGBT Temperature by Limit Current - y7	0.0 to 110.0 %In	70.0 %In	
P7532	Table IGBT Temperature by Limit Current - N	0 to 8	8	
P7638	Table Inductor Temperature by limit current - x0	0.0 to 200.0 °C	120.0 °C	
P7640	Table Inductor Temperature by limit current - x1	0.0 to 200.0 °C	125.0 °C	
P7642	Table Inductor Temperature by limit current - x2	0.0 to 200.0 °C	130.0 °C	
P7644	Table Inductor Temperature by limit current - x3	0.0 to 200.0 °C	131.0 °C	
P7646	Table Inductor Temperature by limit current - x4	0.0 to 200.0 °C	132.0 °C	
P7648	Table Inductor Temperature by limit current - x5	0.0 to 200.0 °C	133.0 °C	
P7650	Table Inductor Temperature by limit current - x6	0.0 to 200.0 °C	134.0 °C	
P7652	Table Inductor Temperature by limit current - x7	0.0 to 200.0 °C	135.0 °C	
P7654	Table Inductor Temperature by limit current - y0	0.0 to 110.0 %In	110.0 %In	
P7656	Table Inductor Temperature by limit current - y1	0.0 to 110.0 %In	103.0 %In	
P7658	Table Inductor Temperature by limit current - y2	0.0 to 110.0 %In	100.0 %In	
P7660	Table Inductor Temperature by limit current - y3	0.0 to 110.0 %In	95.0 %In	
P7662	Table Inductor Temperature by limit current - y4	0.0 to 110.0 %In	90.0 %In	
P7664	Table Inductor Temperature by limit current - y5	0.0 to 110.0 %In	85.0 %In	
P7666	Table Inductor Temperature by limit current - y6	0.0 to 110.0 %In	80.0 %In	
P7668	Table Inductor Temperature by limit current - y7	0.0 to 110.0 %In	70.0 %In	
P7670	Table Inductor Temperature by limit current - N	0 to 8	8	

Param.	Description	Adjustable range	Factory setting	Read Only
P7706	Table Frequency per Upper Active Power x0	0.0 to 110.0 Hz	58.0 Hz	
P7708	Table Frequency per Upper Active Power x1	0.0 to 110.0 Hz	58.5 Hz	
P7710	Table Frequency per Upper Active Power x2	0.0 to 110.0 Hz	59.0 Hz	
P7712	Table Frequency per Upper Active Power x3	0.0 to 110.0 Hz	59.5 Hz	
P7714	Table Frequency per Upper Active Power x4	0.0 to 110.0 Hz	60.0 Hz	
P7716	Table Frequency per Upper Active Power x5	0.0 to 110.0 Hz	60.5 Hz	
P7718	Table Frequency per Upper Active Power x6	0.0 to 110.0 Hz	61.0 Hz	
P7720	Table Frequency per Upper Active Power x7	0.0 to 110.0 Hz	61.5 Hz	
P7722	Table Frequency per Upper Active Power y0	0.0 to 200.0 %	110.0 %	
P7724	Table Frequency per Upper Active Power y1	0.0 to 200.0 %	110.0 %	
P7726	Table Frequency per Upper Active Power y2	0.0 to 200.0 %	110.0 %	
P7728	Table Frequency per Upper Active Power y3	0.0 to 200.0 %	110.0 %	
P7730	Table Frequency per Upper Active Power y4	0.0 to 200.0 %	110.0 %	
P7732	Table Frequency per Upper Active Power y5	0.0 to 200.0 %	110.0 %	
P7734	Table Frequency per Upper Active Power y6	0.0 to 200.0 %	110.0 %	
P7736	Table Frequency per Upper Active Power y7	0.0 to 200.0 %	110.0 %	
P7738	Table Frequency per Upper Active Power n	0 to 8	8	
P7740	Table Frequency per Lower Active Power x0	0.0 to 110.0 Hz	58.0 Hz	
P7742	Table Frequency per Lower Active Power x1	0.0 to 110.0 Hz	58.5 Hz	
P7744	Table Frequency per Lower Active Power x2	0.0 to 110.0 Hz	59.0 Hz	
P7746	Table Frequency per Lower Active Power x3	0.0 to 110.0 Hz	59.5 Hz	
P7748	Table Frequency per Lower Active Power x4	0.0 to 110.0 Hz	60.0 Hz	
P7750	Table Frequency per Lower Active Power x5	0.0 to 110.0 Hz	60.5 Hz	
P7752	Table Frequency per Lower Active Power x6	0.0 to 110.0 Hz	61.0 Hz	
P7754	Table Frequency per Lower Active Power x7	0.0 to 110.0 Hz	61.5 Hz	

Param.	Description	Adjustable range	Factory setting	Read Only
P7756	Table Frequency per Lower Active Power y0	-200.0 to 0.0 %	-110.0 %	
P7758	Table Frequency per Lower Active Power y1	-200.0 to 0.0 %	-110.0 %	
P7760	Table Frequency per Lower Active Power y2	-200.0 to 0.0 %	-110.0 %	
P7762	Table Frequency per Lower Active Power y3	-200.0 to 0.0 %	-110.0 %	
P7764	Table Frequency per Lower Active Power y4	-200.0 to 0.0 %	-110.0 %	
P7768	Table Frequency per Lower Active Power y5	-200.0 to 0.0 %	-110.0 %	
P7770	Table Frequency per Lower Active Power y6	-200.0 to 0.0 %	-110.0 %	
P7772	Table Frequency per Lower Active Power y7	-200.0 to 0.0 %	-110.0 %	
P7774	Table Frequency per Lower Active Power n	0 to 8	8	
P7800	Emulation Setting	Bitfield: bit0 : Enable Emulation bit1 : Force Book Status by Enable Parameter bit2 : Emulate Books Feedbacks	Binary = 0b0	
P7804	Emulated Voltage Bat 1	0.0 to 100.0 %	68.0 %	
P7806	Emulated Voltage Bat 2	0.0 to 100.0 %	68.0 %	
P7814	Emulated Temperature - IGBT	0.0 to 100.0 %	10.0 %	
P7816	Emulated Temperature - Inductor	0.0 to 100.0 %	10.0 %	
P7818	Emulated Temperature - CMPS	0.0 to 100.0 %	10.0 %	
P7820	Emulated Temperature - Water	0.0 to 100.0 %	10.0 %	
P7822	Emulated Pressure - Water	0.0 to 100.0 %	0.0 %	
P7824	Emulated Temperature of Capacitors	0.0 to 100.0 %	80.0 %	
P7900	Reset	Bitfield: bit0 : Reset control bit1 : Factory reset bit2 : Enable Special Parameters Writing bit3 : Enable Communication Parameter Writing bit4 : Reset Fault Historic bit5 : SD Card Download Settings	Binary = 0b0	
P7902	Password	0 to 4294967295	0	
P7904	Acess Level	0 = Basic Access 1 = User Access 2 = Service Access 3 = Engineering Access	0 = Basic Access	ro
P7910	Enable Grid Transition Events	0 = Off 1 = On	0 = Off	
P7965	Load setting on start	0 to 1	1	
P7966	SD Control	0 = Normal Operation 1 = Disable SD Card 2 = Format SD Card	0 = Normal Operation	

Param.	Description	Adjustable range	Factory setting	Read Only
P7967	Alarm Reset Each 30min	0 = Off 1 = On	0 = Off	
P7970	Pulse number for test AC filter	0 to 100	30	
P7971	Cycles of test AC Filter	15 to 1000	30	
P7972	Enable test of AC Filter	0 = Off 1 = On	0 = Off	
P7974	Maximum current of test AC Filter	0 to 50	15	
P7976	Maximum oscillation in DC test AC Filter	0 to 500	30	
P7978	Start minute test AC Filter	0 to 59	0	
P7979	Start hour test AC Filter	0 to 23	20	
P7980	Days to run the test of AC Filter	Bitfield: bit0 : Day 1 bit1 : Day 2 bit2 : Day 3 bit3 : Day 4 bit4 : Day 5 bit5 : Day 6 bit6 : Day 7 bit7 : Day 8 bit8 : Day 9 bit9 : Day 10 bit10 : Day 11 bit11 : Day 12 bit12 : Day 13 bit13 : Day 14 bit14 : Day 15 bit15 : Day 16 bit16 : Day 17 bit17 : Day 18 bit18 : Day 19 bit19 : Day 20 bit20 : Day 21 bit21 : Day 22 bit22 : Day 23 bit23 : Day 24 bit24 : Day 25 bit25 : Day 26 bit26 : Day 27 bit27 : Day 28 bit28 : Day 29 bit29 : Day 30 bit30 : Day 31	Binary = 0b0	
P7984	AC Filter Test Result	0 = Generate Alarm 1 = Generate Fault	0 = Generate Alarm	
P7985	Enable AC Filter Test when Islanded	0 = Off 1 = On	0 = Off	
P8034	Table Volt-Var x0	77.0 to 103.0 %	92.0 %	
P8036	Table Volt-Var x1	92.0 to 105.0 %	98.0 %	
P8038	Table Volt-Var x2	95.0 to 108.0 %	102.0 %	
P8040	Table Volt-Var x3	97.0 to 123.0 %	108.0 %	
P8042	Table Volt-Var x4	0.0 to 200.0 %	200.0 %	
P8044	Table Volt-Var x5	0.0 to 200.0 %	200.0 %	
P8046	Table Volt-Var x6	0.0 to 200.0 %	200.0 %	
P8048	Table Volt-Var x7	0.0 to 200.0 %	200.0 %	
P8050	Table Volt-Var y0	0.0 to 100.0 %	44.0 %	

Param.	Description	Adjustable range	Factory setting	Read Only
P8052	Table Volt-Var y1	-100.0 to 100.0 %	0.0 %	
P8054	Table Volt-Var y2	-100.0 to 100.0 %	0.0 %	
P8056	Table Volt-Var y3	-100.0 to 0.0 %	-44.0 %	
P8058	Table Volt-Var y4	0.0 to 100.0 %	0.0 %	
P8060	Table Volt-Var y5	0.0 to 100.0 %	0.0 %	
P8062	Table Volt-Var y6	0.0 to 100.0 %	0.0 %	
P8064	Table Volt-Var y7	0.0 to 100.0 %	0.0 %	
P8066	Table Volt-Var n	0 to 8	4	
P8068	Table Watt-Var x0	-100.0 to -50.0 %	-100.0 %	
P8070	Table Watt-Var x1	-80.0 to -40.0 %	-50.0 %	
P8072	Table Watt-Var x2	-70.0 to 0.0 %	-20.0 %	
P8074	Table Watt-Var x3	0.0 to 70.0 %	20.0 %	
P8076	Table Watt-Var x4	40.0 to 80.0 %	50.0 %	
P8078	Table Watt-Var x5	50.0 to 100.0 %	100.0 %	
P8080	Table Watt-Var x6	-100.0 to 100.0 %	0.0 %	
P8082	Table Watt-Var x7	-100.0 to 100.0 %	0.0 %	
P8084	Table Watt-Var y0	-100.0 to 100.0 %	44.0 %	
P8086	Table Watt-Var y1	-100.0 to 100.0 %	0.0 %	
P8088	Table Watt-Var y2	-100.0 to 100.0 %	0.0 %	
P8090	Table Watt-Var y3	-100.0 to 100.0 %	0.0 %	
P8092	Table Watt-Var y4	-100.0 to 100.0 %	0.0 %	
P8094	Table Watt-Var y5	-100.0 to 100.0 %	-44.0 %	
P8096	Table Watt-Var y6	-100.0 to 100.0 %	0.0 %	
P8098	Table Watt-Var y7	-100.0 to 100.0 %	0.0 %	
P8100	Table Watt-Var n	0 to 8	6	
P8120	Table Compensation Active Power - Reactive Power x0	-100.00 to 100.00 %	-100.00 %	
P8122	Table Compensation Active Power - Reactive Power x1	-100.00 to 100.00 %	-50.00 %	
P8124	Table Compensation Active Power - Reactive Power x2	-100.00 to 100.00 %	0.00 %	
P8126	Table Compensation Active Power - Reactive Power x3	-100.00 to 100.00 %	50.00 %	
P8128	Table Compensation Active Power - Reactive Power x4	-100.00 to 100.00 %	100.00 %	
P8130	Table Compensation Active Power - Reactive Power x5	-100.00 to 100.00 %	0.00 %	
P8132	Table Compensation Active Power - Reactive Power x6	-100.00 to 100.00 %	0.00 %	
P8134	Table Compensation Active Power - Reactive Power x7	-100.00 to 100.00 %	0.00 %	

Param.	Description	Adjustable range	Factory setting	Read Only
P8136	Table Compensation Active Power - Reactive Power y0	-100.00 to 100.00 %	0.00 %	
P8138	Table Compensation Active Power - Reactive Power y1	-100.00 to 100.00 %	0.00 %	
P8140	Table Compensation Active Power - Reactive Power y2	-100.00 to 100.00 %	0.00 %	
P8142	Table Compensation Active Power - Reactive Power y3	-100.00 to 100.00 %	0.00 %	
P8144	Table Compensation Active Power - Reactive Power y4	-100.00 to 100.00 %	0.00 %	
P8146	Table Compensation Active Power - Reactive Power y5	-100.00 to 100.00 %	0.00 %	
P8148	Table Compensation Active Power - Reactive Power y6	-100.00 to 100.00 %	0.00 %	
P8150	Table Compensation Active Power - Reactive Power y7	-100.00 to 100.00 %	0.00 %	
P8152	Table Compensation Active Power - Reactive Power n	0 to 8	5	
P8200	GSIM - Frequency	0.000 to 80.000 Hz	60.000 Hz	
P8202	GSIM - V Magnitude	0.00 to 125.00 %	100.00 %	
P8204	GSIM - V Mag AB	0.00 to 125.00 %	100.00 %	
P8206	GSIM - V Mag BC	0.00 to 125.00 %	100.00 %	
P8208	GSIM - V Mag CA	0.00 to 125.00 %	100.00 %	
P8210	GSIM - V Mag A	0.00 to 125.00 %	100.00 %	
P8212	GSIM - V Mag B	0.00 to 125.00 %	100.00 %	
P8214	GSIM - V Mag C	0.00 to 125.00 %	100.00 %	
P8216	GSIM - V Pos	0.00 to 125.00 %	100.00 %	
P8218	GSIM - V Neg	0.00 to 20.00 %	0.00 %	
P8220	GSIM - V Zero	0.00 to 20.00 %	0.00 %	
P8222	GSIM - Angle ph A	-180 to 180 °	0 °	
P8224	GSIM - Angle ph B	-180 to 180 °	0 °	
P8226	GSIM - Angle ph C	-180 to 180 °	0 °	
P8228	GSIM - Angle V Neg	-180 to 180 °	0 °	
P8230	GSIM - Angle V Zero	-180 to 180 °	0 °	
P8232	GSIM - Freq_slew	0.000 to 100.000 Hz/s	1.000 Hz/s	
P8234	GSIM - V Mag Slew	0 to 100000 %/s	0 %/s	
P8236	GSIM - V Mag AB Slew	0 to 100000 %/s	0 %/s	
P8238	GSIM - V Mag BC Slew	0 to 100000 %/s	0 %/s	
P8240	GSIM - V Mag CA Slew	0 to 100000 %/s	0 %/s	
P8242	GSIM - V Mag A Slew	0 to 100000 %/s	0 %/s	
P8244	GSIM - V Mag B Slew	0 to 100000 %/s	0 %/s	

