POWER ELECTRONICS

SD750FR

SOFTWARE AND PROGRAMMING MANUAL

4Q REGENERATIVE ACTIVE FRONT END DRIVE

SD750FR

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Software and Programming Manual

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SD75FRSW01CI Rev. C

ABOUT THIS MANUAL

PURPOSE

This manual contains important instructions for the installation and maintenance of Power Electronics SD750FR variable speed drives.

TARGET AUDIENCE

This manual is intended for qualified customers who will install, operate and maintain Power Electronics SD750FR variable speed drives.

Only trained electricians may install and commission the drives.

REFERENCE MANUALS

The following reference documents are available for SD750FR variable speed drives:

- SD750FR Hardware and Installation Manual.
- SD750FR Programming and Software Manual.
- Pumps Application Manual.
- Accesories Manuals.

POWER ELECTRONICS CONTACT INFORMATION

Power Electronics USA Inc.
1510 N. Hobson Street, Gilbert,
Phoenix
AZ 85233
UNITED STATES OF AMERICA
US Sales: 602-354-4890 / (480) 519-5977

Power Electronics España, S.L.
Polígono Industrial Carrases
Ronda del Camp d'Aviació nº 4
46160, Llíria (Valencia)
SPAIN
Telephone: (+34) 96 136 65 57
Website: www.power-electronics.com

REVISIONS CONTROL		
DATE (DD/MM/YYYY)	**REVISION**	**DESCRIPTION**
25 / 05 / 2021	A	First Edition.
07 / 09 / 2021	B	Updated to new software version. Acronyms. Fault messages descriptions and actions. Visualization parameters. Description of programming parameters. Modbus communication. Configuration register.
14 / 03 / 2022	C	Updated to new software version. Acronyms. Status & warning messages. Fault messages, descriptions and actions. Description of programming parameters. Modbus communication. Configuration register. Misprints correction.

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ACRONYMS

The terms commonly used in the documentation of Power Electronics' products are listed in the table below.

Please notice this is a general series of terms and it encompasses all our product divisions (industrial, solar, storage, and electric mobility), thus, some of the following expressions may not apply to this particular manual.

ACRONYM	MEANING
AASS	Auxiliary Services
AC	Alternating Current
AI	Analogue Input
AO	Analogue Output
BESS	Battery Energy Storage System
BMS	Battery Manager Solution
CCID	Charge circuit interrupting device
CCL	Charge Current Limit.
CCS	Combined charging system – charging and communications protocol following the standard IEC 61851-23 Annex CC
CHAdeMO	Charging and communications protocol following the standard IEC 61851-23 Annex AA
CPU	Central Processing Unit
DC	Direct Current
DCL	Discharge Current Limit
DI	Digital Input
DSP	Digital Signal Processor
DO	Digital Output
EMS	Energy Management System
EV	Electric Vehicle
FPGA	Programmable device (Field-Programmable Gate Array)
FRU	Field Replaceable Unit
GFDI	Ground Fault Detector Interrupter
GPRS	General Packet Radio Services, a data transmission system
HVAC	Heating, Ventilation, and Air Conditioning
IGBT	Insulated Gate Bipolar Transistor
IMI	Insulation monitoring device
IT	Grid system where the power supply is kept isolated and the electrical equipment system is grounded.
LOTO	Lock Out – Tag Out
MCB	Miniature Circuit Breaker
MPCS	Multi Power Conversion System
MID	Measuring Instrument Directive
MV	Medium Voltage. This term is used to refer to high voltage in general
PE	Ground connection
PI	Proportional and Integral
POI	Point Of Interconnection

ACRONYM	MEANING
PPE	Personal Protection Equipment
PV	Photovoltaic energy
RCD	Residual Current Device
RCM	Residual Current Monitor
RFID	Radio Frequency Identification
SOC	State Of Charge – referred to battery
SOH	State Of Health – referred to battery. It compares the actual state of the battery to its initial conditions. It is measured in percentage
STO	Safe Torque Off
TN	Grid system where the power supply is grounded, and the electrical equipment system is brought to the same ground through the neutral connector.
TT	Grid system where both the power supply and the electrical devices are connected to the ground via separate connections
UPS	Uninterruptible Power Supply
VSD / VFD	Variable Speed Drive, Variable Frequency Drive. Both terms are used

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.

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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

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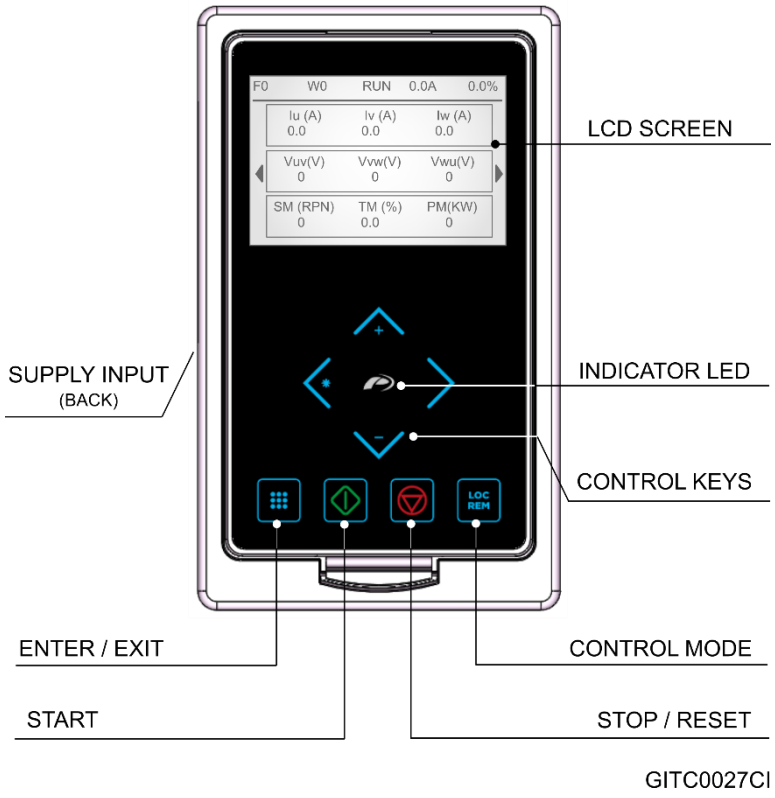
Keypad unit description

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 SD750FR 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.

Note: By keeping the left and right control keys pressed, while the display is connected to the equipment, the user forces the download of the MCF installed in the central microprocessor. Drive parameters will be initialized to factory values.

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.

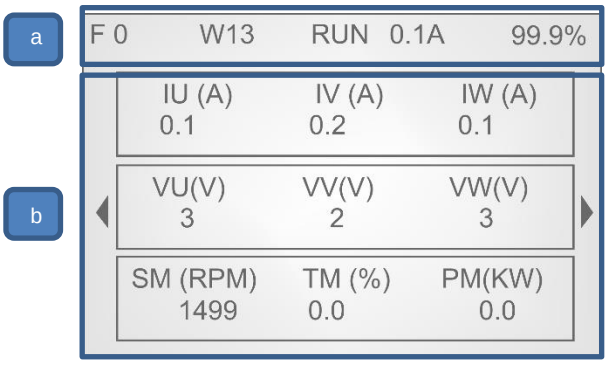
Alphanumeric LCD display

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 UVW has 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, allowing to use the multiplier to set the desired value of a variable (manual precision) or to modify the rate of updating the value according to the time pressed (automatic precision). To enable it, go to **Menu – Settings – Variable editing mode** and select “Manual precision”. Use the arrows right / 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 and the parameter G4.1.3 “Allow local reset” is enabled.

LOC REM

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 ").

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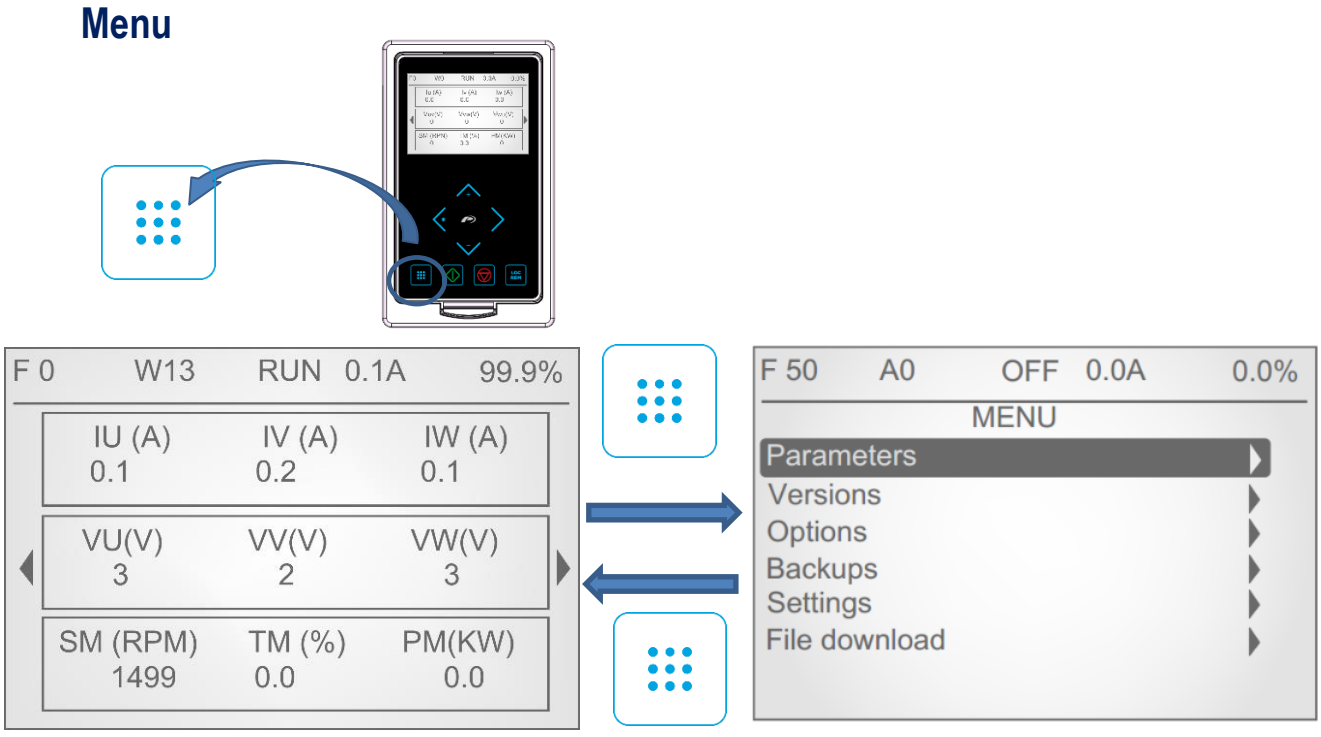


Access and exit of the menu

This section includes the following submenus:

- **Parameters:**

This menu contains all the configuration and visualization. These parameters are grouped into subgroups or sub-menus to facilitate their location.

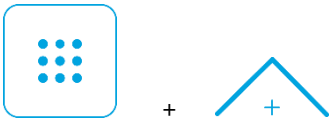
- **Versions:**

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

- **Custom view creator:**

This menu allows creating custom display screens on the main screen, selecting the parameters to be included for any of the three lines of the new screen to be customized. Once the line to be configured is selected, the user can select the three parameters to be included in the line. When leaving the configuration, the screen will be automatically created on the right side of the Home screen.

To delete a customized screen, the user should go to the screen to be deleted and press:



- **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 home when timeout: allows configuring if after timeout without interacting with the display, the screen should return to the home screen or not.
  - Start with custom view: allows configuring if after each start of the equipment the home screen display will be the “custom screen 1” generated in the Options submenu or the default home screen.

- **File download:**

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

  - MCF: Allows the display to download the MCF file stored in the microcontroller that contains the definition of display screens, variables and properties.
  - Firmware: If the microcontroller of the equipment has stored a new version, allows updating the software version of the display.
  - Bootloader: Enabling the option allows to load software in .dfu format, allowing the display update by PC through USB port.

STATUS & WARNING MESSAGES

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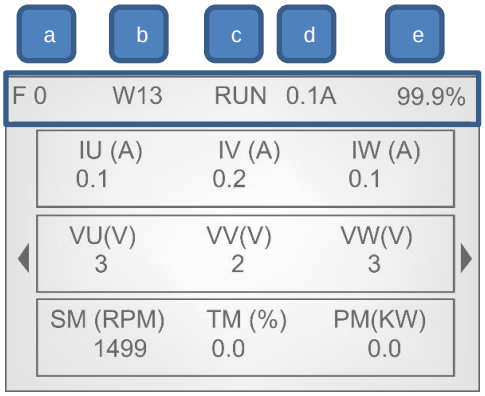
In the status bar of the display we can see the status of the equipment, the average intensity consumed by the motor (A) and the motor speed (%). It always remains visible on the display and can not be modified by the user:

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



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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 SD750FR 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	SD750FR 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	SD750FR 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	SD750FR is working according to inch speed 2 command. 'Start + Inch speed 2' mode is active.
IS3	Inch speed 3	SD750FR is working according to inch speed 3 command. 'Start + Inch speed 3' mode is active.

List of warning messages

NOTICE

The warning messages specific to each optional board are not described in this manual, for further information **check the corresponding manual (SD75MA--)**.

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 overtemperature	This message will appear when motor thermal model is increasing the estimated motor temperature.
W3	MOC	Motor overload	Motor current is higher than the rated current value.
W4	DOC	Drive overload	This message will appear if the output current is higher than 125% of the nominal current.
W5	ILT	Current limit	Current limit algorithm has been activated.
W6	TLT	Torque limit	Torque limit algorithm has been activated.
W7	VLT	Voltage limit	A high DC Link voltage level has been detected and the voltage limit control algorithm has been activated to protect the drive.
W8	ACO	Iout Unbalance	Asymmetry in output currents of the drive has been detected.
W9	AVO	Vout Unbalance	Asymmetry in output voltage of the drive has been detected.
W10	AVI	Vin Unbalance	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.

Warning	Acronym	Name	Description
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.
W16	RTL	Reg torque limit	Regenerative torque limit algorithm has been activated.
W17	MVR	Motor voltage remainder	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].
W19	LVRT	Low voltage drive-through	The voltage threshold is not being complied.
W20	REC_ON	Rectifier On	The starting time of the rectifier part of the motor is delayed.
W22	PIE	Iin rect	The input current has reached 100% of the nominal current.
W23	DIE	I Unbalance rect	Reverse current has reached 75% of fault range “R19 Iin Unbalanced”.
W24	FTE	I gnd rect	The earth fault current has reached 75% of the fault range “R20 Input ground”.
W25	TPR	IGBT temp rect	The IGBTs of the rectifier bridge have reached 90ºC.
W26	MCC	CAN module comms	Some CAN frames of optical fiber communication have been lost.
W27	FAV	Fans rect	The power to the rectifier bridge fans fails. The “R22 IGBT temp” fault will reduce its value from 110ºC to 90ºC, to protect the drive components.
W28	PLL	PLL rect	The rectifier is synchronizing with the network.
W29	SWM	SW version rect	Software version is not supported.
W30	DWA	Diag advice rect	One of the diagnostic boards is reporting a warning.
W31	LCL	LCL contactor rect	LCL contactor feedback is not received correctly.
W36	DE_A	Digital A expansion	There is a communications problem with the digital I/O expansion board A.
W37	EPB	Profibus expansion	This warning message is related to the Profibus expansion board, for more details, please refer to the SD75MA06 manual.
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	This warning message is related to the analogue I/O expansion board, for more details, please refer to the SD75MA05 manual.
W47	AE_B	Analog B expansion	
W48	PNE	Profinet expansion	This warning message is related to the Profinet expansion board, for more details, please refer to the SD75MA03 manual.
W49	EIPE	EthernetIP expansion	This warning message is related to the Ethernet/IP communication board, for more details, please refer to the SD75MA01 manual.
W50	NOSD	SD not present	The SD card is not present.
W51	SDCRRP	Corrupted SD	The SD card is removed or is no longer recognized.

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FAULT MESSAGES. DESCRIPTIONS AND ACTIONS

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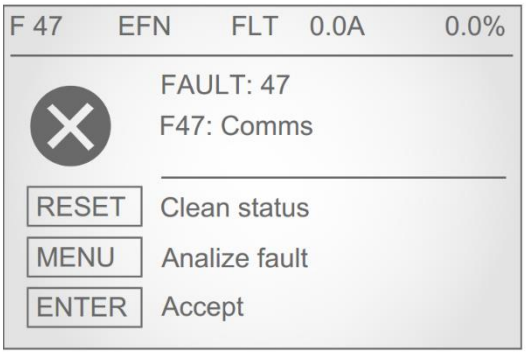
When a fault occurs, the SD750FR will stop the motor, showing the fault in the display.

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. Parameter SV9 – Last fault Registers, provides accurate equipment data at 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

NOTICE

The fault messages specific to each optional board are not described in this manual, for further information **check the corresponding manual (SD75MA--)**.

Description of inverter bridge faults

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, for 480VAC equipment: >850VDC and for 690VAC equipment: >1250VDC. 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 SD750FR 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 timeou".
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, for 480VAC equipment: >850VDC and for 690VAC equipment >1250VDC. Software Protection.
F17:Bus under voltage	DC Bus voltage is lower than critical operating level, for 480VAC equipment: <350VDC and for 690VAC equipment <525VDC.
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 has reached the minimum speed limit specified in "G10.1.1 Minimum limit 1" and "G10.1.3 Minimum limit 2" parameters, 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 SD750FR 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 the limit (see parameter SV2.5.2).
F35:DSP Watchdog	An unknown fault has reset the microprocessor of the control board.

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DISPLAY	DESCRIPTION
F36: Encoder card com.	This fault message is related to the encoder board, for more details, please refer to manual SD75MA04.
F37: Encoder card timeout	
F38: Encoder	
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 20 and 21). 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 SD750FR through serial communication.
F42:Analog input 1 missing	The SD750FR 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 SD750FR 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 reached the maximum speed limit specified in “G10.1.2 Maximum limit 1” and “G10.1.4 Maximum limit 2” parameters, 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 SD750FR 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	This fault message is related to the Ethernet/IP communication board, for more details, please refer to the SD75MA01 manual.
F61:EIP Fault	
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] and the motor speed is higher than the value set in [G11.2.12] 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	This fault message is related to the Profibus expansion board, for more details, please refer to manual SD75MA06.
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.

