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BM4-O-EIP-01

EtherNet/IP Adapter
for b maXX® controller

Programming manual

E	5.08030.01

Title	Programming manual
Product	**BM4-O-EIP-01 Adapter for b maXX® controller**
Version	5.08030.01
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Obligatory

These operating instructions are part of the equipment/machine. These operating instructions must be available to the operator at all times and must be in a legible condition. If the equipment/machine is sold or moved to a different location these operating instructions must be passed on by the owner together with the equipment/machine.
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INTRODUCTION

The programming manual is an important part of your b maXX® 4400 device. Please read the documentation completely for your own safety. This documentation describes how the company Baumüller Nürnberg GmbH has implemented the EtherNet/IP connection on the optional module **BM4-O-EIP-01** for the device series b maXX® 4400.

This introduction contains general information on the optional module **BM4-O-EIP-01**, which connects the b maXX® device to EtherNet/IP.

1.1 General

Information on the optional and functional modules for the device series b maXX® 4400 is contained in the document No. 5.04043.

Information about the programming of the b maXX® 4400 controller is contained in the parameter manual for b maXX® 4400 document No. 5.03039.

Numeral representation:

The following numeral representations are used in the different, tables and diagrams:

123 or 123_{dez}	Numerals in decimal form
123_{hex}	Numerals in hex-decimal form
P123	Number of the parameter for b maXX® controller

1.2 Assembly and installation

The assembly of the optional module **BM4-O-EIP-01** is described in the documentation - Operating Instructions for **BM4-O-EIP-01 Adapter for b maXX® controller** no. 5.08031.

1.3 Copyright and trade mark

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BASIC SAFETY INSTRUCTIONS

This chapter describes the potential risks, which one is likely to encounter during the parameterisation of the Baumüller b maXX® 4400 controller and the significance of the Info sign.

2.1 Hazard information and signs

WARNING

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

Danger: **mechanical and electrical function.** *A change in the parameters influences the working of the Baumüller device and thereby the working of the system and its components. If you change the parameter settings, the system and/or its components might function in a dangerous manner.*

The device should be re-commissioned after every modification in the parameter setting, while observing all safety instructions and guidelines.

2.2 Info sign

NOTE

The note given here is particularly important.

3

FUNDAMENTALS OF ETHERNET/IP

3.1 References on EtherNet/IP

- The CIP Networks Library, Volume 1, Common Industrial Protocol (CIP), ODVA & ControlNet International Ltd.
- The CIP Networks Library, Volume 2, EtherNet/IP adaption of CIP, ODVA & ControlNet International Ltd.

NOTE
EtherNet/IP is an asynchronous bus system, which enables a precise determination of the transmission of values at specific points of time, under certain conditions. However, a time frame can be fixed, in which the setpoint and actual values can be updated via the bus system. This time frame and the maximum possible bus speed depends upon the devices used, the controls and the traffic in the system.
Hence, the suitability of the selected system should be checked before using the bus systems for controlling certain system functions.

3.2 Settings on the Scanner

The EtherNet/IP Scanner must be projected with the software supplied herewith. For this, the following information on the adapter must be made available to the scanner:

- Device Type 16#00 (Generic Device)
- IP address of the adapter on the network
- Short integer (8 bit) communication format
- Input assembly instance is 101 with 8 byte
- Output assembly instance is 100 with 9 byte
- Configuration assembly instance is 0 byte.

NOTE
While changing the settings on the EtherNet/IP Scanner, the entire system must be restarted for a renewed initialization.

3.3 EDS file

A range of information about the individual adapters can be made available to the scanner for using the functions on the EtherNet/IP. The supplied EDS file (Electronic Data Sheet File) is therefore required for configuring the EtherNet/IP scanner systems. The EDS file was created in conformance with **The CIP Networks Library, Volume 2, EtherNet/IP adaption of CIP** standard and contains fixed information about every adapter, which helps in the configuration of data transmission and the start-up behaviour of the bus system.
It is recommended that you copy the EDS file and the bitmap file from the CDs included into the respective directories for the project-planning tool of the EtherNet/IP scanner. A printout of the EDS file is available in the Appendix B, ▹Appendix D - EDS File◃ from page 65. The EDS file also can be downloaded at Baumüller website.

3.4 IP Address Determination

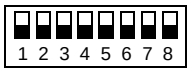
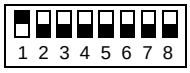
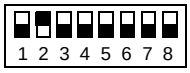
3.4.1 Code switch SW13100

The code switch SW13100 provide an offset value to the basic **IP address**. If the offset value is zero the IP address is taken from DHCP, from G/H configuration of the b maXX controller or from non-volatile memory of the IP adapter module. In addition, the value of the eight switches is the last number of the IP address. The first three numbers are always 192.168.1.

SW13100: setting of IP address

192.168.1.0 + [offset value]

Example:

	SW13100
IP address from DHCP, controller or flash	
192.168.1.1	
192.168.1.2	

3.4.2 DHCP

If IP setting by DIP switches is off, the device searches the DHCP server. Furthermore, the Bit 13 of the option modules G, H configuration parameter 1 in ProDrive has to be 0. The MAC address is labeled at the RJ-45 connector of each device. After power-up, the device sends three DHCP requests to the server. If there is no response, a stored IP address is taken. Use a DHCP server to assign the IP address to the device. For example the BOOTP/DHCP Server from Rockwell Automation can be used.

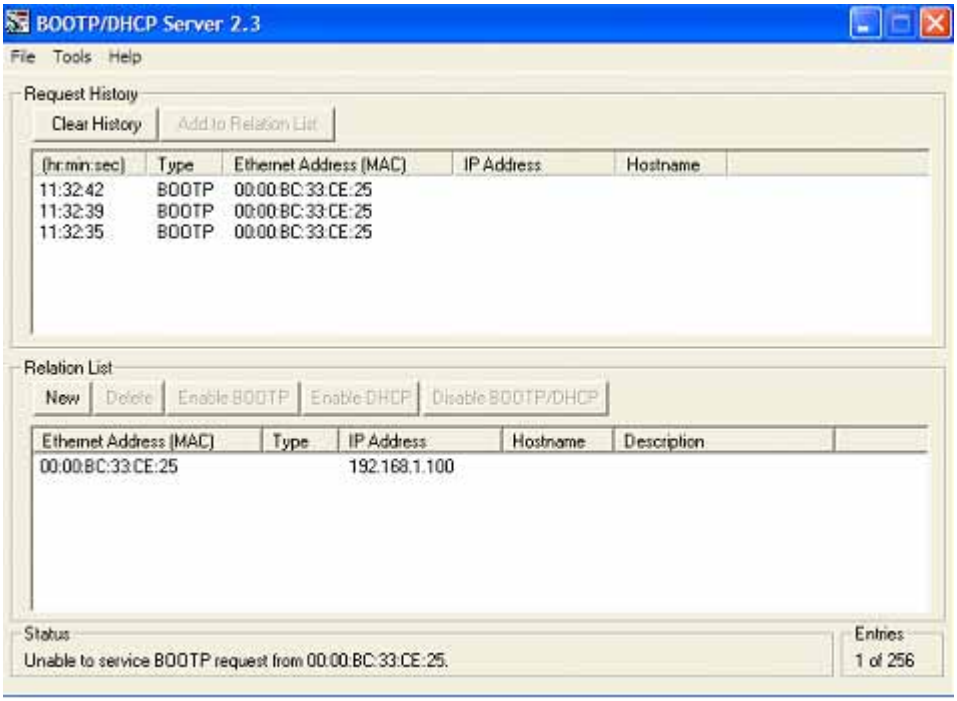


Figure 1: Settings DHCP

3.4.3 IP addressing by controller

For IP setting by controller the code switches must be set to off and the Baumüller Configuration Tool ProDrive should be used. In this tool in options modules G, H configuration, the bit no. 13 in parameter 1 has to set to 1. In parameter 4 and 5, the IP address must be entered. Parameter 5 includes the first two numbers of the IP address and parameter 4 includes the last two numbers of the IP address.

Figure 2: IP addressing by controller

3.4.4 Using stored IP Address

There's the possibility to store an IP address in the non-volatile memory of the **BM4-O-EIP-01 Adapter for b maXX® controller**. Therefore an IP address has to be assigned by one of the addressing methods in ▹IP Address Determination◃ from page 10. After a connection to the scanner is established, you can save the address to the non-volatile memory by writing on the Configuration Control Attribute of the TCP/IP Interface Object (Object F5, Instance 1, Attribute 3). If you write 0 to this attribute the used IP address is stored and is used instead of DHCP or addressing by controller if the code switch SW13100 is zero. If you want to change back the addressing mode to DHCP or by controller you have to write 2 to the Configuration Control Attribute of the TCP/IP Object.

Configuration Control Attribute:

16#00000000	stored IP
16#00000002	DHCP

But pay attention you can only change this attribute by having a correct connection to the EtherNet/IP scanner. Therefore you need the IP address. If you forget the IP address which is stored you can only set a new IP address by code switch SW13100.

3.5 Example of configuration with an Allen Bradley Control Logix

The following section describes the configuration of the optional module **BM4-O-EIP-01 Adapter for b maXX® controller** on an Allen Bradley Control Logix.

Before using the optional module, this must first be integrated in the programming interface of the PLC (see also the description of Allen Bradley for the programming interface version currently used).

First you should start importing the Baumüller EDS file with the Rockwell Software's EDS Wizard. Open the RSHWare.exe in the directory „.\Rockwell Software\RSCommon\“. and add the Baumüller EDS file to the system.

The driver for the connection to the PLC has to be configured in RSLinx. For serial communication to the PLC you have to choose RS-232 DF1 devices. For other drivers types please read the description of Allen Bradley.

By successfully importing the Baumüller EDS file and correct connection, you will find the **BM4-O-EIP-01** device type in RSWho Browser under Ethernet.

In RSLogix 5000 you have to create a new file and select controller type, software revision, chassis type, slot number, project path and name the device.

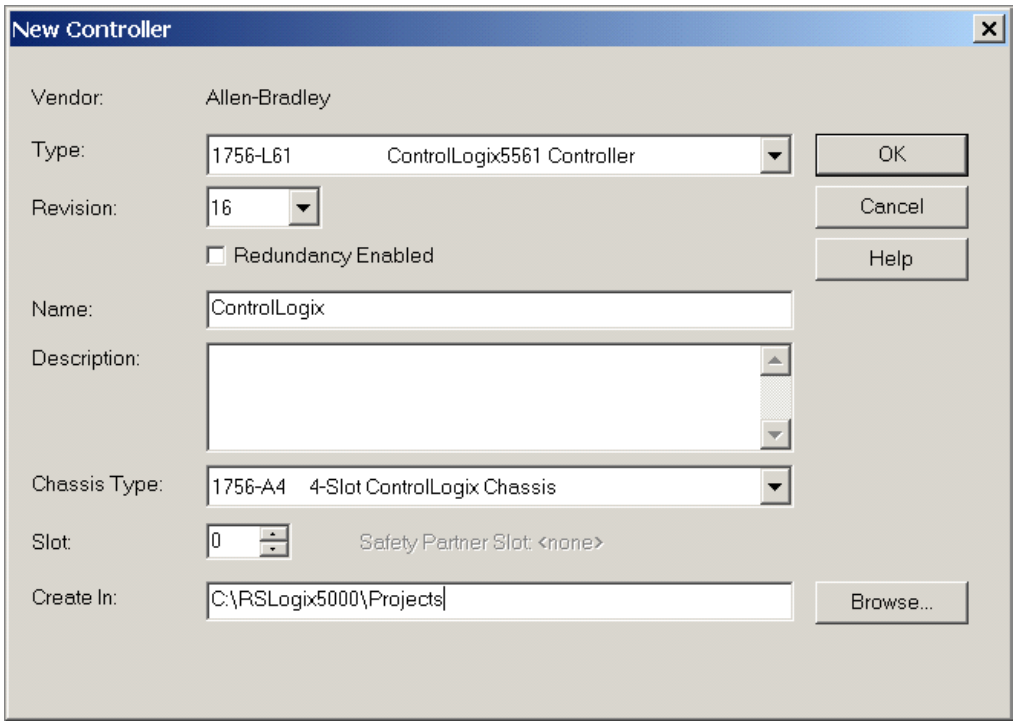


Figure 3: Configuration with an Allen Bradley Control Logix

For communication over EtherNet/IP the correct Create Ethernet Communication Interface has to be selected. Right click on Backplane in the RSLogix 5000 Project Tree and choose ***New Module***.

Select the Ethernet Bridge ***1756-ENBT/A*** under ***Communications***.

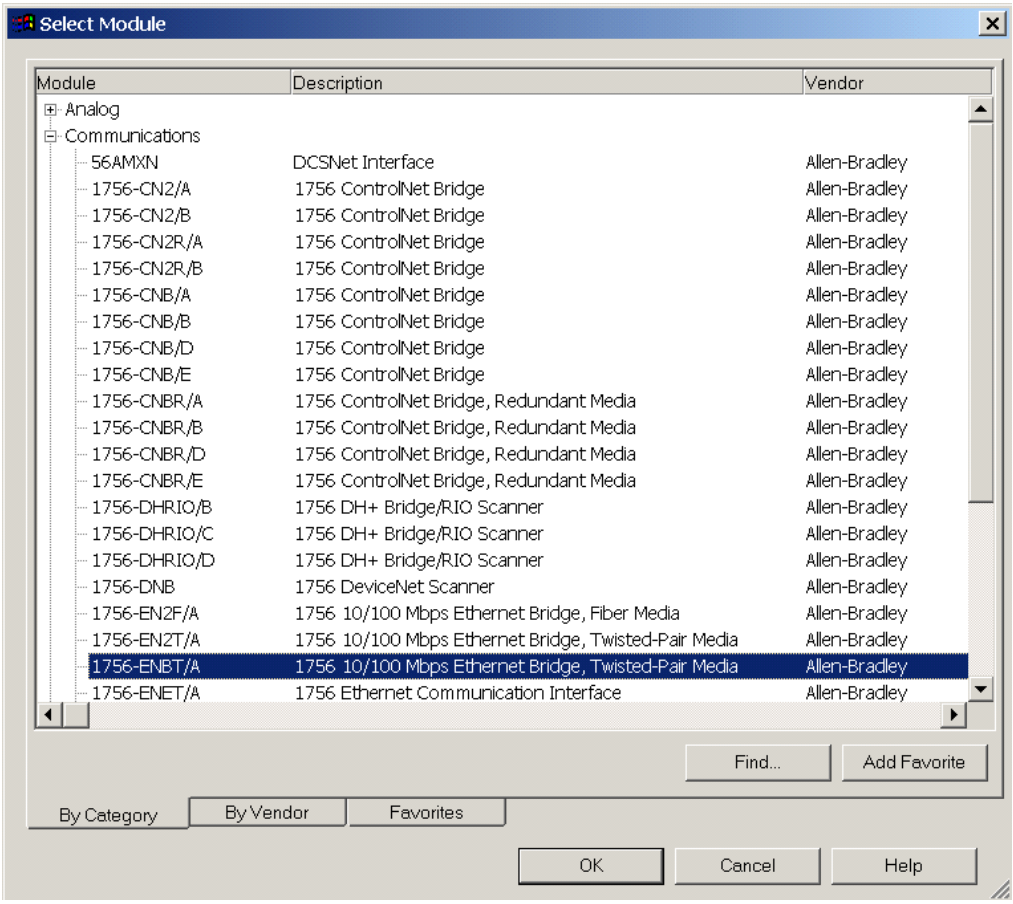


Figure 4: Selecting the EtherNet Bridge

Name the device and select the correct slot number in your chassis as well as the IP address or host name.

The **BM4-O-EIP-01 Adapter for b maXX® controller** can be added now as Generic Ethernet Module. Therefore click with the right mouse button at the Ethernet Network in the RSLogix 5000 Project Tree and choose ***New Module***.

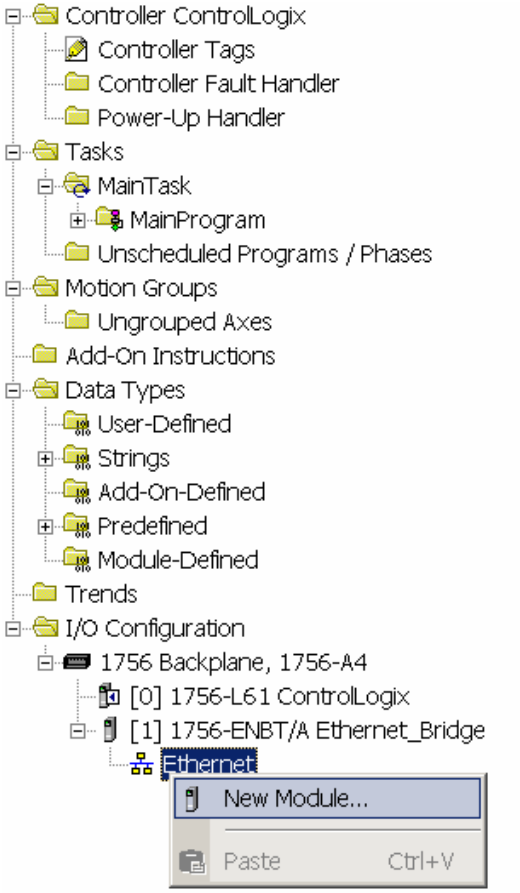


Figure 5: Creating New Module

Select the ***Generic EtherNet Module*** under ***Communications***.

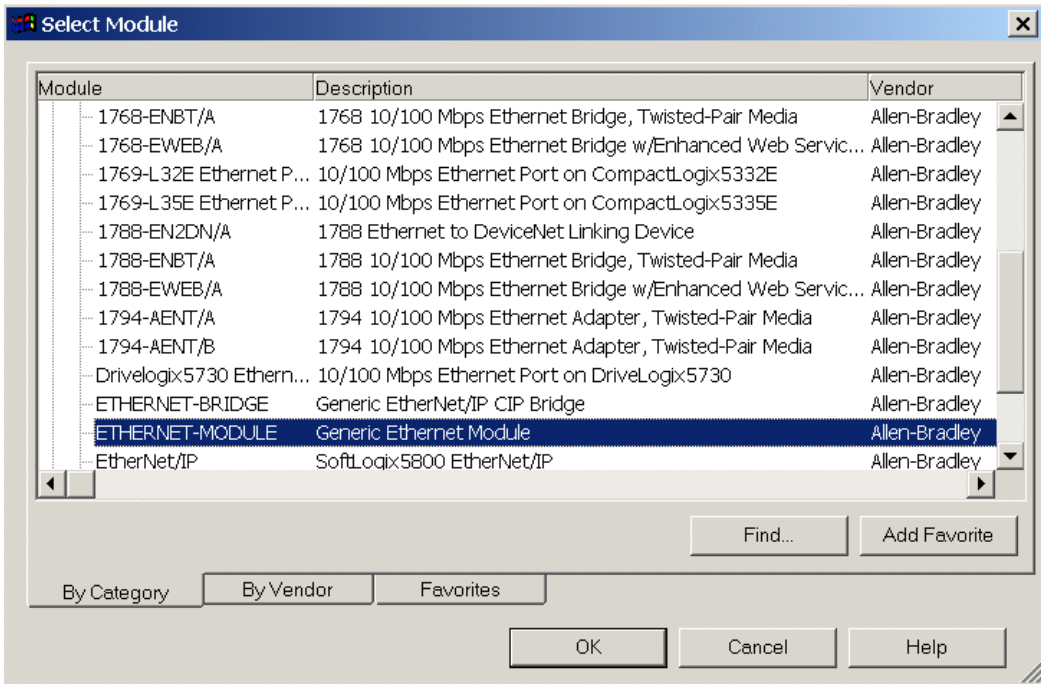


Figure 6: Selecting Generic EtherNet Module

Name the device and select a correct IP address. The Input Assembly Instance should be 101 with a size of 8 bytes, and the Output Assembly Instance should be 100 with a size of 9 bytes. The Communication Format is Data - SINT.

