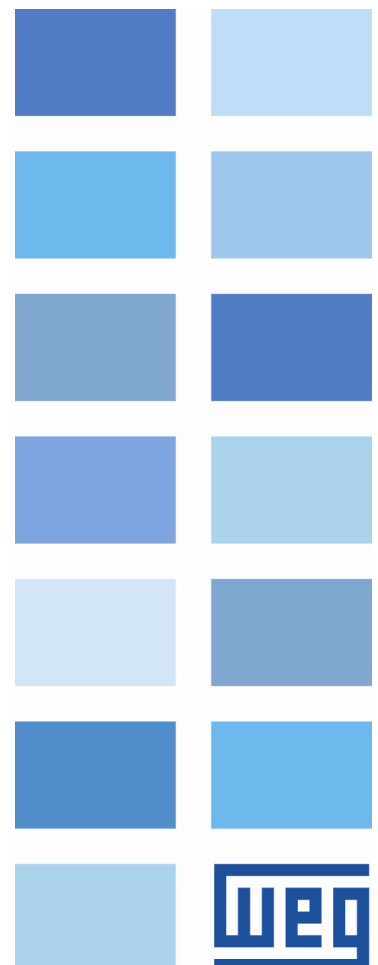# Frequency Inverter

ECM Industrial V1.0X

Quick Reference of Parameters, Alarms and Faults

Quick Reference of Parameters, Alarms and Faults

English

The information below describes the reviews made in this manual.

Version	Review	Description
V1.0X	R00	First edition.

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P000	Access to Parameters	0 to 9999	1		B.2
P001	Speed Reference	0 to 9999		ro	B.2
P002	Output Speed (Motor)	0 to 9999		ro	B.2
P003	Motor Current	0.0 to 40.0 A		ro	B.2
P004	DC Link Voltage	0 to 828 V		ro	B.2
P005	Output Frequency (Motor)	0.0 to 400.0 Hz		ro	B.2
P006	Inverter Status	0 = Ready 1 = Run 2 = Undervoltage 3 = Fault 4 = Self-Tuning 5 = Configuration 6 = DC Braking 7 = Reserved 8 = Fire Mode		ro	B.2
P007	Output Voltage	0 to 480 V		ro	B.2
P009	Motor Torque	-200.0 to 200.0 %		ro	B.2
P011	Power Factor	0.00 to 1.00		ro	B.2
P012	DI3 to DI1 Status	0 to 7 (hexa) Bit 0 = DI1 Bit 1 = DI2 Bit 2 = DI3		ro	B.2
P013	DO2 to DO1 Status	0 to 3 (hexa) Bit 0 = DO1 Bit 1 = DO2		ro	B.2
P016	FO Value %	0.0 to 100.0 %		ro	B.2
P017	FO Value in Hz	10 to 3000 Hz		ro	B.2
P018	AI1 Value	-100.0 to 100.0 %		ro	B.2
P021	PWM Duty Cycle %	10.0 to 95.0 %		ro	B.7
P022	FI Value in Hz	0 to 3000 Hz		ro	B.7
P023	Main SW Version	0.00 to 99.99		ro	B.2
P025 (*)	Comm. Acces. SW Version	0.00 to 99.99		ro	B.2
P027	Config. Acces. HMIR	0 = Without Accessory 1 = CFW300-HMIR		ro	B.2
P028	Config. Comm. Acces.	0 = Without Accessory 1 = Reserved 2 = CFW320-CBLT 3 to 4 = Reserved 5 = CFW320-CETH 6 = Reserved		ro	B.2
P029	Power HW Configuration	0 = Not identified 1 = 14.0 A/380 V 2 = 10,0 A/380 V 3 = 7,0 A/380 V 4 to 8 = Reserved	According to the Inverter Model	ro	B.4
P030	Module Temperature	-200.0 to 200.0 ºC		ro	B.2
P034	Internal Air Temperature	-200.0 to 150.0 ºC		ro	B.2
P036	Internal Fan Speed	0 to 9000 rpm		ro	B.2
P037	Motor Overload Ixt	0.0 to 100.0 %		ro	B.2
P045	Fan Enabled Time	0 to FFFF (hexa)		ro	B.2
P047	CONF Status	0 to 33 (Table A.1 on page 21)		ro	B.2
P048	Present Alarm	0 to 999		ro	B.2
P049	Present Fault	0 to 999		ro	B.2
P050	Last Fault	0 to 999		ro	B.2
P051	Current At Last Fault	0.0 to 40.0 A		ro	B.2
P052	DC Link At Last Fault	0 to 828 V		ro	B.2
P053	Frequency At Last Fault	0.0 to 400.0 Hz		ro	B.2
P054	Temperature Last Fault	0.0 to 200.0 ºC		ro	B.2
P060	Second Fault	0 to 999		ro	B.2
P070	Third Fault	0 to 999		ro	B.2
P080	Last Fault on Fire Mode	0 to 999		ro	B.2
P081	Second Fault on Fire Mode	0 to 999		ro	B.2
P082	Third Fault on Fire Mode	0 to 999		rop.	B.2
P100	Acceleration Time	0.1 to 999.9 s	20.0 s		B.2
P101	Deceleration Time	0.1 to 999.9 s	20.0 s		B.2

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P102	Acceleration Time 2nd Ramp	0.1 to 999.9 s	5.0 s		B.2
P103	Deceleration Time 2nd Ramp	0.1 to 999.9 s	10.0 s		B.2
P104	Ramp S	0 = Inactive 1 = Active	0	cfg	B.2
P105	1st / 2nd Ramp Selection	0 = 1st Ramp 1 = 2nd Ramp 2 = DIx 3 = Serial/USB 4 = Reserved 5 = ETH 6 = SoftPLC	0		B.2
P106	Emer. R. Acceleration Time	0.1 to 999.9 s	5.0 s		B.2
P107	Emer. R. Time Deceleration	0.1 to 999.9 s	5.0 s		B.2
P120	Speed Ref. Backup	0 = Inactive 1 = Active 2 = Backup by P121	1		B.2
P121	Reference via HMI	0.0 to 400.0 Hz	3.0 Hz		B.2
P122	JOG Reference	-400.0 to 400.0 Hz	5.0 Hz		B.2
P124	Multispeed Ref. 1	-400.0 to 400.0 Hz	3.0 Hz		B.2
P125	Multispeed Ref. 2	-400.0 to 400.0 Hz	10.0 Hz		B.2
P126	Multispeed Ref. 3	-400.0 to 400.0 Hz	20.0 Hz		B.2
P127	Multispeed Ref. 4	-400.0 to 400.0 Hz	30.0 Hz		B.2
P128	Multispeed Ref. 5	-400.0 to 400.0 Hz	40.0 Hz		B.2
P129	Multispeed Ref. 6	-400.0 to 400.0 Hz	50.0 Hz		B.2
P130	Multispeed Ref. 7	-400.0 to 400.0 Hz	60.0 Hz		B.2
P131	Multispeed Ref. 8	-400.0 to 400.0 Hz	66.0 Hz		B.2
P133	Minimum Frequency	0.0 to 400.0 Hz	3.0 Hz		B.2
P134	Maximum Frequency	0.0 to 400.0 Hz	90.0 Hz		B.2
P135	Maximum Output Current	0.0 to 40.0 A	$1.5 \times I_{nom}$		B.2
P136	Manual Torque Boost	0.0 to 30.0 %	According to the Inverter Model	VVW PM	B.2
P139	Output Current Filter	0.000 to 9.999 s	0.050 s		B.2
P149	DC Link Comp. Mode	0 = Inactive 1 = Standard 2 = Overmodulation 3 = Extended	0	cfg, VVW PM	B.2
P150	DC/LC Regul. Type	0 = hold_Ud and decel_LC 1 = accel_Ud and decel_LC 2 = hold_Ud and hold_LC 3 = accel_Ud and hold_LC	0	cfg	B.2
P151	DC Link Regul. Level	325 to 810 V	430 V (P296 = 1) 380 V (P296 = 2) 781 V (P296 = 4) 781 V (P296 = 5) 781 V (P296 = 6) 781 V (P296 = 7)		B.2
P156	Rated Speed Overload Current	0.1 to 40.0 A	$1.2 \times I_{nom}$		B.2
P157	Overl.Curr.50 % Speed	0.1 to 40.0 A	$1.2 \times I_{nom}$		B.2
P158	Overl.Curr.20 % Speed	0.1 to 40.0 A	$1.2 \times I_{nom}$		B.2
P200	Password	0 = Inactive 1 = Active 2 to 9999 = New Password	0	cfg	B.2
P202	Type of Control	0 to 1 = Reserved 2 to 7 = Not Used 8 = VVW PM	8	cfg	B.2
P204	Load/Save Parameters	0 to 4 = Not Used 5 = Load Default Motor 6 = Not Used 7 = Reserved 8 = Load User 9 = Reserved 10 = Save User 11 = Load Default SoftPLC 12 to 17 = Reserved	0	cfg	B.4
P205	Main Display Parameter	0 to 999	2		B.2
P207	Bar Graph Parameter	0 to 999	3		B.2
P208	Ref. Scale Factor	1 to 9999	900		B.2

