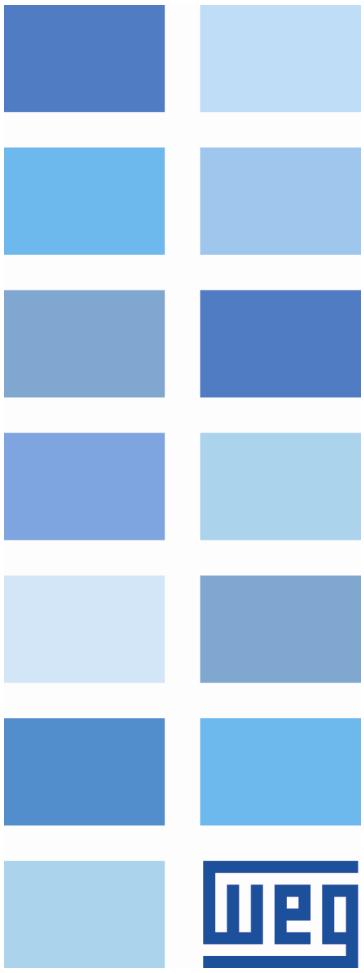
Anybus Profibus DP

SSW900-CPDP-N

User's Guide



Anybus Profibus DP User’s Guide

Series: SSW900
Software version: 1.5X
Language: English
Document: 10004633121 / 05
Build 6066

Publication Date: 09/2022

The information below describes the reviews made in this manual.

Version	Revision	Description
V1.0X	R00	First edition
V1.1X	R01	General revision
V1.2X	R02	General revision
V1.3X	R03	Parameters related to the SSW900-CETH-W accessory. Parameter for adjusting the contrast of the HMI display. Text corrections.
V1.4X	R04	C6.2.1, C11.4. Text corrections.
V1.5X	R05	General revision

Contents

ABOUT THE MANUAL 6
ABBREVIATIONS AND DEFINITIONS 6
NUMERICAL REPRESENTATION 6
1 MAIN CHARACTERISTICS 7
2 INTERFACE DESCRIPTION 8
2.1 ANYBUS PROFIBUS DP ACCESSORY 8
2.2 CONNECTORS 8
2.3 INDICATION LEDS 9
3 PROFIBUS DP NETWORK INSTALLATION 10
3.1 BAUD RATE 10
3.2 ADDRESS IN THE PROFIBUS DP NETWORK 10
3.3 TERMINATION RESISTOR 10
3.4 CABLE 10
3.5 CONNECTORS 11
3.6 CONNECTION IN THE NETWORK 11
4 S STATUS 12
S5 COMMUNICATIONS 12
S5.1 Status Word 12
S5.2 Command Word 12
S5.3 Value for Outputs 13
S5.3.2 Value for AO 13
S5.5 Anybus-CC 14
5 C CONFIGURATIONS 15
C8 COMMUNICATIONS 15
C8.1 I/O Data 15
C8.1.1 Data Read 15
C8.1.2 Data Write 16
C8.3 Anybus-CC 18
C8.3.10 Off Line Error 18
6 OPERATION IN THE PROFIBUS DP NETWORK 20
6.1 PROFIBUS DP-V0 20
6.1.1 Cyclic Data 20
6.1.2 Input words 20
6.1.3 Output Words 21
6.2 PROFIBUS DP-V1 22
6.2.1 Acyclic Data 22
6.3 GSD FILE 22
7 STARTUP GUIDE 23
7.1 INSTALLING THE ACCESSORY 23
7.2 CONFIGURING THE EQUIPMENT 23
7.3 CONFIGURING THE MASTER 23
7.4 COMMUNICATION STATUS 24
7.5 OPERATION USING PROCESS DATA 24

7.6 ACCESS TO PARAMETERS – ACYCLIC MESSAGES 24
8 FAULTS AND ALARMS 25
9 QUICK REFERENCES 26
9.1 PARAMETER STRUCTURE 26
9.2 PARAMETERS 28

ABOUT THE MANUAL

This manual supplies the necessary information for the operation of the SSW900 soft-starter using the Anybus Profibus DP interface. This manual must be used together with the SSW900 user's manual and programming manual.

ABBREVIATIONS AND DEFINITIONS

DP Decentralized Periphery
EIA Electronic Industries Alliance
I/O Input/Output
ro Read only
rw Read/write
SAP Service Access Point

NUMERICAL REPRESENTATION

Decimal numbers are represented by means of digits without suffix. Hexadecimal numbers are represented with the letter 'h' after the number. Binary numbers are represented with the letter 'b' after the number.

1 MAIN CHARACTERISTICS

Below are the main characteristics for communication of the soft-starter SSW900 with Anybus Profibus DP accessory.

- Profibus DP slave operation mode.
- Supports services of the DP-V0 and DP-V1 (acyclic messages) versions.
- It is supplied with an GSD file for the network master configuration.
- Allows up to 50 input words and 20 output words for cyclic data communication.
- Acyclic data available for parameterization.
- EDD files and DTM files are also available.

2 INTERFACE DESCRIPTION

The SSW900 soft-starter has two Slots for accessories (Figura 2.1). Parameters S3.5.1 and S3.5.2 present which accessory was recognized by Slot.

The accessories can be connected to any Slot, but only one type of each communication accessory is allowed. The Anybus-CC communication accessories (regardless of the protocol implanted) are identified on these parameters as *Anybus-CC*.

Read the user's manual of the SSW900 soft-starter before installing or using this accessory.

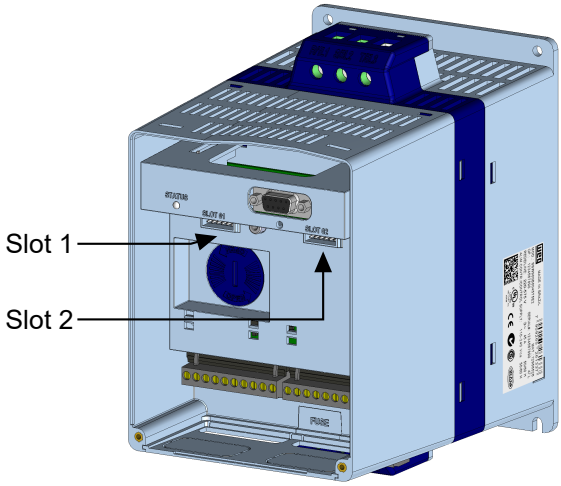
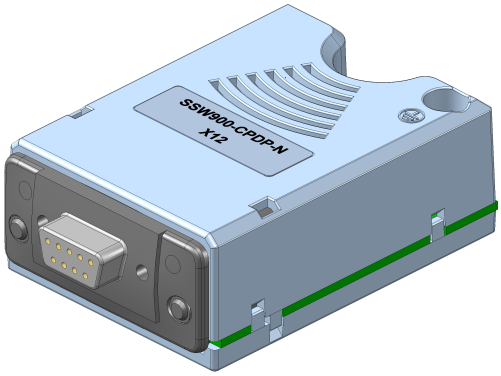


Figure 2.1: *Slots for accessories*

NOTE!
Only one Anybus-CC communication accessory can be connected to the SSW900 soft-starter, even if they are different protocols.

2.1 ANYBUS PROFIBUS DP ACCESSORY



SSW900-CPDP-N:

- Supplied items:
  - Installation guide.
  - Anybus Profibus DP communication module.
  - "torx" screw driver for fixing the module.
  - Interface certified by Profibus International.

2.2 CONNECTORS

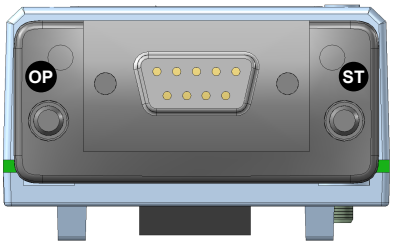
The accessory for Profibus DP communication has a DB9 connector for network connection, with the following pinout:

Table 2.1: *Profibus female DB9 connector pinout*

Pin	Name	Function
1	-	-
2	-	-
3	B - Line(+)	RxD/TxD positive (red)
4	RTS	Request to Send
5	GND	0V isolated for the RS485 circuit
6	+5V	+5V isolated for the RS485 circuit
7	-	-
8	A - Line(-)	RxD/TxD negative (green)
9	-	-
Metallic Housing	Shield	Protective earth

2.3 INDICATION LEDS

The Profibus DP accessory has two LEDs for state indication, one for the communication module (ST) and another for the operating mode (OP). These LEDs have the following functions and indications.



The ST LED indicates the conditions of the module itself. That is, whether it is able to work or not. The table below shows the possible states.

Table 2.2: *State of the Profibus DP module*

Status	Description	Comments
Off	No power or initializing	-
Green, solid	Module initialized	-
Green, flashing	Initialized, but in event diagnosis	It indicates that a problem was diagnosed in the module and an alarm was generated.
Red, solid	Module in error	Reinitializing the equipment is required.

The OP LED provides information about the state of the Profibus DP network. The table below presents the description of those states.

Table 2.3: *State of the Profibus DP network*

Status	Description	Comments
Off	Without power supply or not *online*	-
Green, solid	Device *Online*	In this state, data exchange effectively occurs.
Green, flashing	*Online* but in the *Clear* sate	In this state, data exchange occurs, but the outputs are not updated.
Red, solid (1 flash)	Error in parameter setting	Incorrect configuration of the Profibus communication properties in the master of the network.
Red, flashing (2 flashes)	Error in the Profibus configuration	It indicates that the quantity of I/O words (or the order of these words) set in the master is different from that set in the equipment.

3 PROFIBUS DP NETWORK INSTALLATION

The Profibus DP network, such as several industrial communication networks, for being many times applied in aggressive environments with high exposure to electromagnetic interference, requires that certain precautions be taken in order to guarantee a low communication error rate during its operation. Recommendations to perform the connection of the product in this network are presented next.

3.1 BAUD RATE

The Profibus DP protocol defines several baud rates that can be used, from 9.6 kbit/s up to 12 Mbit/s. The baud rate that can be used by equipment depends on the length of the cable used in the installation. The table 3.1 shows the baud rates and the maximum cable length that can be used in the installation, according to the protocol recommendation.

Table 3.1: *Supported baud rates and installation size*

Baud Rate	Cable Length
9.6 kbit/s	1200 m
19.2 kbit/s	1200 m
45.45 kbit/s	1200 m
93.75 kbit/s	1200 m
187.5 kbit/s	1000 m
500 kbit/s	400 m
1.5 Mbit/s	200 m
3.0 Mbit/s	100 m
6.0 Mbit/s	100 m
12.0 Mbit/s	100 m

All network equipment must be programmed to use the same communication baud rate.

The SSW900 soft-starter Profibus DP interface has automatic baud rate detection, according to what has been configured for the network master, and therefore it is not necessary to configure this option.

3.2 ADDRESS IN THE PROFIBUS DP NETWORK

Each Profibus DP network device must have an address, and may range from 1 to 126. This address must be unique for each equipment.

3.3 TERMINATION RESISTOR

The bus line must be terminated with resistors to avoid line reflection, which can impair the signal and cause communication errors. Connectors suitable for the Profibus network that feature a switch to enable the resistor may be used.

It is worth to mention that, in order to allow the disconnection of the element from the network without impairing the bus, it is interesting to put active terminations, which are elements that only play the role of the termination. Therefore, any equipment in the network can be disconnected from the bus without impairing the termination.

3.4 CABLE

It is recommended that the installation be carried out with a type A cable. The cable has a pair of shielded and twisted wires in order to guarantee greater immunity against electromagnetic interference. The following table shows the recommended characteristics for the cable.

Table 3.2: *Profibus DP cable characteristics*

Impedance	Capacitance	Resistance in Loop	Diameter of the Cable	Cross Section of the Wire
135 to 165 Ω	30 pf / m	110 Ω / km	> 0.64 mm	> 0.34 mm^2

It is recommended to use a certified Profibus DP cable.

3.5 CONNECTORS

There are different types of connectors specifically designed for applications in the Profibus network. For SSW900 soft-starter, it is recommended to use connectors with cable connection in 180 degrees, because, in general, connectors with different angles can not be used due to mechanical characteristics of the product.

3.6 CONNECTION IN THE NETWORK

In order to interconnect the several network nodes, it is recommended to connect the equipment directly to the main line without using derivations. In general, the connector of the Profibus network itself has one input and one output for the cable, allowing the connection to be taken to the other points of the network. Derivations from the main bus are not recommended, especially for baud rates higher or equal to 1.5 Mbit/s. If you use derivations, the limits of length for derivation defined by the Profibus DP specification must be observed. During the cable installation the passage near to power cables must be avoided, because, due to electromagnetic interference, this makes the occurrence of transmission errors possible.

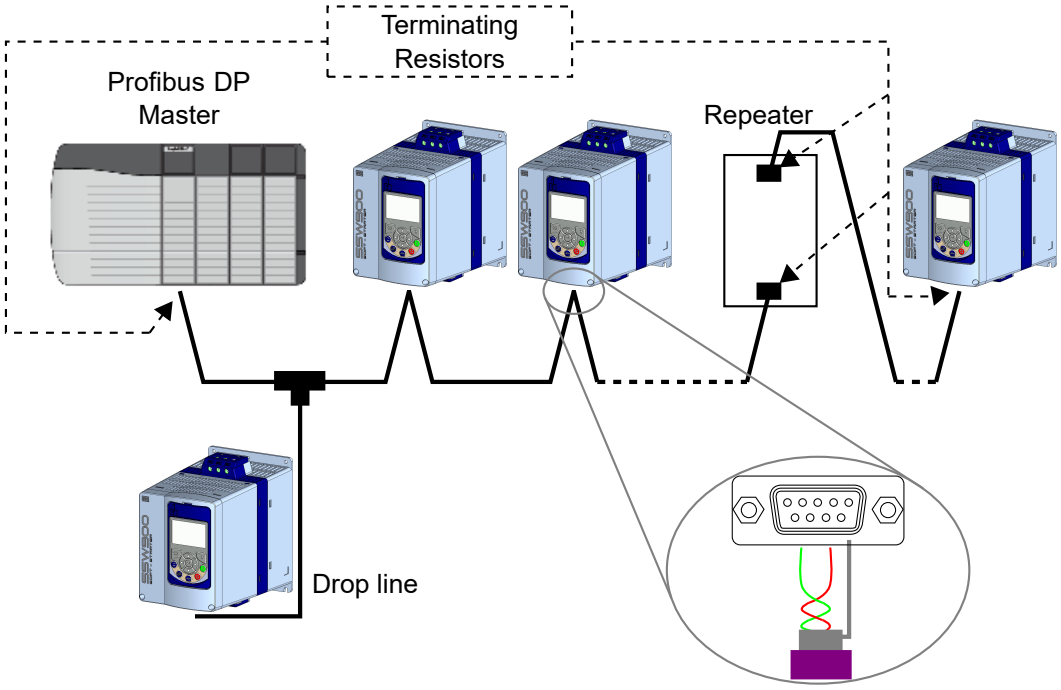


Figure 3.1: *Profibus DP network installation example*

In order to avoid problems with current circulation caused by difference of potential among ground connections, it is necessary that all the devices be connected to the same ground point. The Profibus cable shield must also be grounded. The Profibus module connector itself already has a connection with the protective ground and, therefore, makes the connection of the shield to the ground when the Profibus cable is connected to the equipment. However a better connection, implemented by clamps that connect the shield to a ground point, is also recommended.

