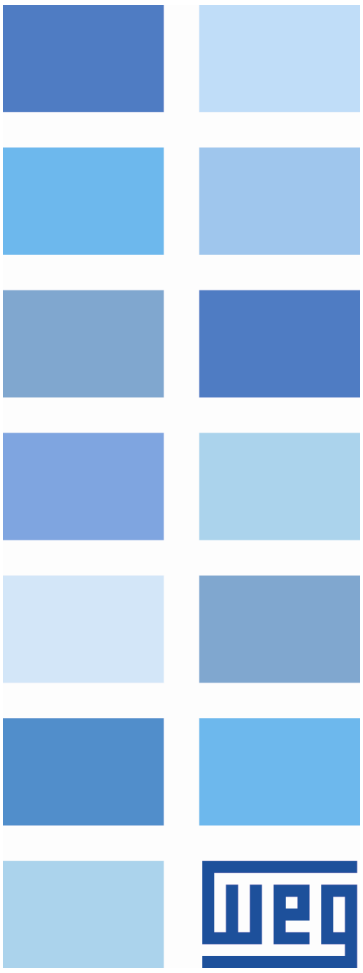
Anybus DeviceNet

SSW900-CDN-N

User's Guide



Anybus DeviceNet User's Guide

Series: SSW900

Software version: 1.2X

Language: English

Document: 10004627097 / 02

Build 5251

Publication Date: 01/2019

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

CONTENTS

ABOUT THE MANUAL

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

ABBREVIATIONS AND DEFINITIONS

ASCII American Standard Code for Information Interchange
CiA CAN in Automation
CIP Common Industrial Protocol
CRC Cycling Redundancy Check
HMI Human-Machine Interface
ODVA Open DeviceNet Vendor Association
PLC Programmable Logic Controller
ro Read only
rw Read/write

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.

DOCUMENTS

The Anybus DeviceNet protocol was developed based on the following specifications and documents:

Document	Version	Source
CAN Specification	2.0	CiA
Volume One - Common Industrial Protocol (CIP) Specification	3.2	ODVA
Volume Three - DeviceNet Adaptation of CIP	1.4	ODVA
Planning and Installation Manual - DeviceNet Cable System	PUB00027R1	ODVA

In order to obtain this documentation, consult ODVA, which is nowadays the organization that keeps, publishes and updates the information related to the DeviceNet network.

1 MAIN CHARACTERISTICS

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

- Uses the Set of Predefined Master/Slave Connections.
- It is supplied with an EDS 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.

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.

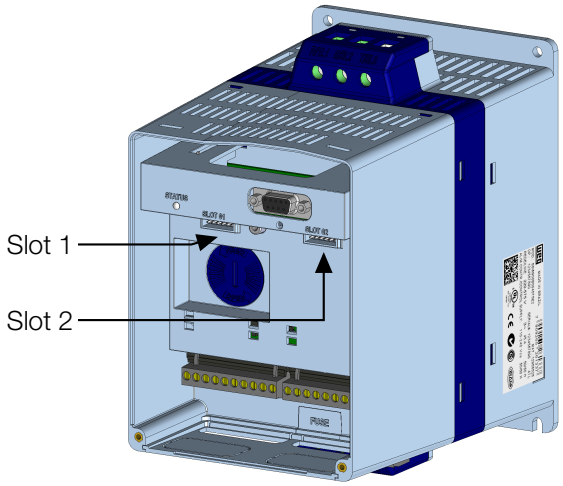
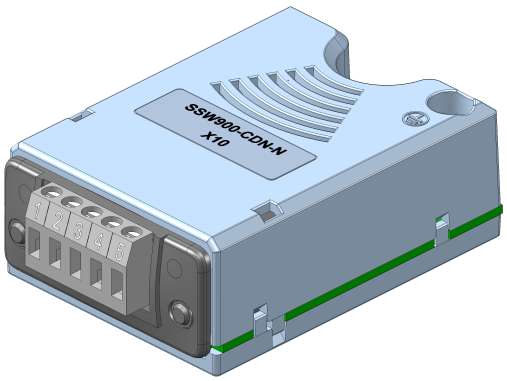


Figure 2.1: *Slots for accessories*

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

2.1 ANYBUS DEVICENET ACCESSORY



SSW900-CDN-N:

- Supplied items:
  - Installation guide.
  - Anybus DeviceNet communication module.
  - "torx" screw driver for fixing the module.
  - ODVA certified interface.

2.2 CONNECTOR

The DeviceNet communication module has a 5-wire plug-in connector with the following pin assignment:

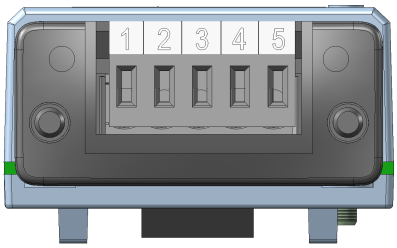


Table 2.1: *Pin assignment of connector for DeviceNet interface*

Pin	Name	Function
1	V-	Negative pole of the power supply
2	CAN_L	Communication signal CAN_L
3	Shield	Cable shield
4	CAN_H	Communication signal CAN_H
5	V+	Positive pole of the power supply

2.3 POWER SUPLLY

The power supply of the network must be able to supply enough current to power up the equipments and interfaces connected to the network. The data for individual consumption and input voltage are presented in tables 2.2 and 2.3.

Table 2.2: *Power Suplly (Vdc)*

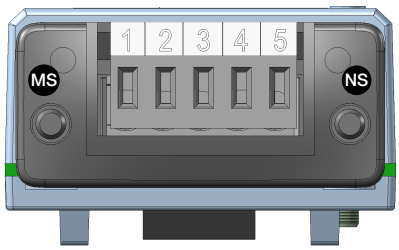
Minimum	Maximum	Recommended
11 V	30 V	24 V

Table 2.3: *Current*

Typical	Maximum
30 mA	50 mA

2.4 INDICATION LEDS

DeviceNet defines two LEDs for state indication, one for the communication module (MS) and another for the network (NS).



The MS 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 2.4: *State of the DeviceNet module*

Status	Description	Comments
Off	No power	-
Green	Module operating and in normal conditions	-
Red	Module in error	Reinitializing the equipment is required.
Flashing green/red	Equipment performing self-diagnosis	It occurs during initialization.

The NS LED provides information about the status of the DeviceNet network. The table below presents the description of those states.

Table 2.5: *Status of the DeviceNet network*

Status	Description	Comments
Off	No power or not *online*	Equipment is not connected to a DeviceNet network with other equipments at the same communication rate.
Green	*Online*, connected	Master has allocated a set of I/O type connection with the slave. In this stage data exchange by means of I/O type connections does effectively occur.
Flashing green	*Online*, not connected	Slave has successfully completed the Mac ID verification procedure. This means that the configured communication is correct (or was detected correctly in the case of use of autobaud) and that there are no other nodes in the network with the same address. However, in this stage, there is not a set of I/O type connections established.
Flashing red	One or more I/O type connections have expired	The I/O data exchange has been interrupted.
Red	Serious fault in the link	It indicates that the slave cannot enter the network because of addressing problems or due to the occurrence of *bus off*. Verify if the address is being used by another equipment, if the chosen communication rate is correct or if there are installation problems.
Flashing green/red	Equipment performing self-diagnosis	It occurs during initialization.

3 DEVICENET NETWORK INSTALLATION

The DeviceNet 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.

NOTE!
Detailed recommendations on how to perform the installation are available at document "Planning and Installation Manual" (item DOCUMENTS).

3.1 BAUD RATE

Equipments with DeviceNet interface generally allow the configuration of the desired baud rate, ranging from 125 kbit/s até 500 kbit/s. The baud rate that can be used by the 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 cable length*

Baud Rate	Cable length
125 kbit/s	500 m
250 kbit/s	250 m
500 kbit/s	100 m

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

3.2 ADDRESS IN THE DEVICENET NETWORK

Each DeviceNet network device must have an address or MAC ID, and may range from 0 to 63. This address must be unique for each equipment.

3.3 TERMINATION RESISTOR

The use of termination resistors at the ends of the bus is essential to avoid line reflection, which can impair the signal and cause communication errors. Termination resistors of 121 Ω | 0.25 W must be connected between the signals CAN_H and CAN_L at the ends of the main bus.

3.4 CABLE

The connection of CAN_L and CAN_H signals must be done with shielded twisted pair cable. The following table shows the recommended characteristics for the cable.

Table 3.2: *DeviceNet cable characteristics*

Cable Length (m)	Resistence per Meter (mΩ/m)	Conductor Cross Section (mm^2)
0 ... 40	70	0.25 ... 0.34
40 ... 300	<60	0.34 ... 0.60
300 ... 600	<40	0.50 ... 0.60
600 ... 1000	<26	0.75 ... 0.80

It is necessary to use a twisted pair cable to provide additional 24Vdc power supply to equipments that need this signal. It is recommended to use a certified DeviceNet cable.

3.5 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. If you use derivations, the limits of length for derivation defined by the DeviceNet 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.