English

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P209	Ref. Eng. Unit	0 to 1 = Without unit 2 = Volt (V) 3 = Hertz (Hz) 4 = Without unit 5 = Percent (%) 6 = Without unit 7 = Rotation/min. (rpm)	3		B.2
P210	Ref. Decimal Point	0 = wxyz 1 = wxy.z 2 = wx.yz 3 = w.xyz	1		B.2
P213	Bar Scale Factor	1 to 9999	$1.0 \times I_{nom}$		B.2
P219	Red. Switch. Freq.	0.0 to 15.0 Hz	0.0 Hz	cfg	B.2
P220	LOC/REM Selection Source	0 = Always Local 1 = Always Remote 2 to 3 = Not Used 4 = DIx 5 = Serial/USB (LOC) 6 = Serial/USB (REM) 7 to 8 = Not Used 9 = ETH (LOC) 10 = ETH (REM) 11 = SoftPLC	5	cfg	B.2
P221	LOC Reference Sel.	0 = HMI 1 = AI1 2 to 3 = Not Used 4 = FI 5 = PWM 6 = Not Used 7 = E.P. 8 = Multispeed 9 = Serial/USB 10 = Not Used 11 = ETH 12 = SoftPLC 13 = Not Used 14 = AI1 > 0 15 to 16 = Not Used 17 = FI > 0 18 = AI1 over PWM	18	cfg	B.7
P222	REM Reference Selection	See options in P221	9	cfg	B.7
P223	LOC FWD/REV Selection	0 = Forward 1 = Reverse 2 to 3 = Not Used 4 = DIx 5 = Serial/USB (FWD) 6 = Serial/USB (REV) 7 to 8 = Not Used 9 = ETH (H) 10 = ETH (AH) 11 = Not Used 12 = SoftPLC	4	cfg	B.2
P224	LOC Run/Stop Sel.	0 = HMI Keys 1 = DIx 2 = Serial/USB 3 = Not Used 4 = ETH 5 = SoftPLC	1	cfg	B.2
P225	LOC JOG Selection	0 = Disabled 1 = Not Used 2 = DIx 3 = Serial/USB 4 = Not Used 5 = ETH 6 = SoftPLC	0	cfg	B.2
P226	REM FWD/REV Selection	See options in P223	5	cfg	B.2
P227	REM Run/Stop Selection	See options in P224	2	cfg	B.2
P228	REM JOG Selection	See options in P225	0	cfg	B.2
P229	Stop Mode Selection	0 = Ramp to Stop 1 = Coast to Stop	0	cfg	B.2
P230	Dead Zone (AIs and FI1)	0 = Inactive 1 = Active	0	cfg	B.2

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P231	AI1 Signal Function	0 = Speed Ref. 1 to 3 = Not Used 4 = PTC 5 to 6 = Not Used 7 = PLC Use 8 to 17 = Not Used	0	cfg	B.2
P232	AI1 Input Gain	0.000 to 9.999	1.000		B.2
P233	AI1 Input Signal	0 = 0 to 10 V / 20 mA 1 = 4 to 20 mA 2 = 10 V / 20 mA to 0 3 = 20 to 4 mA 4 = 2 to 10 V	4		B.2
P234	AI1 Input Offset	-100.0 to 100.0 %	0.0 %		B.2
P235	AI1 Input Filter	0.00 to 16.00 s	0.00 s		B.2
P245	FI1 Filter	0.00 to 16.00 s	0.00 s		B.2
P246	FI1 Input Function	0 = Inactive 1 = Active in DI1 2 = Active in DI2 3 = Active in DI3 4 = FI1 in DI1 + Fire Mode 5 = FI1 in DI2 + Fire Mode 6 = FI1 in DI3 + Fire Mode 7 = PWM in DI1 + Fire Mode 8 = PWM in DI2 + Fire Mode 9 = PWM in DI3 + Fire Mode	9	cfg	B.5
P247	FI1 Input Gain	0.000 to 9.999	1.000		B.2
P248	FI1 Minimum Input	1 to 3000 Hz	100 Hz		B.2
P249	FI1 Input Offset	-100.0 to 100.0 %	0.0 %		B.2
P250	FI1 Maximum Input	1 to 3000 Hz	1000 Hz		B.2
P257	FO Output Function	0 = Speed Ref. 1 = Not Used 2 = Real Speed 3 to 4 = Not Used 5 = Output Current 6 = Not Used 7 = Active Current 8 to 10 = Not Used 11 = Motor Torque 12 = SoftPLC 13 to 14 = Not Used 15 = Disable FO 16 = Motor Ixt 17 to 30 = Not Used	15		B.2
P258	FO Output Gain	0.000 to 9.999	1.000		B.2
P259	FO Minimum Output	10 to 3000 Hz	10 Hz		B.2
P260	FO Maximum Output	10 to 3000 Hz	3000 Hz		B.2

English

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P263	DI1 Input Function	0 = Not Used 1 = Run/Stop 2 = General Enable 3 = Quick Stop 4 = Forward Run 5 = Reverse Run 6 = Start 7 = Stop 8 = Direction of Rotation 9 = LOC/REM 10 = JOG 11 = Accelerate E.P. 12 = Decelerate E.P. 13 = Multispeed 14 = 2nd Ramp 15 to 17 = Not Used 18 = No Ext. Alarm 19 = No Ext. Fault 20 = Reset 21 to 23 = Not Used 24 = Disab. Flying Start 25 = Not Used 26 = Lock Prog. 27 = Load User 1 28 = Load User 2 29 to 31 = Not Used 32 = 2nd Ramp Multispeed 33 = 2nd Ramp Increase E.P. 34 = 2nd Ramp Decrease E.P. 35 = 2nd Ramp FWD Run 36 = 2nd Ramp REV Run 37 = Start / Inc. E.P. 38 = Dec. E.P. / Stop 39 = Stop 40 = Safety Switch 41 to 48 = Not Used 49 = Enable Fire Mode 50 to 54 = Not Used 55 = Run/Stop with Line Start Lockout 56 = Forward Run with Line Start Lockout 57 = Reverse Run with Line Start Lockout	1	cfg	B.5

English

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P264	DI2 Input Function	0 = Not Used 1 = Run/Stop 2 = General Enable 3 = Quick Stop 4 = Forward Run 5 = Reverse Run 6 = Start 7 = Stop 8 = Direction of Rotation 9 = LOC/REM 10 = JOG 11 = Accelerate E.P. 12 = Decelerate E.P. 13 = Multispeed 14 = 2nd Ramp 15 to 17 = Not Used 18 = No Ext. Alarm 19 = No Ext. Fault 20 = Reset 21 to 23 = Not Used 24 = Disab.FlyStart 25 = Not Used 26 = Progr. Off 27 to 31 = Not Used 32 = 2nd Ramp Multispeed 33 = 2nd Ramp Increase E.P. 34 = 2nd Ramp Decrease E.P. 35 = 2nd Ramp FWD Run 36 = 2nd Ramp REV Run 37 = Turn ON / Ac. E.P. 38 = De. E.P. / Turn OFF 39 = Stop 40 = Safety Switch 41 to 48 = Not Used 49 = Enable Fire Mode 50 = PID Manual / Automatic 51 to 54 = Not Used 55 = Run/Stop with Line Start Lockout 56 = Forward Run with Line Start Lockout 57 = Reverse Run with Line Start Lockout	8	cfg	B.5

