



People for Process Automation

Version 1.00.00

Integration Tutorial SE03

Schneider Electric Modicon M580 and EtherNet/IP plus PROFIBUS PA for Mining Industry



Supported by:







People for Process Automation

Version 1.00.00





Reference Topology SE03

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1 Document Information

1.1 Purpose and Scope

This document provides a step by step description on how to integrate EtherNet/IP and PROFIBUS PA devices with the Schneider Electric Modicon system. All content of this document is jointly developed, reviewed and approved by Schneider Electric and Endress+Hauser as a common deliverable of Open Integration.

1.2 Document History

This is version 1.00.00 of this document. Version history:

Version	Released	Description
1.00.00	2021-03	Initial version

1.3 Related Documents

Please refer to related documents as listed below:

Document	Description
SD02678S/04/EN/01.20	Reference Topology SE03
SD02680S/04/EN/01.20	Integration Test Summary SE03
SD02681S/04/EN/01.20	List of Tested Devices and Versions SE03

2 Pre-Requisites

Readers of this document should be familiar with related documents as listed in chapter 1.3 and basics on how to work with the Rockwell Automation ControlLogix System as well as EtherNet/IP and HART in general. Please refer to recommended literature as listed in chapter 2.1.



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2.1 Recommended Literature

2.1.1 Schneider Electric

Document	Description		
EIO000001578.10	Modicon M580 Hardware Reference Manual		
EIO000000482.02	TCSESM-E Extended Managed Switch		
	Web-based Interface Reference Manual		
HRB62665.11	Modicon M580 BMENOC0301/0311 Ethernet Communications Module		
	Installation and Configuration Guide		

2.1.2 Softing

Document	Description
EN-062020-1.00	Users Guide EtherNet/IP Gateways

2.1.3 Endress+Hauser

Document	Description
BA00065S/04/EN/11.20	Operating Instructions FieldCare SFE500

2.2 Operable Control System

This document assumes an operable Schneider Electric System as defined by Reference Topology SE03. Please refer to the manuals listed in chapter 2.1.1 for an explanation on how to use hard- and software provided by Schneider Electric.

2.3 Operable Asset Management System

This document assumes an operable Endress+Hauser PAM System as defined by Reference Topology SE03. Please refer to manuals listed in chapter 2.1.3 for installing of software provided by Endress+Hauser.

2.4 Operable Field Devices

This document assumes an operable selection of Endress+Hauser EtherNet/IP and PROFIBUS PA devices, as defined by Reference Topology SE03. Each field device is powered if needed and adequately connected to the network infrastructure components. If required, please refer to individual device manuals for further advice.



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3 Basic Integration

This chapter describes the main workflow for integration of EtherNet/IP and PROFIBUS PA devices in combination with Phoenix Contact and Softing network infrastructure components into the Schneider Electric System. As a result, the EtherNet/IP cyclic communication is running, and all process values are available within the control strategy of the system for further processing.

3.1 PROFIBUS PA Network Configuration

3.1.1 Hardware Configuration

In this example, the Endress+Hauser PROFIBUS PA field devices of the reference topology are split in two PA segments as shown on following picture (Two PROFIBUS PA segments are available on the Softing epGate PB gateway):



- Each PROFIBUS PA segment is connected to a Softing epGate PB channel and externally supplied by a Phoenix Contact power supply FB-PS. The powered bus is then connected to a Phoenix Contact Trunk module FB-ET, which communicates to the different PA couplers FB-ISO of the segment.
- FB-ET and FB-ISO modules communicate via ME 17.5 TBUS connectors.
- Each PROFIBUS PA device is connected to one FB-ISO module.



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• The table below lists all PROFIBUS devices configured address with the used method:

Network	Com	ponent	Configured Address	IPAdress Configuration Method
	epGate PA		1	Addresed Automatically
	Segment PA0	Deltabar S	13	Device DIP switch
		Gammapilot M	20	FieldCare + Softing CommDTM
		itherm	21	Device Display DIP switch
PROFIBUS PA		Promag50	24	Device DIP switch
	Segment PA1	Cerabar M	11	Device DIP switch
		Levelflex	15	Device DIP switch
		Prosonic M	16	Device DIP switch
		Micropilot	19	Device DIP switch

3.1.2 Softing epGate PB Configuration

Refer to chapter 3.2.2.2 for more details.



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3.2 EtherNet/IP Network Configuration

Network	Comp	onent	Configured IP Address	Subnet Mask	IP Configuration Method
Supervisor Network	Ethernet Module	BMENOC0311	10.126.97.88	255.255.252.0	UnityPro + USB
	Control System	BMEP582040	192.168.12.30	255.255.255.0	UnityPro + USB
	Switch	ETAP 1783	192.168.12.61	255.255.255.0	Web server
	Switch	DRS TCSE	192.168.12.21	255.255.255.0	Web server
	Gateway	epGate PA	192.168.12.40	255.255.255.0	Web server
EtherNet/IP	Field Devices	Liquiline CM44x	192.168.12.33	255.255.255.0	Device display
		Promag500	192.168.12.34	255.255.255.0	Web server
		Promass300	192.168.12.35	255.255.255.0	Web server
		Memograph RSG45	192.168.12.36	255.255.255.0	Device display
		AUMA actuator	192.168.12.37	255.255.255.0	Device display

The table below lists all IP addresses to configure with the used method:

3.2.1 Network Overview

The SE03 topology is using two networks, a supervisory network and an I/O network:



New components might be delivered without or with default IP addresses. This chapter explains among others how the IP addresses have been configured.





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There exist different methods for setting the modules IP Addresses (via Commissioning Tool, USB, DIP switch or Web server) depending of course on the components to configure.

3.2.2 I/O Network Configuration

3.2.2.1 DRS Switch Configuration

3.2.2.1.1 IP Address

• Connect the managed switch to a laptop with a EtherNet cable and start the Schneider Electric tool "Ethernet Switch Configurator 2.3.0.3":



• A scan is automatically performed, and the connected switch is found with the IP address 0.0.0.0:

P	Ethernet Switch Con	figurator					-	- 🗆	×
File	Edit Options ?								
S	Image: Signal Properties WWW Telnet Ping Rescan Preferences 192.168.12.220: USB3.0 to Gigabit Ethernet Adapt								
Id	MAC Address	Writable	IP Address 🛦	Net Mask	Default Gateway	Product	Name		
1	00:80:63:F2:82:0E	\checkmark	0.0.0.0	0.0.0.0	0.0.0.0	TCSESM083F23F1	TCSESM083F23F1		

• Select the managed switch and click on the button "Properties":



• Configure the IP address according to your network settings:

Properties	Properties X							
MAC Address:	MAC Address: 00:80:63:F2:82:0E							
Name:	TCSESMO	33F23F	1					
IP Configuration	on							
IP Address:	19	2.	168	. 12	. 21	1	Set Default (192.168.12.20)	
Net Mask:	25	5.	255	. 255	. 0		Set Default (255.255.255.0)	
Default Gatev	vay: 19	2.	168	. 12	. 1		Set Default (192.168.12.1)	
	Save As Default							
				Ok	Cance	!		

In this example, the switch IP address is 192.168.12.21.



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• This configures the IP settings:

		5						
📉 Ethernet Switch Config	urator					-	-	×
File Edit Options ?								
ignal Properties WWW T	🔳 😡 Telnet Pin) ಿ 🔌	192.168.	12.220: USB3.0 to Gi	gabit Ethernet Adapt	~		
Id MAC Address V	Writable	IP Address 🛦	Net Mask	Default Gateway	Product	Name		
1 00:80:63:F2:82:0E	\sim	192.168.12.21	255.255.255.0	192.168.12.1	TCSESM083F23F1	TCSESM083F23F1		
							-	

3.2.2.1.2 Switch Settings

• Click now on the shortcut button "www":

1	Ethern	et Switch	n Conf	igurator					_	- 🗆	\times
File	e Edit (Options	?								
	Image: Signal Properties Image: Signal P										
Id	MA	AC Addre	ss	Writable	IP Address 🛦	Net Mask	Default Gateway	Product	Name		
	1 00:80:	:63:F2:82	:0E	\sim	192.168.12.21	255.255.255.0	192, 168, 12, 1	TCSESM083F23F1	TCSESM083F23F1		

• This opens the managed switch web browser:

Ø 192.168.12.21 TCSESM-E × □ [*]		
Schneider Connexium	n TCSESM-E Web Server	
Electric		
	TCSESM-E	
	Schneider Electric	
	Software Version: 09.0.14	
	Login user	\sim
	Password •••••	
	Language English	\sim
	ОК	

Remark

• The Web-based interface works with Java Version 1.6.x. Configure this version adequately in your operating system





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• Connect the session with the administrator rights and click on the button "OK":

9 192.168.12.21 TCSESM-E × C		
Schneider ConneXium TC	SESM-E Web Server	
Electric		
_		
	TCSESM-E	
	Software Version: 09.0.14	
Login	admin	~
Passy	ard ••••••	
	nne English	
Lange		

The default administrator Login is "admin" with the Password "private".

• This displays following window:

192.168.12.21 TCSESM-E	× 📑		
Schneider Belectric	ConneXi	um TCSESM-E Web Server	
Basic Settings System System Software Dert Configuration Load/Save Restart	System Device Status Alarm Start Tir Alarm Reason	ne	
Security Time Switching OS/Priority Gos/Priority Diagnostics Advanced Help	System Data Name Location Contact Basic Module Power Supply 1/2 Uptime Temperature (*C)	TCSESM083F23F1 www.schneider-electric.com TCSESM083F23F1 HW:1.30 present / present 1 day(s), 23:42:06 0 45 0 45 70	Device View
	Reloading Data in 82	S	60



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• Click on the menu "Basic Settings" and configure the System Time, by clicking on the button "Set Time from PC" and then on the button "Set":

😂 192.168.12.21 TCSESM-Е	× 🖸
Schneider Electric	ConneXium TCSESM-E Web Server
Basic Settings	Sasic Settings
Network	Configuration
Software	System Time (UTC) Nov 3, 2020 2:58:12 PM
I pad/Save	
Restart	System Time Nov 3, 2020 3:58:12 PM Set Time from PC
🗄 🕒 🕒 Security	Time Source local 🗸
E Time	Local Official Figure 1
Basic Settings	Local Oriset (finiti) ou Set Oriset from PC
E. Switching	
🗄 📲 🛛 QoS/Priority	
E Redundancy	
Ring Redundan	
Sub Ring	
Global	
Dual RSTP	
Port	
Diagnostics	
Syslog	
Irap Log	
Topology Disco	
Port Mirroring N	
- Vevice Status	
Signal Contact	
Alarms (Traps)	Z Set Reload 🕹 Help
Report V	
< >>	

Click on the menu "Redundancy→Ring Redundancy" and configure these settings:

 ^[6] 192.168.12.21 TCSESM-E ×

Schnoldon	
	Connexium ICSESM-E web Server
Basic Settings	Ring Redundancy
	Version O HIPER-Ring O MRP Fast HIPER-Ring
Redundancy Ring Redundancy Sub Ring Wing Ming/Network Coup B- Spanning Tree	Ring Port 1 Ring Port 2 Port 1.1 Port 1.2 Operation forwarding Operation blocked
छे-@ Diagnostics ⊕-☆ Advanced ⊞-@ Help	Ring Manager Mode On Off
	Operation Operation Operation On Off Ring Information Round Trip Delay 100
	VLAN VLAN ID 1
	Swäches Number 4
	Information Redundancy exists
	Set Reload Delete ring configuration
< >	68



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In this example, the ring is configured between Port 1.1 and Port 1.2 with the option "Fast HIPER-Ring". The managed switch is the ring master and there are 2 participants in the ring (Switch and PLC). Select the option "Operation ON" and click on the button "Set" to save the configured parameters in the switch.

• Click on the button "Reload" to check if the parameter settings was successful:

Set	Reload	Delete ring configuration	😢 Help

• Select the menu "Global" of the Spanning Tree menu:

Schneider Electric	ConneXium	TCSESM-E	Web Server		
Basic Settings	Spanning Tree	- Global			
Network Network Network Port Configuration Load/Save Restart	Operation On Off	Protocol Version RSTP			
E g Security	Protocol Comgara	Bridge	Root	Topology	
E Switching	Bridge ID	32768 / 00 80 63 f2 82 0e	0 / 00 80 f4 11 3b c8	Bridge is Root	
QoS/Priority	Priority	32768 ~	0	Root Port	1.1
Ring Redundancy	Hello Time [s]	2	2	Root Path Cost	200000
Ring/Network Coup	Forward Delay [s]	15	21	Topology Change Count	30
Spanning Tree	Max Age	20	40	Time Since Topology Change	0 day(s), 0:06:09
Dual RSTP	Tx Hold Count	10			
Diagnostics	MRP Compatibility				
Help	BPDU Guard				
			Set Reload		e Hein
			Reload		
< >					

- Enable the Spanning Tree Protocol by clicking on the option "Operation ON" and click on the button "Set" to save the configured parameters in the switch.
- Click on the button "Reload" to check if the parameter settings:

Set Reload Delete hing configuration	Set	Reload	Delete ring configuration	🕑 Help
--------------------------------------	-----	--------	---------------------------	--------





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3.2.2.2 Softing epGate PB Configuration

3.2.2.1 Web Server IP Address

• Connect the epGate PB gateway to a laptop with a EtherNet cable and start the Softing tool "Search and Configure:"



• Click on the button search to scan the network:

MAC Address	Device Type	Serial Number	Name	IP Address	IP Mask	Gateway		
00-06-71-6f-01-3b	0xad04	200900105	epgatepb-200900105.local	<u>192.168.0.10</u>	255.255.255.0	0.0.0.0		

- The epGate PA gateway is found with default Web server IP settings.
- Click on the button "Configure":



• Configure the new IP settings according the network:

	A second s		ſ	^
1	New Values	Current Settings		
Host name	epgatepb-1	epgatepb-1		
IP address	192.168.12.41	10.126.105.155		
Subnet mask	255.255.255.0	255.255.252.0		
Default gateway address	192.168.12.1	10.126.104.1		
Maintenance IP address	0.0.0.0	0.0.0.0		
User name 2 Password	administrator	3		
User name 2 Password	administrator	□ □3		





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- Then enter the default logins, Username "Administrator" and the Password "FGadmin!1" and click on the button "Submit".
- Click on the button "Yes":



• epGate Web server IP address is now configured:

9 9	Search and Configure					-		×
Cor	nected devices in lo	cal network:						
	MAC Address	Device Type	Serial Number	Name	IP Address		IP Mask	
1	00-06-71-6f-01-3b	0xad04	200900105	epgatepb-1	<u>192.168.12.41</u>	1	255.255.25	5.0

• Open a browser and enter the configured Web server IP address, 192.168.12.41, in this example:

o o i Softing o i			
	Jac .		
administrator (Administrator)	config (Maintenance)	view (Observer)	
Password:	Login		



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• Select the administrator mode, enter the default Password "FGadmin!1" and click on the button "Login":

o o o o o o o o o o o o o o o o o o o		$ \begin{array}{c} 0 \\ 1 \\ 1 \\ 1 \\ 0 \\ 0 \\ 1 \\ 0 \\ 0 \\ 1 \\ 0 \\ 0 \\ 1 \\ 0 \\ 0 \\ 1 \\ 0 $	
Administrator (Administrator) User name:	config (Maintenance) administrator	view (Observer)	

• This opens the Information menu:

epGate PB	Information Settings Diagnosis	EthernetIP PROFIBUS	Restart Logout Device administrator	Auto logout in 9 min
Views	Device / System			
System License About	Serial Number Firmware Version Bootloader Version Factory Version Hardware Version System ID Host ID	200900105 1.10.00.10803 1.04.01.11691 1.03.00.11691 1.00 epGate PB #00-06-71-6F-01-3B#04AD#0BF	97E09#	
	Motherboard Serial Number	184400458		
	Hardware Version	1.00		
	Daughterboard			
	Serial Number Hardware Version	184400139 1.00		
	No messages.			*





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3.2.2.2.2 PROFIBUS GSD Files Import

• Click on the menu "PROFIBUS" :

epGate PB	Information	Settings	Diagnosis	EthernetIP	PROFIBUS	Restart Device	Logout administrator	Auto log in 6 min	out	soft	ing
Views	Configuratio	on									
Configuration	Device Cata	log				Segmen	t Configuration				
Log						Segmer	nt PAO 🔒	Segment PA1	.li	Segment DP0	.li
Actions											
Import GSD											
Remove All GSDs											
Clear Configuration											
Load Configuration											
Save Configuration											
Create Report											
Apply Configuration											
	No messages.										^

• On the left side of the window, click on the menu "Import GSD" :

epGate PB	Information Settings	Diagnosis	EthernetIP	PROFIBUS	Restart Device	Logout administrator	Auto logo in 2 min	ut	soft	ing
Views	Configuration									
Configuration	Device Catalog				Segment	Configuration				
Log	Open		1.1.0		C	×	Segment PA1	.h	Segment DP0	.li
Actions	← → ↑ ↑ • • • • • • • • • • • • • • • • •	> EH_PA_LE_MI	cropilot_u	• 0 0	Search EH_PA_LE					
Import GSD 1	A Quick access 2	Name	GSD	Date mo 7/10/201	dified 4 4:37 PM	Type GSD File				
Clear Configuration	This PC									
Load Configuration Save Configuration										
Create Report	Cite of the second s				un Film (* and *	>				
Apply Configuration	File nan	re: EH3X 1559.GSD		3	Open	Cancel				
	No messages.									^

Then select the GSD file to import and click on the button "Open".