DISPLAY	DESCRIPTION
F77:Incompat. IO Exp	Incompatible software version of the I / O expansion board.
F78:Fremaq	The digital input "25 Freemaq Fault" receives a fault from the associated filter contactor, the temperature of the filter has reached a dangerous value.
F79:PT100	PT100 sensor temperature fault.
F83:Torque slave	Fault of the torque slave.
F84:SCR temperature	SCR temperature fault (not included in frames 1 and 2 of the SD750FR).
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	This fault message is related to the analogue I / O expansion board, for more details, please refer to manual SD75MA05.
F93:Time out optical fiber	This fault message is related to the optical fiber expansion board, for more details, please refer to manual SD75MA07.
F94:Sync lost	
F95:Slave	
F96:Master	
F99:PowerPLC	The PowerPLC macro has triggered a fault.
F100:Communication error	Failure in communication with the display.
F101:I/O exp version mismatch	This fault message is related to the analogue I / O expansion board, for more details, please refer to manual SD75MA05.
F102:Exp analog I/O A comm	
F103:Exp analog I/O B comm	
F104:Analog input 5 missing	
F105:Analog input 6 missing	
F106:Analog input 7 missing	
F107:Exp digital I/O B comm	Failure in communication with digital I / O expansion board B.
F108:Expansion Profinet comm	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA03.
F109:Exp EthernetIP comm	This fault message is related to the Ethernet / IP communication board, for more details, please refer to manual SD75MA01.
F110:Lost PNET c1 comms	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA03.
F111:Lost PNET c2 comms	
F112:Lost CIP c2 comms	This fault message is related to the Ethernet / IP communication board, for more details, please refer to manual SD75MA01.
F113:Lost PBUS c1 comms	This fault message is related to the Profibus expansion board, for more details, please refer to manual SD75MA06.
F114:Exp PT100 (1) fault	These fault messages are related to the PT100 expansion board, for more details, please refer to manual SD75MA08.
F115:Exp PT100 (2) fault	
F116:Exp PT100 (3) fault	
F117:Exp PT100 (4) fault	
F118:Exp PT100 (5) fault	
F119:Exp PT100 (6) fault	
F120:Exp PT100 (7) fault	
F121:Exp PT100 (8) fault	
F122:Incompat. PT100 Exp	
F123:Ethernet IP Exp Version	This fault message is related to the Ethernet / IP communication board, for more details, please refer to manual SD75MA01.
F124:Profinet Exp Version	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA03.
F125:Profibus Exp Version	This fault message is related to the Profibus expansion board, for more details, please refer to manual SD75MA06.

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Description of rectifier bridge faults

DISPLAY	DESCRIPTION
R1:Overcurrent	The rectifier current has reached a dangerous level. Its value is above 220% of the rated current of the drive. Hardware protection is activated instantly.
R2:Overvoltage	The DC bus voltage has reached a dangerous level> 850Vdc (Vn = 400Vac) and> 1250Vdc (larger sizes). HW protection. The inverter disconnects the motor output.
R3:Softcharge	The bus voltage does not reach Vdc.
R4:Overcurrent R+	The internal protection provided for the power IGBT semiconductor has tripped.
R5:Overcurrent R-	
R6:Overcurrent S+	
R7:Overcurrent S-	
R8:Overcurrent T+	
R9:Overcurrent T-	
R10:Multi Oc	
R11:Vin lost	Input voltage measurement has been lost.
R12:Vin Unbalanced	The inverse input voltage is greater than + 30% of the average input voltage for a time higher than 100ms.
R13:V con lost	Contactor voltage measurement has been lost.
R14:Vbus lost	The DC Bus voltage measurement has been lost.
R15:Softcharge cont	The contactor signal has been lost. The soft load contactor has triggered a fault, or the pickup signal (feedback) has been lost. The soft load contactor was closed at the time of giving the order. Check the wiring (not resettable).
R16:LCL Temp	The LCL filter has reached a dangerous temperature level.
R17:Vbus low	Low bus voltage detected <450Vdc (Vn = 400Vdc) and 800Vdc (larger sizes).
R18:Fiber Comms	Fiber optic CAN communications have failed.
R19:Iin Unbalanced	The reverse input current has reached the limit set in G24.3.3 for more than 10ms.
FR20:Input ground	The level of leakage current to earth has reached the limit established in G24.3.4.
R21:Iin limit	The input current has exceeded the limit set in G24.3.1 for the time set in G24.3.2.
R22:IGBT temp	The temperature of the IGBT of the rectifier bridge has reached 110ºC.
R23:I Hall	Incorrect rectifier current hall sensor connection.
R24:LCL feedback	LCL contactor feedback.
R25:Diag node	A diagnostic card does not communicate over CAN.
R26:Diag bus	Diagnostic bus is not working.
R29:Rect. I2C DSP	Failure in the rectifier drive selection.
R34:Rect. Drive-Select	Different DSP software versions of the rectifier and the inverter bridges.
R37:Rect. SW	Power failure or inconsistent parameter setting.

List of inverter bridge faults and 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.	

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DISPLAY	POSSIBLE CAUSE	ACTIONS
F20:Ground current	Motor or wiring has short-circuited to ground.	Disconnect the motor and wiring of the SD750FR and check motor insulation.
	Ground is incorrectly connected or wrong.	Check and improve the ground connection system.
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 has reached the speed limit for the time set in.	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 SD750FR.
	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 SD750FR.	Check if the heat sink and the cooling fan are operating correctly.
	The internally configured maximum value has been exceeded.	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.	This fault message is related to the encoder board, for more details, please refer to manual SD75MA04.	
F37: Encoder card timeout		
F38: Encoder		
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.

DISPLAY	POSSIBLE CAUSE	ACTIONS
F41:Serial comms	Fault triggered by a computer via serial communication.	Disconnect the communication and check if the fault persists.
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.
	SD750FR 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 has reached the speed limit for the time set in.	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	This fault message is related to the Ethernet/IP communication board, for more details, please refer to manual SD75MA01.	
F61:EIP Fault		
F62:CANopen comm lost	Reserved.	Contact Power Electronics.
F63:CANopen sdo transmission	Reserved.	Contact Power Electronics.

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DISPLAY	POSSIBLE CAUSE	ACTIONS
F64:CANopen transmission	Reserved.	Contact Power Electronics.
F68:Pump underload	The minimum value set in G11.2.11 has been reached and the value set in G11.2.12 has been exceeded.	Check the motor load.
		Check G11.2.11, 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.	
F72:Expansion Profibus comm	This fault message is related to the Profibus expansion board, for more details, please refer to manual SD75MA06.	
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 an excessive motor temperature.	Check the ventilation of the motor cabinet.
F83:Torque slave	The master has identified that the torque slave has a fault.	Check the fault in the slave drive.
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	This fault message is related to the analogue I/O expansion board, for more details, please refer to manual SD75MA05.	
F93:Time out optical fiber	This fault message is related to the optical fiber expansion board, for more details, please refer to manual SD75MA07.	
F94:Sync lost		
F95:Slave		
F96:Master		
F99:PowerPLC	As defined by the user of the program.	See PowerPLC program.

DISPLAY	POSSIBLE CAUSE	ACTIONS
F100:Communication error	Communication between the display and the microprocessor is not correct.	Check wiring. Consult with Power Electronics.
F101:I/O exp version mismatch	This fault message is related to the analogue I/O expansion board, for more details, please refer to manual SD75MA05.	
F102:Exp analog I/O A comm		
F103:Exp analog I/O B comm		
F104:Analog input 5 missing		
F105:Analog input 6 missing		
F106:Analog input 7 missing		
F107:Exp digital I/O B comm	Communication with the digital I/O expansion board B has been lost.	Consult with Power Electronics.
F108:Expansion Profinet comm	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA03.	
F109:Exp EthernetIP comm	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA01.	
F110:Lost PNET c1 comms	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA03.	
F111:Lost PNET c2 comms		
F112:Lost CIP c2 comms	This fault message is related to the Ethernet/IP communication board, for more details, please refer to manual SD75MA01.	
F113:Lost PBUS c1 comms	This fault message is related to the Profibus expansion board, for more details, please refer to manual SD75MA06.	
F114:Exp PT100 (1) fault	These fault messages are related to the PT100 expansion board, for more details, please refer to manual SD75MA08.	
F115:Exp PT100 (2) fault		
F116:Exp PT100 (3) fault		
F117:Exp PT100 (4) fault		
F118:Exp PT100 (5) fault		
F119:Exp PT100 (6) fault		
F120:Exp PT100 (7) fault		
F121:Exp PT100 (8) fault		
F122:Incompat. PT100 Exp		
F123:Ethernet IP Exp Version	This fault message is related to the Ethernet / IP communication board, for more details, please refer to manual SD75MA01.	
F124:Profinet Exp Version	This fault message is related to the Profinet expansion board, for more details, please refer to manual SD75MA03.	
F125:Profibus Exp Version	This fault message is related to the Profibus expansion board, for more details, please refer to manual SD75MA06.	

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List of rectifier bridge faults and troubleshooting

DISPLAY	POSSIBLE CAUSE	ACTIONS
R1:Overcurrent	The input current measure signal has been lost.	Check the current sensors are correctly fastened.
	The input voltage measure signal has been lost.	Check the voltage sensors are correctly fastened.
	Incorrect setting of the current control loop.	Readjust the parameters G24.2.3 and G24.2.4.
	A voltage dip has occurred.	Try to reset the fault. If the fault persists contact Power Electronics for technical service.
R2:Overvoltage	Deceleration ramp too high (parameters "G5.2.1 Deceleration rate 1" and "G5.2.2 Deceleration rate 2") or rectifier's PID Vdc parameters are too slow.	Decrease deceleration ramps. If the fault persists contact Power Electronics for technical service.
R3:Softcharge	Try to reset the fault. Disconnect and re-connect again the input power. If the fault persists, contact Power Electronics for technical service.	Try to reset the fault. Disconnect and re-connect again the input power. If the fault persists, contact Power Electronics for technical service.
R4:Overcurrent R+ **R5:Overcurrent R-** **R6:Overcurrent S+** **R7:Overcurrent S-** **R8:Overcurrent T+** **R9:Overcurrent T-** **R10:Multi Oc**	Rectifier bridge IGBTs desaturation. See possible causes for faults F4-F8.	Check if there is possible input wiring faults. If the fault persists after disconnecting input wires request technical assistance.
R11:Vin lost	Input power phase lost.	Check the input wiring is correctly installed.
	Input voltage measure has been lost.	Check the voltage sensors are correctly fastened.
R12:Vin Unbalanced	Unbalance voltage input.	Possible internal wiring disconnection. Check the input wiring is correctly installed and the status of the input power supply is correct.
R13:V con lost	Voltage lost in the capacitor of the LCL filter.	Possible internal wiring disconnection. Disconnect and re-connect again the input power. If the fault persists contact Power Electronics for technical service.
R14:Vbus lost	DC bus voltage signal is lost.	
R15:Softcharge cont	Feedback signal from the softcharge contactor is lost. Feedback is wrong wired.	Check that voltage signal connector is correctly fastened. If the fault persists contact Power Electronics for technical service. When the fault is produced when the VFD is power supplied, stop, check the contactor and start.
R16:LCL Temp	The fans of the LCL filter zone are faulty.	Check that the fans rotate smoothly and there is not any obstacle.
R17:Vbus low	Low bus voltage detected.	Input voltage is lost and the electronics power supply keep powered.
R18:Fiber Comms	Fiber optic cable is interrupted.	Check fiber optic cable about visual damages.
R19:Iin Unbalanced	Unstable grid.	Check the parameter "G24.3.3 I imbalance" value. If the fault persists contact Power Electronics technical service.
	Wiring fault.	
FR20:Input ground	Wiring fault.	Check power wiring about visual damages.
R21:Iin limit	Input short circuit.	Check the parameter "G24.3.1 I lim rec" value and the load.
	Wiring fault.	
	Circuit fault.	
R22:IGBT temp	See possible causes for F34 fault.	See possible solutions described for F34 fault.
R23:I Hall	Incorrect rectifier current hall sensor connection.	Check the current hall sensor wires.

DISPLAY	POSSIBLE CAUSE	ACTIONS
R24:LCL feedback	The feedback wire is not connected. The order wire is not connected. There is not contactor.	Review the LCL contactor wires.
R25:Diag node	The ID of one target is wrong.	Review the selector positions
R26:Diag bus	The communication bus is wrongly wired	Review the communication bus wires Review the end line jumpers
R29:Rect. I2C DSP	Failure in the rectifier drive selection.	Verify the drive selection. Consult with Power Electronics.
R34:Rect. Drive-Select	The DSP software versions of the rectifier and inverter bridges are different.	Check the two software versions with the display. Check CAN communications.
R37:Rect. SW	Power failure or inconsistent parameter setting.	Remove and restart the SD750FR. If the same fault occurs, initialize all the parameters (use parameter G1.3-Initialize) and re-energize. If the fault persists, contact Power Electronics for technical service.

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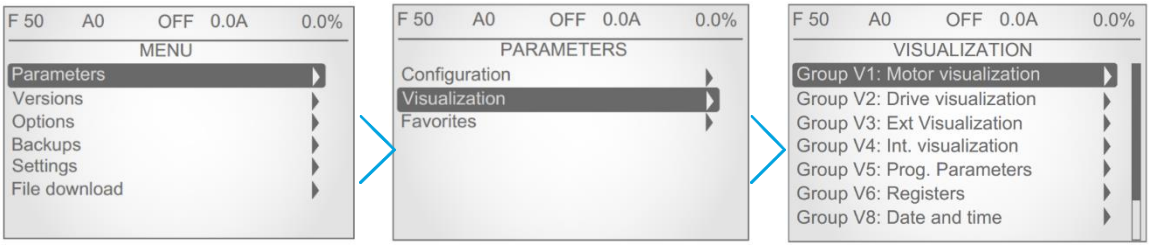
VISUALIZATION PARAMETERS

4

These parameters constantly indicate the input signal status and dynamic parameter status of the SD750FR. Visualization lines are the second and the third lines. To access these parameters, user must enter the Menu by pressing **Menu-Parameters-Visualization**.



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 specific to each optional board are not described in this manual, for further information **check the corresponding manual (SD75MA--)**.

Group V1: Motor visualization

This group shows information related to motor parameters.

Note: The parameter associated with the optical fiber board (SV1.17) will only be displayed if an optical fiber expansion board has been connected. Check document **SD75MA07** for further information.

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 percentage.
SV1.4-Motor speed (rpm) = 0 rpm	rpm	Shows the motor speed in revolutions 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	-	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	-	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].**

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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 (L1-L2).
SV2.1.2-L2-L3 supply voltage = 0 V	V	Shows the input instantaneous voltage applied to the drive (L2-L3).
SV2.1.3-L3-L1 supply voltage = 0 V	V	Shows the input instantaneous voltage applied to the drive (L3-L1).
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.

Group V3: External visualization

Note: The parameters associated with analogue inputs 4 to 7 (parameters SV3.10 to SV3.21) and analogue outputs 3 to 6 (parameters SV3.28 to SV3.33) will only be displayed if an inputs and outputs expansion board has been connected. Check document **SD75MA05** for further information.

Screen	Units	Description
SV3.1-AI1 value = 0.00 V	See units G4.2.3	Shows the value of Analogue Input 1 (AI1).
SV3.2-AI1 percentage = 100.0 %	%	Shows the percentage with respect to the voltage allowed by Analogue Input 1 (AI1).
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 units G4.4.3	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]**.
SV3.22-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.
SV3.34-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-PID setpoint = 100.0 %	%	Shows the reference value in PID mode of the equipment standard program.
SV4.5-PID feedback value = 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.

EN

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.

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-Mot. Total En. GWh = 0 GWh	GWh	Shows the drive total energy consumption.
SV6.4.2-Mot. Total En. MWh = 0 MWh	MWh	Shows the drive total energy consumption.
SV6.4.3-Mot. Total En. KWh = 0 kWh	kWh	Shows the drive total energy consumption.
SV6.5.1-Mot. Partial En. GWh = 0 GWh	GWh	Shows the drive partial energy consumption.
SV6.5.2-Mot. Partial En. MWh = 0 MWh	MWh	Shows the drive partial energy consumption.
SV6.5.3-Mot. Partial En. KWh = 0 kWh	kWh	Shows the drive partial energy consumption.
SV6.6-Mot. Partial En. reset = No	-	Allows resetting the counter of partial energy.
SV6.7.1-Rect. Consum. En. GWh = 0 GWh	GWh	Shows the regenerative stage total energy consumption.
SV6.7.2-Rect. Consum. En. MWh = 0 MWh	MWh	Shows the regenerative stage total energy consumption.
SV6.7.3-Rect. Consum. En. KWh = 0 kWh	kWh	Shows the regenerative stage total energy consumption.
SV6.8.1-Rect. Suppl. En. GWh = 0 GWh	GWh	Shows the regenerative stage partial energy consumption.
SV6.8.2-Rect. Suppl. En. MWh = 0 MWh	MWh	Shows the regenerative stage partial energy consumption.
SV6.8.3-Rect. Suppl. En. KWh = 0 kWh	kWh	Shows the regenerative stage partial energy consumption.

Group V7: Rectifier info

Screen	Units	Description
SV7.1-Input power = 0.0 kW	kW	Shows the power input value of the rectifier.
SV7.2-Drive input current R = 0.0 A	A	Shows the instantaneous current per phase of the rectifier (U).
SV7.3-Drive input current S = 0.0 A	A	Shows the instantaneous current per phase of the rectifier (V).
SV7.4-Drive input current T = 0.0 A	A	Shows the instantaneous current per phase of the rectifier (W).
SV7.5-Rect. Cos Phi = 0.00	-	Shows the motor's cos phi or Displacement Power Factor (DPF).
SV7.6-Rect. IGBT temp. = 0 °C	°C	Shows the IGBTs temperature.
SV7.7-Frequency of PLL = 0.0 Hz	Hz	Shows the internal frequency of the PLL.
SV7.8-THD input = 0.00 %	%	Shows the input current distortion of the rectifier.
SV7.9-L1-L2 supply voltage = 0 V	V	Shows the instantaneous line voltage (L1-L2).
SV7.10-L2-L3 supply voltage = 0 V	V	Shows the instantaneous line voltage (L2-L3).
SV7.11-L3-L1 supply voltage = 0 V	V	Shows the instantaneous line voltage (L3-L1).
SV7.12-DC bus voltage = 0 V	V	Shows the DC bus voltage.