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P265	DI3 Input Function	0 = Not Used 1 = Run/Stop 2 = General Enable 3 = Quick Stop 4 = Forward Run 5 = Reverse Run 6 = Start 7 = Stop 8 = Direction of Rotation 9 = LOC/REM 10 = JOG 11 = Accelerate E.P. 12 = Decelerate E.P. 13 = Multispeed 14 = 2nd Ramp 15 to 17 = Not Used 18 = No Ext. Alarm 19 = No Ext. Fault 20 = Reset 21 to 23 = Not Used 24 = Disab.FlyStart 25 = Not Used 26 = Lock Prog. 27 to 31 = Not Used 32 = 2nd Ramp Multispeed 33 = 2nd Ramp Increase E.P. 34 = 2nd Ramp Decrease E.P. 35 = 2nd Ramp FWD Run 36 = 2nd Ramp REV Run 37 = Start / Inc. E.P. 38 = Dec. E.P. / Stop 39 = Stop 40 = Safety Switch 41 to 48 = Not Used 49 = Enable Fire Mode 50 = Not Used 51 = Command to Increase the Control Setpoint (EP) 52 = Not Used 53 = 1st DI for Control Setpoint Selection 54 = Not Used 55 = Run/Stop with Line Start Lockout 56 = Forward Run with Line Start Lockout 57 = Reverse Run with Line Start Lockout	0	cfg	B.5

English

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P275	DO1 Function	0 = Not Used 1 = F* ≥ Fx 2 = F ≥ Fx 3 = F ≤ Fx 4 = F = F* 5 = Not Used 6 = Is > Ix 7 = Is < Ix 8 = Torque > Tx 9 = Torque < Tx 10 = Remote 11 = Run 12 = Ready 13 = No Fault 14 = No F070 15 = Not Used 16 = No F021/F022 17 = Not Used 18 = No F072 19 = 4-20 mA OK 20 = P695 Value 21 = Forward 22 to 23 = Not Used 24 = Ride-Through 25 = Not Used 26 = Fault 27 = Not Used 28 = SoftPLC 29 to 34 = Not Used 35 = No Alarm 36 = Without fault and alarm 37 to 44 = Not Used 45 = Fire Mode ON 46 = Low Level of Process Variable 47 = High Level of Process Variable	13		B.2
P276	DO2 Function	See options in P275	0		B.2
P281	Fx Frequency	0.0 to 400.0 Hz	3.0 Hz		B.2
P282	Fx Hysteresis	0.0 to 15.0 Hz	0.5 Hz		B.2
P290	Ix Current	0.0 to 40.0 A	$1.0 \times I_{nom}$		B.2
P293	Tx Torque	0 to 200 %	100 %		B.2
P295	Inverter Rated Current	1.1 to 15.2 A	According to the Inverter Model	ro	B.2
P296	Line Rated Voltage	0 to 3 = Reserved 4 = 380 Vac | 513 Vdc 5 = 415 Vca | 560 Vcc 6 = 440 Vca | 594 Vcc 7 = 480 Vac | 650 Vdc	According to the Inverter Model	cfg	B.2
P297	Switching Frequency	2.5 to 15.0 kHz	4.0 kHz	cfg	B.2
P299	DC Braking Start Time	0.0 to 15.0 s	0.0 s		B.2
P300	DC Braking Stop Time	0.0 to 15.0 s	0.0 s		B.2
P301	DC Braking Frequency	0.0 to 15.0 Hz	3.0 Hz		B.2
P302	DC Braking Current	0.0 to 100.0 %	20.0 %		B.2
P303	Skip Frequency 1	0.0 to 400.0 Hz	0.0 Hz		B.2
P304	Skip Frequency 2	0.0 to 400.0 Hz	0.0 Hz		B.2
P306	Skip Band	0.0 to 25.0 Hz	0.0 Hz		B.2
P308	Serial Address	1 to 247	1	cfg	B.2
P310	Serial Baud Rate	0 = 9600 bits/s 1 = 19200 bits/s 2 = 38400 bits/s 3 = 57600 bits/s 4 = 76800 bits/s	1	cfg	B.2
P311	Serial Bytes Config.	0 = 8 bits, no, 1 1 = 8 bits, even,1 2 = 8 bits, odd, 1 3 = 8 bits, no, 2 4 = 8 bits, even,2 5 = 8 bits, odd, 2	1	cfg	B.2

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P312	Serial Protocol	0 to 1 = Reserved 2 = Modbus RTU Slave 3 = BACnet 4 = Reserved 5 = ModBus RTU Master	2	cfg	B.2
P313	Action for Communic. Error	0 = Inactive 1 = Ramp Stop 2 = General Disable 3 = Go to LOC 4 = LOC Keep Enab. 5 = Cause Fault	1		B.2
P314	Serial Watchdog	0.0 to 999.0 s	0.0 s	cfg	B.2
P316	Serial Interf. Status	0 = Inactive 1 = Active 2 = Watchdog Error		ro	B.2
P320	Flying Start / Ride-Through	0 = Inactive 1 = Flying Start 2 = FS / RT 3 = Ride-Through	3	cfg	B.2
P331	Voltage Ramp for FS and RT	0.2 to 60.0 s	2.0 s		B.2
P332	Dead Time	0.1 to 10.0 s	1.0 s		B.2
P340	Auto-Reset Time	0 to 255 s	0 s		B.2
P343	Fault/Alarm Mask	0 to FFFF (hexa) Bit 0 to 4 = Reserved Bit 5 = F179 Bit 6 to 15 = Reserved	0 (hexa)	cfg	B.2
P397	Control Config	0 to 1F (hexa) Bit 0 = Slip Compens. Regen. Bit 1 = Dead Time Comp. Bit 2 = Is Stabilization Bit 3 = P297 reduction in A050 Bit 4 = DC Link Fast Regulation	1A (hexa)	cfg	B.2
P400	Motor Rated Voltage	0 to 480 V	According to the Inverter Model	cfg, VVW PM	B.2
P401	Motor Rated Current	0.0 to 40.0 A	$1.0 \times I_{nom}$	cfg, VVW PM	B.2
P402	Motor Rated Speed	0 to 24000 rpm	900 rpm	cfg, VVW PM	B.2
P403	Motor Rated Frequency	0 to 400 Hz	90 Hz	cfg, VVW PM	B.2
P435	Ke Constant	0 to 3000	410	VVW PM	B.2
P445	MTPA Ref. Const.	0.00 to 4.00	0.50	VVW PM	B.2
P446	MTPA Prop. Gain	0.00 to 5.00	1.00	VVW PM	B.2
P447	MTPA Int. Gain	0.000 to 0.500	0.012	VVW PM	B.2
P448	Damping tunning	0.00 to 30.00	0.25	VVW PM	B.2
P451	Damping Initial Speed	0.0 to 100.0 %	2.0 %	VVW PM	B.2
P452	DQ Current filter	0.001 to 1.000 s	0.001 s	VVW PM	B.2
P454	MTPA Min. Voltage	0.0 to 100.0 %	100.0 %	VVW PM	B.2
P510	SoftPLC Eng. Unit	See options in P209	0		B.2
P511	SoftPLC Indication Form	See options in P210	1		B.2
P580	Fire Mode Configuration	0 = Inactive 1 = Active 2 = Active / P134 3 = Reserved 4 = Active / General Disable	2	cfg	B.5
P582	Fire Mode Auto-reset Adjustable	0 = Limited 1 = Unlimited	1	cfg	B.2
P610	Serial Number #1	0 to 9999		ro	B.4
P611	Serial Number #2	0 to 9999		ro	B.4
P612	Serial Number #3	0 to 9999		ro	B.4
P613	Main SW Revision	-9999 to 9999		ro	B.2