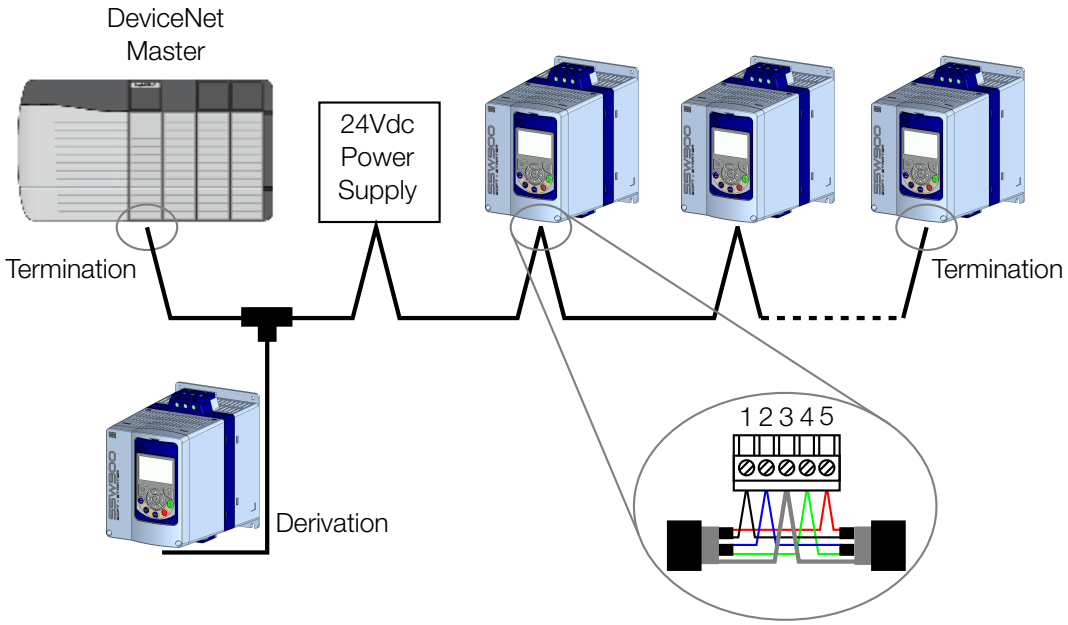


Figure 3.1: *DeviceNet network installation example*

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.

To avoid voltage difference problems between the power supplies of the network devices, it is recommended that the network is fed by only one power supply and the signal is provided to all devices through the cable. If it is required more than one power supply, these should be referenced to the same point. Use the power supply to power the bus cable system only.

The maximum number of devices connected to a single segment of the network is limited to 64. Repeaters can be used for connecting a bigger 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 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 serial 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 ... 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 COMMUNICATION

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
Modbus RTU	SSW900-CRS485-W
Modbus TCP	SSW900-CMB-TCP-N
Profibus DP	SSW900-CPDP-N
PROFINET IO	SSW900-CPN-IO-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 and SSW900-CPN-IO-N. For SSW900-CRS485-W using Modbus RTU protocol or SSW900-CMB-TCP-N module, a contiguous area of holding registers (@1500-@1549 and @1600-@1619) can be accessed using standard Modbus functions.

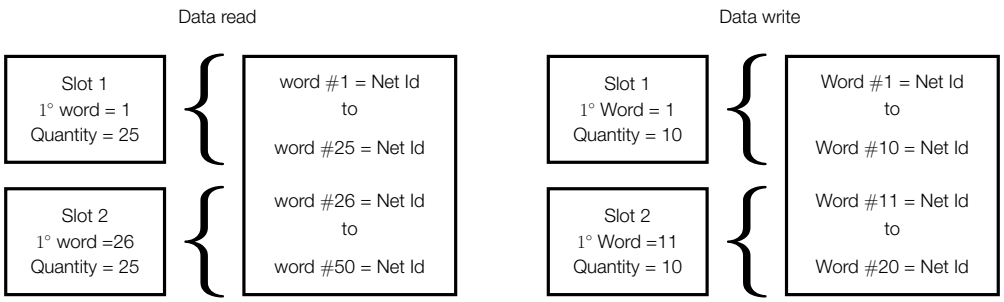


Figure 5.1: *Example of data setting*

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.

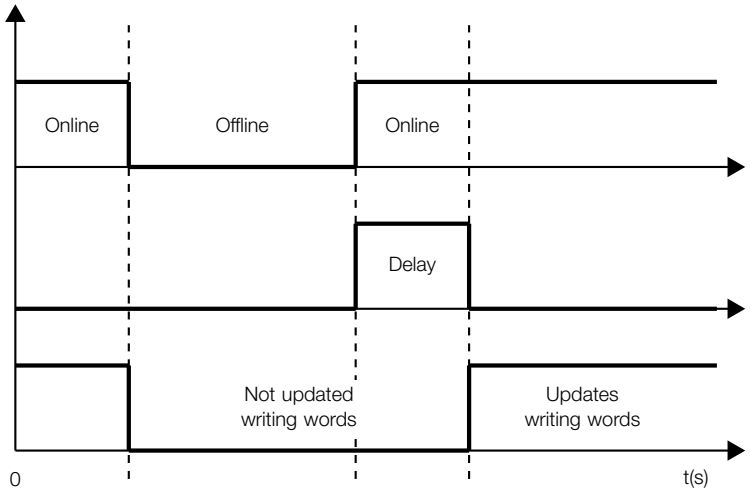


Figure 5.2: *Delay in the update of the I/O words*

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 Anybus-CC

C8.3.3 Baud Rate

Range:	0 ... 3	**Default:** 3
Properties:		

Description:
Select the baud rate for the Anybus module, in bits per second.

This configuration must be identical for all the devices connected to the network. This configuration is used for the Anybus-CC DeviceNet module only.

Indication	Description
0 = 125 kbps	Bit rate per second.
1 = 250 kbps	Bit rate per second.
2 = 500 kbps	Bit rate per second.
3 = Autobaud	Automatic bit rate.

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 C8.3.9.1, and the action programmed in C8.3.9.2 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 IO.

C8.3.10 Off Line Error
C8.3.10.1 Mode
Range: 0 ... 2 **Default:** 0
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:** 3
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 IO 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 C3.

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 C8.3.9.1 is programmed for Alarm A129.

6 OPERATION IN THE DEVICENET NETWORK

6.1 CYCLIC DATA

Cyclic data is the data normally used for status monitoring and equipment control. For DeviceNet 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.

6.1.1 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 A.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:

- S5.1.1 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 A.2:

Mapped Parameter	Net Id	Size	Qty Mapped Words	Example Value
S5.1.1 Status Word SSW	680	16bit	1	99 = 0063h
S1.2.4 Main Line Voltage Average	4	16bit	1	2186 = 088Ah
S1.1.4 Current Average	24	32bit	2	23 = 00000017h
S1.5.4 Output Power & P.F. P. F.	8	8bit	1	14 = 0Eh

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	S5.1.1	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, refer to Appendix A.

6.1.2 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 A.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 A.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 Appendix A.

6.2 ACYCLIC DATA

In addition to the cyclic data, the interface also provides acyclic data via explicit messaging. Using this type of communication, you can access any equipment parameter. Access to this type of data is commonly done using instructions for reading or writing data, which should indicate the class, instance, and attribute to the desired parameter. The Manufacturer Specific Class (A2h) describes how to address the parameters for SSW900 soft-starter.

6.3 EDS FILE

Each device on an DeviceNet network has an EDS 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 DeviceNet network.

The EDS file is available from WEG website (http://www.weg.net). It is important to note if the EDS configuration file is compatible with the firmware version of the SSW900 soft-starter.

6.4 SUPPORTED OBJECT CLASSES

Any DeviceNet equipment is modeled as a set of objects. The objects are responsible for defining the function that each device will have. The following sections present detailed information about these object classes.

6.4.1 Identity Class (01h)

Provides general information about the device identity such as VendorID, Product Name, Serial Number, etc.. The following attributes are implemented:

Table 6.3: Identity Class instance attributes

Attribute	Method	Name	Default	Description
1	GET	Vendor ID	355h	Manufacturer identifier.
2	GET	Device Type	2Bh	Product Type.
3	GET	Product Code	1300h	Product Code.
4	GET	Revision		Firmware revision.
5	GET	Status		Device status.
6	GET	Serial Number		Serial Number.
7	GET	Product Name	SSW900 Anybus-CC	Product name.

6.4.2 Message Router Class (02h)

Provides information on the explicit message router object. This class does not have any attribute implemented in the SSW900.

6.4.3 DeviceNet Class (03h)

This class is responsible for maintaining the configuration and the state of the physical connections of the DeviceNet node. The following attributes are implemented:

Table 6.4: DeviceNet Class attributes

Atributte	Method	Name	Min/Max	Default	Description
1	GET	Revision	1 - 65535		Revision of the DeviceNet Object Class definition upon which the implementation is based.

Table 6.5: DeviceNet Class instance attributes

Atributte	Method	Name	Min/Max	Default	Description
1	GET/SET	MAC ID	0 - 63	63	Node address.
2	GET/SET	Baud Rate	0 - 2	0	Communication baud rate.
3	GET/SET	Bus-Off Interrupt	0 - 1	1	Bus-off reset.
4	GET/SET	Bus-Off Counter	0 - 255		Bus-off counter.
5	GET	Allocation Information			Information about allocation byte.

6.4.4 Assembly Class (04h)

This class is responsible for grouping several attributes in only one connection. Only the attribute Data (3) is implemented in the SSW900.

Table 6.6: Assembly class instance attributes

Atribute	Method	Name	Description
3	GET	Data	Data contained in the assembly object.

The Assembly class contains the following instances in the SSW900:

Table 6.7: Assembly class instances

Instance	Size	Description
100	up to 50 bytes	Producing Instance.
150	up to 100 bytes	Consuming Instance.

