# Platform MX6 Software option S105 CODESYS Profinet Device

# 1 Identification

Identification	
Option ID	S105
Order number	S-05000307-0000
Short name	CODESYS Profinet Device
Brief description	With this software option, it is possible to operate the control as a Profinet Device in a Profinet network.
Revision ID document	V3.0

# 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	MX6-PLC from version 1.16.0, CODESYS from 3.5 SP10 Patch 1			
Additional requirements	<ul> <li>IP Networkconnection to a Profinet Master</li> <li>CODESYS IDE &gt;= 3.5.10.0</li> </ul>			
Restrictions				



# 3 Product description

With this expansion it is possible to run the control as Profinet Device in an IP-Network with a Profinet Master (z.B. of the company siemens).

The Profinet Device is based on a standard ethernet interface and the software Profinet Device Stack from the company 3S. Through a variable IO description the Profinet Device can individully adapt to the given requirments and circumstances. The configuration of the Profinet Device is done easily and comfortable through the CODESYS IDE. The sizes of the input and output areas, the Profinet devicename and further parameters and options of the Profinet Devices are set in the IO configuration of the particular CODESYS project. Application scenarios can be found in the plant network of the automotive sector, in intralogistics or processautomation where Profinet is often given as communication protocoll.

The Profinet Device is completely integrated into the CODESYS development environment. An installation of an additional module is not necessary.

Without valid license the Profinet Device can be run for 30 minutes without restrictions in the demo mode. After the installation of the softwarelicense it is possible to use the Profinet Device function on the control without temporal limitation. The licensing takes places pro control.

For full documentation of the Profinet-Device configuration menus please check the CODESYS Online help under: https://help.codesys.com/webapp/ pnio f slave device;product=core ProfinetIO Configuration Editor;version=3.5.15.0

## 4 Technical data

Technical data	
Profinet Version	V2.3
Profinet Conformance Class	CC-A
Transmitting medium	Ethernet 100 Base TX/FX
Profinet Norm	Technical Specification for PROFINET IO Version 2.3Ed2MU3 – Date: March 2016

# 5 Quick Start Guide

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

#### 5.1 Preparatory tasks

In the web configuration of the control the "Profinet Device Mode" for the ETH1 Interface under the configuration item "Network" has to be selected. The ETH0 interface can't be in the same subnet while using Profinet. The control needs to reboot for the settings to become operative.



#### ECC2215 0.8S 1131 NUT 32/16N - 252700000

(plcactive)

	Network Conf	figuration
Configuration	соммон	
CAN Time and Date VNC-Server	Hostname	ECC-NUT
FTP-Server Users SVC Config	DNS Server 2	0.0.0.0
Reset Config	ETH0	
System		
Info	Mode:	static 👻
<u>Update</u>	IPAddress	10.255.231.212
Reboot	NetMask	255.255.224.0
PLC-Manager	Default Gateway	0.0.0.0
<u>Control</u> <u>Config</u> Application Info	ETH1	
Application Files Font Files	Mode:	profinet device 🚽
Diagnostics		
<u>PLC Log System Log Ethernet CAN Storage System Dump</u>	Save	

### 5.2 Addition of the ethernet adapters

At first a profinet ethernet adapter has to be integrated into the CODESYS project, through the CODESYS function "Add Device".

ame: Ethernet				
Action: Append device	rt device 🔘 Plug device 🄘	Update device		
Enter a string for a fulltext se	arch in all devices Vendor:	<all vendors=""></all>		
Name	Vendor	Version	Description	
	r apter 35 - Smart Software	Solutions CmbH 3 5 10 0	Ethernet Link	
	)evice	300 0015 GHDH 3.3.10.0	Luternet Llin.	
* Profinet IO D				
Profinet IO I	laster			

### 5.3 Addition of the profinet adapters

After that a profinet device can be hung under the ethernet adapters.

Add Device				
Name: CODESYS_Profinet_Device				
Action:				
Append device	evice 🔘 Update device			
Enter a string for a fulltext search in all devices	Vendor: <all vendors=""></all>			
Name	Vendor	Version	Description	
🖃 🖬 Fieldbusses				
🖻 - 👄 EtherNet/IP				
🗄 📲 📖 🗱 Modbus				
🖹 🚟 Profinet IO				
Profinet IO Device				
CODESYS Profinet Device	3S - Smart Software Solutions GmbH	3.5.10.0	CODESYS PLC running as Profinet Device.	
🗄 🛲 Profinet IO Master				

# 5.4 Configuration of the profinet input und outputs

It is now possible to integrate one or various IO modules beneath the profinet device adapters. The profinet device IO configuration has to match the profinet master IO configuration.

Append d	levice 🦱 Insert device 🦱 Pl	ug device 🖱 Update device			
inter a string	) for a fulltext search in all device	s Vendor: <all vendors=""></all>			
Name		Vendor	Version	Description	
i	Profinet IO IIII Profinet IO Module				
	InOut 64 Byte	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	InOut 8Bit	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	InOut Float32	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	InOut Float32*8	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	🛯 🔟 InOut Structured	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	🔟 InOut Unsigned 32	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	InOut Unsigned32*8	3S - Smart Software Solutions GmbH	3.5.10.0	Module with Input- and Output-Data	
	🗂 Input 8Bit	3S - Smart Software Solutions GmbH	3.5.10.0	Module provides Controller Input-Data	
	🔟 Input Float32	3S - Smart Software Solutions GmbH	3.5.10.0	Module provides Controller Input-Data	
	🔟 Input Float32*8	3S - Smart Software Solutions GmbH	3.5.10.0	Module provides Controller Input-Data	
	🖷 🔟 Input Unsigned 32	3S - Smart Software Solutions GmbH	3.5.10.0	Module provides Controller Input-Data	
	🐨 🔟 Input Unsigned32*8	3S - Smart Software Solutions GmbH	3.5.10.0	Module provides Controller Input-Data	
	🔟 Output 8Bit	3S - Smart Software Solutions GmbH	3.5.10.0	Module consumes Controller Output-Data	
	🖳 🔟 Output Float32	3S - Smart Software Solutions GmbH	3.5.10.0	Module consumes Controller Output-Data	
	🔟 Output Float32*8	3S - Smart Software Solutions GmbH	3.5.10.0	Module consumes Controller Output-Data	
	🖳 🔟 Output Unsigned 32	3S - Smart Software Solutions GmbH	3.5.10.0	Module consumes Controller Output-Data	
	11 Output Unsigned 32*8	3S - Smart Software Solutions GmbH	3.5.10.0	Module consumes Controller Output-Data	