English

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P680	Logical Status	0 to FFFF (hexa) Bit 0 = Reserved Bit 1 = Run Command Bit 2 = Fire Mode Bit 3 to 4 = Reserved Bit 5 = 2nd Ramp Bit 6 = Config. Mode Bit 7 = Alarm Bit 8 = Running Bit 9 = Enabled Bit 10 = Forward Bit 11 = JOG Bit 12 = Remote Bit 13 = Subvoltage Bit 14 = Reserved Bit 15 = Fault		ro	B.2
P681	13-Bit Speed	0 to FFFF (hexa)		ro	B.2
P682	Serial/USB Control	0 to FFFF (hexa) Bit 0 = Ramp Enable Bit 1 = General Enable Bit 2 = Run Forward Bit 3 = JOG Enable Bit 4 = Remote Bit 5 = 2nd Ramp Bit 6 = Reserved Bit 7 = Fault Reset Bit 8 to 15 = Reserved		ro	B.2
P683	Serial/USB Speed Ref.	0 to FFFF (hexa)		ro	B.2
P684 (*)	CO/DN/DP/ETH Control	0 to FFFF (hexa) Bit 0 = Ramp Enable Bit 1 = General Enable Bit 2 = Run Forward Bit 3 = JOG Enable Bit 4 = Remote Bit 5 = 2nd Ramp Bit 6 = Reserved Bit 7 = Fault Reset Bit 8 to 15 = Reserved		ro	B.2
P685 (*)	CO/DN/DP/ETH Speed Ref	0 to FFFF (hexa)		ro	B.2
P690	Logic State 2	0 to FFFF (hexa) Bit 0 to 1 = Reserved Bit 2 = DC Link Voltage Extended Bit 3 = Energy Saver Bit 4 = Fs Reduction Bit 5 = Reserved Bit 6 = Deceleration Ramp Bit 7 = Acceleration Ramp Bit 8 = Freeze Ramp Bit 9 = Setpoint Ok Bit 10 = DC Link Regulation Bit 11 = 50 Hz Config Bit 12 = Ride-Through Bit 13 = Flying Start Bit 14 = DC Braking Bit 15 = PWM pulse		ro	B.2
P695	DOx Value	0 to 3 (hexa) Bit 0 = DO1 Bit 1 = DO2		ro	B.2
P760	BACnet Dev Inst Hi	0 to 419	0		B.2
P761	BACnet Dev Inst Lo	0 to 9999	0		B.2
P762	Max Number of master	0 to 127	127		B.2
P763	MS/TP Max info Frame	0 to FFFF (hexa)	1 (hexa)		B.2
P764	I-AM Msg transmition	0 = Power Up 1 = Continuous	0		B.2
P765	Token RX Quantity	0 to FFFF (hexa)		ro	B.2
P770 (*)	Blueooth Device Name	0 to 9999	Serial Number of the Inverter		B.2
P771 (*)	Bluetooth Password PIN	0 to 9999	1234		B.2
P850 (*)	IP Address Config	0 = Parameters 1 = DHCP	0	cfg	B.2
P851 (*)	IP Address 1	0 to 255	192	cfg	B.2
P852 (*)	IP Address 2	0 to 255	168	cfg	B.2

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P853 (*)	IP Address 3	0 to 255	0	cfg	B.2
P854 (*)	IP Address 4	0 to 255	10	cfg	B.2
P855 (*)	CIDR Sub-net	0 = Reserved 1 = 128.0.0.0 2 = 192.0.0.0 3 = 224.0.0.0 4 = 240.0.0.0 5 = 248.0.0.0 6 = 252.0.0.0 7 = 254.0.0.0 8 = 255.0.0.0 9 = 255.128.0.0 10 = 255.192.0.0 11 = 255.224.0.0 12 = 255.240.0.0 13 = 255.248.0.0 14 = 255.252.0.0 15 = 255.254.0.0 16 = 255.255.0.0 17 = 255.255.128.0 18 = 255.255.192.0 19 = 255.255.224.0 20 = 255.255.240.0 21 = 255.255.248.0 22 = 255.255.252.0 23 = 255.255.254.0 24 = 255.255.255.0 25 = 255.255.255.128 26 = 255.255.255.192 27 = 255.255.255.224 28 = 255.255.255.240 29 = 255.255.255.248 30 = 255.255.255.252 31 = 255.255.255.254	24	cfg	B.2
P856 (*)	Gateway 1	0 to 255	0	cfg	B.2
P857 (*)	Gateway 2	0 to 255	0	cfg	B.2
P858 (*)	Gateway 3	0 to 255	0	cfg	B.2
P859 (*)	Gateway 4	0 to 255	0	cfg	B.2
P860 (*)	MBTCP: Communication Status	0 = Disabled 1 = No connection 2 = Connected 3 = Timeout Error		ro	B.2
P863 (*)	MBTCP: Active Connections	0 to 4		ro	B.2
P865 (*)	MBTCP: TCP Port	0 to 9999	502	cfg	B.2
P866 (*)	MBTCP: Unit ID	0 to 255	255	cfg	B.2
P868 (*)	MBTCP: Timeout	0.0 to 999.9 s	0.0 s	cfg	B.2
P869 (*)	EIP: Master Status	0 = Run 1 = Idle		ro	B.2
P870 (*)	EIP: Communication Status	0 = Disabled 1 = No connection 2 = Connected 3 = Timeout in I/O Connection 4 = Reserved		ro	B.2
P871 (*)	EIP: Data Profile	0 to 3 = Reserved 4 = 120/170: CIP Basic Speed + I/O 5 = 121/171: CIP Extended Speed + I/O 6 to 7 = Reserved 8 = 100/150: Manufac. Speed + I/O 9 to 10 = Reserved	8	cfg	B.2
P872 (*)	Ethernet Read Word #3	0 to 9999	0		B.2
P873 (*)	Ethernet Read Word #4	0 to 9999	0		B.2
P874 (*)	Ethernet Read Word #5	0 to 9999	0		B.2
P875 (*)	Ethernet Read Word #6	0 to 9999	0		B.2
P876 (*)	Ethernet Read Word #7	0 to 9999	0		B.2
P877 (*)	Ethernet Read Word #8	0 to 9999	0		B.2
P880 (*)	Ethernet Write Word #3	0 to 9999	0		B.2
P881 (*)	Ethernet Write Word #4	0 to 9999	0		B.2
P882 (*)	Ethernet Write Word #5	0 to 9999	0		B.2

English

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P883 (*)	Ethernet Write Word #6	0 to 9999	0		B.2
P884 (*)	Ethernet Write Word #7	0 to 9999	0		B.2
P885 (*)	Ethernet Write Word #8	0 to 9999	0		B.2
P888 (*)	Ethernet Baud rate	0 = Auto 1 = 10Mbit, half duplex 2 = 10Mbit, full duplex 3 = 100Mbit, half duplex 4 = 100Mbit, full duplex	0		B.2
P889 (*)	Ethernet Interface Status	0 to 3 (hexa) Bit 0 = Link 1 Bit 1 = Link 2		ro	B.2
P900	SoftPLC Status	0 = No Application 1 = Installing Application 2 = Incompat. Application 3 = Application Stopped 4 = Application Running		ro	B.2
P901	SoftPLC Command	0 = Stop Application 1 = Run Application	0		B.2
P902	Scan Cycle Time	0.000 to 9.999 s		ro	B.2
P904	Action for SoftPLC Application not Running	0 = Disabled 1 = Cause Alarm (A708) 2 = Cause Fault (F709)	0		B.2
P910	SoftPLC Parameter 1	-9999 to 9999	0		B.2
P911	SoftPLC Parameter 2	-9999 to 9999	0		B.2
P912	SoftPLC Parameter 3	-9999 to 9999	0		B.2
P913	SoftPLC Parameter 4	-9999 to 9999	0		B.2
P914	SoftPLC Parameter 5	-9999 to 9999	0		B.2
P915	SoftPLC Parameter 6	-9999 to 9999	0		B.2
P916	SoftPLC Parameter 7	-9999 to 9999	0		B.2
P917	SoftPLC Parameter 8	-9999 to 9999	0		B.2
P918	SoftPLC Parameter 9	-9999 to 9999	0		B.2
P919	SoftPLC Parameter 10	-9999 to 9999	0		B.2
P920	SoftPLC Parameter 11	-9999 to 9999	0		B.2
P921	SoftPLC Parameter 12	-9999 to 9999	0		B.2
P922	SoftPLC Parameter 13	-9999 to 9999	0		B.2
P923	SoftPLC Parameter 14	-9999 to 9999	0		B.2
P924	SoftPLC Parameter 15	-9999 to 9999	0		B.2
P925	SoftPLC Parameter 16	-9999 to 9999	0		B.2
P926	SoftPLC Parameter 17	-9999 to 9999	0		B.2
P927	SoftPLC Parameter 18	-9999 to 9999	0		B.2
P928	SoftPLC Parameter 19	-9999 to 9999	0		B.2
P929	SoftPLC Parameter 20	-9999 to 9999	0		B.2
P930	SoftPLC Parameter 21	-9999 to 9999	0		B.2
P931	SoftPLC Parameter 22	-9999 to 9999	0		B.2
P932	SoftPLC Parameter 23	-9999 to 9999	0		B.2
P933	SoftPLC Parameter 24	-9999 to 9999	0		B.2
P934	SoftPLC Parameter 25	-9999 to 9999	0		B.2
P935	SoftPLC Parameter 26	-9999 to 9999	0		B.2
P936	SoftPLC Parameter 27	-9999 to 9999	0		B.2
P937	SoftPLC Parameter 28	-9999 to 9999	0		B.2
P938	SoftPLC Parameter 29	-9999 to 9999	0		B.2
P939	SoftPLC Parameter 30	-9999 to 9999	0		B.2
P940	SoftPLC Parameter 31	-9999 to 9999	0		B.2
P941	SoftPLC Parameter 32	-9999 to 9999	0		B.2
P942	SoftPLC Parameter 33	-9999 to 9999	0		B.2
P943	SoftPLC Parameter 34	-9999 to 9999	0		B.2
P944	SoftPLC Parameter 35	-9999 to 9999	0		B.2
P945	SoftPLC Parameter 36	-9999 to 9999	0		B.2
P946	SoftPLC Parameter 37	-9999 to 9999	0		B.2
P947	SoftPLC Parameter 38	-9999 to 9999	0		B.2
P948	SoftPLC Parameter 39	-9999 to 9999	0		B.2
P949	SoftPLC Parameter 40	-9999 to 9999	0		B.2
P950	SoftPLC Parameter 41	-9999 to 9999	0		B.2