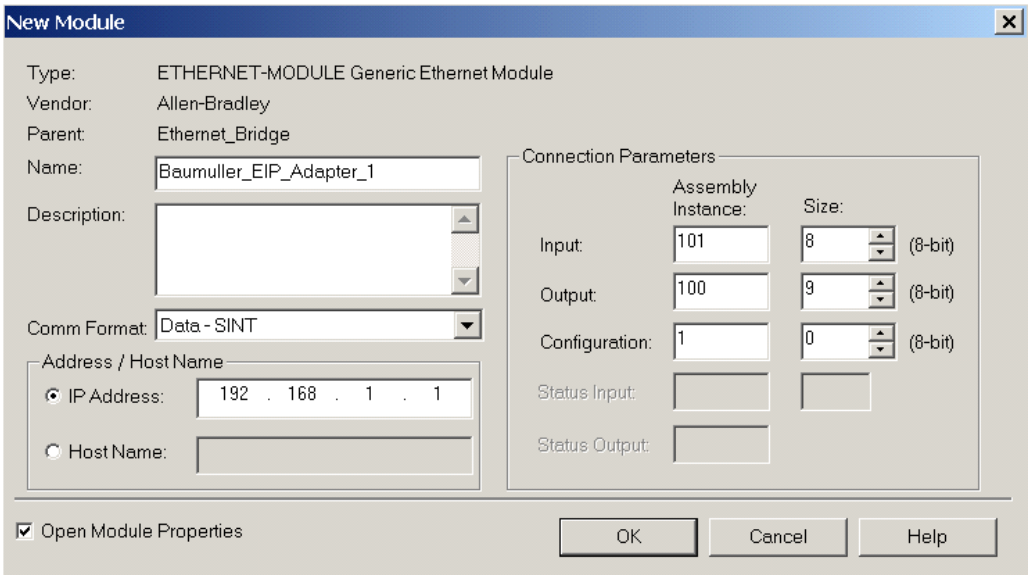


Figure 7: New Module configuration

On the ***Module Properties*** page, you can change the communication speed by changing the value in the ***Request Packet Interval (RPI)***. It must be between 1,0 ms and 3200,0 ms.

Do the same for other drives. Therefore, you can copy and paste.

3.6 Initialization problems in the event of configuration errors

If the configuration of the IP address and the Input/Output Assembly Instance values in the EtherNet/IP Scanner does not match, the card does not change over to the data exchange status, but remains in the initialization status and no data exchange of the setpoint and actual values takes place with the b maXX® controller. A configuration error is indicated via the EtherNet/IP diagnosis.

3.7 Communication monitoring

To be able to detect a communication failure between Scanner and Adapter, the ***Major Fault On Controller*** *If Connection Fails While in Run* Mode for the Adapter must be enabled during the configuration of the EtherNet/IP Scanner. This option is not automatically enabled by the Scanner.

In RSLogix 5000, such a field exists for each Adapter for setting. This field must be enabled so that the Scanner is able to detect a failure of the bus system and stops the execution of the actual project.

To trigger off the corresponding action in the drive, the communication monitoring must be set accordingly in the b maXX® controller (see also ▹Monitoring the process data◃ from page 22).

WARNING

The following **may occur**, if you do not observe this warning information:

- serious personal injury
- death

For monitoring the communication between b maXX® and EtherNet/IP, an error reaction must be set via the ***BM_i_ErrReactionBaci (P0298)*** parameter, which is triggered by the controller in the drive after an adjustable period of time.

This setting can be made in ProDrive on the “BACI” page under “Error reaction for BACI communication“ (see also ▹Monitoring the process data◃ from page 22). To make the communication check of the drive effective, the sensitivity check (Watchdog function) for the Slave must be enabled for the EtherNet/IP settings.

If this check is not enabled, undefined system stati may occur in the drive in the event of bus errors, which are not traceable.

4

COMMUNICATION WITH THE B MAXX® CONTROLLER

This chapter describes the data communication between the optional module **BM4-O-EIP-01 Adapter for b maXX® controller** and the b maXX® 4400 device.

4.1 General information about communication with the b maXX® controller

The optional module **BM4-O-EIP-01 Adapter for b maXX® controller** exchanges data with the b maXX® 4400 controller via a dual port RAM. This data exchange takes place within a specific time slot via the BACI (BAumüller Component Interface).

The optional module initiates the communication with the b maXX® 4400 controller. During the communication, two different types of data are transferred:

- Process data (implicit messages)
- Service data (explicit messages)

The process data is always transferred in a cyclic manner. The service data is transferred in the residual period of a cycle. Process data is transferred in an adjustable time slot, the SYNC interval. In this process, the set value and actual values are transferred with different offset in the SYNC interval.

To enable the communication via BACI, the following settings must be made with ProDrive on the drive manager page:

- BACI write access for service data enabled
  (must also be enabled if no service data via EtherNet/IP is needed because the optional card for internal communication carries out the service data communication with the controller)
- BACI write access for process data enabled
- Control by BACI and ProDrive

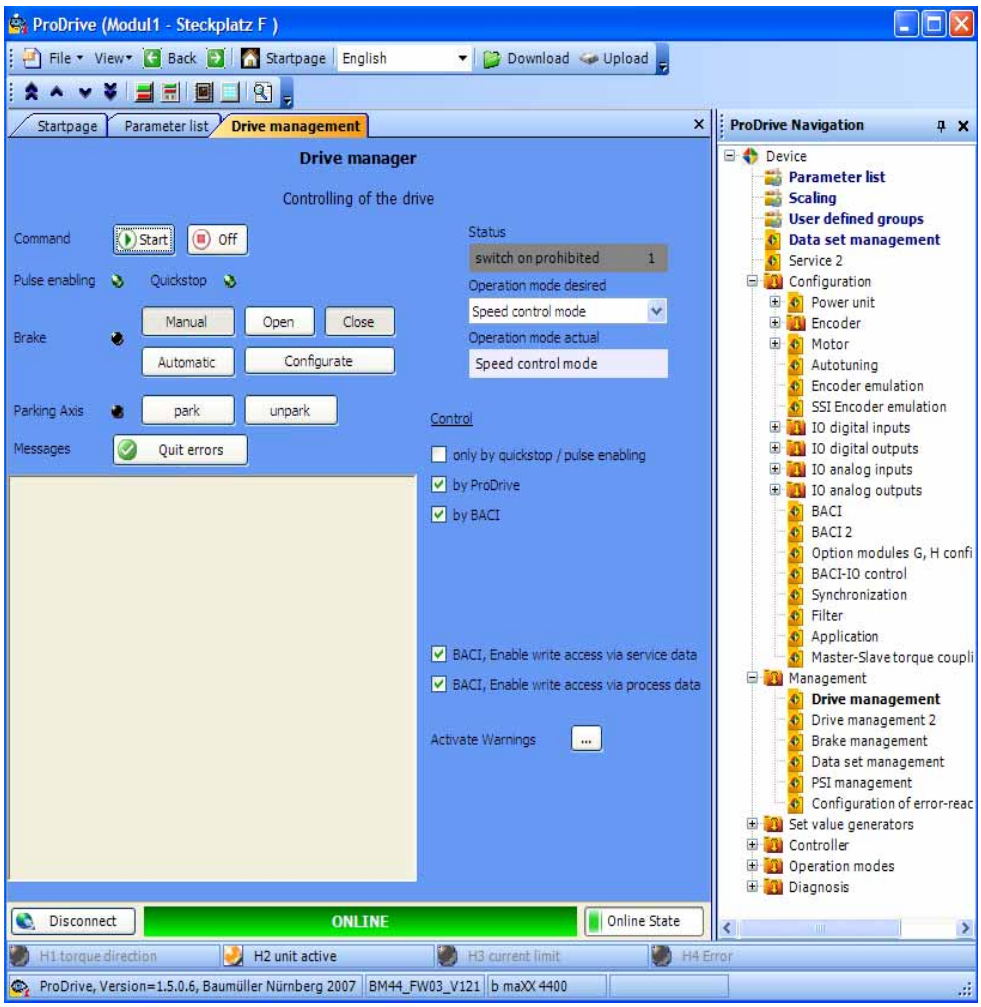


Figure 8: ProDrive Drive manager

4.2 Parameterization of the BACI communication times

2 set values and 3 actual values can be exchanged between the optional module EtherNet/IP Adapter and the b maXX® controller in a single communication cycle.

The first set value is fixed. It's the b maXX® control word (P0300). 2 actual values are fixed, too. It's the b maXX ***status word (P0301)*** and the ***positioning switch state (P0461)***. One set value and one actual value can be configured by the user. The cyclic parameters are updated automatically from the cyclic data which is set in EtherNet/IP Scanner. The setpoint and actual values are to be exchanged are put down in the BACI parameters in the b maXX® controller. This chapter shows the parameterization of the communication.

The communication between the optional module EtherNet/IP Adapter and the b maXX® controller is parameterized via ProDrive (see ▷Figure 9◁ on page 23).

On the ProDrive BACI (**optional module 1**) page, you can set the communication cycle time via the ***BACI cyclic time (P0800)*** parameters, the ***BACI cycle offset*** of the set values and the ***BACI cycle offset*** of the actual values.

The b maXX® controller has a time slice system with a time slice duration of 125 µs. One communication task can be called in each time slice; this task transfers the process data (setpoint or actual values).

The communication cycle time is a multiple of the time slice duration (125 µs). The communication cycle time between the EtherNet/IP Scanner and the Adapter should not be smaller than the ***BACI cyclic time***.

.

NOTE

The communication cycle time between the EtherNet/IP Scanner and the Adapter should not be smaller than the ***BACI cyclic time***.

The process data set values and the process data actual values are transferred to different communication time slices. Hence, a different cycle offset of the actual values is specified for the set values. The cycle offset is nothing but the number of the communication time slice, in which the data is transferred. The following general rule applies for the setting of the cycle offset:

Cycle offset (set values) = (BACI cycle time/125 µs) - 1

Cycle offset (actual values) = (BACI Cycle Time/125 µs)/2 - 1

Examples:

BACI cycle time (P0800)	BACI cycle offset Set values (P0818)	BACI cycle offset Actual values (P0819)
1000 µs	7	3
2000 µs	15	7
4000 µs	31	15

Other settings are also possible for the cycle offset of the set values and actual values

NOTE

Setpoint and actual values may not be set to identical values and the value 0.

4.3 Parameterization of process data

On the ProDrive ***BACI (optional module)*** page, you can enter the parameters to be used for the cyclic transfer. Enter the parameter numbers of the set values and actual values in the desired sequence.

NOTE

It is recommended that you enter the status and control word in the first place in the respective lists.

4.4 Monitoring the process data

The following settings must be made on the b maXX® controller for monitoring the process data:

- Error reaction for BACI communication
- Timeout for cyclic communication (P0839)
- Timeout for starting phase (P838)

Error reaction for BACI communication:

This determines the reaction behavior of the drive when an error is detected during the cyclic communication.

Default: No error reaction

Timeout for cyclic communication:

Timeout determines the duration, for which an error in cyclic communication may be kept pending, before the controller triggers the error reaction.

Default: 50 ms

Timeout for starting phase:

With this, you can set the maximum time, which the system has to put the cyclic communication into operation after it is switched on. At the end of this duration or when the controller detects a correctly functional cyclic communication, the controller evaluates the Timeout for cyclic communication and the set error reaction.

Default: 60 s

4.5 Example of process data communication

In the process data, the ***control word (P0300)*** and ***ramp function generator (P1171)*** must be set as the set values and the ***status word (P0301)***, the ***speed actual value (P0353)*** and the ***positioning switch state (P0461)*** as the actual values.

As error reaction, a quickstop must be initiated after 50 ms. The duration from starting until the assumption of the process data monitoring function, should last not more than 60 s.

The cycle time is 1 ms. The acceptance offsets are determined according to the general rule.

The completely configured ProDrive page is shown in the following diagram.

Figure 9: ProDrive BACI configuration

NOTE

When all the settings are made, the active data set must be saved and the system restarted.

4.6 Service data communication with b maXX®

The service data communication does not required a separate setting, since the release of the service data communication must be permitted for the correct functioning of the optional module (see also ▷General information about communication with the b maXX® controller◁ on page 19).

4.7 Cyclic synchronization

EtherNet/IP is not a hard-time scheduled protocol. There are no sync telegrams or timestamps. For this reason, the synchronization in ProDrive should be deactivated to prevent b maXX® fault messages.

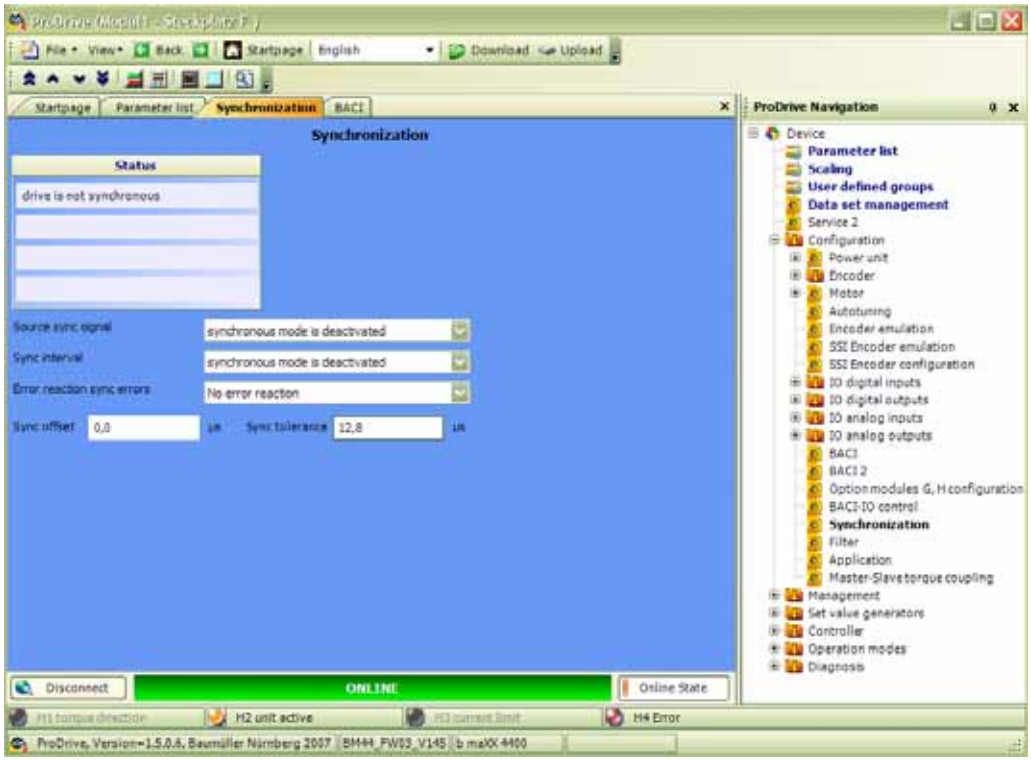


Figure 10: Cyclic synchronization

5

COMMUNICATION PROTOCOLS

This chapter describes the Common Industrial Protocol (CIP) Object Model and the structure of the cyclic I/O data (implicit messaging) and also explains the operating sequence of the non-cyclic service data (explicit messaging) communication.

5.1 Object model

The CIP family of protocols contains a large number of object classes. Only a few objects are integrated in the b maXX Ethernet/IP Adapter. The Device Type is Generic Device, so b maXX EtherNet/IP Adapter can be used to communicate with most common EtherNet/IP Scanners.

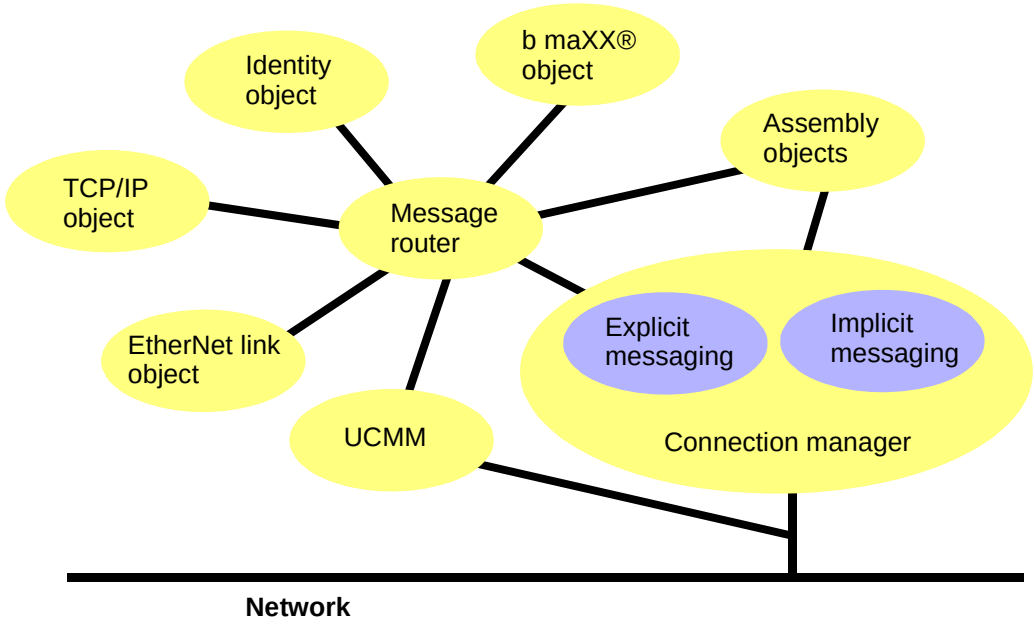


Figure 11: Object model

EtherNet/IP is a connection-based network. The access to the internal objects is controlled by the Connection Manager and the Unconnected Message Manager (UCMM). At the beginning of the communication process, the connection has to be established. This is done by the Unconnected Message Manager, which is responsible for processing the connection requests.

