SD500 Series

ACCESSORIES

DeviceNet Communication

Communication Network

POWER ELECTRONICS®

SD500 Series

ACCESSORIES

Communication Network

DeviceNet Communication

Edition: March 2011

SD50BC02AI Rev. A

SAFETY SYMBOLS

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

	This symbol means improper operation may results in serious personal injury or death.
	Identifies shock hazards under certain conditions. Particular attention should be given because dangerous voltage may be present. Maintenance operation should be done by qualified personnel.
	Identifies potential hazards under certain conditions. Read the message and follow the instructions carefully.

Edition March 2011

This publication could present technical imprecision or misprints. The information here included will be periodically modified and updated, and all those modifications will be incorporated in later editions.
To consult the most updated information of this product you might access through our website www.power-electronics.com where the latest version of this manual can be downloaded.

Revisions

Date	Revision	Description
28 / 03 / 2011	A	First edition

INDEX

SAFETY INSTRUCTIONS

IMPORTANT!

- Safety instructions showed in this manual are useful to teach user how to use the product in a correct and safety way with the purpose of preventing possible personal injuries or property damages.
- Safety messages included here are classified as it follows:

WARNING

Be sure to take ESD (Electrostatic Discharge) protection measures when you touch the board.
Otherwise, the optional board may get damaged due to static charges.

Implement wiring change on the optional board after checking that the power supply is off.
Otherwise, there is a danger of connecting error and damage to the board.

Be sure to connect correctly the optional board to the inverter.
Otherwise, there is a danger of connecting error and damage to the board.

Be sure to install a termination resistor (120Ω, 1/4W) at the end of the network.

Do not remove the cover while the power is applied or the unit is in operation.
Otherwise, electric shock could occur.

Do not run the inverter with the front cover removed.
Otherwise, you may get an electric shock due to the high voltage terminals or exposure of charged capacitors.

Do not remove the cover except for periodic inspections or wiring, even if the input power is not applied.
Otherwise, you may access the charged circuits and get an electric shock.

Wiring and periodic inspections should be performed at least 10 minutes after disconnecting the input power and after checking the DC Link voltage is discharged with a meter (below 30VDC).
Otherwise, you may get an electric shock.

Operate the switches with dry hands.
Otherwise, you may get an electric shock.

Do not use cables with damaged insulation.
Otherwise, you may get an electric shock.

Do not subject the cables to the abrasions, excessive stress, heavy loads or pinching.
Otherwise, you may get an electric shock.

CAUTION

Install the inverter on a non-flammable surface. Do not place flammable material nearby.
Otherwise, fire could occur.

Disconnect the input power if the inverter gets damaged.
Otherwise, it could result in a secondary accident or fire.

After the input power is applied or removed, the inverter will remain hot for a couple of minutes.
Touching hot parts may result in skin burns.

Do not apply power to a damaged inverter or to an inverter with parts missing even if the installation is complete.
Otherwise, fire or accident could occur.

Do not allow lint, paper, wood chips, dust, metallic chips or other foreign matter into the drive.
Otherwise, fire or accident could occur.

WARNINGS

RECEPTION

- Material of Power Electronics is carefully tested and perfectly packed before leaving the factory.
- In the even of transport damage, please ensure that you notify the transport agency and POWER ELECTRONICS: 902 40 20 70 (International +34 96 136 65 57) or your nearest agent, within 24hrs from receipt of the goods.

UNPACKING

- Make sure received merchandise corresponds with delivery note, models and serial numbers.
- Each optional board is supplied with a technical manual.

SAFETY

- Before operating the inverter, read this manual thoroughly to gain and understanding of the unit. If any doubt exists then please contact POWER ELECTRONICS, (902 40 20 70 / +34 96 136 65 57) or your nearest agent.
- Wear safety glasses when operating the inverter with power applied and the front cover is removed.
- Handle the inverter with care according to its weight.
- Install the inverter according to the instructions within this manual.
- Do not place heavy objects on the inverter.
- Ensure that the mounting orientation is correct.
- Do not drop the inverter or subject it to impact.
- The SD500 inverters contain static sensitive printed circuits boards. Use static safety procedures when handling these boards.

CONNECTION PRECAUTIONS

- To ensure correct operation of the inverter it is recommended to use a SCREENED CABLE for the control wiring.
- For EMERGENCY STOP, make sure supply circuitry is open.
- Do not disconnect motor cables if input power supply remains connected. The internal circuits of the SD450 Series will be damaged if the incoming power is connected and applied to output terminals (U, V, W).
- It is not recommended to use a 3-wire cable for long distances. Due to increased leakage capacitance between conductors, over-current protective feature may operate malfunction.
- Do not use power factor correction capacitors, surge suppressors, or RFI filters on the output side of the inverter. Doing so may damage these components.
- Always check whether the DC Link LED is OFF before wiring terminals. The charge capacitors may hold high-voltage even after the input power is disconnected. Use caution to prevent the possibility of personal injury.

TRIAL RUN

- Verify all parameters before operating the inverter. Alteration of parameters may be required depending on application and load.
- Always apply voltage and current signals to each terminal that are within levels indicated within this manual. Otherwise, damage to the optional board may result.

EARTH CONNECTION

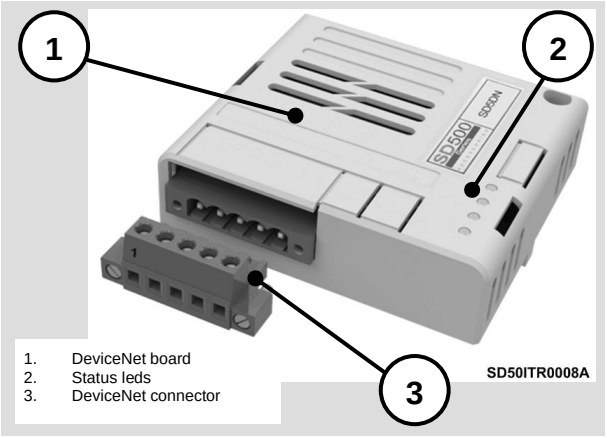
- The inverter is a high frequency switching device, and leakage current may flow. Ground the inverter to avoid electrical shock. Use caution to prevent the possibility of personal injury.
- Connect only to the dedicated ground terminal of the inverter. Do not use the case or the chassis screw for grounding.
- When installing, grounding wire should be connected first and removed last.
- The earth cable must have a minimal cross sectional area that meets local country electrical regulations.
- Motor ground must be connected to the drive ground terminal and not to the installation's ground. We recommend that the section of the ground connection cable should be equal or higher than the active conductor.
- Installation ground must be connected to the inverter ground terminal.

1. INTRODUCTION

1.1. Description of the DeviceNet Optional Board

The optional board for DeviceNet communication allows SD500 drive to connect it to a DeviceNet network. Thanks to this optional board:

- Inverter can be controlled and monitored by PLC sequence program or any master module.
- Multiple inverters can be connected to one communication cable with simple and easy installation, saving wiring, maintenance cost and time.
- Compatible with PC System, PLC and any controllers is available, making Factory Automation more easily.



2. TECHNICAL CHARACTERISTICS

2.1. General Information

2.1.1. Contents of DeviceNet Optional Board Kit

The DeviceNet optional board kit consists of:

- 1 DeviceNet optional board.
- 1 Connector of 5 pins.
- 1 Fixation screw.
- 1 120Ω (1/4W) termination resistor.
- 1 Technical Manual.
- 1 EDS file (see section *'4.1. EDS File'*).

2.1.2. Specifications of DeviceNet Optional Board

- Device Type: AC Drives.
- Explicit Peer to Peer Messaging: Support
- I/O Peer to Peer Messaging: Not available.
- Configuration Consistence Value: Not available.
- Faulted Node Recovery: Support.
- Baud Rate Support: 125, 250, 500 (kbps).
- Master/Scanner (predefined connection): Support.
- I/O Slave Messaging:
  - Polling ➔ Support.
  - Bit Strobe (bits activation), Cyclic, Change of State (COS) ➔ No available.
- Range of Input Voltages: 11 – 25Vdc.

2.1.3. Local Indications

LED	Description	Function
MS	Module Status	It supplies information about the status of incoming power to optional board, CPU function and communication to the inverter.
NS	Network Status	It supplies information about the connection of optional board on the network and DeviceNet power status.

Note: See section *'6. FAULT DIAGNOSIS'* to obtain more detailed information of Status Leds.

3. INSTALLATION AND CONNECTION

3.1. Installation of DeviceNet Optional Board

The DeviceNet optional board is connected to the SD500 Series inverters of Power Electronics directly (through a connector) to integrate the equipment into a DeviceNet communications network. Therefore, it is necessary to use one DeviceNet optional board for any equipment to connect it to the network.

CAUTION

Motor controllers of Power Electronics operate with a high electric energy.
Make sure the power supply has been disconnected and wait for at least 10 minutes to guarantee that DC Link voltage is discharged, before installing the DeviceNet optional board. Otherwise, you may get personal injuries or an accident could occur.

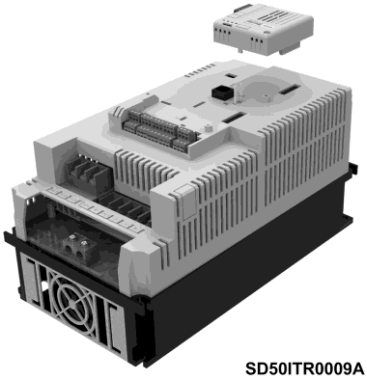


Figure 3.1 Installation of DeviceNet optional board to the inverter

3.2. Connections of DeviceNet Optional Board

3.2.1. Description of Terminals and Leds

In the DeviceNet optional board there are two connectors and two leds. One connector is used to connect the board to the SD500 inverter; in the other connector, DeviceNet specific signals are connected. On the other hand, leds provide with information about the status of the device and the communications.

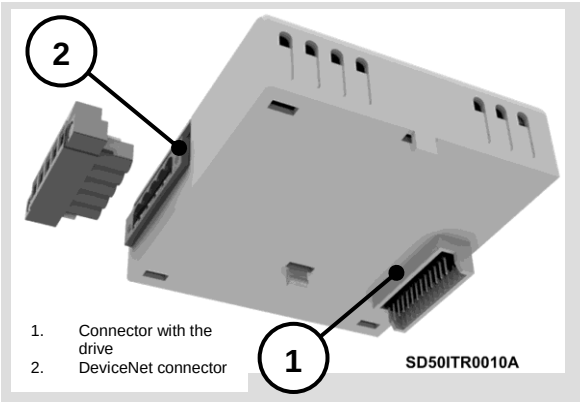


Figure 3.2 Location of connectors on the DeviceNet board

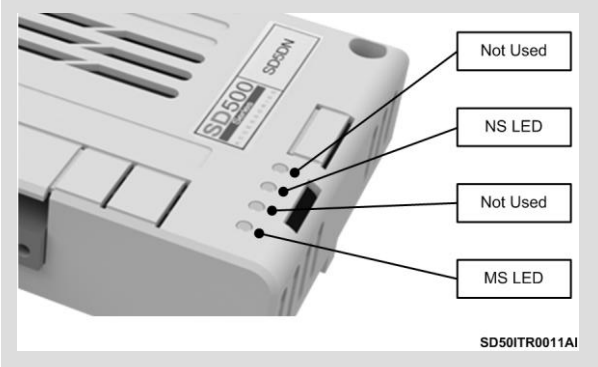


Figure 3.3 Description of the DeviceNet optional board LEDs

<table>
<tr><th>CONNECTOR / LED</th><th>DESCRIPTION</th></tr>
<tr><td>DeviceNet connector</td><td>Connector for the connections of the specific signals of DeviceNet network.