Param.	Description	Adjustable Range	Factory Setting	Prop.	Reference
P951	SoftPLC Parameter 42	-9999 to 9999	0		B.2
P952	SoftPLC Parameter 43	-9999 to 9999	0		B.2
P953	SoftPLC Parameter 44	-9999 to 9999	0		B.2
P954	SoftPLC Parameter 45	-9999 to 9999	0		B.2
P955	SoftPLC Parameter 46	-9999 to 9999	0		B.2
P956	SoftPLC Parameter 47	-9999 to 9999	0		B.2
P957	SoftPLC Parameter 48	-9999 to 9999	0		B.2
P958	SoftPLC Parameter 49	-9999 to 9999	0		B.2
P959	SoftPLC Parameter 50	-9999 to 9999	0		B.2
P960	SoftPLC Parameter 51	-9999 to 9999	0		B.2
P961	SoftPLC Parameter 52	-9999 to 9999	0		B.2
P962	SoftPLC Parameter 53	-9999 to 9999	0		B.2
P963	SoftPLC Parameter 54	-9999 to 9999	0		B.2
P964	SoftPLC Parameter 55	-9999 to 9999	0		B.2
P965	SoftPLC Parameter 56	-9999 to 9999	0		B.2
P966	SoftPLC Parameter 57	-9999 to 9999	0		B.2
P967	SoftPLC Parameter 58	-9999 to 9999	0		B.2
P968	SoftPLC Parameter 59	-9999 to 9999	0		B.2
P969	SoftPLC Parameter 60	-9999 to 9999	0		B.2
P970	SoftPLC Parameter 61	-9999 to 9999	0		B.2
P971	SoftPLC Parameter 62	-9999 to 9999	0		B.2
P972	SoftPLC Parameter 63	-9999 to 9999	0		B.2
P973	SoftPLC Parameter 64	-9999 to 9999	0		B.2
P974	SoftPLC Parameter 65	-9999 to 9999	0		B.2
P975	SoftPLC Parameter 66	-9999 to 9999	0		B.2
P976	SoftPLC Parameter 67	-9999 to 9999	0		B.2
P977	SoftPLC Parameter 68	-9999 to 9999	0		B.2
P978	SoftPLC Parameter 69	-9999 to 9999	0		B.2
P979	SoftPLC Parameter 70	-9999 to 9999	0		B.2

English

English

Fault / Alarm	Description	Possible Causes
F021 Undervoltage on the DC Link	Undervoltage fault on the intermediate circuit.	■ Wrong voltage supply; check if the data on the inverter label comply with the power supply and parameter P296. ■ Supply voltage too low, producing voltage on the DC Link below the minimum value (Level F021) according to Table A.2 on page 21. ■ Phase fault in the input. ■ Fault in the pre-charge circuit.
F022 Overvoltage on the DC Link	Overvoltage fault on the intermediate circuit.	■ Wrong voltage supply; check if the data on the inverter label comply with the power supply and parameter P296. ■ Supply voltage is too high, producing voltage on the DC Link above the maximum value (Level F022) according to Table A.2 on page 21. ■ Load inertia is too high or deceleration ramp is too fast. ■ P151 setting is too high.
F032 Comm. Plug-in module comunication Lost	Main control cannot establish the communication link with the communication acccessory.	■ Accessory damaged. ■ Poor connection of the accessory. ■ Problem in the identification of the accessory; refer to P028.
A046 Motor Overload	Motor overload alarm.	■ Settings of P156 is too low for the used motor. ■ Overload on the motor shaft.
A050 IGBTs Overtemperatures	Overtemperature alarm from the power module temperature sensor (NTC).	■ High temperature at IGBTs. P030 > Level A050, according to Table A.3 on page 21. ■ High ambient temperature around the inverter and high output current. ■ Blocked or defective fan. ■ Heatsink is too dirty, preventing the air flow.
F051 IGBTs Overtemperatures	Overtemperature fault measured on the temperature sensor of the power pack.	■ High temperature at IGBTs. P030 > Level F051, according to Table A.3 on page 21. ■ High ambient temperature around the inverter and high output current. For further information, refer to of the user's manual available for download on the website: **www.weg.net**. ■ Blocked or defective fan. ■ Heatsink is too dirty, preventing the air flow.
F070 Overcurrent/Shortcircuit	Overcurrent or short-circuit on the output, DC Link or braking resistor.	■ Short-circuit between two motor phases. ■ IGBTs module in short-circuit or damaged. ■ Start with too short acceleration ramp. ■ Start with motor spinning without the Flying Start function.
F072 Motor Overload	Motor overload fault.	■ P156, P157 or P158 setting is too low in relation to the motor operating current. ■ Overload on the motor shaft.
F078 Motor Overtemperature	Overtemperature fault measured on the motor temperature sensor (Triple PTC) via analog input AIx	■ Overload on the motor shaft. ■ Load cycle is too high (high number of starts and stops per minute). ■ High ambient temperature around the motor. ■ Poor contact or short-circuit ($3k9 < R_{PTC} < 0k1$). ■ Motor thermistor not installed. ■ Motor shaft is stuck.
F080 CPU Fault (Watchdog)	Fault related to the supervision algorithm of the inverter main CPU.	■ Electric noise. ■ Inverter firmware fault.
F081 End of User's Memory	Fault of end of memory to save user's parameter table.	■ Attempt to save (P204 = 9 or P204 = 10) more than 64 parameters (with values different from the factory default) on the User parameter table.
F082 Fault in Data Transfer (MMF)	Fault in data transfer using MMF accessory.	■ Attempt to download data from the flash memory module to the inverter with the inverter energized. ■ Attempt to download a SoftPLC application incompatible with the destination inverter. ■ Problems saving data downloaded to the inverter.
F084 Auto-diagnosis Fault	Fault related to the automatic identification algorithm of the inverter hardware.	■ Poor contact in the connection between the main control and the power pack. ■ Hardware not compatible with the firmware version. ■ Defect on the internal circuits of the inverter.
F087 Iu Offset Fault	Fault related to the measurement of the Iu current offset.	■ Electric noise. ■ Inverter internal cables disconnected. ■ Defect on the inverter internal circuits.
F088 Iv Offset Fault	Fault related to the measurement of the Iv current offset.	■ Electric noise. ■ Inverter internal cables disconnected. ■ Defect on the inverter internal circuits.
F089 Iw Offset Fault	Fault related to the measurement of the Iw current offset.	■ Electric noise. ■ Inverter internal cables disconnected. ■ Defect on the inverter internal circuits.