If a connection is established all message connections can be divided into explicit messaging connections and implicit (or I/O) messaging connections. The Connection Manager Object allocates and manages the internal resources for both connections types. The Message Router Object provides a messaging connection point for the Scanner to address message services to other objects. With these services data to or from each object can be sent or received over a single connection. This input and output data which is expressed by attributes of the objects is set by the Assembly Object.

The TCP/IP Interface Object serves to configure the device's TCP/IP network interface items, which includes the IP Address, Network Mask and Gateway Address. Link specific settings and information is provided by the Ethernet Link Object.

The Identity Object provides identification of and general information about the b maXX® EtherNet/IP Adapter.

The point of intersection between the controller and EtherNet/IP is done by the b maXX® object. This object contains the access to the controller data. By reading and writing the attributes of this object, the b maXX parameters can be configured.

All sets of objects are represented by a specific class number. The previously named objects have the following class numbers:

Identity Object	01_{hex}
Message Router Object	02_{hex}
Assembly Object	04_{hex}
Connection Manager Object	06_{hex}
b maXX Object	64_{hex}
TCP/IP Interface Object	$F5_{hex}$
Ethernet Link Object	$F6_{hex}$

5.2 Implicit messaging (I/O messaging)

5.2.1 General information about Implicit messaging

The b maXX® EtherNet/IP Adapter allows the establishment of a variety of implicit message connection because of the realization by multicast. This allows a single transmission to be received from many nodes.

Implicit message connections provide dedicated, special purpose communication paths between the Scanner and the Adapter. The message length is fixed and the data serves controlling purpose exclusively.

Implicit messages are cyclic messages. The cyclic period of each device is determined by the Scanner.

The consuming data of b maXX EtherNet/IP Adapter (Command Message) has a length of 9 bytes. The first two bytes contain the b maXX control word. The next three bytes define which data shall be exchanged. Based on instances and attributes the right parameter in the b maXX object can be set. The last four bytes specify the commanded data which is sent by the scanner to the parameter determined in the bytes before.

The Command Message is separated in the following way:

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	b maXX Control Word (P0300) Low Byte							
1	b maXX Control Word (P0300) High Byte							
2	Command instance number				Response instance number			
3	Command Attribute Number							
4	Response Attribute Number							
5	Command Data Low Byte							
6	Command Data Low Middle Byte							
7	Command Data High Middle Byte							
8	Command Data High Byte							

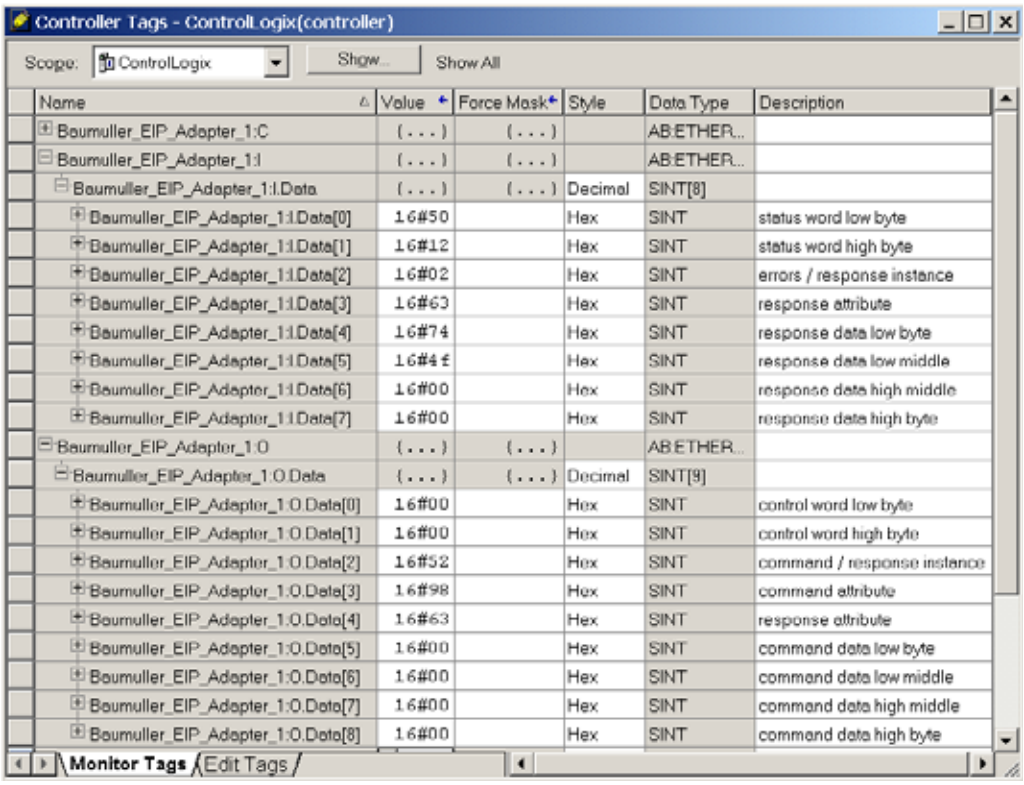
The producing data of b maXX EtherNet/IP Adapter (Response Message) has a length of 8 bytes. The first two bytes contain the b maXX® status word. In the next two bytes status bits and the instance and attribute number of the requested data is notified. The last four bytes specify the requested data which is sent to the scanner from the parameter determined in the bytes before.

The Response Message is separated in the following way:

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	b maXX Status Word (P0301) Low Byte							
1	b maXX Status Word (P0301) High Byte							
2	Not used	b maXX Warning	b maXX Fault	Comm. Fault	Response Instance Number			
3	Response Attribute Number							
4	Response Data Low Byte							
5	Response Data Low Middle Byte							
6	Response Data High Middle Byte							
7	Response Data High Byte							

5.2.2 Example of Implicit Messaging with an Allen Bradley Control Logix

When you add the b maXX® EtherNet/IP Adapter to your RSLogix 5000 project tree, controller tags for input, output and configuration were automatically created for each device.



Controller Tags - ControlLogix(controller)

Scope: ControlLogix | Show... | Show All

Name	Value	Force Mask	Style	Data Type	Description
Baumuller_EIP_Adapter_1:C	{...}	{...}		AB:ETHER...	
Baumuller_EIP_Adapter_1:I	{...}	{...}		AB:ETHER...	
Baumuller_EIP_Adapter_1:I.Data	{...}	{...}	Decimal	SINT[8]	
Baumuller_EIP_Adapter_1:I.Data[0]	16#50		Hex	SINT	status word low byte
Baumuller_EIP_Adapter_1:I.Data[1]	16#12		Hex	SINT	status word high byte
Baumuller_EIP_Adapter_1:I.Data[2]	16#02		Hex	SINT	errors / response instance
Baumuller_EIP_Adapter_1:I.Data[3]	16#63		Hex	SINT	response attribute
Baumuller_EIP_Adapter_1:I.Data[4]	16#74		Hex	SINT	response data low byte
Baumuller_EIP_Adapter_1:I.Data[5]	16#4f		Hex	SINT	response data low middle
Baumuller_EIP_Adapter_1:I.Data[6]	16#00		Hex	SINT	response data high middle
Baumuller_EIP_Adapter_1:I.Data[7]	16#00		Hex	SINT	response data high byte
Baumuller_EIP_Adapter_1:O	{...}	{...}		AB:ETHER...	
Baumuller_EIP_Adapter_1:O.Data	{...}	{...}	Decimal	SINT[9]	
Baumuller_EIP_Adapter_1:O.Data[0]	16#00		Hex	SINT	control word low byte
Baumuller_EIP_Adapter_1:O.Data[1]	16#00		Hex	SINT	control word high byte
Baumuller_EIP_Adapter_1:O.Data[2]	16#52		Hex	SINT	command / response instance
Baumuller_EIP_Adapter_1:O.Data[3]	16#98		Hex	SINT	command attribute
Baumuller_EIP_Adapter_1:O.Data[4]	16#63		Hex	SINT	response attribute
Baumuller_EIP_Adapter_1:O.Data[5]	16#00		Hex	SINT	command data low byte
Baumuller_EIP_Adapter_1:O.Data[6]	16#00		Hex	SINT	command data low middle
Baumuller_EIP_Adapter_1:O.Data[7]	16#00		Hex	SINT	command data high middle
Baumuller_EIP_Adapter_1:O.Data[8]	16#00		Hex	SINT	command data high byte

Monitor Tags / Edit Tags

Figure 12: Example of Implicit Messaging

The controller tags for input are called Response Messages and the controller tags for output data are called Command Messages. The configuration tags are not used.

In the command instance number and command attribute number you have to fill the set value parameter. In the response instance number and response attribute number of the output data you have to fill the actual value parameter.

Now you can write the set values in the upper four bytes of the output data manually or by routine. The actual values can be read from the upper four bytes of the input data.

In the Response Message you can see if the right response instance and attribute number is sent. Also, error bits are set if there is a fault in communication or with the b maXX® controller.

All operation modes and parameters of the b maXX® controller can be used. If a command or response parameter is set but not defined for cyclic use, you have to change to an existing cyclic parameter and restart the controller by a power cycle.

5.3 Explicit Messaging

5.3.1 General information about Explicit Messaging

Explicit messaging connections provide generic, multi-purpose communication directly between two devices. It's the typical request/response-oriented network communication. The source address, the destination and a Connection ID is required in each direction.

The explicit messages are not for cyclic communication. The connection is only built for the request and the response and it is closed afterwards. The message has to be triggered again for a new connection.

For every b maXX® EtherNet/IP Adapter there are not more than 20 explicit message connections allowed.

5.3.2 Example of Explicit Messaging with an Allen Bradley Control Logix

For reading parameters from b maXX controller by explicit messaging, double-click on ***Controller Tags*** in the RSLogix 5000 project tree. Insert a new tag with data type ***MESSAGE*** and a new tag with data type ***BOOL***.

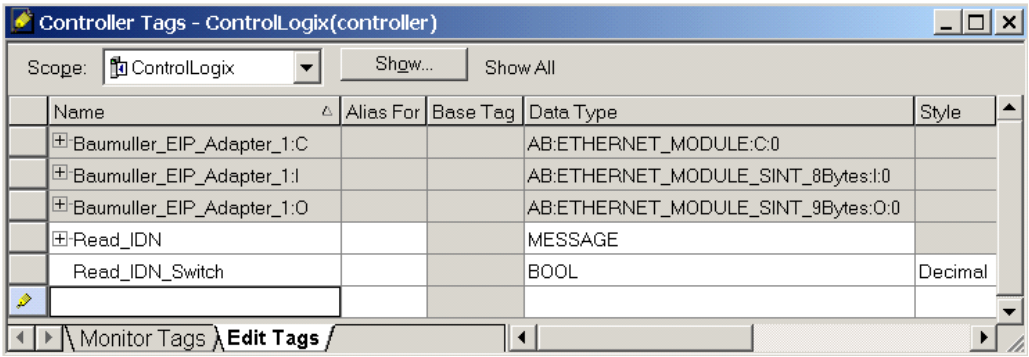


Figure 13: Example Controller Tags

Open the ladder diagram in your routine. Click on a path and from the ***Language Element Toolbar*** select the symbol ***Examine On*** from the ***Favorite*** tab and then select the *MSG* symbol on the ***Input/Output*** tab.

Select the boolean tag for the ***Examine On*** and the message tag for the message block.

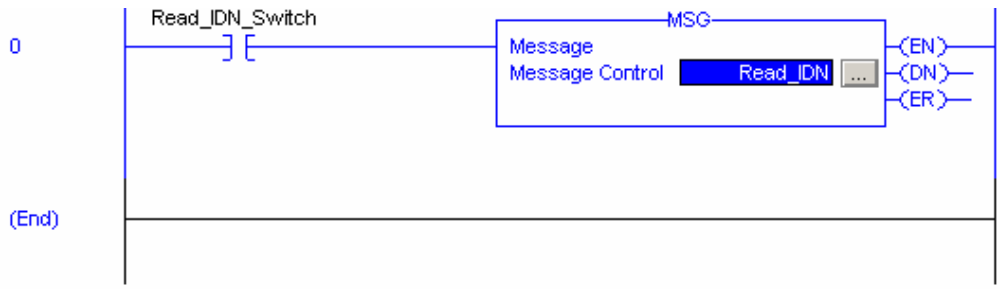


Figure 14: Ladder diagram

Click on the box in the message block to open the configuration tab. Select the message type *CIP Generic*, the service type ***Get Attribute Single*** and the instance, class and attribute of the requested data. For reading the b maXX parameters you have to use the class 64_{hex}. Read appendix A for mapping b maXX parameters to CIP attributes.

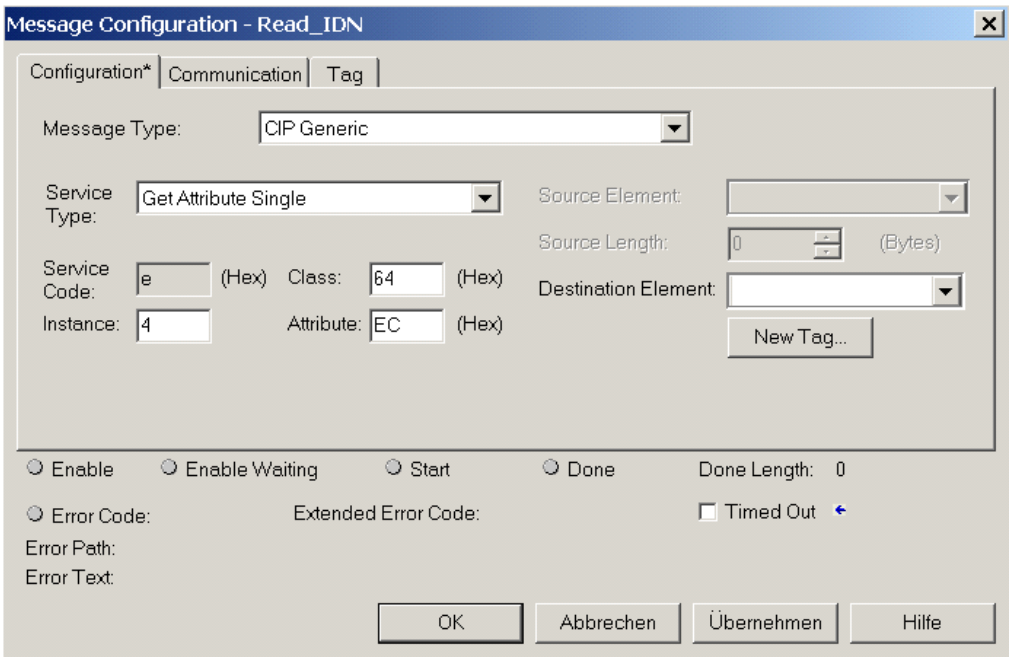
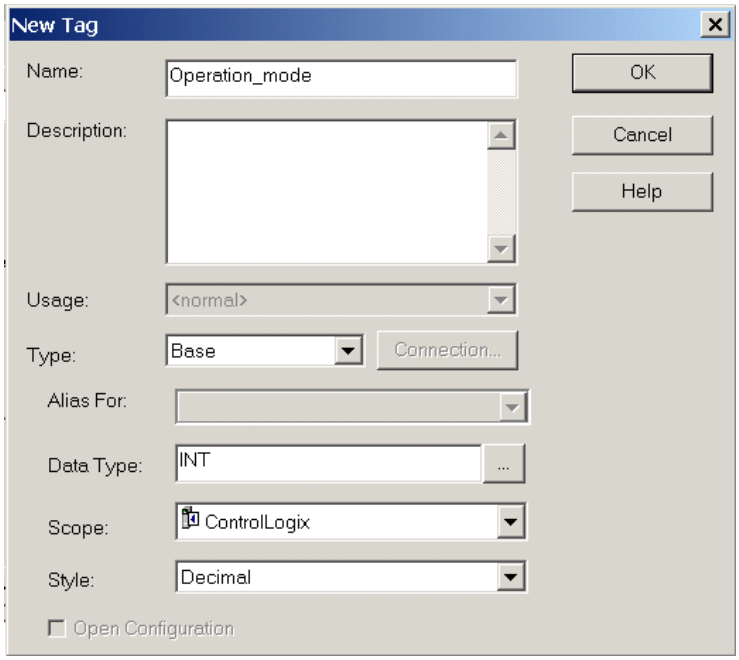


Figure 15: Message Configuration

Click on *New Tag*. Fill in the name, data type and style of the destination element and click *OK*.



In the configuration tab, select this tag for destination. In the communication tab, browse the path and select the appropriate adapter device.

In Online Mode, you have to toggle the switch by a right click on the block in the subroutine. So, the b maXX® parameter is read from controller and written in the destination tag of the message and can be monitored in the ***Controller Tags*** list in RSLogix 5000.

For writing parameters to b maXX® controller by explicit messaging, double-click on *Controller Tags* in the RSLogix 5000 project tree. Insert a new tag with data type ***MESSAGE*** and a new tag with data type ***BOOL***.

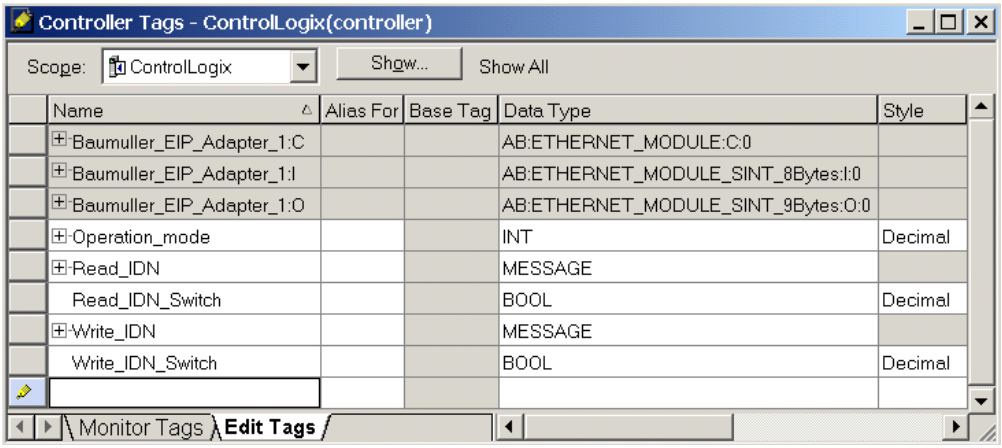


Figure 16: Edit Tags

Open the ladder diagram in your routine. Click on a path and from the ***Language Element Toolbar*** select the symbol ***Examine On*** from the ***Favorite*** tab and then select the ***MSG*** symbol on the ***Input/Output*** tab.