The maximum number of devices connected to a single segment of the network when using the RS485 physical medium is limited to 32. Repeaters can be used for connecting a higher number of devices.

4 S STATUS

Allows viewing of the SSW reading variables.

S5 COMMUNICATIONS

HMI monitoring parameters of the communication interfaces.

For a detailed description, refer to the Anybus-CC, CANopen, DeviceNet, Ethernet and Modbus RTU User's Manuals of the SSW according to the interface used.

S5.1 Status Word

.1 SSW	0 ... 15 Bit

Description:
Word of SSW status.

.1 SSW Word of SSW status.

Bit	Value/Description
Bit 0 Running	0: The motor is not enabled. 1: The motor is enabled.
Bit 1 Gener. Enabled	0: When it is general disabled by any mean. 1: When it is general enabled by all the means.
Bit 2 JOG	0: The JOG function is inactive. 1: The JOG function is active.
Bit 3 Initial Test	0: None. 1: During the initial tests before the motor starting.
Bit 4 Ramp Up	0: It is not accelerating. 1: During the whole acceleration.
Bit 5 Full Voltage	0: There is no full voltage applied to the motor. 1: Full voltage is being applied to the motor.
Bit 6 Bypass	0: With open bypass. 1: With closed bypass.
Bit 7 Ramp Down	0: It is not decelerating. 1: During the whole deceleration.
Bit 8 Remote	0: Local. 1: Remote.
Bit 9 Braking	0: It is not executing braking. 1: During the braking process.
Bit 10 FWD/REV	0: It is not reverting the rotation direction. 1: During the rotation reversion process.
Bit 11 Reverse	0: Forward rotation. 1: Reverse rotation.
Bit 12 Ton	0: None. 1: Time before start (C5.7.2).
Bit 13 Toff	0: None. 1: Time after stop (C5.7.3).
Bit 14 Alarm	0: The SSW is not in alarm condition. 1: The SSW is in alarm condition. Note: The active alarm codes can be read by means of the menu D2.1.
Bit 15 Fault	0: The SSW is not in fault condition. 1: The SSW is in fault condition. Note: The active fault code can be read by means of the menu D1.1.

S5.2 Command Word

.5 Slot1	0 ... 15 Bit
.6 Slot2	0 ... 15 Bit

Description:
Command word of all sources of the SSW. The RUN/STOP and JOG commands of the sources which are not active will be reset.

.5 Slot1 Control word via any communication accessory connected to Slot 1.

.6 Slot2 Command word via any communication accessory connected to Slot 2.

Bit	Value/Description
Bit 0 Start/Stop	**0**: stopping by ramp. **1**: starting by ramp.
Bit 1 Gener. Enabled	**0**: general disable. **1**: general enable.
Bit 2 JOG	**0**: no JOG. **1**: with JOG.
Bit 3 FWD/REV	**0**: clockwise CW. **1**: counterclockwise CCW.
Bit 4 LOC/REM	**0**: local. **1**: remote.
Bit 5 … 6 Reserved	
Bit 7 Reset	**0** → **1**: execute fault reset (if a fault is active). Note: Only in the 0 to 1 transition command.
Bit 8 … 15 Reserved	

NOTE!
If the RUN/STOP and JOG commands are by a certain source and it is active, only these commands can be viewed in S5.2. For security reasons, all the other commands of the other sources which are not active will be reset.

S5.3 Value for Outputs

.1 DO Value	0 ... 15 Bit

Description:
Value for digital and analog outputs via communication.

.1 DO Value Value for the digital outputs via network interfaces.

Bit	Value/Description
Bit 0 DO1	**0**: Inactive. **1**: Active.
Bit 1 DO2	**0**: Inactive. **1**: Active.
Bit 2 DO3	**0**: Inactive. **1**: Active.
Bit 3 … 15 Reserved	

S5.3.2 Value for AO

.1 AO in 10 bits	0 ... 1023

Description:
Value for the analog output via network interfaces.

.1 AO in 10 bits Value for the analog output via network interfaces: 0...1023. 0=0% and 1023=100%.

S5.5 Anybus-CC

.1 Identification	0 ... 25
.2 Comm. Status	0 ... 8

Description:
Status of the Anybus communication accessory and the protocols that use this interface.

.1 Identification It allows identifying the connected Anybus module.

Indication	Description
0 = Disabled	Communication module not installed.
1 ... 15 = Reserved	
16 = Profibus DP	Profibus DP module.
17 = DeviceNet	DeviceNet Module.
18 = Reserved	
19 = EtherNet/IP	EtherNet/IP module.
20 = Reserved	
21 = Modbus TCP	Modbus TCP module.
22 = Reserved	
23 = PROFINET IO	PROFINET IO module.
24 = PROFINET S2	
25 = Reserved	

.2 Comm. Status It informs the communication module status.

Indication	Description
0 = Setup	Module identified, waiting for configuration data (automatic).
1 = Init	Module executing the interface initialization (automatic).
2 = Wait Comm	Module initialized, but without communication with the network master.
3 = Idle	Communication with the network master established, but in idle or programming mode.
4 = Data Active	Communication with the network master established, and I/O data being communicated successfully. ”Online”.
5 = Error	Not available.
6 = Reserved	
7 = Exception	Serious error on the communication interface. The interface requires reinitialization.
8 = Access Error	Access error between the equipment and Anybus interface. Requires interface reset.

5 C CONFIGURATIONS

This menu allows the programming of all SSW configuration parameters.

C8 COMMUNICATIONS

To change information via communication network, the SSW has several standard protocols.

The following necessary accessories and protocols are available:

Protocol	Accessory
CANopen	SSW900-CAN-W
DeviceNet	SSW900-CDN-N, SSW900-CAN-W
EtherNet/IP	SSW900-CETH-IP-N, SSW900-CETH-W
Modbus RTU	SSW900-CRS485-W
Modbus TCP	SSW900-CMB-TCP-N, SSW900-CETH-W
Profibus DP	SSW900-CPDP-N
PROFINET IO	SSW900-CPN-IO-N
PROFINET S2	SSW900-CPN-S2-N

For further details regarding the SSW configuration to operate these protocols, refer to the SSW Communication Manual.

C8.1 I/O Data

Configure network data exchange area.

Use this for cyclic communication over SSW900-CAN-W module (DeviceNet), SSW900-CPDP-N, SSW900-CDN-N, SSW900-CETH-IP-N, SSW900-CPN-IO-N and SSW900-CETH-W (EtherNet/IP). For SSW900-CRS485-W using Modbus RTU protocol or modules SSW900-CMB-TCP-N and SSW900-CETH-W using Modbus TCP protocol, a contiguous area of holding registers (@1500-@1549 and @1600-@1619) can be accessed using standard Modbus functions.

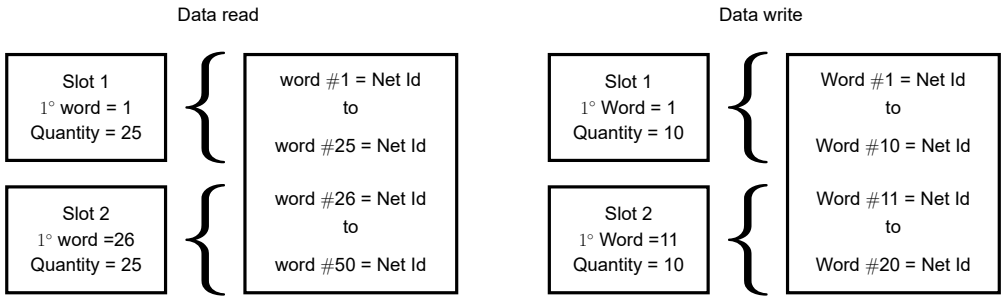


Figure 5.1: *Example of data setting*

C8.1.1 Data Read

Configure a set of 16 bit parameters to read over the network.

C8.1.1 Data Read		
C8.1.1.1 Slot 1 1st Word		
Range:	1 ... 50	**Default:** 1
Properties:	Stopped	

Description:
It sets the index of the first programmable read word for data communication (inputs for master).

C8.1.1 Data Read		
C8.1.1.2 Slot 1 Quantity		
Range:	1 ... 50	**Default:** 1
Properties:	Stopped	

Description:
It sets the number of read words for data communication (inputs for master), from the first word on.

C8.1.1 Data Read		
C8.1.1.3 Slot 2 1st Word		
Range:	1 ... 50	**Default:** 26
Properties:	Stopped	

Description:
It sets the index of the first programmable read word for data communication (inputs for master).

C8.1.1 Data Read		
C8.1.1.4 Slot 2 Quantity		
Range:	1 ... 50	**Default:** 1
Properties:	Stopped	

Description:
It set the number of read words for data communication (inputs for master), from the first word on.

C8.1.1 Data Read
C8.1.1.5 Word #1

C8.1.1.5 to C8.1.1.54

C8.1.1 Data Read		
C8.1.1.54 Word #50		
Range:	0 ... 65535	**Default:** 0
Properties:	Stopped	

Description:
Select the net address of other parameter, which content will be available as reading data for fieldbus interfaces (inputs: sent to master).

The data size of the referenced parameter must be considered. If data size is bigger than 16 bits, the next data read word configuration must be set to the same net address.

C8.1.2 Data Write

Configure a set of 16 bit parameters to write over the network.

C8.1.2 Data Write		
C8.1.2.1 Slot 1 1st Word		
Range:	1 ... 20	**Default:** 1
Properties:	Stopped	

Description:
It sets the index of the first programmable write word for data communication (outputs for master).

C8.1.2 Data Write		
C8.1.2.2 Slot 1 Quantity		
Range:	1 ... 20	**Default:** 1
Properties:	Stopped	

Description:
It sets the number of write words for data communication (outputs for master), from the first word on.

C8.1.2 Data Write		
C8.1.2.3 Slot 2 1st Word		
Range:	1 ... 20	**Default:** 11
Properties:	Stopped	

Description:
It sets the index of the first programmable write word for data communication (outputs for master).

C8.1.2 Data Write		
C8.1.2.4 Slot 2 Quantity		
Range:	1 ... 20	**Default:** 1
Properties:	Stopped	

Description:
It sets the number of write words for data communication (outputs for master), from the first word on.

C8.1.2 Data Write		
C8.1.2.5 Update Delay		
Range:	0.0 ... 999.9 s	**Default:** 0.0
Properties:		

Description:
Whenever there is a transition from offline (without cyclic data) to online (with cyclic write data), the data received via communication networks (write words) is ignored during this programmed time, remaining in the state it was before the beginning of the reception.

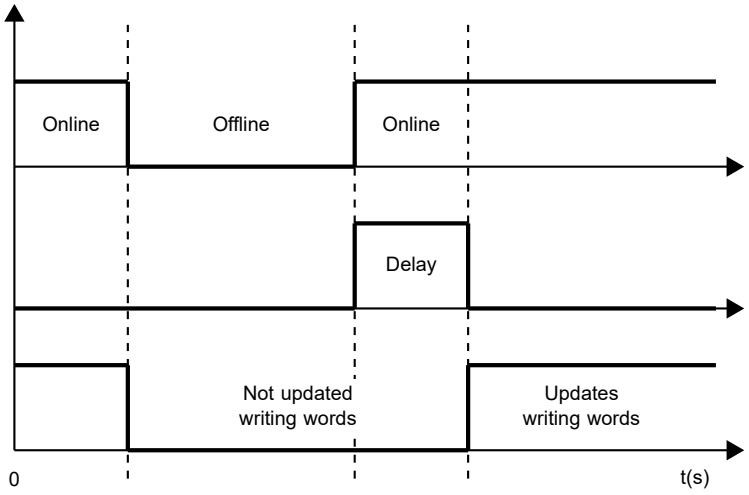


Figure 5.2: *Delay in the update of the I/O words*

C8.1.2 Data Write
C8.1.2.6 Word #1

C8.1.2.6 to C8.1.2.25

C8.1.2 Data Write		
C8.1.2.25 Word #20		
Range:	0 ... 65535	**Default:** 0
Properties:	Stopped	

Description:
Select the net address of other parameter, which content will be available as writing data for fieldbus interfaces (outputs: received from master).

The data size of the referenced parameter must be considered. If data size is bigger than 16 bits, the next data write word configuration must be set to the same net address.

C8.3 Anybus-CC

Configuration for the Anybus-CC communication and protocols that use this interface.

For a detailed description, refer to the SSW900 Anybus-CC User's Manual specific for the desired protocol, supplied in electronic format.

C8.3 Anybus-CC		
C8.3.1 Update Configuration		
Range:	0 ... 1	**Default:** 0
Properties:	Stopped	

Description:
It allows forcing a reinitialization of the Anybus-CC communication module for the configurations done in the parameters of menus C8.1 and C8.3 to be applied.

The reinitialization implies communication loss. After the process is completed, this parameter automatically goes back to Regular Operation.

Indication	Description
0 = Normal Operation	No action.
1 = Update configuration	Reinitializes the Anybus module.

C8.3 Anybus-CC		
C8.3.2 Address		
Range:	0 ... 255	**Default:** 63
Properties:		

Description:
Select the address used for the anybus module in the network.