<table>
<tr><th>Terminal</th><th>Signal</th><th>Function</th><th>Cable Colour</th></tr>
<tr><td>V-</td><td>Common</td><td>Common</td><td>Black</td></tr>
<tr><td>CAN_L</td><td>CAN Low</td><td>Low Signal (-)</td><td>Blue</td></tr>
<tr><td>S</td><td>Shield</td><td>Shield</td><td>-</td></tr>
<tr><td>CAN_H</td><td>CAN High</td><td>High Signal (+)</td><td>White</td></tr>
<tr><td>V+</td><td>Power Supply</td><td>Power Supply (11 – 24Vdc)</td><td>Red</td></tr>
</table>

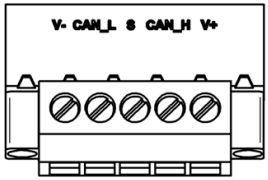
 

Figure 3.4 Detail of DeviceNet connector</td></tr>
<tr><td>Inverter Connector</td><td>By using it, DeviceNet board is connected to the inverter.</td></tr>
<tr><td>MS Led</td><td>Depending on its status (solid / flashing) and its colour (green / red) supplies information about the connection of the board to the inverter and the incoming power to the board. See section ‘6.2. MS Led (Module Status)’ to obtain more detailed information.</td></tr>
<tr><td>NS Led</td><td>Depending on its status (solid / flashing) and its colour (green / red) supplies information about the connection of the board to the network and the communications status. See section ‘6.1. NS Led (Network Status)’ to obtain more detailed information.</td></tr>
</table>

4. CONFIGURATION OF DEVICENET OPTIONAL BOARD

Once the board has been connected to the inverter, this one can be configured by using the software v1.1 and upper versions.

Board configuration can be divided in two parts. First, installation of the EDS file by using a configuration software of DeviceNet network; then, parameter setting of the group [G20.4 DeviceNet] related to DeviceNet from the inverter itself.

4.1. EDS File

One EDS file is supplied with the kit of DeviceNet optional board.

The EDS files are specially formatted ASCII files. They are text files that must be interpreted by the configuration software. These files supply all the information necessary for a configuration tool (software), to access and modify the parameters of a device.

The EDS file contains information about the numbers of parameters in a device and how those parameters are grouped together. Information about each parameter is contained in this file such as minimum, maximum and default parameter values, parameter data format and scaling, and the parameter name and units.

Install the EDS file for the SD500 inverter supplied with the kit to control the inverter parameters. For this, use DeviceNet configuration software.

4.2. Parameter Setting of DeviceNet

4.2.1. DeviceNet ID Setting (G20.4.3 ➔ CAN ID)

It allows assigning the equipment number (station address) to each inverter into a DeviceNet network. Therefore, this number is unique and for this reason is necessary to be sure that any equipment has a different address.

The setting of this parameter is available from the keypad. The default value is '63'. If DPRAM communication between inverter and the optional board becomes faulty, the value will default to '63'.

When the value of this parameter is changed during run, the optional board is automatically reset to find the new address device in the network. If a duplicated address is found, the NS led (Network Status) turns solid red. In this case, the address value must be changed. In the normal operation, NS led is flashing green.

4.2.2. Baud Rate Setting (G20.4.4 ➔ Baud)

It allows setting the transmission speed of the network. The baud rate determines the maximum length of the DeviceNet cable. In the following table, the cable length according to the speed is shown.

Baud Rate	Maximum Cable Length (m)		Drop Length (m)	
	Thick Cable	Thin Cable	Maximum Length	Cumulat.
125kbps	500m	100m	6m	156m
250kbps	250m			78m
500kbps	100m			39m

The table values are valid for DeviceNet-dedicated cables. For additional information about DeviceNet cables, manufacturers and specifications, refer to the *"Open DeviceNet Vendor Association (ODVA)"* which homepage is the following one http://www.odva.org/.

The NS led (Network Status) remains OFF when the network set speed and the speed of the DeviceNet network does not match.

The setting of this parameter is available from the keypad and will not be effective until power is cycled. Reset the inverter or realize a reset request from the network.

The NS led will turn to flashing green when network baud rate matches baud rate of the DeviceNet optional board and, additionally, the address ID is unique (not duplicated).

4.2.3. Assembly Instance Setting (G20.4.5 ➔ RdInstance, G20.4.11 ➔ WrInstance)

Assembly Instance has 4 types of Sending / Receiving data through Poll I/O communication. See section *'7.1.3 Assembly Object'* for additional information.

4.3. Setting of other Parameters

4.3.1. Time Out Setting (G11.3 ➔ Setting of time to determine speed reference signal loss)

When the communication between inverter and DeviceNet network is disrupted during run, inverter will wait for the time set in this parameter before considering that reference signal given from the network has been lost. From this moment, the inverter will stop according to the setting realized in parameter 'G11.2 ➔ Stop mode after reference signal loss in communication network'.

4.3.2. Poll I/O Connection

It is a data transaction between inverter and scanner.

- I/O size: 4 bytes.
- Communication Rate: 0 (default)
- Data Transaction: Poll I/O.

Data Transaction through Poll I/O is determined by the setting of Assembly Instance (parameters 'G20.4.11 ➔ I DeviceNet Output Instance' and 'G20.4.5 ➔ DeviceNet Input Instance').

Assembly Instance consists of Input and Output, based on Scanner side. Therefore, input data means data that scanner receives. For inverter side, it is the feedback value to the scanner.
On the other hand, output data is the data that scanner transmits to the inverter as a new command.

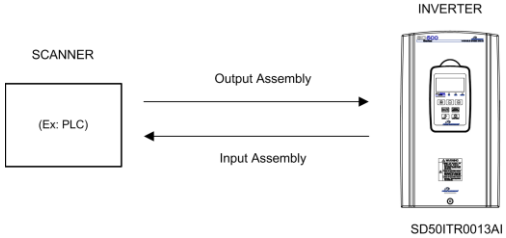


Figure 4.1 Data transaction through Poll I/O communication

	Scanner side	Inverter side
Input Assembly Data	Receive data	Transmit data
Output Assembly Data	Transmit data	Receive data

5. OPERATION MODES

5.1. Initialization or Reset of DeviceNet Board

During an initialization or reset of the DeviceNet optional board:

1. The MS led (Module Status) flashes green for 0.5s to red for 0.5s and then turns to solid green when DPRAM communication is in normal operation.
2. Then, the NS led (Network Status) flashes green for 0.5s to red for 0.5s.
3. After checking that any address ID is not duplicated, the NS led flashes green indicating that DeviceNet optional board is successfully connected to the network. However, communication with other nodes (equipments or devices) has not been initiated.

If the above indicated steps are failed, follow the below steps (No action later than previous described steps is required in the normal operating state).

1. When DPRAM communication is not working properly, the MS led turns solid red. In this case, check the connection of the optional board with the inverter first and cycle the power then.
2. When NS remains OFF (not flashing green),
    - Check the DeviceNet power.
    - Check if the transmission speed (baud rate) of network and the optional board matches.

Notes:

- When an error occurs because of there is a duplicate address ID, the NS led turns solid red. In this case, set a different address ID from keypad.
- When the DeviceNet board is in communication with other nodes, the NS led turns solid green.

5.2. Explicit Message Connection (EMC) established by Scanner

When the explicit message connection (EMC) is established by scanner:

1. The NS led turns green. During this state, if EMC setting is deactivated, NS led will turn green after 10 seconds delay. Once EMC is connected, I/O connection setting is available. At this time, the NS led will not change.
2. If I/O connection is not established within given time, then Time Out will occur and the NS led turns flashing red (depending on the time setting of EMC, the led can be changed to green again).

6. FAULT DIAGNOSIS

6.1. NS Led (Network Status)

LED	Status	Cause	Diagnostics
OFF	Off-Line (no power)	DeviceNet board is not receiving power from the network.	Check DeviceNet power, cable connections, and the DeviceNet connector on the board.
		Single node on the network.	Check DeviceNet master node.
		Incorrect setting of the network transmission speed (baud rate).	Check the baud rate setting and reset the inverter.
Flashing Green	On-Line (not connected)	Check that there is not a duplicate node, but connection to other node is not completed.	Normal operating status before user makes the connection.
Solid Green	On-Line, connected (link OK)	More than one EMC connection is established.	Poll I/O connection is available.
Flashing Red	Connection Time Out Critical link failure.	Poll I/O connection is Timed Out.	Reset the inverter. Reset request from the network. Retry I/O connection.
Solid Red	Fault	Fault occurs when checking address ID duplication.	Change the setting of address ID.
		Bus OFF state.	Check for line connection.
Green ➔ Flashing Red	Self-diagnostic	Device is under self-diagnostic mode.	Wait for a moment.
Red ➔ Flashing Green	Communic. fault	State of communication fault due to the failure to pass the network access. Identity communication fault request is accepted.	No action required.

6.2. MS Led (Module Status)

LED	Status	Cause	Diagnostic
OFF	Off-Line (no power)	5V power supply is not applied to the DeviceNet board.	Check the incoming power to inverter is provided.
Solid Green	Operational	Normal operation state.	
Solid Red	Unrecovera ble fault	Data transaction through DPRAM is disrupted.	Check the connection between DeviceNet board and inverter.
Flashing Green and Red	Self-test	Device is in self-test mode.	

7. DEVICENET DATA TABLES

Message

- R: Read Only
- R/W: Read / Write enable

Device profile

- AC/DC Drives: 0x02

7.1. DeviceNet Object Classes

Object Class Name	Class Code
Identity	0x01
Message Router	0x02
DeviceNet	0x03
Assembly	0x04
Connection	0x05
Motor Data	0x28
Control Supervisor	0x29
AC/DC Drive	0x2A
Inverter	0x64

7.1.1. Class 1 – Identity Object

Class Code	0x01
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
1	Vendor ID	R
2	Device Type	R
3	Product Code	R
4	Revision	R
	Major Revision (High Byte)	
	Minor Revision (Low Byte)	
5	Status[1]	R
6	Serial Number	R
7	Product Name	R

7.1.2. Class 3 – DeviceNet Object

Class Code	0x03
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
1	MAC ID[2]	R/W
2	Baud Rate[3]	R/W
3	BOI	Not Support
4	Bus-Off Counter	Not Support

[1] Status Attribute

Bit Number	0 (Owned)	8 (Recoverable Minor Fault)	Other bits
Meaning	Connected to the master	DPRAM Error	Not Support

[2] Range of MAC ID: 0 – 63.