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• In this example, the Micropilot GSD file has been successfully imported:

epGate PB	Information Settings Diagnosis EthernetIP PROFIBUS Restart Logout Auto logout In 9 min
Views	Configuration
Configuration	Device Catalog Segment Configuration
Log Actions	Micropilot 5x PA + Manufacturer: Endress+Hauser Ident Number: 0x1559 Version: Profile 3.02 GSD File Name: EH3x1559.GSD
Import GSD Remove All GSDs	
Clear Configuration	
Save Configuration Create Report	
Apply Configuration	
	3:16:00 PM Import GSD EH3x1559.GSD Info 1001: The GSD has been successfully imported.

Proceed as well for all other relevant GSD files of the SE03 topology.

• Available field device modules can be displayed by expanding the small arrow :

epGate PB	Information Settings Diagnosis EthernetIP PROFIBUS
Views	Configuration
Configuration	Device Catalog
Log	PROMAG 50 PA PA +
Actions	Manufacturer: Endress + Hauser Ident Number: 0x1525 Version: Profile 3.0 GSD File Name: EH3x1525.GSD
Import GSD Remove All GSDs	Prosonic M PA Manufacturer: Endress+Hauser Version: Profile 3.0 GSD File Name: EH3_152C. GSD
Clear Configuration Load Configuration Save Configuration	ITEMP TMT84 3.02 PA + Manufacturer: Endress+Hauser Version: 02 GSD File Name: EH021551 gsd
Create Report	Al +
Apply Configuration	DISPLAY_VALUE +



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3.2.2.3 PA Segments Configuration

• The epGate PB has two PA segments PAO and PA1. In the menu "PROFIBUS", select the segment PAO and click on the "+" symbol of the field device to add a field device:

epGate PB	Information Settings Diagnosis EthernetIP PROFIBUS Restart Logout Device administrator	Auto logout in 9 min	0
Views	Configuration		
Configuration	Device Catalog Segment Configuration		
Log	Cerabar M 5x PA + 1 Segment PA0 # Segment PA0	nt PA1 🔒 Segment DP0 🔒	
Actions	Version: Profile 3.02 GSD File Name: EH3X1553 GSD	4.01	
Import GSD Remove All GSDs	Deltabar S evolution V4.01 PA Address 🗸 3 Devi Manufacturer: Endress-Hauser Ident Number: 0x1542 Version: Profile 3.02 GSD File Name: EH021542 GSD	ice Type: Deltabar S evolution V4.01 (Endret	
Clear Configuration	Main Process Value +		
Save Configuration	2nd Cyclic Value +		
Create Report	3rd Cyclic Value +		
Apply Configuration	Display Value		
	Gammapilot M PA + ·		
	No messages.	^	•

This inserts in this example the Deltabar S in the Segment PAO. Tag name and PROFIBUS address can be updated.

- All IO modules of the device are automatically configured.
- Proceed as well for all field devices of the SE03 topology:

Segment Configuration	Segment Configuration
Segment PA0 📑 Segment PA1 👬 Segment DP0 👬	Segment PA0 🔒 Segment PA1 🔒 Segment DP0 🛔
Oeltabar S evolution V4.01 Address: 13 Device Type: Deltabar S evolution V4.01 (Endree	Cerabar M 5x Address: 11 Device Type: Cerabar M 5x (Endress+Hauser)
Gammapilot M Address: 20 Device Type: Gammapilot M (Endress+Hauser)	Levelflex 5x Address: 15 Device Type: Levelflex 5x (Endress+Hauser)
Address: ✓ 21 Device Type: ITEMP TMT84 3.02 (Endress+Hau	Prosonic M Address: 16 Device Type: Prosonic M (Endress+Hauser)
PROMAG 50 PA Address: 24 Device Type: PROMAG 50 PA (Endress + Hause	Address:





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• The Bus Timing parameters are automatically calculated and cannot be modified. Click on the small shortcut button of each PA segment to display them:



• Bus Timing parameters for Segment PAO:

Busparameter		
Baudrate	31.25 KBaud	
TsI	320	
Min Tsdr	11	
Max Tsdr	250	
Ttr	20000	
Highest Station Address	126	
Tset	32	
Max Retry Limit	3	

• Confirm the configuration by clicking on the field "Apply Configuration" and then click on the button "OK":

OK







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• Save as well the PROFIBUS PA segments configuration:

epGate PB
Views
Configuration
Log
Actions
Import GSD
Remove All GSDs
Clear Configuration
Load Configuration
Save Configuration
Create Report
Apply Configuration

The configuration is automatically saved on the Laptop in a *.json file, called "PROFIBUS-Cfg.son". It is recommended to save the PROFIBUS configuration because after a reboot of the epGate PB gateway the Web server PROFIBUS configuration is not displayed anymore.

• Click on the button "Create Report". This generates a *.html file with the complete PROFIBUS configuration:







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• Extract of the file "Create Report":

Device	Overview
Device	Overview

Tag	Address	Name	Revision	Manufacturer	Ident Number
Deltabar S evolution V4.01	13	Deltabar S evolution V4.01	Profile 3.02	Endress+Hauser	1542
<u>Gammapilot M</u>	20	Gammapilot M	Profile 3.0	Endress+Hauser	1548
<u>ITEMP TMT84 3.02</u>	21	ITEMP TMT84 3.02	02	Endress+Hauser	1551
PROMAG 50 PA	24	PROMAG 50 PA	Profile 3.0	Endress + Hauser	1525

Device Deltabar S evolution V4.01

Address:	13
Name:	Deltabar S evolution V4.01
Revision:	Profile 3.02
Manufacturer:	Endress+Hauser
Ident Number:	1542

Slots

Name	Number	Module	
Main Input Parameter	1	Main Process Value	
2nd Input Parameter	2	2nd Cyclic Value	
3rd Input Parameter	3	3rd Cyclic Value	
Output Parameter	4	Display Value	
Device Parameters			
Name	Value		Туре
Condensed Status	Enabled		Bit

3.2.2.4 Network Settings

• Click on the menu "Settings" to display the Web server network settings:

epGate PB	Information Settin	gs Diagnosis	EthernetIP	PROFIBUS	Restart Device	Logout administrator	}	Auto logout in 9 min	optimized
Views	TCP/IP Settings								
Network	Obtain IP settings fr	om a DHCP serve	r						
User Accounts	IP Address	192.168.12.41		·					
Firmware	Subnet Mask	255.255.255.0		~					
Reset	Default Gateway	192.168.12.1		~					
HTTPS	Hostname NTP Server The new data is used a Apply	epgatepb-1	e device						
	No messages.								1

• Click on the button "Apply". A reboot of the gateway is required.



Remark

- The configured IP address of this menu corresponds to the Web server IP address.
- Enter an IP address for the NTP Server field. This will helpful for the diagnosis to get the correct date and time information.

3.2.2.2.5 epGate PB EtherNet/IP Address Configuration

• Click on the menu "EthernetIP" and configure the EtherNet/IP address of the epGate PB gateway. This IP address must be different as this used for the Web server (as described in previous chapter):

epGate PB	Information Settin	gs Diagnosis	EthemetIP PROFIBU	S Restart Device	Logout administrator	Auto logout in 9 min	softing
Views	EIP Settings						
Settings	Obtain IP settings fi	om a DHCP server					
Mapping 1	IP Address	192.168.12.40	-				
Log	Subnet Mask 2	255.255.255.0	-				
Actions	Default Gateway	192.168.12.1	~				
Engineering:	The new data is used a Apply	fter a restart of the d	evice				
Create EDS							
Export Studio 5000 AOIs							

• The mapping of PROFIBIUS data into the EtherNet/IP telegrams is automatically generated and the mapping overview is available on the left side of the window by clicking on the button "Mapping":

epGate PB	Information Settings Diag	nosis EthernetIP Pl	ROFIBUS	Restar Device	t Lo e admir	gout Anistrator	uto logout I 9 min	optimi S	ofting
Views	EIP Mapping								
Settings	Input Assembly 1								j
Mapping Log	Assembly Type: Input Assembly Id: 100 Add On Instruction: epGate_ User Defined Type: epGate_	PB_192_168_12_41_I1 PB_192_168_12_41_I1Dat	a						
Actions	User Define	d Type	Assembly			IO Cha	annel		
Engineering:	Field Name	Field Type	Offset	Segment	Slave Address	Device Name	Device Tag	Slot	Channel Id
Studio 5000 🗸	HaStatus	✓ HaStatus	4						
	DeviceFailure	ARRAY[01] OF DINT	12						
Create EDS	DeviceStatus	ARRAY[07] OF SINT	20						
Export Studio 5000 AOIs	Main_Process_Value_1_13_1_1	REAL	28	PA0	13	Deltabar S evolution V4.01	Deltabar S evolution V4.01	1	1
	Main_Process_Value_1_13_1_2	SINT	32	PA0	13	Deltabar S evolution V4.01	Deltabar S evolution V4.01	1	2
	a2nd_Cyclic_Value_1_13_2_1	REAL	33	PA0	13	Deltabar S evolution V4.01	Deltabar S evolution V4.01	2	1
	a2nd_Cyclic_Value_1_13_2_2	SINT	37	PA0	13	Deltabar S evolution V4.01	Deltabar S evolution V4.01	2	2
						Deltabar S	Deltabar S	-	





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3.2.2.2.6 epGate PB Exports

• In the menu "EthernetIP", select the field "Control Expert" in the list box "Engineering":

epGate PB	Information Settings Diagnosis EthernetIP
Views	EIP Mapping
Settings	✓ Input Assembly 1
Mapping	✓ Output Assembly 1
Actions	
Engineering: 1 Control Expert ~	
Create EDS Export Control Expert FBs	

• Export the EDS file of the epGate PB gateway corresponding to the PROFIBUS mapping by clicking the field "Create EDS" for further use in the integration strategy:



• By clicking on the field "Export Control Expert FBs", a specific function block is generated to decode the PROFIBUS data of the EtherNet/IP in Control Expert logic.



The function block must be exported after each PROFIBUS mapping update.





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3.2.2.3 Endress+Hauser IP Address Configuration

IP addresses of Endress+Hauser EtherNet/IP devices may be configured directly on the display if available or by using the web server.

This example describes the main steps for configurating the IP address of a Promass 300 by using the Web server. Refer to the device manual for further details.

- Power off the device.
- Set the device DIP switch 2 to ON in order to select the default IP address 192.168.1.212.
- Reboot the device.
- Connect a laptop with private network settings (192.168.1.1/24) to the Promass300 with an Ethernet cable.
- Open a browser and enter the IP address 192.168.1.212:

🖹 🔄 🖾 Promass 300	\times + \vee					- 0 ×
\leftrightarrow) \odot	192.168.1.212/#ulPic	0=20009,ulAccCode=832	903566			□☆ 佐んピ…
Device name:	Promass 300	Mass flow:	-0.0334 kg/h	Density:	0.0006 kg/l	Endress+Hauser
Device tag:	Promass	Volume flow:	-59.1889 l/h	Ref.density:	0.0006 kg/NI	
Status signal:		Correct.vol.flow:	-812.4214 NI/h			
Web server language Login Access status Enter access code	i English Maintenan 1	ce Login				
Poret accore code						

Enter the access code "0000" and click on the button Login.

• Click on the button "Menu→Setup→Communication":

🖻 🖅 🖽 Promass 300	\times + \vee			- o ×
\leftrightarrow \rightarrow \circlearrowright	192.168.1.212/#ulPID=161,ulAccCode=83	2903566		□☆ 虛 & 崆 …
Device name:	Promass 300 Mass flow:	0.4186 kg/h Density:	0.0006 kg/l	Endress+Hauser
Device tag:	Promass Volume flow:	757.4326 I/h Ref.density:	0.0006 kg/NI	
Status signal:	Device ok Correct.vol.flow:	757.4326 NI/h		
Measured values Menu	Instrument health status Data manager	nent Network		Logout (Maintenance)
Main menu > Setup				
Device tag	i Promass	×		
System units	Communication	Medium selection		
I/O configuration	Display	Low flow cut off		
Partially filled pipe detec	tion > Advanced setup			
		-		





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• Disactivate the option "DHCP client" and set the new IP addresses.

Device name:	Promass 300	Mass flow:	1.4929 kg/h	Density:	0.0006 kg/l	Endress+Hauser 🖽
Device tag:	Promass	Volume flow:	2679.420 l/h	Ref.density:	5.571709e-04 kg/NI	
Status signal:	Cevice ok	Correct.vol.flow:	2679.420 NI/h			
Measured values Menu	Instrument health st	atus Data manageme	nt Network			Logout (Service)
Main menu > Setup > Co	ommunication					
MAC Address	00-07-0	5-12-2D-13				Î
Default netw.set	Off					
DHCP client	(i) Off		·			
IP address	(i) 192.168	1.12.35]			
Subnet mask	(i) 255.255	.255.0]			
Default gateway	(i) 0.0.0.0					

Remark

- Once done, the connection to the Web server is lost.
- Reconfigure the DIP switch 2 to OFF.

3.2.3 Network Connection

All components IP addresses have now been configured. Connect all EtherNet/IP field devices as defined in reference topology SE03.

3.3 System Configuration

3.3.1 New Project

• Start the software Control Expert:



• Create a new project by clicking on "File $\rightarrow N$ ew..."