It is necessary that each device in the network has an address different from all the others. This configuration is used for the Anybus-CC Profibus and DeviceNet modules only. For DeviceNet the range is 0 to 63 and for Profibus it is 1 to 126.

NOTE!
After changing this configuration, for the modification to be effective, the equipment must be turned off and then turned on again, or the configurations must be updated through C8.3.1.

C8.3.10 Off Line Error

Protection against interruption in the communication with the network master.

If for some reason there is an interruption in the communication between the product and the network master, a communication error will be indicated, alarm A129 or fault F129 will be shown on the HMI, depending on the programming of C8.3.10.1, and the action programmed in C8.3.10.2 will be executed.

It only occurs after the equipment is online. This error is generated for the modules Anybus-CC DeviceNet, EtherNet/IP, Profibus DP and PROFINET.

C8.3.10 Off Line Error

C8.3.10.1 Mode

Range: 0 ... 2 **Default:** 2

Properties:

Description:
It allows configuring the tripping mode of the protection against interruption in the communication with the network master.

Indication	Description
0 = Inactive	No tripping.
1 = Fault F129	Trips as fault. Disables the motor.
2 = Alarm A129	Trips as alarm. Action described in C8.3.10.2.

C8.3.10 Off Line Error

C8.3.10.2 Alarm Action

Range: 0 ... 4 **Default:** 2

Properties:

Description:
Action for the Anybus-CC Offline communication alarm.

The actions described in this parameter are executed through the writing of the respective bits in the control word of the SLOT to which the accessory Anybus-CC DeviceNet, EtherNet/IP, Profibus DP or PROFINET is connected. Thus, for the commands to be effective, the equipment must be programmed to be controlled by the network interface used. This programming is done through menu C8.3.10.

Indication	Description
0 = Indicates Only	No action is taken; the equipment remains in the current state.
1 = Ramp Stop	The stop by ramp command is executed, and the motor stops according to the programmed deceleration ramp.
2 = General Disable	The equipment is general disabled, and the motor stops by inertia.
3 = Change to LOC	The equipment is commanded to local mode.
4 = Change to REM	The equipment is commanded to remote mode.

NOTE!
The alarm action will only have a function if the error tripping mode C8.3.10.1 is programmed for Alarm A129.

6 OPERATION IN THE PROFIBUS DP NETWORK

6.1 PROFIBUS DP-V0

6.1.1 Cyclic Data

Cyclic data is the data normally used for status monitoring and equipment control. For Profibus DP protocol, the interface supports an I/O connection that allows communication up to 50 input words and 20 output words.

It is necessary the configuration to be made both at the slave and master.

6.1.2 Input words

The SSW900 soft-starter has a reading area with 50 16-bit words available for cyclic data exchange of communication networks. The data available in the reading area (Input) is sent to the master of the network. This area is shared between the two Slots.

To map an object in the reading area, follow the steps below.

1. Configure parameter C8.1.1.1 (Slot 1) or C8.1.1.3 (Slot 2). Those parameters indicate which of the reading words starts the input area for the specific Slot.
2. Configure on parameter C8.1.1.2 (Slot 1) or C8.1.1.4 (Slot 2) the quantity of input words which must be transmitted via network.
3. Parameters C8.1.1.5 to C8.1.1.54 enable to configure the data that must be provided on the reading words. Those parameters must contain the network addresses (Net Id) of the data that must be transmitted on the respective reading words. The Net Id list is available on the table 9.2. Consider the size of each parameter mentioned in this list when programming each word.

Example

The example below presents a configuration for Slot 2. Considering the following parameters to be mapped:

- S3.1.3.1 Status Word SSW.
- S1.2.4 Main Line Voltage Average.
- S1.1.4 Current Average.
- S1.5.4 Output Power & P.F. P. F..

Searching parameter information on the table 9.2:

Mapped Parameter	Net Id	Size	Qty Mapped Words	Example Value
S3.1.3.1 Status Word SSW	680	16bit	1	99
S1.2.4 Main Line Voltage Average	4	16bit	1	2186 (218.6 V)
S1.1.4 Current Average	24	32bit	2	23 (2.3 A)
S1.5.4 Output Power & P.F. P. F.	8	8bit	1	14 (0.14)

Therefore, the configuration must be performed as shown below:

1. C8.1.1.3 Data Read Slot 2 1st Word = 26 → first word transmitted via network is the word #26.
2. C8.1.1.4 Data Read Slot 2 Quantity = 5 → sum of the column “Qty mapped words”.
3. Table 6.1 presents the configuration parameters of the words and the content of the reading words.

Table 6.1: *Example of configuration of the writing words.*

Configuration Parameter	Mapped Parameter	Net Id	Input Area Value
C8.1.1.30 Data Read Word #26	S3.1.3.1	680	0063h
C8.1.1.31 Data Read Word #27	S1.2.4	4	088Ah
C8.1.1.32 Data Read Word #28	S1.1.4	24	0017h (S1.1.4 low word)
C8.1.1.33 Data Read Word #29	S1.1.4	24	0000h (S1.1.4 high word)
C8.1.1.34 Data Read Word #30	S1.5.4	8	000Eh

NOTE!

- Mapping of invalid parameters or not available will return zero value.
- The data is transmitted as an integer value, without the indication of the decimal places.
- To obtain the network address (Net Id) of the parameters and the number of decimal places, refer to the item 9.

6.1.3 Output Words

The SSW900 soft-starter has a writing area with 20 16-bit words available for cyclic data exchange of communication networks. The data available in the write area (Output) is received from the network master. This area is shared between the two Slots.

To map an object in the writing area, follow the steps below.

1. Configure parameter C8.1.2.1 (Slot 1) or C8.1.2.3 (Slot 2). Those parameters indicate which of the writing words starts the output area for the specific Slot.
2. Configure on parameter C8.1.2.2 (Slot 1) or C8.1.2.4 (Slot 2) the quantity of reading words which must be transmitted via network.
3. Parameters C8.1.2.6 to C8.1.2.25 enable to configure the data that must be provided on the writing words. Those parameters must contain the network address (Net Id) of the data that must be transmitted on the respective writing words. The Net Id list is available on the table 9.2. Consider the size of each parameter mentioned in list when programming each word.

Exemplo

The example below presents a configuration for Slot 1. Considering the following parameters to be mapped:

- S5.2.5 Command Word Slot1.
- S5.3.1 Value for Outputs DO Value.
- S5.3.2.1 Value for AO AO in 10 bits.

Searching parameter information on the table 9.2:

Mapped Parameter	Net Id	Size	Qty Mapped Words	Example Value
S5.2.5 Command Word Slot1	685	16bit	1	19 = 0013h
S5.3.1 Value for Outputs DO Value	695	16bit	1	7 = 0007h
S5.3.2.1 Value for AO AO in 10 bits	696	16bit	1	1023 = 03FFh

Therefore, the configuration must be performed as shown below:

1. C8.1.2.1 Data Write Slot 1 1st Word = 1 → first word transmitted via network is the word #1.
2. C8.1.2.2 Data Write Slot 1 Quantity = 3 → sum of column “Qty mapped words”.
3. The table 6.2 presents the configuration parameters of the words and the content of the writing words.

Table 6.2: *Example of configuration of the writing words.*

Configuration Parameter	Mapped Parameter	Net Id	Output Area Value
C8.1.2.6 Data Write Word #1	S5.2.5	685	0013h
C8.1.2.7 Data Write Word #2	S5.3.1	695	0007h
C8.1.2.8 Data Write Word #3	S5.3.2.1	696	03FFh

NOTE!

- Mapping of readonly parameters (status, diagnostics) or invalid parameters will have no effect.
- Parameters that have the property *Stopped*, when mapped on the writing words, are only changed when the motor is stopped.
- The parameters written using these words are not saved in non-volatile memory. Thus, if the equipment is turned off and back on, these parameters will return to their original value.
- The data is transmitted as an integer value, without the indication of the decimal places.
- To obtain the network address (Net Id) of the parameters, refer to the item 9.

6.2 PROFIBUS DP-V1

6.2.1 Acyclic Data

In addition to the services defined by the first version of the Profibus DP specification (DP-V0), where it is mainly defined how to perform the exchange of cyclic data for equipment control and monitoring, the SSW900 soft-starter with the Profibus DP communication accessory also supports the DP-V1 additional services for acyclic communication. Using these services, it id possible to read/write drive parameters using DP-V1 acyclic function, both by the network master (class 1 master) and by a commissioning tool (class 2 master).

The parameter mapping is done based on the *Slot* and *Index* addressing, as showed in the formula below:

- Slot: ((Net Id) - 1) / 255.
- Index: ((Net Id) - 1) MOD 255.

NOTE!

- MOD represents the remainder of the integer division.
- The data is transmitted as an integer value, without the indication of the decimal places.
- To obtain the network address (Net Id) used to identify the *Slot* and *Index* of the parameters, refer to the item 9.

6.3 GSD FILE

Each device on a Profibus DP network has a GSD configuration file, which contains information about the device functions on the network. This file is used by a master or configuration software to program devices present at Profibus DP network.

The GSD file is available from WEG website (http://www.weg.net).

7 STARTUP GUIDE

The main steps to start up the SSW900 soft-starter in Profibus DP network are described below. These steps represent an example of use. Check out the specific chapters for details on the indicated steps.

7.1 INSTALLING THE ACCESSORY

1. Install the communication accessory, as indicated in the installation guide supplied with the accessory.
2. With the module installed the ST LED must turn on in green.
3. Observe the content of parameter S5.5.1. Check if the module was recognized. The detection is done automatically and does not require the user's intervention.
4. Connect the cables, considering the recommended instructions in network installation, as described in item 3.6:
   - Use shielded cable.
   - Properly ground network equipment.
   - Avoid laying communication cables next to power cables.

7.2 CONFIGURING THE EQUIPMENT

1. Follow the recommendations described in the user manual to program the device parameters related to the motor parameterization, desired functions for the I/O signals, etc.
2. Program the command sources as desired for the application in menu C3.
3. Configure the address in C8.3.
4. Program the desired action for the equipment in case of communication fault in C8.3.10.
5. Define which data will be read and written at soft-starter SSW900 using menu C8.1. Among the main parameters that can be used to control the device, we can mention:
   - S3.1.3.1 Status Word SSW (read).
   - S5.2.5 Command Word Slot1 (write).
   - S5.2.6 Command Word Slot2 (write).
6. Once the parameters are set, if any of the parameters described in the previous steps were changed, the equipment must be powered off and on again, or an update must be performed by C8.3.1.

7.3 CONFIGURING THE MASTER

The way the network configuration is done depends greatly on the used master and the configuration tool. It is essential to know the tools used to perform this activity. In general, the following steps are necessary to perform the network configuration.

1. Load the GSD file[1] to the list of devices in the network configuration tool.
2. Select SSW900 soft-starter from the available list of devices on the network configuration tool. This can be done manually or automatically, if allowed by the tool.
3. The Profibus DP module is recognized as "SSW900 Anybus-CC", at the "General" category.
4. For the master configuration, in addition to the address used by the Profibus DP module, you must indicate the number of I/O words exchanged with the master. It is necessary to select word by word, first selecting all input words and then all output words.

Once configured, the OP LED will be on in green. It is in this condition that cyclic data exchange effectively occurs between the slave and the master of the network.

[1] The GSD file is available from WEG website (http://www.weg.net).

7.4 COMMUNICATION STATUS

Once the network is assembled and the master programmed, it is possible to use the LEDs and parameters of the equipment to identify some status related to the communication.

- The ST and OP LEDs provide information about the status of the interface and communication.
- The parameter S5.5.2 indicates the status of communication between the device and the network master.

The master of the network must also supply information about the communication with the slave.

7.5 OPERATION USING PROCESS DATA

Once the communication is established, the data mapped in the I/O area is automatically updated between master and slave. Among the main parameters that can be used to control the device, we can mention:

- S3.1.3.1 Status Word SSW.
- S5.2.5 Command Word Slot1.
- S5.2.6 Command Word Slot2.

It is important to know these parameters to program the master as desired for the application.

7.6 ACCESS TO PARAMETERS – ACYCLIC MESSAGES

Besides the I/O data (cyclic) communication, the Profibus DP protocol also defines a kind of acyclic DP-V1 telegram, used especially in asynchronous tasks, such as parameter setting and configuration of the equipment.

The item 6.2.1 describes how to address the parameters of the soft-starter SSW900 via acyclic messages.

8 FAULTS AND ALARMS

Fault/Alarm	Description	Possible Causes
F129/A129: Anybus Offline	It indicates communication interruption of Anybus-CC accessory with network master.	- The master PLC went to the idle or programming state. - Programming error, the number of programmed I/O words in the slave differs from the number adjusted in the master. - Lose of communication with the master (broken cable, disconnected connector etc.).
F130: Anybus Access Fault	It indicates access error to the Anybus-CC communication module. It actuates when the SSW cannot exchange data with the Anybus-CC accessory, when the Anybus module identifies some internal fault, or when there is a hardware incompatibility. In order to remove this fault, it is necessary to power the SSW off and on again.	- Check that the accessory is properly fitted. - Check that the equipment firmware version supports the Anybus accessory. - Hardware errors due to improper handling or installation of the accessory, for example, may cause this error. - If possible, carry out tests by replacing the communication accessory.
F132/A132: Anybus Idle	It indicates that network master changed to idle or programming state.	- How to detect this condition depends on the communication protocol and the network master.

