# Vector inverter for lifts with synchronous/asynchronous motors

## ADL510

Functions description
and parameters list

Language: English

# Information about this manual

This manual explains the functions and the description of the parameters.

The informations about mechanical installation, electrical connection and fast start-up can be found on the ADL550 HW+QS (Hardware and Quick start guide), it is available on WEG web site in the download section (https://www.weg.net/catalog/weg/IT/en/p/MKT_WDC_GLOBAL_PRODUCT_INVERTER_FOR_ELEVATOR_ADL500).

**Firmware version**

This manual is updated according to:

- firmware version V 3.x.2
- lift application, EFC V 3.x.2

The firmware version identification number can be read in the data matrix (see section 2.3 of the ADL500 HW+QS manual) or in parameter **Firmware Version** PAR 174 (DRIVE INFO menu).

**General information**

*Note!* In industry, the terms “Inverter”, “Regulator” and “Drive” are sometimes interchanged. In this document, the term “Drive” will be used.

Before using the product, read the safety instruction section carefully. Keep the manual in a safe place and available to engineering and installation personnel during the product functioning period.

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Thank you for choosing this WEG product.

We will be glad to receive any possible information which could help us improvingthis manual.

The e-mail address is the following: techdoc@weg.net.



## Symbols used in the manual


Indicates a procedure, condition, or statement that, if not strictly observed, could result in personal injury or death.


Indicates a procedure, condition, or statement that, if not strictly observed, could result in damage to or destruction of equipment.

Indicates that the presence of electrostatic discharge could damage the appliance. When handling the boards, always wear a grounded bracelet.


Indicates a procedure, condition, or statement that should be strictly followed in order to optimize these applications.

*Note !* Indicates an essential or important procedure, condition, or statement.

## Table of Contents

## A.1 Menu display modes

The programming menu can be displayed in four modes, which can be selected using the parameter 554 **Access level** (04 - DRIVE CONFIG menu):

| | |
|---|---|
| (0) Readonly | The read-only parameters are displayed. |
| (1) Easy | Only the main parameters required for a basic start up are displayed. |
| (2) Intermediate | Only the parameters for initial optimization are displayed. |
| (3) Expert | All parameters are displayed except for the menu and service parameters. |
| (4) Service | All parameters are displayed. Reserved for service. |

## A.2 Programming of “function block” digital input signals

The signals, variables and parameters of each single “function block” of the drive are interconnected in order to achieve the configurations and controls inside the control system.

These can be managed and modified using the keypad, PC configurator or fieldbus programming.

The programming mode is based on the following logic:

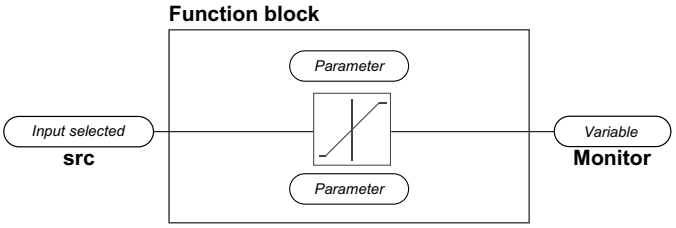
**Src** (source; i.e.: **Fault reset src**, PAR: 4500)

This term defines ***the source of the function block input***, i.e. the signal to be processed in the function block.

The different configurations are defined in the relative ***selection lists***.

**Mon** (monitor; es.: **Mon ing digitale 1**, PAR: 1210)

Si definisce con tale denominazione ***la variabile in uscita al blocco funzione, risultante dalle elaborazioni effettuate nel blocco stesso***.




## A.3 Variable interconnections mode

The **source (src)** allows the desired control signal to be assigned to the function block input.

This operation is performed by using specific selection lists.

Possible control signal sources:

**1 – Physical terminal**

The analog and digital signals come from the terminal strip of the regulation card and/or from those of the expansion cards.

**2 – Drive internal variables**

Internal drive control system variables, from “function block” calculations, sent via keypad, PC configurator or fieldbus.

**Practical example**

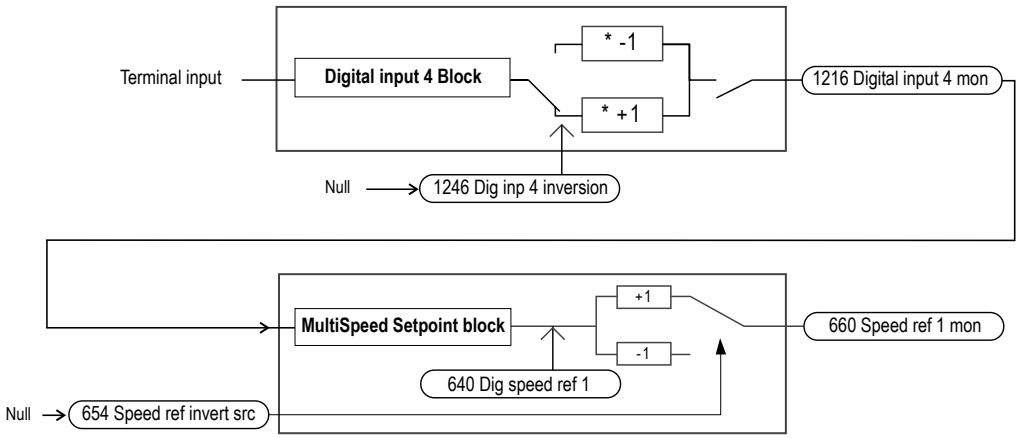
The following examples illustrate the philosophies and methods with which more or less complex operations are performed in the single “function blocks”, the results of which represent the output of the block.

*• Example: Changing the digital outputs source*

The main drive reference (in the default configuration) **Speed ref 1 mon (**PAR 660) s generated by the output of the function block “**Multispeed selector**”. Its default source is the multispeed 1, **Dig input 4 mon** signal (PAR 1216), profrom the output of the function block “**Digital Input 4 Block**”, which in this case refers to digital inout 4 of the signal terminal strip.

*• Example: Inverting the digital input signal “Start fwd cmd src”*

To invert the “**Start fwd cmd src**” digital input signal the value of the parameter **Dig inp 4 inversion** (PAR 1246), which has a default setting of **Null** (nessuna operazione)no operation), must be changed by selecting the source of the command signal from among those listed in the L_DIGSEL 2 selection list, for example **Dig inp 4 inversion (PAR 1246)**, **One** (function always enabled), etc.




The diagrams above illustrate the internal processing philosophy of the single “function blocks” and the result of these changes on the other interconnected “function blocks”.

***Note!*** This section contains a brief description of the functions of the other parameters in the function blocks not included for the changes in the example.

The parameter **Speed ref invert src** (PAR: 654) can be used to select the source for the command to reverse the “**Multispeed selector**” function block output.

The output signal from the “**Speed setpoint**” block is displayed in the parameter **Speed ref 1 mon** (PAR 660).

## B - Parameters and functions description

### Legend

| ❶ | ❷ | ❸ | ❹ | ❺ | ❻ | ❼ | ❽ | ❾ | ❿ | ⓫ |
|---|---|---|---|---|---|---|---|---|---|---|
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
| **4 DRIVE** | | | | | | *( Level 1 menu )* | | | | | |
| **4.1 DRIVE MONITOR** | | | | | | *( Level 2 menu )* | | | | | |
| **4.1.1** | **250** | **Output current** | A | FLOAT | 16/32BIT | 0 | 0 | 0 | R | | ALL |
| **4.4 ALARM CONFIG** | | | | | | | | | | | |
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
| **4.4.1** | **4500** | **Fault reset src** | | LINK | 16BIT | 6000 | 0 | 16384 | RW | | FVY |

Selection of the origin (source) of the signal to be used for the command to reset the drive after an alarm. The terminal that can be used for this function can be selected from among those listed in the "**L_DIGSEL2**" selection list. *[*]*

| | | | |
|---|---|---|---|
| ❶ | Indexing of the menu and parameter | | |
| ❷ | Parameter identifier | | |
| ❸ | Parameter description | | |
| ❹ | UM: unit of measure | | |
| ❺ | Type of parameter | BIT | Boolean, from modbus seen as 16 bits |
| | | ENUM | Selection list, from modbus seen as 16 bits |
| | | FLOAT | Real, from modbus seen as 32 bits |
| | | INT16 | Integer with sign 16 bits, from modbus seen as 16 bits |
| | | INT32 | Integer with sign 32 bits, from modbus seen as 32 bits |
| | | ILINK | Selection list, from modbus seen as 16 bits |
| | | LINK | Selection list, from modbus seen as 16 bits |
| | | UINT16 | Integer without sign 16 bits, from modbus seen as 16 bits |
| | | UINT32 | Integer without sign 32 bits, from modbus seen as 32 bits |
| | | STRING16 | 16 character string |
| | | FBM2SIPA | IPA of the parameter received from the CAN master |
| | | FBF2MIPA | IPA of the parameter sent to the CAN master |
| ❻ | Format of data exchanged on Fieldbus | | 16=16BIT, 32=32BIT, 16/32= 16/32BIT |
| ❼ | Default value (1) | CALCF<br>CALCI<br>SIZE | Value calculated as a number with floating point<br>Value calculated as a whole number<br>Value depending on the size of the drive |
| ❽ | Minimum value | | |
| ❾ | Maximum value | | |
| ❿ | Accessibility | R | Read |
| | | W | Write |
| | | Z | Parameters that can be modified ONLY with the drive disabled |
| ⓫ | Level | RO | Read Only |
| | | INT | Intermediate |
| | | EXP | Expert |
| | | SRV | Service |
| | | ESY | Easy |
| | Visibility | F | Open loop V/f mode control, asynchronous motor (PAR 540 = ASY SSC, Default). |
| | | V | Field oriented vector mode control, asynchronous motor (PAR 540 = ASY FOC). |
| | | Y | Field oriented vector mode control for permanent magnet synchronous motor (PAR 540 = SYN FOC). |
| [*] | Selection lists:<br>The "Source.../Src..." format parameters are linked to a selection list.<br>The source of the signal that will control the parameter can be selected from the list indicated.<br>The lists are indicated in paragraph D of this manual. | | |

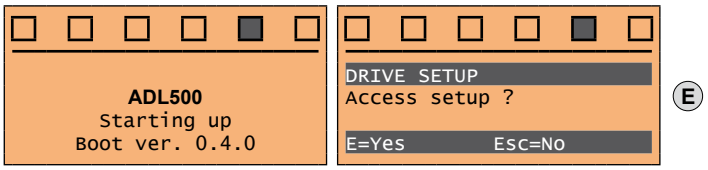
(1) The default value is usually common for Synchronous and Asynchronous versions. When it is different, the value of the synchronous version is indicated into brackets: e.g.: PAR 11012 Pulley diameter, Def= 0.6 (0.32), 0.6 = default ver. asynchronous, (0.32)= default ver. synchronous.

# DRIVE SETUP

Il SETUP DRIVE è una procedura che viene presentata all'utente solo alla prima accensione del drive e permette di modificare le impostazioni base.

Nel caso in cui si fosse completato il setup ma si desiderasse visualizzarlo nuovamente è necessario eseguire la procedura di ripristino (**Parametri di default**, PAR 580 e **Salva Parametri,** PAR 550) quindi spegnere e riaccendere il drive.

Tutti i parametri presenti nel setup sono anche disponibili all'interno dei vari menu del drive.




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | **578** | **Language select** | | ENUM | | GB | | | RW | INT | FVY |

Setting of the drive programming language.

**0** English
**1** Italian
**2** French
**3** German
**4** Spanish
**5** Turkish

English and Italian are pre-installed in the drive, to select the Italian language set **1**.

To set a different language download from the WEG site (https:///www.weg.net/..., DRIVE SET-UP folder) the available language file (wizard available in the ADL500 HW+QS manual, section 8.2.8.1 Language selection):

- Unzip and save the files to on the PC where the WEG DriveLabs configurator is installed in a folder named "ADL500LN";
- Start the language loading procedure, when finished the drive will be restarted;
- Select parameter 578 Select language and set the new language.

***Note!*** The language file must be aligned to the firmware and application version of the drive, check the match!

The new language will be loaded into the memory of the drive and will replace the Italian language. The English language cannot be replaced by another language.

***Note!*** The **Load Default** command (PAR 580) does not modify this parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | **2132** | **Encoder mode** | | ENUM | | None | | | RWZ | INT | FVSY |

The drive has a built-in encoder card. The encoder mode can be selected according to the following table:

**0** None
**1** Digital
**2** Sinus

# 1 STARTUP WIZARD

Following the step-by-step procedure from this menu, the drive can be started up by setting the main parameters relating to communication, feedback, motor, main system mechanical data, speed and motor self-tuning.

## 1.1 Set comm mode?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.1.1** | **4000** | **Communication mode** | | ENUM | | Parallel | | | RW | INT | FVSY |

Setting the type of communication to be used.

**0** Parallel I/O

Setting **0** the drive communicates with the Controller through the **Parallel I/O** (analogue inputs and outputs).

## 1.2 Set encoder param?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.2.1** | **2102** | **Encoder supply** | V | FLOAT | | 5.2 | 5.2 | 20.0 | RW | INT | FVY |

Setting of the encoder supply voltage. Min and max values are modified according to the selection of parameter 2104 **Encoder input config** as follows:

| PAR 2104 Encoder input config | Def | Min | Max |
|---|---|---|---|
| [0] HTL | 5.2 V | 5.2 V | 20.0 V |
| [1] TTL | 5.2 V | 5.2 V | 6.0 V |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.2.2** | **2132** | **Encoder mode** | | ENUM | | None | | | RWZ | INT | FVSY |

The drive has an integrated encoder card. The encoder mode can be selected in accordance with the following table:

**0** None
**1** Digital
**2** Sinus

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.2.3** | **2100** | **Encoder pulses** | ppr | UINT16 | | 1024 | 4 | 16384 | RWZ | INT | FVY |

Setting of the number of feedback encoder impulses. During setup, for incremental sinusoidal encoders + absolute EnDat, encoder absolute EnDat Full digital and Hiperface encoders this value is set automatically by reading the number of incremental encoder impulses.

With the EnDat Full digital Encoder, the value set automatically may be below the minimum.

## 1.3 Set motor data?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.1** | **540** | **Control type** | | ENUM | | ASY_VF | | | RWZ | INT | FVSY |

The control mode is displayed.

**0** ASY SSC
**1** ASY FOC

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.2** | **2000** | **Rated voltage** | V | FLOAT | | SIZE | 150 | 480 | RWZ | INT | FVSY |

Set the motor rated voltage as indicated on the data plate. This is the voltage the drive must supply at the motor rated frequency.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.3** | **2002** | **Rated current** | A | FLOAT | | SIZE | 1 | 1500 | RWZ | INT | FVSY |

The motor rated current at its rated power (kW / Hp) and voltage (indicated on the motor data plate).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.4** | **2004** | **Rated speed** | rpm | FLOAT | | SIZE | 10 | 32000 | RWZ | INT | FVSY |

Rated speed of the motor with full load in rpm. In some motors the synchronous speed (e.g. 1500 rpm for a 4-pole motor) and slippage, i.e. the loss of revolutions between the motor idling condition and the rated load condition (e.g. 80 rpm), is indicated. Enter the following: synchronous speed - slippage.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.5** | **2006** | **Rated frequency** | Hz | FLOAT | | SIZE | 1 | 1000 | RWZ | INT | FVS |

Rated frequency of the motor expressed in Hz.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.6** | **2008** | **Pole pairs** | | UINT16 | | SIZE | 1 | 60 | RWZ | INT | FVSY |

Motor pole pairs. The number of motor pole pairs is calculated using the motor plate data and applying the following formula:

$$p = \frac{60\ [s] \times f\ [Hz]}{nN\ [rpm]}$$

Where: p = motor pole pairs; f = motor rated frequency (PAR 2006)
Vn = motor rated speed (PAR 2004).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.7** | **2010** | **Rated power** | kW | FLOAT | | SIZE | 0.1 | 1500 | RWZ | INT | FVS |

Rated power of the motor at the rated voltage and frequency. This value represents the mechanical power produced on the motor shaft.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.3.8** | **2012** | **Cos phi** | | FLOAT | | SIZE | 0.6 | 0.95 | RWZ | INT | FVS |

Motor power factor, as indicated on the data plate (Cos φ). This parameter is not always present on the motor data plate: in that case use the default value present in the drive.

## 1.4 Set mechanical data?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.1** | **11002** | **Travel units sel** | | ENUM | | Hz (m/s) | | | RWZ | INT | FVY |

Selection of the unit of measure for speed references.

**0** Hz (output frequency)
**1** m/s (cabin speed and depends on the mechanical constant)
**2** rpm (speed of the motor shaft)

When the unit of measure is modified the conversion constants are re-calculated, the units of measure are changed in the parameter list and the multispeed values are converted into the new unit of measure (the result may contain approximations due to the conversion calculations).

A variable representing the speed of the cabin in m/s (fpm) is always available (PAR 14242).

There are fixed units of measure for the acceleration and deceleration parameters m/s², and for jerks m/s³.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.2** | **11006** | **Cabin speed** | m/s | FLOAT | | 1 | 0 | 10 | RWZ | INT | FVY |

Sets the maximum speed of system operation. This is also used for the recalculation of the full scale speed (PAR 680, **Full scale speed**).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.3** | **11010** | **Gearbox ratio** | | FLOAT | | 45 (1) | 1 | 200 | RW | INT | FVY |

Sets the reduction ratio between motor and pulley.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.4** | **11164** | **Rope ratio** | | FLOAT | | 1 (2) | 1 | 10 | RWZ | INT | FVY |

Sets the reduction ratio due to rope windings.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.5** | **11012** | **Pulley diameter** | m | FLOAT | | 0.6 (0.32) | 0 | 5 | RWZ | INT | FVY |

Impostazione del diametro della puleggia.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.6** | **11150** | **Car weight** | kg | FLOAT | | 400 | 0 | 10000 | RW | INT | FVY |

Setting of the weight of the cabin (intended as the total empty weight of everything hanging from the ropes: frame, walls, door operator, appliances, etc.).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.7** | **11152** | **Counter weight** | kg | FLOAT | | 1000 | 0 | 10000 | RW | INT | FVY |

Setting of the weight of the counterweight, including its frame.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.8** | **11154** | **Load weight** | kg | FLOAT | | 450 | 0 | 10000 | RW | INT | FVY |

Setting of the weight of the maximum load for system dimensions.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.4.9** | **11156** | **Rope weight** | kg | FLOAT | | 20 | 0 | 1000 | RW | INT | FVY |

Setting of the weight of the cable (intended as the total weight of all car suspension ropes).

## 1.5 Set speeds?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.1** | **11020** | **Multi speed 0** | | FLOAT | | 4.77 (0.1) | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 0 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp. This setting is taken as the default low speed value.

If the **Multi speed 0** value is changed, it will only be acquired when the drive is rebooted.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.2** | **11022** | **Multi speed 1** | | FLOAT | | 47.73 (1.0) | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 1 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp. This setting is taken as the default high speed value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.3** | **11024** | **Multi speed 2** | | FLOAT | | 21.48 (0.4) | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 2 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp. This setting is taken as the default maintenance speed value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.4** | **11026** | **Multi speed 3** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 3 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.5** | **11028** | **Multi speed 4** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 4 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.6** | **11030** | **Multi speed 5** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 5 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.7** | **11032** | **Multi speed 6** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 6 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.5.8** | **11034** | **Multi speed 7** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 7 value. Can be selected via digital input, fieldbus, etc.

The selected value is the reference for the S-shaped lift ramp.

***Note!***

By default, the multispeed 0, 1 and 2 have the values 5.00Hz, 47.73Hz and 20Hz respectively referred to a cabin speed of 1m/s.

The first three multispeeds take the values of 10%, 100% and 45% of the cabin speed each time the mechanical data is changed.

In addition, each time mechanical data is changed, the drive performs a multispeed congruity check that works as follows:

a) where a multispeed is greater than the nominal speed, it shall be limited to that speed;

b) if the mechanical values are changed further and the previously limited speeds are now lower than the nominal speed, these multispeeds are not changed (bearing in mind that the first 3 multispeeds always take the values in %).

By manually entering values of multispeed these are limited to the cabin speed, while following a change in the mechanical parameters that change the cabin speed, will be returned to the default values percentages.

## 1.7 Run autotune still?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.7.1** | **2032** | **Autotune** | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |

Performs self-tuning with the motor having ropes already wound on the traction pulley.

The self-tuning procedure may cause limited rotation of the motor shaft. To perform self-tuning, follow the procedure described on parameter PAR 2020 **Take parameters**.

## 1.8 Save parameters?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.8.1** | **550** | **Save parameters** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Any changes to parameter values immediately affect drive operations, but are not automatically saved in the permanent memory.

The “Save Parameters” command is used to save current parameter values in the permanent memory.

Any changes that are not saved will be lost when the drive is switched off.

To save parameters press the **E** key to start the save parameters procedure and press **E** again to confirm.

# 2 OPTIMIZATION WIZARD (OPTIMIZ. WIZARD)

Through this menu it is possible to immediately optimize the control response in order to maximise cabin comfort.

In addition to the automatic procedure (**Learning Trip** function), three or fives levels of optimization are available for each of the **Rollback**, **Comfort low speed**, **Comfort high speed** parameters.

To avoid possible vibrations, the optimization level should not be increased if not necessary.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2.1** | **9720** | **Learning trip** | | BIT | | 0 | 0 | 1 | RWZ | INT | VSY |

Launch the “Learning Trip” function, an automatic procedure to simplify commissioning and optimise the drive according to the system’s mechanical parameters.

**Attention**

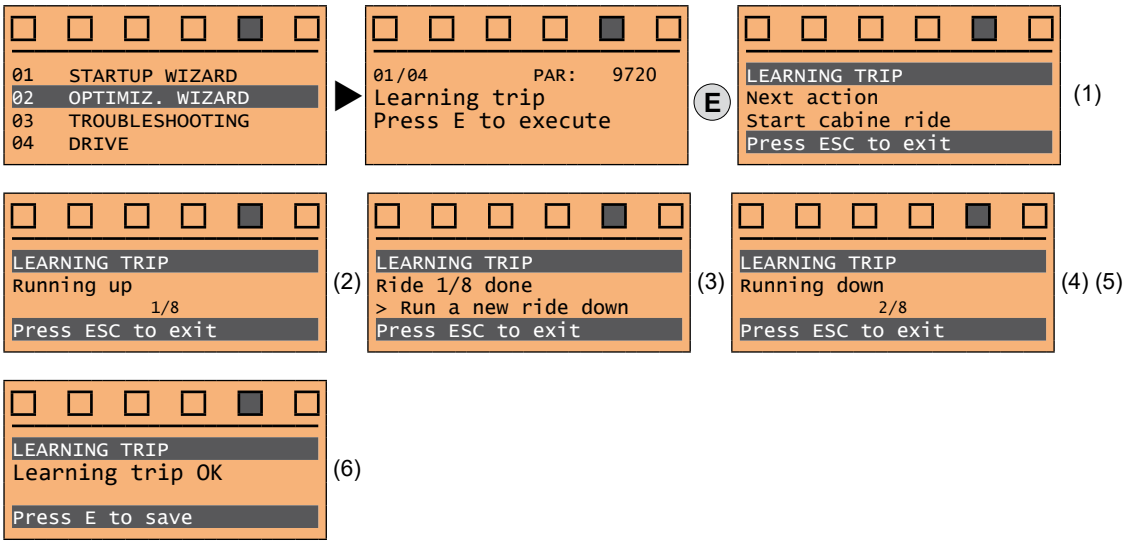
Before enabling the function:

- run the **Startup wizard,**
- check cabin movement in inspection mode to rule out any macroscopic data entry errors.

The function can be performed from the keypad and via the WEG_DriveLabs configurator (Wizard menu / Optimization Wizard).

To facilitate operations, the configurator/keypad suggests what actions are to be performed (e.g. up one floor, down one floor, etc.), intercepting any incorrect actions and communicating them (e.g. call to floor short, calls always in the same direction, etc.) so as to recommend the corrective action.

Once the sequences envisaged by the function have been completed, the basic speed regulator gains are automatically recalculated. Therefore the user can run a test travel to evaluate the improvement in performance obtained and, if still not satisfied, the Learning Trip procedure can be repeated or the deficient aspects improved using the appropriate sections of the optimisation wizard (Rollback, Comfort low speed, Comfort high speed).




(1) You are prompted to perform the first run (up or down).

(2) Perform the up run.

(3) You are prompted to perform a down run.

(4) Perform the down run.

(5) Repeat the operations (1) (2) (3) (4) several times.

(6) Procedure successfully completed.

Other possible messages:


Procedure not successfully completed. Short run error. Wrong direction error.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2.2** | **12000** | **Rollback at start** | | UINT32 | | 1 | 1 | 5 | RW | ESY | FVY |

In some applications, for a short time at the start of the stroke when the locking brake is lifted, the cab may move in the opposite direction to the controlled direction.

Selecting one of the five levels can reduce/eliminate the noise.

**1** Basic level pre-selected as default level
**2** Intermediate optimization level 2
**3** Intermediate optimization level 3
**4** Intermediate optimization level 4
**5** High optimization level

To avoid possible vibrations, the optimization level should not be increased if not necessary.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2.3** | **12006** | **Rollback at arrival** | | UINT32 | | 1 | 1 | 3 | RW | ESY | FVY |

In some applications, an undesired displacement of the cab may occur for a short time at the end of the stroke when the engine is held still while waiting for the brake to close.

Selecting one of the five levels can reduce/eliminate the noise.

**1** Basic level pre-selected as default level
**2** Intermediate optimization level 2
**3** Intermediate optimization level 3
**4** Intermediate optimization level 4
**5** High optimization level

To avoid possible vibrations, the optimization level should not be increased if not necessary.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2.4** | **12002** | **Comfort high spd** | | UINT32 | | 1 | 1 | 3 | RW | ESY | FVY |

During the high speed section there may be oscillations in the cabin or abrupt and sudden movements.

By selecting one of the five levels the disturbance can be reduced or eliminated.

**1** Basic level pre-selected as default level
**2** Intermediate optimization level 2
**3** High optimization level

To avoid possible vibrations, the optimization level should not be increased if not necessary.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2.5** | **12004** | **Comfort low spd** | | UINT32 | | 1 | 1 | 3 | RW | ESY | FVY |

During the low speed section there may be oscillations in the cabin or abrupt and sudden movements.

By selecting one of the five levels the disturbance can be reduced or eliminated.

**1** Basic level pre-selected as default level
**2** Intermediate optimization level 2
**3** High optimization level

To avoid possible vibrations, the optimization level should not be increased if not necessary.

# 3 TROUBLESHOOTING

For each typical problem of a Lift System, the parameter of the drive on which to act to solve the problem, are displayed by selecting the relative action.

## 3.1 Start

| Problem | Solution |
|---|---|
| The cabin doesn't start smoothly. | Increase the brake opening delay. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.1.1** | **11064** | **Brake open delay** | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |

Setting of the brake opening delay time.

## 3.2 Rollback

| Problem | Solution |
|---|---|
| There is an unwanted movement of the cabin in the opposite direction to the commanded at the start. | Modify the proportional and /or integral speed gain at start. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2.1** | **2200** | **Boost Voltage** | % | FLOAT | | 3 | 0 | 20.0 | RW | INT | F |

Specifica il valore della tensione supplementare applicata ai morsetti del motore alle basse velocità al fine di incrementare la coppia erogata. Valori eccessivi producono un aumento della corrente assorbita e del riscaldamento del motore a causa delle perdite resistive nell'avvolgimento statorico.

Intervallo di valori possibili : 0…20% della tensione nominale del motore.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2.2** | **2212** | **V/Hz Boost Mode** | | ENUM | | Auto | | | RW | INT | F |

This parameter can be used to select one of the following two boost voltage generation modes:

**0** Fixed
**1** Auto

In the "Fixed" mode, the boost voltage is defined by the user through parameter PAR 2200 **Boost voltage.**

At zero speed, the drive applies a voltage to the motor terminals equal to the value defined in parameter PAR 2200.

This additional voltage is gradually reduced for speeds higher than zero until it is eliminated for output frequencies above the threshold equal to half the rated frequency defined in parameter PAR 2204 **Base frequency** (see figure).

In "Auto" mode the boost voltage is dynamically adjusted by the drive.

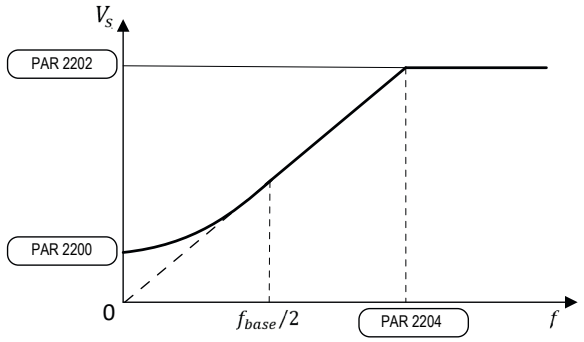



Figure 11.4: V/f characteristic curve profile

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2.3** | **2794** | **SR-P gain at start** | % | FLOAT | | 150.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of proportional control exercised by the PI regulator during the start phase.

In this initial phase the motor speed control loop must be sufficiently responsive to compensate for any load imbalance and thus counteract the roll-back effect.

An excessive increase of this parameter may generate system vibrations or unstable behaviour.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2.4** | **2796** | **SR-I gain at start** | % | FLOAT | | 110.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of integral control exercised by the PI regulator during the start phase.

Increasing the value of this parameter improves the speed control response in compensating for any load imbalance when the brake is opened.

## 3.3 Too fast acceleration (Too fast accel.)

| Problem | Solution |
|---|---|
| The acceleration is too abrupt. | Decrease the value of the initial acceleration jerk and / or acceleration value. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.3.1** | **11040** | **Accel initial jerk** | $m/s^3$ | FLOAT | | 0.2 | 0.001 | 20 | RW | ESY | FVY |

Setting of the jerk value for the first part of the acceleration.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.3.2** | **11042** | **Acceleration** | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |

Setting of the maximum acceleration value.

## 3.4 Slow speed vibrations (Slow speed vibr.)

| Problem | Solution |
|---|---|
| There are vibrations during the movement of the cabin at slow speed. | Modify the proportional and integral speed gain. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.4.1** | **2752** | **SR-P gain low speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the proportional control action exercised by the PI regulator for operating speeds below the minimum threshold defined in parameter PAR 2760 **SR-low speed thrsd**.

For operating speeds above this threshold, the actual level of proportional action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2756 **SR-P gain high speed**.

In the speed range between the thresholds defined in PAR 2760 SR-low speed thrsd and PAR 2762 **SR-high speed thrsd** parameters, the weight of the proportional action varies linearly with the speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.4.2** | **2754** | **SR-I gain low speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the integral control action exercised by the PI regulator for operating speeds below the minimum

threshold defined in parameter PAR 2760 **SR-low speed thrsd**.

For operating speeds above this threshold, the actual level of integral action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2758 **SR-I gain high speed**.

In the speed range between the thresholds defined in PAR 2760 **SR-low speed thrsd** and PAR 2762 **SR-high speed thrsd** parameters, the weight of the proportional action varies linearly with the speed.

## 3.5 High speed vibrations (High speed vibr.)

| Problem | Solution |
|---|---|
| There are vibrations during the movement of the cabin at high speed. | Modify the proportional and integral speed gain. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.5.1** | **2756** | **SR-P gain high speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the proportional control action exercised by the PI regulator for operating speeds above the maximum threshold defined in parameter PAR 2762 **SR-high speed thrsd**.

For operating speeds lower than this threshold, the actual level of proportional action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2752 **SR-P gain low speed**.

In the speed range between the minimum and maximum thresholds defined in PAR 2760 **SR-low speed thrsd** and PAR 2762 **SR-high speed thrsd** parameters, the weight of the proportional action varies linearly with the speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.5.2** | **2758** | **SR-I gain high speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the integral control action exercised by the PI regulator for operating speeds above the maximum threshold defined in parameter PAR 2760 **SR-low speed thrsd**.

For operating speeds lower than this threshold, the actual level of integral action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2754 **SR-I gain low speed.**

In the speed range between the thresholds defined in PAR 2760 **SR-low speed thrsd** and PAR 2762 **SR-high speed thrsd** parameters, the weight of the integral action varies linearly with the speed.

## 3.6 Too fast deceleration (Too fast dec.)

| Problem | Solution |
|---|---|
| The deceleration with which the cabin approaches the floor is too abrupt. | Decrease the value of the initial deceleration jerk and / or deceleration value. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.6.1** | **11046** | **Decel initial jerk** | $m/s^3$ | FLOAT | | 0.6 | 0.001 | 20 | RW | ESY | FVY |

Setting of the jerk value for the first part of the deceleration.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.6.2** | **11048** | **Deceleration** | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |

Setting of the maximum deceleration value.

## 3.7 Floor leveling

| Problem | Solution |
|---|---|
| During the arrival at the floor there is an abrupt stop. | Decrease the brake closing delay. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.7.1** | **11068** | **Brake close delay** | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |

Setting of the delay time after closing the brake.

## 3.9 Vibration analyzer

| Problem | Solution |
|---|---|
| Vibration analyzer measures system vibration expressed in two most significant resonant frequiencies. | Values greater than 0 may indicate system vibrations. Typical causes could be intrinsic resonances of the system itself.insufficient guides lubrification, ovalized guide wheels, etc. If you need any advice on vibration damping you can contact after-sale service. |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.9.1** | **9464** | **Vibratio freq. 1** | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | INT | VSY |

Indicates the value in Hz of the first measured resonance frequency. If two frequencies have been detected, **Vibration freq. 1** will be the one with the higher amplitude.

A “0” value indicates that no resonance frequency is present in the measurement band.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.9.2** | **9466** | **Vibration freq. 2** | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | INT | VSY |

Indicates the value in Hz of the second measured resonance frequency. If two frequencies have been detected, **Vibration freq. 2** will be the one with the lower amplitude.

A “0” value indicates that no second resonance frequency is present in the measurement band.

# 4 DRIVE

## 4.1 DRIVE MONITOR

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.1** | **250** | **Output current** | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The drive output current is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.2** | **252** | **Output voltage** | V | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The drive line voltage output is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.3** | **254** | **Output frequency** | Hz | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The drive output frequency is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.4** | **664** | **Speed setpoint** | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The motor speed reference is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.5** | **260** | **Motor speed** | rpm | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The actual output speed of the motor is displayed (in ASY FOC/SYN = speed measured by the encoder, in ASY VF = speed estimated by the drive).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.6** | **270** | **DC link voltage** | V | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The direct voltage of the intermediate circuit capacitors is displayed (DC-Bus).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.7** | **272** | **Heatsink temperature** | degC | FLOAT | 16BIT_L | 0 | 0 | 0 | R | ESY | FVSY |

The temperature measured by the linear sensor integrated in the IGBT modules is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.9** | **280** | **Torque current ref** | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | EXP | FVSY |

The current reference used for torque control is displayed (in the sensorless vector and field-oriented vector modes).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.10** | **282** | **Magnet current ref** | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | EXP | FVSY |

The magnetizing current reference is displayed (in the sensorless vector and field-oriented vector modes).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.11** | **284** | **Torque current** | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | INT | FVSY |

The actual torque current value is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.12** | **286** | **Magnet current** | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | INT | FVSY |

The actual magnetizing current value is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.13** | **3212** | **Motor overload** | % | UINT16 | 16BIT_H | 0 | 0 | 100 | R | ESY | FVSY |

The motor overload level is displayed (100% = alarm threshold).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.14** | **368** | **Drive overload** | % | UINT16 | 16BIT_H | 0 | 0 | 100 | R | ESY | FVSY |

The drive overload level is displayed. An instantaneous overload of 200% of the drive rated current is allowed for 10s. The thermal image $I^2t$ adjusts the drive output current thresholds. During normal operation, the instantaneous output current value can reach 200% of the drive rated current. When the overload level par. 368 **Drive overload** reaches 100%, the output current threshold is reduced to 100% of the rated current, and stays at that value until the $I^2t$ integrator cycle is complete. At this point the instantaneous overload of 200% or 150% (below 3Hz) will be re-activated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.15** | **3260** | **Bres overload** | % | UINT16 | 16BIT_H | 0 | 0 | 100 | R | ESY | FVSY |

The braking resistor overload limit is displayed (100% = alarm threshold).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.16** | **1066** | **Enable state mon** | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | ESY | FVSY |

The drive Enable command status is displayed.
Voltage must be present on terminal 9, in the case of ADL550 also at the Safety enable terminals.
The FR Forwardstart command is needed to start the inverter.

**1** Enabled Drive enabled
**0** Disabled Drive disabled

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.17** | **1068** | **Start state mon** | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | ESY | FVSY |

The drive **Start** command status is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.18** | **1070** | **FastStop state mon** | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | ESY | FVSY |

The drive **FastStop** command status is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.19** | **2386** | **Torque ref** | % | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |

The value of the torque reference is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.20** | **2388** | **Torque** | % | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | INT | FVSY |

Displays the current torque value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.21** | **372** | **In use current limit** | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | EXP | FVSY |

Displays the actual current limit.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.23** | **1200** | **Dig input mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | ESY | FVSY |

The logic status of the digital inputs is displayed. It can also be read via a serial line or fieldbus. The data are contained in a word, where each bit is 1 if voltage is supplied to the corresponding input terminal.

**1** Input high.
**0** Input low.

Example:

0 0 0 0 0 0 0 0 0 0 **1** **1**
Enable
DI 1

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1.25** | **1400** | **Digital output mon** | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |

The status of the digital outputs is displayed. It can also be read via a serial line or fieldbus. The data are contained in a word, where each bit is 1 if the associated output relay is closed.

**1** Output enabled.
**0** Output disabled.

Example:

0 0 0 0 0 0 0 0 0 0 **1** **1**
DO 1
DO 2

## 4.2 DRIVE INFO

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.1** | **172** | **Drive type** | | ENUM | | ADL510 | | | R | ESY | FVSY |

The drive series identification code is displayed.

**1** ADL510
**2** ADL530
**3** ADL550

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.2** | **482** | **Drive size** | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |

The drive power size is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.3** | **484** | **Drive family** | | ENUM | | No Power | | | R | INT | FVSY |

The mains voltage range accepted by the drive is displayed (e.g. 230V..480V). The undervoltage alarm refers to this voltage value. The condition **No power** occurs when the regulation board has just left from production and has never been configured for any power.

**0** No power
**1** 230V..480V

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.4** | **488** | **Drive cont current** | A | FLOAT | | CALCF | 0.0 | 0.0 | R | ESY | FVSY |

The current that the drive can deliver continuously according to size, supply voltage and programmed switching frequency is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.6** | **174** | **Firmware version** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The HMI firmware version operating in the drive is displayed in the X.X.X format: the first is the (**X**.X.X) firmware version, the second the (X.**X**.X firmware release, and the third is the (X.X.**X)** firmware type.

On the keypad these are displayed in the version.release format. The parameter reading from the serial communication device or fieldbus returns the version in the high byte and the release in the low byte.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.7** | **176** | **DSP Firmware version** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The firmware version of the DSP application operating in the drive is displayed in the X.X.X format: the first is the (**X**.X.X) firmware version, the second the (X.**X**.X) firmware release, and the third is the (X.X.**X**) firmware type..

On the keypad these are displayed in the version.release format. The parameter reading from the serial communication device or fieldbus returns the version in the high byte and the release in the low byte.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.8** | **180** | **DSP Boot version** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

Processor boot version.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.9** | **182** | **HMI Boot version** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

Processor boot version.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.10** | **184** | **Application name** | | STRING16 | | 0 | 0 | 0 | R | ESY | FVSY |

Displays the name of the installed application.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.11** | **192** | **Application version** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The firmware version of the application operating in the drive is displayed in the XX.XX.XX format: the first is the (**XX**.XX.XX) firmware version, the second the (XX.**XX**.XX) firmware release, and the third is the (XX.XX.**XX**) firmware type.

On the keypad these are displayed in the version.release format. The parameter reading from the serial communication device or fieldbus returns the version in the high byte and the release in the low byte.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.12** | **198** | **Hardware version** | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |

The hardware version of the adjustment board is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.13** | **520** | **Product S/N** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The drive serial number is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.14** | **522** | **Regulation S/N** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The drive regulation card serial number is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.15** | **524** | **Power S/N** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The drive power card serial number is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.16** | **526** | **Power file ver.rel** | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |

The drive power card configuration release is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.17** | **9562** | **IP address** | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| | | Displays the IP address in use. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.2.18** | **9600** | **MAC address** | | STRING16 | | 0 | 0 | 0 | R | EXP | FVSY |
| | | Displays the drive's MAC address. | | | | | | | | | |

## 4.3 DRIVE CONFIG

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.1** | **550** | **Save parameters** | | BIT | | 0 | 0 | 1 | RW | ESY | FVSY |

Any changes to parameter values immediately affect drive operations, but are not automatically saved in the permanent memory. The “Save Parameters” command is used to save current parameter values in the permanent memory.

Any changes that are not saved will be lost when the drive is switched off.

To save parameters follow the procedure described in STEP 7 of the **Startup wizard**.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.2** | **580** | **Load default** | | BIT | | 0 | 0 | 1 | RWZ | ESY | FVSY |

Transfers the standard factory settings to the drive memory (“Def” column in the parameters table).

This does not apply to the access level and password parameters, for which see the menu “6.6 NETWORK AND ACCESS” on page 87).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.3** | **540** | **Control type** | | ENUM | | ASY_VF | | | RWZ | INT | FVSY |

The ADL550 can operate in different control modes:

**0** ASY SSC
**1** ASY FOC

**ASY SSC**: the open loop V/f mode. It is the simplest type of asynchronous motor control, as the only parameters required are the rated voltage, current and frequency of the motor.
The ASY SSC control mode is factory-set and does not require any speed feedback. The natural variation in speed generated by machine load induction (slippage) can be compensated using PAR **2214 V/Hz Slip ctrl gain** and **2224 V/Hz slip filter constant.**

**ASY FOC**: in the **field oriented vector mode** an encoder is required for closed loop feedback. With this mode it is possible to achieve extremely high dynamic responses thanks to the regulation bandwidth, maximum torque even with the rotor blocked, speed and torque control. Numerous regulation parameters can be used to adjust the drive to each specific application, for instance adaptive gains, system inertia compensation, etc.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.4** | **554** | **Access level** | | ENUM | | Intermediate | | | RW | ESY | FVSY |

Determines the parameters that can be displayed and/or modified to suit the operator’s needs and capabilities.

**0** Readonly
**1** Easy
**2** INT
**3** Expert
**4** Service

**Readonly**: read-only level, where a limited number of parameters are displayed.

**Easy**: level that allows parameters to be displayed and modified for basic commissioning, in V/f control and without tuning.

**Intermediate**: level that allows parameters to be displayed and modified for complete commissioning and basic optimization.

**Expert**: level that allows parameters to be displayed and modified for advanced optimization.

**Service**: reserved for Service.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.5** | **568** | **Enable password** | | BIT | | 0 | 0 | 1 | RW | EXP | FVSY |

When this parameter is OFF (default), it is possible to change the selection of PAR 554 **Access level** (parameter access level, excluding Service level) without entering the password.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.7** | **560** | **Mains voltage** | | ENUM | | 400 V | | | RWZ | INT | FVSY |

Setting of the available mains voltage value in Volts. Detection of the undervoltage alarm refers to this value.

**2** 380 V
**3** 400 V

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.8** | **448** | **Emergency UV** | V | FLOAT | | CALCF | 0 | CALCF | RWZ | INT | FVSY |

This parameter enables for the undervoltage threshold to be configured during emergency conditions.

This parameter also identifies the voltage at which it is necessary to send the closing command of the precharge relay (which must take place when the voltage on the DC-link has exceeded approximately 70% of its final value). In the presence of batteries connected to the EM input, parameter 448 must be set manually to 70% of the minimum output voltage of the battery pack (or, more generally, of the power source used).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.9** | **450** | **Undervoltage** | V | FLOAT | | 300.0 | 0 | 0 | RW | INT | FVSY |

Lets you change the Undervoltage value. Minimum and maximum default values depend on line voltage.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.10** | **2690** | **Chopper ON** | V | FLOAT | | CALCF | 0 | CALCF | RW | EXP | FVY |

Corresponds to the threshold of activation of the braking resistance. It's so possible to increase this value to the level of the overvoltage threshold.

(ADL500-...-4 = 802 Vdc, ADL500-...-2T = 396 Vdc, ADL500-...-2M = 396 Vdc).

The range is defined by the parameter 560 Mains voltage.

***Note!*** If the mains voltage parameter is set to the maximum possible value, the brake resistance activation threshold can only take the maximum value and cannot be changed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.11** | **1010** | **Fast Start disable** | | BIT | | 1 | 0 | 1 | RW | EXP | FVSY |

Changes the engine start mode after a drive restart. In ON mode the drive, after switching on, starts only if the direction input is activated after the drive signal Ok. With OFF mode the drive, after switching on, starts after the OK drive signal seeing the status of the direction signal even if this has been activated before the OK drive signal becomes high.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.12** | **574** | **Startup display** | | INT16 | | -1 | -1 | 20000 | RW | INT | FVSY |

It is possible to set the parameter number that will automatically be displayed when the drive is switched on.

If set to -1 the main menu is automatically displayed when the drive is turned on.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.13** | **576** | **Display backlight** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Enabling of the backlight on the drive display.
If set to 0 (Off) the display backlight will go off when the drive has been on for three minutes.

If set to 1 (On) the backlight will stay on for as long as the drive is powered.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.14** | **578** | **Language select** | | ENUM | | GB | | | RW | INT | FVSY |

Setting of the drive programming language.

**0** English
**1** Italian
**2** French
**3** German
**4** Spanish
**5** Turkish

English and Italian are pre-installed on the drive, to select Italian set **1**.

To set a different language, download the available languages file from the WEG site (https://www.weg.net/..., DRIVE SET-UP folder) (wizard available in manual ADL500 HW+QS, section 8.2.8.1 Language selection):

- Unzip and save the files on a USB flash drive, in a folder called "ADL500LN".
- Insert the flash drive into the drive's USB port.
- Select the **Language Select** parameter 570 and set the new language,
- Start the language loading procedure, after which the drive will reboot.

**Note!** The language file must be aligned with the version of both the drive firmware and application. Check correspondence.

The new language will be loaded into the drive memory and replace the Italian. English cannot be replaced by another language.

**Note!** The Load Default command (par. 580) does not modify this parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.15** | **7200** | **Password recovery** | | BIT | | 0 | 0 | 1 | RW | ESY | FVSY |

If executed, it generates a code in PAR 7210 **Recovery code** to be communicated to WEG to obtain a temporary Expert password. To be used in case the password is lost.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.16** | **7210** | **Recovery code** | | UINT32 | | 0.0 | 0 | 0 | R | ESY | FVSY |

This parameter is used to write the code to be communicated to WEG to obtain a temporary Expert password (see PAR 7200 **Password recovery**). To be used in case the password is lost.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.17** | **7220** | **Alarm time** | min | UINT16 | | 60 | 0 | 1092 | RW | EXP | FVSY |

Sets the drive logout time, in minutes, calculated from the first start-up.

