POWER ELECTRONICS

SD750

SOFTWARE AND PROGRAMMING MANUAL

LOW VOLTAGE VARIABLE SPEED DRIVE

SD750

LOW VOLTAGE VARIABLE SPEED DRIVE

Software and Programming Manual

SDP2G_5.2.0

Edition: December 2019

SD75MTSW01HI Rev. H

ABOUT THIS MANUAL

PURPOSE

This manual contains important instructions for the installation and maintenance of Power Electronics SD750 variable speed drives.

TARGET AUDIENCE

This manual is intended for qualified customers who will install, operate and maintain Power Electronics SD750 variable speed drives.

Only trained electricians may install and commission the drives.

REFERENCE MANUALS

The following reference documents are available for SD750 variable speed drives:

- Hardware and Installation Manual.
- Programming and Software Manual.
- Maintenance Manual.
- Pumps Application Manual.

POWER ELECTRONICS CONTACT INFORMATION

Power Electronics USA Inc.
4777 N 44th Ave
Phoenix
AZ 85031
UNITED STATES OF AMERICA

US Sales: 602-354-4890 / (480) 519-5977
Fax: (415) 874-3001

Power Electronics España, S.L.
Polígono Industrial Carrases
Ronda del Camp d'Aviació nº 4
46160, Llíria (Valencia)
SPAIN

Fax: (+34) 96 131 82 01
Website: www.power-electronics.com

REVISIONS CONTROL		
DATE	**REVISION**	**DESCRIPTION**
24 / 10 / 2017	A	First Edition.
21 / 11 / 2017	B	Visualization parameters, Description of programming parameters, Commissioning Recommendations, Fault messages. Description and actions. Configuration register.
12 / 01 / 2018	C	Safety instructions, Display unit and control keypad, Status messages, Visualization parameters, programming parameters Description, Commissioning Recommendations, Fault messages. Description and actions. Configuration register.
12 / 03 / 2018	D	Update software version SDP2G_2.0.0. Added default value in visualization parameters. Misprint and image update. Sections: Fault Messages. Modbus communication. Configuration register.
10 / 05 / 2018	E	Updated to software version SDP2G_3.0.0. Misprints correction.
29 / 11 / 2018	F	Updated to software version SDP2G_4.0.0. Status, warning and fault messages. Misprints correction.
20 / 06 / 2019	G	Updated to software version SDP2G_4.1.0. Status, warning and fault messages. Misprints correction.
10 / 12 / 2019	H	About this manual. Misprints correction. Updated to software version SDP2G_5.2.0. Status, warning and fault messages.

EN

The equipment and technical documentation are periodically updated. Power Electronics reserves the right to modify all or part of the contents of this manual without previous notice. To consult the most updated information of this product, you may access our website www.power-electronics.com, where the latest version of this manual can be downloaded. The reproduction or distribution of the present manual is strictly forbidden, unless express authorization from Power Electronics.

TABLE OF CONTENTS

ABOUT THIS MANUAL **2**

SAFETY SYMBOLS **7**

SAFETY INSTRUCTIONS **8**

1. DISPLAY UNIT AND CONTROL KEYPAD **9**
Keypad Unit Description 9
LED for status indication 10
Alphanumeric LCD Display 10
Control Keys 10
Menu 11

2. STATUS & WARNING MESSAGES **13**
List of Status Messages 13
List of Warning Messages 14

3. FAULT MESSAGES. DESCRIPTIONS AND ACTIONS **16**
Description of Fault List 17
Troubleshooting 20

4. VISUALIZATION PARAMETERS **25**
Group V1: Motor Visualization 26
Group V2: Drive Visualization 27
Group V3: External Visualization 27
Group V4: Internal Visualization 28
Group V5: Programmable Parameters 29
Group V6: Registers 29
Group V8: Date and time 29
Group V9: Last fault Registers 30
Subgroup V9.1: Motor registers 30
Subgroup V9.2: Drive registers 30
Subgroup V9.3: External registers 31
Subgroup V9.4: Internal registers 32

5. DESCRIPTION OF PROGRAMMING PARAMETERS **33**
Group 1: Options 34
Group 2: Motor Nameplate Data 35
Group 3: References 36
Group 4: Inputs 37
Subgroup 4.1: Digital Inputs 37
Subgroup 4.2: Analogue Input 1 42
Subgroup 4.3: Analogue Input 2 / Pulse 43
Subgroup 4.4: Analogue Input 3 / PT100 45
Subgroup 4.5: Analogue input 4 46
Subgroup 4.6: Analogue input 5 48
Subgroup 4.7: Analogue input 6 49

Subgroup 4.8: Analogue input 7 50
Group 5: Acceleration / deceleration rates 52
Subgroup 5.1: Acceleration 52
Subgroup 5.2: Deceleration 52
Subgroup 5.3: Motorized potentiometer 52
Others 53
Group 6: PID Control 53
Group 7: Start / Stop Control 54
Subgroup 7.1: Start 54
Subgroup 7.2: Stop 55
Subgroup 7.3: Spin start 56
Group 8: Outputs 56
Subgroup 8.1: Digital outputs 56
Subgroup 8.2: Analogue output 1 61
Subgroup 8.3: Analogue output 2 / Pulse 62
Subgroup 8.4: Analogue output 3 63
Subgroup 8.5: Analogue output 4 63
Subgroup 8.6: Analogue output 5 64
Subgroup 8.7: Analogue output 6 64
Group 9: Comparators 65
Subgroup 9.1: Comparator 1 65
Subgroup 9.2: Comparator 2 66
Subgroup 9.3: Comparator 3 67
Group 10: Limits 68
Group 10.1: Speed 68
Group 10.2: Current/Torque 68
Group 11: Protections 69
Group 11.1: Input 69
Group 11.2: Motor 70
Group 12: Auto Reset 71
Group 13: Fault History 72
Group 14: Multi-references 72
Group 15: Inch Speeds 73
Group 16: Skip Frequencies 73
Group 17: Brake 74
Group 19: Fine Tuning 75
Subgroup 19.1: IGBT Control 75
Subgroup 19.2: Motor load 76
Subgroup 19.3: Motor model 77
Subgroup 19.4: Vector PID 77
Group 20: Serial Communication 78
Subgroup 20.1: Modbus RTU 78
Subgroup 20.2: Profibus Configuration 79
Subgroup 20.6: Custom Modbus configuration 80
Subgroup 20.7: Custom Modbus values 80
Group 21: Networks 81
Subgroup 21.1: Ethernet 81
Subgroup 21.2: Client TCP 81
Subgroup 21.3: EtherNet / IP 82
Subgroup 21.4: Profinet 84
Group 23: Expansion 86
Subgroup 23.2: Input/Output 86

EN

Subgroup 23.3: Communications....86
Group 25: Master / Slave....88
Group 26: Fans....88

6. MODBUS COMMUNICATION....89
Supported Modbus Function Codes....89
Modbus Function Code Nº 3: Registers Reading....89
Modbus Function Code Nº 16: Registers Writing....90
Addressing Modes....91
Broadcast Addressing Mode....91
Remote Control Functions....91
Summary of Modbus Addresses....92
Modbus Register 'COMMS STATUS'....92
Programming Parameters....93
Visualization Parameters....112

7. COMMON CONFIGURATIONS....119
Start / Stop Commands and Speed Reference by Keypad....119
Parameter Configuration....119
Start / Stop Commands by Terminals and Speed Reference by Analogue Input....120
Parameter Configuration....120
Connection Drawing....121
Start / Stop Commands by Terminals and Speed Reference by Motorized Potentiometer....122
Parameter Configuration....122
Connection Drawing....123
Start / Stop Commands by Terminals and Seven Speed References Selectable by Digital Inputs....124
Parameter Configuration....124
Connection Drawing....125

8. CONFIGURATION REGISTER....126

SAFETY SYMBOLS

Always follow safety instructions to prevent accidents and potential hazards from occurring.

In this manual, safety messages are classified as follows:

WARNING	Identifies potentially hazardous situations where dangerous voltage may be present, which if not avoided, could result in minor personal injury, serious injury or death. Be extremely careful and follow the instructions to avoid the risk of electrical shocks.
CAUTION	Identifies potentially hazardous situations, which if not avoided, could result in product damage, or minor or moderate personal injury. Read the message and follow the instructions carefully.
NOTICE	Identifies important measures to take in order to prevent damage equipment and warranty lost, as well as encouraging good use and environmental practices.

Other symbols used in this manual for safety messages are the following:

	Hot surface. Be careful and follow the instructions to avoid burns and personal injuries.
	Risk of fire. Be careful and follow the instructions to prevent causing an unintentional fire.
	Caution, risk of electric shock. Energy storage timed discharge. Wait for the indicated time to avoid electrical hazards.
	Caution, risk of hearing damage. Wear hearing protection.

EN

SAFETY INSTRUCTIONS

IMPORTANT!

Read carefully this manual to maximize the performance of the product and to ensure its safe use.

In order to appropriately use the drive, please, follow all instructions described in the *Hardware and Installation Manual* which refer to transportation, installation, electrical connection and commissioning of the equipment.

Power Electronics accepts no responsibility or liability for partial or total damages resulting from incorrect use of equipment.

CAUTION

Read carefully the ***Hardware and Installation Manual*** and all documentation related to the drive to ensure its safe use and prevent personal injuries and equipment damage.

Comply with local and national regulation.

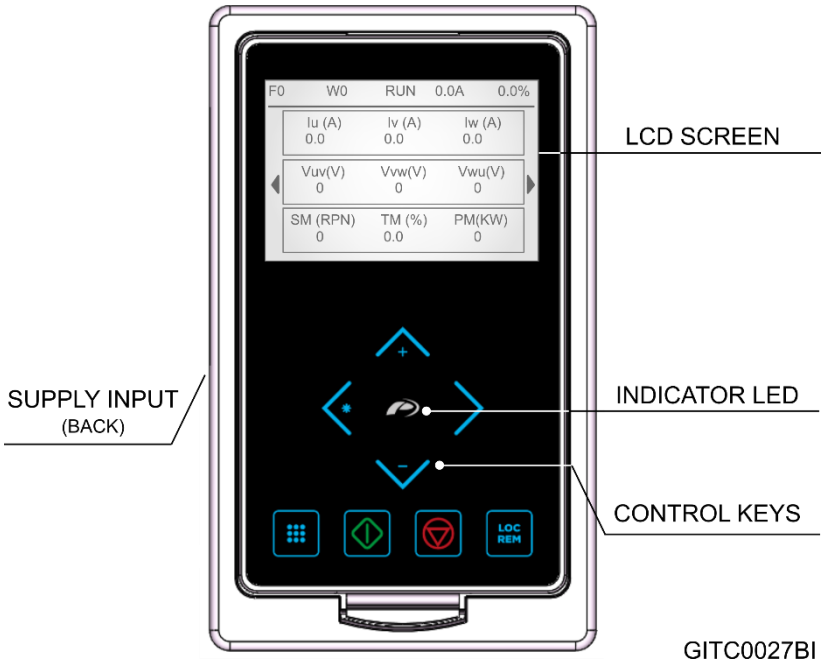
DISPLAY UNIT AND CONTROL KEYPAD

1

EN

Keypad Unit Description

The graphic display is a removable display unit for remote installation. There is a LED indicator integrated in the Power Electronics logo on the display which provides information about the operation status of the equipment. In addition, there is a 2.8 " LCD screen and eight control keys.



Display and Keypad

NOTICE

If the USB terminal is connected to the control board, do not connect the micro USB connection of the display cable to any other equipment different from the SD750 drive's display. Otherwise the equipment connected may be damaged.

The display is connected to the control board using a cable with a micro USB terminal on the end of the display and a USB terminal on the control card side.

LED for status indication

The status LED shows the drive status while it is on. It is located in the Power Electronics logo, and will change its color as follows:

- Green: The equipment is in RUN status.
- Red: The equipment has stopped due to a FAULT.
- Yellow: The equipment is in WARNING status.

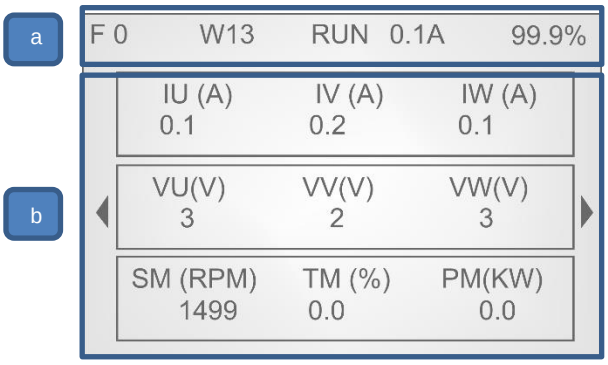
Alphanumeric LCD Display

The main screen of the display is divided into two areas:

a) Status bar: Shows the main indicators of equipment status.

From left to right (see figure "Application screen"):

- Current Fault.
- Current Warning.
- Status.
- Output current in Amperes.
- Current motor speed or equipment power: Displays the current motor speed or the current equipment power in%. If negative sign, it indicates the motor rotates anti-clockwise.



Application screen

b) Visualization Area: Shows the main visualization of the parameters and the different menus of the application.

Control Keys

The display integrates eight control keys with the following functions:

This key is used to scroll up in the Menu or modify the value of the parameters.

Scroll left the main visualization screen or return to the previous screen in the Menu options. Cancel changes made to a parameter.

Scroll right the main visualization screen or enter to the different options of the Menu. Save changes made to a parameter.

This key is used to scroll down in the Menu or modify the value of the parameters.

Enter or exit the menu. It can also be used as editing help during parameter adjustment. To enable it, go to **Menu – Settings – Variables edit mode** and select “Manual precision”. Use the arrows righ/left to increase/decrease the digit “ED”. See example below. See section 5.

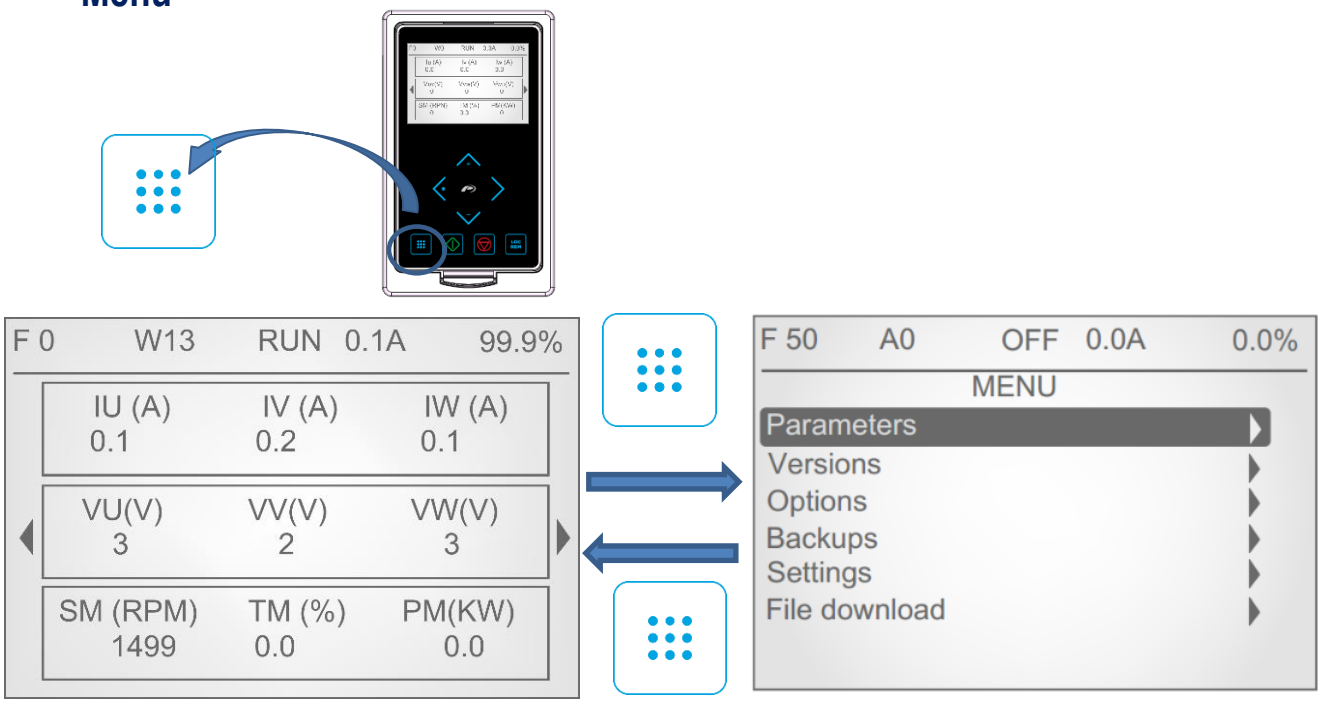
This key is used to start the equipment using the keyboard when the control has been set to Local.

This key is used to stop the converter from the keyboard when the control has been set to Local. In the event of a fault, this button can be used to reset the equipment when the LOCAL control is enabled.

This key is used for the selection of the control mode. When set to Local, the device is controlled as Local. When set to Remote, the equipment works with the option configured in the active control mode at that moment (either the one set in parameter G4.1.1 "Main control mode" or in G4.1.2 "Alternative control mode ").

EN

Menu



Access and exit of the menu

This section includes the following submenus:

- **Parameters:**

This menu contains all the configuration, visualization and favorite parameters (it also allows you to establish a list of favorite parameters). These parameters are grouped into subgroups or sub-menus to facilitate their location.

- **Versions:**

This menu contains the information of the versions associated with the equipment in terms of MCF, uP, DSP, HW and display.

- **Options:**

This menu allows creating custom display screens on the main screen, selecting the parameters to be included.

- **Backups:**

This menu allows making copies of the system and restore the system from one copy.

- **Settings:**

This menu contains all the general settings of the display:

  - Contrast.
  - Show / hide group index: it will show on the screen the subgroup index of the different parameters (ex: G1.1).
  - Animations.
  - Display language.
  - Show / hide the value of variables.
  - Variable editing mode.
  - Go back to home with timeout.

- **File download:**

This menu allows the download of the MCF file, firmware files and files by bootloader.

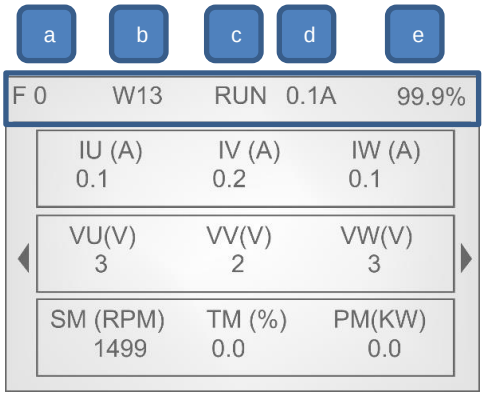
  - MCF: File that contains the definition of display screens, variables and properties.
  - Firmware: Allows updating of the software version of the display.
  - Bootloader: Enabling the option allows updating the display by PC through USB port.

STATUS & WARNING MESSAGES

2

In the status bar of the display we can see the status of the equipment, the average intensity consumed by the motor (A) and the motor speed (%). It always remains visible on the display and can not be modified by the user:

a) Last fault
b) Current Warning message status
c) Current message status
d) Output current
e) Current speed



EN

Note: User can access to the information displayed in status line via Modbus communication. See section 'Modbus Communication'.

List of Status Messages

The following table indicates the possible status of the drive.

Screen	Name	Description
OFF	Deactivated power	Drive power is deactivated.
ON	Activated power	Drive power is activated.
ACL	Accelerating	Drive is increasing the output frequency. Motor increasing in speed, it is accelerating.
RUN	Running	Drive is operating at reference speed. Operation at steady status.
DEC	Decelerating	Drive is decreasing the output frequency. Motor decreasing in speed, it is decelerating.
STP	Stopping	Drive is decreasing the output frequency due to a stop command. Motor is stopping by ramp until zero speed is reached.
FLT	Fault	The drive is in a fault status
RFLT	Fault with ramp stop	This message will be shown whenever any of the faults related to analog input loss is triggered (F42, F43, F59, F89, F104, F105, F106…). After the fault the, drive will stop with ramp.
SPN	Flying start	'Flying start' operation must be configured if required. The SD750 will search for the actual motor shaft speed once the drive has received a start command.
AUT	Automatic adjustment	The drive is obtaining the values of the motor magnitudes. ⚠ **CAUTION:** Although the motor is not running there is dangerous voltage. Run Led will be lit during this process. Be careful to avoid damages and personal injury.
BRK	Brake	The DC brake of the motor is active.

Screen	Name	Description
IHEAT	Non-condensing current is activated	SD750 is injecting DC current to prevent moisture condensing within the motor. ⚠ **CAUTION:** Although the motor is not running there is dangerous voltage. Run Led will be lit during this process. Be careful to avoid damages and personal injury.
DLY	Start Delay Time	When a delay time has been set in order to start the equipment, after the start command has been activated, this message will be displayed until this time has elapsed.
IS1	Inch speed 1	SD750 is working according to inch speed 1 command and 'Start + Inch speed 1' mode is active. When operated in this mode the "Start + Inch speed 1" command is dominant over other inputs programmed for "Start" functionality. Therefore, if one input is configured as 'Start' and it is deactivated; despite this deactivated input, the drive will start when 'Start + Inch speed 1' command is received. This is also valid for Inch speed 2 and 3.
IS2	Inch speed 2	SD750 is working according to inch speed 2 command. 'Start + Inch speed 2' mode is active.
IS3	Inch speed 3	SD750 is working according to inch speed 3 command. 'Start + Inch speed 3' mode is active.

List of Warning Messages

The following table details all the possible warning messages. If none exists, the message **"NO WRN"** will be displayed on the STATUS LINE of the display.

Warning	Acronym	Name	Description
W1	MOL	Motor overload	This message will appear when motor thermal model is increasing the estimated motor temperature.
W3	MOC	Motor over-current	Motor current is higher than the rated current value.
W4	DOC	Drive over-current	This message will appear if the output current is higher than 125% of the nominal current.
W5	ILT	Current limitation	Current limit algorithm has been activated.
W6	TLT	Torque limitation	Torque limit algorithm has been activated.
W7	VLT	Voltage limitation	A high DC Link voltage level has been detected and the voltage limit control algorithm has been activated to protect the drive.
W8	ACO	Asymmetric current	Asymmetry in output currents of the drive has been detected.
W9	AVO	Output voltage imbalance	Asymmetry in output voltage of the drive has been detected.
W10	AVI	Input voltage imbalance	Asymmetry in input voltage of the drive has been detected.
W11	OVV	High input voltage	Input voltage of the equipment is reaching a dangerous level. The value is above the set value (protections settings).
W12	UNV	Low input voltage	Input voltage of the equipment is reaching a dangerous level. The value is below the set value (protections settings).
W13	SLMAX	Max speed limit	Motor speed has reached the maximum speed limit that is active at the moment.
W14	CWR	Cells	The drive does not increase speed because input voltage is not enough. **This warning only applies to permanent magnet synchronous motors.**
W15	SLMIN	Min speed limit	Motor speed has reached the minimum speed limit that is active at the moment.

Warning	Acronym	Name	Description
W16	RTL	Reg torque limit	Regenerative torque limit algorithm has been activated.
W17	MVR	Remaining voltage in the motor	After stopping the converter, the motor retains a voltage higher than 10% of its rated voltage.
W18	RIL	Regenerative I Limit	The motor current reaches the regeneration current limit set in the screen [G10.2.11].
W36	DE_A	Digital A expansion	There is a communications problem with the digital I/O expansion board A.
W37	EPB	Profibus expansion	There is a communications problem with the Profibus board.
W44	DE_B	Digital B expansion	There is a communications problem with the digital I/O expansion board B.
W45	EVCOMM	Expansion fans comm	There is a communications problem with the fans expansion board.
W46	AE_A	Analog A expansion	There is a communications problem with the analogue I/O expansion board A.
W47	AE_B	Analog B expansion	There is a communications problem with the analogue I/O expansion board B.
W48	PNE	Profinet expansion	There is a communications problem with the Profinet board.
W49	EIPE	EthernetIP expansion	There is a communications problem with the Ethernet/IP board.

EN

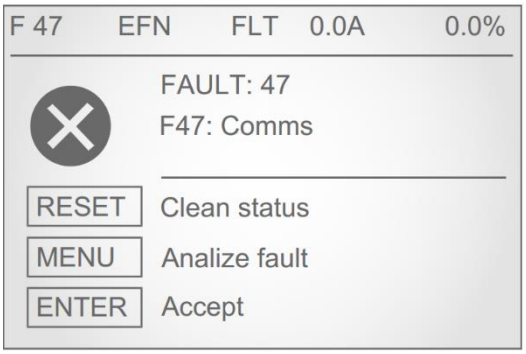
FAULT MESSAGES. DESCRIPTIONS AND ACTIONS

3

When a fault occurs, the SD750 will stop the motor, showing the fault in the display.

Without resetting the fault it is possible to navigate through the display lines where we will have access to the rest of the display parameters, providing us data of the exact moment in which the failure happened.

On the other hand, the LED of the display will show a fixed red color, and the fault message will remain until the fault is solved and the equipment is reset.



Fault Visualization

Description of Fault List

DISPLAY	DESCRIPTION
F0	Drive is operative. There is no fault.
F1:Overcurrent	Output current has reached a dangerous level. Its value is above 220% of the drive rated current. Protection is activated instantaneously.
F2:Overvoltage	DC Bus voltage has reached a dangerous level >850VDC. Hardware Protection. Drive will turn off the output to the motor.
F3:PDINT	DC Bus voltage and the output current of the equipment have reached dangerous levels.
F4:Overload U	Internal protection within the appropriate IGBT semiconductor has acted.
F5:Overload V	
F6:Overload W	
F7:Multiple Overload	The internal protection of several power semiconductors has acted simultaneously.
F8:Dinamic brake overload	The internal protection for the dynamic brake semiconductor has acted. **Note:** Only applies to sizes 1 and 2.
F10:Safety stop (STO)	Automatic internal protection of several of the IGBT semiconductors has acted or safe stop contact of the drive (connected to an external circuit by the user) has been activated (for example, emergency stop).
F11:Input voltage Lost	Power supply loss of any input phase for a time higher than 20ms has occurred.
F12:V input Unbal.	Input voltage imbalance greater than ±10% of average input power supply of SD750 for a time higher than 100ms.
F13:V input high	Average supply voltage has exceeded the value set in 'G11.1.3 Supply over voltage' for greater than the time set in 'G11.1.4 Over voltage timeout".
F14:V input low	Average supply voltage is lower than the value set in 'G11.1.1 Supply under voltage' for greater than the time set in 'G11.1.2 Under voltage timeout'.
F15:Bus ripple	Unstable bus voltage. There is a DC Bus voltage ripple higher than 100VDC during more than 1.1 seconds.
F16:Bus Overvoltage	DC Bus voltage has exceeded critical operating level (>850VDC). Software Protection.
F17:Bus under voltage	DC Bus voltage is lower than critical operating level (<350VDC).
F18:Unbal.V output	Voltage imbalance of more than ±5% of the average drive output average voltage for a time higher than 100ms.
F19:Unbal.I output	Current imbalance of more than ±25% of the average output motor current for a time higher than 1 second.
F20:Ground current	Current level to the ground has exceeded the level set in 'G11.2.2 Ground current limit'.
F21:Overcurrent limit	Motor current has exceeded the current limit set in 'G10.2.1 Current limit' for the time set in 'G10.2.2 I limit timeout'.
F22:Torque limit	Motor torque has exceeded the torque limit set in parameter 'G10.2.6 Torque limit' for the time set in 'G10.2.7 Torque limit timeout'.
F23:Min speed limit	Motor speed does not reach the speed limit (parameters G10.1.1 and G10.1.3) for the time set in [G10.1.6 Minimum lim timeout].
F24:Regen. torque limit	Motor torque has exceeded the torque limit set in parameter 'G10.2.13 Reg torque limit' for the time set in [G10.2.14 Reg torque limit time].
F25:Motor overload	Motor overload calculated by SD750 thermal model has exceeded 110%.
F26:Internal communications	There is a problem in the internal electronics.
F27:Softcharge	The DC Bus has not been charged in the expected time.
F28:Regenerative I Limit	Fault for regenerative converters. See the corresponding manual.
F31:SCR L1	Trip on conduction status of thyristor 1. The thyristor has not turned on correctly.
F32:SCR L2	Trip on conduction status of thyristor 2. The thyristor has not turned on correctly.
F33:SCR L3	Trip on conduction status of thyristor 3. The thyristor has not turned on correctly.
F34:IGBT temperature	IGBT internal temperature has reached a level of 110°C (see parameter SV2.5.2).
F35:DSP Watchdog	An unknown fault has reset the microprocessor of the control board.
F36:Encoder card com.	There is a communication problem between the encoder card and central control.
F37:Encoder card timeout	The encoder card is not detected.
F38:Encoder	Incorrect encoder measurement while working in closed loop.

EN

DISPLAY	DESCRIPTION
F39:No load	There is no load connected to the drive output.
F40:PTC	The external trip device or PTC of the motor has operated. The circuit that controls the external temperature sensor (PTC, thermostat, etc.) of the motor winding has acted. (Connection between terminals 8 and 9). Values lower than 90Ω ± 10% or greater than 1K5 ± 10% generate the fault.
F41:Serial comms	Trip generated through RS232 or RS485 communication. Master (PLC or PC) is generating a fault in the SD750 through serial communication.
F42:Analog input 1 missing	The SD750 is not receiving a signal on analogue input 1 while [G4.2.14 AI1 loss protection] is set to 'Yes'. The signal introduced through this input has been lost.
F43:Analog input 2 missing	The SD750 is not receiving a signal on the analogue input 2 while [G4.3.14 AI2 loss protection] is set to 'Yes'. The signal introduced through this input has been lost.
F44:Drive calibration	Internal reference voltage levels are wrong.
F45:Stop timeout	Trip generated by excessive delay in the motor stop. The time elapsed since the stop signal has exceeded the value set in [G11.2.1 Maximum stop timeout].
F46:Data fault	The non-volatile memory (EEPROM) is defective.
F47:Comms	Trip generated by excessive delay in serial communication. The time elapsed since the last successful reception frame has exceeded the value set in the screen [G20.2 COMMS F / T].
F48:Internal communications	Trip due to bad transfer of the data bus.
F49:Max speed limit	Motor speed has exceeded the speed limit (parameters G10.1.2 and G10.1.4) for the time set in [G10.1.5 Maximum lim timeout].
F50:Power supply	Internal power supply is not supplying the correct voltage. One voltage level has decreased to zero value for 100ms approx.
F52:Lost control voltage	External digital control voltage signal fault.
F53:Max internal temperature	Internal temperature of the equipment control electronics chamber has reached a dangerous level.
F54:Watchdog reset	Internal fault of the microcontroller.
F55:Contactor Feedback	The digital input configured as "YES Digital RL" has not received the feedback of the digital output before the time set in [G4.1.27].
F56:External emergency stop	Digital input configured as 'EXTERN EMERGE' has been activated (NC contact).
F57:Pump overload	This fault is generated when the output current of the drive is higher than the current set in [G11.2.8] during the time adjusted in [G11.2.10].
F58:CAN interface	Reserved. Contact Power Electronics.
F59:Analog input 3 missing	The SD750 has stopped receiving a signal through the analog input 3 while [G4.4.14 AI3 loss protection] is set to "YES". The device has lost the signal entered through this input.
F60:Lost CIP c1 comms	The connection of the equipment (server) to the Ethernet / IP client (PLC) in connector 1 of the board has been lost. If there is no configuration to indicate another option, by default, the CIP standard forces the drive to stop the motor and trip Timeout fault.
F61:EIP Fault	Failure in the Ethernet/IP board. This fault is triggered by the PLC.
F62:CANopen comm lost	Reserved. Contact Power Electronics.
F63:CANopen sdo transmission	Reserved. Contact Power Electronics.
F64:CANopen transmission	Reserved. Contact Power Electronics.
F68:Pump underload	Fault generated when the output current of the inverter is lower than the value set in [G11.2.11] during the time set in [G11.2.13].
F69:Serial I/O comm	Communication fault with the I / O control electronics.
F71:Exp digital I/O A comm	Failure in communication with the digital inputs and outputs expansion board A.
F72:Expansion Profibus comm	Communication failure with the Profibus communication expansion board.
F73:Comparator 1	Failure of the comparator 1
F74:Comparator 2	Failure of the comparator 2
F75:Comparator 3	Failure of the comparator 3
F76:STO Malfunction	Problem in the STO circuit.
F77:Incompat. IO Exp	Incompatible software version of the I / O expansion board.
F78:Fremaq	Temperature of the filter has reached a dangerous value.
F79:PT100	PT100 sensor temperature fault

DISPLAY	DESCRIPTION
F84:SCR temperature	SCR temperature fault
F85:Fan power	A fault in the power supply to the cooling fans has occurred.
F87:Incompatible Dsp Version	Incompatible DSP software version.
F89:Analog input 4 missing	The SD750 has stopped receiving a signal through the analog input 4 while [G4.5.14 AI4 loss protection] is set to "YES". The device has lost the signal entered through this input.
F93:Time out optical fiber	Timeout of the optical fiber has been exceeded.
F94:Sync lost	Synchronism in permanent magnet motor is lost. It only works when we operate with permanent magnet motors (G19.1.1 = PMSM).
F95:Slave	When working in the Master / Slave system (G1.9 = YES), the slave reports this fault because the master has failed. To activate the fault, G25.3 = YES.
F96:Master	When working in the Master / Slave system (G1.9 = YES), the Master reports this fault because a slave has failed. To activate the fault, set G25.3 = YES.
F99:PowerPLC	The PowerPLC macro has triggered a fault.
F100:Expansion fans comm	Failure in communication with the fans board.
F101:I/O exp version mismatch	The software version of the I/O expansion board does not match the software version of the drive.
F102:Exp analog I/O A comm	Failure in communication with analog I/O expansion board A.
F103:Exp analog I/O B comm	Failure in communication with analog I/O expansion board B.
F104:Analog input 5 missing	The SD750 has stopped receiving a signal through the analog input 5 while [G4.6.14 AI5 loss protection] is set to "YES". The device has lost the signal entered through this input.
F105:Analog input 6 missing	The SD750 has stopped receiving a signal through the analog input 6 while [G4.7.14 AI6 loss protection] is set to "YES". The device has lost the signal entered through this input.
F106:Analog input 7 missing	The SD750 has stopped receiving a signal through the analog input 7 while [G4.8.14 AI7 loss protection] is set to "YES". The device has lost the signal entered through this input.
F107:Exp digital I/O B comm	Failure in communication with digital I/O expansion board B.
F108:Expansion Profinet comm	Failure in communication with the Profinet board.
F109:Exp EthernetIP comm	Failure in communication with the Ethernet/IP board.
F110:Lost PNET c1 comms	Failure in communication with the connector 1 of the Profinet board.
F111:Lost PNET c2 comms	Failure in communication with the connector 2 of the Profinet board.
F112:Lost CIP c2 comms	Failure in communication with the connector 1 of the Ethernet/IP board.
F113: Lost PBUS c1 comms	Failure in communication with the connector 1 of the Profibus board.

EN

Troubleshooting

DISPLAY	POSSIBLE CAUSE	ACTIONS
F0	-	-
F1:Overcurrent	Motor output short circuit:	Check output cables and motor for possible wiring faults or short circuits.
	Wiring fault.	
	Circuit fault.	
	Motor fault.	
F2:Overvoltage	High voltage peak on the input.	Check conditions of input power supply. Decrease deceleration ramps.
	High load regeneration.	
	Deceleration ramp too high (parameters G5.2.1 and G5.2.2).	
F3:PDINT	See faults F1 and F2.	See faults F1 and F2.
F4:Overload U	Short circuit.	Check if there are possible wiring faults or a motor fault. If the fault persists after disconnecting output wires request technical assistance.
F5:Overload V		
F6:Overload W		
F7:Multiple Overload	See faults F4, F5 and F6.	See actions for faults F4, F5 and F6 (individual overloads).
F8:Dinamic brake overload	Short circuit or overload in the braking resistor.	Check the braking resistor. If the fault persists once the cables of the braking resistor have been disconnected, request technical assistance.
F10:Safety stop (STO)	See possible causes for faults F4 – F9.	See actions for F4 – F9.
	Safe stop contact of the drive has been activated.	Revise the external circuit, where the safe stop contact is connected, that produces the activation of this contact into the drive.
F11:Input voltage Lost	Input power is incorrect, damaged fuses.	Check conditions of input power supply.
	Input wiring is incorrect.	Check wiring.
F12:V input Unbal	Input power is incorrect, damaged fuses.	Check conditions of input power supply.
	Input wiring is incorrect.	Check wiring.
F13:V input high	Input power is incorrect.	Check input power conditions.
	Incorrect setting of parameter [G11.1.3 Supply over voltage].	Check parameters settings.
F14:V input low	Input power is incorrect, damaged fuses.	Check input power conditions.
	Incorrect setting of parameter [G11.1.1 Supply under voltage].	Check parameters settings.
F15:Bus ripple	Input power is incorrect.	Check input power conditions, load type of the application, and all the motor mechanical parts. If the fault persists after disconnecting output wires, request technical assistance.
	Motor is driving an unstable load.	
	One of the input fuses is damaged.	
F16:Bus Overvoltage	High voltage peak on the input.	Check conditions of input power supply.
	High load regeneration.	Check stop conditions of the drive.
	Deceleration ramp is too high (parameters G5.2.1 and G5.2.2).	Decrease deceleration ramps.
F17:Bus under voltage	Input power is wrong, damaged fuses.	Check conditions of input power supply.
F18:Unbal.V output	Motor is driving an unstable load.	Check motor circuit completely in case of possible wiring faults or motor fault. If the fault persists after disconnecting output wires, request technical assistance.
	Motor wiring fault.	
	Motor is wrong.	
F19:Unbal.I output	Motor is supporting unstable loads.	Check motor circuit completely in case of possible wiring faults or motor fault.
	Motor wiring fault.	
	Motor is wrong.	
F20:Ground current	Motor or wiring has short-circuited to ground.	Disconnect the motor and wiring of the SD750 and check motor insulation.
	Ground is incorrectly connected or wrong.	Check and improve the ground connection system.

DISPLAY	POSSIBLE CAUSE	ACTIONS
F21:Overcurrent limit	Motor stalled. Heavy load.	Check the motor load.
	Motor mechanical brake is coupled.	Increase maximum current limit.
F22:Torque limit	Motor stalled. Heavy load.	Check the motor load.
	Motor mechanical brake is coupled.	Increase maximum torque limit.
F23:Min speed limit	Speed reference is lower or equal than the speed limit.	Check the reference source and the motor load.
	Motor speed is out of control or motor is not accelerating due to the load.	Verify speed limits.
F24:Regen. torque limit	Excessive regeneration is produced due to deceleration ramp to high.	Decrease deceleration ramp.
		Check the setting of parameters related to regenerating current limitation (G10.12 and G10.13).
F25:Motor overload	High current used by the motor due to heavy load.	Check motor load.
	The load exceeds the capacity of motor cooling under normal operating conditions.	Check the motor load. Check the setting of parameters 'G2.1 MTR CUR' and 'G2.7 MTR COOL' relating to the motor thermal model. Increasing the parameter 'G2.7 MTR COOL', can be undertaken when there is a motor PTC fitted and it is connected to the SD750.
	Incorrect setting of the thermal model parameters.	
	Phase loss of the motor or a fault in motor windings.	
F26:Internal communications	There is a problem in the internal electronics.	Contact the Technical Service.
F27:Softcharge	The soft charge resistors of the equipment are not working correctly.	Try resetting the fault. Disconnect and connect the power again. If the fault persists, contact Power Electronics technical service.
F28:Regenerative I Limit	Regenerative VSD fault.	See the corresponding manual.
F31:SCR L1	A conduction fault has been produced in the corresponding thyristor. The thyristor is OFF when it should be on.	Try to reset the fault. Disconnect and re-connect again the input power. If the fault persists request technical assistance.
F32:SCR L2		
F33:SCR L3		
F34:IGBT temperature	Blocked or poor ventilation.	Check if there is an object blocking ventilation. Improve the cooling.
	Heat sink and cooling fan fault on the SD750.	Check if the heat sink and the cooling fan are operating correctly.
	Ambient temperature is higher than 50°C.	Check the cooling and thermal conditions. Request technical assistance.
F35:DSP Watchdog	Input power fault.	Reset the fault; if it persists, request technical assistance.
F36:Encoder card com.	There is a communication problem between the encoder card and central control.	Remove drive power supply and turn it on again. Check the encoder configuration.
F37:Encoder card timeout	The encoder card is not detected.	Verify the card is connected correctly.
F38:Encoder	Wrong encoder reading	Check the encoder wiring and its power.
F39:No load	There is no load on the output of the equipment.	Check the motor is connected.
		Check that the current meters work correctly (current transducers, wiring).
F40:PTC	Actuation of the external trigger device.	Check the external trip switch (if any).
	The motor is overheated (the motor load exceeds the cooling capacity at operating speed).	Check the temperature of the motor.
		To reset the fault, the motor must be at a normal temperature.
	Fault in the sensor connection.	Check the sensor connection.
F41:Serial comms	Fault triggered by a computer via serial communication.	Disconnect the communication and check if the fault persists.

EN

DISPLAY	POSSIBLE CAUSE	ACTIONS
F42:Analog input 1 missing	Analogue input cable has become loose or disconnected (terminals 17 y 18).	Verify the wiring and the device which provides the analogue signal.
F43:Analog input 2 missing	Analogue input cable has become loose or disconnected (T19 y T20).	Verify the wiring and the device which provides the analogue signal.
F44:Drive calibration	Incorrect internal reference voltage levels.	Check the drive select. Request technical assistance
F45:Stop timeout	Deceleration ramps (parameters G5.2.1 and G5.2.2) are too slow.	Verify that the time set in parameter 'G11.2.1 Max stop timeout' to stop the system after setting deceleration ramps and checking the system performance.
	SD700 is voltage limiting voltage due to regeneration from the motor.	
F46:Data fault	Integrated circuit fault.	Request technical assistance.
F47:Comms	Communications cable is loose or has been cut.	Verify the wiring of communications system.
	Master device has not sent valid data in the required frame or it has sent incorrect data.	Verify the data and settings of the master device.
F48:Internal communications	Input power fault.	Reset the equipment and if the fault persists request technical assistance.
F49:Max speed limit	Speed reference is higher or equal than the speed limit.	Check the reference source and the motor load.
	Motor speed is out of control or motor is accelerating because of the load.	Check the reference source and the motor load.
F50:Power supply	Damaged power supply.	Reset the equipment and if the fault persists request technical assistance.
F52:Lost control voltage	Incorrect network voltage.	Check power conditions.
	Incorrect wiring.	Check wiring.
F53:Max internal temperature	The internal temperature limits of the equipment have been exceeded.	Verify that the ambient conditions are proper for the equipment.
		Make sure that there is nothing obstructing the cooling fans (dust, papers, dirt, etc.) and that they rotate correctly.
F54:Watchdog reset	There has been a failure in the microcontroller.	Remove power and reconnect it. If the fault persists contact Power Electronics.
F55:Contactor Feedback	The timeout set in parameter G4.1.27 has been exceeded.	Verify the feedback of the digital output configured in parameter G4.1.27.
F56:External emergency stop	An external trip has been produced by closing a contact on the digital input configured in this option.	Verify the wiring of digital input.
		Check the installation.
F57:Pump overload	High current used by the motor due to heavy load.	Check the motor load.
	The load exceeds the capacity of the motor cooling under normal operating conditions.	Check if the motor cooling is appropriate.
	Incorrect setting of the parameters related to pump overload.	Check the setting of the parameters related to pump overload in group G11.
	Phase loss of the motor or a fault in motor windings.	Contact Power Electronics.
F58:CAN interface	Reserved.	Contact Power Electronics.
F59:Analog input 3 missing	Analogue input 3 missing	Check wiring and the equipment that provides the analogue signal.
F60:Lost CIP c1 comms	The active connection with the Ethernet/IP Client has been lost.	Check the Ethernet/IP connection of the client (PLC, PC).
F61:EIP Fault	The PLC has detected a fault in the Ethernet/IP board.	Verify the cable of the board connector is properly connected.
		Verify the board is connected correctly.
F62:CANopen comm lost	Reserved.	Contact Power Electronics.
F63:CANopen sdo transmission	Reserved.	Contact Power Electronics.

DISPLAY	POSSIBLE CAUSE	ACTIONS
F64:CANopen transmission	Reserved.	Contact Power Electronics.
F68:Pump underload	The minimum value set in G11.2.12 has been reached.	Check the motor load.
		Check G11.2.12, G11.2.13 and G11.2.14.
F69:Serial I/O comm	The serial I / O board does not work correctly.	Check the wiring. Contact Power Electronics.
F71:Exp digital I/O A comm	The I / O board does not work correctly.	Check the wiring. Contact Power Electronics.
F72:Expansion Profibus comm	The communication between Profibus Master and Slave is cut off.	Revise the Profibus wiring and the configuration in the Master (PLC).
F73:Comparator 1	The comparator 1 has been disabled.	Check the configuration of the comparator 1.
F74:Comparator 2	The comparator 2 has been disabled.	Check the configuration of the comparator 2.
F75:Comparator 3	The comparator 3 has been disabled.	Check the configuration of the comparator 3.
F76:STO Malfunction	Short circuit on a line of safe stop circuit with power or grounded. The push of the safe stop circuit is detected, but only in one of the 2 lines of the circuit.	Check the STO circuit (Pins STO1, STO2, TEST1, TEST2, etc.)
F77:Incompat. IO Exp	Software version is incompatible.	Contact Power Electronics.
F78:Fremaq	The temperature of the filter is very high.	Check ventilation.
		Check the thermal contacts.
		Check the power contactor.
		Verify the wiring of the digital input configured as "FREEMAQ FLL"
F79:PT100	The controller has detected a temperature in the excessive transformer	Check the ventilation of the transformer cabinet
F84:SCR temperature	The temperature limits for the radiator have been exceeded.	Verify the environmental conditions are appropriate for the equipment. Make sure there is nothing obstructing the cooling fans (dust, paper, dirt in general) and they rotate normally.
F85:Fan power	Fans of the equipment are operating wrong.	Verify that fans are not obstructed. Check that fans are not dirty and rotate correctly.
	Power supply of the fans has been overheated.	Wait for the temperature of the power supply decreases down to a value in normal conditions and restart it. You can disconnect the equipment, connect it again, and restart the power supply again. If the fault persists request technical assistance of Power Electronics.
F87:Incompatible Dsp Version	The software versions of the micro and DSP are not compatible.	Contact Power Electronics.
F89:Analog input 4 missing	Analogue input 4 missing	Check wiring and the equipment that provides the analogue signal.
F93:Time out optical fiber	The fiber has been broken.	Check the wiring.
	One of the computers in the network has been turned off.	Check the status of the equipment.
	Incorrect connection	
F94:Sync lost	The torque demanded by the application is higher than that allowed by the engine.	Check current limit G10.5 and torque G10.9 adjusted.
F95:Slave	One of the slaves has failed.	Check the fault produced in the slave.
F96:Master	The Master has failed.	Check the fault produced in the master.
F99:PowerPLC	As defined by the user of the program.	See PowerPLC program.
F100:Expansion fans comm	Communication with the fans board is not correct.	Check wiring Consult with Power Electronics.
F101:I/O exp version mismatch	The version of software loaded in the expansion board does not match the current software version of the drive.	Contact Power Electronics

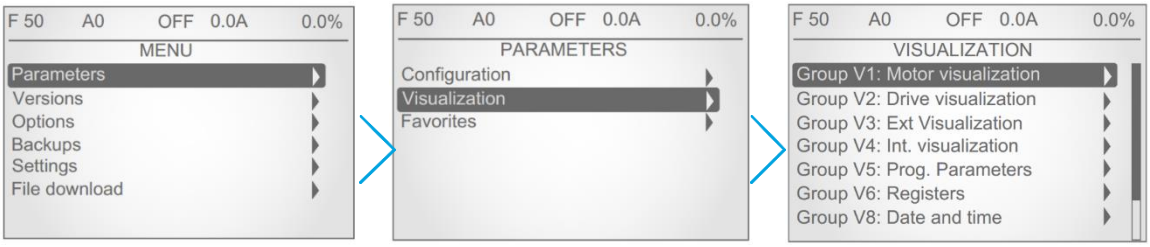
EN

DISPLAY	POSSIBLE CAUSE	ACTIONS
F102:Exp analog I/O A comm	Communication with the analog I/O expansion board A is not correct.	Check wiring Consult with Power Electronics.
F103:Exp analog I/O B comm	Communication with the analog I/O expansion board B is not correct.	
F104:Analog input 5 missing	Analogue input 5 missing	Check wiring and the equipment that provides the analogue signal.
F105:Analog input 6 missing	Analogue input 6 missing	
F106:Analog input 7 missing	Analogue input 7 missing	
F107:Exp digital I/O B comm	Communication with the digital I/O expansion board B is not correct.	Check wiring Consult with Power Electronics.
F108:Expansion Profinet comm	Communication with the Profinet board is not correct.	Verify the board is connected correctly. Consult with Power Electronics.
F109:Exp EthernetIP comm	Communication with the Ethernet/IP board is not correct.	
F110:Lost PNET c1 comms	Communication with the connector 1 of the Profinet board is not correct.	
F111:Lost PNET c2 comms	Communication with the connector 2 of the Profinet board is not correct.	
F112:Lost CIP c2 comms	Communication with the connector 2 of the Ethernet/IPboard is not correct.	
F113: Lost PBUS c1 comms	Communication with the connector 1 of the Profibus board is not correct.	

VISUALIZATION PARAMETERS

4

These parameters constantly indicate the input signal status and dynamic parameter status of the SD700. Visualization lines are the second and the third lines. To access these parameters, user must enter the Menu by pressing **Menu-Parameters-Visualization**.