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:

EN

Subgroup V9.1: Motor registers

This subgroup shows information related to the drive characteristics on an individual level.

Note: The parameters associated with the encoder (SV9.1.16 and SV9.1.17) will only be displayed if an optional encoder expansion board has been connected. Check document **SD75MA04** for further information.

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 percentage.
SV9.1.4-Motor speed (rpm) = 0 rpm	rpm	Shows the motor speed in revolutions per minute.
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].**

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

Note: The parameters associated with analogue inputs 4 to 7 (parameters SV9.3.10 to SV9.3.21) and analogue outputs 3 to 6 (parameters SV9.3.28 to SV9.3.33) will only be displayed if an inputs and outputs expansion board has been connected. Check document **SD75MA05** for further information.

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 2 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 3 associated with analogue input 3.
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 the magnitude 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 the magnitude 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 the magnitude associated with analogue output 3.
SV9.3.34-DI status = 000000	-	Shows the status of each of the digital inputs of the central control: 6, 10 or 16 bits (input 1: first from the left).
SV9.3.34-DI status = 00000000000	-	
SV9.3.34-DI status = 0000000000000000	-	
SV9.3.35-DO status = 000	-	Shows the status of digital outputs: 3, 8 or 11 bits (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.
SV9.3.35-DO status = 00000000	-	
SV9.3.35-DO status = 00000000000	-	

Subgroup V9.4: Internal registers

Screen	Units	Description
SV9.4.1-Last fault = 0	-	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).

Subgroup V9.5: Rectifier registers

This group includes several registers of general information about the rectifier bridge.

Screen	Units	Description
SV9.5.1-Input power = 0.0 kW	kW	Shows the input power.
SV9.5.2-Drive input current R = 0.0 A	A	Shows the instantaneous current per phase of the rectifier (U).
SV9.5.3-Drive input current S = 0.0 A	A	Shows the instantaneous current per phase of the rectifier (V).
SV9.5.4-Drive input current T = 0.0 A	A	Shows the instantaneous current per phase of the rectifier (W).
SV9.5.5-Rect. Cos Phi = 0.00	-	Shows the input cos phi or Displacement Power Factor (DPF).
SV9.5.6-Rect. IGBT temp. = 0 ºC	ºC	Shows the maximum temperature of the IGBTs of the rectifier bridge.
SV9.5.7-Frequency of PLL = 0.0 Hz	Hz	Shows the internal PLL frequency.
SV9.5.8-THD input = 0.00 %	%	Shows the input current distortion (THDi).
SV9.5.9-L1-L2 supply voltage = 0 V	V	Shows the instantaneous line voltage (UV).
SV9.5.10-L2-L3 supply voltage = 0 V	V	Shows the instantaneous line voltage (VW).
SV9.5.11-L3-L1 supply voltage = 0 V	V	Shows the instantaneous line voltage (WU).
SV9.5.12-DC bus voltage= 0 V	V	Shows the DC bus voltage.

Subgroup V9.6: Local motor reg

This subgroup shows information related to the characteristics of the parallel equipment on an overall level.

Note: The parameters associated with the encoder (SV9.6.16 and SV9.6.17) will only be displayed if an optional encoder expansion board has been connected. Check document **SD75MA04** for further information.

Screen	Units	Description
SV9.6.1-Speed reference = 0.0 %	%	Shows the present reference value of speed applied to the motor.
SV9.6.2-Torque reference = 0.0 %	%	Shows the present reference value of torque applied to the motor.
SV9.6.3-Motor speed (%) = 0.0 %	%	Shows the motor speed in percentage.
SV9.6.4-Motor speed (rpm) = 0 rpm	rpm	Shows the motor speed in revolutions per minute.

Screen	Units	Description
SV9.6.5-Motor frequency = 0.0 Hz	Hz	Shows the frequency at which the motor is running.
SV9.6.6-Motor voltage = 0 V	V	Shows the present voltage applied to the motor.
SV9.6.7-Motor current = 0.0 A	A	Shows the present current of the motor.
SV9.6.8-Motor torque = 0.0 %	%	Shows the present torque applied to the motor.
SV9.6.9-Motor phi cosine = 0.85	-	Shows the motor's power factor.
SV9.6.10-Motor power = 0.0 kW	kW	Shows the instantaneous power consumption of the motor.
SV9.6.11.1-U motor current = 0.0 A	A	Shows the instantaneous current per phase of the motor (U).
SV9.6.11.2-V motor current = 0.0 A	A	Shows the instantaneous current per phase of the motor (V).
SV9.6.11.3-W motor current = 0.0 A	A	Shows the instantaneous current per phase of the motor (W).
SV9.6.12.1-U-V motor voltage = 0 V	V	Shows the instantaneous line voltage (U-V).
SV9.6.12.2-V-W motor voltage = 0 V	V	Shows the instantaneous line voltage (V-W).
SV9.6.12.3-W-U motor voltage = 0 V	V	Shows the instantaneous line voltage (W-U).
SV9.6.13-PTC Status = No	-	Shows whether the motor PTC is connected or disconnected. **Visible if [G4.1.10 = PTC].**
SV9.6.14-Motor temperature(%) = 0.0 %	%	Shows the theoretical heating level of the motor.
SV9.6.15-Motor temperature = 0 ºC	ºC	Shows the motor temperature measured with the PT100 sensor. **Visible if [G4.4.0 = YES].**

Group V11: Exp PT100

Note: This group shows information related to PT100 parameters. Refer to the SD75MA08 manual for further information.

Group V12: Warning history

This group shows the last 10 warnings that have been detected by the variable speed drives.

Screen	Units	Description
SV12.1-Last warning = 0	-	Last register of the warning history.
SV12.2-Date = 01/01/2000 00:00	-	Last date and time of the register of warning history.
SV12.3-Ninth warning = 0	-	Register number 9 of the warning history.
SV12.4-Date = 01/01/2000 00:00	-	Date and time of the register number 9 of warning history.
SV12.5-Eighth warning = 0	-	Register number 8 of the warning history.
SV12.6-Date = 01/01/2000 00:00	-	Date and time of the register number 8 of warning history.
SV12.7-Seventh warning = 0	-	Register number 7 of the warning history.
SV12.8-Date = 01/01/2000 00:00	-	Date and time of the register number 7 of warning history.
SV12.9-Sixth warning = 0	-	Register number 6 of the warning history.
SV12.10-Date = 01/01/2000 00:00	-	Date and time of the register number 6 of warning history.
SV12.11-Fifth warning = 0	-	Register number 5 of the warning history.
SV12.12-Date = 01/01/2000 00:00	-	Date and time of the register number 5 of warning history.
SV12.13-Fourth warning = 0	-	Register number 4 of the warning history.
SV12.14-Date = 01/01/2000 00:00	-	Date and time of the register number 4 of warning history.

Screen	Units	Description
SV12.15-Third warning = 0	-	Register number 3 of the warning history.
SV12.16-Date = 01/01/2000 00:00	-	Date and time of the register number 3 of warning history.
SV12.17-Second warning = 0	-	Register number 2 of the warning history.
SV12.18-Date = 01/01/2000 00:00	-	Date and time of the register number 2 of warning history.
SV12.19-First warning = 0	-	Register number 1 of the warning history.
SV12.20-Date = 01/01/2000 00:00	-	Date and time of the register number 1 of warning history.
SV12.21-Erase warning history = No	-	Clears the content of the warnings' history.

Group V13: Local Motor vis

This group shows the general local motor's controls only in SD750 drives frames 9 to 11, provided that the following conditions are met:

- G25.1-Role = "Local Master", "Global Master" or "Global Slave"
- There is more than one equipment configured in parallel (G25.7-Paral. Drives Number).
- G1.9-Master/slave config = "Enable".

Check document **SD75MA07** for further information.

Note: The parameter associated with the encoder (SV13.17) will only be displayed if an encoder optional expansion board has been connected. Check document **SD75MA04** for further information.

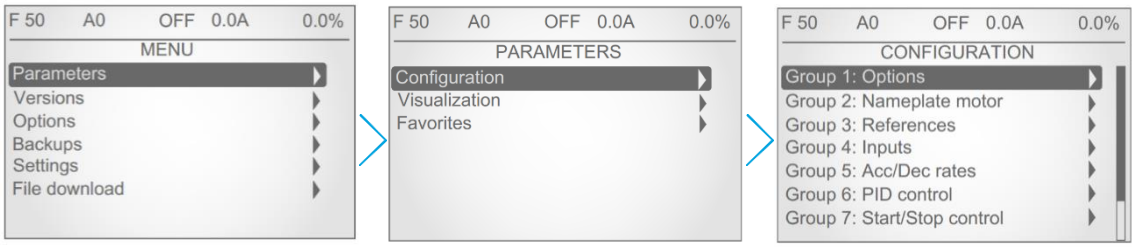
Screen	Units	Description
SV13.1-Speed reference = 0.0 %	%	Shows the present reference value of speed which is applied to the local motor.
SV13.2-Torque reference = 0.0 %	%	Shows the present reference value of torque which is applied to the motor.
SV13.3-Motor speed (%) = 0.0 %	%	Shows the local motor speed in percentage.
SV13.4-Motor speed (rpm) = 0 rpm	rpm	Shows the local motor speed in revolutions per minute.
SV13.5-Motor frequency = 0.0 Hz	Hz	Shows the frequency applied to the local motor.
SV13.6-Motor voltage = 0 V	V	Shows the voltage value applied to the local motor.
SV13.7-Motor current = 0.0 A	A	Shows the current flowing to the local motor.
SV13.8-Motor torque = 0.0 %	%	Shows the torque applied to the local motor.
SV13.9-Motor phi cosine = 0.85	-	Shows the local motor's power factor.
SV13.10-Motor power = 0.0 kW	kW	Shows the instantaneous power consumption of the local motor.
SV13.11.1-U motor current = 0.0 A	A	Shows the instantaneous current of each phase of the local motor (U).
SV13.11.2-V motor current = 0.0 A	A	Shows the instantaneous current of each phase of the local motor (V).
SV13.11.3-W motor current = 0.0 A	A	Shows the instantaneous current of each phase of the local motor (W).
SV13.12.1-U-V motor voltage = 0 V	V	Shows the instantaneous voltage applied (UV) to the local motor.
SV13.12.2-V-W motor voltage = 0 V	V	Shows the instantaneous voltage applied (VW) to the local motor.
SV13.12.3-W-U motor voltage = 0 V	V	Shows the instantaneous voltage applied (UW) to the local motor.
SV13.13-PTC Status = No	-	Shows whether the local motor PTC is connected or disconnected. **Visible if [G4.1.10 = PTC].**
SV13.14-Estimat. Mot. temp(%) = 0.0 %	%	Shows the estimated local motor temperature.
SV13.15-Motor temperature = 0 ºC	ºC	Shows the local motor temperature measured with the PT100 sensor. **Visible if [G4.4.0 = YES].**

DESCRIPTION OF PROGRAMMING PARAMETERS

5

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

NOTICE

Parameters specific to each optional board are not described in this manual, for further information **check the corresponding manual (SD75MA--)**.

Group 1: Options

Note: The parameter associated with the optical fiber board (G1.9) will only be displayed if an optical fiber expansion board has been connected. Check document **SD75MA07** for further information.

<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>No
Partial lock
Total lock
Display lock</td><td>Allows user to lock SD750FR parameters totally or partially. To lock you must introduce a password in G1.1a.
<table><tr><th>DESCRIPTION</th><th>FUNCTION</th></tr><tr><td>No</td><td>Parameter lock is not active.</td></tr><tr><td>Partial lock</td><td>All parameters are locked except for [G1.1], [G1.1a], [G3.3] and [G6.2] (PID reference).</td></tr><tr><td>Total lock</td><td>Only [G1.1] and [G1.1a] can be modified.</td></tr><tr><td>Display 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 to 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 to 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
German
Italian</td><td>Allows selecting the language of the parameters shown on the Webserver.
<table><tr><th>OPC.</th><th>DESCRIPCIÓN</th></tr><tr><td>0</td><td>Spanish</td></tr><tr><td>1</td><td>English</td></tr><tr><td>2</td><td>German</td></tr><tr><td>3</td><td>Italian</td></tr></table>Note: The display language is selected in the "Settings" menu.</td><td>NO</td></tr>
<tr><td>G1.3-Initialize = No init</td><td>No init
User parameters
Motor parameters
All parameters</td><td>Allows selecting the parameters that we desire to initialize back to the factory default value.
<table><tr><th>DESCRIPTION</th><th>FUNCTION</th></tr><tr><td>No init</td><td>None of parameters is initialized.</td></tr><tr><td>User parameters</td><td>User parameters are only initialized.</td></tr><tr><td>Motor parameters</td><td>Motor data are only initialized.</td></tr><tr><td>All parameters</td><td>All parameters of the drive are initialized.</td></tr></table></td><td>NO</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>NO</td></tr>
<tr><td>G1.5-Activate programs = Standard</td><td>Standard = 0
1 to 8</td><td>Standard: Normal equipment functionalities.
1 to 8: Additional user functions programmed with PowerPLC, such as the PUMPS MACRO.</td><td>NO</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 enables the synchronization of the output voltage with the input voltage, starting the bypass mode.</td><td>NO</td></tr>
</table>

EN

Group 2: Motor nameplate data

Screen	Range	Function	Set on run
G2.1-Motor plate current = 1.0In A	0.2In to 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 to 700 V	Allows setting of the motor rated voltage according to its nameplate.	NO
G2.3-Motor plate power = Pn (*)	0.0 to 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 to 24000 rpm	Allows setting of the motor rated speed according to its nameplate.	NO
G2.5-Motor plate phi cosine = 0.85	0.01 to 0.99	Allows setting of motor cosine Phi according its nameplate.	NO
G2.6-Motor plate frequency = 50 Hz	0 to 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 = 63.00%	50 to 100%, Off = 101	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 SD750FR 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.

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 to 17</td><td rowspan="2">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><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>G3.2-Speed ref 2 source = Local</td><td>YES</td></tr>
<tr><td>G3.3-Speed local reference = 100.0 %</td><td>-250 to 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 to 17</td><td rowspan="2">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><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>G3.5-Torque ref 2 source = Local</td><td>YES</td></tr>
<tr><td>G3.6-Torque local reference = 100.0 %</td><td>-250 to 250%</td><td>Adjust the local torque reference.</td><td>YES</td></tr>
</table>

EN

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>0 to 6</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 the display keypad.</td></tr><tr><td>2</td><td>Remote</td><td>Drive controlled through digital inputs of the 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: [G1.9 Master/slave config] must be enabled. Check SD75MA07.</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>0 to 6</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 the display keypad.</td></tr><tr><td>2</td><td>Remote</td><td>Drive controlled through digital inputs of the 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 the role is master. Check SD75MA07.</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 and the protocol enabled.</td></tr></table>
Note: Control mode 2 will be activated exclusively through the digital inputs and with the equipment set on OFF. For this, the digital input 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 display 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 display keypad unit.</td></tr><tr><td>Yes</td><td>The drive can be reset via the reset button on the display keypad unit.</td></tr></table></td><td>YES</td></tr>
<tr><td>G4.1.4-Digital input mode = All programmable</td><td>1 to 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 4 and 5 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>DI4</th><th>DI5</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>

<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>1 to 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 3, 4 and 5 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>DI3</th><th>DI4</th><th>DI5</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.
DI4 = Up (NO contact)
DI5 = 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>NO</td></tr>
<tr><td>G4.1.5-Digital Input 1 = Start / Stop</td><td rowspan="2">0 to 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>

EN

<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 to 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) in G7.1.2. (NO)</td></tr>
<tr><td>23</td><td>Current limit 2</td><td>To select the alternative current limit in G10.2.3. (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 'F40 PTC'. Only valid for Digital Input 6.</td></tr>
<tr><td>32</td><td>Speed / Torque</td><td>Allows changing the control mode by vector control (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 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>

<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="9">0 to 48</td><td rowspan="9">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 pushbutton. (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>

EN

<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 to 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 Err. Timeout = 1.0 s</td><td>0.5 to 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 to 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>

Subgroup 4.2: Analogue input 1

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></tr>
<tr><td>G4.2.1-Enable sensor = No</td><td>No
Yes</td><td>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.

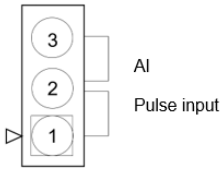
<table>
<tr><th>OPTION</th><th>FUNCTION</th></tr>
<tr><td>No</td><td>The analogue input will remain scaled in default units .</td></tr>
<tr><td>Yes</td><td>The analogue input and any variables relating to the analogue input will be configured in the engineering units selected in G4.2.2.</td></tr>
</table></td><td>NO</td></tr>
<tr><td>G4.2.2-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 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 Sensor low level = +0.0 l/s' ➔ Minimum range of sensor.
'G4.2.7 Sensor high level = +10.0 l/s' ➔ Maximum range of sensor.

Available if [G4.2.1 = YES].</td><td>NO</td></tr>
</table>

Screen	Range	Function	Set on run
G4.2.3-AI1 Format = V	V mA	Allows configuring the analogue input 1 format for either a voltage or current signal, by modifying the input impedance of the analogue input. 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	The analogue input reading is calibrated with the magnitude selected in 'G4.2.2', allowing to determine 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	The analogue input reading is calibrated with the magnitude selected in 'G4.2.2', allowing to set 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	The analogue input reading is calibrated with the magnitude selected in 'G4.2.2', allowing to determine 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	The analogue input reading is calibrated with the magnitude selected in 'G4.2.2', allowing to set 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
G4.2.14-AI1 loss protection = No	No Yes	Sets the drive stop mode when a loss of the analogue input 1 signal occurs. **OPTION** / **FUNCTION** No: Function disabled. 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 20.0s	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

EN

Subgroup 4.3: Analogue input 2 / pulse

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></tr>
<tr><td>G4.3.0-Enable Pulse In. Mode = No</td><td>No
Yes</td><td>Allows the user to enable analogue input 2 as a pulse input.
<table><tr><th>OPTION</th><th>FUNCTION</th></tr><tr><td>No</td><td>The analogue input remains as AI2</td></tr><tr><td>Yes</td><td>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.
  </td></tr></table></td><td>NO</td></tr>
<tr><td>G4.3.1-Enable sensor = No</td><td>No
Yes</td><td>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].
<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>G4.3.2-Sensor unit = Bar</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 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].</td><td>NO</td></tr>
<tr><td>G4.3.2-Sensor unit Pulse In. = l/s</td><td>%
l/s
m³/s
l/m
m³/m
l/h
m³/h
m/s
m/m
m/h</td><td>Allows selecting the units of the input when it is configured as "pulse input".

