Platform MX6 Software option S104 CODESYS EtherCAT Master

1 Identification

Identification	
Option ID	S104
Order number	S-05000304-0000
Short name	CODESYS EtherCAT Master
Brief description	With this software option, it is possible to operate the control as an EtherCAT Master in an EtherCAT network.
Revision ID document	V1.0

2 System requirements and restrictions

System requirements and restrictions				
Supported platforms and devices	Berghof PLC devices of the MX6 platform (e.g.: MCs, CCs, DCs). Additional information regarding availability and compatibility can be found in options sec- tion of the product catalog.			
Firmware	All			
Additional requirements	 Berghof MX6 PLC with a free Ethernet Interface All CODESYS V3 IDE 			
Restrictions	_			



3 Product description

Integrated EtherCAT master support in the IEC 61131-3 development system

EtherCAT is a powerful real-time Ethernet fieldbus system with an open protocol. With its short cycle times, low jitter values and different network topologies, the system is standard in many industrial automation application today.

The EtherCAT master integration in the IEC 61131-3 development system CODESYS comprises

- an integrated configurator for the master and the connected slaves
- a portable protocol stack in form of a CODESYS library
- a runtime system component for direct access to the Ethernet interface
- diagnostics functionality in the Development System and possibility to monitor the process through the IEC 61131-3 application
- optional support of EtherCAT gateway modules to other fieldbus systems such as IO-Link, Profibus or the like

Advantages of the seamless integration:

One tool with an integrated infrastructure for PLC programming and fieldbus coniguration:

- Simple configuration
- Fewer sources of error
- Fast engineering

Without valid license the EtherCAT Master runs for 30 minutes without restrictions in demo mode. After the installation of the software license it is possible to use the EtherCAT Master on the PLC without temporal limitation. The licensing takes places per PLC.

For full documentation of the different EtherCAT Master and Device configuration menus please check the CODESYS Online help under:

https://help.codesys.com/webapp/_ecat_f_configurator;product=core_EtherCAT_Configuration_Editor;version=3.5.14.0

4 Quick Start Guide

With this illustrated Quick Start Guide it is possible to create a funtional EtherCAT Master within a view minutes.

4.1 Preparatory tasks

In the web configuration of the control the "ethercat" mode for the ETH1 Interface under the configuration item "Network" has to be selected. The control needs to reboot for the settings to become operative.

	Network Con	figuration	
Configuration	COMMON		
CAN Time and Date	Hostname	270011200-00035	
<u>Display</u> FTP-Server	DNS Server 1	0.0.0.0	
<u>SSH-Server</u> WEB-Server	DNS Server 2	0.0.0.0	
<u>Users</u> <u>SVC Config</u> Config Protection	ETHO		
Reset Config	Mode:	static 👻	
System	IPAddress	169.254.255.35	
Licenseinfo Screenshot	NetMask	255.255.255.0	
<u>Update</u> Reboot	Gateway	0.0.0.0	
PLC-Manager	ETH0:1		
<u>Control</u> <u>Config</u> <u>Application Info</u> <u>Application Files</u>	Mode:	inactive 👻	
Font Files	ETH1		
Diagnostics			
PLC Log System Log	Mode:	ethercat 👻	
CAN Storage	Save		

4.2 Addition of the EtherCAT Master

At first the EtherCAT Master has to be integrated into the CODESYS project, through the CODESYS function "Add Device" by right clicking on the PLC-Device in the devices window in CODESYS.

Devices		→ ₽ X	1 A	Add Device						
🗏 🎒 Untitle	d1									
🖹 👚 🚹 De	evice (Berghof MX6 Control)		Nan	me EtherCAT_Master						
÷	X Cut		A	Action						
٩ C	🗈 Сору		0	Append device Insert device Plug device Update device						
1	🔁 Paste				Ŭ					
	× Delete		Str	tring for a fulltext search	Vendor	<all vendors=""></all>				
ſ	Properties		N	Name	Vendor		Version	Description		
2	Add Object	•		Miscellaneous						
(🚞 🛛 Add Folder			= · · · · · · · · · · · · · · · · · · ·						
	Add Device			BrotherCAT						
	Update Device			🖃 - Brad Master						
	🕤 🛛 Edit Object			🗄 🔛 EtherCAT Master	3S - Sma	art Software Solutions GmbH	3.5.15.0	EtherCAT Master		
	Edit Object with			EtherCAT Master SoftMotion	3S - Sma	art Software Solutions GmbH	3.5.15.0	EtherCAT Master SoftMotion		

4.3 Configuration of the EtherCAT Master

With a double click on the newly added EtherCAT Master, you can open the configuration. Select the option "select network by name" and set the Ethernet interface same as configured in the webinterface. If needed activate the "Automatic restart slaves" option.

Devices 👻 👎 🗙	EtherCAT_Master X				
Untitled1					
🖻 🚮 Device (Berghof MX6 Control)	General	Autoconfig Master/Slaves	EtherCAT		
PLC Logic			Ethere		
🖻 😳 Application	Sync Unit Assignment	EtherCAT NIC Setting			
Eibrary Manager	100	Destination address (MAC) FF-FF-FF-FF-FF-FF	Broadcast Enable redundancy		
PLC_PRG (PRG)	Log				
E Task Configuration	EtherCAT Parameters	Source address (MAC) 00-00-00-00-00	Browse		
EtherCAT_Task		Network Name eth1			
🖃 😻 MainTask	EtherCAT I/O Mapping	Select network by MAC Select network by name			
PLC_PRG					
EtherCAT_Master (EtherCAT Master)	EtherCAT IEC Objects	✓ Distributed Clock	Options		
	Status	Curle line 4000	Use LRW instead of LWR/LRD		
	Status		Enable messages pertask		
	Information	Sync offset 20 🚔 %	Automotion and a start allower		
		Sync window monitoring	Automatic restart slaves		
		Sync window 1			

4.4 Addition of the EtherCAT device

By using the "Add Device" function on the EtherCAT Master it is now possible to add your EtherCAT devices. Please be aware that your EtherCAT device will only be shown in the device list the hardware description file (XML) has been installed in CODESYS.



4.5 Configuration of the EtherCAT devices

With a double click on the newly added EtherCAT device, you can open the configuration.

For a default EtherCAT network between slaves and a master, no additional options must be set in the EtherCAT device.

Devices	👻 4 🗙	ECC_DIO_16_16P_NTL X				
Untitled1	-					
🖹 👕 Device (Berghof MX6 Control)		General	Address		— Additional —	
E PLC Logic			AutoInc address	0	Enable expert settings	EtherCAT.
Application		Process Data	EtherCAT address	1001	Optional	
Library Manager		Ethor CAT Darameters	Elicical address	1001 V		
PLC_PRG (PRG)		EtherCAT Parameters	Distributed Clock			
- 👹 Task Configuration		EtherCAT I/O Mapping				
i⊒- 🥩 MainTask □		EtherCAT IEC Objects				
🖻 💮 EtherCAT_Master (EtherCAT Master)		Status				
ECC_DIO_16_16P_NTL (ECC DIO 16/16 P NTL (2)	50 000 900))					
		Information				
		•				

Repeat the adding and configuration of EtherCAT devices until the device configuration in CODESYS matches the real hardware configuration which is connected to the PLC. When this is done download the project onto the PLC and start the application.

Your contact partner can be reached under:

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