EN

Navigation in Settings

KEY	DESCRIPTION
	To access an area, group, subgroup or parameter, the user must scroll using the arrows up and down the display, and press the right arrow
	Pressing the right arrow user accesses to each group. To exit and return to the previous one, the user must press the left arrow.

There is also the possibility of creating favorite display screens that allow quick access to information.

NOTICE

Parameters marked in gray color indicate the parameter value is conditioned to another parameter or variable.

Group V1: Motor Visualization

This group shows information related to motor parameters.

Screen	Units	Description
SV1.1 Speed reference = 0.0 %	%	Shows the present reference value of speed which is applied to the motor.
SV1.2 Torque reference = 0.0 %	%	Shows the present reference value of torque which is applied to the motor.
SV1.3 Motor speed (%) = 0.0 %	%	Shows the motor speed in %.
SV1.4 Motor speed (rpm) = 0 rpm	rpm	Shows the motor speed in revs per minute.
SV1.5 Motor frequency = 0.0 Hz	Hz	Shows the frequency being applied to the motor.
SV1.6 Motor voltage = 0 V	V	Shows the present voltage applied to the motor.
SV1.7 Motor current = 0.0 A	A	Shows the present current flowing to the motor.
SV1.8 Motor torque = 0.0 %	%	Shows the present torque applied to the motor.
SV1.9 Motor phi cosine = 0.85	None	Shows the motor's cos phi.
SV1.10 Motor power = 0.0 kW	kW	Shows the instantaneous power consumption of the motor.
SV1.11.1 U motor current= 0.0 A	A	Shows the instantaneous current of each phase of the motor (U).
SV1.11.2 V motor current = 0.0 A	A	Shows the instantaneous current of each phase of the motor (V)
SV1.11.3 W motor current= 0.0 A	A	Shows the instantaneous current of each phase of the motor (W)
SV1.12.1 U-V motor voltage = 0.0 V	V	Shows the instantaneous voltage applied (UV)
SV1.12.2 V-W motor voltage = 0.0 V	V	Shows the instantaneous voltage applied (VW)
SV1.12.3 W-U motor voltage = 0.0 V	V	Shows the instantaneous voltage applied (UW)
SV1.13 PTC Status = No	None	Shows whether the motor PTC is connected or disconnected. **Visible if [G4.1.10 = PTC].**
SV1.14 Estimated. Motor temp(%) = 0.0 %	%	Shows the estimated motor temperature.
SV1.15 Motor temperature = 0 ºC	ºC	Shows the motor temperature measured with the PT100 sensor. **Visible if [G4.4.0 = YES].**
SV1.17 Encoder speed = 0 rpm	rpm	Real speed measured by the encoder. **Visible if [G18.1 = Yes].**

Group V2: Drive Visualization

This group shows respective information to the drive parameters.

Screen	Units	Description
SV2.1.1 L1-L2 supply voltage = 0 V	V	Shows the input instantaneous voltage applied to the drive (RS)
SV2.1.2 L2-L3 supply voltage = 0 V	V	Shows the input instantaneous voltage applied to the drive (ST)
SV2.1.3 L3-L1 supply voltage = 0 V	V	Shows the input instantaneous voltage applied to the drive (RT)
SV2.2 Input voltage average = 0 V	V	Shows the average input voltage to the drive.
SV2.3 DC bus voltage = 0 V	V	Shows DC Link voltage of the drive.
SV2.4 Input frequency = 0.0 Hz	Hz	Shows the frequency of the drive input voltage.
SV2.5.1 Drive temperature = 0 ºC	ºC	Shows the temperature measured inside the electronics chamber of the drive.
SV2.5.2 IGBT temperature = 0 ºC	ºC	Shows the temperature measured at the power stage of the drive output.
SV2.10 Relative Humidity = 0 %	%	Shows the internal relative humidity of the converter.

EN

Group V3: External Visualization

Note: The parameters associated with analogue inputs 4 to 7 and analogue outputs 3 to 6 will only be displayed if an inputs and outputs expansion board has been connected.

Screen	Units	Description
SV3.1 AI1 value = 0.00 V	See units G4.2.3	Shows the value of Analogue Input 1.
SV3.2 AI1 percentage = 100.0 %	%	Shows the value of the PID reference proportional to Analogue Input 1 in percentage.
SV3.3 AI1 sensor value = 0.0 l/s	See units G4.2.2	Shows the value of sensor 1 associated to the Analogue Input 1.
SV3.4 AI2 value = 0.00 mA	mA	Shows the value of the Analogue Input 2. **Visible if [G4.3.0 = NO]**
SV3.5 AI2 percentage = 100.0 %	%	Shows the value of the PID reference proportional to the Analogue Input 2 signal. **Visible if [G4.3.0 = NO]**
SV3.6 AI2 sensor value = 0.0 Bar	See units G4.3.2	Shows the value of sensor 2 associated to the Analogue Input 2. **Visible if [G4.3.0 = NO] and [G4.3.1 = YES]**
SV3.7 AI3 value = 0.00 V	See unitsG4.4.3	Shows the value of sensor 3 associated to the Analogue Input 3. **Visible if [G4.4.0 = NO]**
SV3.8 AI3 percentage = 100.0 %	%	Shows the value of the PID reference proportional to the Analogue Input 3 signal. **Visible if [G4.4.0 = NO]**
SV3.9 AI3 sensor value = 0.0 l/s	See units G4.4.2	Shows the value of sensor 3 associated to the Analogue Input 3. **Visible if [G4.4.1 = YES]**
SV3.10 AI4 value = 0.00 V	See units G4.5.3	Shows the value of the Analogue Input 4 (AI4).
SV3.11 AI4 percentage = 100.0 %	%	Shows the value of the PID reference proportional to the Analogue Input 4 signal.
SV3.12 AI4 sensor value = 0.0 l/s	See units G4.5.2	Shows the value of sensor 4 associated to the Analogue Input 4. **Visible if [G4.5.1 = YES].**
SV3.13 AI5 value = 0.00 V	See units G4.6.3	Shows the value of the Analogue Input 5.
SV3.14 AI5 percentage = 100.0 %	%	Shows the value of the PID reference proportional to the Analogue Input 5 signal.
SV3.15 AI5 sensor value = 0.0 l/s	See units G4.6.2	Shows the value of sensor 5 associated to the Analogue Input 5. **Visible if [G4.6.1 = YES].**
SV3.16 AI6 value = 0.00 V	See units G4.7.3	Shows the value of the Analogue Input 6.
SV3.17 AI6 percentage = 100.0 %	%	Shows the value of the PID reference proportional to the Analogue Input 6 signal.
SV3.18 AI6 sensor value = 0.0 l/s	See units G4.7.2	Shows the value of sensor 6 associated to the Analogue Input 6.. **Visible if [G4.7.1 = YES].**
SV3.19 AI7 value = 0.00 V	See units G4.8.3	Shows the value of the Analogue Input 7.

Screen	Units	Description
SV3.20 AI7 percentage = 100.0 %	%	Shows the value of the PID reference proportional to the Analogue Input 7 signal.
SV3.21 AI7 sensor value = 0.0 l/s	See units G4.8.2	Shows the value of sensor 7 associated to the Analogue Input 7. **Visible if [G4.8.1 = YES].**
SV3.22 AO1 value = 0.00 V	See units G8.2.2	Shows the value of the Analogue output 1.
SV3.23 AO1 percentage = 0.0 %	%	Shows the magnitude value associated to the Analogue Output 1
SV3.24 AO2 value = 0.00 V	See units G8.3.2	Shows the value of the Analogue output 1. **Visible if [G8.3.0 = NO]**
SV3.25 AO2 percentage = 0.0 %	%	Shows the magnitude value associated to the Analogue Output 2.
SV3.26 AO3 value = 0.00 V	See units G8.4.2	Shows the value of the Analogue output 3.
SV3.27 AO3 percentage = 0.0 %	%	Shows the magnitude value associated to the Analogue Output 3.
SV3.28 AO4 value = 0.00 V	See units G8.5.2	Shows the value of the Analogue output 4.
SV3.29 AO4 percentage = 0.0 %	%	Shows the magnitude value associated to the Analogue Output 4.
SV3.30 AO5 value = 0.00 V	See units G8.6.2	Shows the value of the Analogue output 5.
SV3.31 AO5 percentage = 0.0 %	%	Shows the magnitude value associated to the Analogue Output 5.
SV3.32 AO5 value = 0.00 V	See units G8.7.2	Shows the value of the Analogue output 6.
SV3.33 AO5 percentage = 0.0 %	%	Shows the magnitude value associated to the Analogue Output 6.
SV3.34 DI status = 000000	-	Shows the value of the digital inputs (6, 10 or 16 bits, depending on the number of expansion boards connected)
SV3.35 Output relays status = 000	-	Shows the value of the states of the output relays (3, 8 or 11 bits, depending on the number of expansion boards connected.)
SV3.37 Fans = Off	-	Shows the status of the fans (on / off)
SV3.38 Pulse Input = 0.0 l/s	See units G4.3.2	Shows the measurement of the pulse input. **Visible if [G4.3.0 = YES]**

Group V4: Internal Visualization

Screen	Units	Description
SV4.1 Present fault = 0	-	Shows the present fault code.
SV4.2 Nominal V = 500 V	V	Shows the drive rated voltage.
SV4.3 Nominal I = 46.0 A	A	Shows the drive rated current.
SV4.4 Reference PID = 100.0	%	Shows the reference value in PID mode of the equipment standard program.
SV4.4 PID setpoint = 100.0 %	%	Shows the feedback value in PID mode of the equipment standard program.
SV4.8.1 Comp status 1 = O	-	Shows the status of the three comparators (C1).
SV4.8.2 Comp status 2 = O	-	Shows the status of the three comparators (C2).
SV4.8.3 Comp status 3 = O	-	Shows the status of the three comparators (C3).
SV4.9 Prior to fault status = OFF	-	Shows the status of the drive before the fault.

Group V5: Programmable Parameters

Screen	Units	Description
SV5.1 Speed local reference = 100.0 %	%	Shows the speed reference in local mode.
SV5.2 PID local setpoint = 100.0 %	%	Shows the PID setting in local mode.
SV5.3 Multireference 1 = 10.00 %	%	Shows the speed value assigned to Multi-reference 1.
SV5.4 Multireference 2 = 20.00 %	%	Shows the speed value assigned to Multi-reference 2.
SV5.5 Multireference 3 = 30.00 %	%	Shows the speed value assigned to Multi-reference 3.
SV5.6 Multireference 4 = 40.00 %	%	Shows the speed value assigned to Multi-reference 4.
SV5.7 Multireference 5 = 50.00 %	%	Shows the speed value assigned to Multi-reference 5.
SV5.8 Multireference 6 = 60.00 %	%	Shows the speed value assigned to Multi-reference 6.
SV5.9 Multireference 7 = 70.00 %	%	Shows the speed value assigned to Multi-reference 7.
SV5.10 Inch speed 1 = 0.00 %	%	Shows the fixed speed 1.
SV5.11 Inch speed 2 = 0.00 %	%	Shows the fixed speed 2.
SV5.12 Inch speed 3 = 0.00 %	%	Shows the fixed speed 3.

EN

Group V6: Registers

Screen	Units	Description
SV6.1.1 Total days counter = 0 days	Days	Shows the total time during which the drive is running (RUN).
SV6.1.2 Total hours counter = 0 h	Hours	Shows the total time during which the drive is running (RUN).
SV6.2.1 Partial days counter = 0 days	Days	Shows the total time during which the drive is running (RUN).
SV6.2.2 Partial hours counter = 0 h	Hours	Shows the partial time during which the drive is running (RUN).
SV6.3 Clear partial counter = No	-	Allows resetting the counter of partial time for running status (RUN).
SV6.4.1 Total energy GWh = 0 GWh	GWh	Shows the drive total energy consumption.
SV6.4.2 Total energy MWh = 0 MWh	MWh	Shows the drive total energy consumption.
SV6.4.3 Total energy kWh = 0 kWh	kWh	Shows the drive total energy consumption.
SV6.5.1 Partial energy GWh = 0 GWh	GWh	Shows the drive partial energy consumption.
SV6.5.2 Partial energy MWh = 0 MWh	MWh	Shows the drive partial energy consumption.
SV6.5.3 Partial energy kWh = 0 kWh	kWh	Shows the drive partial energy consumption.
SV6.6 Partial energy reset = No	-	Allows resetting the counter of partial energy.

Group V8: Date and time

Screen	Units	Description
SV8.1 Seconds = 0	-	Shows the seconds of the current time.
SV8.2 Minutes = 0	-	Shows the minutes of the current time.
SV8.3 Hours = 0	-	Shows the hours of the current time.
SV8.4 Day = 1	-	Shows the day of the current date.
SV8.5 Month = 1	-	Shows the month of the current date.
SV8.6 Year = 2015	-	Shows the year of the current date.

Group V9: Last fault Registers

These registers show the conditions that were present at the moment when the last fault occurred. They are divided into the following subgroups:

Subgroup V9.1: Motor registers

Screen	Units	Description
SV9.1.1 Speed reference = 0.0 %	%	Shows the value of the current speed reference.
SV9.1.2 Torque reference = 0.0 %	%	Shows the value of the current torque reference.
SV9.1.3 Motor speed (%) = 0.0 %	%	Shows the motor speed in%.
SV9.1.4 Motor speed (rpm) = 0 rpm	rpm	Shows the motor speed in rpm.
SV9.1.5 Motor frequency = 0.0 Hz	Hz	Shows the frequency which the motor is running.
SV9.1.6 Motor voltage = 0 V	V	Shows the current voltage applied to the motor.
SV9.1.7 Motor current = 0.0 A	A	Shows the present current to the motor.
SV9.1.8 Motor torque = 0.0 %	%	Shows the current torque applied to the motor.
SV9.1.9 Motor phi cosine = 0.85	-	Shows the motor power factor.
SV9.1.10 Motor power = 0 kW	kW	Shows the instantaneous power consumption of the motor.
SV9.1.11.1 U motor current = 0.0 A	A	Shows the instantaneous current per phase of the motor (U).
SV9.1.11.2 V motor current = 0.0 A	A	Shows the instantaneous current per phase of the motor (V).
SV9.1.11.3 W motor current = 0.0 A	A	Shows the instantaneous current per phase of the motor (W).
SV9.1.12.1 U-V motor voltage = 0 V	V	Shows the instantaneous line voltage (U-V).
SV9.1.12.2 V-W motor voltage = 0 V	V	Shows the instantaneous line voltage (V-W).
SV9.1.12.3 W-U motor voltage = 0 V	V	Shows the instantaneous line voltage (W-U).
SV9.1.13 PTC Status = No	-	Shows whether the motor PTC is connected or not. **Visible if [G4.1.10 = PTC]**
SV9.1.14 Motor temperature(%) = 0.0 %	%	Shows the theoretical heating level of the motor.
SV9.1.15 Motor temperature = 0 ºC	ºC	Shows the temperature of the motor measured with the PT100 sensor. **Visible if [G4.4.0 = YES].**
SV9.1.16 Encoder pulses = 0	-	Shows the pulse count of the Encoder.
SV9.1.17 Encoder speed = 0 rpm	RPM	Shows the speed seen by the Encoder.

Subgroup V9.2: Drive registers

Screen	Units	Description
SV9.2.1.1 L1-L2 supply volt = 0 V	V	Shows the instantaneous input voltage between L1 and L2.
SV9.2.1.2 L2-L3 supply volt = 0 V	V	Shows the instantaneous input voltage between L2 and L3.
SV9.2.1.3 L3-L1 supply volt = 0 V	V	Shows the instantaneous input voltage between L3 and L1.
SV9.2.2 Input voltage average = 0 V	V	Shows the average value of input voltages between phases.
SV9.2.3 DC bus voltage = 0 V	V	Shows the DC bus voltage.
SV9.2.4 Input frequency = 0.0 Hz	Hz	Shows the frequency of the input voltage.
SV9.2.5 Drive temperature = 0 ºC	ºC	Shows the temperature of the drive.
SV9.2.9 IGBT temperature = 0 ºC	ºC	Shows the temperature measured at the power stage of the drive output.
SV9.2.10 Relative Humidity = 0 %	%	Shows the internal relative humidity of the drive.

Subgroup V9.3: External registers

Screen	Units	Description
SV9.3.1 AI1 value = 0.00 V	V	Shows the average value of the analogue input 1.
SV9.3.2 AI1 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 1.
SV9.3.3 AI1 sensor value = 0.0 l/s	l/s	Shows the value of sensor 1 associated with analogue input 1.
SV9.3.4 AI2 value = 0.00 mA	mA	Shows the average value of the analogue input 2.
SV9.3.5 AI2 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 2.
SV9.3.6 AI2 sensor value = 0.0 Bar	Bar	Shows the value of sensor 1 associated with analogue input 2.
SV9.3.7 AI3 value = 0.00 V	See units G4.4.3	Shows the average value of the analogue input 3.
SV9.3.8 AI3 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 3.
SV9.3.9 AI3 sensor value = 0.0 l/s	See units G4.4.2	Shows the value of sensor 1 associated with analogue input 3.
SV9.3.10 AI4 value = 0.00 V	See units G4.5.3	Shows the average value of the analogue input 4.
SV9.3.11 AI4 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 4.
SV9.3.12 AI4 sensor value = 0.0 l/s	See units G4.5.2	Shows the value of sensor 1 associated with analogue input 4.
SV9.3.13 AI5 value = 0.00 V	See units G4.6.3	Shows the average value of the analogue input 5.
SV9.3.14 AI5 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 5.
SV9.3.15 AI5 sensor value = 0.0 l/s	See units G4.6.2	Shows the value of sensor 1 associated with analogue input 5.
SV9.3.16 AI6 value = 0.00 V	See units G4.7.3	Shows the average value of the analogue input 6.
SV9.3.17 AI6 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 6.
SV9.3.18 AI6 sensor value = 0.0 l/s	See units G4.7.2	Shows the value of sensor 1 associated with analogue input 6.
SV9.3.19 AI7 value = 0.00 V	See units G4.8.3	Shows the average value of the analogue input 7.
SV9.3.20 AI7 percentage = 100.0 %	%	Shows the speed reference or the PID proportional setting for the analogue input 7.
SV9.3.21 AI7 sensor value = 0.0 l/s	See units G4.8.2	Shows the value of sensor 1 associated with analogue input 7.
SV9.3.22 AO1 value = 0.00 V	See units G8.2.2	Shows the value of analogue output 1.
SV9.3.23 AO1 percentage = 0.0 %	%	Shows the value of sensor 1 associated with analogue output 1.
SV9.3.24 AO2 value = 0.00 V	See units G8.3.2	Shows the value of analogue output 2.
SV9.3.25 AO2 percentage = 0.0 %	%	Shows the value of sensor 1 associated with analogue output 2.
SV9.3.26 AO3 value = 0.00 V	See units G8.4.2	Shows the value of analogue output 3.
SV9.3.27 AO3 percentage = 0.0 %	%	Shows the value of sensor 1 associated with analogue output 3.
SV9.3.28 AO4 value = 0.00 V	See units G8.5.2	Shows the value of analogue output 4.
SV9.3.29 AO4 percentage = 0.0 %	%	Shows the value of sensor 1 associated with analogue output 4.
SV9.3.30 AO5 value = 0.00 V	See units G8.6.2	Shows the value of analogue output 5.
SV9.3.31 AO5 percentage = 0.0 %	%	Shows the value of sensor 1 associated with analogue output 5.
SV9.3.32 AO6 value = 0.00 V	See units G8.7.2	Shows the value of analogue output 6.
SV9.3.33 AO6 percentage = 0.0 %	%	Shows the value of sensor 1 associated with analogue output 6.
SV9.3.34 DI status = 000000	-	Shows the status of each of the digital inputs of the central control: 000000 (input 1: first from the left).
SV9.3.35 DI status = 00000000000	-	Shows the status of digital inputs: 00000000000 (entry 1: first from the left). **Note:** Only displayed if an expansion board has been connected. If there are two expansion boards connected, 16 bits will be displayed.

EN

Screen	Units	Description
SV9.3.36 DO status = 000	-	Shows the status of each of the digital outputs of the central control: 000000 (input 1: first from the left).
SV9.3.37 DO status = 00000000	-	Shows the status of the digital outputs: 00000000000 (entry 1: first from the left). **Note:** Only displayed if an expansion board has been connected. If there are two expansion boards connected, 16 bits will be displayed.

Subgroup V9.4: Internal registers

Screen	Units	Description
SV9.4.1 Last fault = 0	NINGUNA	Shows the present fault code.
SV9.4.2 Drive nominal current = 46.0 A	A	Shows the rated current of the drive.
SV9.4.3 Drive nominal voltage = 500 V	V	Shows the rated voltage of the drive.
SV9.4.6 PID setpoint = 100.0 %	%	Shows the setpoint value of the PID of the standard equipment program.
SV9.4.7 PID feedback value = 100.0 %	%	Shows the PID feedback value of the standard equipment program.
SV9.4.8.1 Comp status 1 = O	-	Shows the status of the three comparators (C1)
SV9.4.8.2 Comp status 2 = O	-	Shows the status of the three comparators (C2)
SV9.4.8.3 Comp status 3 = O	-	Shows the status of the three comparators (C3)

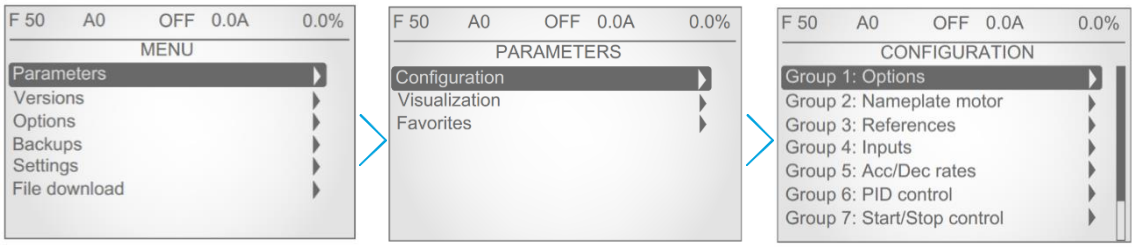
DESCRIPTION OF PROGRAMMING PARAMETERS

5

EN

This menu contains all the configuration parameters. These parameters are organized in subgroups or sub-menus to facilitate their location.

To access these parameters, enter: **Menu - Parameters - Configuration:**



Navigation in Settings

KEY	DESCRIPTION
	To access an area, group, subgroup or parameter, user must scroll using the arrows up and down, and press the right arrow.
	Pressing the right arrow user accesses each group. To exit and return to the previous screen, user must press the left arrow.
	Use this key to change the scale when adjusting a parameter (x1, x10, x100, x1000, x10000). 1. Enable edit mode by pressing “Menu” key. “EDx1” will appear in the top of the screen. 2. Choose the scale by using the left/right arrow keys (see example). 3. Adjust the digit – according to the selection made on step 2 – by using the up/down arrow keys. **Example**: Value that will be entered = **1453,2** **Parameter value** | **1** | **4** | **5** | **3** | **,** | **2** **Scale adjustment** | X10000 | X1000 | X100 | X10 | | X1

Group 1: Options

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G1.1 Lock parameters = No</td><td>0 - 3</td><td>Allows user to lock SD750 parameters totally or partially. To lock you must introduce a password in G1.2.

<table><tr><th>OPT</th><th>DESCRIPTION</th><th>FUNCTION</th></tr><tr><td>0</td><td>NO</td><td>Parameter lock is not active.</td></tr><tr><td>1</td><td>PARTIAL LOCK</td><td>All parameters are locked except for G1.1, G1.2, G3.3 and G6.2 (PID reference).</td></tr><tr><td>2</td><td>TOTAL LOCK</td><td>Only G1.1 and G1.2 can be modified.</td></tr><tr><td>3</td><td>DISP LOCK</td><td>Parameters cannot be modified using the display. To perform any changes, user must unlock them or connect through Modbus.</td></tr></table></td><td>YES</td></tr>
<tr><td>G1.1a Lock password = 0</td><td>0 - 65535</td><td>Allows user to introduce a password to lock parameters and avoid unauthorized changes in the programming.
If any lock option has been enabled in G1.1, then this parameter appears automatically.
Unlock: In [G1.1 = 1 or 2] set 0➔ NO. The [G1.1a Lock password] screen will appear.</td><td>YES</td></tr>
<tr><td>G1.1b Unlock password recov. = 0</td><td>0 -65535</td><td>It provides information for the recovery of the blocking code introduced with the expression: Unlock password = (XXXX/2)-3.</td><td>YES</td></tr>
<tr><td>G1.2 Language = Spanish</td><td>Spanish
English</td><td>Allows selecting the language of the web access of the equipment. The display language is selected in the "Settings" menu.</td><td>YES</td></tr>
<tr><td>G1.3 Initialize = No init</td><td>0 - 3</td><td>Allows selecting the parameters that we desire to initialize back to the factory default value.

<table><tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr><tr><td>0</td><td>No init</td><td>None of parameters is initialized.</td></tr><tr><td>1</td><td>User parameters</td><td>User parameters are only initialized.</td></tr><tr><td>2</td><td>Motor parameters</td><td>Motor data are only initialized.</td></tr><tr><td>3</td><td>All parameters</td><td>All parameters of the drive are initialized.</td></tr></table></td><td>YES</td></tr>
<tr><td>G1.4 Short menu = No</td><td>NO
YES</td><td>If it is active, then configuration menus will not be accessible. Only visible G1 OPTIONS MENU, G10 LIMITS, and Display groups.</td><td>YES</td></tr>
<tr><td>G1.5 Activate programs = Standard</td><td>Standard,
1 - 8</td><td>Standard: Normal equipment functionalities.
1 to 8: Additional user functions programmed with PowerPLC, such as the PUMPS MACRO.</td><td>YES</td></tr>
<tr><td>G1.6 Service group password = 0</td><td colspan="3">Group reserved for the Technical Service or Power Electronics authorized personnel.</td></tr>
<tr><td>G1.7 Network synchronization = 0</td><td>No
Yes</td><td>Allows to select whether the inverter has the bypass mode.</td><td>NO</td></tr>
<tr><td>G1.9 Master/slave config = Disable</td><td>Disable = 0
Enable = 1</td><td>Synchronization between different equipment in the same application. There must necessarily always be a MASTER (there can only be one), and a SLAVE (there can be several). The connection between the equipment by optical fiber is needed.</td><td>YES</td></tr>
</table>

Group 2: Motor Nameplate Data

Screen	Range	Function	Set on RUN
G2.1 Motor plate current = 1.0In A	0.2In - 1.5In A	Allows setting of the motor rated current according to its nameplate **Note:** In = Rated motor current.	NO
G2.2 Motor plate voltage = 0 V (*)	0 - 700 V	Allows setting of the motor rated voltage according to its nameplate.	NO
G2.3 Motor plate power = Pn (*)	0.0 - 6500.0 kW	Allows setting of the motor rated power according to its nameplate. **This value depends on the rated current of the drive.**	NO
G2.4 Motor plate rpm = 1485 rpm	0 - 24000 rpm	Allows setting of the motor rated speed according to its nameplate.	NO
G2.5 Motor plate phi cosine = 0.85	0.01 - 0.99	Allows setting of motor cosine Phi according its nameplate.	NO
G2.6 Motor plate frequency = 50 Hz	0 - 599 Hz	Allows setting of the motor rated frequency according to its nameplate. **Note:** For operating frequencies above 100 Hz consult Power Electronics.	NO
G2.7 Motor cooling = 63 %	50% - 100%, off	It provides adjustment of sensitive of the motor thermal model based on actual motor cooling. The following settings can be taken as reference: Submersible pumps and non-deflagrating motor ➔ 5% Self-cool motor ➔ 63% Forced-cool motor ➔ 100% **Note:** If the drive is working at low speeds for a long time and several trips caused by motor thermal model are produced even though the motor was not hot then this value can be increased slightly to avoid further tripping. **Note:** If it is set to 'OFF', thermal model will be deactivated. **Note:** This protection estimates the temperature in the motor. To guarantee the motor protection, it is recommended to use the motor sensor (PTC).	YES

Note: If all these values are not entered correctly, the SD700 will not operate correctly. When the motor nameplate offers multiple configuration possibilities, as in case of the start-delta motor connection, ensure the correct data is entered for the appropriate configuration.

(*) The default value of these parameters depends on the motor nameplate.

EN

Group 3: References

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G3.1 Speed ref 1 source = Local</td><td rowspan="2">0 - 17</td><td>Allows selecting the source 1 or 2 for the speed reference.

<table>
<tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr>
<tr><td>0</td><td>None</td><td>Reference source 1 has not been selected.</td></tr>
<tr><td>1</td><td>Analog Input 1</td><td>Reference will be introduced through the Analogue Input 1.</td></tr>
<tr><td>2</td><td>Analog Input 2</td><td>Reference will be introduced through the Analogue Input 2.</td></tr>
<tr><td>3</td><td>Analog Input 1+2</td><td>Reference will be the sum of the signals introduced through the Analogue Inputs 1 and 2.</td></tr>
<tr><td>5</td><td>Local</td><td>Reference will be given by keypad and will be set in [G3.3 Local Speed Reference].</td></tr>
<tr><td>6</td><td>Multireferences</td><td>Multi-Reference. Different references activated by the digital inputs. It will be necessary to configure the digital inputs. See [G4.1 ➔ Digital Inputs].</td></tr>
<tr><td>7</td><td>Motorized potentiometer</td><td>Motorized potentiometer with or without reference memory.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G3.2 Speed ref 2 source = Local</td><td>
<table>
<tr><td>8</td><td>PID</td><td>It will take as reference the value set in the parameters of the PID function.</td></tr>
<tr><td>9</td><td>Analog Input 3</td><td>Reference will be introduced through the Analogue Input 3.</td></tr>
<tr><td>10</td><td>Comunicaciones</td><td>The reference will be introduced through the communications.</td></tr>
<tr><td>11</td><td>Fiber</td><td>Reserved.</td></tr>
<tr><td>12</td><td>PowerPLC</td><td>Reference will be introduced through PowerPLC.</td></tr>
<tr><td>13</td><td>Analog Input 4</td><td>Reference will be introduced through the Analogue Input 4.</td></tr>
<tr><td>14</td><td>Analog Input 5</td><td>Reference will be introduced through the Analogue Input 5.</td></tr>
<tr><td>15</td><td>Analog Input. 6</td><td>Reference will be introduced through the Analogue Input 6.</td></tr>
<tr><td>16</td><td>Analog Input 7</td><td>Reference will be introduced through the Analogue Input 7.</td></tr>
<tr><td>17</td><td>EthernetIP</td><td>Reference will be introduced through the Ethernet/IP network.</td></tr>
</table>
Notes:
• Options 13 to 16 will only be visible if an IO expansion board has been connected.
• Option 17 will only be available if the Ethernet/IP board has been connected.</td><td>YES</td></tr>
<tr><td>G3.3 Speed local reference = 100.0 %</td><td>-250 - 250%</td><td>Allows the user to set the motor speed value if the reference source for speed has been set to ‘LOCAL’.</td><td>YES</td></tr>
<tr><td>G3.4 Torque ref 1 source = Local</td><td rowspan="2">0 - 17</td><td>Allows selecting the source of the torque control reference (G3.4) and the reference source of the alternative torque control (G3.5).

<table>
<tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr>
<tr><td>0</td><td>None</td><td>Reference source 1 has not been selected.</td></tr>
<tr><td>1</td><td>Analog Input 1</td><td>Reference will be introduced through the Analogue Input 1.</td></tr>
<tr><td>2</td><td>Analog Input 2</td><td>Reference will be introduced through the Analogue Input 2.</td></tr>
<tr><td>3</td><td>Analog Input 1+2</td><td>Reference will be the sum of the signals introduced through the Analogue Inputs 1 and 2.</td></tr>
<tr><td>5</td><td>Local</td><td>Reference will be given by keypad and will be set in ‘G3.3’Local Speed Reference’.</td></tr>
<tr><td>6</td><td>Multireferences</td><td>Multi-Reference. Different references activated by the digital inputs. It will be necessary to configure the digital inputs. See ‘G4.1 ➔ Digital Inputs’.</td></tr>
<tr><td>7</td><td>Motorized potentiometer</td><td>Motorized potentiometer with or without reference memory.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G3.5 Torque ref 2 source = Local</td><td>
<table>
<tr><td>8</td><td>PID</td><td>It will take as reference the value set in the parameters of the PID function.</td></tr>
<tr><td>9</td><td>Analog Input 3</td><td>Reference will be introduced through the Analogue Input 3.</td></tr>
<tr><td>10</td><td>Comunicaciones</td><td>The reference will be introduced through the communications.</td></tr>
<tr><td>11</td><td>Fiber</td><td>Reserved.</td></tr>
<tr><td>12</td><td>PowerPLC</td><td>Reference will be introduced through PowerPLC.</td></tr>
<tr><td>13</td><td>Analog Input 4</td><td>Reference will be introduced through the Analogue Input 4.</td></tr>
<tr><td>14</td><td>Analog Input 5</td><td>Reference will be introduced through the Analogue Input 5.</td></tr>
<tr><td>15</td><td>Analog Input 6</td><td>Reference will be introduced through the Analogue Input 6.</td></tr>
<tr><td>16</td><td>Analog Input 7</td><td>Reference will be introduced through the Analogue Input 7.</td></tr>
<tr><td>17</td><td>EthernetIP</td><td>Reference will be introduced through the Ethernet IP network.</td></tr>
</table>
Notes:
• Options 13 to 16 will only be visible if an IO expansion board has been connected.
• Option 17 will only be available the corresponding board has been connected and the Ethernet/IP protocol enabled.</td><td>YES</td></tr>
<tr><td>G3.6 Torque local reference = 100.0 %</td><td>-250 - 250%</td><td>Adjust the local torque reference.</td><td>YES</td></tr>
</table>

Group 4: Inputs

This group of programming parameters is divided into different subgroups.

Subgroup 4.1: Digital Inputs

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G4.1.1 Main control mode = Local</td><td>None
Local
Remote
Communications
Fiber
PowerPLC
EthernetIP</td><td>Allows setting the control mode for the drive commands (Start/Stop, Reset, ...)
<table><tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr><tr><td>0</td><td>None</td><td>Control mode 1 is not operative.</td></tr><tr><td>1</td><td>Local</td><td>Drive control is done by keypad.</td></tr><tr><td>2</td><td>Remote</td><td>Drive controlled through control terminals.</td></tr><tr><td>3</td><td>Communications</td><td>Drive controlled through communication bus.</td></tr><tr><td>4</td><td>Fiber</td><td>Drive controlled through optical fiber
Note: When G25.1 = master.</td></tr><tr><td>5</td><td>PowerPLC</td><td>Drive controlled with the PowerPLC macro.
Note: This option will not be available if the macro is disabled.</td></tr><tr><td>6</td><td>EthernetIP</td><td>Drive controlled through the Ethernet IP network.
Note:This option will only appear if an Ethernet/IP board has been connected.</td></tr></table></td><td>NO</td></tr>
<tr><td>G4.1.2 Alternative ctrl mode = Remote</td><td>None
Local
Remote
Communications
Fiber
PowerPLC
EthernetIP</td><td>Allows setting the control mode for the drive commands (Start/Stop, Reset, ...).
<table><tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr><tr><td>0</td><td>None</td><td>Control mode 2 is not operative.</td></tr><tr><td>1</td><td>Local</td><td>Drive control is done by keypad.</td></tr><tr><td>2</td><td>Remote</td><td>Drive controlled through control terminals.</td></tr><tr><td>3</td><td>Communications</td><td>Drive controlled through communication bus.</td></tr><tr><td>4</td><td>Fiber</td><td>Drive controlled through optical fiber
Note: When G25.1 = master.</td></tr><tr><td>5</td><td>PowerPLC</td><td>Drive controlled with the PowerPLC macro.
Note: This option will not be available if the macro is disabled.</td></tr><tr><td>6</td><td>EthernetIP</td><td>Drive controlled through the Ethernet IP network.
Note:This option will only appear if the Ethernet/IP board has been connected and the protocol enabled.</td></tr></table>
Note: Control mode 2 will be activated exclusively through the digital inputs. For this, some of these must be set to 17 ➔ Control 2. When the input is activated, the auxiliary control mode will enter into operation, inhibiting the main mode.</td><td>NO</td></tr>
<tr><td>G4.1.3 Allow local reset = Yes</td><td>No
Yes</td><td>Allows user to reset faults from the keypad unit (LOCAL).
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>It is not possible to reset from the keypad unit.</td></tr><tr><td>Yes</td><td>The drive can be reset via the reset button on the keypad unit.</td></tr></table></td><td>YES</td></tr>
<tr><td>G4.1.4 Digital input mode = All programmable</td><td>0 – 5</td><td>Allows user to configure the digital inputs for different functions. All options described below will program to all the digital inputs simultaneously, except for option ‘1 ➔ All Programmable’, which allows configuring them separately.
<table><tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>All programmable</td><td>Inputs configuration individually by user. See G4.1.5 to G4.1.10.</td></tr><tr><td>2</td><td>Mref 2 wires</td><td>Digital inputs 5 and 6 are programmed as multiple references (of speed or PID references) for up to 4 preset speeds. The remaining inputs are user programmable.
<table><tr><th>PARM</th><th>DI5</th><th>DI6</th></tr><tr><td>G14.4</td><td>0</td><td>0</td></tr><tr><td>G14.5</td><td>0</td><td>X</td></tr><tr><td>G14.6</td><td>X</td><td>0</td></tr><tr><td>G14.7</td><td>X</td><td>X</td></tr></table>
Note: It is necessary to set G3.1 or G3.2 to “Multireferences”.</td></tr></table>
Note: Continues in the following page.</td><td>NO</td></tr>
</table>

EN

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G4.1.4 Digital input mode = All programmable</td><td>0 - 5</td><td>
Note: Comes from the previous page.
<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>3</td><td>Mref 3 wires</td><td>Digital inputs 4, 5 and 6 are programmed as multiple references (of speed or PID references) for up to 7 preset speeds. The remaining inputs are user programmable.
<table>
<tr><th>PARM</th><th>DI4</th><th>DI5</th><th>DI6</th></tr>
<tr><td>G14.1</td><td>0</td><td>0</td><td>X</td></tr>
<tr><td>G14.2</td><td>0</td><td>X</td><td>0</td></tr>
<tr><td>G14.3</td><td>0</td><td>X</td><td>X</td></tr>
<tr><td>G14.4</td><td>X</td><td>0</td><td>0</td></tr>
<tr><td>G14.5</td><td>X</td><td>0</td><td>X</td></tr>
<tr><td>G14.6</td><td>X</td><td>X</td><td>0</td></tr>
<tr><td>G14.7</td><td>X</td><td>X</td><td>X</td></tr>
</table>
Note: It is necessary to set G3.1 or G3.2 to “Multireferences”.</td></tr>
<tr><td>4</td><td>Motorized potentiometer</td><td>It assigns the up and down reference function for two of the digital inputs.
DI5 = Up (NO contact)
DI6 = Down (NC contact)
Reference limits will be the speed limits set in ‘G10 LIMITS’.
Programming a change ramp is possible at:
G5.3.1 Mot pot accel rate 1 =3%/s
G5.3.2 Mot pot decel rate 1 =3%/s
G5.3.3 Mot pot accel rate 2 =1%/s
G5.3.4 Mot pot decel rate 2 =1%/s
G5.3.5 Mot pot rate brk speed = 0 %

Note: In this mode, the reference set by potentiometer will be memorized even if the motor is stopped and in the case of a power loss.</td></tr>
<tr><td>5</td><td>Resettable potentiometer</td><td>It operates in the same way as option 4, but when the motor is stopped, or a power loss occurs, the reference will not be memorized. In this case the minimum reference value set in G10.1 or G10.1.3 will be the default speed. This will happen when the limit is above zero, if the limit is equal or below zero, the default speed will be zero.</td></tr>
</table>
⚠ Caution: Digital input configuration changes their settings automatically. Make sure there is not a hazard due to accidental motor starting that can cause property damage or personal injury.
</td><td></td></tr>
<tr><td>G4.1.5 Digital Input 1 = Start / Stop</td><td rowspan="2">0 – 48</td><td rowspan="2">Allows user to configure the digital inputs for individual use.
<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>00</td><td>No use</td><td>Input is disabled.</td></tr>
<tr><td>01</td><td>Start (NO)</td><td>‘Start’ command from a normally open push button (NO). First, it is necessary to configure another input as a ‘Stop’ command from a normally closed contact (NC).</td></tr>
<tr><td>02</td><td>Stop 1 (NC)</td><td>‘Stop’ command from a normally closed push button. Stop mode is adjusted in G7.2.1 Main stop mode. (NC)</td></tr>
<tr><td>03</td><td>Stop 2 / Reset</td><td>‘Stop’ command from a normally closed pushbutton. Stop mode is adjusted in G7.2.2 Alternative stop mode. Activation of the input in this mode also acts as a ‘Reset’ signal. (NC)</td></tr>
<tr><td>04</td><td>Stop 1 / Reset</td><td>‘Stop’ command from a normally closed pushbutton. Stop mode is adjusted in G7.2.1 Main stop mode. Activation of the input in this mode also acts a ‘Reset’ signal. (NC)</td></tr>
<tr><td>05</td><td>Start / Stop</td><td>Allows start when closed and stop when open (2 wires start / stop). (NO)</td></tr>
<tr><td>06</td><td>Start / Reset / Stop</td><td>Allows start when closed and stop when open (2 wires start / stop). Activation of this input also acts a fault reset. (NO)</td></tr>
<tr><td>07</td><td>Reset (NC)</td><td>‘Reset’ signal by push button. (NC). User can choose this option independently of the selected program and the control mode used (LOCAL, REMOTE, COMMUNICATION)</td></tr>
</table>
Note: Continues in the following page.</td><td>NO</td></tr>
<tr><td>G4.1.6 Digital Input 2 = Reference 2</td><td>NO</td></tr>
</table>

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G4.1.7 Digital Input 3 = Control 2</td><td rowspan="4">0 - 48</td><td rowspan="4">Note: Comes from the previous page.
<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>08</td><td>Start + Inch 1</td><td>Start' command and inch speed 1 when closed. Inch speed is programmed in G15.1 Inch speed 1. (NO)</td></tr>
<tr><td>09</td><td>Start + Inch 2</td><td>Start' command and inch speed 2 when closed. Inch speed is programmed in G15.2 INCH2. (NO). If two inputs configured with the options 08 ➔Run + VFit1 and 09 ➔ Run + VFit2 are activated simultaneously, the combination of Run + Fixed Speed 3 programmed in [G15.3 VEL FIJ3] is obtained.</td></tr>
<tr><td>10</td><td>Invert speed</td><td>It causes deceleration of the motor until motor is stopped and inverts the rotation direction. (NO). To allow the motor to rotate at negative speeds, [G10.1.7= Yes] is required.</td></tr>
<tr><td>13</td><td>Invert inches</td><td>It inverts the fixed speed reference set in G15.1, G15.2 or G15.3. (NO). To allow the motor to rotate at negative speeds, [G10.1.7 = Yes] is required.</td></tr>
<tr><td>14</td><td>Acc / Dec 2</td><td>If active, acceleration and deceleration ramps are enabled. Alternative acceleration and deceleration rates are programmed in G5.1.3 and G5.2.1. (NO)</td></tr>
<tr><td>15</td><td>Reference 2</td><td>Allows selecting the alternative speed reference as programmed in G3.2. (NO)</td></tr>
<tr><td>17</td><td>Control 2</td><td>It activates the alternative control mode as programmed in G4.1.2. (NO)</td></tr>
<tr><td>18</td><td>Start / Stop / Reset</td><td>Like the option 06, but 'Reset' signal will be activated after the drive is stopped. (NO)</td></tr>
<tr><td>19</td><td>Stop 2 (NC)</td><td>Stop' command from a normally closed pushbutton. Stop mode is adjusted in G7.2.2 Alternative stop mode. (NC)</td></tr>
<tr><td>20</td><td>Speed limit 2</td><td>It will change to the alternative speed limits as programmed in G10.1.3 and G10.1.4. (NO).</td></tr>
<tr><td>22</td><td>Start mode 2</td><td>To select the alternative starting mode (Ramp / Spin) (NO)</td></tr>
<tr><td>23</td><td>Current limit 2</td><td>To select the alternative current limit. (NO)</td></tr>
<tr><td>24</td><td>External emergency</td><td>To generate the fault 'F56 EMERGEN.STOP'. (NC).</td></tr>
<tr><td>25</td><td>Freemaq Fault</td><td>It is an emergency stop which indicates fault in the freemaq filter (NC). Drive will trip by fault 78 TMP FREEMAQ.</td></tr>
<tr><td>27</td><td>Start/Stop + Inv</td><td>Start/Stop + rotation reversal. Start the equipment with this digital input means starting in the opposite direction of the reference speed sign.</td></tr>
<tr><td>28</td><td>LCL Regenerative fb</td><td>Not available</td></tr>
<tr><td>29</td><td>PTC</td><td>To generate the fault 'F79 PT100'. Only valid for Digital Input 6.</td></tr>
<tr><td>32</td><td>Speed / Torque</td><td>Allows changing the control mode by Speed (input = 0) or by Torque (input = 1)</td></tr>
<tr><td>33</td><td>Output 1 Feedback 1</td><td rowspan="8">If the status of the input is different during the time set in G4.1.27 to the state of the corresponding output, fault "F55: contactor feedback"</td></tr>
<tr><td>34</td><td>Output 1 Feedback 2</td></tr>
<tr><td>35</td><td>Output 1 Feedback 3</td></tr>
<tr><td>36</td><td>Output 4 Feedback 4</td></tr>
<tr><td>37</td><td>Output 5 Feedback 5</td></tr>
<tr><td>38</td><td>Output 6 Feedback 6</td></tr>
<tr><td>39</td><td>Output 7 Feedback 7</td></tr>
<tr><td>40</td><td>Output 8 Feedback 8</td></tr>
<tr><td>41</td><td>Universal Stop</td><td>It stops the drive regardless of control mode & program selection configured (NO).</td></tr>
<tr><td>43</td><td>Output 9 Feedback 9</td><td rowspan="5">If the status of the input is different during the time set in G4.1.27 to the state of the corresponding output, fault "F55: contactor feedback"</td></tr>
<tr><td>44</td><td>Output 10 Feedback 10</td></tr>
<tr><td>45</td><td>Output 11 Feedback 11</td></tr>
<tr><td>46</td><td>Output 12 Feedback 12</td></tr>
<tr><td>47</td><td>Output 13 Feedback 13</td></tr>
<tr><td>48</td><td>Torque limit 2</td><td>Allows selecting the alternative torque limit reference as programmed in G10.2.8</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G4.1.8 Digital Input 4 = Reset (NC)</td><td>NO</td></tr>
<tr><td>G4.1.9 Digital Input 5 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.10 Digital Input 6/PTC = Not used</td><td>NO</td></tr>
</table>

EN

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G4.1.11 Digital Input 7 = Not used</td><td rowspan="8">0 – 48</td><td rowspan="8">Configure external inputs for individual use. Available only if an I / O expansion board is connected.

<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>00</td><td>Not used</td><td>Input is disabled.</td></tr>
<tr><td>01</td><td>Start (NO)</td><td>Start' command from a normally open push button (NO). First, it is necessary to configure another input as a 'Stop' command from a normally closed contact (NC).</td></tr>
<tr><td>02</td><td>Stop 1 (NC)</td><td>'Stop' command from a normally closed push button. Stop mode is adjusted in G7.2.1 Main stop mode. (NC)</td></tr>
<tr><td>03</td><td>Stop 2 / Reset</td><td>'Stop' command from a normally closed pushbutton. Stop mode is adjusted in G7.2.2 Alternative stop mode. Activation of the input in this mode also acts as a 'Reset' signal. (NC)</td></tr>
<tr><td>04</td><td>Stop 1 / Reset</td><td>'Stop' command from a normally closed pushbutton. Stop mode is adjusted in G7.2.1 Main stop mode. Activation of the input in this mode also acts a 'Reset' signal. (NC)</td></tr>
<tr><td>05</td><td>Start / Stop</td><td>Allows start when closed and stop when open (2 wires start / stop). (NO)</td></tr>
<tr><td>06</td><td>Start / Reset / Stop</td><td>Allows start when closed and stop when open (2 wires start / stop). Activation of this input also acts a fault reset. (NO)</td></tr>
<tr><td>07</td><td>Reset (NC)</td><td>'Reset' signal by push button. (NC). User can choose this option independently of the selected program and the control mode used (LOCAL, REMOTE, COMMUNICATION)</td></tr>
<tr><td>08</td><td>Start + Inch 1</td><td>Start' command and inch speed 1 when closed. Inch speed is programmed in G15.1 Inch speed 1. (NO)</td></tr>
<tr><td>09</td><td>Start + Inch 2</td><td>Start' command and inch speed 2 when closed. Inch speed is programmed in G15.2 (NO). If two inputs configured with the options 08 ➔Run + VFit1 and 09 ➔ Run + VFit2 are activated simultaneously, the combination of Run + Fixed Speed 3 programmed in [G15.3] is obtained.</td></tr>
<tr><td>10</td><td>Invert speed</td><td>It causes deceleration of the motor until motor is stopped and inverts the rotation direction. (NO). To allow the motor to rotate at negative speeds, [G10.1.7 = Yes] is required.</td></tr>
<tr><td>13</td><td>Invert inches</td><td>It inverts the fixed speed reference set in G15.1, G15.2 or G15.3. (NO). To allow the motor to rotate at negative speeds, [G10.1.7 = Yes] is required.</td></tr>
<tr><td>14</td><td>Acc / Dec 2</td><td>It active acceleration and deceleration ramps are enabled. Alternative acceleration and deceleration rates are programmed in G5.1.3 and G5.2.1. (NO)</td></tr>
<tr><td>15</td><td>Reference 2</td><td>Allows selecting the alternative speed reference as programmed in G3.2. (NO)</td></tr>
<tr><td>17</td><td>Control 2</td><td>It activates the alternative control mode as programmed in G4.1.2. (NO)</td></tr>
<tr><td>18</td><td>Start / Stop / Reset</td><td>Like the option 06, but 'Reset' signal will be activated after the drive is stopped. (NO)</td></tr>
<tr><td>19</td><td>Stop 2 (NC)</td><td>'Stop' command from a normally closed pushbutton. Stop mode is adjusted in G7.2.2 Alternative stop mode. (NC)</td></tr>
<tr><td>20</td><td>Speed limit 2</td><td>It will change to the alternative speed limits as programmed in G10.1.3 and G10.1.4. (NO).</td></tr>
<tr><td>22</td><td>Start mode 2</td><td>To select the alternative starting mode (Ramp / Spin) (NO)</td></tr>
<tr><td>23</td><td>Current limit 2</td><td>To select the alternative current limit. (NO)</td></tr>
<tr><td>24</td><td>External emergency</td><td>To generate the fault 'F56 EMERGEN.STOP'. (NC).</td></tr>
<tr><td>25</td><td>Freemaq Fault</td><td>It is an emergency stop which indicates fault in the freemaq filter (NC). Drive will trip by fault 78 TMP FREEMAQ.</td></tr>
<tr><td>27</td><td>Start/Stop + Inv</td><td>Start/Stop + rotation reversal. Start the equipment with this digital input means starting in the opposite direction of the reference speed sign.</td></tr>
<tr><td>28</td><td>LCL Regenerative fb</td><td>Feedback for the contactor of the LCL filter. Only for regenerative drives.</td></tr>
</table>

Note: Continues in the following page.</td><td>NO</td></tr>
<tr><td>G4.1.12 Digital Input 8 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.13 Digital Input 9 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.14 Digital Input 10 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.15 Digital Input 11 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.16 Digital Input 12 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.17 Digital Input 13 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.18 Digital Input 14 = Not used</td><td>NO</td></tr>
</table>

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G4.1.19 Digital Input 15 = Not used</td><td rowspan="2">0 - 48</td><td rowspan="2">Note: Comes from the previous page.