Available if [G4.3.0 = YES]</td><td>YES</td></tr>
<tr><td>G4.3.2b-Pulses per unit = 100</td><td>1 to G4.3.2c</td><td>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].</td><td>YES</td></tr>
<tr><td>G4.3.2c-Max pulses = 1000</td><td>1 to 32000</td><td>Allows adjusting the maximum number of pulses of the sensor. Available if [G4.3.0 = YES].</td><td>YES</td></tr>
<tr><td>G4.3.3-AI2 Format = mA</td><td>V
mA</td><td>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].</td><td>YES</td></tr>
<tr><td>G4.3.4-AI2 low level = 4.0 mA</td><td>-10.0V to G4.3.6
+0.0mA to G4.3.6</td><td>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].</td><td>NO</td></tr>
<tr><td>G4.3.5-Sensor low level = 0.0 Bar</td><td>-3200.0 to G4.3.7
Engineering units</td><td>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].</td><td>YES</td></tr>
</table>

Screen	Range	Function	Set on run
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** No — Function disabled. 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 s	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

EN

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 = YES].**	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 = YES].**	YES

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 = YES].**	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 = YES].**	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
G4.4.17-PT100 stabilizer filt = 10.0s	Off = 0.0 0.1 to 20.0s	Allows adjusting a filtering to the value received from the PT100. 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 = YES].** **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 4.5: Analogue input 4

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Subgroup 4.6: Analogue input 5

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Subgroup 4.7: Analogue input 6

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Subgroup 4.8: Analogue input 7

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Group 5: Acc / Dec 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] or by digital input or by using the Acc / Dec comparator output functions 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 1 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 percentage 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 1 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 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 +300.0%	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 20.0	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
G6.5-Process Ti = 0.1 s	0.1 to 1000s Infinite = 1000.1	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.	YES

EN

Screen	Range	Function	Set on run
G6.6-Process Td = 0.0 s	0.0 to 250.0 s	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.	YES
G6.7-Invert PID = No	No Yes	Allows inverting the drive PID output. **OPTION** / **FUNCTION** No: 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. Yes: 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.	NO
G6.8-Feedback low pass filter = Off	Off = 0.0 0.1 to 20.0 s	Configures the feedback low pass filter, in seconds. If it is set to 0, it will be deactivated.	YES
G6.9-Process error = 0.0 %	-300% to 300%	Shows the difference between the reference [G6.1] and the feedback signal of [G6.3].	YES

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

Screen	Range	Function	Set on run
G7.1.1-Main start mode = Ramp	Ramp Spin Spin2	Selects the start mode of the drive. This value should be configured appropriately for each application. **OPT.** / **FUNCTION** Ramp: Drive will start applying a frequency ramp to the motor from a known speed. Spin: 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 only searches in the configured direction of rotation (for example, if the reference is negative, it will look in negative speeds). Spin2: Operates like option 'SPIN'. The difference lies in the possibility of starting loads that are still rotating independently of the motor rotation direction. **Note:** This option starts searching in the configured direction of rotation, but if it is not found, it searches in the rest of the operating range. **Note:** Start mode 2 (alternative) is selected through a digital input configured with the option [22 ➔ run MODE 2].	YES
G7.1.2-Alternative start mode = Ramp			YES
G7.1.3-Start delay = Off	Off = 0 1 to 6500s	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'.	YES
G7.1.4-Fine restart delay = Off	Off = 0.000 0.001 to 10.000 s	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.	YES
G7.1.5-Alt restart delay = Off	Off = 0.0 0.1 to 6500.0 s	Allows setting a delay time between the moment the drive has stopped and the next start. Different from [G7.1.4], this parameter allows to set a wider range of delay time. 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.	YES
G7.1.6-Run on supply loss = Yes	No Yes	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). **OPT.** / **FUNCTION** No: 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. Yes: The drive will start automatically when power supply is recovered after power supply loss occurs, as long as the start signal is still active. **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.	YES

<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
Yes</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. Sets 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
0.1 to 10.0 s</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 = Off</td><td>Off = 0.00
1.00 to 250.00 %</td><td>Allows user to select the minimum absolute value at which the equipment can start.</td><td>YES</td></tr>
<tr><td>G7.2.6-Power off delay = Off</td><td>Off = 0.000
0.001 to 9.999</td><td>Sets the period of time in seconds during which the drive maintains the magnetic flux in the motor after reaching zero speed when stopping.</td><td>YES</td></tr>
</table>

Subgroup 7.3: Spin start

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></tr>
<tr><td>G7.3.1-Tune = 10 %</td><td>0 to 100%</td><td>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.</td><td>YES</td></tr>
<tr><td>G7.3.2-Minimum speed = 0.0 %</td><td>0.0 to 25.0 %</td><td>Allows to set the minimum speed that the drive can reach during the speed search in spin start. The drive starts the speed search in the nominal speed and performs the search by lowering the speed to the minimum speed set in this parameter.</td><td>YES</td></tr>
<tr><td>G7.3.3-Magnetization tim = 1.0 s</td><td>0.1 to 25.0 s</td><td>Allows defining how long to wait, in seconds, to stablish the flow of the motor once the speed search for spin start has finished.</td><td>YES</td></tr>
</table>

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).</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>
<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 digital input 1</td><td rowspan="5">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 digital input 2</td></tr>
<tr><td>37</td><td>Copy digital input 3</td></tr>
<tr><td>38</td><td>Copy digital input 4</td></tr>
<tr><td>39</td><td>Copy digital input 5</td></tr>
</table></td><td>NO</td></tr>
</table>

Screen	Range	Function	Set on run
		40 Copy digital input 6 44 Copy digital input 7 45 Copy digital input 8 46 Copy digital input 9 47 Copy digital input 10 48 Copy digital input 11 49 Copy digital input 12 50 Copy digital input 13 51 Copy digital input 14	
		52 User's fault group 1 53 User's fault group 2 54 User's fault group 3 — Allow selecting a group to configure user faults.	
		56 Start/Stop delay — 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).	
		57 Copy digital input 15 58 Copy digital input 16 — Copies the corresponding digital input and closes the relay when the digital input is active.	
G8.1.2-Relay 1 ON delay = 0.0 s	0.0 to 999.0s	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.	YES
G8.1.3-Relay 1 OFF delay = 0.0 s	0.0 to 999.0s	Allows setting a delay time before deactivating relay 1. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.4-Relay 1 inversion = No	No Yes	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). **OPT.** / **FUNCTION** No — Relay logic remains unchanged. Yes — Inverts relay logic.	NO
G8.1.5-Relay 2 source select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.6-Relay 2 ON delay = 0.0 s	0.0 to 999.0 s	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.	YES
G8.1.7-Relay 2 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 2. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.8-Relay 2 inversion = No	No Yes	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). **OPT.** / **FUNCTION** No — Relay logic remains unchanged. Yes — Inverts relay logic.	NO
G8.1.9-Relay 3 source select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.10-Relay 3 ON delay = 0.0 s	0.0 to 999.0 s	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.	YES
G8.1.11-Relay 3 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 3. If during this OFF delay time the deactivation condition disappears, the relay will remain activated.	YES
G8.1.12-Relay 3 inversion = No	No Yes	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). **OPT.** / **FUNCTION** No — Relay logic remains unchanged. Yes — Inverts relay logic.	NO
G8.1.13-Relay 4 src select = Always OFF	00 to 58	**Note:** See [G8.1.1].	NO
G8.1.14-Relay 4 ON delay = 0.0 s	0.0 to 999.0 s	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.	YES
G8.1.15-Relay 4 OFF delay = 0.0 s	0.0 to 999.0 s	Allows setting a delay time before deactivating relay 4. 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>G8.1.16-Relay 4 inversion = No</td><td>No
Yes</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
Yes</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
Yes</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
Yes</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>
<tr><td>G8.1.30-Relay 8 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>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.</td><td>YES</td></tr>
<tr><td>G8.1.31-Relay 8 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 8.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.32-Relay 8 inversion = No</td><td>No
Yes</td><td>Allows inverting the logic of relay 8 functionality.
Relay 8 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>G8.1.33-Relay 9 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.34-Relay 9 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>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.</td><td>YES</td></tr>
<tr><td>G8.1.35-Relay 9 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 9.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</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>G8.1.36-Relay 9 inversion = No</td><td>No
Yes</td><td>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.<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>YES</td></tr>
<tr><td>G8.1.37-Relay 10 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.38-Relay 10 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>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.</td><td>YES</td></tr>
<tr><td>G8.1.39-Relay 10 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 10.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.40-Relay 10 inversion = No</td><td>No
Yes</td><td>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.<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>G8.1.41-Relay 11 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.42-Relay 11 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>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.</td><td>YES</td></tr>
<tr><td>G8.1.43-Relay 11 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 11.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.44-Relay 11 inversion = No</td><td>No
Yes</td><td>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.<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>G8.1.45-Relay 12 src select = Always OFF</td><td>00 to 58</td><td>Note: See [G8.1.1].</td><td>NO</td></tr>
<tr><td>G8.1.46-Relay 12 ON delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>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.</td><td>YES</td></tr>
<tr><td>G8.1.47-Relay 12 OFF delay = 0.0 s</td><td>0.0 to 999.0 s</td><td>Allows setting a delay time before deactivating relay 12.
If during this OFF delay time the deactivation condition disappears, the relay will remain activated.</td><td>YES</td></tr>
<tr><td>G8.1.48-Relay 12 inversion = No</td><td>No
Yes</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
Yes</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>

EN

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>

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 0.1 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 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 only be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Subgroup 8.5: Analogue output 4

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Subgroup 8.6: Analogue output 5

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

Subgroup 8.7: Analogue output 6

Note: This group will be shown if an analogue I/O expansion board has been connected. Check document **SD75MA05** for further information.

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.</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>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><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>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>
</table>

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></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>
<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 999.0s</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 999.0s</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>FUNCTION</th><th>DESCRIPTION</th></tr>
<tr><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>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>
</table>

Screen	Range	Function	Set on run
G9.2.3-Comp 2 ON level = 100 %	-250% to 250%	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].**	YES
G9.2.4-Comp 2 OFF level = 0 %	-250% to 250%	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].**	YES
G9.2.3-Comp 2 window limit 2 = 100 %	-250% to 250%	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].**	YES
G9.2.4-Comp 2 window limit 1 = 0 %	-250% to 250%	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].**	YES
G9.2.5-Comp 2 ON delay = 0.0 s	0.0 to 999.0s	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 999.0s	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 12	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. **FUNCTION** / **DESCRIPTION** Normal: Comparator will be activated when the ON condition is given and will be deactivated when the OFF condition is given. 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 999.0s	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 999.0s	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 use	0 to 12	Allows selecting the function to be activated with the output Comparator 3. See configuration options in [G9.1.7].	NO

Group 10: Limits

Subgroup 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. **Note:** Selection of maximum speed limit 2 is done via a digital input or comparator output function	YES
G10.1.5-Maximum lim timeout = Off s	0.1 to 60.0s Off = 0.0	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 s	0.1 to 60.0s Off = 0.0	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

Subgroup 10.2: Current/Torque

Screen	Range	Function	Set on run
G10.2.1-Current limit = 1.2In A	0.2In to1.5In A Off = 15001	Output current limit. The current limit speed reduction algorithm limits the motor load current keeping it within this programmed limit. When this protection is active the SD750FR 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 60s Off = 61	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 = 15001	Similar to [G10.2.15], but for the alternative current limit.	YES
G10.2.4-I limit 2 timeout = Off	0 to 68s Off = 69	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 = 0 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 %	Output torque limit. The torque limit speed reduction algorithm limits the maximum torque of the motor set. It is set as a percentage of motor rated torque.	YES
G10.2.7-Torque limit timeout = Off	0 to 60s Off = 61	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 60s Off = 61	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 = 0 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

EN

Screen	Range	Function	Set on run
G10.2.11-I limit Regen = Off	Off = 18.3 40.1% to 150.00%·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 SD750FR is limiting current (RIL). If this parameter is set to 'OFF', the algorithm will be disabled. **Note**: Set a slightly lower value than the desired one. Due to motor noise, the current limit may increase.	YES
G10.2.12-I limit Regen Time = Off	0 to 60s Off = 61	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 60s Off = 61	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 current and torque limit timeout protection is still active (G10.2.2 and G10.2.7) which could cause a drive trip.	YES

Group 11: Protections

Subgroup 11.1: Input

Screen	Range	Function	Set on run
G11.1.1-Supply under voltage = 0.875Vn	See Note	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 (set value according to the drive frame), for the time set in G11.5. **Note**: The range of this parameter varies depending on the equipment's rated voltage: 400V: 0.75Vn to 0.9Vn 440V: 0.75Vn to 0.9Vn 480V: 0.75Vn to 0.9Vn 690V: 0.75Vn to 0.9Vn	YES
G11.1.2-Under voltage timeout = 5.0 s	0.0 to 60.0s Off = 60.1		YES
G11.1.3-Supply over voltage = 1.075Vn	See Note	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 (set value according to the drive frame), for the time set in G11.1.4. **Note**: The range of this parameter varies depending on the equipment's rated voltage: 400V: 1.05Vn to 1.15Vn 440V: 1.05Vn to 1.15Vn 480V: 1.05Vn to 1.15Vn 690V: 1.05Vn to 1.15Vn	YES
G11.1.4-Over voltage timeout = 5.0 s	0.0 to 60.0s 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: **FUNCTION** / **DESCRIPTION** No faults: No action will be taken by the drive. Faults: Drive will trigger fault 'F11 VIN LOSS'. 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. 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

Subgroup 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 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 = 10.1	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 = 10.1	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	Off = -21 -20 to 180ºC	Configures the threshold temperature to trigger F79 PT100 once the time specified in G11.2.6 has been exceeded.	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. **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 (with no motor connected). If "NO" is selected, the drive triggers due to F39 NO LOAD 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-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- Overload filter = Off	Off = 0.0 0.1 a 20.0s		YES
G11.2.10-Overload delay = 60 s	0.0 a 480.0s		YES
G11.2.11-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. Enabling the underload protection in this parameter, the equipment will protect the pump against underloads when: - The motor current is below the underload current specified in G11.2.12. - The motor speed is greater above the underload speed specified in G11.2.13. - The delay time for activating the underload protection is exceeded by G11.2.14. If three previous conditions are given, the drive will stop the pump to protect it from underload status.	YES
G11.2.12-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-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-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
G11.2.15-PMSM Desync. Thresh = 40.0 %	0.0 to 100.0 %	Synchronization threshold, indicates the maximum speed difference from the reference speed allowed in the motor. **Available if [G19.1.1= Synchronous].**	YES
G11.2.16-PMSM Desync. Time = 0.10s	0.0 to 5.00 s Off = 5.01	Synchronization time, indicates the maximum time of desynchronization allowed in the motor. **Available if [G19.1.1= Synchronous].**	YES

EN

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 SD750FR 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 SD750FR will fault on the last fault condition. The SD750FR 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 SD750FR will automatically resets the faults selected in these parameters. Adjustment is individual according to the table from section “Fault messages. Description and actionsFAULT 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>

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 = 0</td><td>0 to 1024</td><td rowspan="12">A list of the last six faults in chronological order is shown. The first parameter from this group (G13.1) allows visualizing information about the last fault and, also, it will be used as the first register of fault history. 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.

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. The configured faults can be automatically rearmed using Auto Reset (see group G12).</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 = 0</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 = 0</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 = 0</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 = 0</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 = 0</td><td>0 to 1024</td><td>YES</td></tr>
<tr><td>G13.6b-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>G13.7-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 %</td><td rowspan="8">-250.00 to 250.00%</td><td rowspan="8">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 DI3,DI4, DI5 inputs when activated in multi-reference mode (as a percentage of motor rated speed):

<table>
<tr><th>PARM</th><th>REF</th><th>DI3</th><th>DI4</th><th>DI5</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 rowspan="8">YES</td></tr>
<tr><td>G14.2-Multi reference 2 = 20.00 %</td></tr>
<tr><td>G14.3-Multi reference 3 = 30.00 %</td></tr>
<tr><td>G14.4-Multi reference 4 = 40.00 %</td></tr>
<tr><td>G14.5-Multi reference 5 = 50.00 %</td></tr>
<tr><td>G14.6-Multi reference 6 = 60.00 %</td></tr>
<tr><td>G14.7-Multi reference 7 = 70.00 %</td></tr>
</table>

EN

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">-250.00 to 250.00%</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 1 to 20 %	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 1 to 20 %	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 1 to 20 %	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 1 to 20 %	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

Group 17: Brake

Screen	Range	Function	Set on run
G17.1-DC brake time = Off	Off = 0 0.1 to 99.0s	Allows setting the time during which the DC brake will be activated.	YES
G17.2-DC brake current level = 0 %	0 to 100%	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.	YES
G17.3-DC break on delay = Off	Off = 0.0 0.0 to 99.0s	Allows setting a delay time in the activation of the DC brake after the drive stops (drive OFF status).	YES
G17.4-Heating current = Off	Off = 0.0 1 to 30%	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.	YES
G17.5-Dynamic brake = No	No Yes	User must configure the drive if an external dynamic brake is going to be used. **OPT.** / **FUNCTION** No: External brake is not going to be used, the application does not require it. Yes: An external brake is going to be installed.	NO

EN

Group 18: Encoder

Information regarding this group, as well as all parameters directly related to the encoder, should be consulted in the manual **SD75MA04**.