[3] Baud Rate

Value	0	1	2
Baud Rate	125kbps	250kbps	500kbps

Attribute ID	Attribute Name	Access Method
5	Allocation Information: Allocation Choice Byte[4] Master's MAC ID	R
6	MAC ID Switch Changed	R
7	Baud Rate Changed	Not Support
8	MAC ID Switch Value	Not Support
9	Baud Rate Switch Value	Not Support

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	Yes	Yes
Set_Attribute_Single	0x10	No	Yes
Allocate Master/Slave Connection Set	0x4B	No	Yes
Release Group 2 Identifier Set	0x4C	No	Yes

7.1.3. Class 4 – Assembly Object

Class Code	0x04
Instance	1 (All Attributes are instance 1)

[4] Allocation Choice Byte

7	6	5	4	3	2	1	0
Not Support						Polled	Explicit Message

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

Output Assembly Data Attribute Format

Instance	Bit / Byte	7	6	5	4	3	2	1	0
20 (100)	0						Fault Reset		Run Fwd
	1								
	2	Speed Reference (Low Byte) – RPM (Speed Reference (Low Byte) – Hz)							
	3	Speed Reference (High Byte) – RPM (Speed Reference (High Byte) – Hz)							
21 (101)	0		NetRef	NetCtrl			Fault Reset	Run Rev	Run Fwd
	1								
	2	Speed Reference (Low Byte) – RPM (Speed Reference (High Byte) – Hz)							
	3	Speed Reference (Low Byte) – RPM (Speed Reference (High Byte) – Hz)							

Name	Description	Related Attribute	
		Class	Attribute ID
Run Fwd	Forward Run Command	0x29	3
Run Rev	Reverse Run Command	0x29	4
Fault Reset	Fault Reset Command	0x29	12
NetRef[5]	Not Used	0x2A	4
NetCtrl[5]	Not Used	0x29	5
Speed Reference	Speed Command	0x2A	8

[5] Setting Reference Control and Run/Stop Control only can be done from keypad. Therefore, NetRef and NetCtrl in Instance 21 and 101 are not available.

When the output instance is set 121, 122, 123 and 124, the I/O poll data information is not fixed, but user sets them with the parameters [G20.4.13] to [G20.4.16].

Depending on the set instance which can be 121, 122, 123 or 124, the communication DeviceNet board will receive from the master 2, 4, 6 or 8 Bytes respectively.

Instance	Bit / Byte	7	6	5	4	3	2	1	0
121	0	Low Bit of the direction set in the parameter [G20.4.13 'ParWr1'].							
	1	High Bit of the direction set in the parameter [G20.4.13 'ParWr1'].							
122	2	Low Bit of the direction set in the parameter [G20.4.14 'ParWr2'].							
	3	High Bit of the direction set in the parameter [G20.4.14 'ParWr2'].							
123	4	Low Bit of the direction set in the parameter [G20.4.15 'ParWr3'].							
	5	High Bit of the direction set in the parameter [G20.4.15 'ParWr3'].							
124	6	Low Bit of the direction set in the parameter [G20.4.16 'ParWr4'].							
	7	High Bit of the direction set in the parameter [G20.4.16 'ParWr4'].							

Input assembly data attribute format

Instance	Bit / Byte	7	6	5	4	3	2	1	0
70 (110)	0						Running 1		Faulted
	1								
	2	Speed reference (Low Byte) – RPM (Speed reference (Low Byte) – Hz)							
	3	Speed Reference (High Byte) – RPM (Speed Reference (High Byte) – Hz)							
71 (111)	0	At Ref.	Ref. from Net	Ctrl. From Net	Ready	Running 2 (Rev)	Running 1 (Fwd)	Warning	Faulted
	1								
	2	Speed reference (Low Byte) – RPM (Speed reference (Low Byte) – Hz)							
	3	Speed Reference (High Byte) – RPM (Speed Reference (High Byte) – Hz)							

Name	Description	Related Attribute	
		Class	Attribute ID
Faulted	DPRAM or Inverter Error	0x29	10
Warning	Not Supported	0x29	11
Running 1	Motor is running Forward	0x29	7
Running 2	Motor is running Reverse	0x29	8
Ready	Motor is ready to run	0x29	9
Ctrl from Net	Run/Stop Control	0x29	15
Ref from Net	Speed Control	0x2A	29
At Reference	Reach at Reference Speed	0x2A	3
Drive State	Current Motor State	0x29	6
Speed Actual	Speed Command	0x2A	7

When the output instance is set 121, 122, 123 and 124, the I/O poll data information is not fixed, but user sets them with the parameters [G20.4.7] to [G20.4.10].

Depending on the set instance which can be 141, 142, 143 or 144, l the communication DeviceNet board will receive from the master 2, 4, 6 or 8 Bytes respectively.

Instance	Bit / Byte	7	6	5	4	3	2	1	0
141	0	Low Bit of the direction set in the parameter [G20.4.7 'ParaRd1'].							
	1	High Bit of the direction set in the parameter [G20.4.7 'ParaRd 1'].							
142	2	Low Bit of the direction set in the parameter [G20.4.8 'ParaRd 2'].							
	3	High Bit of the direction set in the parameter [G20.4.8 'ParaRd 2'].							
143	4	Low Bit of the direction set in the parameter [G20.4.9 'ParaRd 3'].							
	5	High Bit of the direction set in the parameter [G20.4.9 'ParaRd 3'].							
144	6	Low Bit of the direction set in the parameter [G20.4.10 'ParaRd 4'].							
	7	High Bit of the direction set in the parameter [G20.4.10 'ParaRd 4'].							

7.1.4. Class 5 – Object Connection

Class Code	0x05	
Instance	1	Predefined EMC
	2	Poll E/S
	6, 7, 8, 9, 10	Dynamic EMC

Attribute ID	Attribute Name	Access Method	
		I/O	EMC
		Established / Time Out	Established / Deferred Delete
1	State	R	R
2	Instance Type	R	R
3	Transport Class Trigger	R	R
4	Produced Connection ID	R/W	R
5	Consumed Connection ID	R/W	R
6	Initial Communication Characteristics	R	R
7	Produced Connection Size	R	R
8	Consumed Connection Size	R	R
9	Expected Packed Rate	R/W	R/W
10 – 11	Not Available		
12	Watchdog Timeout Action	R/W	R/W
13	Produced Connection Path Length	R	R
14	Produced Connection Path	R	R
15	Consumed Connection Path Length	R	R
16	Consumed Connection Path	R	R
17	Production Inhibit Time	R/W	R

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Reset	0x05	No	Yes
Set_Attribute_Single	0x10	No	Yes

7.1.5. Class 28 – Motor Data object

Class Code	0x28
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
3	Motor type	R[6]
6	Rated current	R/W
7	Rated voltage	R

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

[6] Motor type Attribute – Squirrel Cage Induction Motor: #7.

7.1.6. Class 29 – Control Supervisor Object

Class Code	0x29
Instance	1 (All Attributes are instance 1)

Attribute ID	Attribute Name	Access Method
3	Run 1 (Forward command)	R/W
4	Run 2 (Reverse command)	R/W
5	NetCtrl[7]	R
6	State	R
7	Running 1 (Forward running)	R
8	Running 2 (Reverse running)	R
9	Ready	R
10	Faulted	R
12	Fault Rst	R/W
13	Fault Code	R
15	Ctrl from Net	R

Service Name	Code Service	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

[7] NetRef Attribute: This Attribute setting determines the control location for the motor. This value only can be set from keypad for safety reasons. Changing this one from the network does not cause error and cannot affect the setting.

7.1.7. Class 2A – AC/DC Drive Object

Class Code	0x2A
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
3	At Reference	R
4	NetRef[8]	R/W
6	Drive Mode	R/W
7	Speed Actual	R
8	Speed Ref	R/W
9	Current Actual	R
29	Ref from Net	R
100	Actual Hz	R
101	Reference Hz	R/W
102	Acceleration Time	R/W
103	Deceleration Time	R/W

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

[8] NetRef Attribute: This setting only can be done from keypad for safety reasons. Changing this one from the network does not cause error and cannot affect the setting.

7.1.8. Class 64 – Inverter Object

All the parameters of the inverter are available using DeviceNet communication with the inverter object. Any parameter owns an instance and an attribute that can be seen in the section *'9.2 Programming parameters'*.

Examples:

Parameters		Class	Instance	Attribute Number
G3.1	REF1 SP	0x64	2	7
G3.2	REF2 SP		3	5
G16.1	JUMP FREQ		4	27
G7.4	SAFE STOP		5	77
G4.1.3	DI1		6	65

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_single	0x0E	Yes	Yes
Set_Attribute_single	0x10	No	Yes

8. GROUP G20.4 DEVICENET PARAMETER LIST

Before using the DeviceNet board it is necessary to set the following parameters:

Screen / Default value	Name / Description	Range	Function	Set during Run
1 REF1 SP= LOCAL **Speed Reference1**	**G3.1** / Speed reference source 1	LOCAL AI1 AI2 AI3 AI4 MDBUS COMMS PLC	To control the speed reference using DeviceNet communications this parameter must be set as 'COMMS'.	NO
1 CONTROLMODE1=1 **Control Mode 1**	**G4.1.1** / Main control mode	LOCAL REMOTE MODBUS COMMS PLC	To control the inverter using DeviceNet communications this parameter must be set as 'COMMS'.	

When connecting the DeviceNet optional board to the inverter a new group of parameters related to the communications is available. This one is the group G20.4 DeviceNet and their parameters are described below.