<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>29</td><td>PTC</td><td>To generate the fault 'F79 PT100'. Only valid for Digital Input 6.</td></tr>
<tr><td>32</td><td>Speed / Torque</td><td>Allows changing the control mode by Speed (input = 0) or by Torque (input = 1)</td></tr>
<tr><td>33</td><td>Output 1 Feedback 1</td><td rowspan="8">If the status of the input is different during the time set in G4.1.27 to the state of the corresponding output, fault "F55: contactor feedback"</td></tr>
<tr><td>34</td><td>Output 2 Feedback 2</td></tr>
<tr><td>35</td><td>Output 3 Feedback 3</td></tr>
<tr><td>36</td><td>Output 4 Feedback 4</td></tr>
<tr><td>37</td><td>Output 5 Feedback 5</td></tr>
<tr><td>38</td><td>Output 6 Feedback 6</td></tr>
<tr><td>39</td><td>Output 7 Feedback 7</td></tr>
<tr><td>40</td><td>Output 8 Feedback 8</td></tr>
<tr><td>41</td><td>Universal Stop</td><td>It stops the drive regardless of control mode & program selection configured (NO).</td></tr>
<tr><td>43</td><td>Output 9 Feedback 9</td><td rowspan="5">If the status of the input is different during the time set in G4.1.27 to the state of the corresponding output, fault "F55: contactor feedback"</td></tr>
<tr><td>44</td><td>Output 10 Feedback 10</td></tr>
<tr><td>45</td><td>Output 11 Feedback 11</td></tr>
<tr><td>46</td><td>Output 12 Feedback 12</td></tr>
<tr><td>47</td><td>Output 13 Feedback 13</td></tr>
<tr><td>48</td><td>Torque limit 2</td><td>Allows selecting the second torque limit reference as programmed in G10.2.8</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G4.1.20 Digital Input 16 = Not used</td><td>NO</td></tr>
<tr><td>G4.1.27 Feedback Error Timeout = 1.0 s</td><td>0.5 - 60.0 s</td><td>If a digital input is configured as "Output X Feedback X" (Output Feedback 1 to 8) sets the time that the value of the selected output and input must remain different so that the" F55: contactor feedback "appears.</td><td>YES</td></tr>
<tr><td>G4.1.28 Invert Input mode= (*)</td><td>DI1 - DI16</td><td>Select which of the inputs works in inverted mode.

The default value and range of this parameter depends on the number of available digital inputs (6, 11 or 16 bits will appear).

Each of the six, eleven or sixteen digital inputs (ED1 to ED16) is selected individually using this parameter.</td><td>YES</td></tr>
</table>

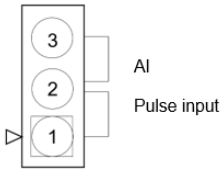
EN

Subgroup 4.2: Analogue Input 1

Screen	Range	Function	Set on RUN
G4.2.1 Enable sensor = No	N Y	Allows user to configure analogue input 1 for use with a sensor and activates the parameters which are necessary to set it up. See G4.2.2 up to G4.2.7. **OPTION** / **FUNCTION** N=NO: The analogue input will remain scaled in default units (%). Y=YES: The analogue input and any variables relating to the analogue input will be configured in the engineering units selected in G4.2.2.	NO
G4.2.2 Sensor unit = l/s	% l/s m3/s l/m m3/m l/h m3/h m/s m/m m/h bar kPa psi m ºC ºF K Hz rpm	Allows selecting different units of measurement for analogue input 1 according to the sensor that is used. If this parameter is modified, the minimum and maximum values of the sensor range must be adjusted to ensure correct configuration. Therefore, the following set values should be checked: 'G4.2.5 Smi1=+0.0l/s' ➔ Minimum range of sensor. 'G4.2.7 Sma1=+10.0l/s' ➔ Maximum range of sensor. **Available if [G4.2.1 = YES].**	NO
G4.2.3 AI1 Format = V	V mA	Allows configuring the analogue input 1 format for either a voltage or current signal. Set according to the sensor that will be used.	NO
G4.2.4 AI1 low level = 0.0 V	-10.0V to G4.2.6 +0.0mA to G4.2.6	Determines the minimum voltage or current value for analogue input 1. Set according to the characteristics of the sensor that will be connected.	YES
G4.2.5 Sensor low level = 0.0 l/s	-3200 to G4.2.7 Engineering units	Sets the minimum units value of the sensor connected to analogue input 1. This value should also correspond to the minimum voltage or current level of the sensor set in 'G4.2.4 INmin1'. **Note:** This value should be checked if the units are changed in 'G4.2.2 SENSOR 1'. It will be set to operate in open loop and close loop.	YES
G4.2.6 AI1 high level = 10.0 V	G4.2.4 to +10V G4.2.4 to +20mA	Determines the maximum voltage or current value for analogue input 1. Set according to the characteristics of the sensor that will be connected.	YES
G4.2.7 Sensor high level = 10.0 l/s	G4.2.5 to +3200 Engineering units	Sets the maximum units value of the sensor connected to analogue input 1. This value should also correspond to the maximum voltage or current level of the sensor set in 'G4.2.6 INmax1'. **Available if [G4.2.1 = YES].** **Note:** This value should be checked if the units are changed in 'G4.2.2 SENSOR 1'. For this, it is necessary to set this value in open loop and close loop configurations.	YES
G4.2.8 AI1 Ref speed min = 0.0 %	-250.0 to G4.2.9	Allows scaling of the speed reference to correspond with the minimum range of the analogue input 1 as set in 'G4.2.4 INmin1'. The value is a percentage of the motor rated speed.	YES
G4.2.9 AI1 Ref speed max = 100.0 %	G4.2.8 to 250.0%	Allows scaling of the speed reference to correspond with the maximum range of the analogue input 1 as set in 'G4.2.6 INmax1'. The value is a percentage of the motor rated speed.	YES
G4.2.10 Sensor min value = 0.0 l/s	-3200 to G4.2.12 Engineering units	Sets the minimum operating range, if the real operating range is different than the range of the sensor which will be used as sensor in open loop. It corresponds with the voltage or current level set in 'G4.2.4INmin1'. This parameter should be configured to operate with sensor in open loop. **Available if [G4.2.1 = YES].**	YES
G4.2.11 Open loop min speed = 0.0 %	-250% to +250%	Allows setting the minimum speed range corresponding to the minimum sensor range set in 'G4.2.10 FB1', when the sensor will be used in open loop. The value is a percentage of the motor rated speed. **Available if [G4.2.1 = YES].**	YES
G4.2.12 Sensor max value = 10.0 l/s	G4.2.10 to +3200 Engineering units	Sets the maximum operating range, if the real operating range is different than the range of the sensor which will be used as sensor in open loop. It corresponds with the voltage or current level set in 'G4.2.6INmin1'. This parameter should be configured to operate with sensor in open loop. **Available if [G4.2.1 = YES].**	YES
G4.2.13 Open loop max speed = 100.0 %	-250% to +250%	Allows setting the maximum speed range corresponding to the maximum sensor range set in 'G4.2.12 FA1', when the sensor will be used in open loop. The value is a percentage of the motor rated speed. **Available if [G4.2.1 = YES].**	YES

Screen	Range	Function	Set on RUN
G4.2.14 AI1 loss protection = No	N Y	Sets the drive stop mode when a loss of the analogue input 1 signal occurs. **OPTION** / **FUNCTION** N=NO: Function disabled. Y=YES: When the analogue input level decreases down to zero value, sensor will be considered damaged and the drive will stop generating a fault 'F42 AIN1 LOSS'.	YES
G4.2.15 AI1 zero band filter = Off	OFF = 0.0, 0.1 to 2.0%	Filtering of analogue input 1 signal. Setting this value, we can filter analogue input 1 to avoid possible electrical noise preventing the analogue reading a zero value.	YES
G4.2.16 AI1 stabilizer filter = Off	OFF = 0.0, 0.1 to 20.0%	Allows filtering the Analogue Input 1 signal. Setting the value of this time constant we can eliminate possible instabilities in the value of the same ones due to noise, wiring faults, etc. **Note:** When applying a Low Pass filter to any analogue signal, a delay time in the own signal is generated. This delay time is the value of the configured time constant approximately.	YES

Subgroup 4.3: Analogue Input 2 / Pulse

Screen	Range	Function	Set on RUN
G4.3.0 Enable Pulse Input Mode = No	No Yes	Allows the user to enable analogue input 2 as a pulse input. **OPTION** / **FUNCTION** No: The analogue input remains as AI2 Yes: If pulse input is enabled, the EA2 must be configured to work with a pulse sensor via jumper "Jumper" J21 connected in position 2-1. This jumper is integrated in the control card.  	NO
G4.3.1 Enable sensor = No	No Yes	Allows user to configure analogue input 2 for use with a sensor and activates the parameters which are necessary to set it up. See G4.3.2 up to G4.3.7. **Available if [G4.3.0 = NO]** **OPTION** / **FUNCTION** No: The analogue input will remain scaled in defaults units (%). Yes: The analogue input and any variables relating to the analogue input will be configured in the engineering units selected in G4.3.2.	NO
G4.3.2 Sensor unit = bar	% l/s m³/s l/m m³/m l/h m³/h m/s m/m m/h bar kPa psi m ºC ºF K Hz rpm	Allows selecting different units of measurement for the analogue input 2 according to the sensor that is used. If this parameter is modified, the minimum and maximum values of the sensor range must be adjusted to ensure correct configuration. Therefore, the following set values should be checked: 'G4.3.5 Smi2=+0.0bar' ➔ Minimum range of sensor. 'G4.3.7 Sma2=+10.0bar' ➔ Maximum range of sensor. **Available if [G4.3.1 = YES].**	NO

Screen	Range	Function	Set on RUN
G4.3.2 Sensor unit Pulse Input = l/s	% l/s m³/s l/m m³/m l/h m³/h m/s m/m m/h	Allows selecting the units of the input when it is configured as "pulse input". **Available if [G4.3.0 = YES]**	YES
G4.3.2b Pulses per unit = 100	1 to G4.3.2c	Allows adjusting the number of pulses per unit of measurement of the sensor (G4.3.2). For example, 100 pulses = 1 l / s. **Available if [G4.3.0 = YES].**	YES
G4.3.2c Max pulses = 1000	1 to 32000	Allows adjusting the maximum number of pulses of the sensor. **Available if [G4.3.0 = YES].**	YES
G4.3.3 AI2 Format = mA	V mA	Allows configuring the format of the analogue input 2 to connect a voltage or current signal based on the sensor or signal that is going to be used for entering the setpoint. **Available if [G4.3.0 = NO].**	YES
G4.3.4 AI2 low level = 4.0 mA	-10.0V to G4.3.6 +0.0mA to G4.3.6	Defines the minimum voltage or current value for analogue input 2 according to the characteristics of the sensor connected. **Available if [G4.3.0 = NO].**	NO
G4.3.5 Sensor low level = 0.0 Bar	-3200.0 to G4.3.7 Engineering units	Sets the minimum value of units of the sensor connected to analogue input 2, corresponding to the minimum voltage or current level of the sensor set in [G4.3.4 Enmin2]. **Note:** This value must be checked if the units are changed in [G4.3.2 SENSOR 2]. It will be adjusted for working in open and closed loop. **Available if [G4.3.1 = YES].**	YES
G4.3.6 AI2 high level = 10.0 mA	G4.3.4 to +10V G4.3.4 to +20mA	Defines the maximum voltage or current value for analogue input 2 according to the characteristics of the sensor to be connected. **Available if [G4.3.0 = NO].**	YES
G4.3.7 Sensor high level = 10.0 Bar	G4.3.5 to +3200 Engineering units	Sets the maximum value of units of the sensor connected to analogue input 2, corresponding to the maximum voltage or current level of the sensor set in [G4.3.6 Enmax2]. **Note:** This value must be checked if the units are changed in [G4.3.2 SENSOR 2]. This value must be adjusted in the open and closed loop configurations. **Available if [G4.3.1 = YES].**	YES
G4.3.8 AI2 Ref speed min = 0.0 %	-250.0 to G4.3.9	Allows setting the speed reference corresponding to the minimum range of analogue input 2, corresponding to the minimum voltage or current level set in [G4.3.4 Enmin2]. It is configured to enter the speed reference using analogue input. Set the parameter [G4.3.1 SENSOR 2 = N]. The value is a percentage of the nominal motor speed. **Available if [G4.3.0 = NO].**	YES
G4.3.9 AI2 Ref speed max = 100.0 %	G4.3.8 to 250.0%	Allows setting the speed reference corresponding to the maximum range of analogue input 2, corresponding to the maximum voltage or current set in [G4.3.6 Enmax2]. It is configured to enter the speed reference using analogue input. Set the parameter [G4.3.1 SENSOR 2 = N]. The value is a percentage of the nominal motor speed. **Available if [G4.3.0 = NO].**	YES
G4.3.10 Sensor min value = 0.0 Bar	-3200.0 to G4.3.12	To set the minimum operating range, if the real operating range is different than the range of the sensor which will be used as sensor in open loop. Corresponds to the voltage or current level set in G4.2.4. It must be configured to work with the sensor in open loop. **Available if [G4.3.1 = YES].**	YES
G4.3.11 Open loop min speed = 0.0 %	-250.0 to 250.0%	Allows setting the minimum speed range corresponding to the minimum range of the sensor set in G4.3.12, when the sensor is going to be used in open loop. The value is a percentage of the nominal motor speed. **Available if [G4.3.1 = YES].**	YES
G4.3.12 Sensor max value = 10.0 Bar	G4.3.10 to 3200.0 Engineering units	To set the minimum operating range, if the real operating range is different than the range of the sensor which will be used as sensor in open loop. Corresponds to the voltage or current level set in G4.3.6. It must be configured to work with the sensor in open loop. **Available if [G4.3.1 = YES].**	YES
G4.3.13 Open loop max speed = 100.0 %	-250.0 to 250.0%	Allows adjusting the maximum speed range corresponding to the maximum range of the sensor set in G4.3.14, when the sensor is going to be used in open loop. The value is a percentage of the nominal motor speed. **Available if [G4.3.1 = YES].**	YES
G4.3.14 AI2 loss protection = No	No Yes	Sets the drive stop mode when a loss of the analogue input 2 signal occurs. **OPTION** / **FUNCTION** N=NO — Function disabled. Y=YES — When the analogue input level decreases down to zero value, sensor will be considered damaged and the drive will stop generating a fault 'F43 AIN2 LOSS'. **Available if [G4.3.0 = NO].**	YES
G4.3.15 AI2 zero band filter = Off	OFF=0.0, 0.1 to 2.0%	Filtering of analogue input 2 signal. By setting this value, we can filter analogue input 2 to avoid possible electrical noise preventing the analogue reading a zero value. **Available if [G4.3.0 = NO].**	YES
G4.3.16 AI2 stabilizer filter = Off	OFF = 0.0, 0.1 to 20.0%	Allows filtering the Analogue Input 2 signal. By setting the value of this time constant we can eliminate possible instabilities in the value of the same ones due to noise, wiring faults, etc. **Available if [G4.3.0 = NO].** **Note:** When applying a Low Pass filter to any analogue signal, a delay time in the own signal is generated. This delay time is the value of the configured time constant approximately..	YES

Subgroup 4.4: Analogue Input 3 / PT100

Screen	Range	Function	Set on RUN
G4.4.0 PT100 Mode = No	No Yes	Configures the AI3 to work with a PT100 sensor. **When enabled, all other parameters within this group will become disabled.** **Note**: In case of activating the PT100 mode, besides configuring the analogue input 3 in mode PT100 (G4.4.0 = Yes), one of the analogue outputs must be configured in mode 10mA (G8.2.2 or G8.3.2 = 10mA). See hardware configuration in the Hardware and Installation Manual.	NO
G4.4.1 Enable sensor = No	No Yes	Allows the user to enable the use of analogue input 3 and enables the necessary screens to configure it. See [G4.4.2] to [G4.4.7]. **OPTION** / **FUNCTION** No: The sensor connected to this input can be used to introduce the speed reference and as open loop sensor. Yes: Analogue input enabled as feedback in closed loop control. **Available if [G4.4.0 = NO].**	NO
G4.4.2 Sensor unit = l/s	% l/s m³/s l/m m³/m l/h m³/h m/s m/m m/h Bar kPa Psi m ºC ºF K Hz rpm	Allows choosing different measure units for the analogue input 3 depending on the function of the sensor to be used. Changing this parameter implies that the minimum and maximum values of the sensor range will be affected by the corresponding conversion. Thus, it is necessary to verify the values adjusted in: [G4.4.5 Sensor low level =+0.0l/s] ➔ Sensor minimum level. [G4.4.7 Sensor high level =+10.0l/s] ➔ Sensor maximum level. **Available if [G4.4.1 =YES].**	NO
G4.4.3 AI3 Format = V	V mA	Allows configuring the format of the analogue input 3 to connect a voltage or current signal, depending on the sensor to be used to introduce the reference. **Available if [G4.4.0 = NO].**	NO
G4.4.4 AI3 low level = 0.0 V	-10.0V to G4.4.6 +0.0mA to G4.4.6	Defines the minimum value of voltage or current for analogue input 3 according to the characteristics of the sensor that is going to be connected. **Available if [G4.4.0 = NO].**	YES
G4.4.5 Sensor low level = 0.0 l/s	-3200 to G4.4.7 Engineering units	Adjusts the minimum unit value of the sensor connected to the analogue input 3, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.4.4]. **Available if [G4.4.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.4.2]. It must be adjusted for operation in open and closed loop.	YES
G4.4.6 AI3 high level = 10.0 V	G4.4.4 to +20.0V G4.4.4 to +20mA	Defines the maximum value of voltage or current for analogue input 3 according to the characteristics of the sensor that is going to be connected. **Available if [G4.4.0 = NO].**	YES
G4.4.7 Sensor high level = 10.0 l/s	G4.4.5 to +3200 Engineering units	Adjusts the maximum unit value of the sensor connected to the analogue input 3, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.4.6]. **Available if [G4.4.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.4.2]. It must be adjusted for operation in open and closed loop.	YES
G4.4.8 AI3 Ref speed min = 0.0 %	-250% to G4.4.9	Allows adjusting the speed reference for the minimum range of analogue input 3, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.4.4]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.4.1 Enable sensor = N'. The value is a percentage of motor nominal speed. **Available if [G4.4.0 = NO].**	YES
G4.4.9 AI3 Ref speed max = 100.0 %	G4.4.8 to +250%	Allows adjusting the speed reference for the maximum range of analogue input 3, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.4.6]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.4.1 Enable sensor = N'. The value is a percentage of motor nominal speed. **Available if [G4.4.0 = NO].**	YES
G4.4.10 Sensor min value = 0.0 l/s	-3200 to G4.4.12	Adjust the minimum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.4.4. It must be configured to work with the sensor in open loop. **Available if [G4.4.1 = SI].**	YES
G4.4.11 Open loop min speed = 0.0 %	-250% to +250%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.4.10, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.4.1 = SI].**	YES

EN

Screen	Range	Function	Set on RUN
G4.4.12 Sensor max value = 10.0 l/s	-3200 to +3200 Engineering units	Adjust the maximum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.4.6. It must be configured to work with the sensor in open loop. **Available if [G4.4.1 = SI].**	YES
G4.4.13 Open loop max speed = 100.0 %	-250% to +250%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.4.12, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.4.1 = SI].**	YES
G4.4.14 AI3 loss protection = No	No Yes	Adjusts stop mode of the drive in case the signal from analogue input 3 is lost. **OPTION** / **FUNCTION** No – Function is disabled. Yes – Whenever a sudden drop on the analogue input level is detected, terminating in zero, it indicates the sensor is damaged. **Available if [G4.4.0 = NO].**	YES
G4.4.15 AI3 zero band filter = Off	Off = 0.0, 0.1 to 2.0%	Analogue input 3 signal filtering. By adjusting this value, the analogue signal is filtered to eliminate possible electrical noise that prevents reading a zero value when it should. **Available if [G4.4.0 = NO].**	YES
G4.4.16 AI3 stabilizer filter = Off	Off = 0.0, 0.1 to 20.0s	Allows adjusting a filtering to the analogue input 3 signal. By adjusting the value of this time constant, it is possible to eliminate possible instabilities in the signal caused by noise, wiring faults, etc. **Available if [G4.4.0 = NO].** **Note:** The application of a low pass filter to any analogue signal produces a delay of approximately the value of the configured time constant.	YES

Subgroup 4.5: Analogue input 4

Note: This group will only be shown if an expansion board has been connected.

Screen	Range	Function	Set on RUN
G4.5.1 Enable sensor = No	No Yes	Allows user to configure analogue input 4 and activates the parameters which are necessary to set it up. See [G4.5.2] to [G4.5.7]. **OPTION** / **FUNCTION** No – The sensor connected to this input can be used to introduce the speed reference and as open loop sensor. Yes – Analogue input enabled as feedback in closed loop control.	NO
G4.5.2 Sensor unit = l/s	% l/s m3/s l/m m3/m l/h m3/h m/s m/m m/h bar kPa psi m ºC ºF K Hz rpm	Allows choosing different measure units for the analogue input 4 depending on the function of the sensor to be used. Changing this parameter implies that the minimum and maximum values of the sensor range will be affected by the corresponding conversion. Thus, it is necessary to verify the values adjusted in: [G4.5.5 Sensor low level =+0.0l/s] ➔ Sensor minimum level. [G4.5.7 Sensor high level =+10.0l/s] ➔ Sensor maximum level. **Available if [G4.5.1 = YES].**	NO
G4.5.3 AI4 Format = V	V mA	Allows configuring the format of the analogue input 4 to connect a voltage or current signal, depending on the sensor to be used to introduce the reference.	NO
G4.5.4 AI4 low level = 0.0 V	-10.0V to G4.5.6 +0.0mA to G4.5.6	Defines the minimum value of voltage or current for analogue input 4 according to the characteristics of the sensor that is going to be connected.	YES
G4.5.5 Sensor low level = 0.0 l/s	-3200.0 to G4.5.7 Engineering units	Adjusts the minimum unit value of the sensor connected to the analogue input 4, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.5.4]. **Available if [G4.5.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.5.2]. It must be adjusted for operation in open and closed loop.	YES
G4.5.6 AI4 high level = 10.0 V	G4.5.4 to +20.0V G4.5.4 to +20mA	Defines the maximum value of voltage or current for analogue input 4 according to the characteristics of the sensor that is going to be connected.	YES

Screen	Range	Function	Set on RUN
G4.5.7 Sensor high level = 10.0 l/s	G4.5.5 to 3200.0 Engineering units	Adjusts the maximum unit value of the sensor connected to the analogue input 4, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.5.6]. **Available if [G4.5.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.5.2]. It must be adjusted for operation in open and closed loop.	YES
G4.5.8 AI4 Ref speed min = 0.0 %	-250.0 to G4.5.9	Allows adjusting the speed reference for the minimum range of analogue input 4, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.5.4]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.5.1 Enable sensor = N'. The value is a percentage of motor nominal speed.	YES
G4.5.9 AI4 Ref speed max = 100.0 %	G4.5.8 to 250.0%	Allows adjusting the speed reference for the maximum range of analogue input 4, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.5.6]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.5.1 Enable sensor = N'. The value is a percentage of motor nominal speed.	YES
G4.5.10 Sensor min value = 0.0 l/s	-3200.0 to G4.5.12 Engineering units	Adjust the minimum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.5.4. It must be configured to work with the sensor in open loop. **Available if [G4.5.1 = SI].**	YES
G4.5.11 Open loop min speed = 0.0 %	-250.0 to 250.0%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.5.10, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.5.1 = SI].**	YES
G4.5.12 Sensor max value = 10.0 l/s	G4.5.10 to 3200.0 Engineering units	Adjust the maximum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.5.6. It must be configured to work with the sensor in open loop. **Available if [G4.5.1 = SI].**	YES
G4.5.13 Open loop max speed = 100.0 %	-250.0 to 250.0%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.5.12, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.5.1 = SI].**	YES
G4.5.14 AI4 loss protection = No	No Yes	Adjusts stop mode of the drive in case the signal from analogue input 4 is lost. **OPTION** / **FUNCTION** No: Function is disabled. Yes: Whenever a sudden drop on the analogue input level is detected, terminating in zero, it indicates the sensor is damaged and the drive will stop, triggering a fault F42.	YES
G4.5.15 AI4 zero band filter = Off	Off = 0.0; 0.1% to 2.0%	Analogue input 4 signal filtering. By adjusting this value, the analogue signal is filtered to eliminate possible electrical noise that prevents reading a zero value when it should.	YES
G4.5.16 AI4 stabilizer filter = Off	Off = 0.0; 0.1 to 20.0s	Allows adjusting a filtering to the analogue input 4 signal. By adjusting the value of this time constant, it is possible to eliminate possible instabilities in the signal caused by noise, wiring faults, etc. **Note:** The application of a low pass filter to any analogue signal produces a delay of approximately the value of the configured time constant.	YES

EN

Subgroup 4.6: Analogue input 5

Note: This group will only be shown if an expansion board has been connected.

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G4.6.1 Enable sensor = No</td><td>No
Yes</td><td>Allows user to configure analogue input 5 and activates the parameters which are necessary to set it up. See [G4.6.2] to [G4.6.7].
<table><tr><th>OPTION</th><th>FUNCTION</th></tr><tr><td>No</td><td>The sensor connected to this input can be used to introduce the speed reference and as open loop sensor.</td></tr><tr><td>Yes</td><td>Analogue input enabled as feedback in closed loop control.</td></tr></table></td><td>NO</td></tr>
<tr><td>G4.6.2 Sensor unit = l/s</td><td>%
l/s
m3/s
l/m
m3/m
l/h
m3/h
m/s
m/m
m/h
bar
kPa
psi
m
ºC
ºF
K
Hz
rpm</td><td>Allows choosing different measure units for the analogue input 5 depending on the function of the sensor to be used.

Changing this parameter implies that the minimum and maximum values of the sensor range will be affected by the corresponding conversion. Thus, it is necessary to verify the values adjusted in:
[G4.6.5 Sensor low level =+0.0l/s] ➔ Sensor minimum level.
[G4.6.7 Sensor high level =+10.0l/s] ➔ Sensor maximum level.

Available if [G4.6.1 =YES].</td><td>NO</td></tr>
<tr><td>G4.6.3 AI5 Format = V</td><td>V
mA</td><td>Allows configuring the format of the analogue input 5 to connect a voltage or current signal, depending on the sensor to be used to introduce the reference.</td><td>NO</td></tr>
<tr><td>G4.6.4 AI5 low level = 0.0 V</td><td>-10.0V to G4.6.6
+0.0mA to G4.6.6</td><td>Defines the minimum value of voltage or current for analogue input 5 according to the characteristics of the sensor that is going to be connected.</td><td>YES</td></tr>
<tr><td>G4.6.5 Sensor low level = 0.0 l/s</td><td>-3200.0 to G4.6.7
Engineering Units</td><td>Adjusts the minimum unit value of the sensor connected to the analogue input 5, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.6.4].
Available if [G4.6.1 = YES].
Note: This value must be revised if the units are changed in [G4.6.2]. It must be adjusted for operation in open and closed loop.</td><td>YES</td></tr>
<tr><td>G4.6.6 AI5 high level = 10.0 V</td><td>G4.6.4 to +10V
G4.6.4 to +20mA</td><td>Defines the maximum value of voltage or current for analogue input 5 according to the characteristics of the sensor that is going to be connected.</td><td>YES</td></tr>
<tr><td>G4.6.7 Sensor high level = 10.0 l/s</td><td>G4.6.5 to 3200.0
Engineering Units</td><td>Adjusts the maximum unit value of the sensor connected to the analogue input 5, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.6.6].
Available if [G4.6.1 = YES].
Note: This value must be revised if the units are changed in [G4.6.2]. It must be adjusted for operation in open and closed loop.</td><td>YES</td></tr>
<tr><td>G4.6.8 AI5 Ref speed min = 0.0 %</td><td>-250.0 to G4.6.9</td><td>Allows adjusting the speed reference for the minimum range of analogue input 5, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.6.4]. It is configured to introduce the speed reference through the analogue input. Adjust parameter ‘G4.6.1 Enable sensor = N’. The value is a percentage of motor nominal speed.</td><td>YES</td></tr>
<tr><td>G4.6.9 AI5 Ref speed max = 100.0 %</td><td>G4.6.8 to 250.0%</td><td>Allows adjusting the speed reference for the maximum range of analogue input 5, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.6.6]. It is configured to introduce the speed reference through the analogue input. Adjust parameter ‘G4.6.1 Enable sensor = N’. The value is a percentage of motor nominal speed.</td><td>YES</td></tr>
<tr><td>G4.6.10 Sensor min value = 0.0 l/s</td><td>-3200.0 to G4.6.12
Engineering Units</td><td>Adjust the minimum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.6.4. It must be configured to work with the sensor in open loop. Available if [G4.6.1 = SI].</td><td>YES</td></tr>
<tr><td>G4.6.11 Open loop min speed = 0.0 %</td><td>-250.0 to 250.0%</td><td>Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.6.10, when the sensor is going to be used in open loop.
The value is a percentage of motor nominal speed. Available if [G4.6.1 = SI].</td><td>YES</td></tr>
<tr><td>G4.6.12 Sensor max value = 10.0 l/s</td><td>G4.6.10 to 3200.0
Engineering Units</td><td>Adjust the maximum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.6.6. It must be configured to work with the sensor in open loop. Available if [G4.6.1 = SI].</td><td>YES</td></tr>
<tr><td>G4.6.13 Open loop max speed = 100.0 %</td><td>-250.0 to 250.0%</td><td>Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.6.12, when the sensor is going to be used in open loop.
The value is a percentage of motor nominal speed. Available if [G4.6.1 = SI].</td><td>YES</td></tr>
</table>

Screen	Range	Function	Set on RUN
G4.6.14 AI5 loss protection = No	No Yes	Adjusts stop mode of the drive in case the signal from analogue input 5 is lost. **OPTION** / **FUNCTION** No: Function is disabled. Yes: Whenever a sudden drop on the analogue input level is detected, terminating in zero, it indicates the sensor is damaged and the drive will stop, triggering a fault F42.	YES
G4.6.15 AI5 zero band filter = Off	Off = 0.0; 0.1% to 2.0%	Analogue input 5 signal filtering. By adjusting this value, the analogue signal is filtered to eliminate possible electrical noise that prevents reading a zero value when it should.	YES
G4.6.16 AI5 stabilizer filter = Off	Off = 0.0; 0.1 to 20.0s	Allows adjusting a filtering to the analogue input 5 signal. By adjusting the value of this time constant, it is possible to eliminate possible instabilities in the signal caused by noise, wiring faults, etc. **Note:** The application of a low pass filter to any analogue signal produces a delay of approximately the value of the configured time constant.	YES

Subgroup 4.7: Analogue input 6

Note: This group will only be shown if an expansion board has been connected.

EN

Screen	Range	Function	Set on RUN
G4.7.1 Enable sensor = No	No Yes	Allows user to configure analogue input 6 and activates the parameters which are necessary to set it up. See [G4.7.2] to [G4.7.7]. **OPTION** / **FUNCTION** No: The sensor connected to this input can be used to introduce the speed reference and as open loop sensor. Yes: Analogue input enabled as feedback in closed loop control.	NO
G4.7.2 Sensor unit = l/s	% l/s m3/s l/m m3/m l/h m3/h m/s m/m m/h bar kPa psi m ºC ºF K Hz rpm	Allows choosing different measure units for the analogue input 6 depending on the function of the sensor to be used. Changing this parameter implies that the minimum and maximum values of the sensor range will be affected by the corresponding conversion. Thus, it is necessary to verify the values adjusted in: [G4.7.5 Sensor low level =+0.0l/s] ➔ Sensor minimum level. [G4.7.7 Sensor high level =+10.0l/s] ➔ Sensor maximum level. **Available if [G4.7.1 = YES].**	NO
G4.7.3 AI6 Format = V	V mA	Allows configuring the format of the analogue input 6 to connect a voltage or current signal, depending on the sensor to be used to introduce the reference.	NO
G4.7.4 AI6 low level = 0.0 V	-10.0V to G4.7.6 +0.0mA to G4.7.6	Defines the minimum value of voltage or current for analogue input 6 according to the characteristics of the sensor that is going to be connected.	YES
G4.7.5 Sensor low level = 0.0 l/s	-3200.0 to G4.7.7 Engineering Units	Adjusts the minimum unit value of the sensor connected to the analogue input 6, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.7.4]. **Available if [G4.7.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.7.2]. It must be adjusted for operation in open and closed loop.	YES
G4.7.6 AI6 high level = 10.0 V	G4.7.4 to +10V G4.7.4 to +20mA	Defines the maximum value of voltage or current for analogue input 6 according to the characteristics of the sensor that is going to be connected.	YES
G4.7.7 Sensor high level = 10.0 l/s	G4.7.5 to 3200.0 Engineering Units	Adjusts the maximum unit value of the sensor connected to the analogue input 6, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.7.6]. **Available if [G4.7.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.7.2]. It must be adjusted for operation in open and closed loop.	YES
G4.7.8 AI6 Ref speed min = 0.0 %	-250.0 to G4.7.9	Allows adjusting the speed reference for the minimum range of analogue input 6, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.7.4]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.7.1 Enable sensor = N'. The value is a percentage of motor nominal speed.	YES

Screen	Range	Function	Set on RUN
G4.7.9 AI6 Ref speed max = 100.0 %	G4.7.8 to 250.0%	Allows adjusting the speed reference for the maximum range of analogue input 6, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.7.6]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.7.1 Enable sensor = N'. The value is a percentage of motor nominal speed.	YES
G4.7.10 Sensor min value = 0.0 l/s	-3200.0 to G4.7.12 Engineering Units	Adjust the minimum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.7.4. It must be configured to work with the sensor in open loop. **Available if [G4.7.1 = SI].**	YES
G4.7.11 Open loop min speed = 0.0 %	-250.0 to 250.0%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.7.10, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.7.1 = SI].**	YES
G4.7.12 Sensor max value = 10.0 l/s	G4.7.10 to 3200.0 Engineering Units	Adjust the maximum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.7.6. It must be configured to work with the sensor in open loop. **Available if [G4.7.1 = SI].**	YES
G4.7.13 Open loop max speed = 100.0 %	-250.0 to 250.0%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.7.12, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.7.1 = SI].**	YES
G4.7.14 AI6 loss protection = No	No Yes	Adjusts stop mode of the drive in case the signal from analogue input 6 is lost. **OPTION** / **FUNCTION** No – Function is disabled. Yes – Whenever a sudden drop on the analogue input level is detected, terminating in zero, it indicates the sensor is damaged and the drive will stop, triggering a fault F42.	YES
G4.7.15 AI6 zero band filter = Off	Off = 0.0; 0.1% to 2.0%	Analogue input 6 signal filtering. By adjusting this value, the analogue signal is filtered to eliminate possible electrical noise that prevents reading a zero value when it should.	YES
G4.7.16 AI6 stabilizer filter = Off	Off = 0.0; 0.1 to 20.0s	Allows adjusting a filtering to the analogue input 6 signal. By adjusting the value of this time constant, it is possible to eliminate possible instabilities in the signal caused by noise, wiring faults, etc. **Note:** The application of a low pass filter to any analogue signal produces a delay of approximately the value of the configured time constant.	YES

Subgroup 4.8: Analogue input 7

Note: This group will only be shown if an expansion board has been connected.

Screen	Range	Function	Set on RUN
G4.8.1 Enable sensor = No	No Yes	Allows user to configure analogue input 7 and activates the parameters which are necessary to set it up. See [G4.8.2] to [G4.8.7]. **OPTION** / **FUNCTION** No – The sensor connected to this input can be used to introduce the speed reference and as open loop sensor. Yes – Analogue input enabled as feedback in closed loop control.	NO
G4.8.2 Sensor unit = l/s	% l/s m3/s l/m m3/m l/h m3/h m/s m/m m/h bar kPa psi m ºC ºF K Hz rpm	Allows choosing different measure units for the analogue input 7 depending on the function of the sensor to be used. Changing this parameter implies that the minimum and maximum values of the sensor range will be affected by the corresponding conversion. Thus, it is necessary to verify the values adjusted in: [G4.8.5 Sensor low level =+0.0l/s] ➔ Sensor minimum level. [G4.8.7 Sensor high level =+10.0l/s] ➔ Sensor maximum level. **Available if [G4.8.1 = YES].**	NO
G4.8.3 AI7 Format = V	V mA	Allows configuring the format of the analogue input 7 to connect a voltage or current signal, depending on the sensor to be used to introduce the reference.	NO

Screen	Range	Function	Set on RUN
G4.8.4 AI7 low level = 0.0 V	-10.0V to G4.8.6 +0.0mA to G4.8.6	Defines the minimum value of voltage or current for analogue input 7 according to the characteristics of the sensor that is going to be connected.	YES
G4.8.5 Sensor low level = 0.0 l/s	-3200.0 to G4.8.7 Engineering Units	Adjusts the minimum unit value of the sensor connected to the analogue input 7, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.8.4]. **Available if [G4.8.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.8.2]. It must be adjusted for operation in open and closed loop.	YES
G4.8.6 AI7 high level = 10.0 V	G4.8.4 to +10V G4.8.4 to +20mA	Defines the maximum value of voltage or current for analogue input 7 according to the characteristics of the sensor that is going to be connected.	YES
G4.8.7 Sensor high level = 10.0 l/s	G4.8.5 to 3200.0 Engineering Units	Adjusts the maximum unit value of the sensor connected to the analogue input 7, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.8.6]. **Available if [G4.8.1 = YES].** **Note**: This value must be revised if the units are changed in [G4.8.2]. It must be adjusted for operation in open and closed loop.	YES
G4.8.8 AI7 Ref speed min = 0.0 %	-250.0 to G4.8.9	Allows adjusting the speed reference for the minimum range of analogue input 7, which corresponds with the minimum level of voltage or current of the sensor configured in [G4.8.4]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.8.1 Enable sensor = N'. The value is a percentage of motor nominal speed.	YES
G4.8.9 AI7 Ref speed max = 100.0 %	G4.8.8 to 250.0%	Allows adjusting the speed reference for the maximum range of analogue input 7, which corresponds with the maximum level of voltage or current of the sensor configured in [G4.8.6]. It is configured to introduce the speed reference through the analogue input. Adjust parameter 'G4.8.1 Enable sensor = N'. The value is a percentage of motor nominal speed.	YES
G4.8.10 Sensor min value = 0.0 l/s	-3200.0 to G4.8.12 Engineering Units	Adjust the minimum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.8.4. It must be configured to work with the sensor in open loop. **Available if [G4.8.1 = SI].**	YES
G4.8.11 Open loop min speed = 0.0 %	-250.0 to 250.0%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.8.10, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.8.1 = SI].**	YES
G4.8.12 Sensor max value = 10.0 l/s	G4.8.10 to 3200.0 Engineering Units	Adjust the maximum working range, if the real working range is different than the one covered by the sensor that is going to be used as sensor in open loop. Corresponds with the level of voltage or current set in G4.8.6. It must be configured to work with the sensor in open loop. **Available if [G4.8.1 = SI].**	YES
G4.8.13 Open loop max speed = 100.0 %	-250.0 to 250.0%	Allows adjusting the minimum speed range which corresponds to the minimum sensor range set in G4.8.12, when the sensor is going to be used in open loop. The value is a percentage of motor nominal speed. **Available if [G4.8.1 = SI].**	YES
G4.8.14 AI7 loss protection = No	NO YES	Adjusts stop mode of the drive in case the signal from analogue input 7 is lost. **OPTION** / **FUNCTION** No: Function is disabled. Yes: Whenever a sudden drop on the analogue input level is detected, terminating in zero, it indicates the sensor is damaged and the drive will stop, triggering a fault F42.	YES
G4.8.15 AI7 zero band filter = Off	Off = 0.0; 0.1% to 2.0%	Analogue input 7 signal filtering. By adjusting this value, the analogue signal is filtered to eliminate possible electrical noise that prevents reading a zero value when it should.	YES
G4.8.16 AI7 stabilizer filter = Off	Off = 0.0; 0.1 to 20.0s	Allows adjusting a filtering to the analogue input 7 signal. By adjusting the value of this time constant, it is possible to eliminate possible instabilities in the signal caused by noise, wiring faults, etc. **Note:** The application of a low pass filter to any analogue signal produces a delay of approximately the value of the configured time constant.	YES

EN

Group 5: Acceleration / deceleration rates

Subgroup 5.1: Acceleration

Screen	Range	Function	Set on RUN
G5.1.1 Acceleration rate 1 = 1.50 %/s	0.01 to 650.00% / s	Allows setting acceleration ramp 1, in acceleration units (increase in percentage of speed per second). For example, a 10%/s ramp means that the drive will increase its speed by 10% of motor rated speed per second. This ramp must be set according to the requirements of each process.	YES
G5.1.2 Acceleration rate 2 = 2.00 %/s	0.01 to 650.00% / s	Allows the user to set the alternative acceleration ramp. Adjustment is made in acceleration units (increase in percentage of speed per second), same as for the main ramp. The drive will apply acceleration ramp 1 until motor exceeds [G5.1.3] and, from here on, it will apply the alternative ramp. If [G5.1.3 = OFF], no ramp change will occur.	YES
G5.1.3 Accel break speed = Off	Off = 0 0 to 250%	This parameter offers the possibility of using the alternative acceleration ramp. Here, user can set the speed value above which the drive will start applying the alternative acceleration ramp. **Note:** Alternative acceleration and deceleration can be selected through the digital inputs or by using the comparator output functions (for example, if the magnitude of the comparator is the drive rated current, when the drive output current exceeds a defined level, calculated as % of In, a ramp change occurs).	YES
G5.1.4 Ramp after V.Deep = 1.50 %/s	0.05 to 650.00 %/s	Acceleration ramp used to reach speed reference after the occurrence of a voltage drop or cut that has caused it to decrease.	YES

Subgroup 5.2: Deceleration

Screen	Range	Function	Set on RUN
G5.2.1 Deceleration rate 1 = 1.50 %/s	0.01 to 650.00% / s	Allows setting deceleration ramp 1, in deceleration units (decrease in percentage of speed per second). For example, a 10%/s ramp means that the drive will decrease its speed by 10% of motor rated speed per second. This ramp must be set according to the requirements of each process.	YES
G5.2.2 Deceleration rate 2 = 2.00 %/s	0.01 to 650.00% / s	Allows the user to set the alternative deceleration ramp. Adjustment is made in deceleration units (decrease in percentage of speed per second), same as for the main ramp. The drive will apply deceleration ramp 2 until motor exceeds [G5.2.3] and, from here on, it will apply the alternative ramp. If [G5.2.3 = OFF], no ramp change will occur.	YES
G5.2.3 Decel break speed = Off	Off = 0 0 to 250%	This parameter offers the possibility of using the alternative deceleration ramp. Here, user can set the speed value above which the drive will start applying the alternative deceleration ramp. **Note:** Alternative acceleration and deceleration can be selected through the digital inputs or by using the comparator output functions independently of the drive speed.	YES

Subgroup 5.3: Motorized potentiometer

Note: This group will be shown if the speed reference has been set to Motorized Potentiometer in Group 3: References.

Screen	Range	Function	Set on RUN
G5.3.1 Mot pot accel rate 1 = 1.00 %/s	0.01 to 650% / s	Allows adjusting ramp 1 reference increase when using the motorized potentiometer function.	YES
G5.3.2 Mot pot decel rate 1 = 3.00 %/s	0.01 to 650% / s	Allows adjusting ramp 1 reference decrease when using the motorized potentiometer function.	YES
G5.3.3 Mot pot accel rate 2 = 1.00 %/s	0.01 to 650% / s	Allows setting the ramp 2 reference increase for the motorized potentiometer function. The drive will apply the ramp 1 rate until the value set in [G5.3.4] is exceeded. From here on it will apply the alternative ramp value. If [G5.3.4 = OFF], no ramp change will occur.	YES
G5.3.4 Mot pot decel rate 2 = 3.00 %/s	0.01 to 650% / s	Allows setting the ramp 2 reference decrease for the motorized potentiometer function. The drive will apply the ramp 1 rate until below the value set in [G5.3.4]. From here on it will apply the alternative ramp value. If [G5.3.4 = OFF] no ramp change will occur.	YES
G5.3.5 Mot pot rate brk speed = 0 %	0 to 250%	This parameter sets the break frequency for the alternative acceleration and deceleration reference ramp when using motorized potentiometer. This parameter is the speed below which the drive will start applying the alternative ramp value.	YES

Others

Screen	Range	Function	Set on RUN
G5.4 Speed filter = Off	Off = 0 0.1 to 80.0%	Percentage of the acceleration ramp in which the S filter is applied. It softens acceleration and deceleration. Provides a filter of the S curve for speed reference changes, including Start / Stop commands, by softening acceleration and deceleration. Particularly useful in cranes and elevators.	YES

Group 6: PID Control

Screen	Range	Function	Set on RUN
G6.1 Setpoint source = Multireferences	0 to 13	Allows user to select the reference source for the setpoint of the PID regulator. OPT. / DESCRIPTION / FUNCTION 0 / None / Source disabled. 1 / Analog Input 1 / PID setpoint introduced by Analogue Input 1. 2 / Analog Input 2 / PID setpoint introduced by Analogue Input 2. 3 / Analog Input 1+2 / Reference will be the sum of signals introduced by Analogue Inputs 1 and 2. 4 / Multireferences / PID setpoint introduced by Digital Inputs configured as Multi-references. 5 / Local / PID setpoint introduced by keypad. Value can be adjusted in screen [G3.3]. 6 / Local PID / PID setpoint introduced by keypad. Value is set in [G6.2]. Allows user having two speed references because [G3.3] is not modified. 7 / Analog Input 3 / PID setpoint introduced by Analogue Input 3. 8 / Communications / PID setpoint introduced by communications. 9 / Analog Input 4 / PID setpoint introduced trough Analogue Input 4. 10 / Analog Input 5 / PID setpoint introduced trough Analogue Input 5. 11 / Analog Input 6 / PID setpoint introduced trough Analogue Input 6. 12 / Analog Input 7 / PID setpoint introduced trough Analogue Input 7. 13 / Ethernet IP / PID setpoint introduced trough Ethernet IP communications **Notes:** • Options 9 to 12 will only be visible if an I/O expansion board has been connected. • Option 13 will only be available if an Ethernet IP board has been connected.	NO
G6.2 Local process setpoint = 100.0 %	+0.0% to +300%	When the PDI source is set as "Local PID"], the setpoint used by the PID will be [G6.2]. The value of parameter [G3.3] is not used and will be available for use as speed reference.	YES
G6.3 Feedback source = Analog Input 2	0 to 15	Selects the reference source for the feedback signal to close the control loop. OPT. / DESCRIPTION / FUNCTION 0 / None / The PID function is not active. 1 / Analog Input 1 / Feedback signal through the Analogue Input 1. 2 / Analog Input 2 / Feedback signal through the Analogue Input 2. 3 / Analog Input 1+2 / Feedback will be the addition of the signals introduced through the Analogue Inputs 1 and 2. 4 / Analog Input 3 / Feedback signal through the Analogue Input 3. 5 / Communications / Feedback signal through communications. 6 / Motor torque / Motor torque. 7 / Absolute torque / Absolute motor torque. 8 / Motor current / Motor output current. 9 / Motor power / Motor output power. 10 / Bus voltage / Bus voltage. 11 / Motor cos phi / Phi Cosine. 12 / Analog Input 4 / Feedback signal through the Analogue Input 4. 13 / Analog Input 5 / Feedback signal through the Analogue Input 5. 14 / Analog Input 6 / Feedback signal through the Analogue Input 6. 15 / Analog Input 7 / Feedback signal through the Analogue Input 7. **Note:** Options 12 to 15 will only be visible if an I/O expansion board has been connected.	NO
G6.4 Process Kc = 8.0	0.1 to 20	Allows setting the proportional gain value of the PID regulator. If you need a higher control response, increase this value. **Note:** If this value is increased too much, a higher instability in the system can be introduced.	YES

EN

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G6.5 Process Ti = 0.1 s</td><td>0.1 to 1000s,
Infinite</td><td>Allows setting the integration time of the PID regulator. If you need a higher accuracy you should increase this value.
Note: If this value is increased too much, the system can become slower.</td><td>YES</td></tr>
<tr><td>G6.6 Process Td = 0.0 s</td><td>0.0 to 250.0 s</td><td>Allows setting the derivate time of the PID regulator. If you need a higher response, you can increase this value.
Note: If this value is increased too much, accuracy can decrease.</td><td>YES</td></tr>
<tr><td>G6.7 Invert PID = No</td><td>N
S</td><td>Allows inverting the drive PID output.
<table><tr><th>OPTION</th><th>FUNCTION</th></tr><tr><td>No</td><td>PID regulator responds in normal mode, that means, when the feedback value is above the reference signal value, speed will be decreased. If the feedback value is below the reference signal value, speed will be increased.</td></tr><tr><td>Yes</td><td>PID regulator responds in inverse mode. Thus, when the feedback value is above the reference signal value, speed will be increased. If the feedback value is below the reference signal value, speed will be decreased.</td></tr></table></td><td>NO</td></tr>
<tr><td>G6.8 Feedback low pass filter = Off</td><td>Off
0.1 to 20.0 s</td><td>Configures the feedback low pass filter, in seconds. If it is set to 0, it will be deactivated.</td><td>YES</td></tr>
<tr><td>G6.9 Process error = 0.0 %</td><td>-300% to 300%</td><td>Shows the difference between the reference [G6.1] and the feedback signal of [G6.3].</td><td>YES</td></tr>
</table>

Note: PID functions will be set here if this function is enabled in parameters 'G3.1 Speed ref 1 source=Local' or 'G3.2 Speed ref 2 source =Local.