Group 19: Fine tuning

Subgroup 19.1: IGBT control

Screen	Range	Function	Set on run
G19.1.1-Control type = Asynchronous	Asynchronous Synchronous	This selection defines the drive control type. **OPTION** / **FUNCTION** Asynchronous: Activates the asynchronous control mode. Synchronous: Activates the synchronous control mode.	NO
G19.1.1a-Asynchronous control = V/Hz	V/Hz Vectorial	This selection defines the asynchronous drive control type. **Available if [G19.1.1 = Asynchronous].** **OPTION** / **FUNCTION** V/Hz: Scalar control mode. Drive carries out the control applying a voltage / frequency ramp to the motor. Vectorial: Vector control mode.	NO
G19.1.1a.2-Vectorial control = PMC Open loop speed	1 to 8	Allows selecting the type of vector control and the type of power motor control. **Available if [G19.1.1 = Asynchronous] and [G19.1.1a = Vectorial].** PMC: Power Motor Control AVC: Advanced Vector Control. **OPT.** / **DESCRIPTION** / **FUNCTION** 1 / PMC Open loop speed / PMC control type speed in open loop. 2 / PMC Close loop speed / PMC control type speed in closed loop. 3 / PMC Close loop torque / PMC control type torque in closed loop. 4 / PMC Open loop torque / PMC control type torque in open loop. 5 / AVC Close loop speed / AVC control type speed in closed loop. 6 / AVC Close loop torque / AVC control type torque in closed loop. 7 / AVC Open loop speed / AVC control type speed in open loop. 8 / AVC Open loop torque / AVC control type torque in open loop. **Note**: In case of doubt regarding the type of control to configure, "PMC" or "AVC", configure as "PMC". For further information, consult Power Electronics.	YES

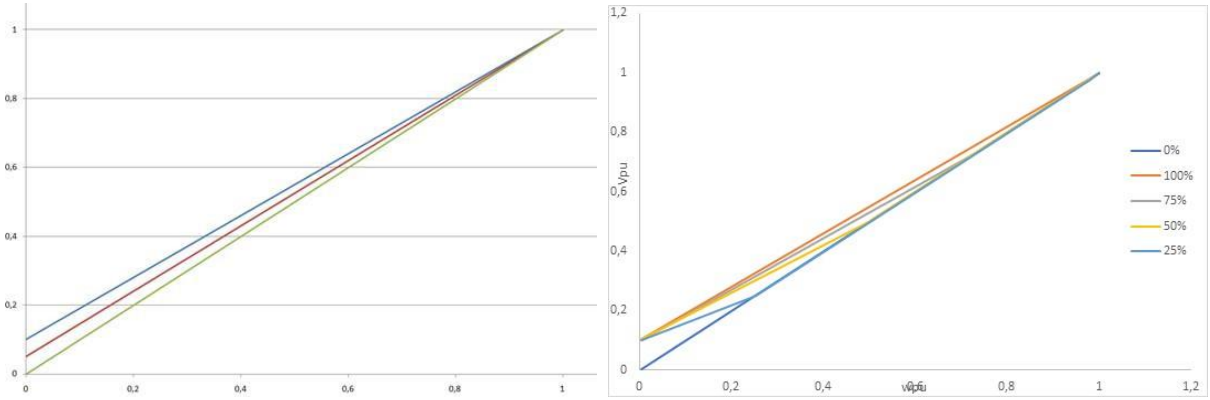
<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></tr>
<tr><td>G19.1.1b-Synchronous control = PMSM</td><td>PMSM
Sync Excited</td><td>This selection defines the synchronous drive control type. Available if [G19.1.1 = Synchronous].
<table><tr><th>OPTION</th><th>FUNCTION</th></tr><tr><td>PMSM</td><td>Control mode for synchronous motors (PMSM: Permanent Magnet Synchronous Motor).</td></tr><tr><td>Sync Excited</td><td>Control mode for the excitation of synchronous motors.</td></tr></table></td><td>YES</td></tr>
<tr><td>G19.1.1b.2-Perm Mag Sync Mot = V/Hz</td><td>V/Hz
F.Oriented Open Loop
F.Oriented Closed Loop
HEPOL</td><td>This selection defines the synchronous drive control type in PMSM. Available if [G19.1.1 = Synchronous] and [G19.1.1b = PMSM].
<table><tr><th>OPTION</th><th>FUNCTION</th></tr><tr><td>V/Hz</td><td>Scalar control mode, in which control is applied by applying a voltage / frequency ramp to the motor.</td></tr><tr><td>F.Oriented Open Loop</td><td>Vector control for synchronous motors.</td></tr><tr><td>F.Oriented Closed Loop</td><td>Vector control with encoder.</td></tr><tr><td>HEPOL</td><td>High Efficiency Performance Open Loop.
Uses the block of maximum torque per ampere for flow control.</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>OPTION</th><th>FUNCTION</th></tr><tr><td>No</td><td>Auto Tuning disabled.</td></tr><tr><td>Static</td><td>Auto Tuning enable. No motor spinning is required.</td></tr><tr><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 = 0.00
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>

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 10.0%	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 100.0%	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 100.0%	Allows setting the initial frequency that will be applied to the drive at the moment of starting.	YES

Screen	Range	Function	Set on run
G19.2.7-Damping = 2 %	0 to 10%	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
G19.2.9-Boost Band = 100.00 %	0.00 to 100.00 %	If G19.2.2 is different from 0.0%, then this parameter regulates the band of the Vboost function (check G19.2.2), thus allowing the voltage/frequency ramp to be customized from the initial voltage value to the corresponding straight line without Vboost. If this value is 100%, it maintains the voltage/frequency ramp with respect to G19.2.2. If this value is 0% it overrides G19.2.2 and the voltage/frequency ramp loses the initial voltage value. **Note**: If G19.2.2 =0.0%, the band setting has no effect.	YES
G19.2.10-Flux Control = Proportional torque	Proportional Torque Maximum Torque Per Ampere	Allows to enable the control of flux in the control mode for synchronous motors (PMSM). **Available if [G19.1.1 = PMSM].** **OPCIÓN** / **FUNCTION** Proportional Torque: Use only when the motor nameplate data is known. Sets the control of flux to be proportional to the theoretical torque. Maximum Torque Per Ampere: Use when internal motor parameters are known. Sets a maximum torque per ampere control with field weakening.	YES
G19.2.11-Maximum Flux = 100.00 %	100.00 a 130.00 %	Allows to set the threshold of the magnetic flux once the control of flux is enabled. **Available if [G19.1.1 = Synchronous].**	YES
G19.2.12-Q Reference = 0.00 %	-250.00 to 250.00 %	Allows to set the reactive power in the equipment while there is synchronous excitation. **Available if [G19.1.1 = Synchronous] and [G19.1.1b = Sync Excited].**	YES

Note: Check the example for G19.2.2= [0%, 5% and 10%] and the effect of G19.2.9 by G19.2.2=10%:



Subgroup 19.3: Motor model

Screen	Range	Function	Set on run
G19.3.1-R stator = 0.1 mOhms	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 mOhms	0.1 to 6553.5 mΩ	A key parameter that directly concerns the output torque. **Available if [G19.1.1 = Asynchronous].**	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 = Asynchronous].**	YES
G19.3.3-B.E.F.(KV/Krpm) = 0.000	0.000 to 5.000	Back electromagnetic force. **Available if [G19.1.1 = Synchronous].**	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 = Asynchronous].**	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 = Synchronous].**	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 = Asynchronous].**	YES

Screen	Range	Function	Set on run
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 = Synchronous].**	YES
G19.3.6-Field weakening = 100.0 %	50.00 to 130.10%(Auto)	Allows to adjust when the field starts to be reduced. 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. **Note**: "Auto" mode allows to optimize field reduction.	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, based on the motor current, which will depend on the application.	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. In addition, overmagnetization may occur in the motor, resulting in an excess of magnetic saturation of the motor.	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.	YES
G19.4.3-Kp torque = 100.0 %	0.0 to 200.0%	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

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>Odd
None
Even</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.</td><td>YES</td></tr>
<tr><td>G20.1.5-Communication timeout = Off</td><td>Off = 0
1 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>

EN

Subgroup 20.2: Profibus configuration

Note: This subgroup allows configuring the Profibus extension board. Check document **SD75MA06** for further information.

Subgroup 20.6: Custom modbus configuration

Screen	Range	Function	Set on run
G20.6.1-Custom modbus map address 1 = 3584	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
G20.6.2-Custom modbus map address 2 = 2002			
G20.6.3-Custom modbus map address 3 = 2006			
G20.6.4-Custom modbus map address 4 = 2009			
G20.6.5-Custom modbus map address 5 = 2007			
G20.6.6-Custom modbus map address 6 = 2004			
G20.6.7-Custom modbus map address 7 = 2005			
G20.6.8-Custom modbus map address 8 = 2008			
G20.6.9-Custom modbus map address 9 = 2034			
G20.6.10-Custom modbus map address 10 = 2000			
G20.6.11-Custom modbus map address 11 = 2038			
G20.6.12-Custom modbus map address 12 = 2039			
G20.6.13-Custom modbus map address 13 = 2080			
G20.6.14-Custom modbus map address 14 = 2081			
G20.6.15-Custom modbus map address 15 = 2061			
G20.6.16-Custom modbus map address 16 = 2064			
G20.6.17-Custom modbus map address 17 = 3585			
G20.6.18-Custom modbus map address 18 = 3569			
G20.6.19-Custom modbus map address 19 = 3587			
G20.6.20-Custom modbus map address 20 = 3588			
G20.6.21-Custom modbus map address 21 = 180			

Screen	Range	Function	Set on run
G20.6.22-Custom modbus map address 22 = 181			
G20.6.23-Custom modbus map address 23 = 223			
G20.6.24-Custom modbus map address 24 = 220			
G20.6.25-Custom modbus map address 25 = 400			
G20.6.26-Custom modbus map address 26 = 401			
G20.6.27-Custom modbus map address 27 = 50			
G20.6.28-Custom modbus map address 28 = 53			
G20.6.29-Custom modbus map address 29 = 70			
G20.6.30-Custom modbus map address 30 = 404			
G20.6.31-Custom modbus map address 31 = 408			
G20.6.32-Custom modbus map address 32 = 416			
G20.6.33-Custom modbus map address 33 = 0			
…			
G20.6.120-Custom modbus addr 120 = 0			

Subgroup 20.7: Custom modbus values

Screen	Range	Function	Set on run
G20.7.1-Custom modbus map value1 = 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
G20.7.2-Custom modbus map value2 = 0			
…			
G20.7.120-Custom modbus map value30 = 0			

Group 21: Networks

Subgroup 21.1: Ethernet

Note: This subgroup allows configuring the Ethernet IP board. Refer to the manual **SD75MA01** for further information.

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

Subgroup 21.3: EtherNet / IP

Note: This subgroup allows configuring the Ethernet IP net. Refer to the manual **SD75MA01** for further information.

Subgroup 21.4: Profinet

Note: This subgroup allows configuring the Profinet. Refer to the manual **SD75MA03** for further information.

Group 23: Expansion

Subgroup 23.1: PT100

Note: This sub-group allows to configure the PT100 card. Refer to the **SD75MA08** manual for further information.

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).

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 (G23.2.5 bis G23.2.8). Check document **SD75MA05** for further information.

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></tr>
<tr><td>G23.2.1-IO digital A status = Off</td><td>Off
On</td><td>Shows the status of the digital inputs and outputs expansion board A.<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>G23.2.2-IO digital A test = No</td><td>No
Yes</td><td>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.</td><td>NO</td></tr>
<tr><td>G23.2.3-IO digital B status = Off</td><td>Off
On</td><td>Shows the status of the digital inputs and outputs expansion board B.<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>
</table>

Screen	Range	Function	Set on run
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

Subgroup 23.3: Communications

Note: The parameters associated with Ethernet IP will only be displayed if an inputs and outputs expansion board has been connected (parameters G23.3.4 to 23.3.6). Check document **SD75MA01** for further information.

The parameters associated with the Profibus board will only be displayed if an inputs and outputs Profibus board has been connected (parameters G23.3.7 to G23.3.9). Check document **SD75MA06** for further information.

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. **Check SD75MA03.** Fault: Fault "F108:Expansion Profinet comm" will be triggered and the drive will stop. **Check SD75MA03.**	NO

Subgroup 23.4: Others

Screen	Range	Function	Set on run
G23.4-Remove All Exp Boards = No	No Yes	Allows to delete the serial number of the connected expansion boards. **OPT.** / **FUNCTION** No: The serial numbers of the connected expansion boards are not deleted. Yes: The serial numbers of the connected expansion boards are deleted.	NO

Group 24: Rectifier

This group shows the bridge rectifier specific parameters.

Subgroup 24.1: Rectifier configuration

<table>
<tr><th>Screen</th><th>Range</th><th>Function</th><th>Set on run</th></tr>
<tr><td>G24.1.1-Vdc ref mode = Auto</td><td>Fixed
Auto</td><td>Allows to select the bus DC voltage adjust mode.
<table><tr><th>OPT.</th><th>FUNCTION</th></tr><tr><td>Fixed</td><td>Allows manual adjustment of the bus DC voltage in parameter G24.1.2.</td></tr><tr><td>Auto</td><td>Allows automatic adjustment of the DC bus voltage. The drive chooses the larger of the following two values as a reference:
Vin*√2*1.1
V_{mot}*√2*1.05</td></tr></table></td><td>YES</td></tr>
<tr><td>G24.1.2-Vdc ref = 0 V</td><td>(*)</td><td>This parameter allows setting the DC bus voltage when parameter G24.1.1 is set to Fixed. A high Vdc could cause greater power losses and a high output dV/dt value.
It is recommended to set it following the next equation:
Vdc_{REF}=Vin*√2*1.1
Note: (*)<table><tr><th>Drive rated voltage (V)</th><th>Range (Vdc)</th></tr><tr><td>400Vac-480Vac</td><td>500Vdc – 825Vdc</td></tr><tr><td>525Vac – 600Vac</td><td>650Vdc – 900Vdc</td></tr><tr><td>690Vac</td><td>850Vdc – 1150Vdc</td></tr></table></td><td>YES</td></tr>
<tr><td>G24.1.3-Cos phi = 1.00</td><td>0.90 to 1.00</td><td>This parameter allows setting the displacement power factor (cos phi).</td><td>YES</td></tr>
<tr><td>G24.1.4-Cos phi setting = Capacitive</td><td>Capacitive
Inductive</td><td>This parameter allows the selection between capacitive or inductive cos phi.</td><td>YES</td></tr>
<tr><td>G24.1.5-Delay off rect = 0 s</td><td>0 to 250s
Off = 251</td><td>This parameter allows to delay the rectifier bridge switching off. This parameter increases the dynamic response in applications with continuous start and stop commands (cranes, precision conveyors, etc.). It is also possible to start the rectifier bridge automatically when it is connected to the grid (FIXED).</td><td>YES</td></tr>
<tr><td>G24.1.6-Eq lin = No</td><td>No
Yes</td><td>This parameter allows to enable the balance of the input current.</td><td>YES</td></tr>
<tr><td>G24.1.7-Rectifier frequency = 2800 Hz</td><td>2000 to 3000</td><td>This parameter allows setting the rectifier bridge IGBT switching frequency.<table><tr><th>OPT.</th><th>FREQUENCY</th></tr><tr><td>2000</td><td>2000 Hz</td></tr><tr><td>2100</td><td>2100 Hz</td></tr><tr><td>2200</td><td>2200 Hz</td></tr><tr><td>2300</td><td>2300 Hz</td></tr><tr><td>2400</td><td>2400 Hz</td></tr><tr><td>2500</td><td>2500 Hz</td></tr><tr><td>2600</td><td>2600 Hz</td></tr><tr><td>2700</td><td>2700 Hz</td></tr><tr><td>2800</td><td>2800 Hz</td></tr><tr><td>2900</td><td>2900 Hz</td></tr><tr><td>3000</td><td>3000 Hz</td></tr></table></td><td>YES</td></tr>
<tr><td>G24.1.8-Delay start inverter = Off</td><td>Off = 0.0
0.1 to 25.0s</td><td>This parameter allows setting the delay time to start the inverter bridge.</td><td>YES</td></tr>
</table>

Subgroup 24.2: PID configuration

These parameters allow setting the gain values of the bridge rectifier.

Screen	Range	Function	Set on run
G24.2.1-Kp PLL = 10.0%	0.0 to 100.0 %	Allows setting the PID proportional gain value of the PLL.	YES
G24.2.2-Ki PLL = 15.0%	0.0 to 100.0 %	Allows setting the PID integral gain value of the PLL.	YES
G24.2.3-Kp I Vdc = 10.0%	0.0 to 100.0 %	Allows setting the PID proportional gain value of the bus voltage loop control.	YES
G24.2.4 Ki I Vdc = 3.5%	0.0 to 100.0 %	Allows setting the PID integral gain value of the bus voltage loop control.	YES
G24.2.5-Kp I = 10.0%	0.0 to 100.0 %	Allows setting the PID proportional gain value of the current loop control.	YES
G24.2.6-Ki I = 10.0%	0.0 to 100.0 %	Allows setting the PID integral gain value of the current loop control.	YES

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Subgroup 24.3: Rectifier protection

Screen	Range	Function	Set on run
G24.3.1-I lim rect = 1.5xIn	1xIn to 2xIn	Allows stopping the drive by generating “R21 Iin limit” fault when the input current value is above the threshold.	YES
G24.3.2-I lim rect delay = Off s	0.0 to 60.0s Off = 60.1	Allows setting the delay before the fault “R21 Iin limit”.	YES
G24.3.3-I imbalance = 30.0%	00.0% to 50.0% Off = 50.1	Allows stopping the drive by generating “R19 Iin unbalanced” fault when the inverse input current value is above the threshold.	YES
G24.3.4-I ground = 30.0%	00.0% to 50.0% Off = 50.1	Allows stopping the drive by generating “R20 Input ground” fault when the ground fault input current value is above the threshold.	YES

Subgroup 24.4: LCL control

Screen	Range	Function	Set on run
G24.4.1-LCL filter mode = RUN	RUN POWER	The LCL filter is equipped with a contactor that isolates the capacitors from the grid and eliminates the stand-by consumption of the filter. **OPTION** / **FUNCTION** RUN: The contactor is closed with the run command and opened with the rectifier’s stop command. **Note:** if delay IGBT function is enabled, the stop command is given after the time. POWER: The contactor is closed when the power level set in “G24.4.2” is reached. The contactor is opened when the power is below 0.9 x ”G24.4.2” and elapsed 60 seconds.	YES
G24.4.2-LCL filter power = 20.0%	0.0% to 100.0%	Allows configuring the power threshold level to open and close the LCL contactor.	YES
G24.4.3-LCL filter fback dlay = 60.1s	0.0 to 59.9s Off = 60.0	Allows setting the time for triggering fault R24. During this time, the contactor’s run order is active and there is no feedback signal.	YES

Subgroup 24.5: Self – regulation

Screen	Range	Function	Set on run
G24.5.1-Auto max retries = Off	Off = 0 1 to 7	This parameter allows setting the number of times the equipment tries to reset after a fault R1, R2, R4, R5, R6, R7, R8, R9. When the selection is followed by a +1, it means that on the last retry it makes a total reduction of the engine power before resetting (without power). **OPT.** / **RESET**: 0 Off; 1 1; 2 2; 3 3; 4 4; 5 1+1; 6 2+1; 7 3+1	YES
G24.5.2-Auto delay = 2s	1 to 60 s	This parameter enables to set the delay between retry attempts.	YES
G24.5.3-Auto reset time = 15s	1 to 60 s	This parameter enables to set the time to reset the count of the number of retries.	YES
G24.5.4-Auto fault report = Yes	No Yes	This parameter enables to set a report fault once the number of retries has been exceeded or continue working without the active rectifier part until the next stop.	YES

Group 25: Master / Slave

This group must always be configured in SD750 drives frames 9 to 11.