Screen / Default value	Name / Description	Range	Function	Set during Run
1 ComUpdate= NO **Comm Update**	**G20.4.1** / Comm setting update	NO YES	It allows the communications reconnection when a parameter has been changed like the communication speed, definition of the plot, etc.	YES
2 LEDStatus= XXXX **LEDs Status**	**G20.4.2** / Leds Status visualization	0000 to XXXX	The DeviceNet board is built on two leds, MS LED and NS LED. However, in the display are shown four status depending on the LED colour: Bit / LED X000 Red MS LED 0X00 Green MS LED 00X0 Red NS LED 000X Green NS LED 0: Inactive; X: Active	NO

Screen / Default value	Name / Description	Range	Function	Set during Run
3 CAN ID= 1 **Dir Com CAN**	**G20.4.3 /** Devicenet communications address	0 to 125	It is an identification assigned to the inverter with which is established the communication from the net. When the communication is done with some equipment, everyone must be set to a different address.	NO
4 BdRate= 125Kbps **DNet Baud Rate**	**G20.4.4 /** DeviceNet Network speed.	125Kbps 250Kbps 500Kbps	It allows the selection of the speed transmission of the net when a net DeviceNet is used.	YES
5 RdInstance=70 **Read Instance**	**G20.4.5** / DeviceNet input instance	70 71 110 111 141 142 143 144	It allows the selection of the DeviceNet communication input instance. See section *'7.1.3. Class 4 – Assembly object'*.	YES
6 ParamRdNum= 3 **Param Read Num**	**G20.4.6** / Parameter Reading number	0 to 4	It allows visualize the number of Reading addresses to communicate. This value changes depending on the input instance set in the parameter [G20.4.5 'RdInstance'].	NO
7 ParaRd1=0x000A[1] **Param Read 1**	**G20.4.7** / Read address 1	0x0000 to 0xFFFF	It allows address the input 1.	YES
8 ParaRd2=0x000E[1] **Param Read 2**	**G20.4.8** / Read address 2	0x0000 to 0xFFFF	It allows address the input 2.	YES
9 ParaRd3=0x000F[1] **Param Read 3**	**G20.4.9** / Read address 3	0x0000 to 0xFFFF	It allows address the input 3.	YES
10 ParaRd4=0x0000[1] **Param Read 4**	**G20.4.10** / Read address 4	0x0000 to 0xFFFF	It allows address the input 4.	YES

[1] These parameters are available depending on the [G20.4.5] set value ➔ 'Devicenet input instance'. Depending on the selected input instance these parameters will appear in ascending order and consecutively.

Screen / Default value	Name / Description	Range	Function	Set during Run
11 WrInstanc=20 **Write Instance**	**G20.4.11** / DeviceNet output instance	20 21 100 101 121 122 123 124	It allows selecting the output instance of the DeviceNet communications. See section *'7.1.3. Class 4 – Assembly object'*.	YES
12 ParaWrNum= 2 **Param Write Num**	**G20.4.12** / Number of writing addresses	0 to 4	It allows visualize the number of Writing addresses to communicate. This value changes depending on the input instance set in the parameter [G20.4.11 'WrInstanc'].	NO
13 ParWr1=0x0005[2] **Param Write 1**	**G20.4.13** / Writing address 1	0x0000 to 0xFFFF	It allows address the output 1.	YES
14 ParWr2=0x0006[2] **Param Write 2**	**G20.4.14** / Writing address 2	0x0000 to 0xFFFF	It allows address the output 2.	YES
15 ParWr3=0x0000[2] **Param Write 3**	**G20.4.15** / Writing address 3	0x0000 to 0xFFFF	It allows address the output 3.	YES
16 ParWr4=0x0000[2] **Param Write 4**	**G20.4.16** / Writing address 4	0x0000 to 0xFFFF	It allows address the output 4.	YES

[2] These parameters are available depending on the [G20.4.11] set value ➔ 'Devicenet output instance'. Depending on the selected output instance these parameters will appear in ascending order and consecutively.

In the case of communication loss it is required to define the action that the variable speed drive must realize. This setting is done in the following parameters:

Screen / Default value	Name / Description	Range	Function	Set during Run
2 RIRLs= None **ResponIf_REF_Lsf**	**G11.1 /** Response in case of a Speed Reference Loss	NONE FREE RUN DEC HOLD I/P HOLD O/P LOSTPRST	In the case of DeviceNet communications, this parameter executes the speed reference loss when the I/O poll connection is lost. For more information look at the SD500 Programming and software manual.	
3 RfLsDly= 1.0s **Ref Loss Dly**	**G11.3 /** Trip delay time due to speed reference loss	0.1 to 120s	Delay time setting after which the speed reference loss protection will enable.	YES
4 RefLRf= 0.00Hz **Ref Loss Ref**	**G11.4 /** Speed in case of reference loss	[G19.2.5] to [G10.1] (Hz)	In order to set the frequency value at which the drive will operate in case a speed reference loss occurs. Therefore, the parameter [G11.1 'RIRLs'] must be set to the value 'LostPrst'.	YES

9. ADDRESS LIST

9.1. Common Area

Address	Parameter	Scale	Units	R/W	Data value
0x0000	Inverter model			R	B: SD500
0x0001	Inverter capacity			R	0: 0.75kW 1: 1.5kW 2: 2.2kW 3: 3.7kW 4: 5.5kW 5: 7.5kW 6: 11kW 7: 15kW 8: 18.5kW 9: 22kW A: 30kW B: 37kW C: 45kW D: 55kW E: 75kW
0x0002	Inverter input voltage			R	0: 220VAC 1: 400VAC
0x0003	SW version			R	(Ex) 0x0100: Version 1.0 (Ex) 0x0101: Version 1.1
0x0004	Reserved				
0x0005	Reference frequency	0.01	Hz	R/W	FStart freq. To Max. Freq.

Address	Parameter	Scale	Units	R/W	Data value
0x0006	Run command			R/W	Bit 0: Stop
					Bit 1: Forward run
					Bit 2: Reverse run
					Bit 3: Fault reset
					Bit 4: Emergency stop
				-	Bit 5: Not used
				R	Bit 6 – 7: Reference introduction 0: Terminals 1: Keypad 2: Reserve 3: Communication
					Bit 8 – 14: Reference frequency 0: DRV-00 1: Not used 2: Step frequency 1 3: Step frequency 2 4: Step frequency 3 5: Step frequency 4 6: Step frequency 5 7: Step frequency 6 8: Step frequency 7 9: Step frequency 8 10: Step frequency 9 11: Step frequency 10 12: Step frequency 11 13: Step frequency 12 14: Step frequency 13 15: Step frequency 14 16: Step frequency 15 17: Up speed 18: Down speed 19: Up/Down Zero 20 – 21: Reserve 22: Analogue V1 23: Analogue V1S 24: Analogue I 25: V1 + I 26: Pulses 27: Option 28: Communication 29: Option 30: Jog frequency 31: PID
					Bit 15: Network error

Address	Parameter	Scale	Units	R/W	Data value
0x0007	Acceleration time	0.1	Sec	R/W	
0x0008	Deceleration time	0.1	sec	R/W	
0x0009	Output current	0.1	A	R	
0x000A	Output frequency	0.01	Hz	R	
0x000B	Output voltage	1	V	R	
0x000C	DC link voltage	1	V	R	
0x000D	Output power	0.1	kW	R	
0x000E	Inverter status			R	Bit 0: Stop
					Bit 1: Forward run
					Bit 2: Reverse run
					Bit 3: Fault
					Bit 4: Accelerating
					Bit 5: Decelerating
					Bit 6: Steady status
					Bit 7: DC braking
					Bit 8: Stopping
					Bit 9: Fixed frequency
					Bit 10: Brake open
					Bit 11: Forward run command
					Bit 12: Reverse run command
					Bit 13: Start / Stop with Communication
					Bit 14: Ref. freq. with communication
					Bit 15: 0-Remote; 1-Local
0x0010	Digital inputs status			R	Bit 0: P1
					Bit 1: P2
					Bit 2: P3
					Bit 3: P4
					Bit 4: P5
					Bit 5: P6
					Bit 6: P7
					Bit 7: P8
0x0011	Digital outputs status			R	Bit 0: Relay 1
					Bit 1: Relay 2
					Bit 2: Digital output 1 (Q1)
					Bit 3: Relay 3 (Option E/S)
					Bit 4: Relay 4 (Option E/S)
					Bit 5: Relay 5 (Option E/S)

Address	Parameter	Scale	Units	R/W	Data value
0x0012	V1			R	Voltage input V1
0x0013	V2			R	Voltage input V2 (Option E/S)
0x0014	I			R	Current input I1
0x0015	RPM			R	Output speed
0x001A	Display unit			R	0: Hz 1: rpm
0x001B	Number of poles			R	Motor poles visualization

Notes:

1. Start / Stop command with communications (address 0x0006)

   All the bits are enabled when they change their status from 0 to 1. For example, if the VFD stops because of a fault while it is started, it won't be able to restart until the fault is reseted and the start command made.

2. Addresses 0x0005 and 0x0006

The values of the directions shown above will be deleted if the VFD loses power supply. These addresses will only maintain their values while the equipment is power supplied.

9.2. Programming parameters

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G1.1	1 LOCK PARMTRS= N	Parameters lockage	-	0 to 2	-	-	-
G1.1b	PASSWORD= 0	Access Password	-	OFF, 0000 to 9999	-	-	-
G1.1c	ERRPWD= XXXX	Unlock recovery clue	-	0000 to 9999	-	-	-
G.1.2	2LOCK SCRENS= N	Screen Lock	-	N Y	-	-	-
G1.2b	PASSWORD= 0	Password	-	OFF, 0000 to 9999	-	-	-
G1.2c	ERRPWD= XXXX	Unlock recovery clue	-	0000 to 9999	-	-	-
G1.3	3 PROG= STANDARD	Default values initialisation	-	STANDARD PID PUMP	-	-	-
G1.4	4 LANGUA= ENGLISH	Language display	-	ENGLISH	-	-	-
G1.5	5 INITIALISE= NO	Default values initialisation	-	NO YES	-	-	-
G1.6	6 UPLOAD= N	Save display parameters	-	NO YES	-	-	-
G1.6b	Upload STS=	Uploading parameter status	-	0 to 100%	-	-	-
G1.7	7 DOWNLOADM= N	Downloading parameters	-	NO YES	-	-	-
G1.7b	DownloadSts=	Downloading parameter status	-	0 to 100%	-	-	-
G1.8	8 Changed Para= N	Default parameter display	-	NO YES	-	-	-
G1.9	9 ADMIN PW= 0	Software Administration	-	0 to 65535	-	-	-
G1.10	10 LCDContra= 60	Set display contrast	-	0 to 63	-	-	-
G1.11	11 FAN= Run	Drive Fan Control	**44928**	DuringRun Always ON Temp Ctrl	0 1 2	4	64