Fault / Alarm	Description	Possible Causes
A090 External Alarm	External alarm via DIx (option "no external alarm" in P263 to P270).	■ Wiring on DI1 to DI8 inputs are open or have poor contact.
F091 External Fault	External fault via DIx ("no external fault" in P263 to P270).	■ Wiring on DI1 to DI8 inputs are open or have poor contact.
A128 Telegram Reception Timeout	It indicates that the device stopped receiving valid telegrams for a period longer than the setting in P314. The time counting starts as soon as it receives the first valid telegram, with correct address and error-checking field.	■ Check network installation, broken cable or fault/poor contact on the connections with the network, grounding. ■ Ensure the master always sends telegrams to the equipment in a time shorter than the setting in P314. ■ Disable this function in P314.
A147 EtherNet/IP Communication Offline	It indicates interruption in the cyclic communication with EtherNet/IP master. It occurs when, for any reason, after the cyclic communication of the master with the product is started, this communication is interrupted.	■ Check the status of the network master. ■ Check the network installation, broken cable or failed/bad contact in the network connections.
A149 Timeout Modbus TCP	It indicates that the device stopped receiving valid telegrams for a period longer than the setting in P868. The time counting starts as soon as it receives the first valid telegram.	■ Check network installation, broken cable or fault/poor contact on the connections with the network, grounding. ■ Ensure the Modbus TCP client always sends telegrams to the equipment in a time shorter than the setting in P868. ■ Disable this function in P868.
A152 Indoor Air Overtemperature	High Indoor Air Temperature Alarm.	■ High internal temperature air, 80 °C < P034 < 85 °C. ■ Damaged inverter's internal fan. ■ The ambient temperature is higher than the specified value depending on the NEMA Enclosure Standards for Electric Motors (TENV: < 40 °C) and (TEAO: < 50 °C).
F153 Indoor Air Overtemperature	High Indoor Air Temperature Fail.	■ High internal temperature air, P034 > 85 °C. ■ Damaged inverter's internal fan. ■ The ambient temperature is higher than the specified value depending on the NEMA Enclosure Standards for Electric Motors (TENV: < 40 °C) and (TEAO: < 50 °C).
A163 Signal Fault AI1 4...20 mA	Analog input signal AI1 at 4 to 20 mA or 20 to 4 mA is below 2 mA.	■ Current signal on the analog input AI1 interrupted or null. ■ Parameterization error on analog input AI1.
A177 Replace Fan	Alarm to replace the fan (P045 > 50000 hours).	■ Maximum number of operation hours of the heatsink fan exceeded.
F179 Fan Low Speed	Internal fan with speed (P0036) under 2/3 of rated fan speed.	■ Internal fan failure. ■ Check if the fan is properly connected. ■ Fan is clogged with dirt.
F182 Pulse Feedback Failure	Pulse feedback circuit fault of the output voltage. **Note:** it may be turned off in P397.	■ Hardware identification fault; compare P295 and P296 to the inverter identification label. ■ Inverter internal pulse feedback circuit fault.
A211 Drive in Fire Mode	Indicates that the drive is in Fire Mode.	■ The digital input programmed for activating the Fire Mode is active.
F228 Timeout in Receipt of Telegrams	It indicates that the device stopped receiving valid telegrams for a period longer than the setting in P314. The time counting starts as soon as it receives the first valid telegram, with correct address and error-checking field.	■ Check network installation, broken cable or fault/poor contact on the connections with the network, grounding. ■ Ensure the master always sends telegrams to the equipment in a time shorter than the setting in P314. ■ Disable this function in P314.
F247 EtherNet/IP Communication Offline	It indicates interruption in the cyclic communication with EtherNet/IP master. It occurs when, for any reason, after the cyclic communication of the master with the product is started, this communication is interrupted.	■ Check the status of the network master. ■ Check the network installation, broken cable or failed/bad contact in the network connections.

English

Fault / Alarm	Description	Possible Causes
F249 Timeout Modbus TCP	It indicates that the device stopped receiving valid telegrams for a period longer than the setting in P868. The time counting starts as soon as it receives the first valid telegram.	■ Check network installation, broken cable or fault/poor contact on the connections with the network, grounding. ■ Ensure the Modbus TCP client always sends telegrams to the equipment in a time shorter than the setting in P868. ■ Disable this function in P868.
A700 Remote HMI Communication	No communication with remote HMI, but there is no frequency command or reference for this source.	■ Check if the communication interface with the HMI is properly configured in parameter P312. ■ HMI cable disconnected.
F701 Remote HMI Communication Fault	No communication with the remote HMI; however, there is command or frequency reference for this source.	■ Check that the HMI communication interface is properly configured in parameter P312. ■ HMI cable disconnected.
A702 Inverter Disabled	This failure occurs when there is a SoftPLC movement block active and the General Enable command is disabled.	■ Check if the drive General Enable command is active.
A704 Two Movem. Enabled	It occurs when 2 or more SoftPLC movement blocks are enabled at the same time.	■ Check the user's program logic.
A706 Refer. Not Progr. SPLC	This failure occurs when a SoftPLC movement block is enabled and the speed reference is not programmed for the SoftPLC.	■ Check the programming of the references in the Local and/or Remote mode (P221 and P222).
A708 SoftPLC Application Stopped	SoftPLC Application not running.	■ SoftPLC Application is stopped (P901 = 0 and P900 = 3). ■ SoftPLC state presents application incompatible with the firmware version of the frequency inverter.
F709 SPLC Application Stopped	SoftPLC application not running.	■ SoftPLC application stopped (P901 = 0 and P900 = 3). ■ SoftPLC state presents incompatible application with the firmware version of the frequency inverter.
F710 Size of the SoftPLC Application	The size of the SoftPLC user's program exceeded the maximum memory capacity.	■ The logic implemented on the SoftPLC is too large. Check project size.
F711 Fault on SoftPLC Application	Fault found in SoftPLC user's program.	■ SoftPLC user's program stored on flash memory is corrupted. ■ Timeout during execution of SoftPLC scan cycle.
A712 SPLC Protected Against Copy	It occurs when there is an attempt to copy the SoftPLC application protected against copies.	■ Attempt to copy SoftPLC application protected against copies ("never permit copies"). ■ Attempt to copy SoftPLC from a copy protected against copies ("no permission to copy from a copy").
F750/A750 to F799/A799 User's Faults/Alarms for SoftPLC	Fault/Alarm range intended for the user's application developed in the SoftPLC function.	■ Defined by the user's application developed in the SoftPLC function.

APPENDIX A - TECHNICAL SPECIFICATIONS

Table A.1: Situações para o estado CONFIG

P047	Condição
0	Out of CONFIG status. The HMI and parameters P006 and P680 must not indicate ConF.
1	Two or more DIx (P263...P270) programmed for (4 = Forward Run).
2	Two or more DIx (P263...P270) programmed for (5 = Reverse Run).
3	Two or more DIx (P263...P270) programmed for (6 = Start).
4	Two or more DIx (P263...P270) programmed for (7 = Stop).
5	Two or more DIx (P263...P270) programmed for (8 = Direction of Rotation).
6	Two or more DIx (P263...P270) programmed for (9 = LOC/REM).
7	Two or more DIx (P263...P270) programmed for (11 = Accelerate E.P.).
8	Two or more DIx (P263...P270) programmed for (12 = Decelerate E.P.).
9	Two or more DIx (P263...P270) programmed for (14 = 2nd Ramp).
10	Reserved
11	Two or more DIx (P263...P270) programmed for (24 = Disable Flying Start).
12	Two or more DIx (P263...P270) programmed for (26 = Programming Off).
13	Reserved
14	Two or more DIx (P0263 ... P0270) programmed for (28 = Load User 2).
15	DIx (P263...P270) programmed for (4 = Forward Run) without DIx (P263...P270) programmed for (5 = Reverse Run) or the opposite.
16	DIx (P263...P270) programmed for (6 = Start) without DIx (P263...P270) programmed for (7 = Stop) or the opposite.e
17	P221 or P222 programmed for (8 = Multispeed) without DIx (P263...P270) programmed for (13 = Multispeed) or the opposite.
18	P221 or P222 programmed for (7 = E.P.) without DIx (P263...P270) programmed for (11 = Accelerate E.P) or the opposite.
19	P224 programmed for (1 = DIx) OR P227 programmed for (1 = DIx) without DIx (P263...P270) programmed for (1 = Run/Stop) AND without DIx (P263...P270) programmed for (2 = General Enable) AND without DIx (P263...P270) programmed for (3 = Quick Stop) AND without DIx (P263...P270) programmed for (4 = Forward Run) AND without DIx (P263...P270) programmed for (6 = Start).
20	Reserved
21	P221 or P222 programmed for (8 = Multispeed) with DI1 (P263) AND DI2 (P264) OR DI1 (P263) AND DI5 (P267) OR DI1 (P263) AND DI6 (P268) OR DI2 (P264) AND DI5 (P267) OR DI2 (P264) AND DI6 (P268) OR DI5 (P267) AND DI6 (P268) programmed for (13 = Multispeed).
22	Minimum Frequency Reference (P133) greater than Maximum Frequency Reference (P134) OR Intermediate Frequency (P146) greater than Field Weakening Speed (P145).
23 to 28	Reserved
29	Two or more DIx (P263 ... P270) programmed for (49 = Enable Fire Mode) OR two or more DOx (P275 ... P278) programmed for (45 = Fire Mode) OR P580 programmed for 1, 2 ou 4 (Fire Mode Active) without DIx programmed for (49 = Activate Fire Mode) OR DIx programmed for (49 = Activate Fire Mode) or DOx programmed for (47 = Fire Mode) and P580 programmed for (0 = Fire Mode Inactive) ou (3 = Reserved)
30 to 32	Reserved
33	Parameterization in conflict with DC Bus Compensation. Energy Saver active (P588 value other than zero), Controle VVW ativo (P202 = 5), Functions Ride-Through or Flying Start are enable (P320 value other than zero)
34	The P221 or P222 parameters were set to 18 (AI1 over PWM), and the P246 parameter is not set to the PWM function, i.e., its value is different from 7, 8, or 9.