6.4.5 Connection Class (05h)

This class allocates and manages the internal resources associated with both I/O and Explicit Messaging connections. The following attributes are implemented:

6.4.5.1 Instance 1: Explicit Message

Table 6.8: *Connection Class – Instance 1: Explicit Message*

Attribute	Method	Name	Description
1	GET	State	Object state.
2	GET	Instance Type	I/O or explicit.
3	GET	Transport Class trigger	Defines the connection behavior.
4	GET	Produced Connection ID	ID field for transmission.
5	GET	Consumed Connection ID	ID field value representing received msg.
6	GET	Initial Comm. Charac.	Defines message groups related to this connection.
7	GET	Produced Connection Size	Maximum size (bytes) of this transmission connection.
8	GET	Consumed Connection Size	Maximum size (bytes) of this reception connection.
9	GET/SET	Expected Packet Rate	Defines timing associated to this connection.
12	GET/SET	Watchdog Timeout Action	Action for inactivity/watchdog timeout.
13	GET	Produced Connection Path Length	Number of bytes in the producer connection.
14	GET	Produced Connection Path	Specifies the path of the data producer objects.
15	GET	Consumed Connection Path Length	Number of bytes in the consumer connection.
16	GET	Consumed Connection Path	Specifies the path of the data consumer objects.
17	GET	Production Inhibit Time	Defines the minimum time between new data production.
18	GET/SET	Connection Timeout Multiplier	

6.4.5.2 Instance 2: Polled

Table 6.9: *Connection Class – Instance 2: Polled*

Attribute	Method	Name	Description
1	GET	State	Object state.
2	GET	Instance Type	I/O or explicit.
3	GET	Transport Class trigger	Defines the connection behavior.
4	GET	Produced Connection ID	ID field for transmission.
5	GET	Consumed Connection ID	ID field value representing received msg.
6	GET	Initial Comm. Charac.	Defines message groups related to this connection.
7	GET	Produced Connection Size	Maximum size (bytes) of this transmission connection.
8	GET	Consumed Connection Size	Maximum size (bytes) of this reception connection.
9	GET/SET	Expected Packet Rate	Defines timing associated to this connection.
12	GET	Watchdog Timeout Action	Action for inactivity/watchdog timeout.
13	GET	Produced Connection Path Length	Number of bytes in the producer connection.
14	GET	Produced Connection Path	Specifies the path of the data producer objects.
15	GET	Consumed Connection Path Length	Number of bytes in the consumer connection.
16	GET	Consumed Connection Path	Specifies the path of the data consumer objects.
17	GET	Production Inhibit Time	Defines the minimum time between new data production.
18	GET/SET	Connection Timeout Multiplier	

6.4.5.3 Instance 3: Bit-strobe

Table 6.10: *Connection Class – Instance 3: Bit-strobe*

Attribute	Method	Name	Description
1	GET	State	Object state.
2	GET	Instance Type	I/O or explicit
3	GET	Transport Class trigger	Defines the connection behavior.
4	GET	Produced Connection ID	ID field for transmission.
5	GET	Consumed Connection ID	ID field value representing received msg.
6	GET	Initial Comm. Charac.	Defines message groups related to this connection.
7	GET	Produced Connection Size	Maximum size (bytes) of this transmission connection.
8	GET	Consumed Connection Size	Maximum size (bytes) of this reception connection.
9	GET/SET	Expected Packet Rate	Defines timing associated to this connection.
12	GET	Watchdog Timeout Action	Action for inactivity/watchdog timeout.
13	GET	Produced Connection Path Length	Number of bytes in the producer connection.
14	GET	Produced Connection Path	Specifies the path of the data producer objects.
15	GET	Consumed Connection Path Length	Number of bytes in the consumer connection.
16	GET	Consumed Connection Path	Specifies the path of the data consumer objects.
17	GET	Production Inhibit Time	Defines the minimum time between new data production.
18	GET/SET	Connection Timeout Multiplier	

6.4.5.4 Instance 4: Change of State/Cyclic

Table 6.11: *Connection Class – Instance 4: Change of State/Cyclic*

Attribute	Method	Name	Description
1	GET	State	Object state.
2	GET	Instance Type	I/O or explicit.
3	GET	Transport Class trigger	Defines the connection behavior.
4	GET	Produced Connection ID	ID field for transmission.
5	GET	Consumed Connection ID	ID field value representing received msg.
6	GET	Initial Comm. Charac.	Defines message groups related to this connection.
7	GET	Produced Connection Size	Maximum size (bytes) of this transmission connection.
8	GET	Consumed Connection Size	Maximum size (bytes) of this reception connection.
9	GET/SET	Expected Packet Rate	Defines timing associated to this connection.
12	GET	Watchdog Timeout Action	Action for inactivity/watchdog timeout.
13	GET	Produced Connection Path Length	Number of bytes in the producer connection.
14	GET	Produced Connection Path	Specifies the path of the data producer objects.
15	GET	Consumed Connection Path Length	Number of bytes in the consumer connection.
16	GET	Consumed Connection Path	Specifies the path of the data consumer objects.
17	GET	Production Inhibit Time	Defines the minimum time between new data production.
18	GET/SET	Connection Timeout Multiplier	

6.4.6 Acknowledge Handler Class (2Bh)

This class is responsible for managing the reception of acknowledgment messages.

Table 6.12: *Acknowledge Handler Class instance attributes*

Attribute	Method	Name
1	GET/SET	Acknowledge Timer
2	GET/SET	Retry Limit
3	GET	COS Production Connection Instance

6.4.7 Manufacturer Specific Class (A2h)

The Manufacturer Specific Class is used for mapping all SSW900 parameters. This class allows the user to read from and write to any parameter through the network. The Manufacturer Specific Class use DeviceNet explicit messages.

Table 6.13: *Manufacturer Specific Class attributes*

Attribute	Method	Name	Min/Max	Description
1	GET	Revision	1 - 65535	Revision of the Manufacturer Specific Class definition upon which the implementation is based.
2	GET	Max Instance	1 - 65535	Maximum instance number.
3	GET	Number of instances	1 - 65535	

Table 6.14: *Manufacturer Specific Class instance attributes*

Attribute	Method	Name	Min/Max	Description
5	GET/SET	Value	0 - 65535	

NOTE!

- For instances of this class, the SSW900 uses only attribute 5.
- The data is transmitted as an integer value, without the indication of the decimal places.
- To obtain network address (Net Id) used to identify the instance number of the parameters, refer to Appendix A.

7 STARTUP GUIDE

The main steps to start up the SSW900 soft-starter in DeviceNet 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, during the recognition stage, the MS and NS LEDs test routine will be performed. After this stage, the MS 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 cable to the accessory, considering the recommended instructions in network installation, as described in item 3.5:
   - 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 communication parameters, such as address and baudrate 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:
   - S5.1.1 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 client 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 EDS 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.

[1] The EDS file is available from WEG website (http://www.weg.net). It is important to note if the EDS configuration file is compatible with the firmware version of the SSW900 soft-starter.

3. During the configuration of the network, it is necessary to define the quantity of I/O data communicated between master and slave, as well as the transmission method of these data. The DeviceNet protocol defines different methods of dada exchange, seeing that the module supports the following methods:

   Polled: communication method in which the master sends a telegram to each of the slaves of its list (*scan list*). As soon as it receives the request, the slave immediately answers the request of the master. This process is repeated until all slaves are polled, restarting the cycle.

   Bit-strobe: communication method in which the master sends a telegram to the network containing 8 bytes of data. Each bit of these 8 bytes represents one slave that, if addressed, answers according to the programmed.

   Change of State: communication method in which the data exchange between master and slave only occurs when there are changes in the values monitored/controlled up to a certain time limit. When this limit is reached, the transmission and reception will take place even if changes have not occurred.

   Cyclic: another communication method very similar to the previous one. The only difference is the production and consumption of messages. In this type of communication, every data exchange occurs at regular time intervals, no matter if they have been changed or not.

Once configured, the NS 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.

7.4 COMMUNICATION STATUS

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

- The MS, NS 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:

- S5.1.1 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 DeviceNet protocol also defines a kind of acyclic telegram (*explicit messages*), used especially in asynchronous tasks, such as parameter setting and configuration of the equipment.

The EDS file provides the full parameter list of the equipment, which can be accessed via *explicit messages*. The item 6.2 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.

APPENDIX A

Level 1		Level 2		Level 3		Page
S	Status	S1	Measurements	S1.1	Current	34
				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	34
				S2.2	Analog Output	
		S3	SSW900	S3.1	SSW Status	35
				S3.2	Software Version	
				S3.3	SSW Model	
				S3.4	Fan Status	
				S3.5	Accessories	
		S4	Temperatures	S4.1	SCRs Temperature	37
				S4.2	Thermal Class Status	
				S4.3	Motor Temperature	
		S5	Communications	S5.1	Status Word	37
				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	
				S5.9	Bluetooth	
		S6	SoftPLC	S6.1	SoftPLC Status	41
				S6.2	Scan Cycle Time	
				S6.3	Value for Outputs	
				S6.4	Parameter	
D	Diagnostics	D1	Fault	D1.1	Actual	42
				D1.2	Fault History	
		D2	Alarms	D2.1	Actual	42
				D2.2	Alarm History	
		D3	Events			42
		D4	Motor On	D4.1	Start Current	42
				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	43
				D5.2	Motor Maximum	
		D6	Hours Control			43
		D7	Changed Parameters			43

Table A.2: *Characteristics of the parameters for the communication protocol*

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
S1 Status\Measurements								
S1.1	Current							
S1.1.1	R Phase	0.0 to 14544.0 A	1	26	UDINT	26	32bit	2
S1.1.2	S Phase	0.0 to 14544.0 A	1	28	UDINT	28	32bit	2
S1.1.3	T Phase	0.0 to 14544.0 A	1	30	UDINT	30	32bit	2
S1.1.4	Average	0.0 to 14544.0 A	1	24	UDINT	24	32bit	2
S1.1.5	Motor %In	0.0 to 999.9 %	1	2	UINT	2	16bit	1
S1.1.6	SSW %In	0.0 to 999.9 %	1	1	UINT	1	16bit	1
S1.2	Main Line Voltage							
S1.2.1	R-S Line	0.0 to 999.9 V	1	33	UINT	33	16bit	1
S1.2.2	S-T Line	0.0 to 999.9 V	1	34	UINT	34	16bit	1
S1.2.3	T-R Line	0.0 to 999.9 V	1	35	UINT	35	16bit	1
S1.2.4	Average	0.0 to 999.9 V	1	4	UINT	4	16bit	1
S1.2.5	Motor %Vn	0.0 to 999.9 %	1	3	UINT	3	16bit	1
S1.2.6	SSW %Vn	0.0 to 999.9 %	1	5	UINT	5	16bit	1
S1.3	Output Voltage							
S1.3.1	Average	0.0 to 999.9 V	1	7	UINT	7	16bit	1
S1.3.2	Motor %Vn	0.0 to 999.9 %	1	6	UINT	6	16bit	1
S1.4	SCR Blocking Voltage							
S1.4.1	R-U Blocking	0.0 to 999.9 V	1	21	UINT	21	16bit	1
S1.4.2	S-V Blocking	0.0 to 999.9 V	1	22	UINT	22	16bit	1
S1.4.3	T-W Blocking	0.0 to 999.9 V	1	23	UINT	23	16bit	1
S1.5	Output Power & P.F.							
S1.5.1	Active	0.0 to 11700.0 kW	1	10	UDINT	10	32bit	2
S1.5.2	Apparent	0.0 to 11700.0 kVA	1	12	UDINT	12	32bit	2
S1.5.3	Reactive	0.0 to 11700.0 kVAr	1	14	UDINT	14	32bit	2
S1.5.4	P. F.	0.0 to 1.0	2	8	USINT	8	8bit	1
S1.6	P.L.L.							
S1.6.1	Status	0 = Off 1 = Ok		16	USINT	16	enum	1
S1.6.2	Frequency	0.0 to 99.9 Hz	1	17	UINT	17	16bit	1
S1.6.3	Sequence	0 = Invalid 1 = RST / 123 2 = RTS / 132		18	USINT	18	enum	1
S1.7	Motor Torque							
S1.7.1	Motor %Tn	0.0 to 999.9 %	1	9	UINT	9	16bit	1
S1.8	Control Voltage							
S1.8.1	Input	0.0 to 999.9 V	1	71	UINT	71	16bit	1
S1.8.2	+5V	0.0 to 9.99 V	2	72	UINT	72	16bit	1
S1.8.3	+12V	0.0 to 99.9 V	1	73	UINT	73	16bit	1
S1.8.4	+Vbat	0.0 to 9.99 V	2	75	UINT	75	16bit	1
S1.8.5	+48V	0.0 to 99.9 V	1	76	UINT	76	16bit	1
S2 Status\I/O								
S2.1	Digital							