Param.	Description	Adjustable range	Factory setting	Read Only
P8246	GSIM - V Mag C Slew	0 to 100000 %/s	0 %/s	
P8248	GSIM - V Pos Slew	0 to 100000 %/s	0 %/s	
P8250	GSIM - V Neg Slew	0 to 100000 %/s	0 %/s	
P8252	GSIM - V Zero Slew	0 to 100000 %/s	0 %/s	
P8254	GSIM - Angle Slew	0 to 100000 deg/s	0 deg/s	
P8256	GSIM - Control Mode	0 = Line-Line 1 = Line-Neutral 2 = Sequence Components	0 = Line-Line	
P8258	GSIM - V ph A	-1500 to 1500 V	-	ro
P8260	GSIM - V ph B	-1500 to 1500 V	-	ro
P8262	GSIM - V ph C	-1500 to 1500 V	-	ro
P8264	GSIM - V_mag_AB_out	-1500 to 1500 V	-	ro
P8266	GSIM - V_mag_BC_out	-1500 to 1500 V	-	ro
P8268	GSIM - V_mag_CA_out	-1500 to 1500 V	-	ro
P8270	GSIM - V_mag_A_out	-1500 to 1500 V	-	ro
P8272	GSIM - V_mag_B_out	-1500 to 1500 V	-	ro
P8274	GSIM - V_mag_C_out	-1500 to 1500 V	-	ro
P8276	GSIM - Angle_A_out	-180 to 180 °	-	ro
P8278	GSIM - Angle_B_out	-180 to 180 °	-	ro
P8280	GSIM - Angle_C_out	-180 to 180 °	-	ro
P8284	GSIM - Start Command	0 to 1	0	
P8285	GSIM - Random Start	0 to 1	0	
P8286	GSIM - Start Angle	-180 to 180 °	0 °	
P8288	GSIM - Elapsed Time	0.0 to 65535.0 s	-	ro
P8290	GSIM - Initial Angle	-180 to 180 °	-	ro

Param.	Description	Adjustable range	Factory setting	Read Only
P8292	GSIM - Recipe Param 1	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	
P8293	GSIM - Recipe Param 2	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	

Param.	Description	Adjustable range	Factory setting	Read Only
P8294	GSIM - Recipe Param 3	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	
P8295	GSIM - Recipe Param 4	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	

Param.	Description	Adjustable range	Factory setting	Read Only
P8296	GSIM - Recipe Param 5	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	
P8297	GSIM - Recipe Param 6	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	

Param.	Description	Adjustable range	Factory setting	Read Only
P8298	GSIM - Recipe Param 7	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	
P8299	GSIM - Recipe Param 8	0 = Unused 1 = Frequency 2 = V Magnitude 3 = V Mag AB 4 = V Mag BC 5 = V Mag CA 6 = V Mag A 7 = V Mag B 8 = V mag C 9 = V Pos 10 = V Neg 11 = V Zero 12 = Frequency Slew 13 = Angle Slew 14 = V Mag Slew 15 = V Mag AB Slew 16 = V Mag BC Slew 17 = V Mag CA Slew 18 = V Mag A Slew 19 = V Mag B Slew 20 = V Mag C Slew 21 = V Pos Slew 22 = V Neg Slew 23 = V Zero Slew 24 = Angle Ph A 25 = Angle Ph B 26 = Angle Ph C 27 = Angle V Neg 28 = Angle V Zero	0 = Unused	
P8300	GSIM - Recipe Value 1	-1500.000 to 100000.000	0.000	
P8302	GSIM - Recipe Value 2	-1500.000 to 100000.000	0.000	
P8304	GSIM - Recipe Value 3	-1500.000 to 100000.000	0.000	
P8306	GSIM - Recipe Value 4	-1500.000 to 100000.000	0.000	
P8308	GSIM - Recipe Value 5	-1500.000 to 100000.000	0.000	
P8310	GSIM - Recipe Value 6	-1500.000 to 100000.000	0.000	
P8312	GSIM - Recipe Value 7	-1500.000 to 100000.000	0.000	

Param.	Description	Adjustable range	Factory setting	Read Only
P8314	GSIM - Recipe Value 8	-1500.000 to 100000.000	0.000	
P8316	GSIM - Recipe Value 9	-1500.000 to 100000.000	0.000	
P8318	GSIM - Recipe Value 10	-1500.000 to 100000.000	0.000	
P8320	GSIM - Recipe Value 11	-1500.000 to 100000.000	0.000	
P8322	GSIM - Recipe Value 12	-1500.000 to 100000.000	0.000	
P8324	GSIM - Recipe Value 13	-1500.000 to 100000.000	0.000	
P8326	GSIM - Recipe Value 14	-1500.000 to 100000.000	0.000	
P8328	GSIM - Recipe Value 15	-1500.000 to 100000.000	0.000	
P8330	GSIM - Recipe Value 16	-1500.000 to 100000.000	0.000	
P8332	GSIM - Recipe Value 17	-1500.000 to 100000.000	0.000	
P8334	GSIM - Recipe Value 18	-1500.000 to 100000.000	0.000	
P8336	GSIM - Recipe Value 19	-1500.000 to 100000.000	0.000	
P8338	GSIM - Recipe Value 20	-1500.000 to 100000.000	0.000	
P8340	GSIM - Recipe Value 21	-1500.000 to 100000.000	0.000	
P8342	GSIM - Recipe Value 22	-1500.000 to 100000.000	0.000	
P8344	GSIM - Recipe Value 23	-1500.000 to 100000.000	0.000	
P8346	GSIM - Recipe Value 24	-1500.000 to 100000.000	0.000	
P8348	GSIM - Recipe Value 25	-1500.000 to 100000.000	0.000	
P8350	GSIM - Recipe Value 26	-1500.000 to 100000.000	0.000	
P8352	GSIM - Recipe Value 27	-1500.000 to 100000.000	0.000	
P8354	GSIM - Recipe Value 28	-1500.000 to 100000.000	0.000	
P8356	GSIM - Recipe Value 29	-1500.000 to 100000.000	0.000	
P8358	GSIM - Recipe Value 30	-1500.000 to 100000.000	0.000	
P8360	GSIM - Recipe Value 31	-1500.000 to 100000.000	0.000	
P8362	GSIM - Recipe Value 32	-1500.000 to 100000.000	0.000	
P8364	GSIM - Recipe Value 33	-1500.000 to 100000.000	0.000	
P8366	GSIM - Recipe Value 34	-1500.000 to 100000.000	0.000	
P8368	GSIM - Recipe Value 35	-1500.000 to 100000.000	0.000	
P8370	GSIM - Recipe Value 36	-1500.000 to 100000.000	0.000	
P8372	GSIM - Recipe Value 37	-1500.000 to 100000.000	0.000	
P8374	GSIM - Recipe Value 38	-1500.000 to 100000.000	0.000	
P8376	GSIM - Recipe Value 39	-1500.000 to 100000.000	0.000	
P8378	GSIM - Recipe Value 40	-1500.000 to 100000.000	0.000	
P8506	Operation Mode for closed loop emulation	0 = Islanded 1 = Grid-Tied	1 = Grid-Tied	
P8508	L1 for Closed Loop Emulation	0.00 to 10000.00 uH	90.00 uH	
P8510	rL1 for Closed Loop Emulation	0.00 to 10000.00 mΩ	1.20 mΩ	

Param.	Description	Adjustable range	Factory setting	Read Only
P8512	C1 for Closed Loop Emulation	0.00 to 10000.00 uF	150.00 uF	
P8514	rC1 for Closed Loop Emulation	0.00 to 10000.00 mΩ	0.10 mΩ	
P8516	L2 for Closed Loop Emulation	0.00 to 10000.00 uH	10.00 uH	
P8518	rL2 for Closed Loop Emulation	0.00 to 10000.00 mΩ	1.00 mΩ	
P8520	Load for Closed Loop Emulation Islanded	0.10 to 200.00 %Pn	0.00 %Pn	
P8522	Grid Status in closed loop simulation	0 = Islanded 1 = Synchronizing 2 = Grid-tied	0 = Islanded	ro
P8524	Angle Error for Synchronization	-180.00 to 180.00 °	-	ro
P8526	Frequency Error for Synchronization	-100.00 to 100.00 Hz	-	ro
P8528	Resistance of battery rBat closed loop emulation	0.00 to 10000.00 mΩ	0.00 mΩ	
P8530		0.00 to 100.00 s	0.50 s	
P8600	Monitor Logical Commands	Bitfield: bit0 : Enable Monitor bit1 : Update Parameters bit2 : Clean bit3 : Save Data in SD	Binary = 0b0	
P8601	Sampling	1 to 60	1	
P8602	Precision	1 to 10	1	
P8603	Number of Monitored Parameters	0 to 99	-	ro
P8604	Parameter 0	-1 to 9000	-1	
P8605	Parameter 1	-1 to 9000	-1	
P8606	Parameter 2	-1 to 9000	-1	
P8607	Parameter 3	-1 to 9000	-1	
P8608	Parameter 4	-1 to 9000	-1	
P8609	Parameter 5	-1 to 9000	-1	
P8610	Parameter 6	-1 to 9000	-1	
P8611	Parameter 7	-1 to 9000	-1	
P8612	Parameter 8	-1 to 9000	-1	
P8613	Parameter 9	-1 to 9000	-1	
P8614	Parameter 10	-1 to 9000	-1	
P8615	Parameter 11	-1 to 9000	-1	
P8616	Parameter 12	-1 to 9000	-1	
P8617	Parameter 13	-1 to 9000	-1	
P8618	Parameter 14	-1 to 9000	-1	
P8619	Parameter 15	-1 to 9000	-1	
P8620	Parameter 16	-1 to 9000	-1	
P8621	Parameter 17	-1 to 9000	-1	
P8622	Parameter 18	-1 to 9000	-1	

Param.	Description	Adjustable range	Factory setting	Read Only
P8623	Parameter 19	-1 to 9000	-1	
P8624	Parameter 20	-1 to 9000	-1	
P8625	Parameter 21	-1 to 9000	-1	
P8626	Parameter 22	-1 to 9000	-1	
P8627	Parameter 23	-1 to 9000	-1	
P8628	Parameter 24	-1 to 9000	-1	
P8629	Parameter 25	-1 to 9000	-1	
P8630	Parameter 26	-1 to 9000	-1	
P8631	Parameter 27	-1 to 9000	-1	
P8632	Parameter 28	-1 to 9000	-1	
P8633	Parameter 29	-1 to 9000	-1	
P8634	Parameter 30	-1 to 9000	-1	
P8635	Parameter 31	-1 to 9000	-1	
P8636	Parameter 32	-1 to 9000	-1	
P8637	Parameter 33	-1 to 9000	-1	
P8638	Parameter 34	-1 to 9000	-1	
P8639	Parameter 35	-1 to 9000	-1	
P8640	Parameter 36	-1 to 9000	-1	
P8641	Parameter 37	-1 to 9000	-1	
P8642	Parameter 38	-1 to 9000	-1	
P8643	Parameter 39	-1 to 9000	-1	
P8644	Parameter 40	-1 to 9000	-1	
P8645	Parameter 41	-1 to 9000	-1	
P8646	Parameter 42	-1 to 9000	-1	
P8647	Parameter 43	-1 to 9000	-1	
P8648	Parameter 44	-1 to 9000	-1	
P8650	Parameter 45	-1 to 9000	-1	
P8651	Parameter 46	-1 to 9000	-1	
P8652	Parameter 47	-1 to 9000	-1	
P8653	Parameter 48	-1 to 9000	-1	
P8654	Parameter 49	-1 to 9000	-1	
P8655	Parameter 50	-1 to 9000	-1	
P8656	Parameter 51	-1 to 9000	-1	
P8657	Parameter 52	-1 to 9000	-1	
P8658	Parameter 53	-1 to 9000	-1	
P8659	Parameter 54	-1 to 9000	-1	
P8660	Parameter 55	-1 to 9000	-1	

Param.	Description	Adjustable range	Factory setting	Read Only
P8661	Parameter 56	-1 to 9000	-1	
P8662	Parameter 57	-1 to 9000	-1	
P8663	Parameter 58	-1 to 9000	-1	
P8664	Parameter 59	-1 to 9000	-1	
P8665	Parameter 60	-1 to 9000	-1	
P8666	Parameter 61	-1 to 9000	-1	
P8667	Parameter 62	-1 to 9000	-1	
P8668	Parameter 63	-1 to 9000	-1	
P8669	Parameter 64	-1 to 9000	-1	
P8670	Parameter 65	-1 to 9000	-1	
P8671	Parameter 66	-1 to 9000	-1	
P8672	Parameter 67	-1 to 9000	-1	
P8673	Parameter 68	-1 to 9000	-1	
P8674	Parameter 69	-1 to 9000	-1	
P8675	Parameter 70	-1 to 9000	-1	
P8676	Parameter 71	-1 to 9000	-1	
P8677	Parameter 72	-1 to 9000	-1	
P8678	Parameter 73	-1 to 9000	-1	
P8679	Parameter 74	-1 to 9000	-1	
P8680	Parameter 75	-1 to 9000	-1	
P8681	Parameter 76	-1 to 9000	-1	
P8682	Parameter 77	-1 to 9000	-1	
P8683	Parameter 78	-1 to 9000	-1	
P8684	Parameter 79	-1 to 9000	-1	

9 FAULTS, ALARMS AND EVENTS

This chapter presents information about faults, alarms and events, which are three distinct categories to describe relevant incidents which may occur during operation of the inverter.

For specific information about communication with the BIW750 and how to use the WEG Programming Suite, please refer to the documentation listed below:

- WEG BIW750 Bidirectional Inverter Start-up and O&M Guide;
- WPS user manual.

For a complete list of faults, alarms and events with corresponding descriptions and possible causes, please refer to section 9.4.

The occurrence of faults, alarms and events is stored in memory. The last 30 occurrences can also be visualized with the help of parameters listed in WPS, as described below:

- P7003 to P7032 specify the faults, alarms or events IDs;
- P7062 to P7178 register date and time of each incident;
- P7206 to P7264 display values, e.g., voltage, current, temperature etc., related to the incidents, when applicable.

In WPS, it is also possible to generate an event log with a detailed record of all faults, alarms and events notifications.

9.1 FAULTS

A fault is defined as a situation that could eventually give rise to a catastrophic failure. Therefore, the BIW750 will automatically halt and disconnect from the grid when a fault is recognized by the system to avoid hazardous situations and equipment damage.

When a fault occurs, the BIW750 is automatically disabled and not allowed to restart until the cause of the fault is fully resolved. The inverter may gradually reduce its current before disconnecting from the grid or immediately disconnect depending on the gravity of the fault, as indicated in section 9.4.

The BIW750 performs the following procedures when a fault occurs:

- Power modules and contactors are switched off, disconnecting the inverter from the grid;
- The inverter status changes to “Fault” in WPS;
- The fault description is indicated in parameter P7000 in WPS;
- Digital output “No Fault” goes LOW.