Table A.2: Levels of performance monitoring of the DC link voltage

Supply	Level F021	Level F022
380 Vac (P296 = 4)	385 Vdc	800 Vdc
400 to 415 Vac (P296 = 5)	405 Vdc	800 Vdc
440 to 460 Vac (P296 = 6)	446 Vdc	800 Vdc
480 Vac (P296 = 7)	486 Vdc	800 Vdc

Table A.3: Overtemperature actuation levels of the power module

Line	Level A050	Level F051
400 V	100°C	110°C

English

APPENDIX B - SPECIAL OPERATING MODES

B.1 ELECTRICAL CONNECTIONS

They intended the control and the operation of the ECM Industrial inverter, and they are:

- **XC1**: to the cable connection of the power supply.

- **W/V/U**: to the cable connection to the built-in motor of the product.

- **XC3**: to the communication accessories assembly, like Bluetooth or Ethernet Dual Port.

- **XC10**: to the speed command and reference through the analog and digital signs according to the connection schema from figure B.1. Table B.1 describes the pinout function.

- **XC11**: to the signage via relay output, see table B.2.

- **XC13**: to the accessory connection of the serial HMI exclusively.

- **XC14**: to the RTU Modbus communication, see table B.3.

- **XE1** and **XE2**: to interconnect the *GND* reference of the *EMI* filter to the metal housing of the product.

- **S1**: to force the default RTU Modbus communication that changes the communication speed parameters, see table B.4.

- **S2**: to enable the communication end line of the *RS485* standard, see table B.5.

- **X9**: to indicate the inverter operation state via LED, see table B.8.

⚠ **ATTENTION!**

- The grid input voltage should be compatible with the inverter's rated voltage.

- The electrical grids with the IT system (high impedance between the neutral and protective conductors) or with the delta corner grounded could not be used because they would damage the inverter.

Table B.1: XC10 Borne Connection

Pin number	Name	Description
1	GND	Reference 0V
2	10V	DC Power Supply +10V
3	AI1	Analog Input 1 by Current
4	GND	Reference 0V
5	AI1	Analog Input 1 by Voltage
6	DO2	Transistor Output (Frequency)
7	GND	Reference 0V
8	DI3	Digital Input (PWM) for reference speed
9	DI2	Digital Input for rotation direction
10	DI1	Digital Input for Run/Stop

⚠ **ATTENTION!**

- The current supply capacity of the +10V DC source must be limited to 50 mA for powering external circuits.

- For any inductive load used through Digital Output 2, a free-wheeling diode should be installed in parallel. The lack of this component can cause damage to the internal electronic circuits of the inverter.

Table B.2: XC11 Borne Connection

Pin number	Name	Description
1	DO1-RL-NC	Digital Output 1: Normally Closed Contact of Relay 1
2	DO1-RL-C	Digital Output 1: Common Contact of Relay 1
3	DO1-RL-NO	Digital Output 1: Normally Opened Contact of Relay 1

Table B.3: XC14 Borne Connection

Pin number	Name	Description
1	GND	Reference 0V
2	B(+)	RS485 - B line
3	A(-)	RS485 - A line

Table B.4: Setting up the S1 switch to force serial communication

Switches Adjustment	Option
S1.1 = OFF and S1.2 = OFF	The serial communication obeys the previous configuration from the P308, P310, P311, and P312 parameters
S1.1 = ON and S1.2 = OFF	The serial communication is forced to the default serial communication
S1.1 = OFF and S1.2 = ON	Combination is not allowed
S1.1 = ON and S1.2 = ON	Combination is not allowed

The forced serial configuration has the following features:

- **Address**: 1

- **Baud Rate**: 19200 bits/s

- **Bytes Config**: 8 bits, even, 1 stop bit

- **Protocol**: Modbus RTU Slave

✓ **NOTE!**
The forced serial configuration allows that the P308, P310, P311, and P312 parameters be modified using the remote HMI or the RTU Modbus serial interface as long as they have the same configuration cited before.

Table B.5: Setting up the S2 switch to RS485 configuration

Switches Adjustment	Option
S2.1 = OFF and S2.2 = OFF	Line End of RS485 off
S2.1 = ON and S2.2 = ON	Line End of RS485 on
S2.1 = OFF and S2.2 = ON	Combination is not allowed
S2.1 = ON and S2.2 = OFF	Combination is not allowed

When connecting this inverter to an **RS485** network, the following considerations must be made:

- It is recommended to use shielded twisted pair cable.

- It is recommended that this cable have one wire to connect to the GND reference. When the cable lacks this additional wire, the GND signal should remain unconnected.

- The communication cable routing must be done separately (and, if possible, far away) from the power supply cables.

- All network devices must be properly grounded, preferably on the same ground connection. The cable shield must also be grounded.

- Enable termination resistors only at two points, at the ends of the main bus, even if there are derivations from the bus.

B.2   REFERENCES MANUAL

The inverter of the ECM Industrial was specially developed for Permanent Magnet Synchronous Motors and was based on the **CFW300** inverter line, whose many technical features are the same. For further information, get the user manual for the **CFW300** inverter, available for download at the site: **www.weg.net**.

B.3   SPEED CONTROL

By default, the order to start and stop the inverter is given by the respective digital signal applied to input **DI1**. The digital signal applied to input **DI2** defines the direction of motor rotation. Speed control is performed by the analog signal applied to input **AI1**.
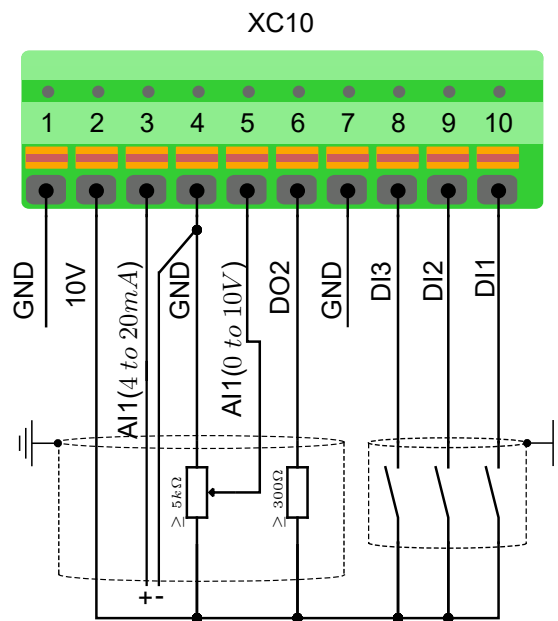

Figure B.1: XC10 connector signals

⚠ **ATTENTION!**
Analog input **AI1** can be used both by **pin 3** and by **pin 5** of connector **XC10**, but these pins must not be used simultaneously.

The types of speed controls available for industrial fan applications are:

1. pulse width modulation (digital input DI3);

2. via analog input (current or voltage signals via analog input AI1);

3. via a serial interface (Modbus RTU).