9 QUICK REFERENCES

9.1 PARAMETER STRUCTURE

Level 1	Level 2	Level 3		Page
S Status	S1	Measurements	S1.1	Current	28
			S1.2	Main Line Voltage	
			S1.3	Output Voltage	
			S1.4	SCR Blocking Voltage	
			S1.5	Output Power & P.F.	
			S1.6	P.L.L.	
			S1.7	Motor Torque	
			S1.8	Control Voltage	
	S2	I/O	S2.1	Digital	29
			S2.2	Analog Output	
	S3	SSW900	S3.1	SSW Status	29
			S3.2	Software Version	
			S3.3	SSW Model	
			S3.4	Fan Status	
			S3.5	Accessories	
	S4	Temperatures	S4.1	SCRs Temperature	32
			S4.2	Thermal Class Status	
			S4.3	Motor Temperature	
	S5	Communications	S5.1	Status Word	32
			S5.2	Command Word	
			S5.3	Value for Outputs	
			S5.4	RS485 Serial	
			S5.5	Anybus-CC	
			S5.6	Configuration Mode	
			S5.7	CANopen/DeviceNet	
			S5.8	Ethernet	
			S5.9	Bluetooth	
	S6	SoftPLC	S6.1	SoftPLC Status	37
			S6.2	Scan Cycle Time	
			S6.3	Value for Outputs	
			S6.4	Parameter	
D Diagnostics	D1	Fault	D1.1	Actual	39
			D1.2	Fault History	
	D2	Alarms	D2.1	Actual	39
			D2.2	Alarm History	
	D3	Events			39
	D4	Motor On	D4.1	Start Current	39
			D4.2	Real Start Time	
			D4.3	Current Full Voltage	
			D4.4	Main Line Voltage	
			D4.5	Main Line Frequency	
			D4.6	kWh Counter	
			D4.7	Number Start	
	D5	Temperatures	D5.1	SCRs Maximum	39
			D5.2	Motor Maximum	
	D6	Hours Control			40
	D7	Changed Parameters			40

Level 1		Level 2		Level 3		Page
C	Configurations	C1	Starting and Stopping			40
		C2	Nominal Motor Data			41
		C3	LOC/REM Selection			41
		C4	I/O	C4.1	Digital Inputs	41
				C4.2	Digital Outputs	
				C4.3	Analog Output	
		C5	Protections	C5.1	Voltage Protections	46
				C5.2	Current Protections	
				C5.3	Torque Protections	
				C5.4	Power Protections	
				C5.5	Phase Sequence	
				C5.6	Bypass Protections	
				C5.7	Time Protections	
				C5.8	Motor Thermal Protection	
				C5.9	Motor Thermal Class	
				C5.10	SSW Short Circuit	
				C5.11	Fault Auto-Reset	
		C6	HMI	C6.1	Password	52
				C6.2	Language	
				C6.3	Date and Time	
				C6.4	Main Screen	
				C6.5	LCD Display	
				C6.6	Communication Timeout	
		C7	Special Functions	C7.1	Forward/Reverse	53
				C7.2	Kick Start	
				C7.3	Jog	
				C7.4	Braking	
		C8	Communications	C8.1	I/O Data	53
				C8.2	RS485 Serial	
				C8.3	Anybus-CC	
				C8.4	CANopen/DeviceNet	
				C8.5	Ethernet	
				C8.6	Bluetooth	
		C9	SSW900	C9.1	Nominal Data	60
				C9.2	Types of Connections	
				C9.3	Accessories Config.	
				C9.4	Fan Configuration	
		C10	Load / Save Parameters	C10.1	Load / Save User	62
				C10.2	Copy Function HMI	
				C10.3	Erase Diagnostics	
				C10.4	Load Factory Default	
				C10.5	Save Changed Param.	
		C11	SoftPLC	C11.3	Parameter	62
A	Assistant	A1	Oriented Start-up			64

9.2 PARAMETERS

Table 9.2: *Characteristics of the parameters for the communication protocol*

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S1 Status\Measurements								
S1.1	Current							
S1.1.1	R Phase	0.0 to 14544.0 A	1	0	25	26	32bit	2
S1.1.2	S Phase	0.0 to 14544.0 A	1	0	27	28	32bit	2
S1.1.3	T Phase	0.0 to 14544.0 A	1	0	29	30	32bit	2
S1.1.4	Average	0.0 to 14544.0 A	1	0	23	24	32bit	2
S1.1.5	Motor %In	0.0 to 999.9 %	1	0	1	2	16bit	1
S1.1.6	SSW %In	0.0 to 999.9 %	1	0	0	1	16bit	1
S1.2	Main Line Voltage							
S1.2.1	R-S Line	0.0 to 999.9 V	1	0	32	33	16bit	1
S1.2.2	S-T Line	0.0 to 999.9 V	1	0	33	34	16bit	1
S1.2.3	T-R Line	0.0 to 999.9 V	1	0	34	35	16bit	1
S1.2.4	Average	0.0 to 999.9 V	1	0	3	4	16bit	1
S1.2.5	Motor %Vn	0.0 to 999.9 %	1	0	2	3	16bit	1
S1.2.6	SSW %Vn	0.0 to 999.9 %	1	0	4	5	16bit	1
S1.3	Output Voltage							
S1.3.1	Average	0.0 to 999.9 V	1	0	6	7	16bit	1
S1.3.2	Motor %Vn	0.0 to 999.9 %	1	0	5	6	16bit	1
S1.4	SCR Blocking Voltage							
S1.4.1	R-U Blocking	0.0 to 999.9 V	1	0	20	21	16bit	1
S1.4.2	S-V Blocking	0.0 to 999.9 V	1	0	21	22	16bit	1
S1.4.3	T-W Blocking	0.0 to 999.9 V	1	0	22	23	16bit	1
S1.5	Output Power & P.F.							
S1.5.1	Active	0.0 to 11700.0 kW	1	0	9	10	32bit	2
S1.5.2	Apparent	0.0 to 11700.0 kVA	1	0	11	12	32bit	2
S1.5.3	Reactive	0.0 to 11700.0 kVAr	1	0	13	14	32bit	2
S1.5.4	P. F.	0.00 to 1.00	2	0	7	8	8bit	1
S1.6	P.L.L.							
S1.6.1	Status	0 = Off 1 = Ok		0	15	16	enum	1
S1.6.2	Frequency	0.0 to 99.9 Hz	1	0	16	17	16bit	1
S1.6.3	Sequence	0 = Invalid 1 = RST / 123 2 = RTS / 132		0	17	18	enum	1
S1.7	Motor Torque							

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S1.7.1	Motor %Tn	0.0 to 999.9 %	1	0	8	9	16bit	1
S1.8	Control Voltage							
S1.8.1	Input	0.0 to 999.9 V	1	0	70	71	16bit	1
S1.8.2	+5V	0.00 to 9.99 V	2	0	71	72	16bit	1
S1.8.3	+12V	0.0 to 99.9 V	1	0	72	73	16bit	1
S1.8.4	+Vbat	0.00 to 9.99 V	2	0	74	75	16bit	1
S1.8.5	+48V	0.0 to 99.9 V	1	0	75	76	16bit	1
S2 Status\I/O								
S2.1	Digital							
S2.1.1	Inputs	Bit 0 = DI1 Bit 1 = DI2 Bit 2 = DI3 Bit 3 = DI4 Bit 4 = DI5 Bit 5 = DI6 Bit 6 ... 15 = Reserved		2	166	677	16bit	1
S2.1.2	Outputs	Bit 0 = DO1 Bit 1 = DO2 Bit 2 = DO3 Bit 3 ... 15 = Reserved		2	167	678	16bit	1
S2.2	Analog Output							
S2.2.1	Percent	0.00 to 100.00 %	2	2	162	673	16bit	1
S2.2.2	Current	0.000 to 20.000 mA	3	2	163	674	16bit	1
S2.2.3	Voltage	0.000 to 10.000 V	3	2	164	675	16bit	1
S2.2.4	10 bits	0 to 1023	0	2	165	676	16bit	1
S3 Status\SSW900								
S3.1	SSW Status							
S3.1.1	Actual	0 = Ready 1 = Initial Test 2 = Fault 3 = Ramp Up 4 = Full Voltage 5 = Bypass 6 = Reserved 7 = Ramp Down 8 = Braking 9 = FWD/REV 10 = Jog		2	168	679	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		11 = Start Delay 12 = Re-start Delay 13 = General Disabled 14 = Configuration						
S3.1.2	Active Command Source	0 = HMI Keys LOC 1 = HMI Keys REM 2 = DIx LOC 3 = DIx REM 4 = USB LOC 5 = USB REM 6 = SoftPLC LOC 7 = SoftPLC REM 8 = Slot 1 LOC 9 = Slot 1 REM 10 = Slot 2 LOC 11 = Slot 2 REM		0	231	232	enum	1
S3.1.3	Status Word							
S3.1.3.1	SSW	Bit 0 = Running Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = Initial Test Bit 4 = Ramp Up Bit 5 = Full Voltage Bit 6 = Bypass Bit 7 = Ramp Down Bit 8 = Remote Bit 9 = Braking Bit 10 = FWD/REV Bit 11 = Reverse Bit 12 = Ton Bit 13 = Toff Bit 14 = Alarm Bit 15 = Fault		2	169	680	16bit	1
S3.1.4	Configuration Mode							
S3.1.4.1	Status	Bit 0 = System Initialization Bit 1 = Firmware Download Bit 2 = Oriented Start-Up Bit 3 = Incompatible		2	181	692	16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		Bit 4 = Reset Needs Bit 5 = Copy HMI Bit 6 = Test Mode Bit 7 ... 15 = Reserved						
S3.2	Software Version							
S3.2.1	Package	0.00 to 99.99	2	1	72	328	16bit	1
S3.2.2	Details							
S3.2.2.1	Control 1 V	0.00 to 99.99	2	1	74	330	16bit	1
S3.2.2.2	Control 1 rev.	-32768 to 32767	0	1	71	327	s16bit	1
S3.2.2.3	Bootloader V	0.00 to 99.99	2	1	73	329	16bit	1
S3.2.2.4	Bootloader rev.	-32768 to 32767	0	1	67	323	s16bit	1
S3.2.2.5	HMI rev.	-32768 to 32767	0	1	66	322	s16bit	1
S3.2.2.6	Control 2 V	0.00 to 99.99	2	1	75	331	16bit	1
S3.2.2.7	Control 2 rev.	-32768 to 32767	0	1	70	326	s16bit	1
S3.2.2.8	Accessory 1 V	0.00 to 99.99	2	1	77	333	16bit	1
S3.2.2.9	Accessory 1 rev.	-32768 to 32767	0	1	68	324	s16bit	1
S3.2.2.10	Accessory 2 V	0.00 to 99.99	2	1	78	334	16bit	1
S3.2.2.11	Accessory 2 rev.	-32768 to 32767	0	1	69	325	s16bit	1
S3.3	SSW Model							
S3.3.1	Current	0 = 10 to 30 A 1 = 45 to 105 A 2 = 130 to 200 A 3 = 255 to 412 A 4 = 480 to 670 A 5 = 820 to 950 A 6 = 1100 to 1400 A		1	38	294	enum	1
S3.3.2	Voltage	0 = 220 to 575 V 1 = 380 to 690 V		1	40	296	enum	1
S3.3.3	Control Voltage	0 = 110 to 240 V 1 = 110 to 130 V 2 = 220 to 240 V 3 = 24 V		1	41	297	enum	1
S3.3.4	Serial Number	0 to 4294967295	0	1	42	298	32bit	2
S3.4	Fan Status							
S3.4.1	Actual	0 = Off 1 = On		1	37	293	enum	1
S3.5	Accessories							