Select the boolean tag for the ***Examine On*** and the message tag for the message block.

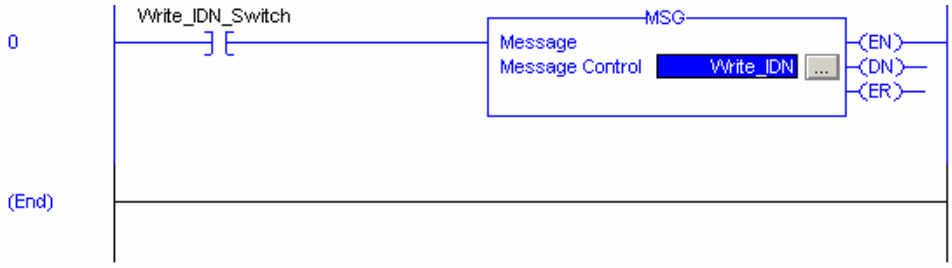


Figure 17: Example ladder diagram

Click on the box in the message block to open the configuration tab. Select the message type ***CIP Generic***, the service type ***Set Attribute Single*** and the instance, class and attribute of the data you want to write. For writing the b maXX parameters you have to use the class 64_{hex}. Read ▹Appendix C - Mapping b maXX® parameter to CIP◃ from page 39 for mapping CIP attributes.

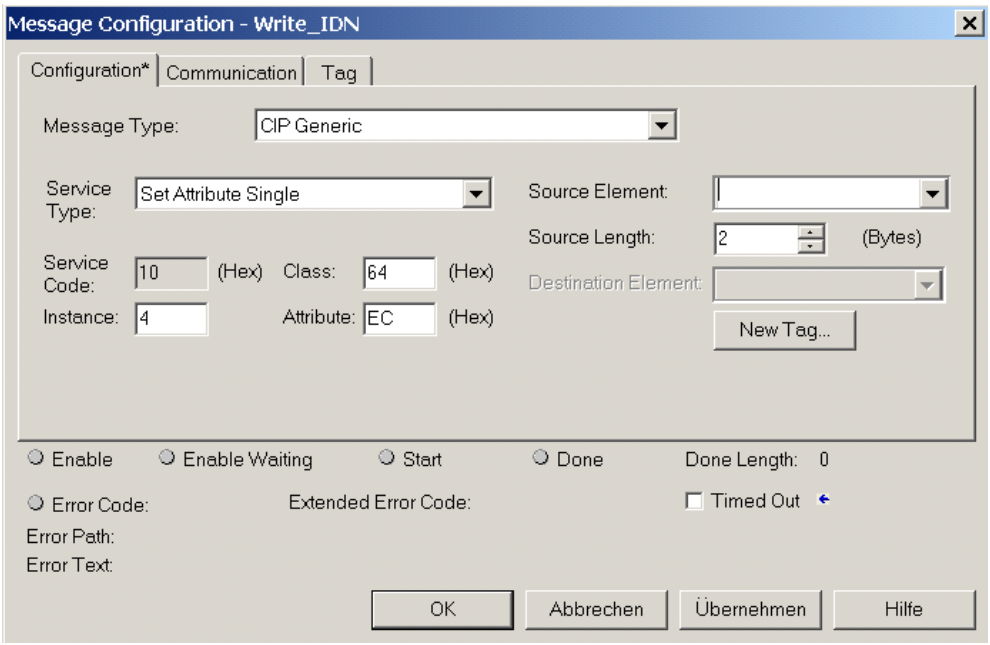


Figure 18: Message Configuration

Click on ***New Tag***. Fill in the name, data type and style of the source element and click ***OK***.

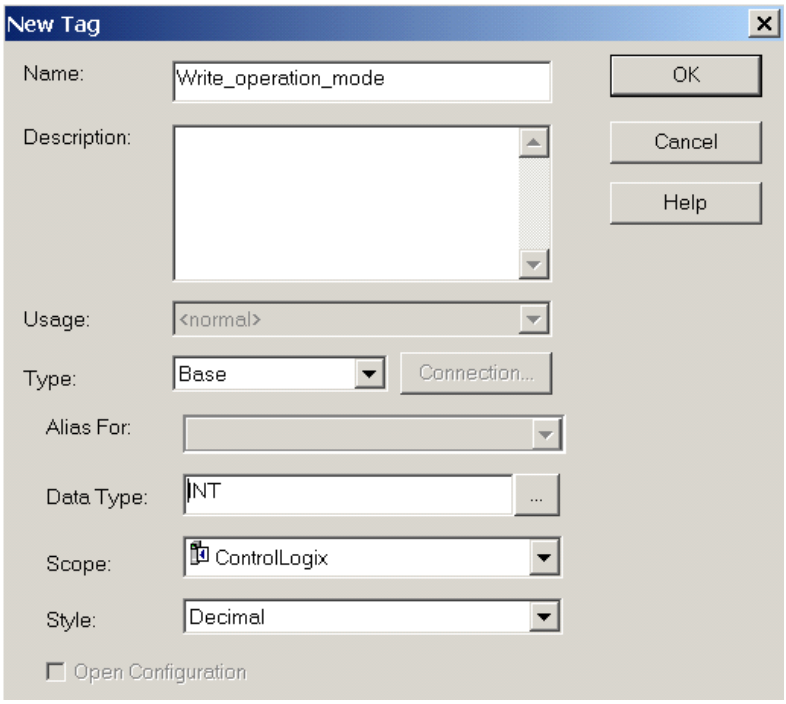


Figure 19: New Tag

In the configuration tab, select this tag for source. In the communication tab, browse the path and select the appropriate adapter device.

Double-click on Controller Tags in the RSLogix 5000 project tree. In the ***Monitor Tags*** tab you can insert the value for your data in the source element.

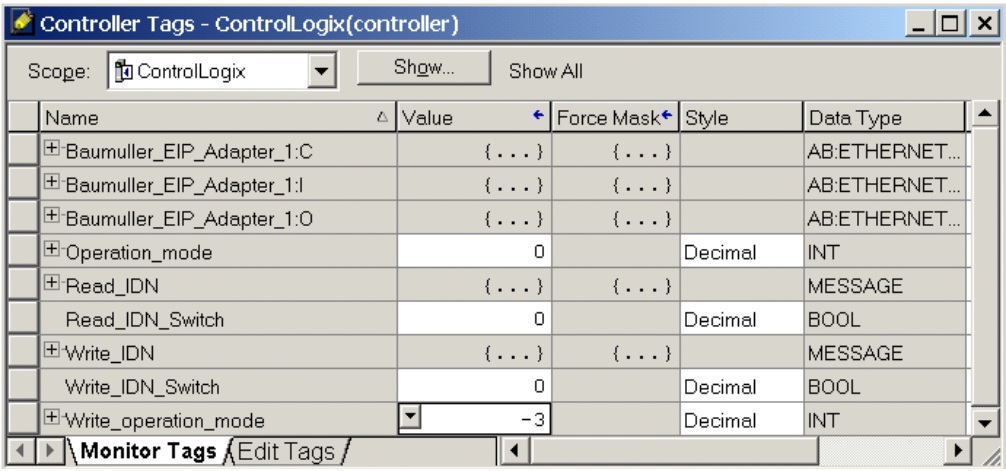


Figure 20: Example Monitor Tags

In Online Mode, you have to toggle the switch by a right click on the block in the subroutine. So, the source element from PLC will be read and the data will be transferred to the b maXX® EtherNet/IP Adapter. From there the value will be written to the right parameter in b maXX® controller.

5.3.3 Error reaction of Explicit Messaging

If there are errors on the explicit messaging, the error code will be transmitted by b maXX® EtherNet/IP Adapter. For decoding error messages read ▷Appendix B - Status code◁ from page 37.

A

APPENDIX A - ABBREVIATIONS

AC	Alternating Current
BACI	Baumüller Drives Communication Interface
BOOTP	Bootstrap Protocol
CIP	Common Industrial Protocol
CPU	Central Processing Unit
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
EDS	Electronic Data Sheet
EMC	Electromagnetic Compatibility
EN	European Standard
ESD	Electrostatic Discharge
I/O	Input/Output Command
IP	Internet Protocol
LED	Light Emitting Diode
MAC	Media Access Control
P	Identification Number
PCB	Printed Circuit Board
PLC	Programmable Logic Controller
RAM	Random Access Memory
RPI	Request Packet Interval
SINT	Short Integer (8 bit)
TCP	Transmission Control Protocol
UCMM	Unconnected Message Manager
X	Contact Bar, Connector, Connection

B

APPENDIX B - STATUS CODE

Status Code	Status name	Description of status
00_{hex}	Success	Service was successfully performed by the object specified.
01_{hex}	Connection failure	A connection related service failed along the connection path.
02_{hex}	Resource unavailable	Resources needed for the object to perform the requested service were unavailable
03_{hex}	Invalid parameter value	See Status Code 20_{hex}, which is the preferred value to use for this condition.
04_{hex}	Path segment error	The path segment identifier or the segment syntax was not understood by the processing node. Path processing shall stop when a path segment error is encountered.
05_{hex}	Path destination unknown	The path is referencing an object class, instance or structure element that is not known or is not contained in the processing node. Path processing shall stop when a path destination unknown error is encountered.
06_{hex}	Partial transfer	Only part of the expected data was transferred.
07_{hex}	Connection lost	The messaging connection was lost.
08_{hex}	Service not supported	The requested service was not implemented or was not defined for this Object Class/ Instance.
09_{hex}	Invalid attribute value	Invalid attribute data detected
$0A_{hex}$	Attribute list error	An attribute in the Get_Attribute_List or Set_Attribute_List response has a non-zero status.
$0B_{hex}$	Already in requested mode/state	The object is already in the mode/state being requested by the service
$0C_{hex}$	Object state conflict	The object cannot perform the requested service in its current mode/state
$0D_{hex}$	Object already exists	The requested instance of object to be created already exists.
$0E_{hex}$	Attribute not settable	A request to modify a non-modifiable attribute was received.
$0F_{hex}$	Privilege violation	A permission/privilege check failed
10_{hex}	Device state conflict	The device's current mode/state prohibits the execution of the requested service.
11_{hex}	Reply data too large	The data to be transmitted in the response buffer is larger than the allocated response buffer
12_{hex}	Fragmentation of a primitive value	The service specified an operation that is going to fragment a primitive data value, i.e. half a REAL data type.
13_{hex}	Not enough data	The service did not supply enough data to perform the specified operation.
14_{hex}	Attribute not supported	The attribute specified in the request is not supported
15_{hex}	Too much data	The service supplied more data than was expected
16_{hex}	Object does not exist	The object specified does not exist in the device.
17_{hex}	Service fragmentation sequence not in progress	The fragmentation sequence for this service is not currently active for this data.
18_{hex}	No stored attribute data	The attribute data of this object was not saved prior to the requested service.
19_{hex}	Store operation failure	The attribute data of this object was not saved due to a failure during the attempt.

Status Code	Status name	Description of status
$1A_{hex}$	Routing failure, request packet too large	The service request packet was too large for transmission on a network in the path to the destination. The routing device was forced to abort the service.
$1B_{hex}$	Routing failure, response packet too large	The service response packet was too large for transmission on a network in the path from the destination. The routing device was forced to abort the service.
$1C_{hex}$	Missing attribute list entry data	The service did not supply an attribute in a list of attributes that was needed by the service to perform the requested behavior.
$1D_{hex}$	Invalid attribute value list	The service is returning the list of attributes supplied with status information for those attributes that were invalid.
$1E_{hex}$	Embedded service error	An embedded service resulted in an error.
$1F_{hex}$	Vendor specific error	A vendor specific error has been encountered. The Additional Code Field of the Error Response defines the particular error encountered. Use of this General Error Code should only be performed when none of the Error Codes presented in this table or within an Object Class definition accurately reflect the error.
20_{hex}	Invalid parameter	A parameter associated with the request was invalid. This code is used when a parameter does not meet the requirements of this specification and/or the requirements defined in an Application Object Specification.
21_{hex}	Write-once value or medium already written	An attempt was made to write to a write-once medium (e.g. WORM drive, PROM) that has already been written, or to modify a value that cannot be changed once established.
22_{hex}	Invalid Reply Received	An invalid reply is received (e.g. reply service code does not match the request service code, or reply message is shorter than the minimum expected reply size). This status code can serve for other causes of invalid replies.
23_{hex}	Buffer Overflow	The message received is larger than the receiving buffer can handle. The entire message was discarded.
24_{hex}	Message Format Error	The format of the received message is not supported by the server.
25_{hex}	Key Failure in path	The Key Segment that was included as the first segment in the path does not match the destination module. The object specific status shall indicate which part of the key check failed.
26_{hex}	Path Size Invalid	The size of the path which was sent with the Service Request is either not large enough to allow the Request to be routed to an object or too much routing data was included.
27_{hex}	Unexpected attribute in list	An attempt was made to set an attribute that is not able to be set at this time.
28_{hex}	Invalid Member ID	The Member ID specified in the request does not exist in the specified Class/ Instance/Attribute
29_{hex}	Member not settable	A request to modify a non-modifiable member was received
$2A_{hex}$	Group 2 only server general failure	This error code may only be reported by DeviceNet Group 2 Only servers with 4K or less code space and only in place of Service not supported, Attribute not supported and Attribute not settable.
$2B_{hex}$	Unknown Modbus Error	A CIP to Modbus translator received an unknown Modbus Exception Code.
$2C_{hex}$-CF_{hex}		Reserved by CIP for future extensions
$D0_{hex}$-FF_{hex}	Reserved for Object Class and service errors	This range of error codes is to be used to indicate Object Class specific errors. Use of this range should only be performed when none of the Error Codes presented in this table accurately reflect the error that was encountered.