🙆 EcoStruxure Control Expert	
File View Tools PLC Help	
睂 <u>N</u> ew	Ctrl+N
≌ <u>O</u> pen	Ctrl+O
<u>E</u> xit	



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PLC	Min.OS Version	Description	Cance
Modicon M580			Help
BME H58 2040	03.20	CPU 580-2 ETH HSBY remote and distributed IO	
BME H58 4040	03.20	CPU 580-4 ETH HSBY remote and distributed IO	
BME H58 6040	03.20	CPU 580-6 ETH HSBY remote and distributed IO	
BME P58 1020	03.20	CPU 580-1 ETH distributed IO	
BME P58 2020	03.20	CPU 580-2 ETH distributed IO	
BME P58 2040	03.20	CPU 580-2 ETH remote and distributed IO	1
BME P58 3020	03.20	CPU 580-3 ETH distributed IO	
BME P58 3040	03.20	CPU 580-3 ETH remote and distributed IO	
BME P58 4020	03.20	CPU 580-4 ETH distributed IO	
BME P58 4040	03.20	CPU 580-4 ETH remote and distributed IO	
BME P58 5040	03.20	CPU 580-5 ETH remote and distributed IO	
BME P58 6040	03.20	CPU 580-6 ETH remote and distributed IO	
Modicon M580 Safety			
Modicon MC80			
Momentum			
Premium			
🗄 🔤 Quantum			
Rack	Description		^
■ Modicon M580 local drop			
	4 SLOTS ETHER	NET BACKPLANE	2
BME XBP 0400		IDANT ETHEDNET DACKDI ANE	
	6 SLOTS REDUN		
BME XBP 0400 BME XBP 0602 BME XBP 0800	6 SLOTS REDUN 8 SLOTS ETHER	INET BACKPLANE	

• Following window is displayed:

Modify Password	×
New password:	
Confirmation:	
OK Cancel	

Define a password if required and click on the button "OK".

• Project structure is created:





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3.3.2 System Offline Configuration

This chapter describes the configuration of the Schneider Electric system environment.

3.3.2.1 M580 PLC

3.3.2.1.1 Power Supply Module

• Expand the menu "Configuration" and double-click on the field "0:PLC bus":



• The PLC module is automatically inserted with the power supply module CPS4002:



• In our example, the used Power Supply is the CPS2010 module. Delete the current one by rightclicking on the symbol CPS2000 and by selecting the menu "Delete Module":





• The power supply module is now deleted. Double-click on the empty module:



• Select the correct power supply module. In this case, it is the module BMXCPS2010. Click on the button "OK":

New Device		×
Topological Address:	0.	OK Cancel
Part Number	Description	Help
Modicon M580 local drop		
Supply		
BMX CPS 2000	STANDARD AC POWER SUPPLY	
BMX CPS 2010	STANDARD ISOL DC POWER SUPPLY	
BMX CPS 3020	HIGH POWER ISOL 24 TO 48 VDC POWER SUPPLY	
BMX CPS 3500	HIGH POWER AC POWER SUPPLY	
BMX CPS 3522	REDUNDANT 125VDC POWER SUPPLY (DOUBLE FORMAT)	
BMX CPS 3540	HIGH POWER DC POWER SUPPLY	
BMX CPS 4002	REDUNDANT AC POWER SUPPLY (DOUBLE FORMAT)	
BMX CPS 4022	REDUNDANT 24-48VDC POWER SUPPLY (DOUBLE FORMAT)	

• This inserts the BMXCPS2010 power supply module:



3.3.2.1.2 Network Settings

• Double+-click on the Ethernet ports of the M580:







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This opens the RIO DIO Communicator Head window. Select the tab "Security":
 RIO DIO Communicator Head

dish at a st											
Global poli	су										
		Enforce	Security					Unlock Sec	urity		
Services											
	FTP :	Disabled	\sim	Dł	HCP / B	DOTP :	Disa	bled		\sim	
	TETP :	Disabled	~			SNMP :	Disa	bled		~	
		Disabled	-				0130	bica			
	HTTP :	Disabled	~			EIP :	Disa	bled		\sim	
Access Co	ntrol										
Access Co	ntrol	~									
Access Co Enabled Subnet	ntrol	~ Address	Subnet ma	ısk	FTP	TFTP	HTTP	Port502	EIP	SNMP	
Access Co Enabled Subnet Yes	ntrol IP / 192.	 Address 168.10.1 	Subnet m 255.255.0	15k	FTP	TFTP	НТТР	Port502	EIP	SNMP	
Access Co Enabled Subnet Yes	ntrol IP / 192.	Address 168.10.1	Subnet m 255.255.(ask).0	FTP		НПР	Port502	EIP	SNMP	
Access Co Enabled Yes V No V	ntrol IP J 192.	Address 168.10.1	Subnet m 255.255.0	ask D.O	FTP			Port502	EIP	SNMP	^
Access Co Enabled Yes V No V No V	IP J 192	✓ Address 168.10.1	Subnet ma 255.255.0	əsk	FTP			Port502		SNMP	
Access Co Enabled Yes V No V No V No V	IP / 192.	✓ Address 168.10.1	Subnet ma 255.255.0	15k	FTP			Port502		SNMP	
Access Co Enabled Yes V No V No V No V No V	IP / 192.	 Address 168.10.1 	Subnet ma 255.255.0	isk				Port502		SNMP	

• In this example, all services are enabled by clicking on the button "Unlock Security":

RIO DIO Communicator Head							
CommHeadRIODIO8L2	Security D /PC	onfig 🚺 RSTP	SNMP	0 NTP 0 Servi	icePort		
	Global policy	Enforce Sec	curity			Unlock Security	
	Services FTP :	Enabled	~	DHCP / BOOT	P :	Enabled V	
	TFTP :	Enabled	~	SNM	Р:	Enabled \checkmark	
	HTTP :	Enabled	\sim	EI	Р:	Enabled \checkmark	
	Access Control						
	Disabled	~					



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Select the tab "IPConfig" and update the PLC IP settings according to your network:
 RIO DIO Communicator Head

CommHeadRIODIO8L2	Security	IPConfig	C RSTP	SNMP	0 NTP
	- IP address confi	guration			
	Mai	n IP address	192 . 168 .	12 . 30	
	Main I	Paddress +1	0.0.	0.0	(Used for Hot Standby)
	1	P address A	192 . 168 .	12 . 31	
	1	IP address B [0.0.	0.0	(Used for Hot Standby)
	Subne	etwork mask	255 . 255 . 2	255 . 0	
	Gate	way address	192 . 168 .	12 . 1	
	CRA IP addres	s configuration			
	Update	CRA IP address co	onfiguration		
	Advanced conf	iguration			
	Service	s configuration			

• Save the configuration by clicking on the symbol "Validate" in the toolbar or in the menu "Edit→Validate":

📆 File Edit View Services Tools Build PLC Debug Window

3.3.2.2 BMENOC311 Communication Module

In our example, a communication module is implemented on the M580 backplane in order to separate IO and supervisory networks.

3.3.2.2.1 Module Insertion

• Double-click on Slot 2:





• Select the module BMENOC311.3 and click on the button "OK":

New Device			×
Topological Address:		0.2	OK Cancel
Part Number	Description	^	Help
Modicon M580 local drop			
BME CXM 0100	CANopen X80 Master Module		
BME CON 0100	Ethemet Communication Module (SV >= 1.01)		
BME NOC 0301 2	Ethemet Communication Module (SV >= 2.04)		
BME NOC 0301.3	Ethemet Communication Module (SV >= 2.05)		
BME NOC 0301.4	Ethemet Communication Module (SV >= 2.11)		
BME NOC 0311	Factory Cast Ethernet Module (SV >= 1.01)		
BME NOC 0311.2	Factory Cast Ethernet Module (SV >= 2.04)		
BME NOC 0311.3	Factory Cast Ethernet Module (SV >= 2.05)		
BME NOC 0311.4	Factory Cast Ethernet Module (SV >= 2.11)		
BME NOC 0321	M580 NOC with IP forwarding		

• This displays following window. Update the name if required and click on the button "OK":



• This inserts the BNOC0311 module on the backplane.

3.3.2.2.2 Network Settings

• Double click on the BNOC0311 module:





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• Configure the IP settings according your network settings:

Eastern Cast Ethernal Markela (CVA) 2.0E)	
Factory Last Ethernet Module (SV >= 2.05)	

IP Address configuration		
Main IP address	10 . 126 . 97 . 88	
Main IP address + 1	0.0.0.0	Used for Hot Standby
IP address A	0.0.0.0	IP A and IP B will be internally disabled automatically by the system if IPsec
IP address B	0.0.0.0	cyber secure protocol is enabled
Subnet Mask	255 . 255 . 255 . 0	
Gateway	10 . 126 . 97 . 1	
Scanner configuration		
Scanner name	BME_NOC0311	

• Save the configuration by clicking on the symbol "Validate" in the toolbar or in the menu "Edit->Validate":

🔂 File	Edit	View	Services	Tools	Build	PLC	Debug	Window	
12 🖻	8		X 🛍	6	∝ 🔽	ø	G, 🛛		

• Click on the link "Service Configuration":

Scanner configuration	
Scanner name B	3ME_NOC0311
Advanced configuration	



• This opens the security settings of the communication module. In this example, the access control is disabled. Click on the button "Unlock Security":

BMENOC0311_2 Communication	
Channel Properties Switch TCP/IP Switces	Global policy Enforce Security Unlock Security
Address Server SNNP RSTP QoS Service Port Cocal Slave 1 Local Slave 2 Local Slave 3	Services FTP : Enabled DHCP / BOOTP : Enabled SNMP : Enabled <
	Access Control Disabled

• Select the menu "Channel Properties" an select the PC network interface, on which the BMENOC0311 is physically connected:

BMENOC0311_2 Communication			Schneider Blectric
Chunnel Properties Switch Services Services EtherNet/IP Local Slaves Device List Logging	Source Address: 1P Address Source (PC): Sub-Network Mask:	✓ 10.126.97.99 ✓ 255 . 255 . 0	
	EtherNet/IP Network Detection: Begin detection range address: End detection range address:	10 .126 .97 . 1 10 .126 .97 . 254	
	Modbus Network Detection: Begin detection range address: End detection range address:	10 . 126 . 97 . 1 10 . 126 . 97 . 254	

• Then click on the button "Apply" to validate the configuration:

OK Cancel Apply

• Close the windows "BMENOC0311_2 Communication" and Factory Cast "Ethernet Module".

3.3.2.3 System Configuration Download

• Download the configuration into the PLC. Please refer to chapters 3.6.1, 3.6.2 and 3.6.3 to proceed.


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3.4 EtherNet/IP Field Device Configuration

3.4.1 Control Expert Field Device Library

3.4.1.1 Hardware Catalog

• Open the menu "Tools→Hardware Catalog":



• All installed field devices EDS files are displayed by clicking on the tab "DTM catalog" and by filtering the protocol "CIP (EtherNet/IP)":

→ All devices Device	Type Device Device Device Device Device Device Device Device Device	Vendor Schneider Electric Schneider Electric Schneider Electric Schneider Electric Schneider Electric	Version 1.1 1.1 1.52 1.52	Date
	Device Device Device Device Device Device	Schneider Electric Schneider Electric Schneider Electric Schneider Electric Schneider Electric	1.1 1.1 1.52 1.52	
	Device Device Device Device Device	Schneider Electric Schneider Electric Schneider Electric Schneider Electric	1.1 1.52 1.52	
	Device Device Device Device	Schneider Electric Schneider Electric Schneider Electric	1.52	
CANopen CONopen CANopen C	Device Device Device	Schneider Electric Schneider Electric	1.52	
CANopen Advanced Generic EDS CIP (EtherNet/IP) HART HART HART HART Modbus over TCP Porfbus DPV0 Profibus DPV1 Porfbus DPV1 Modbus over TCP Rombus DPV1 Modbus over TCP Porfbus DPV1 Modbus over TCP Rombus OPV1 Modbus over TCP Rombus OPV1 Rombu	Device Device	Schneider Electric		
CIP (EtherNet/P) ALTUARST Revision 15 from EDS) HART ALTUARST Revision 21 from EDS) ALTUARST Revision 21 from EDS) ALTUARST Revision 21 from EDS) ALTUARST Revision 23 from EDS) ALTUARST Revision 33 from EDS) BME AHI 0812 BME AHI 0812 BME HSQ204 Prevision 31 0 from EDS) BMEHSQ2040 Frevision 31 0 from EDS)	Device		1.10.8.0	
HART ALTUARST Revision 2.1 from EDS) Profibus DPV0 ALTUARST Revision 1.6 from EDS) Profibus DPV1 ALTUARST Revision 2.3 from EDS) ALTUARST Revision 3.3 from EDS) ALTUARST Revision 3.3 from EDS) BMEH582040 Revision 3.10 from EDS		Schneider Electric	1.5	
Modbus over TCP ALTIVAR71 Revision 1.6 from EDS) Profibus DPV0 ALTIVAR71 Revision 2.7 from EDS) INTRAFIT Revision 3.3 from EDS) BME AHI 0812 BME AHI 0812 BME AHO 0412 BME SQL04 Orem EDS) BMEH58QL04 Prevision 3.10 from EDS) BMEH58QL045 Revision 3.10 from EDS)	Device	Schneider Electric	2.1	
Profibus DPV0 ALTUAR71 Revision 2.2 from EDS) Profibus DPV1 BALTWAR71 Revision 2.3 from EDS) BME AHI 0812 BME AHO 0412 BME HS2040 From EDS) BMEHS82040 Servision 3.10 from EDS) BMEHS82040 Revision 3.10 from EDS) BMEHS82040 Revision 3.10 from EDS)	Device	Schneider Electric	1.6	
Profibus DPV1 ALTIVAR71 Revision 33 from EDS) BME AH0 0412 BME AH0 0412 BME CXM 0100 (H) BMEH582040 from EDS) BMEH582040 from EDS) BMEH582040 Revision 310 from EDS) BMEH582040 Revision 310 from EDS) BMEH582040 Revision 310 from EDS)	Device	Schneider Electric	2.7	
BME AHI 0812 BME AHO 0412 BME AHO 0412 BME AHO 0412 BME AHO 0412 BME H58204 9 more EDS) BMEH582040 Prevision 3.10 from EDS) BMEH582040 Servision 3.10 from EDS) BMEH582040 Servision 3.10 from EDS) BMEH582040 Servision 3.10 from EDS)	Device	Schneider Electric	3.3	
BME AHO 0412 BME CXM 0100 (H) BME/S2040 from EDS) BME/S82040 From EDS) BME/S82040 Revision 3.10 from EDS) BME/S820403 Revision 3.10 from EDS)	Gateway	Schneider Electric	1.1.8.0	2020-07-30
BME CXM 0100 (H) BMEH582040 from EDS) BMEH582040 Revision 3.10 from EDS) BMEH5820405 Revision 3.10 from EDS)	Gateway	Schneider Electric	1.1.8.0	2020-07-30
BMEH582040 (from EDS) BMEH582040 Revision 3.10 (from EDS) BMEH582040S Revision 3.10 (from EDS) BMEH582040S Revision 3.10 (from EDS)	Gateway	Schneider Electric	1.0.000	2016-10-14
BMEH582040 Revision 3.10 (from EDS) BMEH582040S Revision 3.10 (from EDS) BMEH5820405 (see EDS)	Device	Schneider Electric	2.10	
BMEH582040S Revision 3.10 (from EDS)	Device	Schneider Electric	3.10	
B BMEHERADAD from EDS)	Device	Schneider Electric	3.10	
BMEH584040 (rom EDS)	Device	Schneider Electric	2.10	
BMEH584040 Revision 3.10 (from EDS)	Device	Schneider Electric	3.10	
BMEH584040S Revision 3.10 (from EDS)	Device	Schneider Electric	3.10	
BMEH586040 (from EDS)	Device	Schneider Electric	2.10	
BMEH586040 Revision 3.10 (from EDS)	Device	Schneider Electric	3.10	
BMEH586040S Revision 3.10 (from EDS)	Device	Schneider Electric	3.10	
BMENOC0301 C	Communication	Schneider Electric	2.14.20.0	2020-07-14
BMENOC0301 (from EDS)	Device	Schneider Electric	1.1	
BMENOC0301 Revision 2.2 (from EDS)	Device	Schneider Electric	2.4	
BMENOC0301_2 0	Communication	Schneider Electric	2.14.20.0	2020-07-14
BMENOC0301_4 0	Communication	Schneider Electric	2.14.20.0	2020-07-14
Update 1				
4 N N Eto Rus) CANopen) BIO Rus) BIC hus) DTM catalog				