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S3.5.1	Slot 1	0 = Without 1 = Anybus-CC 2 = RS-485 3 = PT100 4 = I/Os Exp. 5 = Profibus 6 = CAN 7 = Ethernet 8 = External Current Acqu.		1	79	335	enum	1
S3.5.2	Slot 2	0 = Without 1 = Anybus-CC 2 = RS-485 3 = PT100 4 = I/Os Exp. 5 = Profibus 6 = CAN 7 = Ethernet 8 = External Current Acqu.		1	80	336	enum	1
		S4 Status\Temperatures						
S4.1	SCRs Temperature							
S4.1.1	Actual	-22 to 260 °C	0	0	59	60	s16bit	1
S4.2	Thermal Class Status							
S4.2.1	Of Maximum	0.0 to 100.0 %	1	0	49	50	16bit	1
S4.3	Motor Temperature							
S4.3.1	Channel 1	-20 to 260 °C	0	0	62	63	s16bit	1
S4.3.2	Channel 2	-20 to 260 °C	0	0	63	64	s16bit	1
S4.3.3	Channel 3	-20 to 260 °C	0	0	64	65	s16bit	1
S4.3.4	Channel 4	-20 to 260 °C	0	0	65	66	s16bit	1
S4.3.5	Channel 5	-20 to 260 °C	0	0	66	67	s16bit	1
S4.3.6	Channel 6	-20 to 260 °C	0	0	67	68	s16bit	1
		S5 Status\Communications						
S5.1	Status Word							
S5.1.1	SSW	Bit 0 = Running Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = Initial Test Bit 4 = Ramp Up Bit 5 = Full Voltage		2	169	680	16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		Bit 6 = Bypass Bit 7 = Ramp Down Bit 8 = Remote Bit 9 = Braking Bit 10 = FWD/REV Bit 11 = Reverse Bit 12 = Ton Bit 13 = Toff Bit 14 = Alarm Bit 15 = Fault						
S5.2	Command Word							
S5.2.1	DIx	Bit 0 = Start/Stop Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = FWD/REV Bit 4 = LOC/REM Bit 5 ... 6 = Reserved Bit 7 = Reset Bit 8 = Brake Bit 9 = Emergency Start Bit 10 ... 15 = Reserved		2	172	683	16bit	1
S5.2.2	HMI Key	Bit 0 = Start/Stop Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = FWD/REV Bit 4 = LOC/REM Bit 5 ... 6 = Reserved Bit 7 = Reset Bit 8 ... 15 = Reserved		2	170	681	16bit	1
S5.2.3	USB	Bit 0 = Start/Stop Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = FWD/REV Bit 4 = LOC/REM Bit 5 ... 6 = Reserved Bit 7 = Reset Bit 8 ... 15 = Reserved		2	171	682	16bit	1
S5.2.4	SoftPLC			2	173	684	16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		Bit 0 = Start/Stop Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = FWD/REV Bit 4 = LOC/REM Bit 5 ... 6 = Reserved Bit 7 = Reset Bit 8 ... 15 = Reserved						
S5.2.5	Slot1	Bit 0 = Start/Stop Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = FWD/REV Bit 4 = LOC/REM Bit 5 ... 6 = Reserved Bit 7 = Reset Bit 8 ... 15 = Reserved		2	174	685	16bit	1
S5.2.6	Slot2	Bit 0 = Start/Stop Bit 1 = Gener. Enabled Bit 2 = JOG Bit 3 = FWD/REV Bit 4 = LOC/REM Bit 5 ... 6 = Reserved Bit 7 = Reset Bit 8 ... 15 = Reserved		2	175	686	16bit	1
S5.3	Value for Outputs							
S5.3.1	DO Value	Bit 0 = DO1 Bit 1 = DO2 Bit 2 = DO3 Bit 3 ... 15 = Reserved		2	184	695	16bit	1
S5.3.2	Value for AO							
S5.3.2.1	AO in 10 bits	0 to 1023	0	2	185	696	16bit	1
S5.4	RS485 Serial							
S5.4.1	Interface Status	0 = Off 1 = On 2 = Timeout Error		2	224	735	enum	1
S5.4.2	Received Telegram	0 to 65535	0	2	225	736	16bit	1
S5.4.3	Transmitted Telegram	0 to 65535	0	2	226	737	16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S5.4.4	Telegram with Error	0 to 65535	0	2	227	738	16bit	1
S5.4.5	Reception Errors	0 to 65535	0	2	228	739	16bit	1
S5.5	Anybus-CC							
S5.5.1	Identification	0 = Disabled 1 ... 15 = Reserved 16 = Profibus DP 17 = DeviceNet 18 = Reserved 19 = EtherNet/IP 20 = Reserved 21 = Modbus TCP 22 = Reserved 23 = PROFINET IO 24 = PROFINET S2 25 = Reserved		2	239	750	enum	1
S5.5.2	Comm. Status	0 = Setup 1 = Init 2 = Wait Comm 3 = Idle 4 = Data Active 5 = Error 6 = Reserved 7 = Exception 8 = Access Error		2	240	751	enum	1
S5.6	Configuration Mode							
S5.6.1	Status	Bit 0 = System Initialization Bit 1 = Firmware Download Bit 2 = Oriented Start-Up Bit 3 = Incompatible Bit 4 = Reset Needs Bit 5 = Copy HMI Bit 6 = Test Mode Bit 7 ... 15 = Reserved		2	181	692	16bit	1
S5.6.2	Control	Bit 0 = Abort Startup Bit 1 ... 15 = Reserved		2	182	693	16bit	1
S5.7	CANopen/DeviceNet							
S5.7.1	CAN Controller Status			2	194	705	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		0 = Disabled 1 = Auto-baud 2 = CAN Enabled 3 = Warning 4 = Error Passive 5 = Bus Off 6 = No Bus Power						
S5.7.2	Received Telegram	0 to 65535	0	2	195	706	16bit	1
S5.7.3	Transmitted Telegram	0 to 65535	0	2	196	707	16bit	1
S5.7.4	Bus Off Counter	0 to 65535	0	2	197	708	16bit	1
S5.7.5	Lost Messages	0 to 65535	0	2	198	709	16bit	1
S5.7.6	CANopen Comm. Status	0 = Disabled 1 = Reserved 2 = Comm. Enabled 3 = ErrorCtrl.Enab 4 = Guarding Error 5 = HeartbeatError		2	210	721	enum	1
S5.7.7	CANopen Node State	0 = Disabled 1 = Initialization 2 = Stopped 3 = Operational 4 = PreOperational		2	211	722	enum	1
S5.7.8	DNet Network Status	0 = Offline 1 = OnLine,NotConn 2 = OnLine,Conn 3 = Conn.Timed-out 4 = Link Failure 5 = Auto-Baud		2	205	716	enum	1
S5.7.9	DeviceNet Master Status	0 = Run 1 = Idle		2	206	717	enum	1
S5.8	Ethernet							
S5.8.1	MBTCP: Communication Status	0 = Disabled 1 = No connection 2 = Connected 3 = Timeout Error		3	94	860	enum	1
S5.8.2	MBTCP: Active Connections	0 to 4	0	3	97	863	8bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S5.8.3	EIP Master Status	0 = Run 1 = Idle		3	103	869	enum	1
S5.8.4	EIP Communication Status	0 = Disabled 1 = No connection 2 = Connected 3 = Timeout in I/O Connection 4 = Duplicated IP		3	104	870	enum	1
S5.8.5	Interface Status	Bit 0 = Link1 Bit 1 = Link2 Bit 2 ... 15 = Reserved		3	123	889	16bit	1
S5.8.6	Current IP Address	0.0.0.0 to 255.255.255.255		3	80	846	ip_address	2
S5.9	Bluetooth							
		S6 Status\SoftPLC						
S6.1	SoftPLC Status							
S6.1.1	Actual	0 = No Application 1 = Install. App. 2 = Incompat. App. 3 = App. Stopped 4 = App. Running		4	79	1100	enum	1
S6.2	Scan Cycle Time							
S6.2.1	Actual	0 to 65535 ms	0	4	81	1102	16bit	1
S6.3	Value for Outputs							
S6.3.1	DO Value	Bit 0 = DO1 Bit 1 = DO2 Bit 2 = DO3 Bit 3 ... 15 = Reserved		2	186	697	16bit	1
S6.3.2	AO Value							
S6.3.2.1	AO in 10 bits	0 to 1023	0	2	187	698	16bit	1
S6.4	Parameter							
S6.4.1	User #1	-10000 to 10000	0	4	89	1110	s32bit	2
S6.4.2	User #2	-10000 to 10000	0	4	91	1112	s32bit	2
S6.4.3	User #3	-10000 to 10000	0	4	93	1114	s32bit	2
S6.4.4	User #4	-10000 to 10000	0	4	95	1116	s32bit	2
S6.4.5	User #5	-10000 to 10000	0	4	97	1118	s32bit	2
S6.4.6	User #6	-10000 to 10000	0	4	99	1120	s32bit	2
S6.4.7	User #7	-10000 to 10000	0	4	101	1122	s32bit	2

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S6.4.8	User #8	-10000 to 10000	0	4	103	1124	s32bit	2
S6.4.9	User #9	-10000 to 10000	0	4	105	1126	s32bit	2
S6.4.10	User #10	-10000 to 10000	0	4	107	1128	s32bit	2
S6.4.11	User #11	-10000 to 10000	0	4	109	1130	s32bit	2
S6.4.12	User #12	-10000 to 10000	0	4	111	1132	s32bit	2
S6.4.13	User #13	-10000 to 10000	0	4	113	1134	s32bit	2
S6.4.14	User #14	-10000 to 10000	0	4	115	1136	s32bit	2
S6.4.15	User #15	-10000 to 10000	0	4	117	1138	s32bit	2
S6.4.16	User #16	-10000 to 10000	0	4	119	1140	s32bit	2
S6.4.17	User #17	-10000 to 10000	0	4	121	1142	s32bit	2
S6.4.18	User #18	-10000 to 10000	0	4	123	1144	s32bit	2
S6.4.19	User #19	-10000 to 10000	0	4	125	1146	s32bit	2
S6.4.20	User #20	-10000 to 10000	0	4	127	1148	s32bit	2
S6.4.21	User #21	-10000 to 10000	0	4	129	1150	s32bit	2
S6.4.22	User #22	-10000 to 10000	0	4	131	1152	s32bit	2
S6.4.23	User #23	-10000 to 10000	0	4	133	1154	s32bit	2
S6.4.24	User #24	-10000 to 10000	0	4	135	1156	s32bit	2
S6.4.25	User #25	-10000 to 10000	0	4	137	1158	s32bit	2
S6.4.26	User #26	-10000 to 10000	0	4	139	1160	s32bit	2
S6.4.27	User #27	-10000 to 10000	0	4	141	1162	s32bit	2
S6.4.28	User #28	-10000 to 10000	0	4	143	1164	s32bit	2
S6.4.29	User #29	-10000 to 10000	0	4	145	1166	s32bit	2
S6.4.30	User #30	-10000 to 10000	0	4	147	1168	s32bit	2
S6.4.31	User #31	-10000 to 10000	0	4	149	1170	s32bit	2
S6.4.32	User #32	-10000 to 10000	0	4	151	1172	s32bit	2
S6.4.33	User #33	-10000 to 10000	0	4	153	1174	s32bit	2
S6.4.34	User #34	-10000 to 10000	0	4	155	1176	s32bit	2
S6.4.35	User #35	-10000 to 10000	0	4	157	1178	s32bit	2
S6.4.36	User #36	-10000 to 10000	0	4	159	1180	s32bit	2
S6.4.37	User #37	-10000 to 10000	0	4	161	1182	s32bit	2
S6.4.38	User #38	-10000 to 10000	0	4	163	1184	s32bit	2
S6.4.39	User #39	-10000 to 10000	0	4	165	1186	s32bit	2
S6.4.40	User #40	-10000 to 10000	0	4	167	1188	s32bit	2
S6.4.41	User #41	-10000 to 10000	0	4	169	1190	s32bit	2
S6.4.42	User #42	-10000 to 10000	0	4	171	1192	s32bit	2
S6.4.43	User #43	-10000 to 10000	0	4	173	1194	s32bit	2
S6.4.44	User #44	-10000 to 10000	0	4	175	1196	s32bit	2
S6.4.45	User #45	-10000 to 10000	0	4	177	1198	s32bit	2
S6.4.46	User #46	-10000 to 10000	0	4	179	1200	s32bit	2
S6.4.47	User #47	-10000 to 10000	0	4	181	1202	s32bit	2
S6.4.48	User #48	-10000 to 10000	0	4	183	1204	s32bit	2
S6.4.49	User #49	-10000 to 10000	0	4	185	1206	s32bit	2

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
S6.4.50	User #50	-10000 to 10000	0	4	187	1208	s32bit	2
			D1 Diagnostics\Fault					
D1.1	Actual							
D1.1.1	Fxxx	0 to 999	0	0	89	90	16bit	1
D1.2	Fault History							
			D2 Diagnostics\Alarms					
D2.1	Actual							
D2.1.1	Axxx 1	0 to 999	0	0	90	91	16bit	1
D2.1.2	Axxx 2	0 to 999	0	0	91	92	16bit	1
D2.1.3	Axxx 3	0 to 999	0	0	92	93	16bit	1
D2.1.4	Axxx 4	0 to 999	0	0	93	94	16bit	1
D2.1.5	Axxx 5	0 to 999	0	0	94	95	16bit	1
D2.2	Alarm History							
			D3 Diagnostics\Events D4 Diagnostics\Motor On					
D4.1	Start Current							
D4.1.1	Maximum	0.0 to 14544.0 A	1	0	35	36	32bit	2
D4.1.2	Average	0.0 to 14544.0 A	1	0	37	38	32bit	2
D4.2	Real Start Time							
D4.2.1	Actual	0 to 999 s	0	0	47	48	16bit	1
D4.2.2	Final	0 to 999 s	0	0	48	49	16bit	1
D4.3	Current Full Voltage							
D4.3.1	Maximum	0.0 to 14544.0 A	1	0	39	40	32bit	2
D4.4	Main Line Voltage							
D4.4.1	Maximum	0.0 to 999.9 V	1	0	53	54	16bit	1
D4.4.2	Minimun	0.0 to 999.9 V	1	0	54	55	16bit	1
D4.5	Main Line Frequency							
D4.5.1	Maximum	0.0 to 99.9 Hz	1	0	55	56	16bit	1
D4.5.2	Minimum	0.0 to 99.9 Hz	1	0	56	57	16bit	1
D4.6	kWh Counter							
D4.6.1	Total	0.0 to 429496729.5 kWh	1	0	51	52	32bit	2
D4.7	Number Start							
D4.7.1	Total	0 to 65535	0	0	58	59	16bit	1
			D5 Diagnostics\Temperatures					
D5.1	SCRs Maximum							
D5.1.1	Total	-22 to 260 °C	0	0	76	77	s16bit	1
D5.2	Motor Maximum							
D5.2.1	Channel 1	-20 to 260 °C	0	0	79	80	s16bit	1
D5.2.2	Channel 2	-20 to 260 °C	0	0	80	81	s16bit	1
D5.2.3	Channel 3	-20 to 260 °C	0	0	81	82	s16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
D5.2.4	Channel 4	-20 to 260 °C	0	0	82	83	s16bit	1
D5.2.5	Channel 5	-20 to 260 °C	0	0	83	84	s16bit	1
D5.2.6	Channel 6	-20 to 260 °C	0	0	84	85	s16bit	1
D6 Diagnostics\Hours Control								
D6.1	Powered	0 to 4294967295 s	0	0	41	42	TIME	2
D6.2	Enabled	0 to 4294967295 s	0	0	43	44	TIME	2
D6.3	Fan ON	0 to 4294967295 s	0	0	45	46	TIME	2
D7 Diagnostics\Changed Parameters								
C1 Configurations\Starting and Stopping								
C1.1	Types of Control	0 = Voltage Ramp 1 = Voltage Ramp + Current Limit 2 = Current Limit 3 = Current Ramp 4 = Pump Control 5 = Torque Control 6 = D.O.L. SCR		0	201	202	enum	1
C1.2	Initial Start Voltage	25 to 90 %	0	0	100	101	8bit	1
C1.3	Maximum Start Time	1 to 999 s	0	0	101	102	16bit	1
C1.4	Start End Detection	0 = Time 1 = Automatic		0	105	106	enum	1
C1.5	Initial Current Ramp	150 to 600 %	0	0	110	111	16bit	1
C1.6	Current Ramp Time	1 to 99 %	0	0	111	112	8bit	1
C1.7	Current Limit	150 to 600 %	0	0	109	110	16bit	1
C1.8	Start Torque Chara.	1 = Constant 2 = Linear 3 = Square		0	119	120	enum	1
C1.9	Initial Start Torque	10 to 300 %	0	0	120	121	16bit	1
C1.10	End Start Torque	10 to 300 %	0	0	121	122	16bit	1
C1.11	Minimun Start Torque	10 to 300 %	0	0	122	123	16bit	1
C1.12	Min.Start Torq. Time	1 to 99 %	0	0	123	124	8bit	1
C1.13	Stop Time	0 to 999 s	0	0	103	104	16bit	1
C1.14	Step Down Volt. Stop	60 to 100 %	0	0	102	103	8bit	1
C1.15	End Voltage Stop	30 to 55 %	0	0	104	105	8bit	1
C1.16	Stop Torque Characte.	1 = Constant 2 = Linear 3 = Square		0	124	125	enum	1
C1.17	End Stop Torque	10 to 100 %	0	0	125	126	8bit	1
C1.18	Minimum Stop Torque	10 to 100 %	0	0	126	127	8bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C1.19	Min. Stop Torque Time	1 to 99 %	0	0	127	128	8bit	1
C2 Configurations\Nominal Motor Data								
C2.1	Voltage	1 to 999 V	0	1	144	400	16bit	1
C2.2	Current	0.1 to 2424.0 A	1	1	145	401	16bit	1
C2.3	Speed	1 to 3600 rpm	0	1	146	402	16bit	1
C2.4	Power	0.1 to 1950.0 kW	1	1	148	404	16bit	1
C2.5	P.F. Power Factor	0.01 to 1.00	2	1	149	405	8bit	1
C2.6	S.F. Service Factor	0.01 to 1.50	2	1	150	406	8bit	1
C3 Configurations\LOC/REM Selection								
C3.1	Mode	0 = Always LOC 1 = Always REM 2 = HMI LR Key LOC 3 = HMI LR Key REM 4 = DIx 5 = USB LOC 6 = USB REM 7 = SoftPLC LOC 8 = SoftPLC REM 9 = Slot 1 LOC 10 = Slot 1 REM 11 = Slot 2 LOC 12 = Slot 2 REM		0	219	220	enum	1
C3.2	LOC Command	0 = HMI Keys 1 = DIx 2 = USB 3 = SoftPLC 4 = Slot 1 5 = Slot 2		0	228	229	enum	1
C3.3	REM Command	0 = HMI Keys 1 = DIx 2 = USB 3 = SoftPLC 4 = Slot 1 5 = Slot 2		0	229	230	enum	1
C3.4	Commands Copy	0 = No 1 = Yes		0	230	231	enum	1
C4 Configurations\I/O								