Once the activity time set in this parameter has elapsed the drive will be reset to Readonly level.

If set to 0, automatic logout is disabled.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.3.18** | **590** | **Save par from keypad** | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |

Transfers the parameters currently stored in the drive and saves them in the keypad memory.

## 4.4 ALARM CONFIG

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.1** | **4500** | **Fault reset src** | | LINK | 16BIT_L | 6000 | | | RW | INT | FVSY |

Selection of the origin (source) of the signal to be used for the command to reset the drive after an alarm. The terminal that can be used for this function can be selected from among those listed in the **"L_DIGSEL2"** selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.2** | **4502** | **ExtFlt src** | | LINK | 16BIT_L | 6000 | | | RW | INT | FVSY |

Selection of the origin (source) of the signal to be used as the input for the drive external fault alarm **External fault [21]**. The terminal that can be used for this function can be selected from among those listed in the "**L_DIGSEL2**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.3** | **4504** | **ExtFlt activity** | | ENUM | | Disable | | | RW | INT | FVSY |

Setting of the behaviour of the drive in the event of an external fault alarm **External fault [21]**. This alarm indicates the intervention of a drive external protection.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Stop
**4** Fast stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.4** | **4506** | **ExtFlt restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the **External fault [21]** alarm.

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.5** | **4508** | **ExtFlt restart time** | ms | UINT16 | | 1000 | 120 | 30000 | RW | EXP | FVSY |

Setting of the time within which the **External fault [21]** alarm must be reset in order to perform automatic restart.

| Menu | PAR | Descrizione | UM | Tipo | FB BIT | Def | Min | Max | Acc | Liv. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.6** | **4510** | **ExtFlt holdoff** | ms | UINT16 | | 0 | 0 | 10000 | RW | INT | FVSY |

Setting of the delay between the signalling of the external fault alarm **External fault [21]** and enabling of the alarm. If an alarm condition occurs, the drive will wait for the set time before blocking is enabled. If the alarm is removed within the set time, the drive will not indicate any alarm condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.8** | **4520** | **MotorOT src** | | LINK | 16BIT_L | 6000 | | | RW | INT | FVSY |

Selection of the origin (source) of the signal to be used for the motor overtemperature alarm **MotorOT [12]**. The terminal that can be used for this function can be selected from among those listed in the "**L_DIGSEL2**" selection list".

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.9** | **4522** | **MotorOT activity** | | ENUM | | Warning | | | RW | INT | FVSY |

Setting of the behaviour of the drive in case of a motor overtemperature alarm **MotorOT [12]**. This alarm indicates that the motor temperature is too high.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.10** | **4524** | **MotorOT restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the motor overtemperature alarm **Motor OT [12]**.

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.11** | **4526** | **MotorOT restart time** | ms | UINT16 | | 1000 | 120 | 30000 | RW | EXP | FVSY |

Setting of the time within which the **Motor OT [12]** alarm must be reset in order to perform automatic restart.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.12** | **4528** | **MotorOT holdoff** | ms | UINT16 | | 1000 | 0 | 30000 | RW | EXP | FVSY |

Setting of the delay between the signalling of the motor overtemperature alarm **MotorOT [12]** and enabling of the alarm. If an alarm condition occurs, the drive will wait for the set time before enabling the alarm. If the alarm is removed within the set time, the drive will not indicate any alarm condition

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.18** | **4540** | **Overspeed thresold** | rpm | INT16 | | CALCI | 0 | 16000 | RW | INT | FVSY |

Setting of the threshold above which the overspeed alarm **Overspeed [23]** is enabled.

***Note!*** The Overspeed threshold value (together with the Full scale speed PAR 680), is automatically recalculated each time the mechanical data parameters are modified.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.19** | **4542** | **Overspeed activity** | | ENUM | | Disable | | | RW | INT | FVSY |

Setting of the behaviour of the drive in case of a motor overspeed alarm **Overspeed [23]**. This alarm indicates that the motor speed has exceeded the threshold set in PAR 4540 **Overspeed threshold.**

**0** Ignore
**1** Warning
**2** Disable drive

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.20** | **4544** | **Overspeed holdoff** | ms | UINT16 | | 0 | 0 | 5000 | RW | INT | FVSY |

Setting of the delay between the signalling of the motor overspeed alarm **Overspeed [23]** and enabling of the alarm. If an alarm condition occurs, the drive will wait for the set time before enabling the alarm. If the alarm is removed within the set time, the drive will not indicate any alarm condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.21** | **4550** | **SpdRefLoss thresold** | rpm | INT16 | | 100 (*) | 0 | CALCI | RW | INT | FVSY |

Setting of the threshold below which the speed reference loss alarm **Speed ref loss [24]** occurs.

(*) Def: 100 = ASY FOC, 10 = SYN FOC

***Note!*** The Overspeed threshold value (together with the Full scale speed PAR 680), is automatically recalculated each time the mechanical data parameters are modified.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.22** | **4552** | **SpdRefLoss activity** | | ENUM | | Disable | | | RW | INT | FVSY |

Setting of the behaviour of the drive in case of a speed reference loss alarm **Speed ref loss [24]**. This alarm indicates that the difference between the speed regulator reference and the actual motor speed is more than 100 rpm.

This alarm must be disabled (= 0 Ignore) when parameter **2354** is set to a value other than zero.

**0** Ignore
**1** Warning
**2** Disable drive

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.23** | **4554** | **SpdRefLoss holdoff** | ms | UINT16 | | 1000 | 0 | 10000 | RW | INT | FVSY |

The delay between the **Speed ref loss [24]** alarm condition signal and activation of the actual alarm. If an alarm condition occurs, the drive will wait for the set time before enabling the alarm. If the alarm is removed within the set time, the drive will not indicate any alarm condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.24** | **4560** | **SpdFbkLoss activity** | | ENUM | | Disable | | | RW | INT | FVSY |

Drive behaviour in case of the **Speed ref loss [24]** alarm is displayed. This alarm indicates the loss of the encoder feedback signals. Each type of encoder generates the **Speed ref loss [24]** alarm differently (incremental signal error, absolute signal error, serial error).

**0** Ignore
**1** Warning
**2** Disable drive

For absolute Endat encoders and absolute Hiperface encoders, after the alarm is generated, the encoder reset command must be sent to the encoder: during this procedure the application verifies whether the encoder is signalling an encoder alarm condition to the drive and the alarm is acquired from this.

The causes of the **Speed ref loss [24]** alarm and the information acquired from the encoder are shown in the **SpdFbk-Loss code** parameter 2172.

***Note!*** See menu "8 ENCODER" for further information.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.25** | **4562** | **SpdFbkLoss holdoff** | ms | UINT16 | | 200 | 0 | 10000 | RW | INT | FVSY |

Setting of the delay between the signalling of the speed feedback loss alarm condition **Speed fbk loss [22]** and the enabling of the alarm. If an alarm condition occurs, the drive will wait for the set time before enabling the alarm. If the alarm is removed within the set time, the drive will not indicate any alarm condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.26** | **4564** | **SpdfbkLoss threshold** | rpm | INT16 | 100 | 0 | CALCI | RW | INT | FVSY | |

Setting the minimum speed by which the **Speed fbk loss [22]** is bypassed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.27** | **4570** | **Drive ovld activity** | | ENUM | | Disable | | | RW | EXP | FVSY |

Setting of the behaviour of the drive in case of a drive overload alarm **Drive ovld**. This alarm indicates that the drive overload threshold has been reached.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.28** | **4572** | **Motor ovld activity** | | ENUM | | Warning | | | RW | EXP | FVSY |

Setting of the behaviour of the drive in case of a motor overload alarm **Motor overload [14]**. This alarm indicates that the motor overload threshold has been reached.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.29** | **4574** | **Bres ovld activity** | | ENUM | | Disable | | | RW | EXP | FVSY |

Setting of the behaviour of the drive in case of a braking resistor overload alarm **Bres overload [15]**. This alarm indicates that the braking resistor overload threshold has been reached.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Stop
**4** Fast stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.30** | **4582** | **HTsens restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the drive heatsink overtemperature alarm **Heatsink OT [9]**.

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.31** | **4584** | **HTsens restart time** | ms | UINT16 | | 20000 | 120 | 60000 | RW | EXP | FVSY |

Setting of the time within which the **Heatsink OT [9]** alarm must be reset in order to perform automatic restart.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.32** | **4610** | **Desat restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the desaturation alarm **Desaturation [5]**. This alarm indicates a short circuit between the motor phases or on the power bridge.

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.33** | **4612** | **Desat restart time** | ms | UINT16 | | 2000 | 1000 | 10000 | RW | EXP | FVSY |

Setting of the time within which the **Desaturation [5]** alarm must be reset in order to perform automatic restart. (Time with alarm signal active + 1000 msec).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.34** | **4620** | **IOverC restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the drive **Overcurrent [4]** alarm. This alarm indicates an overcurrent (or short circuit between phases or towards the ground).

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.35** | **4622** | **IOverC restart time** | ms | UINT16 | | 2000 | 1000 | 10000 | RW | EXP | FVSY |

Setting of the time within which the **Overcurrent [4]** alarm must be reset in order to perform automatic restart. (Time with alarm signal active + 1000 msec).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.36** | **4630** | **OverV restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the **Overvoltage [1]** alarm. This alarm indicates an overvoltage on the intermediate circuit (DC link)

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.37** | **4632** | **OverV restart** | ms | UINT16 | | 2000 | 1000 | 10000 | RW | EXP | FVSY |

Setting of the time within which the **Overvoltage [1]** alarm must be reset in order to perform automatic restart. (Time with alarm signal active + 1000 msec).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.38** | **4640** | **UnderV restart** | | ENUM | | Enable | | | RW | EXP | FVSY |

Enabling of automatic restart after the **Undervoltage [2]** alarm. This alarm indicates an undervoltage on the intermediate circuit (DC link).

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.39** | **4642** | **UnderV restart time** | ms | UINT16 | | 1000 | 120 | 10000 | RW | EXP | FVSY |

Setting of the time within which the **Undervoltage [2]** alarm must be reset in order to perform automatic restart. (Time with alarm signal active + 100 msec).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.40** | **4650** | **UVRep attempts** | | UINT16 | | 5 | 0 | 1000 | RW | EXP | FVSY |

Setting of the maximum number of attempts at automatic restart after the **Undervoltage [2]** alarm before a **Mult Undervoltage alarm** is generated. If this parameter is set to 1000 an infinite number of attempts are available.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.41** | **4652** | **UVRep delay** | s | UINT16 | | 240 | 0 | 300 | RW | EXP | FVSY |

Setting of the time within which, if no automatic restarts are executed after the **Undervoltage [2]** alarm, the attempts counter is reset. In this way the number of attempts set in PAR 4650 **Underv res attempts** are still available.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.42** | **4654** | **Phloss mov activity** | | ENUM | | Warning | 0 | 0 | RW | EXP | FVSY |

Setting the drive behavior in case of “PhLoss mov” alarm that signals the disconnection of a phase of the engine during running condition. The “PhLoss mov” function detects the disconnection of one or more phases of connection of the drive to the engine. This function is only operational when the motor is rotating. The configuration parameters of this function are IPA 4654, 4656, 4674.

**0** Ignore
**1** Warning
**2** Disable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.43** | **4656** | **Phloss mov holdoff** | ms | UINT32 | | 200 | 0 | 2000 | R | EXP | FVSY |

Represents the time for which the alarm condition must remain before the alarm is actually generated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.44** | **4674** | **Phloss mov freq thr** | hz | FLOAT | | 0.5 | 0.1 | 5 | RW | EXP | FVSY |

It represents the minimum frequency threshold exceeded which the function of PhLoss mov becomes operational. Below this threshold the function of PhLoss mov is inactive.

It may be useful to increase this parameter to avoid false positives at low speeds.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.45** | **4678** | **Phloss mov code** | | | | 0 | 0 | 0 | W | EXP | FVSY |

The hexadecimal value indicates which engine steps have been disconnected.

0x001 Phase U disconnected
0x002 Phase V disconnected
0x004 Phase W disconnected
0x003 Phase U and V disconnected
0x005 Phase U and W disconnected
0x006 Phase V and W disconnected
0x007 Phase U, V, W disconnected

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.46** | **4670** | **Optionbus activity** | | ENUM | | Disable | | | RW | EXP | FVSY |

Setting of the behaviour of the drive in case of an **Opt Bus Fault [17]** alarm.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Stop
**4** Fast stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.47** | **4660** | **PhLoss in activity** | | ENUM | | Disable | | | RW | EXP | FVSY |

Setting of the behaviour of the drive in case of a **Phaseloss in [16]** alarm. This alarm indicates the absence of a drive power supply phase

**0** Ignore
**1** Warning
**2** Disable drive

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.48** | **4662** | **PhLoss in restart** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enabling of automatic restart after the **Phaseloss in [16]** alarm.

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.49** | **4664** | **PhLoss in rest time** | ms | UINT16 | | 1000 | 120 | 10000 | RW | EXP | FVSY |

Setting of the time within which the **Phaseloss in [16]** alarm must be reset in order to perform automatic restart. (Time with alarm signal active + 100 msec).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.50** | **4668** | **PhLoss output test** | | ENUM | | Enable | | | RW | EXP | FVSY |

Enabling of the output phase loss test.

**0** Disabled

**1** Enable
**2** Powerup

If set to **0** the test is disable

If set to **1** the drive verifies the presence of all the output phases each time it receives the enable command.

If set to **2** the drive only verifies the presence of all the output phases the first time the enable command is sent after powering

***Note!*** The motor brake must be closed while running this test!

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.51** | **4680** | **GroundFault thr** | perc | FLOAT | 10.0 | 0.0 | 150.0 | RW | INT | FVSY | |

Setting of the threshold for the ground short circuit alarm **Ground fault [3]**.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.52** | **4700** | **Alarm dig out 1 sel** | | ENUM | | No alarm | | | RW | INT | FVSY |
| **4.4.53** | **4702** | **Alarm dig out 2 sel** | | ENUM | | No alarm | | | RW | INT | FVSY |
| **4.4.54** | **4704** | **Alarm dig out 3 sel** | | ENUM | | No alarm | | | RW | INT | FVSY |
| **4.4.55** | **4706** | **Alarm dig out 4 sel** | | ENUM | | No alarm | | | RW | INT | FVSY |

Setting of the alarm signal to enable on a digital output. The digital output is selected using parameters **Alarm dig out 1 sel...4**, which can be enabled in the **L_DIGSEL1** selection list.

**0** No alarm
**1** Overvoltage
**2** Undervoltage
**3** Ground fault
**4** Overcurrent
**5** Desaturation
**6** MultiUndervolt
**7** MultiOvercurr
**8** MultiDesat
**9** Heatsink OT
**10** HeatsinkS OTUT
**11** Ptc failure
**12** Motor OT
**13** Drive overload
**14** Motor overload
**15** Bres overload
**16** Phaseloss in
**17** Opt Bus fault
**18** Opt 1 IO fault
**19** Precharge faul
**20** Opt enc fault
**21** External fault
**22** Speed fbk loss
**23** Overspeed
**24** Speed ref loss
**25** Emg stop alarm
**26** Power down
**27** Phaseloss out
**28** OV safety
**29** Safety failure
**30** Phaseloss mov
**31** Ropes change
**32** Enable missing
**33** Plc1 fault
**34** Plc2 fault
**35** Plc3 fault
**36** Plc4 fault
**37** Plc5 fault
**38** Plc6 fault
**39** Plc7 fault
**40** Plc8 fault
**41** Plc9 fault
**42** Plc10 fault

**43** Plc11 fault
**44** Plc12 fault
**45** Plc13 fault
**46** Plc14 fault
**47** Plc15 fault
**48** Plc16 fault

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.56** | **4720** | **Alm autoreset time** | s | FLOAT | | 0.0 | 0.0 | 60.0 | RW | EXP | FVSY |

Setting of the time interval that must pass before executing an automatic reset.

If no alarms are enabled the drive is set to restart.

If some alarms are still enabled the drive is set to execute a new attempt at automatic reset.

At each attempted reset a counter increases. If the limit set in the parameter **Alm autoreset number** (PAR 4722) is reached the drive is set to make no more attempts at reset and waits for a user reset.

The counter is set to zero when an automatic reset or user reset is performed and no alarms are enabled.

If the parameter is 0 the function is disabled.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.4.57** | **4722** | **Alm autoreset number** | | UINT16 | | 3 | 0 | 100 | RW | EXP | FVSY |

Setting of the maximum number of attempted automatic resets.

## 4.8 DIGITAL INPUTS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.8.1** | **1240** | **Dig inp 1 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.2** | **1242** | **Dig inp 2 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.3** | **1244** | **Dig inp 3 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.4** | **1246** | **Dig inp 4 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.5** | **1248** | **Dig inp 5 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.6** | **1250** | **Dig inp 6 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.7** | **1252** | **Dig inp 7 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.8.8** | **1254** | **Dig inp 8 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Inversion of the logic status of the function associated with the digital input.

**0** Off
**1** On

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.8.13** | **1110** | **Dig input E mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |

These signals represent the state of the corresponding Enable digital input.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.8.14** | **1210** | **Dig input 1 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.15** | **1212** | **Dig input 2 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.16** | **1214** | **Dig input 3 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.17** | **1216** | **Dig input 4 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.18** | **1218** | **Dig input 5 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.19** | **1220** | **Dig input 6 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.20** | **1222** | **Dig input 7 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.21** | **1224** | **Dig input 8 mon** | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |

These signals represent the logic state of the corresponding digital input.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.8.26** | **1268** | **Dig input E dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.27** | **1270** | **Dig input 1 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.28** | **1272** | **Dig input 2 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.29** | **1274** | **Dig input 3 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.30** | **1276** | **Dig input 4 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.31** | **1278** | **Dig input 5 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.32** | **1280** | **Dig input 6 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.33** | **1282** | **Dig input 7 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| **4.8.34** | **1284** | **Dig input 8 dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |

Selection of the destination of the associated digital input.

## 4.9 DIGITAL OUTPUTS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.9.1** | **1430** | **Dig out 1 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.9.2** | **1432** | **Dig out 2 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.9.3** | **1434** | **Dig out 3 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| **4.9.4** | **1436** | **Dig out 4 inversion** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Inversion of the logic status of the function associated with the digital output.

**0** Off
**1** On

# 4.10 ANALOG INPUTS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.1** | **1600** | **Analog input mon** | cnt | INT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |

The value of the voltage of the analog input is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.2** | **1602** | **Analog inp type** | | ENUM | | -10V..+10V | | | RW | INT | FVSY |

Selection of the type of input (voltage or current). Depending on the input signal, move the switches on the regulation card. The factory parameter is inputs set for differential voltage signals (± 10V).

**0** -10V..+10V
**1** 0.20mA , 0.10V
**2** 4..20mA

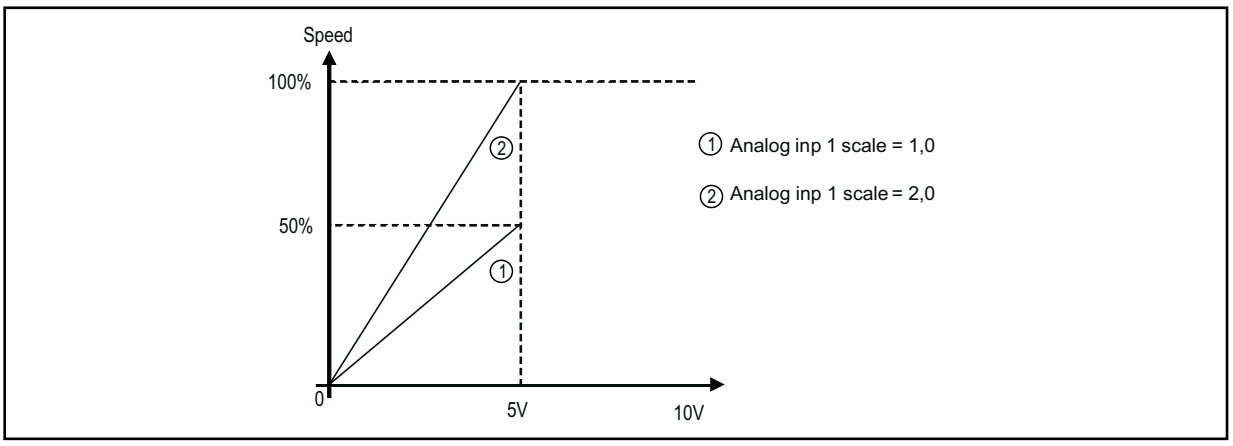
Select option **0** in order to connect a maximum voltage of ±12.5V (typically ±10V/5mA) to the analog input. If the signal is used as a reference, reverse the direction of rotation by inverting the voltage polarity.

Select option **1** to connect a max voltage of 12.5V (typically 10V/5mA) or a signal in current from 0 ... 20 mA to the analog input. The signal must be positive.

Select option **2** to connect a current signal of 4...20 mA to the analog input. The signal must be positive.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.3** | **1604** | **Analog inp scale** | | FLOAT | | 1.0 | -10.0 | 10.0 | RW | INT | FVSY |

Setting of a multiplier factor to be applied to the analog input.




*Example:*

The speed reference of a drive is assigned with a max external voltage of 5V. With this value the drive must reach the maximum speed allowed (set using PAR 680 **Full scale speed**).

As the **Analog inp scale** parameter the scale factor of 2 is entered (10V : 5V).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.4** | **1606** | **An inp offset tune** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Self-tuning command for the offset of the analog input. Automatic fine tuning of the input. To perform self-tuning, set the input signal to its minimum value and execute the command. The conditions containing an offset can be compensated. When this command is sent, PAR 1606 **An inp offset tune** is automatically selected so that the available input signal corresponds to the zero value of the variable.

Automatic tuning can only be performed if the following condition is present:

- Input voltage less than 1V or input current less than 2 mA.

***Note!*** The value that is obtained automatically can be changed manually, if necessary, using Offset ing an.

If the voltage setting on the analog input is more than 1V the "**Input value too high**" message is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.5** | **1608** | **An inp gain tune** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Self-tuning command for the analog input gain. Automatic fine tuning of the input. When this command is sent, **An inp gain tune** is automatically selected so that the available input signal corresponds to the maximum value of the variable.

Two conditions are necessary in order to perform automatic tuning:

- Input voltage greater than 1V or input current greater than 2 mA
- Positive polarity. The value that is found is automatically accepted for the other direction of rotation.

***Note!*** If necessary, the value obtained automatically can be changed manually via An inp gain tune.

To perform self-tuning, set the input signal to its maximum value and execute the command. A multiplier factor is calculated to apply to the input signal value (not considering the **An inp gain tune** parameter) to reach the full scale value.

If the voltage setting on the analog input is less than 1V the "**Input value too low**" message is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.6** | **1610** | **Analog inp filter** | ms | FLOAT | | 10 | 2 | 100 | RW | EXP | FVSY |

Filter on the measurement of the analog input. This parameter can be used to control the response of the analog input and reduce any possible noise and interference.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.7** | **1612** | **Analog inp top** | cnt | INT16 | | 16384 | -32768 | +32767 | RW | EXP | FVSY |

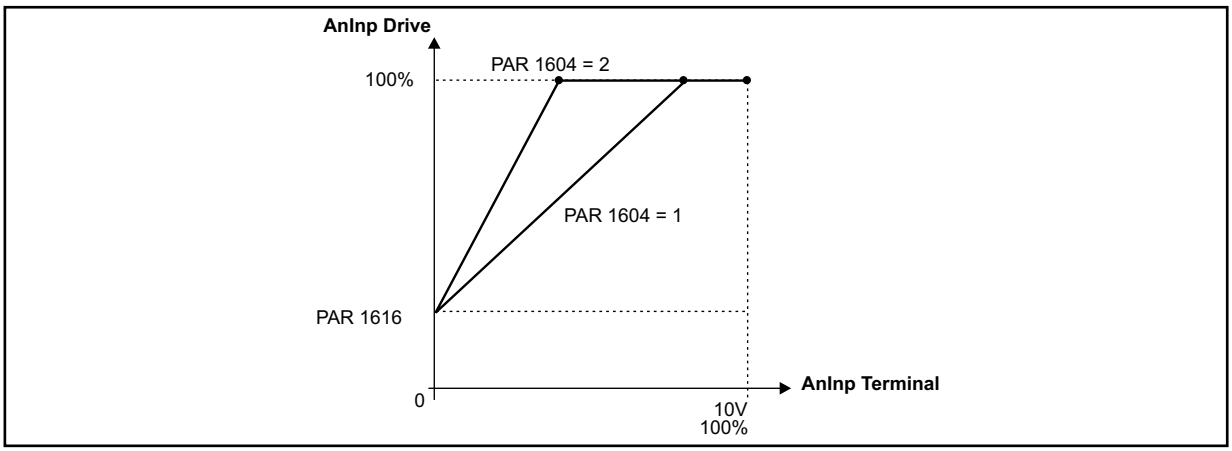
Setting of the upper speed reference limit as a function of the voltage (or current) of the analog reference.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.8** | **1614** | **Analog inp bottom** | cnt | INT16 | | -16384 | -32768 | +32767 | RW | EXP | FVSY |

Setting of the lower speed reference limit as a function of the voltage (or current) of the analog reference.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.9** | **1616** | **Analog inp offset** | cnt | INT16 | | 0 | -32768 | +32767 | RW | EXP | FVSY |

Setting of an offset value to algebrically add to the analog input.




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.10** | **1618** | **Analog inp gain** | | FLOAT | | 1.0 | -10.0 | 10.0 | RW | EXP | FVSY |

This parameter contains the value of the multiplier factor to apply to the analog reference calculated using the **Analog inp gain tune** function.

*Example :*

An external analog reference only reaches a maximum of 9.8V instead of 10V. 1.020 (10V : 9.8V) is entered as the **An inp gain tune** (PAR 1608) parameter.

This parameter can be selected from the keypad menu. The maximum analog value available (in this case 9.8V) must be present on the terminal, with positive polarity. Press the **Enter** key on the keypad to start analog reference self-tuning.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.11** | **1626** | **An inp sign src** | | LINK | 16BIT_L | 6000 | | | RW | INT | FVSY |

Selection of the origin (source) of the signal to be assigned to the analog input for selecting the direction of rotation of the motor. The functions that can be associated with the outputs are listed in the “**L_DIGSEL2**” selection list”.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.10.12** | **1632** | **Analog input dest** | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |

The function for which the analog input has been programmed and on which it acts is displayed.

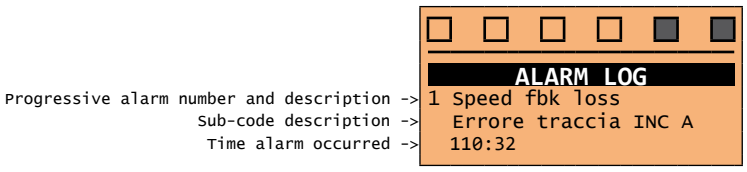
## 4.11 ALARM LOG

This is the menu in which the log of previous alarms is saved, with the time the alarm occurred (in relation to the PAR 510 **Time drive power on** parameter). The alarms are displayed starting from the most recent (No. 1) up to the furthest back in time (No. 30).

Up to 30 alarm signals can be displayed.

The sub-code is used to identify the specific type of alarm.

Press the ▲ and ▼ keys to scroll the screen pages of the alarm log. The alarm log cannot be deleted.




## 4.12 LIFE TIME

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.12.1** | **510** | **Time drive power on** | h.min | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The total time for which the drive has been powered is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.12.2** | **512** | **Time drive enable** | h.min | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The time for which the drive has been enabled is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.12.3** | **514** | **Number power up** | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |

The number of times the drive has been powered on is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.12.4** | **516** | **Time fan on** | h.min | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

The total time for which the drive fan has been running is displayed.

# 5 LIFT

## 5.1 LIFT MONITOR

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.1** | **14014** | **Trip number** | | UINT32 | | | - | - | R | ESY | FVY |

Displays the lift trip counter, which is incremented, when the Start lift signal is active, each time a start is signalled.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.2** | **14016** | **Sequence state** | | ENUM | | | | | R | ESY | FVY |

View the logical state the drive is in.

The sequence of states where the drive can be found is listed below:

**0** Idle
**1** Cont close
**2** Drive ready
**3** Brake open
**4** Smooth start
**5** Multispeed
**6** Waiting 0 spd
**7** Zero speed
**8** Brake close
**9** Cont open
**10** Not drive ok
**91** SC cont mon

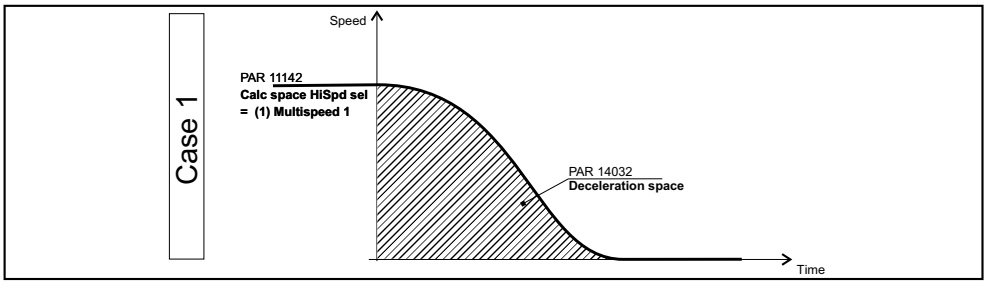
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.3** | **14030** | **Acceleration state** | m | FLOAT | | | - | - | R | ESY | FVY |

Displays the space required to accelerate from zero to the selected speed, considering the space due to the initial and final jerk. This does not include the space travelled at a constant speed due to activation of the soft start function.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.4** | **14032** | **Decelaration space** | m | FLOAT | | | - | - | R | ESY | FVY |

The distance necessary to stop from the high speed is displayed.

Different methods are used to calculate this distance, depending on the value of the relative parameters:

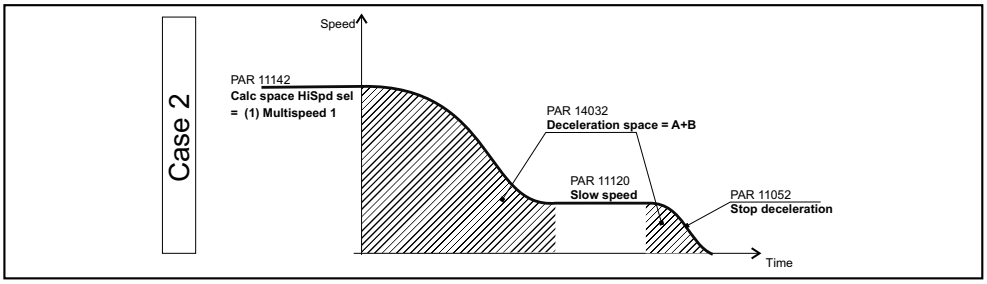



- **Case 1**: S-shaped ramp from high speed to zero speed

**Distance multispeed0** (PAR 11102) = 0, **Enable landing src** (PAR 11130) = Disabled, **Slow speed** (PAR 11120) = Zero.

**Deceleration space** (PAR 14032) the distance covered during the stop ramp from PAR 11142 **Calc space HiSpd sel** = (1) **Multispeed 1** (high speed) to zero speed.

The parameters that influence the calculation of this distance are: **Calc space HiSpd sel** (PAR 11142), **Percent dec factor** (PAR 11056), **Dec ini jerk** (PAR 11046), **Deceleration** (PAR 11048) and **Dec end jerk** (PAR 11050).



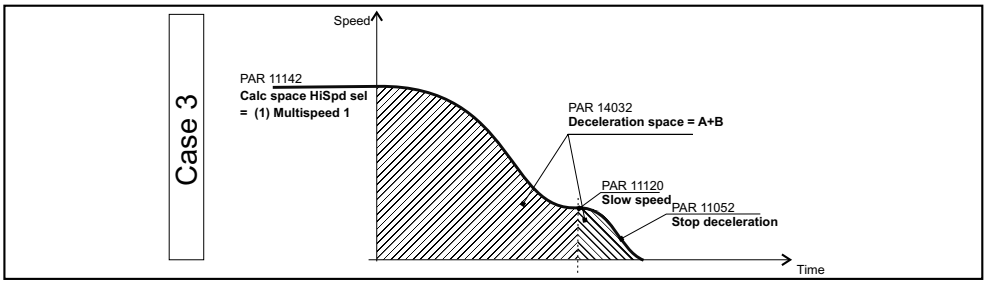

- **Case 2**: S-shaped ramp from high to low speed, low speed zone and subsequent stop

**Distance multispeed0** (PAR 11102) = 0, **Enable landing src** (PAR 11130) = Disabled, **Slow speed** (PAR 11120) = **Multispeed 0**.

**Deceleration space** (PAR 14032) is the distance covered during the slow down ramp from PAR 11142 **Calc space HiSpd sel** = (1) **Multispeed 1** (high speed) to PAR 11120 **Slow speed** and during the stop ramp from PAR 11120 **Slow speed** to zero speed.

If the sensors are positioned at a distance from the arrival floor greater than the distance indicated by PAR 14032 then a travel with low speed movement occurs with the value set in PAR 11120.

The parameters that influence the calculation of this distance are: **Calc space HiSpd sel** (PAR 11142), **Multispeed 0** (PAR 11020), **Percent dec factor** (PAR 11056), **Dec ini jerk** (PAR 11046), **Deceleration** (PAR 11048), **Dec end jerk** (PAR 11050) and **Stop deceleration** (PAR 11052).

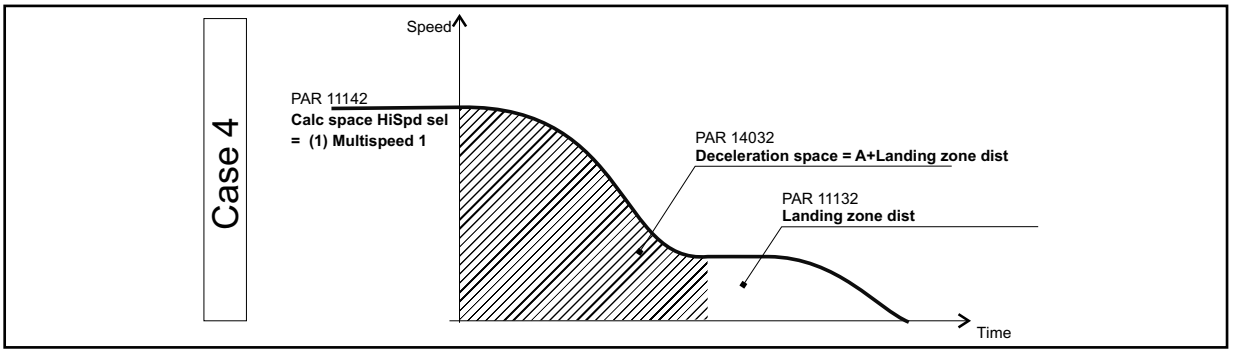



- **Case 3**: S-shaped ramp from high to low speed, low speed zone and subsequent stop

**Distance multispeed0** (PAR 11102) ≠ 0 (es.0.5m), **Enable landing src** (PAR 11130) = Disabled, **Slow speed** (PAR 11120) = Multispeed 0.

**Deceleration space** (PAR 14032) is the distance covered during the slow down ramp from PAR 11142 **Calc space HiSpd sel** = (1) **Multispeed 1** to PAR 11120 **Slow speed** and during the stop ramp from PAR 11120 **Slow speed** to zero speed.

The parameters that influence the calculation of this distance are: **Calc space HiSpd sel** (PAR 11142), **Multispeed 0** (11020), **Percent dec factor** (PAR 11056), **Dec ini jerk** (PAR 11046), **Deceleration** (PAR 11048) and **Dec end jerk** (PAR 11050) and **Stop deceleration** (PAR 11052).




- **Case 4**: S-shaped ramp from high to low speed, low speed zone and subsequent stop with “landing control”

**Distance multispeed0** (PAR 11102) ≠ 0 (es.0.5m), **Enable landing src** (PAR 11130) = Enabled, **Slow speed** (PAR 11120) = Multispeed 0.

**Deceleration space** (PAR 14032) is the distance covered during the slow down ramp from **C**PAR 11142 **Calc space HiSpd sel** = (1) **Multispeed 1** (high speed) to PAR 11120 **Slow speed** plus **Landing zone dist** (PAR 11132).

The parameters that influence the calculation of this distance are: **Calc space HiSpd sel** (PAR 11142), **Multispeed 0** (PAR 11020), **Percent dec factor** (PAR 11056), **Dec ini jerk** (PAR 11046), **Deceleration** (PAR 11048) and **Dec end jerk** (PAR 11050).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.5** | **14034** | **Landing zone space** | m | FLOAT | | | - | - | R | ESY | FVY |

Displays the space required to reach the landing zone calculated from the deceleration and low speed values

(not multiplied by the percentage factor PAR 11056 **Percent dec factor**).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.6** | **14210** | **Actual speed ref** | m/s | FLOAT | | | - | - | R | ESY | FVY |

Displays the speed reference set in m/s.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.1.7** | **14242** | **Actual cabin spd** | m/s | FLOAT | | | - | - | R | ESY | FVY |

Displays the cabin speed in m/s. This speed value tends to follow the current speed reference.

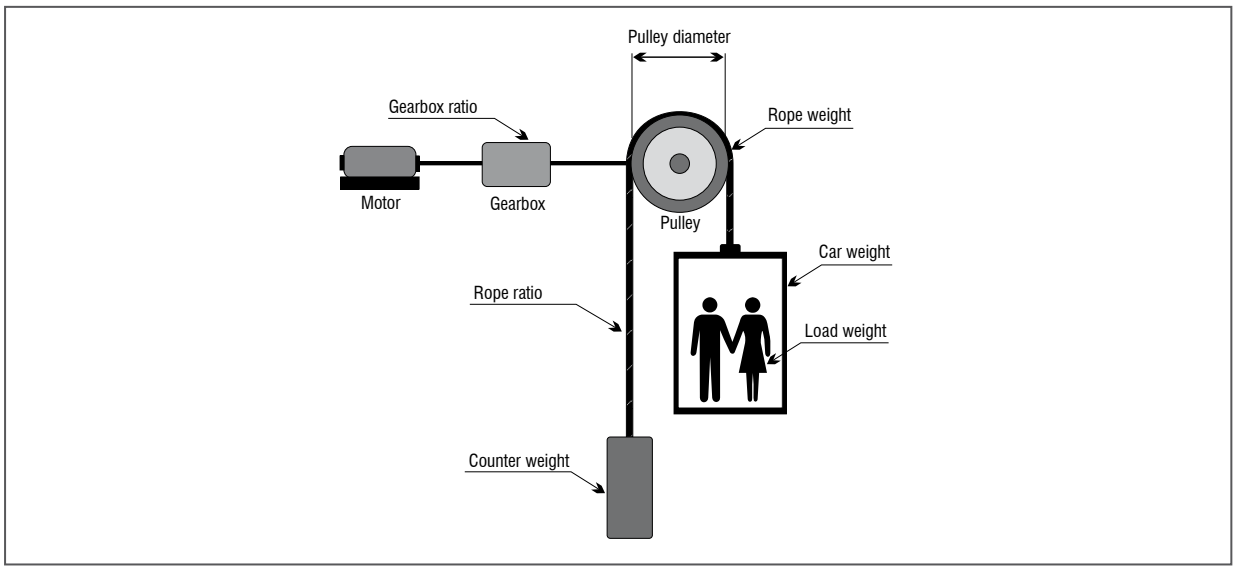
## 5.2 MECHANICAL DATA

The parameters described in this menu are used to define the mechanical and physical features of the system.

**Mechanical constants**

The mechanical constant defines the ratio between motor rpm and distance travelled by the cabin.

**Mechanical constant** = (π *Pulley diameter)/Reduction ratio




The mechanical constant is calculated when the drive is turned on and re-calculated each time one of the parameters used to determine this value is modified (**Cabin speed, Pulley diameter, Gearbox ratio**).

The rewriting of the mechanical constant determines the recalculation of the full scale speed (PAR 680), which is set using the motor revs required to reach the maximum system speed through the mechanical ratios set.

**Weights and inertia**

Entering the mechanical features of the system makes it possible to calculate the total inertia applied to the motor.

The calculated inertia value, is automatically written to the parameter (PAR 2240); this operation allows the basic speed loop gains to be recalculated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.1** | **11002** | **Travel unit sel** | | ENUM | | Hz (m/s) | - | - | RWZ | INT | FVY |

Selection of the unit of measure for speed references.

**0** Hz (output frequency)
**1** m/s (cabin speed and depends on the mechanical constant)
**2** rpm (speed of the motor shaft)

When the unit of measure is modified the conversion constants are re-calculated, the units of measure are changed in the parameter list and the multispeed values are converted into the new unit of measure (the result may contain

approximations due to the conversion calculations). A variable representing the speed of the cabin in m/s (fpm) is always available (PAR 14242). There are fixed units of measure for the acceleration and deceleration parameters m/s², and for jerks m/s³.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.2** | **11006** | **Cabin speed** | m/s | FLOAT | | 1 | 0 | 10 | RWZ | INT | FVY |

Sets the maximum speed of system operation. This is also used for the recalculation of the full scale speed (PAR 680).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.3** | **11010** | **Gearbox ratio** | | FLOAT | | 45 (1) | 1 | 200 | RW | INT | FVY |

Sets the reduction ratio between motor and pulley.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.4** | **11164** | **Rope ratio** | | FLOAT | | 1 (2) | 1 | 10 | RWZ | INT | FVY |

Sets the reduction ratio due to rope windings.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.5** | **11012** | **Pulley diameter** | m | FLOAT | | 0.6 (0.32) | 0 | 5 | RWZ | INT | FVY |

Setting of the diameter of the pulley.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.6** | **11150** | **Car weight** | kg | FLOAT | | 400 | 0 | 10000 | RW | INT | FVY |

Setting of the weight of the cabin (intended as the total empty weight of everything hanging from the ropes: frame, walls, door operator, appliances, etc.).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.7** | **11152** | **Counter weight** | kg | FLOAT | | 1000 | 0 | 10000 | RW | INT | FVY |

Setting of the weight of the counterweight, including its frame.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.8** | **11154** | **Load weight** | kg | FLOAT | | 450 | 0 | 10000 | RW | INT | FVY |

Setting of the weight of the maximum load for system dimensions.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.2.9** | **11156** | **Rope weight** | kg | FLOAT | | 20 | 0 | 1000 | RW | INT | FVY |

Setting of the weight of the cable (intended as the total weight of all car suspension ropes).

# 5.3 SPEED

**Multi speed configuration table**

Attention

**Through the combination of "MtlSpd S0" (Digital input 4), "MtlSpd S1" (Digital input 5) and "MtlSpd S2" (Digital input 6) commands, is possible to select Multi speed desired, according to next table:**

| MtlSpd S2 | MtlSpd S1 | MtlSpd S0 | ACTIVE SPEED |
|---|---|---|---|
| 0 | 0 | 0 | Multi speed 0, PAR 11020 |
| 0 | 0 | 1 | Multi speed 1, PAR 11022 |
| 0 | 1 | 0 | Multi speed 2, PAR 11024 |
| 0 | 1 | 1 | Multi speed 3, PAR 11026 |
| 1 | 0 | 0 | Multi speed 4, PAR 11028 |
| 1 | 0 | 1 | Multi speed 5, PAR 11030 |
| 1 | 1 | 0 | Multi speed 6, PAR 11032 |
| 1 | 1 | 1 | Multi speed 7, PAR 11034 |

***Note!*** The Multi-speed unit of measure is set with PAR 11002 Travel units sel.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.1** | **11020** | **Multi speed 0** | | FLOAT | | 4.78 (0.1) | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 0 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.
This setting is taken as the default low speed value.
If the **Multi speed 0** value is changed, it will only be acquired when the drive is rebooted.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.2** | **11022** | **Multi speed 1** | | FLOAT | | 47.78 (1.0) | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 1 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.
This setting is taken as the default high speed value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.3** | **11024** | **Multi speed 2** | | FLOAT | | 21.50 (0.4) | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 2 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.
This setting is taken as the default maintenance speed value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.4** | **11026** | **Multi speed 3** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 3 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.5** | **11028** | **Multi speed 4** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 4 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.6** | **11030** | **Multi speed 5** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 5 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.7** | **11032** | **Multi speed 6** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 6 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.8** | **11034** | **Multi speed 7** | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

Setting of the multispeed 7 value. Can be selected via digital input, fieldbus, etc.
The selected value is the reference for the S-shaped lift ramp.

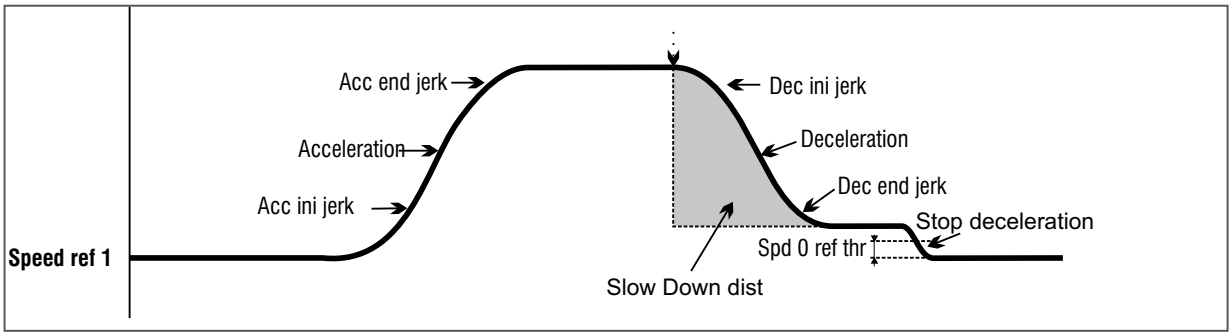
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.3.10** | **14010** | **Actual multi spd sel** | | ENUM | | | | | R | ESY | FVY |

The currently selected speed is displayed.

**0** Multispeed 0
**1** Multispeed 1
**2** Multispeed 2
**3** Multispeed 3
**4** Multispeed 4
**5** Multispeed 5
**6** Multispeed 6
**7** Multispeed 7
**8** Null

## 5.4 RAMPS

The lift application envisages an S-shaped ramp function with the possibility of setting 4 independent jerks and linear acceleration and deceleration factors, as in the standard profile illustrated in the figure below.




The PAR 11040 **Accel initial jerk**, PAR 11042 **Acceleration** and PAR 11044 **Accel end jerk** values used to execute the acceleration ramp are calculated by multiplying the corresponding parameters by the acceleration ramp factor (Percent acc factor), while the PAR 11046 **Decel initial jerk**, PAR 11048 **Deceleration** and PAR 11050 **Decel end jerk** values used to execute the deceleration ramp are calculated by multiplying the corresponding parameters by the deceleration ramp factor (**Percent dec factor**, PAR 11056).