B.4 MOTOR MODELS AND FACTORY DEFAULT

The electronically commutated motor, ECM Industrial, is identified according to its drive and motor models:

- Regarding the inverter model, it utilizes the P029 parameter value to classify the operating range in relation to the input voltage and the output current.

- The Factory Default depends on the coupled motor and may present differences in relation to the initial values presented in the Parameters Table.

- Regarding the motor model, identification is made through the serial number of the product that is written on the P610, P611, and P612 parameters.

P029 - Power hardware configuration

Adjustable Range:	0 to 8
Properties:	ro

Description:

Table B.6: P029 Parameter Option

P029	Description
0	Not identified
1	Rated current of 14,0 A and output voltage of 380 V
2	Rated current of 10,0 A and output voltage of 380 V
3	Rated current of 7,0 A and output voltage of 380 V
4 to 8	Reserved

This parameter depends on the HW inverter's characteristics. When a factory default is loaded, the inverter HW model is loaded and stored in this parameter.

NOTE!
When a valid HW model is not found, the P029 parameter value becomes zero, and the F084 fault is generated.

P204 - Load/Save Parameters

Adjustable Range:	0 to 17
Properties:	cfg

Description:

Table B.7: P204 Parameter Option

P204	Action
0 to 4	**Not Used**: no action
5	**Load Default Motor**: the parameters in the inverter are loaded with the factory settings based on the built-in motor.
6	**Not Used**: no action
7	Reserved
8	**Load User**: it transfers the content of the memory from user parameter to the inverter current parameters
9	Reserved
10	**Save User**: transfers the current content of the parameters to the user's parameter memory
11	**Load Default SoftPLC**: it loads the factory default in SoftPLC parameters (P910 to P979)
12 to 17	Reserved

NOTE!

- To load user parameters into the inverter operation area (P204 = 8), this area must have been previously saved.

- The factory default (P204 = 5) restores the previously defined parameters according to the motor and the application for which it is intended.

P610, P611 e P612 - Product Serial Number

Adjustable Range:	0 to 9999
Properties:	ro

Description:

Parameters P610, P611, and P612 make up the product serial number (NSP) according to the following formula:

$$NSP = P610 + (P611 \times 10000) + (P612 \times 10000000)$$

As an example, for a serial number equal to 1234560001, the values to be recorded in these parameters are: P610 = 1, P611 = 3456, and P612 = 12.

B.5 FIRE MODE

The Fire Mode function is intended to make the frequency inverter continue to drive the motor even under adverse conditions, inhibiting most faults generated by the frequency inverter. The Fire Mode is activated by driving a digital input previously set to Fire Mode with logic level "1" at the input terminals for at least 5 seconds. The Fire Mode function is enabled for one of the DIx Digital Inputs as written in parameters P246, P263, P264, or P265 depending on the desired input signal type (logic level, frequency, or pulse width modulation - PWM), and beyond this configuration, it is necessary that parameter P580 be configured in one of its options different from 0 or 3. If this is not done, the inverter will indicate that it is in configuration status through parameter P006 with the value 5 and parameter P047 with the value 29.

Once the inverter is in the Fire Mode state, the only way to disable the Fire Mode operation function is to turn off the entire solution and then turn it back on again. It could be triggered using the internal 10 V DC power

supply.When the inverter detects the entry into fire mode, it updates the operating mode status in "P006 - Inverter Status" to "8 - Fire Mode", and the alarm "A211" is displayed on the HMI and written at the parameter "P048 - Current Alarm", indicating that the frequency inverter is in Fire Mode.

DANGER!
FIRE MODE FUNCTION - RISK OF DEATH!
- Notice that the inverter is only one of the components of the system, and it is configurable for several functions that must be pre-established in the project.
- Therefore, the full operation of the Fire Mode function, with the required safety, depends on the specification in the project, as it also requires the compatibility with all the other components of the system and the installation environment.
- Ventilation systems that operate in life safety applications must be approved by the Fire Department and/or another competent local public authority.
- The activation of the Fire Mode function disables essential protection functions for the safety of the frequency inverter and of the system as a whole.
- The non-interruption of the frequency inverter operation due to the improper activation of the Fire Mode function is critical, as it may cause injuries or even death, and damages to the frequency inverter, to the other components of the system and to the environment where it is installed.
- The operation in the Fire Mode function may, under certain circumstances, result in fire, as the protection devices will be disabled.
- Only qualified personnel from safety engineer departments must evaluate and activate the equipment Fire Mode function.
- It is essential to follow the aforementioned instructions before using the frequency inverter in the Fire Mode function.

Under no circumstance shall WEG take any liability for deaths, damages, compensations and/or losses occurred due to the improper programming or operation of the frequency inverter in the Fire Mode function.

IMPORTANT - RISK OF DEATH!
When activating the "Fire Mode" function, the user must be aware of the fact that the protection functions of the frequency inverter will be disabled, which may result in damages:
1. to the inverter;
2. to the components connected to it;
3. to the environment where it is installed;
4. to the people present in the place.

Therefore, the operator who activates the Fire Mode function takes full liability for the resulting risks.

The operation of the inverter with the Fire Mode function programmed voids the warranty of the product.

The operation in this condition is internally registered by the frequency inverter, and it may be validated by an engineer and occupational safety professional duly qualified by the manufacturer.

NOTE!
When activating the Fire Mode function, the user acknowledges that the protection functions of the frequency inverter are disabled, which may result in damages to the frequency inverter, to the components connected to it, to the environment in which it is installed and to the people present in such environment. Therefore, the user takes full liability for the resulting risks. The operation of the inverter with the Fire Mode function enabled voids the warranty of the product. The operation under such condition is internally registered by the frequency inverter and must be validated by an engineer and occupational safety professional duly qualified. If the user presses the 🅿 key, the message will disappear from the display (A211), but the operation mode will continue to be shown in parameter P006. It is also possible to indicate this condition in a digital output (DOx) previously programmed for Fire Mode. During the operation in Fire Mode, all the stop commands are ignored (even General Enable). Some Faults (considered critical) that may damage the inverter will not be disabled, but they can be infinitely reset automatically (define this condition in parameter P582): Overvoltage on the DC Link (F022), Overcurrent/Short Circuit (F070).

B.6   OPERATING SIGNS BY LED

The ECM Industrial has a STATUS LED on the back cover that shows the operating state and helps with fault diagnosis:

- The LED will remain on while the motor is working at a speed greater than zero;

- The LED will remain off while the motor is stopped, i.e., speed equals zero.

> ⚠ **ATTENTION!**
>
> - The LED being off does not mean that there is no power supply to the inverter;
>
> - Make sure that the power supply of the product is disconnected before performing any maintenance.

- The LED will flash in the event of any failure. The table B.8 indicates the intermittent behavior according to the fault type.

Table B.8: Intermittent behavior according to the fault type

Intermittent periods	Failure	Time on	Time off	Wait Time
2	Undervoltage - F021	0.1 s	0.1 s	-
3	Overcurrent - F070	0.25 s	0.25 s	2 s
6	Overvoltage - F022			
9	Self-diagnosis failure - F084			
10	CPU failure (Watchdog) - F080			
11	Overload / Locked rotor - F072			
2	Other failures	1 s	1 s	1 s

B.7   SPEED REFERENCE INPUT VIA PWM SIGNAL

Through the parameter "P246 - Function of the Input in Freq. FI1", configured for the values 7, 8, or 9 (PWM in DIx with Fire Mode function), the inverter speed input can be adjusted by an 80 Hz ±2,5 % PWM signal and a duty cycle variable from 10 % to 95 %. As it is an option that has the Fire Mode operating mode linked, it is also necessary to configure parameter P580 (Fire Mode Configuration) in one of its options other than 0 or 3. If this is not done, the inverter will indicate the status of the configuration, as described in Section B.5.

The duty cycle and frequency of the signal applied to the configured digital input can be checked using the parameters "P021 – PWM Duty Cycle %" and "P022 – IF Value in Hz". To use the duty cycle as a speed reference from "P133 – Minimum Frequency" to "P134 – Maximum Frequency", it is necessary to set "P221 – Sel. LOC Reference" to "5 – PWM". For this configuration, the status of the DIx in "P012: Status DI3 to DI1" will only be updated when "P022" is set to "0".