3.4.1.2 EDS File Import

• Open the menu "Tools→DTM Browser":

F	ile	Edit	V	liew	Services	Tools	Build	PLC	Debug	g Window	Help
	1	2		8	lina X	✓ Pro	oject <u>B</u> ro	wser		Alt+1	2
	E.	*	T		Q -	<u>H</u> a	rdware (Catalog	9	Alt+2	
<u></u>	-					Т <u>о</u> Тур	es Libra	ry Bro	wser	Alt+3	1.0
P	roj	ect Br	ow	ser		<u>О</u> р	erator S	creen l	ibrary	Alt+4	
	Ę	St	ruct	tural v	/iew	<u>S</u> ea	arch / Re	eplace		Alt+5	
		<u></u>	Pro	oject	nfiguration	<u>D</u> ia	gnostic	Viewe	r	Alt+6	
			ā	Der	rived Data	PL	C Sc <u>r</u> eer	n		Alt+7	
				Dei	rived FB Ty	Var	iable Wi	indow		Alt+8	
	G		è	Var	iables & Fl	<u>D</u> at	ta Editor	r		Alt+9	
				Мо	tion						_
				Cor	nmunicati	DTI	M Brows	ser		Alt+Shift+1	
			ΨĐ	Eth	ernet Netv	Bo	okmarks	s		Alt+Shift+2	
	E	9		Pro	grams						_
				Ani	mation Ta	Tre	nding to	loc			
				Оре	erator Scre	Co	nvert Pa	rtially			
	6	H	Ľb.	, Doo	cumentatio						





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•	Right-click on the PLC DTM "BMEP58_ECPU_EXT" and select the menu "DTM
	Browser→Additional functions→Add EDS to library":

File Edit View Services loois Build	PLC Debug Window Help		
🖹 🖻 🖶 🗇 📗 🗄 🛍 🗠 🗠	🖂 🔑 🗣 🖾 📖 🎽 👘	🕾 🛗 🔚 📑 🖶 🖬 🐘	M V 20 20 20
™ ₩ ₩ ₩ ₩ ₩ ₩			
	_		
DTM Browser	×		
Host PC			
192.168.12.30 > BMEP58_ECPU_EXT Remote Bus	Open		
Distributed Bus			
(< 10.126.97.88 > BME_NOC0311	Add		
	Delete Del		
	Ma Field bus discovery		
	Sort by address		
	Connect		
	Disconnect		
	Load data from device		
	Store data to device		
	Conv		
	Paste		
	Go to module or device		
	Device menu 🕨	Offline Parameter	1
	Properties ALT+Enter	Online Parameter	
		Compare •	
	Print device	Configuration	
1	Zoom in	Observe	ECO
Project Browser	Zoom out	Diagnosis	200
Pa Structural view	Expand all	Additional functions	Add EDS to library
	Collapse all		Remove EDS from library
Configuration			Export EDS library
Derived Data Types			Import EDS library
Derived FB Types			Store Device Conf to FDR
Motion			Online Action EthorNet/ID Explicit Macrogo
Communication			Modbus Explicit Message
Programs			About
Animation Tables			

• This displays following window. Click on the button "Yes" to proceed:







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• The EDS Import wizard is started:

Addition	×	EDS Addition	
		EtherNet/IP>	0
	EDS	Select the Location of the EDS File(s) : (Add File(s))	
is Wizard allows you to add EDS files.		Add all the EDS from the Directory Look Directory or File Name :	in Subfolders
		Drivers SE03\EH_EIP_FL_Promass300500_0x103B_0x01_EDS\	Promass300_5000101.eds
		The EDS files usable are registered in the EDS Library. Select the lo plick on Next button to insert the EDS files in the base.	ocation of the file(s) and
		EDS DTM New Naming Convention	
		Checked : Generic EDS DTM name creation is based on Product and naming is consistent across PCs (Backward Compatibility is no new naming rule is used to create new application.	name and Revision Number t supported). By default,
		Unchecked : Generic EDS DTM name creation is based on Lega convention to be used when an application produced with previou compatible with Control Expert version.	cy naming rule. This naming s Unity Pro version to be
		3	

In this example, select the option "Add File(s)", browse the EDS file to import and click on the button "Next":

• Then follow the wizard:

EDS Addition			×	EDS Addition		×
File Name ✓ Promass300_5000101.eds	Status No error. Ready to be added.	Product Name Promass300 500	Major Revi 1	Click on Finish to complete the action.	EDS	
 List of the files ready to be added 	d in the library. Click on Next to	-	>			
complete the addition.		View Sele	cted File			
Analyze errors						
	4 Back Next	Cancel	Help	Back	5 Finish Cancel H	Help





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All devices		Device	Туре	Vendor	Version	Date	
Device types		140NOC77100 (from	Device	Schneider Electric	1.1		
Vendors		140NOC77101 (from	Device	Schneider Electric	1.1		
Groups		140NOC78000 (from	Device	Schneider Electric	1.52		
Protocols		140NOC78100 (from	Device	Schneider Electric	1.52		
		Advanced Generic E	Device	Schneider Electric	1.10.8.0		
		ALTIVAR61 Revision	Device	Schneider Electric	1.5		
		ALTIVAR61 Revision	Device	Schneider Electric	2.1		
		ALTIVAR71 Revision	Device	Schneider Electric	1.6		
		ALTIVAR71 Revision	Device	Schneider Electric	2.7		
	Ē	ALTIVAR71 Revision	Device	Schneider Electric	3.3		
	1	BME AHI 0812	Gateway	Schneider Electric	1.1.8.0	2020-07-30	
	1	BME AHO 0412	Gateway	Schneider Electric	1.1.8.0	2020-07-30	
	1.	BME CXM 0100 (H)	Gateway	Schneider Electric	1.0.000	2016-10-14	
	1	BME NOR 2200H	Communication	Schneider Electric	1.0.087.0	2020-03-26	
		BMEH582040 (from E	Device	Schneider Electric	2.10		
		BMEH582040 Revisi	Device	Schneider Electric	3.10		
		BMEH582040S Revis	Device	Schneider Electric	3.10		
		BMEH584040 (from E	Device	Schneider Electric	2.10		
		BMEH584040 Revisi	Device	Schneider Electric	3.10		
		BMEH584040S Revis	Device	Schneider Electric	3.10		
		BMEH586040 (from E	Device	Schneider Electric	2.10		
		BMEH586040 Revisi	Device	Schneider Electric	3.10		
		BMEH586040S Revis	Device	Schneider Electric	3.10		
	6	BMENOC0301	Communication	Schneider Electric	2.14.20.0	2020-07-14	
		BMENOC0301 (from	Device	Schneider Electric	1.1		
		BMENOC0301 Revisi	Device	Schneider Electric	2.4		
	lī	BMENOC0301_2	Communication	Schneider Electric	2.14.20.0	2020-07-14	
Update							

Go back in the Hardware Catalog and update the DTM catalog: •

Field device EDS appears in the Hardware Catalog: •



The EDS file is converted in a DTM format by the Schneider Electric environment. Other field • devices of SE03 topology have been successfully imported as well:

AGM Electronics, Inc.	^	Device	Туре	Vendor	Version
Beckhoff Automation	-	Liquiline CM44x Revision 2.1 (from EDS)	Device	Endress+Hauser	2.1
Bihl & Wiedemann GmbH		Memograph M RSG45 Revision 2.1 (from EDS)	Device	Endress+Hauser	2.1
Endress+Hauser		Promag 300 500 Revision 1.1 (from EDS)	Device	Endress+Hauser	1.1
Fanuc Robotics America		Promass300 500 Revision 1.1 (from EDS)	Device	Endress+Hauser	1.1
With the second	~				
Rockwell Software	^	Device	Туре	Vendor	Version
SAE-STAHL GmbH		epGate PB Revision 1.10 (from EDS)	Device	Softing Industrial Automation GmbH	1.10
Schneider Electric Schneider Electric SICK AG					



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3.4.2 Softing epGate PB Gateway

The epGate PB Softing Gateway may be integrated either with the Softing EDS file or with the Schneider Electric Advanced Generic EDS file.

3.4.2.1 Gateway Integration with Softing EDS File

• In the DTM Browser, right-click on the PLC DTM and select the menu "Add...":

TM Browser	EXT		
Remote Bus	Open		
Distributed Bus 5 < 10, 126, 97, 88 > BME_NOC0311	Add		
	Delete	Del	
	🚵 Field bus discovery		

• Select the driver "epGate PB Revision 1.10" and click on the button "Add DTM":

	Device	Type	Vendor	Ve	Date	~
R	SP600 ER 600V Revision 3.1 (from EDS)	Device	Rockwell Automation / Reliance Fl	31		
8	SP600 Revision 1.1 (from EDS)	Device	Rockwell Automation / Reliance El	11		-
8	SP600 Revision 2.1 (rom EDS)	Device	Rockwell Automation/Reliance El	21		-
層	SP600 Revision 3.1 (rom EDS)	Device	Bockwell Automation/Reliance El	31		-
冒	PtherNet/IP Messaging (from EDS)	Device	Rockwell Software	11		-
Ē	IS1 BIO EtherNetIP (from EDS)	Device	SAE-STAHL GmbH	31.2		-
ĥ	PME SWT 0100	Device	SCAIME	01	2013-07-05	-
8	MICS3-ABAZXXIZ1 Revision 1.2 (from EDS)	Device	SICK AG	1.2		-
Ē	MICS3-CBAZXXIZ1 Revision 1.2 (from EDS)	Device	SICK AG	1.2		-
Ē	epGate PB Revision 1.10 (from EDS)	Device	Softing Industrial Automation GmbH	1.10		
	CD 582 -EIP Revision 1.1 (from EDS)	Device	TR-Electronic GmbH	1.1		-
Ē	TBIP-L4-FDIO1-2IOL Revision 2.8 (from E	Device	Turck, Inc.	2.8		
	TBIP-L4-FDIO1-2IOL Revision 3.1 (from E	Device	Turck, Inc.	3.1		
Ē	TBIP-L5-FDIO1-2IOL Revision 2.8 (from E	Device	Turck, Inc.	2.8		
Ē	TBIP-L5-FDIO1-2IOL Revision 3.1 (from E	Device	Turck, Inc.	3.1		_
	applicomIO EtherNet/IP Scanner (from EDS)	Device	Woodhead Software & Electronics	2.1		

• Enter a name for the instance and click on the button "OK":

Propertie	s of device				×
General	Device information	DTM information	Protocol infom	nation	
DTM r	name management				
Name	e : epGate_P	B_Revision_1_10_	EDS		
			ОК	Cancel	Help
			0	Ganoti	





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• This inserts the gateway in the project. Double-click on this object:



• In this example, select the connection "Exclusive Owner" and change the Input mode from "Multicast" to "Point to Point":

epGate_PB_Revision_1_10_EDS - fdtConfiguration			- • •
epGate PB Revision 1.10 (from EDS) I/O epGate_P8_Revision_1_10_EDS			
epGate_PB_Revision_1_10_EDS	Connection		
Logging 📕			
	Group/Parame	eter value	Unit
	▶ RPI	8	msec
	Input T->O		
	Input size	255	
	Input mode	Point to Point	
	Input type	Fixed	
	Input priority	Scheduled	
	Input trigger	Cydic	
	Output O->T		
	Output size	255	
	> Output mode	Point to Point	
	👛 Output type	Fixed	
	Output priority	Scheduled	
	Description Transmission mode of packets contain Multicast: transmission from the adap	ing input data: - Point to point: transmission fi ter to a Multicast IP address Null: No transm	om adapter to scanner ission of inputs. Value
Add Connection Remove Connection	depend of EDS (Point to Point, Multica	ist, Nul)	3
Help		ОК	Cancel Apply
치다 Disconnected 🚺 Data set	1		

- Valid the configuration by clicking on the button "Apply" and close the window.
- Double-click on the PLC DTM:





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• Go to the epGate PB tab "Address Setting" and update the IP address to the needed one:

BMEP58_ECPU_EXT - fdtConfiguration		
BMEP58_ECPU_EXT Communication BME P58 2040	2	Schneider Belectric
Channel Properties Channel Properties Channel Properties Address Server Address Server Cacal Slave 1 Cacal Slave 2 Cacal Slave 3 Cacad Slave 3 Cacal Slave 3 Cacad Slave 3 Cacad Slave 3 Ca	Properties Address Setting IP Configuration IP Address: Subnet Mask: Gateway: Address Server	3 255 . 255 . 255 . 0 192 . 168 . 12 . № 192 . 168 . 12 . 30
ia- Exclusive Owner Legging	DHCP for this device: Identified by: Identifier:	Disabled V Device Name V epGate_P8_Revisi
Help		4 OK Cancel Apply
Help		OK Cancel Ap

Click on the button "Apply" and close the window. In this example, the EtherNet/IP address of the gateway is 192.168.12.40, as defined in chapter 3.2.2.2.5.

Compile and download the project configuration as described in chapter 3.6.