When the **Start** command is removed, the reference speed is zero regardless of the reference selected in the multispeeds. In this final part of the profile the jerk deceleration values are used directly (not multiplied by **Percent dec factor**, PAR 11056) with the **Stop deceleration** parameter as the linear deceleration. The factors for the final section of the profile are also used in case of a Stop lift emergency condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.1** | **11040** | **Accel initial jerk** | $m/s^3$ | FLOAT | | 0.2 | 0.001 | 20 | RW | ESY | FVY |
| | | Setting of the jerk value for the first part of the acceleration. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.2** | **11042** | **Acceleration** | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |
| | | Setting of the maximum acceleration value. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.3** | **11044** | **Accel end jerk** | $m/s^3$ | FLOAT | | 0.6 | 0.001 | 20 | RW | ESY | FVY |
| | | Setting of the jerk value for the last part of the acceleration. | | | | | | | | | |

| Menu | PAR | Descrizione | UM | Tipo | FB BIT | Def | Min | Max | Acc | Liv. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.4** | **11054** | **Percent acc factor** | % | FLOAT | | 100 | 10 | 1000 | RW | INT | FVY |
| | | Setting of the acceleration factor multiplier.<br>If set to 100 the ramp uses the factors entered in the parameters.<br>If set to a value of less than 100 the lift will tend to accelerate over a longer distance.<br>If set to a value of more than 100 the lift will tend to accelerate over a shorter distance. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.5** | **11046** | **Decel initial jerk** | $m/s^3$ | FLOAT | | 0.6 | 0.001 | 20 | RW | ESY | FVY |
| | | Setting of the jerk value for the first part of the deceleration. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.6** | **11048** | **Deceleration** | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |
| | | Setting of the maximum deceleration value. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.7** | **11050** | **Decel end jerk** | $m/s^3$ | FLOAT | | 0.500 | 0.001 | 20 | RW | ESY | FVY |
| | | Setting of the jerk value for the last part of the deceleration. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.8** | **11056** | **Percent dec factor** | % | FLOAT | | 100 | 10 | 1000 | RW | INT | FVY |

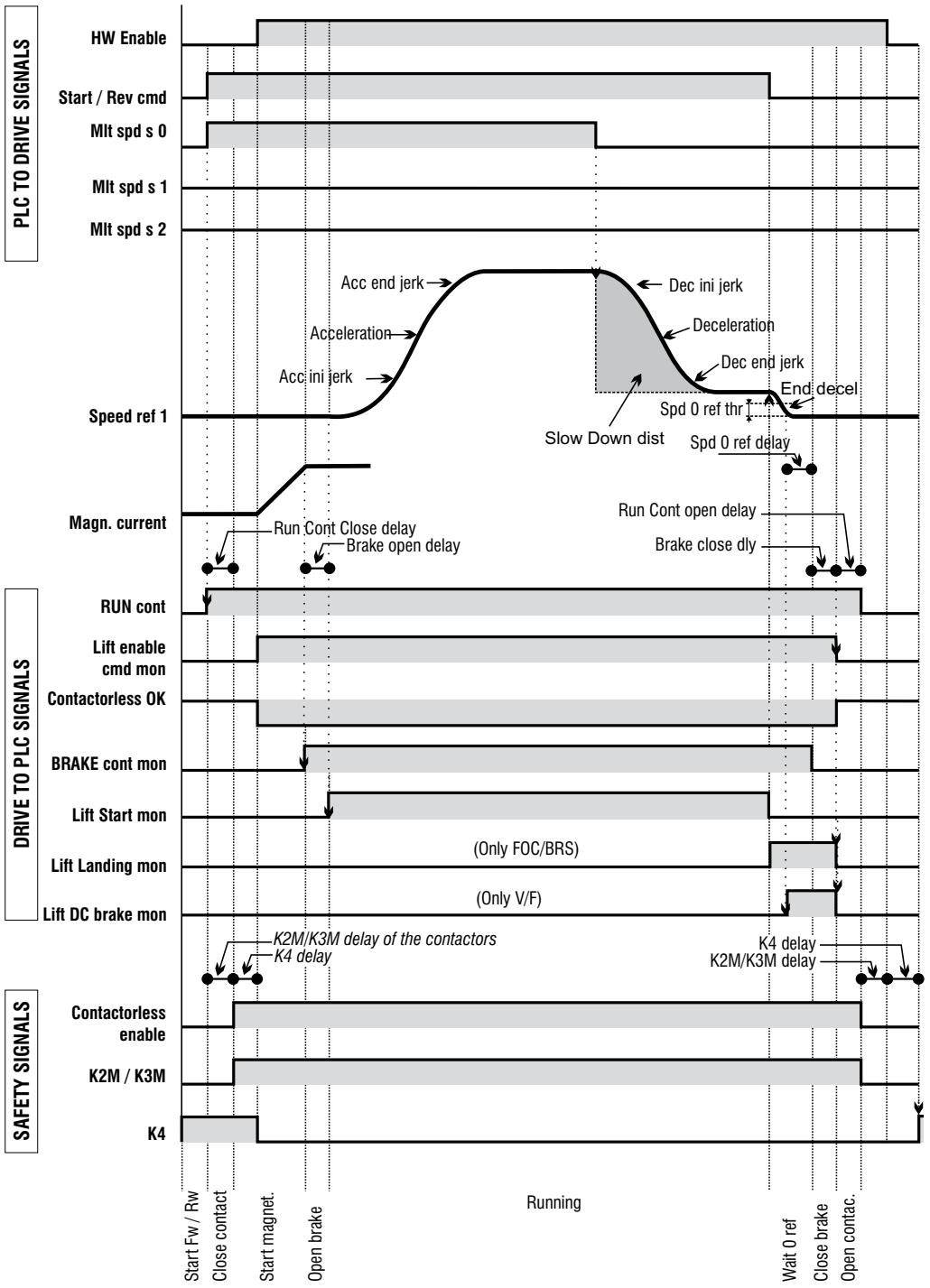
Setting of the deceleration factor multiplier.
If set to 100 the ramp uses the factors entered in the parameters.
If set to a value of less than 100 the lift will tend to decelerate over a longer distance.
If set to a value of more than 100 the lift will tend to decelerate over a shorter distance.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.4.9** | **11052** | **Stop deceleration** | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10.000 | RW | ESY | FVY |

Setting of the maximum deceleration value used when the start command is removed.

## 5.5 LIFT SEQUENCES

This menu shows the parameters used to manage and define the travel of the lift depending on the status of the inputs and alarms. The structure of the lift sequences is summarised below.




**Starting sequence:**

1 Reading of the enable hardware input and checking for alarms (enabling is aborted in case of an alarm).

2 Detection of the **Enable** and **Start** commands as set in the **Sequence start stop** parameter.

3 When the **Start forward/reverse** command is received, a command is sent to close the contactors, depending on the direction of travel.

4 When the time set in **Contactor close dly** has elapsed the internal **Enable** lift signal is activated.

5 The system waits for the magnetisation signal from the drive (**Drive ready**).

6 At the end of magnetisation the open brake signal is activated.

7 The system waits for the brake to be opened (**Brake open delay**).

8 When the delay before opening the brake has elapsed the **Start** lift command is sent and movement is enabled.

**Sequence of movement:**

1 The motor is started and moves slowly at the speed set in Smooth start speed for the time indicated in **Smooth start delay** (PAR 11066).
2 At the end of **Smooth start time** (PAR 11066), movements are managed by the multispeeds and S-shaped ramp
3 When the set speed is exceeded, the **Brake mon** (PAR 3712) output signal can be used to check that the brake has actually been opened.
4 The EFC function with space control can be used to change to a slower speed.
5 When the **Start forward/reverse** signal is lowered the signal indicating arrival at the floor is enabled and the start lift signal is disabled.
6 The start command can be sent again until the drive reaches zero speed: the operating conditions are restored.

**Stopping sequence:**

1 When zero speed is reached the DC stop command is enabled (**ASY SSC** control).
2 The application waits the time needed to reach zero speed and sends the command to close brakes 1 and 2.
3 It waits the time necessary for the brakes to close ((**Brake close delay,** PAR 11068) and, if the current is to be reduced with a ramp, it waits for the current limit to reach zero. The internal **Enable lift**, arrival zone and DC brake signals are then lowered.
4 The application waits the time set in **Contactor open dly** (PAR 11072) and checks that the current supplied is zero, before sending a command to open the contactors.

It is essential to make sure that whenever a drive alarm condition is generated or the drive is disabled, the drive is stopped and a command is sent to open the contactors.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.1** | **11060** | **Sequence start stop** | | ENUM | | Start fwd/rev | - | - | RWZ | ESY | FVY |

Setting the PAR 3702 **Run cont mon** command activation mode.

**0** Start fwd/rev
**1** Enable
**2** MItspd out !=0

When set to 0, output command PAR 3702 **Run cont mon** is activated, giving as input only signal PAR 11222 **Start fwd cmd src** or PAR 11224 **Start rev cmd src**.

When set to 1, output command PAR 3702 **Run cont mon** is activated, giving as input both the enable signal and signal PAR 11222 **Start fwd cmd src** or PAR 11224 **Start rev cmd src**.

When set to 2, output command PAR 3702 **Run cont mon** is activated, giving as input signal PAR 11222 **Start fwd cmd src** or PAR 11224 **Start rev cmd src** and selecting a speed other than zero using the multi-speed selectors.

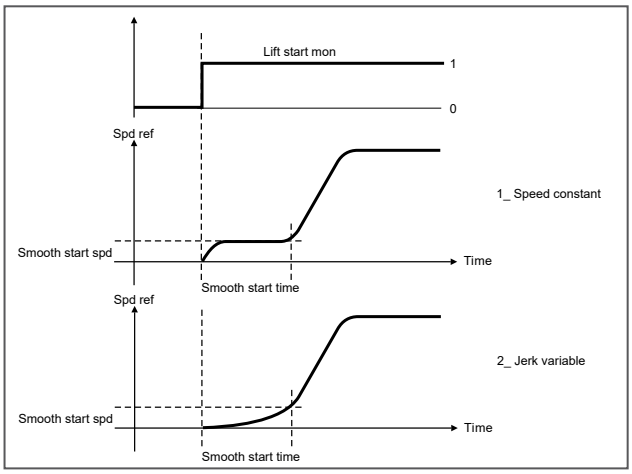
***Note!*** The sequence of operation is the same whether you use a traditional brake or the EBC device.

***Note!*** If EBC is used, in the absence of CAN communication between EBC and ADL, if the lack of communication occurs before you exceed the maximum time of the brake open delay then the drive stops in EBC alarm failure if instead the lack of communication CAN occurs after this time the drive tries to carry on the whole sequence until the stop sequence where, The Run Contactor command is also removed at the brake closing command and the EBC failure alarm is activated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.2** | **11084** | **Smooth start mode** | | ENUM | | Variable jerk | - | - | RWZ | INT | FVY |

Setting of the soft start mode.

**1** Speed constant
**2** Jerk variable




If set to 1 the soft speed is automatically selected after the start command regardless of the selected multispeed. This setting is used in systems with a reducer, as it helps to overcome initial friction before starting with the profile.

If set to 2 it uses a variable value jerk and obtains a variable start acceleration that follows a parabolic trajectory, enabling extremely reduced variations in initial speed. This setting is mainly used in systems with gearless motors.

The Smooth speed duration is dependent on parameter PAR 11066 **Smooth start time:** if this parameter is set to zero, the selected multi-speed is used and not the “Smooth” speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.3** | **11082** | **Smooth start speed** | | FLOAT | 0 | 0 | 0 | 10000 | RW | INT | FVY |

Setting of the speed in the smooth start phase.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.4** | **11066** | **Smooth start time** | ms | INT16/32 | | 0 | 0 | 10000 | RW | INT | FVY |

Setting of the time for which the **Smooth start speed** (PAR 11082) is enabled. If this parameter is set to zero, the S-shaped profile is executed directly at the start, and the soft start function is excluded.

| Menu | PAR | Descrizione | UM | Tipo | FB BIT | Def | Min | Max | Acc | Liv. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.5** | **11062** | **Contactor close dly** | ms | INT16/32 | | 200 | 0 | 10000 | RW | ESY | FVY |

Setting of the delay time after closing the contactor.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.6** | **11064** | **Brake open delay** | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |

Setting of delay time after opening the brake.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.7** | **11078** | **Speed 0 threshold** | rpm | INT16 | | 30 (1) | 0 | 10000 | RW | INT | FVY |

Setting of the zero speed threshold, below which the zero speed signal is activated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.8** | **11080** | **Speed 0 delay** | ms | UINT16 | | 400 | 0 | 10000 | RW | INT | FVY |

Setting of the zero speed delay. After the zero speed signal and after the time set in this parameter the zero speed signal is activated. These parameters are used to know the cabin stop.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.9** | **11086** | **Door open speed** | m/s | FLOAT | | 0 | -10000 | 10000 | RWZ | EXP | FVY |

Setting of the door opening speed.

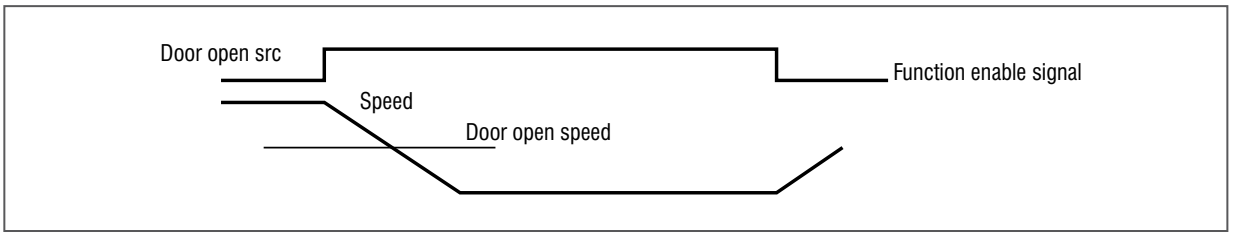
Source to enable brake release through the digital input. In standard sequence brake release is controlled by the drive and therefore this parameter is set to ONE. In case that brake release should be conditioned

by some external control (e.g. PLC), set this parameter to digital input controlled by PLC.

Internal sequence for brake release will wait until this input is asserted.

During run brake will be closed whenever this input becomes not asserted.

***Note!*** Under no circumstances can the drive bypass the safeties. This task is delegated to special safety modules external to the drive.




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.11** | **11068** | **Brake close delay** | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |

Setting of the delay time after closing the brake.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.12** | **11072** | **Contactor open dly** | ms | INT16/32 | | 200 | 0 | 10.000 | RW | ESY | FVY |

Setting of the contactor opening delay time.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.14** | **11826** | **Inspection behaviour** | | ENUM | | None | - | - | RWZ | EXP | FVY |

**0** None
**1** Fast Stop
**2** Immediate

Manages the stop ramp in maintenance/inspection mode. If enabled, the function allows greater deceleration compared to nominal deceleration.

Setting **0**: function disabled (default). The car stops with the normal ramps inserted.

Setting **1**: the 200 ms stop function is enabled if the set maintenance speed (PAR 11828 **Inspection spd sel**) is below 0.63 m/s. If the set speed is higher it is automatically limited to 0.63 m/s.

Setting **3**: the car stops immediately (with no ramp and with closing the brake) when the button on the maintenance button panel is released.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.15** | **11828** | **Inspection spd sel** | | ENUM | | Multispeed 2 | - | - | RWZ | INT | FVY |

Maintenance speed value.

**0** Multispeed 0
**1** Multispeed 1
**2** Multispeed 2
**3** Multispeed 3
**4** Multispeed 4
**5** Multispeed 5
**6** Multispeed 6
**7** Multispeed 7
**8** Null

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.5.16** | **11244** | **Inversion motor rot** | | ENUM | | Not inverted | - | - | RWZ | INT | FVY |

Reversal of the motor rotation direction.

**0** Not inverted
**1** Inverted

Setting **0** does not reverse the direction of rotation.

Setting **1** reverses the direction of rotation.

International standards require that a positive reference corresponds to the motor rotating in a clockwise direction as seen from the drive side (shaft). For correct operation, the control algorithms provide that a positive speed reference corresponds to a positive speed measurement.

## 5.6 LIFT OUT

**Outputs**

The lift control output signals are directly accessible from the selection lists used to configure the drive relay outputs, according to the following table:

| PAR | | Description |
|---|---|---|
| 3700 | **Lift enable** | Enable lift command |
| 3702 | **Run cont mon** | Close contactor command |
| 3704 | **Up cont mon** | Up contactor command |
| 3706 | **Down cont mon** | Down contactor command |
| 3708 | **Brake cont mon** | Brake command |
| 3710 | **Lift dc brake** | DC brake function command |
| 3712 | **Brake mon** | Brake control signal |
| 3714 | **Door open mon** | Open door command |
| 3716 | **Lift start** | Start lift command |
| 3718 | **Safe Brake Test** | Safe Brake Test alarm signal |
| 3720 | **Lift statusWord** | Contains pairs of the StatusWord (selectable from SelLiftStatWord) |
| 3722 | **Brake mon** | Second brake command |
| 3724 | **SC Cont mon** | Control of the contactor of the suicide circuit or short circuit of the motor phases |
| 3726 | **Ramp down limit** | Ramp down current limit |
| 3728 | **EBC Ok** | Indication of the correct functioning of the EBC feedback (equivalent to the feedback of the brake contactor of a traditional brake supply circuit) |
| 3730 | **Lift wdec input** | Connected to the selector for LifWDecomp |

The set of lift output signals composes the “Lift statusWord”; below is the meaning of each single bit. This word is then indicated in parameter PAR 3720 **Lift statusWord** and in **DW1 fieldbus Tx**.

| Bit | Description | Notes |
|---|---|---|
| 0 | **LiftEnable** | Enable lift command. |
| 1 | **RunCont** | Run command contactor |
| 2 | **UpCont** | Up command contactor |
| 3 | **DownCont** | Down command contactor |
| 4 | **BrakeCont** | Brake command contactor |
| 5 | **LiftDcBrake** | DC brake function command |
| 6 | **Brake2** | Brake control signal |
| 7 | **DoorOpen** | Open door command |
| 8 | **Drive Ok** | Drive not in alarm condition signal |
| 9 | **SpeedIsZero** | Speed less than 0 limit signal |
| 10 | **SpeedRefIsZero** | Speed reference less than 0 limit signal |
| 11 ... 12 | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.6.1** | **1410** | **Dig output 1 src** | | LINK | 16BIT_L | 6000 | | | RW | INT | |
| **5.6.2** | **1412** | **Dig output 2 src** | | LINK | 16BIT_L | 6000 | | | RW | INT | |
| **5.6.3** | **1414** | **Dig output 3 src** | | LINK | 16BIT_L | 6000 | | | RW | INT | |
| **5.6.4** | **1416** | **Dig output 4 src** | | LINK | 16BIT_L | 6000 | | | RW | INT | |

Selection of the origin (source) of the destination associated with the digital output. The functions that can be associated with the digital outputs are listed in the “**L_DIGSEL1**” selection list”.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.6.7** | **11016** | **LiftEnable out delay** | | FLOAT | 0 | 0 | 0 | 5 | RW | EXP | FVY |

Setting of the delay time of the enable lift output.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.6.8** | **14104** | **Command output mon** | Hex | | UINT32 | | | | R | ESY | FVY |

Hexadecimal display of the status of outputs, see description “Lift status word” (table beginning section) for the meaning of individual bits.

# 5.7 LIFT IN

**Inputs**

The lift application input commands can be connected to a signal via a selector in order to choose from a series of possibilities available in the input list.

Generally speaking a signal can be connected to a digital input, to certain internal signals and to a bit of the Decomp word bit. This word is connected to a fieldbus processing channel (**PDC FieldBus M->S1**).

The set of digital inputs in a word is displayed in the Lift control word.

The commands used in the lift application are listed below.

| Bit | Command | Description | Default source |
|---|---|---|---|
| 0 | **EnableCmd** | Enable command | Dig input enable |
| 1 | **StartFwdCmd** | Start forward command | Dig input 1x |
| 2 | **StartRevCmd** | Start reverse command | Dig input 2x |
| 3 | **MltSpd S0** | Multispeed 0 sel | Dig input 4x |
| 4 | **MltSpd S1** | Multispeed 1 sel | Dig input 5x |
| 5 | **MltSpd S2** | Multispeed 2 sel | Dig input 6x |
| 6 | **ContFbk** | Contactor close contact | Run cont mon |
| 7 | **BrakeFbk** | Brake close contact | Brake cont mon |
| 8 | **DoorOpenEna** | Source for enabling the door open function | Null |
| 9 | **DoorFbk** | Door close contact | Null |
| 10 | **Emergency mode** | Emergency operation command | Dig input 3x |
| 11 | **InvRampSrc** | Command to invert the speed direction | Null |
| 12 | **UpperLimit** | Travel upper limit signal | Null |
| 13 | **LowerLimit** | Travel lower limit signal | Null |
| 14 | **Brake fbk A3** | Brake failure signal | Null |
| 15 | **Brake 2 fbk** | Second brake failure signal | Brake cont mon |

**Multi speed configuration table**

| Multi speed S2 sel | Multi speed S1 sel | Multi speed S0 sel | ACTIVE RAMP REF |
|---|---|---|---|
| 0 | 0 | 0 | **Multi speed 0** |
| 0 | 0 | 1 | **Multi speed 1** |
| 0 | 1 | 0 | **Multi speed 2** |
| 0 | 1 | 1 | **Multi speed 3** |
| 1 | 0 | 0 | **Multi speed 4** |
| 1 | 0 | 1 | **Multi speed 5** |
| 1 | 1 | 0 | **Multi speed 6** |
| 1 | 1 | 1 | **Multi speed 7** |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.1** | **11220** | **Lift enable cmd src** | | ENUM | | Dig input E mon | - | - | RW | INT | FVY |

Setting of the source for the enable command.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.2** | **11222** | **Start fwd cmd src** | | ENUM | | Dig input 1 mon | - | - | RW | INT | FVY |

Setting of the source for the start forward command.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.3** | **11224** | **Start rev cmd src** | | ENUM | | Dig input 2 mon | - | - | RW | INT | FVY |

Setting of the source for the start reverse command.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.4** | **11256** | **Speed ref src** | | ENUM | | Multispeed | - | - | RW | INT | FVY |

Selection of the origin (source) of the signal to be used for the speed reference.

The signals that can be used are multispeed, analog inputs or fieldbus (except the PAR **4020 Fieldbus M->S1 ipa**).

By using the analogue input as the speed reference source, the entire speed profile from the cabin's start to its stop will be generated only by this input, bypassing the functions implemented here.

**640** Multispeed
**1600** Analog in 1
**4034** Fieldbus M->S2
**4044** Fieldbus M->S3
**4054** Fieldbus M->S4
**4064** Fieldbus M->S5
**4074** Fieldbus M->S6
**4084** Fieldbus M->S7
**4094** Fieldbus M->S8
**4104** Fieldbus M->S9
**4114** Fieldbus M->S10
**4124** Fieldbus M->S11
**4134** Fieldbus M->S12
**4144** Fieldbus M->S13
**4154** Fieldbus M->S14
**4164** Fieldbus M->S15
**4174** Fieldbus M->S16

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.5** | **11226** | **Multi speed S0 src** | | ENUM | | Dig input 4 mon | - | - | RW | ESY | FVY |

Sets the source for the first bit for multi-speed selection.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.6** | **11228** | **Multi speed S1 src** | | ENUM | | Dig input 5 mon | - | - | RW | ESY | FVY |

Sets the source for the second bit for multi-speed selection.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.7** | **11230** | **Multi speed S2 src** | | ENUM | | Dig input 6 mon | - | - | RW | ESY | FVY |

Sets the source for the third bit for multi-speed selection.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.8** | **11232** | **Contactor fbk src** | | ENUM | | Run cont mon | - | - | RW | INT | FVY |

Sets the source of contactor status signal.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.9** | **11236** | **Brake fbk src** | | ENUM | | Brake cont mon | - | - | RW | INT | FVY |

Sets the source of brake status signal.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.10** | **10096** | **Brake 2 fbk src** | | ENUM | | Brake cont mon | - | - | RW | INT | FVY |

Sets the source of the second brake status signal.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.11** | **11238** | **Door open src** | | ENUM | | Null | - | - | RW | EXP | FVY |

Sets of source to enable early door opening control.

The list of functions that can be associated with the digital inputs are in the "**LiftInputDoorCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.12** | **11240** | **Door feedback src** | | ENUM | | Null | - | - | RW | EXP | FVY |

Setting of the source of the door status signal.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdlCmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.13** | **11242** | **Emergency mode src** | | ENUM | | Dig input 3 mon | - | - | RW | INT | FVY |

Setting of the source of the emergency operation signal.

The list of functions that can be associated with the digital inputs are in the “**LiftInputAdlCmd**” selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.14** | **11246** | **Upper limit src** | | ENUM | | Null | - | - | RW | INT | FVY |

Setting of the source of the upper limit enabling signal.

The list of functions that can be associated with the digital inputs are in the “**LiftInputAdlCmd**” selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.15** | **11248** | **Lower limit src** | | ENUM | | Null | - | - | RW | INT | FVY |

Setting of the source of the lower limit enabling signal.

The list of functions that can be associated with the digital inputs are in the “**LiftInputAdlCmd**” selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.17** | **11274** | **Landing Cmd src** | | ENUM | | Null | - | - | RW | INT | FVY |

Sets the source of Landing command.

If you select Freeze inputs, the command is activated on the encoder inputs (see the ADL500 HW+QS manual to identify the encode Freeze inputs).

Rising (rising/positive edge) means active on the rising edge of the signal; Falling (falling/negative edge) active on the falling edge.

The list of functions that can be associated with the digital inputs are in the “**LiftInputAdlCmd**” selection list.

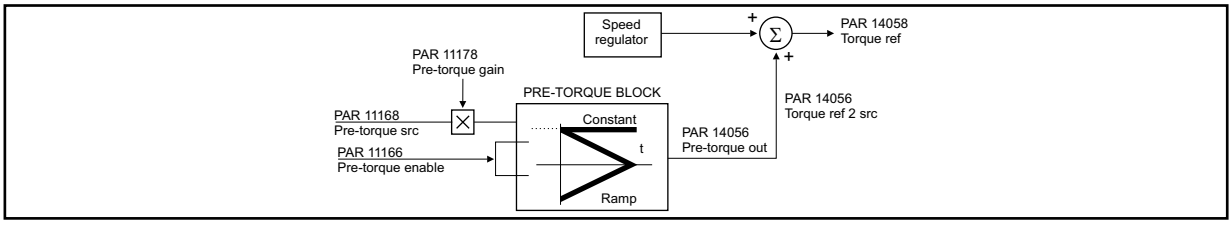
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.7.20** | **14102** | **Command input mon** | Hex | UINT32 | | | - | - | R | ESY | FVY |

Hexadecimal display of input status, see “Lift control word” description (table at the beginning of this section).

# 5.8 PRE TORQUE

The Pre-torque function helps to guarantee a linear start without any initial jerk. This is possible by setting a torque value that corresponds to the load before opening the brake.

The initial torque value applied to the motor as well as the direction of the applied torque can be provided through an appropriately scaled analogue input (load cell on the lift cabin) or with a fixed torque value (in this case the value is optimised for one load condition only).




***Note!*** The pre-torque function is active in the SYN FOC motor control mode only.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.8.1** | **11166** | **Pre-torque enable** | | BIT | | Off | - | - | RWZ | EXP | VY |

Enabling of the pre-torque function.

**0** Off
**1** On

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.8.2** | **11168** | **Pre-torque source** | | ENUM | | Init PreTorque | - | - | RW | EXP | VY |

Selection of the origin (source) of the signal used for the pre-torque function.

**1600** Analog in 1
**11170** Init pretorque

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.8.3** | **11170** | **Init pre-torque** | % | INT16/32 | | 0 | -100 | 100 | RWZ | EXP | VY |

Setting of the reference value used in the pre-torque function only if the PAR 11168 **Pre-torque source** parameter is set to 11170 **Init pre-torque**.

The value set in this parameter only enables the pre-torque function to be optimised for one load condition.

The pre-torque function can also be optimised for different load conditions by using the fieldbus to modify the setting of this parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.8.4** | **11172** | **Pre-torque ramp up** | ms | INT16/32 | | 0 | 0 | 10000 | RWZ | EXP | VY |

Setting of the ramp time for the rising edge of the torque value (before opening the brake): if this parameter is set to zero the constant feed-forward torque value is maintained during travel.

## 5.9 EMERGENCY MODE

The possibility of operating on an emergency module power supply has been implemented in the drive, to overcome the problem of sudden power failures.

The emergency operation condition signal must be connected to the terminal relating to the source PAR 11242 **Emergency mode src,** which, if active, disables the antirollback function (to limit power consumption) and the **Undervoltage [2]** alarm so that the drive can operate powered on the DC link by the EMS emergency module (which is in turn powered by a buffer battery pack).

In order to use batteries with a lower power rating, a function has been implemented to allow the desired direction of travel to be selected before starting an emergency start procedure.

The direction is carried out according to the selected mode (PAR 11262 **Autoselect direction**).

In case of a blackout the drive can be powered by an Emergency Module Supplier (EMS) or by an Uninterruptible Power Supply UPS.

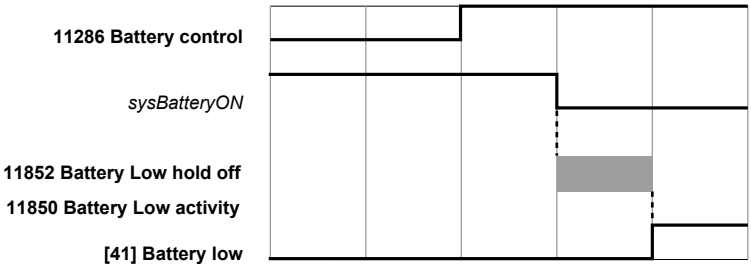
**Operation with Emergency Module Supplier (EMS)**

If the emergency mode is active, the Undervoltage [2] alarm will be disabled allowing the drive to operate powered on the DC link. See ADL500 HW+QS Manual section 7.3.3 and the EMS manual for the connection.

**EMS system management and monitoring function**

This function allows the connection of the batteries to be checked.

This function is enabled with parameter PAR 11286 **Battery control**. If the batteries are disconnected for longer than the time set in parameter PAR 11852 **BatteryLow Hold off,** the [41] **No battery** alarm is tripped according to the action defined in parameter PAR 11852 **BatteryLow Activity**.




**Battery saving mode of operation**

**Operation with Uninterruptible Power Supply (UPS) Single-phase**

When the emergency is activated, the Drive can be powered with 230V single-phase UPS. For connection see ADL500 HW+QS (Quick Start Guide) section 7.9.3.1.

The function can work with two modes: (3) “Battery Saving” and (4) “BattSav+Rec”.

Depending on how you set the PAR 11262 **Autoselect direction** will be activated the first or the second new function.

The principle of operation of the function of replenishment to the floor in the event of a power outage with battery savings works as follows: with emergency input activated the drive tries to move the engine using only the imbalance as for a manoeuvre for unbalance that opens only the brake (and possibly also the gear switch setting the parameter PAR 11094 **Brake release type** = (1) Brake + Gear), if within a preset time from PAR 11092 **Em min spd time** the car moves and then stops once you reach the emergency speed set by PAR 11822 **Em max speed** (max speed in emergency) then the cabin continues for alternating imbalance to stop (when you reach the maximum speed in emergency). If, however, the cabin does not reach this speed within this time, the manoeuvre for imbalance is interrupted and then continue with the motor powered and with a maximum speed set through the parameter 11014 **Em max speed sav bat**.

Attention: the PAR 11824 **Brake lock time**, which defines the waiting time when the button is pressed between the release of the brake for reached max speed in emergency and the subsequent closing of the brake, must be less than PAR 11092 **Em min spd time** otherwise the maneuver turns into energized maneuver.

In the case of selection “Battery Saving” (3) the direction that the motor takes is that indicated by the input of ascent or descent.

In the case of selection “Battsav+Rec” (4) the direction taken by the motor is independent of the enabled input up or down and follows the reccomended direction previously stored in the drive.

Summing up, in this maneuver first the emergency input must be activated, then the control board must command a movement of ascent or descent also enabling the enable as a normal maneuver (except that the multispeed inputs are not considered and the motor speed is regulated by the PAR 11260 **Emergency mode speed**), then the cabin will move for imbalance or so with energized motor.

Once the car has reached the floor is the control board that controls the engine stop by removing the climb or descent references and then the enable.

**Manual emergency mode for imbalance**

The purpose of the function is to allow the movement of the cabin when there is no network in order to bring it to the nearest floor by simple gravity.

The maneuver is possible only when the drive is in emergency condition, signaled by the control board through-towards the digital input “Emergency Mode”. A digital input (Brake Open) must be connected to a “Brake Open” button in the control panel that enables the movement of the cab. The command can be activated by simultaneous activation of the inputs frw and rev after setting the parameter 11820 to the value “Av + Ind”.

When the button is pressed, the inverter via the Relay output “Brake Contactor”, will open the brake contactor. The PAR 11094 parameter set in “Brake + Gear” mode allows to activate also the output of the gear contactors located along the supply line of the brake coil.

The operator must press and hold the “Brake Open” button to move the car.

The PAR 11822 **Em max speed** sets the maximum speed that the car (or engine) can have during the maneuver.

If the car reaches the maximum speed allowed the drive locks the brake for the time T set in PAR 11824 **Brake lock time**, disabling the use of the button (even if pressed it does not release the brake).

By activating this operation, the display (both optional and integrated) displays the current cabin speed (or engine if rpm is set) and the Fwd or Rev direction. In case of an inspection, the manoeuvre is disabled.

**Automatic emergency manoeuvre for imbalance**

The manoeuvre is identical to the manual emergency manoeuvre and differs only in that input 11820 is activated automatically by the lift control board.

**Emergency manoeuvre with engine energized by UPS or batteries + EMS module**

Selecting in par 11262 the values 0 Off, 1 autosel or 2 Recommended, with emergency input activated, at the first driving control the drive controls a movement to the motor in the direction depending on the value chosen with the speed indicated in parameter 11260 **Emergency mode speed**.

**Speed and direction display in case of emergency movement**

In comparison to EN 81-20 in case of movement of the engine in emergency controlled by the drive, the keypad is always indicated the speed at which the motor is going and the direction of movement (through the positive or negative sign of speed). Both for closed-loop and open-loop configurations, the management of the arrival to the emergency plan is realized trying to optimize the power demand to the emergency modules.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.9.1** | **11286** | **Battery control** | | ENUM | | Disable | - | - | RWZ | INT | FVY |

Enables the continuous monitoring of the EMS system; in the event of a disconnection or low battery charge, the [41] **No battery** alarm is tripped, managed by the PAR 11850 **No battery activity** and the PAR 11852 **No battery hold off** parameters in the 5.10 LIFT ALARMS menu.

**0** Disable
**1** Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.9.2** | **11260** | **Emergency mode speed** | | FLOAT | | 4.77(0.1) | -10000 | 10000 | RW | INT | FVY |

Setting of the speed during movements in the emergency operation condition.

The multi-speed is not considered.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.9.3** | **11262** | **Autoselect direction** | | ENUM | | Recommended | - | - | RWZ | INT | FVY |

Enables the automatic selection of the most favourable direction of movement before a start in the emergency mode.

**0** OFF
**1** AutoSelect
**2** Recommended
**3** Battery saving
**4** BattSav + Rec

If 0 is selected: the drive does not calculate the more favorable direction, which is commanded manually.
If 1 is selected: as soon as the drive is in emergency condition it moves the motor with alternating forward and reverse movements, calculating the value of the current delivered in each direction, and selects the more favorable one (less current requested).
If 2 is selected: the drive assesses the most favourable direction based on the current supplied and the DC-Link voltage prior to the emergency. If the drive was in regenerative mode before the emergency, the same direction will be maintained even in an emergency, if the drive was not in regenerative mode but was supplying a current whose value is lower than the threshold set (PAR 11284 Detection Limit), it will maintain the same direction; otherwise, if the current supplied was higher than the threshold, the drive will reverse the direction of movement.

If 3 is selected: The “Battery saving” function allows you to manage the automatic return to the floor in an emergency by exploiting the movement of the car by gravity, and activating the motor only if necessary.
The maneuver is activated by configuring “Battery saving” (PAR 11262) as emergency mode and activating the Emergency function via the configured input.
The function works following this logic: a “manual release brake” maneuver is automatically launched, respecting the settings of the “manual release brake” function; if the car moves, the “manual release brake” maneuver continues, respecting

the conditions set by the function. If the car is in an equilibrium position or the car speed remains below the threshold (PAR 11090) for the pre-set time (PAR 11092) then the brake is closed and the electric running in emergency starts. The electric gear will take place following the commanded direction

If 4 is selected: The “BattSav + Rec” function allows you to manage the automatic return to the floor in an emergency, the maneuver takes place as in selection 3 “Battery saving” the difference is that in electric running in this mode it will take place following the recommended direction.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.9.5** | **11284** | **Detection Limit** | % | UINT32 | | 20 | 0 | 100 | RWZ | INT | FVY |

This is the current limit value delivered by the drive (expressed as a percentage of nominal current) to select the more favorable riding direction in **Recommended** mode (see PAR 11262).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.9.6** | **14282** | **Chosen direction** | | ENUM | | - | - | - | R | INT | |

Indicates the direction selected by the drive during the emergency.

**0** No direction (selected)
**1** Forward
**2** Reverse

The association of Forward/Reverse and Up/Down depends on how the motor connection is made.

See PAR 11092 Em min spd time (def = 6 sec) on menu “9 SAFETY”.

## 5.10 LIFT ALARMS

The drive manages and generates the following alarms:

| Index | Error message shown on the display | Description |
|---|---|---|
| 32 | **Enable missing** | Condition: (ADL550 only) occurs if Enable is not activated within 4 seconds of the Safety Enable signal. |
| | | Solution:<br>• check the Enable signal.<br>• check the SAFETY connector, contacts 1 and 2.<br>• check the electrical level and Safety Enable signal current capacity. |
| 33 | **Cont feedback** | Condition: The contactor feedback signal does not match its command. |
| | | Solution: Check contactor feedback wiring, check logic status of feedback input to drive, increase hold off time (PAR 11202). |
| 34 | **Brake Feedback** | Condition: The brake feedback signal does not match its command. |
| | | Solution: Check brake feedback wiring, check logic status of feedback input to drive, increase hold off time (PAR 11206). |
| 35 | **Door Feedback** | Condition: The door feedback signal does not match its command. |
| | | Solution: Check door feedback wiring, check logic status of feedback input to drive, increase hold off time (PAR 11212). |
| 36 | **Brake Failure** | Condition: Exceeding the Threshold A3 (PAR 11270). |
| | | Solution: Reset alarm using the reset parameter (PAR 11268), check that brake is intact, increase threshold (PAR 11270). |
| 37 | **Safe Brake Test** | Condition: Safe Brake Test failed. |
| | | Solution: Check that brake is intact, increase the maximum deviation threshold (PAR 11840). |
| 38 | **Speed limit** | Condition: Speed limitation warning to ensure stopping, enabling the DISTANCE function. |
| | | Solution: Check multi-speed selected for current distance. |
| 39 | **Up/low limit** | Condition: Speed threshold exceeded in limit switches zone (sensors installed at the top and bottom of the lift/elevator shaft). |
| | | Solution: Check speed set in limit switches zone, change speed limit (PAR 11216). |
| 40 | **Lift ext fault** | Condition: External alarm signal triggered (PAR 11258). |
| | | Solution: Check causes enabling external alarm signal, increase hold off time (PAR 11266). |
| 41 | **No battery** | Condition: Battery monitoring alarm triggered. |
| | | Solution: Check whether battery is properly connected to drive. |
| 42 | **Batt assente** | **Condizione**: Intervento dell’allarme di monitoraggio della batteria. |
| | | **Soluzione**: Verificare se la batteria è correttamente collegata al drive. |

All alarms are associated with a parameter to configure the action taken when the alarm is activated.
Activity: used to set the action to be performed after activation of the alarm, as follows.

**Action**

**Ignore** The alarm is not included in the alarm list, it is not included in the alarm log, it is not signalled on the

digital outputs, commands to the drive are not modified.

**Warning** The alarm is included in the alarm list, it is included in the alarm log, it is signalled on the digital outputs, First alarm information is updated, Enabled alarms information is updated, commands to the drive are not modified.

**Disable drive** The alarm is included in the alarm list, it is included in the alarm log, it is signalled on the digital outputs, First alarm information is updated, Enabled alarms information is updated, a stop command is sent, the motor is disabled and stops due to inertia.

**Fast Stop** The alarm is included in the alarm list, it is included in the alarm log, it is signalled on the digital outputs, First alarm information is updated, Enabled alarms information is updated, a Stop command is sent. The drive is set to zero speed with the maximum available current; when the Speed 0 delay. signal is activated the drive is disabled.

**Lift Fast stop** When there is an alarm occurrence, lift will be stopped (ramp reference is set to zero) immediately with fast ramp, after that it will remain in alarm state. Attention: this will cause the cabin to stop out of floor !

**Lift stop** When there is an alarm occurrence, lift will continue to run until next stop condition, after that it will remain in alarm state.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.1** | **11058** | **Lift fast stop fact** | | FLOAT | | 10 | 1 | 50 | RWZ | INT | FVY |

Sets a multiplication factor that is applied to all ramps when the “Fast stop” alarm occurs.

Setting 1: Ramp values are not changed: 100% of the rated value is used

Setting 10: Ramp values are multiplied by 10: 1000% of the rated value is used.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.2** | **11200** | **Contactor activity** | | ENUM | | Disable | | | RWZ | INT | FVY |

Sets the drive behaviour in case the **Cont feedback** alarm is tripped.

This alarm indicates that contactor command and feedback are mismatched.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.3** | **11202** | **Cont hold off** | ms | INT32 | | 1000 | 0 | 60000 | RW | INT | FVY |

Sets the allowed delay time if contactor command and feedback are mismatched.

If command and feedback are mismatched, the drive waits until the set time has elapsed before tripping the alarm.

If the alarm is removed within the set time, the drive will not activate the alarm.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.4** | **11204** | **Brake activity** | | ENUM | | Disable | | | RWZ | INT | FVY |

Setting of drive behaviour in case of a **Brake Feedback** alarm.

This alarm indicates that brake command and feedback are mismatched.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.5** | **11206** | **Brake hold off** | ms | INT32 | | 1000 | 0 | 60000 | RW | INT | FVY |

Sets the delay time if brake command and feedback are mismatched.

If the alarm is removed within the set time, the drive will not activate the alarm.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.6** | **10094** | **Brake 2 hold off** | ms | INT32 | | 1000 | 0 | 60000 | RW | INT | FVY |

Sets the delay time if second brake command and feedback are mismatched. If the alarm is removed within the set time,

the drive will not activate the alarm.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.7** | **11208** | **Brake run hold off** | | ENUM | | Enable* | - | - | RW | INT | FVY |

Setting of drive behaviour when a possible **Brake Feedback** alarm is detected.

**0** Disable
**1** Enable

If set to 0 the brake feedback alarm is indicated immediately.

If set to 1 the possible brake feedback alarm is indicated at the end of travel: this allows the cabin to reach the floor in case of a faulty brake status signal.

* with ASY SSC motor, the default value is set to Disable.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.8** | **11210** | **Door activity** | | ENUM | | Disabile | - | - | RWZ | EXP | FVY |

Setting of drive behaviour when a possible **Door Feedback** alarm is detected.

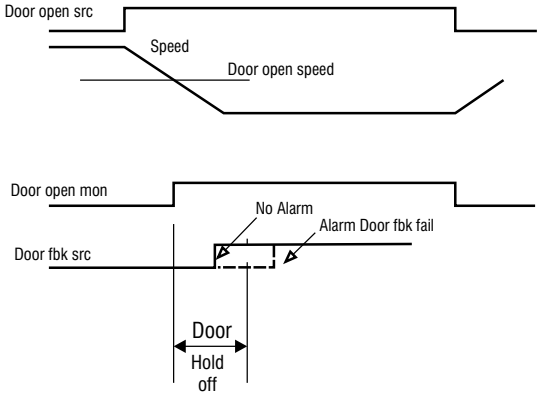
This alarm indicates that door command and feedback are mismatched.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.9** | **11212** | **Door hold off** | ms | INT32 | | 1000 | 0 | 60000 | RW | EXP | FVY |

Sets the allowed delay time if contactor command and feedback are mismatched.

If command and feedback are mismatched, the drive waits for the set time to elapse before activating the alarm. If the alarm is removed within the set time, the drive will not activate the alarm.




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.10** | **11214** | **Limit activity** | | ENUM | | Lift fast stop | - | - | RWZ | INT | FVY |

Setting of drive behaviour in case of the **Upper/Lower limit**.

The P AR 11246 **Upper limit src** and PAR 11248 **Lower limit src** digital inputs must be set to enable speed limit control. The **UpperLimit** must always correspond to the upper limit signal and the **LowerLimit** must always correspond to the lower limit signal.

This alarm occours when the speed is greather than PAR 11216 **Limit speed thr** and are active sensors installed at the beginning and end of the space.

This function implemented in the drive provides an additional control to avoid overtravel.

The alarm condition is generated, when the set speed limit is exceeded.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.11** | **11216** | **Limit speed thr** | m/s | FLOAT | | 1 | 0 | 10 | RW | INT | FVY |

Sets the maximum speed allowed in the limit switches zone.

If this parameter is left at zero, the **Up/Low Limit** alarm will remain deactivated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.12** | **11218** | **Spd target activity** | | ENUM | | Warning | - | - | RWZ | INT | FVY |

Setting of drive behaviour in case of the **Speed limit** alarm.

This alarm is tripped if, when using the EFC function (see DISTANCE menu), the calculated deceleration distance is less than the actual available deceleration space.

The speed limiter is activated to always allow a correct stop.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.13** | **11258** | **Lift EF alarm src** | | ENUM | | Null | - | - | RWZ | INT | FVY |

Selects the origin of the "**Lift External Fault**" alarm signal; the alarm is intended to put the drive into an alarm condition, for faults detected by external controllers.

The list of functions that can be associated with the digital inputs are in the "**LiftInputAdICmd**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.14** | **11264** | **Lift EF al activity** | | ENUM | | Lift stop | - | - | RWZ | INT | FVY |

Setting of "Lift EF alarm set" alarm.

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.15** | **11266** | **Lift EF hold off** | ms | UINT32 | | 1000 | 0 | 60000 | RW | INT | FVY |

Sets the delay time between when the "**Lift EF alarm**" is received and the execution of the selected activity.

If, within the time set in this parameter, the alarm is eliminated, the drive will not perform the action.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.17** | **11850** | **No battery activity** | | ENUM | | Warning | - | - | RWZ | INT | FVY |

Sets the drive behaviour in case the [41] **No battery** alarm is tripped.

If the battery management and monitoring function is used (see 5.9 EMERGENCY MODE menu).

**0** Ignore
**1** Warning
**2** Disable drive
**3** Fast stop
**4** Lift fast stop
**5** Lift stop

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.10.18** | **11852** | **No battery hold off** | ms | UINT32 | | 1000 | 0 | 10000 | RW | INT | FVY |

Sets the delay time between when the [41] **No battery** alarm is received and the execution of the selected activity.