Note: This group will appear when the optical fiber board is included and the master / slave configuration is enabled in the [G1.9 Master/slave configuration] parameter. Check document **SD75MA07** for further information.

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 at the delay specified in [G26.4 Power off delay] 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 min	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 SD750FR 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[1].

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[1].

[1] CRC is only required for serial communication (RS232, RS485). It does not apply for TCP communication.

Each register consists of 2 bytes (2x8bits=16 bits). This is the default length of all the registers that form the SD750FR.

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[2]
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	Byte Number	Data (address 20) (=110)	CRC-16[2]
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[2].

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[2].

[2] CRC is only required for serial communication (RS232, RS485). It does not apply for TCP communication.

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

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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.

HOST SPEED / TORQUE REFERENCE 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	RESERVED	Reserved	Reserved
	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 1 2 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 German Italian	0 1 2 3	RW
G1.3	Initialize = No init	**40015**	No init User parameters Motor parameters All parameters	0 1 2 3	RW
G1.4	Short menu = No	**40016**	No Yes	0 1	RW
G1.5	Activate programs = Standard	**40017**	Standard = 0 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 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 = 101	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

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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 Fiber PowerPLC EthernetIP	0 1 2 3 4 5 6	RW
G4.1.2	Alternative ctrl mode = Remote	**40072**			RW
G4.1.3	Allow local reset = Yes	**40073**	No Yes	0 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 Output 4 Feedback Output 5 Feedback Output 6 Feedback Output 7 Feedback Output 8 Feedback Universal Stop Output 9 Feedback Output 10 Feedback Output 11 Feedback Output 12 Feedback Output 13 Feedback Torque limit 2	32 33 34 35 36 37 38 39 40 41 43 44 45 46 47 48	RW
G4.1.11	Digital Input 7 = Not used	**40081**	Not used Start (NO) Stop 1 (NC)	0 1 2	RW
G4.1.12	Digital Input 8 = Not used	**40082**	Stop 2 / Reset Stop 1 / Reset Start / Stop Start / Reset / Stop Reset (NC) Start + Inch 1 Start + Inch 2	3 4 5 6 7 8 9	RW
G4.1.13	Digital Input 9 = Not used	**40083**			RW
G4.1.14	Digital Input 10 = Not used	**40084**	Invert speed Invert inches Acc / Dec 2 Reference 2 Control 2	10 13 14 15 17	RW
G4.1.15	Digital Input 11 = Not used	**40085**			RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.1.16	Digital Input 12 = Not used	**40086**	Start / Stop / Reset Stop 2 (NC) Speed limit 2 Start mode 2 Current limit 2 External emergency Freemaq Fault Start/Stop + Inv LCL Regenerative fb PTC Speed / Torque Output 1 Feedback Output 2 Feedback Output 3 Feedback Output 4 Feedback Output 5 Feedback Output 6 Feedback Output 7 Feedback Output 8 Feedback Universal Stop Output 9 Feedback Output 10 Feedback Output 11 Feedback Output 12 Feedback Output 13 Feedback Torque limit 2	18 19 20 22 23 24 25 27 28 29 32 33 34 35 36 37 38 39 40 41 43 44 45 46 47 48	RW
G4.1.17	Digital Input 13 = Not used	**40087**			RW
G4.1.18	Digital Input 14 = Not used	**40088**			RW
G4.1.19	Digital Input 15 = Not used	**40089**			RW
G4.1.20	Digital Input 16 = Not used	**40090**			RW
G4.1.27	Feedback Err. 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 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 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 high 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	Sensor max value = 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 1	RW
G4.2.15	AI1 zero band filter = Off	**40115**	Off = 0 0.1% to 2.0%	0 to 200	RW

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.2.16	AI1 stabilizer filter = Off	**40116**	Off = 0 0.1 to 20.0s	0 to 200	RW
G4.3.0	Enable Pulse In. Mode = No	**40120**	No Yes	0 1	RW
G4.3.1	Enable sensor = No	**40121**	No Yes	0 1	RW
G4.3.2	Sensor unit = Bar	**40122**	See G4.2.2	0 to 18	RW
G4.3.2	Sensor unit Pulse In. = l/s	**40841**	% l/s m^3/s l/m m^3/m l/h m^3/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 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 min value = 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 max value = 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 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 1	RW
G4.4.1	Enable sensor = No	**40141**	No Yes	0 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 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 = 10.0 l/s	**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

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G4.4.14	AI3 loss protection = No	**40154**	No Yes	0 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
G4.4.17	PT100 stabilizer filt= 10.0s	**40160**	Off = 0.0 0.1 to 20.0s	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**	Off = 0 0.1 to 80.0%	0 to 8000	RW
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**	0.1 to 1000s Infinite = 1001s	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 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

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
G7.1.1	Main start mode = Ramp	**40224**	Ramp Spin Spin2	0 1 2	RW
G7.1.2	Alternative start mode = Ramp	**40225**	Ramp Spin Spin2	0 1 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 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 1	RW
G7.1.7	Start after V.Deep = Spin	**40240**	Ramp Spin	0 1	RW
G7.1.8	Run after reset = Yes	**40233**	No Yes	0 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 0.1 to 10.0 s	0 to 100	RW
G7.2.1	Main stop mode = Ramp	**40221**	Ramp Spin	0 1	RW
G7.2.2	Alternative stop mode = Spin	**40222**	Ramp Spin	0 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
G7.2.5	Stop at min speed = Off	**40228**	Off = 0 1.00 to 250.00 %	0 to 25000	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**	0.1 to 25.0 s	1 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

Parameter	Screen	Address	Range	Modbus Range	Access [1]
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 digital input 15 Copy digital input 16	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
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 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 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 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 1	RW

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
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 1	RW
G8.1.21	Relay 6 source 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 1	RW
G8.1.25	Relay 7 source 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 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 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 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 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
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 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 Yes	0 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 1	RW
G8.1.53	Speed for crane brake = 0.00 %	**40300**	0.00 to 100.00%	0 to 10000	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G8.2.1	AO1 source selection = Motor speed	**40301**	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 Max scale Absolute speed Absolute torque Analog Input 1+2 PID output Encoder speed PowerPLC 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 21 22 23 24 25 26 28 29 30 31 32	RW
G8.2.2	AO1 format = 4..20 mA	**40302**	0-10V ±10V 0-20mA 4-20mA ±20mA	0 1 2 3 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 0.1 to 20.0s	0 to 200	RW
G8.3.0	Enable Pulse Mode = No	**40327**	No Yes	0 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 1 2 3 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
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

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
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 Window	0 1	RW
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 1	RW
G9.2.3	Comp 2 ON 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 1	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
G9.3.3	Comp 3 ON 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 use	**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**	0.1 to 60.0s Off = 60.1	1 to 601	RW
G10.1.6	Minimum lim timeout = Off	**40450**	0.1 to 60.0s Off = 60.1	1 to 601	RW
G10.1.7	Invert speed = No	**40411**	No Yes	0 1	RW
G10.2.1	Current limit = 1.2In A	**40405**	0.2 to 1.50In Off = 15001	2500 to 15001	RW
G10.2.2	I limit timeout = Off	**40406**	0 to 60 s Off = 61	0 to 610	RW
G10.2.3	Current limit 2 = 1.2In A	**40407**	0.2 to 1.50In Off = 15001	2500 to 15001	RW
G10.2.4	I limit 2 timeout = Off	**40420**	0 to 60s Off = 61	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 60s Off = 61	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 60s Off = 61	0 to 610	RW
G10.2.10	Torque I 2 swt speed = Off	**40423**	Off = 0 1 to 250.00 %	0 to 25000	RW
G10.2.11	Regeneration I limit = Off	**40417**	Off = 3999 40.1% to 150.00%·In A (equipment)	3999 to 15000	RW
G10.2.12	I limit Regen Time = Off	**40418**	0 to 60s Off = 61	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 60s Off = 61s	0 to 610	RW
G10.2.15	Disable limit I/T = No	**40412**	No Yes	0 1	RW
G11.1.1	Supply under voltage = 0.875Vn	**40434**	400V: 0.75Vn to 0.9Vn 440V: 0.75Vn to 0.9Vn 480V: 0.75Vn to 0.9Vn 690V: 0.75Vn to 0.9Vn	-	RW
G11.1.2	Under voltage timeout = 5.0 s	**40435**	0.0 to 60.0s Off = 60.1s	0 to 601	RW
G11.1.3	Supply over voltage = 1.075Vn	**40436**	400V: 1.05Vn to 1.15Vn 440V: 1.05Vn to 1.15Vn 480V: 1.05Vn to 1.15Vn 690V: 1.05Vn to 1.15Vn	-	RW
G11.1.4	Over voltage timeout = 5.0 s	**40437**	0.0 to 60.0s Off = 60.1s	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

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
G11.2.1	Stop timeout = Off	**40432**	Off = 0 0.1 to 999s	0 to 9990	RW
G11.2.2	Ground current limit = 20 %	**40433**	Off = 0 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 = 10.1	0 to 101	RW
G11.2.4	V asym out trip delay = 5.0 s	**40438**	0.0 to 10.0s Off = 10.1	0 to 101	RW
G11.2.5	PT100 motor fault = Off ºC	**40440**	Off = -21 -20 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 1	RW
G11.2.8	Pump overload level = 20.0 A	**40441**	0.0 to 3000 A	0 to 30000	RW
G11.2.9	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 1	RW
G11.2.12	Underload current = 1.0In A	**40445**	0.2In to 1.5In	2000 to 15000	RW
G11.2.13	Underload speed = 100.0 %	**40446**	0.0 to 250.0%	0 to 25000	RW
G11.2.14	Underload flt dly = 10.0 s	**40447**	0.0 to 999.9 s	0 to 9999	RW
G11.2.15	Desync. Threshold = 40.0 %	**40457**	0.0 to 100.0 %	0 to 10000	RW
G11.2.16	PMSM Desync. Time = 0.10 s	**40458**	0.00 to 5.00s Off = 5.01	1 to 501	RW
G12.1	Enable autoreset = No	**40461**	No Yes	0 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
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 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

Parameter	Screen	Address	Range	Modbus Range	Access [1]
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 99.0s	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 0.0 to 99.0s	0 to 990	RW
G17.4	Heating current = Off	**40564**	Off = 0 1 to 30%	0 to 3000	RW
G17.5	Dynamic brake = No	**40565**	No Yes	0 1	RW
G19.1.1	Control type = Asynchronous	**40601**	Asynchronous Synchronous	0 1	RW
G19.1.1a	Asynchronous control = V/Hz	**40493**	V/Hz Vectorial	0 1	RW
G19.1.1a.2	Vectorial 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
G19.1.1b	Synchronous control = PMSM	**40494**	PMSM Sync Excited	0 13	RW
G19.1.1b.2	Perm Mag Sync Mot = V/Hz	**40608**	V/Hz F.Oriented Open Loop F.Oriented Closed Loop HEPOL	9 10 11 12	RW
G19.1.3	PID Vout = No	**40604**	No Yes	0 1	RW
G19.1.6	Auto Tuning = No	**43575**	No Static Dynamic	0 1 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 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 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

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
G19.2.7	Damping = 2 %	**40616**	0 to 10%	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	Real value = Modbus value	RW
G19.2.9	Boost Band = 100.00 %	**40560**	0.00 to 100.00 %	0 to 10000	RW
G19.2.10	Flux control = Proportional Torque	**40570**	Proportional Torque Maximum Torque Per Ampere	0 1	RW
G19.2.11	Maximum Flux = 100 %	**40753**	100.00 to 130.00%	10000 to 13000	RW
G19.2.12	Q Reference = 0.00 %	**40766**	-250.00 to 250.00 %	-25000 to 25000	RW
G19.3.1	R stator = 0.1 mOhms	**40621**	0.1 to 6553.5 mΩ	1 to 65535	RW
G19.3.2	R rotor = 0.1 mOhms	**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	B.E.F (kV/krpm) = 0.000	**40637**	0.000 to 5.000	0 to 5000	RW
G19.3.4	L leakage stator = 0.00 mH	**40624**	0.00 to 655.35 mH	0 to 65535	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 655.35 mH	0 to 65535	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 = 100.0 %	**40626**	50.00 to 130.10%	5000 to 13010	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 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 = 100.0 %	**40633**	0.0 to 200.0%	0 to 20000	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
G20.1.1	Display baudrate = 921600 bps baud/s	**40651**	2400 bps baud/s 4800 bps baud/s 9600 bps baud/s 19200 bps baud/s 57600 bps baud/s 115200 bps baud/s 230400 bps baud/s 460800 bps baud/s 921600 bps baud/s	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 baud/s 4800 bps baud/s 9600 bps baud/s 19200 bps baud/s 57600 bps baud/s 115200 bps baud/s 230400 bps baud/s 460800 bps baud/s 921600 bps baud/s	0 1 2 3 4 5 6 7 8	RW
G20.1.4	Modbus parity = None	**40654**	Odd None Even	0 1 2	RW
G20.1.5	Communication timeout = Off	**40655**	Off = 0 1 to 600 s	0 to 600	RW

Parameter	Screen	Address	Range	Modbus Range	Access [1]
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
G21.2.1	Client TCP timeout = 1000s	**40741**	0.05 to 5000	50 to 5000	RW
G21.2.2	Client TCP retries = 1	**40742**	0 to 4	0 to 4	RW
G23.2.1	IO digital A status = Off	**41135**	Off On	0 1	RO
G23.2.2	IO digital A test = No	**41136**	No Yes	0 1	RW
G23.2.3	IO digital B status = Off	**41137**	Off On	0 1	RO
G23.2.4	IO digital B test = No	**41138**	No Yes	0 1	RW
G23.3.1	Profinet board status = Off	**41021**	Off On	0 1	RO
G23.3.2	Profinet board test = No	**41022**	No Yes	0 1	RW
G23.3.3	Profinet Com Error = Fault	**41023**	Off Warning Fault	0 1 2	RW
G23.4	Remove All Exp Boards = No	**40880**	No Yes	0 1	RW
G24.1.1	Vdc ref mode = Auto	41331	Fixed Auto	0 1	RW
G24.1.2	Vdc ref = 0 V	41332	500Vdc to 825Vdc 650Vdc to 900Vdc 850Vdc to 1150Vdc	500 to 825 650 to 900 850 to 1150	RW
G24.1.3	Cos phi = 1.00	41333	0.90 to 1.00	90 to 100	RW
G24.1.4	Cos phi setting = Capacitive	41334	Capacitive Inductive	0 1	RW
G24.1.5	Delay off rect = 0 s	41335	0 to 250s Off = 251	0 to 251	RW
G24.1.6	Eq Iin = No	41336	No Yes	0 1	RW
G24.1.7	Rectifier frequency = 2800 Hz	41354	2000 Hz = 2000 2100 Hz = 2100 2200 Hz = 2200 2300 Hz = 2300 2400 Hz = 2400 2500 Hz = 2500 2600 Hz = 2600 2700 Hz = 2700 2800 Hz = 2800 2900 Hz = 2900 3000 Hz = 3000	2000 to 3000	RW
G24.1.8	Delay start inverter = Off	41355	Off = 0.0 0.1 to 25.0 s	0 to 250	RW
G24.2.1	Kp PLL = 10.0%	41337	0.0 to 100.0 %	0 to 1000	RW
G24.2.2	Ki PLL = 15.0%	41338	0.0 to 100.0 %	0 to 1000	RW
G24.2.3	Kp I Vdc = 10.0%	41339	0.0 to 100.0 %	0 to 1000	RW
G24.2.4	Ki I Vdc = 3.5%	41340	0.0 to 100.0 %	0 to 1000	RW
G24.2.5	Kp I = 10.0%	41341	0.0 to 100.0 %	0 to 1000	RW

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Parameter	Screen	Address	Range	Modbus Range	Access [1]
G24.2.6	Ki I = 10.0%	41342	0.0 to 100.0 %	0 to 1000	RW
G24.3.1	I lim rect = 1.5xIn	41343	0 to 65535	0 to 65535	RW
G24.3.2	I lim rect delay = Off s	41344	0.0 to 60.0 s Off	0 to 601	RW
G24.3.3	I imbalance = 30.0%	41345	00.0% to 50.0% Off = 50.1	0 to 501	RW
G24.3.4	I ground = 30.0%	41346	00.0% to 50.0% Off = 50.1	0 to 501	RW
G24.4.1	LCL filter mode = RUN	41347	RUN POWER	0 1	RW
G24.4.2	LCL filter power = 20.0%	41348	0.0% to 100.0%	0 to 1000	RW
G24.4.3	LCL filter fback dlay = 60.1s	41349	0.0 to 60.0 s Off = 60.1 s	0 to 601	RW
G24.5.1	Auto max retries = Off	41350	Off 1 2 3 4 1+1 2+1 3+1	0 1 2 3 4 5 6 7	RW
G24.5.2	Auto delay = 2s	41351	1 to 60 s	1 to 60	RW
G24.5.3	Auto reset time = 15s	41352	1 to 60 s	1 to 60	RW
G24.5.4	Auto fault report = Yes	41353	No Sí	0 1	RW
G26.1	Fans mode = Run	**41211**	Off Auto Fixed Run	0 1 2 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.