3.4.2.2 Gateway Integration with Schneider Electric Advanced Generic EDS File

• In the DTM Browser, right-click on the PLC DTM and select the menu "Add...":

DTM Browser			×
Host PC 	U EXT Open		
 Ustributed Bus < 10, 126, 97, 88 > BME NOC0311 	Add		
	Delete 🚵 Field bus discovery	Del	

• Select the driver "Advanced Generic DTM" and click on the button "Add DTM":

Proto	col <u>1</u> EtherNet/IP	~				
	Device	Туре	Vendor	Version	Date	1
	140NOC77100 (from EDS)	Device	Schneider Electric	1.1		
	140NOC77101 (from EDS)	Device	Schneider Electric	1.1		
	140NOC78000 (from EDS)	Device	Schneider Electric	1.52		
	140NOC78100 (from EDS)	Device	Schneider Electric	1.52		
	Advanced Generic EDS	Device	Schneider Electric	1.10.11.0		
	ALTIVAR61 Revision 1.5 (from EDS)	Device	Schneider Electric	1.5		
	ALTIVAR61 Revision 2.1 (from EDS)	Device	Schneider Electric	2.1		
	ALTIVAR71 Revision 1.6 (from EDS)	Device	Schneider Electric	1.6		
	ALTIVAR71 Revision 2.7 (from EDS)	Device	Schneider Electric	2.7		
	ALTIVAR71 Revision 3.3 (from EDS)	Device	Schneider Electric	3.3		
Π.	BME AHI 0812	Gateway	Schneider Electric	1.1.9.0	2020-09-10	
1	BME AHO 0412	Gateway	Schneider Electric	1.1.9.0	2020-09-10	
li.	BME CXM 0100 (H)	Gateway	Schneider Electric	1.0.0003.3	2016-10-14	
	BMEH582040 (from EDS)	Device	Schneider Electric	2.10		
	BMEH582040 Revision 3.10 (from EDS)	Device	Schneider Electric	3.10		
	BMEH582040S Revision 3.10 (from EDS)	Device	Schneider Electric	3.10		
	BMEH584040 (from EDS)	Device	Schneider Electric	2.10		





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• Enter a name for the instance and click on the button "OK":

management				
epGate_P	B_Advanced_Gen	eric_EDS		
	epGate_P	epGate_PB_Advanced_Gen	epGate_PB_Advanced_Generic_EDS	epGate_PB_Advanced_Generic_EDS

• This inserts the gateway in the project. Double-click on this object:



• In this example, select the connection "Exclusive Owner" and change the Input/Output size to 255 and the Input mode from "Multicast" to "Point to Point" in the tab "Connection":







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• Select the tab "Configuration Settings" and configure the Input/Output instances:

epGate_PB_Advanced_Generic_EDS - fdtConfigurat	tion		
Advanced Generic EDS I/O epGate_PB_Advanced_Generic_EDS	1		Schneider Gelectric
epGate_PB_Advanced_Generic_EDS Exclusive Owner	Connection Identity Check Configuration Settings		
Logging	Group/Parameter	Value	Unit
	Dimut T-20		
	I we have the	100	12
	Dutput Q-ST	100	12
	Output Instance	150	13
	Configuration	130	10
	Configuration	0	
	Configuration Instance	U	
	Coniguration		
	Description		
Add Connection Remove Connection		ок	4 Cancel Apply
Disconnected Data set	1		

- Valid the configuration by clicking on the button "Apply" and close the window.
- Double-click on the PLC DTM:



• Go to the epGate PB tab "Address Setting" and update the IP address to the needed one:

BMEP58_ECPU_EXT Communication BME P58 2040	2	
Channel Properties TCP/IP Services Call Slave 1 Local Slave 1 Local Slave 2 Local Slave 2 Local Slave 2 Local Slave 3 Local Slave 3 Local Slave 3 Local Slave 3 Local Slave 4 Local Slave 2 Local Slave 5 Lo	Properties Address Setting IP Configuration IP Address: Subnet Mask: Gateway: Address Server DHCP for this device: Identified by: Identifier:	3 ► 192 . 168 . 12 . 40 255 . 255 . 255 . 0 192 . 168 . 12 . 30 Decice Name epGate_P8_Advanc

Click on the button "Apply" and close the window. In this example, the EtherNet/IP address of the gateway is 192.168.12.40, as defined in chapter 3.2.2.2.5.

Compile and download the project configuration as described in chapter 3.6.





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Remark

Information about Connection and Configuration settings can be found in the Exported EDS file. Use for example the ODVA tool EZ-EDS. This tool can be downloaded on https://www.odva.org/:

• Start the software EZEDS.exe:



• Select the menu "File \rightarrow Open...":



Select the generated EDS file (Refer to chapter 3.2.2.6) and click on the button "Open":
 Z Open



• Select the format "EtherNet/IP EDS" and click on the button "OK":





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• Select the configured connection "Exclusive Owner" in the connection Manager menu:

The East Los view window here	P	
🗅 😅 🖬 🖻 📾 🙆 🦍 🛍	B ver 2 kg 8 kg	
Image: Second	Number of bytes per slot in the D>T real time data packet for adapter rack connec- tions (dostalet > AssemN) Number of bytes per slot in the T>O real time data packet for adapter rack connec- tions (dostalet > AssemN) Real time transfer format Ibyte 32-bit run/die header I reserved (Bit 11) connection is pure data and is modeless connection Type:" In NULL NULTCAST reserved (Bit 15) connection Type:" NULL Priority:" IV UNTCAST I' IGH I' URGENT "In the case of several checkmarks, the user may be asked which one to use by a tool Properties Value/Reference II: 0-0-1 II: 0-0-1 II: 0-0-1 II: 0-0-1	Path × Format: hex: • decimal If format: fipositible Path meaning in case of • Normal Connection Chass: • Class: • Class: Ignored Path • • Class: • Instance: • 100 • Attribute: Class: • Connection Point; • 150 • Attribute: Producing I/0 Path • • • Class: • Connection Point; • 150 • Attribute: Image: • • • Class: • • • Class: • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • •

The **input instance** configured in the Advanced Generic EDS corresponds to the "Producing I/O Path" Assembly value 100 and the **output instance** to the "Consuming I/O Path" value Assembly150.

• The Input/Output **Assembly size** can be found in the menu Assembly. Click for example on the Input assembly 100 to display the size parameter:

📴 File Edit EDS View Window Help	
🗅 🖆 🖬 🐚 💼 🖉 🐘 📖 🖧	verb 2 ka 2 k?
Image: Second Secon	[Assembly] Entry - Assem1 Comment Name InputAssem100 Path Attribute directly addressable from the network: Comment Create/Decode Path
⊕ - [編] [Connection Manager] (6) ⊕ - [編] [Capacity] (1) [編] [DLR Class] ⊕ - [編] [Ethernet Link Class] (2) 	Size of the Data Block (in bytes) 255 Comment NOTE: Actual Size of the Data Block: Bits: 8 Bytes: 1 Descriptor Comment Comment 1





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3.4.3 E+H Promass300 Flowmeter

3.4.3.1 Field Device Insertion

• In the DTM Browser, right-click on the PLC DTM and select the menu "Add...":

DTM Browser		x
Host PC	0	
	Open	
	Add	
	Delete	Del
	n Field bus discovery	
	Sort by address	

• Select the driver "Promass300 500 Revision 1.1" and click on the button "Add DTM": $_{\mbox{\tiny Add}}$

	Device	Туре	Vendor	Version	Date	^
Ē	AMCI-NX2C4E (from EDS)	Device	Advanced Micro Controls I	1.3		
▤	AMCI-NX2E4E (from EDS)	Device	Advanced Micro Controls I	1.3		_
₿	AMCI-NX3A1E (from EDS)	Device	Advanced Micro Controls I	1.3		
	Applicom Produit (from EDS)	Device	AGM Electronics, Inc.	1.1		_
	Beckhoff - BK9105 (from EDS)	Device	Beckhoff Automation	1.2		
▤	AS-i 3 EnIP GW+Safety Monitor 3.0 Revisi	Device	Bihl & Wiedemann GmbH	1.1		_
	AS-i 3 SL EnIP GW+Safety Monitor 3.0 Re	Device	Bihl & Wiedemann GmbH	1.1		
3	AS+ EnIP GW+Safety Monitor 3.0 Revision	Device	Bihl & Wiedemann GmbH	1.1		
▤	Liquiline CM44x Revision 2.1 (from EDS)	Device	Endress+Hauser	2.1		-
▤	Memograph M RSG45 Revision 2.1 (from E	Device	Endress+Hauser	2.1		
	Promag 300 500 Revision 1.1 (from EDS)	Device	Endress+Hauser	1.1		
	Promass300 500 Revision 1.1 (from EDS)	Device	Endress+Hauser			
	FANUC Robot Safety Slave Revision 2.2 (f	Device	Fanuc Robotics America	2.2		_
₿	FANUC Robot Safety Slave Revision 3.1 (f	Device	Fanuc Robotics America	3.1		
	Anybus Communicator - Slave Revision 1.6	Device	HMS Industrial Networks AB	1.60		
	Anybus Communicator - Slave Revision 2.3	Device	HMS Industrial Networks AB	2.3		
₿	Anybus Communicator CAN (from EDS)	Device	HMS Industrial Networks AB	1.3		

• Enter a name for the instance and click on the button "OK":







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• This inserts the Promass300 in the project. Double-click on this object:



• This opens the field device FDT Configuration window:

Promass300_500_FW010105 - fdtConfiguration Promass300 500 Revision 1.1 (from EDS) I/O Promass300_500_FW010105	Connection Configuration Settings		Schneider Electric
Logging	Group/Parameter	Value 20 44 Point to Point Fixed Scheduled Cyclic 52 Point to Point Fixed Scheduled	Unit msec
Add Connection Remove Connection			
Help		ОК	Cancel Apply
⊲l> Disconnected ① Data set	/		

The Promass300 is inserted in the project with the connection "Fix in + Fix out + Config" In this example, the input mode is changed from "Multicast" to "Point to Point".



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• A further tab "Configuration Settings" is available because the configured connection is "Fix in + Fix out + **Config**".

Promass300_500_FW010105 - fdtConfiguration				
Promass300 500 Revision 1.1 (from EDS) I/O Promass300_500_FW010105			Schn	eider
Promass300_500_FW010105	Connection Group/Parameter Image: Concentration profile 1-3 Image: Concentration profile 1-3 Image: Concentration profile 1-3	Value		^
Add Connection Remove Connection	Description			v
Help		ОК	Cancel	Apply
♥▷ Disconnected U Data set	1			

• The Assembly "Config" allows the user to configure the default values of relevant device settings, as for example the system units:

				Group/Parameter	Value	Unit
			6	🗄 🦲 Sensor adjustment		
Group/Parameter	Value	Jnii 🔺	6	Communication		
E Sensor adjustment			6	+ Totalizer 1-3		
Communication			6	Access		
			6	+ Petroleum		
+ Access				System units		
Petroleum			-	System units - Pressure unit	bar	
System units				System units - Temperature unit	С	
System units - Pressure unit	bar			System units - Reference density unit	ka/N	
System units - Temperature unit	C			System units - Density unit	ka/l	
System units - Reference density unit	kg/N			System units - Corrected volume unit	Nm^3	
System units - Density unit	Kg/I			System units - Cor. volflow unit	NI/h	
System units - Corrected volume unit	NM13			System units - Volume unit	m^3	
System units - Cor.vollow unit	INI/IN			System units - Volume flow unit	l/h	
System units - Volume drift	145		_	System units - Mass unit	ka	
System units - Macs unit	ka			System units - Mass flow unit	a /min	
System units - Mass drift	ka/h	_	 ×	No Group Specified	g/mm	×
No Group Specified	Ng/II					_
in a group specifica						

- All "Config" parameters are written in the device every time that a new CIP Forward Open communication is performed, this happens either in case of a device restart or if the device is physically disconnected and reconnected in the network.
- Click on the button "Apply" to save the configuration and close the window:

Help					ОК	Cancel	Apply
♥▷ Disconnected	🚺 Data set	1					





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3.4.3.2 Other Connections

The default connection "Fix in + Fix out + Config" can be changed by another one.

• Click on the button "Remove Connection" to delete the current connection and then click on the button "Add Connection":



• This allows the user to select another connection via the list box:

Select the connection to add







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3.4.3.3 IP Settings

• Double-click on the PLC DTM:

DT	M Browser	I
(Host PC Image: Second Secon	

• Go to the Promass300 tab "Address Setting" and update the IP address to the needed one:

BMEP58_ECPU_EXT - fdtConfiguration		
BMEP58_ECPU_EXT Communication BME P58 2040	2	Schneider Gelectric
Channel Properties TCP/IP Services Address Server EherNet/IP Local Slaves CLocal Slave 1 tems	Properties Address Setting IP Configuration IP Address: Subnet Mask:	3 192 ⋅ 168 ⋅ 12 ⋅ 35 255 ⋅ 255 ⋅ 255 ⋅ 0
	Gateway: Address Server	192 . 168 . 12 . 30
	DHCP for this device: Identified by: Identifier:	Disabled v Device Name v Promass300_500_F
Help	OK	Cancel Apply

Click on the button "Apply" and close the window. In this example, the EtherNet/IP address of the Promass300 is 192.168.12.35, as defined in chapter 3.2.2.2.5.

Compile and download the project configuration as described in chapter 3.6.





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3.5 Control Strategy

A specific Control Expert *.xdb function block can be generated directly from the epGate PB Web server. Once imported and implemented in a Control Expert program, this function block decodes automatically the EtherNet/IP mapping and provides the user, status information and process values of the PROFIBUS PA field devices.

This function block must be generated after each updates of the data mapping in the epGate PB gateway. Please refer to chapter 3.2.2.2.6 for more details about the function block export.

Following chapter describes the workflow to import and configure the function block in the Control Expert environment.

3.5.1 epGate PB Function Block Import

• In the Project Browser view, right-click on the menu "Derived FB Types" and select the menu "Import":



• Click on the button "Yes" to confirm the modification:



• In this example, the current project state is not saved:







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• Select the *.XDB function file:

🕖 Import			×
← → • ↑ <mark> </mark> « S	E03 Pac → SE03 Tuto 🗸 さ	Search SE03 Tuto	
Organize 🔻 New fol	der		?
A Oviele and	Name	Date modified	Туре
> 🗶 Quick access	ControlExpert-FBs-Export.XDB	03.12.2020 15:52	XDB
> 💻 This PC			
> 💣 Network			
	<		>
File	name: ControlExpert-FBs-Export.XDB 🛛 🗸	Derived function (*.XDB)	\sim
		Import Cancel	

• This import following structure in the menus "Derived Data Types" and "Derived FB types":



Remark

• Pay attention during the function block export that the PROFIBUS and EtherNet/IP configuration is displayed in the Web server. (Both configurations are for example not displayed anymore after a gateway restart). Otherwise no Derived FB Types will be imported, as below, and the configuration next steps will not be possible:







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3.5.2 New Program

• Expand the menu "Programs→Tasks→MAST", right-click on the menu "SR Sections" and select the menu "New SR Section":



• Enter a name and select the language, "FBD" in this example and click on the button "OK":

General Comment Name: 1 epGatePB_Data			
Language: FBD 2		Protection: None	~
	3 ок	Cancel	Help

• This inserts the new program in the project view:

F	Project Browser	x
ſ	Structural view	_
I	Project	
I	🗄 👘 🛄 Configuration	
I	🗄 🖳 Derived Data Types	
I	🗄 👘 🛄 Derived FB Types	
I	🗄 🖳 Variables & FB instances	
I	Motion	
I	Communication	
I	🔢 Ethernet Network	
I	Programs	
I	📄 👘 🔂 Tasks	
I	📄 👘 🔂 MAST	
I	Logic	
I	SR Sections	
I	epGatePB_Data	



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• In the program, right-click in the field and select the menu "FFB Input Assistant...":

	10	20	30	
10		Paste		Ctrl+V
		Duplicate		Ctrl+W
		<u>Z</u> oom		•
	: :	∎ <mark>≵ D</mark> ata Select	ion	Ctrl+D
	:	FF <u>B</u> Input /	Assistant	Ctrl+1
20		SR Subroutine		

• Search the function block epGate_PB_192_168_12_41_11:

Function I	nput Assistant		>	<		Function Input Assistant : FFB Type Selecti	ion			×
FFB type : Instance :	epGate 1		2 ~		•	EpGate Function and Function Block types		~ H	lelp On Type	
Name	Туре	no Comment	Entry field			🕈 🦓 Name = *		EF 🗹	EFB DFI	в
						Ubranies/Families → Capitations ⊕ Capitations - Cubset V15.0>	Name 0::::::::::::::::::::::::::::::::::::	• no.	Type <dfb> <dfb> <ef></ef></dfb></dfb>	-
Add P	n Remove	e Pin(s)	Help On Type				<			>
Special Assist	ant	OK	Cancel Help					4 ок	Cancel	

• Then click on the button "OK":

runction in	iput Assistan	t		^						
FFB type :	epGate_PB_	ate_PB_192_168_12_41_11								
Instance :	epGate_PB_	oGate_P8_192_168_12_41_11_0 ~								
Prototype										
Name		Туре	no.	Comment						
	.its>									
	we	ARRAY[0254] OF BYTE	1							
	puts>	enGate PB 192 168 12 41 11Data	1							
	uts/outputs>	cpdate_rb_rb2_rbb_r2_+r_rbbata								
<				>						
Add Pir	n	Remove Pin(s)		Help On Type						
Special Assista	ant	ОК	Cano	el Help						



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• Click in the program to insert the function block:



• Click on the Input label and then on the shortcut browse Button:



• This displays following window:

ariables Function Blocks Interface			1
Y Name 🔂			Inside structure
Name 🔺	Туре 💌	Value	Comment -
	T_BMENOC0311_2	1	
BMEP58_ECPU_EXT	T_BMEP58_ECPU_EXT		
epGate_PB_Advanced_Generic_EDS	T_epGate_PB_Advanced		
epGate_PB_Advanced_Generic_EDS.Freshness	BOOL		Global Freshness
🔶 epGate_PB_Advanced_Generic_EDS.Freshness_1 🛛 🔫	BOOL		Freshness of Object
😑 🗐 epGate_PB_Advanced_Generic_EDS.Inputs 🛛 🖌	T_epGate_PB_Advanced		Input Variables
epGate_PB_Advanced_Generic_EDS.Inputs.Free0	ARRAY[0255] OF BYTE		Unused Variable
🗄 🕣 epGate_PB_Advanced_Generic_EDS.Outputs	T_epGate_PB_Advanced		Output Variables
Promass300_500_FW010105	T_Promass300_500_FW0		

Click at first on the checkbox "Inside structure" to display the data in the variable table, then select the field "epGate_PB_Advanced_Generic_EDS.Inputs.Free0", which corresponds to the array buffer of the EtherNet/IP inputs and click on the button "OK".