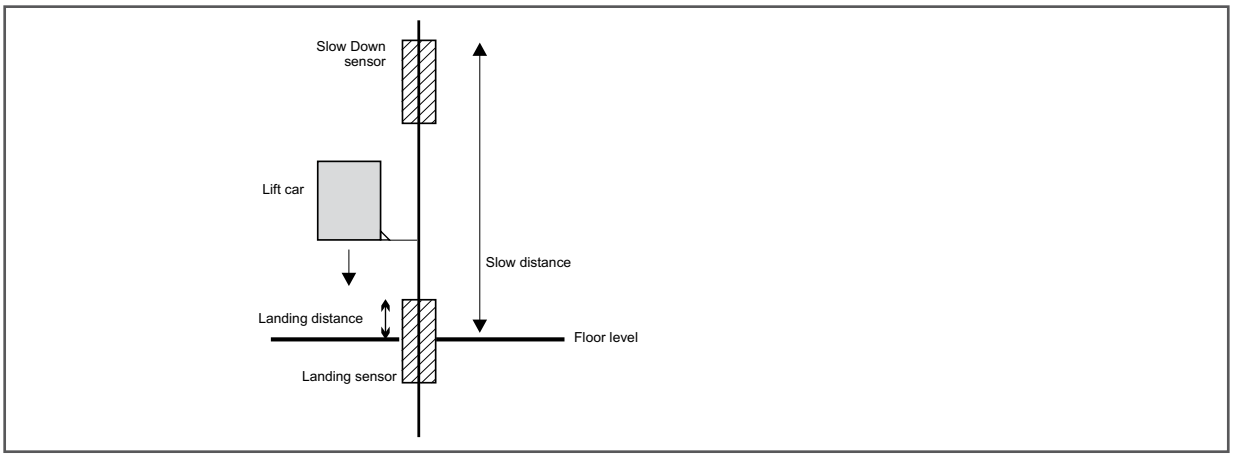
If the battery management and monitoring function is used (see 5.9 EMERGENCY MODE menu).

If, within the time set in this parameter, the alarm is eliminated, the drive will not perform the action.

## 5.11 DISTANCE

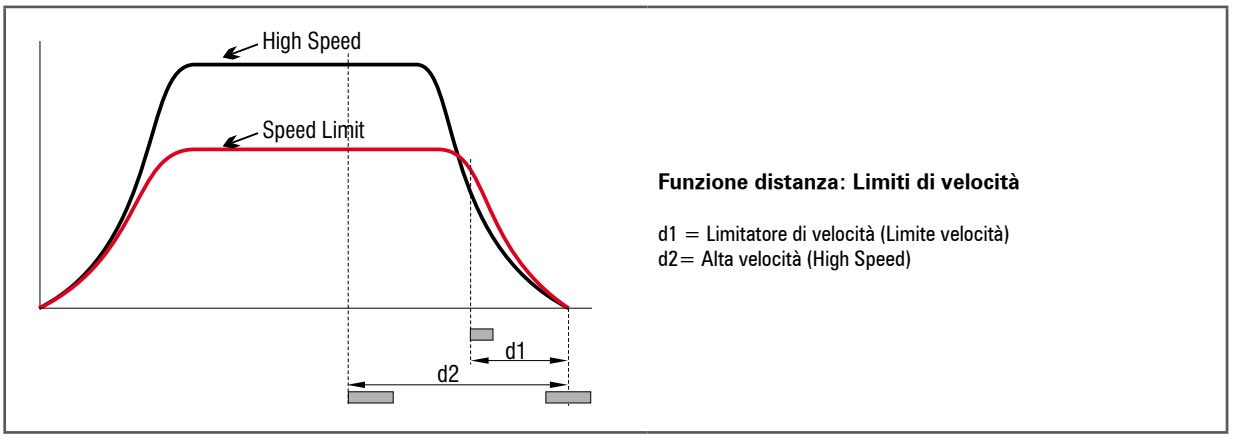
Use of the distances facilitates positioning of the deceleration sensors and is helpful for managing short floors.

The aim of the function that considers distances is to start decelerating from high speed in order to reach the approach speed in proximity to the landing zone.




Up to a maximum of 8 different slow down distances can be managed (real distance between the start of the sensor and the floor) associated with the different multispeeds. The distance to be used is selected after enabling the drive, before the cabin starts to move. Different distances cannot be selected while the cabin is travelling.

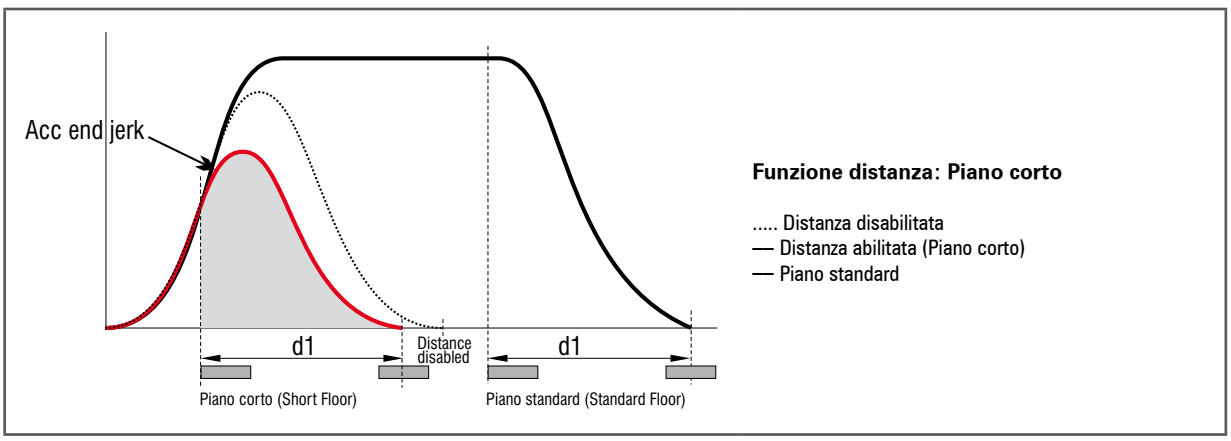
If the slow down distance is shorter than the real deceleration distance for the selected target speed, the speed is automatically limited so that the stop is always correct. When this speed limiter is enabled a **Speed Limit** alarm (warning) is generated.




**Funzione distanza: Limiti di velocità**

d1 = Limitatore di velocità (Limite velocità)
d2= Alta velocità (High Speed)

If the slow down sensor is met during acceleration, the distance required to terminate the acceleration and deceleration phases may be greater than the distance available: in that case the last acceleration jerk is increased to enable correct landing.




**Funzione distanza: Piano corto**

..... Distanza disabilitata
— Distanza abilitata (Piano corto)
— Piano standard

Also note that when the position sensor is not enabled in the landing zone, its exact length is not known. To ensure correct deceleration this distance is estimated on the basis of the value entered in the PAR 11132 **Landing zone dist** parameter.

When this is equal to zero the distance is calculated on the basis of the value of the low speed and deceleration parameters and shown in the PAR 14034 **Landing zone space** parameter. The user should make sure this distance is approximately the real length of the landing zone.

In FOC mode the distance is calculated by reading the encoder position.

In the ASY SSC mode the distance is estimated (SpdRef*Time) and is thus subject to errors due to the difference between the real speed of the motor and the speed reference.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.1** | **11102** | **Distance multispeed 0** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.2** | **11104** | **Distance multispeed 1** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.3** | **11106** | **Distance multispeed 2** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.4** | **11110** | **Distance multispeed 3** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.5** | **11112** | **Distance multispeed 4** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.6** | **11114** | **Distance multispeed 5** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.7** | **11116** | **Distance multispeed 6** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| **5.11.8** | **11118** | **Distance multispeed 7** | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |

Setting of the value of the distance associated with **multispeed** (0...7).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.9** | **11120** | **Slow speed** | | ENUM | | Autoselect | - | - | RW | INT | FVY |

Setting of the floor approach speed.

The **Slow speed** is the speed of approach to the landing zone. When the multispeed associated with the **Slow speed** is selected the slow down space is checked in order to reach this speed in proximity to the landing zone.

**0** Autoselect
**1** Multispeed 0
**2** Multispeed 1
**3** Multispeed 2
**4** Multispeed 3
**5** Multispeed 4
**6** Multispeed 5
**7** Multispeed 6
**8** Multispeed 7
**9** Null

When mode **0** (**Autoselect**) is selected, **Slow speed** is automatically connected to the multispeed with absolute value of less and other than zero. If repositioning speeds with a value of less than the **Slow speed** are used, the multispeed corresponding to the floor approach speed must be set.

When mode 9 (**Null**) is selected the floor approach spaces are never controlled. In this case the profile depends exclusively on the multispeed selected.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.10** | **11130** | **Enable landing src** | | INT16 | | Off | - | - | RW | EXP | FVY |

Setting for enabling space control in the landing zone.

This function enables the cabin to arrive exactly at floor level by controlling the position of the encoder in the landing zone sensor. Position control is only possible if an encoder is used (normally in SYN FOC). ASY SSC mode simply generate an appropriate profile on the position reference.

When the function is enabled, the **s**peed at which the cabin enters the landing zone is that defined on PAR 11120 **Slow speed** and no longer depends on the relative multispeed but is calculated automatically according to the jerk and deceleration values to enable stopping without exceeding the set limits.

The value of **Slow speed** (PAR 11120 = 1...8) is calculated using the jerk and deceleration values not multiplied by the ramp factor.

Direct arrival at floor level is also possible, without using the **Slow speed**. This is done by setting the **Slow speed** multispeed value to zero.

**0** Off
**1** On

Given the solution that has been selected to calculate the speed profile, before enabling the landing zone function it is important to verify the exactness of the spaces that have been entered (for both slow down and landing), and of the mechanical constants. Incorrect spaces could result in sudden decelerations and errors in arrival at floor level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.11** | **11132** | **Landing zone dist** | m | FLOAT | | 0.120 | 0 | 10 | RW | EXP | FVY |

Setting of the landing zone distance.

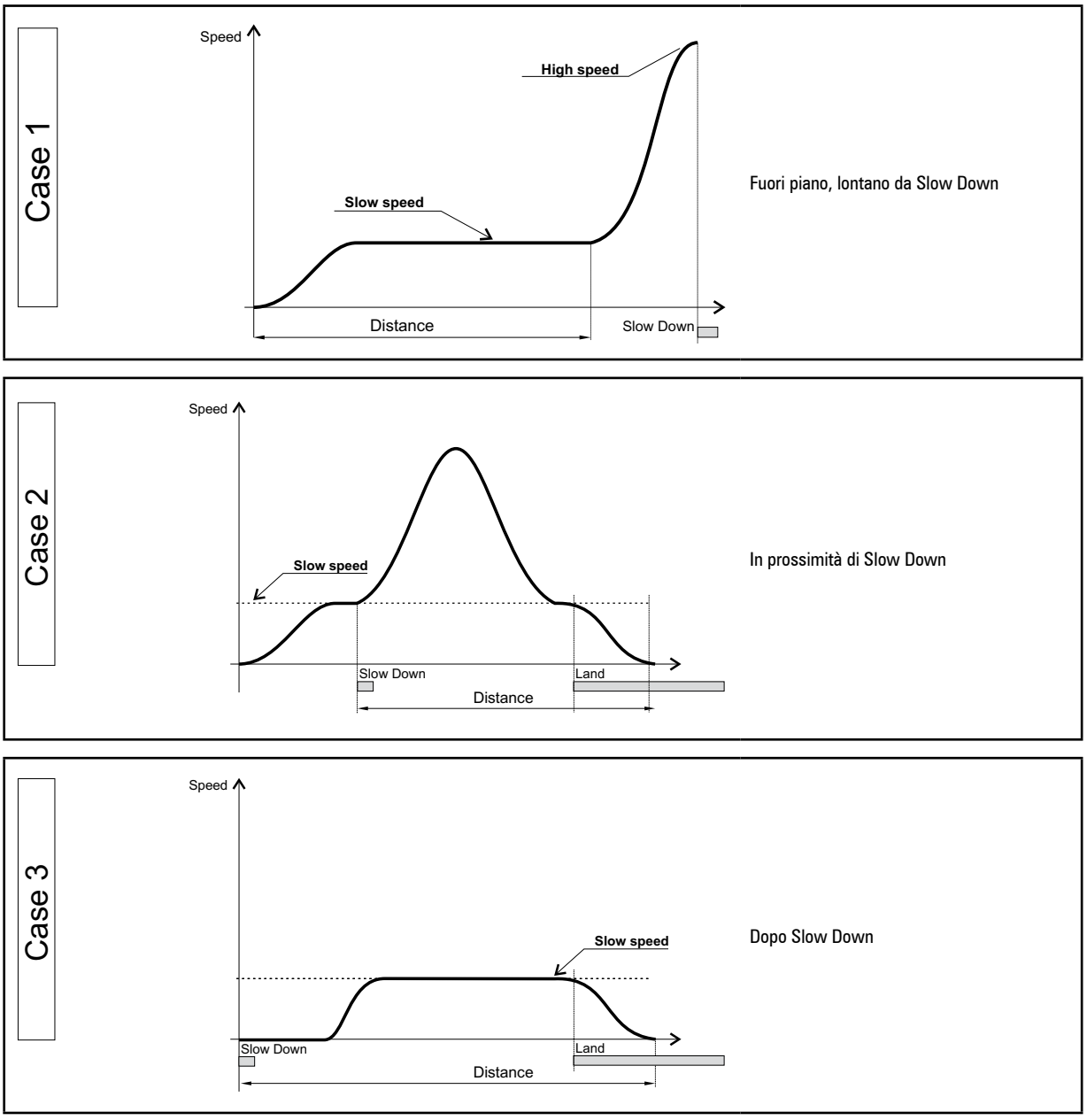
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.12** | **11138** | **Out floor function** | | BIT | | Off | | | RW | EXP | FVY |

Enabling of the safe start function when not at floor level. This function enables recognition of arrival at floor level, which is assumed to be correct if the landing zone phase is performed.

If a correct stopping sequence is not recognised this means an emergency stop command has been sent, after which a low speed start is generated.

The restart procedure depends on the stop position as shown in the figure.

**0** Off
**1** On




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.13** | **11140** | **Delay acq time** | ms | FLOAT | | 15 | 0 | 1000 | RW | EXP | FVY |

Setting of the delay time for sending the slow down signal.

The value of this parameter is used to compensate for the distance covered during the delay time between the passage of the cabin on the slow down sensor and receipt of the decelerate command by the drive. At high speeds this distance can have significant values: e.g. with a cabin travelling at 2 m/s and a delay time of 30 ms, the distance covered and to be

taken into consideration during the deceleration phase is 6 cm.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.14** | **11142** | **Calc space HiSpd sel** | | UINT16 | | Multispeed 1 | | | RW | EXP | FVY |

Setting of the high speed to be used to calculate distances.

**0** Multispeed 0
**1** Multispeed 1
**2** Multispeed 2
**3** Multispeed 3
**4** Multispeed 4
**5** Multispeed 5
**6** Multispeed 6
**7** Multispeed 7
**8** Null

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.11.15** | **11276** | **Kp landing** | | FLOAT | | 0 | 0 | 100 | RW | EXP | FVY |

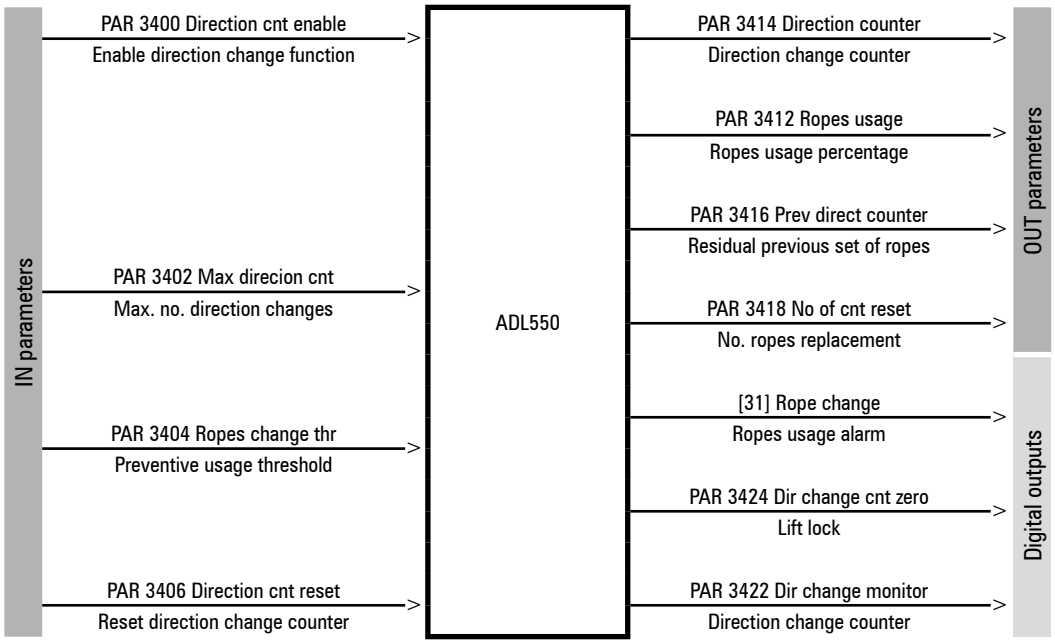
Lets you configure proportional gain to control the landing curve.

## 5.14 DIRECT CNT

The purpose of the “change ride direction count” function is to monitor the wear and tear of the ropes or belts, to indicate when to carry out the necessary maintenance/replacement and to stop the lift if the usage limits are reached. The change of direction counting function for coated ropes or belts is not required by EN 81.20 but it is up to the manufacturers of coated ropes and belts to define the method for indicating when replacement becomes mandatory. The most commonly used method is to count the changes of direction. To ensure that this count cannot be tampered with, the count itself must be protected against deletion. The most commonly used method is to use a password to gain access to data that cannot be deleted by mistake. There are two types of passwords: a password that is always valid until it is changed, and a password that becomes unusable after each use and must be regenerated using a decryption code. Passwords are not compulsory and the manufacturer can use whichever method he prefers to protect against accidental deletion, which is why the change counter can also be used without being put under a password.

A specific counter keeps count of direction changes and can be reset when the ropes are replaced.

The following signals, inserted in the L_DIGSEL1 selection list, can be brought to a digital output: PAR 3420 **Ropes change req mon**, PAR 3422 **Dir change monitor** and PAR 3424 **Dir change cnt zero**.




Attention

**Firmware update**

To keep them from being overwritten when using WEG_DriveLabs, these parameters are not updated with the **Write all target parameters** operation.

**Replacing the drive**

If the drive is replaced, you can save the configuration of the “Direction change count” function on a USB device (PAR 3434 **Save rope to USB**) and load it on the new drive (PAR 3436 **Load rope from USB**).

**Password**

All parameters of this function, reserved for the lift maintenance mechanic, are only accessible at the Expert level, which can be password protected, see “6.6 NETWORK AND ACCESS”).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.1** | **3400** | **Direction cnt enable** | | ENUM | | Disable | | | RW | EXP | FVSY |

**0** Disable
**1** Enable

Enables the “Direction change count” function.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.2** | **3402** | **Max direction cnt** | | UINT32 | | 0 | 0 | 2147483647 | RW | EXP | FVSY |

Sets the maximum allowed number of direction changes.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.3** | **3404** | **Rope change thr** | % | UINT32 | | 98 | 0 | 100 | RW | EXP | FVSY |

Sets a usage threshold beyond which the “Rope change” alarm is signalled to indicate that the ropes have to be replaced.

When parameter 3412 **Ropes usage** exceeds this threshold, the drive keeps running but the alarm stays on to remind the operator to replace the ropes.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.4** | **3406** | **Direction cnt reset** | | BIT | | 0 | 0 | 1 | RW | EXP | FVSY |

**0** Disable
**1** Enable

Let you run a reset to return the direction change counter to the initial value of parameter 3402 **Max direction cnt** (value set by rope manufacturer).

This operation is password-protected and must be run when the ropes are changed.

Executing this command causes the following:

1. the value of counter 3414 **Direction counter** is copied to parameter 3416 **Prev direct counter**,
2. the value of parameter 3418 **No of cnt reset** is incremented,
3. counter 3414 **Direction counter** is reset to value 3402 **Max direction cnt** and consequently parameter 3412 **Ropes usage** is reset to 0.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.5** | **3408** | **Dir cnt password** | | UINT32 | | 0 | 0 | 999999 | RW | EXP | FVSY |
| **5.14.6** | **3410** | **Dir cnt new password** | | UINT32 | | 0 | 0 | 999999 | RW | EXP | FVSY |

With parameters 3408 and 3410 the modification of parameters 3400, 3402, 3404, 3406, 3410 is protected.

The password is a numeric code of up to 6 digits.

To set a password, it must be entered twice in parameter 3410.

After the first entry, “Confirm password” is signaled, which means that the same value must be entered for confirmation.

If the second value is different from the first, “Password mismatch” is signalled, otherwise the new password becomes operative.

The password is retentive so it will not be necessary to save the parameters after changing it.

To enable changes to the protected parameters, the password must be entered in parameter 3408, which must correspond to what was programmed in parameter 3410.

The current values of parameters 3408 and 3410 are only visible while typing. When you press Enter, 0 is displayed to prevent them from being read by unauthorized persons.

After having modified one of the parameters 3400, 3406 and 3410, the entered password is invalidated therefore if you want to continue with other modifications you have to enter it again.

For one-time password management, see the instructions in the description of par 3440.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.7** | **3412** | **Ropes usage** | % | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |

Displays the ropes usage counter (as percentage) of parameter 3402 **Max direction cnt**.

When PAR 3412 = 100% (corresponds to PAR 3414 = 0), the ropes have reached their useful life and must be replaced: the drive finishes the current travel and then locks.

By switching the drive off and back on you can run a single travel to bring the car to a better position for the procedure.

To eliminate the lock condition, reset the direction change counter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.8** | **3414** | **Direction counter** | | UINT32 | 32BIT | 0 | 0 | 0 | R | EXP | FVSY |

Displays the countdown of direction changes remaining until useful life of the ropes is reached.

When PAR 3414 = “0” the ropes must be replaced (corresponds to PAR 3412 = 100%): the drive finishes the current travel and then locks.

By switching the drive off and back on you can run a single travel to bring the car to a better position for the procedure.

To eliminate the lock condition, reset the direction change counter (see PAR 3406 **Direction cnt reset**).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.9** | **3416** | **Prev direct counter** | | UINT32 | 32BIT | 0 | 0 | 0 | R | EXP | FSVY |

Displays the number of direction changes remaining on the previous set of ropes (value of PAR 3414 **Direction counter** is copied before reset). This number will remain fixed until the next replacement of the ropes.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.10** | **3418** | **No of cnt reset** | | UINT32 | 32BIT | 0 | 0 | 0 | R | EXP | FVSY |

Displays the number of rope changes made.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.11** | **3420** | **Ropes change req mon** | | BIT | 16BIT_L | 0 | 0 | 1 | R | EXP | FVSY |

Activates when the percentage of rope usage (set in PAR 3412 **Ropes usage**) exceeds the set threshold (PAR 3404 **Ropes change thr**).

This signal is inserted in the L_DIGSEL1 selection list and can be brought to a digital output.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.12** | **3422** | **Dir change monitor** | | BIT | 16BIT_L | 0 | 0 | 1 | R | EXP | FVSY |

This signal stays on for one second each time the drive detects a direction change and thus decrements the counter.

This signal is inserted in the L_DIGSEL1 selection list and can be brought to a digital output.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5.14.13** | **3424** | **Dir change cnt zero** | | BIT | 16BIT_L | 0 | 0 | 1 | R | EXP | FVSY |

This signal activates when the drive is locked because 3414 **Direction counter** has reached 0.

This signal is inserted in the L_DIGSEL1 selection list and can be brought to a digital output.

# 6 COMMUNICATION

## 6.1 CONTROL COMMUNICATION (CONTROL COMM)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.1.1** | **4000** | **Communication mode** | | ENUM | | Parallel | | | RW | INT | FVSY |

Setting the type of communication to be used.

**0** Parallel I/O

Setting **0** the drive communicates with the Controller through Parallel I/O (physical inputs and outputs).

## 6.6 NETWORK AND ACCESS

To enable password protection for access levels, change parameter PAR 568 **Enable password** to “ON”.

The user will then be asked to enter the password for their current access level; if the password has not been changed, its default value must be entered (visible in the DEFAULT column of the parameter description), then the user will be asked to enter a new password, which must be at least 8 characters long and alphanumeric.

For password recovery in the event of loss, see PAR 7200 **Password recovery**.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.1** | **9610** | **Readonly Username** | | STRING16 | | readonly | 0 | 0 | R | EXP | FVSY |

Username assigned to the “Readonly” access level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.2** | **9626** | **Easy Username** | | STRING16 | | easy | 0 | 0 | R | EXP | FVSY |

Username assigned to the “Easy” access level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.3** | **9634** | **Easy Password** | | STRING16 | | easy | 0 | 0 | RW | EXP | FVSY |

Password used to access the “Easy” level.

| Menu | PAR | Descrizione | UM | Tipo | FB BIT | Def | Min | Max | Acc | Liv. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.4** | **9642** | **Interm Username** | | STRING16 | | interm | 0 | 0 | R | EXP | FVSY |

Username assigned to the “INT” (Intermediate) access level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.5** | **9650** | **Interm Password** | | STRING16 | | interm | 0 | 0 | RW | EXP | FVSY |

Password used to access the “INT” (Intermediate) access level.

| Menu | PAR | Descrizione | UM | Tipo | FB BIT | Def | Min | Max | Acc | Liv. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.6** | **9658** | **Expert Username** | | STRING16 | | expert | 0 | 0 | RW | EXP | FVSY |

Username assigned to the “Expert” access level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.7** | **9666** | **Expert Password** | | STRING16 | | expert | 0 | 0 | RW | EXP | FVSY |

Password used to access the “Expert” level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.13** | **9556** | **IP Address set** | | UINT32 | | 169.254.10.10 | 0 | 0 | RW | EXP | FVSY |

Enters the network IP address.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.14** | **9558** | **IP Netmask set** | | UINT32 | | 255.255.0.0 | 0 | 0 | RW | EXP | FVSY |

Enters the subnet IP address.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.15** | **9560** | **IP Gateway set** | | UINT32 | | 0.0.0.0 | 0 | 0 | RW | EXP | FVSY |

Enters the gateway IP address.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.16** | **9564** | **IP Netmask** | | UINT32 | | 255.255.0.0 | 0 | 0 | R | EXP | FVSY |

Subnet IP address in use.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.17** | **9566** | **IP Gateway** | | UINT32 | | 0.0.0.0 | 0 | 0 | R | EXP | FVSY |

Gateway IP address in use.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.6.18** | **9608** | **IP Assignment** | | ENUM | | Static | 0 | 0 | RW | EXP | FVSY |

IP address assignment.

**0** DHCP
**1** Static

**DHCP**: the drive IP address is assigned by the network DHCP server. If no DHCP server is present, the drive waits for about 3 min, after which it takes the static address configured via parameter (PAR 9556 **IP Address set**, default = 169.254.10.10) as the IP address. Typical use: drive connected to a network with several devices.

**Static**: The drive IP address is assigned via parameter PAR 9556 **IP Address set**, default = 169.254.10.10. Typical use: drive connected directly to the PC.

# 7 MOTOR DATA

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.2** | **2000** | **Rated voltage** | V | FLOAT | | SIZE | 150 | 480 | RWZ | INT | FVSY |

Set the motor rated voltage as indicated on the data plate. This is the voltage the drive must supply at the motor rated frequency.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.3** | **2002** | **Rated current** | A | FLOAT | | SIZE | 1 | 1500 | RWZ | INT | FVSY |

The motor rated current at its rated power (kW / Hp) and voltage (indicated on the motor data plate).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.4** | **2004** | **Rates speed** | rpm | FLOAT | | SIZE | 10 | 32000 | RWZ | INT | FVY |

Rated speed of the motor with full load in rpm. In some motors the asynchronous speed (e.g. 1500 rpm for a 4-pole motor) and slippage, i.e. the loss of revolutions between the motor idling condition and the rated load condition (e.g. 80 rpm), is indicated. Enter the following: synchronous speed - slippage.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.5** | **2006** | **Rated frequency** | Hz | FLOAT | | SIZE | 1 | 1000 | RWZ | INT | FVS |

Rated frequency of the motor expressed in Hz.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.6** | **2008** | **CPole pairs** | | UINT16 | | SIZE | 1 | 60 | RWZ | INT | FVSY |

Motor pole pairs. The number of motor pole pairs is calculated using the motor plate data and applying the following formula:

$$p = \frac{60\ [s] \times f\ [Hz]}{Vn\ [rpm]}$$

Where: p = motor pole pairs; f = motor rated frequency (PAR 2006)
nN = motor rated speed (PAR 2004).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.7** | **2010** | **Rated power** | kW | FLOAT | | SIZE | 0.1 | 1500 | RWZ | INT | FVS |

Motor power factor, as indicated on the data plate (Cos φ). This parameter is not always present on the motor data plate: in that case use the default value present in the drive.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.8** | **2012** | **Rated power factor** | | FLOAT | | SIZE | 0.6 | 0.95 | RWZ | INT | FVS |

Motor power factor, as indicated on the data plate (Cos φ). This parameter is not always present on the motor data plate: in that case use the default value present in the drive.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.10** | **2020** | **Take parameters** | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |

Saves the set motor data in the drive. This command must be supplied last after entering the appropriate values of all the parameters listed above. This means calculating the normalization factors (a) and estimated values for the motor parameters (b). The drive cannot be started until the **Take parameters** command has been set.

Use of the Startup wizard is recommended.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.11** | **2022** | **Autotune rotation** | | BIT | | 0 | 0 | 1 | RWZ | INT | FVS |

Performs self-tuning in rotation: the motor must be uncoupled from the load or the transmission must not represent more than 5% of the load. This procedure allows the greatest degree of accuracy in measuring the motor parameters.

To execute the command you must first open the hardware enabling. Selt-tuning can now be performed.

Close the hardware enabling. At the end of the self-tuning procedure, open the hardware enabling.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.12** | **2024** | **Autotune still** | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |

Performs self-tuning with the motor coupled to the transmission. The self-tuning procedure may cause limited rotation of the motor shaft. To perform self-tuning, follow the procedure described for the previous parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.13** | **2030** | **Autotune status** | | ENUM | | Required | | | R | INT | FVSY |

Indication of the status of parameter saving.

**0** Required
**1** Done

The parameter displays the **Required** message when the motor parameters that have been entered need to be saved. When they have been saved the parameter indicates **Done**.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.14** | **2050** | **Measured Rs** | ohm | FLOAT | | 0 | 0 | 200 | RW | EXP | FVSY |

Measured value of the rotor resistance.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.15** | **2052** | **Measured DTL** | V | FLOAT | | 0 | 0 | 100 | RW | EXP | FVY |

Measured value of dead time compensation.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.16** | **2054** | **Measured DTS** | V/A | FLOAT | | 0 | 0 | 100 | RW | EXP | FVSY |

Measured compensation gradient value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.17** | **2056** | **Measured Lsig** | mH | FLOAT | | 0.1 | 0.1 | 200 | RW | EXP | FVS |

Leakage inductance value measured (Only for asynchronous motors).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.20** | **2062** | **Measured ImN** | A | FLOAT | | CALCF | 0 | 1000 | RW | EXP | FVS |

Measured value of the rated magnetising current.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.21** | **2066** | **Measured FlxN** | Wb | FLOAT | | CALCF | 0 | 10 | RW | EXP | FVS |

Measured flux saturation value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.22** | **2076** | **Measured Rr** | ohm | FLOAT | | CALCF | 0 | 200 | RW | EXP | FVS |

Measured rotor resistance value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **7.23** | **2078** | **Take tune paramenters** | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

Saves the motor data calculated by the self-tuning procedure in the drive.

# 8 ENCODER

***Note!*** The parameters of this menu will be available depending on the selection of parameter 2132 Encoder mode.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.1** | **2100** | **Encoder pulses** | ppr | UINT16 | | 1024 | 4 | 16384 | RWZ | INT | |

Setting of the number of feedback encoder impulses. During setup, for incremental sinusoidal encoders + absolute EnDat, encoder absolute EnDat Full digital and BiSS encoders this value is set automatically by reading the number of incremental encoder impulses.

With the EnDat Full digital Encoder, the value set automatically may be below the minimum.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.2** | **2102** | **Encoder supply** | V | FLOAT | | 5.2 | 5.2 | 20.0 | RW | INT | FVSY |

Sets the encoder supply voltage. The min and max values will be changed depending on the selection of parameter 2104 **Encoder input config** as follows:

| PAR 2104 Encoder input config | Def | Min | Max |
|---|---|---|---|
| [0] HTL | 5.2 V | 5.2 V | 20.0 V |
| [1] TTL | 5.2 V | 5.2 V | 6.0 V |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.3** | **2104** | **Encoder input config** | | ENUM | | TTL | | | RWZ | INT | |

Setting of the input configuration of the incremental digital encoder, TTL or HTL.

**0** HTL
**1** TTL

This parameter is automatically set to HTL when the value set in the **Encoder supply** parameter is more than 6.0V.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.4** | **2106** | **Encoder repetition** | | ENUM | | No division | | | RWZ | INT | |

Setting of the divider to apply to the encoder repeat output frequency.

**0** No division
**1** Divide 2
**2** Divide 4
**3** Divide 8
**4** Divide16
**5** Divide 32
**6** Divide 64

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.5** | **2108** | **Encoder signal Vpp** | V | FLOAT | | 0.8 | 0.5 | 1.2 | RWZ | INT | |

Setting of the peak-to-peak voltage value of the encoder signal. Incremental sinusoidal encoders and absolute SinCos encoders normally produce signals with a peak-to-peak voltage of 1 Vpp. Due to loss of voltage along the cable, the value of the peak-to-peak voltage signal received by the feedback card could be lower, generating a **Speed fbk loss [22]** alarm.

This parameter can be used to set the peak-to-peak voltage value of the incremental sinusoidal encoders and absolute SinCos encoders on the input terminals of the feedback card.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.6** | **2110** | **Encoder signal check** | | ENUM | | Check A-B | | | RWZ | EXP | |

Configuration of which incremental digital encoder channels are to be controlled in order to process the **Speed fbk loss [22]** alarm signal.

**1** Check A-B
**2** Check A-B-Z

Set **1** to check for signal on channels A-B

Set **2** to check for signal on channels A-B-Z

If the application detects the absence of feedback the **Speed fbk loss** [22] is generated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.7** | **2116** | **ENC signal Vpp inc** | V | FLOAT | | 0 | 0 | 0 | R | EXP | |

Displays the Vpp signal of the incremental tracks of the connected encoder.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.9** | **2130** | **Encoder direction** | | ENUM | | Not inverted | | | RWZ | INT | |

Setting of the sign of the information obtained from the incremental or absolute encoder.

**0** Not inverted
**1** Inverted

By setting 0 the encoder feedback signals are not inverted.

By setting 1 the encoder feedback signals are inverted

According to international standards, positive references are associated with clockwise motor rotation, seen from the control side (shaft). To ensure correct operation, the regulation algorithms ensure that positive speed references correspond to positive speed measurements.

If the motor pulley is mounted on the side opposite the command side, it will turn in an anticlockwise direction when the speed is positive: to make the pulley turn in a clockwise direction, the motor phase sequence is modified, which inverts the speed measurement sign. To restore the correct speed measurement sign, invert the incremental encoder A+ and A- signals and the absolute encoder Sin+ and Sin- signals on the encoder connections. The absolute part cannot be inverted with Endat and Hiperface absolute encoders.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.10** | **2132** | **Encoder mode** | | ENUM | | None | | | RWZ | INT | FVSY |

The drive has an integrated encoder card. The encoder mode can be selected in accordance with the following table:

**0** None
**1** Digital
**2** Sinus

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.11** | **2134** | **Encoder speed filter** | ms | FLOAT | | 1.0 | 0.1 | 8.0 | RW | EXP | |

Setting of the time constant of the filter applied to the feedback encoder pulse reading. The parameter affects both the accuracy of the speed measurement and the dynamics obtainable in closed loop control. On the other hand, the use of a speed measurement filter introduces delays that do not permit high control loop dynamics. Low settings extend the regulation bandwidth but may accentuate any disturbance. The filter is applied to the speed reported in the **Encoder speed** (PAR 2150) parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.13** | **2150** | **Encoder speed** | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | |

The motor speed measured by the incremental encoder is displayed, filtered by the PAR 2134 **Encoder speed filter** parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.14** | **2162** | **Encoder position** | cnt | UINT16 | 16BIT_L | 0 | 0 | 0 | R | ESY | |

The impulse count obtained from the incremental encoder reading is displayed: 1 encoder turn is equal to the value entered in Encoder pulses multiplied by 4.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **8.16** | **2172** | **SpdFbkLoss code** | | UINT16 | | 0 | 0 | 0 | R | EXP | |

The **Speed fbk loss** [22] alarm generated by an encoder fault is displayed. Each type of encoder generates the alarm differently (incremental signal error, absolute signal error, serial error), so this parameter is used to display information about the alarm that has been activated. In case of several concurrent causes, these are shown in this parameter.

| Bit | Value | Name |
|---|---|---|
| 0 | 0x01 | CHA |
| 1 | 0x02 | CHB |
| 2 | 0x04 | CHZ |
| 3 | 0x08 | MOD_INCR |
| 4 | 0x10 | MOD_ABS |

| | | |
|---|---|---|
| 5 | 0x20 | CRC_CKS_P |
| 6 | 0x40 | ACK_TMO |
| 7 | 0x80 | DT1_ERR |
| 8 | 0x100 | Setup Error |
| 10..15 | | Free |
| 16..31 | | Encoder-dependent |

For further details reference should be made to the description of the **Speed fbk loss [22]** alarm and the chapter 10.2 Speed fbk loss alarm according to the type of feedback (ADL500 HW+QS manual).

***Note!*** For the correct interpretation of the cause of the alarm trigger, it is necessary to transform the hex code indicated in parameter SpdFbkLoss code, PAR 2172 , in the corresponding binary and verify in the encoder table that the active bits and related description are used.

Example with encoder Endat:

PAR 2172 = A0H (hex value)

In the table "Speed fbk loss [22] alarm with absolute encoder EnDat" A0 is not indicated in the value column.
A0 should be contemplated as a bitword with meaning A0 -> 10100000 -> bit 5 and bit 7 . The following causes simultaneously intervene:

Bit 5 = 20H Cause: the SSI signal interferences cause an error in the CKS or parity
Bit 7 = 80H Cause: The encoder has detected an incorrect operation and communicates it to the converter through the Error bit. Bits 16..31 present the type of incorrect encoder operation detected.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **9.3** | **11252** | **Brake fbk A3 sel** | | ENUM | | Null | - | - | RW | INT | FVY |

Selection of the **Brake failure** alarm In the default configuration the brake fault alarm function is disabled.
Setting of the source to enable between those available in the "**LiftInputAdlCmd**" selection list.

| | |
|---|---|
| **1110** | Dig input E mon |
| **1210** | Dig input 1 mon |
| **1212** | Dig input 2 mon |
| **1214** | Dig input 3 mon |
| **1216** | Dig input 4 mon |
| **1218** | Dig input 5 mon |
| **1220** | Dig input 6 mon |
| **1222** | Dig input 7 mon |
| **1224** | Dig input 8 mon |
| **1230** | Dig input 1x mon |
| **1232** | Dig input 2x mon |
| **1234** | Dig input 3x mon |
| **1236** | Dig input 4x mon |
| **3702** | Run cont mon |
| **3706** | Down cont mon |
| **3708** | Brake cont mon |
| **3714** | Door open mon |
| **6000** | Null |
| **6002** | One |
| **8000** | EBC SOK mon |
| **8002** | EBC Warning mon |
| **8004** | EBC Alarm mon |
| **12250** | B0 Lift decomp |
| **12252** | B1 Lift decomp |
| **12254** | B2 Lift decomp |
| **12256** | B3 Lift decomp |
| **12258** | B4 Lift decomp |
| **12260** | B5 Lift decomp |
| **12262** | B6 Lift decomp |
| **12264** | B7 Lift decomp |
| **12266** | B8 Lift decomp |
| **12268** | B9 Lift decomp |
| **12270** | B10 Lift decomp |
| **12272** | B11 Lift decomp |
| **12274** | B12 Lift decomp |
| **12276** | B13 Lift decomp |
| **12278** | B14 Lift decomp |
| **12280** | B15 Lift decomp |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **9.4** | **11268** | **Reset Brake Alarm** | | INT | | 0 | - | - | RW | INT | FVY |

Resets the **Brake feedback** alarm.

Reset procedure:

1. Open menu 5.10 LIFT ALARMS, and check that the **Brake feedback** alarm is on.
2. In the lift alarm menu, select parameter 11268 **Reset Brake Alarm** (default 0).
3. The system asks for a code, enter release code 5313.
4. Check again to see whether the **Brake feedback** alarm has been reset.

# 10 REGOLATION MENU

## 10.1 SPEED REGULATION GAINS (SPEED REG GAINS)

### Speed Reg Gains

This menu contains the parameters specific to the motor (synchronous or asynchronous) speed control loop illustrated in the figure.

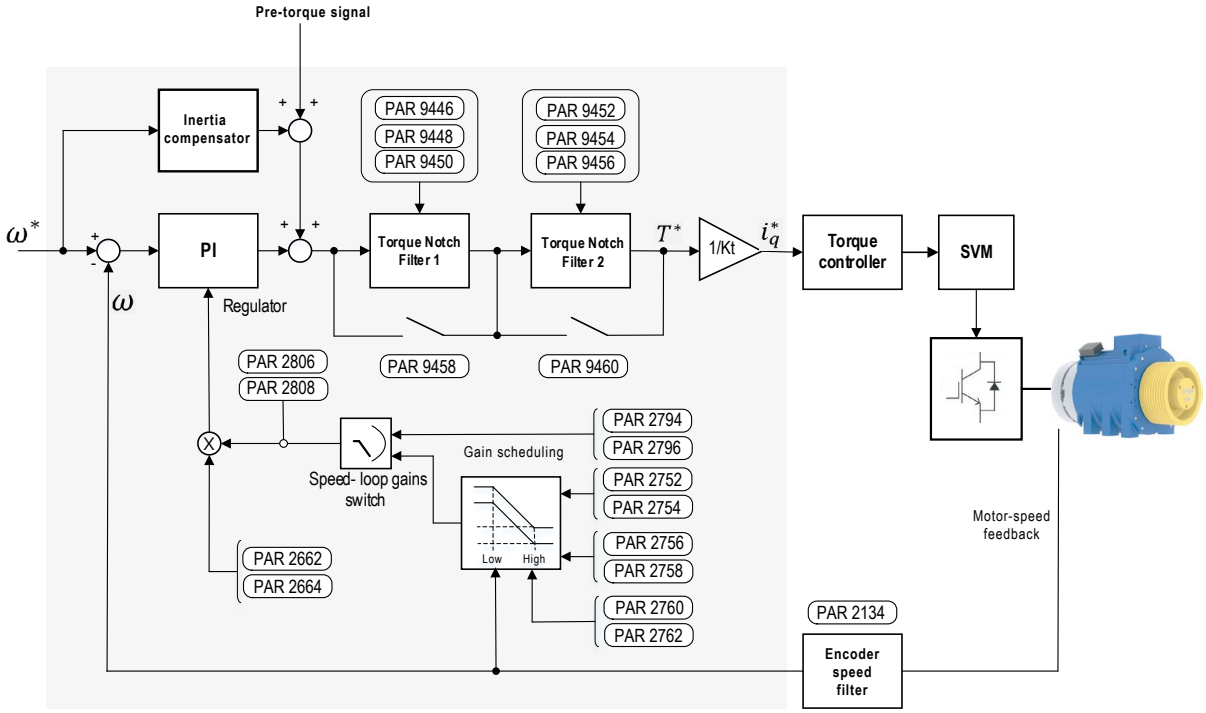
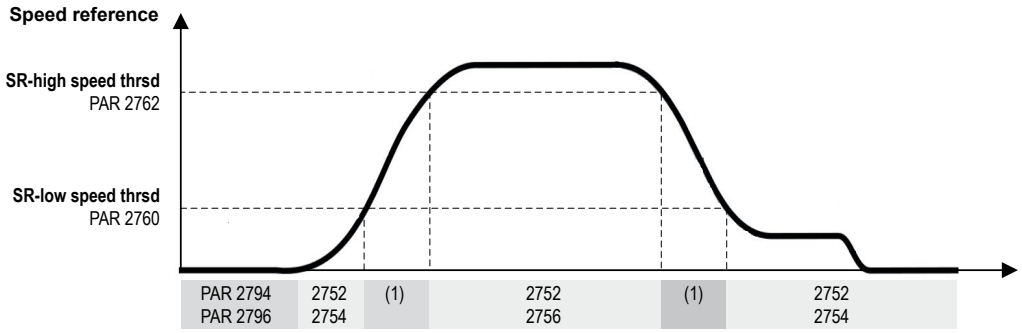



Figure 11.1: Motor speed control loop block diagram




PAR 2794 SR-P gain at start; PAR 2796 SR-I gain at start; PAR 2752 SR-P gain low speed; PAR 2754 SR-I gain low speed; (1) Linear change of gains;

Figure 11.2: Adaptation of the control loop gains as a function of the speed reference

### Torque Notch Filters

To attenuate possible resonance frequencies, in the 5...300Hz range, up to two cascade suppressor filters have been provided for. Both can be configured and enabled independently.

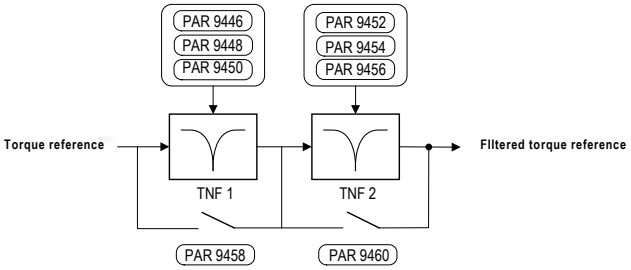



Figure 11.3: Suppressor filters in cascade

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.1** | **2240** | **Inerzia** | kgm² | FLOAT | | 0.8 | 0.001 | 1000 | RW | INT | VSY |

Specifies the actual value of the moment of inertia on the motor side.

Based on the value defined in this parameter, the drive suitably sets the base gains of the Proportional + Integral controller of the speed control loop (PAR 2662 **SR-high speed thrsd**, PAR 2664 **SR-I time**) to ensure stable operation.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.2** | **9702** | **Learning trip out** | kgm² | FLOAT | | 0 | 0 | 0 | R | EXP | FVSY |

Provides the value calculated by the Learning trip procedure (PAR 9720, menu 2 OPTIMIZ. WIZARD). At the end of the procedure, if successfully ending with the “Learning trip OK” message, this value is copied to parameter 2240 Inertia.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.3** | **2794** | **SR-P gain at start** | % | FLOAT | | 150.0 (*) | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of proportional control exercised by the PI regulator during the start phase.