Group 7: Start / Stop Control

Subgroup 7.1: Start

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G7.1.1 Main start mode = Ramp</td><td rowspan="2">Ramp
Spin
Spin2</td><td rowspan="2">Selects the start mode of the drive. This value should be configured appropriately for each application.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Ramp</td><td>Drive will start applying a frequency ramp to the motor.</td></tr><tr><td>Spin</td><td>In this mode, the motor shaft speed is automatically searched for and the frequency output of the drive is set to match the actual motor speed. This allows starting loads that are still rotating when the drive receives a start command.
Note: This option is valid when the motor is running in positive direction.</td></tr><tr><td>Spin2</td><td>Operates like option ‘SPIN’. The difference lies in the possibility of starting loads that are still rotating independently of the motor rotation direction.</td></tr></table>Note: Start mode 2 (alternative) is selected through a digital input configured with the option [22 ➔ RUN MODE 2].</td><td>YES</td></tr>
<tr><td>G7.1.2 Alternative start mode = Ramp</td><td>YES</td></tr>
<tr><td>G7.1.3 Start delay = Off</td><td>Off = 0
1 to 6500s</td><td>Allows setting a delay time from the moment the drive receives the start command to the beginning of providing an output frequency to the motor.
Note: After receiving the start command, the drive will wait until the delay time is elapsed. During this time, the drive status will change to ‘DLY’.</td><td>YES</td></tr>
<tr><td>G7.1.4 Fine restart delay = Off</td><td>Off = 0.000;
0.001 to 10.000 s</td><td>Allows setting a delay time between the moment the drive has stopped and the next start. The next time the drive has to start it will consider no additional delay time unless parameter [G7.1.3] has been set to a value different than OFF.</td><td>YES</td></tr>
<tr><td>G7.1.5 Alt restart delay = Off</td><td>Off = 0,
0.1 to 6500.0 s</td><td>Delay time for start command after a stop. If the start command is given after the time set in this parameter has elapsed, the drive will start immediately.</td><td>YES</td></tr>
<tr><td>G7.1.6 Run on supply loss = Yes</td><td>No
Yes</td><td>Allows setting the drive to start automatically when a main power supply loss occurs, and it is recovered again (power supply loss or instant power supply loss).
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>The drive will not start after power supply recovery occurs even if the start command is active. User should deactivate this signal and activate it again.</td></tr><tr><td>Yes</td><td>The drive will start automatically when power supply is recovered after power supply loss occurs, as long as the start signal is still active.</td></tr></table>Note: If start / stop control is done by keypad, the drive will not start automatically after power supply loss occurs and it is recovered again.</td><td>YES</td></tr>
</table>

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G7.1.7 Start after V.Deep = Spin</td><td>Ramp
Spin</td><td>Select the start mode after a voltage drop. This value must be set appropriately for each application.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Ramp</td><td>Drive will stop applying a frequency ramp.</td></tr><tr><td>Spin</td><td>Current motor speed will be searched for automatically and, from that point, motor will be accelerated until reaching the reference speed.</td></tr></table></td><td>YES</td></tr>
<tr><td>G7.1.8 Run after reset = Yes</td><td>No
Si</td><td>Allows starting the drive after resetting the fault produced in the equipment, as long as the start command is activated.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>After resetting the fault, the drive will not start even if the start command is activated. To start, user should deactivate the start command and activate it again. This operation mode guarantees that, even if the fault is reset, start will be controlled by an operator. This option is commonly used in remote controls to increase the safety at the starting.</td></tr><tr><td>Yes</td><td>The drive will start after resetting the fault, as long as the start command is activated.</td></tr></table></td><td>YES</td></tr>
<tr><td>G7.1.9 Delay after reset = 0.001 s</td><td>0.001 to 9.999 s</td><td>Operates with G7.1.8. Estimates the minimum time during which the start order must be disabled before starting after the reset. This is a very useful parameter for communications, since the start command is received in the time that takes the frame to arrive.</td><td>YES</td></tr>
<tr><td>G7.1.10 Magnetization time = Off</td><td>Off = 0,
0.001 to 9.999</td><td>Sets the period during which the motor is being magnetized before starting.</td><td>YES</td></tr>
</table>

EN

Subgroup 7.2: Stop

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G7.2.1 Main stop mode = Ramp</td><td>Ramp
Spin</td><td>Selects the main stop mode of the drive. This value should be configured appropriately for each application.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Ramp</td><td>The drive will stop applying a frequency ramp to stop the motor</td></tr><tr><td>Spin</td><td>The drive will cut motor power supply and the motor will stop by inertia.</td></tr></table></td><td>YES</td></tr>
<tr><td>G7.2.2 Alternative stop mode = Spin</td><td>Ramp
Spin</td><td>Selects drive alternative stop mode. This value should be configured appropriately for each application. Options are the same as for the main stop mode.
Note: Stop mode 1 or 2 can be selected by digital inputs, by comparator output functions, or by setting a switch speed for stop mode in [G7.2.3].</td><td>YES</td></tr>
<tr><td>G7.2.3 Stop mode switch speed = Off</td><td>Off = 0
1 to 250%</td><td>When this parameter is set to a value other than zero, if the drive is set to stop mode 1, when the stop command is received it will stop according to the mode set in [G7.2.1] from steady status to the speed value set in this parameter. From that moment, the drive will apply stop mode 2 to complete the stop.
Note: Stop mode 1 or 2 can be selected by digital inputs, by comparator output functions, or by setting a switch speed for stop mode in [G7.2.3].</td><td>YES</td></tr>
<tr><td>G7.2.4 Stop delay = Off</td><td>Off = 0
1 to 6500s</td><td>Allows setting a delay time applied from the moment the drive receives the stop command until the drive stops providing an output frequency to the motor.</td><td>YES</td></tr>
<tr><td>G7.2.5 Stop at min speed = No</td><td>No
Si</td><td>Allows user to stop the motor when the speed is below lower speed limit.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>In this case, the motor will continue to operate at minimum speed defined as minimum speed limit (set in G10.1 or G10.1.3), even if the speed reference is below these settings. For example, if [1 Ve MIN1=+30.00%], and the speed reference is +20.00%, %, the equipment will operate at +30.00% and never below this value.</td></tr><tr><td>Yes</td><td>In this case, the drive will respond to the start command as long as the speed reference is above the value set as minimum speed limit. While the speed reference is below this value, equipment will be in 'READY' status. Once the reference overcomes the minimum speed level, the drive will start until reaching the introduced reference.
If the drive is decelerating and the reference is below the minimum speed value, then the equipment will stop by spin.</td></tr></table>Note: If you want to stop the motor when the reference is below a fixed speed setpoint, you should set this parameter to YES. Additionally, you should set the correct values in [G10.1] or [G10.1.3].</td><td>YES</td></tr>
</table>

Screen	Range	Function	Set on RUN
G7.2.6 Power off delay = Off	Off = 0, 0.001 to 9.999	Sets the period during which the drive maintains the magnetic flux in the motor after reaching zero speed when stopping.	YES

Subgroup 7.3: Spin start

Screen	Range	Function	Set on RUN
G7.3.1 Tune = 10 %	0 to 100%	Allows setting the accuracy of the speed search function when the drive starts in SPIN mode. Usually, the optimum value is between 2 and 5%. As the value is lower, more accuracy is required.	YES
G7.3.2 Minimum speed = 0.0 %	0.0 to 25.0 %	Allows adjusting the minimum speed that the drive should maintain during the speed search in spin start.	YES
G7.3.3 Magnetization tim = 1.0 s	1.0 to 25.0 s	Allows defining how long to wait, in seconds, to stablish the flow of the motor once the speed search for spin start has finished.	YES

Group 8: Outputs

Subgroup 8.1: Digital outputs

Note: Parameters G8.1.13 to G8.1.52 will only be available if the corresponding expansion boards have been connected.

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G8.1.0.1 Group 1</td><td rowspan="3">0 to 255</td><td rowspan="3">User can configure three faults per group (this is, nine faults in total). If a fault occurs and matches any of the faults configured in these groups, the output relay will be enabled.

To enable the relay, the corresponding output source (G8.1.x) must have been enabled as “User fault group 1” (52), “User fault group 2” (53) or “User fault group 3” (54).

Each fault can be coded from 1 y 99. Refer to section “FAULT MESSAGES. DESCRIPTIONS AND ACTIONS” to consult fault codes and their description.</td><td>YES</td></tr>
<tr><td>G8.1.0.2 Group 2</td><td>YES</td></tr>
<tr><td>G8.1.0.3 Group 3</td><td>YES</td></tr>
<tr><td>G8.1.1 Relay 1 source select = Run</td><td>00 to 58</td><td>Configures the operation of each output relay according to the options from the following table:
<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>00</td><td>Always OFF</td><td>Output is not active.</td></tr>
<tr><td>01</td><td>Always ON</td><td>When the drive is powered, the output relay is activated.</td></tr>
<tr><td>02</td><td>No faults</td><td>Relay will remain active if there are no faults in the drive. If a fault occurs, the relay will be deactivated.</td></tr>
<tr><td>03</td><td>General fault</td><td>Drive fault or low input voltage will activate the relay.</td></tr>
<tr><td>04</td><td>Start</td><td>Relay is active once the drive has received the start command.</td></tr>
<tr><td>05</td><td>Run</td><td>Drive is running, and relay will be activated.</td></tr>
<tr><td>06</td><td>Ready</td><td>Drive is ready to start (there are no faults or warnings).</td></tr>
<tr><td>07</td><td>Zero speed</td><td>Drive is running at zero speed.</td></tr>
<tr><td>08</td><td>Set speed</td><td>Speed has reached the value set as reference.</td></tr>
<tr><td>09</td><td>Speed direction</td><td>The relay is activated when the speed direction is negative.</td></tr>
<tr><td>11</td><td>Speed ref direction</td><td>The relay is activated when the speed reference direction is negative.</td></tr>
<tr><td>13</td><td>Speed limit</td><td>Speed limit has been reached.</td></tr>
<tr><td>14</td><td>Current limit</td><td>Motor current limit has been reached.</td></tr>
<tr><td>15</td><td>Voltage limit</td><td>DC Bus voltage limit has been reached.</td></tr>
<tr><td>16</td><td>Torque limit</td><td>Torque limit has been reached.</td></tr>
<tr><td>17</td><td>Comparator 1</td><td>When the comparator 1 output is active, relay will be activated.</td></tr>
<tr><td>18</td><td>Comparator 2</td><td>When the comparator 2 is output active, relay will be activated.</td></tr>
<tr><td>19</td><td>Comparator 3</td><td>When the comparator 3 output is active, relay will be activated.</td></tr>
<tr><td>20</td><td>Acc / Dec 2</td><td>Relay is activated if the alternative ramps are used.</td></tr>
<tr><td>21</td><td>Reference 2</td><td>Relay is activated if reference 2 has been selected.</td></tr>
<tr><td>22</td><td>Stop 2</td><td>Relay is activated if stop mode 2 is used.</td></tr>
</table>
Note: Continues in the next page.</td><td>NO</td></tr>
</table>

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G8.1.1 Relay 1 source select = Run</td><td>00 to 58</td><td>Note: Comes from the previous page.

<table>
<tr><th>OPT</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>23</td><td>Speed limit 2</td><td>Relay is activated if the alternative speed limits have been selected.</td></tr>
<tr><td>24</td><td>DC brake</td><td>Relay is activated if DC brake is active.</td></tr>
<tr><td>28</td><td>PowerPLC</td><td>Digital output is controlled by a PowerPLC program. This option will be shown if [G1.5] is different than Standard.</td></tr>
<tr><td>29</td><td>Communications</td><td>Relay is controlled from communications.</td></tr>
<tr><td>32</td><td>Crane brake</td><td>The relay will be activated as in option “05 RUN”, considering the ON delay time set in [G8.1.2], [G8.1.6] or [G8.1.10] (depending on the which relay is used: 1, 2 or 3), and will be deactivated when motor speed is below the speed set in G8.1.53.</td></tr>
<tr><td>34</td><td>Warnings</td><td>The relay is energized when there is any Warning.</td></tr>
<tr><td>35</td><td>Copy DI 1</td><td rowspan="14">Copies the corresponding digital input and closes the relay when the digital input is active.
Options 44 – 51, 55 and 56 will only be available if an I/O expansion board has been connected.</td></tr>
<tr><td>36</td><td>Copy DI 2</td></tr>
<tr><td>37</td><td>Copy DI 3</td></tr>
<tr><td>38</td><td>Copy DI 4</td></tr>
<tr><td>39</td><td>Copy DI 5</td></tr>
<tr><td>40</td><td>Copy DI 6</td></tr>
<tr><td>44</td><td>Copy DI 7</td></tr>
<tr><td>45</td><td>Copy DI 8</td></tr>
<tr><td>46</td><td>Copy DI 9</td></tr>
<tr><td>47</td><td>Copy DI 10</td></tr>
<tr><td>48</td><td>Copy DI 11</td></tr>
<tr><td>49</td><td>Copy DI 12</td></tr>
<tr><td>50</td><td>Copy DI 13</td></tr>
<tr><td>51</td><td>Copy DI 14</td></tr>
<tr><td>52</td><td>User faults G1</td><td rowspan="3">Allow selecting a group to configure user faults.</td></tr>
<tr><td>53</td><td>User faults G2</td></tr>
<tr><td>54</td><td>User faults G3</td></tr>
<tr><td>56</td><td>Start/Stop delay</td><td>The relay will be enabled once the waiting time set by the user before starting or stopping has elapsed (G7.1.3, G7.1.4, G7.1.5, G7.1.10, G7.1.9, G7.2.4, G7.2.6).</td></tr>
<tr><td>57</td><td>Copy DI15</td><td rowspan="2">Copies the corresponding digital input and closes the relay when the digital input is active.</td></tr>
<tr><td>58</td><td>Copy DI16</td></tr>
</table></td><td></td></tr>
<tr><td>G8.1.2 Relay 1 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 1.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.3 Relay 1 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 1.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.4 Relay 1 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 1 functionality.
Relay 1 has one normally open contact (connection 1/2 of J5 connector) and one normally closed contact (connection 2/3, J5).

<table>
<tr><th>OPT.</th><th>FUNCTION</th></tr>
<tr><td>No</td><td>Relay logic remains unchanged.</td></tr>
<tr><td>Yes</td><td>Inverts relay logic.</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G8.1.5 Relay 2 source select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.6 Relay 2 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 2.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.7 Relay 2 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 2.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.8 Relay 2 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 2 functionality.

Relay 2 has one normally open contact (connection 1/2 of J6 connector) and one normally closed contact (connection 2/3, J6).

<table>
<tr><th>OPT.</th><th>FUNCTION</th></tr>
<tr><td>No</td><td>Relay logic remains unchanged.</td></tr>
<tr><td>Yes</td><td>Inverts relay logic.</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G8.1.9 Relay 3 source select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
</table>

EN

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G8.1.10 Relay 3 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 3.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.11 Relay 3 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 3.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.12 Relay 3 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 3 functionality.
Relay 3 has one normally open contact (connection 1/2 of J7 connector) and one normally closed contact (connection 2/3, J7).
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.13 Relay 4 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.14 Relay 4 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 4.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.15 Relay 4 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 4.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.16 Relay 4 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 4 functionality.
Relay 4 is connected to J11 connector and its contact is, by default, normally open.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.17 Relay 5 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.18 Relay 5 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 5.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.19 Relay 5 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 5.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.20 Relay 5 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 5 functionality.
Relay 5 is connected to J12 connector and its contact is, by default, normally open.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.21 Relay 6 source select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.22 Relay 6 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 6.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.23 Relay 6 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 6.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.24 Relay 6 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 6 functionality.
Relay 6 is connected to J13 connector and its contact is, by default, normally open.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.25 Relay 7 source select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.26 Relay 7 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 7.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.27 Relay 7 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 7.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.28 Relay 7 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 7 functionality.
Relay 7 is connected to J13 connector and its contact is, by default, normally open.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.29 Relay 8 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
</table>

Screen	Range	Function	Set on RUN
G8.1.30 Relay 8 ON delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before activating relay 8. If during this ON delay time the activation condition disappears, the relay will not be activated.	YES
G8.1.31 Relay 8 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 8. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.32 Relay 8 inversion = No	No Si	Allows inverting the logic of relay 8 functionality. Relay 8 is connected to J12 connector and its contact is, by default, normally open. **OPT.** / **FUNCTION** No – Relay logic remains unchanged. Yes – Inverts relay logic.	NO
G8.1.33 Relay 9 src select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.34 Relay 9 ON delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before activating relay 9. If during this ON delay time the activation condition disappears, the relay will not be activated.	YES
G8.1.35 Relay 9 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 9. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.36 Relay 9 inversion = No	No Si	Allows inverting the logic of relay 9 functionality. Relay 9 is connected to J10 connector of the second expansion board and its contact is, by default, normally open. **OPT.** / **FUNCTION** No – Relay logic remains unchanged. Yes – Inverts relay logic.	YES
G8.1.37 Relay 10 src select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.38 Relay 10 ON delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before activating relay 10. If during this ON delay time the activation condition disappears, the relay will not be activated.	YES
G8.1.39 Relay 10 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 10. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.40 Relay 10 inversion = No	No Si	Allows inverting the logic of relay 10 functionality. Relay 10 is connected to J11 connector of the second expansion board and its contact is, by default, normally open. **OPT.** / **FUNCTION** No – Relay logic remains unchanged. Yes – Inverts relay logic.	NO
G8.1.41 Relay 11 src select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.42 Relay 11 ON delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before activating relay 11. If during this ON delay time the activation condition disappears, the relay will not be activated.	YES
G8.1.43 Relay 11 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 11. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.44 Relay 11 inversion = No	No Si	Allows inverting the logic of relay 11 functionality. Relay 11 is connected to J12 connector of the second expansion board and its contact is, by default, normally open. **OPT.** / **FUNCTION** No – Relay logic remains unchanged. Yes – Inverts relay logic.	NO
G8.1.45 Relay 12 src select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.46 Relay 12 ON delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before activating relay 12. If during this ON delay time the activation condition disappears, the relay will not be activated.	YES
G8.1.47 Relay 12 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 12. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES

EN

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G8.1.48 Relay 12 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 12 functionality.

Relay 12 is connected to J13 connector of the second expansion board and its contact is, by default, normally open.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.49 Relay 13 src select = Always OFF</td><td>00 to 59</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.50 Relay 13 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before activating relay 13.
If during this ON delay time the activation condition disappears, the relay will not be activated.</td><td>YES</td></tr>
<tr><td>G8.1.51 Relay 13 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 13.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.52 Relay 13 inversion = No</td><td>No
Si</td><td>Allows inverting the logic of relay 13 functionality.
Relay 13 is connected to J14 connector of the second expansion board and its contact is, by default, normally open.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Relay logic remains unchanged.</td></tr><tr><td>Yes</td><td>Inverts relay logic.</td></tr></table></td><td>NO</td></tr>
<tr><td>G8.1.53 Speed for crane brake = 0.00 %</td><td>0.00 to 100.00%</td><td>This parameter allows setting the speed below which any relay configured to option [32 Crane Brake] will be deactivated.</td><td>YES</td></tr>
</table>

Subgroup 8.2: Analogue output 1

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G8.2.1 AO1 source selection = Motor speed</td><td>00 to 32</td><td>
Analogue output 1 is programmable according to the following table:
<table>
<tr><th>OPT.</th><th>DESCR.</th><th>FUNCTION</th><th>UNITS</th></tr>
<tr><td>00</td><td>None</td><td>Not used.</td><td>-</td></tr>
<tr><td>01</td><td>Motor speed</td><td>Signal proportional to the motor speed.</td><td>% Motor speed</td></tr>
<tr><td>02</td><td>Motor current</td><td>Signal proportional to the motor current.</td><td>% Motor rated current</td></tr>
<tr><td>03</td><td>Motor voltage</td><td>Signal proportional to the motor voltage.</td><td>% Motor rated voltage</td></tr>
<tr><td>04</td><td>Motor power</td><td>Signal proportional to the motor power.</td><td>% Motor power</td></tr>
<tr><td>05</td><td>Motor torque</td><td>Signal proportional to the motor torque.</td><td>% Motor torque</td></tr>
<tr><td>06</td><td>Motor cos phi</td><td>Signal proportional to the motor power factor.</td><td>% Motor rated Cosine Phi</td></tr>
<tr><td>07</td><td>Motor temperature</td><td>Signal proportional to the motor temperature.</td><td>% Motor temperature</td></tr>
<tr><td>08</td><td>Motor frequency</td><td>Signal proportional to the input frequency.</td><td>% Input frequency (50Hz=100%)</td></tr>
<tr><td>09</td><td>Input voltage</td><td>Signal proportional to the input voltage.</td><td>% Equipment rated voltage</td></tr>
<tr><td>10</td><td>Bus voltage</td><td>Signal proportional to the DC Bus voltage.</td><td>% Motor voltage x 1.414</td></tr>
<tr><td>11</td><td>Drive temperature</td><td>Signal proportional to the drive temperature.</td><td>% Drive temperature</td></tr>
<tr><td>12</td><td>Speed reference</td><td>Signal proportional to the speed reference.</td><td>% Motor speed</td></tr>
<tr><td>14</td><td>PID reference</td><td>Signal proportional to the reference in PID mode.</td><td>%</td></tr>
<tr><td>15</td><td>PID feedback</td><td>Signal proportional to the feedback in PID mode.</td><td>%</td></tr>
<tr><td>16</td><td>PID error</td><td>Signal proportional to the error (difference between reference and feedback) in PID mode.</td><td>%</td></tr>
<tr><td>17</td><td>Analog Input 1</td><td>Analogue input 1 signal is transferred to analogue output.</td><td>%</td></tr>
<tr><td>18</td><td>Analog Input 2</td><td>Analogue input 2 signal is transferred to analogue output.</td><td>%</td></tr>
<tr><td>19</td><td>Analog Input 3</td><td>Analogue input 3 signal is transferred to analogue output.</td><td>%</td></tr>
<tr><td>21</td><td>Max scale</td><td>It forces the output to maximum value.</td><td>100% bottom scale</td></tr>
<tr><td>22</td><td>Absolute speed</td><td>Signal proportional to the motor speed without sign (absolute value).</td><td>% Motor speed</td></tr>
<tr><td>23</td><td>Absolute torque</td><td>Signal proportional to the motor torque without sign (absolute value).</td><td>% Motor torque</td></tr>
<tr><td>24</td><td>Analog Input 1+2</td><td>The average of the analogue inputs 1 and 2.</td><td>%</td></tr>
<tr><td>25</td><td>PID output</td><td>Signal proportional to the output in PID mode.</td><td>%</td></tr>
<tr><td>26</td><td>Encoder speed</td><td>Signal proportional to the real speed of the encoder</td><td>% rpm (motor nameplate)</td></tr>
<tr><td>28</td><td>PowerPLC</td><td colspan="2">The analogue output is controlled by a PowerPLC macro. This option will be shown whenever the program selected in [G1.5] is different than Standard.</td></tr>
<tr><td>29</td><td>Analog Input 4</td><td>Analogue input 4 signal is transferred to analogue output.</td><td>%</td></tr>
<tr><td>30</td><td>Analog Input 5</td><td>Analogue input 5 signal is transferred to analogue output.</td><td>%</td></tr>
<tr><td>31</td><td>Analog Input 6</td><td>Analogue input 6 signal is transferred to analogue output.</td><td>%</td></tr>
<tr><td>32</td><td>Analog Input 7</td><td>Analogue input 7 signal is transferred to analogue output.</td><td>%</td></tr>
</table>
Note: Options 29-32 will only be available if the corresponding inputs/outputs are enabled.
</td><td>NO</td></tr>
</table>

EN

Screen	Range	Function	Set on RUN
G8.2.2 AO1 format = 4..20 mA	0-10V ±10mA 0-20mA 4-20mA ±20mA	Analogue output 1 is programmable in one of the five available formats according to the system requirements.	NO
G8.2.3 AO1 low level = 0 %	-250% to +250%	Minimum level of analogue output 1. Minimum level setting can be higher than the maximum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.2.1] increases, the output frequency will decrease and vice versa.	YES
G8.2.4 AO1 high level = 100 %	-250% to +250%	Maximum level of analogue output 1. Maximum level setting can be lower than the minimum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.2.1] increases, the output frequency will decrease and vice versa.	YES
G8.2.5 AO1 filter = Off	Off= 0.0 to 20.0s	Filter for analogue input 1 value. If the analogue signal appears slightly unstable, improved stability and response can be achieved with the addition of a suitable filter value. **Note:** Filter use can add a slight delay to the analogue output signal.	YES

Subgroup 8.3: Analogue output 2 / Pulse

Screen	Range	Function	Set on RUN
G8.3.0 Enable Pulse Mode = No	No Yes	Configures the AO2 to work with a pulse sensor through J18 connector, position 2-1. J18 is located in the control board.	NO
G8.3.1 AO2 source selection = Motor current	00 to 32	Analogue output 2 is programmable in the same way as analogue output 1. See configuration options in G8.2.1.	NO
G8.3.2 AO2 format = 4..20 mA	0-10V ±10V 0-20mA 4-20mA 10mA	Analogue output 2 is programmable in one of the five available formats according to the system requirements. **Available if [G8.3.0 = NO].**	NO
G8.3.3 AO2 low level = 0 %	-250 to 250%	Minimum level of analogue output 2. Minimum level setting can be higher than the maximum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.3.1] increases, the output frequency will decrease and vice versa. **Available if [G8.3.0 = NO].**	YES
G8.3.4 AO2 high level = 100 %	-250 to 250%	Maximum level of analogue output 2. Maximum level setting can be lower than the minimum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.3.1] increases, the output frequency will decrease and vice versa. **Available if [G8.3.0 = NO].**	YES
G8.3.5 AO2 filter = Off	Off=0 0,1 to 20,0 s	Filter for analogue input 2 value. If the analogue signal appears slightly unstable, improved stability and response can be achieved with the addition of a suitable filter value. **Note:** Filter use can add a slight delay to the analogue output signal.	YES
G8.3.6 Max pulse number = 100	0 to 32000	Adjusts the maximum number of pulses per second that can be generated by the output. **Available if [G8.3.0 = YES].**	YES
G8.3.7 Pulse duty = 50 %	20% to 65%	Time percentage when pulses are in active level. Work cycle. **Available if [G8.3.0 = YES].**	YES

Subgroup 8.4: Analogue output 3

Note: This group will be shown if an I/O expansion board has been connected.

Screen	Range	Function	Set on RUN
G8.4.1 AO3 source selection = Motor speed	00 to 32	Analogue output 3 is programmable in the same way as analogue output 1. See configuration options in G8.2.1.	NO
G8.4.2 AO3 format = 4..20 mA	0-10V ±10V 0-20mA 4-20mA 10mA	Analogue output 3 is programmable in one of the five available formats according to the system requirements.	NO
G8.4.3 AO3 low level = 0 %	-250 to 250%	Minimum level of analogue output 3. Minimum level setting can be higher than the maximum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.4.1] increases, the output frequency will decrease and vice versa.	YES
G8.4.4 AO3 high level = 100 %	-250 to 250%	Maximum level of analogue output 3. Maximum level setting can be lower than the minimum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.4.1] increases, the output frequency will decrease and vice versa.	YES
G8.4.5 AO3 filter = Off	Off=0 0 to 20.0 s	Filter for analogue input 3 value. If the analogue signal appears slightly unstable, improved stability and response can be achieved with the addition of a suitable filter value. **Note:** Filter use can add a slight delay to the analogue output signal.	YES

EN

Subgroup 8.5: Analogue output 4

Note: This group will be shown if an I/O expansion board has been connected.

Screen	Range	Function	Set on RUN
G8.5.1 AO4 source selection = Motor speed	00 to 32	Analogue output 4 is programmable in the same way as analogue output 1. See configuration options in G8.2.1.	NO
G8.5.2 AO4 format = 4..20 mA	0-10V ±10V 0-20mA 4-20mA 10mA	Analogue output 4 is programmable in one of the five available formats according to the system requirements.	NO
G8.5.3 AO4 low level = 0 %	-250 to 250%	Minimum level of analogue output 4. Minimum level setting can be higher than the maximum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.5.1] increases, the output frequency will decrease and vice versa.	YES
G8.5.4 AO4 high level = 100 %	-250 to 250%	Maximum level of analogue output 4. Maximum level setting can be lower than the minimum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.5.1] increases, the output frequency will decrease and vice versa.	YES
G8.5.5 AO4 filter = Off	Off=0 0,1 to 20,0 s	Filter for analogue input 4 value. If the analogue signal appears slightly unstable, improved stability and response can be achieved with the addition of a suitable filter value. **Note:** Filter use can add a slight delay to the analogue output signal.	YES

Subgroup 8.6: Analogue output 5

Note: This group will be shown if an I/O expansion board has been connected.

Screen	Range	Function	Set on RUN
G8.6.1 AO5 source selection = Motor speed	00 to 32	Analogue output 5 is programmable in the same way as analogue output 1. See configuration options in G8.2.1.	NO
G8.6.2 AO5 format = 4..20 mA	0-10V ±10V 0-20mA 4-20mA 10mA	Analogue output 5 is programmable in one of the five available formats according to the system requirements.	NO
G8.6.3 AO5 low level = 0 %	-250 to 250%	Minimum level of analogue output 5. Minimum level setting can be higher than the maximum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.6.1] increases, the output frequency will decrease and vice versa.	YES
G8.6.4 AO5 high level = 100 %	-250 to 250%	Maximum level of analogue output 5. Maximum level setting can be lower than the minimum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.6.1] increases, the output frequency will decrease and vice versa.	YES
G8.6.5 AO5 filter = Off	Off=0 0 to 20,0 s	Filter for analogue input 5 value. If the analogue signal appears slightly unstable, improved stability and response can be achieved with the addition of a suitable filter value. **Note:** Filter use can add a slight delay to the analogue output signal.	YES

Subgroup 8.7: Analogue output 6

Note: This group will be shown if an I/O expansion board has been connected.

Screen	Range	Function	Set on RUN
G8.7.1 AO6 source selection = Motor speed	00 to 32	Analogue output 6 is programmable in the same way as analogue output 1. See configuration options in G8.2.1.	NO
G8.7.2 AO6 format = 4..20 mA	0-10V ±10V 0-20mA 4-20mA 10mA	Analogue output 6 is programmable in one of the five available formats according to the system requirements.	NO
G8.7.3 AO6 low level = 0 %	-250 to 250%	Minimum level of analogue output 6. Minimum level setting can be higher than the maximum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.7.1] increases, the output frequency will decrease and vice versa.	YES
G8.7.4 AO6 high level = 100 %	-250 to 250%	Maximum level of analogue output 6. Maximum level setting can be lower than the minimum level setting. This allows the user to achieve inverse scaling; as the reference magnitude set in [G8.7.1] increases, the output frequency will decrease and vice versa.	YES
G8.7.5 AO6 filter = Off	Off=0 0 to 20,0 s	Filter for analogue input 6 value. If the analogue signal appears slightly unstable, improved stability and response can be achieved with the addition of a suitable filter value. **Note:** Filter use can add a slight delay to the analogue output signal.	YES

Group 9: Comparators

Subgroup 9.1: Comparator 1

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G9.1.1 Comp 1 source sel = None</td><td>00 to 32</td><td>The source for Comparator 1 can be set according to the following table:
<table>
<tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>00</td><td>None</td><td>There is no source for the comparator.</td></tr>
<tr><td>01</td><td>Motor speed</td><td>Comparison signal is motor speed.</td></tr>
<tr><td>02</td><td>Motor current</td><td>Motor current signal.</td></tr>
<tr><td>03</td><td>Motor voltage</td><td>Motor voltage signal.</td></tr>
<tr><td>04</td><td>Motor power</td><td>Motor power.</td></tr>
<tr><td>05</td><td>Motor torque</td><td>Motor torque signal.</td></tr>
<tr><td>06</td><td>Motor cos phi</td><td>Motor cosine phi</td></tr>
<tr><td>07</td><td>Motor temperature</td><td>Motor temperature signal.</td></tr>
<tr><td>08</td><td>Motor frequency</td><td>Drive input frequency.</td></tr>
<tr><td>09</td><td>Input voltage</td><td>Drive input voltage.</td></tr>
<tr><td>10</td><td>Bus voltage</td><td>DC Bus voltage.</td></tr>
<tr><td>11</td><td>Drive temperature</td><td>Drive temperature.</td></tr>
<tr><td>12</td><td>Speed reference</td><td>Speed reference.</td></tr>
<tr><td>14</td><td>PID reference</td><td>Speed reference in PID mode.</td></tr>
<tr><td>15</td><td>PID feedback</td><td>System feedback signal.</td></tr>
<tr><td>16</td><td>PID error</td><td>PID error. Difference between reference and feedback signal of the sensor.</td></tr>
<tr><td>17</td><td>Analog Input 1</td><td>Signal connected to analogue input 1.</td></tr>
<tr><td>18</td><td>Analog Input 2</td><td>Signal connected to analogue input 2.</td></tr>
<tr><td>19</td><td>Analog Input 3</td><td>Signal connected to analogue input 3.</td></tr>
<tr><td>20</td><td>Analog Input 1+2</td><td>The average of the analogue inputs 1 and 2.</td></tr>
<tr><td>22</td><td>Absolute speed</td><td>Comparison signal is motor speed without sign (absolute value).</td></tr>
<tr><td>24</td><td>Absolute torque</td><td>Comparison signal is motor torque without sign (absolute value).</td></tr>
<tr><td>25</td><td>Encoder speed</td><td>Comparison signal is the speed measured by the encoder. Hidden if [SG1.30 = NO].</td></tr>
<tr><td>27</td><td>PID output</td><td>Output in PID mode.</td></tr>
<tr><td>28</td><td>Max scale</td><td>We will get a maximum value, forcing the comparator to obtain the needed status.</td></tr>
<tr><td>29</td><td>Analog Input 4</td><td>Signal connected to analogue input 4.</td></tr>
<tr><td>30</td><td>Analog Input 5</td><td>Signal connected to analogue input 5.</td></tr>
<tr><td>31</td><td>Analog Input 6</td><td>Signal connected to analogue input 6.</td></tr>
<tr><td>32</td><td>Analog Input 7</td><td>Signal connected to analogue input 7.</td></tr>
</table>
Note: Options 29-32 will only be available if the corresponding inputs/outputs are enabled.</td><td>NO</td></tr>
<tr><td>G9.1.2 Comp 1 type = Normal</td><td>Normal
Window</td><td>Allows selecting the operation mode of Comparator 1.
<table>
<tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>0</td><td>Normal</td><td>Comparator will be activated when the ON condition is given and will be deactivated when the OFF condition is given.</td></tr>
<tr><td>1</td><td>Window</td><td>Comparator will be activated when signal is within the limits 1 and 2, and additionally when limit 2 is higher than limit 1. If limit 2 is lower than limit 1, comparator output logical function will be inverted.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G9.1.3 Comp 1 ON level = 100 %</td><td>-250% to +250%</td><td>Selects the activation value of Comparator 1 output. The comparator output will be activated if comparator source signal, selected in G9.1.1, is higher than the value set here, and the delay time G9.1.5 has elapsed. Available if [G9.1.2 = NORMAL].</td><td>YES</td></tr>
<tr><td>G9.1.4 Comp 1 OFF level = 0 %</td><td>-250% to +250%</td><td>Selects the activation value of Comparator 1 in Window mode. The comparator output will be activated if comparator source signal, selected in G9.1.1, is lower than the value of this parameter, and the delay time G9.1.5 has elapsed. Available if [G9.1.2 = NORMAL].</td><td>YES</td></tr>
<tr><td>G9.1.3 Comp 1 window limit 2 = 100 %</td><td>-250% to +250%</td><td>Defines one of the limits to activate Comparator 1 in Window mode. The comparator output will be activated when comparator source signal, selected in G9.1.1, is within the two limits G9.1.3 and G9.1.4, and ON delay time G9.1.5 has elapsed.
Available if [G9.1.2 = WINDOW].</td><td>YES</td></tr>
</table>

EN

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G9.1.4 Comp 1 window limit 1 = 0 %</td><td>-250% to +250%</td><td>Defines one of the limits to activate Comparator 1 in Window mode. The comparator output will be activated when comparator source signal, selected in G9.1.1, is within the two limits G9.1.3 and G9.1.4, and ON delay time G9.1.5 has elapsed.
Available if [G9.1.2 = WINDOW].</td><td>YES</td></tr>
<tr><td>G9.1.5 Comp 1 ON delay = 0.0 s</td><td>0.0 to 999s</td><td>Delay time for the Comparator 1 output activation. When the activation condition is satisfied, whether Normal or Window mode is enabled, the timer delays the activation of this signal during the time set in this parameter.</td><td>NO</td></tr>
<tr><td>G9.1.6 Comp 1 OFF delay = 0.0 s</td><td>0.0 to 999s</td><td>Delay time for the Comparator 1 output deactivation. When the activation condition is met, whether Normal or Window mode is enabled, the timer delays the activation of this signal during the time set in this parameter.</td><td>NO</td></tr>
<tr><td>G9.1.7 Comp 1 output function = Not used</td><td>00 to 12</td><td>Allows selecting the function to be activated with the output Comparator 1 according to the following table:
<table>
<tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>00</td><td>Not used</td><td>Comparator output deactivated</td></tr>
<tr><td>01</td><td>Start / Stop</td><td>When it is activated, it gives the start command. When it is deactivated, it gives the stop command.</td></tr>
<tr><td>02</td><td>Stop 1</td><td>Activates the stop mode 1.</td></tr>
<tr><td>03</td><td>Stop 2</td><td>Activates the stop mode 2.</td></tr>
<tr><td>04</td><td>Reset</td><td>Resets the drive.</td></tr>
<tr><td>05</td><td>Start + Inch 1</td><td>Activates Start + Inch speed 1.</td></tr>
<tr><td>06</td><td>Start + Inch 2</td><td>Activates Start + Inch speed 2.</td></tr>
<tr><td>07</td><td>Start + Inch 3</td><td>Activates Start + Inch speed 3.</td></tr>
<tr><td>08</td><td>Invert speed</td><td>It inverts the speed direction.</td></tr>
<tr><td>09</td><td>Acc / Dec 2</td><td>Activates the alternative ramps.</td></tr>
<tr><td>10</td><td>Reference 2</td><td>Activates the alternative reference.</td></tr>
<tr><td>11</td><td>Speed limit 2</td><td>Activates the alternative speed limits.</td></tr>
<tr><td>12</td><td>Fault</td><td>Drive will trip by F73, F74 or F75 when comparator ON condition is satisfied.</td></tr>
</table>
Note: If activation and deactivation levels are adjusted to very similar values and delay times are set to OFF, any noise in the signals of the selected source may cause an oscillation in the comparator activation and, therefore, incorrect operation. You should set these levels keeping a reasonable margin between them, and if necessary, set a delay time to improve the operation.</td><td>YES</td></tr>
</table>

Subgroup 9.2: Comparator 2

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G9.2.1 Comp 2 source sel = None</td><td>00 to 32</td><td>Sets the source for Comparator 2. See [G9.1.1] for configuration options.</td><td>NO</td></tr>
<tr><td>G9.2.2 Comp 2 type = Normal</td><td>Normal
Window</td><td>Allows selecting the operation mode of Comparator 2.
<table>
<tr><th>OPT.</th><th>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><td>0</td><td>Normal</td><td>Comparator will be activated when the ON condition is given and will be deactivated when the OFF condition is given.</td></tr>
<tr><td>1</td><td>Window</td><td>Comparator will be activated when signal is within the limits 1 and 2, and additionally when limit 2 is higher than limit 1. If limit 2 is lower than limit 1, comparator output logical function will be inverted.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G9.2.3 Comp 2 ON level = 100 %</td><td>-250% to +250%</td><td>Selects the activation value of Comparator 2 output. The comparator output will be activated if comparator source signal, selected in G9.2.1, is higher than the value set here, and the delay time G9.2.5 has elapsed. Available if [G9.2.2 = NORMAL].</td><td>YES</td></tr>
<tr><td>G9.2.4 Comp 2 OFF level = 0 %</td><td>-250% to +250%</td><td>Selects the activation value of Comparator 2 in Window mode. The comparator output will be activated if comparator source signal, selected in G9.2.1, is lower than the value of this parameter, and the delay time G9.2.5 has elapsed. Available if [G9.2.2 = NORMAL].</td><td>YES</td></tr>
<tr><td>G9.2.3 Comp 2 window limit 2 = 100 %</td><td>-250% to +250%</td><td>Defines one of the limits to activate Comparator 2 in Window mode. The comparator output will be activated when comparator source signal, selected in G9.2.1, is within the two limits G9.2.3 and G9.2.4, and ON delay time G9.2.5 has elapsed.
Available if [G9.2.2 = WINDOW].</td><td>YES</td></tr>
<tr><td>G9.2.4 Comp 2 window limit 1 = 0 %</td><td>-250% to +250%</td><td>Defines one of the limits to activate Comparator 2 in Window mode. The comparator output will be activated when comparator source signal, selected in G9.2.1, is within the two limits G9.2.3 and G9.2.4, and ON delay time G9.2.5 has elapsed.
Available if [G9.2.2 = WINDOW].</td><td>YES</td></tr>
</table>

Screen	Range	Function	Set on RUN
G9.2.5 Comp 2 ON delay = 0.0 s	0.0 to 999s	Delay time for the Comparator 2 output activation. When the activation condition is satisfied, whether Normal or Window mode is enabled, the timer delays the activation of this signal during the time set in this parameter.	YES
G9.2.6 Comp 2 OFF delay = 0.0 s	0.0 to 999s	Delay time for the Comparator 2 output deactivation. When the activation condition is met, whether Normal or Window mode is enabled, the timer delays the activation of this signal during the time set in this parameter.	YES
G9.2.7 Comp 2 output function = Not used	0 to 11	Allows selecting the function to be activated with the output Comparator 2. See configuration options in [G9.1.7].	NO

Subgroup 9.3: Comparator 3

Screen	Range	Function	Set on RUN
G9.3.1 Comp 3 source sel = None	00 to 32	Sets the source for Comparator 3. See [G9.1.1] for configuration options.	NO
G9.3.2 Comp 3 type = Normal	Normal Window	Allows selecting the operation mode of Comparator 3. **OPT.** / **FUNCTION** / **DESCRIPTION** 0 / Normal / Comparator will be activated when the ON condition is given and will be deactivated when the OFF condition is given. 1 / Window / Comparator will be activated when signal is within the limits 1 and 2, and additionally when limit 2 is higher than limit 1. If limit 2 is lower than limit 1, comparator output logical function will be inverted.	YES
G9.3.3 Comp 3 ON level = 100 %	-250% to +250%	Selects the activation value of Comparator 3 output. The comparator output will be activated if comparator source signal, selected in G9.3.1, is higher than the value set here, and the delay time G9.3.5 has elapsed. **Available if [G9.3.2 = NORMAL].**	YES
G9.3.4 Comp 3 OFF level = 0 %	-250% to +250%	Selects the activation value of Comparator 3 in Window mode. The comparator output will be activated if comparator source signal, selected in G9.3.1, is lower than the value of this parameter, and the delay time G9.3.5 has elapsed. **Available if [G9.3.2 = NORMAL].**	YES
G9.3.3 Comp 3 window limit 2 = 100 %	-250% to +250%	Defines one of the limits to activate Comparator 3 in Window mode. The comparator output will be activated when comparator source signal, selected in G9.3.1, is within the two limits G9.3.3 and G9.3.4, and ON delay time G9.3.5 has elapsed. **Available if [G9.3.2 = WINDOW].**	YES
G9.3.4 Comp 3 window limit 1 = 0 %	-250% to +250%	Defines one of the limits to activate Comparator 3 in Window mode. The comparator output will be activated when comparator source signal, selected in G9.3.1, is within the two limits G9.3.3 and G9.3.4, and ON delay time G9.3.5 has elapsed. **Available if [G9.3.2 = WINDOW].**	YES
G9.3.5 Comp 3 ON delay = 0.0 s	0.0 to 999s	Delay time for the Comparator 3 output activation. When the activation condition is satisfied, whether Normal or Window mode is enabled, the timer delays the activation of this signal during the time set in this parameter.	YES
G9.3.6 Comp 3 OFF delay = 0.0 s	0.0 to 999s	Delay time for the Comparator 3 output deactivation. When the activation condition is met, whether Normal or Window mode is enabled, the timer delays the activation of this signal during the time set in this parameter.	YES
G9.3.7 Comp 3 output function = Not used	0 to 11	Allows selecting the function to be activated with the output Comparator 3. See configuration options in [G9.1.7].	NO

EN

Group 10: Limits

Group 10.1: Speed

Screen	Range	Function	Set on RUN
G10.1.1 Minimum limit 1 = -100.00 %	-250.00% to G10.1.2	Sets the minimum speed limit 1 that can be applied to the motor by the drive. It is set in percentage of motor rated speed.	YES
G10.1.2 Maximum limit 1 = 100.00 %	G10.1.1 to +250.00%	Sets the maximum speed limit 1 that can be applied to the motor by the drive. If the reference is higher than the value set in this parameter, the drive will ignore that reference and will operate the motor at the value set in this screen. It is set in percentage of motor rated speed.	YES
G10.1.3 Minimum limit 2 = -100.00 %	-250.00% to G10.1.4	Sets the minimum speed limit 2 that can be applied to the motor by the drive. It is set in percentage of motor rated speed. **Note:** Selection of minimum speed limit 2 is done via a digital input or comparator output function.	YES
G10.1.4 Maximum limit 2 = 100.00 %	G10.1.3 to +250.00%	Sets the maximum speed limit 2 that can be applied to the motor by the drive. If the reference is higher than the value set in this parameter, the drive will ignore that reference and will operate the motor at the value set in this screen. It is set in percentage of motor rated speed.	YES
G10.1.5 Maximum lim timeout = Off	0.0 to 60.0 s; Off	Allows setting a delay to trigger a fault 'F49 SPD LIMIT' once the drive reaches the configured speed limit.	YES
G10.1.6 Minimum lim timeout = Off	0.0 to 60.0 s; Off	Establishes the period that the drive must maintain the minimum speed before triggering F23.	YES
G10.1.7 Invert speed = No	No Yes	Allows inverting motor speed. This function helps to prevent the motor from running in negative direction. **OPT.** / **FUNCTION** No – Motor running in negative rotation direction is not allowed. Yes – Motor running in both rotation directions is allowed.	YES

Group 10.2: Current/Torque

Screen	Range	Function	Set on RUN
G10.2.1 Current limit = 1.2In A	0.2In to1.5In A; Off	Output current limit. Motor current will be kept within this programmed limit. When this protection is active the SD750 status of current limitation (ILT) is displayed. **Note:** It is not advisable, in applications when the motor is at steady speed status, that current limit works constantly. This may cause damage to the motor and torque variations can affect the load. Current limit should only work when an overload occurs, or due to excessive acceleration and deceleration values, or because motor data details are entered incorrectly.	YES
G10.2.2 I limit timeout = Off	0 to 60 s; Off	Allows adjusting the time to trigger a fault once current limit has been reached.	YES
G10.2.3 Current limit 2 = 1.2In A	0.2In to1.5In A; Off	Similar to [G10.2.15], but for the alternative current limit.	YES
G10.2.4 I limit 2 timeout = Off	0 to 60 s; Off	Adjusts the time to trigger a fault if the alternative current limit (G10.2.4) is reached.	YES
G10.2.5 I lim 2 switch speed = Off	Off 1 to 250 %	Allows setting the speed level to change from current limit 1 to current limit 2. Additionally, it is possible to select the alternative current limit 2 using a digital input configured as option 23.	YES
G10.2.6 Torque limit = 150.0 %	0.0 to 250.0 %	Maintains the maximum torque, impeding the drive applies more torque to the load. It is set as a percentage of motor rated torque.	YES
G10.2.7 Torque limit timeout = Off	0 to 60 s; Off	Allows adjusting the time to trigger a fault once torque limit has been reached.	YES
G10.2.8 Torque limit 2 = 150.0 %	0.0 to 250.00 %	Similar to G10.2.6, but for the alternative torque limit.	YES
G10.2.9 Torque lim 2 timeout = Off	0 to 60 s; Off	Allows adjusting the time to trigger a fault once the alternative torque limit has been reached (G10.2.8).	YES
G10.2.10 Torque l 2 swt speed = Off %	Off 1 to 250.00 %	Allows setting the torque level to change from torque limit 1 to torque limit 2. It is also possible to select the alternative torque limit 2 using a digital input configured as option 48.	YES
G10.2.11 I limit Regen = Off	Off = 40%·In (motor), 40.1% to 150%·In A (drive)	Output current limit during regeneration. It keeps the motor load current within the adjusted limit during regeneration. When this protection is active, the display shows that the SD750 is limiting current (ILT). If this parameter is set to 'OFF', the algorithm will be disabled.	YES