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 51

Modbus Value	Warning	Modbus Value	Warning	Modbus Value	Warning	Modbus Value	Warning
0	NO WRN	11	OVV	22	PIE	36	DE_A
1	MOL	12	UNV	23	DIE	37	EPB
3	MOC	13	SLMAX	24	FTE	44	DE_B
4	DOC	14	CWR	25	TPR	45	EVCOMM
5	ILT	15	SLMIN	26	MCC	46	AE_A
6	TLT	16	RTL	27	FAV	47	AE_B
7	VLT	17	MVR	28	PLL	48	PNE
8	ACO	18	RIL	29	SWM	49	EIPE
9	AVO	19	LVRT	30	DWA	50	NOSD
10	AVI	20	ACI	31	LCL	51	SDCRP

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

Fault messages	**42101**	1 to 218

Modbus Value	Fault message	Modbus Value	Fault message	Modbus Value	Fault message	Modbus Value	Fault message
0	F0	39	F39	83	F83	161	R1
1	F1	40	F40	84	F84	162	R2
2	F2	41	F41	85	F85	163	R3
3	F3	42	F42	87	F87	164	R4
4	F4	43	F43	89	F89	165	R5
5	F5	44	F44	93	F93	166	R6
6	F6	45	F45	94	F94	167	R7
7	F7	46	F46	95	F95	168	R8
8	F8	47	F47	96	F96	169	R9
10	F10	48	F48	99	F99	170	R10
11	F11	49	F49	100	F100	171	R11
12	F12	50	F50	101	F101	172	R12
13	F13	53	F53	102	F102	173	R13
14	F14	54	F54	103	F103	174	R14
15	F15	55	F55	104	F104	175	R15
16	F16	56	F56	105	F105	176	R16
17	F17	57	F57	106	F106	177	R17
18	F18	58	F58	107	F107	178	R18
19	F19	59	F59	108	F108	179	R19
20	F20	60	F60	109	F109	180	R20
21	F21	61	F61	110	F110	181	R21
22	F22	62	F62	111	F111	182	R22
23	F23	63	F63	112	F112	183	R23
24	F24	64	F64	113	F113	184	R24
25	F25	68	F68	114	F114	185	R25
26	F26	69	F69	115	F115	186	R26
27	F27	70	F70	116	F116	189	R29
28	F28	71	F71	117	F117	194	R34
31	F31	72	F72	118	F118	197	R37
32	F32	73	F73	119	F119		
33	F33	74	F74	120	F120		
34	F34	75	F75	121	F121		
35	F35	76	F76	122	F122		
36	F36	77	F77	123	F123		
37	F37	78	F78	124	F124		
38	F38	79	F79	125	F125		

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

STATUS LINE
OFF 0.0A +0.0%

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 percentage). (Corresponds with SV1.3)	**42003**	8192 = 100% of motor rated speed

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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 percentage.	**42003**	Real Value = (Modbus Value / 100)
SV1.4	Motor speed (rpm) = 0 rpm	Shows the motor speed in revolutions per minute.	**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
SV2.1.1	L1-L2 supply voltage = 0 V	Shows the input instantaneous voltage applied to the drive (L1-L2, L2-L3 and L3-L1).	**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)
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)

Parameter	Screen	Description	Address	Modbus Range
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)
SV3.22	AO1 value = 0.00 V	Value of the Analogue output 1 in volts.	**42070**	Real Value = (Modbus Value / 1000)
SV3.23	AO1 percentage = 0.0 %	Value of the Analogue output 1 in percent.	**42071**	Real Value = (Modbus Value / 100)
SV3.24	AO2 value = 0.00 V	Value of the Analogue output 2 in volts.	**42072**	Real Value = (Modbus Value / 1000)
SV3.25	AO2 percentage = 0.0 %	Value of the Analogue output 2 in percent.	**42073**	Real Value = (Modbus Value / 100)
SV3.26	AO3 value = 0.00 V	Value of the Analogue output 3 in volts.	**42074**	Real Value = (Modbus Value / 1000)
SV3.27	AO3 percentage = 0.0 %	Value of the Analogue output 3 in percent.	**42075**	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
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

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Parameter	Screen	Description	Address	Modbus Range
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	Mot. Total En. GWh = 0 GWh	Shows the drive total energy consumption.	**42256**	Real Value = Modbus Value
SV6.4.2	Mot. Total En. MWh = 0 MWh	Shows the drive total energy consumption.	**42257**	Real Value = Modbus Value
SV6.4.3	Mot. Total En. KWh = 0 kWh	Shows the drive total energy consumption.	**42258**	Real Value = Modbus Value
SV6.5.1	Mot. Partial En. GWh = 0 GWh	Shows the drive partial energy consumption.	**42259**	Real Value = Modbus Value
SV6.5.2	Mot. Partial En. MWh = 0 MWh	Shows the drive partial energy consumption.	**42260**	Real Value = Modbus Value
SV6.5.3	Mot. Partial En. KWh = 0 kWh	Shows the drive partial energy consumption.	**42261**	Real Value = Modbus Value
SV6.6	Mot. Partial En. reset = No	Allows resetting the counter of partial energy.	**42262**	Real Value = Modbus Value
SV6.7.1	Rect. Consum. En. GWh = 0 GWh	Shows the regenerative stage total energy consumption.	**42263**	Real Value = Modbus Value
SV6.7.2	Rect. Consum. En. MWh = 0 MWh	Shows the regenerative stage total energy consumption.	**42264**	Real Value = Modbus Value
SV6.7.3	Rect. Consum. En. KWh = 0 kWh	Shows the regenerative stage total energy consumption.	**42265**	Real Value = Modbus Value
SV6.8.1	Rect. Suppl. En. GWh = 0 GWh	Shows the regenerative stage partial energy consumption.	**42266**	Real Value = Modbus Value
SV6.8.2	Rect. Suppl. En. MWh = 0 MWh	Shows the regenerative stage partial energy consumption.	**42267**	Real Value = Modbus Value
SV6.8.3	Rect. Suppl. En. KWh = 0 kWh	Shows the regenerative stage partial energy consumption.	**42268**	Real Value = Modbus Value
SV7.1	Input power = 0.0 kW	Shows the power input value of the rectifier.	**42271**	Real Value = (Modbus Value / 10)
SV7.2	Drive input current R = 0.0 A	Shows the instantaneous current per phase of the rectifier (U).	**42272**	Real Value = (Modbus Value / 10)
SV7.3	Drive input current S = 0.0 A	Shows the instantaneous current per phase of the rectifier (V).	**42281**	Real Value = (Modbus Value / 10)
SV7.4	Drive input current T = 0.0 A	Shows the instantaneous current per phase of the rectifier (W).	**42282**	Real Value = (Modbus Value / 10)
SV7.5	Rect. Cos Phi = 0.00	Shows the motor's cos phi or Displacement Power Factor (DPF).	**42283**	Real Value = (Modbus Value / 100)
SV7.6	Rect. IGBT temp. = 0 °C	Shows the IGBTs temperature.	**42284**	Real Value = Modbus Value
SV7.7	Frequency of PLL = 0.0 Hz	Shows the internal frequency of the PLL.	**42285**	Real Value = (Modbus Value / 10)
SV7.8	THD input = 0.00 %	Shows the input current distortion of the rectifier.	**42286**	Real Value = (Modbus Value / 100)
SV7.9	L1-L2 supply voltage = 0 V	Shows the instantaneous line voltage (L1-L2).	**42287**	Real Value = (Modbus Value / 100)
SV7.10	L2-L3 supply voltage = 0 V	Shows the instantaneous line voltage (L2-L3).	**42288**	Real Value = Modbus Value
SV7.11	L3-L1 supply voltage = 0 V	Shows the instantaneous line voltage (L3-L1).	**42289**	Real Value = Modbus Value
SV7.12	DC bus voltage = 0 V	Shows the DC bus voltage.	**42290**	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
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

Parameter	Screen	Description	Address	Modbus Range
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 percentage.	**42453**	Real Value = (Modbus Value / 100)
SV9.1.4	Motor speed (rpm) = 0 rpm	Shows the motor speed in revolutions per minute.	**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 = 0.0 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
SV9.2.1.1	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)
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)

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Parameter	Screen	Description	Address	Modbus Range
SV9.3.22	AO1 value = 0.00 V	Value of the Analogue output 1 in volts.	**42493**	Real Value = (Modbus Value / 1000)
SV9.3.23	AO1 percentage = 0.0 %	Value of the Analogue output 1 in percent.	**42494**	Real Value = (Modbus Value / 100)
SV9.3.24	AO2 value = 0.00 V	Value of the Analogue output 2 in volts.	**42495**	Real Value = (Modbus Value / 1000)
SV9.3.25	AO2 percentage = 0.0 %	Value of the Analogue output 2 in percent.	**42496**	Real Value = (Modbus Value / 100)
SV9.3.26	AO3 value = 0.00 V	Value of the Analogue output 3 in volts.	**42497**	Real Value = (Modbus Value / 1000)
SV9.3.27	AO3 percentage = 0.0 %	Value of the Analogue output 3 in percent.	**42498**	Real Value = (Modbus Value / 100)
SV9.3.34	DI status = 000000	Shows the status of each of the digital inputs of the central control: 6, 10 or 16 bits (input 1: first from the left).	**42499**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.34	DI status = 00000000000		**41273**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.34	DI status = 0000000000000000		**41273**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.35	DO status = 000	Shows the status of digital inputs: 3, 8 or 11 bits (entry 1: first from the left).	**42510**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.35	DO status = 00000000		**42510**	Real Value = Modbus Value (LSB: Entrada 1)
SV9.3.35	DO status = 0000000000000		**42510**	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
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
SV9.5.1	Input power = 0.0 kW	Input power.	**42543**	Real Value = (Modbus Value / 10)
SV9.5.2	Drive input current R= 0.0 A	Current phase U.	**42544**	Real Value = (Modbus Value / 10)
SV9.5.3	Drive input current S = 0.0 A	Current phase V.	**42545**	Real Value = (Modbus Value / 10)
SV9.5.4	Drive input current T = 0.0 A	Current phase W.	**42546**	Real Value = (Modbus Value / 10)
SV9.5.5	Rect. Cos Phi = 0.00	Input Phi Cos (DPF).	**42547**	Real Value = (Modbus Value / 100)
SV9.5.6	Rect. IGBT temp.= 0 ºC	Max. IGBT temperature.	**42548**	Real Value = Modbus Value
SV9.5.7	Frequency of PLL = 0.0 Hz	Internal PLL frequency	**42549**	Real Value = (Modbus Value / 10)
SV9.5.8	THD input = 0.00 %	Shows the input current distortion (THDi).	**42550**	Real Value = (Modbus Value / 100)
SV9.5.9	L1-L2 supply voltage = 0 V	Supply voltage UV.	**42551**	Real Value = Modbus Value
SV9.5.10	L2-L3 supply voltage = 0 V	Supply voltage VW.	**42552**	Real Value = Modbus Value
SV9.5.11	L3-L1 supply voltage = 0 V	Supply voltage WU.	**42553**	Real Value = Modbus Value
SV9.5.12	DC bus voltage = 0 V	DC bus voltage.	**42554**	Real Value = Modbus Value
SV9.6.1	Speed reference = 0.0 %	Shows the present reference value of speed applied to the motor.	**42555**	Real Value = (Modbus Value / 100)
SV9.6.2	Torque reference = 0.0 %	Shows the present reference value of torque applied to the motor.	**42556**	Real Value = (Modbus Value / 100)
SV9.6.3	Motor speed (%) = 0.0 %	Shows the motor speed in percentage.	**42557**	Real Value = (Modbus Value / 100)

Parameter	Screen	Description	Address	Modbus Range
SV9.6.4	Motor speed (rpm) = 0 rpm	Shows the motor speed in revolutions per minute.	**42558**	Real Value = Modbus Value
SV9.6.5	Motor frequency = 0.0 Hz	Shows the frequency at which the motor is running.	**42559**	Real Value = (Modbus Value / 10)
SV9.6.6	Motor voltage = 0 V	Shows the present voltage applied to the motor.	**42560**	Real Value = Modbus Value
SV9.6.7	Motor current = 0.0 A	Shows the present current of the motor.	**42561**	Real Value = (Modbus Value / 10)
SV9.6.8	Motor torque = 0.0 %	Shows the present torque applied to the motor.	**42562**	Real Value = (Modbus Value / 100)
SV9.6.9	Motor phi cosine = 0.85	Shows the motor's power factor.	**42563**	Real Value = (Modbus Value / 100)
SV9.6.10	Motor power = 0.0 kW	Shows the instantaneous power consumption of the motor.	**42564**	Real Value = (Modbus Value / 10)
SV9.6.11.1	U motor current = 0.0 A	Shows the instantaneous current per phase of the motor (U, V and W).	**42565**	Real Value = (Modbus Value / 10)
SV9.6.11.2	V motor current = 0.0 A		**42566**	Real Value = (Modbus Value / 10)
SV9.6.11.3	W motor current = 0.0 A		**42567**	Real Value = (Modbus Value / 10)
SV9.6.12.1	U-V motor voltage = 0 V	Shows the instantaneous line voltage (UV, VW and WU).	**42568**	Real Value = Modbus Value
SV9.6.12.2	V-W motor voltage = 0 V		**42569**	Real Value = Modbus Value
SV9.6.12.3	W-U motor voltage = 0 V		**42570**	Real Value = Modbus Value
SV9.6.13	PTC Status = No	Shows whether the motor PTC is connected or disconnected.	**42571**	Real Value = Modbus Value
SV9.6.14	Motor temperature(%) = 0.0 %	Shows the theoretical heating level of the motor.	**42572**	Real Value = (Modbus Value / 100)
SV9.6.15	Motor temperature = 0 ºC	Shows the motor temperature measured with the PT100 sensor.	**42573**	Real Value = Modbus Value
SV12.1	Last warning = 0	Register number 1 of the warning history.	**41711**	Real Value = Modbus Value
SV12.2	Date = 01/01/2000 00:00	Date and time of the register number 9 of warning history.	**41712 - Date** **41713 - Time**	Real Value = Modbus Value
SV12.3	Ninth warning = 0	Register number 9 of the warning history.	**41714**	Real Value = Modbus Value
SV12.4	Date = 01/01/2000 00:00	Date and time of the register number 8 of warning history.	**41715 - Date** **41716 - Time**	Real Value = Modbus Value
SV12.5	Eighth warning = 0	Register number 8 of the warning history.	**41717**	Real Value = Modbus Value
SV12.6	Date = 01/01/2000 00:00	Date and time of the register number 7 of warning history.	**41718 - Date** **41719 - Time**	Real Value = Modbus Value
SV12.7	Seventh warning = 0	Register number 7 of the warning history.	**41720**	Real Value = Modbus Value
SV12.8	Date = 01/01/2000 00:00	Date and time of the register number 6 of warning history.	**41721 - Date** **41722 - Time**	Real Value = Modbus Value
SV12.9	Sixth warning = 0	Register number 6 of the warning history.	**41723**	Real Value = Modbus Value
SV12.10	Date = 01/01/2000 00:00	Date and time of the register number 5 of warning history.	**41724 - Date** **41725 - Time**	Real Value = Modbus Value
SV12.11	Fifth warning = 0	Register number 5 of the warning history.	**41726**	Real Value = Modbus Value
SV12.12	Date = 01/01/2000 00:00	Date and time of the register number 4 of warning history.	**41727 - Date** **41728 - Time**	Real Value = Modbus Value
SV12.13	Fourth warning = 0	Register number 4 of the warning history.	**41729**	Real Value = Modbus Value
SV12.14	Date = 01/01/2000 00:00	Date and time of the register number 3 of warning history.	**41730 - Date** **41731 - Time**	Real Value = Modbus Value
SV12.15	Third warning = 0	Register number 3 of the warning history.	**41732**	Real Value = Modbus Value
SV12.16	Date = 01/01/2000 00:00	Date and time of the register number 2 of warning history.	**41733 - Date** **41734 - Time**	Real Value = Modbus Value
SV12.17	Second warning = 0	Register number 2 of the warning history.	**41735**	Real Value = Modbus Value
SV12.18	Date = 01/01/2000 00:00	Date and time of the register number 1 of warning history.	**41736 - Date** **41737 - Time**	Real Value = Modbus Value
SV12.19	First warning = 0	Register number 1 of the warning history.	**41738**	Real Value = Modbus Value
SV12.20	Date = 01/01/2000 00:00	Date and time of the register number 1 of warning history.	**41739 - Date** **41740 - Time**	Real Value = Modbus Value

EN

Parameter	Screen	Description	Address	Modbus Range
SV12.21	Erase warning history = No	Clears the content of the warnings' history.	**41741**	Real Value = Modbus Value
SV13.1	Speed reference = 0.0 %	Shows the speed reference value applied to the local motor.	**41671**	Real Value = (Modbus Value / 100)
SV13.2	Torque reference = 0.0 %	Shows the torque reference value applied to the motor.	**41672**	Real Value = (Modbus Value / 100)
SV13.3	Motor speed (%) = 0.0 %	Shows the local motor speed in percentage.	**41673**	Real Value = (Modbus Value / 100)
SV13.4	Motor speed (rpm) = 0 rpm	Shows the local motor speed in revolutions per minute.	**41674**	Real Value = Modbus Value
SV13.5	Motor frequency = 0.0 Hz	Shows the frequency applied to the local motor.	**41675**	Real Value = (Modbus Value / 10)
SV13.6	Motor voltage = 0 V	Shows the voltage value applied to the local motor.	**41676**	Real Value = Modbus Value
SV13.7	Motor current = 0.0 A	Shows the current flowing to the local motor.	**41677**	Real Value = (Modbus Value / 10)
SV13.8	Motor torque = 0.0 %	Shows the torque applied to the local motor.	**41678**	Real Value = (Modbus Value / 100)
SV13.9	Motor phi cosine = 0.85	Shows the local motor's power factor.	**41679**	Real Value = (Modbus Value / 100)
SV13.10	Motor power = 0.0 kW	Shows the instantaneous power consumption of the local motor.	**41680**	Real Value = (Modbus Value / 10)
SV13.11.1	U motor current = 0.0 A	Shows the instantaneous current of each phase of the local motor (U, V and W).	**41681**	Real Value = (Modbus Value / 10)
SV13.11.2	V motor current = 0.0 A		**41682**	Real Value = (Modbus Value / 10)
SV13.11.3	W motor current = 0.0 A		**41683**	Real Value = (Modbus Value / 10)
SV13.12.1	U-V motor voltage = 0 V	Shows the instantaneous voltage applied (UV, VW and WU) to the local motor.	**41684**	Real Value = Modbus Value
SV13.12.2	V-W motor voltage = 0 V		**41685**	Real Value = Modbus Value
SV13.12.3	W-U motor voltage = 0 V		**41686**	Real Value = Modbus Value
SV13.13	PTC Status = No	Shows whether the local motor PTC is connected or disconnected.	**41687**	Real Value = Modbus Value
SV13.14	Estimat. Mot. temp(%) = 0.0 %	Shows the estimated local motor temperature.	**41688**	Real Value = (Modbus Value / 100)
SV13.15	Motor temperature = 0 ºC	Shows the local motor temperature measured with the PT100 sensor.	**41689**	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	1 ➔ Yes (Enables reset by keypad).
G24: Rectifier.		
G24.1.1 Vdc ref mode	Select the bus DC voltage adjust mode	Fixed ➔ Allows manual adjustment of the bus DC voltage in parameter G24.1.2.
G24.1.2 Vdc ref	DC bus voltage	Set the DC bus voltage in accordance with the installation.
G24.1.3 Cos phi	Displacement power factor	Set the displacement power factor (cos phi) as 1.
G24.1.4 Cos phi setting	Cosine Phi	Set the cos phi as capacitive.
G24.1.5 Delay off rect	Rectifier bridge switching off	Set the delay of the rectifier bridge switching off to 0.
G24.1.6 Eq Iin	Balance of the input current	Set the balance of the input current to No.
G24.1.7 Rectifier frequency	Rectifier bridge frequency	Set the rectifier bridge frequency to 2800Hz.
G24.1.8 Delay start inverter	Delay start time of the inverter bridge.	Set the delay time to start the inverter bridge.