In this initial phase the motor speed control loop must be sufficiently responsive to compensate for any load imbalance and thus counteract the roll-back effect.

An excessive increase of this parameter may generate system vibrations or unstable behaviour.

(*) Def: 150 = ASY FOC, 110 = SYN FOC

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.4** | **2796** | **SR-I gain at start** | % | FLOAT | | 110.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of integral control exercised by the PI regulator during the start phase.

Increasing the value of this parameter improves the speed control response in compensating for any load imbalance when the brake is opened.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.5** | **2752** | **SR-P gain low speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the proportional control exercised by the PI regulator for operating speeds below the minimum threshold defined in parameter PAR 2760 **SR-low speed thrsd**.

For operating speeds above this threshold, the actual level of proportional action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2756 **SR-P gain high speed.**

In the speed range between the thresholds defined in the PAR 2760 **SR-low speed thrsd** and the PAR 2762 **SR-high speed thrsd** parameters, the weight of the proportional action varies linearly with the speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.6** | **2754** | **SR-I gain low speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the integral control exercised by the PI regulator for operating speeds below the minimum threshold defined in parameter PAR 2760 **SR-low speed thrsd**.

For operating speeds above this threshold, the actual level of integral action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2758 **SR-I gain high speed**.

In the speed range between the thresholds defined in the PAR 2760 **SR-low speed thrsd** and the PAR 2762 **SR-high speed thrsd** parameters, the weight of the proportional action varies linearly with the speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.7** | **2756** | **SR-P gain high speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the proportional control action exercised by the PI regulator for operating speeds above the maximum threshold defined in parameter PAR 2762 **SR-high speed thrsd**.

For operating speeds lower than this threshold, the actual level of proportional action becomes a linear combination between the value defined in this parameter and the value defined in parameter PAR 2752 **SR-P gain low speed**.

In the speed range between the minimum and maximum thresholds defined in PAR 2760 **SR-low speed thrsd** and PAR 2762 **SR-high speed thrsd** parameters, the weight of the proportional action varies linearly with the speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.8** | **2758** | **SR-I gain high speed** | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

Defines the level of the integral control action exercised by the PI regulator for operating speeds above the maximum threshold defined in parameter PAR 2760 **SR-low speed thrsd**.

For operating speeds lower than this threshold, the actual level of integral action becomes a linear combination between

the value defined in this parameter and the value defined in parameter PAR 2754 **SR-I gain low speed.**

In the speed range between the thresholds defined in PAR 2760 **SR-low speed thrsd** and PAR 2762 **SR-high speed thrsd** parameters, the weight of the integral action varies linearly with the speed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.9** | **2760** | **SR-low speed thrsd** | % | UINT16 | | 30 | 1 | 100 | RW | INT | VSY |

Specifies the low speed threshold used for automatic gain adjustment of the speed controller.

The value is expressed as a percentage of the rated speed.

For motor speeds below this threshold, the speed controller uses the gains specified in the PAR 2752 **SR-P gain low speed** and the PAR 2754 **SR-I gain low speed** parameters.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.10** | **2762** | **SR-high speed thrsd** | % | UINT16 | | 70 | 1 | 100 | RW | INT | VSY |

Specifies the high speed threshold used for automatic gain adjustment of the speed controller.

The value is expressed as a percentage of the rated speed.

For motor speeds above this threshold, the speed controller uses the gains specified in the PAR 2756 **SR-P gain high speed** and the PAR 2758 **SR-I gain high speed** parameters.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.11** | **2662** | **SR-P gain** | N/rpm | FLOAT | | 1.0 | 0 | 0 | RW | INT | VSY |

Specifies the base value of the speed controller's proportional gain.

Its value is calculated by the drive as a function of the total moment of inertia declared in paramete PAR 2240 **Inertia**.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.12** | **2664** | **SR-I time** | ms | FLOAT | | 1.0 | 0 | 0 | RW | INT | VSY |

Specifies the base value of the speed controller's integral time. Its default value is 100 ms.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.13** | **9446** | **TNF1-frequency** | Hz | FLOAT | | 100.0 | 5.0 | 350.0 | RW | EXP | VSY |

Specifies the value of the central frequency of the first TNF1 suppressor filter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.14** | **9448** | **TNF1-bandwidth** | Hz | FLOAT | | 4 | 1 | 20 | RW | EXP | VSY |

Defines the TNF1 suppressor filter's frequency band.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.15** | **9450** | **TNF1-depth** | | FLOAT | | 20 | 3 | 60 | RW | EXP | VSY |

Specifies the TNFR1 suppressor filter's attenuation value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.16** | **9458** | **Torque Notch Fltr 1** | | ENUM | | Disable | | | RW | EXP | VSY |

This parameter activates/deactivates the filtering function of the first optional TNF 1 filter applied to the torque reference generated by the PI speed regulator.

**0** - Disable
**1** - Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.17** | **9452** | **TNF2-frequency** | Hz | FLOAT | | 100.0 | 5.0 | 350.0 | RW | EXP | VSY |

Specifies the value of the central frequency of the second TNF2 suppressor filter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis.. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.18** | **9454** | **TNF2-bandwidth** | Hz | FLOAT | | 4 | 1 | 20 | RW | EXP | VSY |

Defines the TNF2 suppressor filter's frequency band.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.16** | **9456** | **TNF2-depth** | | FLOAT | | 20 | 3 | 60 | RW | EXP | VSY |

Specifies the TNF2 suppressor filter's attenuation value.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.20** | **9460** | **Torque Notch Fltr 2** | | ENUM | | Disable | | | RW | EXP | VSY |

This parameter activates/deactivates the filtering function of the second optional TNF 2 filter applied to the torque reference generated by the PI speed regulator.

**0** - Disable
**1** - Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.21** | **2806** | **SR-P gain in use** | % | FLOAT | | 100.0 | 0 | 0 | R | INT | VSY |

Read-only parameter. Contains the current value of the speed controller's proportional action level.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.1.22** | **2808** | **SR-I gain in use** | % | FLOAT | | 100.0 | 0 | 0 | R | INT | VSY |

Read-only parameter. Contains the current value of the speed controller's integral action level.

## 10.2 VF CONTROL

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.1** | **2200** | **Boost voltage** | % | FLOAT | | 3 | 0 | 20.0 | RW | ESY | F |

Specifies the additional voltage value applied to the motor terminals at low speeds to increase the delivered torque. Excessive values produce an increase of current draw and motor heating due to the resistive losses in stator winding.

Possible range of values: 0…20% of motor rated voltage.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.2** | **2202** | **Base voltage** | V | FLOAT | | 0 | 0 | 0 | RW | ESY | F |

Specifies the maximum voltage value applicable to the motor terminals. This parameter's setting is defined by the drive automatically, based on the motor data plate, during the Wizard procedure.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.3** | **2204** | **Base frequency** | Hz | FLOAT | | 0 | 0 | 0 | RW | ESY | F |

Specifies the rated motor frequency value at which the voltage applied to the motor terminals reaches the maximum value defined in parameter PAR 2202 **Base voltage**. For operating frequencies above this value the voltage applied to the motor is kept constant.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.4** | **2212** | **V/Hz Boost most** | | ENUM | | Auto | | | RW | ESY | F |

This parameter can be used to select one of the following two boost voltage generation modes:

**0** Fixed
**1** Auto

In the "Fixed" mode, the boost voltage is defined by the user through parameter PAR 2200 Boost voltage.

At zero speed, the drive applies a voltage to the motor terminals equal to the value defined in PAR 2200.

This additional voltage is gradually reduced for speeds higher than zero until it is eliminated for output frequencies above the threshold equal to half the rated frequency defined in PAR 2204 Base frequency (see figure).

In "Auto" mode the boost voltage is dynamically adjusted by the drive.

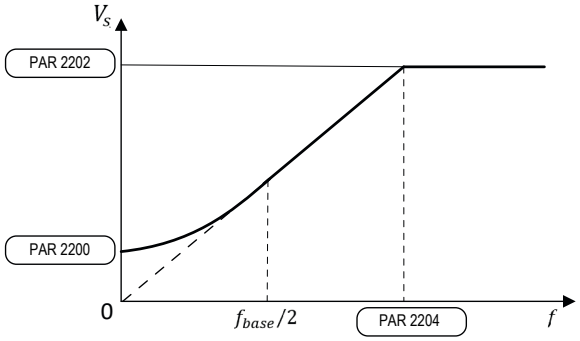



Figure 11.4: V/f characteristic curve profile

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.5** | **2214** | **V/Hz Slip ctrl gain** | | FLOAT | | 0 | 0 | 0 | RW | EXP | F |

This parameter influences the static accuracy of the open loop speed control. It is used for slip compensation under all load conditions. It is automatically defined by the drive based on the motor data plate and it can also be manually adjusted.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.6** | **2218** | **V/Hz Stability gain** | | FLOAT | | 0.0 | 0 | 0 | RW | EXP | F |

This parameter can be used to compensate for any current oscillations that may occur during travel and degrade comfort in the cabin. Its value is appropriately defined by the drive during the self-tuning procedure or after the "Take parameter" command.

V/f control can be made more stable by increasing this parameter.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.7** | **2220** | **V/Hz Limiter Kp** | Hz/A | FLOAT | | 0.2 | 0 | 0 | RW | EXP | F |

Defines the proportional gain of the current limiter in V/f mode. Its value is set by the drive after the self-tuning procedure or after the “Take parameter” command based on the motor data plate.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.8** | **2222** | **V/Hz Limiter Ti** | ms | FLOAT | | 50.0 | 0 | 0 | RW | EXP | F |

Defines the time constant of the integral action of the current limiter in V/f mode. Its value is set by the drive after the self-tuning procedure or after the “Take parameter” command based on the motor data plate.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.9** | **2224** | **V/Hz slip fltr const** | ms | FLOAT | | 10.0 | 1.0 | 1000.0 | RW | EXP | F |

Sets the filter for slip compensation. The value set in this parameter determines the reaction time of the slip compensation function. The lower this parameter’s setting, the higher the slip compensation reaction. If this parameter is set too low, undesirable speed fluctuations.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.10** | **2230** | **V/Hz Boost gain** | V | FLOAT | | 0.0 | 0 | 0 | RW | EXP | F |

Defines the gain for automatic boost voltage adjustment in the “Automatic” mode.

It is defined directly by the drive after the self-tuning procedure or after the “Take parameter” command based on the motor data plate.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.11** | **2480** | **Vf Min Freq** | Hz | FLOAT | | 0.5 | 0 | 5 | RW | EXP | F |

Minimum frequency setting in VF control mode. This is the minimum output frequency value; below this value no frequency adjustment is effective.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.12** | **2482** | **Vf Min Dly** | ms | FLOAT | | 800 | 0 | 5000 | RW | EXP | F |

Delay setting for minimum frequency signal in VF control mode.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.13** | **2206** | **Middle voltage** | V | FLOAT | | 0 | 0 | 0 | RW | EXP | F |

Setting an intermediate voltage value for the customised V/f property.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.14** | **2208** | **Middle frequency** | Hz | FLOAT | | 0 | 0 | 0 | RW | EXP | F |

Setting an intermediate frequency value for the customised V/f property.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.15** | **2232** | **Initial voltage** | V | FLOAT | | 0 | 0 | 60.0 | RW | EXP | F |

Setting the value for the initial voltage applied at zero frequency when using the customised V/f property.

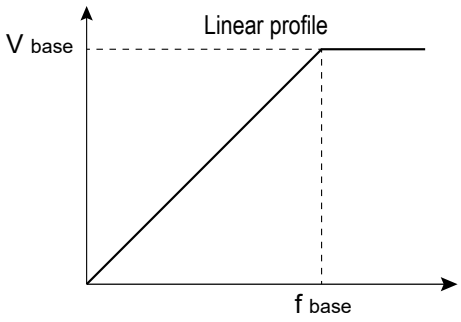
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.16** | **2210** | **V/Hz Profile type** | | ENUM | | Linear | | | RW | EXP | F |

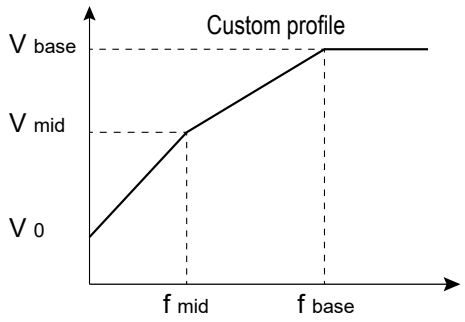
Selection of the type of V/f property.

**0** Linear
**1** Custom

Setting 0 (Linear) gives a V/f property that is linear, with midpoints set to half the value of parameters 2202 **Base voltage** and 2204 **Base frequency**.

Setting 1 (Custom) provides a customised V/f property where the intermediate voltage and frequency values are defined by parameters 2206 **Middle voltage** and 2208 **Middle frequency** while the initial voltage (boost) value is given by parameter 2232 **Initial voltage**.




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.17** | **2226** | **V/Hz Boost slope** | | FLOAT | | 0.0 | 0 | 0 | RW | EXP | F |

Slope of the initial section of the V/f property during which the boost voltage is applied.
Only valid for the linear V/f property. It is automatically defined by the drive following the self-tuning procedure.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.2.18** | **2228** | **Slip comp hold** | | ENUM | | | Disable | | RW | EXP | F |

Activates the slip compensation.

**0** - Disable
**1** - Enable

## 10.3 REGULATOR PARAM

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.1** | **2250** | **CR-P gain** | V/A | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |

Setting of the proportional gain of the current regulator (CR).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.2** | **2252** | **CR-I time** | ms | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |

Sets the integral time constant of the current regulator (CR).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.3** | **2260** | **FR-P gain** | A/Wb | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |

Sets the proportional gain value of the flux regulator (FR) used only in vector control ([1] ASY FOC, PAR 540 **Control type**) for asynchronous motors.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.4** | **2262** | **FR-I time** | ms | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |

Sets the value of the integral time constant of the flux regulator (FR) used only in vector control ([1] ASY FOC, PAR 540 **Control type**) for asynchronous motors.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.5** | **2272** | **VR-I time** | ms | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |

Sets the value of the integral time constant of the output voltage regulator (VR).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.6** | **2290** | **Deflux voltage** | V | FLOAT | | 380 | 0 | 0 | RW | EXP | FVSY |

Defines the maximum AC voltage value applicable by the inverter. For speeds greater than the base speed (at the speed for which the applied voltage reaches its maximum value) the drive reduces the magnetic flux of the motor by entering the Flux weakening operating range.

Flux reduction enables higher speeds to be reached at the expense of the maximum deliverable torque, which decreases accordingly.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.7** | **2292** | **Voltage margin** | perc | FLOAT | | 5.0 | 0 | 30.0 | RW | EXP | FVSY |

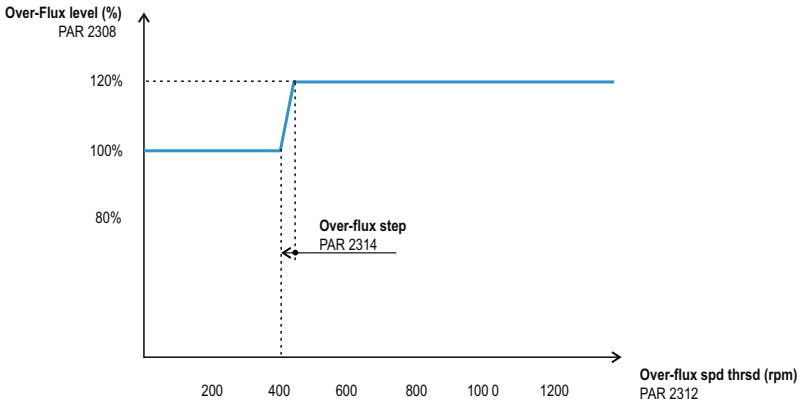
Setting of the voltage regulation margin according to the available voltage. In case of a Deflux voltage setting close to or equal to the actual mains value, **Voltage margin** (PAR 2292) represents the margin allowable by the voltage regulation to perform rapid current variations when load steps are suddenly applied.

A value of 5% allows a very fast response to load steps but with a loss of output voltage and thus power output (reduced power output).

The minimum value (1%) allows a maximum output voltage (around 98%) of the mains voltage to be achieved but with loss of quality of the dynamic response.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.8** | **2308** | **Over-flux level** | perc | FLOAT | | 100 | 100 | 150 | RW | EXP | FVSY |

The value is expressed as the percentage in excess of the rated flux.



| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.9** | **2312** | **Over-flux spd thrsd** | rpm | FLOAT | | 400 | 1 | 1000 | RW | EXP | FVSY |

Speed limit below which the overflux value set in PAR 2308 **Over-flux level**.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.10** | **2314** | **Over-flux step** | | FLOAT | | 1 | 0.01 | 10 | RW | EXP | FVSY |

Setting of the ramp time in the transition between the rated flux and the overflux value set in PAR 2308 **Over-Flux level.**

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.3.11** | **2724** | **Defluxing curr lim** | A | FLOAT | | 0.0 | 0 | 0 | RW | EXP | FVSY |

This parameter specifies the maximum defluxing current (direct component of motor current) applicable by the drive in Flux Weakening operating range.

Standard value 30% of the rated current. A null value disables the defluxing function.

## 10.4 TORQUE CONFIG

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.1** | **2350** | **Torque cur lim Pos** | A | FLOAT | 16BIT_H | CALCF | 0.0 | CALCF | RW | EXP | FVSY |

Setting of the active torque limit of the drive for the positive current direction (clockwise rotation and anti-clockwise braking).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.2** | **2352** | **Torque curr lim Neg** | A | FLOAT | 16BIT_H | CALCF | 0.0 | CALCF | RW | EXP | FVSY |

Setting of the active torque limit of the drive for the negative current direction (anti-clockwise rotation and clockwise braking).

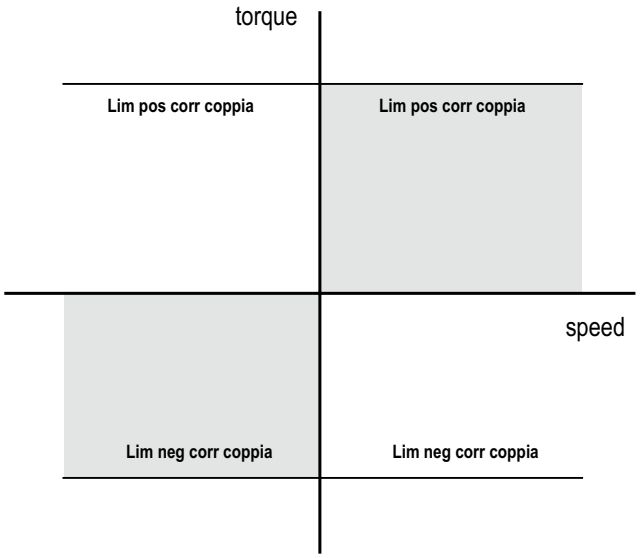
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.3** | **2354** | **Torque curr lim sel** | | ENUM | | Off | | | RWZ | EXP | FVSY |

Setting of the type of behaviour of the drive in the current limit condition.

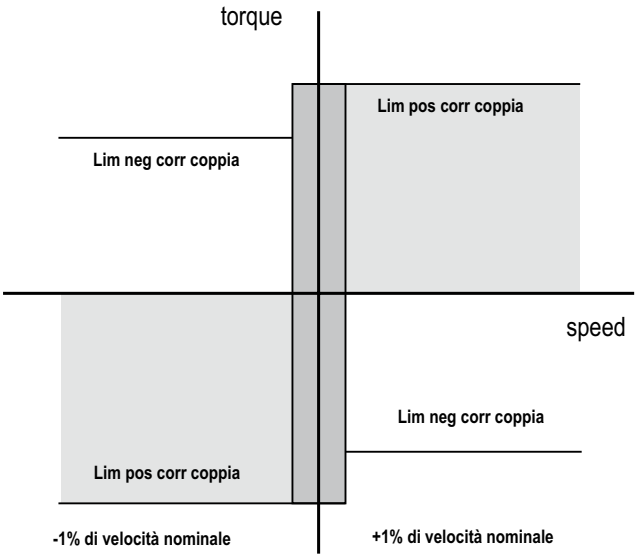
**0** Off
**1** T clim +/-
**2** T clim mot/gen
**3** T limit src

If set to **0** no specific type of current limitation is set.

If set to **1** the active positive torque limit is **Torque curr lim Pos** (PAR 2350) and the active negative torque limit is **Torque curr lim Neg** (PAR 2352).




Torque limits with Torque curr lim Sel = 1




Torque limits with Torque curr lim sel = 2

If set to **2** three conditions are possible:

1 – If the motor speed is > +1% of **Rated speed** the active positive torque limit is **Torque curr lim Pos** (PAR 2350) and the active negative torque limit is **Torque curr lim Neg** (PAR 2352).

2 – If the motor speed is < -1% of **Rated speed** the active positive torque limit is **Torque curr lim Pos** (PAR 2350) and the active negative torque limit is **Torque curr lim Neg** (PAR 2352).

3– If -1% of Motor non speed < motor speed < + 1% of **Rated speed** the active positive torque limit is **Torque curr lim Pos** (PAR 2350) and the active negative torque limit is **Torque curr lim Neg** (PAR 2352).

If set to **3** the torque limits are symmetrical. The torque limit is the value written in the sorce selected by **Torque limit src (PAR 2358)**. This mode is not managed with ASY SSC control mode.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.4** | **2358** | **Torque limit src** | | LINK | 16BIT_H | 6000 | 0 | 2380 | RWZ | EXP | FVSY |

Selection of the origin (source) of the signal to be used for the torque current limit. The signals that can be associated with the function are listed in the "**L_LIM**" selection list.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.5** | **2360** | **Torque climPos Inuse** | A | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |

The positive torque limit value currently being used is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.6** | **2362** | **Torque climNeg Inuse** | A | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |

The negative torque limit value currently being used is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.7** | **2380** | **Dig torque ref** | % | FLOAT | 16BIT_H | 0.0 | -300.0 | 300.0 | RW | EXP | FVSY |

Setting of a digital torque reference. The current reference value is proportional to the active motor current and determines the torque value. The sign determines the torque direction.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **10.4.8** | **2382** | **Torque ref src** | | LINK | 16BIT_H | 65535 | 2380 | 2380 | RWZ | EXP | FVSY |

Selection of the origin (source) of the signal to be used for the torque reference. The signals that can be associated with the function are listed in the “**L_VREF**” selection list.

# 11 FUNCTIONS

## 11.1 DC BRAKING

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.1.1** | **3150** | **DC braking cmd src** | | LINK | 16BIT_L | 6000 | | | RW | INT | FVS |

Selection of the origin (source) of the signal to be used for the **DC braking command**. The terminal or signal that can be used for this function can be defined from among those available in the "**L_DIGSEL2**" selection list".

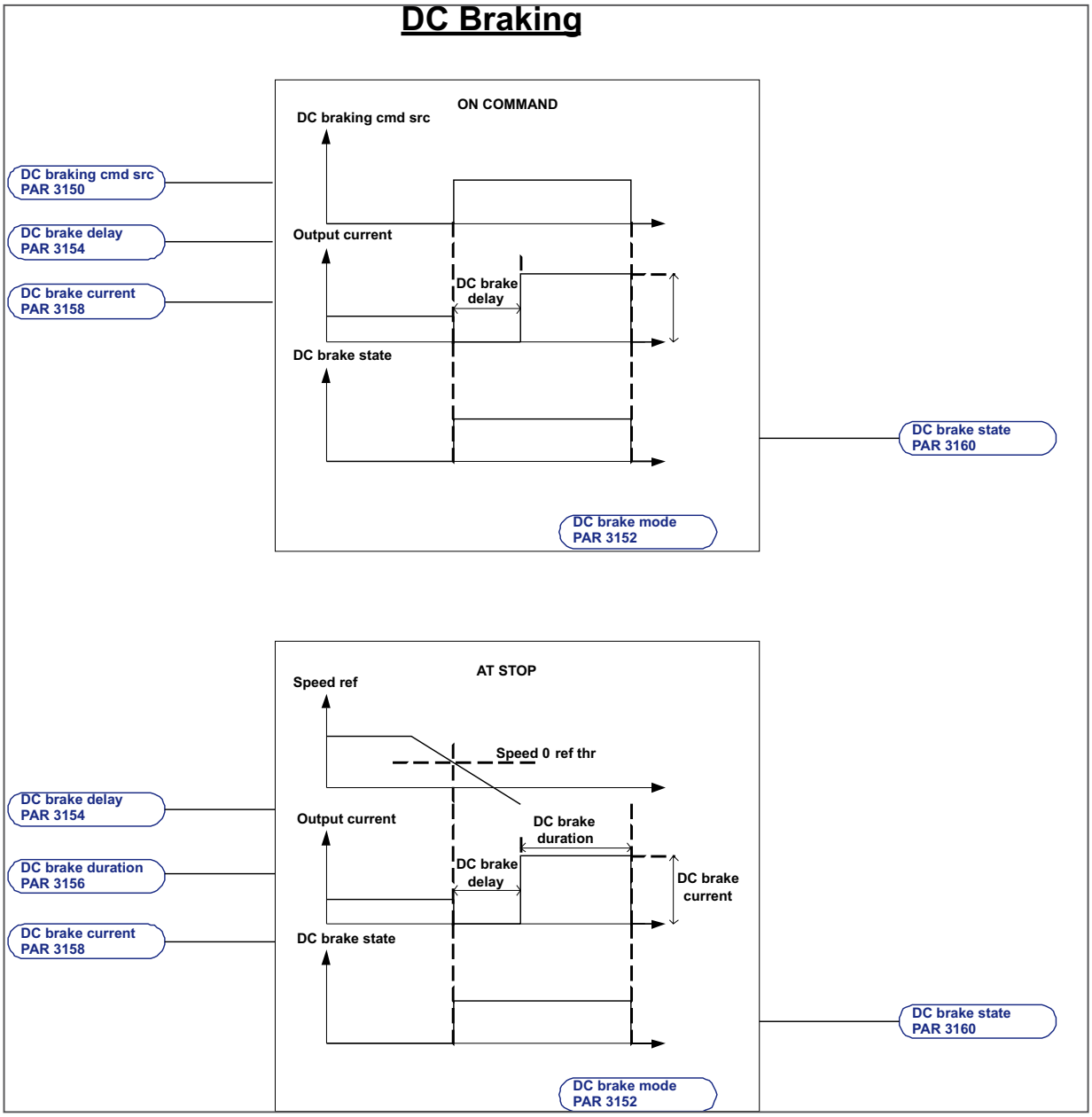
**0** DC braking command not enable
**1** DC braking command enable

In default conditions the origin of the **DC braking command** signal is 0 (not enable).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.1.2** | **3152** | **DC brake mode** | | ENUM | | Off | | | RW | INT | FVS |

This parameter can be used to configure the DC braking activation modes.

**0** Off
**1** At Stop
**2** On Command
**3** OnCmd & AtStop



In “**Off**” mode the direct current injection phase is never executed.

In “**At stop**” mode the direct current injection phase is executed when the stop command is sent and the speed reference threshold = zero has been reached.

*Example:*

With the motor running at any speed, when the stop command is enabled the ramp output decreases according to the selected ramp time, when the speed reference threshold = zero is reached PAR 934 **Ref is 0** the direct current injection phase is enabled. When the command is enabled after the delay configured in PAR 3154 **DC brake delay** direct current injection starts. PAR 3156 **DC brake time** is used to configure the duration of the injection phase and PAR 3158 **DC brake curr** is used to configure the intensity of the injection phase current.

In “**At command**” mode the direct current injection phase is executed when the **DC braking command** configured using parameter PAR 3150 **DC braking command src** is sent.

*Example:*

Motor running driven by load. When the drive is enabled and the **DC braking command** is sent the direct current injection phase is activated. When the command is enabled after the delay configured in PAR 3154 **DC brake delay** direct current injection starts. PAR 3156 **DC brake time** is used to configure the duration of the injection phase and PAR 3158 **DC brake curr** is used to configure the intensity of the injection phase current.

If the command is an impulse shorter than the time programmed with PAR 3156 **DC brake time**, the direct current injection phase continues at least for the time set in parameter **DC brake time**.

If the command is an impulse longer than the time programmed with 3156 **DC brake time**, the direct current injection phase continues for as long as the command is present.

In “**OnCmd & AtStop**” modes the direct current injection phase is executed when one of the two conditions described in the “**At stop**” or “**On command**” modes is present.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.1.3** | **3154** | **DC brake delay** | s | FLOAT | | 0.01 | 0.01 | 30.0 | RW | INT | FVS |

This parameter is used to configure the delay in seconds between the moment DC braking is requested and the moment direct current injection starts.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.1.4** | **3156** | **DC brake duration** | s | FLOAT | | 1.0 | 0.01 | 30.0 | RW | INT | FVS |

This parameter is used to configure the duration of direct current injection.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.1.5** | **3158** | **DC brake current** | % | FLOAT | | 75 | 0.0 | 150.0 | RW | INT | FVS |

This parameter is used to configure the value of the injected direct current.

This is expressed as a percentage of the rated current (PAR 2002 **Rated Current**).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.1.6** | **3160** | **DC brake state** | | ENUM | 16BIT_L | Not active | | | R | INT | FVS |

The status of direct current braking is displayed.

**0** Not active
**1** Active

***Note!*** During braking the Enable command must be enabled. If this command is not present or is removed during the braking process, the drive blocks the inverter bridge and the motor stops due to inertia, without braking.

During the direct current injection phase the Run command should not be enabled. If the Run command is sent to the drive, the ramp output starts following the set reference; direct current output is produced in any case. The moment the DC braking command is removed there is immediately a speed step without performing a change in the ramp.

During the direct current injection phase, for the Jog command follow the instructions provided for the Run command.

## 11.2 INERTIA COMP

An increase in the dynamic response of the speed regulator to a variation in the reference, can be modified by changing the current value during the acceleration/deceleration phase, to counter the machine inertia.

These parameters are calculated by the speed loop autotuning procedure but can also be set manually by the user.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.2.1** | **3100** | **Inertia comp** | $kgm^2$ | FLOAT | | 0.1 | 0 | 0 | RW | EXP | FVSY |

Total value of the inertia on the motor shaft in $Kgm^2$ identified during the self-tuning procedure. If known, this value can also be set manually by the user.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.2.2** | **3102** | **Inertia comp filter** | ms | FLOAT | | 4.0 | 2.0 | 20.0 | RW | EXP | FVSY |

Setting of a filter on the torque compensation. The filter reduces noise due to speed differentiation in the inertia block.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.2.3** | **3104** | **Inertia comp mon** | % | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |

The value of inertia compensation on the function block output is displayed.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.2.4** | **3106** | **Inertia comp fcn** | | ENUM | | Disable | | | RW | EXP | FVSY |

Enable inertia compensation mode.

**0** Disable
**1** Enable

## 11.4 VIBRATION ANALYSIS (VIBR. ANALYSIS)

This is a measurement tool that can be activated in FOC control modes, whether synchronous or asynchronous, to detect any mechanical vibration that occurs during movement at constant speed disturbing the comfort in the cabin. The measurement system for each movement is able to detect, if present, up to two resonance frequencies in the band between 5...300Hz and returns the values as output in two parameters. Any frequencies found can then be used to configure the notch filters in the SPEED REG GAINS menu.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.4.1** | **2288** | **Vibration analyzer** | | ENUM | | Disable | | | RW | EXP | VSY |

This parameter enables/disables the function for measuring resonance frequencies.

**0** - Disable
**1** - Enable

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.4.2** | **9464** | **Vibration freq. 1** | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | EXP | VSY |

Indicates the value in Hz of the first measured resonance frequency. If two frequencies have been detected, **Vibration freq. 1** will be the one with the higher amplitude.

A “0” value indicates that no resonance frequency is present in the measurement band.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.4.3** | **9466** | **Vibration freq. 2** | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | EXP | VSY |

Indicates the value in Hz of the second measured resonance frequency. If two frequencies have been detected, **Vibration freq. 2** will be the one with the lower amplitude.

A “0” value indicates that no second resonance frequency is present in the measurement band.

## 11.5 MOTOR OVERLOAD

The overload control function provides integrator logic to protect the motor against thermal overload.
This protection emulates the thermal relay of the motor controlled by the ADL550 drive.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.5.1** | **3200** | **Motor ovld enable** | | ENUM | | Off | | | RW | EXP | FVSY |

Enabling of the motor overload control.

**0** Off
**1** On

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.5.2** | **3202** | **Motor ovld factor** | % | FLOAT | | 150 | 100 | 300 | RW | EXP | FVSY |

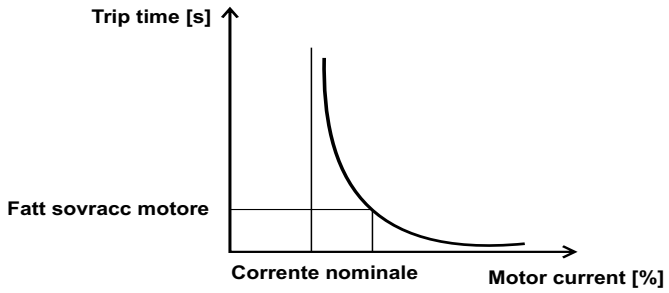
Setting of the motor overload value. Percentage value of the motor rated current (PAR 2002 **Rated current**).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.5.3** | **3204** | **Motor ovld time** | s | FLOAT | | 30 | 10 | 300 | RW | EXP | FVSY |

Setting of the motor overload duration in seconds. It represents the moment in which the protection ("Motor Overload") is enabled, if the motor current value is above the overload set in the PAR 3202 **Motor ovld factor** parameter.

This alarm can be assigned to a programmable digital output (PAR 3214 **Motor overload trip**).

The trip time depends on the motor current value and is as follows:




| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.5.4** | **3206** | **Motor service factor** | % | FLOAT | | 100 | 25 | 200 | RW | EXP | FVSY |

Setting of the motor service factor. This is the difference between the peak current and rated current. It is used to calculate the thermal image of the motor.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.5.5** | **3216** | **Motor fan type** | | ENUM | | Auto fan | | | RW | EXP | FVSY |

This parameter is used to set the type of motor cooling system.

**0** Auto fan
**1** Servo fan

**Auto fan** indicates the presence of a fan unit mounted on the motor shaft that therefore turns at a speed proportional to the motor speed. Cooling is not very effective at low motor speeds.

**Servo fan** indicates the presence of an independent fan unit that therefore always runs at the rated speed. It ensures optimum cooling efficiency at all motor speeds.

When the current motor speed is below (PAR 2004 **Rated speed** / 2) and PAR 3216 **Motor fan type** = Auto fan; , the MOTOR OVERLOAD protection intervention time must be reduced as cooling is insufficient.

At below (PAR 2004 **Rated speed** / 2) the protection intervention time is reduced by reducing the direct current of the MOTOR OVERLOAD function.

When the motor speed is equal to (PAR 2004 **Rated speed** / 2) the direct current of the MOTOR OVERLOAD function is equal to PAR 2002 **Rated current** * PAR 3206 **Motor service factor**, , whereas below that limit it is modified following a linear pattern until PAR 2002 **Rated current** * 3206 **Motor service factor** * PAR 3218 **Motor derat factor** when the motor speed reaches zero.

The overload current of the MOTOR OVERLOAD function is obtained by PAR 2002 **Rated current** * 3206 **Motor service factor** * PAR 3202 **Motor ovld factor** and is the maximum current that can circulate in the motor. If the MOTOR OVERLOAD function is enabled the drive automatically sets the torque current limit so that Iout max. does not exceed this value.

With the MOTOR OVERLOAD function a current equal to the Overload level is supplied to the motor for the maximum time set in PAR 3204 **Motor ovld time**, The slower the motor speed, the shorter the time allowed (see figure at beginning of chapter).

After the set time, the MOTOR OVERLOAD function automatically sets the torque current limit so that Iout max. does not exceed the direct current of the MOTOR OVERLOAD function.

When the motor current speed exceeds (PAR 2004 **Rated speed** / 2) and PAR 3216 **Motor fan type** = Auto fan, the direct current is not reduced as cooling is sufficient.

When PAR 3216 **Motor fan type** = Servo fan, the direct current is not reduced as cooling is sufficient.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.5.6** | **3218** | **Motor derat factor** | % | FLOAT | | 50 | 0 | 100 | RW | EXP | FVSY |

This parameter is used to set the derating factor. The value is expressed as a percentage of PAR 2002 **Rated current** * PAR 3206 **Motor service factor**.

When the current motor speed is below (PAR 2004 **Rated speed** / 2) and PAR 3216 **Motor fan type** = Auto fan, the protection intervention time must be reduced as cooling is insufficient.

At below (PAR 2004 **Rated speed** / 2) sthe protection intervention time is reduced by reducing the direct current of the MOTOR OVERLOAD function.

When the motor speed is equal to (PAR 2004 **Rated speed** / 2) ) the direct current of the MOTOR OVERLOAD function is equal to PAR 2002 **Rated current** * PAR 3206 **Motor service factor**, whereas below that limit it is modified following a linear pattern until PAR 2002 **Rated current** * PAR 3206 **Motor service factor** * PAR 3218 **Motor derat factor** when the motor speed reaches zero.

The overload current of the MOTOR OVERLOAD function is obtained by PAR 2002 **Rated current** * PAR 3206 **Motor service factor** * PAR 3202 **Motor ovld factor** and is the maximum current that can circulate in the motor. If the MOTOR OVERLOAD function is enabled the drive automatically sets the torque current limit so that Iout max. does not exceed this value.

With the MOTOR OVERLOAD function a current equal to the Overload level is supplied to the motor for the maximum time set in PAR 3204 **Motor ovld time**, The slower the motor speed, the shorter the time allowed (see graphs).

After the set time, the MOTOR OVERLOAD function automatically sets the torque current limit so that Iout max. does not exceed the direct current of the MOTOR OVERLOAD function.

When the motor current speed exceeds (PAR 2004 **Rated speed** / 2) and PAR 3216 **Motor fan type** = Auto fan, the direct current is not reduced as cooling is sufficient.

When PAR 3216 **Motor fan type** = Servo fan, the direct current is not reduced as cooling is sufficient.

If the value of parameter 3202 **Motor ovld factor** is 100 % the overload current of the Motor Overload function is equal to the continuous current of the Motor Overload function. In this case the drive behaves as if the overload cycle has been executed and so sets the torque current limit so that Iout max is not more than the continuous current, i.e. **Rated current** (PAR 2002) * **Motor service factor** (PAR 3206) * **Motor derat factor** (PAR 3218).

We recommend setting parameter 3218 **Motor derat factor** to a value so that **Rated current** (PAR 2002) * **Motor service factor** (PAR 3206) * **Motor derat factor** (PAR 3218) produces a result that is more than the motor magnetisation current.

## 11.6 BRAKING RESISTOR OVERLOAD (BRES OVERLOAD)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.6.1** | **3250** | **Bres control** | | ENUM | | On | | | RW | INT | FVSY |

Enabling of the external braking resistance and relative overload control.

**0** Off
**1** On

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.6.2** | **3252** | **Bres value** | ohm | FLOAT | | 7.0 | 7.0 | 1000.0 | RW | INT | FVSY |

Setting of the ohm value of the external braking resistor.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.6.3** | **3254** | **Bres cont power** | kW | FLOAT | | 0.1 | 0.1 | 100.0 | RW | INT | FVY |

Setting of the power that can be continuously dissipated by the external braking resistor.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.6.4** | **3256** | **Bres overload factor** | % | FLOAT | | 1.5 | 1.5 | 10.0 | RW | INT | FVSY |

Setting of the external resistor overload factor.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.6.5** | **3258** | **Bres overload time** | s | FLOAT | | 0.5 | 0.5 | 50.0 | RW | INT | FVSY |

Setting of the intervention time of the external braking resistor overload.

## 11.7 ENERGY SAVING (ENER. SAVING)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.7.1** | **3122** | **Saved energy** | kWh | FLOAT | | 0 | 0 | 0 | R | EXP | FVSY |

Energy saved, starting from the first switch-on, by using the drive coupled with a regenerative unit. If the drive is not coupled to this product, the parameter calculates how much energy would have been saved.

The displayed value is never reset even when the drive is switch-off.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **11.7.2** | **3124** | **Set energy val** | kWh | FLOAT | | 0 | 0 | 0 | RW | EXP | FVSY |

Makes it possible to reset parameter 3122 **Saved energy** by entering “0” or a generic desired value.

(e.g. if 10 kWh is entered, parameter 3122 is automatically updated to 10 kWh and continues to accumulate from this value).

# PARAMETERS ON SELECTION LISTS, BUT NOT DISPLAYED ON KEYPAD

This list reports the parameters that are not displayed in the keyboard while they are part of the selection lists.
These parameters can be used as SOURCE of the input signals for the function block. (Refer to section A – Programming).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **262** | **Motor speed no filter** | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | R | SRV | |
| | | Indicates the unfiltered motor speed. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **626** | **Ramp ref out mon** | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | R | SRV | |
| | | Displays the reference value output of the ramp reference function block. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **760** | **Ramp out mon** | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | RW | SRV | |
| | | Displays the reference value output of the ramp function block. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **764** | **Ramp acc state** | | BIT | 16BIT_L | 2 | 0 | 1 | R | SRV | |
| | | Indicates whether the acceleration ramp is active. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **766** | **Ramp dec state** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | Indicates whether the deceleration ramp is active. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **934** | **Ref is 0** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | This signal is active when the reference is below the limit set in parameter 930 **Reference 0 threshold**. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **936** | **Ref is 0 delay** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | It is active when the reference is below the threshold set in parameter 930 **Reference 0 threshold**. The signal is enabled after the delay set with parameter 932 **Reference delay 0**. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **944** | **Speed is 0** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | It is active when the speed is below the threshold set in parameter 940 **Speed 0 threshold**. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **946** | **Speed is 0 delay** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | It is active when the reference is below the threshold set in parameter 940 **Speed 0 threshold**. The signal is activated after the delay set in parameter 942 **Speed 0 delay.** | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **1024** | **Enable cmd mon** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | Enable signal monitor. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **1026** | **Start cmd mon** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |
| | | Start signal monitor. | | | | | | | | | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **1028** | **FastStop cmd mon** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

Fast Stop signal monitor.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **1060** | **SM1 status** | | ENUM | | PSTART | | | R | SRV | |

Status of DSP machine state.

**255** - PSTART
**0** - N_RDY_TO_SW_ON
**64** - SWITCH_ON_DIS
**33** - RDY_TO_SWT_ON
**35** - SWITCHED_ON
**39** - OPER_ENABLED
**7** - QUICKSTOP_ACT
**15** - FLT_REACT_ACT
**8** - PFAULT

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **1062** | **Drive OK** | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | SRV | |

It is active when the drive is in the "**OK**" condition and no alarms are present.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **1064** | **Drive ready** | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | SRV | |

**It is active when the drive reference is in the "Ready" to run condition.**

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **3214** | **Motor overload trip** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

It is active when the drive is in the motor overload alarm condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **3262** | **Bres overload trip** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

It is active when the drive is in the braking resistor overload alarm condition.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **4708** | **Alm dig out mon 1** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

**It** is activated when the alarm configured in parameter 4700 **Alarm dig sel 1** is active.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **4710** | **Alm dig out mon 2** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

**It** is activated when the alarm configured in parameter 4702 **Alarm dig sel 2** is active.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **4712** | **Alm dig out mon 3** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

It is activated when the alarm configured in parameter 4704 **alarm dig sel 3** is active.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **4714** | **Alm dig out mon 4** | | BIT | 16BIT_L | 0 | 0 | 1 | R | SRV | |

It is activated when the alarm configured in parameter 4706 **alarm dig sel 4** is active.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **4770** | **First alarm** | | ENUM | | No Alarms | | | R | SRV | |

Displays the first alarm to be activated.

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **6000** | **Null** | | UINT32 | 32BIT | 0 | 0 | 0 | R | SRV | |

Forces the variable to the zero level (always disabled).

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | **6002** | **One** | | UINT32 | 32BIT | 1 | 1 | 1 | R | SRV | |

Forces the variable to level one (always active).