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
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		677	WORD	677	16bit	1
S2.1.2	Outputs	Bit 0 = DO1 Bit 1 = DO2 Bit 2 = DO3 Bit 3 ... 15 = Reserved		678	WORD	678	16bit	1
S2.2	Analog Output							
S2.2.1	Percent	0.0 to 100.0 %	2	673	UINT	673	16bit	1
S2.2.2	Current	0.0 to 20.0 mA	3	674	UINT	674	16bit	1
S2.2.3	Voltage	0.0 to 10.0 V	3	675	UINT	675	16bit	1
S2.2.4	10 bits	0 to 1023	0	676	UINT	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 11 = Start Delay 12 = Re-start Delay 13 = General Disabled 14 = Configuration		679	USINT	679	enum	1
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		232	USINT	232	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
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		680	WORD	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 Bit 4 = Reset Needs Bit 5 = Copy HMI Bit 6 ... 15 = Reserved		692	WORD	692	16bit	1
S3.2	Software Version							
S3.2.1	Package	0.0 to 99.99	2	328	UINT	328	16bit	1
S3.2.2	Details							
S3.2.2.1	Control 1 V	0.0 to 99.99	2	330	UINT	330	16bit	1
S3.2.2.2	Control 1 rev.	-32768 to 32767	0	327	INT	327	s16bit	1
S3.2.2.3	Bootloader V	0.0 to 99.99	2	329	UINT	329	16bit	1
S3.2.2.4	Bootloader rev.	-32768 to 32767	0	323	INT	323	s16bit	1
S3.2.2.5	HMI rev.	-32768 to 32767	0	322	INT	322	s16bit	1
S3.2.2.6	Control 2 V	0.0 to 99.99	2	331	UINT	331	16bit	1
S3.2.2.7	Control 2 rev.	-32768 to 32767	0	326	INT	326	s16bit	1
S3.2.2.8	Accessory 1 V	0.0 to 99.99	2	333	UINT	333	16bit	1
S3.2.2.9	Accessory 1 rev.	-32768 to 32767	0	324	INT	324	s16bit	1
S3.2.2.10	Accessory 2 V	0.0 to 99.99	2	334	UINT	334	16bit	1
S3.2.2.11	Accessory 2 rev.	-32768 to 32767	0	325	INT	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		294	USINT	294	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		6 = 1100 to 1400 A						
S3.3.2	Voltage	0 = 220 to 575 V 1 = 400 to 690 V		296	USINT	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 Vcc		297	USINT	297	enum	1
S3.3.4	Serial Number	0 to 4294967295	0	298	UDINT	298	32bit	2
S3.4	Fan Status							
S3.4.1	Actual	0 = Off 1 = On		293	USINT	293	enum	1
S3.5	Accessories							
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.		335	USINT	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.		336	USINT	336	enum	1
S4 Status\Temperatures								
S4.1	SCRs Temperature							
S4.1.1	Actual	-22 to 260 °C	0	60	INT	60	s16bit	1
S4.2	Thermal Class Status							
S4.2.1	Of Maximum	0.0 to 100.0 %	1	50	UINT	50	16bit	1
S4.3	Motor Temperature							
S4.3.1	Channel 1	-20 to 260 °C	0	63	INT	63	s16bit	1
S4.3.2	Channel 2	-20 to 260 °C	0	64	INT	64	s16bit	1
S4.3.3	Channel 3	-20 to 260 °C	0	65	INT	65	s16bit	1
S4.3.4	Channel 4	-20 to 260 °C	0	66	INT	66	s16bit	1
S4.3.5	Channel 5	-20 to 260 °C	0	67	INT	67	s16bit	1
S4.3.6	Channel 6	-20 to 260 °C	0	68	INT	68	s16bit	1
S5 Status\Communications								

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
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 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		680	WORD	680	16bit	1
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		683	WORD	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		681	WORD	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		682	WORD	682	16bit	1
S5.2.4	SoftPLC	Bit 0 = Start/Stop		684	WORD	684	16bit	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		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		685	WORD	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		686	WORD	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		695	WORD	695	16bit	1
S5.3.2	Value for AO							
S5.3.2.1	AO in 10 bits	0 to 1023	0	696	UINT	696	16bit	1
S5.4	RS485 Serial							
S5.4.1	Interface Status	0 = Off 1 = On 2 = Timeout Error		735	USINT	735	enum	1
S5.4.2	Received Telegram	0 to 65535	0	736	UINT	736	16bit	1
S5.4.3	Transmitted Telegram	0 to 65535	0	737	UINT	737	16bit	1
S5.4.4	Telegram with Error	0 to 65535	0	738	UINT	738	16bit	1
S5.4.5	Reception Errors	0 to 65535	0	739	UINT	739	16bit	1
S5.5	Anybus-CC							
S5.5.1	Identification	0 = Disabled 1 ... 15 = Reserved 16 = Profibus DP 17 = DeviceNet 18 = Reserved		750	USINT	750	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		19 = EtherNet/IP 20 = Reserved 21 = Modbus TCP 22 = Reserved 23 = PROFINET IO 24 ... 25 = Reserved						
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		751	USINT	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 ... 15 = Reserved		692	WORD	692	16bit	1
S5.6.2	Control	Bit 0 = Abort Startup Bit 1 ... 15 = Reserved		693	WORD	693	16bit	1
S5.7	CANopen/DeviceNet							
S5.7.1	CAN Controller Status	0 = Disabled 1 = Auto-baud 2 = CAN Enabled 3 = Warning 4 = Error Passive 5 = Bus Off 6 = No Bus Power		705	USINT	705	enum	1
S5.7.2	Received Telegram	0 to 65535	0	706	UINT	706	16bit	1
S5.7.3	Transmitted Telegram	0 to 65535	0	707	UINT	707	16bit	1
S5.7.4	Bus Off Counter	0 to 65535	0	708	UINT	708	16bit	1
S5.7.5	Lost Messages	0 to 65535	0	709	UINT	709	16bit	1
S5.7.6	CANopen Comm. Status	0 = Disabled 1 = Reserved 2 = Comm. Enabled 3 = ErrorCtrl.Enab 4 = Guarding Error 5 = HeartbeatError		721	USINT	721	enum	1
S5.7.7	CANopen Node State	0 = Disabled		722	USINT	722	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		1 = Initialization 2 = Stopped 3 = Operational 4 = PreOperational						
S5.7.8	DNet Network Status	0 = Offline 1 = OnLine,NotConn 2 = OnLine,Conn 3 = Conn.Timed-out 4 = Link Failure 5 = Auto-Baud		716	USINT	716	enum	1
S5.7.9	DeviceNet Master Status	0 = Run 1 = Idle		717	USINT	717	enum	1
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		1100	USINT	1100	enum	1
S6.2	Scan Cycle Time							
S6.2.1	Actual	0 to 65535 ms	0	1102	UINT	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		697	WORD	697	16bit	1
S6.3.2	AO Value							
S6.3.2.1	AO in 10 bits	0 to 1023	0	698	UINT	698	16bit	1
S6.4	Parameter							
S6.4.1	User #1	-10000 to 10000	0	1110	DINT	1110	s32bit	2
S6.4.2	User #2	-10000 to 10000	0	1112	DINT	1112	s32bit	2
S6.4.3	User #3	-10000 to 10000	0	1114	DINT	1114	s32bit	2
S6.4.4	User #4	-10000 to 10000	0	1116	DINT	1116	s32bit	2
S6.4.5	User #5	-10000 to 10000	0	1118	DINT	1118	s32bit	2
S6.4.6	User #6	-10000 to 10000	0	1120	DINT	1120	s32bit	2
S6.4.7	User #7	-10000 to 10000	0	1122	DINT	1122	s32bit	2
S6.4.8	User #8	-10000 to 10000	0	1124	DINT	1124	s32bit	2
S6.4.9	User #9	-10000 to 10000	0	1126	DINT	1126	s32bit	2
S6.4.10	User #10	-10000 to 10000	0	1128	DINT	1128	s32bit	2
S6.4.11	User #11	-10000 to 10000	0	1130	DINT	1130	s32bit	2
S6.4.12	User #12	-10000 to 10000	0	1132	DINT	1132	s32bit	2
S6.4.13	User #13	-10000 to 10000	0	1134	DINT	1134	s32bit	2
S6.4.14	User #14	-10000 to 10000	0	1136	DINT	1136	s32bit	2
S6.4.15	User #15	-10000 to 10000	0	1138	DINT	1138	s32bit	2