• This assigns the input variable to the function block (but red marked):

•	iep	Gate_PB_192_168_12_41_I1_0	
•	· · ·	1 epGate_PB_192_168_12_41_11	
epGate_PB_Advanced_	Generic_EDS.Inputs.Free0-	raw cooked .	

Remark

At this point, one further modification must be done inside the function block due to a mismatch between the EtherNet/IP data input array (256 bytes) and the function block data input (255 bytes). This error can be checked by compiling the project:

× /	Analyzing
췝({Logic <dfb> : [epGate_PB_192_168_12_41_11]} : 0 error(s), 0 warning(s)</dfb>
	(Logic <dfb> : [epGate_PB_192_168_12_41_01]) : 0 error(s), 0 warning(s)</dfb>
118	(Ethernet Network) : Global modbus and EIP network bandwidth: Input=0.14% - Output=0.14% [limit is set to 77.00%]
III F	Project settings disabled : Maintain output links on disabled EF (EN=0)
11	(epGatePB_Data <sr> : [MAST]} : [1:16, c: 21) E1092 data types do not match ('epGate_PB_192_160_12_41_11.raw:ARRAY[0254] OF BYTE'<>'epGate_PB_Advanced_Generic_EDS.Inputs.Free0:ARRAY[0255] OF BYTE'</sr>
{	(epGatePB_Data <sr> : [MAST]) : 1 error(s), 0 warning(s)</sr>
	K + P 21 Rebuild All Project / Import/export / Useremons / FDT log event / Search/Replace /





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• In the menu "Derived FB Types", double click on the function block "epGate PB 192 168 12 41 I1" and identify the input array:

Project Browser	😰 Data Editor
28 Structural view	Variables DDT Types Function Blocks DFB Types
Project	Fiter Name
Derived Data Types Derived FB Types Derived FB Types	Name v no. Type Value Comment R/W Rights of Referenced Variable R/W Rights of Referenced V
a poster p 192_106 12_11_01	Grow I ARRAY0.254JOF BYTE
Hold Control Cont	Image: Compute > Image: Compute ><
Communication Communication Communication Communication Communication Communication Communication Communication	
Programs Tasis Jojc Scotons Jojc Scotons Jojc Jojc	

• Modify the array length to [0..255], to get as well 256 bytes and click on the button "Yes":

ariables DDT Types Function Blocks	DFB Typ	es					
Filter 🚺 🍓 Name =	•						
Name	no.	Type <dfb> 1</dfb>	▼ ,	Value	Comment 👻	R/W Rights o	f Referenced Variable
in	1	ARRAY 0255	OF B) 🗸 💶				
<pre>coutputs></pre>			Data Edito	or		×	
<pre> <pre> <pre> </pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> </pre> <pre> </pre> <pre> </pre>			?	The item is us Doyou want I	ed in the project. to modify it?	-	
epGate_PB_192_168_12_41		<dfb></dfb>		Don't ask aga	in	-	
			2	Yes	No		

• This updates the input array:

😺 Data Editor					
Variables DDT Types Function Blog	cks DFB Types	3			
Filter 🛛 🦓 Name =	•				
Name 🗸	no.	Туре	✓ Value	Comment 👻	R/W Rights of Referenced Variable
📄 <u>ଲ</u> 📑 epGate_PB_192_168_12]	<dfb></dfb>			
<inputs></inputs>					
庄 📙 raw	1	ARRAY[0255] OF	BYTE		
inputs/outputs>					
∎		<dfb></dfb>			

• With this modification, no errors occur in the compilation anymore and the variable is not underlined anymore:





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• Click on the Output label and enter a variable name:



• Click on the button "Yes":



• Confirm the variable creation:

epGate_PB_Advanced_Generic_EDS.Inputs.F

:	Create variable?
:	Name: adData_epGate Type: EPGATE_ ~
	epGate_PB_192_168_12_41_11
epGate_PB_Advanced_Generic_EDS.In	puts.Free0—raw cookedD=pookedData_epGate

- Download the configuration into the PLC. Please refer to chapter, 3.6.2 and 3.6.4 and 3.6.5 to proceed.

cooked

kedData_epGate



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3.6 Commissioning of the Control Project

3.6.1 Project Variables Settings

• Click on the menu "Tools→Project Settings":



• Select the menu "Variables" and then the option "Allow dynamic arrays". Then, click on the buttons "Apply" and "OK" to validate the configuration:







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3.6.2 **Project Compilation**

• Select the menu "Build→Rebuild All Project":



Compilation is succesful:

Linking Process succeeded : 0 Error(s) , 0	₩arning(s)							
Rebuild All Project	Import/export	λ	User errors	λ	FDT log event	λ	Search/Replace	1
Ready								

3.6.3 First Download Configuration

The first download is realized via USB in order to set the IP settings of the system.

- Connect the PLC via USB to the Engineering station.
- Select the menu "PLC→Set <u>A</u>ddress..." in the tool bar:

File Edit View Services Tools Build	PLC Debug Window Help	
12 🗗 🖬 🖉 📗 🖓 📲 🖕 🖓	<u>C</u> onnect	Ctrl+K
	Set <u>A</u> ddress	
	T Standard Mode	
Project Browser	Simulation Mode	

• Select the PLC parameters "SYS" and "USB", then click on the button "Test Connection":

Set Address		? ×
✓ PLC Address SYS ✓ @ 1	Simulator Address 127.0.0.1 V 💼	Bandwidth 3 Test Connection
Media USB V 2	Media TCPIP ~	OK
Communication Parameters	Communication Parameters	Cancel
Speed rate auto-adaptation at the end of dow	nload	Help

• Following message appears. Click on the button "OK":





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• Close the window "Set Address" by clicking on the button "OK".

et Address		? ×
✓ PLC Address SYS ✓ fi Media	Simulator Address 127.0.0.1	Bandwidth Test Connection
USB	TCPIP	~ OK
Communication Parameter	s Communication Parame	eters Cancel
Speed rate auto-adaptation at the en	d of download	Help

• Go to chapter 3.6.5 to download the configuration in the PLC.

3.6.4 Download Configuration

The system IP settings have already been downloaded in the PLC. In this example, the other downloads are realized via the communication module BMENOC0311, with IP address 10.126.97.88.

• Select the menu "PLC→Set Address..." in the tool bar:

File	Edit	View	Services	Tools	Build	PLC	Debug	Window	Help	
1	🗳 🖥	8	lina X		6.0	<u>C</u>	onnect			Ctrl+K
31 p.				- U.		Se	et <u>A</u> ddress	i		
	wi L				_	671 St	andard M	lode		
Proje	ect Bro	wser				Si	mulation	Mode		

• Select the PLC parameters "10.126.97.88" and "TCPIP", then click on the button "Test Connection":

Set Address			? ×
✓ PLC Address 10.126.97.88 ✓ 💼 1	Simulator Address 127.0.0.1	3	Bandwidth Test Connection
Media TCPIP 2	Media TCPIP ~]	OK
Communication Parameters	Communication Parameters		Cancel
Speed rate auto-adaptation at the end of dou	vnload		Help

Following message appears. Click on the button "OK":

ControlE	kpert	×
1	Successfully connected to the currently selected target.	
	ОК	ו

• Close the window "Set Address" by clicking on the button "OK".

Set Address		? ×
 ✓ PLC Address 10.126.97.88 ✓ m Media 	Simulator Address 127.0.0.1 V 🗃 Media	Bandwidth Test Connection
TCPIP ~	Communication Parameters	OK Cancel
Speed rate auto-adaptation at the end of do	wnload	Help





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3.6.5 Project Download in PLC

• Select the menu "PLC \rightarrow Connect" in the tool bar:

hile Edit View Services Tools Build	PLC Debug Window Help
🏙 🚅 🖬 🎒 📗 🐰 🛍 🗠 🛶 💆	<u>C</u> onnect Ctrl+K
N - & & 🖪 So	Set <u>A</u> ddress
	🚮 Standard Mode
Project Browser	🔩 Simulation Mode

• Once connected, select the menu "PLC→Transfer Project to PLC":



• Following Message Box is displayed. Select the option "PLC Run after Transfer" if needed:

Transfer Proje	ct to PLC	Queruritten	El C Broiset
Name:	Project	Name:	Project
Version:	0.0.0	Version:	0.0.54
Last Build:	24/01/2017 12:02:58	Last Build:	20/01/2017 15:16:59
📝 PLC Ru	n after Transfer		
	Transfer		Cancel

• Following Message Box is displayed. Confirm by clicking on the button "OK:



The PLC is in run mode.
 HMI R/W mode EQUAL RUN UPLOAD INFO OK USB:SYS





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3.7 Monitoring of Process Values and Status Information

3.7.1 epGate PB Gateway Data

3.7.1.1 Integration with Softing EDS File

• In the Project Browser view, right-click on the field "Animation table" and select the menu "New Animation Table":



• Enter a name and click on the button "OK":

New Animation Table	×
Name: epGatePB_SofingEDS	Functional module: <none></none>
Comment:	
	^
	~
Extended String Animation Number of animated characters: 10	0 (range: 20-300)
Temporary Table	
✓ Include in upload info	OK Cancel

• This opens this new Animation Table:

	🗲 epGateDP_So	ftingEDS										
	Modification	Force				- 10. 11					ЯĨ	
	Name	-	Valu	e	Туре		• ,	Com	ment			
	···· •											
1												



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• Click first in the cell, then click on the shortcut button to select the data structure "epGate_PB_Revision_1_10_EDS":

epGateDP_SoftingEDS	
Modification Force 72	テーマーズ 2月1日 2月12日 🔜 🗎
Name 👻 Value	Animation Table : Instance Selection
	epGate_PB_Revision_1_10_EDS V GLOBAL V
-	Variables Function Blocks Interface
	■ Name ■ Pept DDT DDDT Device DDT
	Name ▼ Type ▼ Value Co ▼ Alias Alias of i ID BME_NOC0311 T BMENOC0311 2 I <td< td=""></td<>
	BMEP58_ECPU_EXT T_BMEP58_ECPU_EXT Control =
	< >
	3 OK Cancel

• Cyclic communication is established:

Modification Force			
Name	▼ Value	Туре 💌	Comment
epGate_PB_Revision_1_10_EDS		T_epGate_PB	
epGate_PB_Revision_1_10_EDS.Freshness	1	BOOL	Global Freshness
epGate_PB_Revision_1_10_EDS.Freshness_1	1	BOOL	Freshness of Object
epGate_PB_Revision_1_10_EDS.Inputs		T_epGate_PB	Input Variables
		T_epGate_PB	Output Variables
b			

• Expand the field "Inputs" to see the Online values:

epGate_PB_Revision_1_10_EDS.Inputs		T_epGate_PB	Input Variables
epGate_PB_Revision_1_10_EDS.Inputs.Component_1	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0		ARRAY[0254]	Unused Variable
epGate_PB_Revision_1_10_EDS.Inputs.Free0[0]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[2]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[3]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[4]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[5]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[6]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[7]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[8]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[9]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[10]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[11]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[12]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[13]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[14]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[15]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[16]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[17]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[18]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[19]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[20]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[21]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[22]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[23]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[24]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[25]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[26]	4	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[27]	20	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[28]	159	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[29]	18	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[30]	58	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[31]	128	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[32]	54	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[33]	92	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[34]	149	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[35]	67	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[36]	128	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[37]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[38]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[39]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[40]	0	BYTE	
epGate_PB_Revision_1_10_EDS.Inputs.Free0[41]	128	BYTE	

Refer to the EtherNet/IP epGate PB mapping to decode the data manually, as described in chapter 3.2.2.5.



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• Pay attention by using these data because there is a byte offset introduced by Control Expert in the data structure:

Modification Force 2 5 2 5	- H = H = H = H			
Name	 Value 	Туре 💌	Comment	
epGate_PB_Revision_1_10_EDS		T_epGate_PB		
epGate_PB_Revision_1_10_EDS.Freshness	1	BOOL	Global Freshness	
epGate_PB_Revision_1_10_EDS.Freshness_1	1	BOOL	Freshness of Object	
epGate_PB_Revision_1_10_EDS.Inputs		T_epGate_PB	Input Variables	
epGate PB Revision 1 10 EDS.Inputs.Component	1 0	BYTE		1st received byte
epGate_PB_Revision_1_10_EDS.Inputs.Free0		ARRAY[0254]	Unused Variable	- ,
epGate_PB_Revision_1_10_EDS.Inputs.Free0[(0] 0	BYTE		2nd received byt
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	1] 0	BYTE		2na receivea bye
epGate_PB_Revision_1_10_EDS.Inputs.Free0[2	2] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[3] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[4	4] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[f	5] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[f	6] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[7	7] 0	BYTE		_
epGate_PB_Revision_1_10_EDS.Inputs.Free0[{	B] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[?	9] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	10] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	11] 0	BYTE		_
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	12] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	13] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	14] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	15] 0	BYTE		_
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	16] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	17] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	18] 0	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[1	19] 4	BYTE		—
epGate_PB_Revision_1_10_EDS.Inputs.Free0[2	20] 4	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[/	21] 4	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[2	22] 4	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[2	23] 4	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[2	24] 4	BYTE		
epGate_PB_Revision_1_10_EDS.Inputs.Free0[/	25] 4	BYTE		
epGate PB Revision 1 10 EDS.Inputs.Free002	26] 4	BYTE		

In consequence, due to this 1-byte shift, the function block provided by Softing cannot be used. Otherwise, wrong values will be displayed.