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G2.1.1	ACi/pVolt= 380V	Input Voltage	**44366**	0.2 to 185kW	0 to 21	2	14
G2.1.2	2 I/P Freq= 50Hz	Input frequency	**44621**	1.0 to 200.0A	10 to 2000	3	13
G2.1.3	3 TrimPwr%= +100%	Power display setting	**44622**	0.5 to 200A	5 to 2000	3	14
G2.1.4	1 MTRPWR= 0.0kW	Motor rated Power	**44623**	180 to 480V	180 to 480	3	15
G2.1.5	2 MTR CUR= 0.0A	Motor rated current	**44619**	2 to 48	2 to 48	3	11
G2.1.6	3 NOLOADC= 0.0A	No load current	**44925**	0.1 to 6000%	1 to 60000	-	-
G2.1.7	4 MTR VOLT= 0V	Motor nominal voltage	**44624**	70 to 100%	7 to 100	3	16
G2.1.8	5 POLE Number= 4	Motor Poles	**44370**	30 to 400Hz	3000 to 40000	2	18
G2.1.9	6 ADJTSPD= 100.0%	Fine speed setting	**46953**	SELF FORCED	0 1	12	41
G2.2.1	7 EFICIENC= +85%[i]	Motor Efficiency	**44627**	170 to 230V 320 to 480V	170 to 230 320 to 480	3	19
G2.2.2	8 MTR FRC = 50.00Hz	Motor frequency	**44618**	60Hz 50Hz	0 1	3	10
G2.2.3	9 MTRCOOL=SELF	Motor cooling	**44626**	70 to 130%	70 to 130	3	18
G3.1	1 REF1 SP= LOCAL	Speed Reference Source 1	**44359**	LOCAL AI1 AI2 AI3 AI4 MDBUS COMMS PLC	0 2 3 4 5 6 8 9	2	7
G3.2	2 REF2 SP= LOCAL	Speed Reference Source 2	**44613**	See [G3.1]	See [G3.1]	3	5
G3.3	3 LCLSP= 0.50Hz	Local Speed Reference	**44353**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	2	1
G4.1.1	1 CONTROL MODE1= 1	Main Control Mode	**44358**	LOCAL REMOTE MODBUS COMMS PLC	0 1 3 4 5	2	6
G4.1.2	2 CONTROL MODE2= 1	Alternative Control Mode	**44612**	See [G4.1.1]	See [G4.1.1]	3	4

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G4.1.3	3 DI1= START (+)	Multifunction Digital Input 1 Configuration	**45441**	None START (+) START (-) RESET EXT TRIP DIS START INCH 1 SPEED-L SPEED-M SPEED-H SPEED-X XCEL-L XCEL-M 3 WIRE CTR/REF 2 UP DOWN RESERVED POT CLEAR AnalogHLD PIDOPLoop RESERVED START/DC ThermalIn INCH (+) INCH (-)	0 1 2 3 4 5 6 7 8 9 10 11 12 14 15 17 18 20 21 23 34 39 46 47	6	65
G4.1.4	4 DI2= START(-)	Multifunction Digital Input 2 Configuration	**45442**	See [G4.1.3]	See [G4.1.3]	6	66
G4.1.5	5 DI3= DIS START	Multifunction Digital Input 3 Configuration	**45443**	See [G4.1.3]	See [G4.1.3]	6	67
G4.1.6	6 DI4= EXT TRIP	Multifunction Digital Input 4 Configuration	**45444**	See [G4.1.3]	See [G4.1.3]	6	68
G4.1.7	7 DI5= SPEED-L	Multifunction Digital Input 5 Configuration	**45445**	See [G4.1.3]	See [G4.1.3]	6	69
G4.1.8	8 DI6= SPEED-M	Multifunction Digital Input 6 Configuration	**45446**	See [G4.1.3]	See [G4.1.3]	6	70
G4.1.9	9 DI7= SPEED-H	Multifunction Digital Input 7 Configuration	**45447**	See [G4.1.3]	See [G4.1.3]	6	71
G4.1.10	10 DI8= INCH 1	Multifunction Digital Input 8 Configuration	**45448**	See [G4.1.3]	See [G4.1.3]	6	72

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G4.1.14	14 DIOnF= 10ms	Digital Input activation delay	**45461**	0 to 10000ms	0 to 10000	6	85
G4.1.15	15 DIOffF= 3ms	Digital Input deactivation delay	**45462**	0 to 10000ms	0 to 10000	6	86
G4.1.16	16 DCTy= 00000000	Digital input contact type selection	**45463**	00000000 to XXXXXXXX	0 to 65535	6	87
G4.1.17	17 DiScan= 1ms	Multireference delay time	**45465**	1 to 5000ms	1 to 5000	6	89
G4.1.18	18 SaveMot Frq= N	Save operating frequency motorised Potentiometer	**44929**	NO YES	0 1	4	65
G4.2.1	1 An1PT= 0-10v	Analog Input Mode Selection	**45382**	0-10V -/+10V	0 1	6	6
G4.2.2	2 Ain1LPF= 10ms	Low Pass Filter for Analog Input 1	**45383**	0 to 10000ms	0 to 10000	6	7
G4.2.3	3 A1MnV= +0.00V	Analog Input 1 Minimum Range	**45384**	0 to 10V	0 to [G4.2.5]	6	8
G4.2.4	4 A1MnRf= +0.00%	Analog Input 1 Minimum Range Speed	**45385**	0 to 100%	0 to 10000	6	9
G4.2.5	5 A1MxV= +10.00V	Analog Input 1 Maximum Rage	**45386**	0 to 10V	[G4.2.3] to 1000	6	10
G4.2.6	6 A1MxR= +100.00%	Analog Input 1 Maximum Range Speed	**45387**	0 to 100%	0 to 10000	6	11
G4.2.7	7 An1NgMn=+0.00V	Analog Input 1 Negative Minimum Range	**45388**	-10 to 0V	[G4.2.9] to 0	6	12
G4.2.8	8 A1MnR= +0.00%	Analog Input 1 Minimum Negative Range	**45389**	-100 to 0%	-10000 to 0	6	13
G4.2.9	9 A1MxR= -10.00V	Analog Input 1 Maximum Negative Range	**45390**	-10 to 0V	-1000 to [G4.2.7]	6	14
G4.2.10	10 A1MxR= -100.00	Analog Input 1 Maximum Negative Range Speed	**45391**	-100 to 0%	-10000 to 0	6	15

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G4.2.11	11 A1DeLI= 0.04	Analog Input 1 Quantification Level	**45393**	0.04 to 10%	4 to 1000	6	17
G4.3.1	1 Ain2LPF= 10ms	Low Pass Filter for Analog Input 2	**45398**	0 to 10000ms	0 to 10000	6	22
G4.3.2	2 A2MnC= 4.00mA	Analog Input 2 Minimum Range	**45399**	0 to 20mA	0 to [G4.3.4]	6	23
G4.3.3	3 A2MnR= +0.00%	Analog Input 1 Minimum Range Speed	**45400**	0 to 100%	0 to 10000	6	24
G4.3.4	4 A2MxC= 20.00mA	Analog Input 2 Maximum Range	**45401**	4 to 20mA	[G4.3.2] to 20000	6	25
G4.3.5	5 A2MxR= +100.00%	Analog Input 2 Maximum Range Speed	**45402**	0 to 100%	0 to 10000	6	26
G4.3.6	6 A2DeLI= 0.04%	Analog Input 2 Quantification level	**45408**	0.04 to 10%	4 to 1000	6	32
G5.1	7 MxFqA=50.00Hz	Maximum frequency at analogue input	**44355**	0 to 600s	0 to 6000	2	3
G5.2	1 ACC1= 20.0s	Acceleration Ramp 1	**44356**	0 to 600s	0 to 6000	2	4
G5.4	2 DECEL1= 30.0s	Deceleration Ramp 1	**44616**	MaxFreq FrqDelta	0 1	3	8
G5.5	4 RmpT= MaxFreq	Type of Acceleration Ramp	**44865**	LINEAR S CURVE	0 1	4	1
G5.6	5 AccPn= Linear	Acceleration Pattern	**44866**	LINEAR S CURVE	0 1	4	2
G5.7	6 DecPn= Linear	Deceleration Pattern	**44867**	1 to 100%	1 to 100	4	3
G5.8	7 AcSSrt= +40%	S Curve Acceleration Starting Ramp	**44868**	1 to 100%	1 to 100	4	4
G5.9	8 AccSEnd= +40%	S-Curve Acceleration Ending Ramp	**44869**	1 to 100%	1 to 100	4	5
G5.10	9 DeISSrt= +40%	S- Curve Deceleration Starting Ramp	**44870**	1 to 100%	1 to 100	4	6
G5.11	10 DecSEnd=+40%	S-Curve Decelerating Ending Ramp	**44884**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	4	20
G5.12	11 AccDWF= 5.00Hz	Acceleration Frequency Pause	**44885**	0 to 60s	0 to 600	4	21
G5.13	12 AccDWT= 0.0s	Acceleration Time Pause	**44886**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	4	22
G5.14	13 DecDWF= 5.00Hz	Deceleration Frequency Pause	**44887**	0 to 60.0s	0 to 600	4	23
G5.15	14 DecDWT= 0.0s	Deceleration Time	**46919**	0 to 600.0s	0 to 6000	12	7

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G5.16.1	1 ACC2= 20.0s	Alternative Acceleration Ramp 2	**44678**	0 to 600.0s	0 to 6000	3	70
G5.16.2	2 DEC2= 20.0s	Alternative Deceleration Ramp 2	**44679**	0 to 600.0s	0 to 6000	3	71
G5.16.3	3 ACC3= 30.0s	Alternative Acceleration Ramp 3	**44680**	0 to 600.0s	0 to 6000	3	72
G5.16.4	4 DEC3= 30.0s	Alternative Deceleration Ramp 3	**44681**	0 to 600.0s	0 to 6000	3	73
G5.16.5	5 ACC4= 40.0s	Alternative Acceleration Ramp 4	**44682**	0 to 600.0s	0 to 6000	3	74
G5.16.6	6 DEC4= 40.0s	Alternative Deceleration Ramp 4	**44683**	0 to 600.0s	0 to 6000	3	75
G6.1	1 SEL REF= MREF	Source Selection to introduce the set point	**46164**	MREF AI1 AI2 AI3 AI4 MODBUS COMMS PLC	0 1 2 3 4 5 7 8	9	20
G6.2	2 SEL FBK= AI1	Source Selection to Introduce the Feedback Signal	**46165**	AI1 AI2 AI3 AI4 MODBUS COMMS PLC	0 1 2 3 4 6 7	9	21
G6.3	3 GainKp= +50.0%	PID Regulator Gain	**46166**	0 to 1000.0%	0 to 10000	9	22
G6.4	4 INTEGRL= 10.0s	PID Regulator Integrating Time	**46167**	0 to 200.0s	0 to 2000	9	23
G6.5	5 T Der= 0ms	PID Regulator Differential Time	**46168**	0 to 1000ms	0 to 1000	9	24
G6.6	6 MxSL= +50.00Hz	PID Upper Frequency Limit	**46173**	[G6.8] to 300Hz	[G6.8] to 30000	9	29
G6.7	7 MnSL= 0.00Hz	PID Lower Frequency Limit	**46174**	-300 to [G6.7]Hz	-30000 to [G6.7]	9	30
G6.8	8 INVERT PID= N	PID Output Inverting	**46175**	N Y	0 1	9	31
G6.9	9 OutSc= +100.0%	PID Output Scale	**46176**	0.1 to 1000%	1 to 10000	9	32