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C4.1	Digital Inputs							
C4.1.1	DI1	0 = Not Used 1 = Start / Stop 2 = Start (3 Wires) 3 = Stop (3 Wires) 4 = General Enable 5 = LOC / REM 6 = JOG 7 = FWD / REV 8 = No External Fault 9 = No External Alarm 10 = Brake 11 = Reset 12 = Load User 1/2 13 ... 16 = Reserved		1	7	263	enum	1
C4.1.2	DI2	0 = Not Used 1 = Start / Stop 2 = Start (3 Wires) 3 = Stop (3 Wires) 4 = General Enable 5 = LOC / REM 6 = JOG 7 = FWD / REV 8 = No External Fault 9 = No External Alarm 10 = Brake 11 = Reset 12 = Load User 1/2 13 ... 16 = Reserved		1	8	264	enum	1
C4.1.3	DI3	0 = Not Used 1 = Start / Stop 2 = Start (3 Wires) 3 = Stop (3 Wires) 4 = General Enable 5 = LOC / REM 6 = JOG 7 = FWD / REV 8 = No External Fault 9 = No External Alarm		1	9	265	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		10 = Brake 11 = Reset 12 = Load User 1/2 13 = Reserved 14 = Emergency Start 15 ... 16 = Reserved						
C4.1.4	DI4	0 = Not Used 1 = Start / Stop 2 = Start (3 Wires) 3 = Stop (3 Wires) 4 = General Enable 5 = LOC / REM 6 = JOG 7 = FWD / REV 8 = No External Fault 9 = No External Alarm 10 = Brake 11 = Reset 12 = Load User 1/2 13 ... 16 = Reserved		1	10	266	enum	1
C4.1.5	DI5	0 = Not Used 1 = Start / Stop 2 = Start (3 Wires) 3 = Stop (3 Wires) 4 = General Enable 5 = LOC / REM 6 = JOG 7 = FWD / REV 8 = No External Fault 9 = No External Alarm 10 = Brake 11 = Reset 12 = Load User 1/2 13 ... 16 = Reserved		1	11	267	enum	1
C4.1.6	DI6	0 = Not Used 1 = Start / Stop 2 = Start (3 Wires) 3 = Stop (3 Wires) 4 = General Enable		1	12	268	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		5 = LOC / REM 6 = JOG 7 = FWD / REV 8 = No External Fault 9 = No External Alarm 10 = Brake 11 = Reset 12 = Load User 1/2 13 ... 14 = Reserved 15 = Mot. Thermistor A032 16 = Mot. Thermistor F032						
C4.2	Digital Outputs							
C4.2.1	DO1	0 = Not Used 1 = Running 2 = Full Voltage 3 = Bypass 4 = FWD / REV K1 5 = DC Braking 6 = Without Fault 7 = With Fault 8 = Without Alarm 9 = With Alarm 10 = No Fault / Alarm 11 = SoftPLC 12 = Communication 13 = I motor % > Value 14 = Breaker Shunt Trip		1	19	275	enum	1
C4.2.2	DO2	0 = Not Used 1 = Running 2 = Full Voltage 3 = Bypass 4 = FWD / REV K2 5 = DC Braking 6 = Without Fault 7 = With Fault 8 = Without Alarm 9 = With Alarm 10 = No Fault / Alarm 11 = SoftPLC 12 = Communication		1	20	276	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		13 = I motor % > Value 14 = Breaker Shunt Trip						
C4.2.3	DO3	0 = Not Used 1 = Running 2 = Full Voltage 3 = Bypass 4 = Not Used 5 = DC Braking 6 = Without Fault 7 = With Fault 8 = Without Alarm 9 = With Alarm 10 = No Fault / Alarm 11 = SoftPLC 12 = Communication 13 = I motor % > Value 14 = Breaker Shunt Trip		1	21	277	enum	1
C4.2.4	DO Comparison Value	10.0 to 500.0 %	1	1	22	278	16bit	1
C4.3	Analog Output							
C4.3.1	Function	0 = Not Used 1 = SSW Current % 2 = Line Voltage % 3 = Output Voltage % 4 = Power Factor 5 = Thermal Class Prot. 6 = Output Power W 7 = Output Power VA 8 = Motor Torque % 9 = Value to AO 10 = SCRs Temperature 11 = SoftPLC		0	250	251	enum	1
C4.3.2	Gain	0.000 to 9.999	3	0	251	252	16bit	1
C4.3.3	Signal	0 = 0 to 20mA 1 = 4 to 20mA 2 = 20mA to 0 3 = 20 to 4mA 4 = 0 to 10V 5 = 10V to 0		0	252	253	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C5 Configurations\Protections								
C5.1	Voltage Protections							
C5.1.1	Motor Undervoltage							
C5.1.1.1	Mode	0 = Inactive 1 = Fault F002 2 = Alarm A002		3	134	900	enum	1
C5.1.1.2	Level	0 to 30 %Vn	0	3	135	901	8bit	1
C5.1.1.3	Time	0.1 to 10.0 s	1	3	136	902	8bit	1
C5.1.2	Motor Overvoltage							
C5.1.2.1	Mode	0 = Inactive 1 = Fault F016 2 = Alarm A016		3	137	903	enum	1
C5.1.2.2	Level	0 to 20 %Vn	0	3	138	904	8bit	1
C5.1.2.3	Time	0.1 to 10.0 s	1	3	139	905	8bit	1
C5.1.3	Motor Voltage Imbalance							
C5.1.3.1	Mode	0 = Inactive 1 = Fault F001 2 = Alarm A001		3	140	906	enum	1
C5.1.3.2	Level	0 to 30 %Vn	0	3	141	907	8bit	1
C5.1.3.3	Time	0.1 to 10.0 s	1	3	142	908	8bit	1
C5.2	Current Protections							
C5.2.1	Motor Undercurrent							
C5.2.1.1	Mode	0 = Inactive 1 = Fault F065 2 = Alarm A065		3	144	910	enum	1
C5.2.1.2	Level	0 to 99 %In	0	3	145	911	8bit	1
C5.2.1.3	Time	1 to 99 s	0	3	146	912	8bit	1
C5.2.2	Motor Overcurrent							
C5.2.2.1	Mode	0 = Inactive 1 = Fault F066 2 = Alarm A066		3	147	913	enum	1
C5.2.2.2	Level	0 to 99 %In	0	3	148	914	8bit	1
C5.2.2.3	Time	1 to 99 s	0	3	149	915	8bit	1
C5.2.3	Current Imbalance							
C5.2.3.1	Mode	0 = Inactive		3	150	916	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		1 = Fault F074 2 = Alarm A074						
C5.2.3.2	Level	0 to 30 %In	0	3	151	917	8bit	1
C5.2.3.3	Time	1 to 99 s	0	3	152	918	8bit	1
C5.3	Torque Protections							
C5.3.1	Undertorque							
C5.3.1.1	Mode	0 = Inactive 1 = Fault F078 2 = Alarm A078		3	184	950	enum	1
C5.3.1.2	Level	0 to 99 %Tn	0	3	185	951	8bit	1
C5.3.1.3	Time	1 to 99 s	0	3	186	952	8bit	1
C5.3.2	Overtorque							
C5.3.2.1	Mode	0 = Inactive 1 = Fault F079 2 = Alarm A079		3	187	953	enum	1
C5.3.2.2	Level	0 to 99 %Tn	0	3	188	954	8bit	1
C5.3.2.3	Time	1 to 99 s	0	3	189	955	8bit	1
C5.4	Power Protections							
C5.4.1	Underpower							
C5.4.1.1	Mode	0 = Inactive 1 = Fault F080 2 = Alarm A080		3	194	960	enum	1
C5.4.1.2	Level	0 to 99 %Pn	0	3	195	961	8bit	1
C5.4.1.3	Time	1 to 99 s	0	3	196	962	8bit	1
C5.4.2	Overpower							
C5.4.2.1	Mode	0 = Inactive 1 = Fault F081 2 = Alarm A081		3	197	963	enum	1
C5.4.2.2	Level	0 to 99 %Pn	0	3	198	964	8bit	1
C5.4.2.3	Time	1 to 99 s	0	3	199	965	8bit	1
C5.5	Phase Sequence							
C5.5.1	Mode	0 = Inactive 1 = RST - Fault F067 2 = RTS - Fault F068		3	164	930	enum	1
C5.6	Bypass Protections							
C5.6.1	Undercurrent			3	153	919	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		0 = Inactive 1 = Fault F076						
C5.6.2	Overcurrent	0 = Inactive 1 = Fault F063		3	154	920	enum	1
C5.6.3	Closed	0 = Inactive 1 = Fault F077		3	155	921	enum	1
C5.7	Time Protections							
C5.7.1	Before Start	0.5 to 999.9 s	1	3	165	931	16bit	1
C5.7.2	After Stop	2.0 to 999.9 s	1	3	166	932	16bit	1
C5.7.3	Between Start	2 to 9999 s	0	3	167	933	16bit	1
C5.8	Motor Thermal Protection							
C5.8.1	Ch1 Installed Sensor							
C5.8.1.1	Mode	0 = Off 1 = On 2 = On Stator		3	240	1006	enum	1
C5.8.2	Ch1 Sensor Fault							
C5.8.2.1	Mode	0 = Fault F109 and F117 1 = Alarm A109 and A117		3	232	998	enum	1
C5.8.3	Ch1 Overtemperature							
C5.8.3.1	Mode	0 = Fault F101 1 = Alarm A101 2 = F101 and A101		3	200	966	enum	1
C5.8.3.2	Fault Level	0 to 250 $^{\circ}C$	0	3	201	967	8bit	1
C5.8.3.3	Alarm Level	0 to 250 $^{\circ}C$	0	3	202	968	8bit	1
C5.8.3.4	Alarm Reset	0 to 250 $^{\circ}C$	0	3	203	969	8bit	1
C5.8.4	Ch2 Installed Sensor							
C5.8.4.1	Mode	0 = Off 1 = On 2 = On Stator		3	241	1007	enum	1
C5.8.5	Ch2 Sensor Fault							
C5.8.5.1	Mode	0 = Fault F110 and F118 1 = Alarm A110 and A118		3	233	999	enum	1
C5.8.6	Ch2 Overtemperature							
C5.8.6.1	Mode			3	204	970	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		0 = Fault F102 1 = Alarm A102 2 = F102 and A102						
C5.8.6.2	Fault Level	0 to 250 °C	0	3	205	971	8bit	1
C5.8.6.3	Alarm Level	0 to 250 °C	0	3	206	972	8bit	1
C5.8.6.4	Alarm Reset	0 to 250 °C	0	3	207	973	8bit	1
C5.8.7	Ch3 Installed Sensor							
C5.8.7.1	Mode	0 = Off 1 = On 2 = On Stator		3	242	1008	enum	1
C5.8.8	Ch3 Sensor Fault							
C5.8.8.1	Mode	0 = Fault F111 and F119 1 = Alarm A111 and A119		3	234	1000	enum	1
C5.8.9	Ch3 Overtemperature							
C5.8.9.1	Mode	0 = Fault F103 1 = Alarm A103 2 = F103 and A103		3	208	974	enum	1
C5.8.9.2	Fault Level	0 to 250 °C	0	3	209	975	8bit	1
C5.8.9.3	Alarm Level	0 to 250 °C	0	3	210	976	8bit	1
C5.8.9.4	Alarm Reset	0 to 250 °C	0	3	211	977	8bit	1
C5.8.10	Ch4 Installed Sensor							
C5.8.10.1	Mode	0 = Off 1 = On 2 = On Stator		3	243	1009	enum	1
C5.8.11	Ch4 Sensor Fault							
C5.8.11.1	Mode	0 = Fault F112 and F120 1 = Alarm A112 and A120		3	235	1001	enum	1
C5.8.12	Ch4 Overtemperature							
C5.8.12.1	Mode	0 = Fault F104 1 = Alarm A104 2 = F104 and A104		3	212	978	enum	1
C5.8.12.2	Fault Level	0 to 250 °C	0	3	213	979	8bit	1
C5.8.12.3	Alarm Level	0 to 250 °C	0	3	214	980	8bit	1
C5.8.12.4	Alarm Reset	0 to 250 °C	0	3	215	981	8bit	1
C5.8.13	Ch5 Installed Sensor							