C

APPENDIX C - MAPPING B MAXX® PARAMETER TO CIP

b maXX Parameter	Parameter name	Instance	Attribute
P0001	Controller type	1	02_{hex}
P0002	Controller firmware type	1	03_{hex}
P0003	Controller firmware ID	1	04_{hex}
P0004	Controller firmware version	1	05_{hex}
P0005	Parameter table version	1	06_{hex}
P0006	Power Unit type code	1	07_{hex}
P0007	Power Unit serial number	1	08_{hex}
P0008	Power Unit data configuration	1	09_{hex}
P0009	Power Unit firmware version	1	$0A_{hex}$
P0010	Power Unit nominal current 4KHz	1	$0B_{hex}$
P0011	Power Unit peak current 4KHz	1	$0C_{hex}$
P0012	Power Unit nominal current 8KHz	1	$0D_{hex}$
P0013	Power Unit peak current 8KHz	1	$0E_{hex}$
P0014	Power Unit thermal time constant 1	1	$0F_{hex}$
P0015	Power Unit thermal time constant 2	1	10_{hex}
P0016	Power Unit internal device warning temperature	1	11_{hex}
P0017	Power Unit internal device shutdown temperature	1	12_{hex}
P0018	Power Unit heatsink warning temperature	1	13_{hex}
P0019	Power Unit heatsink shutdown temperature	1	14_{hex}
P0020	Power Unit DC link nominal voltage	1	15_{hex}
P0021	Power Unit dead time	1	16_{hex}
P0022	Power Unit burden factor Iac	1	17_{hex}
P0023	Power Unit burden factor Vdc	1	18_{hex}
P0024	Power Unit mode	1	19_{hex}
P0025	Power Supply Unit mode	1	$1A_{hex}$
P0026	Max. Phase-Error Delaytime	1	$1B_{hex}$
P0027	Phase-Error Delaytime	1	$1C_{hex}$
P0028	Max. Motor Current while Phase Error	1	$1D_{hex}$
P0029	Motor Current while Phase Error	1	$1E_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P0030	Power Unit burden factor Vmain	1	$1F_{hex}$
P0031	Power Unit burden factor Motor Temperature	1	20_{hex}
P0050	Motor type code	1	33_{hex}
P0051	Motor serial number	1	34_{hex}
P0052	Motor data configuration	1	35_{hex}
P0053	Motor nominal voltage DC link	1	36_{hex}
P0054	Motor nominal current	1	37_{hex}
P0055	Motor nominal operation mode	1	38_{hex}
P0056	Motor nominal power	1	39_{hex}
P0057	Motor nominal speed	1	$3A_{hex}$
P0058	Motor power factor	1	$3B_{hex}$
P0059	Motor slip frequency 1	1	$3C_{hex}$
P0060	Motor slip frequency 2	1	$3D_{hex}$
P0061	Motor nominal frequency	1	$3E_{hex}$
P0062	Motor temperature 1	1	$3F_{hex}$
P0063	Motor temperature 2	1	40_{hex}
P0064	Motor friction moment	1	41_{hex}
P0065	Motor number of pole pairs	1	42_{hex}
P0066	Motor magnetizing current	1	43_{hex}
P0067	Motor Ke factor	1	44_{hex}
P0068	Motor attenuation factor	1	45_{hex}
P0069	Motor peak current	1	46_{hex}
P0070	Motor peak torque	1	47_{hex}
P0071	Motor field weakening speed	1	48_{hex}
P0072	Motor max. speed mechanical	1	49_{hex}
P0073	Motor I^2t time constant	1	$4A_{hex}$
P0074	Motor Flags	1	$4B_{hex}$
P0075	Motor stator resistance	1	$4C_{hex}$
P0076	Motor stator leakage inductance	1	$4D_{hex}$
P0077	Motor rotor resistance	1	$4E_{hex}$
P0078	Motor rotor leakage inductance	1	$4F_{hex}$
P0079	Motor magnetizing inductance	1	50_{hex}
P0080	Motor Lq inductance	1	51_{hex}
P0081	Motor Ld inductance	1	52_{hex}
P0082	Motor notch position	1	53_{hex}
P0083	Motor torque inertia	1	54_{hex}
P0084	Motor temperature sensor type	1	55_{hex}
P0085	Motor brake voltage	1	56_{hex}
P0086	Motor brake torque inertia	1	57_{hex}
P0087	Motor rotating field	1	58_{hex}
P0088	Motor warning temperature 1	1	59_{hex}
P0089	Motor warning temperature 2	1	$5A_{hex}$
P0090	Motor shutdown temperature	1	$5B_{hex}$
P0091	Motor temperature hysteresis	1	$5C_{hex}$
P0092	Motor I^2t warning limit	1	$5D_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P0093	Motor mode	1	$5E_{hex}$
P0094	Motor mode notch position	1	$5F_{hex}$
P0095	Field weakening current for SM	1	60_{hex}
P0096	Motor article number	1	61_{hex}
P0097	Motor standstill current	1	62_{hex}
P0098	Motor standstill torque	1	63_{hex}
P0099	Motor brake torque	1	64_{hex}
P0100	Motor gear factor	1	65_{hex}
P0150	Encoder 1 mode	1	97_{hex}
P0151	Encoder 1 type code	1	98_{hex}
P0152	Encoder 1 number of pulses	1	99_{hex}
P0153	Encoder 1 number of revolutions	1	$9A_{hex}$
P0154	Absolute offset encoder 1	1	$9B_{hex}$
P0155	Encoder 1 reference marks base distance	1	$9C_{hex}$
P0157	Absolute offset angle encoder 1 from type key	1	$9E_{hex}$
P0158	Absolute offset revolution encoder 1 from type key	1	$9F_{hex}$
P0159	Encoder 1 shiftfactor	1	$A0_{hex}$
P0160	Encoder 2 mode	1	$A1_{hex}$
P0161	Encoder 2 type code	1	$A2_{hex}$
P0162	Encoder 2 number of pulses	1	$A3_{hex}$
P0163	Encoder 2 number of revolutions	1	$A4_{hex}$
P0164	Absolute offset encoder 2	1	$A5_{hex}$
P0165	Encoder 2 reference marks base distance	1	$A6_{hex}$
P0167	Absolute offset angle encoder 2 from type key	1	$A8_{hex}$
P0168	Absolute offset revolution encoder 2 from type key	1	$A9_{hex}$
P0169	Encode 1 shiftfactor	1	AA_{hex}
P0200	Error System 1	1	$C9_{hex}$
P0201	Error Processor	1	CA_{hex}
P0202	Error Operating-System	1	CB_{hex}
P0203	Error Communication	1	CC_{hex}
P0204	Error in function or option modules	1	CD_{hex}
P0205	Error Power Supply Unit	1	CE_{hex}
P0206	Error Power Unit	1	CF_{hex}
P0207	Error Motor	1	$D0_{hex}$
P0208	Error Encoder 1	1	$D1_{hex}$
P0209	Error Encoder 2	1	$D2_{hex}$
P0210	Error Encoder manager	1	$D3_{hex}$
P0211	Error Drive manager	1	$D4_{hex}$
P0212	Error Data set manager	1	$D5_{hex}$
P0213	Error Position controller	1	$D6_{hex}$
P0214	Error Speed controller	1	$D7_{hex}$
P0215	Error Free control section	1	$D8_{hex}$
P0216	Error CANsync	1	$D9_{hex}$
P0233	Error Power Unit serial interface	1	EA_{hex}
P0234	Error Encoder 1 serial interface	1	EB_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0235	Error Encoder 2 serial interface	1	EC_{hex}
P0236	Error Mainsmonitor	1	ED_{hex}
P0240	Error Function module A	1	$F1_{hex}$
P0241	Error Function module B	1	$F2_{hex}$
P0242	Error Function module C	1	$F3_{hex}$
P0243	Error Function module D	1	$F4_{hex}$
P0244	Error Function module E	1	$F5_{hex}$
P0245	Error Option module G	1	$F6_{hex}$
P0246	Error Option module H	1	$F7_{hex}$
P0247	Error Option module J	1	$F8_{hex}$
P0248	Error Option module K	1	$F9_{hex}$
P0249	Error Option module L	1	FA_{hex}
P0250	Error Option module M	1	FB_{hex}
P0251	Error Communication parameter no.	1	FC_{hex}
P0260	Warning System 1	2	06_{hex}
P0261	Warning Power Supply Unit	2	07_{hex}
P0262	Warning Power Unit	2	08_{hex}
P0263	Warning Motor	2	09_{hex}
P0264	Global Drive Warnings	2	$0A_{hex}$
P0265	Warning Mainsmonitor	2	$0B_{hex}$
P0290	Client alive timeout	2	24_{hex}
P0291	Receive Timeout Proprog Protocol	2	25_{hex}
P0297	Error Reaction Mains Failure	2	$2B_{hex}$
P0298	Error Reaction BACI Communication	2	$2C_{hex}$
P0299	Error Reaction Sync Errors	2	$2D_{hex}$
P0300	Controlword	2	$2E_{hex}$
P0301	Status word	2	$2F_{hex}$
P0302	Controlword 2	2	30_{hex}
P0303	Status word 2	2	31_{hex}
P0304	Operation mode actual	2	32_{hex}
P0305	Drive status	2	33_{hex}
P0306	Status dig. inputs drive manager	2	34_{hex}
P0307	Delay for quickstop input	2	35_{hex}
P0308	Status word 3	2	36_{hex}
P0310	Data set command	2	38_{hex}
P0311	Data set status	2	39_{hex}
P0312	Active data set number	2	$3A_{hex}$
P0313	Valid data sets	2	$3B_{hex}$
P0314	Data set source	2	$3C_{hex}$
P0315	Data set destination	2	$3D_{hex}$
P0316	Error Data set parameter no.	2	$3E_{hex}$
P0317	EEPROM Write count	2	$3F_{hex}$
P0318	PSI Write count	2	40_{hex}
P0319	PSI Parameter number	2	41_{hex}
P0320	PSI Array index	2	42_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0321	PSI Parameter data width	2	43_{hex}
P0322	PSI Parameter value (32 Bit)	2	44_{hex}
P0323	PSI String parameter	2	45_{hex}
P0324	PSI Data set selection	2	46_{hex}
P0325	PSI Valid data sets	2	47_{hex}
P0326	Data set manager mode	2	48_{hex}
P0327	Boot data set	2	49_{hex}
P0330	Current controller status	2	$4C_{hex}$
P0331	Torque set value	2	$4D_{hex}$
P0332	Current Iq set value	2	$4E_{hex}$
P0333	Current Iq actual value	2	$4F_{hex}$
P0334	Current Iq controller output	2	50_{hex}
P0335	Current Id set value	2	51_{hex}
P0336	Current Id actual value	2	52_{hex}
P0337	Current Id controller output	2	53_{hex}
P0338	Voltage EMF set value	2	54_{hex}
P0339	Voltage Vq set value	2	55_{hex}
P0340	Voltage Vd set value	2	56_{hex}
P0341	Current phase U actual value	2	57_{hex}
P0342	Current phase V actual value	2	58_{hex}
P0343	Apparent current actual value	2	59_{hex}
P0344	Torque actual value	2	$5A_{hex}$
P0345	Apparent current actual value with Iq sign	2	$5B_{hex}$
P0350	Speed controller status	2	60_{hex}
P0351	Speed set value	2	61_{hex}
P0352	Speed set value total	2	62_{hex}
P0353	Speed actual value	2	63_{hex}
P0354	Speed deviation value	2	64_{hex}
P0355	Torque feed forward	2	65_{hex}
P0356	Speed controller output	2	66_{hex}
P0357	Torque Limit cyclic	2	67_{hex}
P0358	Speed act. value after notchfilter	2	68_{hex}
P0359	Scaling of speed set value	2	69_{hex}
P0360	Position controller status	2	$6A_{hex}$
P0361	Position set value	2	$6B_{hex}$
P0362	Position actual value	2	$6C_{hex}$
P0363	Position set value angle	2	$6D_{hex}$
P0364	Position set value rev	2	$6E_{hex}$
P0365	Speed feed forward	2	$6F_{hex}$
P0366	Position controller output	2	70_{hex}
P0367	Position actual total deviation	2	71_{hex}
P0368	Position actual angle deviation	2	72_{hex}
P0369	Position set value for interpolation	2	73_{hex}
P0370	Position angle value for interpolation	2	74_{hex}
P0371	Mechanical angle at reference switch	2	75_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0380	open loop speed status	2	$7E_{hex}$
P0381	Startup time for open loop	2	$7F_{hex}$
P0382	Starting torque boost for open loop	2	80_{hex}
P0383	Speed range for torque boost	2	81_{hex}
P0390	Encoder 1 status	2	88_{hex}
P0391	Encoder 1 actual angle	2	89_{hex}
P0392	Encoder 1 actual revolutions	2	$8A_{hex}$
P0393	Encoder 1 mechanical actual angle	2	$8B_{hex}$
P0394	Encoder 1 actual speed	2	$8C_{hex}$
P0395	Encoder 1 actual position 16	2	$8D_{hex}$
P0400	Encoder 2 status	2	92_{hex}
P0401	Encoder 2 actual angle	2	93_{hex}
P0402	Encoder 2 actual revolutions	2	94_{hex}
P0403	Encoder 2 mechanical actual angle	2	95_{hex}
P0404	Encoder 2 actual speed	2	96_{hex}
P0405	Encoder 2 actual position 16	2	97_{hex}
P0410	Function module A status digital input	2	$9C_{hex}$
P0411	Function module B status digital input	2	$9D_{hex}$
P0412	Function module C status digital input	2	$9E_{hex}$
P0413	Function module D status digital input	2	$9F_{hex}$
P0414	Function module E status digital input	2	$A0_{hex}$
P0415	Function module A status digital output	2	$A1_{hex}$
P0416	Function module B status digital output	2	$A2_{hex}$
P0417	Function module C status digital output	2	$A3_{hex}$
P0418	Function module D status digital output	2	$A4_{hex}$
P0419	Function module E status digital output	2	$A5_{hex}$
P0420	Analog input 1 actual value	2	$A6_{hex}$
P0421	Analog input 2 actual value	2	$A7_{hex}$
P0430	Ramp Function Generator status	2	$B0_{hex}$
P0431	Ramp Function Generator output	2	$B1_{hex}$
P0440	Set Value Generator mode	2	BA_{hex}
P0441	SVG time 1	2	BB_{hex}
P0442	SVG set value 1	2	BC_{hex}
P0443	SVG time 2	2	BD_{hex}
P0444	SVG set value 2	2	BE_{hex}
P0445	SVG time 3	2	BF_{hex}
P0446	SVG set value 3	2	$C0_{hex}$
P0447	SVG time 4	2	$C1_{hex}$
P0448	SVG set value 4	2	$C2_{hex}$
P0449	Set Value Generator output	2	$C3_{hex}$
P0460	Positioning control status	2	CE_{hex}
P0461	Positioning switch status	2	CF_{hex}
P0462	Positioning control position actual value	2	$D0_{hex}$
P0463	Positioning control position set value	2	$D1_{hex}$
P0464	Positioning control speed set value	2	$D2_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P0465	Position switch status	2	$D3_{hex}$
P0466	Spindle positioning status	2	$D4_{hex}$
P0467	Spindle positioning effective target position	2	$D5_{hex}$
P0470	Synchronous operation status	2	$D8_{hex}$
P0471	Synchronous operation position set value	2	$D9_{hex}$
P0472	Synchronous operation angle set value	2	DA_{hex}
P0473	Synchronous operation delta angle	2	DB_{hex}
P0474	Synchronous operation speed set value	2	DC_{hex}
P0476	Start active movement	2	DD_{hex}
P0477	Register angle set value absolute	2	DF_{hex}
P0480	Power Unit status	2	$E2_{hex}$
P0481	Power Unit internal device actual temperature	2	$E3_{hex}$
P0482	Power Unit heatsink actual temperature	2	$E4_{hex}$
P0483	Power Unit actual mains voltage	2	$E5_{hex}$
P0484	Power Unit DC link actual voltage	2	$E6_{hex}$
P0485	Power Unit Ixt actual value	2	$E7_{hex}$
P0486	Mains drop-out supervision time	2	$E8_{hex}$
P0487	Switching PWM mode	2	$E9_{hex}$
P0488	Maximum modulation index	2	EA_{hex}
P0489	Threshold for PWM-frequency switching between 2 and 4kHz	2	EB_{hex}
P0490	Power Supply Unit status	2	EC_{hex}
P0500	Motor status	2	$F6_{hex}$
P0501	Motor status notch position	2	$F7_{hex}$
P0502	Motor I^2t actual value	2	$F8_{hex}$
P0503	Motor actual temperature	2	$F9_{hex}$
P0504	Motor actual slip frequency	2	FA_{hex}
P0505	Motor temperature smooth time	2	FB_{hex}
P0506	Calculated motor magnetizing current	2	FC_{hex}
P0507	Calculated motor electrical power	2	FD_{hex}
P0508	Calculated torque actual value	2	FE_{hex}
P0509	Maximum set torque	2	FF_{hex}
P0520	Flux set value	3	$0B_{hex}$
P0521	Flux actual value	3	$0C_{hex}$
P0522	Rotor time constant actual value	3	$0D_{hex}$
P0523	Flux set value reduce	3	$0E_{hex}$
P0530	Synchronization status	3	15_{hex}
P0531	Source sync signal	3	16_{hex}
P0532	Sync interval	3	17_{hex}
P0533	Sync tolerance	3	18_{hex}
P0534	Sync offset	3	19_{hex}
P0540	CAN mode	3	$1F_{hex}$
P0541	CAN status	3	20_{hex}
P0542	CAN baudrate (config)	3	21_{hex}
P0543	CAN Baudrate (DIP-Switch)	3	22_{hex}
P0544	CAN baudrate (active)	3	23_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0545	CAN slave number (config)	3	24_{hex}
P0546	CAN slave number (DIP-Switch)	3	25_{hex}
P0547	CAN slave number (active)	3	26_{hex}
P0550	Module type slot A	3	29_{hex}
P0551	Module type slot B	3	$2A_{hex}$
P0552	Module type slot C	3	$2B_{hex}$
P0553	Module type slot D	3	$2C_{hex}$
P0554	Module type slot E	3	$2D_{hex}$
P0555	Controller FPGA version	3	$2E_{hex}$
P0556	Controller Bootloader version	3	$2F_{hex}$
P0557	Programming request	3	30_{hex}
P0558	Configuration ID	3	31_{hex}
P0559	Drive name	3	32_{hex}
P0560	Encoder emulation module version	3	33_{hex}
P0561	Encoder emulation status	3	34_{hex}
P0562	Encoder emulation mode	3	35_{hex}
P0563	Encoder emulation pulses per revolution	3	36_{hex}
P0564	Encoder emulation offset Zero pulse	3	37_{hex}
P0565	SSI-Encoder emulation status	3	38_{hex}
P0566	SSI-Encoder emulation mode	3	39_{hex}
P0567	Motorpotentiometer output	3	$3A_{hex}$
P0568	Motorpotentiometer status	3	$3B_{hex}$
P0575	Digital input channel for error acknowledge	3	42_{hex}
P0576	Digital input channel for enable operation	3	43_{hex}
P0579	Function module selection for PLC I/O-access	3	46_{hex}
P0580	Touch probe status	3	47_{hex}
P0581	Touch probe 1 measured value angle positive edge	3	48_{hex}
P0582	Touch probe 1 measured value revolutions pos. edge	3	49_{hex}
P0583	Touch probe 1 measured value angle negative edge	3	$4A_{hex}$
P0584	Touch probe 1 measured value revolutions neg. edge	3	$4B_{hex}$
P0585	Touch probe 2 measured value angle positive edge	3	$4C_{hex}$
P0586	Touch probe 2 measured value revolutions pos. edge	3	$4D_{hex}$
P0587	Touch probe 2 measured value angle negative edge	3	$4E_{hex}$
P0588	Touch probe 2 measured value revolutions neg. edge	3	$4F_{hex}$
P0590	Programmable PID controller set value	3	51_{hex}
P0591	Programmable PID controller actual value	3	52_{hex}
P0592	Programmable PID controller output	3	53_{hex}
P0593	Programmable PID controller integral part (hdw)	3	54_{hex}
P0600	Positioning target position 0	3	$5B_{hex}$
P0601	Positioning target input 0	3	$5C_{hex}$
P0602	Positioning speed 0	3	$5D_{hex}$
P0603	Positioning acceleration 0	3	$5E_{hex}$
P0604	Positioning deceleration 0	3	$5F_{hex}$
P0605	Positioning maximum jerk 0	3	60_{hex}
P0606	Positioning smoothing time 0	3	61_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0607	Relative Positioning control target position 0	3	62_{hex}
P0610	Positioning target position 1	3	65_{hex}
P0611	Positioning target input 1	3	66_{hex}
P0612	Positioning speed 1	3	67_{hex}
P0613	Positioning acceleration 1	3	68_{hex}
P0614	Positioning deceleration 1	3	69_{hex}
P0615	Positioning maximum jerk 1	3	$6A_{hex}$
P0616	Positioning smoothing time 1	3	$6B_{hex}$
P0617	Relative Positioning control target position 1	3	$6C_{hex}$
P0620	Positioning target position 2	3	$6F_{hex}$
P0621	Positioning target input 2	3	70_{hex}
P0622	Positioning speed 2	3	71_{hex}
P0623	Positioning acceleration 2	3	72_{hex}
P0624	Positioning deceleration 2	3	73_{hex}
P0625	Positioning maximum jerk 2	3	74_{hex}
P0626	Positioning smoothing time 2	3	75_{hex}
P0627	Relative Positioning control target position 2	3	76_{hex}
P0630	Positioning target position 3	3	79_{hex}
P0631	Positioning target input 3	3	$7A_{hex}$
P0632	Positioning speed 3	3	$7B_{hex}$
P0633	Positioning acceleration 3	3	$7C_{hex}$
P0634	Positioning deceleration 3	3	$7D_{hex}$
P0635	Positioning maximum jerk 3	3	$7E_{hex}$
P0636	Positioning smoothing time 3	3	$7F_{hex}$
P0637	Relative Positioning control target position 3	3	80_{hex}
P0640	Positioning target position 4	3	83_{hex}
P0641	Positioning target input 4	3	84_{hex}
P0642	Positioning speed 4	3	85_{hex}
P0643	Positioning acceleration 4	3	86_{hex}
P0644	Positioning deceleration 4	3	87_{hex}
P0645	Positioning maximum jerk 4	3	88_{hex}
P0646	Positioning smoothing time 4	3	89_{hex}
P0647	Relative Positioning control target position 4	3	$8A_{hex}$
P0650	Positioning target position 5	3	$8D_{hex}$
P0651	Positioning target input 5	3	$8E_{hex}$
P0652	Positioning speed 5	3	$8F_{hex}$
P0653	Positioning acceleration 5	3	90_{hex}
P0654	Positioning deceleration 5	3	91_{hex}
P0655	Positioning maximum jerk 5	3	92_{hex}
P0656	Positioning smoothing time 5	3	93_{hex}
P0657	Relative Positioning control target position 5	3	94_{hex}
P0660	Positioning target position 6	3	97_{hex}
P0661	Positioning target input 6	3	98_{hex}
P0662	Positioning speed 6	3	99_{hex}
P0663	Positioning acceleration 6	3	$9A_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P0664	Positioning deceleration 6	3	$9B_{hex}$
P0665	Positioning maximum jerk 6	3	$9C_{hex}$
P0666	Positioning smoothing time 6	3	$9D_{hex}$
P0667	Relative Positioning control target position 6	3	$9E_{hex}$
P0670	Positioning target position 7	3	$A1_{hex}$
P0671	Positioning target input 7	3	$A2_{hex}$
P0672	Positioning speed 7	3	$A3_{hex}$
P0673	Positioning acceleration 7	3	$A4_{hex}$
P0674	Positioning deceleration 7	3	$A5_{hex}$
P0675	Positioning maximum jerk 7	3	$A6_{hex}$
P0676	Positioning smoothing time 7	3	$A7_{hex}$
P0677	Relative Positioning control target position 7	3	$A8_{hex}$
P0680	Positioning target position 8	3	AB_{hex}
P0681	Positioning target input 8	3	AC_{hex}
P0682	Positioning speed 8	3	AD_{hex}
P0683	Positioning acceleration 8	3	AE_{hex}
P0684	Positioning deceleration 8	3	AF_{hex}
P0685	Positioning maximum jerk 8	3	$B0_{hex}$
P0686	Positioning smoothing time 8	3	$B1_{hex}$
P0687	Relative Positioning control target position 8	3	$B2_{hex}$
P0690	Positioning target position 9	3	$B5_{hex}$
P0691	Positioning target input 9	3	$B6_{hex}$
P0692	Positioning speed 9	3	$B7_{hex}$
P0693	Positioning acceleration 9	3	$B8_{hex}$
P0694	Positioning deceleration 9	3	$B9_{hex}$
P0695	Positioning maximum jerk 9	3	BA_{hex}
P0696	Positioning smoothing time 9	3	BB_{hex}
P0697	Relative Positioning control target position 9	3	BC_{hex}
P0700	Positioning target position 10	3	BF_{hex}
P0701	Positioning target input 10	3	$C0_{hex}$
P0702	Positioning speed 10	3	$C1_{hex}$
P0703	Positioning acceleration 10	3	$C2_{hex}$
P0704	Positioning deceleration 10	3	$C3_{hex}$
P0705	Positioning maximum jerk 10	3	$C4_{hex}$
P0706	Positioning smoothing time 10	3	$C5_{hex}$
P0707	Relative Positioning control target position 10	3	$C6_{hex}$
P0710	Positioning target position 11	3	$C9_{hex}$
P0711	Positioning target input 11	3	CA_{hex}
P0712	Positioning speed 11	3	CB_{hex}
P0713	Positioning acceleration 11	3	CC_{hex}
P0714	Positioning deceleration 11	3	CD_{hex}
P0715	Positioning maximum jerk 11	3	CE_{hex}
P0716	Positioning smoothing time 11	3	CF_{hex}
P0717	Relative Positioning control target position 11	3	$D0_{hex}$
P0720	Positioning target position 12	3	$D3_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P0721	Positioning target input 12	3	$D4_{hex}$
P0722	Positioning speed 12	3	$D5_{hex}$
P0723	Positioning acceleration 12	3	$D6_{hex}$
P0724	Positioning deceleration 12	3	$D7_{hex}$
P0725	Positioning maximum jerk 12	3	$D8_{hex}$
P0726	Positioning smoothing time 12	3	$D9_{hex}$
P0727	Relative Positioning control target position 12	3	DA_{hex}
P0730	Positioning target position 13	3	DD_{hex}
P0731	Positioning target input 13	3	DE_{hex}
P0732	Positioning speed 13	3	DF_{hex}
P0733	Positioning acceleration 13	3	$E0_{hex}$
P0734	Positioning deceleration 13	3	$E1_{hex}$
P0735	Positioning maximum jerk 13	3	$E2_{hex}$
P0736	Positioning smoothing time 13	3	$E3_{hex}$
P0737	Relative Positioning control target position 13	3	$E4_{hex}$
P0740	Positioning target position 14	3	$E7_{hex}$
P0741	Positioning target input 14	3	$E8_{hex}$
P0742	Positioning speed 14	3	$E9_{hex}$
P0743	Positioning acceleration 14	3	EA_{hex}
P0744	Positioning deceleration 14	3	EB_{hex}
P0745	Positioning maximum jerk 14	3	EC_{hex}
P0746	Positioning smoothing time 14	3	ED_{hex}
P0747	Relative Positioning control target position 14	3	EE_{hex}
P0750	Positioning target position 15	3	$F1_{hex}$
P0751	Positioning target input 15	3	$F2_{hex}$
P0752	Positioning speed 15	3	$F3_{hex}$
P0753	Positioning acceleration 15	3	$F4_{hex}$
P0754	Positioning deceleration 15	3	$F5_{hex}$
P0755	Positioning maximum jerk 15	3	$F6_{hex}$
P0756	Positioning smoothing time 15	3	$F7_{hex}$
P0757	Relative Positioning control target position 15	3	$F8_{hex}$
P0760	Positioning target position 16	3	FB_{hex}
P0761	Positioning target input 16	3	FC_{hex}
P0762	Positioning speed 16	3	FD_{hex}
P0763	Positioning acceleration 16	3	FE_{hex}
P0764	Positioning deceleration 16	3	FF_{hex}
P0765	Positioning maximum jerk 16	4	01_{hex}
P0766	Positioning smoothing time 16	4	02_{hex}
P0767	Relative Positioning control target position 16	4	03_{hex}
P0800	Option module 1 master 1 cyclic time	4	24_{hex}
P0801	Option module 1 master 1 parameter no. set value 1	4	25_{hex}
P0802	Option module 1 master 1 parameter no. set value 2	4	26_{hex}
P0803	Option module 1 master 1 parameter no. set value 3	4	27_{hex}
P0804	Option module 1 master 1 parameter no. set value 4	4	28_{hex}
P0805	Option module 1 master 1 parameter no. set value 5	4	29_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0806	Option module 1 master 1 parameter no. set value 6	4	$2A_{hex}$
P0807	Option module 1 master 1 parameter no. set value 7	4	$2B_{hex}$
P0808	Option module 1 master 1 parameter no. set value 8	4	$2C_{hex}$
P0809	Option module 1 master 1 parameter no. act.value 1	4	$2D_{hex}$
P0810	Option module 1 master 1 parameter no. act.value 2	4	$2E_{hex}$
P0811	Option module 1 master 1 parameter no. act.value 3	4	$2F_{hex}$
P0812	Option module 1 master 1 parameter no. act.value 4	4	30_{hex}
P0813	Option module 1 master 1 parameter no. act.value 5	4	31_{hex}
P0814	Option module 1 master 1 parameter no. act.value 6	4	32_{hex}
P0815	Option module 1 master 1 parameter no. act.value 7	4	33_{hex}
P0816	Option module 1 master 1 parameter no. act.value 8	4	34_{hex}
P0817	Option module 1 master 1 trigger offset	4	35_{hex}
P0818	Option module 1 master 1 cycle offset set values	4	36_{hex}
P0819	Option module 1 master 1 cycle offset act. values	4	37_{hex}
P0820	Hardware configuration module F (controller)	4	38_{hex}
P0821	Hardware configuration module G	4	39_{hex}
P0822	Hardware configuration module H	4	$3A_{hex}$
P0823	Hardware configuration module J	4	$3B_{hex}$
P0824	Hardware configuration module K	4	$3C_{hex}$
P0825	Hardware configuration module L	4	$3D_{hex}$
P0826	Hardware configuration module M	4	$3E_{hex}$
P0827	Baci Module Select	4	$3F_{hex}$
P0830	Option module G configuration 1	4	42_{hex}
P0831	Option module G configuration 2	4	43_{hex}
P0832	Option module G configuration 3	4	44_{hex}
P0833	Option module G configuration 4	4	45_{hex}
P0834	Option module G configuration 5	4	46_{hex}
P0835	Option module G configuration 6	4	47_{hex}
P0836	Option module G configuration 7	4	48_{hex}
P0837	Option module G configuration 8	4	49_{hex}
P0838	Baci Setup Timeout	4	$4A_{hex}$
P0839	Baci Cyclic Communication Timeout	4	$4B_{hex}$
P0840	Option module H configuration 1	4	$4C_{hex}$
P0841	Option module H configuration 2	4	$4D_{hex}$
P0842	Option module H configuration 3	4	$4E_{hex}$
P0843	Option module H configuration 4	4	$4F_{hex}$