Screen	Range	Function	Set on RUN
G10.2.12 I limit Regen Time = Off	0 to 60s, Off	Allows adjusting the time to trigger a fault once reached the limit of regenerative current. **Hidden if [G10.2.11 = Off].**	YES
G10.2.13 Reg torque limit = 150.0 %	0.0 to 250.0 %	Allows limiting the regenerative torque of the motor.	YES
G10.2.14 Reg torque lim time = Off	0 to 60 s Off	Allows defining the maximum time where regenerative torque of the motor can be limited.	YES
G10.2.15 Disable limit I/T = No	No Yes	Allows disabling the torque/current limit algorithm. **OPT.** / **FUNCTION** No: Algorithm is enabled. By limiting the current or the torque, the equipment reduces its speed. Yes: Algorithm is disabled but the equipment still using current or torque limit (G10.2.1 and G10.2.6) and timeouts (G10.2.2 and G10.2.7) which could cause a drive trip.	YES

Group 11: Protections

EN

Group 11.1: Input

Screen	Range	Function	Set on RUN
G11.1.1 Supply under voltage = 0.875Vn	0.85Vn to 0.90Vn	Input low voltage protection is a combination of parameters G11.4 and G11.5. Drive turns off its output generating a fault 'F14 LW V IN' when average voltage, measured in the drive input, is below the value set in G11.4 for the time set in G11.5.	YES
G11.1.2 Under voltage timeout = 5.0 s	0.0 to 60.9s Off = 60.1		YES
G11.1.3 Supply over voltage = 1.075Vn	1.05Vn to 1.10Vn	Input high voltage protection is a combination of parameters G11.1.3 and G11.1.4. Drive turns off its output generating a fault 'F13 HI V IN' when average voltage, measured in the drive input, is above the value set in G11.1.3 for the time set in G11.1.4.	YES
G11.1.4 Over voltage timeout = 5.0 s	0.0 to 60.9s Off = 60.1		YES
G11.1.5 Low voltage behavior = Faults	No faults Faults Stop Dip voltage recover	Modifies the drive response following an input power loss while motor is running according to the following table: **OPT.** / **FUNCTION** / **DESCRIPTION** 0 / No faults / No action will be taken by the drive. 1 / Faults / Drive will trigger fault 'F11 VIN LOSS'. 2 / Stop / Drive will not trip because of fault and will try to control the motor to a stop while DC Bus voltage level allows it. 3 / Dip voltage recover / After a momentary power loss has occurred, an algorithm of controlled recovery is activated. Thus, motor speed is not affected significantly. In case of loads with high inertia, speed reduction will be minimal.	YES
G11.1.6 LVRT input threshold = 25 %	15 to 50 %	Defines the voltage threshold to enable LVRT. Whenever voltage drops below this value, the drive will enter in voltage dip.	YES
G11.1.7 LVRT output threshold = 5 %	1 to 15 %	Defines the voltage threshold to disable LVRT. Once voltage overcomes this value, the drive will exit the voltage dip.	YES

Group 11.2: Motor

Screen	Range	Function	Set on RUN
G11.2.1 Stop timeout = Off	Off 0.1 to 999s	It supplies a safety function to stop the drive automatically if the motor has not stopped after the time set in this parameter has elapsed and if the drive has received a stop command. The drive will fault on 'F45 STOP T/O'. This function is used to protect from uncontrolled stops where motor needs a longer time than the predict time to stop. As well as other protections integrated into the drive, this time can be set to turn off the output voltage and stop the motor by free run if this time has elapsed and the motor has not stopped completely. Controlled stop time is calculated in standard conditions during system operation. Stop limit time should be set to a higher value than controlled stop time value.	YES
G11.2.2 Ground current limit = 20 %	Off, 0 to 30% In	Allows drive to turn off its output to the motor generating a fault 'F20 GROUND FLT' automatically if the leakage current value is above the value set in this parameter.	YES
G11.2.3 I out asym trip delay = 5.0 s	0.0 to 10.0s, Off	Allows the setting of a delay time before the trip when an output current unbalance is detected. After this time, the drive will trip by 'F19 IMB I OUT'	YES
G11.2.4 V asym out trip delay = 5.0 s	0.0s to 10.0s, Off	Allows setting a delay time before tripping once output voltage imbalance has been detected. Once this time is elapsed, the drive trips due to 'F18 IMB V OUT'.	YES
G11.2.5 PT100 motor fault = Off ºC	69 = Off, 70 to 180ºC	Configures the threshold temperature to trigger F79 PT100.	YES
G11.2.6 PT100 fault timeout = 30 s	0 to 3000s	Sets the time where temperature must be equal to the value set in G11.2.5 to trigger fault F79 PT100. **Note: This parameter is hidden if [G11.2.5 = Off].**	YES
G11.2.7 Fault with no load = No	No Yes	Allows activating operation without load. If "NO" is selected, the drive triggers due to F39 SIN CARGA when 5% of the speed is reached and no load has been detected. In case of selectins "YES" the drive will be able to start without load.	YES
G11.2.8 Pump overload level = 20.0 A	0.0 to 3000A	Overload protection is a combination of parameters G11.2.8, G11.2.9 and G11.2.10. Drive turns off its output generating a fault 'F57 PUMP OVERLOAD' when the output current of the drive is higher than the current set in G11.2.8 for the time adjusted in parameter G11.2.10. By means of parameter G11.2.9, we can adjust the value of low-pass filter for the current reading to avoid oscillations.	YES
G11.2.9 Pump overload filter = Off	Off = 0, 0.0 a 20.0s		YES
G11.2.10 Overload delay = 60 s	0.0 a 480.0s		YES
G11.2.11 Pump underload enable = No	No Yes	Allows the possibility of protecting the pump from underload status. **OPT.** / **FUNCTION** No – Underload protection disabled. Yes – Underload protection enabled. To protect the pump from underload status is necessary to follow the next steps: Set this parameter to 'YES'. Set an underload current value (in G11.2.12) below which the first detection condition will be met. Set an underload speed value (in G11.2.13) above which the second detection condition will be met. Set a delay time to activate underload protection (in G11.2.14), once elapsed, last underload condition will be activated. If three previous conditions are given, the drive will stop the pump to protect it from underload status.	YES
G11.2.12 Pump underload current = 1.0In A	0.2In to 1.5In A	Sets the underload current below which the first detection condition to activate the protection is met. This parameter operates together with parameters G11.2.13 and G11.2.14. **This value depends on the drive capacity.**	YES
G11.2.13 Pump underload speed = 100.0 %	+0.0% to +250%	Sets the underload speed above which the second detection condition to activate the protection is met. This parameter operates together with parameters G11.2.12 and G11.2.14.	YES
G11.2.14 Pump underload flt dly = 10.0 s	0 to 999.9 s	Sets delay time to activate the underload protection. The drive will wait for this time before activating the protection and then will stop. This parameter operates together with parameters G11.2.12 and G11.2.13.	YES

Group 12: Auto Reset

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G12.1 Enable autoreset = No</td><td>No
Yes</td><td>This function resets the drive automatically after a fault.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>Auto Reset is disabled.</td></tr><tr><td>Yes</td><td>Auto Reset is enabled.</td></tr></table>When this function is active, faults programmed in G12.5 to G12.8 will be reset.
⚠ Caution: Auto Reset function can cause unexpected automatic starts. Ensure the installation is configured for Auto Reset to prevent damage to property or personnel.</td><td>YES</td></tr>
<tr><td>G12.2 Retries max number = 1</td><td>1 to 5</td><td>Allows setting of the maximum number of Auto Reset attempts. Drive will try to reset as many times as the number of attempts set in this screen after a fault occurs. This parameter and ‘G12.4 RS COUNT’ control the drive to carry out Auto Reset function in a controlled manner.</td><td>YES</td></tr>
<tr><td>G12.3 Autoreset delay = 5 s</td><td>5 to 120s</td><td>Allows setting of the time elapsed from the fault occurring before attempting auto reset.</td><td>YES</td></tr>
<tr><td>G12.4 Counter reset time = 15 min</td><td>1 to 60min</td><td>Allows setting of the time that once elapsed will reset the Auto Reset attempt counter to zero.
Two situations are possible:
a) If the SD750 is successfully restarted and runs for a period exceeding the value set in this screen then the attempt counter G12.2 will be reset to zero.
b) If the total number of reset attempts is exceeded within this period the SD750 will fault on the last fault condition. The SD700 will remain in a fault condition until the unit is manually reset.</td><td>YES</td></tr>
<tr><td>G12.5 Autoreset fault 1 = Off</td><td>0 to 65535</td><td rowspan="4">If Auto Reset selection is enabled, the SD750 will automatically resets the faults selected in these parameters. Adjustment is individual according to the table from section “FAULT MESSAGES. DESCRIPTIONS AND ACTIONS ”.
⚠ Caution: When fault selection for auto reset is undertaken, user should pay special attention to option 1 ‘All the faults’. In this case, the protections of the drive and motor will be disabled. It is not recommended to select this option since the drive could try to reset internal trips causing serious damage to the drive.</td><td>YES</td></tr>
<tr><td>G12.6 Autoreset fault 2 = Off</td><td>0 to 65535</td><td>YES</td></tr>
<tr><td>G12.7 Autoreset fault 3 = Off</td><td>0 to 65535</td><td>YES</td></tr>
<tr><td>G12.8 Autoreset fault 4 = Off</td><td>0 to 65535</td><td>YES</td></tr>
</table>

EN

Group 13: Fault History

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G13.1 Fault Register 1 = No faults</td><td>0 to 1024</td><td rowspan="12">The first parameter from this group allows visualizing information about the last fault and, also, it will be used as the first register of fault history.

The drive is rearmed by pressing the STOP-RESET key from the display, the RESET button on the control cabinet door or by using an external display if it exists. Some faults can be automatically rearmed using Auto Reset (see group G12).

A list of the last six faults in chronological order is shown. The most recent fault appears in first place (G13.1). Each time that a fault occurs, the drive shows the fault in parameter G13.1. After the fault is solved and reset, this fault will be shifted to the next position of the register (G13.2). The previous faults will shift down one position. The oldest fault message (G13.6) will be discarded.</td><td>YES</td></tr>
<tr><td>G13.1b Date = 01/01/2000 00:00</td><td>01/01/2000 00:00 to 31/12/2127 23:59</td><td>YES</td></tr>
<tr><td>G13.2 Fault Register 2 = No faults</td><td>0 to 1024</td><td>YES</td></tr>
<tr><td>G13.2b Date = 01/01/2000 00:00</td><td>01/01/2000 00:00 to 31/12/2127 23:59</td><td>YES</td></tr>
<tr><td>G13.3 Fault Register 3 = No faults</td><td>0 to 1024</td><td>YES</td></tr>
<tr><td>G13.3b Date = 01/01/2000 00:00</td><td>01/01/2000 00:00 to 31/12/2127 23:59</td><td>YES</td></tr>
<tr><td>G13.4 Fault Register 4 = No faults</td><td>0 to 1024</td><td>YES</td></tr>
<tr><td>G13.4b Date = 01/01/2000 00:00</td><td>01/01/2000 00:00 to 31/12/2127 23:59</td><td>YES</td></tr>
<tr><td>G13.5 Fault Register 5 = No faults</td><td>0 to 1024</td><td>YES</td></tr>
<tr><td>G13.5b Date = 01/01/2000 00:00</td><td>01/01/2000 00:00 to 31/12/2127 23:59</td><td>YES</td></tr>
<tr><td>G13.6 Fault Register 6 = No faults</td><td>0 to 1024</td><td>YES</td></tr>
<tr><td>G13.7 Erase fault history = No</td><td>No
Yes</td><td>
<table>
<tr><th>OPT.</th><th>FUNCTION</th></tr>
<tr><td>No</td><td>Function disabled.</td></tr>
<tr><td>Yes</td><td>It erases fault history (last six faults). The screen returns to default value ‘NO’, after all the faults have been erased.</td></tr>
</table>
</td><td>YES</td></tr>
</table>

Group 14: Multi-references

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G14.1 Multi reference 1 = 10.00 %

G14.2 Multi reference 2 = 20.00 %

G14.3 Multi reference 3 = 30.00 %

G14.4 Multi reference 4 = 40.00 %

G14.5 Multi reference 5 = 50.00 %

G14.6 Multi reference 6 = 60.00 %

G14.7 Multi reference 7 = 70.00 %</td><td>-250% to +250%</td><td>Allows setting multiple references. These references will be activated using digital inputs configured as multiple speed references or PID references.

To use this function, select operating mode, ‘G4.1.4 DIGIT I MODE=2 or 3’ (2 or 3-wires multi-reference). Then, it is necessary to select the multi-references as the speed reference in parameter ‘G3.1 REF 1 SPD=Multireferences’ or as a PID references in ‘G6.1 SEL REF=Multireferences’.

Units are set in either percentage of motor rated speed or feedback analogue input range (if an analogue unit is selected).

The following table shows the relationship between DI4,DI5, DI6 inputs when activated in multi-reference mode (as a percentage of motor rated speed):
<table>
<tr><th>PARM</th><th>REF</th><th>ED4</th><th>ED5</th><th>ED6</th></tr>
<tr><td>G14.1</td><td>Multireferences 1</td><td>0</td><td>0</td><td>X</td></tr>
<tr><td>G14.2</td><td>Multireferences 2</td><td>0</td><td>X</td><td>0</td></tr>
<tr><td>G14.3</td><td>Multireferences 3</td><td>0</td><td>X</td><td>X</td></tr>
<tr><td>G14.4</td><td>Multireferences 4</td><td>X</td><td>0</td><td>0</td></tr>
<tr><td>G14.5</td><td>Multireferences 5</td><td>X</td><td>0</td><td>X</td></tr>
<tr><td>G14.6</td><td>Multireferences 6</td><td>X</td><td>X</td><td>0</td></tr>
<tr><td>G14.7</td><td>Multireferences 7</td><td>X</td><td>X</td><td>X</td></tr>
</table>
Note: 0: Not active and X: Active.</td><td>YES</td></tr>
</table>

Group 15: Inch Speeds

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G15.1 Inch speed 1 = 0.00 %</td><td rowspan="3">-250% to +250%</td><td rowspan="3">Allows setting of the value of the three possible motor inch speeds. Inch speed selection is possible through a comparator output (directly) or by a digital input combination. If digital inputs are used for this purpose they should be configured as ‘START + INCH1’ or ‘START + INCH2’. See G4.1.5 to G4.1.10.

<table>
<tr><th></th><th colspan="2">Inputs</th></tr>
<tr><th>Speed</th><th>DIX</th><th>DIY</th></tr>
<tr><td>Inch speed 1</td><td>X</td><td>0</td></tr>
<tr><td>Inch speed 2</td><td>0</td><td>X</td></tr>
<tr><td>Inch speed 3</td><td>X</td><td>X</td></tr>
</table>

Note: The activation of this function includes the start command. Therefore, this signal has priority over any other input configured as ‘Start’. When this option is active, inputs configured as Start / Stop 5, Start / Reset / Stop 6, Start / Stop / Reset 18, will not operate as stop anymore.</td><td rowspan="3">YES</td></tr>
<tr><td>G15.2 Inch speed 2 = 0.00 %</td></tr>
<tr><td>G15.3 Inch speed 3 = 0.00 %</td></tr>
</table>

Group 16: Skip Frequencies

Screen	Range	Function	Set on RUN
G16.1 Skip frequency 1 = 0.00 %	-250.00 to 250.00 %	Allows user to select a first skip frequency to avoid resonance frequencies or any other frequencies that the motor will avoid using as reference. The drive will pass through these frequencies during speed shifts (acceleration / deceleration) but will not remain operation at them. This value defines de center of the skip bandwidth 1, which size must be configured in [G16.2].	YES
G16.2 Skip bandwidth 1 = Off	Off = 0; 0.1 to 20.00 %	Sets the skip frequency bandwidth 1. Skip frequencies are those where the drive will not operate, even if during acceleration or deceleration the drive passes through such frequencies. Skip bandwidth 1 will have the size set on this parameter and will be centered with respect to [G16.1]. For example, if a 10% is selected, skip bandwidth will be from [G16.1]: 5%, to [G16.1] + 5%. Let us suppose that the range goes from 20% to 30%. In case the reference frequency is within that range, say 27%, we have two scenarios: a) If the new setpoint is greater than the current setpoint, the equipment has to accelerate to the lower limit of the band and there is no action until the new setpoint exceeds the frequency hopping band. When this condition is met, the equipment must accelerate. b) In the event that the new setpoint is less than the current setpoint, the team will decelerate to the upper limit of the band and will not transfer it until the setpoint is less than the lower limit of the frequency hop band. When this happens, then the equipment decelerates until it reaches the setpoint. If G16.2 is set to 0= Off, the skip frequency 1 will not be considered.	YES
G16.3 Skip frequency 2 = 0.00 %	-250.00 to 250.00 %	Allows user to select a second skip frequency to avoid resonance frequencies or any other frequencies that the motor will avoid using as reference. The drive will pass through these frequencies during speed shifts (acceleration / deceleration) but will not remain operation at them. This value defines de center of the skip bandwidth 1, which size must be configured in [G16.4].	YES
G16.4 Skip bandwidth 2 = Off	Off = 0; 0 to 20.00 %	Sets the skip frequency bandwidth 2. It will have the size set on this parameter and will be centered with respect to [G16.3]. See [G16.2] for an example.	YES
G16.5 Skip frequency 3 = 0.00 %	-250.00 to 250.00 %	Allows user to select a third skip frequency to avoid resonance frequencies or any other frequencies that the motor will avoid using as reference. The drive will pass through these frequencies during speed shifts (acceleration / deceleration) but will not remain operation at them. This value defines de center of the skip bandwidth 1, which size must be configured in [G16.6].	YES
G16.6 Skip bandwidth 3 = Off	Off = 0; 0 to 20.00 %	Sets the skip frequency bandwidth 3. It will have the size set on this parameter and will be centered with respect to [G16.5]. See [G16.2] for an example.	YES
G16.7 Skip frequency 4 = 0.00 %	-250.00 to 250.00 %	Allows user to select a fourth skip frequency to avoid resonance frequencies or any other frequencies that the motor will avoid using as reference. The drive will pass through these frequencies during speed shifts (acceleration / deceleration) but will not remain operation at them. This value defines de center of the skip bandwidth 1, which size must be configured in [G16.8]	YES
G16.8 Skip bandwidth 4 = Off	Off = 0; 0 to 20.00 %	Sets the skip frequency bandwidth 4. It will have the size set on this parameter and will be centered with respect to [G16.3]. See [G16.2] for an example.	YES

EN

Group 17: Brake

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G17.1 DC brake time = Off</td><td>Off=0.0
0.1 to 99s</td><td>Allows setting the time during which the DC brake will be activated.</td><td>YES</td></tr>
<tr><td>G17.2 DC brake current level = 0 %</td><td>0 to 100%</td><td>Allows setting the current level applied during braking. The proper current value must be set to brake the load inertia correctly. If this value is too low, the load will not be stopped in time. If the value is too high the power components of the drive will be stressed.</td><td>YES</td></tr>
<tr><td>G17.3 DC break on delay = Off</td><td>Off,
0.0 to 99s,</td><td>Allows setting the continuous DC voltage level applied during braking. The proper voltage value must be set to brake the load inertia correctly. If this value is too low, load will not be stopped in time. Otherwise, if the value is too high the power components of the drive will be stressed.</td><td>YES</td></tr>
<tr><td>G17.4 Heating current = Off</td><td>Off=0.0
0.1 to 30%</td><td>Set a suitable value to avoid humidity condensation forming in the motor.
Note: Modify this parameter only if necessary.

⚠ CAUTION: Although the motor is not running there is dangerous voltage. Run Led will be lit during this process. Be careful to avoid property damage and personal injuries.</td><td>YES</td></tr>
<tr><td>G17.5 Dynamic brake = No</td><td>No
Yes</td><td>User must configure the drive if an external dynamic brake is going to be used.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>No</td><td>External brake is not going to be used, the application does not require it.</td></tr><tr><td>Yes</td><td>An external brake is going to be installed.</td></tr></table></td><td>NO</td></tr>
</table>

Group 19: Fine Tuning

Subgroup 19.1: IGBT Control

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G19.1.1 Control type = V/Hz</td><td>V/Hz
Vector
PMSM</td><td>This selection defines the drive control type.
<table>
<tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr>
<tr><td>0</td><td>V/Hz</td><td>Scalar control mode. Drive carries out the control applying a voltage / frequency ramp to the motor.</td></tr>
<tr><td>1</td><td>Vector</td><td>Vector control mode.</td></tr>
<tr><td>2</td><td>PMSM</td><td>Control mode for synchronous motors (PMSM: Permanent Magnet Synchronous Motor).</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G19.1.1b Vector control = PMC Open loop speed</td><td>1 to 8</td><td>Allows selecting the type of vector control and the type of power control for the motor. Available if G19.1.1 = Vector.

PMC: Power Motor Control
AVC: Advanced Vector Control.
<table>
<tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr>
<tr><td>1</td><td>PMC Open loop speed</td><td>PMC control type speed in open loop.</td></tr>
<tr><td>2</td><td>PMC Close loop speed</td><td>PMC control type speed in closed loop.</td></tr>
<tr><td>3</td><td>PMC Close loop torque</td><td>PMC control type torque in closed loop.</td></tr>
<tr><td>4</td><td>PMC Open loop torque</td><td>PMC control type torque in open loop.</td></tr>
<tr><td>5</td><td>AVC Close loop speed</td><td>AVC control type speed in closed loop.</td></tr>
<tr><td>6</td><td>AVC Close loop torque</td><td>AVC control type torque in closed loop.</td></tr>
<tr><td>7</td><td>AVC Open loop speed</td><td>AVC control type speed in open loop.</td></tr>
<tr><td>8</td><td>AVC Open loop torque</td><td>AVC control type torque in open loop.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G19.1.1c Perm Magnet Sync Mot = I/Hz</td><td>I/Hz
F.Oriented</td><td>Allows selecting the control type for synchronous motors. Available if G19.1.1 = PMSM.
<table>
<tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr>
<tr><td>9</td><td>I/Hz</td><td>Scalar control mode, in which control is applied by applying a voltage / frequency ramp to the motor.</td></tr>
<tr><td>10</td><td>F.Oriented</td><td>Vector control for synchronous motors.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G19.1.3 PID Vout = No</td><td>No
Yes</td><td>Allows enabling or disabling regulation of output voltage to keep it at its rated value despite load conditions.</td><td>NO</td></tr>
<tr><td>G19.1.6 Auto Tuning = No</td><td>No
Static
Dynamic</td><td>With this option, the drive calculates internally motor parameters to use them in the vector control.
<table>
<tr><th>OPT.</th><th>DESCRIPTION</th><th>FUNCTION</th></tr>
<tr><td>0</td><td>No</td><td>Auto Tuning disabled.</td></tr>
<tr><td>1</td><td>Static</td><td>Auto Tuning enable. No motor spinning is required.</td></tr>
<tr><td>2</td><td>Dynamic</td><td>Auto Tuning enable. It requires the motor working without load.</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G19.1.7 Overmodulation = Off</td><td>Off
0.01 to 100.00 %</td><td>With this option, it is possible to supply more motor voltage at 50Hz.</td><td>YES</td></tr>
<tr><td>G19.1.8 Pewave = Yes</td><td>No
Yes</td><td>This control mode improves motor noise tone.
<table>
<tr><th>OPT.</th><th>FUNCTION</th></tr>
<tr><td>No</td><td>Pewave control deactivated.</td></tr>
<tr><td>Yes</td><td>Pewave control activated.
Commutation frequency (G19.1.9) is slightly modified on a random basis to improve the noise tone generated by the motor.</td></tr>
</table></td><td>YES</td></tr>
<tr><td>G19.1.9 Switching frequency = 4000 Hz</td><td>4000 to 8000 Hz</td><td>Allows varying the drive switching frequency. This function can be used to reduce motor noise.</td><td>YES</td></tr>
</table>

EN

Subgroup 19.2: Motor load

Screen	Range	Function	Set on RUN
G19.2.1 Minimum flux level = 100 %	40 to 130%	Allows setting the minimum flux level used by the motor during low load conditions. With this dynamic system of flux optimization, noise and power losses are reduced. Adaptation of the flux level during low load conditions occurs automatically. The algorithm will be disabled when this parameter is set to 100%.	YES
G19.2.2 Boost voltage = 0.0 %	0.0 to 10%	Sets an initial voltage value applied to the motor during the starting. By using this function, it is possible to improve breakaway torque when starting heavy loads. **Note:** Set a low value first. Increase the value gradually until the load starts easily.	YES
G19.2.3 Boost current = 0.0 %	0.0 to 100%	Sets an initial current value applied to the motor during the starting. By using this function, it is possible to improve breakaway torque when starting heavy loads. This parameter will be ignored if [G19.2.2 has been previously adjusted]. **Note:** Set a low value first. Increase the value gradually until the load starts easily.	YES
G19.2.4 Slip compensation = No	No Yes	If this function is active, it helps to compensate the slip on the motor. In case of heavy load able of provoking a high slip during the starting, set this parameter to YES.	YES
G19.2.5 Current limit factor = 0.0 %	0.0 to 20.0%	Allows active frequency reduction, by varying speed, to maintain output current within controllable margins (the display will show LTI). With this parameter it is possible to improve the stability of the current limitation function considering motor slip. **Note:** It is recommended to adjust this value in cases where current limitation is unstable. A los value will improve stability, although the preventive actions will act before..	YES
G19.2.6 Initial frequency = 0.0 %	0.0 to 100%	Allows setting the initial frequency that will be applied to the drive at the moment of starting.	YES
G19.2.7 Damping = 2 %	0.00 to 10.00%	Some motors can be destabilized and suffer shaking when working with soft loads or at certain speeds. The damping parameter is introduced to control stability. **Note**: No-load damping produces small variations (normally <0.1Hz). Therefore, if the application requires an absolute fixed frequency output, this parameter must be set to 0.00%.	YES
G19.2.8 Reg bus voltage	For VIN = 400V / 500V Bus: 625 to 800V For VIN = 690V Bus: 950 to 1251V	During deceleration with loads with inertia, the drive decelerates keeping the level of the bus voltage set by this parameter, when load and inertia conditions allow it. If when decelerating, the fault 'F2 V LIM FLT' occurs, decrease the value of this parameter.	YES

Subgroup 19.3: Motor model

Screen	Range	Function	Set on RUN
G19.3.1 R stator = 0.1 mΩ	0.1 to 6553.5 mΩ	*Stator resistance (Rs)*: It is used to compensate the iron losses and copper losses of the motor.	YES
G19.3.2 R rotor = 0.1 mΩ	0.1 to 6553.5 mΩ	A key parameter that directly concerns the output torque.	YES
G19.3.3 L magnetization = 0.1 mH	0.1 to 6553.5 mH	It is an interesting parameter if the equipment works with vector control and G19.1.2 = AVC. It is the main inductance of the motor that defines the magnetic field strength. It is a key parameter that directly concerns the motor flux. Typical values can range from 75% (small motors) to 800% (large motors). **Available if G19.1.1 = V/Hz or Vector.**	YES
G19.3.3 Back electrom. force = 0.000 kV	0.000 to 5.000 kV	Back electromagnetic force. **Available if G19.1.1 = PMSM.**	YES
G19.3.4 L leakage stator = 0.00 mH	0.00 to 655.35 mH	Allows adjusting the stator dispersion inductance. **Available if G19.1.1 = V/Hz or Vector.**	YES
G19.3.4 L Stator D axis = 0.00 mH	0.00 to 100.00 mH	Allows adjusting the inductance in the D-axis of the stator. **Available if G19.1.1 = PMSM.**	YES
G19.3.5 L leakage rotor = 0.00 mH	0.00 to 655.35 mH	Allows adjusting the rotor dispersion inductance. **Available if G19.1.1 = V/Hz or Vector.**	YES
G19.3.5 L Stator Q axis = 0.00 mH	0.00 to 100.00 mH	Allows adjusting the inductance in the Q-axis of the stator. **Available if G19.1.1 = PMSM.**	YES
G19.3.6 Field weakening = 90.0 %	50.00 to 100.10%(Auto)	The weakening field occurs when the drive cannot give more voltage than it receives from the power supply, and at the same time the frequency exceeds the rated frequency of the motor. In this event, only the frequency will be regulated, and the voltage will remain constant, producing the weakening of the motor field.	YES
G19.3.7 Temperature coef R = 20.0 %	0.0 to 50.0%	Allows adjusting the coefficient of the thermal model of the motor.	YES
G19.3.8 Flux tuning = 2.0 %	0.0 to 10.0%	Allows adjusting a higher start torque in PMC control type torque or speed in closed loop [G19.1.2]. **Note**: If even set to the maximum value, moving the motor is still not possible, it may be because the resistive torque is too high for the equipment, or because there is a mechanical problem.	YES
G19.3.9 Params online estim = No	No Yes	Allows enabling or disabling parameters estimation while the motor is running. If enabled, the drive will correct dynamically the variation of G19.3.1 and G19.3.2 depending on the temperature of the motor.	YES

Subgroup 19.4: Vector PID

Screen	Range	Function	Set on RUN
G19.4.1 Kp speed = 10.0 %	0.0 to 100.0%	Allows setting the proportional gain value of the speed regulator. If a greater control response is needed, this value must be increased. **Note:** When increasing too much this value, the system can be destabilized.	YES
G19.4.2 Ki speed = 10.0 %	0.0 to 100.0%	Allows the adjustment of the integration time of the speed regulator. In the event of needing more precision, this value must be increased. **Note:** When increasing too much this value, the system can get slower.	YES
G19.4.3 Kp torque = 10.0 %	0.0 to 100.0%	Allows setting the value of the proportional gain of the overcurrent regulator. If a greater control response is needed this value must be increased. **Note**: When increasing too much this value, the system can become more unstable.	YES
G19.4.4 Ki torque = 10.0 %	0.0 to 100.0%	Allows the adjustment of the integration time of the overcurrent regulator. In the event of needing more precision, this value must be increased. **Note:** When increasing too much this value, the system can get slower.	YES
G19.4.5 Kp I = 10.0 %	0.0 to 100.0%	Allows the setting of the proportional gain value of the flow regulator.	YES
G19.4.6 Ki I = 15.0 %	0.0 to 100.0%	Allows the adjustment of the integration time of the flow regulator	YES
G19.4.7 Kp Sensorless = 50.0 %	0.0 to 100.0%	Allows setting the proportional gain value of the speed regulator. If a greater control response is needed, this value must be increased. **Note:** When increasing too much this value, the system can be destabilized.	YES
G19.4.8 Ki Sensorless = 50.0 %	0.0 to 100.0%	Allows setting the value of the integral gain of the regulator of the speed estimator. If a greater control response is needed, this value must be increased. **Note:** When increasing too much this value, the system can be destabilized.	YES

EN

Group 20: Serial Communication

Subgroup 20.1: Modbus RTU

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G20.1.1 Display baudrate = 921600 bps baud/s</td><td>0 to 8</td><td>Allows selecting the baud rate of the communication between the display and the control board.
<table><tr><th>OPT.</th><th>SPEED bps</th></tr><tr><td>0</td><td>2400</td></tr><tr><td>1</td><td>4800</td></tr><tr><td>2</td><td>9600</td></tr><tr><td>3</td><td>19200</td></tr><tr><td>4</td><td>57600</td></tr><tr><td>5</td><td>115200</td></tr><tr><td>6</td><td>230400</td></tr><tr><td>7</td><td>460800</td></tr><tr><td>8</td><td>921600</td></tr></table></td><td>YES</td></tr>
<tr><td>G20.1.2 Modbus address = 10</td><td>1 to 255</td><td>Sets the identification address assigned to the drive for communication via the Modbus network. If communication with several drives is required, a different address must be set for each unit.</td><td>YES</td></tr>
<tr><td>G20.1.3 Modbus baudrate = 9600 bps baud/s</td><td>0 to 8</td><td>Sets the data transmission speed for MODBUS serial communications. This rating should be the same as the rating of the master of the communication bus on which the drive is integrated.
<table><tr><th>OPT.</th><th>SPEED bps</th></tr><tr><td>0</td><td>2400</td></tr><tr><td>1</td><td>4800</td></tr><tr><td>2</td><td>9600</td></tr><tr><td>3</td><td>19200</td></tr><tr><td>4</td><td>57600</td></tr><tr><td>5</td><td>115200</td></tr><tr><td>6</td><td>230400</td></tr><tr><td>7</td><td>460800</td></tr><tr><td>8</td><td>921600</td></tr></table></td><td>YES</td></tr>
<tr><td>G20.1.4 Modbus parity = None</td><td>0 to 2</td><td>MODBUS parity setting. Used for data validation. If you do not want to validate data, set this parameter to ‘NONE’. Parity selection should be the same as the parity of the master of the communication bus on which the drive is integrated.
<table><tr><th>OPT.</th><th>PARITY</th></tr><tr><td>0</td><td>Odd</td></tr><tr><td>1</td><td>None</td></tr><tr><td>2</td><td>Even</td></tr></table></td><td>YES</td></tr>
<tr><td>G20.1.5 Communication timeout = Off</td><td>Off,
0 to 600 s</td><td>If the time elapsed from the last valid data transmission has overcome the communications timeout, it is possible to trigger a fault whenever user requires it.
Serial communication with the drive is possible through RS485 terminals or through optional serial communication interfaces.
Note: Do not modify this parameter if it is not strictly necessary.</td><td>YES</td></tr>
</table>

Subgroup 20.2: Profibus Configuration

Subgroup 20.2.1: Master's input

Subgroup 20.2.1.1: Addresses

Screen	Range	Function	Set on RUN
Custom modbus addr1: 0	0 to 65535	See “Subgroup 20.6: Custom Modbus address”. **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2 and G21.4.2 will change.	YES
Custom modbus addr2: 0			
…			
Custom modbus addr16: 0			

Subgroup 20.2.1.2: Values

Screen	Range	Function	Set on RUN
Custom modbus val1: 0	0 to 65535	See “Subgroup 20.7: Custom Modbus values”. **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2 and G21.4.2 will change.	YES
Custom modbus val2: 0			
…			
Custom modbus val16: 0			

Subgroup 20.2.2: Master's output

Subgroup 20.2.2.1: Addresses

Screen	Range	Function	Set on RUN
Custom modbus addr17: 0	0 to 65535	See “Subgroup 20.6: Custom Modbus address”. **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.3 and G21.4.3 will change.	YES
Custom modbus addr18: 0			
…			
Custom modbus addr32: 0			

Subgroup 20.2.2.2: Values

Screen	Range	Function	Set on RUN
Custom modbus val17: 0	0 to 65535	See “Subgroup 20.7: Custom Modbus values”. **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.3 and G21.4.3 will change.	YES
Custom modbus val18: 0			
…			
Custom modbus val32: 0			

EN

Others

Screen	Range	Function	Set on RUN
G20.2.3 – Profibus node address = 1	0 to 126	This parameter allows setting the slave ID address.	YES
G20.2.4 – Connector Fault Mode = Fault	0 to 1	This parameter allows configuring the fault mode of the connector when communication with the master is not allowed. **OPT.** – **FUNCTION** Fault – The drive will trigger fault *F-113: Lost PBUS c1 comms* when communication is not enabled. Ignore – The fault is ignored, and it is not triggered.	YES
G20.2.5 – Connector State = Off	0 to 1	This parameter shows the state of the connector.	YES

Subgroup 20.6: Custom Modbus configuration

Screen	Range	Function	Set on RUN
G20.6.1 Custom modbus addr 1 = 0 **G20.6.2 Custom modbus addr 2 = 0** ... **G20.6.120 Custom modbus addr 120 = 0**	0 to 65535	These parameters allow configuring 120 consecutive registers (4500 to 4619) variables from the Modbus map as required. This is particularly useful when designing a SCADA, so that the client can consult several registers in a single reading operation. They are grouped as follows: • Subgroup 20.6.1: Values 1 to 30 • Subgroup 20.6.2: Values 31 to 60 • Subgroup 20.6.3: Values 61 to 90 • Subgroup 20.6.4: Values 91 to 120 In parameters G20.6.x, user must enter the Modbus registers (Modbus address – 40001) that will be pointed to. Once configured, parameters G20.7.x can be used to read or write the value of each register. **Example**: Let us suppose we want to store the local speed reference (G3.3, Modbus 40053). We must configure register 52 (40053 – 1) in G20.6.1, at *Custom modbus addr1*. Then, in G20.7.1, *Custom modbus val 1* we will read the current value of the local speed reference. To modify it, we must enter the new value and save changes. **Note**: When reading or writing a variable, keep in mind the type of variable and its Modbus range to ensure values are interpreted correctly.	YES

Subgroup 20.7: Custom Modbus values

Screen	Range	Function	Set on RUN
G20.7.1 Custom modbus val1 = 0 **G20.7.2 Custom modbus val2 = 0** ... **G20.7.120 Custom modbus val30 = 0**	0 to 65535	These parameters can be used to read and write the values of the registers that were previously configured in G20.6. They are grouped as follows: • Subgroup 20.7.1: Values 1 to 30 • Subgroup 20.7.2: Values 31 to 60 • Subgroup 20.7.3: Values 61 to 90 • Subgroup 20.7.4: Values 91 to 120 **Note**: When reading or writing a variable, keep in mind the type of variable and its Modbus range to ensure values are interpreted correctly.	YES

Group 21: Networks

Subgroup 21.1: Ethernet

Screen	Range	Function	Set on RUN
G21.1.1 Automatic IP = No	No Yes	Allows the possibility of assigning the parameters automatically. **OPT.** / **FUNCTION** No: Drive will take the IP, subnet mask and gateway addresses set by the user in [G21.1.2, G21.1.3 and G21.1.4]. Yes: The drive requests and receives the parameters of the IP, Subnet Mask and Gateway addresses from the Network Server. DHCP protocol is used.	YES
G21.1.1.1 Assigned IP = 0.0.0.0	0 to 255	Shows the drive IP address, regardless of whether it was assigned automatically or by the user in parameter [G21.1.2].	YES
G21.1.1.2 Assigned subnet = 0.0.0.0	0 to 255	Shows the drive subnet mask, regardless of whether it was assigned automatically or by the user in parameter [G21.1.3].	YES
G21.1.1.3 Assigned gateway = 0.0.0.0	0 to 255	Shows the drive gateway address, regardless of whether it was assigned automatically or by the user in parameter [G21.1.4]. Format of Gateway Address is: A.B.C.D.	YES
G21.1.2 IP address = 192.168.1.143	0 to 255	Sets the IP address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the IP address is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.1.3 Subnet Mask = 255.255.255.0	0 to 255	Sets the subnet mask address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the subnet mask is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.1.4 Gateway = 0.0.0.0	0 to 255	Sets the gateway address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the gateway address is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.1.5 MAC address= A.B.C.D.E.F	0x00 to 0xFF	Sets the MAC address. This address must be unique and exclusive and depends on the LAN board. This address must be provided by Power Electronics. Format of the MAC address is: A.B.C.D.E. F. To configure the address, enter a value in each of the six parameters that compose it.	NO

Subgroup 21.2: Client TCP

Screen	Range	Function	Set on RUN
G21.2.1 – Client TCP timeout = 1000s	0.05 to 5000	Maximum time allowed to enable communication	YES
G21.2.2 – Client TCP retries = 1	0 to 4	Number of allowed retries to enable communication	YES

EN

Subgroup 21.3: EtherNet / IP

Subgroup 21.3.1: EtherNet / IP

Screen	Range	Function	Set on RUN
G21.3.1.1 Automatic IP = No	No Yes	Allows the possibility of assigning the parameters automatically. **OPT.** / **FUNCTION** No: Drive will take the IP, subnet mask and gateway addresses set by the user in [G21.3.1.2, G21.3.1.3 and G21.3.1.4]. Yes: The drive requests and receives the parameters of the IP, Subnet Mask and Gateway addresses from the Network Server. DHCP protocol is used.	YES
G21.3.1.2 Assigned IP = 0.0.0.0	0 to 255	Shows the assigned IP address. **Available if G23.1.3.1 = Yes.**	YES
G21.3.1.3 Assigned subnet = 0.0.0.0	0 to 255	Shows the assigned subnet mask. **Available if G23.1.3.1 = Yes.**	YES
G21.3.1.4 Assigned gateway = 0.0.0.0	0 to 255	Shows the assigned gateway address. **Available if G23.1.3.1 = Yes**.	YES
G21.3.1.2 IP address = 192.168.1.143	0 to 255	**Available if G23.1.3.1 = No.** Sets the IP address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the IP address is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.3.1.3 Subnet Mask = 255.255.255.0	0 to 255	**Available if G23.1.3.1 = No.** Sets the subnet mask address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the subnet mask is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.3.1.4 Gateway = 0.0.0.0	0 to 255	**Available if G23.1.3.1 = No.** Sets the gateway address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the gateway address is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.3.1.5 MAC address= A.B.C.D.E.F	0x00 to 0xFF	Sets the MAC address. This address must be unique and exclusive and depends on the LAN board. This address must be provided by Power Electronics. Format of the MAC address is: A.B.C.D.E. F. To configure the address, enter a value in each of the six parameters that compose it.	NO

Note: Please notice parameters G21.3.1.2, G21.3.1.3 and G21.3.1.4 vary depending on whether automatic IP is enabled or not (parameter G21.3.1.1).

Subgroup 21.3.2: Master's input

Subgroup 21.3.2.1: Addresses

Screen	Range	Function	Set on RUN
Custom modbus addr1: 0	0 to 65535	See "Subgroup 20.6: Custom Modbus address". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.3, G21.4.2 and G21.4.3 will change.	YES
Custom modbus addr2: 0			
…			
Custom modbus addr16: 0			

Subgroup 21.3.2.2: Values

Screen	Range	Function	Set on RUN
Custom modbus val1: 0 **Custom modbus val2: 0** ... **Custom modbus val16: 0**	0 to 65535	See "Subgroup 20.7: Custom Modbus values". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.3, G21.4.2 and G21.4.3 will change.	YES

Subgroup 21.3.3: Master's output

Subgroup 21.3.3.1: Addresses

Screen	Range	Function	Set on RUN
Custom modbus addr31: 0 **Custom modbus addr32: 0** ... **Custom modbus addr46: 0**	0 to 65535	See "Subgroup 20.6: Custom Modbus address". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2, G21.4.2 and G21.4.3 will change.	YES

Subgroup 21.3.3.2: Values

Screen	Range	Function	Set on RUN
Custom modbus val31: 0 **Custom modbus val32: 0** ... **Custom modbus val46: 0**	0 to 65535	See "Subgroup 20.7: Custom Modbus values". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2, G21.4.2 and G21.4.3 will change.	YES

Others

Screen	Range	Function	Set on RUN
G21.3.4 Control mode = Local	Local Network Net decides	Allows defining who controls the equipment (sends start, stop, fault and reset commands). **OPT.** / **FUNCTION** Local: Control mode depends on G4.1.1 setting. The PLC will never be able decide what to do, even if it is communicating with the drive. Network: The network commands the drive. Net decides: The PLC decides when to control the drive (commands will be sent through the network) and when control will depend on the setting of G4.1.1.	NO
G21.3.5 Reference mode = Local	Local Network Net decides	Allows defining who sets the direct reference (V or P) for the equipment. **OPT.** / **FUNCTION** Local: Reference will be set through local control. Network: Reference will be given by the network. Net decides: Reference will be set through local control or the network, as the PLC determines.	NO

Screen	Range	Function	Set on RUN
G21.3.6 PID mode = Local	Local Network Net decides	Allows defining who sets the direct reference (V or P) for the PID. **OPT.** / **FUNCTION** Local: Reference will be set through local control. Network: Reference will be given by the network. Net decides: Reference will be set through local control or the network, as the PLC determines.	NO
G21.3.7 Connector 1 status = Off	Off On	Read-only parameter, shows whether the Ethernet/IP connector 1 is off or on.	NO
G21.3.8 Fault mode c1 = Fault	Fault Ignore	Enables the fault associated to the Ethernet/IP connector 1. **OPT.** / **FUNCTION** Fault: If the timeout is overcome, fault F60:Lost CIP c1 comms will be triggered. Ignore: Fault F60 will not be triggered.	YES
G21.3.9 Connector 2 status = Off	Off On	Read-only parameter, shows whether the Ethernet/IP connector 2 is off or on.	NO
G21.3.10 Fault mode c2 = Fault	Fault Ignore	Enables the fault associated to the Ethernet/IP connector 1. **OPT.** / **FUNCTION** Fault: If the timeout is overcome, fault F112:Lost CIP c2 comms will be triggered. Ignore: Fault F112 will not be triggered.	YES

Subgroup 21.4: Profinet

Grupo 21.4.1: ProfiNET Net

Screen	Range	Function	Set on RUN
G21.4.1.1 IP address = 192.168.1.143	0 to 255	Sets the IP address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the IP address is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.4.1.2 Subnet Mask = 255.255.255.0	0 to 255	Sets the subnet mask address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the subnet mask is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.4.1.3 Gateway = 0.0.0.0	0 to 255	Sets the gateway address of the equipment in the user local network. This address must be provided by the local network administrator. Format of the gateway address is: A.B.C.D. To configure the address, enter a value in each of the four parameters that compose it.	NO
G21.4.1.4 MAC address= A.B.C.D.E.F	0x00 to 0xFF	Sets the MAC address. This address must be unique and exclusive and depends on the LAN board. This address must be provided by Power Electronics. Format of the MAC address is: A.B.C.D.E. F. To configure the address, enter a value in each of the six parameters that compose it.	NO

Subgroup 21.4.2: Master's input

Subgroup 21.4.2.1: Addresses

Screen	Range	Function	Set on RUN
Custom modbus addr1: 0	0 to 65535	See “Subgroup 20.6: Custom Modbus address”. **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2, G21.3.3 and G21.4.3 will change.	YES
Custom modbus addr2: 0			
...			
Custom modbus addr16: 0			

Subgroup 21.4.2.2: Values

Screen	Range	Function	Set on RUN
Custom modbus val1: 0	0 to 65535	See "Subgroup 20.7: Custom Modbus values". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2, G21.3.3 and G21.4.3 will change.	YES
Custom modbus val2: 0			
...			
Custom modbus val16: 0			

Subgroup 21.4.3: Master's output

Subgroup 21.4.3.1: Addresses

Screen	Range	Function	Set on RUN
Custom modbus addr17: 0	0 to 65535	See "Subgroup 20.6: Custom Modbus address". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2, G21.3.3 and G21.4.2 will change.	YES
Custom modbus addr18: 0			
...			
Custom modbus addr32: 0			

Subgroup 21.4.3.2: Values

Screen	Range	Function	Set on RUN
Custom modbus val17: 0	0 to 65535	See "Subgroup 20.7: Custom Modbus values". **Note:** If these values are modified, the configuration of G20.6, G20.7, G21.3.2, G21.3.3 and G21.4.2 will change.	YES
Custom modbus val18: 0			
...			
Custom modbus val32: 0			

Others

Screen	Range	Function	Set on RUN
G21.4.4 Connector 1 status = Off	Off On	Read-only parameter, shows whether connector 1 of the Profinet board is off or on.	NO
G21.4.5 Fault mode c1 = Fault	Fault Ignore	Enables the fault associated to the Profinet connector 1. **OPT.** / **FUNCTION** Fault: If the timeout is overcome, fault F110:Lost PNET c1 comms will be triggered. Ignore: Fault F110 will not be triggered.	YES
G21.4.6 Connector 2 status = Off	Off On	Read-only parameter, shows whether connector 2 of the Profinet board is off or on.	NO
G21.4.7 Fault mode c2 = Fault	Fault Ignore	Enables the fault associated to the Profinet connector 2. **OPT.** / **FUNCTION** Fault: If the timeout is overcome, fault F111:Lost PNET c2 comms will be triggered. Ignore: Fault F111 will not be triggered.	YES

EN

Group 23: Expansion

Subgroup 23.2: Input/Output

This group shows the status of the inputs and outputs expansion boards and allows setting the led in test mode (fast blinking).