Given a fault condition, it is necessary to understand and fix any abnormal situation which is preventing the BIW750 to operate properly. Once this is done, the inverter can be restarted in one of the following ways:

- Waiting for the auto reset timer to count down to zero. The auto reset time can be configured with the P1040 parameter;
- By the system operator, by sending the command “Clear Faults” through parameter P01001 in WPS.

9.2 ALARMS

Unlike a system fault, an alarm indicates an abnormal situation which will not immediately prevent the BIW750 from working correctly. Nevertheless, alarms should not be neglected as they could eventually escalate to faults. The alarm description is indicated in parameter P7001 in WPS.

Alarms are automatically cleared once the abnormal situations are resolved.

9.3 EVENTS

An event describes a situation that is relevant, but expected to happen during normal operation of the inverter, e.g., receiving or transmitting commands, transition states between modes of operation etc.

9.4 LIST OF ALARMS AND FAULTS

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0001 : Undervoltage Protection	Immediate	It acts when the line voltage drops below a value specified in P1100.	- The distribution network has a voltage value below the nominal.
F0002 : Undervoltage Protection - LVRT0 (timed)	Immediate	It acts when the line voltage reaches a value lower than that specified in P1112.	- The power distribution network has a voltage value below the nominal.
F0003 : Undervoltage Protection - LVRT1 (timed)	Immediate	It acts when the line voltage reaches a value lower than that specified in P1116.	- The power distribution network has a voltage value below the nominal.
F0004 : Overvoltage Protection	Immediate	It acts when the line voltage reaches a value higher than that specified in P1102.	- The power distribution network has a voltage value above the nominal.
F0005 : Overvoltage Protection (Timed)	Immediate	It acts when the line voltage reaches a value higher than that specified in P1108.	- The power distribution network has a voltage value above the nominal.
F0006 : Underfreq. Protection	Immediate	It acts when the line frequency reaches a value lower than that specified in P1104.	- The power distribution network has a frequency value below the nominal.
F0007 : Underfrequency Protection UFRT0 (Timed)	Immediate	It acts when the line frequency reaches a value lower than that specified in P1130.	- The power distribution network has a frequency value below the nominal.
F0008 : Overfreq. Protection	Immediate	It acts when the line frequency reaches a value higher than that specified in P1106.	- The power distribution network has a frequency value above the nominal.
F0009 : Overfrequency Protection OFRT0 (Timed)	Immediate	It acts when the line frequency reaches a value higher than that specified in P1130.	- The power distribution network has a frequency value above the nominal.
E0010 :	-	Ride-through event, caused by voltage or frequency disturbances.	- Power grid event.
F0011 : Underfrequency Protection UFRT1 (Timed)	Immediate	It acts when the line frequency reaches a value lower than that specified in P1134.	- The power distribution network has a frequency value below the nominal.
F0012 : Overfrequency Protection OFRT1 (Timed)	Immediate	It acts when the line frequency reaches a value higher than that specified in P1134.	- The power distribution network has a frequency value above the nominal.
E0013 : AC Filter Test Event	-	Event of output filter test.	- It happens periodically according to adjustments defined in P7978, P7979 e P7980.
E0015 : Islanded Transition	-	Event triggered by transition between grid following to grid forming.	- Disconnection of electrical grid.
E0016 : Grid Transition	-	Event triggered by transition between grid forming to grid following.	- Reconnection of electrical grid.
E0017 : PWM Reset Overcurrent Event	-	Overcurrent event from variation the grid voltage.	- Grid disturbances.
A0018 : Half DC Voltage 1	Immediate	It acts when the converter has imbalances voltages in the DC link	- Oscillations of electrical grid - DC voltage reading failure - DC Link failure
F0019 : Half DC Voltage 1	Immediate	It acts when the converter has overvoltage in one of the capacitors from DC link, specified in P1208	- Oscillations of electrical grid - DC voltage reading failure - DC Link failure
F0020 : DC Link Undervoltage	Immediate	It occurs when the voltage on the DC bus falls below the value specified in P1202.	- DC undervoltage - Batteries discharged (low SoC) - DC voltage reading failure