# DRIVE SETUP

## Access setup ?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1 | 578 | Language select | | ENUM<br>0 - English<br>1 - Italian<br>2 - French<br>3 - German<br>4 - Spanish<br>5 - Turkish | | GB | | | RW | INT | FVSY |
| 0.2 | 390 | Load Application | | UINT16<br>0 - No applicat.<br>1 - EFC | | - | - | 4 | RW | INT | FVY |
| 0.3 | 598 | Load from USB | | BIT | | 0 | 0 | 1 | RWZ | INT | |
| 0.4 | 2132 | Encoder mode | | ENUM<br>0 - None<br>1 - Digital<br>2 - Sinus | | None | | | RWZ | INT | |
| 0.5 | 392 | Select motor | | BIT | | 0 | 0 | 1 | RWZ | INT | |

## Leave setup ?

# 1 STARTUP WIZARD

## 1.1 Set comm mode?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.1.1 | 4000 | Communication mode | | ENUM<br>0 - Parallel I/O | | Parallel | | | RW | INT | FVSY |

## 1.2 Set encoder param?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.2.1 | 2102 | Encoder supply | V | FLOAT | | 5.2 | 5.2 | 20.0 | RW | INT | FVSY |
| 1.2.2 | 2132 | Encoder mode | | ENUM<br>0 - None<br>1 - Digital<br>2 - Sinus | | None | | | RWZ | INT | |
| 1.2.3 | 2100 | Encoder pulses | ppr | UINT16 | | 1024 | 4 | 16384 | RWZ | INT | |

## 1.3 Set motor data?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.3.1 | 540 | Control type | | ENUM<br>0 - ASY SSC<br>1 - ASY FOC<br>2 - SYN FOC | | ASY_VF | | | RWZ | INT | FVSY |
| 1.3.2 | 2000 | Rated voltage | V | FLOAT | | SIZE | 150 | 480 | RWZ | INT | FVSY |
| 1.3.3 | 2002 | Rated current | A | FLOAT | | SIZE | 1 | 1500 | RWZ | INT | FVSY |
| 1.3.4 | 2004 | Rated speed | rpm | FLOAT | | SIZE | 10 | 32000 | RWZ | INT | FVSY |
| 1.3.5 | 2006 | Rated frequency | Hz | FLOAT | | SIZE | 1 | 1000 | RWZ | INT | FVS |
| 1.3.6 | 2008 | Pole pairs | | UINT16 | | SIZE | 1 | 60 | RWZ | INT | FVSY |
| 1.3.7 | 2010 | Rated power | kW | FLOAT | | SIZE | 0.1 | 1500 | RWZ | INT | FVS |
| 1.3.8 | 2012 | Rated power factor | | FLOAT | | SIZE | 0.6 | 0.95 | RWZ | INT | FVS |

## 1.4 Set mechanical data?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.4.1 | 11002 | Travel units sel | | ENUM<br>0 - Hz | | Hz (m/s) | - | - | RWZ | INT | FVY |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 - m/s<br>2 - rpm | | | | | | | |
| 1.4.2 | 11006 | Cabin speed | m/s | FLOAT | | 1 | 0 | 10 | RWZ | INT | FVY |
| 1.4.3 | 11010 | Gearbox ratio | | FLOAT | | 45 (1) | 1 | 200 | RW | INT | FVY |
| 1.4.4 | 11164 | Rope ratio | | FLOAT | | 1 (2) | 1 | 10 | RWZ | INT | FVY |
| 1.4.5 | 11012 | Pulley diameter | m | FLOAT | | 0.6 (0.32) | 0 | 5 | RWZ | INT | FVY |
| 1.4.6 | 11150 | Car weight | kg | FLOAT | | 400 | 0 | 10000 | RW | INT | FVY |
| 1.4.7 | 11152 | Counter weight | kg | FLOAT | | 1000 | 0 | 10000 | RW | INT | FVY |
| 1.4.8 | 11154 | Load weight | kg | FLOAT | | 450 | 0 | 10000 | RW | INT | FVY |
| 1.4.9 | 11156 | Rope weight | kg | FLOAT | | 20 | 0 | 1000 | RW | INT | FVY |

## 1.5 Set speeds?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.5.1 | 11020 | Multispeed 0 | | FLOAT | | 5 (0.1) | 0 | 10000 | RW | ESY | FVY |
| 1.5.2 | 11022 | Multispeed 1 | | FLOAT | | 47.73 (1.0) | 0 | 10000 | RW | ESY | FVY |
| 1.5.3 | 11024 | Multispeed 2 | | FLOAT | | 20 (0.4) | 0 | 10000 | RW | ESY | FVY |
| 1.5.4 | 11026 | Multispeed 3 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 1.5.5 | 11028 | Multispeed 4 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 1.5.6 | 11030 | Multispeed 5 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 1.5.7 | 11032 | Multispeed 6 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 1.5.8 | 11034 | Multispeed 7 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |

## 1.7 Run autotune still?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.7.1 | 2032 | Autotune | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |

## 1.8 Save parameters?

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.8.1 | 550 | Save parameters | | BIT | | 0 | 0 | 1 | RW | ESY | FVSY |

# 2 OPTIMIZATION WIZARD

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.1 | 9720 | Learning trip | | BIT | | 0 | 0 | 1 | RWZ | INT | VSY |
| 2.2 | 12000 | RollBack at start | | UINT32 | | 1 | 1 | 5 | RW | ESY | FVY |
| 2.3 | 12006 | RollBack at arrival | | UINT32 | | 1 | 1 | 3 | RW | ESY | FVY |
| 2.4 | 12002 | Comfort high spd | | UINT32 | | 1 | 1 | 3 | RW | ESY | FVY |
| 2.5 | 12004 | Comfort low spd | | UINT32 | | 1 | 1 | 3 | RW | INT | FVY |

# 3 TROUBLESHOOTING

## 3.1 Start

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.1.1 | 11064 | Brake open delay | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |

## 3.2 Rollback

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2.1 | 2200 | Boost voltage | % | FLOAT | | 3 | 0 | 20.0 | RW | INT | F |
| 3.2.2 | 2212 | V/Hz Boost mode | | ENUM<br>0 - Fisso<br>1 - Auto | | Auto | | | RW | INT | F |
| 3.2.3 | 2794 | SR-P gain at start | % | FLOAT | | 150.0 | 0.0 | 400.0 | RW | INT | VSY |
| 3.2.4 | 2796 | SR-I gain at start | % | FLOAT | | 110.0 | 0.0 | 400.0 | RW | INT | VSY |

## 3.3 Too fast acceleration (Too fast accel.)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.3.1 | 11040 | Accel initial jerk | $m/s^3$ | FLOAT | | 0.2 | 0.001 | 20 | RW | ESY | FVY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.3.2 | 11042 | Acceleration | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |

## 3.4 Slow speed vibrations (Slow speed vibr.)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.4.1 | 2752 | SR-P gain low speed | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |
| 3.4.2 | 2754 | SR-I gain low speed | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

## 3.5 High speed vibrations (High speed vibr.)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.5.1 | 2756 | SR-P gain high speed | % | FLOAT | | 100 | 0.0 | 400.0 | RW | INT | VSY |
| 3.5.2 | 2758 | SR-I gain high speed | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |

## 3.6 Too fast deceleration (Too fast dec.)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.6.1 | 11046 | Decel initial jerk | $m/s^3$ | FLOAT | | 0.6 | 0.001 | 20 | RW | ESY | FVY |
| 3.6.2 | 11048 | Deceleration | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |

## 3.7 Floor leveling

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.7.1 | 11068 | Brake close delay | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |

## 3.9Vibrator analyzer

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.9.1 | 9464 | Vibration freq. 1 | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | INT | VSY |
| 3.9.2 | 9466 | Vibration freq. 2 | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | INT | VSY |

# 4 DRIVE

## 4.1 DRIVE MONITOR

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.1.1 | 250 | Output current | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.2 | 252 | Output voltage | V | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.3 | 254 | Output frequency | Hz | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.4 | 664 | Speed setpoint | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.5 | 260 | Motor speed | rpm | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.6 | 270 | DC link voltage | V | FLOAT | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.7 | 272 | Heatsink temperature | degC | FLOAT | 16BIT_L | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.9 | 280 | Torque current ref | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | EXP | FVSY |
| 4.1.10 | 282 | Magnet current ref | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | EXP | FVSY |
| 4.1.11 | 284 | Torque current | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | INT | FVSY |
| 4.1.12 | 286 | Magnet current | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | INT | FVSY |
| 4.1.13 | 3212 | Motor overload | % | UINT16 | 16BIT_H | 0 | 0 | 100 | R | ESY | FVSY |
| 4.1.14 | 368 | Drive overload | % | UINT16 | 16BIT_H | 0 | 0 | 100 | R | ESY | FVSY |
| 4.1.15 | 3260 | Bres overload | % | UINT16 | 16BIT_H | 0 | 0 | 100 | R | ESY | FVSY |
| 4.1.16 | 1066 | Enable state mon | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | ESY | FVSY |
| 4.1.17 | 1068 | Start state mon | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | ESY | FVSY |
| 4.1.18 | 1070 | FastStop state mon | | UINT16 | 16BIT_L | 0 | 0 | 1 | R | ESY | FVSY |
| 4.1.19 | 2386 | Torque ref | % | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |
| 4.1.20 | 2388 | Torque | % | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | INT | FVSY |
| 4.1.21 | 372 | In use current limit | A | FLOAT | 16BIT_H | 0 | 0 | 0 | R | EXP | FVSY |
| 4.1.23 | 1200 | Dig input mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | ESY | FVSY |
| 4.1.25 | 1400 | Digital output mon | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |

## 4.2 DRIVE INFO

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.2.1 | 172 | Drive type | | ENUM<br>1 - ADL510<br>2 - ADL530<br>3 - ADL550 | | ADL510 | | | R | ESY | FVSY |
| 4.2.2 | 482 | Drive Size | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.3 | 484 | Drive Family | | ENUM<br>0 - Ness Potenza<br>1 - 230V..480V | | No power | | | R | INT | FVSY |
| 4.2.4 | 488 | Drive cont current | A | FLOAT | | CALCF | 0.0 | 0.0 | R | ESY | FVSY |
| 4.2.6 | 174 | Firmware version | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.7 | 176 | DSP Firmware version | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.8 | 180 | DSP Boot version | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.9 | 182 | HMI Boot version | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.10 | 184 | Application name | | STRING16 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.11 | 192 | Application version | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.12 | 198 | Versione Hardware | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.13 | 520 | Product S/N | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.14 | 522 | Regulation S/N | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.15 | 524 | Power S/N | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.16 | 526 | Power file ver.rel | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.17 | 9562 | IP address | | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.2.18 | 9600 | Mac address | | STRING16 | | 0 | 0 | 0 | R | EXP | FVSY |

## 4.3 DRIVE CONFIG *

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.3.1 | 550 | Save parameters | | BIT | | 0 | 0 | 1 | RWZ | ESY | FVSY |
| 4.3.2 | 580 | Load default | | BIT | | 0 | 0 | 1 | RWZ | ESY | FVSY |
| 4.3.3 | 540 | Control type | | ENUM<br>0 - ASY SSC<br>1 - ASY FOC<br>2 - SYN FOC | | ASY_VF | | | RWZ | INT | FVSY |
| 4.3.4 | 554 | Access level | | ENUM<br>0 - Readonly<br>1 - Easy<br>2 - INT<br>3 - Expert<br>4 - Service | | Intermediate | | | RW | ESY | FVSY |
| 4.3.5 | 568 | Enable Passwords | | BIT | | 0 | 0 | 1 | RW | EXP | FVSY |
| 4.3.7 | 560 | Mains voltage | | ENUM<br>1 - 230 V<br>2 - 380 V<br>3 - 400 V<br>4 - 415 V<br>5 - 440 V<br>6 - 460 V<br>7 - 480 V | | 400 V | | | RWZ | INT | FVSY |
| 4.3.8 | 448 | Emergency UV | V | FLOAT | | CALCF | 0 | CALCF | RWZ | INT | FVSY |
| 4.3.9 | 450 | Undervoltage | V | FLOAT | | 300.0 | 0 | 0 | RW | INT | FVSY |
| 4.3.10 | 2690 | Chopper ON | V | FLOAT | | CALCF | 0 | CALCF | RWZ | EXP | FVSY |
| 4.3.11 | 1010 | Fast start disable | | BIT | | 1 | 0 | 1 | RW | EXP | FVSY |
| 4.3.12 | 574 | Startup display | | INT16 | | -1 | -1 | 20000 | RW | INT | FVSY |
| 4.3.13 | 576 | Display backlight | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.3.14 | 578 | Language select | | ENUM<br>0 - English<br>1 - Italian<br>2 - French<br>3 - German<br>4 - Spanish<br>5 - Turkish | | GB | | | RW | INT | FVSY |
| 4.3.15 | 7200 | Password recovery | | BIT | | 0 | 0 | 1 | RW | ESY | FVSY |
| 4.3.16 | 7210 | Recovery code | | UINT32 | | 0.0 | 0 | 0 | R | ESY | FVSY |
| 4.3.17 | 7220 | Logout time | min | UINT16 | | 60 | 0 | 1092 | RW | EXP | FVSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.3.18 | 590 | Save par to keypad | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |

* Parameters 578, 590, 592, 596, 598,1560, 9548 are only visible on keypad.

## 4.4 ALARM CONFIG

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.4.1 | 4500 | Fault reset src | | LINK | 16BIT_L | 6000 | | | RW | INT | FVSY |
| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
| | | | | L_DIGSEL2 | | | | | | | |
| 4.4.2 | 4502 | ExtFlt src | | LINK<br>L_DIGSEL2 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 4.4.3 | 4504 | ExtFlt activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Stop<br>4 - Fast stop | | Disable | | | RW | INT | FVSY |
| 4.4.4 | 4506 | ExtFlt restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.5 | 4508 | ExtFlt restart time | ms | UINT16 | | 1000 | 120 | 30000 | RW | EXP | FVSY |
| 4.4.6 | 4510 | ExtFlt holdoff | ms | UINT16 | | 0 | 0 | 10000 | RW | INT | FVSY |
| 4.4.8 | 4520 | MotorOT src | | LINK<br>L_DIGSEL2 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 4.4.9 | 4522 | MotorOT activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Stop<br>4 - Fast stop | | Warning | | | RW | INT | FVSY |
| 4.4.10 | 4524 | MotorOT restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.11 | 4526 | MotorOT restart time | ms | UINT16 | | 1000 | 120 | 30000 | RW | EXP | FVSY |
| 4.4.12 | 4528 | MotorOT holdoff | ms | UINT16 | | 1000 | 0 | 30000 | RW | EXP | FVSY |
| 4.4.18 | 4540 | Overspeed threshold | rpm | INT16 | | CALCI | 0 | 16000 | RW | INT | FVSY |
| 4.4.19 | 4542 | Overspeed activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive | | Disable | | | RW | INT | FVSY |
| 4.4.20 | 4544 | Overspeed holdoff | ms | UINT16 | | 0 | 0 | 5000 | RW | INT | FVSY |
| 4.4.21 | 4550 | SpdRefLoss threshold | rpm | INT16 | | 100 | 0 | CALCI | RW | INT | FVSY |
| 4.4.22 | 4552 | SpdRefLoss activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive9 | | Disable | | | RW | INT | FVSY |
| 4.4.23 | 4554 | SpdRefLoss holdoff | ms | UINT16 | | 1000 | 0 | 10000 | RW | INT | FVSY |
| 4.4.24 | 4560 | SpdFbkLoss activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive | | Disable | | | RW | INT | FVSY |
| 4.4.25 | 4562 | SpdFbkLoss holdoff | ms | UINT16 | | 200 | 0 | 10000 | RW | INT | FVSY |
| 4.4.26 | 4564 | SpdFbkLoss Threshold | rpm | INT16 | | 100 | 0 | CALCI | RW | INT | FVSY |
| 4.4.27 | 4570 | Drive ovld activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Stop<br>4 - Fast stop | | Disable | | | RW | EXP | FVSY |
| 4.4.28 | 4572 | Motor ovld activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Stop<br>4 - Fast stop | | Warning | | | RW | EXP | FVSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.4.29 | 4574 | Bres ovld activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Stop<br>4 - Fast stop | | Disable | | | RW | EXP | FVSY |
| 4.4.30 | 4582 | HTsens restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.31 | 4584 | HTsens restart time | ms | UINT16 | | 20000 | 120 | 60000 | RW | EXP | FVSY |
| 4.4.32 | 4610 | Desat restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.33 | 4612 | Desat restart time | ms | UINT16 | | 2000 | 1000 | 10000 | RW | EXP | FVSY |
| 4.4.34 | 4620 | IOverC restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.35 | 4622 | IOverC restart time | ms | UINT16 | | 2000 | 1000 | 10000 | RW | EXP | FVSY |
| 4.4.36 | 4630 | OverV restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.37 | 4632 | OverV restart time | ms | UINT16 | | 2000 | 1000 | 10000 | RW | EXP | FVSY |
| 4.4.38 | 4640 | UnderV restart | | ENUM<br>0 - Disable<br>1 - Enable | | Enable | | | RW | EXP | FVSY |
| 4.4.39 | 4642 | UnderV restart time | ms | UINT16 | | 1000 | 120 | 10000 | RW | EXP | FVSY |
| 4.4.40 | 4650 | UVRep attempts | | UINT16 | | 5 | 0 | 1000 | RW | EXP | FVSY |
| 4.4.41 | 4652 | UVRep delay | s | UINT16 | | 240 | 0 | 300 | RW | EXP | FVSY |
| 4.4.42 | 4654 | PhLoss mov activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable | | Warning | | | RW | EXP | FVSY |
| 4.4.43 | 4656 | PhLoss mov HOLDOFF | ms | UINT32<br>0 - Ignore<br>1 - Warning<br>2 - Disable | | 200 | 0 | 2000 | RW | EXP | FVSY |
| 4.4.44 | 4674 | PhLoss mov freq thr | Hz | FLOAT | | 0.5 | 0.1 | 5 | RW | EXP | FVSY |
| 4.4.45 | 4678 | PhLoss mov freq thr | Hz | FLOAT | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.4.46 | 4670 | Optionbus activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Stop<br>4 - Fast stop | | Disable | | | RW | EXP | FVSY |
| 4.4.47 | 4660 | PhLoss in activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive | | Disable | | | RW | EXP | FVSY |
| 4.4.48 | 4662 | PhLoss in restart | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |
| 4.4.49 | 4664 | PhLoss in rest time | ms | UINT16 | | 1000 | 120 | 10000 | RW | EXP | FVSY |
| 4.4.50 | 4668 | PhLoss output test | | ENUM<br>0 - Disabled<br>1 - Enable<br>2 - Powerup | | Enable | | | RW | EXP | FVSY |
| 4.4.51 | 4680 | GroundFault thr | % | FLOAT | | 10.0 | 0.0 | 150.0 | RW | INT | FVSY |
| 4.4.52 | 4700 | Alarm dig out 1 sel | | ENUM | | No alarm | | | RW | INT | FVSY |
| 4.4.52 | 4702 | Alarm dig out 2 sel | | ENUM | | No alarm | | | RW | INT | FVSY |
| 4.4.53 | 4704 | Alarm dig out 3 sel | | ENUM | | No alarm | | | RW | INT | FVSY |
| 4.4.54 | 4706 | Alarm dig out 4 sel | | ENUM<br>0 - No alarm<br>1 - Overvoltage<br>2 - Undervoltage<br>3 - Ground fault<br>4 - Overcurrent | | No alarm | | | RW | INT | FVSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 5 - Desaturation<br>6 - MultiUndervolt<br>7 - MultiOvercurr<br>8 - MultiDesat<br>9 - Heatsink OT<br>10 - HeatsinkS OTUT<br>11 - Ptc failure<br>12 - Motor OT<br>13 - Drive overload<br>14 - Motor overload<br>15 - Bres overload<br>16 - Phaseloss in<br>17 - Opt Bus fault<br>18 - Opt 1 IO fault<br>19 - Precharge faul<br>20 - Opt enc fault<br>21 - External fault<br>22 - Speed fbk loss<br>23 - Overspeed<br>24 - Speed ref loss<br>25 - Emg stop alarm<br>26 - Power down<br>27 - Phaseloss out<br>28 - OV safety<br>29 - Safety failure<br>30 - Phaseloss mov<br>31 - Ropes change<br>32 - Enable missing<br>33 - Plc1 fault<br>34 - Plc2 fault<br>35 - Plc3 fault<br>36 - Plc4 fault<br>37 - Plc5 fault<br>38 - Plc6 fault<br>39 - Plc7 fault<br>40 - Plc8 fault<br>41 - Plc9 fault<br>42 - Plc10 fault<br>43 - Plc11 fault<br>44 - Plc12 fault<br>45 - Plc13 fault<br>46 - Plc14 fault<br>47 - Plc15 fault<br>48 - Plc16 fault<br>49 - Watchdog<br>50 - Trap error<br>51 - System error<br>52 - User error<br>53 - Param error<br>54 - Load def par<br>55 - Plc cfg error<br>56 - Load def plc<br>57 - Key failed<br>58 - Encoder error<br>59 - Recovery mode | | | | | | |
| 4.4.55 | 4720 | Alm autoreset time | s | FLOAT | | 0.0 | 0.0 | 60.0 | RW | EXP | FVSY |
| 4.4.57 | 4722 | Alm autoreset number | | UINT16 | | 3 | 0 | 100 | RW | EXP | FVSY |

## 4.8 DIGITAL INPUTS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.8.1 | 1240 | Dig inp 1 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.2 | 1242 | Dig inp 2 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.3 | 1244 | Dig inp 3 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.4 | 1246 | Dig inp 4 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.5 | 1248 | Dig inp 5 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.6 | 1250 | Dig inp 6 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.7 | 1252 | Dig inp 7 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.8 | 1254 | Dig inp 8 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.8.13 | 1110 | Dig input E mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.14 | 1210 | Dig input 1 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.15 | 1212 | Dig input 2 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.16 | 1214 | Dig input 3 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.17 | 1216 | Dig input 4 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.8.18 | 1218 | Dig input 5 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.19 | 1220 | Dig input 6 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.20 | 1222 | Dig input 7 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.21 | 1224 | Dig input 8 mon | | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.26 | 1268 | Dig input E dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.27 | 1270 | Dig input 1 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.28 | 1272 | Dig input 2 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.29 | 1274 | Dig input 3 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.30 | 1276 | Dig input 4 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.31 | 1278 | Dig input 5 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.32 | 1280 | Dig input 6 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.33 | 1282 | Dig input 7 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |
| 4.8.34 | 1284 | Dig input 8 dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |

## 4.9 DIGITAL OUTPUTS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.9.1 | 1430 | Dig out 1 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.9.2 | 1432 | Dig out 2 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.9.3 | 1434 | Dig out 3 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.9.4 | 1436 | Dig out 4 inversion | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

## 4.10 ANALOG INPUTS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.10.1 | 1600 | Analog input mon | cnt | INT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | FVSY |
| 4.10.2 | 1602 | Analog inp type | | ENUM<br>0 - -10V..+10V<br>1 - 0.20mA , 0.10V<br>2 - 4..20mA | | -10V..+10V | | | RW | INT | FVSY |
| 4.10.3 | 1604 | Analog inp scale | | FLOAT | | 1.0 | -10.0 | 10.0 | RW | INT | FVSY |
| 4.10.4 | 1606 | An inp offset tune | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.10.5 | 1608 | An inp gain tune | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |
| 4.10.6 | 1610 | Analog inp filter | ms | FLOAT | | 10 | 2 | 100 | RW | EXP | FVSY |
| 4.10.7 | 1612 | Analog inp top | cnt | INT16 | | 16384 | -32768 | +32767 | RW | EXP | FVSY |
| 4.10.8 | 1614 | Analog inp bottom | cnt | INT16 | | -16384 | -32768 | +32767 | RW | EXP | FVSY |
| 4.10.9 | 1616 | Analog inp offset | cnt | INT16 | | 0 | -32768 | +32767 | RW | EXP | FVSY |
| 4.10.10 | 1618 | Analog inp gain | | FLOAT | | 1.0 | -10.0 | 10.0 | RW | EXP | FVSY |
| 4.10.11 | 1626 | An inp sign src | | LINK<br>L_DIGSEL2 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 4.10.12 | 1632 | Analog input dest | | ILINK | | 0 | 0 | 0 | R | EXP | FVSY |

## 4.11 ALARM LOG

## 4.12 LIFE TIME

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.12.1 | 510 | Time drive power on | h.min | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.12.2 | 512 | Time drive enable | h.min | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.12.3 | 514 | Number power up | | UINT16 | | 0 | 0 | 0 | R | ESY | FVSY |
| 4.12.4 | 516 | Time fan on | h.min | UINT32 | | 0 | 0 | 0 | R | ESY | FVSY |

# 5 LIFT

## 5.1 MONITOR

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.1.1 | 14014 | Trip number | | UINT32 | | | - | - | R | ESY | FVY |
| 5.1.2 | 14016 | Sequence state | | ENUM<br>0 - Idle<br>1 - Cont close | | | - | - | R | ESY | FVY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2 - Drive ready<br>3 - Brake open<br>4 - Smooth start<br>5 - Multispeed<br>6 - Waiting 0 spd<br>7 - Zero speed<br>8 - Brake close<br>9 - Cont open<br>10 - Not drive ok<br>91- SC cont mon | | | | | | |
| 5.1.3 | 14030 | Acceleration space | m | FLOAT | | | - | - | R | ESY | FVY |
| 5.1.4 | 14032 | Deceleration space | m | FLOAT | | | - | - | R | ESY | FVY |
| 5.1.5 | 14034 | Landing zone space | m | FLOAT | | | - | - | R | ESY | FVY |
| 5.1.6 | 14210 | Actual speed ref | m/s | FLOAT | | | - | - | R | ESY | FVY |
| 5.1.7 | 14242 | Actual cabin spd | m/s | FLOAT | | | - | - | R | ESY | FVY |

## 5.2 MECHANICAL DATA

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.2.1 | 11002 | Travel units sel | | ENUM<br>0 - Hz<br>1 - m/s<br>2 - rpm | | Hz (m/s) | - | - | RWZ | INT | FVY |
| 5.2.2 | 11006 | Cabin speed | m/s | FLOAT | | 1 | 0 | 10 | RWZ | INT | FVY |
| 5.2.3 | 11010 | Gearbox ratio | | FLOAT | | 45 (1) | 1 | 200 | RW | INT | FVY |
| 5.2.4 | 11164 | Rope ratio | | FLOAT | | 1 (2) | 1 | 10 | RWZ | INT | FVY |
| 5.2.5 | 11012 | Pulley diameter | m | FLOAT | | 0.6 (0.32) | 0 | 5 | RWZ | INT | FVY |
| 5.2.6 | 11150 | Car weight | kg | FLOAT | | 400 | 0 | 10000 | RW | INT | FVY |
| 5.2.7 | 11152 | Counter weight | kg | FLOAT | | 1000 | 0 | 10000 | RW | INT | FVY |
| 5.2.8 | 11154 | Load weight | kg | FLOAT | | 450 | 0 | 10000 | RW | INT | FVY |
| 5.2.9 | 11156 | Rope weight | kg | FLOAT | | 20 | 0 | 1000 | RW | INT | FVY |

## 5.3 SPEED

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.3.1 | 11020 | Multi speed 0 | | FLOAT | | 5 (0.1) | 0 | 10000 | RW | ESY | FVY |
| 5.3.2 | 11022 | Multi speed 1 | | FLOAT | | 47.73 (1.0) | 0 | 10000 | RW | ESY | FVY |
| 5.3.3 | 11024 | Multi speed 2 | | FLOAT | | 20 (0.4) | 0 | 10000 | RW | ESY | FVY |
| 5.3.4 | 11026 | Multi speed 3 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 5.3.5 | 11028 | Multi speed 4 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 5.3.6 | 11030 | Multi speed 5 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 5.3.7 | 11032 | Multi speed 6 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 5.3.8 | 11034 | Multi speed 7 | | FLOAT | | 0 | 0 | 10000 | RW | ESY | FVY |
| 5.3.9 | 14010 | Actual multi spd sel | | ENUM<br>0 - Multispeed 0<br>1 - Multispeed 1<br>2 - Multispeed 2<br>3 - Multispeed 3<br>4 - Multispeed 4<br>5 - Multispeed 5<br>6 - Multispeed 6<br>7 - Multispeed 7<br>8 - Null | | | | | R | ESY | FVY |

## 5.4 RAMPS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.4.1 | 11040 | Accel initial jerk | $m/s^3$ | FLOAT | | 0.2 | 0.001 | 20 | RW | ESY | FVY |
| 5.4.2 | 11042 | Acceleration | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |
| 5.4.3 | 11044 | Accel end jerk | $m/s^3$ | FLOAT | | 0.6 | 0.001 | 20 | RW | ESY | FVY |
| 5.4.4 | 11054 | Percent acc factor | % | FLOAT | | 100 | 10 | 1000 | RW | INT | FVY |
| 5.4.5 | 11046 | Decel initial jerk | $m/s^3$ | FLOAT | | 0.6 | 0.001 | 20 | RW | ESY | FVY |
| 5.4.6 | 11048 | Deceleration | $m/s^2$ | FLOAT | | 0.600 | 0.001 | 10 | RW | ESY | FVY |
| 5.4.7 | 11050 | Decel end jerk | $m/s^3$ | FLOAT | | 0.600 | 0.001 | 20 | RW | ESY | FVY |
| 5.4.8 | 11056 | Percent dec factor | % | FLOAT | | 100 | 10 | 1000 | RW | INT | FVY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.4.9 | 11052 | Stop deceleration | $m/s^2$ | FLOAT | | 0.6 | 0.001 | 10000 | RW | ESY | FVY |

## 5.5 SEQUENCES

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.5.1 | 11060 | Sequence start stop | | ENUM<br>0 - Start fwd/rev<br>1 - Enable<br>2 - Mltspd out !=0 | | Start fwd/rev | - | - | RWZ | ESY | FVY |
| 5.5.2 | 11084 | Smooth start mode | | ENUM<br>1 - Speed constant<br>2 - Jerk variable | | Variable jerk | - | - | RWZ | INT | FVY |
| 5.5.3 | 11082 | Smooth start speed | | FLOAT | | 0 | 0 | 10000 | RW | INT | FVY |
| 5.5.4 | 11066 | Smooth start time | ms | INT16/32 | | 0 | 0 | 10000 | RW | INT | FVY |
| 5.5.5 | 11062 | Contactor close dly | ms | INT16/32 | | 200 | 0 | 10000 | RW | ESY | FVY |
| 5.5.6 | 11064 | Brake open delay | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |
| 5.5.7 | 11078 | Speed 0 threshold | rpm | INT16 | | 30 (1) | 0 | 10000 | RW | INT | FVY |
| 5.5.8 | 11080 | Speed 0 delay | ms | UINT16 | | 400 | 0 | 10000 | RW | INT | FVY |
| 5.5.9 | 11086 | Door open speed | m/s | FLOAT | | 0 | -10000 | 10000 | RWZ | EXP | FVY |
| 5.5.11 | 11068 | Brake close delay | ms | INT16/32 | | 500 | 0 | 10000 | RW | ESY | FVY |
| 5.5.12 | 11072 | Contactor open dly | ms | INT16/32 | | 200 | 0 | 10.000 | RW | ESY | FVY |
| 5.5.14 | 11826 | Inspection behaviour | | ENUM<br>0 - None<br>1 - Fast Stop<br>2 - Immediate | | None | - | - | RWZ | EXP | FVY |
| 5.5.15 | 11828 | Inspection spd sel | | ENUM<br>0 - Multispeed 0<br>1 - Multispeed 1<br>2 - Multispeed 2<br>3 - Multispeed 3<br>4 - Multispeed 4<br>5 - Multispeed 5<br>6 - Multispeed 6<br>7 - Multispeed 7<br>8 - Null | | Multispeed 2 | - | - | RWZ | INT | FVY |
| 5.5.16 | 11244 | Inversion motor rot | | LINK<br>0 - Not inverted<br>1 - Inverted | | Not inverted | | | RWZ | INT | FVY |

## 5.6 LIFT OUT

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.6.1 | 1410 | Dig output 1 src | | LINK<br>L_DIGSEL1 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 5.6.2 | 1412 | Dig output 2 src | | LINK<br>L_DIGSEL1 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 5.6.3 | 1414 | Dig output 3 src | | LINK<br>L_DIGSEL1 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 5.6.4 | 1416 | Dig output 4 src | | ENUM<br>L_DIGSEL1 | 16BIT_L | 6000 | | | RW | INT | FVSY |
| 5.6.7 | 11016 | Rit uscita Abil Lift | ms | | UINT | 0 | 0 | 5000 | RW | EXP | FVY |
| 5.6.8 | 14104 | Command output mon | Hex | | UINT32 | | | | R | ESY | FVY |

## 5.7 LIFT IN

| Menu | PAR | Descrizione | UM | Tipo | FB BIT | Def | Min | Max | Acc | Liv. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.7.1 | 11220 | Lift enable cmd src | | ENUM<br>LiftInputAdlCmd | | Dig input E mon | - | - | RW | INT | FVY |
| 5.7.2 | 11222 | Start fwd cmd src | | ENUM<br>LiftInputAdlCmd | | Dig input 1 mon | - | - | RW | INT | FVY |
| 5.7.3 | 11224 | Start rev cmd src | | ENUM<br>LiftInputAdlCmd | | Dig input 2 mon | - | - | RW | INT | FVY |
| 5.7.4 | 11256 | Speed ref src | | ENUM<br>640 - Multispeed<br>1600 - Analog in 1<br>4034 - Fieldbus M->S2 | | Multispeed | - | - | RW | INT | FVY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4044 - Fieldbus M->S3<br>4054 - Fieldbus M->S4<br>4064 - Fieldbus M->S5<br>4074 - Fieldbus M->S6<br>4084 - Fieldbus M->S7<br>4094 - Fieldbus M->S8<br>4104 - Fieldbus M->S9<br>4114 - Fieldbus M->S10<br>4124 - Fieldbus M->S11<br>4134 - Fieldbus M->S12<br>4144 - Fieldbus M->S13<br>4154 - Fieldbus M->S14<br>4164 - Fieldbus M->S15<br>4174 - Fieldbus M->S16 | | | | | |
| 5.7.5 | 11226 | Multi speed S0 src | | ENUM<br>LiftInputAdlCmd | | Dig input 4 mon | - | - | RW | ESY | FVY |
| 5.7.6 | 11228 | Multi speed S1 src | | ENUM<br>LiftInputAdlCmd | | Dig input 5 mon | - | - | RW | ESY | FVY |
| 5.7.7 | 11230 | Multi speed S2 src | | ENUM<br>LiftInputAdlCmd | | Dig input 6 mon | - | - | RW | ESY | FVY |
| 5.7.8 | 11232 | Contactor fbk src | | ENUM<br>LiftInputAdlCmd | | Run cont mon | - | - | RW | INT | FVY |
| 5.7.9 | 11236 | Brake fbk src | | ENUM<br>LiftInputAdlCmd | | Brake cont mon | - | - | RW | INT | FVY |
| 5.7.10 | 10096 | Brake 2 fbk src | | ENUM<br>LiftInputAdlCmd | | Brake cont mon | - | - | RW | INT | FVY |
| 5.7.11 | 11238 | Door open src | | ENUM<br>LiftInputDoorCmd | | Null | - | - | RW | EXP | FVY |
| 5.7.12 | 11240 | Door feedback src | | ENUM<br>LiftInputAdlCmd | | Null | - | - | RW | EXP | FVY |
| 5.7.13 | 11242 | Emergency mode src | | ENUM<br>LiftInputAdlCmd | | Dig input 3 mon | - | - | RW | INT | FVY |
| 5.7.14 | 11246 | Upper limit src | | ENUM<br>LiftInputAdlCmd | | Null | - | - | RW | INT | FVY |
| 5.7.15 | 11248 | Lower limit src | | ENUM<br>LiftInputAdlCmd | | Null | - | - | RW | INT | FVY |
| 5.7.17 | 11274 | Landing Cmd src | | ENUM<br>LiftInputAdlCmd | | Null | - | - | RW | INT | FVY |
| 5.7.18 | 11820 | Brake release src | | LINK<br>LiftInputAdlCmd | | Null | - | - | RW | EXP | VY |
| 5.7.20 | 14102 | Command input mon | Hex | UINT32 | | | - | - | R | ESY | FVY |

## 5.8 PRE TORQUE

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.8.1 | 11166 | Pre-torque enable | | BIT | | Off | - | - | RWZ | EXP | VY |
| 5.8.2 | 11168 | Pre-torque source | | ENUM<br>1600 - Analog in 1<br>4034 - Fieldbus M->S2<br>4044 - Fieldbus M->S3<br>4054 - Fieldbus M->S4<br>4064 - Fieldbus M->S5<br>4074 - Fieldbus M->S6<br>4084 - Fieldbus M->S7<br>4094 - Fieldbus M->S8<br>4104 - Fieldbus M->S9<br>4114 - Fieldbus M->S10<br>4124 - Fieldbus M->S11<br>4134 - Fieldbus M->S12<br>4144 - Fieldbus M->S13<br>4154 - Fieldbus M->S14<br>4164 - Fieldbus M->S15<br>4174 - Fieldbus M->S16<br>11170 - Init pretorque | | Init pretorque | - | - | RW | EXP | VY |
| 5.8.3 | 11170 | Init pre-torque | % | INT16/32 | | 0 | -100 | 100 | RWZ | EXP | VY |
| 5.8.4 | 11172 | Pre-torque ramp up | ms | INT16/32 | | 0 | 0 | 10000 | RWZ | EXP | VY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.8.5 | 11174 | Pre-torque ramp down | ms | INT16/32 | | 0 | 0 | 60000 | RWZ | EXP | VY |
| 5.8.6 | 11176 | Pre-torque offset | % | FLOAT | | 0 | -100 | 100 | RWZ | EXP | VY |
| 5.8.7 | 11178 | Pre-torque gain | | FLOAT | | 1.0 | -100 | 100 | RWZ | EXP | VY |

## 5.9 LIFT EMERGENCY

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.9.1 | 11286 | Battery control | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | - | - | RWZ | INT | FVY |
| 5.9.2 | 11260 | Emergency mode speed | | FLOAT | | 4.77 (0.1) | -10000 | 10000 | RW | INT | FVY |
| 5.9.3 | 11262 | Autoselect direction | | ENUM<br>0 - OFF<br>1 - AutoSelect<br>2 - Recommended<br>3 - Battery saving<br>4 - BattSav + Rec | | Recommended | | | RWZ | INT | FVY |
| 5.9.4 | 11278 | Em DC brk current | % | FLOAT | | 75.0 | 0 | 150 | RW | INT | FV |
| 5.9.5 | 11284 | Detection limit | % | UINT32 | | 20 | 0 | 100 | RWZ | INT | FVY |
| 5.9.6 | 14282 | Chosen Direction | | ENUM<br>0 - No direction<br>1 - Forward<br>2 - Reverse | | - | - | - | R | INT | |
| 5.9.7 | 11094 | Brake release type | | ENUM<br>0 - Brake<br>1 - Brake+Gear | | Brake+Gear | - | - | RW | EXP | VY |
| 5.9.8 | 11090 | Em min speed | | FLOAT | | 0.05 | 0 | 10000 | RW | EXP | VY |
| 5.9.9 | 11092 | Em min spd time | s | INT16/32 | | 6 | 1 | 30 | RW | EXP | VY |
| 5.9.10 | 11108 | Delay mot sav bat | m/s | INT32 | | 1000 | 0 | 5000 | RW | EXP | VY |
| 5.9.11 | 11822 | Max vel em | | UINT32 | | 0.1 | - | - | RW | EXP | VY |
| 5.9.12 | 11014 | Em mac speed sav bat | Hz | FLOAT | | 0.09 | 0.01 | 1000 | RW | EXP | VY |
| 5.9.13 | 11824 | Brake lock time | s | UINT32 | | 4 | 1 | 30 | RW | EXP | VY |

## 5.10 LIFT ALARMS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.10.1 | 11058 | Lift fast stop fact | | FLOAT | | 10 | 1 | 50 | RWZ | INT | FVY |
| 5.10.2 | 11200 | Contactor activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Disable | | | RWZ | INT | FVY |
| 5.10.3 | 11202 | Cont hold off | ms | INT32 | | 1000 | 0 | 60000 | RW | INT | FVY |
| 5.10.4 | 11204 | Brake activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Disable | | | RWZ | INT | FVY |
| 5.10.5 | 11206 | Brake hold off | ms | INT32 | | 1000 | 0 | 60000 | RW | INT | FVY |
| 5.10.6 | 10094 | Brake 2 hold off | ms | INT32 | | 1000 | 0 | 60000 | RW | INT | FVY |
| 5.10.7 | 11208 | Brake run hold off | | ENUM<br>0 - Disable<br>1 - Enable | | Enable | - | - | RW | INT | FVY |
| 5.10.8 | 11210 | Door activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Disable | - | - | RWZ | EXP | FVY |
| 5.10.9 | 11212 | Door hold off | ms | INT32 | | 1000 | 0 | 60000 | RW | EXP | FVY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.10.10 | 11214 | Limit activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Lift fast stop | - | - | RWZ | INT | FVY |
| 5.10.11 | 11216 | Limit speed thr | m/s | FLOAT | | 1 | 0 | 10 | RW | INT | FVY |
| 5.10.12 | 11218 | Spd target activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Warning | | | RWZ | INT | FVY |
| 5.10.13 | 11258 | Lift EF alarm src | | ENUM<br>6000 - Null<br>6002 - One<br>12250 - B0 Lift decomp<br>12252 - B1 Lift decomp<br>12254 - B2 Lift decomp<br>12256 - B3 Lift decomp<br>12258 - B4 Lift decomp<br>12260 - B5 Lift decomp<br>12262 - B6 Lift decomp<br>12264 - B7 Lift decomp<br>12266 - B8 Lift decomp<br>12268 - B9 Lift decomp<br>12270 - B10 Lift decomp<br>12272 - B11 Lift decomp<br>12274 - B12 Lift decomp<br>12276 - B13 Lift decomp<br>12278 - B14 Lift decomp<br>12280 - B15 Lift decom<br>1110 - Dig input E mon<br>1210 - Dig input 1 mon<br>1212 - Dig input 2 mon<br>1214 - Dig input 3 mon<br>1216 - Dig input 4 mon<br>1218 - Dig input 5 mon<br>1220 - Dig input 6 mon<br>1222 - Dig input 7 mon<br>1224 - Dig input 8 mon<br>1230 - Dig input 1x mon<br>1232 - Dig input 2x mon<br>1234 - Dig input 3x mon<br>1236 - Dig input 4x mon<br>3702 - Run cont mon<br>3706 - Down cont mon<br>3708 - Brake cont mon<br>3714 - Door open mon | | Null | - | - | RWZ | INT | FVY |
| 5.10.14 | 11264 | Lift EF al activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Lift stop | - | - | RWZ | INT | FVY |
| 5.10.15 | 11266 | Lift EF hold off | ms | UINT32 | | 1000 | 0 | 60000 | RW | INT | FVY |
| 5.10.17 | 11850 | No battery activity | | ENUM<br>0 - Ignore<br>1 - Warning<br>2 - Disable drive<br>3 - Fast stop<br>4 - Lift fast stop<br>5 - Lift stop | | Warning | - | - | RWZ | INT | FVY |
| 5.10.18 | 11852 | No battery hold off | ms | UINT32 | | 1000 | 0 | 10000 | RW | INT | FVY |

## 5.11 DISTANCE

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.11.1 | 11102 | Distance multispeed0 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.2 | 11104 | Distance multispeed1 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.3 | 11106 | Distance multispeed2 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.4 | 11110 | Distance multispeed3 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.5 | 11112 | Distance multispeed4 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.6 | 11114 | Distance multispeed5 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.7 | 11116 | Distance multispeed6 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.8 | 11118 | Distance multispeed7 | m | FLOAT | | 0.000 | 0 | 400 | RW | INT | FVY |
| 5.11.9 | 11120 | Slow speed | | ENUM<br>0 - Autoselect<br>1 - Multispeed 0<br>2 - Multispeed 1<br>3 - Multispeed 2<br>4 - Multispeed 3<br>5 - Multispeed 4<br>6 - Multispeed 5<br>7 - Multispeed 6<br>8 - Multispeed 7<br>9 - Null | | Autoselect | - | - | RW | INT | FVY |
| 5.11.10 | 11130 | Enable landing src | | INT16 | | Off | | | RW | EXP | FVY |
| 5.11.11 | 11132 | Landing zone dist | m | FLOAT | | 0.120 | 0 | 10 | RW | EXP | FVY |
| 5.11.12 | 11138 | Out floor function | | BIT | | Off | | | RW | EXP | FVY |
| 5.11.13 | 11140 | Delay acq time | ms | FLOAT | | 15 | 0 | 1000 | RW | EXP | FVY |
| 5.11.14 | 11142 | Calc space HiSpd sel | | UINT16<br>0 - Multispeed 0<br>1 - Multispeed 1<br>2 - Multispeed 2<br>3 - Multispeed 3<br>4 - Multispeed 4<br>5 - Multispeed 5<br>6 - Multispeed 6<br>7 - Multispeed 7<br>8 - Null | | Multispeed 1 | - | - | RW | EXP | FVY |
| 5.11.15 | 11276 | KP Landing | | FLOAT | | 0 | 0 | 100 | RW | EXP | FVY |

## 5.14 DIRECTION CNT

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.14.1 | 3400 | Direction cnt enable | | ENUM<br>0 - Off<br>1 - On | | Disable | | | RW | EXP | FVSY |
| 5.14.2 | 3402 | Max direcion cnt | | UINT32 | | 0 | 0 | 2147483647 | RW | EXP | FVSY |
| 5.14.3 | 3404 | Ropes change thr | % | UINT32 | | 98 | 0 | 100 | RW | EXP | FVSY |
| 5.14.4 | 3406 | Direction cnt reset | | BIT<br>0 - Off<br>1 - On | | 0 | 0 | 1 | RW | EXP | FVSY |
| 5.14.5 | 3408 | Inser pssw dir cnt | | UINT32 | | 0 | 0 | 999999 | RW | EXP | FVSY |
| 5.14.6 | 3410 | Nuova pssw dir cnt | | UINT32 | | 0 | 0 | 999999 | RW | EXP | FVSY |
| 5.14.7 | 3412 | Ropes usage | % | UINT16 | 16BIT_L | 0 | 0 | 0 | R | EXP | FVSY |
| 5.14.8 | 3414 | Direction counter | | UINT32 | 32BIT | 0 | 0 | 0 | R | EXP | FVSY |
| 5.14.9 | 3416 | Prev direct counter | | UINT32 | 32BIT | 0 | 0 | 0 | R | EXP | FVSY |
| 5.14.10 | 3418 | No of cnt reset | | UINT32 | 32BIT | 0 | 0 | 0 | R | EXP | FVSY |
| 5.14.11 | 3420 | Ropes change req mon | | BIT | 16BIT_L | 0 | 0 | 1 | R | EXP | FVSY |
| 5.14.12 | 3422 | Dir change monitor | | BIT | 16BIT_L | 0 | 0 | 1 | R | EXP | FVSY |
| 5.14.13 | 3424 | Dir change cnt zero | | BIT | 16BIT_L | 0 | 0 | 1 | R | EXP | FVSY |
| 5.14.16 | 3440 | Dircnt password type | | ENUM | | Static | - | - | RW | EXP | FVSY |
| 5.14.17 | 3442 | Pwd code build | | BIT | | 0 | 0 | 1 | RW | EXP | FVSY |
| 5.14.18 | 3444 | Pwd code | | UINT32 | | 0.0 | 0 | 0 | R | EXP | |

# 6 COMMUNICATION

## 6.1 CONTROL COMMUNICATION (CONTROL COMM)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.1.1 | 4000 | Communication mode | | ENUM<br>0 - Parallel I/O | | Parallel | | | RW | INT | FVSY |

## 6.6 NETWORK AND ACCESS

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.6.1 | 9610 | Readonly Username | | STRING16 | | readonly | 0 | 0 | R | EXP | FVSY |
| 6.6.2 | 9626 | Easy Username | | STRING16 | | easy | 0 | 0 | RW | EXP | FVSY |
| 6.6.3 | 9634 | Easy Password | | STRING16 | | easy | 0 | 0 | RW | EXP | FVSY |
| 6.6.4 | 9642 | Interm Username | | STRING16 | | interm | 0 | 0 | R | EXP | FVSY |
| 6.6.5 | 9650 | Interm Password | | STRING16 | | interm | 0 | 0 | RW | EXP | FVSY |
| 6.6.6 | 9658 | Expert Username | | STRING16 | | expert | 0 | 0 | R | EXP | FVSY |
| 6.6.7 | 9666 | Expert Password | | STRING16 | | expert | 0 | 0 | RW | EXP | FVSY |
| 6.6.13 | 9556 | IP Address set | | UINT32 | | 169.254.10.10 | 0 | 0 | RW | EXP | FVSY |
| 6.6.14 | 9558 | IP Netmask set | | UINT32 | | 255.255.0.0 | 0 | 0 | RW | EXP | FVSY |
| 6.6.15 | 9560 | IP Gateway set | | UINT32 | | 0.0.0.0 | 0 | 0 | RW | EXP | FVSY |
| 6.6.16 | 9564 | IP Netmask | | UINT32 | | 255.255.0.0 | 0 | 0 | R | EXP | FVSY |
| 6.6.17 | 9566 | IP Gateway | | UINT32 | | 0.0.0.0 | 0 | 0 | R | EXP | FVSY |
| 6.6.18 | 9608 | Ip Assignment | | ENUM<br>0 - DHCP<br>1 - Static | | Static | 0 | 0 | RW | EXP | FVSY |