Screen	Range	Function	Set on RUN
G23.2.1 IO digital A status = Off	Off On	Shows the status of the digital inputs and outputs expansion board A. **OPT.** / **FUNCTION** Off – The board is not connected. On – The board is connected	NO
G23.2.2 IO digital A test = No	No Yes	Enables led fast blinking. This is useful to help locate the board when several boards of the same type are connected. **Note:** this parameter only appears if the I/O expansion board A has been connected.	NO
G23.2.3 IO digital B status = Off	Off On	Shows the status of the digital inputs and outputs expansion board B. **OPT.** / **FUNCTION** Off – The board is not connected. On – The board is connected	NO
G23.2.4 IO digital B test = No	No Yes	Enables led fast blinking. This is useful to help locate the board when several boards of the same type are connected. **Note:** this parameter only appears if the I/O expansion board B has been connected.	NO
G23.2.5 IO analog A status = Off	Off On	These four parameters are similar to G23.2.1, G23.2.2, G23.3.3 and G23.3.4 respectively, but for the analogue inputs and outputs expansion boards.	NO
G23.2.6 IO analog A test = No	No Yes		NO
G23.2.7 IO analog B status = Off	Off On		NO
G23.2.8 IO analog B test = No	No Yes		NO

Subgroup 23.3: Communications

Screen	Range	Function	Set on RUN
G23.3.1 Profinet board status = Off	Off On	Shows the status of the Profinet board. **OPT.** / **FUNCTION** Off – The board is not connected. On – The board is connected	NO
G23.3.2 Profinet board test = No	No Yes	Enables the LED fast blinking. This is useful to locate the board in case several boards of the same type are connected. **Note:** This parameter will only appear if a Profinet board has been connected.	NO
G23.3.3 Profinet Com Error = Fault	Off Warning Fault	Allows defining the behavior of the drive in case communication with the Profinet board is lost. **OPT.** / **FUNCTION** Off – Drive will remain operating normally. Warning – Warning “W48:Profinet expansion” will be triggered. Fault – Fault “F108:Expansion Profinet comm” will be triggered and the drive will stop.	NO
G23.3.4 EthernetIP board state = Off	Off On	Shows the status of the Ethernet/IP board. **OPT.** / **FUNCTION** Off – The board is not connected. On – The board is connected	NO
G23.3.5 EthernetIP board test = No	No Yes	Enables the LED fast blinking. This is useful to locate the board in case several boards of the same type are connected. **Note:** This parameter will only appear if an Ethernet/IP board has been connected.	NO

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on RUN</th></tr>
<tr><td>G23.3.6 EthernetIP Com Error = Fault</td><td>Off
Warning
Fault</td><td>Allows defining the behavior of the drive in case communication with the Ethernet/IP board is lost.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Off</td><td>Drive will remain operating normally.</td></tr><tr><td>Warning</td><td>Warning “W49:EthernetIP” expansion will be triggered.</td></tr><tr><td>Fault</td><td>Fault “F109:Exp EthernetIP comm” will be triggered and the drive will stop.</td></tr></table></td><td>NO</td></tr>
<tr><td>G23.3.7 Profibus board status = Off</td><td>Off
On</td><td>Shows the status of the Profibus board.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Off</td><td>The board is not connected.</td></tr><tr><td>On</td><td>The board is connected</td></tr></table></td><td>NO</td></tr>
<tr><td>G23.3.8 Profibus board test = No</td><td>No
Yes</td><td>Enables the LED fast blinking. This is useful to locate the board in case several boards of the same type are connected.
Note: This parameter will only appear if a Profibus board has been connected.</td><td>NO</td></tr>
<tr><td>G23.3.9 Profibus Com Error = Fault</td><td>Off
Warning
Fault</td><td>Allows defining the behavior of the drive in case communication with the Profibus board is lost.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Off</td><td>Drive will remain operating normally.</td></tr><tr><td>Warning</td><td>Warning “W37:Profibus expansion” expansion will be triggered.</td></tr><tr><td>Fault</td><td>Fault “F72:Expansion Profibus comm” will be triggered and the drive will stop.</td></tr></table></td><td></td></tr>
</table>

EN

Group 25: Master / Slave

This group will appear when parameter [G1.9] is enabled.

Screen	Range	Function	Set on RUN
G25.1 Role = Master	Master Slave	FUNC. / DESCRIPTION Master: Equipment will work as master. Slave: Equipment works as slave, taking commands from the master.	NO
G25.2 Start fiber = No	No Yes	If the drive is configured in slave mode and fiber optics communication, equipment will be able to start directly with command from the master or not, depending on the setting of this parameter. FUNC. / DESCRIPTION No: The slave needs an additional command to the master's command. Yes: The slave will start with the master's command.	YES
G25.3 Fault partner = Yes	No Yes	When this option is enabled in the drive master and the system is operating in closed loop mode, the master will stop and show "F95 SLAVE" if one or more slaves are in fault. Otherwise, master will continue working.	YES
G25.4 Stop partner fault = Spin	Spin Ramp	In this option, whenever for any reason the master goes into fault status, all slaves automatically stop during a stop in spin or ramp.	YES
G25.5 Restart after reset = No	No Yes	When one of the equipment in the system fails, if all others keep on operating, once the fault is reset the equipment will start automatically or not depending on the setting of this parameter.	YES
G25.6 Time out fiber = 1.0 s	0.1 to 10 s, Off	Selects open loop and closed loop modes. Besides, for closed loop mood, it allows stablishing the maximum slave response time. If the master does not receive an answer before this time elapses, it will trigger fault "F93 Timeout FO". OPT / FUNCTION OFF: Closed loop off. 0.100s: Closed loop enabled 0.1s 9.990s: Slave response time exceeded. Option "listener" slave is available in mode "open loop". The slave will keep on receiving bus communications but will not act.	YES

Group 26: Fans

Screen	Range	Function	Set on RUN
G26.1 Fans mode = Run	Off Auto Fixed Run	Selects fans mode operation. OPT. / FUNCTION Off: Fans are deactivated. Auto: Temperature mode. Fans speed reference is defined by the slope generated from parameters G26.2 to G26.3. Fixed: Fans will start at the moment they get power supply. Run: Fans are connected with the start command and disconnect three minutes after the equipment has stopped.	YES
G26.2 Min temperature = 47 ºC	35ºC to G26.3 Max temperature	Defines the temperature to deactivate fans while they are operating. **Available if [G26.1 = Auto].**	YES
G26.3 Max temperature = 51 ºC	G26.2 Min temperature to 80ºC	Defines the temperature to activate fans. **Available if [G26.1 = Auto].**	YES
G26.4 Power off delay = 1 min	1 to 5	In run mode, time to turn off fans from the moment when the run command disappears. **Available if [G26.1 = Run].**	YES

MODBUS COMMUNICATION

6

EN

Supported Modbus Function Codes

Serial communications protocol implemented by SD750 drives adheres to Modbus Industrial standard communications protocol of Modicon. From all the functions that exist in the Modbus protocol, the drive uses the Reading and Writing functions:

Function	Description	Registers Number
3	Registers Reading	120
16	Registers Writing	120

The implementation of these function codes in the drive allows reading up to 120 registers from a Parameters Group in a single frame. In case of requiring accessing consecutive memory registers, but which belong to different groups, user will need to use as many frames as groups are involved.

Modbus Function Code Nº 3: Registers Reading

This function code allows the Modbus controller (master) to read the content of the data registers indicated in the drive (slave). This function code only admits unicast addressing. Broadcast or groupcast addressing are not possible with this function code.

The implementation of this function code in the drive allows reading up to 120 registers of the drive with consecutive addresses in a single frame.

Next, a frame is shown where the master attempts to read the content of 3 registers of a drive where the current used by each phase is. The information that should be attached in the ask frame is the following:

Data address of the drive.
Modbus function code (3 Registers reading).
Starting Data address.
Registers number for reading.
CRC-16 code.

The answer of the drive (slave) should contain the following fields:

Data address of the slave.
Modbus function code (3 Registers reading).
Bytes number for reading.
Bytes number / 2 registers.
CRC-16 code.

Each register consists of 2 bytes (2x8bits=16 bits). This is the default length of all the registers that form the SD750.

Example: Modbus Function Code Nº 3 (Registers Reading)

Suppose we want to read the motor current (nameplate data) via communications. This data corresponds to the parameter [G2.1 = 00.0A]. The frame that should be transmitted is:

Modbus Address	Modbus Function Code	Starting Data Address (40282)	Registers Number	CRC-16
0x0A	0x03	0x0119	0x0001	0x2493

Suppose that instantaneous current of the equipment is 8,2 A. (Modbus value 82 decimal = 0x52 Hexadecimal). The answer of the slave would be:

Modbus Address	Modbus Function Code	Starting Data Address (40282)	Registers Number	CRC-16
0x0A	0x03	0x02	0x0052	0x9C78

Modbus Function Code Nº 16: Registers Writing

This function code allows the Modbus controller (master) to write the content of the data registers indicated in the drive (slave), whenever they are not Read Only registers. Registers writing by the master does not impede the later modification of those registers by the slave.

The implementation of this function code in the drive allows writing up to 5 registers of the drive in a single frame.

Next, a frame is shown where the master attempts to write the content of one register that stores the acceleration time. The information that should be attached in the request frame is the following:

- Data address of the slave.
- Modbus function code (16 Registers writing).
- Starting Data Address.
- Registers number for writing.
- Bytes number for writing.
- Content of registers for writing.
- CRC-16 code.

The answer of the slaves includes:

- Data address of the slave.
- Modbus function code (16 Registers writing).
- Starting Data Address.
- Written registers number.
- CRC-16 code.

Addressing Modes

Broadcast Addressing Mode

Broadcast addressing mode allows the master to access at the same time all the slaves connected to the Modbus network. The Modbus function code that admits this global addressing mode is:

Function	Description
16	Registers Writing

To access all devices connected to a Modbus network, use the address 0. When this address is used, all the slaves in the Modbus network will execute the required task but they do not prepare any answer.

Remote Control Functions

HOST START CONTROL

Screen	-
Range	0 – 1
Modbus address	**43586**
Modbus range	0 to 1
Read / Write	YES
Description	Allows sending the start command to the equipment through communications network.

HOST STOP CONTROL

Screen	-
Range	0 – 1
Modbus address	**43587**
Modbus range	0 to 1
Read / Write	YES
Description	Allows sending the stop command to the equipment through communications network.

HOST RESET CONTROL

Screen	-
Range	0 – 1
Modbus address	**43588**
Modbus range	0 to 1
Read / Write	YES
Description	Allows sending the reset command to the equipment through communications network.

HOST TRIP CONTROL

Screen	-
Range	0 – 1
Modbus address	**43589**
Modbus range	0 to 1
Read / Write	YES
Description	Allows the equipment to generate a fault through communications network.

EN

HOST COMMS CONTROL

Screen	-
Range	-25000 to +25000
Modbus address	**43570**
Modbus range	-25000 to +25000
Read / Write	YES
Description	Allows the assignment of the speed reference through communications network.

Summary of Modbus Addresses

Modbus Register 'COMMS STATUS'

This register supplies information about the communication status of the drive, as shown in the following table:

Modbus Address	Bit	Description	Meaning on '0'	Meaning on '1'
43585	0	RUN	Drive stopped	Drive running
	1	FAULT	No Fault	Fault
	2	WARNING	No Warning	At least one warning present
	3	READY	The drive is not ready to start (a fault or warning is present)	The drive is ready to start (no faults and no warnings)
	4	EXTERNAL POWER SUPPLY	The drive is powered through internal power supply	The drive is powered through external power supply
	5	DELAYING START	Not delaying start	Delaying start
	6	MOTOR OVERLOAD	Motor overload warning (MOL) is not active	Motor overload warning (MOL) is active
	7	MOTOR OVERLOAD FAULT	Motor overload fault (F25) is not present	Motor overload fault (F25) is present
	8	RESERVED	Reserved	Reserved
	9	DRIVE AT SET SPEED	Motor speed is different to the reference speed	Motor speed has reached the value set as reference
	10	CURRENT LIMIT	Current limitation warning (ILT) is not present	Current limitation warning (ILT) is present
	11	VOLTAGE LIMIT	Voltage limitation warning (VLT) is not present	Voltage limitation warning (VLT) is present
	12	TORQUE LIMIT	Torque limitation warning (TLT) is not present	Torque limitation warning (TLT) is present
	13	COMPARATOR 1	Comparator 1 is 'OFF'	Comparator 1 is 'ON'
	14	COMPARATOR 2	Comparator 2 is 'OFF'	Comparator 2 is 'ON'
	15	COMPARATOR 3	Comparator 3 is 'OFF'	Comparator 3 is 'ON'

Programming Parameters

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G1.1	Lock parameters = No	40011	No Partial lock Total lock Display lock	0 to 3	RW
G1.1a	Lock password = 0	40012	0 to 65535	0 to 65535	RW
G1.1b	Unlock password recov. = 0	40013	0 to 65535	0 to 65535	RO
G1.2	Language = Spanish	40014	Spanish English	0 to 1	RW
G1.3	Initialize = No init	40015	No init User parameters Motor parameters All parameters	0 to 3	RW
G1.4	Short menu = No	40016	No Yes	0 to 1	RW
G1.5	Activate programs = Standard	40017	Standard, 1 to 8	0 to 8	RW
G1.6	Service group password = 0	40018	0 to 65535	0 to 65535	RW
G1.7	Network synchronization= 0	40019	No Yes	0 to 1	RW
G1.9	Master/slave config = Disable	40021	Disable Enable	0 to 1	RW
G2.1	Motor plate current = 1.0In A	40031	0.2In to 1.5In	2000 to 15000	RW
G2.2	Motor plate voltage = 0 V	40032	0 to 700 V	0 to 700	RW
G2.3	Motor plate power =Pn	40033	0.0 to 6500.0 kW	0 to 65000	RW
G2.4	Motor plate rpm = 1485 rpm	40034	0 to 24000 rpm	0 to 24000	RW
G2.5	Motor plate phi cosine = 0.85	40035	0.01 to 0.99	1 to 99	RW
G2.6	Motor plate frequency = 50 Hz	40036	0 to 599 Hz	0 to 599	RW
G2.7	Motor cooling = 63 %	40037	50% to 100%, Off	5000 to 10100	RW
G3.1	Speed ref 1 source = Local	40051	None Analog Input 1 Analog Input 2 Analog Input 1+2 Local Multireferences Motorized potentiometer PID Analog Input 3 Communications Fiber PowerPLC Analog Input 4 Analog Input 5 Analog Input 6 Analog Input 7 EthernetIP	0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17	RW
G3.2	Speed ref 2 source = Local	40052			RW
G3.3	Speed local reference = 100.0 %	40053	-250.0 to 250.0	-25000 to 25000	RW
G3.4	Torque ref 1 source = Local	40054	None Analog Input 1 Analog Input 2 Analog Input 1+2 Local Multireferences Motorized potentiometer PID Analog Input 3 Communications Fiber PowerPLC Analog Input 4 Analog Input 5 Analog Input 6 Analog Input 7 EthernetIP	0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17	RW
G3.5	Torque ref 2 source = Local	40055			RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G3.6	Torque local reference = 100.0 %	40056	-250.0 to 250.0 %	-25000 to 25000	R/W
G4.1.1	Main control mode = Local	40071	None Local Remote Communications	0 1 2 3	RW
G4.1.2	Alternative ctrl mode = Remote	40072	Fiber PowerPLC EthernetIP	4 5 6	RW
G4.1.3	Allow local reset = Yes	40073	No Yes	0 to 1	RW
G4.1.4	Digital input mode = All programmable	40074	All programmable Mref 2 wires Mref 3 wires Motorized potentiometer Resettable potentiometer	1 2 3 4 5	RW
G4.1.5	Digital Input 1 = Start / Stop	40075	Not used Start (NO) Stop 1 (NC) Stop 2 / Reset Stop 1 / Reset	00 01 02 03 04	RW
G4.1.6	Digital Input 2 = Reference 2	40076	Start / Stop Start / Reset / Stop Reset (NC) Start + Inch 1 Start + Inch 2	05 06 07 08 09	RW
G4.1.7	Digital Input 3 = Control 2	40077	Invert speed Invert inches Acc / Dec 2 Reference 2 Control 2	10 13 14 15 17	RW
G4.1.8	Digital Input 4 = Reset (NC)	40078	Start / Stop / Reset Stop 2 (NC) Speed limit 2 Start mode 2 Current limit 2	18 19 20 22 23	RW
G4.1.9	Digital Input 5 = Not used	40079	External emergency Freemaq Fault Start/Stop + Inv LCL Regenerative fb PTC	24 25 27 28 29	RW
G4.1.10	Digital Input 6/PTC = Not used	40080	Speed / Torque Output 1 Feedback Output 2 Feedback Output 3 Feedback Universal Stop Torque limit 2	32 33 34 35 41 48	RW
G4.1.11	Digital Input 7 = Not used	40081	Not used Start (NO) Stop 1 (NC) Stop 2 / Reset	0 1 2 3	RW
G4.1.12	Digital Input 8 = Not used	40082	Stop 1 / Reset Start / Stop Start / Reset / Stop Reset (NC)	4 5 6 7	RW
G4.1.13	Digital Input 9 = Not used	40083	Start + Inch 1 Start + Inch 2 Invert speed Invert inches	8 9 10 13	RW
G4.1.14	Digital Input 10 = Not used	40084	Acc / Dec 2 Reference 2 Control 2 Start / Stop / Reset	14 15 17 18	RW
G4.1.15	Digital Input 11 = Not used	40085	Stop 2 (NC) Speed limit 2 Start mode 2 Current limit 2	19 20 22 23	RW
G4.1.16	Digital Input 12 = Not used	40086	External emergency Freemaq Fault Start/Stop + Inv LCL Regenerative fb	24 25 27 28	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.1.17	Digital Input 13 = Not used	40087	PTC Speed / Torque Output 1 Feedback Output 2 Feedback	29 32 33 34	RW
G4.1.18	Digital Input 14 = Not used	40088	Output 3 Feedback Output 4 Feedback Output 5 Feedback Output 6 Feedback	35 36 37 38	RW
G4.1.19	Digital Input 15 = Not used	40089	Output 7 Feedback Output 8 Feedback Universal Stop Output 9 Feedback	39 40 41 43	RW
G4.1.20	Digital Input 16 = Not used	40090	Output 10 Feedback Output 11 Feedback Output 12 Feedback Output 13 Feedback Torque limit 2	44 45 46 47 48	RW
G4.1.27	Feedback Error Timeout = 1.0s	40100	0.5 to 60.0s	5 to 600	RW
G4.1.28	Invert Input mode = 0	41272	0 to 4095	0 to 4095	RW
G4.2.1	Enable sensor = No	40101	No Yes	0 to 1	RW
G4.2.2	Sensor unit = l/s	40102	% l/s m3/s l/m m3/m l/h m3/h m/s m/m m/h bar kPa psi m ºC ºF K Hz rpm	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18	RW
G4.2.3	AI1 Format = V	40103	V mA	0 to 1	RW
G4.2.4	AI1 low level = 0.0 Variable (G4.2.3-EA1 Format)	40104	-10.0V to G4.2.6 +0.0mA to G4.2.6	-100 to G4.2.6 0 to G4.2.6	RW
G4.2.5	Sensor low level = 0.0 Variable (G4.2.2-Sensor unit)	40105	-3200.0 to G4.2.7 Eng. Units	-32000 to G4.2.7	RW
G4.2.6	AI1 high level = 10.0 Variable (G4.2.3-EA1 Format)	40106	G4.2.4 to +10V G4.2.4 to +20mA	G4.2.4 to +10V G4.2.4 to +20mA	RW
G4.2.7	Sensor low level = 10.0 Variable (G4.2.2-Sensor unit)	40107	G4.2.5 to 3200.0 Eng. Units.	G4.2.5 to 32000	RW
G4.2.8	AI1 Ref speed min = 0.0 %	40108	-250.0 to G4.2.9	-25000 to G4.2.9	RW
G4.2.9	AI1 Ref speed max = 100.0 %	40109	G4.2.8 to 250.0%	G4.2.8 to 25000	RW
G4.2.10	Sensor min value = 0.0 Variable (G4.2.2-Sensor unit)	40110	-3200.0 to G4.2.12 Eng. Units.	-32000 to G4.2.12	RW
G4.2.11	G4.2.11 Open loop min speed = 0.0 %	40111	-250.0 to 250.0%	-25000 to 25000	RW
G4.2.12	Open loop min speed = 10.0 Variable (G4.2.2-Sensor unit)	40112	G4.2.10 to 3200.0 Eng. Units.	G4.2.10 to 32000	RW
G4.2.13	Open loop max speed = 100.0 %	40113	-250.0 to 250.0%	-25000 to 25000	RW
G4.2.14	AI1 loss protection = No	40114	No Yes	0 to 1	RW
G4.2.15	AI1 zero band filter = Off	40115	Off = 0.0; 0.1% to 2.0%	0 to 200	RW
G4.2.16	AI1 stabilizer filter = Off	40116	Off = 0.0; 0.1 to 20.0s	0 to 200	RW
G4.3.0	Enable Pulse Input Mode = No	40120	No Yes	0 to 1	RW
G4.3.1	Enable sensor = No	40121	No Yes	0 to 1	RW
G4.3.2	Sensor unit = Bar	40122	See G4.2.2	0 to 18	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.3.2	Sensor unit Pulse Input = l/s	40841	% l/s m³/s l/m m³/m l/h m³/h m/s m/m m/h	00 01 02 03 04 05 06 07 08 09	RW
G4.3.2b	Pulses per unit = 100	40842	1 to G4.3.2c	1 to G4.3.2c	RW
G4.3.2c	Max pulses = 1000	40843	1 to 32000	1 to 32000	RW
G4.3.3	AI2 Format = mA	40123	V mA	0 to 1	RW
G4.3.4	AI2 low level = 4.0 Variable (G4.3.3 AI2 Format)	40124	-10.0V to G4.3.6 +0.0mA to G4.3.	-100 to G4.3.6 +0 to G4.3.6	RW
G4.3.5	Sensor low level = 0 Variable (G4.3.2 Sensor unit)	40125	-3200.0 to G4.3.7	-32000 to G4.3.7	RW
G4.3.6	AI2 high level = 20.0Variable (G4.3.3 AI2 Format)	40126	G4.3.4 to +10V G4.3.4 to +20mA	G4.3.4 to +10V G4.3.4 to +20mA	RW
G4.3.7	Sensor high level = 10.0 Variable (G4.3.2 Sensor unit)	40127	G4.3.5 to 3200.0	G4.3.5 to 32000	RW
G4.3.8	AI2 Ref speed min = 0.0 %	40128	-250.0% to G4.3.9	-25000 to G4.3.9	RW
G4.3.9	AI2 Ref speed max = 100.0 %	40129	G4.3.8 to 250.0%	G4.3.8 to 25000	RW
G4.3.10	Sensor low level = 0.0 Variable (G4.3.2 Sensor unit)	40130	-3200.0 to G4.3.12	-32000 to G4.3.12	RW
G4.3.11	Open loop min speed = 0.0 %	40131	-250.0 to 250.0%	-25000 to 25000	RW
G4.3.12	Sensor high level = 10.0 Variable (G4.3.2 Sensor unit)	40132	G4.3.10 to 3200.0	G4.3.10 to 32000	RW
G4.3.13	Open loop max speed = 100.0 %	40133	-250.0 to 250.0%	-25000 to 25000	RW
G4.3.14	AI2 loss protection = No	40134	No Yes	0 to 1	RW
G4.3.15	AI2 zero band filter = Off	40135	Off = 0.0 0.1 to 2.0%	0 to 200	RW
G4.3.16	AI2 stabilizer filter = Off	40136	Off = 0.0 0.1 to 20.0 s	0 to 200	RW
G4.4.0	PT100 Mode = No	40157	No Yes	0 to 1	RW
G4.4.1	Enable sensor = No	40141	No Yes	0 to 1	RW
G4.4.2	Sensor unit = l/s	40142	See G4.3.2	0 to 18	RW
G4.4.3	AI3 Format = V	40143	V mA	0 to 1	RW
G4.4.4	AI3 low level = 0.0 V	40144	-10.0V to G4.4.6 +0mA to G4.4.6	-100 to G4.4.6 +0 to G4.4.6	RW
G4.4.5	Sensor low level = 0.0 Variable (G4.4.2 Sensor Unit)	40145	-3200.0 to G4.4.7	-32000 to G4.4.7	RW
G4.4.6	AI3 high level = 10.0V	40146	G4.4.4 to +20.0V G4.4.4 to +20mA	G4.4.4 to +200 G4.4.4 to +20	RW
G4.4.7	Sensor high level = 10.0 Variable (G4.4.2 Sensor unit)	40147	G4.4.5 to 3200.0	G4.4.5 to 32000	RW
G4.4.8	AI3 Ref speed min = 0.0 %	40148	-250.0 to G4.4.9	-25000 to G4.4.9	RW
G4.4.9	AI3 Ref speed max = 100.0 %	40149	G4.4.8 to 250.0	G4.4.8 to 25000	RW
G4.4.10	Sensor min value = 0.0 Variable (G4.4.2 Sensor unit)	40150	-3200.0 to G4.4.12	-32000 to G4.4.12	RW
G4.4.11	Open loop min speed = 0.0 %	40151	-250.0 to 250.0%	-25000 to 25000	RW
G4.4.12	Sensor max value = 10.0V	40152	G4.4.10 to 3200.0	G4.4.10 to 32000	RW
G4.4.13	Open loop max speed = 100.0 %	40153	-250.0 to 250.0%	-25000 to 25000	RW
G4.4.14	AI3 loss protection = No	40154	No Yes	0 to 1	RW
G4.4.15	AI3 zero band filter = Off	40155	Off = 0.0, 0.1 to 2.00%	0 to 200	RW
G4.4.16	AI3 stabilizer filter = Off	40156	Off = 0.0, 0.1 to 20.0s	0 to 200	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.5.1	Enable sensor = No	40831	No Yes	0 to 1	RW
G4.5.2	Sensor unit = l/s	40832	See G4.3.2	0 to 18	RW
G4.5.3	AI4 format = V	40833	V mA	0 to 1	RW
G4.5.4	AI4 low level = 0.0 V	40834	-10.0V to G4.5.6 +0mA to G4.5.6	-10000V to G4.5.6 +0mA to G4.5.6	RW
G4.5.5	Sensor low level = 0.0 l/s	40835	-3200.0 to G4.5.7	-32000 to G4.5.7	RW
G4.5.6	AI4 high level = 10.0 V	40836	G4.5.4 to 20.0V	G4.5.4 to 20000	RW
G4.5.7	Sensor high level = 10.0 l/s	40837	G4.5.5 to 3200.0 l/s	G4.5.5 to 32000	RW
G4.5.8	AI4 Ref speed min = 0.0 %	40838	-250.0 % to G4.5.9	-25000 to G4.5.9	RW
G4.5.9	AI4 Ref speed max = 100.0 %	40839	G4.5.8 to 250.0 %	G4.5.8 to 25000	RW
G4.5.10	Sensor min value = 0.0 l/s	40840	-3200.0 l/s to G4.5.12	-32000 to G4.5.12	RW
G4.5.11	Open loop min speed = 0.0 %	40844	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.5.12	Sensor max value = 10.0 l/s	40845	G4.5.10 to 3200.0 l/s	G4.5.10 to 32000	RW
G4.5.13	Open loop max speed = 100.0 %	40846	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.5.14	AI4 loss protection = No	40847	No Yes	0 to 1	RW
G4.5.15	AI4 zero band filter = Off	40848	Off = 0.0 0.1 to 2.00 %	0 to 200	RW
G4.5.16	AI4 stabilizer filter = Off	40849	Off = 0.0 0.1 to 20.0 s	0 to 200	RW
G4.6.1	Enable sensor = No	40864	No Yes	0 to 1	RW
G4.6.2	Sensor unit = l/s	40865	See G4.3.2	0 to 18	RW
G4.6.3	AI5 Format = V	40866	V = 0 mA = 1	0 to 1	RW
G4.6.4	AI5 low level = 0.0 V	40867	-10.0 V to G4.6.6	-10000 to G4.6.6	RW
G4.6.5	Sensor low level = 0.0 l/s	40868	-3200.0 l/s to G4.6.7	-32000 to G4.6.7	RW
G4.6.6	AI5 high level = 10.0 V	40869	G4.6.4 to 20.0 V	G4.6.4 to 20000	RW
G4.6.7	Sensor high level = 10.0 l/s	40870	G4.6.5 to 3200.0 l/s	G4.6.5 to 32000	RW
G4.6.8	AI5 Ref speed min = 0.0 %	40871	-250.0 % to G4.6.9	-25000 to G4.6.9	RW
G4.6.9	AI5 Ref speed max = 100.0 %	40872	G4.6.8 to 250.0 %	G4.6.8 to 25000	RW
G4.6.10	Sensor min value = 0.0 l/s	40873	-3200.0 l/s to G4.6.12	-32000 to G4.6.12	RW
G4.6.11	Open loop min speed = 0.0 %	40874	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.6.12	Sensor max value = 10.0 l/s	40875	G4.6.10 to 3200.0 l/s	G4.6.10 to 32000	RW
G4.6.13	Open loop max speed = 100.0 %	40876	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.6.14	AI5 loss protection = No	40877	No Yes	0 to 1	RW
G4.6.15	AI5 zero band filter = Off	40878	Off = 0.0 0.1 to 2.00 %	0 to 200	RW
G4.6.16	AI5 stabilizer filter = Off	40879	Off = 0.0 0.1 to 20.0 s	0 to 200	RW
G4.7.1	Enable sensor = No	40524	No Yes	0 to 1	RW
G4.7.2	Sensor unit = l/s	40525	See G4.3.2	0 to 18	RW
G4.7.3	AI6 Format = V	40526	V = 0 mA = 1	0 to 1	RW
G4.7.4	AI6 low level = 0.0 V	40527	-10.0 V to G4.7.6	-10000 to G4.7.6	RW
G4.7.5	Sensor low level = 0.0 l/s	40528	-3200.0 l/s to G4.7.7	-32000 to G4.7.7	RW
G4.7.6	AI6 high level = 10.0 V	40529	G4.7.4 to 20.0 V	G4.7.4 to 20000	RW
G4.7.7	Sensor high level = 10.0 l/s	40530	G4.7.5 to 3200.0 l/s	G4.7.5 to 32000	RW
G4.7.8	AI6 Ref speed min = 0.0 %	40531	-250.0 % to G4.7.9	-25000 to G4.7.9	RW
G4.7.9	AI6 Ref speed max = 100.0 %	40532	G4.7.8 to 250.0 %	G4.7.8 to 25000	RW
G4.7.10	Sensor min value = 0.0 l/s	40533	-3200.0 l/s to G4.7.12	-32000 to G4.7.12	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.7.11	Open loop min speed = 0.0 %	40534	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.7.12	Sensor max value = 10.0 l/s	40535	G4.7.10 to 3200.0 l/s	G4.7.10 to 32000	RW
G4.7.13	Open loop max speed = 100.0 %	40536	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.7.14	AI6 loss protection = No	40537	No Yes	0 to 1	RW
G4.7.15	AI6 zero band filter = Off	40538	Off = 0.0 0.1 to 2.00 %	0 to 200	RW
G4.7.16	AI6 stabilizer filter = Off	40539	Off = 0.0 0.1 to 20.0 s	0 to 200	RW
G4.8.1	Enable sensor = No	41405	No Yes	0 to 1	RW
G4.8.2	Sensor unit = l/s	41406	See G4.3.2	0 to 18	RW
G4.8.3	AI7 Format = V	41407	V = 0 mA = 1	0 to 1	RW
G4.8.4	AI7 low level = 0.0 V	41408	-10.0 V to G4.8.6	-10000 to G4.8.6	RW
G4.8.5	Sensor low level = 0.0 l/s	41409	-3200.0 l/s to G4.8.7	-32000 to G4.8.7	RW
G4.8.6	AI7 high level = 10.0 V	41410	G4.8.4-a 20.0 V	G4.8.4 to 20000	RW
G4.8.7	Sensor high level = 10.0 l/s	41411	G4.8.5 to 3200.0 l/s	G4.8.5 to 32000	RW
G4.8.8	AI7 Ref speed min = 0.0 %	41412	-250.0 % to G4.8.9	-25000 to G4.8.9	RW
G4.8.9	AI7 Ref speed max = 100.0 %	41413	G4.8.8 to 250.0 %	G4.8.8 to 25000	RW
G4.8.10	Sensor min value = 0.0 l/s	41414	-3200.0 l/s to G4.8.12	-32000 to G4.8.12	RW
G4.8.11	Open loop min speed = 0.0 %	41415	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.8.12	Sensor max value = 10.0 l/s	41416	G4.8.10 to 3200.0 l/s	G4.8.10 to 32000	RW
G4.8.13	Open loop max speed = 100.0 %	41417	-250.0 % to 250.0 %	-25000 to 25000	RW
G4.8.14	AI7 loss protection = No	41418	No Yes	0 to 1	RW
G4.8.15	AI7 zero band filter = Off	41419	Off = 0.0 0.1 to 2.00 %	0 to 200	RW
G4.8.16	AI7 stabilizer filter = Off	41420	Off = 0.0 0.1 to 20.0 s	0 to 200	RW
G5.1.1	Acceleration rate 1 = 1.50 %/s	40181	0.01 to 650.00 % / s	1 to 65000	RW
G5.1.2	Acceleration rate 2 = 2.00 %/s	40183	0.01 to 650.00 % / s	1 to 65000	RW
G5.1.3	Accel break speed = Off	40185	Off =0 1 to 250%	0 to 25000	RW
G5.1.4	Ramp after V.Deep = 1.50 %/s	40193	0.05 to 650.00 % / s	5 to 65000	RW
G5.2.1	Deceleration rate 1 = 1.50 %/s	40182	0.01 to 650.00 % / s	1 to 65000	RW
G5.2.2	Deceleration rate 2 = 2.00 %/s	40184	0.01 to 650.00 % / s	1 to 65000	RW
G5.2.3	Decel break speed = Off	40186	Off = 0 1 to 250%	0 to 25000	RW
G5.3.1	Mot pot accel rate 1 = 1.00 %/s	40188	0.01 to 650.00 % / s	1 to 65000	RW
G5.3.2	Mot pot decel rate 1 = 3.00 %/s	40189	0.01 to 650.00 % / s	1 to 65000	RW
G5.3.3	Mot pot accel rate 2 = 1.00 %/s	40190	0.01 to 650.00 % / s	1 to 65000	RW
G5.3.4	Mot pot decel rate 2 = 3.00 %/s	40191	0.01 to 650.00 % / s	1 to 65000	RW
G5.3.5	Mot pot rate brk speed = 0 %	40192	0 to 250%	0 to 25000	RW
G5.4	Speed filter = Off	40187	0.0 to 80.0%	0 to 8000	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G6.1	Setpoint source = Multireferences	40201	None Analog Input 1 Analog Input 2 Analog Input 1+2 Multireferences Local Local PID Analog Input 3 Communications Analog Input 4 Analog Input 5 Analog Input 6 Analog Input 7 Ethernet IP	0 1 2 3 4 5 6 7 8 9 10 11 12 13	RW
G6.2	Local process setpoint = 100.0 %	40202	0.0 to 300.0%	0 to 30000	RW
G6.3	Feedback source = Analog Input 2	40203	None Analog Input 1 Analog Input 2 Analog Input 1+2 Analog Input 3 Communications Motor torque Absolute torque Motor current Motor power Bus voltage Motor cos phi Analog Input 4 Analog Input 5 Analog Input 6 Analog Input 7	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	RW
G6.4	Process Kc = 8.0	40204	0.1 to 20.0	1 to 200	RW
G6.5	Process Ti = 0.1 s	40205	0.0 to 1000s; Infinite	1 to 10001	RW
G6.6	Process Td = 0.0 s	40206	0.0 to 250.0s	0 to 2500	RW
G6.7	Invert PID = No	40207	No Yes	0 to 1	RW
G6.8	Feedback low pass filter = Off	40209	Off = 0.0 0.1 to 20.0 s	0 to 200	RW
G6.9	Process error = 0.0 %	40208	-300.0 to 300.0%	-30000 to 30000	RO
G7.1.1	Main start mode = Ramp	40224	Ramp Spin Spin2	0 to 2	RW
G7.1.2	Alternative start mode = Ramp	40225	Ramp Spin Spin2	0 to 2	RW
G7.1.3	Start delay = Off	40226	Off = 0, 0.1 to 6500s	0 to 6500	RW
G7.1.4	Fine restart delay = Off	40229	Off = 0.000, 0.001 to 10.000 s	0 to 10000	RW
G7.1.5	Alt restart delay = Off	40232	Off = 0, 0.1 to 6500.0 s	0 to 65000	RW
G7.1.6	Run on supply loss = Yes	40230	No Yes	0 to 1	RW
G7.1.7	Start after V.Deep = Spin	40240	Ramp Spin	0 to 1	RW
G7.1.8	Run after reset = Yes	40233	No Yes	0 to 1	RW
G7.1.9	Delay after Reset = 0.001 s	40236	0.001 to 9.999 s	1 to 9999	RW
G7.1.10	Magnetization time = Off	40235	Off = 0, 0.001 to 9.999 s	0 to 9999	RW
G7.2.1	Main stop mode = Ramp	40221	Ramp Spin	0 to 1	RW
G7.2.2	Alternative stop mode = Spin	40222	Ramp Spin	0 to 1	RW
G7.2.3	Stop mode switch speed = Off	40223	Off = 0 1 to 250%	0 to 25000	RW
G7.2.4	Stop delay = Off	40227	Off = 0, 0.1 to 6500s	0 to 6500	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G7.2.5	Stop at min speed = No	40228	No Yes	0 to 1	RW
G7.2.6	Power off delay = Off	40234	Off = 0, 0.001 to 9.999 s	0 to 9999	RW
G7.3.1	Tune = 10 %	40231	0 to 100%	0 to 10000	RW
G7.3.2	Minimum speed = 0.0 %	40982	0.0 to 25.0 %	0 to 250	RW
G7.3.3	Magnetization tim = 1.0 s	40981	1.0 to 25.0 s	10 to 250	RW
G8.1.0.1.1	User fault 1 G1 = Off	40283	0 to 255	0 to 255	RW
G8.1.0.1.2	User fault 2 G1 = Off	40284	0 to 255	0 to 255	RW
G8.1.0.1.3	User fault 3 G1 = Off	40285	0 to 255	0 to 255	RW
G8.1.0.2.1	User fault 1 G2 = Off	40286	0 to 255	0 to 255	RW
G8.1.0.2.2	User fault 2 G2 = Off	40287	0 to 255	0 to 255	RW
G8.1.0.2.3	User fault 3 G2 = Off	40288	0 to 255	0 to 255	RW
G8.1.0.3.1	User fault 1 G3 = Off	40289	0 to 255	0 to 255	RW
G8.1.0.3.2	User fault 2 G3 = Off	40290	0 to 255	0 to 255	RW
G8.1.0.3.3	User fault 3 G3 = Off	40291	0 to 255	0 to 255	RW
G8.1.1	Relay 1 source select = Run	40251	Always Off Always ON No faults General fault Start Run Ready Zero speed Set speed Speed direction Speed ref direction Speed limit Current limit Voltage limit Torque limit Comparator 1 Comparator 2 Comparator 3 Acc / Dec 2 Reference 2 Stop 2 Speed limit 2 DC brake Power PLC Communications Crane brake Warnings Copy digital input 1 Copy digital input 2 Copy digital input 3 Copy digital input 4 Copy digital input 5 Copy digital input 6 Copy digital input 7 Copy digital input 8 Copy digital input 9 Copy digital input 10 Copy digital input 11 Copy digital input 12 Copy digital input 13 Copy digital input 14 User's fault group 1 User's fault group 2 User's fault group 3 Start/Stop delay Copy DI15 Copy DI16	00 01 02 03 04 05 06 07 08 09 11 13 14 15 16 17 18 19 20 21 22 23 24 28 29 32 34 35 36 37 38 39 40 44 45 46 47 48 49 50 51 52 53 54 56 57 58	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G8.1.2	Relay 1 ON delay = 0.0 s	40252	0.0 to 999.0 s	0 to 9990	RW
G8.1.3	Relay 1 OFF delay = 0.0 s	40253	0.0 to 999.0 s	0 to 9990	RW
G8.1.4	Relay 1 inversion = No	40254	No Yes	0 to 1	RW
G8.1.5	Relay 2 source select = Always OFF	40255	See 8.1.1	See 8.1.1	RW
G8.1.6	Relay 2 ON delay = 0.0 s	40256	0.0 to 999.0 s	0 to 9990	RW
G8.1.7	Relay 2 OFF delay = 0.0 s	40257	0.0 to 999.0 s	0 to 9990	RW
G8.1.8	Relay 2 inversion = No	40258	No Yes	0 to 1	RW
G8.1.9	Relay 3 source select = Always OFF	40259	See 8.1.1	See 8.1.1	RW
G8.1.10	Relay 3 ON delay = 0.0 s	40260	0.0 to 999.0 s	0 to 9990	RW
G8.1.11	Relay 3 OFF delay = 0.0 s	40261	0.0 to 999.0 s	0 to 9990	RW
G8.1.12	Relay 3 inversion = No	40262	No Yes	0 to 1	RW
G8.1.13	Relay 4 src select = Always OFF	40263	See 8.1.1	See 8.1.1	RW
G8.1.14	Relay 4 ON delay = 0.0 s	40264	0.0 to 999.0 s	0 to 9990	RW
G8.1.15	Relay 4 OFF delay = 0.0 s	40265	0.0 to 999.0 s	0 to 9990	RW
G8.1.16	Relay 4 inversion = No	40266	No Yes	0 to 1	RW
G8.1.17	Relay 5 src select = Always OFF	40267	See 8.1.1	See 8.1.1	RW
G8.1.18	Relay 5 ON delay = 0.0 s	40268	0.0 to 999.0 s	0 to 9990	RW
G8.1.19	Relay 5 OFF delay = 0.0 s	40269	0.0 to 999.0 s	0 to 9990	RW
G8.1.20	Relay 5 inversion = No	40270	No Yes	0 to 1	RW
G8.1.21	Relay 6 src select = Always OFF	40271	See 8.1.1	See 8.1.1	RW
G8.1.22	Relay 6 ON delay = 0.0 s	40272	0.0 to 999.0 s	0 to 9990	RW
G8.1.23	Relay 6 OFF delay = 0.0 s	40273	0.0 to 999.0 s	0 to 9990	RW
G8.1.24	Relay 6 inversion = No	40274	No Yes	0 to 1	RW
G8.1.25	Relay 7 src select = Always OFF	40275	See 8.1.1	See 8.1.1	RW
G8.1.26	Relay 7 ON delay = 0.0 s	40276	0.0 to 999.0 s	0 to 9990	RW
G8.1.27	Relay 7 OFF delay = 0.0 s	40277	0.0 to 999.0 s	0 to 9990	RW
G8.1.28	Relay 7 inversion = No	40278	No Yes	0 to 1	RW
G8.1.29	Relay 8 src select = Always OFF	40279	See 8.1.1	See 8.1.1	RW
G8.1.30	Relay 8 ON delay = 0.0 s	40280	0.0 to 999.0 s	0 to 9990	RW
G8.1.31	Relay 8 OFF delay = 0.0 s	40281	0.0 to 999.0 s	0 to 9990	RW
G8.1.32	Relay 8 inversion = No	40282	No Yes	0 to 1	RW
G8.1.33	Relay 9 src select = Always OFF	42581	See 8.1.1	See 8.1.1	RW
G8.1.34	Relay 9 ON delay = 0.0 s	42582	0.0 to 999.0 s	0 to 9990	RW
G8.1.35	Relay 9 OFF delay = 0.0 s	42583	0.0 to 999.0 s	0 to 9990	RW
G8.1.36	Relay 9 inversion = No	42584	No Yes	0 to 1	RW
G8.1.37	Relay 10 src select = Always OFF	42585	See 8.1.1	See 8.1.1	RW
G8.1.38	Relay 10 ON delay = 0.0 s	42586	0.0 to 999.0 s	0 to 9990	RW
G8.1.39	Relay 10 OFF delay = 0.0 s	42587	0.0 to 999.0 s	0 to 9990	RW
G8.1.40	Relay 10 inversion = No	42588	No Yes	0 to 1	RW
G8.1.41	Relay 11 src select = Always OFF	42589	See 8.1.1	See 8.1.1	RW
G8.1.42	Relay 11 ON delay = 0.0 s	42590	0.0 to 999.0 s	0 to 9990	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G8.1.43	Relay 11 OFF delay = 0.0 s	42591	0.0 to 999.0 s	0 to 9990	RW
G8.1.44	Relay 11 inversion = No	42592	No Yes	0 to 1	RW
G8.1.45	Relay 12 src select = Always OFF	42593	See 8.1.1	See 8.1.1	RW
G8.1.46	Relay 12 ON delay = 0.0 s	42594	0.0 to 999.0 s	0 to 9990	RW
G8.1.47	Relay 12 OFF delay = 0.0 s	42595	0.0 to 999.0 s	0 to 9990	RW
G8.1.48	Relay 12 inversion = No	42596	NO SI	0 to 1	RW
G8.1.49	Relay 13 src select = Always OFF	42597	See 8.1.1	See 8.1.1	RW
G8.1.50	Relay 13 ON delay = 0.0 s	42598	0.0 to 999.0 s	0 to 9990	RW
G8.1.51	Relay 13 OFF delay = 0.0 s	42599	0.0 to 999.0 s	0 to 9990	RW
G8.1.52	Relay 13 inversion = No	42600	No Yes	0 to 1	RW
G8.1.53	Speed for crane brake = 0.00 %	40300	0.00 to 100.00%	0 to 10000	RW
G8.2.1	AO1 source selection = Motor speed	40301	None 00 Motor speed 01 Motor current 02 Motor voltage 03 Motor power 04 Motor torque 05 Motor cos phi 06 Motor temperature 07 Motor frequency 08 Input voltage 09 Bus voltage 10 Drive temperature 11 Speed reference 12 PID reference 14 PID feedback 15 PID error 16 Analog Input 1 17 Analog Input 2 18 Analog Input 3 19 Max scale 21 Absolute speed 22 Absolute torque 23 Analog Input 1+2 24 PID output 25 Encoder speed 26 PowerPLC 28 Analog Input 4 29 Analog Input 5 30 Analog Input 6 31 Analog Input 7 32		RW
G8.2.2	AO1 format = 4..20 mA	40302	0-10V ±10V 0-20mA 4-20mA ±20mA	0 to 4	RW
G8.2.3	AO1 low level = 0 %	40304	-250 to 250%	-25000 to 25000	RW
G8.2.4	AO1 high level = 100 %	40305	-250 to 250%	-25000 to 25000	RW
G8.2.5	AO1 filter = Off	40306	Off= 0.0 to 20.0s	0 to 200	RW
G8.3.0	Enable Pulse Mode = No	40327	No Yes	0 to 1	RW
G8.3.1	AO2 source selection = Motor current	40311	See G8.2.1	See G8.2.1	RW
G8.3.2	AO2 format = 4..20 mA	40312	0-10V ±10V 0-20mA 4-20mA ±20mA	0 to 4	RW
G8.3.3	AO2 low level = 0 %	40314	-250 to 250%	-25000 to 25000	RW
G8.3.4	AO2 high level = 100 %	40315	-250 to 250%	-25000 to 25000	RW
G8.3.5	AO2 filter = Off	40316	Off=0 0.1 to 20.0 s	0 to 200	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G8.3.6	Max pulse number = 100	40318	0 to 32000	0 to 32000	RW
G8.3.7	Pulse duty = 50 %	40319	20 to 65	20 to 65	RW
G8.4.1	AO3 source selection = Motor speed	40321	See G8.2.1	See G8.2.1	RW
G8.4.2	AO3 format = 4..20 mA	40322	0-10V ±10V 0-20mA 4-20mA ±20mA	0 to 4	RW
G8.4.3	G8.4.3 AO3 low level = 0 %	40324	-250 to 250%	-25000 to 25000	RW
G8.4.4	G8.4.4 AO3 high level = 100 %	40325	-250 to 250%	-25000 to 25000	RW
G8.4.5	AO3 filter = Off	40326	Off=0 0.1 to 20.0 s	0 to 200	RW
G8.5.1	AO4 source selection = Motor speed	41231	See G8.2.1	See G8.2.1	RW
G8.5.2	AO4 format = 4..20 mA	41232	See G8.4.2	0 to 4	RW
G8.5.3	Low level SA4 = 0 %	41234	-250 to 250%	-25000 to 25000	RW
G8.5.4	High level SA4 = 100 %	41235	-250 to 250%	-25000 to 25000	RW
G8.5.5	AO4 filter = Off	41236	Off=0 0.1 to 20.0 s	0 to 200	RW
G8.6.1	AO5 source selection = Motor speed	40895	See G8.2.1	See G8.2.1	RW
G8.6.2	AO5 format = 4..20 mA	40896	See G8.4.2	0 to 4	RW
G8.6.3	AO5 low level = 0 %	40898	-250 to 250%	-25000 to 25000	RW
G8.6.4	AO5 high level = 100 %	40899	-250 to 250%	-25000 to 25000	RW
G8.6.5	AO5 filter = Off	40900	Off=0 0.1 to 20.0 s	0 to 200	RW
G8.7.1	AO6 source selection = Motor speed	40935	See G8.2.1	See G8.2.1	RW
G8.7.2	AO6 format = 4..20 mA	40936	See G8.4.2	0 to 4	RW
G8.7.3	AO6 low level = 0 %	40938	-250 to 250%	-25000 to 25000	RW
G8.7.4	AO6 high level = 100 %	40939	-250 to 250%	-25000 to 25000	RW
G8.7.5	AO6 filter = Off	40940	Off=0 0.1 to 20.0 s	0 to 200	RW
G9.1.1	Comp 1 source sel = None	40341	None Motor speed Motor current Motor voltage Motor power Motor torque Motor cos phi Motor temperature Motor frequency Input voltage Bus voltage Drive temperature Speed reference PID reference PID feedback PID error Analog Input 1 Analog Input 2 Analog Input 3 Analog Input 1+2 Absolute speed Absolute torque Encoder speed PID output Max scale Analog Input 4 Analog Input 5 Analog Input 6 Analog Input 7	00 01 02 03 04 05 06 07 08 09 10 11 12 14 15 16 17 18 19 20 22 24 25 27 28 29 30 31 32	RW
G9.1.2	Comp 1 type = Normal	40342	Normal Ventana	0 to 1	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G9.1.3	Comp 1 ON level = 100 %	40343	-250 to 250%	-25000 to 25000	RW
G9.1.4	Comp 1 OFF level = 0 %	40344	-250 to 250%	-25000 to 25000	RW
G9.1.3	Comp 1 window limit 2 = 100 %	40345	-250 to 250%	-25000 to 25000	RW
G9.1.4	Comp 1 window limit 1 = 0 %	40346	-250 to 250%	-25000 to 25000	RW
G9.1.5	Comp 1 ON delay = 0.0 s	40347	0.0 to 999.0s	0 to 9990	RW
G9.1.6	Comp 1 OFF delay = 0.0 s	40348	0.0 to 999.0s	0 to 9990	RW
G9.1.7	Comp 1 output function = Not used	40349	Not used Start / Stop Stop 1 Stop 2 Reset Start + Inch 1 Start + Inch 2 Start + Inch 3 Invert speed Acc / Dec 2 Reference 2 Speed limit 2 Fault	00 01 02 03 04 05 06 07 08 09 10 11 12	RW
G9.2.1	Comp 2 source sel = None	40361	See G9.1.1	See G9.1.1	RW
G9.2.2	Comp 2 type = Normal	40362	Normal Window	0 to 1	RW
G9.2.3	Comp 2 ON activation level = 100 %	40363	-250 to 250%	-25000 to 25000	RW
G9.2.4	Comp 2 OFF level = 0 %	40364	-250 to 250%	-25000 to 25000	RW
G9.2.3	Comp 2 window limit 2 = 100 %	40365	-250 to 250%	-25000 to 25000	RW
G9.2.4	Comp 2 window limit 1 = 0 %	40366	-250 to 250%	-25000 to 25000	RW
G9.2.5	Comp 2 ON delay = 0.0 s	40367	0.0 to 999.0s	0 to 9990	RW
G9.2.6	Comp 2 OFF delay = 0.0 s	40368	0.0 to 999.0s	0 to 9990	RW
G9.2.7	Comp 2 output function = Not used	40369	See G9.1.7	See G9.1.7	RW
G9.3.1	Comp 3 source sel = None	40381	See G9.1.1	See G9.1.1	RW
G9.3.2	Comp 3 type = Normal	40382	Normal Window	0 to 1	RW
G9.3.3	Comp 3 ON activation level = 100 %	40383	-250 to 250%	-25000 to 25000	RW
G9.3.4	Comp 3 OFF level = 0 %	40384	-250 to 250%	-25000 to 25000	RW
G9.3.3	Comp 3 window limit 2 = 100 %	40385	-250 to 250%	-25000 to 25000	RW
G9.3.4	Comp 3 window limit 1 = 0 %	40386	-250 to 250%	-25000 to 25000	RW
G9.3.5	Comp 3 ON delay = 0.0 s	40387	0.0 to 999.0 s	0 to 9990	RW
G9.3.6	Comp 3 OFF delay = 0.0 s	40388	0.0 to 999.0 s	0 to 9990	RW
G9.3.7	Comp 3 output function = Not used	40389	See G9.1.7	See G9.1.7	RW
G10.1.1	Minimum limit 1 = -100.00 %	40401	-250.00 to G10.1.2	-25000 to G10.1.2	RW
G10.1.2	Maximum limit 1 = 100.00 %	40402	G10.1.1 to 250.00	G10.1.1 to 25000	RW
G10.1.3	Minimum limit 2 = -100.00 %	40403	-250.00 to G10.1.4	-25000 to G10.1.4	RW
G10.1.4	Maximum limit 2 = 100.00 %	40404	G10.1.3 to 250.00	G10.1.3 to 25000	RW
G10.1.5	Maximum lim timeout = Off	40431	0.0 to 60.0s Off = 601	0 to 601	RW
G10.1.6	Minimum lim timeout = Off	40450	0.0 to 60.0s Off = 601	0 to 601	RW
G10.1.7	Invert speed = No	40411	No Yes	0 to 1	RW
G10.2.1	Current limit = 1.2In A	40405	0.2 to 1.50In, Off	2500 to 15010	RW
G10.2.2	I limit timeout = Off	40406	0 to 60 s; Off = 610	0 to 610	RW
G10.2.3	Current limit 2 = 1.2In A	40407	0.2 to 1.50In, Off	2500 to 15010	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G10.2.4	I limit 2 timeout = Off	40420	0 to 60 s; Off = 610	0 to 610	RW
G10.2.5	I limit 2 switch speed = Off	40408	Off = 0, +1 to +250%	0 to 25000	RW
G10.2.6	Torque limit = 150.0 %	40409	0.0 to 250.0 %	0a 25000	RW
G10.2.7	Torque limit timeout = Off	40410	0 to 60 s; Off = 610	0 to 610	RW
G10.2.8	Torque limit 2 = 150.0 %	40421	0.0 to 250.00 %	0 to 25000	RW
G10.2.9	Torque lim 2 timeout = Off	40422	0 to 60 s; Off = 610	0 to 610	RW
G10.2.10	Torque l 2 swt speed = Off	40423	Off = 0; 1 to 250.00 %	0 to 25000	RW
G10.2.11	Regeneration I limit = Off	40417	Off = 40%·In (motor), 40.1% to 150%·In to (equipment)	3999 to 15000	RW
G10.2.12	I limit Regen Time = Off	40418	0 To 60s, Off	0 to 610	RW
G10.2.13	Reg torque limit = 150.0 %	40413	0.0 to 250.0 %	0 to 25000	RW
G10.2.14	Reg torque limit time = Off	40419	0 to 60 Off = 61	0 to 610	RW
G10.2.15	Disable limit I/T = No	40412	No Yes	0 to 1	RW
G11.1.1	Supply under voltage = SuV	40434	0.85Vn to 0.90Vn	-	RW
G11.1.2	Under voltage timeout = 5.0 s	40435	0.0 to 60.9s Off = 60.1	0 to 601	RW
G11.1.3	Supply over voltage = SuV	40436	1.05Vn to 1.10Vn	-	RW
G11.1.4	Over voltage timeout = 5.0 s	40437	0.0 to 60.9s Off = 60.1	0 to 601	RW
G11.1.5	Low voltage behavior = Faults	40439	No faults Faults Stop Dip voltage recover	0 1 2 3	RW
G11.1.6	LVRT input threshold = 25 %	43789	15 to 50 %	15 to 50	RW
G11.1.7	LVRT output threshold = 5 %	43790	1 to 15 %	1 to 15	RW
G11.2.1	Stop timeout = Off	40432	Off 0.1 to 999s	0 to 9990	RW
G11.2.2	Ground current limit = 20 %	40433	Off, 0 to 30% In	0 to 3000	RW
G11.2.3	I out asym trip delay = 5.0 s	40451	0.0 to 10.0s, Off	0 to 101	RW
G11.2.4	V asym out trip delay = 5.0 s	40438	0.0 to 10.0s, Off	0 to 101	RW
G11.2.5	PT100 motor fault = Off ºC	40440	69 = Off, 70 to 180ºC	69 to 180	RW
G11.2.6	PT100 fault timeout = 30 s	40459	0 to 3000s	0 to 3000	RW
G11.2.7	Fault with no load = No	40454	No Yes	0 to 1	RW
G11.2.8	Pump overload level = 20.0 A	40441	0.0 to 3000 A	0 to 30000	RW
G11.2.9	Pump overload filter = Off	40442	Off = 0, 0.1 to 20.0s	0 to 200	RW
G11.2.10	Overload delay = 60	40443	Off = 0, 1 to 480.0s	0 to 4800	RW
G11.2.11	Pump underload enable = No	40444	No Yes	0 to 1	RW
G11.2.12	Pump underload current = 1.0In A	40445	0.2In to 1.5In	2000 to 15000	RW
G11.2.13	Pump underload speed = 100.0 %	40446	0.0 to 250.0%	0 to 25000	RW
G11.2.14	Pump underload flt dly = 10.0 s	40447	0.0 to 999.9 s	0 to 9999	RW
G12.1	Enable autoreset = No	40461	No Yes	0 to 1	RW
G12.2	Retries max number = 1	40462	1 to 5	1 to 5	RW
G12.3	Autoreset delay = 5 s	40463	5 to 120s	5 to 120	RW
G12.4	Counter reset time = 15 min	40464	1 to 60min	1 to 60	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G12.5	Autoreset fault 1 = Off	40465	0 to 65535	0 to 65535	RW
G12.6	Autoreset fault 2 = Off	40466	0 to 65535	0 to 65535	RW
G12.7	Autoreset fault 3 = Off	40467	0 to 65535	0 to 65535	RW
G12.8	Autoreset fault 4 = Off	40468	0 to 65535	0 to 65535	RW
G13.1	Fault Register 1 = 0	40481	0 to 1024	0 to 1024	RO
G13.1b	Date = 01/01/2000 00:00	41531	01/01/2000 00:00 to 31/12/2127 23:59	0 to 65535	RO
G13.2	Fault Register 2 = 0	40482	0 to 1024	0 to 1024	RO
G13.2b	Date = 01/01/2000 00:00	41533	01/01/2000 00:00 to 31/12/2127 23:59	0 to 65535	RO
G13.3	Fault Register 3 = 0	40483	0 to 1024	0 to 1024	RO
G13.3b	Date = 01/01/2000 00:00	41535	01/01/2000 00:00 to 31/12/2127 23:59	0 to 65535	RO
G13.4	Fault Register 4 = 0	40484	0 to 1024	0 to 1024	RO
G13.4b	Date = 01/01/2000 00:00	41537	01/01/2000 00:00 to 31/12/2127 23:59	0 to 65535	RO
G13.5	Fault Register 5 = 0	40485	0 to 1024	0 to 1024	RO
G13.5b	Date = 01/01/2000 00:00	41539	01/01/2000 00:00 to 31/12/2127 23:59	0 to 65535	RO
G13.6	Fault Register 6 = 0	40486	0 to 1024	0 to 1024	RO
G13.6b	Date = 01/01/2000 00:00	41541	01/01/2000 00:00 to 31/12/2127 23:59	0 to 65535	RO
G13.7	Erase fault history = No	40487	No Yes	0 to 1	RW
G14.1	Multi-reference 1 = 10.00 %	40501	-250.00 to 250.00%	-25000 to 25000	RW
G14.2	Multi-reference 2 = 20.00 %	40502	-250.00 to 250.00%	-25000 to 25000	RW
G14.3	Multi-reference 3 = 30.00 %	40503	-250.00 to 250.00%	-25000 to 25000	RW
G14.4	Multi-reference 4 = 40.00 %	40504	-250.00 to 250.00%	-25000 to 25000	RW
G14.5	Multi-reference 5 = 50.00 %	40505	-250.00 to 250.00%	-25000 to 25000	RW
G14.6	Multi-reference 6 = 60.00 %	40506	-250.00 to 250.00%	-25000 to 25000	RW
G14.7	Multi-reference 7 = 70.00 %	40507	-250.00 to 250.00%	-25000 to 25000	RW
G15.1	Inch speed 1 = 0.00 %	40521	-250.00 to 250.00%	-25000 to 25000	RW
G15.2	Inch speed 2 = 0.00 %	40522	-250.00 to 250.00%	-25000 to 25000	RW
G15.3	Inch speed 3 = 0.00 %	40523	-250.00 to 250.00%	-25000 to 25000	RW
G16.1	Skip frequency 1 = 0.00 %	40541	-250.00 % to 250.00 %	-25000 to 25000	RW
G16.2	Skip bandwidth 1 = Off	40542	Off = 0; 0.1 to 20.00 %	0 to 2000	RW
G16.3	Skip frequency 2 = 0.00 %	40543	-250.00 % to 250.00 %	-25000 to 25000	RW
G16.4	Skip bandwidth 2 = Off	40544	Off = 0; 0.1 to 20.00 %	0 to 2000	RW
G16.5	Skip frequency 3 = 0.00 %	40545	-250.00 % to 250.00 %	-25000 to 25000	RW
G16.6	Skip bandwidth 3 = Off	40546	Off = 0; 0.1 to 20.00 %	0 to 2000	RW
G16.7	Skip frequency 4 = 0.00 %	40547	-250.00 % to 250.00 %	-25000 to 25000	RW
G16.8	Skip bandwidth 4 = Off	40548	Off = 0; 0.1 to 20.00 %	0 to 2000	RW
G17.1	DC brake time = Off	40561	Off = 0.0 0.1 to 99s	0 to 990	RW
G17.2	DC brake current level = 0 %	40562	0 to 100%	0 to 10000	RW
G17.3	DC break on delay = Off	40563	Off, 0.0 to 99.0s,	0 to 990	RW
G17.4	Heating current = Off	40564	Off = 0, 0.1 to 30%	0 to 3000	RW
G17.5	Dynamic brake = No	40565	No Yes	0 to 1	RW
G18.1	Enable encoder = No	40581	No Yes	0 to 1	No
G18.2	Encoder PPR = 1024 PPR	40582	0 to 8191 PPR	0 to 8191	Si