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
S6.4.16	User #16	-10000 to 10000	0	1140	DINT	1140	s32bit	2
S6.4.17	User #17	-10000 to 10000	0	1142	DINT	1142	s32bit	2
S6.4.18	User #18	-10000 to 10000	0	1144	DINT	1144	s32bit	2
S6.4.19	User #19	-10000 to 10000	0	1146	DINT	1146	s32bit	2
S6.4.20	User #20	-10000 to 10000	0	1148	DINT	1148	s32bit	2
S6.4.21	User #21	-10000 to 10000	0	1150	DINT	1150	s32bit	2
S6.4.22	User #22	-10000 to 10000	0	1152	DINT	1152	s32bit	2
S6.4.23	User #23	-10000 to 10000	0	1154	DINT	1154	s32bit	2
S6.4.24	User #24	-10000 to 10000	0	1156	DINT	1156	s32bit	2
S6.4.25	User #25	-10000 to 10000	0	1158	DINT	1158	s32bit	2
S6.4.26	User #26	-10000 to 10000	0	1160	DINT	1160	s32bit	2
S6.4.27	User #27	-10000 to 10000	0	1162	DINT	1162	s32bit	2
S6.4.28	User #28	-10000 to 10000	0	1164	DINT	1164	s32bit	2
S6.4.29	User #29	-10000 to 10000	0	1166	DINT	1166	s32bit	2
S6.4.30	User #30	-10000 to 10000	0	1168	DINT	1168	s32bit	2
S6.4.31	User #31	-10000 to 10000	0	1170	DINT	1170	s32bit	2
S6.4.32	User #32	-10000 to 10000	0	1172	DINT	1172	s32bit	2
S6.4.33	User #33	-10000 to 10000	0	1174	DINT	1174	s32bit	2
S6.4.34	User #34	-10000 to 10000	0	1176	DINT	1176	s32bit	2
S6.4.35	User #35	-10000 to 10000	0	1178	DINT	1178	s32bit	2
S6.4.36	User #36	-10000 to 10000	0	1180	DINT	1180	s32bit	2
S6.4.37	User #37	-10000 to 10000	0	1182	DINT	1182	s32bit	2
S6.4.38	User #38	-10000 to 10000	0	1184	DINT	1184	s32bit	2
S6.4.39	User #39	-10000 to 10000	0	1186	DINT	1186	s32bit	2
S6.4.40	User #40	-10000 to 10000	0	1188	DINT	1188	s32bit	2
S6.4.41	User #41	-10000 to 10000	0	1190	DINT	1190	s32bit	2
S6.4.42	User #42	-10000 to 10000	0	1192	DINT	1192	s32bit	2
S6.4.43	User #43	-10000 to 10000	0	1194	DINT	1194	s32bit	2
S6.4.44	User #44	-10000 to 10000	0	1196	DINT	1196	s32bit	2
S6.4.45	User #45	-10000 to 10000	0	1198	DINT	1198	s32bit	2
S6.4.46	User #46	-10000 to 10000	0	1200	DINT	1200	s32bit	2
S6.4.47	User #47	-10000 to 10000	0	1202	DINT	1202	s32bit	2
S6.4.48	User #48	-10000 to 10000	0	1204	DINT	1204	s32bit	2
S6.4.49	User #49	-10000 to 10000	0	1206	DINT	1206	s32bit	2
S6.4.50	User #50	-10000 to 10000	0	1208	DINT	1208	s32bit	2
D1 Diagnostics\Fault								
D1.1	Actual							
D1.1.1	Fxxx	0 to 999	0	90	UINT	90	16bit	1
D1.2	Fault History							
D2 Diagnostics\Alarms								
D2.1	Actual							
D2.1.1	Axxx 1	0 to 999	0	91	UINT	91	16bit	1
D2.1.2	Axxx 2	0 to 999	0	92	UINT	92	16bit	1
D2.1.3	Axxx 3	0 to 999	0	93	UINT	93	16bit	1
D2.1.4	Axxx 4	0 to 999	0	94	UINT	94	16bit	1
D2.1.5	Axxx 5	0 to 999	0	95	UINT	95	16bit	1
D2.2	Alarm History							
D3 Diagnostics\Events								
D4 Diagnostics\Motor On								