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0021 : DC Link Overvoltage	Immediate	It acts when the voltage on the DC bus 1 rises above the value configured in P1200.	- Over DC voltage. - Connection of the batteries - Dimensioning of the batteries - DC voltage reading fault
A0022 : DC Link Unbal. 1	Immediate	It acts when the voltage imbalance on the DC bus 1 is greater than the value configured in P1206.	- DC voltage reading failure.
F0023 : DC Link Unbal. 1	Immediate	It acts when the voltage imbalance on the DC bus 1 is greater than the value configured in P1204.	- DC voltage reading failure.
F0024 : Overvoltage in Batteries 1	Immediate	Acts when the voltage of Batteries 1 reaches a value that is higher than that specified in P1220	- DC overvoltage - Incorrect sizing of the batteries - Failure reading the voltage of the batteries
F0025 : Negative Battery Voltage 1 - Inverted Polarity	Immediate	Occurs when Batteries 1 are connected to the busses with inverted polarity	- Incorrect connection of the batteries to the busses - Inverted polarity of the batteries
F0026 : DC Link Short Circuit 1	Immediate	Short circuit fault in the DC bus 1.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0027 : Minimum DC voltage for discharge 1	Immediate	It occurs when the voltage on the DC bus falls below the value specified in P1320, while discharging.	- DC undervoltage - Batteries discharged (low SoC) - DC voltage reading failure
A0028 : Half DC Voltage 2	Immediate	It acts when the converter has imbalances voltages in the DC link	- Oscillations of electrical grid - DC voltage reading failure - DC Link failure
F0029 : Half DC Voltage 2	Immediate	It acts when the converter has overvoltage in one of the capacitors from DC link, specified in P1208	- Oscillations of electrical grid - DC voltage reading failure - DC Link failure
F0030 : DC Link Undervoltage 2	Immediate	It occurs when the voltage on the DC bus 2 falls below the value specified in P1202.	- DC undervoltage - Batteries discharged (low SoC) - DC voltage reading failure
F0031 : DC Link Overvoltage 2	Immediate	It acts when the voltage on the DC bus 2 rises above the value configured in P1200.	- DC overvoltage. - Connection of the batteries - Dimensioning of the batteries - DC voltage reading fault
A0032 : DC Link Unbal. Alarm 2	Immediate	It acts when the voltage imbalance on the DC bus 2 is greater than the value configured in P1206.	- DC voltage reading failure.
F0033 : DC Link Unbal. Fault 2	Immediate	It acts when the voltage imbalance on the DC bus 2 is greater than the value configured in P1204.	- DC voltage reading failure.
F0034 : Overvoltage in Batteries Modules 2	Immediate	Acts when the voltage of Batteries 2 reaches a value that is higher than that specified in P1220	- DC overvoltage - Incorrect sizing of the batteries - Failure reading the voltage of the batteries
F0035 : Negative Bat. Voltage 2 - Inverted Polarity	Immediate	Occurs when Batteries 2 are connected to the busses with inverted polarity	- Incorrect connection of the batteries to the busses - Inverted polarity of the batteries
F0036 : DC Link Short Circuit 2	Immediate	Short circuit fault in the DC bus 2.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0037 : Minimum DC voltage for discharge 2	Immediate	It occurs when the voltage on the DC bus falls below the value specified in P1320, while discharging.	- DC undervoltage - Batteries discharged (low SoC) - DC voltage reading failure
F0038 : Fault while forming grid	Immediate	It acts when the converter do not is succeed forming the grid, becausing of synchronization problems	- Another electrical sources acting in the islanding process. - Load oscillations.
A0039 : Mac Address not defined	-	Acts when the MAC address is lost	- Memory error - Internal circuitry defect
F0040 : CPU Error (Watchdog)	Immediate	Watchdog timer of microcontroller	- Electrical noise - Non-grounded converter
F0041 : EEPROM Access Fault	Immediate	Failed to read the EEPROM Memory parameter list.	- Defect in the EEPROM memory.
F0042 : IMPS: Wrong Book Number	Immediate	Parameter List corrupted in EEPROM memory.	- Problem with the firmware version. Perform factory reset.
F0043 : Serial Communication Fault	Ramp	Modbus RS485 communication failure.	- Power grid cable disconnected. - Incorrect power grid configuration.
A0044 : Invalid clock value	-	Indicates that the HMI clock has an invalid date or time.	- HMI battery discharged, defective or not installed. - Necessary to set date and time.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0045 : Book Initialization Fault - No Book Enable	Immediate	Communication between the books and the control failed.	Book not enabled in P1014 e P1015 parameters. - CMPS card not energized or defective.
F0046 : Open Loop Mode not allowed	Immediate	Open-Loop operating mode is not allowed.	- Electricity power grid present.
A0047 : Broken Wire in Temperature Sensor	-	Problem in measuring the book inductor temperature sensor.	- Temperature sensor cable not properly connected to the CMPS card. - Faulty temperature sensor.
F0048 : Broken Wire in Temperature Sensor	Ramp	Problem in measuring the temperature sensor of the book semiconductor switches.	- Temperature sensor cable not properly connected to the CMPS card. - Faulty temperature sensor.
A0049 : Broken Wire in Water Temperature Sensor	-	Problem in the water temperature sensor.	- Temperature sensor cable not connected properly to the IMPS card. - Temperature sensor damage.
F0050 : Phase U Current Calibration Fault	Immediate	Current measurement circuit of the U phase has a value outside the range specified in P1268.	- Defect in internal circuits.
F0051 : Phase V Calibration Current Fault	Immediate	Current measurement circuit of the V phase has a value outside the range specified in P1268.	- Defect in internal circuits.
F0052 : Phase W Current Calibration Fault	Immediate	Current measurement circuit of the W phase has a value outside the range specified in P1268.	- Defect in internal circuits.
F0053 : Voltage Calibration Fault Vab	Immediate	Voltage measurement circuit Vab has value out of range. The range of values can be configured in P1266.	- Defect in internal circuits
F0054 : Voltage Calibration Fault Vbc	Immediate	Voltage measurement circuit Vbc has value out of range. The range of values can be configured in P1266.	- Defect in internal circuits
F0055 : Voltage Calibration Fault Vca	Immediate	Voltage measurement circuit Vca has value out of range. The range of values can be configured in P1266.	- Defect in internal circuits
F0056 : Misconfig in Points ABC	Immediate	Acts when the phases are connected with incorrect sequence	- Incorrect connection of the phases - Incorrect phases sequence
A0058 : Alarm error on EEPROM	-	Error reading non volatile data	- Failure in the EEPROM memory of CCE card
A0059 : Alarm Task Frozen	-	The time limit for HMI, EEPROM and background has been exceeded.	- Internal microcontroller problems.
F0060 : DC Contactor Opening Fault 1	Immediate	It occurs when there is a failure to open the DC contactor 1.	- Defect in the DC contactor.
F0061 : DC Contactor Closing Fault 1	Immediate	It occurs when the DC contactor 1 fails to close.	- Defect in the synchronism contactor.
F0062 : DC Contactor Opening Fault 2	Immediate	It occurs when there is a failure to open the DC contactor 2.	- Defect in the DC contactor.
F0063 : DC Contactor Closiing Fault 2	Immediate	It occurs when there is a failure to open the DC contactor 2.	- Defect in the DC contactor.
A0064 : Synchronization with the Grid was not Possible	-	It occurs when the grid measures are out of the operating range during synchronism.	- AC Switch oppened. - AC voltage measure circuit damage.
F0065 : DC Pre Charge Contactor Closing Fault	Immediate	It occurs when there is a failure to close the DC pre-charge contactor.	- Defect in the DC pre-charge contactor.
F0066 : AC Circuit Breaker Opening Fault	Immediate	Failure to open the AC circuit breaker.	- Broken wire or digital input function not defined for the return of the AC Circuit Breaker. - AC Circuit Breaker defect.
F0067 : AC Circuit Breaker Closing Fault	Immediate	Failure to close the AC circuit breaker.	- Broken wire or digital input function not defined for the return of the AC Circuit Breaker. - AC Circuit Breaker defect.
F0068 : DC pre charge fault in Book	Immediate	Add help at: 68_Falha de pré carga CC no Book	
F0069 : Fault Frozen Task	Immediate	The time limit for the control routine has been exceeded.	- Internal microcontroller problems.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0070 : Door Panel Opened	Ramp	Operates when the electrical panel door opens.	- Electrical panel door open - Bad contact in the door sensor connection
F0071 : External Fault	Immediate	Fault information sent by a component external to the inverter control.	- According to the functionality of the external component.
A0072 : SD Full	-	It happens when the SD card is full.	
A0073 : Memory Card not Found or Corrupted	-		
A0074 : Trace Store Error	-		
F0075 : UPS Short Fault	Immediate	Short-UPS Fault detected.	- Verify fault in the Short-UPS inverter.
F0076 : QDMT Fault	Immediate	It happens when have a failure in the medium voltage switchgear.	- Failure in the medium voltage switchgear - Failure in connection with the medium voltage switchgear
F0077 : Fault Grid Available Before AC Switch Closure	Immediate	It happens when have the measurement of grid voltage without closing the AC circuit breaker.	- Failure in AC circuit breaker - Wrong configuration of the converter.
F0078 : Fault Emergency Button Pressed	Immediate	It happens when the emergy button is pressed.	- Failure emergency button. - Emergency button pressed.
F0079 : PWM Watchdog Fault	Immediate	It happens when PWM is not sent.	- There may have a problem in CCE eletronic board. - There may have a problem in the processor from CCE board.
A0080 : Broken wire 4-20mA AI1	-	Occurs when the coolant pressure drops below the set alarm value.	- Water pump with insufficient pressure. - Leak in the hydraulic circuit.
F0081 : Broken wire 4-20mA AI2	Ramp	Occurs when the coolant pressure drops below the set fault value.	- Water pump with insufficient pressure. - Leak in the hydraulic circuit.
A0082 : Insulat Resi Measur Alarm	-	Surge protection detected.	- Short circuit in a String.
F0083 : Insulat Resi DI Alarm	Immediate	It acts when the measurement of the insulation resistance is below the specified value.	- Insulation resistance reading failure. - Short-circuit to earth
F0084 : Fault DI Skid Temperature	Immediate	Add help at: 84_Falha DI Temperatura Skid	
F0085 : Fan Inverter Fault	Ramp	Cooling system fan inverter failure.	- Check the fan inverter.
F0086 : Fan Overload Fault	Ramp	Overload failure in the cooling system fan.	- Broken wire or digital input function not defined for overload return. - Defect in the overload relay.
F0087 : Water Pump Inverter Fault	Ramp	Cooling system water pump inverter failure.	- Check the water pump inverter.
F0088 : Water Leak Fault	Ramp	Water leak detected.	- Poor connection of the water leak sensor. - Damaged cooling system piping.
F0089 : Cooling Water Flow Fault	Ramp	Water flow fault detected.	- Water Pump OFF.
F0090 : Fault AC Fuse	Immediate	AC Fuse Blown.	- Overcurrent. - AC Short Circuit.
F0091 : Faul DC Fuse	Immediate	DC Fuse Blown.	- Overcurrent. - DC Short Circuit.
A0092 : Alarm HVAC	-	Add help at: 92_Alarme HVAC	
F0093 : Fault Fuse Rectifier	Immediate	Fuse Blown.	- Overcurrent. - Rectifier Short Circuit.
F0094 : Fault Thermostat Rectifier	Immediate	Rectifier thermostat fault.	- High temperature.
F0095 : Fault of Bypass Feedback using Circuit Breaker	-	DC Bypass Fault.	- DC Bypass not closing. - Wrong digital input of DC bypass.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0100 : HW Overcurrent or Desat.	Immediate	HW Overcurrent or HW Deactivation	- IGBT modules shorted or deactivated.
F0101 : IMPS - Power Supply Fall	Immediate	The power supply to CC1 electronic card has been interrupted.	- Grid fault, responsible for supplying the auxiliary circuits - Fault in the 24V IMPS power supply - 220V AC fault (short UPS) responsible for power the 24V power supply of the IMPS card.
F0102 : IMPS - Source Fault +15V	Immediate	IMSP1 power supply below (+15V) the minimum limit.	- Grid Fault, responsible for power supplying the auxiliary circuits - Fault in the 24V IMPS power supply - 220V AC fault (short UPS) responsible for power the 24V power supply of the IMPS card.
F0103 : IMPS - Source Fault -15V	Immediate	The IMSP1 power supply (-15V) is below the minimum limit.	- Grid Fault, responsible for power supplying the auxiliary circuits - Fault in the 24V IMPS power supply - 220V AC fault (short UPS) responsible for power the 24V power supply of the IMPS card.
A0105 : Alarm Maximum DC difference	-	Unbalance between DC Balances.	- Batteries with great voltage differences. - Disconnection of one DC link.
F0106 :	Immediate	Unbalance between DC Balances.	- Batteries with great voltage differences. - Disconnection of one DC link.
A0110 : Phase A High Grid Current	-	It occurs when the mains current in phase A exceeds the limit stipulated in P1240.	- Damaged IGBTs or Sinusoidal Filter components.
F0111 : Phase A Grid Overcurrent	Immediate	Power Grid Overcurrent in the Phase A.	- Damaged IGBTs or Sinusoidal Filter components.
A0112 : Phase B High Grid Current	-	It occurs when the mains current in phase B exceeds the limit stipulated in P1240.	- Damaged IGBTs or Sinusoidal Filter components.
F0113 : Phase B Grid Overcurrent	Immediate	Power Grid overcurrent in the Phase B.	- Damaged IGBTs or Sinusoidal Filter components.
A0114 : Phase C High Grid Current	-	It occurs when the mains current in phase C exceeds the limit stipulated in P1240.	- Damaged IGBTs or Sinusoidal Filter components.
F0115 : Phase C Grid Overcurrent	Immediate	Power Grid overcurrent in the Phase C.	- Damaged IGBTs or Sinusoidal Filter components.
A0120 : Phase A High AVG Grid Current	-	It occurs when the mains current in phase A exceeds the limit stipulated in P1244.	- Damaged IGBTs or Sinusoidal Filter components.
F0121 : Phase A AVG Grid Overcurrent	Immediate	Power Grid AVG overcurrent in the Phase A.	- Damaged IGBTs or Sinusoidal Filter components.
A0122 : Phase B High AVG Grid Current	-	It occurs when the mains current in phase B exceeds the limit stipulated in P1244.	- Damaged IGBTs or Sinusoidal Filter components.
F0123 : Phase B AVG Grid Overcurrent	Immediate	Power Grid AVG overcurrent in the Phase B.	- Damaged IGBTs or Sinusoidal Filter components.
A0124 : Phase C High AVG Grid Current	-	It occurs when the mains current in phase C exceeds the limit stipulated in P1244.	- Damaged IGBTs or Sinusoidal Filter components.
F0125 : Phase C AVG Grid Overcurrent	Immediate	Power grid AVG overcurrent in the Phase C.	- Damaged IGBTs or Sinusoidal Filter components.
A0130 : Phase A Grid Current Unbal.	-	Power Grid Current imbalance in the phase A.	- Defect in the current measurement sensor. - Defect in internal circuits that generate pulses for IGBTs.
F0131 : Phase A Grid Current Unbal.	Immediate	Power Grid current imbalance in the Phase A.	- Imbalanced three-phase load
A0132 : Phase B Grid Current Unbal.	-	Power Grid Current imbalance in the phase B.	- Defect in the current measurement sensor. - Defect in internal circuits that generate pulses for IGBTs.
F0133 : Phase B Grid Current Unbal.	Immediate	Power Grid Current imbalance in the phase B.	- Defect in the current measurement sensor. - Defect in internal circuits that generate pulses for IGBTs.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0134 : Phase C Grid Current Unbal.	-	Power Grid Current imbalance in the phase C.	- Defect in the current measurement sensor. - Defect in internal circuits that generate pulses for IGBTs.
F0135 : Phase C Grid Current Unbal.	Immediate	Power Grid Current imbalance in the Phase C.	- imbalanced three-phase load
F0140 : Max difference between Id and Idgrid	Immediate	Maximum difference between the inverter active current and the grid active current	- Power Grid fault during operation.
F0141 : Max difference between Id and Idgrid	Immediate	Maximum difference between the inverter reactive current and the grid reactive current	- Power Grid fault during operation.
F0142 : DC1 - Max Id variation	Immediate	Maximum allowed active current variation has been reached in DC link 1.	- Power Grid fault during operation. - Current Controls Instability.
F0143 : DC1 - Max Iq variation	Immediate	Maximum allowed reactive current variation has been reached in DC Link 1.	- Power Grid fault during operation. - Current Controls Instability.
F0144 : DC2 - Max Id variation	Immediate	Maximum allowed active current variation has been reached in DC link 2.	- Power Grid fault during operation. - Current Controls Instability.
F0145 : DC2 - Max Iq variation	Immediate	Maximum allowed reactive current variation has been reached in DC Link 2.	- Power Grid fault during operation. - Current Controls Instability.
A0150 : CC1 - High RMS Neutral Current - Book 1	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 1.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0151 : CC1 - High RMS Neutral Current - Book 2	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 2.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0152 : CC1 - High RMS Neutral Current - Book 3	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 3.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0153 : CC1 - High RMS Neutral Current - Book 4	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 4.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0154 : CC1 - High RMS Neutral Current - Book 5	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 5.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0155 : CC1 - High RMS Neutral Current - Book 6	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 6.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0156 : CC1 - High RMS Neutral Current - Book 7	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 7.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0157 : CC1 - High RMS Neutral Current - Book 8	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 8.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0158 : CC1 - High RMS Neutral Current - Book 9	-	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1270 for book 9.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0160 : CC1 - High RMS Neutral Current - Book 1	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 1.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0161 : CC1 - High RMS Neutral Current - Book 2	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 2.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0162 : CC1 - High RMS Neutral Current - Book 3	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 3.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0163 : CC1 - High RMS Neutral Current - Book 4	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 4.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0164 : CC1 - High RMS Neutral Current - Book 5	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 5.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0165 : CC1 - High RMS Neutral Current - Book 6	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 6.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0166 : CC1 - High RMS Neutral Current - Book 7	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 7.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0167 : CC1 - High RMS Neutral Current - Book 8	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 8.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0168 : CC1 - High RMS Neutral Current - Book 9	Immediate	The neutral current (instantaneous sum of the currents of phases U, V and W) exceeded the limit defined in P1272 for book 9.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the books' CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0170 : Timed overcurrent fault - Book 1	Immediate	Overload detection, current is greather than defined in P1462 of book 1.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0171 : Timed overcurrent fault - Book 2	Immediate	Overload detection, current is greather than defined in P1462 of book 2.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0172 : Timed overcurrent fault - Book 3	Immediate	Overload detection, current is greather than defined in P1462 of book 3.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0173 : Timed overcurrent fault - Book 4	Immediate	Overload detection, current is greather than defined in P1462 of book 4.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0174 : Timed overcurrent fault - Book 5	Immediate	Overload detection, current is greather than defined in P1462 of book 5.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0175 : Timed overcurrent fault - Book 6	Immediate	Overload detection, current is greather than defined in P1462 of book 6.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0176 : Timed overcurrent fault - Book 7	Immediate	Overload detection, current is greather than defined in P1462 of book 7.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0177 : Timed overcurrent fault - Book 8	Immediate	Overload detection, current is greather than defined in P1462 of book 8.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0178 : Timed overcurrent fault - Book 9	Immediate	Overload detection, current is greather than defined in P1462 of book 9.	- Damaged IGBTs or Sinusoidal Filter components. - Overload in islanded moad.
F0200 : CC1 - Communication Fault - Book 1	Ramp	Communication failure with the Book 1 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0201 : CC1 - Communication Fault - Book 2	Ramp	Communication failure with the Book 2 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0202 : CC1 - Communication Fault - Book 3	Ramp	Communication failure with the Book 3 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0203 : CC1 - Communication Fault - Book 4	Ramp	Communication failure with the Book 4 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0204 : CC1 - Communication Fault - Book 5	Ramp	Communication failure with the Book 5 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0205 : CC1 - Communication Fault - Book 6	Ramp	Communication failure with the Book 6 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0206 : CC1 - Communication Fault - Book 7	Ramp	Communication failure with the Book 7 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0207 : CC1 - Communication Fault - Book 8	Ramp	Communication failure with the Book 8 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0208 : CC1 - Communication Fault - Book 9	Ramp	Communication failure with the Book 9 card.	- Bad contact on the cable. - Electrical noise in the installation.
F0210 : CC1 - Phase U IGBT Overcurrent - Book 1	Immediate	Overcurrent in IGBT of phase U of Book 1.	- IGBT modules shorted.
F0211 : CC1 - Phase U IGBT Overcurrent - Book 2	Immediate	Overcurrent in IGBT of phase U of Book 2.	- IGBT modules shorted.
F0212 : CC1 - Phase U IGBT Overcurrent - Book 3	Immediate	Overcurrent in IGBT of phase U of Book 3.	- IGBT modules shorted.
F0213 : CC1 - Phase U IGBT Overcurrent - Book 4	Immediate	Overcurrent in IGBT of phase U of Book 4.	- IGBT modules shorted.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0214 : CC1 - Phase U IGBT Overcurrent - Book 5	Immediate	Overcurrent in IGBT of phase U of Book 5.	- IGBT modules shorted.
F0215 : CC1 - Phase U IGBT Overcurrent - Book 6	Immediate	Overcurrent in IGBT of phase U of Book 6.	- IGBT modules shorted.
F0216 : CC1 - Phase U IGBT Overcurrent - Book 7	Immediate	Overcurrent in IGBT of phase U of Book 7.	- IGBT modules shorted.
F0217 : CC1 - Phase U IGBT Overcurrent - Book 8	Immediate	Overcurrent in IGBT of phase U of Book 8.	- IGBT modules shorted.