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G19.1.1	Control type = V/Hz	40601	V/Hz Vector PMSM	0 1 2	RW
G19.1.1b	Vector control = PMC Open loop speed	40602	PMC Open loop speed PMC Close loop speed PMC Close loop torque PMC Open loop torque AVC Close loop speed AVC Close loop torque AVC Open loop speed AVC Open loop torque	1 2 3 4 5 6 7 8	RW
G19.1.1c	Perm Magnet Sync Mot = I/Hz	40608	I/Hz F.Oriented	9 10	RW
G19.1.3	PID Vout = No	40604	No Yes	0 to 1	RW
G19.1.6	Auto Tuning = No	43575	No Static Dynamic	0 to 2	RW
G19.1.7	Overmodulation = Off	40607	Off = 0.00 0.01 to 100.00 %	0 to 10000	RW
G19.1.8	Pewave = Yes	40609	No Yes	0 to 1	RW
G19.1.9	Switching frequency = 4000 Hz	40618	4000 to 8000 Hz	4000 to 8000	RW
G19.2.1	Minimum flux level = 100 %	40611	40 to 130%	4000 to 13000	RW
G19.2.2	Boost voltage = 0.0 %	40612	0.0 to 10.0%	0 to 1000	RW
G19.2.3	Boost current = 0.0 %	40610	0.0 to 100.0%	0 to 10000	RW
G19.2.4	Slip compensation = No	40613	No Yes	0 to 1	RW
G19.2.5	Current limit factor = 0.0 %	40614	0.0 to 20.0%	0 to 2000	RW
G19.2.6	Initial frequency = 0.0 %	40615	0.0 to 100.0%	0 to 10000	RW
G19.2.7	Damping = 2 %	40616	0.00 to 10.00%	0 to 1000	RW
G19.2.8	Reg bus voltage =	40617	Para VIN = 400V / 500V Bus: 625 to 800V Para VIN=690V Bus: 950 to 1251V	-	RW
G19.3.1	R stator = 0.1 mΩ	40621	0.1 to 6553.5 mΩ	1 to 65535	RW
G19.3.2	R rotor = 0.1 mΩ	40622	0.1 to 6553.5 mΩ	1 to 65535	RW
G19.3.3	L magnetization = 0.1 mH	40623	0.1 to 6553.5 mH	1 to 65535	RW
G19.3.3	Back electrom. force = 0.000 kV	40637	0.000 kV to 5.000 kV	0 to 5000	RW
G19.3.4	L leakage stator = 0.00 mH	40624	0.00 to 100.00 mH	0 to 10000	RW
G19.3.4	L Stator D axis = 0.00 mH	40638	0.00 mH to 100.00 mH	0 to 10000	RW
G19.3.5	L leakage rotor = 0.00 mH	40625	0.00 to 100.00 mH	0 to 10000	RW
G19.3.5	L Stator Q axis = 0.00 mH	40639	0.00 mH to 100.00 mH	0 to 10000	RW
G19.3.6	Field weakening = 90.0 %	40626	50.00 to 100.10%	5000 to 10010	RW
G19.3.7	Temperature coef R = 20.0 %	40627	0.0 to 50.0%	0 to 5000	RW
G19.3.8	Flux tuning = 2.0 %	40628	0.0 to 10.0%	0 to 100	RW
G19.3.9	Params online estim = No	40657	No Yes	0 to 1	RW
G19.4.1	Kp speed = 10.0 %	40631	0.0 to 100.0%	0 to 10000	RW
G19.4.2	Ki speed = 10.0 %	40632	0.0 to 100.0%	0 to 10000	RW
G19.4.3	Kp torque = 10.0 %	40633	0.0 to 100.0%	0 to 10000	RW
G19.4.4	Ki torque = 10.0 %	40634	0.0 to 100.0%	0 to 10000	RW
G19.4.5	Kp I = 10.0 %	40635	0.0 to 100.0%	0 to 10000	RW
G19.4.6	Ki I = 15.0 %	40636	0.0 to 100.0%	0 to 10000	RW
G19.4.7	Kp Sensorless = 50.0 %	40642	0.0 to 100.0%	0 to 10000	RW
G19.4.8	Ki Sensorless = 50.0 %	40643	0.0 to 100.0%	0 to 10000	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G20.1.1	Display baudrate = 921600bps baud/s	40651	2400 bps 4800 bps 9600 bps 19200 bps 57600 bps 115200 bps 230400 bps 460800 bps 921600 bps	0 1 2 3 4 5 6 7 8	RW
G20.1.2	Modbus address = 10	40652	1 to 255	1 to 255	RW
G20.1.3	Modbus baudrate = 9600 bps baud/s	40653	2400 bps 4800 bps 9600 bps 19200 bps 57600 bps 115200 bps 230400 bps 460800 bps 921600 bps	0 1 2 3 4 5 6 7 8	RW
G20.1.4	Modbus parity = None	40654	Odd None Even	0 to 2	RW
G20.1.5	Communication timeout = Off	40655	Off, 0 to 600 s	0 to 600	RW
G20.2.1.1.1 to G20.2.1.1.16	Custom Modbus addresses 1 to 16	44601 to 44616	0 to 65535	0 to 65535	RW
G20.2.1.2.1 to G20.2.1.2.16	Values of custom Modbus registers 1 to 16	44801 to 44816	0 to 65535	0 to 65535	RW
G20.2.2.1.1 to G20.2.2.1.16	Custom Modbus addresses 1 to 120	44617 to 44632	0 to 65535	0 to 65535	RW
G20.2.2.2.1 to G20.2.2.2.16	Values of custom Modbus registers 1 to 120	44817 to 44832	0 to 65535	0 to 65535	RW
G20.2.3	Profibus node address	40661	0 to 126	0 to 126	RW
G20.2.4	Connector Fault Mode	40665	Fault Ignore	0 to 1	RW
G20.2.5	Connector State	40666	Off On	0 to 1	RO
G20.6.1 to G20.6.120	Custom Modbus addresses 1 to 120	44601 to 44720	0 to 65535	0 to 65535	RW
G20.7.1 to G20.7.120	Values of custom Modbus registers 1 to 120	44801 to 44920	0 to 65535	0 to 65535	RW
G21.1.1	Automatic IP = No	40701	No Yes	0 to 1	RW
G21.1.1.1	Assigned IP = 0.0.0.0 (A.B.C.D)	40702 – A 40703 – B 40704 – C 40705 – D	0 to 255	0 to 255	RO
G21.1.1.2	Assigned subnet = 0.0.0.0 (A.B.C.D)	40706 – A 40707 – B 40708 – C 40709 – D	0 to 255	0 to 255	RO
G21.1.1.3	Assigned gateway = 0.0.0.0 (A.B.C.D)	40710 -A 40711 – B 40712 – C 40713 – D	0 to 255	0 to 255	RO
G21.1.2	IP address = 192.168.1.143 (A.B.C.D)	40714 – A 40715 – B 40716 – C 40717 - D	0 to 255	0 to 255	RW
G21.1.3	Subnet Mask = 255.255.255.0 (A.B.C.D)	40718 – A 40719 – B 40720 – C 40721 – D	1 to 255	1 to 255	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G21.1.4	Gateway = 0.0.0.1 (A.B.C.D)	40722 – A 40723 – B 40724 – C 40725 - D	0 to 255	0 to 255	RW
G21.1.5	MAC address = 0.27.119.129.238.66 (A.B.C.D.E.F)	40726 – A 40727 – B 40728 – C 40729 – D 40730 – E 40731 – F	0 to 255	0 to 255	RW
G21.2.1	Client TCP timeout	40741	0.05 a 5000	50 a 5000	RW
G21.2.2	Client TCP retries	40742	0 a 4	0 a 4	RW
G21.3.1.1	Automatic IP = No	42701	No Yes	0 to 1	RW
G21.3.1.2	Assigned IP = 0.0.0.0 (A.B.C.D)	42702 – A 42703 – B 42704 – C 42705 – D	0 to 255	0 to 255	RO
G21.3.1.3	Assigned subnet = 0.0.0.0 (A.B.C.D)	42706 – A 42707 – B 42708 – C 42709 – D	0 to 255	0 to 255	RO
G21.3.1.4	Assigned gateway = 0.0.0.0 (A.B.C.D)	42710 – A 42711 – B 42712 – C 42713 – D	0 to 255	0 to 255	RO
G21.3.1.2	IP address = 192.168.1.143 (A.B.C.D)	42714 – A 42715 – B 42716 – C 42717 - D	0 to 255	0 to 255	RW
G21.3.1.3	Subnet Mask = 255.255.255.0 (A.B.C.D)	42718 – A 42719 – B 42720 – C 42721 – D	1 to 255	1 to 255	RW
G21.3.1.4	Gateway = 0.0.0.0 (A.B.C.D)	42722 – A 42723 – B 42724 – C 42725 - D	0 to 255	0 to 255	RW
G21.3.1.5	MAC address = 00-1B-77-81-EE-42 (A.B.C.D.E.F)	42726 – A 42727 – B 42728 – C 42729 – D 42730 – E 42731 – F	0 to 255	0 to 255	RW
G21.3.4	Control mode = Local	42741	Local Network Net decides	0 to 2	RW
G21.3.5	Reference mode = Local	42742	Local Network Net decides	0 to 2	RW
G21.3.6	PID mode = Local	42743	Local Network Net decides	0 to 2	RW
G21.3.7	Connector 1 status = Off	42805	Off On	0 to 1	RO
G21.3.8	Fault mode c1 = Fault	42744	Fault Ignore	0 to 1	RW
G21.3.9	Connector 2 status = Off	42806	Off On	0 to 1	RO
G21.3.10	Fault mode c2 = Fault	42804	Fault Ignore	0 to 1	RW
G21.4.1.1	IP address = 192.168.1.143 (A.B.C.D)	42784 – A 42785 – B 42786 – C 42787 - D	0 to 255	0 to 255	RW
G21.4.1.2	Subnet Mask = 255.255.255.0 (A.B.C.D)	42788 – A 42789 – B 42790 – C 42791 – D	1 to 255	1 to 255	RW

EN

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G21.4.1.3	Gateway = 0.0.0.0 (A.B.C.D)	42792 – A 42793 – B 42794 – C 42795 - D	0 to 255	0 to 255	RW
G21.4.1.4	MAC address = 00-1B-77-81-EE-42 (A.B.C.D.E.F)	42796 – A 42797 – B 42798 – C 42799 – D 42800 – E 42801 – F	0 to 255	0 to 255	RW
G21.4.4	Connector 1 status = Off	42807	Off On	0 to 1	RO
G21.4.5	Fault mode c1 = Fault	42802	Fault Ignore	0 to 1	RW
G21.4.6	Connector 2 status = Off	42808	Off On	0 to 1	RO
G21.4.7	Fault mode c2 = Fault	42803	Fault Ignore	0 to 1	RW
G23.2.1	IO digital A status = Off	41135	Off On	0 to 1	RO
G23.2.2	IO digital A test = No	41136	No Yes	0 to 1	RW
G23.2.3	IO digital B status = Off	41137	Off On	0 to 1	RO
G23.2.4	IO digital B test = No	41138	No Yes	0 to 1	RW
G23.2.5	IO analog A status = Off	41125	Off On	0 to 1	RO
G23.2.6	IO analog A test = No	41126	No Yes	0 to 1	RW
G23.2.7	IO analog B status = Off	41127	Off On	0 to 1	RO
G23.2.8	IO analog B test = No	41128	No Yes	0 to 1	RW
G23.3.1	Profinet board status = Off	41021	Off On	0 to 1	RO
G23.3.2	Profinet board test = No	41022	No Yes	0 to 1	RW
G23.3.3	Profinet Com Error = Fault	41023	Off Warning Fault	0 1 2	RW
G23.3.4	EthernetIP board state = Off	41024	Off On	0 to 1	RO
G23.3.5	EthernetIP board test = No	41025	No Yes	0 to 1	RW
G23.3.6	EthernetIP Com Error = Fault	41026	Off Warning Fault	0 to 2	RW
G23.3.7	Profibus board status = Off	41027	Off On	0 to 1	RO
G23.3.8	Profibus board test = No	41028	No Yes	0 to 1	RW
G23.3.9	Profibus Com Error = Fault	41029	Off Warning Fault	0 to 2	RW
G25.1	Role = Master	41186	Master Slave	0 to 1	RW
G25.2	Start fiber = No	41187	No Yes	0 to 1	RW
G25.3	Fault partner = Yes	41188	No Yes	0 to 1	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G25.4	Stop partner fault = Spin	41189	Spin Ramp	0 to 1	RW
G25.5	Restart after reset = No	41190	No Yes	0 to 1	RW
G25.6	Time out fiber = 1.0 s	41192	0.1 to 10, Off = 101	1 to 101	RW
G26.1	Fans mode = Run	41211	Off Auto Fixed Run	0 to 3	RW
G26.2	Min temperature = 47 ºC	41214	35ºC to G26.3	35 to G26.3	RW
G26.3	Max temperature = 51 ºC	41213	G26.2 to 80ºC	G26.2 to 80	RW
G26.4	Power off delay = 1 min	41214	1 to 5 min	1 to 5	RW

[1] **Access**: **RW**: Read and write. **RO**: Read only.

EN

Visualization Parameters

Parameter	Screen	Description	Address	Modbus Range
		Current drive status.	**43564**	0 to 255

Modbus Value	Status	Modbus Value	Status
0	OFF	10	SPN
1	ON	11	AUT
2	ACL	12	BRK
3	RUN	14	IHEAT
4	DEC	16	DLY
5	STP	41	IS1
6	FLT	42	IS2
9	RFLT	43	IS3

Consult state messages description in section “STATUS & WARNING MESSAGES”.

Warning messages	**43565**	1 to 45

Modbus Value	Warning	Modbus Value	Warning	Modbus Value	Warning
0	NO WRN	10	AVI	36	DE_A
1	MOL	11	OVV	37	EPB
3	MOC	12	UNV	44	DE_B
4	DOC	13	SLMAX	45	EVCOMM
5	ILT	14	CWR	46	AE_A
6	TLT	15	SLMIN	47	AE_B
7	VLT	16	RTL	48	PNE
8	ACO	17	MVR	49	EIPE
9	AVO				

Consult warning messages description in section “STATUS & WARNING MESSAGES”

STATUS LINE
OFF 0.0A +0.0%

Fault messages	**42101**	1 to 218

Modbus Value	Fault message	Modbus Value	Fault message	Modbus Value	Fault message	Modbus Value	Fault message
0	F0	26	F26	55	F55	89	F89
1	F01	27	F27	56	F56	93	F93
2	F02	28	F28	57	F57	94	F94
3	F03	31	F31	58	F58	95	F95
4	F04	32	F32	59	F59	96	F96
5	F05	33	F33	60	F60	99	F99
6	F06	34	F34	61	F61	100	F100
7	F07	35	F35	62	F62	101	F101
8	F08	36	F36	63	F63	102	F102
10	F10	37	F37	64	F64	103	F103
11	F11	38	F38	68	F68	104	F104
12	F12	39	F39	69	F69	105	F105
13	F13	40	F40	70	F70	106	F106
14	F14	41	F41	71	F71	107	F107
15	F15	42	F42	72	F72	108	F108
16	F16	43	F43	73	F73	109	F109
17	F17	44	F44	74	F74	110	F110
18	F18	45	F45	75	F75	111	F111
19	F19	46	F46	76	F76	112	F112
20	F20	47	F47	77	F77		
21	F21	48	F48	78	F78		
22	F22	49	F49	79	F79		
23	F23	50	F50	84	F84		
24	F24	53	F53	85	F85		
25	F25	54	F54	87	F87		

Consult fault messages description in section “FAULT MESSAGES. DESCRIPTIONS AND ACTIONS

STATUS LINE	OFF **0.0A** +0.0%	Motor output current. (Corresponds with SV1.6)	**42007**	Real Value = (Modbus Value / 10)
STATUS LINE	OFF 0.0A **+0.0%**	Motor output speed (in %). (Corresponds with SV1.3)	**42003**	8192 = 100% of motor rated speed

Parameter	Screen	Description	Address	Modbus Range
SV1.1	Speed reference = 0.0 %	Shows the present reference value of speed which is applied to the motor.	**42001**	Real Value = (Modbus Value / 100)
SV1.2	Torque reference = 0.0 %	Shows the present reference value of torque which is applied to the motor.	**42002**	Real Value = (Modbus Value / 100)
SV1.3	Motor speed (%) = 0.0 %	Shows the motor speed in %.	**42003**	Real Value = (Modbus Value / 100)
SV1.4	Motor speed (rpm) = 0 rpm	Shows the motor speed in rpm.	**42004**	Real Value = Modbus Value
SV1.5	Motor frequency = 0.0 Hz	Shows the frequency being applied to the motor.	**42005**	Real Value = (Modbus Value / 10)
SV1.6	Motor voltage = 0 V	Shows the present voltage applied to the motor.	**42006**	Real Value = Modbus Value
SV1.7	Motor current = 0.0 A	Shows the present current flowing to the motor.	**42007**	Real Value = (Modbus Value / 10)
SV1.8	Motor torque = 0.0 %	Shows the present torque applied to the motor.	**42008**	Real Value = (Modbus Value / 100)
SV1.9	Motor phi cosine = 0.85	Shows the motor's cos phi.	**42009**	Real Value = (Modbus Value / 100)
SV1.10	Motor power = 0.0 kW	Shows the instantaneous power consumption of the motor.	**42010**	Real Value = Modbus Value
SV1.11.1	U motor current = 0.0 A	Shows the instantaneous current of each phase of the motor (U, V and W).	**42011**	Real Value = (Modbus Value / 10)
SV1.11.2	V motor current = 0.0 A		**42012**	Real Value = (Modbus Value / 10)
SV1.11.3	W motor current = 0.0 A		**42013**	Real Value = (Modbus Value / 10)
SV1.12.1	U-V motor voltage = 0 V	Shows the instantaneous voltage applied (UV, VW, UW).	**42014**	Real Value = Modbus Value
SV1.12.2	V-W motor voltage = 0 V		**42015**	Real Value = Modbus Value
SV1.12.3	W-U motor voltage = 0 V		**42016**	Real Value = Modbus Value
SV1.13	PTC Status = No	Shows whether the motor PTC is connected or disconnected.	**42017**	Real Value = Modbus Value
SV1.14	Estimat. Motor temp(%) = 0.0 %	Shows the estimated motor temperature.	**42018**	Real Value = (Modbus Value / 100)
SV1.15	Motor temperature = 0 ºC	Shows the motor temperature	**42019**	Real Value = Modbus Value
SV1.16	Encoder pulses = 0	Shows the pulses per revolution of the encoder.	**42020**	Real Value = Modbus Value
SV1.17	Encoder speed = 0 rpm	Real speed measured by the encoder.	**42021**	Real Value = Modbus Value
SV2.1.1	L1-L2 supply voltage = 0 V	Shows the input instantaneous voltage applied to the drive (RS, ST and RT).	**42031**	Real Value = Modbus Value
SV2.1.2	L2-L3 supply voltage = 0 V		**42032**	Real Value = Modbus Value
SV2.1.3	L3-L1 supply voltage = 0 V		**42033**	Real Value = Modbus Value
SV2.2	Input voltage average = 0 V	Shows the average input voltage to the drive.	**42034**	Real Value = Modbus Value
SV2.3	DC bus voltage = 0 V	Shows DC Link voltage of the drive.	**42035**	Real Value = Modbus Value
SV2.4	Input frequency = 0.0 Hz	Shows the frequency of the drive input voltage	**42036**	Real Value = (Modbus Value / 10)
SV2.5.1	Drive temperature = 0 ºC	Shows the temperature measured inside the electronics chamber of the drive.	**42039**	Real Value = Modbus Value
SV2.5.2	IGBT temperature = 0 ºC	Shows the maximum temperature measured at the power stage	**42040**	Real Value = Modbus Value
SV2.10	Relative Humidity = 0 %	Shows the internal relative humidity of the converter.	**42050**	Real Value = Modbus Value
SV3.1	AI1 value = 0.00 V	Shows the value of Analogue Input 1.	**42061**	Real Value = (Modbus Value / 1000)
SV3.2	AI1 percentage = 100.0 %	Shows the value or the PID reference proportional to Analogue Input 1	**42062**	Real Value = (Modbus Value / 100)
SV3.3	AI1 sensor value = 0.0 l/s	Value of sensor 1 associated to AI1.	**42063**	Real Value = (Modbus Value / 10)
SV3.4	AI2 value = 0.00 mA	Shows the value of the Analogue Input 2.	**42064**	Real Value = (Modbus Value / 1000)

EN

Parameter	Screen	Description	Address	Modbus Range
SV3.5	AI2 percentage = 100.0 %	Value or the PID reference proportional to the AI 2 signal.	**42065**	Real Value = (Modbus Value / 100)
SV3.6	AI2 sensor value = 0.0 Bar	Value of sensor 2 associated to the AI2.	**42066**	Real Value = (Modbus Value / 10)
SV3.7	AI3 value = 0.00 V	Value of sensor 3 associated to the AI3.	**42067**	Real Value = (Modbus Value / 1000)
SV3.8	AI3 percentage = 100.0 %	Value or the PID reference proportional to the AI3 signal.	**42068**	Real Value = (Modbus Value / 100)
SV3.9	AI3 sensor value = 0.0 l/s	Value of sensor 3 associated to the AI3.	**42069**	Real Value = (Modbus Value / 10)
SV3.10	AI4 value = 0.00 V	Value of the AI4 (AI4).	**41261**	Real Value = (Modbus Value / 1000)
SV3.11	AI4 percentage = 100.0 %	Shows the value or the PID reference proportional to the AI 4 signal.	**41262**	Real Value = (Modbus Value / 100)
SV3.12	AI4 sensor value = 0.0 l/s	Shows the value of sensor 4 associated to the Analogue Input 4.	**41263**	Real Value = (Modbus Value / 10)
SV3.13	AI5 value = 0.00 V	Shows the value of the Analogue Input 5.	**40469**	Real Value = (Modbus Value / 1000)
SV3.14	AI5 percentage = 100.0 %	Shows the value or the PID reference proportional to the AI5 signal.	**40470**	Real Value = (Modbus Value / 100)
SV3.15	AI5 sensor value = 0.0 l/s	Value of sensor 5 associated to the AI5.	**40471**	Real Value = (Modbus Value / 10)
SV3.16	AI6 value = 0.00 V	Value of the AI6.	**40578**	Real Value = (Modbus Value / 1000)
SV3.17	AI6 percentage = 100.0 %	Value or the PID reference proportional to the AI 6 signal.	**40579**	Real Value = (Modbus Value / 100)
SV3.18	AI6 sensor value = 0.0 l/s	Value of sensor 6 associated to the AI6..	**40580**	Real Value = (Modbus Value / 10)
SV3.19	AI7 value = 0.00 V	Value of the AI7.	**40591**	Real Value = (Modbus Value / 1000)
SV3.20	AI7 percentage = 100.0 %	Value or the PID reference proportional to the AI 7 signal.	**40589**	Real Value = (Modbus Value / 100)
SV3.21	AI7 sensor value = 0.0 l/s	Value of sensor 7 associated to the AI7.	**40590**	Real Value = (Modbus Value / 10)
SV3.22	AO1 value = 0.00 V	Value of the Analogue output 1.	**42070**	Real Value = (Modbus Value / 1000)
SV3.23	AO1 percentage = 0.0 %	Magnitude value associated to the AO1.	**42071**	Real Value = (Modbus Value / 100)
SV3.24	AO2 value = 0.00 V	Value of the Analogue output 1.	**42072**	Real Value = (Modbus Value / 1000)
SV3.25	AO2 percentage = 0.0 %	Magnitude value associated to the AO2.	**42073**	Real Value = (Modbus Value / 100)
SV3.26	AO3 value = 0.00 V	Value of the Analogue output 3.	**42074**	Real Value = (Modbus Value / 1000)
SV3.27	AO3 percentage = 0.0 %	Magnitude value associated to the AO3.	**42075**	Real Value = (Modbus Value / 100)
SV3.28	AO4 value = 0.00 V	Value of the Analogue output 4.	**41264**	Real Value = (Modbus Value / 1000)
SV3.29	AO4 percentage = 0.0 %	Magnitude value associated to the AO4.	**41265**	Real Value = (Modbus Value / 100)
SV3.30	AO5 value = 0.00 V	Value of the Analogue output 5.	**40619**	Real Value = (Modbus Value / 1000)
SV3.31	AO5 percentage = 0.0 %	Magnitude value associated to the AO5.	**40620**	Real Value = (Modbus Value / 100)
SV3.32	AO6 value = 0.00 V	Value of the Analogue output 6.	**40629**	Real Value = (Modbus Value / 1000)
SV3.33	AO6 percentage = 0.0 %	Magnitude value associated to the AO6.	**40630**	Real Value = (Modbus Value / 100)
SV3.34	DI status = 000000	Value of the digital inputs (6 bits)	**42081**	Real Value = Modbus Value
SV3.35	Output relays status = 000	Value of the output relays (3, bits)	**42082**	Real Value = Modbus Value
SV3.37	Fans = Off	Shows the status of the fans (on / off)	**41215**	Real Value = Modbus Value
SV3.38	Pulse Input = 0.0 l/s	Shows the measurement of the pulse input.	**42092**	Real Value = Modbus Value
SV4.1	Present fault = 0	Shows the present fault code.	**42101**	Real Value = Modbus Value
SV4.2	Nominal V = 500 V	Shows the drive rated voltage.	**42102**	Real Value = Modbus Value

Parameter	Screen	Description	Address	Modbus Range
SV4.3	Nominal I = 46.0 A	Shows the drive rated current.	**42103**	Real Value = (Modbus Value / 10)
SV4.4	PID setpoint = 100.0 %	Shows the reference value in PID mode of the equipment standard program.	**42106**	Real Value = (Modbus Value / 100)
SV4.5	PID feedback value = 100.0 %	Shows the feedback value in PID mode of the equipment standard program.	**42107**	Real Value = (Modbus Value / 100)
SV4.8.1	Comp status 1 = O	Shows the status of the three comparators.	**42108**	Real Value = Modbus Value
SV4.8.2	Comp status 2 = O		**42109**	Real Value = Modbus Value
SV4.8.3	Comp status 3 = O		**42110**	Real Value = Modbus Value
SV4.9	Prior to fault status = OFF	Status of the drive before the fault.	**42111**	Real Value = Modbus Value
SV5.1	Speed local reference = 100.0 %	Shows the speed reference in local mode.	**42231**	Real Value = (Modbus Value / 100)
SV5.2	PID local setpoint = 100.0 %	Shows the PID setting in local mode.	**42232**	Real Value = (Modbus Value / 100)
SV5.3	Multireference 1 = 10.00 %	Speed value assigned to Multi-reference 1	**42233**	Real Value = (Modbus Value / 100)
SV5.4	Multireference 2 = 20.00 %	Speed value assigned to Multi-reference 2	**42234**	Real Value = (Modbus Value / 100)
SV5.5	Multireference 3 = 30.00 %	Speed value assigned to Multi-reference 3	**42235**	Real Value = (Modbus Value / 100)
SV5.6	Multireference 4 = 40.00 %	Speed value assigned to Multi-reference 4	**42236**	Real Value = (Modbus Value / 100)
SV5.7	Multireference 5 = 50.00 %	Speed value assigned to Multi-reference 5	**42237**	Real Value = (Modbus Value / 100)
SV5.8	Multireference 6 = 60.00 %	Speed value assigned to Multi-reference 6	**42238**	Real Value = (Modbus Value / 100)
SV5.9	Multireference 7 = 70.00 %	Speed value assigned to Multi-reference 7	**42239**	Real Value = (Modbus Value / 100)
SV5.10	Inch speed 1 = 0.00 %	Shows the fixed speed 1.	**42240**	Real Value = (Modbus Value / 100)
SV5.11	Inch speed 2 = 0.00 %	Shows the fixed speed 2.	**42241**	Real Value = (Modbus Value / 100)
SV5.12	Inch speed 3 = 0.00 %	Shows the fixed speed 3.	**42242**	Real Value = (Modbus Value / 100)
SV6.1.1	Total days counter = 0 days	Shows the total time during which the drive is running (RUN).	**42251**	Real Value = Modbus Value
SV6.1.2	Total hours counter = 0 h	Shows the total time during which the drive is running (RUN).	**42252**	Real Value = Modbus Value
SV6.2.1	Partial days counter = 0 days	Shows the total time during which the drive is running (RUN).	**42253**	Real Value = Modbus Value
SV6.2.2	Partial hours counter = 0 h	Shows the partial time during which the drive is running (RUN).	**42254**	Real Value = Modbus Value
SV6.3	Clear partial counter = No	Allows resetting the counter of partial time for running status (RUN).	**42255**	Real Value = Modbus Value
SV6.4.1	Total energy GWh = 0 GWh	Drive total energy consumption.	**42256**	Real Value = Modbus Value
SV6.4.2	Total energy MWh = 0 MWh	Drive total energy consumption.	**42257**	Real Value = Modbus Value
SV6.4.3	Total energy KWh = 0 kWh	Drive total energy consumption.	**42258**	Real Value = Modbus Value
SV6.5.1	Partial energy GWh = 0 GWh	Drive partial energy consumption.	**42259**	Real Value = Modbus Value
SV6.5.2	Partial energy MWh = 0 MWh	Drive partial energy consumption.	**42260**	Real Value = Modbus Value
SV6.5.3	Partial energy KWh = 0 kWh	Drive partial energy consumption.	**42261**	Real Value = Modbus Value
SV6.6	Partial energy reset = No	Reset partial energy counter.	**42262**	Real Value = Modbus Value
SV8.1	Seconds = 0	Shows the seconds of the current time.	**42431**	Real Value = Modbus Value
SV8.2	Minutes = 0	Shows the minutes of the current time.	**42432**	Real Value = Modbus Value
SV8.3	Hours = 0	Shows the hours of the current time.	**42433**	Real Value = Modbus Value
SV8.4	Day = 1	Shows the day of the current date.	**42434**	Real Value = Modbus Value

EN

Parameter	Screen	Description	Address	Modbus Range
SV8.5	Month = 1	Shows the month of the current date.	**42435**	Real Value = Modbus Value
SV8.6	Year = 2015	Shows the year of the current date.	**42436**	Real Value = Modbus Value
SV9.1.1	Speed reference = 0.0 %	Current speed reference value.	**42451**	Real Value = (Modbus Value / 100)
SV9.1.2	Torque reference = 0.0 %	Current torque reference value.	**42452**	Real Value = (Modbus Value / 100)
SV9.1.3	Motor speed (%) = 0.0 %	Shows the motor speed in%.	**42453**	Real Value = (Modbus Value / 100)
SV9.1.4	Motor speed (rpm) = 0 rpm	Shows the motor speed in rpm.	**42454**	Real Value = Modbus Value
SV9.1.5	Motor frequency = 0.0 Hz	Shows the frequency which the motor is running.	**42455**	Real Value = (Modbus Value / 10)
SV9.1.6	Motor voltage = 0 V	Shows the current voltage applied to the motor.	**42456**	Real Value = Modbus Value
SV9.1.7	Motor current = 0.0 A	Shows the present current to the motor.	**42457**	Real Value = (Modbus Value / 10)
SV9.1.8	Motor torque = 0.0 %	Shows the current torque applied to the motor.	**42458**	Real Value = (Modbus Value / 100)
SV9.1.9	Motor phi cosine = 0.85	Shows the motor power factor.	**42459**	Real Value = (Modbus Value / 100)
SV9.1.10	Motor power = 0 kW	Shows the instantaneous power consumption of the motor.	**42460**	Real Value = Modbus Value
SV9.1.11.1	U motor current = 0.0 A	Shows the instantaneous current per phase of the motor (U, V and W)	**42461**	Real Value = (Modbus Value / 10)
SV9.1.11.2	V motor current = 0.0 A		**42462**	Real Value = (Modbus Value / 10)
SV9.1.11.3	W motor current = 0.0 A		**42463**	Real Value = (Modbus Value / 10)
SV9.1.12.1	U-V motor voltage = 0 V	Shows the instantaneous line voltage (UV, VW, UW)	**42464**	Real Value = Modbus Value
SV9.1.12.2	V-W motor voltage = 0 V		**42465**	Real Value = Modbus Value
SV9.1.12.3	W-U motor voltage = 0 V		**42466**	Real Value = Modbus Value
SV9.1.13	PTC Status = No	Shows whether the motor PTC is connected or not.	**42467**	Real Value = Modbus Value
SV9.1.14	Motor temperature(%) = 0.0 %	Shows the theoretical heating level of the motor.	**42468**	Real Value = (Modbus Value / 100)
SV9.1.15	Motor temperature = 0 ºC	Shows the temperature of the motor.	**42469**	Real Value = Modbus Value
SV9.1.16	Encoder pulses = 0	Shows the pulse count of the Encoder.	**42470**	Real Value = Modbus Value
SV9.1.17	Encoder speed = 0 rpm	Shows the speed seen by the Encoder.	**42471**	Real Value = Modbus Value
SV9.2.1.1	L1-L2 supply volt = 0 V	Shows the instantaneous input voltage (L1-L2, L2-L3, L3-L1)	**42481**	Real Value = Modbus Value
SV9.2.1.2	L2-L3 supply volt = 0 V		**42482**	Real Value = Modbus Value
SV9.2.1.3	L3-L1 supply volt = 0 V		**42483**	Real Value = Modbus Value
SV9.2.2	Input voltage average = 0 V	Shows the average value of input voltages between phases.	**42511**	Real Value = Modbus Value
SV9.2.3	DC bus voltage = 0 V	Shows the DC bus voltage.	**42500**	Real Value = Modbus Value
SV9.2.4	Input frequency = 0.0 Hz	Shows the frequency of the input voltage	**42484**	Real Value = (Modbus Value / 10)
SV9.2.5	Drive temperature = 0 ºC	Shows the temperature of the drive.	**42487**	Real Value = Modbus Value
SV9.2.9	IGBT temperature = 0 ºC	Shows the temperature measured at the power stage of the drive output.	**42512**	Real Value = Modbus Value
SV9.2.10	Relative Humidity = 0 %	Shows the internal relative humidity of the drive.	**42513**	Real Value = Modbus Value
SV9.3.1	AI1 value = 0.00 V	Shows the average value of the AI1.	**42501**	Real Value = (Modbus Value / 1000)
SV9.3.2	AI1 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI1.	**42502**	Real Value = (Modbus Value / 100)
SV9.3.3	AI1 sensor value = 0.0 l/s	Value of sensor 1 associated to AI1.	**42503**	Real Value = (Modbus Value / 10)

Parameter	Screen	Description	Address	Modbus Range
SV9.3.4	AI2 value = 0.00 mA	Average value of the analogue input 2.	**42504**	Real Value = (Modbus Value / 1000)
SV9.3.5	AI2 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI2.	**42505**	Real Value = (Modbus Value / 100)
SV9.3.6	AI2 sensor value = 0.0 Bar	Value of sensor 1 associated to AI2.	**42506**	Real Value = (Modbus Value / 10)
SV9.3.7	AI3 value = 0.00 V	Average value of the analogue input 3.	**42507**	Real Value = (Modbus Value / 1000)
SV9.3.8	AI3 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI3.	**42508**	Real Value = (Modbus Value / 100)
SV9.3.9	AI3 sensor value = 0.0 l/s	Value of sensor 1 associated to AI3.	**42509**	Real Value = (Modbus Value / 10)
SV9.3.10	AI4 value = 0.00 V	Average value of the analogue input 4.	**41268**	Real Value = (Modbus Value / 1000)
SV9.3.11	AI4 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI4.	**41269**	Real Value = (Modbus Value / 100)
SV9.3.12	AI4 sensor value = 0.0 l/s	Value of sensor 1 associated to AI4.	**41270**	Real Value = (Modbus Value / 10)
SV9.3.13	AI5 value = 0.00 V	Average value of the analogue input 5.	**41228**	Real Value = (Modbus Value / 1000)
SV9.3.14	AI5 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI5.	**41229**	Real Value = (Modbus Value / 100)
SV9.3.15	AI5 sensor value = 0.0 l/s	Value of sensor 1 associated to AI5.	**41230**	Real Value = (Modbus Value / 10)
SV9.3.16	AI6 value = 0.00 V	Average value of the analogue input 6.	**40754**	Real Value = (Modbus Value / 1000)
SV9.3.17	AI6 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI6.	**40755**	Real Value = (Modbus Value / 100)
SV9.3.18	AI6 sensor value = 0.0 l/s	Value of sensor 1 associated to AI6.	**40756**	Real Value = (Modbus Value / 10)
SV9.3.19	AI7 value = 0.00 V	Average value of the analogue input 7.	**40858**	Real Value = (Modbus Value / 1000)
SV9.3.20	AI7 percentage = 100.0 %	Shows the speed reference or the PID proportional setting for the AI7.	**40859**	Real Value = (Modbus Value / 100)
SV9.3.21	AI7 sensor value = 0.0 l/s	Value of sensor 1 associated to AI7.	**40860**	Real Value = (Modbus Value / 10)
SV9.3.22	AO1 value = 0.00 V	Shows the value of analogue output 1.	**42493**	Real Value = (Modbus Value / 1000)
SV9.3.23	AO1 percentage = 0.0 %	Valueof sensor 1 associated to AO1.	**42494**	Real Value = (Modbus Value / 100)
SV9.3.24	AO2 value = 0.00 V	Valueof analogue output 2.	**42495**	Real Value = (Modbus Value / 1000)
SV9.3.25	AO2 percentage = 0.0 %	Valueof sensor 1 associated to AO2.	**42496**	Real Value = (Modbus Value / 100)
SV9.3.26	AO3 value = 0.00 V	Valueof analogue output 3.	**42497**	Real Value = (Modbus Value / 1000)
SV9.3.27	AO3 percentage = 0.0 %	Valueof sensor 1 associated to AO3.	**42498**	Real Value = (Modbus Value / 100)
SV9.3.28	AO4 value = 0.00 V	Valueof analogue output 4.	**41271**	Real Value = (Modbus Value / 1000)
SV9.3.29	AO4 percentage = 0.0 %	Valueof sensor 1 associated to AO4.	**41272**	Real Value = (Modbus Value / 100)
SV9.3.30	AO5 value = 0.00 V	Valueof analogue output 5.	**40965**	Real Value = (Modbus Value / 1000)
SV9.3.31	AO5 percentage = 0.0 %	Valueof sensor 1 associated to AO5.	**40966**	Real Value = (Modbus Value / 100)
SV9.3.32	AO6 value = 0.00 V	Valueof analogue output 6.	**40967**	Real Value = (Modbus Value / 1000)
SV9.3.33	DI status = 000000	Valueof sensor 1 associated to AO6.	**40968**	Real Value = (Modbus Value / 100)
SV9.3.34	DI status = 00000000000	Shows the status of each of the digital inputs of the central control.	**42499**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.35	DI status = 0000000000000000	Shows the status of digital inputs: 00000000000 (entry 1: first from the left).	**41273**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.36	DO status = 000	Shows the status of each of the digital outputs of the central control.	**42510**	Real Value = Modbus Value (LSB: Salida 1)
SV9.3.37	DO status = 00000000	Shows the status of the digital outputs: 00000000000 (entry 1: first from the left).	**42510**	Real Value = Modbus Value (LSB: Salida 1)
SV9.4.1	Last fault = 0	Shows the present fault code.	**42531**	Real Value = Modbus Value

EN

Parameter	Screen	Description	Address	Modbus Range
SV9.4.2	Drive nominal current = 46.0 A	Shows the rated current of the drive.	**42532**	Real Value = (Modbus Value / 10)
SV9.4.3	Drive nominal voltage = 500 V	Shows the rated voltage of the drive.	**42533**	Real Value = Modbus Value
SV9.4.6	PID setpoint = 100.0 %	Shows the setpoint value of the PID of the standard equipment program.	**42536**	Real Value = (Modbus Value / 100)
SV9.4.7	PID feedback value = 100.0 %	Shows the PID feedback value of the standard equipment program.	**42537**	Real Value = (Modbus Value / 100)
SV9.4.8.1	Comp status 1 = O	Shows the status of the three comparators	**42538**	Real Value = Modbus Value
SV9.4.8.2	Comp status 2 = O		**42539**	Real Value = Modbus Value
SV9.4.8.3	Comp status 3 = O		**42540**	Real Value = Modbus Value

COMMON CONFIGURATIONS

7

EN

Start / Stop Commands and Speed Reference by Keypad

Parameter Configuration

Parameter	Description	Value
G1: Options		
G1.2 Language	Language selection	English
G1.5 Activate programs	Program activation	Standard
G2: Motor Nameplate		
G2.1 Motor plate current	Motor rated current	__A (Set according to motor nameplate).
G2.2 Motor plate voltage	Motor rated voltage	__V (Set according to motor nameplate).
G2.3 Motor plate power	Motor rated power	__kW (Set according to motor nameplate).
G2.4 Motor plate rpm :	Motor rpm	__rpm (Set according to motor nameplate).
G2.5 Motor plate phi cosine	Cosine Phi	__ (Set according to motor nameplate).
G2.6 Motor plate frequency	Motor frequency	__Hz (Set according to motor nameplate).
G2.7 Motor cooling	Motor cooling at zero speed	Use the following values as reference: Submersible pumps and non-deflagrating motors ➔ 5% Self-cool motor ➔ 63% Force-cooled motor ➔ 100%
G3: References		
G3.1 Speed ref 1 source	Speed reference source 1	Local ➔ Reference will be determined by keypad and is set in G3.3 'Local Speed Reference'.
G3.3 Speed local reference	Local Speed Reference	+100%
G4: Inputs – G4.1: Digital Inputs		
G4.1.1 Main control mode	Main Control Mode	1 ➔ LOCAL (Drive control is done by keypad).
G4.1.3 Allow local reset	Reset by keypad	Y ➔ YES (Enables reset by keypad).