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
D4.1	Start Current							
D4.1.1	Maximum	0.0 to 14544.0 A	1	36	UDINT	36	32bit	2
D4.1.2	Average	0.0 to 14544.0 A	1	38	UDINT	38	32bit	2
D4.2	Real Start Time							
D4.2.1	Actual	0 to 999 s	0	48	UINT	48	16bit	1
D4.2.2	Final	0 to 999 s	0	49	UINT	49	16bit	1
D4.3	Current Full Voltage							
D4.3.1	Maximum	0.0 to 14544.0 A	1	40	UDINT	40	32bit	2
D4.4	Main Line Voltage							
D4.4.1	Maximum	0.0 to 999.9 V	1	54	UINT	54	16bit	1
D4.4.2	Minimun	0.0 to 999.9 V	1	55	UINT	55	16bit	1
D4.5	Main Line Frequency							
D4.5.1	Maximum	0.0 to 99.9 Hz	1	56	UINT	56	16bit	1
D4.5.2	Minimum	0.0 to 99.9 Hz	1	57	UINT	57	16bit	1
D4.6	kWh Counter							
D4.6.1	Total	0.0 to 214748364.7 kWh	1	52	UDINT	52	32bit	2
D4.7	Number Start							
D4.7.1	Total	0 to 65535	0	59	UINT	59	16bit	1
		D5 Diagnostics\Temperatures						
D5.1	SCRs Maximum							
D5.1.1	Total	-22 to 260 °C	0	77	INT	77	s16bit	1
D5.2	Motor Maximum							
D5.2.1	Channel 1	-20 to 260 °C	0	80	INT	80	s16bit	1
D5.2.2	Channel 2	-20 to 260 °C	0	81	INT	81	s16bit	1
D5.2.3	Channel 3	-20 to 260 °C	0	82	INT	82	s16bit	1
D5.2.4	Channel 4	-20 to 260 °C	0	83	INT	83	s16bit	1
D5.2.5	Channel 5	-20 to 260 °C	0	84	INT	84	s16bit	1
D5.2.6	Channel 6	-20 to 260 °C	0	85	INT	85	s16bit	1
		D6 Diagnostics\Hours Control						
D6.1	Powered	0 to 4294967295 s	0	42	UDINT	42	TIME	2
D6.2	Enabled	0 to 4294967295 s	0	44	UDINT	44	TIME	2
D6.3	Fan ON	0 to 4294967295 s	0	46	UDINT	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		202	USINT	202	enum	1
C1.2	Initial Start Voltage	25 to 90 %	0	101	USINT	101	8bit	1
C1.3	Maximum Start Time	1 to 999 s	0	102	UINT	102	16bit	1
C1.4	Start End Detection	0 = Time 1 = Automatic		106	USINT	106	enum	1
C1.5	Initial Current Ramp	150 to 500 %	0	111	UINT	111	16bit	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C1.6	Current Ramp Time	1 to 99 %	0	112	USINT	112	8bit	1
C1.7	Current Limit	150 to 500 %	0	110	UINT	110	16bit	1
C1.8	Start Torque Chara.	1 = Constant 2 = Linear 3 = Square		120	USINT	120	enum	1
C1.9	Initial Start Torque	10 to 300 %	0	121	UINT	121	16bit	1
C1.10	End Start Torque	10 to 300 %	0	122	UINT	122	16bit	1
C1.11	Minimun Start Torque	10 to 300 %	0	123	UINT	123	16bit	1
C1.12	Min.Start Torq. Time	1 to 99 %	0	124	USINT	124	8bit	1
C1.13	Stop Time	0 to 999 s	0	104	UINT	104	16bit	1
C1.14	Step Down Volt. Stop	60 to 100 %	0	103	USINT	103	8bit	1
C1.15	End Voltage Stop	30 to 55 %	0	105	USINT	105	8bit	1
C1.16	Stop Torque Characte.	1 = Constant 2 = Linear 3 = Square		125	USINT	125	enum	1
C1.17	End Stop Torque	10 to 100 %	0	126	USINT	126	8bit	1
C1.18	Minimum Stop Torque	10 to 100 %	0	127	USINT	127	8bit	1
C1.19	Min. Stop Torque Time	1 to 99 %	0	128	USINT	128	8bit	1
C2 Configurations\Nominal Motor Data								
C2.1	Voltage	1 to 999 V	0	400	UINT	400	16bit	1
C2.2	Current	0.1 to 2424.0 A	1	401	UINT	401	16bit	1
C2.3	Speed	1 to 3600 rpm	0	402	UINT	402	16bit	1
C2.4	Power	0.1 to 1950.0 kW	1	404	UINT	404	16bit	1
C2.5	P.F. Power Factor	0.01 to 1.0	2	405	USINT	405	8bit	1
C2.6	S.F. Service Factor	0.01 to 1.5	2	406	USINT	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		220	USINT	220	enum	1
C3.2	LOC Command	0 = HMI Keys 1 = DIx 2 = USB 3 = SoftPLC 4 = Slot 1 5 = Slot 2		229	USINT	229	enum	1
C3.3	REM Command			230	USINT	230	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		0 = HMI Keys 1 = DIx 2 = USB 3 = SoftPLC 4 = Slot 1 5 = Slot 2						
C3.4	Commands Copy	0 = No 1 = Yes		231	USINT	231	enum	1
C4 Configurations\I/O								
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		263	USINT	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		264	USINT	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		265	USINT	265	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		8 = No External Fault 9 = No External Alarm 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		266	USINT	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		267	USINT	267	enum	1
C4.1.6	DI6	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		268	USINT	268	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		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		275	USINT	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 13 = I motor % > Value 14 = Breaker Shunt Trip		276	USINT	276	enum	1
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		277	USINT	277	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		12 = Communication 13 = I motor % > Value 14 = Breaker Shunt Trip						
C4.2.4	DO Comparison Value	10.0 to 500.0 %	1	278	UINT	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		251	USINT	251	enum	1
C4.3.2	Gain	0.0 to 9.999	3	252	UINT	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		253	USINT	253	enum	1
		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		900	USINT	900	enum	1
C5.1.1.2	Level	0 to 30 %Vn	0	901	USINT	901	8bit	1
C5.1.1.3	Time	0.1 to 10.0 s	1	902	USINT	902	8bit	1
C5.1.2	Motor Overvoltage							
C5.1.2.1	Mode	0 = Inactive 1 = Fault F016 2 = Alarm A016		903	USINT	903	enum	1
C5.1.2.2	Level	0 to 20 %Vn	0	904	USINT	904	8bit	1
C5.1.2.3	Time	0.1 to 10.0 s	1	905	USINT	905	8bit	1
C5.1.3	Motor Voltage Imbalance							
C5.1.3.1	Mode	0 = Inactive 1 = Fault F001 2 = Alarm A001		906	USINT	906	enum	1
C5.1.3.2	Level	0 to 30 %Vn	0	907	USINT	907	8bit	1
C5.1.3.3	Time	0.1 to 10.0 s	1	908	USINT	908	8bit	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C5.2	Current Protections							
C5.2.1	Motor Undercurrent							
C5.2.1.1	Mode	0 = Inactive 1 = Fault F065 2 = Alarm A065		910	USINT	910	enum	1
C5.2.1.2	Level	0 to 99 %In	0	911	USINT	911	8bit	1
C5.2.1.3	Time	1 to 99 s	0	912	USINT	912	8bit	1
C5.2.2	Motor Overcurrent							
C5.2.2.1	Mode	0 = Inactive 1 = Fault F066 2 = Alarm A066		913	USINT	913	enum	1
C5.2.2.2	Level	0 to 99 %In	0	914	USINT	914	8bit	1
C5.2.2.3	Time	1 to 99 s	0	915	USINT	915	8bit	1
C5.2.3	Current Imbalance							
C5.2.3.1	Mode	0 = Inactive 1 = Fault F074 2 = Alarm A074		916	USINT	916	enum	1
C5.2.3.2	Level	0 to 30 %In	0	917	USINT	917	8bit	1
C5.2.3.3	Time	1 to 99 s	0	918	USINT	918	8bit	1
C5.3	Torque Protections							
C5.3.1	Undertorque							
C5.3.1.1	Mode	0 = Inactive 1 = Fault F078 2 = Alarm A078		950	USINT	950	enum	1
C5.3.1.2	Level	0 to 99 %Tn	0	951	USINT	951	8bit	1
C5.3.1.3	Time	1 to 99 s	0	952	USINT	952	8bit	1
C5.3.2	Overtorque							
C5.3.2.1	Mode	0 = Inactive 1 = Fault F079 2 = Alarm A079		953	USINT	953	enum	1
C5.3.2.2	Level	0 to 99 %Tn	0	954	USINT	954	8bit	1
C5.3.2.3	Time	1 to 99 s	0	955	USINT	955	8bit	1
C5.4	Power Protections							
C5.4.1	Underpower							
C5.4.1.1	Mode	0 = Inactive 1 = Fault F080 2 = Alarm A080		960	USINT	960	enum	1
C5.4.1.2	Level	0 to 99 %Pn	0	961	USINT	961	8bit	1
C5.4.1.3	Time	1 to 99 s	0	962	USINT	962	8bit	1
C5.4.2	Overpower							
C5.4.2.1	Mode			963	USINT	963	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		0 = Inactive 1 = Fault F081 2 = Alarm A081						
C5.4.2.2	Level	0 to 99 %Pn	0	964	USINT	964	8bit	1
C5.4.2.3	Time	1 to 99 s	0	965	USINT	965	8bit	1
C5.5	Phase Sequence							
C5.5.1	Mode	0 = Inactive 1 = RST - Fault F067 2 = RTS - Fault F068		930	USINT	930	enum	1
C5.6	Bypass Protections							
C5.6.1	Undercurrent	0 = Inactive 1 = Fault F076		919	USINT	919	enum	1
C5.6.2	Overcurrent	0 = Inactive 1 = Fault F063		920	USINT	920	enum	1
C5.6.3	Closed	0 = Inactive 1 = Fault F077		921	USINT	921	enum	1
C5.7	Time Protections							
C5.7.1	Before Start	0.5 to 999.9 s	1	931	UINT	931	16bit	1
C5.7.2	After Stop	2.0 to 999.9 s	1	932	UINT	932	16bit	1
C5.7.3	Between Start	2 to 9999 s	0	933	UINT	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		1006	USINT	1006	enum	1
C5.8.2	Ch1 Sensor Fault							
C5.8.2.1	Mode	0 = Fault F109 and F117 1 = Alarm A109 and A117		998	USINT	998	enum	1
C5.8.3	Ch1 Overtemperature							
C5.8.3.1	Mode	0 = Fault F101 1 = Alarm A101 2 = F101 and A101		966	USINT	966	enum	1
C5.8.3.2	Fault Level	0 to 250 °C	0	967	USINT	967	8bit	1
C5.8.3.3	Alarm Level	0 to 250 °C	0	968	USINT	968	8bit	1
C5.8.3.4	Alarm Reset	0 to 250 °C	0	969	USINT	969	8bit	1
C5.8.4	Ch2 Installed Sensor							
C5.8.4.1	Mode	0 = Off 1 = On 2 = On Stator		1007	USINT	1007	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C5.8.5	Ch2 Sensor Fault							
C5.8.5.1	Mode	0 = Fault F110 and F118 1 = Alarm A110 and A118		999	USINT	999	enum	1
C5.8.6	Ch2 Overtemperature							
C5.8.6.1	Mode	0 = Fault F102 1 = Alarm A102 2 = F102 and A102		970	USINT	970	enum	1
C5.8.6.2	Fault Level	0 to 250 °C	0	971	USINT	971	8bit	1
C5.8.6.3	Alarm Level	0 to 250 °C	0	972	USINT	972	8bit	1
C5.8.6.4	Alarm Reset	0 to 250 °C	0	973	USINT	973	8bit	1
C5.8.7	Ch3 Installed Sensor							
C5.8.7.1	Mode	0 = Off 1 = On 2 = On Stator		1008	USINT	1008	enum	1
C5.8.8	Ch3 Sensor Fault							
C5.8.8.1	Mode	0 = Fault F111 and F119 1 = Alarm A111 and A119		1000	USINT	1000	enum	1
C5.8.9	Ch3 Overtemperature							
C5.8.9.1	Mode	0 = Fault F103 1 = Alarm A103 2 = F103 and A103		974	USINT	974	enum	1
C5.8.9.2	Fault Level	0 to 250 °C	0	975	USINT	975	8bit	1
C5.8.9.3	Alarm Level	0 to 250 °C	0	976	USINT	976	8bit	1
C5.8.9.4	Alarm Reset	0 to 250 °C	0	977	USINT	977	8bit	1
C5.8.10	Ch4 Installed Sensor							
C5.8.10.1	Mode	0 = Off 1 = On 2 = On Stator		1009	USINT	1009	enum	1
C5.8.11	Ch4 Sensor Fault							
C5.8.11.1	Mode	0 = Fault F112 and F120 1 = Alarm A112 and A120		1001	USINT	1001	enum	1
C5.8.12	Ch4 Overtemperature							
C5.8.12.1	Mode	0 = Fault F104 1 = Alarm A104 2 = F104 and A104		978	USINT	978	enum	1
C5.8.12.2	Fault Level	0 to 250 °C	0	979	USINT	979	8bit	1
C5.8.12.3	Alarm Level	0 to 250 °C	0	980	USINT	980	8bit	1
C5.8.12.4	Alarm Reset	0 to 250 °C	0	981	USINT	981	8bit	1
C5.8.13	Ch5 Installed Sensor							

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C5.8.13.1	Mode	0 = Off 1 = On 2 = On Stator		1010	USINT	1010	enum	1
C5.8.14	Ch5 Sensor Fault							
C5.8.14.1	Mode	0 = Fault F113 and F121 1 = Alarm A113 and A121		1002	USINT	1002	enum	1
C5.8.15	Ch5 Overtemperature							
C5.8.15.1	Mode	0 = Fault F105 1 = Alarm A105 2 = F105 and A105		982	USINT	982	enum	1
C5.8.15.2	Fault Level	0 to 250 °C	0	983	USINT	983	8bit	1
C5.8.15.3	Alarm Level	0 to 250 °C	0	984	USINT	984	8bit	1
C5.8.15.4	Alarm Reset	0 to 250 °C	0	985	USINT	985	8bit	1
C5.8.16	Ch6 Installed Sensor							
C5.8.16.1	Mode	0 = Off 1 = On 2 = On Stator		1011	USINT	1011	enum	1
C5.8.17	Ch6 Sensor Fault							
C5.8.17.1	Mode	0 = Fault F114 and F122 1 = Alarm A114 and A122		1003	USINT	1003	enum	1
C5.8.18	Ch6 Overtemperature							
C5.8.18.1	Mode	0 = Fault F106 1 = Alarm A106 2 = F106 and A106		986	USINT	986	enum	1
C5.8.18.2	Fault Level	0 to 250 °C	0	987	USINT	987	8bit	1
C5.8.18.3	Alarm Level	0 to 250 °C	0	988	USINT	988	8bit	1
C5.8.18.4	Alarm Reset	0 to 250 °C	0	989	USINT	989	8bit	1
C5.9	Motor Thermal Class							
C5.9.1	Programming Mode	0 = Standard 1 = Custom		934	USINT	934	enum	1
C5.9.2	Action Mode	0 = Inactive 1 = Fault F005 2 = Alarm A005 3 = F005 and A005		935	USINT	935	enum	1
C5.9.3	Alarm Level	0 to 100 %	0	936	USINT	936	8bit	1
C5.9.4	Alarm Reset	0 to 100 %	0	937	USINT	937	8bit	1
C5.9.5	Motor Temperature	0 = T.C. + PT100 1 = T.C. + Th.Im.		938	USINT	938	enum	1
C5.9.6	Thermal Class			939	USINT	939	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		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						
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		940	USINT	940	enum	1
C5.9.7.2	Temperature Rise	0 to 200 °C	0	942	USINT	942	8bit	1
C5.9.7.3	Ambient Temperature	0 to 200 °C	0	941	USINT	941	8bit	1
C5.9.7.4	Locked Rotor Time	1 to 100 s	0	943	USINT	943	8bit	1
C5.9.7.5	Locked Rotor Current	2.0 to 10.0 x	1	944	USINT	944	8bit	1
C5.9.7.6	Heating Time Constant	1 to 2880 min	0	945	UINT	945	16bit	1
C5.9.7.7	Cooling Time Constant	1 to 8640 min	0	946	UINT	946	16bit	1
C5.9.8	Thermal Image							
C5.9.8.1	Reset	0 to 8640 min	0	947	UINT	947	16bit	1
C5.10	SSW Short Circuit							
C5.10.1	Motor Off	0 = Inactive 1 = Fault F019		922	USINT	922	enum	1
C5.10.2	Motor On	0 = Inactive 1 = Fault F020		923	USINT	923	enum	1
C5.11	Fault Auto-Reset							
C5.11.1	Mode	0 = Off 1 = On		207	USINT	207	enum	1
C5.11.2	Time	3 to 600 s	0	208	UINT	208	16bit	1
		C6 Configurations\HMI						
C6.1	Password							
C6.1.1	Password	0 to 9999	0	210	UINT	210	16bit	1
C6.1.2	Password Options	0 = Off 1 = On 2 = Change Password		200	USINT	200	enum	1
C6.2	Language							