# 7 MOTOR DATA

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.2 | 2000 | Rated voltage | V | FLOAT | | SIZE | 150 | 480 | RWZ | INT | FVSY |
| 7.3 | 2002 | Rated current | A | FLOAT | | SIZE | 1 | 1500 | RWZ | INT | FVSY |
| 7.4 | 2004 | Rated speed | rpm | FLOAT | | SIZE | 10 | 32000 | RWZ | INT | FVSY |
| 7.5 | 2006 | Rated frequency | Hz | FLOAT | | SIZE | 1 | 1000 | RWZ | INT | FVS |
| 7.6 | 2008 | Pole pairs | | UINT16 | | SIZE | 1 | 60 | RWZ | INT | FVSY |
| 7.7 | 2010 | Rated power | kW | FLOAT | | SIZE | 0.1 | 1500 | RWZ | INT | FVS |
| 7.8 | 2012 | Rated power factor | | FLOAT | | SIZE | 0.6 | 0.95 | RWZ | INT | FVS |
| 7.10 | 2020 | Take parameters | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |
| 7.11 | 2022 | Autotune rotation | | BIT | | 0 | 0 | 1 | RWZ | INT | FVS |
| 7.12 | 2024 | Autotune still | | BIT | | 0 | 0 | 1 | RWZ | INT | FVSY |
| 7.13 | 2030 | Autotune status | | ENUM<br>0 - Required<br>1 - Done | | Required | | | R | INT | FVSY |
| 7.14 | 2050 | Measured Rs | ohm | FLOAT | | 0 | 0 | 200 | RW | EXP | FVSY |
| 7.15 | 2052 | Measured DTL | V | FLOAT | | 0 | 0 | 100 | RW | EXP | FVSY |
| 7.16 | 2054 | Measured DTS | V/A | FLOAT | | 0 | 0 | 100 | RW | EXP | FVSY |
| 7.17 | 2056 | Measured Lsig | mH | FLOAT | | 0.1 | 0.1 | 200 | RW | EXP | FVS |
| 7.20 | 2062 | Measured ImN | A | FLOAT | | CALCF | 0 | 1000 | RW | EXP | FVS |
| 7.21 | 2066 | Measured FlxN | Wb | FLOAT | | CALCF | 0 | 10 | RW | EXP | FVS |
| 7.22 | 2076 | Measured Rr | ohm | FLOAT | | CALCF | 0 | 200 | RW | EXP | FVS |
| 7.23 | 2078 | Take tune parameters | | BIT | | 0 | 0 | 1 | RW | INT | FVSY |

# 8 ENCODER

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.1 | 2100 | Encoder pulses | ppr | UINT16 | | 1024 | 4 | 16384 | RWZ | INT | |
| 8.2 | 2102 | Encoder supply | V | FLOAT | | 5.2 | 5.2 | 20.0 | RW | INT | FVSY |
| 8.3 | 2104 | Encoder input config | | ENUM<br>0 - HTL<br>1 - TTL | | TTL | | | RWZ | INT | |
| 8.4 | 2106 | Encoder repetition | | ENUM<br>0 - No division | | No division | | | RWZ | INT | |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 - Divide 2<br>2 - Divide 4<br>3 - Divide 8<br>4 - Divide 16<br>5 - Divide 32<br>6 - Divide 64 | | | | | | | |
| 8.5 | 2108 | Encoder signal Vpp | V | FLOAT | | 0.8 | 0.5 | 1.2 | RWZ | INT | |
| 8.6 | 2110 | Encoder signal check | | ENUM<br>1 - Check A-B<br>2 - Check A-B-Z | | Check A-B | | | RWZ | EXP | |
| 8.7 | 2116 | ENC signal Vpp inc | V | FLOAT | | 0 | 0 | 0 | R | EXP | |
| 8.9 | 2130 | Encoder direction | | ENUM<br>0 - Not inverted<br>1 - Inverted | | Not inverted | | | RWZ | INT | |
| 8.10 | 2132 | Encoder mode | | ENUM<br>0 - None<br>1 - Digital<br>2 - Sinus<br>3 - Sinus SINCOS<br>4 - Sinus ENDAT<br>5 - Sinus BISS<br>6 - ENDAT<br>7 - BiSS<br>8 - Sinus SSI | | None | | | RWZ | INT | FVSY |
| 8.11 | 2134 | Encoder speed filter | ms | FLOAT | | 1.0 | 0.1 | 8.0 | RW | EXP | |
| 8.13 | 2150 | Encoder speed | rpm | INT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | |
| 8.14 | 2162 | Encoder position | cnt | UINT16 | 16BIT_H | 0 | 0 | 0 | R | ESY | |
| 8.16 | 2172 | SpdFbkLoss code | | UINT16 | | 0 | 0 | 0 | R | EXP | |

# 9 SICUREZZA

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.3 | 11252 | Brake fbk A3 sel | | ENUM | | Null | - | - | RW | INT | FVY |
| 9.4 | 11268 | Reset Brake Alarm | | INT | | 0 | - | - | RW | INT | FVY |
| 9.5 | 11270 | Threshold A3 | m | FLOAT | | 0.1 | 0 | 2 | RW | INT | VY |

# 10 REGULATION MENU

## 10.1 SPEED REGULATION GAINS (SPEED REG GAINS)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.1.1 | 2240 | Inertia | $kgm^2$ | FLOAT | | 0.8 | 0.001 | 1000 | RW | INT | VSY |
| 10.1.2 | 9702 | Learning trip out | $kgm^2$ | FLOAT | | 0 | 0 | 0 | R | EXP | FVSY |
| 10.1.3 | 2794 | SR-P gain at start | % | FLOAT | | 150.0 | 0.0 | 400.0 | RW | INT | VSY |
| 10.1.4 | 2796 | SR-I gain at start | % | FLOAT | | 110.0 | 0.0 | 400.0 | RW | INT | VSY |
| 10.1.5 | 2752 | SR-P gain low speed | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |
| 10.1.6 | 2754 | SR-I gain low speed | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |
| 10.1.7 | 2756 | SR-P gain high speed | % | FLOAT | | 80.0 | 0.0 | 400.0 | RW | INT | VSY |
| 10.1.8 | 2758 | SR-I gain high speed | % | FLOAT | | 100.0 | 0.0 | 400.0 | RW | INT | VSY |
| 10.1.9 | 2760 | SR-low speed thrsd | % | UINT16 | | 30 | 1 | 100 | RW | INT | VSY |
| 10.1.10 | 2762 | SR-high speed thrsd | % | UINT16 | | 70 | 1 | 100 | RW | INT | VSY |
| 10.1.11 | 2662 | SR-P gain | N/rpm | FLOAT | | 1.0 | 0 | 0 | RW | INT | VSY |
| 10.1.12 | 2664 | SR-I time | ms | FLOAT | | 1.0 | 0 | 0 | RW | INT | VSY |
| 10.1.13 | 9446 | TNF1-frequency | Hz | FLOAT | | 100.0 | 5.0 | 350.0 | RW | EXP | VSY |
| 10.1.14 | 9448 | TNF1-bandwidth | Hz | FLOAT | | 4 | 1 | 20 | RW | EXP | VSY |
| 10.1.15 | 9450 | TNF1-depth | | FLOAT | | 20 | 3 | 60 | RW | EXP | VSY |
| 10.1.16 | 9458 | Torque Notch Fltr 1 | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | VSY |
| 10.1.17 | 9452 | TNF2-frequency | Hz | FLOAT | | 100.0 | 5.0 | 350.0 | RW | EXP | VSY |
| 10.1.18 | 9454 | TNF2-bandwidth | Hz | FLOAT | | 4 | 1 | 20 | RW | EXP | VSY |
| 10.1.19 | 9456 | TNF2-depth | | FLOAT | | 20 | 3 | 60 | RW | EXP | VSY |
| 10.1.20 | 9460 | Torque Notch Fltr 2 | | ENUM<br>0 - Disable | | Disable | | | RW | EXP | VSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 - Enable | | | | | | | |
| 10.1.21 | 2806 | SR-P gain in use | % | FLOAT | | 100.0 | 0 | 0 | R | INT | VSY |
| 10.1.22 | 2808 | SR-I gain in use | % | FLOAT | | 100.0 | 0 | 0 | R | INT | VSY |

## 10.2 VF CONTROL

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.2.1 | 2200 | Boost voltage | % | FLOAT | | 3 | 0 | 20.0 | RW | ESY | F |
| 10.2.2 | 2202 | Base voltage | V | FLOAT | | 0 | 0 | 0 | RW | ESY | F |
| 10.2.3 | 2204 | Base frequency | Hz | FLOAT | | 0 | 0 | 0 | RW | ESY | F |
| 10.2.4 | 2212 | V/Hz Boost mode | | ENUM<br>0 - Fixed<br>1 - Auto | | Auto | | | RW | ESY | F |
| 10.2.5 | 2214 | V/Hz Slip ctrl gain | | FLOAT | | 0 | 0 | 0 | RW | EXP | F |
| 10.2.6 | 2218 | V/Hz Stability gain | | FLOAT | | 0.0 | 0 | 0 | RW | EXP | F |
| 10.2.7 | 2220 | V/Hz Limiter Kp | Hz/A | FLOAT | | 0.2 | 0 | 0 | RW | EXP | F |
| 10.2.8 | 2222 | V/Hz Limiter Ti | ms | FLOAT | | 50.0 | 0 | 0 | RW | EXP | F |
| 10.2.9 | 2224 | V/Hz slip fltr const | ms | FLOAT | | 10.0 | 1.0 | 1000.0 | RW | EXP | F |
| 10.2.10 | 2230 | V/Hz Boost gain | V | FLOAT | | 0.0 | 0 | 0 | RW | EXP | F |
| 10.2.11 | 2480 | Vf Min Freq | Hz | FLOAT | | 0.5 | 0 | 5 | RW | EXP | F |
| 10.2.12 | 2482 | Vf Min Dly | ms | FLOAT | | 800 | 0 | 5000 | RW | EXP | F |
| 10.2.13 | 2206 | Middle voltage | V | FLOAT | | 0 | 0 | 0 | RW | EXP | F |
| 10.2.14 | 2208 | Middle frequency | Hz | FLOAT | | 0 | 0 | 0 | RW | EXP | F |
| 10.2.15 | 2232 | Initial voltage | V | FLOAT | | 0 | 0 | 60.0 | RW | EXP | F |
| 10.2.16 | 2210 | V/Hz Profile type | | ENUM<br>0 - Linear<br>1 - Custom | | Linear | | | RW | EXP | F |
| 10.2.17 | 2226 | V/Hz Boost slope | | FLOAT | | 0.0 | 0 | 0 | RW | EXP | F |
| 10.2.18 | 2228 | Slip comp hold | | ENUM<br>0 - Disable<br>1 - Enable | | | Disable | | RW | EXP | F |

## 10.3 REGULATOR PARAM

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.3.1 | 2250 | CR-P gain | V/A | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |
| 10.3.2 | 2252 | CR-I time | ms | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |
| 10.3.3 | 2260 | FR-P gain | A/Wb | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |
| 10.3.4 | 2262 | FR-I time | ms | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |
| 10.3.5 | 2272 | VR-I time | ms | FLOAT | | 1.0 | 0 | 0 | RW | EXP | FVSY |
| 10.3.6 | 2290 | Deflux voltage | V | FLOAT | | 380 | 0 | 0 | RW | EXP | FVSY |
| 10.3.7 | 2292 | Voltage margin | % | FLOAT | | 5.0 | 0 | 30.0 | RW | EXP | FVSY |
| 10.3.8 | 2308 | Over-flux level | % | FLOAT | | 100 | 100 | 150 | RW | EXP | FVSY |
| 10.3.9 | 2312 | Over-flux spd thrsd | rpm | FLOAT | | 400 | 1 | 1000 | RW | EXP | FVSY |
| 10.3.10 | 2314 | Over-flux step | | FLOAT | | 1 | 0,01 | 10 | RW | EXP | FVSY |
| 10.3.11 | 2724 | Defluxing curr lim | A | FLOAT | | 0.0 | 0 | 0 | RW | EXP | FVSY |

## 10.4 TORQUE CONFIG

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.4.1 | 2350 | Torque curr lim Pos | A | FLOAT | 16BIT_H | CALCF | 0.0 | CALCF | RW | EXP | FVSY |
| 10.4.2 | 2352 | Torque curr lim Neg | A | FLOAT | 16BIT_H | CALCF | 0.0 | CALCF | RW | EXP | FVSY |
| 10.4.3<br>0 - Off | 2354 | Torque curr lim sel | | ENUM<br>1 - T clim +/-<br>2 - T clim mot/gen<br>3 - T limit src | | Off | | | RWZ | EXP | FVSY |
| 10.4.4 | 2358 | Torque limit src | | LINK<br>L_LIM | 16BIT_H | 6000 | | | RWZ | EXP | FVSY |
| 10.4.5 | 2360 | Torque climPos Inuse | A | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |
| 10.4.6 | 2362 | Torque climNeg Inuse | A | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |
| 10.4.7 | 2380 | Dig torque ref | % | FLOAT | 16BIT_H | 0.0 | -300.0 | 300.0 | RW | EXP | FVSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.4.8 | 2382 | Torque ref src | | LINK<br>L_VREF | 16BIT_H | 65535 | | | RWZ | EXP | FVSY |

# 11 FUNCTIONS

## 11.1 DC BRAKING

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.1.1 | 3150 | DC braking cmd src | | LINK<br>L_DIGSEL2 | 16BIT_L | 6000 | | | RW | INT | FVS |
| 11.1.2 | 3152 | DC brake mode | | ENUM<br>0 - Off<br>1 - At Stop<br>2 - On Command<br>3 - OnCmd & AtStop | | Off | | | RW | INT | FVS |
| 11.1.3 | 3154 | DC brake delay | s | FLOAT | | 0.01 | 0.01 | 30.0 | RW | INT | FVS |
| 11.1.4 | 3156 | DC brake duration | s | FLOAT | | 1.0 | 0.01 | 30.0 | RW | INT | FVS |
| 11.1.5 | 3158 | DC brake current | % | FLOAT | | 75.0 | 0.0 | 150.0 | RW | INT | FVS |
| 11.1.6 | 3160 | DC brake state | | ENUM<br>0 - Not active<br>1 - Active | 16BIT_L | Not active | | | R | INT | FVS |

## 11.2 INERTIA COMP

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.2.1 | 3100 | Inertia comp | $kgm^2$ | FLOAT | | 0.1 | 0 | 0 | RW | EXP | FVSY |
| 11.2.2 | 3102 | Inertia comp filter | ms | FLOAT | | 4.0 | 2.0 | 20.0 | RW | EXP | FVSY |
| 11.2.3 | 3104 | Inertia comp mon | % | FLOAT | 16BIT_H | 0.0 | 0.0 | 0.0 | R | EXP | FVSY |
| 11.2.4 | 3106 | Inertia comp fcn | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | FVSY |

## 11.4 VIBRATION ANALYSIS (VIBR. ANALYSIS)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.4.1 | 2288 | Vibrations analyzer | | ENUM<br>0 - Disable<br>1 - Enable | | Disable | | | RW | EXP | VSY |
| 11.4.2 | 9464 | Vibration freq. 1 | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | EXP | VSY |
| 11.4.3 | 9466 | Vibration freq. 2 | Hz | FLOAT | | 0 | 0.0 | 0.0 | R | EXP | VSY |

## 11.5 MOTOR OVERLOAD

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.5.1 | 3200 | Motor ovld enable | | ENUM<br>0 - Off<br>1 - On | | Off | | | RW | EXP | FVSY |
| 11.5.2 | 3202 | Motor ovld factor | % | FLOAT | | 150 | 100 | 300 | RW | EXP | FVSY |
| 11.5.3 | 3204 | Motor ovld time | s | FLOAT | | 30 | 10 | 300 | RW | EXP | FVSY |
| 11.5.4 | 3206 | Motor service factor | % | FLOAT | | 100 | 25 | 200 | RW | EXP | FVSY |
| 11.5.5 | 3216 | Motor fan type | | ENUM<br>0 - Auto fan<br>1 - Servo fan | | Servo fan | | | RW | EXP | FVY |
| 11.5.6 | 3218 | Motor derat factor | % | FLOAT | | 50 | 0 | 100 | RW | EXP | FVSY |

## 11.6 BRAKING RESISTOR OVERLOAD (BRES OVERLOAD)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.6.1 | 3250 | Bres control | | ENUM<br>0 - Off<br>1 - On | | On | | | RW | INT | FVSY |
| 11.6.2 | 3252 | Bres value | ohm | FLOAT | | 7.0 | 7.0 | 1000.0 | RW | INT | FVSY |

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.6.3 | 3254 | Bres cont power | kW | FLOAT | | 0.1 | 0.1 | 100.0 | RW | INT | FVSY |
| 11.6.4 | 3256 | Bres overload factor | | FLOAT | | 1.5 | 1.5 | 10.0 | RW | INT | FVSY |
| 11.6.5 | 3258 | Bres overload time | s | FLOAT | | 0.5 | 0.5 | 50.0 | RW | INT | FVSY |

## 11.7 ENERGY SAVING (ENER. SAVING)

| Menu | PAR | Description | UM | Type | FB BIT | Def | Min | Max | Acc | Lev. | Vis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.7.1 | 3122 | Energia recuperata | kWh | FLOAT | | 0 | 0 | 0 | R | EXP | FVSY |
| 11.7.2 | 3124 | Set val. energia | kWh | FLOAT | | 0 | 0 | 0 | RW | EXP | FVSY |

## L_DIGSEL1

| PAR | Description | Menu |
|---|---|---|
| 6000 | Null | (*) |
| 6002 | One | (*) |
| 1110 | Dig input E mon | 4.8.13 |
| 1210 | Dig input 1 mon | 4.8.14 |
| 1212 | Dig input 2 mon | 4.8.15 |
| 1214 | Dig input 3 mon | 4.8.16 |
| 1216 | Dig input 4 mon | 4.8.17 |
| 1218 | Dig input 5 mon | 4.8.18 |
| 1220 | Dig input 6 mon | 4.8.19 |
| 1222 | Dig input 7 mon | 4.8.20 |
| 1224 | Dig input 8 mon | 4.8.21 |
| 1230 | Dig input 1x mon | 4.8.22 |
| 1232 | Dig input 2x mon | 4.8.23 |
| 1234 | Dig input 3x mon | 4.8.24 |
| 1236 | Dig input 4x mon | 4.8.25 |
| 1062 | Drive OK | 4.7.14 |
| 1064 | Drive ready | 4.7.15 |
| 934 | Ref is 0 | (*) |
| 936 | Ref is 0 delay | (*) |
| 944 | Speed is 0 | (*) |
| 946 | Speed is 0 delay | (*) |
| 1066 | Enable state mon | 4.1.16 |
| 1068 | Start state mon | 4.1.17 |
| 1070 | FastStop cmd mon | 4.1.18 |
| 1024 | Enable cmd mon | 4.7.10 |
| 1026 | Start cmd mon | 4.7.11 |
| 1028 | FastStop cmd mon | (*) |
| 4708 | Alm dig out mon 1 | (*) |
| 4710 | Alm dig out mon 2 | (*) |
| 4712 | Alm dig out mon 3 | (*) |
| 4714 | Alm dig out mon 4 | (*) |
| 362 | Drive overload trip | 13.4.8 |
| 3214 | Motor overload trip | (*) |
| 3262 | Bres overload trip | (*) |
| 366 | Drive overload 80% | 13.4.9 |
| 4454 | Bit0 decomp mon | 6.5.3 |
| 4456 | Bit1 decomp mon | 6.5.4 |
| 4458 | Bit2 decomp mon | 6.5.5 |
| 4460 | Bit3 decomp mon | 6.5.6 |
| 4462 | Bit4 decomp mon | 6.5.7 |
| 4464 | Bit5 decomp mon | 6.5.8 |
| 4466 | Bit6 decomp mon | 6.5.9 |
| 4468 | Bit7 decomp mon | 6.5.10 |
| 4470 | Bit8 decomp mon | 6.5.11 |
| 4472 | Bit9 decomp mon | 6.5.12 |
| 4474 | Bit10 decomp mon | 6.5.13 |
| 4476 | Bit11 decomp mon | 6.5.14 |
| 4478 | Bit12 decomp mon | 6.5.15 |
| 4480 | Bit13 decomp mon | 6.5.16 |
| 4482 | Bit14 decomp mon | 6.5.17 |
| 4484 | Bit15 decomp mon | 6.5.18 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe brake test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |
| 3732 | Activation delay enable | 13.7.17 |
| 764 | Ramp acc state | 4.6.6 |
| 766 | Ramp dec state | 4.6.7 |
| 3420 | Ropes change req mon | 5.2.11 |
| 3422 | Dir change monitor | 5.2.12 |
| 3424 | Dir change cnt zero | 5.2.13 |

## L_DIGSEL2

| PAR | Description | Menu |
|---|---|---|
| 6000 | Null | (*) |
| 6002 | One | (*) |
| 1110 | Dig input E mon | 4.8.13 |
| 1210 | Dig input 1 mon | 4.8.14 |
| 1212 | Dig input 2 mon | 4.8.15 |
| 1214 | Dig input 3 mon | 4.8.16 |
| 1216 | Dig input 4 mon | 4.8.17 |
| 1218 | Dig input 5 mon | 4.8.18 |
| 1220 | Dig input 6 mon | 4.8.19 |
| 1222 | Dig input 7 mon | 4.8.20 |
| 1224 | Dig input 8 mon | 4.8.21 |
| 1230 | Dig input 1x mon | 4.8.22 |
| 1232 | Dig input 2x mon | 4.8.23 |
| 1234 | Dig input 3x mon | 4.8.24 |
| 1236 | Dig input 4x mon | 4.8.25 |
| 4454 | Bit0 decomp mon | 6.5.3 |
| 4456 | Bit1 decomp mon | 6.5.4 |
| 4458 | Bit2 decomp mon | 6.5.5 |
| 4460 | Bit3 decomp mon | 6.5.6 |
| 4462 | Bit4 decomp mon | 6.5.7 |
| 4464 | Bit5 decomp mon | 6.5.8 |
| 4466 | Bit6 decomp mon | 6.5.9 |
| 4468 | Bit7 decomp mon | 6.5.10 |
| 4470 | Bit8 decomp mon | 6.5.11 |
| 4472 | Bit9 decomp mon | 6.5.12 |
| 4474 | Bit10 decomp mon | 6.5.13 |
| 4476 | Bit11 decomp mon | 6.5.14 |
| 4478 | Bit12 decomp mon | 6.5.15 |
| 4480 | Bit13 decomp mon | 6.5.16 |
| 4482 | Bit14 decomp mon | 6.5.17 |
| 4484 | Bit15 decomp mon | 6.5.18 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe Brake Test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |
| 3732 | Activation delay enable | 13.7.17 |

## L_DIGSEL3

| PAR | Description | Menu |
|---|---|---|
| *XXXX* | [2] | |
| 6000 | Null | (*) |
| 1218 | Dig input 5 mon | 4.8.18 |
| 1220 | Dig input 6 mon | 4.8.19 |
| 1222 | Dig input 7 mon | 4.8.20 |
| 1224 | Dig input 8 mon | 4.8.21 |
| 1230 | Dig input 1x mon | 4.8.22 |
| 1232 | Dig input 2x mon | 4.8.23 |
| 1234 | Dig input 3x mon | 4.8.24 |
| 1236 | Dig input 4x mon | 4.8.25 |
| 1062 | Drive OK | 4.7.14 |
| 1064 | Drive ready | 4.7.15 |
| 934 | Ref is 0 | (*) |
| 936 | Ref is 0 delay | (*) |
| 944 | Speed is 0 | (*) |
| 946 | Speed is 0 delay | (*) |
| 1066 | Enable state mon | 4.1.16 |
| 1068 | Start state mon | 4.1.17 |
| 1070 | FastStop state mon | 4.1.18 |
| 1024 | Enable cmd mon | 4.7.10 |
| 1026 | Start cmd mon | 4.7.11 |
| 1028 | FastStop cmd mon | (*) |
| 4708 | Alm dig out mon 1 | (*) |
| 4710 | Alm dig out mon 2 | (*) |
| 4712 | Alm dig out mon 3 | (*) |
| 4714 | Alm dig out mon 4 | (*) |
| 362 | Drive overload trip | 13.4.8 |
| 3214 | Motor overload trip | (*) |
| 3262 | Bres overload trip | (*) |
| 366 | Drive overload 80% | 13.4.9 |
| 4454 | Bit0 decomp mon | 6.5.3 |
| 4456 | Bit1 decomp mon | 6.5.4 |
| 4458 | Bit2 decomp mon | 6.5.5 |
| 4460 | Bit3 decomp mon | 6.5.6 |
| 4462 | Bit4 decomp mon | 6.5.7 |
| 4464 | Bit5 decomp mon | 6.5.8 |
| 4466 | Bit6 decomp mon | 6.5.9 |
| 4468 | Bit7 decomp mon | 6.5.10 |
| 4470 | Bit8 decomp mon | 6.5.11 |
| 4472 | Bit9 decomp mon | 6.5.12 |
| 4474 | Bit10 decomp mon | 6.5.13 |
| 4476 | Bit11 decomp mon | 6.5.14 |
| 4478 | Bit12 decomp mon | 6.5.15 |
| 4480 | Bit13 decomp mon | 6.5.16 |
| 4482 | Bit14 decomp mon | 6.5.17 |
| 4484 | Bit15 decomp mon | 6.5.18 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe Brake Test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |
| 764 | Ramp acc state | 4.6.6 |
| 766 | Ramp dec state | 4.6.7 |

[2] the XXXX parameter changes according to the src parameter used:

| | |
|---|---|
| 1014 Local/remote src | 4.7.6 |
| [2] = 1012 Dig local/remote | 4.7.5 |

## L_LIM

| PAR | Description | Menu |
|---|---|---|
| 6000 | Null | (*) |
| 1600 | Analog input mon | 4.10.1 |
| 4024 | Fieldbus M->S1 mon | 6.2.3 |
| 4034 | Fieldbus M->S2 mon | 6.2.7 |
| 4044 | Fieldbus M->S3 mon | 6.2.11 |
| 4054 | Fieldbus M->S4 mon | 6.2.15 |
| 4064 | Fieldbus M->S5 mon | 6.2.19 |
| 4074 | Fieldbus M->S6 mon | 6.2.23 |
| 4084 | Fieldbus M->S7 mon | 6.2.27 |
| 4094 | Fieldbus M->S8 mon | 6.2.31 |
| 4104 | Fieldbus M->S9 mon | 6.2.35 |
| 4114 | Fieldbus M->S10 mon | 6.2.39 |
| 4124 | Fieldbus M->S11 mon | 6.2.43 |
| 4134 | Fieldbus M->S12 mon | 6.2.47 |
| 4144 | Fieldbus M->S13 mon | 6.2.51 |
| 4154 | Fieldbus M->S14 mon | 6.2.55 |
| 4164 | Fieldbus M->S15 mon | 6.2.59 |
| 4174 | Fieldbus M->S16 mon | 6.2.63 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe Brake Test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |

## L_MLTREF

| PAR | Description | Menu |
|---|---|---|
| *XXXX* | (4) | |
| 1600 | Analog input mon | 4.10.1 |
| 2150 | Encoder speed | 8.13 |
| 4024 | Fieldbus M->S1 mon | 6.2.3 |
| 4034 | Fieldbus M->S2 mon | 6.2.7 |
| 4044 | Fieldbus M->S3 mon | 6.2.11 |
| 4054 | Fieldbus M->S4 mon | 6.2.15 |
| 4064 | Fieldbus M->S5 mon | 6.2.19 |
| 4074 | Fieldbus M->S6 mon | 6.2.23 |
| 4084 | Fieldbus M->S7 mon | 6.2.27 |
| 4094 | Fieldbus M->S8 mon | 6.2.31 |
| 4104 | Fieldbus M->S9 mon | 6.2.35 |
| 4114 | Fieldbus M->S10 mon | 6.2.39 |
| 4124 | Fieldbus M->S11 mon | 6.2.43 |
| 4134 | Fieldbus M->S12 mon | 6.2.47 |
| 4144 | Fieldbus M->S13 mon | 6.2.51 |
| 4154 | Fieldbus M->S14 mon | 6.2.55 |
| 4164 | Fieldbus M->S15 mon | 6.2.59 |
| 4174 | Fieldbus M->S16 mon | 6.2.63 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe Brake Test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |

(4) the XXXX parameter changes according to the src parameter used:

| | | |
|---|---|---|
| 610 | Ramp ref 1 src | 4.5.3 |
| (4) = 600 | Dig ramp ref 1 | 4.5.1 |
| 612 | Ramp ref 2 src | 4.5.4 |
| (4) = 602 | Dig ramp ref 2 | 4.5.2 |
| 650 | Speed ref 1 src | 4.5.12 |
| (4) = 640 | Multispeed | 4.5.11 |
| 652 | Speed ref 2 src | 4.5.13 |
| (4) = 642 | Dig speed ref 2 | 4.5.15 |

## L_SCOPE

| PAR | Description | Menu |
|---|---|---|
| 6000 | Null | (*) |

## L_VREF

| PAR | Description | Menu |
|---|---|---|
| *XXXX* | (6) | |
| 1600 | Analog input mon | 4.10.1 |
| 4024 | Fieldbus M->S1 mon | 6.2.3 |
| 4034 | Fieldbus M->S2 mon | 6.2.7 |
| 4044 | Fieldbus M->S3 mon | 6.2.11 |
| 4054 | Fieldbus M->S4 mon | 6.2.15 |
| 4064 | Fieldbus M->S5 mon | 6.2.19 |
| 4074 | Fieldbus M->S6 mon | 6.2.23 |
| 4084 | Fieldbus M->S7 mon | 6.2.27 |
| 4094 | Fieldbus M->S8 mon | 6.2.31 |
| 4104 | Fieldbus M->S9 mon | 6.2.35 |
| 4114 | Fieldbus M->S10 mon | 6.2.39 |
| 4124 | Fieldbus M->S11 mon | 6.2.43 |
| 4134 | Fieldbus M->S12 mon | 6.2.47 |
| 4144 | Fieldbus M->S13 mon | 6.2.51 |
| 4154 | Fieldbus M->S14 mon | 6.2.55 |
| 4164 | Fieldbus M->S15 mon | 6.2.59 |
| 4174 | Fieldbus M->S16 mon | 6.2.63 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe Brake Test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |
| 6000 | Null | (*) |

(4) the XXXX parameter changes according to the src parameter used:

| | | |
|---|---|---|
| 4452 | Word decomp src | 6.5.2 |
| (6) = 4450 | Dig word decomp | 6.5.1 |

## L_WDECOMP

| PAR | Descrizione | Menu |
|---|---|---|
| *XXXX* | (6) | |
| 6000 | Null | (*) |
| 6002 | One | (*) |
| 4432 | Word comp mon | 6.4.17 |
| 4024 | Fieldbus M->S1 mon | 6.2.3 |
| 4034 | Fieldbus M->S2 mon | 6.2.7 |
| 4044 | Fieldbus M->S3 mon | 6.2.11 |
| 4054 | Fieldbus M->S4 mon | 6.2.15 |
| 4064 | Fieldbus M->S5 mon | 6.2.19 |
| 4074 | Fieldbus M->S6 mon | 6.2.23 |
| 4084 | Fieldbus M->S7 mon | 6.2.27 |
| 4094 | Fieldbus M->S8 mon | 6.2.31 |
| 4104 | Fieldbus M->S9 mon | 6.2.35 |
| 4114 | Fieldbus M->S10 mon | 6.2.39 |
| 4124 | Fieldbus M->S11 mon | 6.2.43 |
| 4134 | Fieldbus M->S12 mon | 6.2.47 |
| 4144 | Fieldbus M->S13 mon | 6.2.51 |
| 4154 | Fieldbus M->S14 mon | 6.2.55 |
| 4164 | Fieldbus M->S15 mon | 6.2.59 |
| 4174 | Fieldbus M->S16 mon | 6.2.63 |
| 3700 | Lift enable | 13.7.1 |
| 3702 | Run cont mon | 13.7.2 |
| 3704 | Up cont mon | 13.7.3 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3710 | Lift dc brake | 13.7.6 |
| 3712 | Brake mon | 13.7.7 |
| 3714 | Door open mon | 13.7.8 |
| 3716 | Lift start | 13.7.9 |
| 3718 | Safe Brake Test | 13.7.10 |
| 3720 | Lift statusWord | 13.7.11 |
| 3722 | Brake mon | 13.7.12 |
| 3724 | SC Cont mon | 13.7.13 |
| 3726 | Ramp down limit | 13.7.14 |
| 3728 | EBC OK | 13.7.15 |
| 3730 | Lift wdec input | 13.7.16 |

(6) the XXXX parameter changes according to the src parameter used:

| | | |
|---|---|---|
| 4452 | Word decomp src | 6.5.2 |
| (6) = 4450 | Dig word decomp | 6.5.1 |

## LIFTINPUTADLCMD

| PAR | Description | Menu |
|---|---|---|
| 1110 | Dig input E | 4.8.13 |
| 1210 | Dig input 1 | 4.8.14 |
| 1212 | Dig input 2 | 4.8.15 |
| 1214 | Dig input 3 | 4.8.16 |
| 1216 | Dig input 4 | 4.8.17 |
| 1218 | Dig input 5 | 4.8.18 |
| 1220 | Dig input 6 | 4.8.19 |
| 1222 | Dig input 7 | 4.8.20 |
| 1224 | Dig input 8 | 4.8.21 |
| 1230 | Dig input 1x | 4.8.22 |
| 1232 | Dig input 2x | 4.8.23 |
| 1234 | Dig input 3x | 4.8.24 |

| PAR | Description | Menu |
|---|---|---|
| 1236 | Dig input 4x | 4.8.25 |
| 3702 | Run cont mon | 12.7.2 |
| 3706 | Down cont mon | 12.7.4 |
| 3708 | Brake cont mon | 12.7.5 |
| 3714 | Door open mon | 12.7.8 |
| 6000 | Null | (*) |
| 6002 | One | (*) |
| 12250 | B0 Lift decomp | (*) |
| 12252 | B1 Lift decomp | (*) |
| 12254 | B2 Lift decomp | (*) |
| 12256 | B3 Lift decomp | (*) |
| 12258 | B4 Lift decomp | (*) |
| 12260 | B5 Lift decomp | (*) |
| 12262 | B6 Lift decomp | (*) |
| 12264 | B7 Lift decomp | (*) |
| 12266 | B8 Lift decomp | (*) |
| 12268 | B9 Lift decomp | (*) |
| 12270 | B10 Lift dcomp | (*) |
| 12272 | B11 Lift dcomp | (*) |
| 12274 | B12 Lift dcomp | (*) |
| 12276 | B13 Lift dcomp | (*) |
| 12278 | B14 Lift dcomp | (*) |
| 12280 | B15 Lift dcomp | (*) |

## LIFTINPUTDOORCMD

| PAR | Description | Menu |
|---|---|---|
| 1110 | Dig input E mon | 4.8.13 |
| 1210 | Dig input 1 mon | 4.8.14 |
| 1212 | Dig input 2 mon | 4.8.15 |
| 1214 | Dig input 3 mon | 4.8.16 |
| 1216 | Dig input 4 mon | 4.8.17 |
| 1218 | Dig input 5 mon | 4.8.18 |
| 1220 | Dig input 6 mon | 4.8.19 |
| 1222 | Dig input 7 mon | 4.8.20 |
| 1224 | Dig input 8 mon | 4.8.21 |
| 1230 | Dig input 1x mon | 4.8.22 |
| 1232 | Dig input 2x mon | 4.8.23 |
| 1234 | Dig input 3x mon | 4.8.24 |
| 1236 | Dig input 4x mon | 4.8.25 |
| 3702 | Run cont mon | 13.7.2 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 6000 | Null | (*) |
| 6002 | One | (*) |
| 12250 | B0 Lift decomp | (*) |
| 12252 | B1 Lift decomp | (*) |
| 12254 | B2 Lift decomp | (*) |
| 12256 | B3 Lift decomp | (*) |
| 12258 | B4 Lift decomp | (*) |
| 12260 | B5 Lift decomp | (*) |
| 12262 | B6 Lift decomp | (*) |
| 12264 | B7 Lift decomp | (*) |
| 12266 | B8 Lift decomp | (*) |
| 12268 | B9 Lift decomp | (*) |
| 12270 | B10 Lift dcomp | (*) |
| 12272 | B11 Lift dcomp | (*) |
| 12274 | B12 Lift dcomp | (*) |
| 12276 | B13 Lift dcomp | (*) |
| 12278 | B14 Lift dcomp | (*) |
| 12280 | B15 Lift dcomp | (*) |

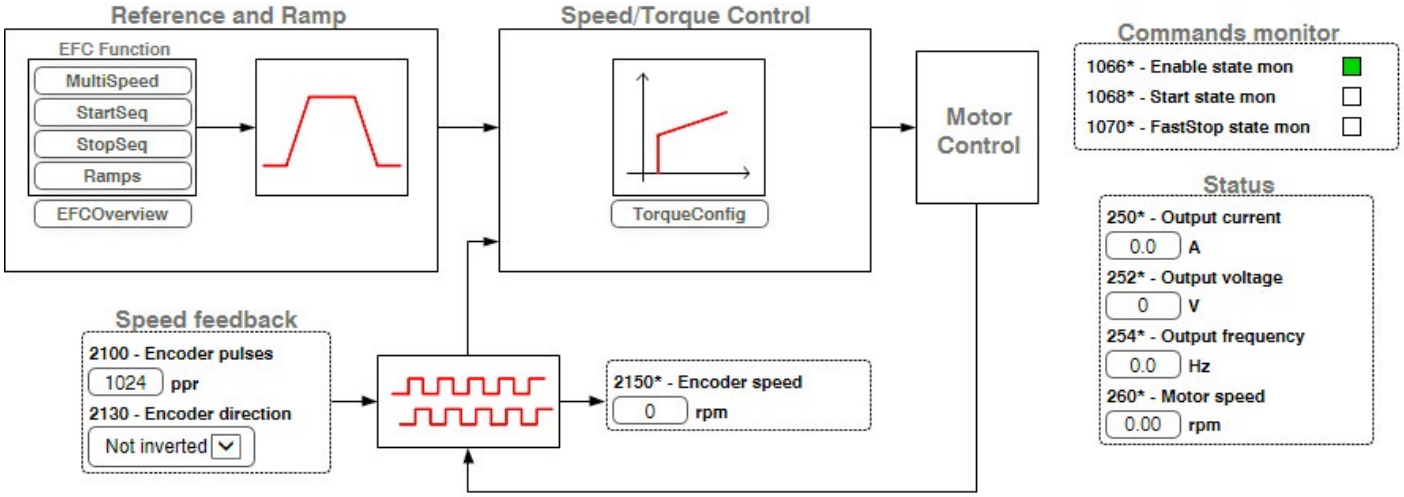
## LIFTINPUTADLCMDEBC

| PAR | Description | Menu |
|---|---|---|
| 1110 | Dig input E mon | 4.8.13 |
| 1210 | Dig input 1 mon | 4.8.14 |
| 1212 | Dig input 2 mon | 4.8.15 |
| 1214 | Dig input 3 mon | 4.8.16 |
| 1216 | Dig input 4 mon | 4.8.17 |
| 1218 | Dig input 5 mon | 4.8.18 |
| 1220 | Dig input 6 mon | 4.8.19 |
| 1222 | Dig input 7 mon | 4.8.20 |
| 1224 | Dig input 8 mon | 4.8.21 |
| 1230 | Dig input 1x mon | 4.8.22 |
| 1232 | Dig input 2x mon | 4.8.23 |
| 1234 | Dig input 3x mon | 4.8.24 |
| 1236 | Dig input 4x mon | 4.8.25 |
| 3702 | Run cont mon | 13.7.2 |
| 3706 | Down cont mon | 13.7.4 |
| 3708 | Brake cont mon | 13.7.5 |
| 3714 | Door open mon | 13.7.8 |
| 8000 | EBC SOK mon | 12.1.1 |
| 8002 | EBC Warning mon | 12.1.2 |
| 8004 | EBC Alarm mon | 12.1.3 |
| 6000 | Null | (*) |
| 6002 | One | (*) |
| 12250 | B0 Lift decomp | (*) |
| 12252 | B1 Lift decomp | (*) |
| 12254 | B2 Lift decomp | (*) |
| 12256 | B3 Lift decomp | (*) |
| 12258 | B4 Lift decomp | (*) |
| 12260 | B5 Lift decomp | (*) |
| 12262 | B6 Lift decomp | (*) |
| 12264 | B7 Lift decomp | (*) |
| 12266 | B8 Lift decomp | (*) |
| 12268 | B9 Lift decomp | (*) |
| 12270 | B10 Lift dcomp | (*) |
| 12272 | B11 Lift dcomp | (*) |
| 12274 | B12 Lift dcomp | (*) |
| 12276 | B13 Lift dcomp | (*) |
| 12278 | B14 Lift dcomp | (*) |
| 12280 | B15 Lift dcomp | (*) |

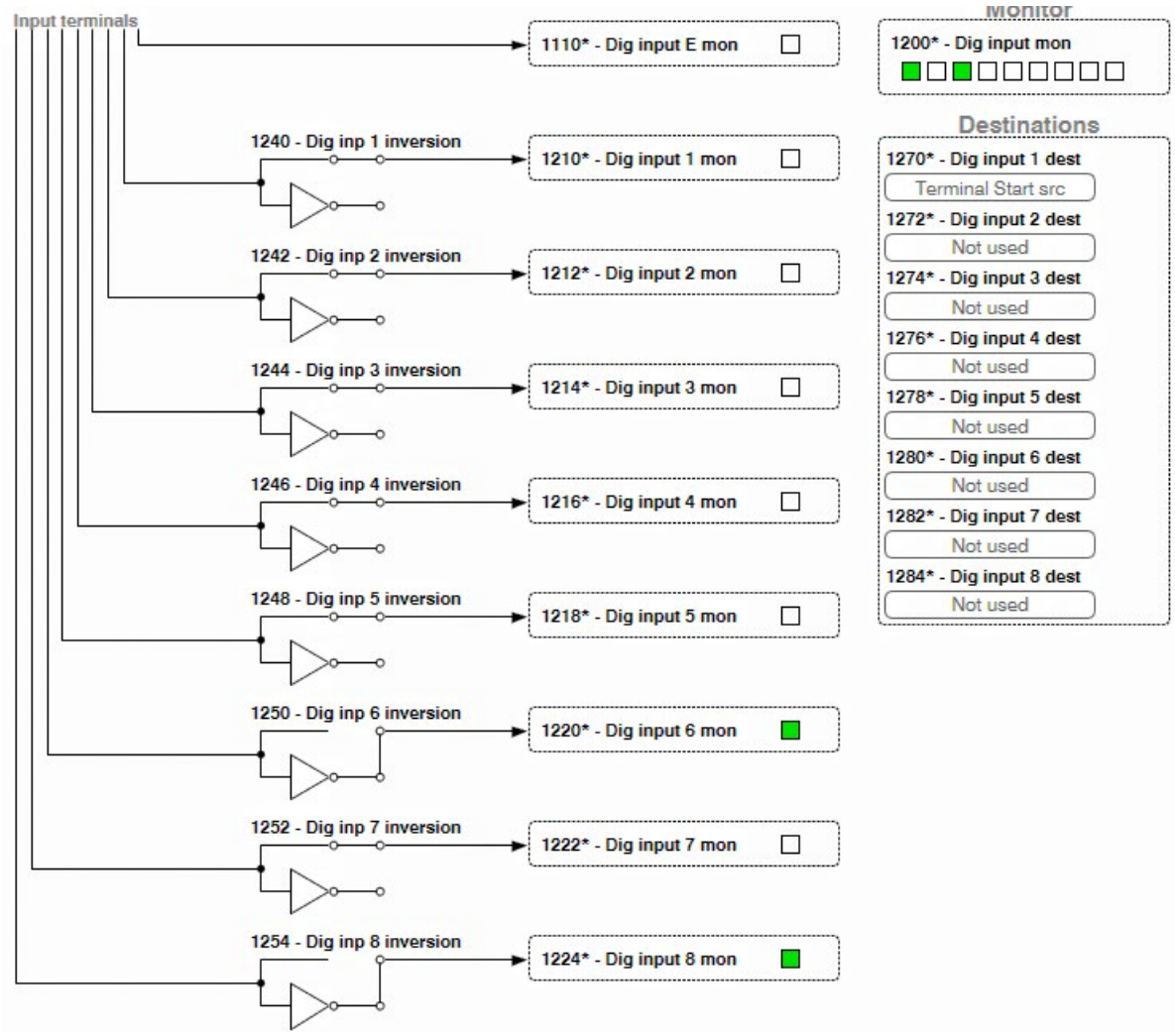
(*) Parameter not shown on the keypad. For information see the “PARAMETERS INCLUDED IN SELECTION LISTS BUT NOT SHOWN ON THE KEYPAD” section.