F0218 : CC1 - Phase U IGBT Overcurrent - Book 9	Immediate	Overcurrent in IGBT of phase U of Book 9.	- IGBT modules shorted.
F0220 : CC1 - Phase V IGBT Overcurrent - Book 1	Immediate	Overcurrent in IGBT of phase V of Book 1.	- IGBT modules shorted.
F0221 : CC1 - Phase V IGBT Overcurrent - Book 2	Immediate	Overcurrent in IGBT of phase V of Book 2.	- IGBT modules shorted.
F0222 : CC1 - Phase V IGBT Overcurrent - Book 3	Immediate	Overcurrent in IGBT of phase V of Book 3.	- IGBT modules shorted.
F0223 : CC1 - Phase V IGBT Overcurrent - Book 4	Immediate	Overcurrent in IGBT of phase V of Book 4.	- IGBT modules shorted.
F0224 : CC1 - Phase V IGBT Overcurrent - Book 5	Immediate	Overcurrent in IGBT of phase V of Book 5.	- IGBT modules shorted.
F0225 : CC1 - Phase V IGBT Overcurrent - Book 6	Immediate	Overcurrent in IGBT of phase V of Book 6.	- IGBT modules shorted.
F0226 : CC1 - Phase V IGBT Overcurrent - Book 7	Immediate	Overcurrent in IGBT of phase V of Book 7.	- IGBT modules shorted.
F0227 : CC1 - Phase V IGBT Overcurrent - Book 8	Immediate	Overcurrent in IGBT of phase V of Book 8.	- IGBT modules shorted.
F0228 : CC1 - Phase V IGBT Overcurrent - Book 9	Immediate	Overcurrent in IGBT of phase V of Book 9.	- IGBT modules shorted.
F0230 : CC1 - Phase W IGBT Overcurrent - Book 1	Immediate	Overcurrent in IGBT of phase W of Book 1.	- IGBT modules shorted.
F0231 : CC1 - Phase W IGBT Overcurrent - Book 2	Immediate	Overcurrent in IGBT of phase W of Book 2.	- IGBT modules shorted.
F0232 : CC1 - Phase W IGBT Overcurrent - Book 3	Immediate	Overcurrent in IGBT of phase W of Book 3.	- IGBT modules shorted.
F0233 : CC1 - Phase W IGBT Overcurrent - Book 4	Immediate	Overcurrent in IGBT of phase W of Book 4.	- IGBT modules shorted.
F0234 : CC1 - Phase W IGBT Overcurrent - Book 5	Immediate	Overcurrent in IGBT of phase W of Book 5.	- IGBT modules shorted.
F0235 : CC1 - Phase W IGBT Overcurrent - Book 6	Immediate	Overcurrent in IGBT of phase W of Book 6.	- IGBT modules shorted.
F0236 : CC1 - Phase W IGBT Overcurrent - Book 7	Immediate	Overcurrent in IGBT of phase W of Book 7.	- IGBT modules shorted.
F0237 : CC1 - Phase W IGBT Overcurrent - Book 8	Immediate	Overcurrent in IGBT of phase W of Book 8.	- IGBT modules shorted.
F0238 : CC1 - Phase W IGBT Overcurrent - Book 9	Immediate	Overcurrent in IGBT of phase W of Book 9.	- IGBT modules shorted.
F0250 : CC1 - DC Short Circuit - Book 1	Immediate	Short circuit fault in the DC bus of Book 1 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0251 : CC1 - DC Short Circuit - Book 2	Immediate	Short circuit fault in the DC bus of Book 2 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0252 : CC1 - DC Short Circuit - Book 3	Immediate	Short circuit fault in the DC bus of Book 3 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0253 : CC1 - DC Short Circuit - Book 4	Immediate	Short circuit fault in the DC bus of Book 4 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0254 : CC1 - DC Short Circuit - Book 5	Immediate	Short circuit fault in the DC bus of Book 5 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0255 : CC1 - DC Short Circuit - Book 6	Immediate	Short circuit fault in the DC bus of Book 6 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0256 : CC1 - DC Short Circuit - Book 7	Immediate	Short circuit fault in the DC bus of Book 7 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0257 : CC1 - DC Short Circuit - Book 8	Immediate	Short circuit fault in the DC bus of Book 8 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0258 : CC1 - DC Short Circuit - Book 9	Immediate	Short circuit fault in the DC bus of Book 9 identified.	- Short circuit in the power module (internal or in the power terminals - Short-circuit between the other internal components of the inverter.
F0260 : CC1 - Phase U Pulses Feedback Fault - Book 1	Immediate	Book 1 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0261 : CC1 - Phase U Pulses Feedback Fault - Book 2	Immediate	Book 2 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0262 : CC1 - Phase U Pulses Feedback Fault - Book 3	Immediate	Book 3 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0263 : CC1 - Phase U Pulses Feedback Fault - Book 4	Immediate	Book 4 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0264 : CC1 - Phase U Pulses Feedback Fault - Book 5	Immediate	Book 5 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0265 : CC1 - Phase U Pulses Feedback Fault - Book 6	Immediate	Book 6 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0266 : CC1 - Phase U Pulses Feedback Fault - Book 7	Immediate	Book 7 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0267 : CC1 - Phase U Pulses Feedback Fault - Book 8	Immediate	Book 8 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0268 : CC1 - Phase U Pulses Feedback Fault - Book 9	Immediate	Book 9 phase U pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0270 : CC1 - Phase V Pulses Feedback Fault - Book 1	Immediate	Book 1 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0271 : CC1 - Phase V Pulses Feedback Fault - Book 2	Immediate	Book 2 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0272 : CC1 - Phase V Pulses Feedback Fault - Book 3	Immediate	Book 3 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0273 : CC1 - Phase V Pulses Feedback Fault - Book 4	Immediate	Book 4 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0274 : CC1 - Phase V Pulses Feedback Fault - Book 5	Immediate	Book 5 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0275 : CC1 - Phase V Pulses Feedback Fault - Book 6	Immediate	Book 6 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0276 : CC1 - Phase V Pulses Feedback Fault - Book 7	Immediate	Book 7 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0277 : CC1 - Phase V Pulses Feedback Fault - Book 8	Immediate	Book 8 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0278 : CC1 - Phase V Pulses Feedback Fault - Book 9	Immediate	Book 9 phase V pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0280 : CC1 - Phase W Pulses Feedback Fault - Book 1	Immediate	Book 1 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0281 : CC1 - Phase W Pulses Feedback Fault - Book 2	Immediate	Book 2 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0282 : CC1 - Phase W Pulses Feedback Fault - Book 3	Immediate	Book 3 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0283 : CC1 - Phase W Pulses Feedback Fault - Book 4	Immediate	Book 4 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0284 : CC1 - Phase W Pulses Feedback Fault - Book 5	Immediate	Book 5 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0285 : CC1 - Phase W Pulses Feedback Fault - Book 6	Immediate	Book 6 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0286 : CC1 - Phase W Pulses Feedback Fault - Book 7	Immediate	Book 7 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0287 : CC1 - Phase W Pulses Feedback Fault - Book 8	Immediate	Book 8 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0288 : CC1 - Phase W Pulses Feedback Fault - Book 9	Immediate	Book 9 phase W pulse feedback failed.	- Feedback cables disconnected. - Damaged IGBT module.
F0290 : IMPS - Communication Fault with FPGA	Immediate	Occurs when the IMPS card fails to communicate with the FPGA 1.	- Electrical noise. - Defect in internal circuits.
F0300 : CC1 - Phase U Desat. Fault - Book 1	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0301 : CC1 - Phase U Desat. Fault - Book 2	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0302 : CC1 - Phase U Desat. Fault - Book 3	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0303 : CC1 - Phase U Desat. Fault - Book 4	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0304 : CC1 - Phase U Desat. Fault - Book 5	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0305 : CC1 - Phase U Desat. Fault - Book 6	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0306 : CC1 - Phase U Desat. Fault - Book 7	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0307 : CC1 - Phase U Desat. Fault - Book 8	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0308 : CC1 - Phase U Desat. Fault - Book 9	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0310 : CC1 - Phase V Desat. Fault - Book 1	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0311 : CC1 - Phase V Desat. Fault - Book 2	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0312 : CC1 - Phase V Desat. Fault - Book 3	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0313 : CC1 - Phase V Desat. Fault - Book 4	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0314 : CC1 - Phase V Desat. Fault - Book 5	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0315 : CC1 - Phase V Desat. Fault - Book 6	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0316 : CC1 - Phase V Desat. Fault - Book 7	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0317 : CC1 - Phase V Desat. Fault - Book 8	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0318 : CC1 - Phase V Desat. Fault - Book 9	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0320 : CC1 - Phase W Desat. Fault - Book 1	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0321 : CC1 - Phase W Desat. Fault - Book 2	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0322 : CC1 - Phase W Desat. Fault - Book 3	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0323 : CC1 - Phase W Desat. Fault - Book 4	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0324 : CC1 - Phase W Desat. Fault - Book 5	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0325 : CC1 - Phase W Desat. Fault - Book 6	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0326 : CC1 - Phase W Desat. Fault - Book 7	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0327 : CC1 - Phase W Desat. Fault - Book 8	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
F0328 : CC1 - Phase W Desat. Fault - Book 9	Immediate	IGBT module (s) shorted.	- IGBT module (s) shorted.
A0340 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 1	-	The current of phase U book 1 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0341 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 2	-	The current of phase U book 2 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0342 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 3	-	The current of phase U book 3 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0343 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 4	-	The current of phase U book 4 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0344 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 5	-	The current of phase U book 5 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0345 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 6	-	The current of phase U book 6 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0346 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 7	-	The current of phase U book 7 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0347 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 8	-	The current of phase U book 8 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0348 : CC1 - Phase U RMS Current Unbalanced Alarm - Book 9	-	The current of phase U book 9 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0350 : CC1 - Phase U RMS Current Unbalanced Fault - Book 1	Ramp	The current of phase U book 1 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0351 : CC1 - Phase U RMS Current Unbalanced Fault - Book 2	Ramp	The current of phase U book 2 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0352 : CC1 - Phase U RMS Current Unbalanced Fault - Book 3	Ramp	The current of phase U book 3 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0353 : CC1 - Phase U RMS Current Unbalanced Fault - Book 4	Ramp	The current of phase U book 4 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0354 : CC1 - Phase U RMS Current Unbalanced Fault - Book 5	Ramp	The current of phase U book 5 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0355 : CC1 - Phase U RMS Current Unbalanced Fault - Book 6	Ramp	The current of phase U book 6 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0356 : CC1 - Phase U RMS Current Unbalanced Fault - Book 7	Ramp	The current of phase U book 7 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0357 : CC1 - Phase U RMS Current Unbalanced Fault - Book 8	Ramp	The current of phase U book 8 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0358 : CC1 - Phase U RMS Current Unbalanced Fault - Book 9	Ramp	The current of phase U book 9 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0360 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 1	Ramp	The current of phase V book 1 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0361 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 2	-	The current of phase V book 2 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0362 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 3	-	The current of phase V book 3 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0363 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 4	-	The current of phase V book 4 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0364 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 5	-	The current of phase V book 5 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0365 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 6	-	The current of phase V book 6 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0366 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 7	-	The current of phase V book 7 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0367 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 8	-	The current of phase V book 8 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0368 : CC1 - Phase V RMS Current Unbalanced Alarm - Book 9	-	The current of phase V book 9 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0370 : CC1 - Phase V RMS Current Unbalanced Fault - Book 1	Ramp	The current of phase V book 1 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0371 : CC1 - Phase V RMS Current Unbalanced Fault - Book 2	Ramp	The current of phase V book 2 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0372 : CC1 - Phase V RMS Current Unbalanced Fault - Book 3	Ramp	The current of phase V book 3 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0373 : CC1 - Phase V RMS Current Unbalanced Fault - Book 4	Ramp	The current of phase V book 4 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0374 : CC1 - Phase V RMS Current Unbalanced Fault - Book 5	Ramp	The current of phase V book 5 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0375 : CC1 - Phase V RMS Current Unbalanced Fault - Book 6	Ramp	The current of phase V book 6 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0376 : CC1 - Phase V RMS Current Unbalanced Fault - Book 7	Ramp	The current of phase V book 7 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0377 : CC1 - Phase V RMS Current Unbalanced Fault - Book 8	Ramp	The current of phase V book 8 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0378 : CC1 - Phase V RMS Current Unbalanced Fault - Book 9	Ramp	The current of phase V book 9 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0380 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 1	-	The current of phase W book 1 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0381 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 2	-	The current of phase W book 2 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0382 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 3	-	The current of phase W book 3 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0383 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 4	-	The current of phase W book 4 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0384 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 5	-	The current of phase W book 5 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0385 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 6	-	The current of phase W book 6 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0386 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 7	-	The current of phase W book 7 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0387 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 8	-	The current of phase W book 8 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0388 : CC1 - Phase W RMS Current Unbalanced Alarm - Book 9	-	The current of phase W book 9 exceeded the percentage limit defined by P1248, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0390 : CC1 - Phase W RMS Current Unbalanced Fault - Book 1	Ramp	The current of phase W book 1 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0391 : CC1 - Phase W RMS Current Unbalanced Fault - Book 2	Ramp	The current of phase W book 2 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0392 : CC1 - Phase W RMS Current Unbalanced Fault - Book 3	Ramp	The current of phase W book 3 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0393 : CC1 - Phase W RMS Current Unbalanced Fault - Book 4	Ramp	The current of phase W book 4 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0394 : CC1 - Phase W RMS Current Unbalanced Fault - Book 5	Ramp	The current of phase W book 5 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0395 : CC1 - Phase W RMS Current Unbalanced Fault - Book 6	Ramp	The current of phase W book 6 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0396 : CC1 - Phase W RMS Current Unbalanced Fault - Book 7	Ramp	The current of phase W book 7 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0397 : CC1 - Phase W RMS Current Unbalanced Fault - Book 8	Ramp	The current of phase W book 8 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
F0398 : CC1 - Phase W RMS Current Unbalanced Fault - Book 9	Ramp	The current of phase W book 9 exceeded the percentage limit defined by P1250, in relation to the average current RMS of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. - Problem in the PWM signal circuit of the respective book on the IMPS card.
A0400 : CC1 - Phase U IGBT Temperature Alarm - Book 1	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0401 : CC1 - Phase U IGBT Temperature Alarm - Book 2	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0402 : CC1 - Phase U IGBT Temperature Alarm - Book 3	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0403 : CC1 - Phase U IGBT Temperature Alarm - Book 4	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0404 : CC1 - Phase U IGBT Temperature Alarm - Book 5	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0405 : CC1 - Phase U IGBT Temperature Alarm - Book 6	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0406 : CC1 - Phase U IGBT Temperature Alarm - Book 7	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0407 : CC1 - Phase U IGBT Temperature Alarm - Book 8	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0408 : CC1 - Phase U IGBT Temperature Alarm - Book 9	-	High temperature alarm measured on the NTC of the IGBT of phase U.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0410 : CC1 - Phase U IGBT Temperature Fault - Book 1	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0411 : CC1 - Phase U IGBT Temperature Fault - Book 2	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0412 : CC1 - Phase U IGBT Temperature Fault - Book 3	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0413 : CC1 - Phase U IGBT Temperature Fault - Book 4	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0414 : CC1 - Phase U IGBT Temperature Fault - Book 5	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0415 : CC1 - Phase U IGBT Temperature Fault - Book 6	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0416 : CC1 - Phase U IGBT Temperature Fault - Book 7	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0417 : CC1 - Phase U IGBT Temperature Fault - Book 8	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0418 : CC1 - Phase U IGBT Temperature Fault - Book 9	Ramp	High temperature fault measured on the NTC of the phase U IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0420 : CC1 - Phase V IGBT Temperature Alarm - Book 1	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0421 : CC1 - Phase V IGBT Temperature Alarm - Book 2	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0422 : CC1 - Phase V IGBT Temperature Alarm - Book 3	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0423 : CC1 - Phase V IGBT Temperature Alarm - Book 4	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0424 : CC1 - Phase V IGBT Temperature Alarm - Book 5	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0425 : CC1 - Phase V IGBT Temperature Alarm - Book 6	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0426 : CC1 - Phase V IGBT Temperature Alarm - Book 7	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0427 : CC1 - Phase V IGBT Temperature Alarm - Book 8	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0428 : CC1 - Phase V IGBT Temperature Alarm - Book 9	-	High temperature alarm measured on the NTC of the IGBT of phase V.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0430 : CC1 - Phase V IGBT Temperature Fault - Book 1	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0431 : CC1 - Phase V IGBT Temperature Fault - Book 2	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0432 : CC1 - Phase V IGBT Temperature Fault - Book 3	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0433 : CC1 - Phase V IGBT Temperature Fault - Book 4	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0434 : CC1 - Phase V IGBT Temperature Fault - Book 5	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0435 : CC1 - Phase V IGBT Temperature Fault - Book 6	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0436 : CC1 - Phase V IGBT Temperature Fault - Book 7	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0437 : CC1 - Phase V IGBT Temperature Fault - Book 8	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0438 : CC1 - Phase V IGBT Temperature Fault - Book 9	Ramp	High temperature fault measured on the NTC of the phase V IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0440 : CC1 - Phase W IGBT Temperature Alarm - Book 1	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0441 : CC1 - Phase W IGBT Temperature Alarm - Book 2	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0442 : CC1 - Phase W IGBT Temperature Alarm - Book 3	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0443 : CC1 - Phase W IGBT Temperature Alarm - Book 4	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0444 : CC1 - Phase W IGBT Temperature Alarm - Book 5	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0445 : CC1 - Phase W IGBT Temperature Alarm - Book 6	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0446 : CC1 - Phase W IGBT Temperature Alarm - Book 7	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0447 : CC1 - Phase W IGBT Temperature Alarm - Book 8	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0448 : CC1 - Phase W IGBT Temperature Alarm - Book 9	-	High temperature alarm measured on the NTC of the IGBT of phase W.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0450 : CC1 - Phase W IGBT Temperature Fault - Book 1	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0451 : CC1 - Phase W IGBT Temperature Fault - Book 2	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0452 : CC1 - Phase W IGBT Temperature Fault - Book 3	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0453 : CC1 - Phase W IGBT Temperature Fault - Book 4	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0454 : CC1 - Phase W IGBT Temperature Fault - Book 5	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0455 : CC1 - Phase W IGBT Temperature Fault - Book 6	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0456 : CC1 - Phase W IGBT Temperature Fault - Book 7	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0457 : CC1 - Phase W IGBT Temperature Fault - Book 8	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0458 : CC1 - Phase W IGBT Temperature Fault - Book 9	Ramp	High temperature fault measured on the NTC of the phase W IGBT.	- Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0460 : CC1 - Inductor Temperature Alarm - Book 1	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0461 : CC1 - Inductor Temperature Alarm - Book 2	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0462 : CC1 - Inductor Temperature Alarm - Book 3	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0463 : CC1 - Inductor Temperature Alarm - Book 4	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0464 : CC1 - Inductor Temperature Alarm - Book 5	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0465 : CC1 - Inductor Temperature Alarm - Book 6	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0466 : CC1 - Inductor Temperature Alarm - Book 7	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0467 : CC1 - Inductor Temperature Alarm - Book 8	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0468 : CC1 - Inductor Temperature Alarm - Book 9	-	High temperature alarm in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0470 : CC1 - Inductor Temperature Fault - Book 1	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0471 : CC1 - Inductor Temperature Fault - Book 2	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0472 : CC1 - Inductor Temperature Fault - Book 3	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0473 : CC1 - Inductor Temperature Fault - Book 4	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0474 : CC1 - Inductor Temperature Fault - Book 5	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0475 : CC1 - Inductor Temperature Fault - Book 6	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0476 : CC1 - Inductor Temperature Fault - Book 7	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0477 : CC1 - Inductor Temperature Fault - Book 8	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0478 : CC1 - Inductor Temperature Fault - Book 9	Ramp	High temperature Fault in inductor	- High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0480 : CC1 - CMPS Temperature Alarm - Book 1	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0481 : CC1 - CMPS Temperature Alarm - Book 2	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0482 : CC1 - CMPS Temperature Alarm - Book 3	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0483 : CC1 - CMPS Temperature Alarm - Book 4	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0484 : CC1 - CMPS Temperature Alarm - Book 5	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0485 : CC1 - CMPS Temperature Alarm - Book 6	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0486 : CC1 - CMPS Temperature Alarm - Book 7	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0487 : CC1 - CMPS Temperature Alarm - Book 8	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