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C6.2.1	Language	0 = Português 1 = English 2 = Español		201	USINT	201	enum	1
C6.3	Date and Time							
C6.3.1	Date and Time	yy/mm/dd and hh:mm:ss		196	SHORT_STRING	196	date	4
C6.3.2	Day of the Week	0 = Sunday 1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday		195	USINT	195	enum	1
C6.4	Main Screen							
C6.5	LCD Backlight							
C6.5.1	Level	1 to 15	0	218	USINT	218	8bit	1
C6.6	Communication Timeout							
C6.6.1	Mode	0 = Inactive 1 = Fault F127 2 = Alarm A127		190	USINT	190	enum	1
C6.6.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		191	USINT	191	enum	1
C6.6.3	Time	1 to 999 s	0	192	UINT	192	16bit	1
C7 Configurations\Special Functions								
C7.1	Forward/Reverse							
C7.1.1	Mode	0 = Inactive 1 = By Contactor 2 = Only for JOG		228	USINT	228	enum	1
C7.2	Kick Start							
C7.2.1	Mode	0 = Off 1 = On		520	USINT	520	enum	1
C7.2.2	Time	0.1 to 2.0 s	1	521	USINT	521	8bit	1
C7.2.3	Voltage	70 to 90 %	0	522	USINT	522	8bit	1
C7.2.4	Current	300 to 700 %	0	523	UINT	523	16bit	1
C7.3	Jog							
C7.3.1	Mode	0 = Off 1 = On		510	USINT	510	enum	1
C7.3.2	Level	10 to 100 %	0	511	USINT	511	8bit	1
C7.4	Braking							

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C7.4.1	Mode	0 = Inactive 1 = Reverse 2 = Optimal 3 = DC		500	USINT	500	enum	1
C7.4.2	Time	1 to 299 s	0	501	UINT	501	16bit	1
C7.4.3	Level	30 to 70 %	0	502	USINT	502	8bit	1
C7.4.4	End	0 = Inactive 1 = Automatic		503	USINT	503	enum	1
C8 Configurations\Communication								
C8.1	I/O Data							
C8.1.1	Data Read							
C8.1.1.1	Slot 1 1st Word	1 to 50	0	712	USINT	712	8bit	1
C8.1.1.2	Slot 1 Quantity	1 to 50	0	713	USINT	713	8bit	1
C8.1.1.3	Slot 2 1st Word	1 to 50	0	753	USINT	753	8bit	1
C8.1.1.4	Slot 2 Quantity	1 to 50	0	754	USINT	754	8bit	1
C8.1.1.5	Word #1	0 to 65535	0	1300	UINT	1300	16bit	1
C8.1.1.6	Word #2	0 to 65535	0	1301	UINT	1301	16bit	1
C8.1.1.7	Word #3	0 to 65535	0	1302	UINT	1302	16bit	1
C8.1.1.8	Word #4	0 to 65535	0	1303	UINT	1303	16bit	1
C8.1.1.9	Word #5	0 to 65535	0	1304	UINT	1304	16bit	1
C8.1.1.10	Word #6	0 to 65535	0	1305	UINT	1305	16bit	1
C8.1.1.11	Word #7	0 to 65535	0	1306	UINT	1306	16bit	1
C8.1.1.12	Word #8	0 to 65535	0	1307	UINT	1307	16bit	1
C8.1.1.13	Word #9	0 to 65535	0	1308	UINT	1308	16bit	1
C8.1.1.14	Word #10	0 to 65535	0	1309	UINT	1309	16bit	1
C8.1.1.15	Word #11	0 to 65535	0	1310	UINT	1310	16bit	1
C8.1.1.16	Word #12	0 to 65535	0	1311	UINT	1311	16bit	1
C8.1.1.17	Word #13	0 to 65535	0	1312	UINT	1312	16bit	1
C8.1.1.18	Word #14	0 to 65535	0	1313	UINT	1313	16bit	1
C8.1.1.19	Word #15	0 to 65535	0	1314	UINT	1314	16bit	1
C8.1.1.20	Word #16	0 to 65535	0	1315	UINT	1315	16bit	1
C8.1.1.21	Word #17	0 to 65535	0	1316	UINT	1316	16bit	1
C8.1.1.22	Word #18	0 to 65535	0	1317	UINT	1317	16bit	1
C8.1.1.23	Word #19	0 to 65535	0	1318	UINT	1318	16bit	1
C8.1.1.24	Word #20	0 to 65535	0	1319	UINT	1319	16bit	1
C8.1.1.25	Word #21	0 to 65535	0	1320	UINT	1320	16bit	1
C8.1.1.26	Word #22	0 to 65535	0	1321	UINT	1321	16bit	1
C8.1.1.27	Word #23	0 to 65535	0	1322	UINT	1322	16bit	1
C8.1.1.28	Word #24	0 to 65535	0	1323	UINT	1323	16bit	1
C8.1.1.29	Word #25	0 to 65535	0	1324	UINT	1324	16bit	1
C8.1.1.30	Word #26	0 to 65535	0	1325	UINT	1325	16bit	1
C8.1.1.31	Word #27	0 to 65535	0	1326	UINT	1326	16bit	1
C8.1.1.32	Word #28	0 to 65535	0	1327	UINT	1327	16bit	1
C8.1.1.33	Word #29	0 to 65535	0	1328	UINT	1328	16bit	1
C8.1.1.34	Word #30	0 to 65535	0	1329	UINT	1329	16bit	1
C8.1.1.35	Word #31	0 to 65535	0	1330	UINT	1330	16bit	1
C8.1.1.36	Word #32	0 to 65535	0	1331	UINT	1331	16bit	1
C8.1.1.37	Word #33	0 to 65535	0	1332	UINT	1332	16bit	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C8.1.1.38	Word #34	0 to 65535	0	1333	UINT	1333	16bit	1
C8.1.1.39	Word #35	0 to 65535	0	1334	UINT	1334	16bit	1
C8.1.1.40	Word #36	0 to 65535	0	1335	UINT	1335	16bit	1
C8.1.1.41	Word #37	0 to 65535	0	1336	UINT	1336	16bit	1
C8.1.1.42	Word #38	0 to 65535	0	1337	UINT	1337	16bit	1
C8.1.1.43	Word #39	0 to 65535	0	1338	UINT	1338	16bit	1
C8.1.1.44	Word #40	0 to 65535	0	1339	UINT	1339	16bit	1
C8.1.1.45	Word #41	0 to 65535	0	1340	UINT	1340	16bit	1
C8.1.1.46	Word #42	0 to 65535	0	1341	UINT	1341	16bit	1
C8.1.1.47	Word #43	0 to 65535	0	1342	UINT	1342	16bit	1
C8.1.1.48	Word #44	0 to 65535	0	1343	UINT	1343	16bit	1
C8.1.1.49	Word #45	0 to 65535	0	1344	UINT	1344	16bit	1
C8.1.1.50	Word #46	0 to 65535	0	1345	UINT	1345	16bit	1
C8.1.1.51	Word #47	0 to 65535	0	1346	UINT	1346	16bit	1
C8.1.1.52	Word #48	0 to 65535	0	1347	UINT	1347	16bit	1
C8.1.1.53	Word #49	0 to 65535	0	1348	UINT	1348	16bit	1
C8.1.1.54	Word #50	0 to 65535	0	1349	UINT	1349	16bit	1
C8.1.2	Data Write							
C8.1.2.1	Slot 1 1st Word	1 to 20	0	714	USINT	714	8bit	1
C8.1.2.2	Slot 1 Quantity	1 to 20	0	715	USINT	715	8bit	1
C8.1.2.3	Slot 2 1st Word	1 to 20	0	755	USINT	755	8bit	1
C8.1.2.4	Slot 2 Quantity	1 to 20	0	756	USINT	756	8bit	1
C8.1.2.5	Update Delay	0.0 to 999.9 s	1	899	UINT	899	16bit	1
C8.1.2.6	Word #1	0 to 65535	0	1400	UINT	1400	16bit	1
C8.1.2.7	Word #2	0 to 65535	0	1401	UINT	1401	16bit	1
C8.1.2.8	Word #3	0 to 65535	0	1402	UINT	1402	16bit	1
C8.1.2.9	Word #4	0 to 65535	0	1403	UINT	1403	16bit	1
C8.1.2.10	Word #5	0 to 65535	0	1404	UINT	1404	16bit	1
C8.1.2.11	Word #6	0 to 65535	0	1405	UINT	1405	16bit	1
C8.1.2.12	Word #7	0 to 65535	0	1406	UINT	1406	16bit	1
C8.1.2.13	Word #8	0 to 65535	0	1407	UINT	1407	16bit	1
C8.1.2.14	Word #9	0 to 65535	0	1408	UINT	1408	16bit	1
C8.1.2.15	Word #10	0 to 65535	0	1409	UINT	1409	16bit	1
C8.1.2.16	Word #11	0 to 65535	0	1410	UINT	1410	16bit	1
C8.1.2.17	Word #12	0 to 65535	0	1411	UINT	1411	16bit	1
C8.1.2.18	Word #13	0 to 65535	0	1412	UINT	1412	16bit	1
C8.1.2.19	Word #14	0 to 65535	0	1413	UINT	1413	16bit	1
C8.1.2.20	Word #15	0 to 65535	0	1414	UINT	1414	16bit	1
C8.1.2.21	Word #16	0 to 65535	0	1415	UINT	1415	16bit	1
C8.1.2.22	Word #17	0 to 65535	0	1416	UINT	1416	16bit	1
C8.1.2.23	Word #18	0 to 65535	0	1417	UINT	1417	16bit	1
C8.1.2.24	Word #19	0 to 65535	0	1418	UINT	1418	16bit	1
C8.1.2.25	Word #20	0 to 65535	0	1419	UINT	1419	16bit	1
C8.2	RS485 Serial							
C8.2.1	Serial Protocol	0 ... 1 = Reserved 2 = Modbus RTU		730	USINT	730	enum	1
C8.2.2	Address	1 to 247	0	731	USINT	731	8bit	1
C8.2.3	Baud Rate	0 = 9600 bits/s		732	USINT	732	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	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		733	USINT	733	enum	1
C8.2.5	Timeout							
C8.2.5.1	Mode	0 = Inactive 1 = Fault F128 2 = Alarm A128		740	USINT	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		741	USINT	741	enum	1
C8.2.5.3	Timeout	0.0 to 999.9 s	1	734	UINT	734	16bit	1
C8.3	Anybus-CC							
C8.3.1	Update Configuration	0 = Normal Operation 1 = Update configuration		749	USINT	749	enum	1
C8.3.2	Address	0 to 255	0	757	USINT	757	8bit	1
C8.3.3	Baud Rate	0 = 125 kbps 1 = 250 kbps 2 = 500 kbps 3 = Autobaud		758	USINT	758	enum	1
C8.3.4	IP Address Configuration	0 = Parameters 1 = DHCP 2 = DCP		760	USINT	760	enum	1
C8.3.5	IP Address	0.0.0.0 to 255.255.255.255		762	UDINT	762	ip_address	2
C8.3.6	CIDR	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		761	USINT	761	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		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		766	UDINT	766	ip_address	2
C8.3.8	Station Name Suffix	0 to 254	0	770	USINT	770	8bit	1
C8.3.9	Modbus TCP Timeout							
C8.3.9.1	Mode	0 = Inactive 1 = Fault F131 2 = Alarm A131		771	USINT	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		772	USINT	772	enum	1
C8.3.9.3	Modbus TCP Timeout	0.0 to 999.9 s	1	759	UINT	759	16bit	1
C8.3.10	Off Line Error							
C8.3.10.1	Mode	0 = Inactive 1 = Fault F129 2 = Alarm A129		897	USINT	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		898	USINT	898	enum	1
C8.4	CANopen/DeviceNet							
C8.4.1	Protocol	0 = Disabled		700	USINT	700	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		1 = CANopen 2 = DeviceNet						
C8.4.2	Address	0 to 127	0	701	USINT	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		702	USINT	702	enum	1
C8.4.4	Bus Off Reset	0 = Manual 1 = Automatic		703	USINT	703	enum	1
C8.4.5	CAN Error							
C8.4.5.1	Mode	0 = Inactive 1 = Fault 2 = Alarm		723	USINT	723	enum	1
C8.4.5.2	Alarm Action	0 = Indicates Only 1 = Ramp Stop 2 = General Disable 3 = Change to LOC 4 = Change to REM		724	USINT	724	enum	1
C8.6	Bluetooth							
C8.6.1	Mode	0 = Off 1 = On		800	USINT	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 8 = 130 A 9 = 171 A 10 = 200 A 11 = 255 A 12 = 312 A 13 = 365 A 14 = 412 A		295	USINT	295	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		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		150	USINT	150	enum	1
C9.2.2	External Bypass	0 = Without 1 = With		140	USINT	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.		337	USINT	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 8 = External Current Acqu.		338	USINT	338	enum	1
C9.4	Fan Configuration							
C9.4.1	Mode	0 = Always Off 1 = Always On 2 = Controlled		203	USINT	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		206	USINT	206	enum	1