P0844	Option module H configuration 5	4	50_{hex}
P0845	Option module H configuration 6	4	51_{hex}
P0846	Option module H configuration 7	4	52_{hex}
P0847	Option module H configuration 8	4	53_{hex}
P0848	Baci error detection delay	4	54_{hex}
P0850	Autotuning mode	4	56_{hex}
P0851	Autotuning status	4	57_{hex}
P0852	Autotuning done status	4	58_{hex}
P0853	Measured motor stator resistance	4	59_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P0854	Measured motor leakage inductance	4	$5A_{hex}$
P0855	Measured motor stator and rotor resistance	4	$5B_{hex}$
P0856	Maximum speed for inertia measurement	4	$5C_{hex}$
P0857	Maximum current for inertia measurement	4	$5D_{hex}$
P0858	Measured drive inertia	4	$5E_{hex}$
P0860	Option module 2 master 1 cyclic time	4	60_{hex}
P0861	Option module 2 master 1 parameter no. set value 1	4	61_{hex}
P0862	Option module 2 master 1 parameter no. set value 2	4	62_{hex}
P0863	Option module 2 master 1 parameter no. set value 3	4	63_{hex}
P0864	Option module 2 master 1 parameter no. set value 4	4	64_{hex}
P0865	Option module 2 master 1 parameter no. set value 5	4	65_{hex}
P0866	Option module 2 master 1 parameter no. set value 6	4	66_{hex}
P0867	Option module 2 master 1 parameter no. set value 7	4	67_{hex}
P0868	Option module 2 master 1 parameter no. set value 8	4	68_{hex}
P0869	Option module 2 master 1 parameter no. act.value 1	4	69_{hex}
P0870	Option module 2 master 1 parameter no. act.value 2	4	$6A_{hex}$
P0871	Option module 2 master 1 parameter no. act.value 3	4	$6B_{hex}$
P0872	Option module 2 master 1 parameter no. act.value 4	4	$6C_{hex}$
P0873	Option module 2 master 1 parameter no. act.value 5	4	$6D_{hex}$
P0874	Option module 2 master 1 parameter no. act.value 6	4	$6E_{hex}$
P0875	Option module 2 master 1 parameter no. act.value 7	4	$6F_{hex}$
P0876	Option module 2 master 1 parameter no. act.value 8	4	70_{hex}
P0877	Option module 2 master 1 trigger offset	4	71_{hex}
P0878	Option module 2 master 1 cycle offset set values	4	72_{hex}
P0879	Option module 2 master 1 cycle offset act. Values	4	73_{hex}
P0880	Holding brake command	4	74_{hex}
P0881	Holding brake status	4	75_{hex}
P0882	Holding brake actuating signal	4	76_{hex}
P0883	Holding brake state monitoring	4	77_{hex}
P0884	Holding brake liner monitoring	4	78_{hex}
P0902	Error reaction table	4	$8A_{hex}$
P0903	Error reaction table function modules	4	$8B_{hex}$
P0904	Error reaction table option modules	4	$8C_{hex}$
P0905	Error reaction table opt.-module application	4	$8D_{hex}$
P1000	Operation mode desired	4	EC_{hex}
P1001	Communication source	4	ED_{hex}
P1002	Drive manager options	4	EE_{hex}
P1003	STOP reaction code	4	EF_{hex}
P1004	QUICK STOP reaction code	4	$F0_{hex}$
P1005	SHUTDOWN reaction code	4	$F1_{hex}$
P1006	DISABLE OPERATION reaction code	4	$F2_{hex}$
P1007	Error reaction code	4	$F3_{hex}$
P1008	mask for status internal limit	4	$F4_{hex}$
P1009	Reaction quickstop command	4	$F5_{hex}$
P1010	Data set ID	4	$F6_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P1011	Data set name	4	$F7_{hex}$
P1020	Current controller P-gain	5	01_{hex}
P1021	Current controller integral-action time	5	02_{hex}
P1022	Torque additional set value	5	03_{hex}
P1023	Current controller output limiter	5	04_{hex}
P1030	Speed controller mode	5	$0B_{hex}$
P1031	Motor maximum drive speed	5	$0C_{hex}$
P1032	Speed controller P-gain	5	$0D_{hex}$
P1033	Speed controller integral-action time	5	$0E_{hex}$
P1034	Torque feed forward factor	5	$0F_{hex}$
P1036	Torque limiter bipolar	5	11_{hex}
P1037	Torque limiter Motor/TD1	5	12_{hex}
P1038	Torque limiter Generator/TD2	5	13_{hex}
P1039	Torque limiter hysteresis	5	14_{hex}
P1040	Speed additional set value	5	15_{hex}
P1041	Speed set value positive limit	5	16_{hex}
P1042	Speed set value negative limit	5	17_{hex}
P1043	Speed deviation limiter	5	18_{hex}
P1044	Cut-off frequency 2 order delay	5	19_{hex}
P1045	Time for reducing torque	5	$1A_{hex}$
P1046	Symmetrical torque limiter in Nm	5	$1B_{hex}$
P1050	Position controller mode	5	$1F_{hex}$
P1051	Position controller Kv factor	5	20_{hex}
P1052	Speed feed forward smoothing time	5	21_{hex}
P1053	Speed feed forward factor	5	22_{hex}
P1054	Position deviation limit dynamic	5	23_{hex}
P1055	Position deviation limit static	5	24_{hex}
P1056	Position deviation time	5	25_{hex}
P1057	Gear factor	5	26_{hex}
P1058	Position deviation limit 2	5	27_{hex}
P1059	Position set value smoothing interval	5	28_{hex}
P1061	Smooth time for open loop speed actual value	5	$2A_{hex}$
P1062	Open Loop overspeed limit	5	$2B_{hex}$
P1063	Open Loop N=0 threshold	5	$2C_{hex}$
P1064	Open loop N>Nx ON threshold	5	$2D_{hex}$
P1065	Open loop N>Nx OFF threshold	5	$2E_{hex}$
P1071	Encoder 1 smoothing time constant	5	34_{hex}
P1072	Encoder 1 over speed limit	5	35_{hex}
P1073	Encoder 1 N=0 threshold	5	36_{hex}
P1074	Encoder 1 N>Nx ON threshold	5	37_{hex}
P1075	Encoder 1 N>Nx OFF threshold	5	38_{hex}
P1076	Encoder 1 $\sin^2 x$ upper limit	5	39_{hex}
P1081	Encoder 2 smoothing time constant	5	$3E_{hex}$
P1082	Encoder 2 over speed limit	5	$3F_{hex}$
P1083	Encoder 2 N=0 threshold	5	40_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P1084	Encoder 2 N>Nx ON threshold	5	41_{hex}
P1085	Encoder 2 N>Nx OFF threshold	5	42_{hex}
P1086	Encoder 2 $\sin^2 x$ upper limit	5	43_{hex}
P1087	Field angle monitor threshold	5	44_{hex}
P1090	Selection digital input 1	5	47_{hex}
P1091	Target number digital input 1	5	48_{hex}
P1092	Bit selection digital input 1	5	49_{hex}
P1093	Set bit pattern for LOW state digital input 1	5	$4A_{hex}$
P1094	Set bit pattern for HIGH state digital input 1	5	$4B_{hex}$
P1095	Selection digital input 2	5	$4C_{hex}$
P1096	Target number digital input 2	5	$4D_{hex}$
P1097	Bit selection digital input 2	5	$4E_{hex}$
P1098	Set bit pattern for LOW state digital input 2	5	$4F_{hex}$
P1099	Set bit pattern for HIGH state digital input 2	5	50_{hex}
P1100	Selection digital input 3	5	51_{hex}
P1101	Target number digital input 3	5	52_{hex}
P1102	Bit selection digital input 3	5	53_{hex}
P1103	Set bit pattern for LOW state digital input 3	5	54_{hex}
P1104	Set bit pattern for HIGH state digital input 3	5	55_{hex}
P1105	Selection digital input 4	5	56_{hex}
P1106	Target number digital input 4	5	57_{hex}
P1107	Bit selection digital input 4	5	58_{hex}
P1108	Set bit pattern for LOW state digital input 4	5	59_{hex}
P1109	Set bit pattern for HIGH state digital input 4	5	$5A_{hex}$
P1110	Selection digital output 1	5	$5B_{hex}$
P1111	Source number digital output 1	5	$5C_{hex}$
P1112	Bit selection digital output 1	5	$5D_{hex}$
P1113	Bit pattern digital output 1	5	$5E_{hex}$
P1114	Selection digital output 2	5	$5F_{hex}$
P1115	Source number digital output 2	5	60_{hex}
P1116	Bit selection digital output 2	5	61_{hex}
P1117	Bit pattern digital output 2	5	62_{hex}
P1118	Selection digital output 3	5	63_{hex}
P1119	Source number digital output 3	5	64_{hex}
P1120	Bit selection digital output 3	5	65_{hex}
P1121	Bit pattern digital output 3	5	66_{hex}
P1122	Selection digital output 4	5	67_{hex}
P1123	Source number digital output 4	5	68_{hex}
P1124	Bit selection digital output 4	5	69_{hex}
P1125	Bit pattern digital output 4	5	$6A_{hex}$
P1130	Selection analog input 1	5	$6F_{hex}$
P1131	Smoothing time analog input 1	5	70_{hex}
P1132	Scaling factor analog input 1	5	71_{hex}
P1133	Target number analog input 1	5	72_{hex}
P1134	Offset analog input 1	5	73_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P1135	Threshold value analog input 1	5	74_{hex}
P1136	Selection analog input 2	5	75_{hex}
P1137	Smoothing time analog input 2	5	76_{hex}
P1138	Scaling factor analog input 2	5	77_{hex}
P1139	Target number analog input 2	5	78_{hex}
P1140	Offset analog input 2	5	79_{hex}
P1141	Threshold value analog input 2	5	$7A_{hex}$
P1150	Selection fast analog output 1	5	83_{hex}
P1151	Source number fast analog output 1	5	84_{hex}
P1152	Offset fast analog output 1	5	85_{hex}
P1153	Scaling factor fast analog output 1	5	86_{hex}
P1154	Selection fast analog output 2	5	87_{hex}
P1155	Source number fast analog output 2	5	88_{hex}
P1156	Offset fast analog output 2	5	89_{hex}
P1157	Scaling factor fast analog output 2	5	$8A_{hex}$
P1170	Ramp Function Generator mode	5	97_{hex}
P1171	Ramp Function Generator input	5	98_{hex}
P1172	Ramp Function Generator ramp-up time	5	99_{hex}
P1173	Ramp Function Generator ramp-down time	5	$9A_{hex}$
P1174	Ramp Function Generator quick stop time	5	$9B_{hex}$
P1175	Ramp Function Generator smoothing	5	$9C_{hex}$
P1176	Ramp Function Generator S-curve ramp-up time	5	$9D_{hex}$
P1177	Ramp Function Generator S-curve ramp-down time	5	$9E_{hex}$
P1178	Ramp Function Generator Set Value Zone	5	$9F_{hex}$
P1190	Positioning mode	5	AB_{hex}
P1191	Positioning record number actual	5	AC_{hex}
P1192	Positioning scaling numerator	5	AD_{hex}
P1193	Positioning scaling denominator	5	AE_{hex}
P1194	Positioning window	5	AF_{hex}
P1195	Positioning window time	5	$B0_{hex}$
P1196	Positioning software limit switch 1	5	$B1_{hex}$
P1197	Positioning software limit switch 2	5	$B2_{hex}$
P1198	Positioning clip environment 1	5	$B3_{hex}$
P1199	Positioning clip environment 2	5	$B4_{hex}$
P1200	Positioning homing position	5	$B5_{hex}$
P1201	Positioning homing speed	5	$B6_{hex}$
P1202	Positioning homing final speed	5	$B7_{hex}$
P1203	Positioning homing acceleration	5	$B8_{hex}$
P1204	Positioning homing deceleration	5	$B9_{hex}$
P1205	Positioning homing mode	5	BA_{hex}
P1206	Positioning homing encoder input	5	BB_{hex}
P1208	Positioning switch mode	5	BD_{hex}
P1209	Positioning encoder offset	5	BE_{hex}
P1210	Positioning jogging speed	5	BF_{hex}
P1211	Positioning jogging acceleration	5	$C0_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P1212	Positioning jogging deceleration	5	$C1_{hex}$
P1213	Positioning stop deceleration	5	$C2_{hex}$
P1214	Digital input channel for positive limit switch	5	$C3_{hex}$
P1215	Digital input channel for negative limit switch	5	$C4_{hex}$
P1216	Digital input channel for origin switch	5	$C5_{hex}$
P1217	Positioning homing blocking time	5	$C6_{hex}$
P1218	Positioning homing torque limit	5	$C7_{hex}$
P1219	Positioning feedrate override	5	$C8_{hex}$
P1220	Synchronous operation mode	5	$C9_{hex}$
P1221	Synchronous operation revolution of slave	5	CA_{hex}
P1222	Synchronous operation revolution of master	5	CB_{hex}
P1223	Maximum driving speed	5	CC_{hex}
P1224	Acceleration	5	CD_{hex}
P1225	Minimal total speed	5	CE_{hex}
P1226	Speed factor	5	CF_{hex}
P1230	Position switch mode	5	$D3_{hex}$
P1239	Positioning modulo position	5	DC_{hex}
P1240	Power Unit PWM frequency	5	DD_{hex}
P1241	Power Unit max. drive current	5	DE_{hex}
P1250	DC link controller set value	5	$E7_{hex}$
P1251	DC link controller P-gain	5	$E8_{hex}$
P1252	DC link controller integral-action time	5	$E9_{hex}$
P1260	Block time	5	$F1_{hex}$
P1261	N=0 threshold blocking time	5	$F2_{hex}$
P1270	Field weakening controller P-gain	5	FB_{hex}
P1271	Field weakening controller integral-action time	5	FC_{hex}
P1272	Flux controller P-gain	5	FD_{hex}
P1273	Flux controller integral-action time	5	FE_{hex}
P1290	Parameter selection status bit 14	6	10_{hex}
P1291	Bit mask for status bit 14	6	11_{hex}
P1292	Parameter selection status bit 15	6	12_{hex}
P1293	Bit mask for status bit 15	6	13_{hex}
P1310	Touch probe mode	6	24_{hex}
P1320	Use autotuning parameter	6	$2E_{hex}$
P1360	Programmable PID controller mode	6	56_{hex}
P1361	Source number programmable PID controller set value	6	57_{hex}
P1362	Source number programmable PID controller act. Value	6	58_{hex}
P1363	Programmable PID controller P-gain	6	59_{hex}
P1364	Programmable PID controller integral-action time	6	$5A_{hex}$
P1365	Programmable PID controller derivative time	6	$5B_{hex}$
P1366	Programmable PID controller smoothing time	6	$5C_{hex}$
P1367	Upper limiter programmable PID controller output	6	$5D_{hex}$
P1368	Lower limiter programmable PID controller output	6	$5E_{hex}$
P1369	Target number programmable PID controller	6	$5F_{hex}$
P1370	Center frequency of speed set value notchfilter	6	60_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P1371	Bandwidth of speed set value notchfilter	6	61_{hex}
P1372	Center frequency of speed act. value notchfilter	6	62_{hex}
P1373	Bandwidth of speed act. value notchfilter	6	63_{hex}
P1374	Center frequency of Iq set value notchfilter	6	64_{hex}
P1375	Bandwidth of Iq set value notchfilter	6	65_{hex}
P1380	Parameter number input value two-level-controller	6	$6A_{hex}$
P1381	Parameter number relative compare value two-level-controller	6	$6B_{hex}$
P1382	Lower threshold absolute two-level-controller	6	$6C_{hex}$
P1383	Upper threshold absolute two-level-controller	6	$6D_{hex}$
P1384	Mode two-level-controller	6	$6E_{hex}$
P1385	Lower threshold relative two-level-controller	6	$6F_{hex}$
P1386	Upper threshold relative two-level-controller	6	70_{hex}
P1387	Target number two-level-controller output	6	71_{hex}
P1388	Bit selection two-level-controller output	6	72_{hex}
P1389	Set bit pattern for LOW state two-level-controller output	6	73_{hex}
P1390	Set bit pattern for HIGH state two-level-controller output	6	74_{hex}
P1400	Holding brake control mode	6	$7E_{hex}$
P1401	Holding brake control automatic	6	$7F_{hex}$
P1402	Holding brake torque threshold	6	80_{hex}
P1403	Holding brake speed threshold	6	81_{hex}
P1404	Holding brake timeout check-back signal	6	82_{hex}
P1405	Pulse inhibit delay	6	83_{hex}
P1406	Start of motion delay	6	84_{hex}
P1410	Motorpotentiometer Mode	6	88_{hex}
P1411	Motorpotentiometer upper limit	6	89_{hex}
P1412	Motorpotentiometer lower limit	6	$8A_{hex}$
P1413	Motorpotentiometer increment	6	$8B_{hex}$
P1415	Parameter number input value two-level-controller 2	6	$8D_{hex}$
P1416	Lower threshold absolute two-level-controller 2	6	$8E_{hex}$
P1417	Upper threshold absolute two-level-controller 2	6	$8F_{hex}$
P1418	Mode two-level-controller 2	6	90_{hex}
P1419	Target number two-level-controller 2 output	6	91_{hex}
P1420	Bit selection two-level-controller2 output	6	92_{hex}
P1421	Set bit pattern for LOW state two-level-controller2 output	6	93_{hex}
P1422	Set bit pattern for HIGH state two-level-controller2 output	6	94_{hex}
P1425	Spindle positioning mode	6	97_{hex}
P1426	Spindle positioning target angle	6	98_{hex}
P1427	Spindle positioning speed	6	99_{hex}
P1428	Spindle positioning deceleration	6	$9A_{hex}$
P1429	Spindle positioning timeout trigger signal	6	$9B_{hex}$
P1430	Spindle positioning relative offset	6	$9C_{hex}$
P1431	Spindle positioning smoothing time	6	$9D_{hex}$
P1436	Torque coupling mode	6	$A2_{hex}$
P1437	Torque coupling factor master	6	$A3_{hex}$
P1438	Torque coupling factor slave	6	$A4_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P1439	Torque coupling P gain	6	$A5_{hex}$
P1440	Torque coupling integral action time	6	$A6_{hex}$
P1441	Upper limiter compensating controller	6	$A7_{hex}$
P1442	Lower limiter compensating controller	6	$A8_{hex}$
P1443	Slave init stress	6	$A9_{hex}$
P1444	Slave init stress filter time	6	AA_{hex}
P1445	Slave reduced init stress	6	AB_{hex}
P1446	Speed limit reduced init stress	6	AC_{hex}
P2002	Oscilloscope source channel 3	8	DA_{hex}
P2003	Oscilloscope source channel 4	8	DB_{hex}
P2004	Oscilloscope source channel 5	8	DC_{hex}
P2005	Oscilloscope source channel 6	8	DD_{hex}
P2006	Oscilloscope source channel 7	8	DE_{hex}
P2007	Oscilloscope source channel 8	8	DF_{hex}
P2008	Oscilloscope trigger source 1	8	$E0_{hex}$
P2009	Oscilloscope trigger source 2	8	$E1_{hex}$
P2010	Mask trigger source 1	8	$E2_{hex}$
P2011	Mask trigger source 2	8	$E3_{hex}$
P2012	Trigger compare operator 1	8	$E4_{hex}$
P2013	Trigger compare operator 2	8	$E5_{hex}$
P2014	Trigger compare value 1	8	$E6_{hex}$
P2015	Trigger compare value 2	8	$E7_{hex}$
P2016	Trigger source combination operator	8	$E8_{hex}$
P2017	Trigger delay in %	8	$E9_{hex}$
P2018	Trigger status	8	EA_{hex}
P2019	Trigger command	8	EB_{hex}
P2020	Memory capacity per channel	8	EC_{hex}
P2021	Sample rate	8	ED_{hex}
P2022	Measurement time	8	EE_{hex}
P2023	Oscilloscope memory length	8	EF_{hex}
P2024	Oscilloscope memory start address	8	$F0_{hex}$
P2025	Oscilloscope error code	8	$F1_{hex}$
P2030	Password	8	$F6_{hex}$
P2031	System command	8	$F7_{hex}$
P2032	System time	8	$F8_{hex}$
P2034	Time since last boot	8	FA_{hex}
P2035	Power on seconds	8	FB_{hex}
P2040	Source number display filter 1	9	01_{hex}
P2041	Source number display filter 2	9	02_{hex}
P2045	Time const parameter filter 1	9	06_{hex}
P2046	Time const parameter filter 2	9	07_{hex}
P2050	Error Reaction Return Motion Mode	9	$0B_{hex}$
P2051	Error Reaction Return Motion Status	9	$0C_{hex}$
P2052	Error Reaction Return Motion Target Position	9	$0D_{hex}$
P2053	Error Reaction Return Motion abs. max. Speed	9	$0E_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P2054	Error Reaction Return Motion abs. max. Acceleration	9	$0F_{hex}$
P2056	Mainsmonitor mode	9	11_{hex}
P2057	Mainsmonitor status	9	12_{hex}
P2058	Warning limit undervoltage	9	13_{hex}
P2059	Warning limit overvoltage	9	14_{hex}
P2060	Warning lower limit frequency	9	15_{hex}
P2061	Warning upper limit frequency	9	16_{hex}
P2062	Mainsmonitor warnings mask	9	17_{hex}
P2063	Mainsmonitor net failure reaction delay	9	18_{hex}
P2064	Mainsmonitor mains voltage actual value	9	19_{hex}
P2065	Mainsmonitor mains frequency actual value	9	$1A_{hex}$
P2066	Maximum mains voltage actual value	9	$1B_{hex}$
P2067	Minimum mains voltage actual value	9	$1C_{hex}$
P2068	Maximum mains frequency actual value	9	$1D_{hex}$
P2069	Minimum mains frequency actual value	9	$1E_{hex}$
P2070	Parking axis control word	9	$1F_{hex}$
P2071	Parking axis status	9	20_{hex}
P2072	Parking axis restore state	9	21_{hex}
P2073	Torque coupling status slave	9	22_{hex}
P2074	Torque coupling command master	9	23_{hex}
P2075		9	24_{hex}
P2076	Torque coupling integral part	9	25_{hex}
P2077	MS master speed set value	9	26_{hex}
P2078	MS master torque set value	9	27_{hex}
P2079	MS master status	9	28_{hex}
P2080	Error limit undervoltage	9	29_{hex}
P2081	Error limit overvoltage	9	$2A_{hex}$
P2082	Error lower limit frequency	9	$2B_{hex}$
P2083	Error upper limit frequency	9	$2C_{hex}$
P3000	Torque reducing factor	C	$C4_{hex}$
P3001	Current U-phase (AD-Value)	C	$C5_{hex}$
P3002	Current V-phase (AD-Value)	C	$C6_{hex}$
P3003	Current offset U (AD-Value)	C	$C7_{hex}$
P3004	Current offset V (AD-Value)	C	$C8_{hex}$
P3005	Cos rho	C	$C9_{hex}$
P3006	Sin rho	C	CA_{hex}
P3007	Current Iq controller Integral part	C	CB_{hex}
P3008	Current Id controller Integral part	C	CC_{hex}
P3009	Current Iq set value unlimited	C	CD_{hex}
P3010	Current Id set value unlimited	C	CE_{hex}
P3011	Voltage reference V-alpha	C	CF_{hex}
P3012	Voltage reference V-beta	C	$D0_{hex}$
P3013	System load	C	$D1_{hex}$
P3014	Current Isq positive limit	C	$D2_{hex}$
P3015	Current Isq negative limit	C	$D3_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P3016	Encoder 2 deltaphi_D	C	$D4_{hex}$
P3017	Speed controller integral part (hw)	C	$D5_{hex}$
P3018	Speed controller integral part (lw)	C	$D6_{hex}$
P3019	Delta_phi_ref_D	C	$D7_{hex}$
P3020	Rho electrical	C	$D8_{hex}$
P3021	Delta I	C	$D9_{hex}$
P3022	Delta rho	C	DA_{hex}
P3023	Encoder 1 latched digital count value	C	DB_{hex}
P3024	Encoder 1 cos (AD-Value)	C	DC_{hex}
P3025	Encoder 1 sin (AD-Value)	C	DD_{hex}
P3026	Encoder 1 pos_D	C	DE_{hex}
P3027	Encoder 1 deltaphi_D	C	DF_{hex}
P3028	Encoder 2 cos (AD-Value)	C	$E0_{hex}$
P3029	Encoder 2 sin (AD-Value)	C	$E1_{hex}$
P3030	Correction factor of the ADC	C	$E2_{hex}$
P3031	Position interpolation angle	C	$E3_{hex}$
P3032	Current Iq actual value in ampere	C	$E4_{hex}$
P3033	Signal selection	C	$E5_{hex}$
P3035	Reg_ctrl	C	$E7_{hex}$
P3036	AD sample delay	C	$E8_{hex}$
P3037	Enc_mode	C	$E9_{hex}$
P3038	Resolver excitation delay	C	EA_{hex}
P3039	Encoder 2 latched digital count value	C	EB_{hex}
P3040	Memory address for analog output 1	C	EC_{hex}
P3041	Memory address for analog output 2	C	ED_{hex}
P3042	Amp status register	C	EE_{hex}
P3043	Amp mode register	C	EF_{hex}
P3044	Amp warning register	C	$F0_{hex}$
P3045	Amp error register	C	$F1_{hex}$
P3046	Reg_Ctrl2	C	$F2_{hex}$
P3047	Port status	C	$F3_{hex}$
P3048	Status internal limits	C	$F4_{hex}$
P3050	Position scaling in user units	C	$F6_{hex}$
P3051	Position scaling number of revolutions	C	$F7_{hex}$
P3052	Positioning acceleration set value	C	$F8_{hex}$
P3053	Position revolution overflow counter	C	$F9_{hex}$
P3054	Position revolution overflow counter reset	C	FA_{hex}
P3058	Notch position from encoder 1	C	FE_{hex}
P3059	Notch position from encoder 2	C	FF_{hex}
P3060	Psi Alpha	D	01_{hex}
P3061	Psi Beta	D	02_{hex}
P3062	Open loop startup status	D	03_{hex}
P3063	Motor notch position offset from type key	D	04_{hex}
P3064	Alpha component for dead time compensation	D	05_{hex}
P3065	Beta component for dead time compensation	D	06_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P3066	Torque-building current integral part (hw)	D	07_{hex}
P3067	Max. torque-building current	D	08_{hex}
P3068	Torque coupling set value	D	09_{hex}
P3069	Torque coupling actual value	D	$0A_{hex}$
P3070	Encoder 1 EEPROM size	D	$0B_{hex}$
P3071	Encoder 2 EEPROM size	D	$0C_{hex}$
P3100	Current Isbeta actual value	D	29_{hex}
P3101	Encoder 2 pos_D	D	$2A_{hex}$
P3106	Normalized leakage inductance	D	$2F_{hex}$
P3107	Normalized Rs	D	30_{hex}
P3109	Normalized Tab / Ls	D	32_{hex}
P3110	Encoder 1 mask	D	33_{hex}
P3111	Encoder 2 mask	D	34_{hex}
P3120	Encoder emulation test send value	D	$3D_{hex}$
P3121	Encoder emulation test reception value	D	$3E_{hex}$
P3122	Encoder emulation K-factor	D	$3F_{hex}$
P3123	Encoder emulation control word	D	40_{hex}
P3124	Encoder emulation status	D	41_{hex}
P3130	Actual start angle offset	D	47_{hex}
P3131	Summary angel absolute	D	48_{hex}
P3141	Warning Mask 1	D	52_{hex}
P3142	Warning Mask 2	D	53_{hex}
P3143	Warning Mask 3	D	54_{hex}
P3144	Warning Mask 4	D	55_{hex}
P3145	Error Invocation	D	56_{hex}
P3150	Memcopy start address	D	$5B_{hex}$
P3151	Memcopy count	D	$5C_{hex}$
P3152	Memcopy control word	D	$5D_{hex}$
P3153	Memcopy status	D	$5E_{hex}$
P3154	Memcopy buffer 1	D	$5F_{hex}$
P3155	Memcopy buffer 2	D	60_{hex}
P3156	Memcopy buffer 3	D	61_{hex}
P3157	Memcopy buffer 4	D	62_{hex}
P3158	Memcopy buffer 5	D	63_{hex}
P3159	Memcopy buffer 6	D	64_{hex}
P3160	Memcopy buffer 7	D	65_{hex}
P3161	Memcopy buffer 8	D	66_{hex}
P3162	Memcopy buffer 9	D	67_{hex}
P3163	Memcopy buffer 10	D	68_{hex}
P3164	Memcopy buffer 11	D	69_{hex}
P3165	Memcopy buffer 12	D	$6A_{hex}$
P3166	Memcopy buffer 13	D	$6B_{hex}$
P3167	Memcopy buffer 14	D	$6C_{hex}$
P3168	Memcopy buffer 15	D	$6D_{hex}$
P3169	Memcopy buffer 16	D	$6E_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P3170	Memcopy buffer 17	D	$6F_{hex}$
P3171	Memcopy buffer 18	D	70_{hex}
P3172	Memcopy buffer 19	D	71_{hex}
P3173	Memcopy buffer 20	D	72_{hex}
P3174	Memcopy buffer 21	D	73_{hex}
P3175	Memcopy buffer 22	D	74_{hex}
P3176	Memcopy buffer 23	D	75_{hex}
P3177	Memcopy buffer 24	D	76_{hex}
P3200	PSU Ualpha A/D value	D	$8D_{hex}$
P3201	PSU Ubeta A/D value	D	$8E_{hex}$
P3202	PSU Ualpha actual value	D	$8F_{hex}$
P3203	PSU Ubeta actual value	D	90_{hex}
P3205	PSU PLL Counter	D	92_{hex}
P3209	PSU Ualpha offset	D	96_{hex}
P3210	PSU Ubeta offset	D	97_{hex}
P3211	PSU main frequency internal counter	D	98_{hex}
P3240	Parameter no. 1. set value	D	$B5_{hex}$
P3241	Parameter no. 2. set value	D	$B6_{hex}$
P3242	Mapping 1. set value	D	$B7_{hex}$
P3243	Mapping 2. set value	D	$B8_{hex}$
P3244	Parameter no. 1. actual value	D	$B9_{hex}$
P3245	Parameter no. 2. actual value	D	BA_{hex}
P3246	Mapping 1. actual value	D	BB_{hex}
P3247	Mapping 2. actual value	D	BC_{hex}
P3248	Mapping status word	D	BD_{hex}
P3249	Max. number of set value interruptions	D	BE_{hex}
P3290	BACI board class id slot F	D	$E7_{hex}$
P3291	BACI board class id slot G	D	$E8_{hex}$
P3292	BACI board class id slot H	D	$E9_{hex}$
P3293	BACI board class id slot J	D	EA_{hex}
P3294	BACI board class id slot K	D	EB_{hex}
P3295	BACI board class id slot L	D	EC_{hex}
P3296	BACI board class id slot M	D	ED_{hex}
P3300	Build time stamp of b maXX firmware	D	$F1_{hex}$
P3304	Controller interrupt time	D	$F5_{hex}$
P3305	Controller interrupt max. time	D	$F6_{hex}$
P3306	Controller interrupt error counter	D	$F7_{hex}$
P3307	Free timer value	D	$F8_{hex}$
P3308	Free timer max. value	D	$F9_{hex}$
P3309	Torque direct upper limit (TD1)	D	FA_{hex}
P3310	Torque direct lower limit (TD2)	D	FB_{hex}
P3311	Time measurement time slot	D	FC_{hex}
P3312	Time measurement time slot function	D	FD_{hex}
P3313	LED status	D	FE_{hex}
P3314	Application parameter 1	D	FF_{hex}