A0488 : CC1 - CMPS Temperature Alarm - Book 9	-	High temperature alarm in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0490 : CC1 - CMPS Temperature Fault - Book 1	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0491 : CC1 - CMPS Temperature Fault - Book 2	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0492 : CC1 - CMPS Temperature Fault - Book 3	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0493 : CC1 - CMPS Temperature Fault - Book 4	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0494 : CC1 - CMPS Temperature Fault - Book 5	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0495 : CC1 - CMPS Temperature Fault - Book 6	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0496 : CC1 - CMPS Temperature Fault - Book 7	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0497 : CC1 - CMPS Temperature Fault - Book 8	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0498 : CC1 - CMPS Temperature Fault - Book 9	Ramp	High temperature fault in electronic board CMPS of power module.	- Short circuit in component of electronic board CMPS. - Book heatsink fins very dirty, impairing the air flow in these. - High ambient temperature (> 45 °C) and high output current. Fan blocked or defective.
F0500 : CC1 - AC Open Fault - Book 1	Immediate	Failed to open the AC Book 1 contactor.	- Defect in AC Contactor.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0501 : CC1 - AC Open Fault - Book 2	Immediate	Failed to open the AC Book 2 contactor.	- Defect in AC Contactor.
F0502 : CC1 - AC Open Fault - Book 3	Immediate	Failed to open the AC Book 3 contactor.	- Defect in AC Contactor.
F0503 : CC1 - AC Open Fault - Book 4	Immediate	Failed to open the AC Book 4 contactor.	- Defect in AC Contactor.
F0504 : CC1 - AC Open Fault - Book 5	Immediate	Failed to open the AC Book 5 contactor.	- Defect in AC Contactor.
F0505 : CC1 - AC Open Fault - Book 6	Immediate	Failed to open the AC Book 6 contactor.	- Defect in AC Contactor.
F0506 : CC1 - AC Open Fault - Book 7	Immediate	Failed to open the AC Book 7 contactor.	- Defect in AC Contactor.
F0507 : CC1 - AC Open Fault - Book 8	Immediate	Failed to open the AC Book 8 contactor.	- Defect in AC Contactor.
F0508 : CC1 - AC Open Fault - Book 9	Immediate	Failed to open the AC Book 9 contactor.	- Defect in AC Contactor.
F0510 : CC1 - AC Close Fault - Book 1	Immediate	Failure to close the AC Book 1 contactor.	- Defect in AC Contactor.
F0511 : CC1 - AC Close Fault - Book 2	Immediate	Failure to close the AC Book 2 contactor.	- Defect in AC Contactor.
F0512 : CC1 - AC Close Fault - Book 3	Immediate	Failure to close the AC Book 3 contactor.	- Defect in AC Contactor.
F0513 : CC1 - AC Close Fault - Book 4	Immediate	Failure to close the AC Book 4 contactor.	- Defect in AC Contactor.
F0514 : CC1 - AC Close Fault - Book 5	Immediate	Failure to close the AC Book 5 contactor.	- Defect in AC Contactor.
F0515 : CC1 - AC Close Fault - Book 6	Immediate	Failure to close the AC Book 6 contactor.	- Defect in AC Contactor.
F0516 : CC1 - AC Close Fault - Book 7	Immediate	Failure to close the AC Book 7 contactor.	- Defect in AC Contactor.
F0517 : CC1 - AC Close Fault - Book 8	Immediate	Failure to close the AC Book 8 contactor.	- Defect in AC Contactor.
F0518 : CC1 - AC Close Fault - Book 9	Immediate	Failure to close the AC Book 9 contactor.	- Defect in AC Contactor.
F0520 : CC1 - Pre Charge Open Fault - Book 1	Immediate	Book 1 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0521 : CC1 - Pre Charge Open Fault - Book 2	Immediate	Book 2 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0522 : CC1 - Pre Charge Open Fault - Book 3	Immediate	Book 3 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0523 : CC1 - Pre Charge Open Fault - Book 4	Immediate	Book 4 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0524 : CC1 - Pre Charge Open Fault - Book 5	Immediate	Book 5 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0525 : CC1 - Pre Charge Open Fault - Book 6	Immediate	Book 6 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0526 : CC1 - Pre Charge Open Fault - Book 7	Immediate	Book 7 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0527 : CC1 - Pre Charge Open Fault - Book 8	Immediate	Book 8 pre-charge contactor failed to open.	- Pre-charge contactor defect.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0528 : CC1 - Pre Charge Open Fault - Book 9	Immediate	Book 9 pre-charge contactor failed to open.	- Pre-charge contactor defect.
F0530 : CC1 - Pre Charge Close Fault - Book 1	Immediate	Failure to close the Book 1 pre-charge contactor.	- Pre-charge contactor defect.
F0531 : CC1 - Pre Charge Close Fault - Book 2	Immediate	Failure to close the Book 2 pre-charge contactor.	- Pre-charge contactor defect.
F0532 : CC1 - Pre Charge Close Fault - Book 3	Immediate	Failure to close the Book 3 pre-charge contactor.	- Pre-charge contactor defect.
F0533 : CC1 - Pre Charge Close Fault - Book 4	Immediate	Failure to close the Book 4 pre-charge contactor.	- Pre-charge contactor defect.
F0534 : CC1 - Pre Charge Close Fault - Book 5	Immediate	Failure to close the Book 5 pre-charge contactor.	- Pre-charge contactor defect.
F0535 : CC1 - Pre Charge Close Fault - Book 6	Immediate	Failure to close the Book 6 pre-charge contactor.	- Pre-charge contactor defect.
F0536 : CC1 - Pre Charge Close Fault - Book 7	Immediate	Failure to close the Book 7 pre-charge contactor.	- Pre-charge contactor defect.
F0537 : CC1 - Pre Charge Close Fault - Book 8	Immediate	Failure to close the Book 8 pre-charge contactor.	- Pre-charge contactor defect.
F0538 : CC1 - Pre Charge Close Fault - Book 9	Immediate	Failure to close the Book 9 pre-charge contactor.	- Pre-charge contactor defect.
A0540 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 1	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0541 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 2	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0542 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 3	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0543 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 4	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0544 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 5	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0545 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 6	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0546 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 7	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0547 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 8	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0548 : CC1 - Phase U AVG Current Unbalanced Alarm - Book 9	-	The current of phase U exceeded the percentage limit defined by P1236, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0550 : CC1 - Phase U AVG Current Unbalanced Fault - Book 1	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0551 : CC1 - Phase U AVG Current Unbalanced Fault - Book 2	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0552 : CC1 - Phase U AVG Current Unbalanced Fault - Book 3	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0553 : CC1 - Phase U AVG Current Unbalanced Fault - Book 4	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0554 : CC1 - Phase U AVG Current Unbalanced Fault - Book 5	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0555 : CC1 - Phase U AVG Current Unbalanced Fault - Book 6	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0556 : CC1 - Phase U AVG Current Unbalanced Fault - Book 7	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0557 : CC1 - Phase U AVG Current Unbalanced Fault - Book 8	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0558 : CC1 - Phase U AVG Current Unbalanced Fault - Book 9	Immediate	The current of phase U exceeded the percentage limit defined by P1238, in relation to the average current of phase U of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0560 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 1	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0561 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 2	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0562 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 3	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0563 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 4	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0564 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 5	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0565 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 6	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0566 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 7	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0567 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 8	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0568 : CC1 - Phase V AVG Current Unbalanced Alarm - Book 9	-	The current of phase V exceeded the percentage limit defined by P1236, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0570 : CC1 - Phase V AVG Current Unbalanced Fault - Book 1	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0571 : CC1 - Phase V AVG Current Unbalanced Fault - Book 2	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0572 : CC1 - Phase V AVG Current Unbalanced Fault - Book 3	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0573 : CC1 - Phase V AVG Current Unbalanced Fault - Book 4	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0574 : CC1 - Phase V AVG Current Unbalanced Fault - Book 5	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0575 : CC1 - Phase V AVG Current Unbalanced Fault - Book 6	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0576 : CC1 - Phase V AVG Current Unbalanced Fault - Book 7	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0577 : CC1 - Phase V AVG Current Unbalanced Fault - Book 8	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0578 : CC1 - Phase V AVG Current Unbalanced Fault - Book 9	Immediate	The current of phase V exceeded the percentage limit defined by P1238, in relation to the average current of phase V of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0580 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 1	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0581 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 2	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0582 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 3	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
A0583 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 4	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0584 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 5	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0585 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 6	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0586 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 7	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0587 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 8	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0588 : CC1 - Phase W AVG Current Unbalanced Alarm - Book 9	-	The current of phase W exceeded the percentage limit defined by P1236, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0590 : CC1 - Phase W AVG Current Unbalanced Fault - Book 1	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0591 : CC1 - Phase W AVG Current Unbalanced Fault - Book 2	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0592 : CC1 - Phase W AVG Current Unbalanced Fault - Book 3	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0593 : CC1 - Phase W AVG Current Unbalanced Fault - Book 4	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0594 : CC1 - Phase W AVG Current Unbalanced Fault - Book 5	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F0595 : CC1 - Phase W AVG Current Unbalanced Fault - Book 6	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0596 : CC1 - Phase W AVG Current Unbalanced Fault - Book 7	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0597 : CC1 - Phase W AVG Current Unbalanced Fault - Book 8	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
F0598 : CC1 - Phase W AVG Current Unbalanced Fault - Book 9	Immediate	The current of phase W exceeded the percentage limit defined by P1238, in relation to the average current of phase W of all books in operation.	- Variation in impedance between the phases of the harmonic filter internal inductor. - Problem with the ribbon cable that interconnects the book's CMPS card with the IMPS card. Problem in the PWM signal circuit of the respective book on the IMPS card.
A0600 : High Water Pump Pressure	-	High water pressure in the cooling system.	- Water pressure measurement failure. - Excess of water and pressure in the system.
F0601 : Very High Water Pressure	Ramp	High water pressure in the cooling system.	- Water pressure measurement failure. - Excess of water and pressure in the system.
A0602 : Low Water Pressure	-	Low water pressure in the cooling system.	- Water pressure measurement failure. - Little water and pressure in the system.
F0603 : Very Low Water Pressure	Ramp	Extremely low water pressure in the cooling system.	- Water pressure measurement failure.
A0604 : High Water Pressure	-	High water pressure in the cooling system.	- Water pressure measurement failure. - Excess of water and pressure in the system.
F0605 : Very High Water Flow	Ramp	High water flow in the cooling system.	- Water flow measurement failure. - Excess of water and pressure in the system.
A0606 : High Water Flow	-	High water flow in the cooling system.	- Water flow measurement failure. - Excess of water and pressure in the system.
F0607 : Very Low Water Flow	Ramp	Low water flow in the cooling system.	- Water flow measurement failure. - Low water and pressure in the system.
A0608 : Low Water Flow	-	Low water flow in the cooling system.	- Water flow measurement failure. - Low water and pressure in the system.
F1000 : CC1 - HW Overcurrent - Book 1	Immediate	It has occurred overcurrent in Book 1, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1001 : CC1 - HW Overcurrent - Book 2	Immediate	It has occurred overcurrent in Book 2, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1002 : CC1 - HW Overcurrent - Book 3	Immediate	It has occurred overcurrent in Book 3, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1003 : CC1 - HW Overcurrent - Book 4	Immediate	It has occurred overcurrent in Book 4, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1004 : CC1 - HW Overcurrent - Book 5	Immediate	It has occurred overcurrent in Book 5, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1005 : CC1 - HW Overcurrent - Book 6	Immediate	It has occurred overcurrent in Book 6, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1006 : CC1 - HW Overcurrent - Book 7	Immediate	It has occurred overcurrent in Book 7, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1007 : CC1 - HW Overcurrent - Book 8	Immediate	It has occurred overcurrent in Book 8, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1008 : CC1 - HW Overcurrent - Book 9	Immediate	It has occurred overcurrent in Book 9, specified in P1460.	- Oscillations in electrical grid - Failure in the measurement of the current.
F1020 : Non Compatible CCE FPGA Firmware	Immediate	It happens when the firmware from MCU is not compatible with FPGA da CCE.	- Wrong program of CCE board.
F1021 : Non Compatible IMPS FPGA Firmware	Immediate	It happens when the firmware from MCU is not compatible with FPGA da IMPS.	- Wrong program of CCE board. - Wrong program of IMPS board.
F1022 : Non Compatible CMPS FPGA Firmware	Immediate	It happens when the firmware from MCU is not compatible with FPGA da CMPS.	- Wrong program of CCE board. - Wrong program of CMPS board.
A1070 : IMPS - Temperature Board Alarm	-	The temperature of the CC1 card exceeded the limit defined in P1224.	- High ambient temperature. - Heat excess in the control stand.
F1072 : IMPS - Temperature Board Fault	Ramp	The temperature of the CC1 card exceeded the limit defined in P1226.	- High ambient temperature. - Heat excess in the control stand.
A1204 : Filter test not allowed	-	It happens when the output filter test was not succesful.	- Not enabled when islanding, according to P7985. - Fault in opening DC switching. - Fault in closing DC pre charge.
A1205 : Alarm of AC Filter test	-	It happens when the test indicates that output filter may be damaged.	- There may be a problem in the resistor of output filter. - Wrong configuration of output filter test.
F1206 : Fault of AC Filter test	Immediate	It happens when the test indicates that output filter may be damaged.	- There may be a problem in the resistor of output filter. - Wrong configuration of output filter test.
F1230 : CC1 - Overcurrent Fase U - Book 1	Immediate	Book 1 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1231 : CC1 - Overcurrent Fase U - Book 2	Immediate	Book 2 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1232 : CC1 - Overcurrent Fase U - Book 3	Immediate	Book 3 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1233 : CC1 - Overcurrent Fase U - Book 4	Immediate	Book 4 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1234 : CC1 - Overcurrent Fase U - Book 5	Immediate	Book 5 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1235 : CC1 - Overcurrent Fase U - Book 6	Immediate	Book 6 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1236 : CC1 - Overcurrent Fase U - Book 7	Immediate	Book 7 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1237 : CC1 - Overcurrent Fase U - Book 8	Immediate	Book 8 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1238 : CC1 - Overcurrent Fase U - Book 9	Immediate	Book 9 U arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1240 : CC1 - Overcurrent Fase V - Book 1	Immediate	Book 1 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1241 : CC1 - Overcurrent Fase V - Book 2	Immediate	Book 2 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1242 : CC1 - Overcurrent Fase V - Book 3	Immediate	Book 3 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1243 : CC1 - Overcurrent Fase V - Book 4	Immediate	Book 4 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1244 : CC1 - Overcurrent Fase V - Book 5	Immediate	Book 5 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1245 : CC1 - Overcurrent Fase V - Book 6	Immediate	Book 6 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1246 : CC1 - Overcurrent Fase V - Book 7	Immediate	Book 7 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1247 : CC1 - Overcurrent Fase V - Book 8	Immediate	Book 8 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1248 : CC1 - Overcurrent Fase V - Book 9	Immediate	Book 9 V arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1250 : CC1 - Overcurrent Fase W - Book 1	Immediate	Book 1 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1251 : CC1 - Overcurrent Fase W - Book 2	Immediate	Book 2 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1252 : CC1 - Overcurrent Fase W - Book 3	Immediate	Book 3 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1253 : CC1 - Overcurrent Fase W - Book 4	Immediate	Book 4 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1254 : CC1 - Overcurrent Fase W - Book 5	Immediate	Book 5 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1255 : CC1 - Overcurrent Fase W - Book 6	Immediate	Book 6 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1256 : CC1 - Overcurrent Fase W - Book 7	Immediate	Book 7 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1257 : CC1 - Overcurrent Fase W - Book 8	Immediate	Book 8 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1258 : CC1 - Overcurrent Fase W - Book 9	Immediate	Book 9 W arm overcurrent failure.	- Oscillations in electrical grid - Short circuit between the phases at the output. - Failure in the measurement of the current.