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G7.1	1 START= RAMP	Start Mode	**44871**	RAMP DC START	0 1	4	7
G7.2	2 StrDly= 0.00s	Start Delay Time	**45464**	0 to 100.0s	0 to 10000	6	88
G7.3	3 STOP= RAMP	Stop Mode 1	**44872**	RAMP DC BRAKE SPIN POW BRKE	0 1 2 4	4	8
G7.4	4 SAFE STOP=N	Safe Stop	**45197**	N Y	0 1	5	77
G7.5	5 SFSStr= 125.0%	Safe Stop Start	**45198**	110 to 140%	1100 to 1400	5	78
G7.6	6 SFSStp = 130.0%	Safe Stop Ending	**45199**	130 to 145%	[G7.5] to 1450	5	79
G7.7	7 SFSGain= 1000	Safe Stop Gain	**45200**	1 to 2000	1 to 20000	5	80
G7.10	10 Run Aft Rst= N	Start after Low Voltage Fault	**44874**	N Y	0 1	4	10
G7.11	11 Str Aft Rst= N	Start after reset due to fault	**46920**	N Y	0 1	12	8
G7.12	12 DCSt T= 0.00s	Dc Start Time	**44876**	0 to 60.00s	0 to 6000	4	12
G7.13	13 DC Curr= 50%I	DC Current Start	**44877**	0 to 200%	0 to 200	4	13
G7.14	14 PreDC T= 0.10s	Previous DC Brake lock - Time	**44878**	0 to 60.00s	0 to 6000	4	14
G7.15	15 DCBrk T= 1.00s	DC Brake Time	**44879**	0 to 60.00s	0 to 6000	4	15
G7.16	16 DCBk Cur= 50%I	DC Brake Level	**44880**	0 to 200%	0 to 200	4	16
G7.17	17 DCBk F= 5.00Hz	DC Brake Frequency	**44881**	0 to 60.00Hz	0 to 6000	4	17
G7.18.1	1 Srch Mode= 0000	Speed Search Mode	**45191**	0000 to XXXX	0 to 15	5	71
G7.18.2	2 Srch I= 150%	Speed Search Current	**45192**	80 to 200%	80 to 200	5	72
G7.18.3	3 Kp Srch= 100	Proportional Gain for Speed Search	**45193**	0 to 9999	0 to 9999	5	73
G7.18.4	4 Ki Srch= 200	Integral Gain Speed Search	**45194**	0 to 9999	0 to 9999	5	74
G7.18.5	5 Srch Dly= 1.0s	Speed Search Delay	**45195**	0 to 60.0s	0 to 600	5	75
G8.1.1	1 OP FLT RLY= 0X0	Relay Output due to Fault	**45662**	000 to XXX	0 to 7	7	30

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G8.1.2	2 RLY1= Trip	Relay 1 Control Source Selection	**45663**	NONE FDT-1 FDT-2 FDT-3 FDT-4 OVERLOAD IOL UNDRLOAD VENTWARN OVERVOLT LOWVOLT OVERHEAT RUN STOP STEADY SPD SRCH READY PUMP TRIP DBOVRLOAD COMPARAT BRCTRL	0 1 2 3 4 5 6 7 8 10 11 12 14 15 16 19 22 25 29 31 34 35	7	31
G8.1.3	3 RLE2= Run	Relay 2 Control Source Selection	**45664**	See [G8.1.2]	See [G8.1.2]	7	32
G8.1.4	4 DOP1= FDT-1	Digital Output 1 Control Source Selection	**45665**	See [G8.1.2]	See [G8.1.2]	7	33
G8.1.5	5 T RL ON= 0.00s	OP1 and Relays Connection Delay	**45682**	0 to 100.00s	0 to 10000	7	50
G8.1.6	6 T RL OF= 0.00	OP1 and Relays Disconnection delay	**45683**	0 to 100.00s	0 to 10000	7	51
G8.1.7	7 INV NA/NC= 000	Digital Output and Relay Contact Type Selection	**45684**	000 to XXX	0 to 65535	7	52
G8.2.1	1 A01= Frequency	Analog Output 1 Selection Mode	**45633**	Frequency O/ pCurr O/pVolt DCLinkV O/p Power TargetFq RampFreq PIDRefVal PIDFdbVal PIDO/p Constant	0 1 2 3 5 8 9 12 13 14 15	7	1

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G8.2.2	2 AO1Ga= +100.0%	Analog Output 1 Gain	**45634**	-1000 to 1000%	-10000 to 10000	7	2
G8.2.3	3 AO1Ofst= +0.0%	Analog Output 1Offset Level	**45635**	-100 to 100%	-1000 to 1000	7	3
G8.2.4	4 AO1OFil = 5ms	Analog Output 1 Filter Selection	**45636**	0 to 10000ms	0 to 10000	7	4
G8.2.5	5 AO1Con= 0.0%	Analog Output 1Constant Value	**45637**	0 to 1000%	0 to 1000	7	5
G8.2.6	6 AO2= Frequency	Analog Output 2 Mode Selection	**45639**	See [G8.2.1]	See [G8.2.1]	7	7
G8.2.7	7 OA2Ga= +100.0%	Analog Output 2 Gain	**45640**	-1000 to 1000%	-10000 to 10000	7	8
G8.2.8	8 AO2Ofst= +0.0%	Analog Output Offset Level	**45641**	-100 to 100%	-1000 to 1000	7	9
G8.2.9	9 AO2Fil= 5ms	Analog Output 2 Filter Selection	**45642**	0 to 10000ms	0 to 10000	7	10
G8.2.10	10 AO2Con= 0.0%	Analog Output 2 Constant Value	**45643**	0 to 1000%	0 to 1000	7	11
G9.1	1 FDTLvl= 30.00Hz	Transfer Function Level	**45689**	0 to [G10.1]Hz	0 to [G10.1]	7	57
G9.2	2 FDTBnd= 10.00Hz	Transfer Function Bandwidth	**45690**	0 to [G10.1]Hz	0 to [G10.1]	7	58
G9.3	3 SLCOM= None	Comparator Source Selection	**44930**	None AI1 AI2 AI3 AI4	0 1 2 3 4	4	66
G9.4	4 S C ON= +90.00%	Output Activation Level in Comparator Mode	**44931**	10 to 100%	[G9.5] to10000	4	67
G9.5	5 S C OF= +10.00%	Output Deactivation Level in Comparator Mode	**44932**	-100 to [G9.4]%	-10000 to [G9.4]	4	68
G10.1	1 MxSpL= 50.00Hz	Maximum Speed Limit	**44372**	40 to 400Hz	4000 to 40000	2	20
G10.2	2 FWR/RV= None	Speed Inverting Permission	**44873**	None FWDPrev RevPrev	0 1 2	4	10
G10.3	3 UseFrqLimit=Y	Frequency Limit	**44888**	N Y	0 1	4	24
G10.4	4FqLtLo= 0.50Hz	Lower Frequency Limit	**44889**	0 to [G10.5]	0 to [G10.5]	4	25
G10.5	5 FqLtHi= 50.00Hz	Upper Frequency Limit	**44890**	0.5 to [G10.1]	[G10.4] to [G10.1]	4	26

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G10.6	6 TORQUE LIMIT= N	Torque Limit Activation	**46962**	N Y	0 1	12	50
G10.7	7 LvTrqLt= 180%	Torque Limit Level	**46964**	30 to 250%	30 to 250	12	52
G11.1	1 RlRLs= None	Response in case of a Speed Reference Loss	**46917**	None FreeRun Dec Hold I/P Hold O/P LostPrst	0 1 2 3 4 5	12	5
G11.2	3 RfLsDly= 1.0s	Trip Delay Time Due to Speed Reference Loss	**46924**	0.1 to 120s	1 to 1200	12	12
G11.3	4 RefLRf= 0.00Hz	Speed in case of Reference Loss	**46925**	[G19.2.5] to [G10.1]Hz	[G19.2.5] to [G10.1]	12	13
G11.4	5 OLWarnSel= NO	Overload Warning	**46926**	NO YES	0 1	12	14
G11.5	6 OLWrnL= +150%	Overload Warning Level	**46929**	30 to 200%	30 to [G11.9]	12	17
G11.6	7 OLWrnT= 10.0s	Delay Time for Enabling the Overload Warning	**46930**	0 to 30.0s	0 to 300	12	18
G11.7	8 OLTS= FreeRun	Action Selection due to Overload Fault	**46931**	None FreeRun Dec	0 1 2	12	19
G11.8	9 OLLevel= 180%	Trip Level in case of Overload Fault	**46932**	30 to 200%	30 to 200	12	20
G11.9	10 TFllSC= 60.0s	Overload delay time	**46933**	0 to 60.0s	0 to 600	12	21
G11.10	11 SBC1min= +150%	Overcurrent level during 1 minute	**46934**	120 to 200%	[G11.12] to 200	12	22
G11.11	12 SBCCont= 120%	Continuous overcurrent level	**46954**	50 to 200%	50 to [G11.11]	12	42
G11.12	13 ThMM= None	Action Selection in case of Thermo-electronic Fault	**46955**	None FreeRun Dec	0 1 2	12	43
G11.13	14 EnableUL= NO	Enabling Underload Alarm	**46952**	NO YES	0 1	12	40
G11.14	15 ULWnDl= 10.0s	Delay Time Enabling Underload Warning	**46937**	0 to 600.0s	0 to 6000	12	25
G11.15	6 TORQUE LIMIT= N	Torque Limit Activation	**46938**	N Y	0 1	12	26

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G11.16	16 ULFM= None	Action Selection in case of Underload Fault	**46939**	None FreeRun Dec	0 1 2	12	27
G11.17	17 ULFltDl= 30.0s	Delay Time Enabling Underload Fault	**46940**	0 to 600.0s	0 to 6000	12	28
G11.18	18 UlMnL = +30%	Underload Detection Lower Level	**46941**	10 to [G11.18]	10 to [G11.18]	12	29
G11.19	19 ULMxL= +30%	Underload Detection Upper Level	**46942**	[G11.17] to 100%	[G11.17] to 100	12	30
G11.20	20 NoMD= None	Action Selection in case of No Motor Connection Detected Fault	**46943**	None FreeRun	0 1	12	31
G11.21	21 NoMtrLvl= +5%	Trip Level in case of No Motor Detection Fault	**46944**	1 to 100%	1 to 100	12	32
G11.22	22 NoMtrDl= 3.0s	Delay Time due to Lack of motor Fault	**46945**	0.1 to 10.0s	1 to 100	12	33
G11.23	23 OvHM= None	Selection in case of Motor Overheat Fault	**46946**	None FreeRun Dec	0 1 2	12	34
G11.24	24 OvrHtSen= None	Motor Overheat Detection Sensor Selection	**46947**	None AI1 AI2 AI3 AI4	0 1 2 3 4	12	35
G11.25	25 OvrHtL= +50.0%	Motor Overheat Detection Fault	**46948**	0 to 100%	0 to 1000	12	36
G11.26	26 OvrHtAr= Low	Trip Area Selection Due to Overheat.	**46949**	LOW HIGH	0 1	12	37
G11.27	27 FANTrip=Trip	Action Selection in case of Fan Trip	**46991**	Trip Warn	0 1	12	79
G11.28	28 DBWarnED= +0%	Brake Unit Overload Warning Level	**46978**	0 to 30%	0 to 30	12	66
G12.1	29 LSS PH= NONE	Phase loss Detection	**46921**	NONE OUTPUT INPUT ALL	0 1 2 3	12	9
G12.2	30 Ripple V=40V	DC Bus Ripple voltage	**46922**	1 to 100V	1 a 100	12	10