Start / Stop commands by terminals and speed reference by analogue input

Parameter configuration

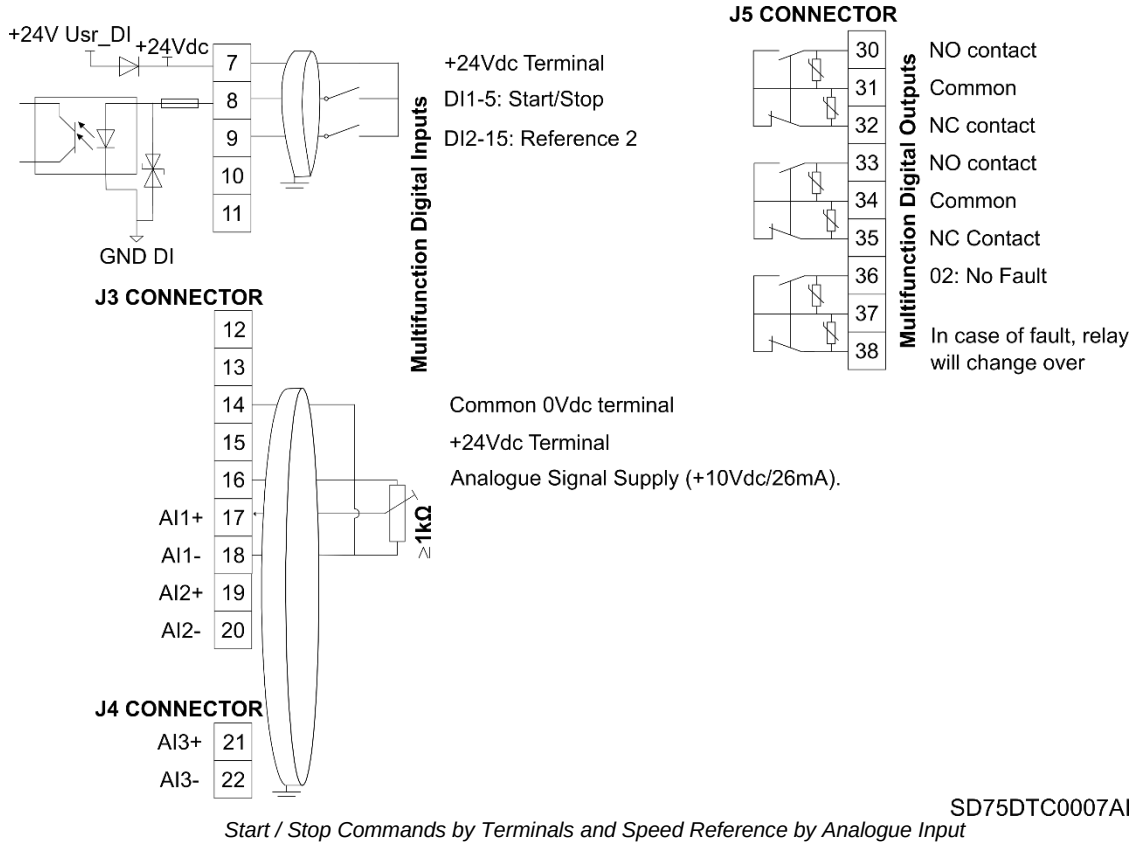
Parameter	Description	Value
G1: Options		
G1.2 Language	Language selection	English.
G1.5 Activate programs	Program activation	Standard.
G2: Motor Nameplate		
G2.1 Motor plate current	Motor rated current	__A (Set according to motor nameplate).
G2.2 Motor plate voltage	Motor rated voltage	__V (Set according 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).
G24: Rectifier.		
G24.1.1 Vdc ref mode	Select the bus DC voltage adjust mode	Fixed ➔ Allows manual adjustment of the bus DC voltage in parameter G24.1.2.
G24.1.2 Vdc ref	DC bus voltage	Set the DC bus voltage in accordance with the installation.
G24.1.3 Cos phi	Displacement power factor	Set the displacement power factor (cos phi) as 1.
G24.1.4 Cos phi setting	Cosine Phi	Set the cos phi as capacitive.
G24.1.5 Delay off rect	Rectifier bridge switching off	Set the delay of the rectifier bridge switching off to 0.
G24.1.6 Eq Iin	Balance of the input current	Set the balance of the input current to No.
G24.1.7 Rectifier frequency	Rectifier bridge frequency	Set the rectifier bridge frequency to 2800Hz.
G24.1.8 Delay start inverter	Delay start time of the inverter bridge.	Set the delay time to start the inverter bridge.

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	Motorized potentiometer ➔ Motorized potentiometer with or without reference memory.
G3.2 Speed ref 2 source	Speed reference source 2	Analog Input 1 ➔ 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	4 ➔ Motorized potentiometer (It assigns the up and down reference function for two of the digital inputs. DI4 = Up (NO contact) and DI5 = Down (NC contact). With reference memory). 5 ➔ Resettable potentiometer (As the previous option but without reference memory).
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.
G24: Rectifier.		
G24.1.1 Vdc ref mode	Select the bus DC voltage adjust mode	Fixed ➔ Allows manual adjustment of the bus DC voltage in parameter G24.1.2.
G24.1.2 Vdc ref	DC bus voltage	Set the DC bus voltage in accordance with the installation.
G24.1.3 Cos phi	Displacement power factor	Set the displacement power factor (cos phi) as 1.
G24.1.4 Cos phi setting	Cosine Phi	Set the cos phi as capacitive.
G24.1.5 Delay off rect	Rectifier bridge switching off	Set the delay of the rectifier bridge switching off to 0.
G24.1.6 Eq Iin	Balance of the input current	Set the balance of the input current to No.
G24.1.7 Rectifier frequency	Rectifier bridge frequency	Set the rectifier bridge frequency to 2800Hz.
G24.1.8 Delay start inverter	Delay start time of the inverter bridge.	Set the delay time to start the inverter bridge.

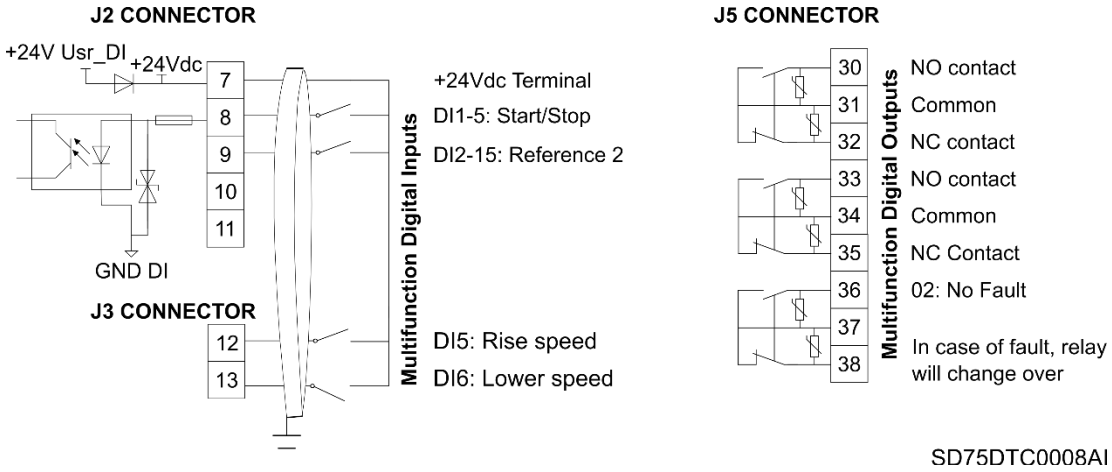
See connection drawing in the next page.

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 ➔ Mref 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).
G24: Rectifier.		
G24.1.1 Vdc ref mode	Select the bus DC voltage adjust mode	Fixed ➔ Allows manual adjustment of the bus DC voltage in parameter G24.1.2.
G24.1.2 Vdc ref	DC bus voltage	Set the DC bus voltage in accordance with the installation.
G24.1.3 Cos phi	Displacement power factor	Set the displacement power factor (cos phi) as 1.
G24.1.4 Cos phi setting	Cosine Phi	Set the cos phi as capacitive.
G24.1.5 Delay off rect	Rectifier bridge switching off	Set the delay of the rectifier bridge switching off to 0.
G24.1.6 Eq Iin	Balance of the input current	Set the balance of the input current to No.
G24.1.7 Rectifier frequency	Rectifier bridge frequency	Set the rectifier bridge frequency to 2800Hz.
G24.1.8 Delay start inverter	Delay start time of the inverter bridge.	Set the delay time to start the inverter bridge.

See connection drawing in the next page.

Connection drawing

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

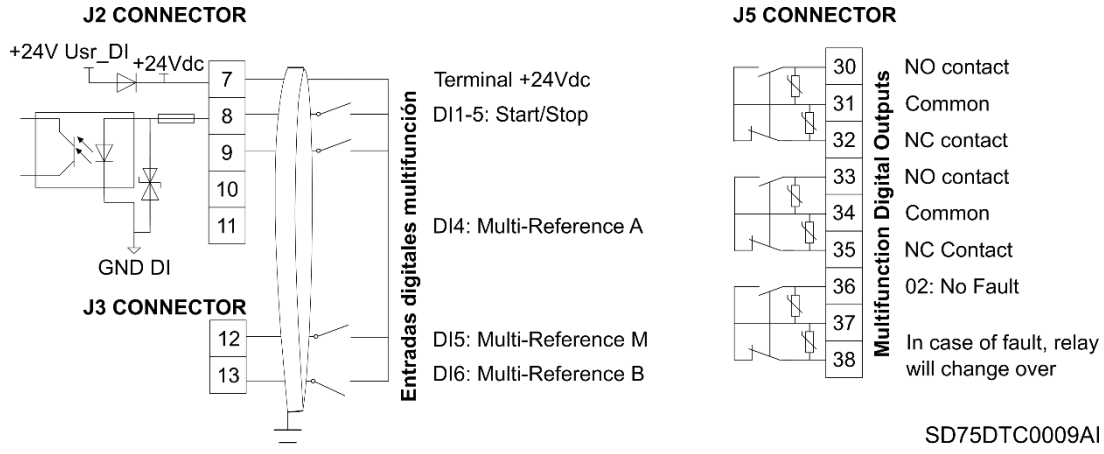
Terminals 7 and 11: multi-reference A (NO status).

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: SD750FR.
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.		
G1.7-Network synchronization	No	_____	_____
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 Err. Timeout	1.0 s		
G4.1.28-Invert Input mode	6 bits		

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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 In. Mode	No		
G4.3.1-Enable sensor	No		
G4.3.2-Sensor unit	Bar		
G4.3.2-Sensor unit Pulse In.	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		
G4.4.17- PT100 stabilizer filt	10.0s		
G5: Acc/Dec rates – G5.1: Acceleration			
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: Acc/Dec rates – G5.2: Deceleration			
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		

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PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G5: Acc/Dec rates – G5.3: Motorized potentiometer			
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	_____	_____
G5.3.5-Mot pot rate brk speed	0 %	_____	_____
G5: Acc/Dec rates – Others			
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	_____	_____

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G7.2.5-Stop at min speed	Off		
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		
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		

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PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
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		
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 %		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
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 %		
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 %		
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 %		
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		

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PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
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	1.2In A		
G10.2.2-I limit timeout	Off		
G10.2.3-Current limit 2	1.2In 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		
G10.2.1-Torque l 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		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G11: Protections – G11.1 Input			
G11.1.1-Supply under voltage	0.875Vn V	_____	_____
G11.1.2-Under voltage timeout	5.0 s	_____	_____
G11.1.3-Supply over voltage	1.075Vn 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-Overload level	20.0 A	_____	_____
G11.2.9-Overload filter	Off	_____	_____
G11.2.10-Ooverload delay	60 s	_____	_____
G11.2.11-Underload enable	No	_____	_____
G11.2.12-Underload current	1.0In A	_____	_____
G11.2.13-Underload speed	100.0 %	_____	_____
G11.2.14-Underload flt dly	10.0 s	_____	_____
G11.2.15-Desync. Threshold	40.0 %	_____	_____
G11.2.16-PMSM Desync. Time	0.10 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	_____	_____

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PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G13: Fault History			
G13.1-Fault Register 1	0	_____	_____
G13.2-Fault Register 2	0	_____	_____
G13.3-Fault Register 3	0	_____	_____
G13.4-Fault Register 4	0	_____	_____
G13.5-Fault Register 5	0	_____	_____
G13.6-Fault Register 6	0	_____	_____
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 %	_____	_____
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	_____	_____

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G19: Fine Tuning – G19.1: IGBT Control			
G19.1.1-Control type	Asynchronous		
G19.1.1a-Asynchronous control	V/Hz		
G19.1.1a.2-Vectorial control	PMC Open loop speed		
G19.1.1b-Synchronous control	PMSM		
G19.1.1b.2-Perm Mag Sync Mot	V/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		
G19.2.9-Boost Band	100.00 %		
G19.2.10-Flux control	Proportional Torque		
G19.2.11-Maximum Flux	100.00%		
G19.2.12-Q Reference	0.00%		
G19: Fine Tuning – G19.3: Motor model			
G19.3.1-R stator	0.1 mOhms		
G19.3.2-R rotor	0.1 mOhms		
G19.3.3-L magnetization	0.1 mH		
G19.3.3-B.E.F (kV/krpm)	0.000		
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 %		

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PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
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	100.0 %		
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	921600 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 – G20.6: Custom Modbus configuration			
G20.6.1-Custom modbus map address 1	3584		
G20.6.2-Custom modbus map address 2	2002		
G20.6.3-Custom modbus map address 3	2006		
G20.6.4-Custom modbus map address 4	2009		
G20.6.5-Custom modbus map address 5	2007		
G20.6.6-Custom modbus map address 6	2004		
G20.6.7-Custom modbus map address 7	2005		
G20.6.8-Custom modbus map address 8	2008		
G20.6.9-Custom modbus map address 9	2034		
G20.6.10-Custom modbus map address 10	2000		
G20.6.11-Custom modbus map address 11	2038		
G20.6.12-Custom modbus map address 12	2039		
G20.6.13-Custom modbus map address 13	2080		
G20.6.14-Custom modbus map address 14	2081		
G20.6.15-Custom modbus map address 15	2061		

PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G20.6.16-Custom modbus map address 16	2064		
G20.6.17-Custom modbus map address 17	3585		
G20.6.18-Custom modbus map address 18	3569		
G20.6.19-Custom modbus map address 19	3587		
G20.6.20-Custom modbus map address 20	3588		
G20.6.21-Custom modbus map address 21	180		
G20.6.22-Custom modbus map address 22	181		
G20.6.23-Custom modbus map address 23	223		
G20.6.24-Custom modbus map address 24	220		
G20.6.25-Custom modbus map address 25	400		
G20.6.26-Custom modbus map address 26	401		
G20.6.27-Custom modbus map address 27	50		
G20.6.28-Custom modbus map address 28	53		
G20.6.29-Custom modbus map address 29	70		
G20.6.30-Custom modbus map address 30	404		
G20.6.31-Custom modbus map address 31	408		
G20.6.32-Custom modbus map address 32	416		
G20.6.33 to G20.6.1.20-Custom Modbus addresses 33 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 – G21.2: TCP Client			
G21.2.1-Client TCP timeout	1000s		
G21.2.2-Client TCP retries	1		
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: Expansion – G23.3 Communications			
G23.3.1-Profinet board status	Off		
G23.3.2-Profinet board test	No		
G23.3.3-Profinet Com Error	Fault		
G23: Expansion – Others			
G23.4-Remove All Expansion Boards	No		

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PARAMETER	DEFAULT VALUE	SETTING 1	SETTING 2
G24: Rectifier – G24.1 Rectifier configuration			
G24.1.1-Vdc ref mode	Auto		
G24.1.2-Vdc ref	0 V		
G24.1.3-Cos phi	1.00		
G24.1.4-Cos phi setting	Capacitive		
G24.1.5-Delay off rect.	0 s		
G24.1.6-Eq Iin	No		
G24.1.7-Rectifier frequency	2800 Hz		
G24.1.8-Delay start inverter	Off		
G24: Rectifier – G24.2 PID configuration			
G24.2.1-Kp PLL	10.0%		
G24.2.2-Ki PLL	15.0%		
G24.2.3-Kp I Vdc	10.0%		
G24.2.4-Ki I Vdc	3.5%		
G24.2.5-Kp I	10.0%		
G24.2.6-Ki I	10.0%		
G24: Rectifier – G24.3 Rectifier protection			
G24.3.1-I lim rect	1.5xIn		
G24.3.2-I limit rect delay	Off s		
G24.3.3-I imbalance	30.0%		
G24.3.4-I ground	30.0%		
G24: Rectifier – G24.4 LCL control			
G24.4.1-LCL filter mode	RUN		
G24.4.2-LCL filter power	20.0%		
G24.4.3-LCL filter fback dlay	60.1s		
G24: Rectifier – G24.5 Self – regulation			
G24.5.1-Auto max retries	Off		
G24.5.2-Auto delay	2s		
G24.5.3-Auto reset time	15s		
G24.5.4-Auto fault report	Yes		
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		

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