F1260 : CC1 - Fault WatchDog PWM - Book 1	Immediate	PWM communication data have not been sent to the CMPS card of Book 1 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1261 : CC1 - Fault WatchDog PWM - Book 2	Immediate	PWM communication data have not been sent to the CMPS card of Book 2 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1262 : CC1 - Fault WatchDog PWM - Book 3	Immediate	PWM communication data have not been sent to the CMPS card of Book 3 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1263 : CC1 - Fault WatchDog PWM - Book 4	Immediate	PWM communication data have not been sent to the CMPS card of Book 4 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1264 : CC1 - Fault WatchDog PWM - Book 5	Immediate	PWM communication data have not been sent to the CMPS card of Book 5 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1265 : CC1 - Fault WatchDog PWM - Book 6	Immediate	PWM communication data have not been sent to the CMPS card of Book 6 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1266 : CC1 - Fault WatchDog PWM - Book 7	Immediate	PWM communication data have not been sent to the CMPS card of Book 7 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1267 : CC1 - Fault WatchDog PWM - Book 8	Immediate	PWM communication data have not been sent to the CMPS card of Book 8 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1268 : CC1 - Fault WatchDog PWM - Book 9	Immediate	PWM communication data have not been sent to the CMPS card of Book 9 within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1270 : CC1 - Fault feedback DO1 - Book 1	Immediate	DO1 of Book 1 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1271 : CC1 - Fault feedback DO1 - Book 2	Immediate	DO1 of Book 2 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1272 : CC1 - Fault feedback DO1 - Book 3	Immediate	DO1 of Book 3 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1273 : CC1 - Fault feedback DO1 - Book 4	Immediate	DO1 of Book 4 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1274 : CC1 - Fault feedback DO1 - Book 5	Immediate	DO1 of Book 6 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1275 : CC1 - Fault feedback DO1 - Book 6	Immediate	DO1 of Book 6 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1276 : CC1 - Fault feedback DO1 - Book 7	Immediate	DO1 of Book 7 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1277 : CC1 - Fault feedback DO1 - Book 8	Immediate	DO1 of Book 8 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1278 : CC1 - Fault feedback DO1 - Book 9	Immediate	DO1 of Book 9 failed.	- DO1 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1280 : CC1 - Fault feedback DO2 - Book 1	Immediate	DO2 of Book 1 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1281 : CC1 - Fault feedback DO2 - Book 2	Immediate	DO2 of Book 2 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1282 : CC1 - Fault feedback DO2 - Book 3	Immediate	DO2 of Book 3 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1283 : CC1 - Fault feedback DO2 - Book 4	Immediate	DO2 of Book 4 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1284 : CC1 - Fault feedback DO2 - Book 5	Immediate	DO2 of Book 5 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1285 : CC1 - Fault feedback DO2 - Book 6	Immediate	DO2 of Book 6 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1286 : CC1 - Fault feedback DO2 - Book 7	Immediate	DO2 of Book 7 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1287 : CC1 - Fault feedback DO2 - Book 8	Immediate	DO2 of Book 8 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1288 : CC1 - Fault feedback DO2 - Book 9	Immediate	DO2 of Book 9 failed.	- Feedback of DO2 not connected. - CCE-CMPS connection problems. - CCE-CMPS communication problem.
F1300 : IMPS - Timeout control data	Immediate	Control data (DC voltage and currents) have not reached the CCE card within the time limit.	- CCE-CMPS connection problems in the books. - CCE-CMPS communication problems in the books.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1301 : Timeout control data - Book 1	Immediate	Control data (DC voltage and currents) of Book 1 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1302 : Timeout control data - Book 2	Immediate	Control data (DC voltage and currents) of Book 2 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1303 : Timeout control data - Book 3	Immediate	Control data (DC voltage and currents) of Book 3 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1304 : Timeout control data - Book 4	Immediate	Control data (DC voltage and currents) of Book 4 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1305 : Timeout control data - Book 5	Immediate	Control data (DC voltage and currents) of Book 5 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1306 : Timeout control data - Book 6	Immediate	Control data (DC voltage and currents) of Book 6 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1307 : Timeout control data - Book 7	Immediate	Control data (DC voltage and currents) of Book 7 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1308 : Timeout control data - Book 8	Immediate	Control data (DC voltage and currents) of Book 8 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1309 : Timeout control data - Book 9	Immediate	Control data (DC voltage and currents) of Book 9 have not reached the CCE card within the time limit.	- CCE-CMPS connection problems. - CCE-CMPS communication noise.
F1310 : IMPS - Power off Fault	Immediate	Supply of IMPS fell below 22V.	- Voltage drop or fluctuation in the supply of IMPS.
F1311 : CC1 - Power off Fault - Book 1	Immediate	Supply of the CMPS card of Book 1 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1312 : CC1 - Power off Fault - Book 2	Immediate	Supply of the CMPS card of Book 2 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1313 : CC1 - Power off Fault - Book 3	Immediate	Supply of the CMPS card of Book 3 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1314 : CC1 - Power off Fault - Book 4	Immediate	Supply of the CMPS card of Book 4 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1315 : CC1 - Power off Fault - Book 5	Immediate	Supply of the CMPS card of Book 5 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1316 : CC1 - Power off Fault - Book 6	Immediate	Supply of the CMPS card of Book 6 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1317 : CC1 - Power off Fault - Book 7	Immediate	Supply of the CMPS card of Book 7 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1318 : CC1 - Power off Fault - Book 8	Immediate	Supply of the CMPS card of Book 8 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1319 : CC1 - Power off Fault - Book 9	Immediate	Supply of the CMPS card of Book 9 fell below 22V.	- Voltage drop or fluctuation in the supply of the CMPS card.
F1320 : IMPS- CRC Error	Immediate	CCE-IMPS communication error.	- CCE-IMPS communication noise. - CCE-IMPS coonection problems.
F1321 : CC1- CRC Error - Book 1	Immediate	CCE-CMPS Book 1 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1322 : CC1- CRC Error - Book 2	Immediate	CCE-CMPS Book 2 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1323 : CC1- CRC Error - Book 3	Immediate	CCE-CMPS Book 3 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1324 : CC1- CRC Error - Book 4	Immediate	CCE-CMPS Book 4 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1325 : CC1- CRC Error - Book 5	Immediate	CCE-CMPS Book 5 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1326 : CC1- CRC Error - Book 6	Immediate	CCE-CMPS Book 6 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1327 : CC1- CRC Error - Book 7	Immediate	CCE-CMPS Book 7 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1328 : CC1- CRC Error - Book 8	Immediate	CCE-CMPS Book 8 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1329 : CC1- CRC Error - Book 9	Immediate	CCE-CMPS Book 9 communication error.	- CCE-CMPS communication noise. - CCE-CMPS coonection problems.
F1330 : IMPS - Sychronism Loss	Immediate	Lost synchronism with the command signals in IMPS.	- CCE-IMPS connection problems.
F1331 : CC1- Sychronism Loss - Book 1	Immediate	Lost synchronism with the command signals in the CMPS card of Book 1.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1332 : CC1- Sychronism Loss - Book 2	Immediate	Lost synchronism with the command signals in the CMPS card of Book 2.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1333 : CC1- Sychronism Loss - Book 3	Immediate	Lost synchronism with the command signals in the CMPS card of Book 3.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1334 : CC1- Sychronism Loss - Book 4	Immediate	Lost synchronism with the command signals in the CMPS card of Book 4.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1335 : CC1- Sychronism Loss - Book 5	Immediate	Lost synchronism with the command signals in the CMPS card of Book 5.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1336 : CC1- Sychronism Loss - Book 6	Immediate	Lost synchronism with the command signals in the CMPS card of Book 6.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1337 : CC1- Sychronism Loss - Book 7	Immediate	Lost synchronism with the command signals in the CMPS card of Book 7.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1338 : CC1- Sychronism Loss - Book 8	Immediate	Lost synchronism with the command signals in the CMPS card of Book 8.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1339 : CC1- Sychronism Loss - Book 9	Immediate	Lost synchronism with the command signals in the CMPS card of Book 9.	- CCE-IMPS connection problems. - CCE-CMPS connection problems.
F1340 : IMPS - Timeout fault of AD1	Immediate	The AD1 conversion of IMPS exceeded the time limit.	- Problem in the AD1 of IMPS.
F1341 : Timeout fault of AD1 - Book 1	Immediate	The AD conversion of the CMPS card of Book 1 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1342 : Timeout fault of AD1 - Book 2	Immediate	The AD conversion of the CMPS card of Book 2 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1343 : Timeout fault of AD1 - Book 3	Immediate	The AD conversion of the CMPS card of Book 3 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1344 : Timeout fault of AD1 - Book 4	Immediate	The AD conversion of the CMPS card of Book 4 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1345 : Timeout fault of AD1 - Book 5	Immediate	The AD conversion of the CMPS card of Book 5 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1346 : Timeout fault of AD1 - Book 6	Immediate	The AD conversion of the CMPS card of Book 6 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1347 : Timeout fault of AD1 - Book 7	Immediate	The AD conversion of the CMPS card of Book 7 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1348 : Timeout fault of AD1 - Book 8	Immediate	The AD conversion of the CMPS card of Book 8 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1349 : Timeout fault of AD1 - Book 9	Immediate	The AD conversion of the CMPS card of Book 9 exceeded the time limit.	- Problem in the AD of the CMPS card.
F1350 : IMPS - Timeout fault of AD2	Immediate	The AD2 conversion of IMPS exceeded the time limit.	- Problem in the AD2 of IMPS.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1351 : CC1 - Feedback fault PWM U+ Book 1	Immediate	Command signals of S1 and S2 IGBTs of Book 1 phase U have not been read in the feedback.	- Connector of phase U of Book 1 not connected.
F1352 : CC1 - Feedback fault PWM U+ Book 2	Immediate	Command signals of S1 and S2 IGBTs of Book 2 phase U have not been read in the feedback.	- Connector of phase U of Book 2 not connected.
F1353 : CC1 - Feedback fault PWM U+ Book 3	Immediate	Command signals of S1 and S2 IGBTs of Book 3 phase U have not been read in the feedback.	- Connector of phase U of Book 3 not connected.
F1354 : CC1 - Feedback fault PWM U+ Book 4	Immediate	Command signals of S1 and S2 IGBTs of Book 4 phase U have not been read in the feedback.	- Connector of phase U of Book 4 not connected.
F1355 : CC1 - Feedback fault PWM U+ Book 5	Immediate	Command signals of S1 and S2 IGBTs of Book 5 phase U have not been read in the feedback.	- Connector of phase U of Book 5 not connected.
F1356 : CC1 - Feedback fault PWM U+ Book 6	Immediate	Command signals of S1 and S2 IGBTs of Book 6 phase U have not been read in the feedback.	- Connector of phase U of Book 6 not connected.
F1357 : CC1 - Feedback fault PWM U+ Book 7	Immediate	Command signals of S1 and S2 IGBTs of Book 7 phase U have not been read in the feedback.	- Connector of phase U of Book 7 not connected.
F1358 : CC1 - Feedback fault PWM U+ Book 8	Immediate	Command signals of S1 and S2 IGBTs of Book 8 phase U have not been read in the feedback.	- Connector of phase U of Book 8 not connected.
F1359 : CC1 - Feedback fault PWM U+ Book 9	Immediate	Command signals of S1 and S2 IGBTs of Book 9 phase U have not been read in the feedback.	- Connector of phase U of Book 9 not connected.
F1360 : CC1 - Feedback fault PWM U- Book 1	Immediate	Command signals of S1 and S2 IGBTs of Book 1 phase U have not been read in the feedback.	- Connector of phase U of Book 1 not connected.
F1361 : CC1 - Feedback fault PWM U- Book 2	Immediate	Command signals of S1 and S2 IGBTs of Book 2 phase U have not been read in the feedback.	- Connector of phase U of Book 2 not connected.
F1362 : CC1 - Feedback fault PWM U- Book 3	Immediate	Command signals of S1 and S2 IGBTs of Book 3 phase U have not been read in the feedback.	- Connector of phase U of Book 3 not connected.
F1363 : CC1 - Feedback fault PWM U- Book 4	Immediate	Command signals of S1 and S2 IGBTs of Book 4 phase U have not been read in the feedback.	- Connector of phase U of Book 4 not connected.
F1364 : CC1 - Feedback fault PWM U- Book 5	Immediate	Command signals of S1 and S2 IGBTs of Book 5 phase U have not been read in the feedback.	- Connector of phase U of Book 5 not connected.
F1365 : CC1 - Feedback fault PWM U- Book 6	Immediate	Command signals of S1 and S2 IGBTs of Book 6 phase U have not been read in the feedback.	- Connector of phase U of Book 6 not connected.
F1366 : CC1 - Feedback fault PWM U- Book 7	Immediate	Command signals of S1 and S2 IGBTs of Book 7 phase U have not been read in the feedback.	- Connector of phase U of Book 7 not connected.
F1367 : CC1 - Feedback fault PWM U- Book 8	Immediate	Command signals of S1 and S2 IGBTs of Book 8 phase U have not been read in the feedback.	- Connector of phase U of Book 8 not connected.
F1368 : CC1 - Feedback fault PWM U- Book 9	Immediate	Command signals of S1 and S2 IGBTs of Book 9 phase U have not been read in the feedback.	- Connector of phase U of Book 9 not connected.
F1369 : CC1 - Feedback fault PWM V+ Book 1	Immediate	Command signals of S1 and S2 IGBTs of Book 1 phase V have not been read in the feedback.	- Connector of phase V of Book 1 not connected.
F1370 : CC1 - Feedback fault PWM V+ Book 2	Immediate	Command signals of S1 and S2 IGBTs of Book 2 phase V have not been read in the feedback.	- Connector of phase V of Book 2 not connected.
F1371 : CC1 - Feedback fault PWM V+ Book 3	Immediate	Command signals of S1 and S2 IGBTs of Book 3 phase V have not been read in the feedback.	- Connector of phase V of Book 3 not connected.
F1372 : CC1 - Feedback fault PWM V+ Book 4	Immediate	Command signals of S1 and S2 IGBTs of Book 4 phase V have not been read in the feedback.	- Connector of phase V of Book 4 not connected.
F1373 : CC1 - Feedback fault PWM V+ Book 5	Immediate	Command signals of S1 and S2 IGBTs of Book 5 phase V have not been read in the feedback.	- Connector of phase V of Book 5 not connected.
F1374 : CC1 - Feedback fault PWM V+ Book 6	Immediate	Command signals of S1 and S2 IGBTs of Book 6 phase V have not been read in the feedback.	- Connector of phase V of Book 6 not connected.
F1375 : CC1 - Feedback fault PWM V+ Book 7	Immediate	Command signals of S1 and S2 IGBTs of Book 7 phase V have not been read in the feedback.	- Connector of phase V of Book 7 not connected.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1376 : CC1 - Feedback fault PWM V+ Book 8	Immediate	Command signals of S1 and S2 IGBTs of Book 8 phase V have not been read in the feedback.	- Connector of phase V of Book 8 not connected.
F1377 : CC1 - Feedback fault PWM V+ Book 9	Immediate	Command signals of S1 and S2 IGBTs of Book 9 phase V have not been read in the feedback.	- Connector of phase V of Book 9 not connected.
F1378 : CC1 - Feedback fault PWM V- Book 1	Immediate	Command signals of S3 and S4 IGBTs of Book 1 phase V have not been read in the feedback.	- Connector of phase V of Book 1 not connected.
F1379 : CC1 - Feedback fault PWM V- Book 2	Immediate	Command signals of S3 and S4 IGBTs of Book 2 phase V have not been read in the feedback.	- Connector of phase V of Book 2 not connected.
F1380 : CC1 - Feedback fault PWM V- Book 3	Immediate	Command signals of S3 and S4 IGBTs of Book 3 phase V have not been read in the feedback.	- Connector of phase V of Book 3 not connected.
F1381 : CC1 - Feedback fault PWM V- Book 4	Immediate	Command signals of S3 and S4 IGBTs of Book 4 phase V have not been read in the feedback.	- Connector of phase V of Book 4 not connected.
F1382 : CC1 - Feedback fault PWM V- Book 5	Immediate	Command signals of S3 and S4 IGBTs of Book 5 phase V have not been read in the feedback.	- Connector of phase V of Book 5 not connected.
F1383 : CC1 - Feedback fault PWM V- Book 6	Immediate	Command signals of S3 and S4 IGBTs of Book 6 phase V have not been read in the feedback.	- Connector of phase V of Book 6 not connected.
F1384 : CC1 - Feedback fault PWM V- Book 7	Immediate	Command signals of S3 and S4 IGBTs of Book 7 phase V have not been read in the feedback.	- Connector of phase V of Book 7 not connected.
F1385 : CC1 - Feedback fault PWM V- Book 8	Immediate	Command signals of S3 and S4 IGBTs of Book 8 phase V have not been read in the feedback.	- Connector of phase V of Book 8 not connected.
F1386 : CC1 - Feedback fault PWM V- Book 9	Immediate	Command signals of S3 and S4 IGBTs of Book 9 phase V have not been read in the feedback.	- Connector of phase V of Book 9 not connected.
F1387 : CC1 - Feedback fault PWM W+ Book 1	Immediate	Command signals of S1 and S2 IGBTs of Book 1 phase W have not been read in the feedback.	- Connector of phase W of Book 1 not connected.
F1388 : CC1 - Feedback fault PWM W+ Book 2	Immediate	Command signals of S1 and S2 IGBTs of Book 2 phase W have not been read in the feedback.	- Connector of phase W of Book 2 not connected.
F1389 : CC1 - Feedback fault PWM W+ Book 3	Immediate	Command signals of S1 and S2 IGBTs of Book 3 phase W have not been read in the feedback.	- Connector of phase W of Book 3 not connected.
F1390 : CC1 - Feedback fault PWM W+ Book 4	Immediate	Command signals of S1 and S2 IGBTs of Book 4 phase W have not been read in the feedback.	- Connector of phase W of Book 4 not connected.
F1391 : CC1 - Feedback fault PWM W+ Book 5	Immediate	Command signals of S1 and S2 IGBTs of Book 5 phase W have not been read in the feedback.	- Connector of phase W of Book 5 not connected.
F1392 : CC1 - Feedback fault PWM W+ Book 6	Immediate	Command signals of S1 and S2 IGBTs of Book 6 phase W have not been read in the feedback.	- Connector of phase W of Book 6 not connected.
F1393 : CC1 - Feedback fault PWM W+ Book 7	Immediate	Command signals of S1 and S2 IGBTs of Book 7 phase W have not been read in the feedback.	- Connector of phase W of Book 7 not connected.
F1394 : CC1 - Feedback fault PWM W+ Book 8	Immediate	Command signals of S1 and S2 IGBTs of Book 8 phase W have not been read in the feedback.	- Connector of phase W of Book 8 not connected.
F1395 : CC1 - Feedback fault PWM W+ Book 9	Immediate	Command signals of S1 and S2 IGBTs of Book 9 phase W have not been read in the feedback.	- Connector of phase W of Book 9 not connected.
F1396 : CC1 - Feedback fault PWM W- Book 1	Immediate	Command signals of S3 and S4 IGBTs of Book 1 phase W have not been read in the feedback.	- Connector of phase W of Book 1 not connected.
F1397 : CC1 - Feedback fault PWM W- Book 2	Immediate	Command signals of S3 and S4 IGBTs of Book 2 phase W have not been read in the feedback.	- Connector of phase W of Book 2 not connected.
F1398 : CC1 - Feedback fault PWM W- Book 3	Immediate	Command signals of S3 and S4 IGBTs of Book 3 phase W have not been read in the feedback.	- Connector of phase W of Book 3 not connected.
F1399 : CC1 - Feedback fault PWM W- Book 4	Immediate	Command signals of S3 and S4 IGBTs of Book 4 phase W have not been read in the feedback.	- Connector of phase W of Book 4 not connected.
F1400 : CC1 - Feedback fault PWM W- Book 5	Immediate	Command signals of S3 and S4 IGBTs of Book 4 phase W have not been read in the feedback.	- Connector of phase W of Book 4 not connected.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1401 : CC1 - Feedback fault PWM W- Book 6	Immediate	Command signals of S3 and S4 IGBTs of Book 6 phase W have not been read in the feedback.	- Connector of phase W of Book 6 not connected.
F1402 : CC1 - Feedback fault PWM W- Book 7	Immediate	Command signals of S3 and S4 IGBTs of Book 7 phase W have not been read in the feedback.	- Connector of phase W of Book 7 not connected.
F1403 : CC1 - Feedback fault PWM W- Book 8	Immediate	Command signals of S3 and S4 IGBTs of Book 8 phase W have not been read in the feedback.	- Connector of phase W of Book 8 not connected.
F1404 : CC1 - Feedback fault PWM W- Book 9	Immediate	Command signals of S3 and S4 IGBTs of Book 9 phase W have not been read in the feedback.	- Connector of phase W of Book 9 not connected.
F1405 : CC1 - Forbidden State PWM Book 1	Immediate	Forbidden state detected in the modulation of Book 1.	- Internal problems of the modulation (FPGA).
F1406 : CC1 - Forbidden State PWM Book 2	Immediate	Forbidden state detected in the modulation of Book 2.	- Internal problems of the modulation (FPGA).
F1407 : CC1 - Forbidden State PWM Book 3	Immediate	Forbidden state detected in the modulation of Book 3.	- Internal problems of the modulation (FPGA).
F1408 : CC1 - Forbidden State PWM Book 4	Immediate	Forbidden state detected in the modulation of Book 4.	- Internal problems of the modulation (FPGA).
F1409 : CC1 - Forbidden State PWM Book 5	Immediate	Forbidden state detected in the modulation of Book 5.	- Internal problems of the modulation (FPGA).
F1410 : CC1 - Forbidden State PWM Book 6	Immediate	Forbidden state detected in the modulation of Book 6.	- Internal problems of the modulation (FPGA).
F1411 : CC1 - Forbidden State PWM Book 7	Immediate	Forbidden state detected in the modulation of Book 7.	- Internal problems of the modulation (FPGA).
F1412 : CC1 - Forbidden State PWM Book 8	Immediate	Forbidden state detected in the modulation of Book 8.	- Internal problems of the modulation (FPGA).
F1413 : CC1 - Forbidden State PWM Book 9	Immediate	Forbidden state detected in the modulation of Book 9.	- Internal problems of the modulation (FPGA).
F1414 : CC1 - Incorrect Vector Transition PWM Book 1	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 1.	- Internal problems of the modulation (FPGA).
F1415 : CC1 - Incorrect Vector Transition PWM Book 2	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 2.	- Internal problems of the modulation (FPGA).
F1416 : CC1 - Incorrect Vector Transition PWM Book 3	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 3.	- Internal problems of the modulation (FPGA).
F1417 : CC1 - Incorrect Vector Transition PWM Book 4	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 4.	- Internal problems of the modulation (FPGA).
F1418 : CC1 - Incorrect Vector Transition PWM Book 5	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 5.	- Internal problems of the modulation (FPGA).
F1419 : CC1 - Incorrect Vector Transition PWM Book 6	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 6.	- Internal problems of the modulation (FPGA).
F1420 : CC1 - Incorrect Vector Transition PWM Book 7	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 7.	- Internal problems of the modulation (FPGA).
F1421 : CC1 - Incorrect Vector Transition PWM Book 8	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 8.	- Internal problems of the modulation (FPGA).
F1422 : CC1 - Incorrect Vector Transition PWM Book 9	Immediate	Transition of vector P to N (or N to P) detected in the command pulses of Book 9.	- Internal problems of the modulation (FPGA).
F1423 : CC1 - Minimum Pulse Detection PWM Book 1	Immediate	Pulse width below minimum detected in the command pulses of Book 1.	- Internal problems of the modulation (FPGA).
F1424 : CC1 - Minimum Pulse Detection PWM Book 2	Immediate	Pulse width below minimum detected in the command pulses of Book 2.	- Internal problems of the modulation (FPGA).
F1425 : CC1 - Minimum Pulse Detection PWM Book 3	Immediate	Pulse width below minimum detected in the command pulses of Book 3.	- Internal problems of the modulation (FPGA).