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G13.1	No Fault	Current Fault status visualization	-	-	-	-	-
G13.1.1	FAULT INFO 1	Fault History Register 1	-	-	-	-	-
G13.1.2	FAULT INFO 2	Fault History Register 2	-	-	-	-	-
G13.1.3	FAULT INFO 3	Fault History Register 3	-	-	-	-	-
G13.1.4	FAULT INFO 4	Fault History Register 4	-	-	-	-	-
G13.1.5	FAULT INFO 5	Fault History Register 5	-	-	-	-	-
G13.1.6	Clr FaultHist= N	Clear Fault History	-	N Y	-	-	-
G13.2.1	ENB/DIS LV Flt=D	Low Voltage fault register	-	-	-	-	-
G13.2.2	1 MREF 1= 10.00Hz	Multi-Reference 1	-	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	-	-
G13.2.3	2 MREF 2= 20.00Hz	Multi-Reference 2	-	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	-	-
G13.2.4	3 MREF 3= 30.00	Multi-Reference 3	-	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	-	-
G13.2.5	4 MREF 4= 40.00H	Multi-Reference 4	-	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	-	-
G14.1	5 MREF 5= 50.00Hz	Multi-Reference 5	**44658**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	50
G14.2	6 MREF 6= 50.00Hz	Multi-Reference 6	**44659**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	51
G14.3	7 MREF 7= 50.00Hz	Multi-Reference 7	**44660**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	52
G14.4	No Fault	Current Fault status visualization	**44661**	-	-	3	53
G14.5	FAULT INFO 1	Fault History Register 1	**44662**	-	-	3	54
G14.6	FAULT INFO 2	Fault History Register 2	**44663**	-	-	3	55
G14.7	FAULT INFO 3	Fault History Register 3	**44664**	-	-	3	56

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G14.8	8 MREF 8= 50.00Hz	Multi-Reference 8	**44665**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	57
G14.9	9 MREF 9= 50.00Hz	Multi-Reference 9	**44666**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	58
G14.10	10 MRF 10= 45.00Hz	Multi-Reference 10	**44667**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	59
G14.11	11 MRF 11= 40.00Hz	Multi-Reference 11	**44668**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	60
G14.12	12 MRF 12= 35.00Hz	Multi-Reference 12	**44669**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	61
G14.13	13 MRF 13= 25.00Hz	Multi-Reference 13	**44670**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	62
G14.14	14 MRF 14= 15.00Hz	Multi-Reference 14	**44671**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	63
G14.15	15 MRF 15= 5.00Hz	Multi-Reference 15	**44672**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	64
G15.1	1 InchFq= 10.00Hz	Inch Frequency	**44363**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	2	11
G15.2	2 InchAcT= 20.0s	Inch Frequency Accelerating Time	**44364**	0 to 600.0s	0 to 6000	2	12
G15.3	3 InchDeT= 30.0s	Inch Frequency Decelerating Time	**44365**	0 to 600.0s	0 to 6000	2	13
G16.1	1 Jmp Freq= NO	Enabling Frequency Jumps	**44891**	NO YES	0 1	4	27
G16.2	2 Sal1 B= 10.00Hz	Frequency Jump 1 Lower Limit	**44892**	0 to [G16.3]	0 to [G16.3]	4	28
G16.3	3 Sal1 A= 15.00Hz	Frequency Jump 1 Upper Limit	**44893**	[G16.2] to [G10.1]	[G16.2] to [G10.1]	4	29
G16.4	4 Sal2 B= 20.00Hz	Frequency Jump 2 Lower Limit	**44894**	0 to [G16.5]	0 to [G16.5]	4	30
G16.5	5 Sal2 A= 25.00Hz	Frequency Jump 2 Upper Limit	**44895**	[G16.4] to [G10.1]	[G16.4] to [G10.1]	4	31
G16.6	6 Sal3 B= 30.00Hz	Frequency Jump 3 Lower Limit	**44896**	0 to [G16.7]	0 to [G16.7]	4	32
G16.7	7 Sal3 A= 35.00Hz	Frequency Jump 3 Upper Limit	**44897**	[G16.6] to [G10.1]	[G16.6] to [G10.1]	4	33
G17.1	1 RlsCurr= 50.0%	Opening Brake Current	**44905**	0 to 180.0%	0 to 1800	4	41
G17.2	2 RlsDly= 1.00s	Opening Brake Delay	**44906**	0 to 10.0s	0 to 1000	4	42
G17.3	3 FwdFrq= 1.00Hz	Opening Brake Frequency (Foward)	**44908**	0 to 400.0Hz	0 to 40000	4	44

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G17.4	4 RevFrq= 1.00Hz	Opening Brake Frequency (Reverse)	**44909**	0 to 400.0Hz	0 to 40000	4	45
G17.5	5 BrEngFr= 1.00s	Closed Brake Delay	**44910**	0 to 10.0s	0 to 1000	4	46
G17.6	6 BrEngFr= 2.00Hz	Closed Brake Frequency	**44911**	0 to 400.0Hz	0 to 40000	4	47
G19.1.1	1 CTRL T.= V/Hz	Control Type Selection	**44361**	V/Hz SlipCom S-less1	0 2 3	2	9
G19.1.2	2 FREQ= 2.0kHz	Modulation Frequency	**45124**	0.7 to 15kHz	7 to 150	5	4
G19.1.3	3 V/FPn= Linear	V/F Pattern	**44615**	Linear Square V/F Us	0 1 2	3	7
G19.1.4.1	1 UsFrq1= 15.00Hz	User Frequency 1	**44649**	0 to [G10.1]	0 to [G10.1]	3	41
G19.1.4.2	2 User V1= 25%	User Voltage 1	**44650**	0 to 100%	0 to 100	3	42
G19.1.4.3	3 UsFrq2= 30.00Hz	User Frequency 2	**44651**	0 to [G10.1]	0 to [G10.1]	3	43
G19.1.4.4	4 User V2= 50%	User Voltage 2	**44652**	0 to 100%	0 to 100	3	44
G19.1.4.5	5 Us Frq3= 45.00Hz	User Frequency 3	**44653**	0 to [G10.1]	0 to [G10.1]	3	45
G19.1.4.6	6 User V3= 75%	User Voltage 3	**44654**	0 to 100%	0 to 100	3	46
G19.1.4.7	7 Us Frq4= 60.00Hz	User Frequency 4	**44655**	0 to [G10.1]	0 to [G10.1]	3	47
G19.1.4.8	8 User V4= 100%	User Voltage 4	**44656**	0 to 100%	0 to 100	3	48
19.2.1	1 InertiaRate= 0	Inertia Range	**44625**	0 to 8	0 to 8	3	17
G19.2.2	2 T Boost= Manual	Initial Voltage	**44367**	MANUAL AUTO	0 1	2	15
G19.2.3	3 FWBoost= +20%	Starting Torque (Foward Direction)	**44368**	0 to 150%	0 to 150	2	16
G19.2.4	4 RVBoost= +20%	Starting Torque (Reverse Direction)	**44369**	0 to 150%	0 to 150	2	17
G19.2.5	5 STR FRQ= 0.50Hz	Starting Frequency	**44371**	0.01 to 10Hz	1 to 1000	2	19
G19.2.6	6 RtSlip= 45rpm	Slip Compensation	**44620**	0 to 3000rpm	0 to 3000	3	12
G19.2.7	7 FLUX MIN= NONE	Minimum Flux	**44914**	NONE MANU AUTO	0 1 2	4	50
G19.2.8	8 FLUX LVEL= +0%	Manual Mode Minimum Flux Value	**44915**	0 to 30%	0 to 30	4	51

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G19.2.9	9 Load Duty= Hevy	Load Type Definition	**46916**	NRML HEVY	0 1	12	4
G19.3.1	1 Rs=	Stator Resistor (Rs)	**44629**	-	-	3	21
G19.3.2	2 LSigma=	Leak Inductor	**44630**	-	-	3	22
G19.3.3	3 Ls=	Stator Inductor	**44631**	-	-	3	23
G19.3.4	4 Tr=	Rotor Time Constant	**44632**	25 to 5000ms	25 to 5000	3	24
G20.1.1	1ComUpdate= NO	Communication Update	**45982**	NO YES	0 1	8	94
G20.1.2	2 Slave Addr= 1	Communication Address	**45889**	1 to 250	1 to 250	8	1
G20.1.3	3 Prot= ModBus	Int485 Communication Protocol	**45890**	MODBUS	0	8	2
G20.1.4	4 BaudR= 9600 bps	Communication Speed	**45891**	1200 2400 4800 9600 19200 38400	0 1 2 3 4 5	8	3
G20.1.5	5 Mode= D8/PN/S1	Communication Frame Definition	**45892**	D8/PN/S1 D8/PN/S2 D8/PE/S1 D8/PO/S1	0 1 2 3	8	4
G20.1.6	6 RespDly= 5ms	Transfer Delay After Reception	**45893**	0 to 1000ms	0 to 1000	8	5
G20.1.7	7 ParamSave= NO	Saving Communication Parameters	**40992**	NO YES	0 1	-	-
G25.1.1	1 MREF1= 10.00%	PID Local Reference 1	**44658**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	50
G25.1.2	2 MREF2= +20.00%	PID Local Reference 2	**44659**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	51
G25.1.3	3 MREF3= +30.00%	PID Local Reference 3	**44660**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	52
G25.1.4	4 MREF4= +40.00%	PID Local Reference 4	**44661**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	53
G25.1.5	5 MREF5= +50.00%	PID Local Reference 5	**44662**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	54
G20.4.1	1 ComUpdate= NO	Communications setting update	**45982**	NO YES	0 1		
G20.4.2	2 LEDStatus= XXXX	LEDs status visualization	**45897**	-	-	-	-
G20.4.3	3 CAN ID= 1	DeviceNet communications address	**45895**	0 to 125	0 to 125	8	7