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3.7.1.2 Integration with Schneider Electric Advanced Generic EDS File

- Add a new animation table, for example "cookedData_epGate" as done in the previous chapter.
 Animation Tables
 epGate_cookedData
- Add the function block output variable "cookedData epGate". This displays the decoded values:

Name	Value	Type 💌	
e CookedData enGate	Value	epGate PB 192 168 12 41 11Data	
E CookedData epGate HaStatus		HaStatus	
cookedData_epGate.HaStatus.LocalState	0	UINT	
cookedData_epGate.HaStatus.RemoteState	0	UINT	
cookedData epGate.HaStatus.LocalError	0	UINT	
cookedData_epGate.HaStatus.RemoteError	0	UINT	
🖃 📕 cookedData epGate.DeviceFailure		ARRAY[01] OF UDINT	
cookedData_epGate.DeviceFailure[0]	0	UDINT	
cookedData_epGate.DeviceFailure[1]	0	UDINT	
🖃 📕 cookedData_epGate.DeviceStatus		ARRAY[07] OF BYTE	
cookedData_epGate.DeviceStatus[0] Address 13	4	BYTE	
cookedData_epGate.DeviceStatus[1] Address 20	4	BYTE DAO Soame	nt dovico statu
cookedData_epGate.DeviceStatus[2] Address 21	4	BYTE FRO Segure	ent device statu
cookedData_epGate.DeviceStatus[3] Address 24	4	BYTE	
cookedData_epGate.DeviceStatus[4] Address 11	4	BYTE	
cookedData_epGate.DeviceStatus[5] Address 15	4	BYTE DA1 Seame	nt device statu
cookedData_epGate.DeviceStatus[6] Address 16	4	BYTE - IAI SCONC	in device statu
cookedData_epGate.DeviceStatus[7] Address 19	4	BYTE	
cookedData_epGate.Main_Process_Value_1_13_1_1	0.0005584857	REAL	
cookedData_epGate.Main_Process_Value_1_13_1_2	128	BYTE	
cookedData_epGate.a2nd_Cyclic_Value_1_13_2_1	298.3941	REAL Process val	ues and Status:
cookedData_epGate.a2nd_Cyclic_Value_1_13_2_2	128	BYTE	
cookedData_epGate.a3rd_Cyclic_Value_1_13_3_1	0.0	REAL Field Device	e Address 13
cookedData_epGate.a3rd_Cyclic_Value_1_13_3_2	128	BYTE	
cookedData_epGate.Main_Process_Value_1_20_1_1	0.0	REAL	
cookedData_epGate.Main_Process_Value_1_20_1_2	79	BYTE	
cookedData_epGate.a2nd_Cyclic_Value_1_20_2_1	50.0	REAL	
cookedData_epGate.a2nd_Cyclic_Value_1_20_2_2	12	BYTE	
cookedData_epGate.Al_1_21_1	24.28375	REAL	
cookedData_epGate.Al_1_21_1_2	128	BYTE	
cookedData_epGate.Al_1_21_2_1	+NAN	REAL	
cookedData_epGate.Al_1_21_2_2	128	BYTE	
cookedData_epGate.Al_1_21_3_1	24.28375	REAL	
cookedData_epGate.Al_1_21_3_2	128	BYTE	
cookedData_epGate.Al_1_21_4_1	+NAN	REAL	
cookedData_epGate.Al_1_21_4_2	128	BYTE	
cookedData_epGate.Al_1_24_1_1	12.3	REAL	
cookedData_epGate.Al_1_24_1_2	96	BYTE	
cookedData_epGate.TOTAL_1_24_2_1		PbFloat32Unsigned8	
cookedData_epGate.TOTAL_1_24_2_1.Value	4263242.0	REAL	
cookedData_epGate.TOTAL_1_24_2_1.ProcessValueStatus	96	BYTE	
cookedData_epGate.TOTAL_1_24_5_1		PbFloat32Unsigned8	
cookedData_epGate.TOTAL_1_24_5_1.Value	4263686.0	REAL	
	00	DVTE	

• The DeviceStatus value is "4". This means that the cyclic data exchange is activated for the device.

Please refer to the Softing User Guide for further details about the status.



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3.7.2 Promass300 E/IP Data

- Add a new animation table, for example "cookedData_epGate" as done in the previous chapter.
 Animation Tables
 epGate_CookedData
 - AT Promass300

3.7.2.1 Process Values

• Add the Promass300 data structure:

			- 1	
lame	·	Value	Туре 🔻	Comment
Promas	s300_FW010005		T_Promass300_FW010005	
- Pro	mass300_FW010005.Freshness	1	BOOL	Global Freshness
🔶 Pro	mass300_FW010005.Freshness_1	1	BOOL	Freshness of Object
😑 🖅 🗐 Pro	mass300_FW010005.Inputs		T_Promass300_FW010005_IN	Input Variables
主 ··· 📘	Promass300_FW010005.Inputs.Free0		ARRAY[03] OF BYTE	Unused Variable
🐤	Promass300_FW010005.Inputs.Actual_diagnostics	0	DINT	
	Promass300_FW010005.Inputs.Process_variables_Mass_flow	1.801607	REAL	
🗢	Promass300_FW010005.Inputs.Process_variables_Volume_fl	2324.822	REAL	
🗢	Promass300_FW010005.Inputs.Process_variab_Correct_vol	2324.822	REAL	
🔶	Promass300_FW010005.Inputs.Process_variables_Temperatu	23.65887	REAL	
🔶	Promass300_FW010005.Inputs.Process_variables_Density	0.0007749443	REAL	
🗢	Promass300_FW010005.Inputs.Process_variables_Reference	0.0007749443	REAL	
🐤	Promass300_FW010005.Inputs.Process_variables_Totalizer	4223.553	REAL	
🔶	Promass300_FW010005.Inputs.Process_variables_TotalizerA	8639.172	REAL	
🔶	Promass300 FW010005.Inputs.Process variables TotalizerB	8639.164	REAL	
🖻 🗇 Pro	mass300 FW010005.Outputs		T Promass300 FW010005 OUT	Output Variables
	Promass300 FW010005.Outputs.Free1	0	BYTE	Unused Variable
🔖	Promass300 EW010005 Outputs Control Totalizer 1 Activatio	0	BOOL	
🔖	Promass 300 EW010005 Outputs Control Totalizer 2 Activatio	0	BOOL	
	Promass 300 EW010005 Outputs Control Totalizer 3 Activatio	0	BOOL	
	Promase 300 EW/010005 Outputs Start, verification, Activation	0	BOOL	
	Promase 300 EW/010005 Outputs Jaurie Liquid type Activation	0	BOOL	
	Promase 300 EW/010005.0 dipute External pressure. Activation	0	BOOL	
	Promass300_FW010005.Outputs.External_pressure_Activation	0	BOOL	
	Promass300_PW010005.0utputs.External_tereferice_density_Ac	0	BOOL	
	Promass300_FW010005.Outputs.External_temperature_Activati	0	BUUL	Linus ad Vestable
	Promass300_PW010005.0utputs.rtee2	0	BITE	Unused variable
	Promass300_FW010005.Outputs.5_VV_correction_value_Activati	0	BOOL	
	Promass300_FW010005.Outputs.water_cut_Activation	0	BOOL	
	Promass300_FW010005.Outputs.How_overnde_Activation	0	BOOL	
	Promass300_FW010005.Outputs.Zero_point_adjustment_control	0	BOOL	
±… 📘	Promass300_FW010005.Outputs.Free3	-	ARRAY[01] OF BYTE	Unused Variable
	Promass300_FW010005.Outputs.Totalizer_1_Control_Totaliz	0	INT	
	Promass300_FW010005.Outputs.Totalizer_2_Control_Totaliz	0	INT	
•	Promass300_FW010005.Outputs.Totalizer_3_Control_Totaliz	0	INT	
	Promass300_FW010005.Outputs.Perform_verific_Start_veri	0	INT	
	Promass300_FW010005.Outputs.Liquid_type	0	INT	
···· 📒	Promass300_FW010005.Outputs.Free4		ARRAY[01] OF BYTE	Unused Variable
	Promass300_FW010005.Outputs.Petroleum_External_pressure	0.0	REAL	
🔶	Promass300_FW010005.Outputs.Pressure_unit	0	INT	
÷	Promass300_FW010005.Outputs.Free5		ARRAY[01] OF BYTE	Unused Variable
	Promass300_FW010005.Outputs.Corr_vol_flow_Ext_ref_d	0.0	REAL	
🔶	Promass300_FW010005.Outputs.Reference_density_unit	0	INT	
	Promass300_FW010005.Outputs.Free6		ARRAY[01] OF BYTE	Unused Variable
💊	Promass300_FW010005.Outputs.Petroleum_External_temperat	0.0	REAL	
	Promass300 FW010005.Outputs.Temperature unit	0	INT	
	Promass300 FW010005.Outputs.Free7		ARRAYIO., 11 OF BYTE	Unused Variable
	Promass300 FW010005.Outputs.Petroleum S W correction va	0.0	REAL	
	Promass300 FW010005.Outouts.Water cut	0.0	REAL	
	Promass 300 FW010005 Outputs Process parameters Flow over	0	INT	
			1.000	1



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3.7.2.2 Field Devices Diagnostics

• In this example, the error F882 has been simulated on the device:

😣 Fa	ailure (F)			
F882	Input signal	(Alarm)712d22h36m50s	۲	Deactivate simulation (Service ID: 49)
V F	unction check ((2)		
C495	Diagnostic event simulatio	n (Warning)712d22h36m50	s 🔊	Deactivate simulation (Service ID: 350)
	Diagnostics			

• The field device diagnostic is part of the input assembly telegram in a double Integer Format. In this example, the received Diagnostics value is (66418)₁₀:

Modification Force 2 5 2 5 2 5	M 🔊 🖪	អា	
Name 🔻	Value	Туре 👻	Comment
🖃 🗩 Promass300_FW010005		T_Promass300_FW010005	
Promass300_FW010005.Freshness	1	BOOL	Global Freshness
Promass300_FW010005.Freshness_1	1	BOOL	Freshness of Object
Promass300_FW010005.Inputs		T_Promass300_FW010005_IN	Input Variables
Promass300_FW010005.Inputs.Free0		ARRAY[03] OF BYTE	Unused Variable
Promass300_FW010005.Inputs.Actual_diagnostics	66418	DINT	
Promass300_FW010005.Inputs.Process_variables_Mass_flow	0.8349453	REAL	
Promass300_FW010005.Inputs.Process_variables_Volume_fl	1086.912	REAL	
Promass300_FW010005.Inputs.Process_variab_Correct_vol	1086.912	REAL	
Promass300_FW010005.Inputs.Process_variables_Temperatu	23.65887	REAL	
Promass300_FW010005.Inputs.Process_variables_Density	0.0007681809	REAL	
Promass300_FW010005.Inputs.Process_variables_Reference	0.0007681809	REAL	
Promass300_FW010005.Inputs.Process_variables_Totalizer	4223.632	REAL	
Promass300_FW010005.Inputs.Process_variables_TotalizerA	8639.251	REAL	
Promass300_FW010005.Inputs.Process_variables_TotalizerB	8639.243	REAL	
Promass300_FW010005.Outputs		T_Promass300_FW010005_OUT	Output Variables

 The Diagnostic telegram is built as below: (66418)₁₀ = (0x0001_0372)₁₆

Ox0372 → (882)₁₀ = Event Number

▶ 0x01 → NAMUR Status

0x00 No Failure detected **0x01 Failure (F)** 0x02 Function Check (C) 0x04 Maintenance Required (M) 0x08 Out of Specification (S)



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Remarks about Diagnostics of other E+H field devices

The Liquiline diagnostics are automatically decoded in the assembly telegram.

• Example of a failure F100:

Name		Value	Туре 🔻	Comment
Liquiline_CM44x_010703			T_Liquiline_CM44x_010703	
Liquiline_CM44x_010703.Freshness		1	BOOL	Global Freshness
Liquiline_CM44x_010703.Freshness_1		1	BOOL	Freshness of Object
Liquiline_CM44x_010703.Inputs			T_Liquiline_CM44x_010703_IN	Input Variables
Liquiline_CM44x_010703.Inputs.H	eader	0	DINT	
- Science CM44x_010703.Inputs.D	iagnoseCode	100	INT	Diagnostic Numbe
Liquiline_CM44x_010703.Inputs.S	tatusSignal	1.	BYTE	NAMUR status
Liquiline_CM44x_010703.Inputs.C	hannel	1	BYTE	
Liquiline_CM44x_010703.Inputs.A	11Value	0.0	REAL	
Liquiline_CM44x_010703.Inputs.A	11Status	12	M	
Liquiline_CM44x_010703.Inputs.A	11Unit	11520	INT	
Liquiline_CM44x_010703.Inputs.A	12Value	0.0	REAL	
Liquiline_CM44x_010703.Inputs.A	12Status	12	INT	
Liquiline CM44x 010703.Inputs.A	12Unit	4608	INT	

In this example, no sensor is connected. This activates the error F100:

Software version: 01.07.03-0003

CH1: F100: Sensor communication



• Example of a simulation C215:

Modification Force		71 - 1	
Name 👻	Value	Туре 👻	Comment
🖃 🗐 Liquiline_CM44x_010703		T_Liquiline_CM	
Liquiline_CM44x_010703.Freshness	1	BOOL	Global Freshness
Liquiline_CM44x_010703.Freshness_1	1	BOOL	Freshness of Object
🖃 🗐 Liquiline_CM44x_010703.Inputs		T_Liquiline_CM	Input Variables
Liquiline_CM44x_010703.Inputs.Header	0	DINT	
Liquiline_CM44x_010703.Inputs.DiagnoseCode	215	INT	Diagnostic Numbe
Liquiline_CM44x_010703.Inputs.StatusSignal	2	BYTE	NAMUR status
Liquiline_CM44x_010703.Inputs.Channel	1	BYTE	
Liquiline_CM44x_010703.Inputs.Al1Value	-0.5324	REAL	
Liquiline_CM44x_010703.Inputs.Al1Status	128	INT	

Menu/Diagnostics

Software version: 01.07.03-0003

Home

Most important message C215 Simulation active





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The same principle is used for the Memograph.

• Example of a failure F105:

÷	Memograph_M_FW020403		T_Memograph	
	Memograph_M_FW020403.Freshness	1	BOOL	Global Freshness
	Memograph_M_FW020403.Freshness_1	1	BOOL	Freshness of Object
	Memograph_M_FW020403.Inputs		T_Memograph	Input Variables
	Memograph_M_FW020403.Inputs.Header	0	DINT	
	Memograph_M_FW020403.Inputs.DiagnoseCode	105	INT	Diagnostic Number
	Memograph_M_FW020403.Inputs.StatusSignal	1	BYTE	NAMUR status

This corresponds to following error:

Diagnostic code	Message text	Description	Remedy
F100	Sensor/input error	Sensor/input error	Check connections and parameters
F101	Open circuit	Open circuit	Check connections
F105	Invalid value!	Measured value is invalid (when calculating> NAN)	Check connections and process variables





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4 Specific Integration

This chapter explains how to handle EtherNet/IP explicit messages from the control strategy.

To evaluate and document the workflow, we have implemented this by example for reading and resetting the totalizer of a Promass300 E/IP device. Further examples, like triggering a Heartbeat Verification, may be based on this concept.

The Promass300 E/IP is connected to the Schneider Electric switch in Star, as defined in Reference Topology SE03. Cyclic communication is running with the M580 PLC.

4.1 Principle

Sending Explicit Messages is possible by using the function block "DATA_EXCH". Two Device Specific function blocks for the Promass300 have been developed by using the "DATA_EXCH" function block:

The function block "readTotalizer1_Promass300" is used to read the Totalizer1 value.

The function block "resetTotalizer1_Promass300 is used to reset the Totalizer1 value.