b maXX Parameter	Parameter name	Instance	Attribute
P3315	Application parameter 2	E	01_{hex}
P3316	Application parameter 3	E	02_{hex}
P3317	Application parameter 4	E	03_{hex}
P3318	Application parameter5	E	04_{hex}
P3319	Application parameter 6	E	05_{hex}
P3320	Application parameter 7	E	06_{hex}
P3321	Application parameter 8	E	07_{hex}
P3322	Application parameter 9	E	08_{hex}
P3323	Application parameter 10	E	09_{hex}
P3324	Application parameter 11	E	$0A_{hex}$
P3325	Application parameter 12	E	$0B_{hex}$
P3326	Application parameter 13	E	$0C_{hex}$
P3327	Application parameter 14	E	$0D_{hex}$
P3328	Application parameter 15	E	$0E_{hex}$
P3329	Application parameter 16	E	$0F_{hex}$
P3330	Application parameter 17	E	10_{hex}
P3331	Application parameter 18	E	11_{hex}
P3332	Application parameter 19	E	12_{hex}
P3333	Application parameter 20	E	13_{hex}
P3334	Application parameter 21	E	14_{hex}
P3335	Application parameter 22	E	15_{hex}
P3336	Application parameter 23	E	16_{hex}
P3337	Application parameter 24	E	17_{hex}
P3338	Application parameter 25	E	18_{hex}
P3340	SyncCapture	E	$1A_{hex}$
P3341	SyncTimer	E	$1B_{hex}$
P3342	TS-function time	E	$1C_{hex}$
P3343	TS-function max. time	E	$1D_{hex}$
P3344	BACI status	E	$1E_{hex}$
P3345	BACI Access Errors Slot G	E	$1F_{hex}$
P3346	BACI Alive Counter Error Slot G	E	20_{hex}
P3347	BACI-Reconfiguration Counter Slot G	E	21_{hex}
P3348	BACI Set data Exchange Counter Slot G	E	22_{hex}
P3349	BACI Act data Exchange Counter Slot G	E	23_{hex}
P3350	BACI-Command Counter Slot G	E	24_{hex}
P3351	Counter Service Data Access Slot G	E	25_{hex}
P3352	Memory address	E	26_{hex}
P3353	Contents memory address	E	27_{hex}
P3354	Service data parameter number 1	E	28_{hex}
P3355	Service data array index 1	E	29_{hex}
P3356	Service data parameter value 1	E	$2A_{hex}$
P3357	Service data status 1	E	$2B_{hex}$
P3358	Service data parameter number 2	E	$2C_{hex}$
P3359	Service data array index 2	E	$2D_{hex}$
P3360	Service data parameter value 2	E	$2E_{hex}$