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
		6 = Reserved						
C10.2	Copy Function HMI							
C10.2.1	Mode	0 = Off 1 = SSW -> HMI 2 = HMI -> SSW		319	USINT	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		205	USINT	205	enum	1
C10.4	Load Factory Default							
C10.4.1	Mode	0 = No 1 = Yes		204	USINT	204	enum	1
C10.5	Save Changed Param.							
C10.5.1	Mode	0 = No 1 = Yes		209	USINT	209	enum	1
C11 Configurations\SoftPLC								
C11.1	Mode	0 = Stop Program 1 = Run Program		1101	USINT	1101	enum	1
C11.2	Action App. Not Running	0 = Inactive 1 = Alarm A708 2 = Fault F708		1103	USINT	1103	enum	1
C11.3	Parameter							
C11.3.1	User #1	-10000 to 10000	0	1110	DINT	1110	s32bit	2
C11.3.2	User #2	-10000 to 10000	0	1112	DINT	1112	s32bit	2
C11.3.3	User #3	-10000 to 10000	0	1114	DINT	1114	s32bit	2
C11.3.4	User #4	-10000 to 10000	0	1116	DINT	1116	s32bit	2
C11.3.5	User #5	-10000 to 10000	0	1118	DINT	1118	s32bit	2
C11.3.6	User #6	-10000 to 10000	0	1120	DINT	1120	s32bit	2
C11.3.7	User #7	-10000 to 10000	0	1122	DINT	1122	s32bit	2
C11.3.8	User #8	-10000 to 10000	0	1124	DINT	1124	s32bit	2
C11.3.9	User #9	-10000 to 10000	0	1126	DINT	1126	s32bit	2
C11.3.10	User #10	-10000 to 10000	0	1128	DINT	1128	s32bit	2
C11.3.11	User #11	-10000 to 10000	0	1130	DINT	1130	s32bit	2
C11.3.12	User #12	-10000 to 10000	0	1132	DINT	1132	s32bit	2
C11.3.13	User #13	-10000 to 10000	0	1134	DINT	1134	s32bit	2
C11.3.14	User #14	-10000 to 10000	0	1136	DINT	1136	s32bit	2
C11.3.15	User #15	-10000 to 10000	0	1138	DINT	1138	s32bit	2
C11.3.16	User #16	-10000 to 10000	0	1140	DINT	1140	s32bit	2

Parameter	Description	Range of values	Decimal places	Instance Class=A2h Attr=5	CIP data type	Net Id	Size	Qty mapped words
C11.3.17	User #17	-10000 to 10000	0	1142	DINT	1142	s32bit	2
C11.3.18	User #18	-10000 to 10000	0	1144	DINT	1144	s32bit	2
C11.3.19	User #19	-10000 to 10000	0	1146	DINT	1146	s32bit	2
C11.3.20	User #20	-10000 to 10000	0	1148	DINT	1148	s32bit	2
C11.3.21	User #21	-10000 to 10000	0	1150	DINT	1150	s32bit	2
C11.3.22	User #22	-10000 to 10000	0	1152	DINT	1152	s32bit	2
C11.3.23	User #23	-10000 to 10000	0	1154	DINT	1154	s32bit	2
C11.3.24	User #24	-10000 to 10000	0	1156	DINT	1156	s32bit	2
C11.3.25	User #25	-10000 to 10000	0	1158	DINT	1158	s32bit	2
C11.3.26	User #26	-10000 to 10000	0	1160	DINT	1160	s32bit	2
C11.3.27	User #27	-10000 to 10000	0	1162	DINT	1162	s32bit	2
C11.3.28	User #28	-10000 to 10000	0	1164	DINT	1164	s32bit	2
C11.3.29	User #29	-10000 to 10000	0	1166	DINT	1166	s32bit	2
C11.3.30	User #30	-10000 to 10000	0	1168	DINT	1168	s32bit	2
C11.3.31	User #31	-10000 to 10000	0	1170	DINT	1170	s32bit	2
C11.3.32	User #32	-10000 to 10000	0	1172	DINT	1172	s32bit	2
C11.3.33	User #33	-10000 to 10000	0	1174	DINT	1174	s32bit	2
C11.3.34	User #34	-10000 to 10000	0	1176	DINT	1176	s32bit	2
C11.3.35	User #35	-10000 to 10000	0	1178	DINT	1178	s32bit	2
C11.3.36	User #36	-10000 to 10000	0	1180	DINT	1180	s32bit	2
C11.3.37	User #37	-10000 to 10000	0	1182	DINT	1182	s32bit	2
C11.3.38	User #38	-10000 to 10000	0	1184	DINT	1184	s32bit	2
C11.3.39	User #39	-10000 to 10000	0	1186	DINT	1186	s32bit	2
C11.3.40	User #40	-10000 to 10000	0	1188	DINT	1188	s32bit	2
C11.3.41	User #41	-10000 to 10000	0	1190	DINT	1190	s32bit	2
C11.3.42	User #42	-10000 to 10000	0	1192	DINT	1192	s32bit	2
C11.3.43	User #43	-10000 to 10000	0	1194	DINT	1194	s32bit	2
C11.3.44	User #44	-10000 to 10000	0	1196	DINT	1196	s32bit	2
C11.3.45	User #45	-10000 to 10000	0	1198	DINT	1198	s32bit	2
C11.3.46	User #46	-10000 to 10000	0	1200	DINT	1200	s32bit	2
C11.3.47	User #47	-10000 to 10000	0	1202	DINT	1202	s32bit	2
C11.3.48	User #48	-10000 to 10000	0	1204	DINT	1204	s32bit	2
C11.3.49	User #49	-10000 to 10000	0	1206	DINT	1206	s32bit	2
C11.3.50	User #50	-10000 to 10000	0	1208	DINT	1208	s32bit	2
A1 Assistant\Oriented Start-up								
A1.1	Mode	0 = No 1 = Yes		317	USINT	317	enum	1

Table A.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 - Automação 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