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1426 : CC1 - Minimum Pulse Detection PWM Book 4	Immediate	Pulse width below minimum detected in the command pulses of Book 4.	- Internal problems of the modulation (FPGA).
F1427 : CC1 - Minimum Pulse Detection PWM Book 5	Immediate	Pulse width below minimum detected in the command pulses of Book 5.	- Internal problems of the modulation (FPGA).
F1428 : CC1 - Minimum Pulse Detection PWM Book 6	Immediate	Pulse width below minimum detected in the command pulses of Book 6.	- Internal problems of the modulation (FPGA).
F1429 : CC1 - Minimum Pulse Detection PWM Book 7	Immediate	Pulse width below minimum detected in the command pulses of Book 7.	- Internal problems of the modulation (FPGA).
F1430 : CC1 - Minimum Pulse Detection PWM Book 8	Immediate	Pulse width below minimum detected in the command pulses of Book 8.	- Internal problems of the modulation (FPGA).
F1431 : CC1 - Minimum Pulse Detection PWM Book 9	Immediate	Pulse width below minimum detected in the command pulses of Book 9.	- Internal problems of the modulation (FPGA).
F1432 : IMPS - Synchronism Timeout	Immediate	Sync signal of the command pulses has not been detected in IMPS within the time limit.	- CCE-IMPS connection problems.
F1433 : CC1 - Synchronism Timeout - Book 1	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 1 within the time limit.	- CCE-IMPS connection problems. - Book 1 CCE-CMPS connection problems.
F1434 : CC1 - Synchronism Timeout - Book 2	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 2 within the time limit.	- CCE-IMPS connection problems. - Book 2 CCE-CMPS connection problems.
F1435 : CC1 - Synchronism Timeout - Book 3	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 3 within the time limit.	- CCE-IMPS connection problems. - Book 3 CCE-CMPS connection problems.
F1436 : CC1 - Synchronism Timeout - Book 4	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 4 within the time limit.	- CCE-IMPS connection problems. - Book 4 CCE-CMPS connection problems.
F1437 : CC1 - Synchronism Timeout - Book 5	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 5 within the time limit.	- CCE-IMPS connection problems. - Book 5 CCE-CMPS connection problems.
F1438 : CC1 - Synchronism Timeout - Book 6	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 6 within the time limit.	- CCE-IMPS connection problems. - Book 6 CCE-CMPS connection problems.
F1439 : CC1 - Synchronism Timeout - Book 7	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 7 within the time limit.	- CCE-IMPS connection problems. - Book 7 CCE-CMPS connection problems.
F1440 : CC1 - Synchronism Timeout - Book 8	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 8 within the time limit.	- CCE-IMPS connection problems. - Book 8 CCE-CMPS connection problems.
F1441 : CC1 - Synchronism Timeout - Book 9	Immediate	Sync signal of the command pulses has not been detected in the CMPS card of Book 9 within the time limit.	- CCE-IMPS connection problems. - Book 9 CCE-CMPS connection problems.
F1450 : CC1 - Instantaneous Fault CMPS 1	Immediate	Instantaneous Fault Book 1.	Verify the electronic board CMPS.
F1451 : CC1 - Instantaneous Fault CMPS 2	Immediate	Instantaneous Fault Book 2.	Verify the electronic board CMPS.
F1452 : CC1 - Instantaneous Fault CMPS 3	Immediate	Instantaneous Fault Book 3.	Verify the electronic board CMPS.
F1453 : CC1 - Instantaneous Fault CMPS 4	Immediate	Instantaneous Fault Book 4.	Verify the electronic board CMPS.
F1454 : CC1 - Instantaneous Fault CMPS 5	Immediate	Instantaneous Fault Book 5.	Verify the electronic board CMPS.
F1455 : CC1 - Instantaneous Fault CMPS 6	Immediate	Instantaneous Fault Book 6.	Verify the electronic board CMPS.
F1456 : CC1 - Instantaneous Fault CMPS 7	Immediate	Instantaneous Fault Book 7.	Verify the electronic board CMPS.
F1457 : CC1 - Instantaneous Fault CMPS 8	Immediate	Instantaneous Fault Book 8.	Verify the electronic board CMPS.
F1458 : CC1 - Instantaneous Fault CMPS 9	Immediate	Instantaneous Fault Book 9.	Verify the electronic board CMPS.

Fault/Alarm/Event	Shutdown	Description	Possible Causes
F1500 : Fault Follower PWM Synchronism	Immediate	Synchronism fault with the forming Master.	Verify fiber optic connection between CCEs. Damaged optic fiber.
A1510 :	-	Timeout alarm with the forming Master.	Verify fiber optic connection between CCEs. Damaged optic fiber.
F1511 :	Immediate	Timeout fault with the forming Master.	Verify fiber optic connection between CCEs. Damaged optic fiber.
F1512:	Immediate	Communication fault with the forming Master.	Verify fiber optic connection between CCEs. Damaged optic fiber.

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