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G20.4.4	4 BdRate= 125Kbps	DeviceNet grid speed	**45896**	125Kbps 250Kbps 500Kbps	6 7 8	8	8
G20.4.5	5 RdInstance=70	DeviceNet input instance	**45917**	70 71 110 111 141 142 143 144	0 1 2 3 4 5 6 7	8	29
G20.4.6	6 ParamRdNum= 3	Reading addresses number	**45918**	0 to 4	0 to 4	8	30
G20.4.7	7 ParaRd1=0x000A	Reading address 1	**45919**	0x0000 to 0xFFFF	0 to 65535	8	31
G20.4.8	8 ParaRd2=0x000E	Reading address 2	**45920**	0x0000 to 0xFFFF	0 to 65535	8	32
G20.4.9	9 ParaRd3=0x000F	Reading address 3	**45921**	0x0000 to 0xFFFF	0 to 65535	8	33
G20.4.10	10 ParRd4=0x0000	Reading address 4	**45922**	0x0000 to 0xFFFF	0 to 65535	8	34
G20.4.11	11 WrInstanc=20	DeviceNet output instance	**45937**	20 21 100 101 121 122 123 124	0 1 2 3 4 5 6 7	8	49
G20.4.12	12 ParaWrNum= 2	Writing addresses number	**45938**	0 to 4	0 to 4	8	50
G20.4.13	13 ParWr1=0x0005	Writing address 1	**45939**	0x0000 to 0xFFFF	0 to 65535	8	51
G20.4.14	14 ParWr2=0x0006	Writing address 2	**45940**	0x0000 to 0xFFFF	0 to 65535	8	52
G20.4.15	15 ParWr3=0x0000	Writing address 3	**45941**	0x0000 to 0xFFFF	0 to 65535	8	53
G20.4.16	16 ParWr4=0x0000	Writing address 4	**45942**	0x0000 to 0xFFFF	0 to 65535	8	54

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G25.1.6	6 MREF6= +50.00%	PID Local Reference 6	**44663**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	55
G25.1.7	7 MREF7= +50.00%	PID Local Reference 7	**44664**	[G19.2.5] to [G10.1]	[G19.2.5] to [G10.1]	3	56
G25.2.1	1 PIDSetp= MREF	PID Setpoint Source	**46164**	MREF AI1 AI2 AI3 AI4 MODBUS COMMS PLC	0 1 2 3 4 5 7 8	9	20
G25.2.2	2 PID Fbk= AI2	PID Feedback Source	**46165**	MREF AI1 AI2 AI3 AI4 MODBUS COMMS PLC	0 1 2 3 4 6 7	9	21
G25.2.3	3 PID Kc= +50.0%	PID Regulator Proportional Gain	**46166**	0 to 1000%	0 to 10000	9	22
G25.2.4	4 PID It= 10.0s	PID Regulator Integrating Time	**46167**	0 to 200s	0 to 2000	9	23
G25.2.5	5 PID Dt= 0.0s	Pid Regulator Differential Time	**46168**	0.0 to 1000ms	0 to 1000	9	24
G25.2.6	6 MxSL= +50.00Hz	PID Frequency Upper Limit	**46173**	[G25.2.7] to 300Hz	[G25.2.7] to 30000	9	29
G25.2.7	7 MnSL= 0.00Hz	PID Frequency Lower Limit	**46174**	-300 to [G25.2.6]Hz	-30000 to [G25.2.6]	9	30
G25.2.8	8 InvertPID= N	PID Output Inverting	**46175**	NO SI	0 1	9	31
G25.2.9	9 Out Sc= +100.0%	PID Output Scale	**46176**	0.1 to 1000%	1 to 10000	9	32
G25.3.1	1 LP Pon= 35%	Awakening Level	**46183**	0 to 100%	0 to 100	9	39
G25.3.2	2 FP1 Son= 49.99Hz	Fix Pump 1 Starting Speed	**46679**	0 to [G10.1]Hz	0 to [G10.1]	11	23
G25.3.3	3 FP2 Son = 49.99Hz	Fix Pump 2 Starting Speed	**46680**	0 to [G10.1]Hz	0 to [G10.1]	11	24
G25.3.4	4 FP3 Son = 49.99Hz	Fix Pump 3 Starting Speed	**46681**	0 to [G10.1]Hz	0 to [G10.1]	11	25
G25.3.5	5 FP4 Son = 49.99Hz	Fix Pump 4 Starting Speed	**46682**	0 to [G10.1]Hz	0 to [G10.1]	11	26
G25.3.6	6 FP Ton= 60.0s	Fix Pumps Starting Delay	**46687**	0 to 3600s	0 to 36000	11	31

Par.	Screen	Description	Addr.	Range	Range	DeviceNet Class 0x64	
						Ins.	Attr.
G25.4.1	1 LP T Slpr= 60.0s	Delay Before Enabling Sleep Mode	**46181**	0 to 999.0s	0 to 9999	9	37
G25.4.2	2 Slp Spd= 0.00Hz	Enabling Sleep Mode Speed	**46182**	0 to [G10.1]	0 to [G10.1]	9	38
G25.4.3	3 SPD1of= 15.0H	Fix Pump 1 Stopping Speed	**46683**	0 to [G10.1]Hz	0 to [G10.1]	11	27
G25.4.4	4 SPD2of = 15.0Hz	Fix Pump 2 Stopping Speed	**46684**	0 to [G10.1]Hz	0 to [G10.1]	11	28
G25.4.5	5 SPD3of = 15.0Hz	Fix Pump 3 Stopping Speed	**46685**	0 to [G10.1]Hz	0 to [G10.1]	11	29
G25.4.6	6 SPD4of = 15.0Hz	Fix Pump 4 Stopping Speed	**46686**	0 to [G10.1]Hz	0 to [G10.1]	11	30
G25.4.7	7 Fp Tof= 60.0s	Stopping Fix Pump Delay	**46688**	0 to 3600s	0 to 36000	11	32
G25.4.8	8 FP Error= 2%	PID Maximum Error Stopping Fix Pumps	**46696**	0 to 100%	0 to 100	11	40
G25.5.1	1 AccTime= 2.0s	Main Motor Accelerating Time after Fix Pump Stop	**46697**	0 to 600s	0 to 6000	11	34
G25.5.2	2 Dec Timel= 2.0s	Main Motor Accelerating Time after Fix Pump Activation	**46698**	0 to 600s	0 to 6000	11	41
G25.7.1	1 Fill Sp= 0.00Hz	Filling Pipes Speed	**46178**	0 to [G10.1]	0 to [G10.1]	9	34
G25.7.2	2 Fill P= 0.0%	Filling Pipes Pressure	**46179**	0 to 100%	0 to 1000	9	35
G25.7.3	3 Fill Tim= 600s	Filling Pipes Delay	**46180**	0 to 9999s	0 to 9999	9	36
G25.9.1	1 First FP= 1	First Fixed Pump Selection	**46677**	1 to 4	1 to 4	11	21
G25.9.2	2 FP number= 0	Number of Fixed Pumps Selection	**46689**	0 to 4	0 to 4	11	33

9.3. Visualization parameters

Parameter	Screen	Description	Address	Range
STATUS LINE	**OFF** 0.0A +0.0Hz	Present drive status.	**40014**	0 to 201

Modbus value for the status of the drive and for the fault and warning messages.

Modbus Value ➔ STATUS MESSAGE					
0	➔	FLT	4	➔	ACL
1	➔	DCB	5	➔	RUN
2	➔	STP	6	➔	RDY
3	➔	DCL			

Note: See status messages description in section "Status Messages".

STATUS LINE	OFF **0.0A** +0.0Hz	Motor output current. (Corresponds to SV1.1)	**40784**	Real Value = (Modbus Value / 10)
STATUS LINE	OFF 0.0A **+0.0Hz**	Motor output speed (in %). (Corresponds to SV1.2)	**40785**	Real Value = (Modbus Value / 100)
SV1.1	Mtr I out=0.0	Shows the current running through the motor, corresponding to the second field of the status line ➔ **OFF 0.0A +0.0Hz**	**40784**	Real Value = (Modbus Value / 10)
SV1.2	Mtr Freq= 0.00Hz	Shows the motor frequency	**40785**	Real Value = (Modbus Value / 100)
SV1.3	Mtr Sp= 0rpm	Shows the motor speed in rpm	**40786**	Real Value = Modbus Value
SV1.4	Mtr FBSp=+0rpm	Motor feedback speed	**40787**	Real Value = Modbus Value
SV1.5	Mtr Vout=0V	Shows the motor voltage.	**40788**	Real Value = Modbus Value
SV1.6	Mtr Pow = 0.00kW	Shows the motor instantaneous power consumption	**40790**	Real Value = (Modbus Value / 10)
SV1.7	Mtr Torqe = 0.0%	Shows the torque applied to the motor.	**40791**	Real Value = (Modbus Value / 10)
SV2.1	Bus vol= 528V	Shows the DC voltage measured in the driver bus.	**40789**	Real Value = Modbus Value
SV3.1	Temperature=26°C	Drive temperature	**45381**	Real Value = Modbus Value
SV3.2	ANLG IN1 = +0.0V	Shows the Analogue Input 1 mean value	**45396**	Real Value = (Modbus Value / 100)

Parameter	Screen	Description	Address	Range
SV3.3	ANLG IN2 = +0.0mA	Shows the Analogue Input 2 mean value	**40016**	Real Value = (Modbus Value / 100)
SV3.4	DigI= 00000000	Shows the activation or rest status of the Digital Inputs, from left to right ED8 to ED1.	**45638**	Real Value = Modbus Value
SV3.5	ANL OUT1 = 0.0%	Shows the value of the Analogue Output 1	**45644**	Real Value = (Modbus Value / 10)
SV3.6	ANLG IN2 = +0.0mA	Shows the Analogue Input 2 mean value.	**45673**	Real Value = (Modbus Value / 10)
SV4.1	DOstatus= 0-00	Shows the status of the digital outputs in the following order: SD1-Relay2 Relay1	**40769**	Real Value = Modbus Value
SV4.2	Inv.Power =	Shows the drive capacity in kW	**40771**	Real Value = Modbus Value
SV4.3	Inv. S/W	Shows the last software version installed	**-**	Real Value = Modbus Value
SV5.1	SW Disp=	Last software version installed in the display.	**40792-40793**	-
SV5.2	S=0.0% F=0.0%	Shows PID Setpoint and Feedback.	**46160**	Real Value = (Modbus Value / 10)
SV8.1	PID Out=+0.00 %	Shows the t PID Output	**40792-40793**	Real Value = (Modbus Value / 100)
SV8.2	S=0.0% F=0.0%	Shows PID Setpoint and Feedback.	**46160**	Real Value = (Modbus Value / 10)
SV8.3	Sal PID=+0.00 %	Shows the PID output	**46676**	Real Value = (Modbus Value / 100)
SV8.4.1	No Bmb Ma=0	Shows the number of pumps running	**44658**	Real Value = Modbus Value
SV8.4.2	1 MREF1= +10.00%	PID Local Reference 1	**44659**	[G19.2.5] to [G10.1]
SV8.4.3	2 MREF2= +20.00%	PID Local Reference 2	**44660**	[G19.2.5] to [G10.1]
SV8.4.4	3 MREF3= +30.00%	PID Local Reference 3	**44661**	[G19.2.5] to [G10.1]
SV8.4.5	4 MREF4= + 40.00%	PID Local Reference 4	**44662**	[G19.2.5] to [G10.1]
SV8.4.6	5 MREF5= +50.00%	PID Local Reference 5	**44663**	[G19.2.5] to [G10.1]
SV8.4.7	6 MREF6= +50.00%	PID Local Reference 6	**44664**	[G19.2.5] to [G10.1]

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