# DRIVE

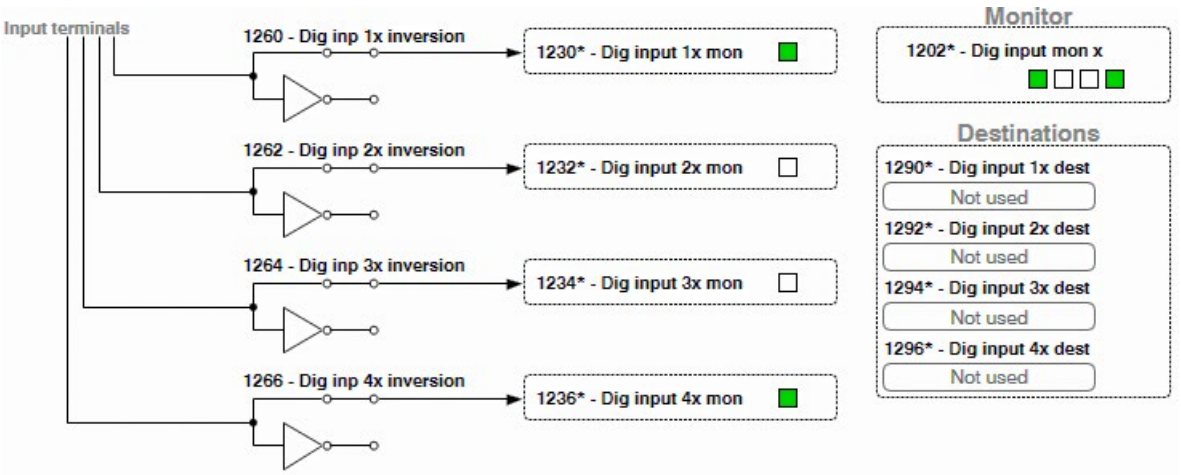
## DRIVE OVERVIEW



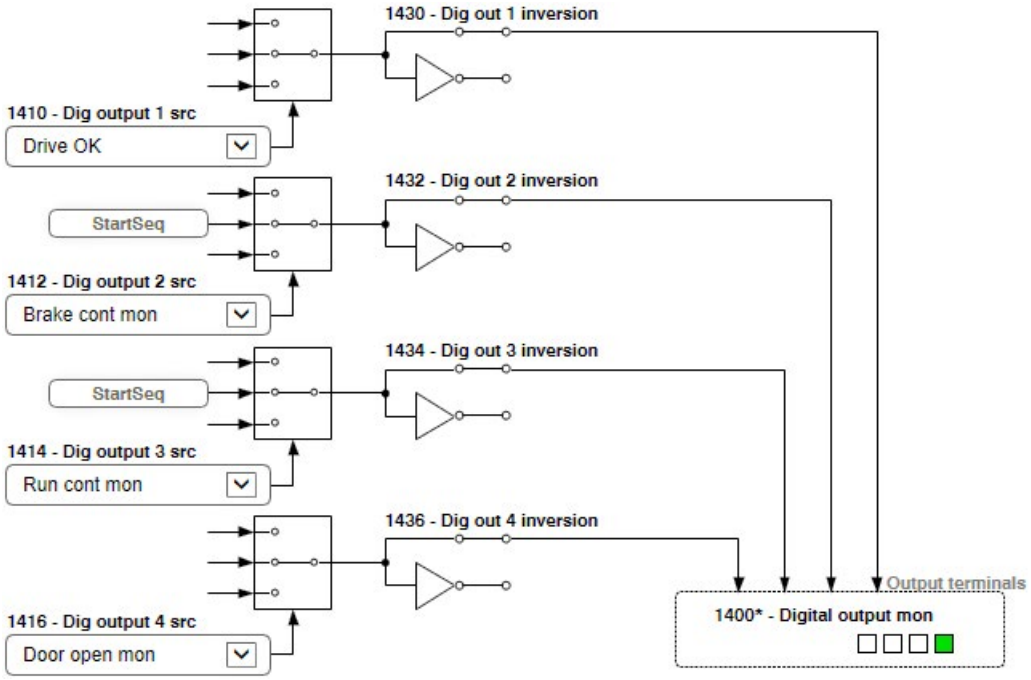

## DIGITAL INPUTS



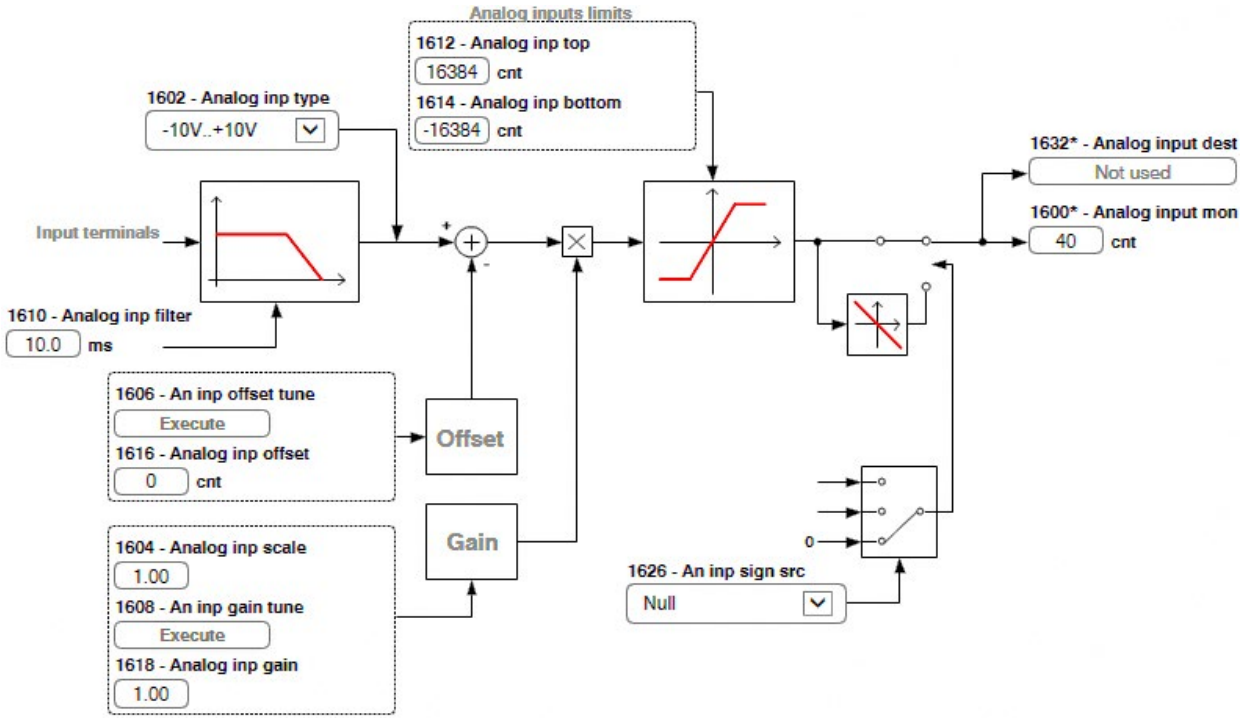
## EXPANSION DIGITAL INPUTS



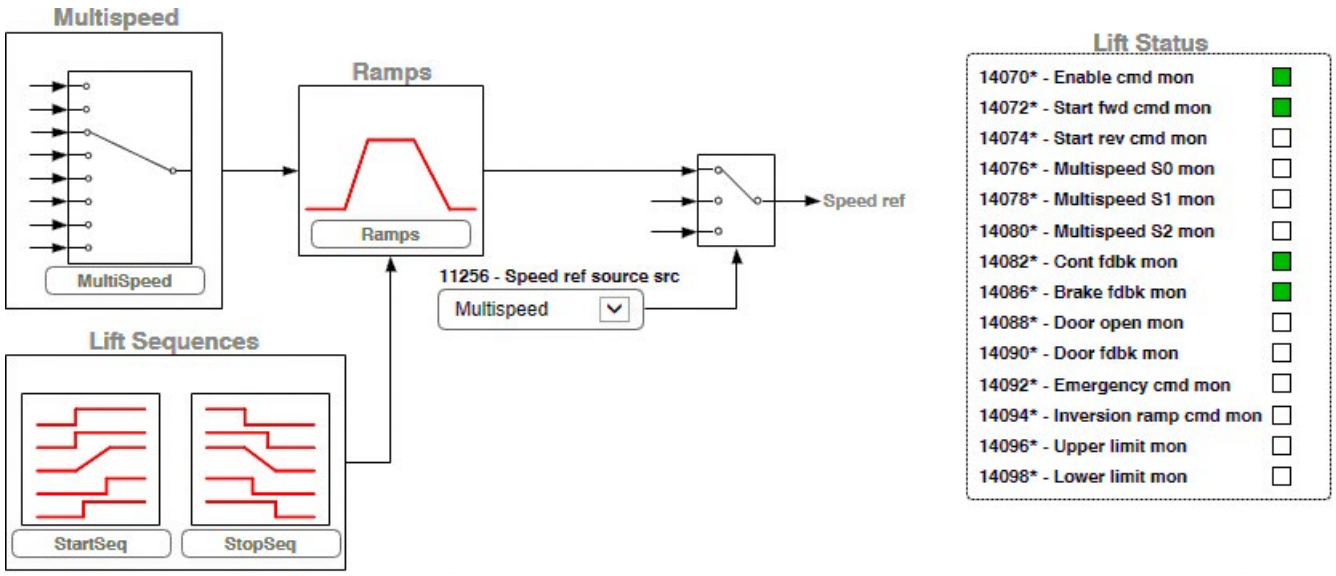

## DIGITAL OUTPUTS



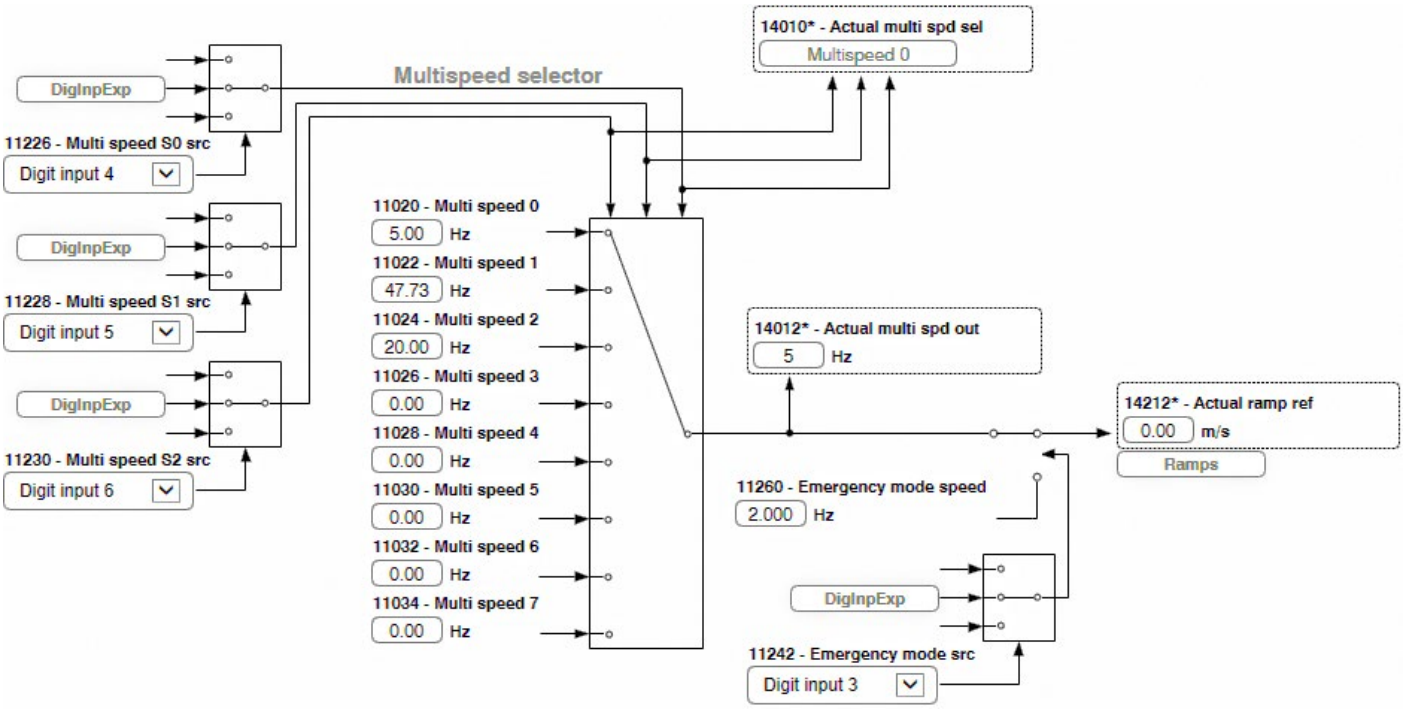
## ANALOG INPUTS



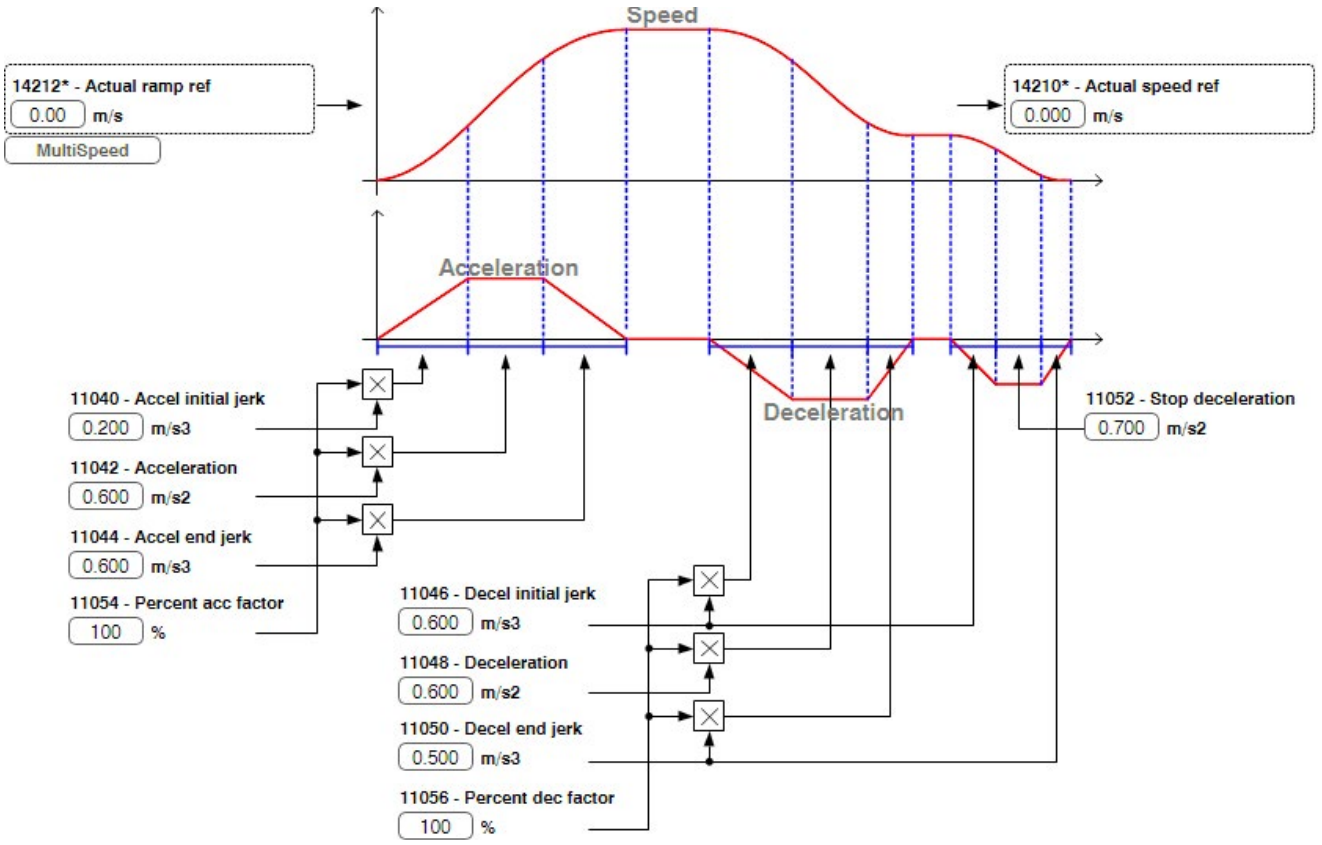
## EFC OVERVIEW



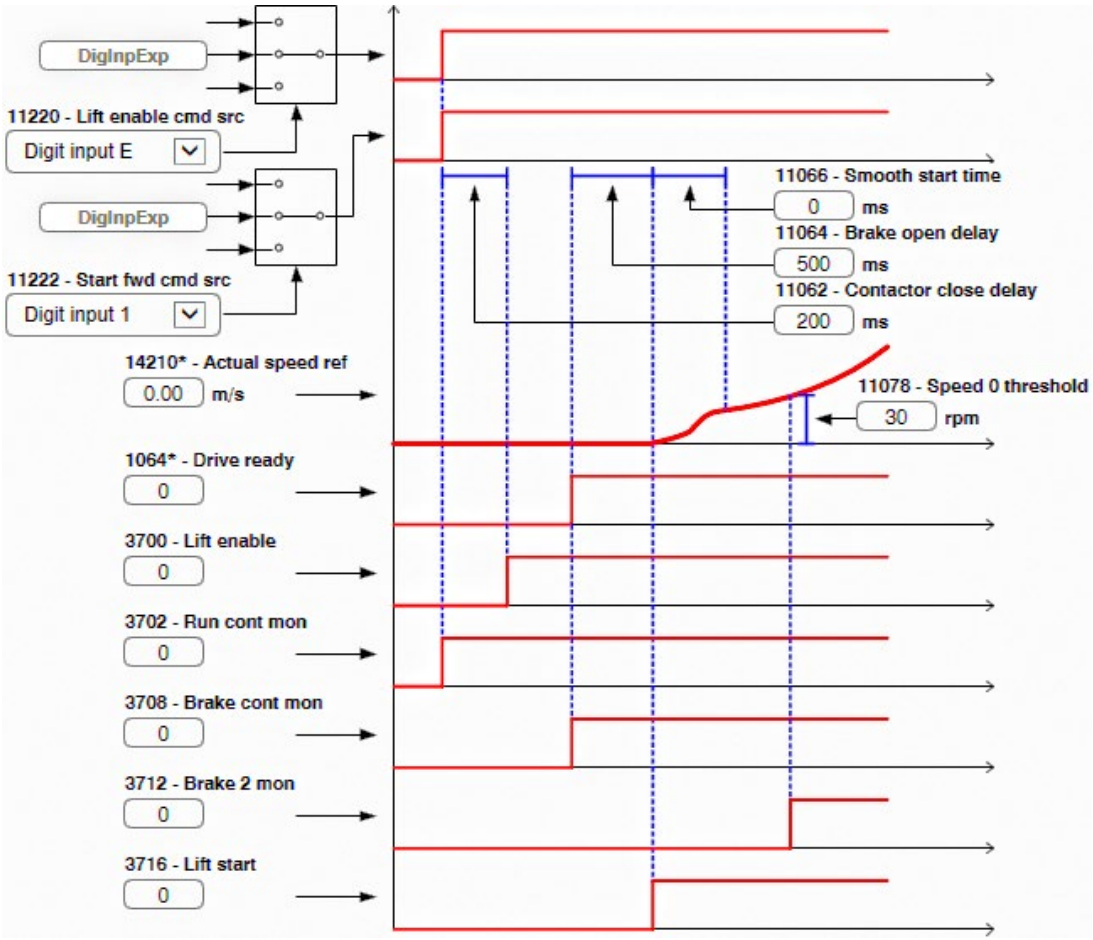

## MULTISPEED



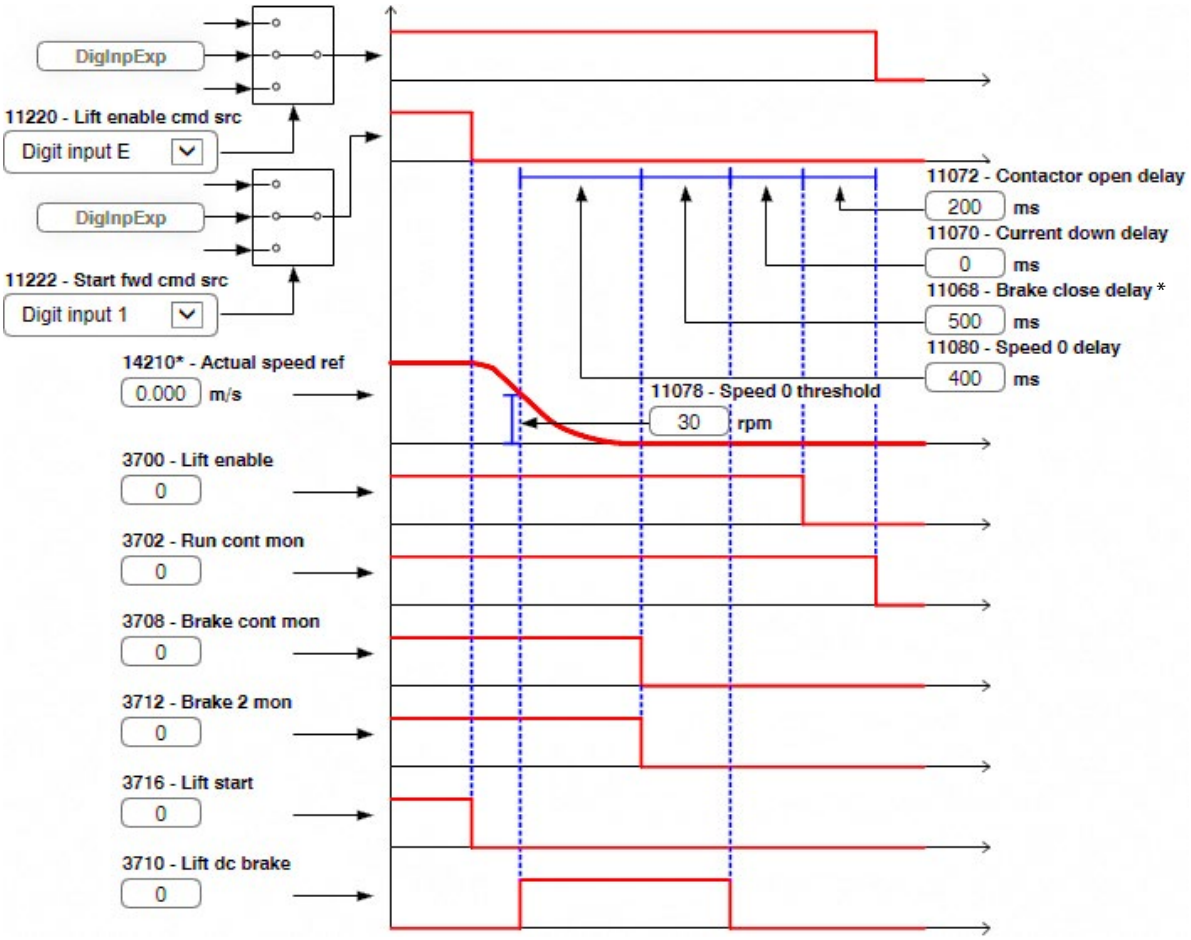
## RAMPS




## START SEQUENCES

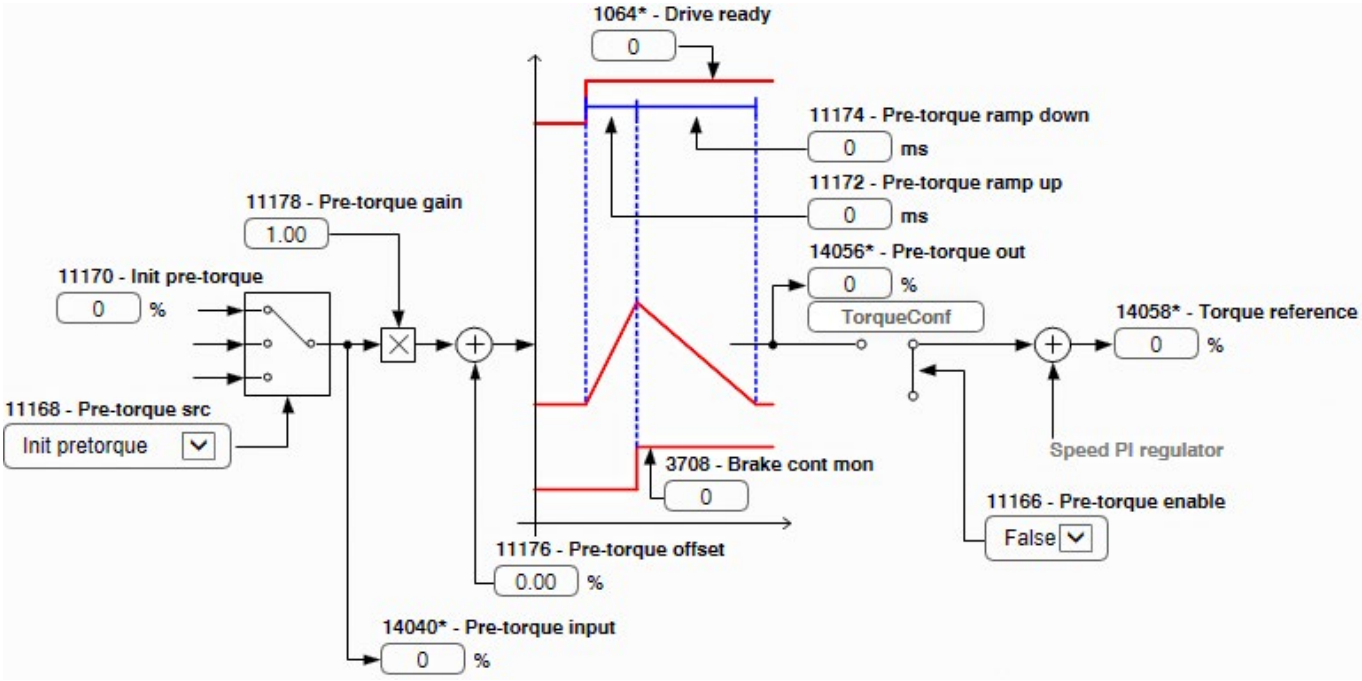


## STOP SEQUENCES

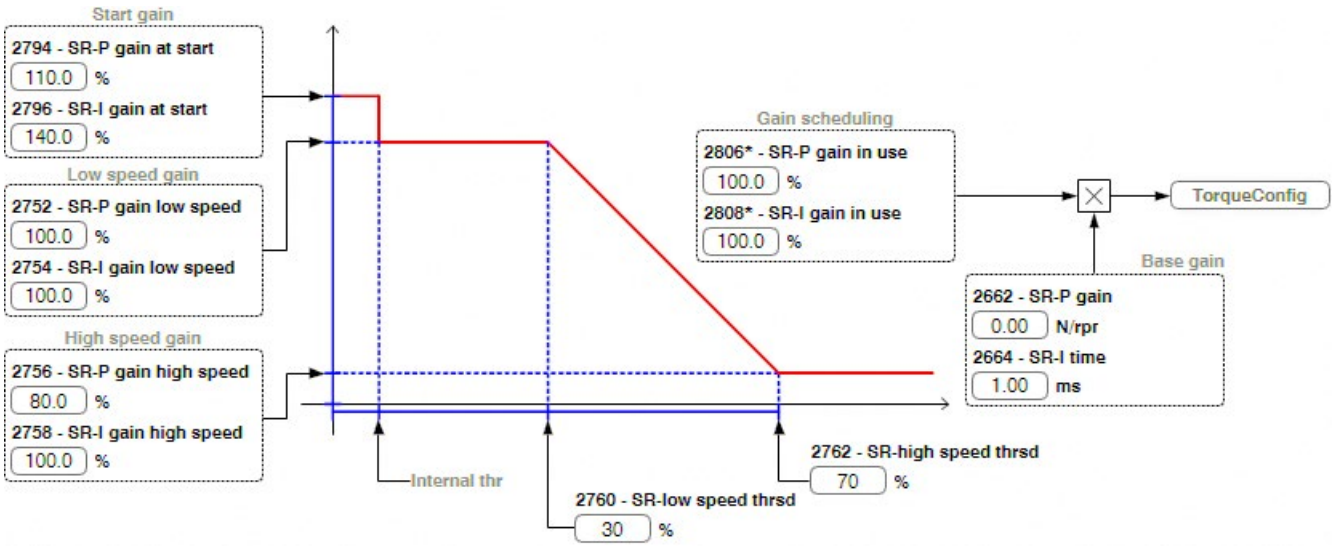



***Note!*** * In the ADL510, parameter 11068 is set = 0 and cannot be displayed.

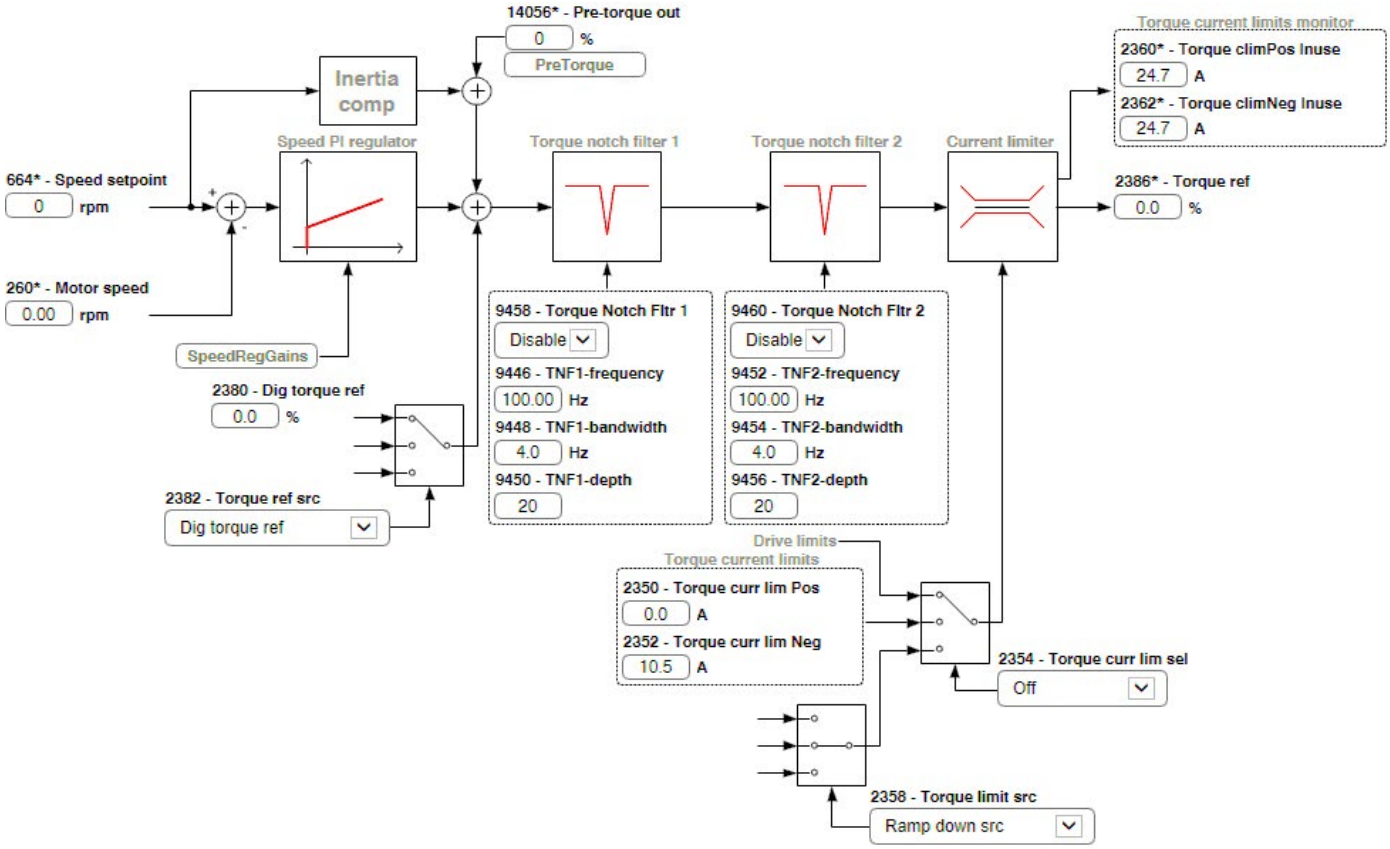
## PRE-TORQUE



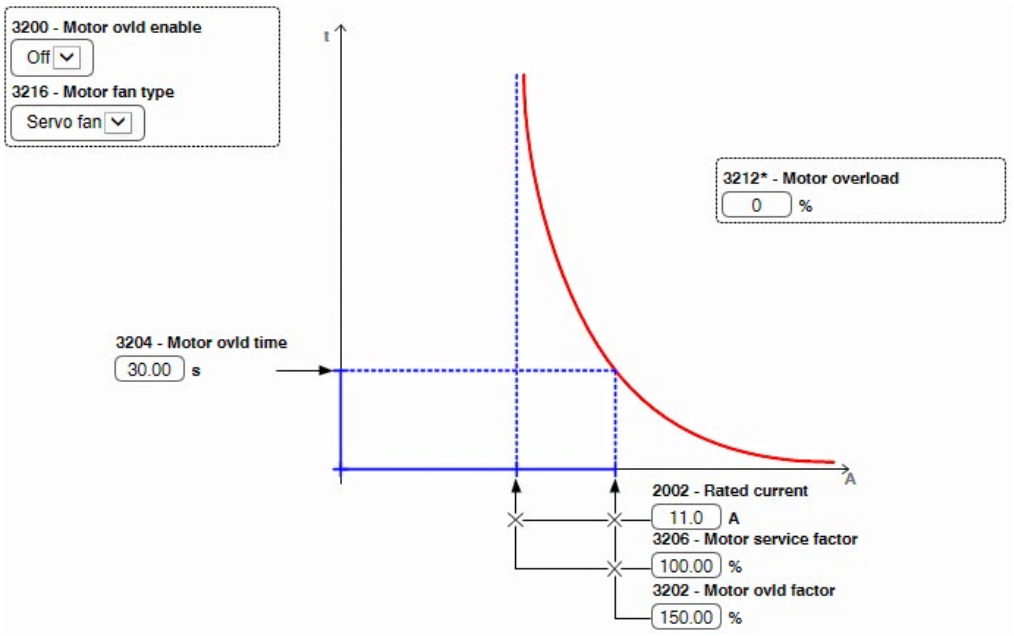
## SPEED REG GAINS



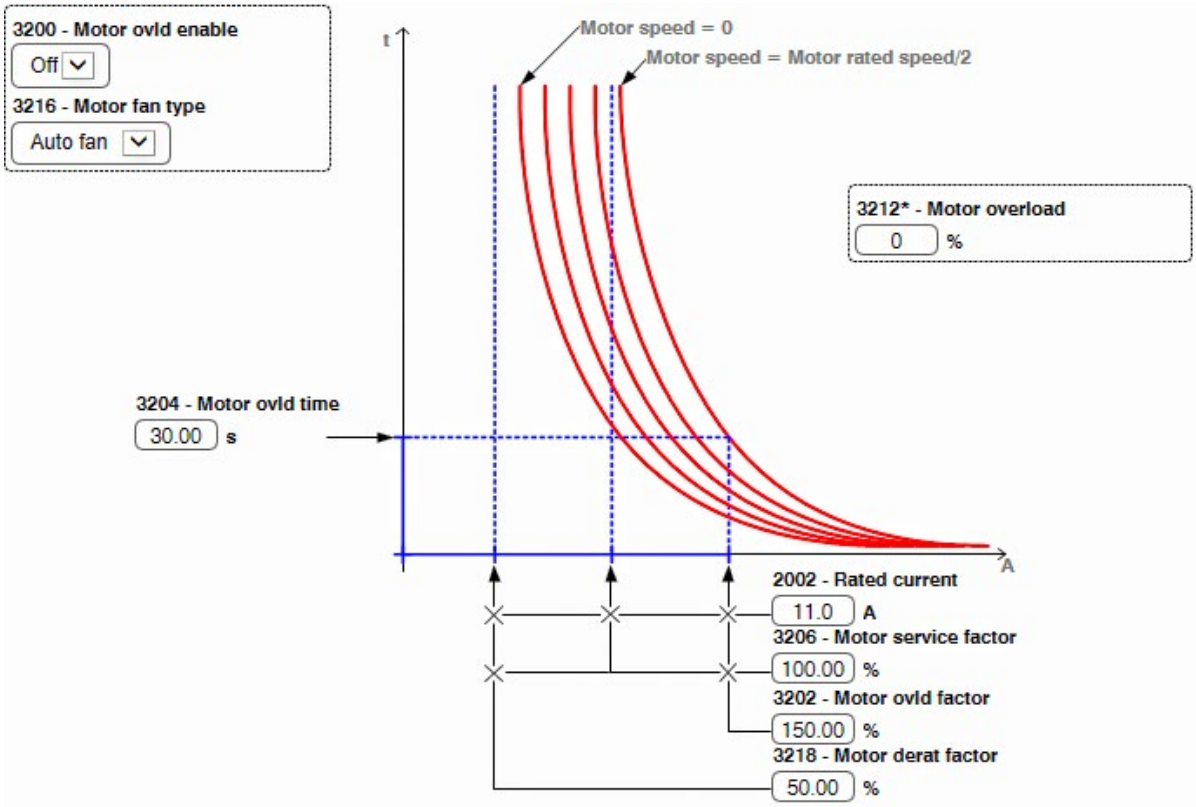

## TORQUE CONFIG



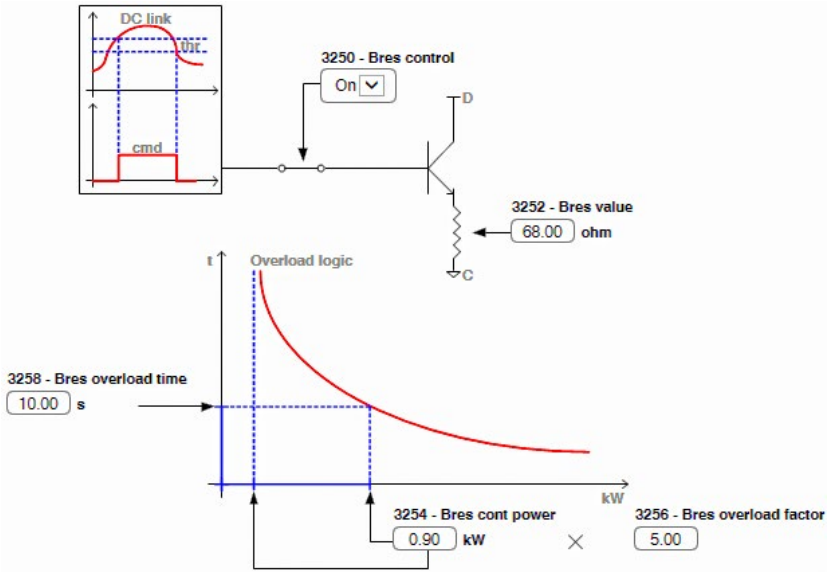
## MOTOR OVERLOAD SERVOFAN



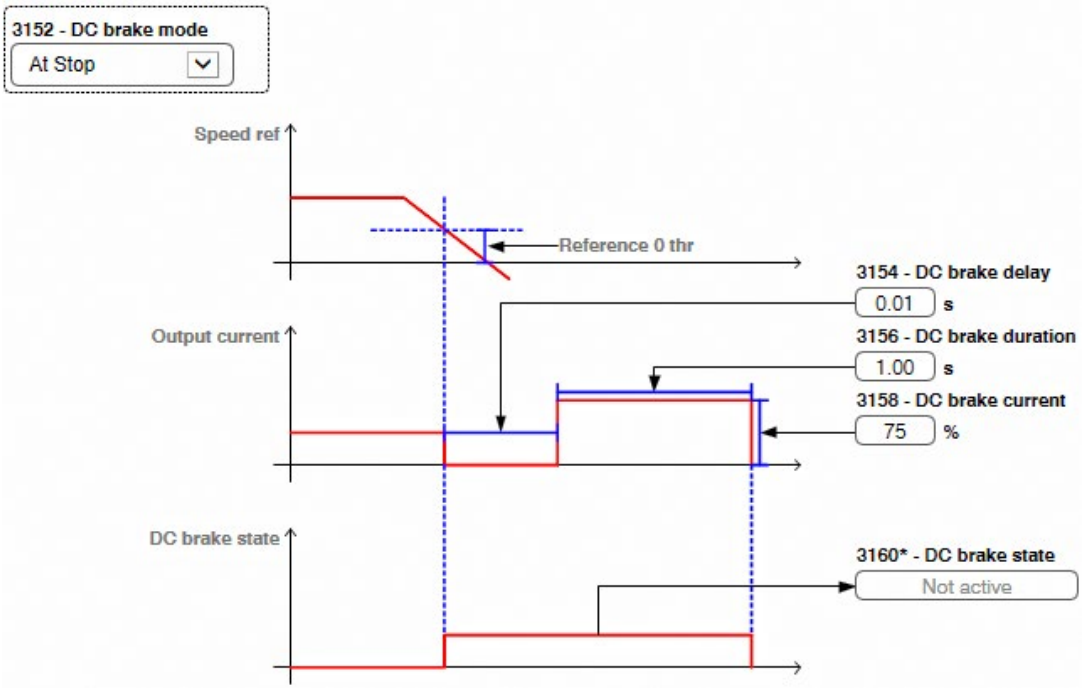

## MOTOR OVERLOAD AUTO FAN



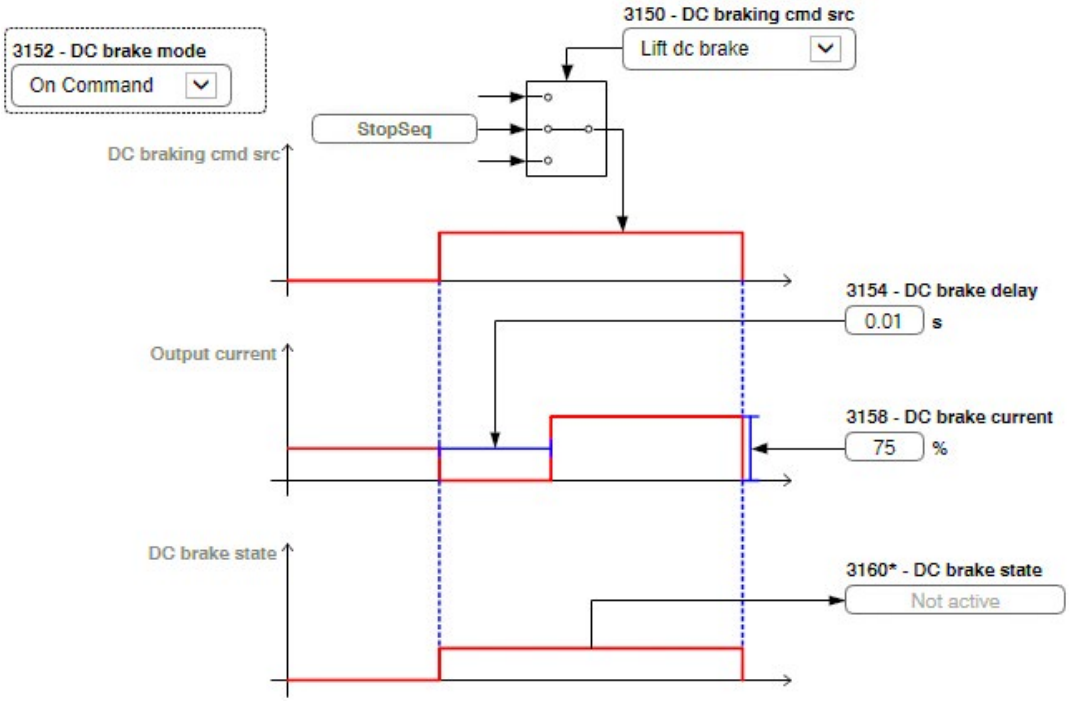
## BRES OVERLOAD



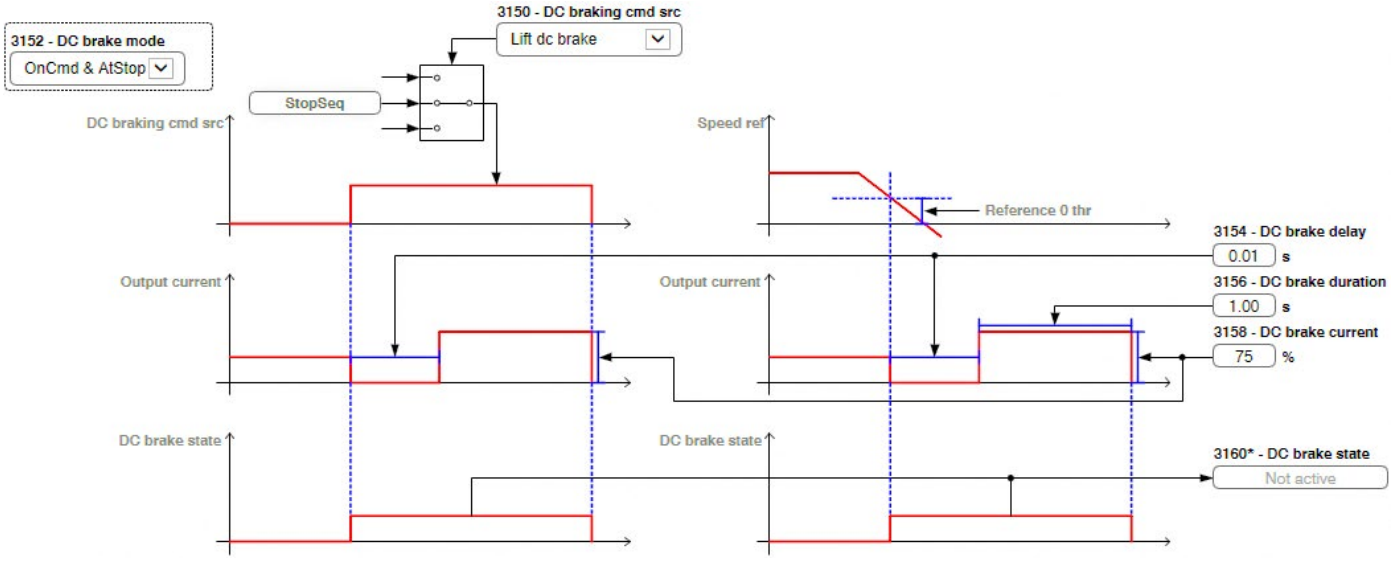

## DC BRAKING AT STOP



## DC BRAKING ON COMMAND




## DC BRAKING ON CMD & AT STOP



# F - Appendix 1 - Drive Alarm handling

## F.1.1 Drive alarm handling

Drive alarms are managed by means of an Emergency message containing the error code relating to the alarm that is generated, according to the table below:

| Selezione | Codice |
|---|---|
| No alarm | 0 |
| Overvoltage | 1 |
| Undervoltage | 2 |
| Ground fault | 3 |
| Overcurrent | 4 |
| Desaturation | 5 |
| MultiUndervolt | 6 |
| MultiOvercurr | 7 |
| MultiDesat | 8 |
| Heatsink OT | 9 |
| HeatsinkS OTUT | 10 |
| PTC failure | 11 |
| Motor OT | 12 |
| Drive overload | 13 |
| Motor overload | 14 |
| Bres overload | 15 |
| Phaseloss | 16 |
| Opt Bus fault | 17 |
| Opt 1 IO fault | 18 |
| Precharge fault | 19 |
| Not used | 20 |

| Selezione | Codice |
|---|---|
| External fault | 21 |
| Speed fbk loss | 22 |
| Overspeed | 23 |
| Speed ref loss | 24 |
| Not used | 25 |
| Power down | 26 |
| Phaseloss out | 27 |
| OV safety | 28 |
| Safety failure | 29 |
| Mot phase loss | 30 |
| Ropes change | 31 |
| Enable missing | 32 |
| Cont feedback | 33 |
| Brake Feedback | 34 |
| Door Feedback | 35 |
| Brake Failure | 36 |
| Safe Brake Test | 37 |
| Speed limit | 38 |
| Up/low limit | 39 |
| Lift ext fault | 40 |
| EBC fault | 41 |

| Selezione | Codice |
|---|---|
| No battery | 42 |
| Plc10 fault | 42 |
| Plc11 fault | 43 |
| Plc12 fault | 44 |
| Plc13 fault | 45 |
| Plc14 fault | 46 |
| Plc15 fault | 47 |
| Plc16 fault | 48 |
| Watchdog | 49 |
| Trap error | 50 |
| System error | 51 |
| User error | 52 |
| Param error | 53 |
| Load def par | 54 |
| Plc cfg error | 55 |
| Load def plc | 56 |
| Key failed | 57 |
| Encoder error | 58 |
| Recovery mode | 59 |
| | |
| | |

Manuale SW
Serie: ADL510
Revision: 1.0
Data: 06/02/2024
Codice: 1S91SWEN

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