Start / Stop Commands by Terminals and Speed Reference by Analogue Input

Parameter Configuration

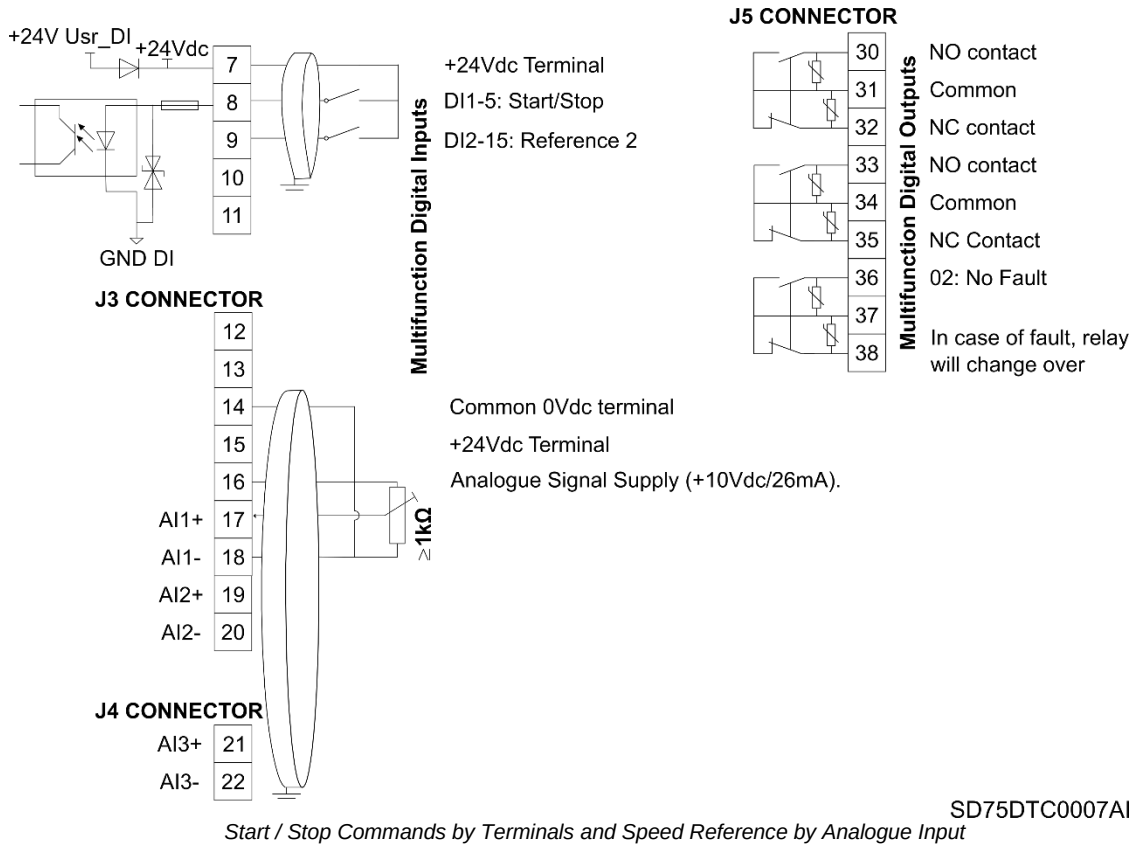
Parameter	Description	Value
G1: Options		
G1.2 Language	Language selection	ENGLISH
G1.5 Activate programs	Program activation	STANDARD
G2: Motor Nameplate		
G2.1 Motor plate current	Motor rated current	__A (Set according to motor nameplate).
G2.2 Motor plate voltage	Motor rated voltage	__V (Set according to motor nameplate).
G2.3 Motor plate power	Motor rated power	__kW (Set according to motor nameplate).
G2.4 Motor plate rpm :	Motor rpm	__rpm (Set according to motor nameplate).
G2.5 Motor plate phi cosine	Cosine Phi	__ (Set according to motor nameplate).
G2.6 Motor plate frequency	Motor frequency	__Hz (Set according to motor nameplate).
G2.7 Motor cooling	Motor cooling at zero speed	Use the following values as reference: Submersible pumps and non-deflagrating motors ➔ 5% Self-cool motor ➔ 63% Force-cooled motor ➔ 100%
G3: References		
G3.1 Speed ref 1 source	Speed reference source 1	Local ➔ Reference will be determined by keypad and is set in G3.3 'Local Speed Reference'.
G3.2 Speed ref 2 source	Speed reference source 2	AI1 ➔ Reference will be introduced by Analogue Input 1.
G3.3 Speed local reference	Local Speed Reference	+100%
G4: Inputs – G4.1: Digital Inputs		
G4.1.1 Main control mode	Main Control Mode	2 ➔ REMOTE (Drive control is done through control terminals).
G4.1.4 Digital input mode	Digital Inputs configuration selection	1 ➔ ALL PROGRAMMABLE (all digital inputs can be individually configured by the user).
G4.1.5 Digital Input 1	Multi-function Digital Input 1 configuration	05 ➔ Start/Stop (Allows the start/stop command to be given by a switch).
G4.1.6 Digital Input2	Multi-function Digital Input 2 configuration	15 ➔ Reference 2 (Allows selecting the alternative speed reference programmed in G3.2.)

See Connection Drawing in the next page.

Connection Drawing

Terminals 7 and 8: start / stop command (NO status).

Terminals 7 and 9: alternative reference command (NO status).



Start / Stop Commands by Terminals and Speed Reference by Analogue Input

Note: Use screened cables for the controls and connect screen to ground.

EN

Start / Stop Commands by Terminals and Speed Reference by Motorized Potentiometer

Parameter Configuration

Parameter	Description	Value
G1: Options		
G1.2 Language	Language selection	ENGLISH
G1.5 Activate programs	Program activation	STANDARD
G2: Motor Nameplate		
G2.1 Motor plate current	Motor rated current	__A (Set according to motor nameplate).
G2.2 Motor plate voltage	Motor rated voltage	__V (Set according to motor nameplate).
G2.3 Motor plate power	Motor rated power	__kW (Set according to motor nameplate).
G2.4 Motor plate rpm :	Motor rpm	__rpm (Set according to motor nameplate).
G2.5 Motor plate phi cosine	Cosine Phi	__ (Set according to motor nameplate).
G2.6 Motor plate frequency	Motor frequency	__Hz (Set according to motor nameplate).
G2.7 Motor cooling	Motor cooling at zero speed	Use the following values as reference: Submersible pumps and non-deflagrating motors ➔ 5% Self-cool motor ➔ 63% Force-cooled motor ➔ 100%
G3: References		
G3.1 Speed ref 1 source	Speed reference source 1	LOCAL ➔ Reference will be determined by keypad and is set in G3.3 'Local Speed Reference'.
G3.2 Speed ref 2 source	Speed reference source 2	AI1 ➔ Reference will be introduced by Analogue Input 1.
G3.3 Speed local reference	Local Speed Reference	+100%
G4: Inputs – G4.1: Digital Inputs		
G4.1.1 Main control mode	Main Control Mode	2 ➔ REMOTE (Drive control is done through control terminals).
G4.1.4 Digital input mode	Digital Inputs configuration selection	1 ➔ ALL PROGRAMMABLE (all digital inputs can be individually configured by the user).
G4.1.5 Digital Input 1	Multi-function Digital Input 1 configuration	05 ➔ Start/Stop (Allows the start/stop command to be given by a switch).
G5: Acceleration / deceleration rates		
G5.3.1 Mot pot accel rate 1	Ramp 1 of reference increase for motorized potentiometer	1.0% / s (Modify these ramps to tune operation). If the ramp is increased the speed reference response will be faster. If the ramp is decreased the speed reference response will be slower.
G5.3.2 Mot pot decel rate 1	Ramp 1 of reference decrease for motorized potentiometer	3.0% / s (Modify these ramps to tune operation). If the ramp is increased the speed reference response will be faster. If the ramp is decreased the speed reference response will be slower.

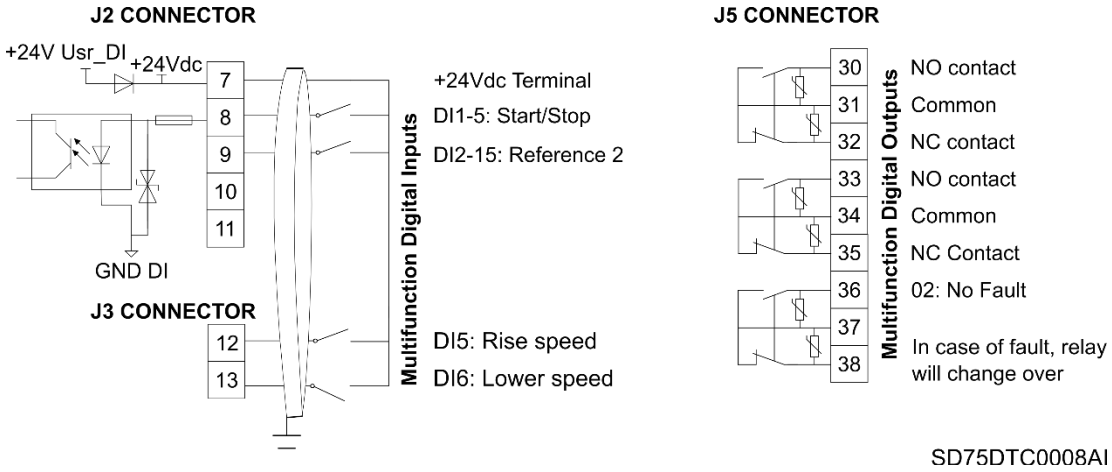
See Connection Drawing in the next page.

Connection Drawing

Terminals 7 and 8: start / stop command (NO status).

Terminals 7 and 12: up speed command (NO status).

Terminals 7 and 13: down speed command (NC status).



Start / Stop Commands by Terminals and Speed Reference by Motorized Potentiometer

Note: Use screened cables for the controls and connect screen to ground.

EN

Start / Stop Commands by Terminals and Seven Speed References Selectable by Digital Inputs

Parameter Configuration

Parameter	Description	Value
G1: Options		
G1.2 Language	Language selection	ENGLISH
G1.5 Activate programs	Program activation	STANDARD
G2: Motor Nameplate.		
G2.1 Motor plate current	Motor rated current	__A (Set according to motor nameplate).
G2.2 Motor plate voltage	Motor rated voltage	__V (Set according to motor nameplate).
G2.3 Motor plate power	Motor rated power	__kW (Set according to motor nameplate).
G2.4 Motor plate rpm :	Motor rpm	__rpm (Set according to motor nameplate).
G2.5 Motor plate phi cosine	Cosine Phi	__ (Set according to motor nameplate).
G2.6 Motor plate frequency	Motor frequency	__Hz (Set according to motor nameplate).
G2.7 Motor cooling	Motor cooling at zero speed	Use the following values as reference: Submersible pumps and non-deflagrating motors ➔ 5% Self-cool motor ➔ 63% Force-cooled motor ➔ 100%
G3: References.		
G3.1 Speed ref 1 source	Speed reference source 1	Multireferences ➔ Multiple speed references activated by digital inputs.
G4: Inputs – G4.1: Digital Inputs		
G4.1.1 Main control mode	Main Control Mode	2 ➔ REMOTE (Drive control is done through control terminals).
G4.1.4 Digital input mode	Digital Inputs configuration selection	3 ➔ Multireferences 3 WIRES (Automatically programs digital inputs 4, 5 and 6 as multiple speed references for up to 7 different values. The others digital inputs remain user configurable).
G4.1.5 Digital Input 1	Multi-function Digital Input 1 configuration	05 ➔ Start/Stop (Allows the start/stop command to be given by a switch).
G14: Multi-references		
G14.1 Multi reference 1	Multi-reference 1	+10.0% (Allows setting the setpoint 1 value for the drive. It should be set according to the application requirements).
G14.2 Multi reference 2	Multi-reference 2	+20.0% (Allows setting the setpoint 2 value for the drive. It should be set according to the application requirements).
G14.3 Multi reference 3	Multi-reference 3	+30.0% (Allows setting the setpoint 3 value for the drive. It should be set according to the application requirements).
G14.4 Multi reference 4	Multi-reference 4	+40.0% (Allows setting the setpoint 4 value for the drive. It should be set according to the application requirements).
G14.5 Multi reference 5	Multi-reference 5	+50.0% (Allows setting the setpoint 5 value for the drive. It should be set according to the application requirements).
G14.6 Multi reference 6	Multi-reference 6	+60.0% (Allows setting the setpoint 6 value for the drive. It should be set according to the application requirements).
G14.7 Multi reference 7	Multi-reference 7	+70.0% (Allows setting the setpoint 7 value for the drive. It should be set according to the application requirements).

See Connection Drawing in the next page.

Connection Drawing

Terminals 7 and 8: start / stop command (NO status).

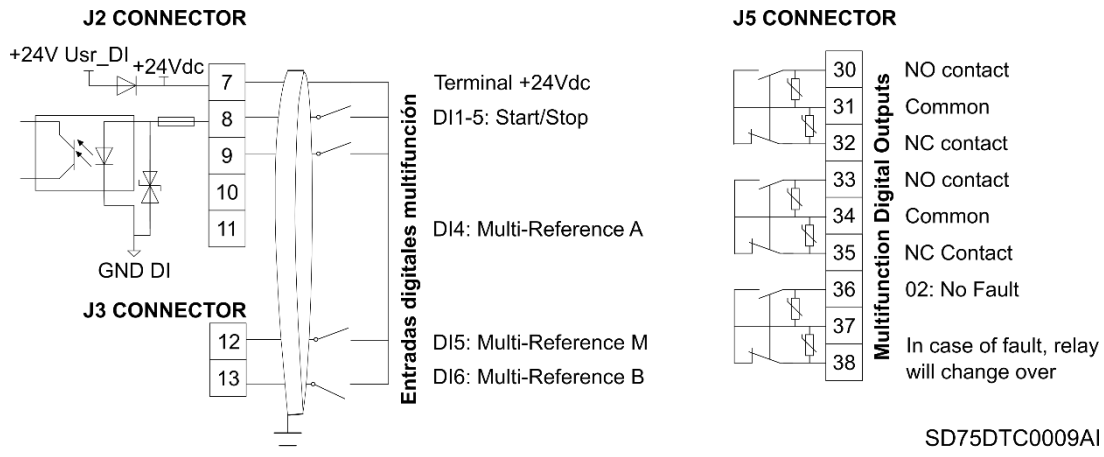
Terminals 7 and 11: multi-reference A (NO status).

Terminals 7 and 12: multi-reference M (NO status).

Terminals 7 and 13: multi-reference B (NO status).

SPEED	REF	Digital Input 4 Multi-reference-A	Digital Input 5 Multi-reference-M	Digital Input 6 Multi-reference-B
G14.1 = +10.0%	Multireferences1	0	0	X
G14.2 = +20.0%	Multireferences2	0	X	0
G14.3 = +30.0%	Multireferences3	0	X	X
G14.4 = +40.0%	Multireferences4	X	0	0
G14.5 = +50.0%	Multireferences5	X	0	X
G14.6 = +60.0%	Multireferences6	X	X	0
G14.7 = +70.0%	Multireferences7	X	X	X

Note: 0: Not active and X: Active.



Start / Stop Commands by Terminals and Seven Speed References Selectable by Digital Inputs.

Note: Use screened cables for the controls and connect screen to ground.

CONFIGURATION REGISTER

8

VARIABLE SPEED DRIVE: SD750.
SERIAL Nº: MODEL:
APPLICATION:
DATE:
CUSTOMER:
NoteS:

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G1: Options			
G1.1-Lock parameters	No	_____	_____
G1.1a-Lock password	0	_____	_____
G1.1b-Unlock password recov.	0	_____	_____
G1.2-Language	Spanish	_____	_____
G1.3-Initialise	No init	_____	_____
G1.4-Short menu	No	_____	_____
G1.5-Activate programs	Standard	_____	_____
G1.6-Service group password	Group reserved for Technical Service staff of Power Electronics' authorized personnel.		
G1.9-Master/slave config	Disable	_____	_____
G2: Motor Nameplate Data			
G2.1-Motor plate current	1.0In A	_____	_____
G2.2-Motor plate voltage	0 V	_____	_____
G2.3-Motor plate power	Pn kW	_____	_____

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G2.4-Motor plate rpm	1485 rpm		
G2.5-Motor plate phi cosine	0.85		
G2.6-Motor plate frequency	50 Hz		
G2.7-Motor cooling	63 %		
G3: References			
G3.1-Speed ref 1 source	Local		
G3.2-Speed ref 2 source	Local		
G3.3-Speed local reference	100.0 %		
G3.4-Torque ref 1 source	Local		
G3.5-Torque ref 2 source	Local		
G3.6-Torque local reference	100.0 %		
G4: Inputs – G4.1: Digital Inputs			
G4.1.1-Main control mode	Local		
G4.1.2-Alternative ctrl mode	Remote		
G4.1.3-Allow local reset	Yes		
G4.1.4-Digital input mode	All programmable		
G4.1.5-Digital Input 1	Start / Stop		
G4.1.6-Digital Input 2	Reference 2		
G4.1.7-Digital Input 3	Control 2		
G4.1.8-Digital Input 4	Reset (NC)		
G4.1.9-Digital Input 5	Not used		
G4.1.10-Digital Input 6/PTC	Not used		
G4.1.11-Digital Input 7	Not used		
G4.1.12-Digital Input 8	Not used		
G4.1.13-Digital Input 9	Not used		
G4.1.14-Digital Input 10	Not used		
G4.1.15-Digital Input 11	Not used		
G4.1.16-Digital Input 12	Not used		
G4.1.17-Digital Input 13	Not used		
G4.1.18-Digital Input 14	Not used		
G4.1.19-Digital Input 15	Not used		
G4.1.20-Digital Input 16	Not used		
G4.1.27 Feedback Error Timeout	1.0 s		
G4.1.28-Invert Input mode	6 bits		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G4: Inputs – G4.2: Analogue Input 1			
G4.2.1-Enable sensor	No		
G4.2.2-Sensor unit	l/s		
G4.2.3-AI1 Format	V		
G4.2.4-AI1 low level	0.0 V		
G4.2.5-Sensor low level	0.0 l/s		
G4.2.6-AI1 high level	10.0 V		
G4.2.7-Sensor high level	10.0 l/s		
G4.2.8-AI1 Ref speed min	0.0 %		
G4.2.9-AI1 Ref speed max	100.0 %		
G4.2.10-Sensor min value	0.0 l/s		
G4.2.11-Open loop min speed	0.0 %		
G4.2.12-Sensor max value	10.0 l/s		
G4.2.13-Open loop max speed	100.0 %		
G4.2.14-AI1 loss protection	No		
G4.2.15-AI1 zero band filter	Off		
G4.2.16-AI1 stabilizer filter	Off		
G4: Inputs – G4.3: Analogue Input 2 / Pulse			
G4.3.0-Enable Pulse Input Mode	No		
G4.3.1-Enable sensor	No		
G4.3.2-Sensor unit	Bar		
G4.3.2-Sensor unit Pulse Input	l/s		
G4.3.2b-Pulses per unit	100		
G4.3.2c-Max pulses	1000		
G4.3.3-AI2 Format	mA		
G4.3.4-AI2 low level	4.0 mA		
G4.3.5-Sensor low level	0.0 Bar		
G4.3.6-AI2 high level	10.0 mA		
G4.3.7-Sensor high level	10.0 Bar		
G4.3.8-AI2 Ref speed min	0.0 %		
G4.3.9-AI2 Ref speed max	100.0 %		
G4.3.10-Sensor min value	0.0 Bar		
G4.3.11-Open loop min speed	0.0 %		
G4.3.12-Sensor max value	10.0 Bar		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G4.3.13-Open loop max speed	100.0 %		
G4.3.14-AI2 loss protection	No		
G4.3.15-AI2 zero band filter	Off		
G4.3.16-AI2 stabilizer filter	Off		
G4: Inputs – G4.4: Analogue Input 3 / PT100			
G4.4.0-PT100 Mode	No		
G4.4.1-Enable sensor	No		
G4.4.2-Sensor unit	l/s		
G4.4.3-AI3 Format	V		
G4.4.4-AI3 low level	0.0 V		
G4.4.5-Sensor low level	0.0 l/s		
G4.4.6-AI3 high level	10.0 V		
G4.4.7-Sensor high level	10.0 l/s		
G4.4.8-AI3 Ref speed min	0.0 %		
G4.4.9-AI3 Ref speed max	100.0 %		
G4.4.10-Sensor min value	0.0 l/s		
G4.4.11-Open loop min speed	0.0 %		
G4.4.12-Sensor max value	10.0 l/s		
G4.4.13-Open loop max speed	100.0 %		
G4.4.14-AI3 loss protection	No		
G4.4.15-AI3 zero band filter	Off		
G4.4.16-AI3 stabilizer filter	Off		
G4: Inputs – G4.5: Analogue Input 4			
G4.5.1-Enable sensor	No		
G4.5.2-Sensor unit	l/s		
G4.5.3-AI4 Format	V		
G4.5.4-AI4 low level	0.0 V		
G4.5.5-Sensor low level	0.0 l/s		
G4.5.6-AI4 high level	10.0 V		
G4.5.7-Sensor high level	10.0 l/s		
G4.5.8-AI4 Ref speed min	0.0 %		
G4.5.9-AI4 Ref speed max	100.0 %		
G4.5.10-Sensor min value	0.0 l/s		
G4.5.11-Open loop min speed	0.0 %		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G4.5.12-Sensor max value	10.0 l/s		
G4.5.13-Open loop max speed	100.0 %		
G4.5.14-AI4 loss protection	No		
G4.5.15-AI4 zero band filter	Off		
G4.5.16-AI4 stabilizer filter	Off		
G4: Inputs – G4.6: Analogue Input 5			
G4.6.1-Enable sensor	No		
G4.6.2-Sensor unit	l/s		
G4.6.3-AI5 Format	V		
G4.6.4-AI5 low level	0.0 V		
G4.6.5-Sensor low level	0.0 l/s		
G4.6.6-AI5 high level	10.0 V		
G4.6.7-Sensor high level	10.0 l/s		
G4.6.8-AI5 Ref speed min	0.0 %		
G4.6.9-AI5 Ref speed max	100.0 %		
G4.6.10-Sensor min value	0.0 l/s		
G4.6.11-Open loop min speed	0.0 %		
G4.6.12-Sensor max value	10.0 l/s		
G4.6.13-Open loop max speed	100.0 %		
G4.6.14-AI5 loss protection	No		
G4.6.15-AI5 zero band filter	Off		
G4.6.16-AI5 stabilizer filter	Off		
G4: Inputs – G4.7: Analogue Input 6			
G4.7.1 Enable sensor	No		
G4.7.2 Sensor unit	l/s		
G4.7.3 AI6 Format	V		
G4.7.4 AI6 low level = 0.0	0.0 V		
G4.7.5 Sensor low level = 0.0	0.0 l/s		
G4.7.6 AI6 high level = 10.0	10.0 V		
G4.7.7 Sensor high level = 10.0	10.0 l/s		
G4.7.8 AI6 Ref speed min = 0.0	0.0 %		
G4.7.9 AI6 Ref speed max = 100.0	100.0 %		
G4.7.10 Sensor min value = 0.0	0.0 l/s		
G4.7.11 Open loop min speed	0.0 %		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G4.7.12 Sensor max value	10.0 l/s		
G4.7.13 Open loop max speed	100.0 %		
G4.7.14 AI6 loss protection	No		
G4.7.15 AI6 zero band filter	Off		
G4.7.16 AI6 stabilizer filter	Off		
G4: Inputs – G4.8: Analogue Input 7			
G4.8.1 Enable sensor = No	NO		
G4.8.2 Sensor unit = l/s	l/s		
G4.8.3 AI7 Format = V	V		
G4.8.4 AI7 low level = 0.0 V	0.0V		
G4.8.5 Sensor low level = 0.0 l/s	0.0l/s		
G4.8.6 AI7 high level = 10.0 V	10.0V		
G4.8.7 Sensor high level = 10.0 l/s	10.0l/s		
G4.8.8 AI7 Ref speed min = 0.0 %	0.0%		
G4.8.9 AI7 Ref speed max = 100.0 %	100.0%		
G4.8.10 Sensor min value = 0.0 l/s	0.0l/s		
G4.8.11 Open loop min speed = 0.0 %	0.0%		
G4.8.12 Sensor max value = 10.0 l/s	10.0l/s		
G4.8.13 Open loop max speed = 100.0 %	100.0%		
G4.8.14 AI7 loss protection = No	NO		
G4.8.15 AI7 zero band filter = Off	Off		
G4.8.16 AI7 stabilizer filter = Off	Off		
G5: Acceleration / Deceleration Ramps			
G5.1.1 Acceleration rate 1	1.50 %/s		
G5.1.2 Acceleration rate 2	2.00 %/s		
G5.1.3-Accel break speed	Off		
G5.1.4 Ramp after V.Deep	1.50 %/s		
G5.2.1 Deceleration rate 1	1.50 %/s		
G5.2.2 Deceleration rate 2	2.00 %/s		
G5.2.3 Decel break speed	Off		
G5.3.1 Mot pot accel rate 1	1.00 %/s		
G5.3.2 Mot pot decel rate 1	3.00 %/s		
G5.3.3 Mot pot accel rate 2	1.00 %/s		
G5.3.4 Mot pot decel rate 2	3.00 %/s		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G5.3.5 Mot pot rate brk speed	0 %		
G5.4 Speed filter	Off		
G6: PID Control			
G6.1 Setpoint source	Multireferences		
G6.2 Local process setpoint	100.0 %		
G6.3 Feedback source	Analog Input 2		
G6.4 Process Kc	8.0		
G6.5 Process Ti	0.1 s		
G6.6 Process Td	0.0 s		
G6.7 Invert PID	No		
G6.8 Feedback low pass filter	Off		
G6.9 Process error	0.0 %		
G7: Start / Stop Control – G7.1 Start			
G7.1.1 Main start mode	Ramp		
G7.1.2 Alternative start mode	Ramp		
G7.1.3 Start delay	Off		
G7.1.4 Fine restart delay	Off		
G7.1.5 Alt restart delay	Off		
G7.1.6 Run on supply loss	Yes		
G7.1.7 Start after V.Deep	Spin		
G7.1.8 Run after reset	Yes		
G7.1.9 Start Delay after Reset	0.001 s		
G7.1.10 Magnetization time	Off		
G7: Start / Stop Control – G7.2 Stop			
G7.2.1 Main stop mode	Ramp		
G7.2.2 Alternative stop mode	Spin		
G7.2.3 Stop mode switch speed	Off		
G7.2.4 Stop delay	Off		
G7.2.5 Stop at min speed	No		
G7.2.6 Power off delay	Off		
G7: Start / Stop Control – G7.3 Spin start			
G7.3.1 Spin start tune	10 %		
G7.3.2 Minimum speed	0.0 %		
G7.3.3 Magnetization tim	1.0 s		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G8: Outputs – G8.1: Output Relays			
G8.1.0.1 Group 1	Off		
G8.1.0.2 Group 2	Off		
G8.1.0.3 Group 3	Off		
G8.1.1 Relay 1 source select	Run		
G8.1.2 Relay 1 ON delay	0.0 s		
G8.1.3 Relay 1 OFF delay	0.0 s		
G8.1.4 Relay 1 inversion	No		
G8.1.5 Relay 2 source select	Always OFF		
G8.1.6 Relay 2 ON delay	0.0 s		
G8.1.7 Relay 2 OFF delay	0.0 s		
G8.1.8 Relay 2 inversion	No		
G8.1.9 Relay 3 source select	Always OFF		
G8.1.10 Relay 3 ON delay	0.0 s		
G8.1.11 Relay 3 OFF delay	0.0 s		
G8.1.12 Relay 3 inversion	No		
G8.1.13 Relay 4 src select	Always OFF		
G8.1.14 Relay 4 ON delay	0.0 s		
G8.1.15 Relay 4 OFF delay	0.0 s		
G8.1.16 Relay 4 inversion	No		
G8.1.17 Relay 5 src select	Always OFF		
G8.1.18 Relay 5 ON delay	0.0 s		
G8.1.19 Relay 5 OFF delay	0.0 s		
G8.1.20 Relay 5 inversion	No		
G8.1.21 Relay 6 source select	Always OFF		
G8.1.22 Relay 6 ON delay	0.0 s		
G8.1.23 Relay 6 OFF delay	0.0 s		
G8.1.24 Relay 6 inversion	No		
G8.1.25 Relay 7 source select	Always OFF		
G8.1.26 Relay 7 ON delay	0.0 s		
G8.1.27 Relay 7 OFF delay	0.0 s		
G8.1.28 Relay 7 inversion	No		
G8.1.29 Relay 8 src select	Always OFF		
G8.1.30 Relay 8 ON delay	0.0 s		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G8.1.31 Relay 8 OFF delay	0.0 s		
G8.1.32 Relay 8 inversion	No		
G8.1.33 Relay 9 src select	Always OFF		
G8.1.34 Relay 9 ON delay	0.0 s		
G8.1.35 Relay 9 OFF delay	0.0 s		
G8.1.36 Relay 9 inversion	No		
G8.1.37 Relay 10 src select	Always OFF		
G8.1.38 Relay 10 ON delay	0.0 s		
G8.1.39 Relay 10 OFF delay	0.0 s		
G8.1.40 Relay 10 inversion	No		
G8.1.41 Relay 11 src select	Always OFF		
G8.1.42 Relay 11 ON delay	0.0 s		
G8.1.43 Relay 11 OFF delay	0.0 s		
G8.1.44 Relay 11 inversion	No		
G8.1.45 Relay 12 src select	Always OFF		
G8.1.46 Relay 12 ON delay	0.0 s		
G8.1.47 Relay 12 OFF delay	0.0 s		
G8.1.48 Relay 12 inversion	No		
G8.1.49 Relay 13 src select	Always OFF		
G8.1.50 Relay 13 ON delay	0.0 s		
G8.1.51 Relay 13 OFF delay	0.0 s		
G8.1.52 Relay 13 inversion	No		
G8.1.53 Speed for crane brake	0.00 %		
G8: Outputs – G8.2: Analogue Output 1			
G8.2.1 AO1 source selection = Motor speed	Motor Speed		
G8.2.2 O1 format = 4..20 mA	4-20mA		
G8.2.3 AO1 low level	0 %		
G8.2.4 AO1 high level	100 %		
G8.2.5 AO1 filter	Off		
G8: Outputs – G8.3: Analogue Output 2 / Pulse			
G8.3.0 Enable Pulse Mode	No		
G8.3.1 AO2 source selection	Motor current		
G8.3.2 AO2 format	4..20 mA		
G8.3.3 AO2 low level	0 %		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G8.3.4 AO2 high level	100 %		
G8.3.5 AO2 filter	Off		
G8.3.6 Max pulse number	100		
G8.3.7 Pulse duty	50 %		
G8: Outputs – G8.4: Analogue Output 3			
G8.4.1 AO3 source selection	Motor speed		
G8.4.2 AO3 format	4..20 mA		
G8.4.3 AO3 low level	0 %		
G8.4.4 AO3 high level	100 %		
G8.4.5 AO3 filter	Off		
G8: Outputs – G8.5: Analogue Output 4			
G8.5.1 AO4 source selection	Motor speed		
G8.5.2 AO4 format	4..20 mA		
G8.5.3 AO4 low level	0 %		
G8.5.4 AO4 high level	100 %		
G8.5.5 AO4 filter	Off		
G8: Outputs – G8.6: Analogue Output 5			
G8.6.1 AO5 source selection	Motor speed		
G8.6.2 AO5 format	4..20 mA		
G8.6.3 AO5 low level	0 %		
G8.6.4 AO5 high level	100 %		
G8.6.5 AO5 filter	Off		
G8: Outputs – G8.7: Analogue Output 6			
G8.7.1 AO6 source selection	Motor speed		
G8.7.2 AO6 format	4-20mA		
G8.7.3 AO6 low level	0%		
G8.7.4 AO6 high level	100%		
G8.7.5 AO6 filter	Off		
G9: Comparators – G9.1: Comparator 1			
G9.1.1 Comp 1 source sel	None		
G9.1.2 Comp 1 type	Normal		
G9.1.3 Comp 1 ON level	100 %		
G9.1.4 Comp 1 OFF level	0 %		
G9.1.3 Comp 1 window limit 2	100 %		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G9.1.4 Comp 1 window limit 1	0 %		
G9.1.5 Comp 1 ON delay	0.0 s		
G9.1.6 Comp 1 OFF delay	0.0 s		
G9.1.7 Comp 1 output function	Not used		
G9: Comparators – G9.2: Comparator 2			
G9.2.1 Comp 2 source sel	None		
G9.2.2 Comp 2 type	Normal		
G9.2.3 Comp 2 ON level	100 %		
G9.2.4 Comp 2 OFF level	0 %		
G9.2.3 Comp 2 window limit 2	100 %		
G9.2.4 Comp 2 window limit 1	0 %		
G9.2.5 Comp 2 ON delay	0.0 s		
G9.2.6 Comp 2 OFF delay	0.0 s		
G9.2.7 Comp 2 output function	Not used		
G9: Comparators – G9.3: Comparator 3			
G9.3.1 Comp 3 source sel	None		
G9.3.2 Comp 3 type	Normal		
G9.3.3 Comp 3 ON level	100 %		
G9.3.4 Comp 3 OFF level	0 %		
G9.3.3 Comp 3 window limit 2	100 %		
G9.3.4 Comp 3 window limit 1	0 %		
G9.3.5 Comp 3 ON delay	0.0 s		
G9.3.6 Comp 3 OFF delay	0.0 s		
G9.3.7 Comp 3 output function	Not used		
G10: Limits – G10.1 Speed			
G10.1.1 Minimum limit 1	-100.00 %		
G10.1.2 Maximum limit 1	100.00 %		
G10.1.3 Minimum limit 2	-100.00 %		
G10.1.4 Maximum limit 2	100.00 %		
G10.1.5 Maximum lim timeout	Off		
G10.1.6 Minimum lim timeout	Off		
G10.1.7 Invert speed	No		
G10: Limits – G10.2 Current / Torque			
G10.2.1 Current limit	1.0In A		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G10.2.2 I limit timeout	Off		
G10.2.3 Current limit 2	1.0In A		
G10.2.4 I limit 2 timeout	Off		
G10.2.5 I limit 2 switch speed	Off		
G10.2.6 Torque limit	150.0 %		
G10.2.7 Torque limit timeout	Off		
G10.2.8 Torque limit 2	150.0 %		
G10.2.9 Torque lim 2 timeout	Off		
G10.2.10 Torque I 2 swt speed	Off		
G10.2.11 Regeneration I limit	Off		
G10.2.12 I limit Regen Time	Off		
G10.2.13 Reg torque limit	150.0 %		
G10.2.14 Reg torque limit time	Off		
G10.2.15 Disable limit I/T	No		
G11: Protections – G11.1 Input			
G11.1.1 Supply under voltage	(Internal)0 V		
G11.1.2 Under voltage timeout	5.0 s		
G11.1.3 Supply over voltage	(Internal)7095 V		
G11.1.4 Over voltage timeout	5.0 s		
G11.1.5 Low voltage behavior	Faults		
G11.1.6 LVRT input threshold	25 %		
G11.1.7 LVRT output threshold	5 %		
G11: Protections – G11.2 Motor			
G11.2.1 Stop timeout	Off		
G11.2.2 Ground current limit	20 %		
G11.2.3 I out asym trip delay	5.0 s		
G11.2.4 V asym out trip delay	5.0 s		
G11.2.5 PT100 motor fault	Off		
G11.2.6 PT100 fault timeout	30 s		
G11.2.7 Fault with no load	No		
G11.2.8 Pump overload level	20.0 A		
G11.2.9 Pump overload filter	Off		
G11.2.10 Pump overload delay	Off		
G11.2.11 Pump underload enable	No		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G11.2.12 Pump underload current	1.0In A		
G11.2.13 Pump underload speed	100.0 %		
G11.2.14 Pump underload flt dly	10.0 s		
G12: Auto Reset			
G12.1 Enable autoreset	No		
G12.2 Retries max number	1		
G12.3 Autoreset delay	5 s		
G12.4 Counter reset time	15 min		
G12.5 Autoreset fault 1	Off		
G12.6 Autoreset fault 2	Off		
G12.7 Autoreset fault 3	Off		
G12.8 Autoreset fault 4	Off		
G13: Fault History			
G13.1 Fault Register 1	No faults		
G13.2 Fault Register 2	No faults		
G13.3 Fault Register 3	No faults		
G13.4 Fault Register 4	No faults		
G13.5 Fault Register 5	No faults		
G13.6 Fault Register 6	No faults		
G13.7 Erase fault history	No		
G14: Multi-references			
G14.1 Multi-reference 1	10.00 %		
G14.2 Multi-reference 2	20.00 %		
G14.3 Multi-reference 3	30.00 %		
G14.4 Multi-reference 4	40.00 %		
G14.5 Multi-reference 5	50.00 %		
G14.6 Multi-reference 6	60.00 %		
G14.7 Multi-reference 7	70.00 %		
G15: Inch Speeds			
G15.1 Inch speed 1	0.00 %		
G15.2 Inch speed 2	0.00 %		
G15.3 Inch speed 3	0.00 %		
G16: Skip Frequencies			
G16.1 Skip frequency 1	0.00 %		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G16.2 Skip bandwidth 1	Off		
G16.3 Skip frequency 2	0.00 %		
G16.4 Skip bandwidth 2	Off		
G16.5 Skip frequency 3	0.00 %		
G16.6 Skip bandwidth 3	Off		
G16.7 Skip frequency 4	0.00 %		
G16.8 Skip bandwidth 4	Off		
G17: Brake			
G17.1 DC brake time	Off		
G17.2 DC brake current level	0 %		
G17.3 DC break on delay	Off		
G17.4 Heating current	Off		
G17.5 Dynamic brake	No		
G18: Encoder			
G18.1 Enable encoder	No		
G18.2 Encoder PPR	1024 PPR		
G19: Fine Tuning – G19.1: IGBT Control			
G19.1.1 Control type	V/Hz		
G19.1.1b Vector control	PMC Open loop speed		
G19.1.1c Perm Magnet Sync Mot	I/Hz		
G19.1.3 PID Vout	No		
G19.1.6 Auto Tuning	No		
G19.1.7 Overmodulation	Off		
G19.1.8 Pewave	Yes		
G19.1.9 Switching frequency	4000 Hz		
G19: Fine Tuning – G19.2: Motor Load			
G19.2.1 Minimum flux level	100 %		
G19.2.2 Boost voltage	0.0 %		
G19.2.3 Boost current	0.0 %		
G19.2.4 Slip compensation	No		
G19.2.5 Current limit factor	0.0 %		
G19.2.6 Initial frequency	0.0 %		
G19.2.7 Damping	2 %		
G19.2.8 Reg bus voltage	800V		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G19: Fine Tuning – G19.3: Motor model			
G19.3.1 R stator	0.1 mΩ	_____	_____
G19.3.2 R rotor	0.1 mΩ	_____	_____
G19.3.3 L magnetization	0.1 mH	_____	_____
G19.3.3 Back electrom. force	0.000 kV	_____	_____
G19.3.4 L leakage stator	0.00 mH	_____	_____
G19.3.4 L Stator D axis	0.00 mH	_____	_____
G19.3.5 L leakage rotor	0.00 mH	_____	_____
G19.3.5 L Stator Q axis	0.00 mH	_____	_____
G19.3.6 Field weakening	90.0 %	_____	_____
G19.3.7 Temperature coef R	20.0 %	_____	_____
G19.3.8 Flux tuning	2.0 %	_____	_____
G19.3.9 Params online estim	No	_____	_____
G19: Fine Tuning – G19.4: PID Control			
G19.4.1 Kp speed	10.0 %	_____	_____
G19.4.2 Ki speed	10.0 %	_____	_____
G19.4.3 Kp torque	10.0 %	_____	_____
G19.4.4 Ki torque	10.0 %	_____	_____
G19.4.5 Kp I	10.0 %	_____	_____
G19.4.6 Ki I	15.0 %	_____	_____
G19.4.7 Kp Sensorless	50.0 %	_____	_____
G19.4.8 Ki Sensorless	50.0 %	_____	_____
G20: Serial Communication– G20.1: Modbus RTU			
G20.1.1 Display baudrate	460800 bps baud/s	_____	_____
G20.1.2 Modbus address	10	_____	_____
G20.1.3 Modbus baudrate	9600 bps baud/s	_____	_____
G20.1.4 Modbus parity	None	_____	_____
G20.1.5 Communication timeout	Off	_____	_____
G20: Serial Communication - G20.2: Profibus			
G20.2.1.1.1 to G20.2.1.1.16– Custom Modbus addresses 1 to 16	0	_____	_____
G20.2.1.2.1 to G20.2.1.2.16– Values of custom Modbus registers 1 to 16	0	_____	_____
G20.2.2.1.1 to G20.2.2.1.16– Custom Modbus addresses 17 to 32	0	_____	_____
G20.2.2.2 to G20.2.2.2.16–Values of custom Modbus registers 17 to 32	0	_____	_____

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G20.2.3 – Profibus node address	1		
G20.2.4 – Connector Fault Mode	Fault		
G20.2.5 – Connector State	Off		
G20: Serial Communication – G20.6: Custom Modbus configuration			
G20.6.1 to G20.6.1.20 – Custom Modbus addresses 1 to 120	0		
G20: Serial Communication – G20.6: Custom Modbus values			
G20.7.1 to G20.7.1.20 – Values of custom Modbus registers 1 to 120	0		
G21: Networks – G21.1: Ethernet			
G21.1.1 Automatic IP	No		
G21.1.1.1 Assigned IP	0.0.0.0		
G21.1.1.2 Assigned subnet	0.0.0.0		
G21.1.1.3 Assigned gateway	0.0.0.0		
G21.1.2 IP address	0.0.0.0		
G21.1.3 Subnet Mask	0.0.0.0		
G21.1.4 Gateway	0.0.0.0		
G21.1.5 MAC address	0.27.119.129.238.66		
G21: Networks – G21.2: TCP Client			
G21.2.1 Client TCP timeout	1000		
G21.2.2 Client TCP retries	1		
G21: Networks – G21.3: EtherNet IP			
G21.3.1.1 Automatic IP	No		
G21.3.1.2 Assigned IP	0.0.0.0		
G21.3.1.3 Assignet subnet	0.0.0.0		
G21.3.1.4 Assigned gateway	0.0.0.0		
G21.3.1.2 IP address	0.0.0.0		
G21.3.1.3 Subnet mask	0.0.0.0		
G21.3.1.4 Gateway	0.0.0.0		
G21.3.1.5 MAC address	A.B.C.D.E.F		
G21.3.4 Control mode	Local		
G21.3.5 Reference Mode	Local		
G21.3.6 PID Mode	Local		
G21.3.7 Connector 1 status	Off		
G21.3.8 Fault mode c1	Fault		

EN

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G21.3.9 Connector 2 status	Off		
G21.3.10 Fault mode c2	Fault		
G21: Networks – G21.4: Profinet			
G21.4.1.1 IP address	192.168.1.143		
G21.4.1.2 Subnet Mask	255.255.255.0		
G21.4.1.3 Gateway	0.0.0.0		
G21.4.1.4 MAC address	00-1B-77-81-EE-42		
G21.4.4 Connector 1 status	Off		
G21.4.5 Fault mode c1	Fault		
G21.4.6 Connector 2 status	Off		
G21.4.7 Fault mode c2	Fault		
G23: Expansion – G23.2 Input / Output			
G23.2.1 IO digital A status	Off		
G23.2.2 IO digital A test	No		
G23.2.3 IO digital B status	Off		
G23.2.4 IO digital B test	No		
G23.2.5 IO analog A status	Off		
G23.2.6 IO analog A test	No		
G23.2.7 IO analog B status	Off		
G23.2.8 IO analog B test	No		
G23: Expansion – G23.3 Comumunications			
G23.3.1 Profinet board status	Off		
G23.3.2 Profinet board test	No		
G23.3.3 Profinet Com Error	Fault		
G23.3.4 EthernetIP board state	Off		
G23.3.5 EthernetIP board test	No		
G23.3.6 EthernetIP Com Error	Fault		
G23.3.7 Profibus board status	Off		
G23.3.8 Profibus board test	No		
G23.3.9 Profibus Com Error	Fault		
G25: Master / Slave			
G25.1 Role	Master		
G25.2 Start fiber	Start		
G25.3 Fault partner	Yes		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G25.4 Stop partner fault	Spin	_____	_____
G25.5 Restart after reset	No	_____	_____
G25.6 Time out fiber	1.0 s	_____	_____
G26: Fans			
G26.1 Fans mode	Run	_____	_____
G26.2 Min temperature	47 °C	_____	_____
G26.3 Max temperature	51 °C	_____	_____
G26.4 Power off delay	1 min	_____	_____

EN

POWER ELECTRONICS

24H TECHNICAL ASSISTANCE 365 DAYS A YEAR

FIND YOUR NEAREST DELEGATION
POWER-ELECTRONICS.COM/CONTACT/