b maXX Parameter	Parameter name	Instance	Attribute
P3361	Service data status 2	E	$2F_{hex}$
P3362	Measure time slice total	E	30_{hex}
P3363	Time 250 µs time slice	E	31_{hex}
P3364	Maximum time 250 µs time slice	E	32_{hex}
P3365	Time 500 µs time slice	E	33_{hex}
P3366	Maximum time 500 µs time slice	E	34_{hex}
P3367	Time 1ms time slice	E	35_{hex}
P3368	Maximum time 1ms time slice	E	36_{hex}
P3369	Time 2 ms time slice	E	37_{hex}
P3370	Maximum time 2 ms time slice	E	38_{hex}
P3371	Time 4ms time slice	E	39_{hex}
P3372	Maximum time 4 ms time slice	E	$3A_{hex}$
P3373	Time 8ms time slice	E	$3B_{hex}$
P3374	Maximum time 8ms time slice	E	$3C_{hex}$
P3375	Time 16ms time slice	E	$3D_{hex}$
P3376	Maximum time 16ms time slice	E	$3E_{hex}$
P3377	Power Unit Error Mask	E	$3F_{hex}$
P3378	Power Unit Warning Mask	E	40_{hex}
P3379	Amplifier power type	E	41_{hex}
P3380	System special function index	E	42_{hex}
P3381	Client alive counter	E	43_{hex}
P3385	BACI Access Errors Slot H	E	47_{hex}
P3386	BACI Alive Counter Error Slot H	E	48_{hex}
P3387	BACI-Reconfiguration Counter Slot H	E	49_{hex}
P3388	BACI Set data Exchange Counter Slot H	E	$4A_{hex}$
P3389	BACI Act data Exchange Counter Slot H	E	$4B_{hex}$
P3390	BACI-Command Counter Slot H	E	$4C_{hex}$
P3391	Counter Service Data Access Slot H	E	$4D_{hex}$
P3392	Max. cyclic access errors	E	$4E_{hex}$

D

APPENDIX D - EDS FILE

D.1 EDS File

The EDS or type file contains all features of the EtherNet/IP Adapter, so that it can be projected via the operating programmes of the EtherNet/IP Scanner. The format of the EDS file is defined in the standard *The CIP NETWORKS Library Volume 2 EtherNet/IP Adaption of CIP*. Thus, the Scanner can read the information from the EDS file.

NOTE

If problems arise in the Scanner interfaces while reading the EDS file, the Scanner manufacturer must be contacted to get information on the known problems with his interfaces while reading EDS files. Not all EtherNet/IP Scanners support EDS files.

```
$ EZ-EDS Version 2.0 Generated Electronic Data Sheet

[File]
        DescText = "Baumueller EtherNet/IP Adapter";
        CreateDate = 05-30-2007;
        CreateTime = 10:00:00;
        ModDate = 07-03-2008;
        ModTime = 10:32:28;
        Revision = 1.1;
        HomeURL = "http://www.baumueller.de/DownloadInternet/bmaXXEIPEDS.zip";

[Device]
        VendCode = 1020;
        VendName = "Baumuller Corp.";
        ProdType = 0;
        ProdTypeStr = "Generic Device";
        ProdCode = 1;
        MajRev = 1;
        MinRev = 1;
        ProdName = "BM4-O-EIP-01";
        Icon = "BM4-O-EIP-01.ico";

[Device Classification]
        Class1 = EtherNetIP;            $ ,
                                        $               1_RSNetWorx_Connectable_Module;
```

```
[Params]
        Param1 =
                0,                      $ reserved, shall equal 0
                6,"20 64 24 01 30 01",  $ Link Path Size, Link Path
                0x0010,                 $ Descriptor
                0xC7,                   $ Data Type
                2,                      $ Data Size in bytes
                "Controller Name",      $ name
                "",                     $ units
                "Identification of Controller type",    $ help string
                1,2,1,                  $ min, max, default data values
                ,,,,                    $ mult, div, base, offset scaling
                ,,,,                    $ mult, div, base, offset links
                ;                       $ decimal places
        Param2 =
                0,
                ,,
                0x0210,
                0xC7,
                2,
                "Producing Size 'Allround'",
                "Byte",
                "",
                8,8,8,
                ,,,,
                ,,,,
                ;
        Param3 =
                0,
                ,,
                0x0210,
                0xC7,
                2,
                "Consuming Size 'Allround'",
                "Byte",
                "",
                9,9,9,
                ,,,,
                ,,,,
                ;
        Param4 =
                0,
                ,,
                0x0210,
                0xC6,
                1,
                "Producer ID 'Allround'",
                "",
                "",
                101,101,101,
                ,,,,
                ,,,,
                ;
        Param5 =
                0,
                ,,
                0x0210,
                0xC6,
                1,
                "Consumer ID 'Allround'",
                "",
                "",
                100,100,100,
                ,,,,
                ,,,,
                ;
```

```
        Param6 =
                0,                      $ reserved, shall equal 0
                6,"20 64 24 01 30 02",  $ Link Path Size, Link Path
                0x0010,                 $ Descriptor
                0xC7,                   $ Data Type
                2,                      $ Data Size in bytes
                "Controller firmware type",    $ name
                "",                     $ units
               "Differentiation between standard fw and customized fw",    $ help string
                0,65535,0,              $ min, max, default data values
                ,,,,                    $ mult, div, base, offset scaling
                ,,,,                    $ mult, div, base, offset links
                ;                       $ decimal places

[Assembly]
        Assem1 =
                "Producing Assembly 'Allround'",
                ,
                8,
                0x0000,
                ,,
                64,;
        Assem2 =
                "Consuming Assembly 'Allround'",
                ,
                9,
                0x0000,
                ,,
                72,;

[Connection Manager]
        Connection1 =
                0x02030002,             $ trigger & transport
                                        $  0-15 = supported transport classes (class 1)
                                        $  16   = cyclic (1 = supported)
                                        $  17   = change of state (1 = supported)
                                        $  18   = on demand (1 = supported)
                                        $  19-23= reserved (must be zero)
                                        $  24-27= input only
                                        $  28-30= reserved (must be zero)
                                        $  31   = client 0
                                                  (don't care for classes 0 and 1)
                0x44240305,             $ connection parameters
                                        $  0    = O=>T fixed (1 = supported)
                                        $  1    = O=>T variable (0 = not supported)
                                        $  2    = T=>O fixed (1 = supported)
                                        $  3    = T=>O variable (0 = not supported)
                                        $  4-7  = reserved (must be zero)
                                        $  8-11 = O=>T header (0 byte heartbeat)
                                        $  12-15= T=>O header (4 byte run/idle)
                                        $  16-19= O=>T connection type (point-to-point)
                                        $  20-23= T=>O connection type (multicast)
                                        $  24-27= O=>T priority (scheduled)
                                        $  28-31= T=>O priority (scheduled)
                ,0,,                    $ O=>T RPI,Size,Format
                ,Param2,Assem1,         $ T=>O RPI,Size,Format
                ,,                      $ config part 1 (not used)
                ,,                      $ config part 2 (not used)
                "Input 'Allround' from bmaXX",    $ connection name
                "",                     $ Help string
                "20 04 24 01 2C FE 2C 65";    $ inputs only path
```

```
        Connection2 =
                0x04030002,             $ trigger & transport
                                        $  0-15 = supported transport classes (class 1)
                                        $  16   = cyclic (1 = supported)
                                        $  17   = change of state (1 = supported)
                                        $  18   = on demand (1 = supported)
                                        $  19-23= reserved (must be zero)
                                        $  24-27= exclusive owner
                                        $  28-30= reserved (must be zero)
                                        $  31   = client 0 (don't care for classes 0
and 1)
                0x44443405,             $ connection parameters
                                        $  0    = O=>T fixed (1 = supported)
                                        $  1    = O=>T variable (0 = not supported)
                                        $  2    = T=>O fixed (1 = supported)
                                        $  3    = T=>O variable (0 = not supported)
                                        $  4-7  = reserved (must be zero)
                                        $  8-10 = O=>T header (4 byte run/idle)
                                        $  11   = reserved (must be zero)
                                        $  12-14= T=>O header  (0 byte heartbeat)
                                        $  15   = reserved (must be zero)
                                        $  16-19= O=>T connection type (point-to-point)
                                        $  20-23= T=>O connection type (point-to-point)
                                        $  24-27= O=>T priority (scheduled)
                                        $  28-31= T=>O priority (scheduled)
                ,Param3,Assem2,         $ O=>T RPI,Size,Format
                ,0,,                    $ T=>O RPI,Size,Format
                ,,                      $ config part 1 (not used)
                ,,                      $ config part 2 (not used)
                "Write 'Allround' to bmaXX",    $ connection name
                "",                     $ Help string
                "20 04 24 01 2C 64 2C FE";    $ outputs only path

        Connection3 =
                0x04030002,             $ trigger & transport
                                        $ 0-15  = supported transport classes (class 1)
                                        $ 16    = cyclic (1 = supported)
                                        $ 17    = change of state (1 = supported)
                                        $ 18    = on demand (1 = supported)
                                        $ 19-23 = reserved (must be zero)
                                        $ 24-27 = exclusive owner
                                        $ 28-30 = reserved (must be zero)
                                        $ 31    = client 0 (don't care for classes 0 and
1)
                0x44640405,             $ connection parameters
                                        $ 0     = O=>T fixed (1 = supported)
                                        $ 1     = O=>T variable (0 = not supported)
                                        $ 2     = T=>O fixed (1 = supported)
                                        $ 3     = T=>O variable (0 = not supported)
                                        $ 4-7   = reserved (must be zero)
                                        $ 8-11  = O=>T header (4 byte run/idle)
                                        $ 12-15 = T=>O header (4 byte run/idle)
                                        $ 16-19 = O=>T connection type (point-to-point)
                                        $ 20-23 = T=>O connection type (multicast)
                                        $ 24-27 = O=>T priority (scheduled)
                                        $ 28-31 = T=>O priority (scheduled)
                ,Param3,Assem2,         $ O=>T RPI,Size,Format
                ,Param2,Assem1,         $ T=>O RPI,Size,Format
                ,,                      $ config part 1 (not used)
                ,,                      $ config part 2 (not used)
                "Read/Write 'Allround'",$ connection name
                "",                     $ Help string
                "20 04 24 01 2C 64 2C 65";
```

```
        Connection4 =
                0x01030002,             $ 0-15    = supported transport classes
                                        $ 16      = trigger: cyclic
                                        $ 17      = trigger: change of state
                                        $ 18      = trigger: application
                                        $ 19-23   = trigger: reserved
                                        $ 24      = transport type: listen-only
                                        $ 25      = transport type: input-only
                                        $ 26      = transport type: exclusive-owner
                                        $ 27      = transport type: redundant-owner
                                        $ 28-30   = reserved
                                        $ 31      = Client = 0 / Server = 1
                0x44240305,             $ 0       = O->T fixed size supported
                                        $ 1       = O->T variable size supported
                                        $ 2       = T->O fixed size supported
                                        $ 3       = T->O variable size supported
                                    $ 4-5     = O->T number of bytes per slot (obsolete)
                                    $ 6-7     = T->O number of bytes per slot (obsolete)
                                        $ 8-10    = O->T Real time transfer format
                                        $ 11      = reserved
                                        $ 12-14   = T->O Real time transfer format
                                        $ 15      = reserved
                                        $ 16      = O->T connection type: NULL
                                        $ 17      = O->T connection type: MULTICAST
                                        $ 18      = O->T connection type: POINT2POINT
                                        $ 19      = O->T connection type: reserved
                                        $ 20      = T->O connection type: NULL
                                        $ 21      = T->O connection type: MULTICAST
                                        $ 22      = T->O connection type: POINT2POINT
                                        $ 23      = T->O connection type: reserved
                                        $ 24      = O->T priority: LOW
                                        $ 25      = O->T priority: HIGH
                                        $ 26      = O->T priority: SCHEDULED
                                        $ 27      = O->T priority: reserved
                                        $ 28      = T->O priority: LOW
                                        $ 29      = T->O priority: HIGH
                                        $ 30      = T->O priority: SCHEDULED
                                        $ 31      = T->O priority: reserved
                ,0,,                    $ O->T RPI, size, format
                ,Param2,Assem1,         $ T->O RPI, size, format
                ,,                      $ config #1 size, format
                ,,                      $ config #2 size, format
                "Listen \"Allround\" from bmaXX",    $ Connection Name
                "",                     $ help string
                "20 04 24 01 2C FF 2C 65";    $ Path

[Capacity]
        ConnOverhead = .01;
        MaxIOConnections = 1;
        MaxMsgConnections = 20;
        TSpec1 = TxRx, 8, 10;

$ [Connection Configuration]
$        Revision = 2;
```

D.2 Bitmaps

NOTE

The name of the Bitmap cannot be changed since it is integrated with the EDS file in some project planning interfaces of the EtherNet/IP Scanner systems.

Bitmap BM4_O_EIP01.ico

Figure 21: Bitmap EtherNet/IP

APPENDIX E - TECHNICAL DATA

In this appendix, you will find an overview of the Technical Data for the optional card EtherNet/IP Adapter for b maXX® controller BM4-O-EIP-01.

E.1 EtherNet/IP Adapter: Technical features

Operating voltage	+5 V internal over controller unit
Current input	Approx. 450 mA internal over controller unit
Bus connection	RJ 45
Number of parameters	See basic device b maXX® 4400
Data width of parameters	16 / 32 bit
Baudrates	10 MBit/s, 100 MBit/s
Environmental conditions	Same as the basic device b maXX® 4400
Storage conditions	Same as the basic device b maXX® 4400

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Revision overview

Version	Status	Modifications
5.08030.01	07.05.09	New edition

Notices:

be in motion

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