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C5.8.13.1	Mode	0 = Off 1 = On 2 = On Stator		3	244	1010	enum	1
C5.8.14	Ch5 Sensor Fault							
C5.8.14.1	Mode	0 = Fault F113 and F121 1 = Alarm A113 and A121		3	236	1002	enum	1
C5.8.15	Ch5 Overtemperature							
C5.8.15.1	Mode	0 = Fault F105 1 = Alarm A105 2 = F105 and A105		3	216	982	enum	1
C5.8.15.2	Fault Level	0 to 250 $^{\circ}C$	0	3	217	983	8bit	1
C5.8.15.3	Alarm Level	0 to 250 $^{\circ}C$	0	3	218	984	8bit	1
C5.8.15.4	Alarm Reset	0 to 250 $^{\circ}C$	0	3	219	985	8bit	1
C5.8.16	Ch6 Installed Sensor							
C5.8.16.1	Mode	0 = Off 1 = On 2 = On Stator		3	245	1011	enum	1
C5.8.17	Ch6 Sensor Fault							
C5.8.17.1	Mode	0 = Fault F114 and F122 1 = Alarm A114 and A122		3	237	1003	enum	1
C5.8.18	Ch6 Overtemperature							
C5.8.18.1	Mode	0 = Fault F106 1 = Alarm A106 2 = F106 and A106		3	220	986	enum	1
C5.8.18.2	Fault Level	0 to 250 $^{\circ}C$	0	3	221	987	8bit	1
C5.8.18.3	Alarm Level	0 to 250 $^{\circ}C$	0	3	222	988	8bit	1
C5.8.18.4	Alarm Reset	0 to 250 $^{\circ}C$	0	3	223	989	8bit	1
C5.9	Motor Thermal Class							
C5.9.1	Programming Mode	0 = Standard 1 = Custom		3	168	934	enum	1
C5.9.2	Action Mode	0 = Inactive 1 = Fault F005 2 = Alarm A005		3	169	935	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		3 = F005 and A005						
C5.9.3	Alarm Level	0 to 100 %	0	3	170	936	8bit	1
C5.9.4	Alarm Reset	0 to 100 %	0	3	171	937	8bit	1
C5.9.5	Motor Temperature	0 = T.C. + PT100 1 = T.C. + Th.Im.		3	172	938	enum	1
C5.9.6	Thermal Class	0 = Automatic 1 = Class 10 2 = Class 15 3 = Class 20 4 = Class 25 5 = Class 30 6 = Class 35 7 = Class 40 8 = Class 45		3	173	939	enum	1
C5.9.7	Motor Data							
C5.9.7.1	Insulation Class	0 = Class A 105°C 1 = Class E 120°C 2 = Class B 130°C 3 = Class F 155°C 4 = Class H 180°C 5 = Class N 200°C 6 = Class R 220°C 7 = Class S 240°C 8 = Class 250°C		3	174	940	enum	1
C5.9.7.2	Temperature Rise	0 to 200 $^{\circ}C$	0	3	176	942	8bit	1
C5.9.7.3	Ambient Temperature	0 to 200 $^{\circ}C$	0	3	175	941	8bit	1
C5.9.7.4	Locked Rotor Time	1 to 100 s	0	3	177	943	8bit	1
C5.9.7.5	Locked Rotor Current	2.0 to 10.0 x	1	3	178	944	8bit	1
C5.9.7.6	Heating Time Constant	1 to 2880 min	0	3	179	945	16bit	1
C5.9.7.7	Cooling Time Constant	1 to 8640 min	0	3	180	946	16bit	1
C5.9.8	Thermal Image							
C5.9.8.1	Reset	0 to 8640 min	0	3	181	947	16bit	1
C5.10	SSW Short Circuit							
C5.10.1	Motor Off	0 = Inactive 1 = Fault F019		3	156	922	enum	1
C5.10.2	Motor On	0 = Inactive		3	157	923	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		1 = Fault F020						
C5.11	Fault Auto-Reset							
C5.11.1	Mode	0 = Off 1 = On		0	206	207	enum	1
C5.11.2	Time	3 to 600 s	0	0	207	208	16bit	1
		C6 Configurations\HMI						
C6.1	Password							
C6.1.1	Password	0 to 9999	0	0	209	210	16bit	1
C6.1.2	Password Options	0 = Off 1 = On 2 = Change Password		0	199	200	enum	1
C6.2	Language							
C6.2.1	Language	0 = Português 1 = English 2 = Español 3 = Français 4 = Downloaded		0	200	201	enum	1
C6.3	Date and Time							
C6.3.1	Date and Time	yy/mm/dd and hh:mm:ss		0	195	196	date	4
C6.3.2	Day of the Week	0 = Sunday 1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday		0	194	195	enum	1
C6.4	Main Screen							
C6.5	LCD Display							
C6.5.1	Backlight	1 to 15	0	0	217	218	8bit	1
C6.5.2	Contrast	0 to 100 %	0	0	218	219	8bit	1
C6.6	Communication Timeout							
C6.6.1	Mode	0 = Inactive 1 = Fault F127 2 = Alarm A127		0	189	190	enum	1
C6.6.2	Alarm Action	0 = Indicates Only		0	190	191	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM						
C6.6.3	Time	1 to 999 s	0	0	191	192	16bit	1
		C7 Configurations\Special Functions						
C7.1	Forward/Reverse							
C7.1.1	Mode	0 = Inactive 1 = By Contactor 2 = Only for JOG		0	227	228	enum	1
C7.2	Kick Start							
C7.2.1	Mode	0 = Off 1 = On		2	9	520	enum	1
C7.2.2	Time	0.1 to 2.0 s	1	2	10	521	8bit	1
C7.2.3	Voltage	70 to 90 %	0	2	11	522	8bit	1
C7.2.4	Current	300 to 700 %	0	2	12	523	16bit	1
C7.3	Jog							
C7.3.1	Mode	0 = Off 1 = On		1	254	510	enum	1
C7.3.2	Level	10 to 100 %	0	2	0	511	8bit	1
C7.4	Braking							
C7.4.1	Mode	0 = Inactive 1 = Reverse 2 = Optimal 3 = DC		1	244	500	enum	1
C7.4.2	Time	1 to 299 s	0	1	245	501	16bit	1
C7.4.3	Level	30 to 70 %	0	1	246	502	8bit	1
C7.4.4	End	0 = Inactive 1 = Automatic		1	247	503	enum	1
		C8 Configurations\Communications						
C8.1	I/O Data							
C8.1.1	Data Read							
C8.1.1.1	Slot 1 1st Word	1 to 50	0	2	201	712	8bit	1
C8.1.1.2	Slot 1 Quantity	1 to 50	0	2	202	713	8bit	1
C8.1.1.3	Slot 2 1st Word	1 to 50	0	2	242	753	8bit	1
C8.1.1.4	Slot 2 Quantity	1 to 50	0	2	243	754	8bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C8.1.1.5	Word #1	0 to 65535	0	5	24	1300	16bit	1
C8.1.1.6	Word #2	0 to 65535	0	5	25	1301	16bit	1
C8.1.1.7	Word #3	0 to 65535	0	5	26	1302	16bit	1
C8.1.1.8	Word #4	0 to 65535	0	5	27	1303	16bit	1
C8.1.1.9	Word #5	0 to 65535	0	5	28	1304	16bit	1
C8.1.1.10	Word #6	0 to 65535	0	5	29	1305	16bit	1
C8.1.1.11	Word #7	0 to 65535	0	5	30	1306	16bit	1
C8.1.1.12	Word #8	0 to 65535	0	5	31	1307	16bit	1
C8.1.1.13	Word #9	0 to 65535	0	5	32	1308	16bit	1
C8.1.1.14	Word #10	0 to 65535	0	5	33	1309	16bit	1
C8.1.1.15	Word #11	0 to 65535	0	5	34	1310	16bit	1
C8.1.1.16	Word #12	0 to 65535	0	5	35	1311	16bit	1
C8.1.1.17	Word #13	0 to 65535	0	5	36	1312	16bit	1
C8.1.1.18	Word #14	0 to 65535	0	5	37	1313	16bit	1
C8.1.1.19	Word #15	0 to 65535	0	5	38	1314	16bit	1
C8.1.1.20	Word #16	0 to 65535	0	5	39	1315	16bit	1
C8.1.1.21	Word #17	0 to 65535	0	5	40	1316	16bit	1
C8.1.1.22	Word #18	0 to 65535	0	5	41	1317	16bit	1
C8.1.1.23	Word #19	0 to 65535	0	5	42	1318	16bit	1
C8.1.1.24	Word #20	0 to 65535	0	5	43	1319	16bit	1
C8.1.1.25	Word #21	0 to 65535	0	5	44	1320	16bit	1
C8.1.1.26	Word #22	0 to 65535	0	5	45	1321	16bit	1
C8.1.1.27	Word #23	0 to 65535	0	5	46	1322	16bit	1
C8.1.1.28	Word #24	0 to 65535	0	5	47	1323	16bit	1
C8.1.1.29	Word #25	0 to 65535	0	5	48	1324	16bit	1
C8.1.1.30	Word #26	0 to 65535	0	5	49	1325	16bit	1
C8.1.1.31	Word #27	0 to 65535	0	5	50	1326	16bit	1
C8.1.1.32	Word #28	0 to 65535	0	5	51	1327	16bit	1
C8.1.1.33	Word #29	0 to 65535	0	5	52	1328	16bit	1
C8.1.1.34	Word #30	0 to 65535	0	5	53	1329	16bit	1
C8.1.1.35	Word #31	0 to 65535	0	5	54	1330	16bit	1
C8.1.1.36	Word #32	0 to 65535	0	5	55	1331	16bit	1
C8.1.1.37	Word #33	0 to 65535	0	5	56	1332	16bit	1
C8.1.1.38	Word #34	0 to 65535	0	5	57	1333	16bit	1
C8.1.1.39	Word #35	0 to 65535	0	5	58	1334	16bit	1
C8.1.1.40	Word #36	0 to 65535	0	5	59	1335	16bit	1
C8.1.1.41	Word #37	0 to 65535	0	5	60	1336	16bit	1
C8.1.1.42	Word #38	0 to 65535	0	5	61	1337	16bit	1
C8.1.1.43	Word #39	0 to 65535	0	5	62	1338	16bit	1
C8.1.1.44	Word #40	0 to 65535	0	5	63	1339	16bit	1
C8.1.1.45	Word #41	0 to 65535	0	5	64	1340	16bit	1
C8.1.1.46	Word #42	0 to 65535	0	5	65	1341	16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C8.1.1.47	Word #43	0 to 65535	0	5	66	1342	16bit	1
C8.1.1.48	Word #44	0 to 65535	0	5	67	1343	16bit	1
C8.1.1.49	Word #45	0 to 65535	0	5	68	1344	16bit	1
C8.1.1.50	Word #46	0 to 65535	0	5	69	1345	16bit	1
C8.1.1.51	Word #47	0 to 65535	0	5	70	1346	16bit	1
C8.1.1.52	Word #48	0 to 65535	0	5	71	1347	16bit	1
C8.1.1.53	Word #49	0 to 65535	0	5	72	1348	16bit	1
C8.1.1.54	Word #50	0 to 65535	0	5	73	1349	16bit	1
C8.1.2	Data Write							
C8.1.2.1	Slot 1 1st Word	1 to 20	0	2	203	714	8bit	1
C8.1.2.2	Slot 1 Quantity	1 to 20	0	2	204	715	8bit	1
C8.1.2.3	Slot 2 1st Word	1 to 20	0	2	244	755	8bit	1
C8.1.2.4	Slot 2 Quantity	1 to 20	0	2	245	756	8bit	1
C8.1.2.5	Update Delay	0.0 to 999.9 s	1	3	133	899	16bit	1
C8.1.2.6	Word #1	0 to 65535	0	5	124	1400	16bit	1
C8.1.2.7	Word #2	0 to 65535	0	5	125	1401	16bit	1
C8.1.2.8	Word #3	0 to 65535	0	5	126	1402	16bit	1
C8.1.2.9	Word #4	0 to 65535	0	5	127	1403	16bit	1
C8.1.2.10	Word #5	0 to 65535	0	5	128	1404	16bit	1
C8.1.2.11	Word #6	0 to 65535	0	5	129	1405	16bit	1
C8.1.2.12	Word #7	0 to 65535	0	5	130	1406	16bit	1
C8.1.2.13	Word #8	0 to 65535	0	5	131	1407	16bit	1
C8.1.2.14	Word #9	0 to 65535	0	5	132	1408	16bit	1
C8.1.2.15	Word #10	0 to 65535	0	5	133	1409	16bit	1
C8.1.2.16	Word #11	0 to 65535	0	5	134	1410	16bit	1
C8.1.2.17	Word #12	0 to 65535	0	5	135	1411	16bit	1
C8.1.2.18	Word #13	0 to 65535	0	5	136	1412	16bit	1
C8.1.2.19	Word #14	0 to 65535	0	5	137	1413	16bit	1
C8.1.2.20	Word #15	0 to 65535	0	5	138	1414	16bit	1
C8.1.2.21	Word #16	0 to 65535	0	5	139	1415	16bit	1
C8.1.2.22	Word #17	0 to 65535	0	5	140	1416	16bit	1
C8.1.2.23	Word #18	0 to 65535	0	5	141	1417	16bit	1
C8.1.2.24	Word #19	0 to 65535	0	5	142	1418	16bit	1
C8.1.2.25	Word #20	0 to 65535	0	5	143	1419	16bit	1
C8.2	RS485 Serial							
C8.2.1	Serial Protocol	0 ... 1 = Reserved 2 = Modbus RTU		2	219	730	enum	1
C8.2.2	Address	1 to 247	0	2	220	731	8bit	1
C8.2.3	Baud Rate	0 = 9600 bits/s		2	221	732	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		1 = 19200 bits/s 2 = 38400 bits/s 3 = 57600 bits/s						
C8.2.4	Bytes Config.	0 = 8 bits, no, 1 1 = 8 bits, even,1 2 = 8 bits, odd, 1 3 = 8 bits, no, 2 4 = 8 bits, even,2 5 = 8 bits, odd, 2		2	222	733	enum	1
C8.2.5	Timeout							
C8.2.5.1	Mode	0 = Inactive 1 = Fault F128 2 = Alarm A128		2	229	740	enum	1
C8.2.5.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		2	230	741	enum	1
C8.2.5.3	Timeout	0.0 to 999.9 s	1	2	223	734	16bit	1
C8.3	Anybus-CC							
C8.3.1	Update Configuration	0 = Normal Operation 1 = Update configuration		2	238	749	enum	1
C8.3.2	Address	0 to 255	0	2	246	757	8bit	1
C8.3.3	Baud Rate	0 = 125 kbps 1 = 250 kbps 2 = 500 kbps 3 = Autobaud		2	247	758	enum	1
C8.3.4	IP Address Configuration	0 = Parameters 1 = DHCP 2 = DCP		2	249	760	enum	1
C8.3.5	IP Address	0.0.0.0 to 255.255.255.255		2	251	762	ip_address	2
C8.3.6	CIDR	0 = Reserved 1 = 128.0.0.0 2 = 192.0.0.0		2	250	761	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		3 = 224.0.0.0 4 = 240.0.0.0 5 = 248.0.0.0 6 = 252.0.0.0 7 = 254.0.0.0 8 = 255.0.0.0 9 = 255.128.0.0 10 = 255.192.0.0 11 = 255.224.0.0 12 = 255.240.0.0 13 = 255.248.0.0 14 = 255.252.0.0 15 = 255.254.0.0 16 = 255.255.0.0 17 = 255.255.128.0 18 = 255.255.192.0 19 = 255.255.224.0 20 = 255.255.240.0 21 = 255.255.248.0 22 = 255.255.252.0 23 = 255.255.254.0 24 = 255.255.255.0 25 = 255.255.255.128 26 = 255.255.255.192 27 = 255.255.255.224 28 = 255.255.255.240 29 = 255.255.255.248 30 = 255.255.255.252 31 = 255.255.255.254						
C8.3.7	Gateway	0.0.0.0 to 255.255.255.255		3	0	766	ip_address	2
C8.3.8	Station Name Suffix	0 to 254	0	3	4	770	8bit	1
C8.3.9	Modbus TCP Timeout							
C8.3.9.1	Mode	0 = Inactive 1 = Fault F131 2 = Alarm A131		3	5	771	enum	1
C8.3.9.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		3	6	772	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C8.3.9.3	Modbus TCP Timeout	0.0 to 999.9 s	1	2	248	759	16bit	1
C8.3.10	Off Line Error							
C8.3.10.1	Mode	0 = Inactive 1 = Fault F129 2 = Alarm A129		3	131	897	enum	1
C8.3.10.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		3	132	898	enum	1
C8.4	CANopen/DeviceNet							
C8.4.1	Protocol	0 = Disabled 1 = CANopen 2 = DeviceNet		2	189	700	enum	1
C8.4.2	Address	0 to 127	0	2	190	701	8bit	1
C8.4.3	Baud Rate	0 = 1 Mbps/Auto 1 = Reserved 2 = 500 Kbps 3 = 250 Kbps 4 = 125 Kbps 5 = 100 Kbps/Auto 6 = 50 Kbps/Auto 7 = 20 Kbps/Auto 8 = 10 Kbps/Auto		2	191	702	enum	1
C8.4.4	Bus Off Reset	0 = Manual 1 = Automatic		2	192	703	enum	1
C8.4.5	CAN Error							
C8.4.5.1	Mode	0 = Inactive 1 = Fault 2 = Alarm		2	212	723	enum	1
C8.4.5.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC		2	213	724	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		4 = Change to REM						
C8.5	Ethernet							
C8.5.1	IP Address Config	0 = Parameters 1 = DHCP		3	84	850	enum	1
C8.5.2	IP Address	0.0.0.0 to 255.255.255.255		3	86	852	ip_address	2
C8.5.3	CIDR Sub-net	0 = Reserved 1 = 128.0.0.0 2 = 192.0.0.0 3 = 224.0.0.0 4 = 240.0.0.0 5 = 248.0.0.0 6 = 252.0.0.0 7 = 254.0.0.0 8 = 255.0.0.0 9 = 255.128.0.0 10 = 255.192.0.0 11 = 255.224.0.0 12 = 255.240.0.0 13 = 255.248.0.0 14 = 255.252.0.0 15 = 255.254.0.0 16 = 255.255.0.0 17 = 255.255.128.0 18 = 255.255.192.0 19 = 255.255.224.0 20 = 255.255.240.0 21 = 255.255.248.0 22 = 255.255.252.0 23 = 255.255.254.0 24 = 255.255.255.0 25 = 255.255.255.128 26 = 255.255.255.192 27 = 255.255.255.224 28 = 255.255.255.240 29 = 255.255.255.248 30 = 255.255.255.252 31 = 255.255.255.254		3	89	855	enum	1
C8.5.4	Gateway	0.0.0.0 to 255.255.255.255		3	90	856	ip_address	2
C8.5.5	MBTCP: TCP Port	0 to 65535	0	3	99	865	16bit	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C8.5.7	EIP Data Profile	0 ... 9 = Reserved 10 = 110/160-Configurable I/O		3	105	871	enum	1
C8.5.9	Modbus TCP Error							
C8.5.9.1	Mode	0 = Inactive 1 = Fault F149 2 = Alarm A149		3	127	893	enum	1
C8.5.9.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		3	128	894	enum	1
C8.5.9.3	Timeout	0.0 to 999.9 s	1	3	102	868	16bit	1
C8.5.10	EtherNet/IP Error							
C8.5.10.1	Mode	0 = Inactive 1 = Fault F147 2 = Alarm A147		3	129	895	enum	1
C8.5.10.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		3	130	896	enum	1
C8.6	Bluetooth							
C8.6.1	Mode	0 = Off 1 = On		3	34	800	enum	1
		C9 Configurations\SSW900						
C9.1	Nominal Data							
C9.1.1	Current	0 = 10 A 1 = 17 A 2 = 24 A 3 = 30 A 4 = 45 A 5 = 61 A 6 = 85 A 7 = 105 A		1	39	295	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		8 = 130 A 9 = 171 A 10 = 200 A 11 = 255 A 12 = 312 A 13 = 365 A 14 = 412 A 15 = 480 A 16 = 604 A 17 = 670 A 18 = 820 A 19 = 950 A 20 = 1100 A 21 = 1400 A						
C9.2	Types of Connections							
C9.2.1	Delta Inside	0 = Off 1 = On		0	149	150	enum	1
C9.2.2	External Bypass	0 = Without 1 = With		0	139	140	enum	1
C9.3	Accessories Config.							
C9.3.1	Slot 1	0 = Automatic 1 = Anybus-CC 2 = RS-485 3 = PT100 4 = I/Os Exp. 5 = Profibus 6 = CAN 7 = Ethernet 8 = External Current Acqu.		1	81	337	enum	1
C9.3.2	Slot 2	0 = Automatic 1 = Anybus-CC 2 = RS-485 3 = PT100 4 = I/Os Exp. 5 = Profibus 6 = CAN 7 = Ethernet		1	82	338	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		8 = External Current Acqu.						
C9.4	Fan Configuration							
C9.4.1	Mode	0 = Always Off 1 = Always On 2 = Controlled		0	202	203	enum	1
C10 Configurations\Load / Save Parameters								
C10.1	Load / Save User							
C10.1.1	Mode	0 = Not Used 1 = Load User 1 2 = Load User 2 3 = Reserved 4 = Save User 1 5 = Save User 2 6 = Reserved		0	205	206	enum	1
C10.2	Copy Function HMI							
C10.2.1	Mode	0 = Off 1 = SSW -> HMI 2 = HMI -> SSW		1	63	319	enum	1
C10.3	Erase Diagnostics							
C10.3.1	Mode	0 ... 1 = Not Used 2 = Fault 3 = Alarms 4 = Events 5 = Motor ON 6 = Temperaturas 7 = Hours Control 8 = Thermal Class Status		0	204	205	enum	1
C10.4	Load Factory Default							
C10.4.1	Mode	0 = No 1 = Yes		0	203	204	enum	1
C10.5	Save Changed Param.							
C10.5.1	Mode	0 = No 1 = Yes		0	208	209	enum	1
C11 Configurations\SoftPLC								
C11.1	Mode			4	80	1101	enum	1