### 5.5 configuration of the ethernet adapters

To configurate the ethernet adapter you have to log in once to the control which you want to be you profinet device. Now you have to select the eth1 network adapter under the configuration item "interface". The option "Change Operating System Settings" is not available on Berghof systems and must not be selected.

Devices	Therefore the second se	
Unitied1     Device [connected] (Berghof MX6 Control)     Dev	General Interface:	
■      ■	Network Adapters	
CODESYS_Profinet_Device.CommCyde     Profinet_IOTask     CODESYS_Profinet_Device (CODESYS Profinet Device)     CODESYS_Profinet_Device (CODESYS Profinet Device)     InOut_64_Byte (InOut 64 Byte)	Name         Description         IP Address           Io         127.0.1           eth0         10.255.231.212           eth1         0.00.0           usb0         0.0.0.0           ipcan0         0.0.0.0           usb0         0.0.0.0	
	MAC Address 00:E0:BA:90:0C:4E	

#### 5.6 configurations of the profinet devices

The station name of the profinet device is set in the profinet device configuration. The profinet master identifies the profinet device through the defined name (here: PN-Device) den hier festgelegten Namen (here: PN-Device).

Devices 👻 🕂 🗙	InOut_64_Byte	ernet Device CODESY5_Profinet_Device X
Untitled1 Device (Berghof MX6 Control) PLC Logic PLC Logic PLC PRG (PRG) PLC_PRG (PRG) PLC_PRG (PRG) Profinet_CommunicationTask Profinet_CommunicationTask Profinet_IOTask Ethernet (Ethernet) Ethernet (Ethernet) InOut_64_Byte (InOut 64 Byte)	General Profinet Device Parameters Profinet Device I/O Mapping Status Information	IP and Name Assignment  Load Remanent Data Use Project Parameters  Station Name PN-Device

### 5.7 export of the profinet device description GSDML

The GSDML device description can be created through the CODESYS device repository. Further, like shown in the Image, the CODESYS profinet device is selected an exported with the Button "export". The result is a Zip-archive in which, besides an IO description in CODESYS format, a GSDML file is that can become a profinet master.

ocation:	System Repository				•	Edit Locations
	(C:\ProgramData\CODESYS\Devices	s)				
stalled d	evice descriptions:					
Name		Vendor	Version	Description	*	Install
🖶 👘 м	liscellaneous					Uninstall
🖲 🛑 В	ACnet					
🖹 👘 🗐 Fi	ieldbusses					Export
🗄 - CI	AN CANbus					
<u>ا</u>	CANopen					
🗩 - 🗧	🗕 DeviceNet					Den en deute
🕀 ··· Bre	🖟 EtherCAT					repository
۵۰ 🗎	Ethernet Adapter					<u> </u>
<u>ب</u>	🗕 EtherNet/IP					
😐 🤇	IO-Link Devices					
۰. 🗈	🕊 J1939					
🗐 - 🔛	Modbus					Detaile
<u>ب</u>	# Profibus					Details
🖻 - 🖁	Trofinet IO				=	
9	Ethernet Adapter					
E	Profinet IO Device					
	CIFX Profinet Device	3S - Smart Software Solutions GmbH	3.5.10.0	CODESYS PLC running as a Profinet Device (CIFX based)		
	CODESYS Profinet Device	3S - Smart Software Solutions GmbH	3.5.10.0	CODESYS PLC running as Profinet Device.		
	EL6631-0010	Beckhoff	3.5.8.0	PROFINET I/O device - EtherCAT slave terminal, V2.0		
	EL6631-0010	Beckhoff	3.5.9.0	PROFINET I/O device - EtherCAT slave terminal, V2.0		
	NetX PN Device	3S - Smart Software Solutions GmbH	3.5.2.0	A Codesys Plc, which is a PN device		
	MetX PN Device	3S - Smart Software Solutions GmbH	3.5.5.0	A Codesys Plc, which is a PN device		
	NetX PN Device	3S - Smart Software Solutions GmbH	3.5.6.0	A Codesys Plc, which is a PN device		
	NetX PN Device	3S - Smart Software Solutions GmbH	3.5.7.0	A Codesys Plc, which is a PN device		
	NetX PN Device	3S - Smart Software Solutions GmbH	3.5.8.0	A Codesys Plc, which is a PN device		
_	NetX PN Device	3S - Smart Software Solutions GmbH	3.5.9.0	A Codesys Plc, which is a PN device		
	Profinet IO Master					
	* · · · Profinet IO Slave					
_ = • •	5 sercos					
" <mark>- </mark>	MI devices				-	
	-					

After that exists a profinet device with variable IO configuration in the profinet master. The IO configuration in the profinet master has to be suitably set with the profinet device.

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