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
		0 = Stop Program 1 = Run Program						
C11.2	Action App. Not Running	0 = Inactive 1 = Alarm A708 2 = Fault F708		4	82	1103	enum	1
C11.3	Parameter							
C11.3.1	User #1	-10000 to 10000	0	4	89	1110	s32bit	2
C11.3.2	User #2	-10000 to 10000	0	4	91	1112	s32bit	2
C11.3.3	User #3	-10000 to 10000	0	4	93	1114	s32bit	2
C11.3.4	User #4	-10000 to 10000	0	4	95	1116	s32bit	2
C11.3.5	User #5	-10000 to 10000	0	4	97	1118	s32bit	2
C11.3.6	User #6	-10000 to 10000	0	4	99	1120	s32bit	2
C11.3.7	User #7	-10000 to 10000	0	4	101	1122	s32bit	2
C11.3.8	User #8	-10000 to 10000	0	4	103	1124	s32bit	2
C11.3.9	User #9	-10000 to 10000	0	4	105	1126	s32bit	2
C11.3.10	User #10	-10000 to 10000	0	4	107	1128	s32bit	2
C11.3.11	User #11	-10000 to 10000	0	4	109	1130	s32bit	2
C11.3.12	User #12	-10000 to 10000	0	4	111	1132	s32bit	2
C11.3.13	User #13	-10000 to 10000	0	4	113	1134	s32bit	2
C11.3.14	User #14	-10000 to 10000	0	4	115	1136	s32bit	2
C11.3.15	User #15	-10000 to 10000	0	4	117	1138	s32bit	2
C11.3.16	User #16	-10000 to 10000	0	4	119	1140	s32bit	2
C11.3.17	User #17	-10000 to 10000	0	4	121	1142	s32bit	2
C11.3.18	User #18	-10000 to 10000	0	4	123	1144	s32bit	2
C11.3.19	User #19	-10000 to 10000	0	4	125	1146	s32bit	2
C11.3.20	User #20	-10000 to 10000	0	4	127	1148	s32bit	2
C11.3.21	User #21	-10000 to 10000	0	4	129	1150	s32bit	2
C11.3.22	User #22	-10000 to 10000	0	4	131	1152	s32bit	2
C11.3.23	User #23	-10000 to 10000	0	4	133	1154	s32bit	2
C11.3.24	User #24	-10000 to 10000	0	4	135	1156	s32bit	2
C11.3.25	User #25	-10000 to 10000	0	4	137	1158	s32bit	2
C11.3.26	User #26	-10000 to 10000	0	4	139	1160	s32bit	2
C11.3.27	User #27	-10000 to 10000	0	4	141	1162	s32bit	2
C11.3.28	User #28	-10000 to 10000	0	4	143	1164	s32bit	2
C11.3.29	User #29	-10000 to 10000	0	4	145	1166	s32bit	2
C11.3.30	User #30	-10000 to 10000	0	4	147	1168	s32bit	2
C11.3.31	User #31	-10000 to 10000	0	4	149	1170	s32bit	2
C11.3.32	User #32	-10000 to 10000	0	4	151	1172	s32bit	2
C11.3.33	User #33	-10000 to 10000	0	4	153	1174	s32bit	2
C11.3.34	User #34	-10000 to 10000	0	4	155	1176	s32bit	2
C11.3.35	User #35	-10000 to 10000	0	4	157	1178	s32bit	2

Parameter	Description	Range of values	Decimal places	Slot	Index	Net Id	Size	Qty mapped words
C11.3.36	User #36	-10000 to 10000	0	4	159	1180	s32bit	2
C11.3.37	User #37	-10000 to 10000	0	4	161	1182	s32bit	2
C11.3.38	User #38	-10000 to 10000	0	4	163	1184	s32bit	2
C11.3.39	User #39	-10000 to 10000	0	4	165	1186	s32bit	2
C11.3.40	User #40	-10000 to 10000	0	4	167	1188	s32bit	2
C11.3.41	User #41	-10000 to 10000	0	4	169	1190	s32bit	2
C11.3.42	User #42	-10000 to 10000	0	4	171	1192	s32bit	2
C11.3.43	User #43	-10000 to 10000	0	4	173	1194	s32bit	2
C11.3.44	User #44	-10000 to 10000	0	4	175	1196	s32bit	2
C11.3.45	User #45	-10000 to 10000	0	4	177	1198	s32bit	2
C11.3.46	User #46	-10000 to 10000	0	4	179	1200	s32bit	2
C11.3.47	User #47	-10000 to 10000	0	4	181	1202	s32bit	2
C11.3.48	User #48	-10000 to 10000	0	4	183	1204	s32bit	2
C11.3.49	User #49	-10000 to 10000	0	4	185	1206	s32bit	2
C11.3.50	User #50	-10000 to 10000	0	4	187	1208	s32bit	2
C11.4	SoftPLC Application	0 = User 1 = Timer Control 2 = Pump Cleaning		4	83	1104	enum	1
A1 Assistant\Oriented Start-up								
A1.1	Mode	0 = No 1 = Yes		1	61	317	enum	1

Table 9.3: *Description of the parameter data types*

Data Type	Description
enum	Enumerated type (unsigned 8-bit) contains a list of values with function description for each item.
8bit	Unsigned 8-bit integer, ranges from 0 to 255.
16bit	Unsigned 16-bit integer, ranges from 0 to 65,535.
s16bit	Signed 16-bit integer, ranges from -32,768 to 32,767.
32bit	Unsigned 32-bit integer, ranges from 0 to 4,294,967,295.
s32bit	Signed 32-bit integer, ranges from -2,147,483,648 to 2,147,483,647.
date	Displays the date and time value in the format below: second (1 byte) minute (1 byte) hour (1 byte) day (1 byte) month (1 byte) reserved (1 byte) year (2 bytes)
TIME	Displays the time in the format hh:mm:ss. For network protocols, this data type is transferred as an unsigned 32-bit integer value representing the number of seconds.
ip_address	Unsigned 32-bit integer representing the octets of the IP address.
MAC_ADDRESS	48-bit identifier displayed in XX:XX:XX:XX:XX:XX format.
STRING_ASCII	Text string. For network protocols, this data type is transferred as a string filled with zeros (\0) to the end (maximum parameter size plus one).

WEG Drives & Controls - Automation LTDA.
Jaraguá do Sul - SC - Brazil
Phone 55 (47) 3276-4000 - Fax 55 (47) 3276-4020
São Paulo - SP - Brazil
Phone 55 (11) 5053-2300 - Fax 55 (11) 5052-4212
automacao@weg.net
www.weg.net