4.2 Read Totalizer Function Block

4.2.1 Request Telegram

• The request telegram is made of two parts, one regarding the EtherNet/IP header and the other one regarding the device specific parameter:

Request Telegram	Offset	Value	Comment
Part1	Byte 0	0x0E	Get Attribute Single service
Header Ethernet IP	Byte 1	0x03	Size of the Link path in Words (6 bytes = 3 Words)
Part2 Device parameter	Byte 2	0x20	
	Byte 3	0x73	Link noth of Dovomotor
	Byte 4	0x24	LINK path of Parameter
	Byte 5	0x01	Process variables - rotalizer value 1
	Byte 6	0x30	
	Byte 7	0x0C	


• The parameter "Process variables – Totalizer value 1" Link path can be found in the EDS file:



4.2.2 Response Telegram

• The response telegram is made of two parts, one regarding the EtherNet/IP Explicit Messages and the other one regarding the device specific parameter:

Response Telegram	Offset	Value	Comment				
	Byte 0	0x8E	Explicit Message Service				
Part1	Byte 1	0x00					
Header Ethernet IP	Byte 2	0x00					
	Byte 3	0x00					
	Byte 4	0x					
Part2	Byte 5	0x	Totalizer 1 value				
Device parameter	Byte 6	0x					
	Byte 7	0x					



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4.2.3 Function Block "readTotalizer1_Promass300"

• In Control Expert, the function block has been created in the "Derived FB Types" library:



- Mandatory Inputs
 - The parameter "startRead" corresponds to the function block start bit.
 - The parameter "IPaddress" corresponds to the Promass300 IP address.
- Outputs
 - The parameter "valueTOT1" corresponds to the Promass300 totalizer 1 value.
- Implemented Function bloc logic



This program shows just the basic workflow to get the totalizer value. The error handling of the DATA_EXCH function block is not implemented.





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4.2.4 Online Monitoring

• If the cyclic communication is established (bit Promass300_FW010005.freshness = TRUE) and the start bit "triggerRead" is enabled, then the function block is enabled as well and the output value (totalizer 1 value) is updated:



4.3 Reset Totalizer Function Block

4.3.1 Request Telegram

• The request telegram is made of three parts, one regarding the EtherNet/IP header and the two others regarding the device specific parameter:

Request Telegram	Offset	Value	Comment			
Part1	Byte 0	0x10	Set Attribute Single service			
Header Ethernet IP	Byte 1	0x03	Size of the Link path in Words (6 bytes = 3 Words)			
	Byte 2	0x20				
	Byte 3	0x72				
Part2	Byte 4	0x24	Link path of Parameter "Totalizer1-Control Totalizer1			
Device parameter 1	Byte 5	0x01				
	Byte 6	0x30				
	Byte 7	0x09				
Part3	Byte 8	0xC6	Command "Reset and Totalize" $\rightarrow 0xC6 = (198)_{10}$			
Device parameter 2	Byte 9	0x00				



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• The parameter "Totalizer 1 – Control Totalizer 1" Link path as well the "Reset+Totalize" Command can be found in the EDS file:



4.3.2 Response Telegram

• The response telegram is made of one part regarding the EtherNet/IP Explicit Messages:

Response Telegram	Offset	Value	Comment			
Part1	Byte 0	0x90	Explicit Message Service			
Header Ethernet/IP	Byte 1	0x00				

4.3.3 Function Block "readTotalizer1_Promass300"

• In Control Expert, the function block has been created in the "Derived FB Types" library:



- Mandatory Inputs
 - The parameter "startReset" corresponds to the function block start bit.
 - \circ $\;$ The parameter "IPaddress" corresponds to the Promass300 IP address.





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• Implemented Function bloc logic

This program shows just the basic workflow to reset the totalizer value. The error handling of the DATA_EXCH function block is not implemented.

4.3.4 Online Monitoring

• If the cyclic communication is established (bit Promass300_FW010005.freshness = TRUE) and the start bit "triggerReset" is enabled, then the function block is enabled as well and this resets the totalizer value 1:







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5 Bypassed Tool Integration

This chapter describes the main workflow for integration of EtherNet/IP and PROFIBUS PA devices to the Endress+Hauser Plant Asset Management (PAM System) by means of Communication DTMs.

5.1 FieldCare New Project

• Start the application FieldCare:



• Select "Create Project" and click on the button "Open":

FieldCare					×				
New Existing Recent									
×	R		HART	0000°					
Create Projec	Connection Wizard	MultiDrop	Point-to-Point	SOFTING					
e									
PCP Interface	e ISS Interface	IPC Interface	CDI FXA291	CDI USB					
Foundation National Inst.									
Creates an empl	ty project								
		[Open	Cance					





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5.2 EtherNet/IP Field Device Integration

5.2.1 CommDTM Configuration

• Right-click on the Network Tag "Host PC" and select the menu "Add Device...":



• Select the CommDTM "EtherNet/IP Comm Adapter" from Schneider Electric and click on the button "OK":

🖼 Add New Device								\times				
Filter												
Manufacturer:						-						
, Davias												
Device.							TILCI					
△ Device	Version		Class	Manufacturer	Protocol			^				
CDI Communication USB	V2.09.07 (2019-0	9-09)	- T	Endress+Hauser	CDI USB							
EtherNet/IP Comm Adapter	V1.5.1 (2016-01-2	5)	dtmSpe	cific Schneider Electric	EtherNetIP							
FF H1 CommDTM	V1.5.4.2 (2015-01	-29)	· 👰	Endress+Hauser	FDT FIELDBUS FF H1							
Flow Communication FXA193/291	V3.30.00 (2018-0	1-29)	· 🔊	Endress+Hauser	ISS							
HART Communication	V1.0.57 (2017-12-	-18)	· 💽	CodeWrights G	HART							
IPC (Level, Pressure) FXA193/2	V1.02.17 (2014-0	2-21)	?	Endress+Hauser	IPC							
Modbus Serial Communication D	V2.6.12(2019-03	201	dtmSne	cific Schneider Electric	MODRUS SERIAI			~				
		Device type (DTM)	information									
Device:		EtherNet/IP Comm	Adapter			-	-					
Manufacturer:		Schneider Electric										
Device ID / SubID:		65535-65535										
Manufacturer ID:		65535										
Hardware revision:												
Software revision:	Software revision:			255.255								
Device revision:	-											
Profile revision:		1 No										
Is generic:		011										
						ОК	Car	ncel				

• CommDTM is inserted in the project view:

Network								
Network Tag	Connection Channel Address		Address	Device type (DTM) Physical Device				
Host PC								
EtherNet/IP Comm Adapter	$\langle \rangle$			EtherNet/IP Comm Adapter				



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• Double-click on the CommDTM and configure the Host Address:

Network					÷ x	EtherNet/IP Comm Adapter (Configuration) ×
Network Tag	Connection	Channel	Address	Device type (DTM)	Physical Device	EtherNet/IP Comm Adapter V1.5.1
Host PC				1		Communication DTM
EtherNet/IP Comm Adapter				EtherNet/IP Comm Adapter		Configuration Runtime AddressTable Scan
						General
						Host Address : 192.168.12.202 Refresh
						Intel(R) 82574L Gigabit Network Connection (Ghemet 1)
						Message Timeout : 1000

• Select the tab "Scan" and configure for example Scan Mode "Range":

Network					ћ х	EtherNet/IP Comm Adapter (Configuration) ×
Network Tag	Connection	Channel	Address	EtherNet/IP Comm Adapter V1.5.1		
Host PC						Communication DTM
EtherNet/IP Comm Adapter	$\triangleleft \triangleright$			EtherNet/IP Comm Adapter	,	Configuration Runtime AddressTable Scan 1
						Scan Mode 2
						🖉 C Single 💽 Range C Broadcast
						Start address : 🆋 192 . 168 . 12 . 33
						End address : 🎢 192 . 168 . 12 . 40

• Click on the button "Apply" and close the CommDTM configuration window:

ОК	Cancel	Apply	Help	
----	--------	-------	------	--

5.2.2 Network Scanning

• Select the CommDTM and click on the button Create Network:

<u>File Edit View D</u> evice	Operation	DTM <u>(</u>	∑atalog	<u>T</u> ools	<u>W</u> indov	v E <u>v</u>	<u>x</u> tras	<u>H</u> elp	
 🛐 🎽 📂 🔲 🖨			-	i 🔓	٦	E <mark></mark> *		1	*
Network						2		÷×	
Network Tag	Connection	Channel	Address	Device type (D	OTM)		Physica	l Device	
Host PC									
EtherNet/IP Comm Adapter				EtherNe	et/IP Comm	Adapter	r		1



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• Select the Promass300 DTM and click on the button "OK":

💷 Create	Ne	twork - Scanning resu	lt						\times
- Status su	mm	ary							
		There is at least one	action required.						
\bigtriangledown	o	Device Tag	Channel : Address	Statu	: / Actior	n			
6		Liquiline CM448	[EtherNetIPCommChannel:192.168.12.33]		Do not	add to project			
6		Memograph M RSG45	[EtherNetIPCommChannel:192.168.12.36]		Do not	add to project			
6		epGate PB	[EtherNetIPCommChannel:192.168.12.40]		Do not	add to project			
1		Promass300/500EI	[EtherNetIPCommChannel:192.168.12.35]		Add to p	project			
Number o	f fo	und devices in scan resu	t: 1			Select all	Des	elect all	
DTH O	-64								
	ualit	y	t assignment details						
		Assigned device ty	pe (DTM) exactly matches the hardware info	rmation	with all I	Ds and revision.			
_	D	evice type (DTM):	Promass 300 500 / 8x3x 8x5x / EIP / FW	1.00.zz	/ Dev.F	Rev. 01			
1	С	lass (DTM):	Flow			Assian device	type (DTM)		
							())))		-
- Status /	Ac آآ	tion lew device found (assign	ecanned device type to project)						-
	ſ	iew device round (dasign							
	A	ction:	Add to project					•	J
	-								
						Details ¥	OK	Car	ncel

Other devices have been found by the scanner but no DTMs exist and are installed in FieldCare environment for them. That's why the DTM Quality signal is "6".

• EtherNet/IP field device is successfully inserted in the project:

Network				1	ф.
Network Tag	Connection	Channel	Address	Device type (DTM)	
Host PC					
EtherNet/IP Comm Adapter				EtherNet/IP Comm Adapter	
Promass 300/500EI	$\langle \rangle$	EtherNetIP	192.168.12.35	Promass 300 500 / 8x3x 8x5x / EIP / FW 1.00.zz / Dev.Rev. 01	

5.2.3 Online Connection

• Select the deviceDTM and click on the button "Connect":

🔁 🎽 📂 🔲 🖨	DTMs	- 🕅			1 🚯 🖏	💱 🍞 -
Network					2	ų ×
Network Tag	Connection	Channel	Address	Device type (DTM) 🛆		Phys
Host PC						
EtherNet/IP Comm Adapter				EtherNet/IP Comm Adapter		1
Promass300/500EI		EtherNetIP	192.168.12.35	Promass 300 500 / 8x3x 8x	5x / EIP / FW 1.00.z	z / Dev.Rev. 01



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• Then double-click on the deviceDTM to open the Online Parameterization window:

TTON			.11207					
-	Device name:	Promass 300	Mass flow:	8	1.9111 kg/h	Density:	0.0008 kg/l	E
	Device tag:	EIP0007	Volume flow:	1	2476.4630 l/h	Reference density:	0.0008 kg/NI	Endress+Hauser
	Status signal: 🧘	🔽 ок	Corrected volume	flow: 🔁	2476.4630 NI/h			
	3 🗖 🖬 🐼 🖻	a 🛸 👗 🚰	0 0					
Menu /	Variable		Instrumen	t health s	tatus			
8	Promass300 500		ОК					
	P Access status:							
	Setup							
1 b	Diagnostics							
÷.	🚞 Expert							
Ľ								
E 0	nline			🕅 🛛 Diagr	nostics			
😍 Co	nnected 🔰 🛛 🔂 🗌 🗕	. 🥒 🔄 😫	User Role: Planni	ng engineer				

5.3 PROFIBUS PA Field Device Integration

5.3.1 Driver Configuration

• Open the program "Softing PROFIBUS \rightarrow Driver configuration" from the Windows Start menu:



• Click on the button "Yes":







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•	This ope	ns following	g program:
---	----------	--------------	------------

PROFIBUS	PROFIBUS		Add
"PROFIboard PCI "PROFIcard 2 "PBpro USB / PROFlusb "PBpro PCI 04+ / PBpro PCI104 "PBpro PCI + PBpro CPCI "PBpro PCIe "PBpro ETH / FG series prGate PB / mbGate PB	Item Installation API and Driver Protocol Driver V5 Hardware Driver V6 Hardware Driver PnP Hardware Driver USB Hardware Driver	Data Version 5.47.00.0 5.47.0.2019 5.47.0.2019 6.27.0.2019	Edit
	Application Program Interface Control Panel Applet	5.47.0.2019 5.47.0.2019	

Select the menu "pnGate PB / mbGate PB" and click on the button "Add...":

 * PROFIBUS Control Panel
 ×

PROFIBUS PROFIboard PCI PROFIcard 2	pnGate PB / mbGate PB	Add Remove
PBpro USB / PROFlusb PBpro PC104+ / PBpro PC1104 PBpro PC104+ / PBpro cPC1 PBpro PC1e PBpro ETH / FG series pnGate PB / mbGate PB	Firmware Version <not available=""></not>	E dit
Scan	OK Cancel Apply	





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• Enter a name for this node, "Segmenr_PA0" in this example and click on the button "Next":

Select Node Name		×
Name?	The following information is used to access the PROFIBUS interface from an application. Please enter a symbolic node name.	
	Symbolic Node Name: Segment_PA0 1	
	<pre>2 </pre> < Back Next > Cancel	

• Enter the IP address epGate PB configured in chapter 3.2.2.2.1, select the Bus segment "PAO" and click on the button "Next":

Select Addresses for pnGate PB	/ mbGate PB	×
	The IP address is used to connect systems independent of their location and the used physical medium. Please enter either the IP address or name of the pnGate PB / mbGate PB interface and select the desired bus connector.	
	pnGate PB / mbGate PB interface Name 192.168.12.41 1 Bus segment: PA0 2	
	3 < Back Next > Cancel	





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Let the default "Timeout" parameters and click on the button "Finish": ٠

Select Timeouts for pnGa	te PB / mbGate PB	×	
	For proper communication it is i timeouts. Please enter the time and the maximum idle time.	necessary to define out for connecting	
	Timeout for Connect:	3000 ms	
	Max Idle Time:	3000 ms	
	< Back Fi	inish Cancel	

Select the created connection "Segment_PAO" and click on the button "Apply": • ×

PROFIBUS Control Panel

W PROFIBUS	pnGate PB / mbG	ate PB Segment_PA0		Add
PROFIboard PCI PROFIcard 2 PROFIcard 2 PBpro USB / PROFIusb PBpro PC104 / PBpro PC104 PBpro PC1 / PBpro PCI PBpro PCIe PBpro ETH / FG series PnGate PB / mbGate PB ① Segment_PA0 1 The settings of this device are not checked	Item Interface Number Interface Type Serial Number Firmware Type Firmware Version IP-Address IP-Port	Data 0 mbGate PB <unknown> PROFIstack Master PA <unknown> <unknown></unknown></unknown></unknown>		Remove Edit
Scan	ОК	Cancel	Apply	2

Confirm the configuration by clicking on the button "Yes": •

PROFIBUS Control Panel	





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• Connection is successfully configured:

S PROFIBUS	pnGate PB / mbGa	ate PB Segment_PA0	Add
PROFIboard PCI PROFIcard 2	Item Interface Number	Data N	Remove
<u>PBpro USB / PROFlusb</u> PBpro PC104+ / PBpro PC1104 PBpro PC1 / PBpro cPC1	Interface Type Serial Number	mbGate PB 200900105	Edit
PBpro PCIe PBpro ETH / FG series	Firmware Type Firmware Version	PROFIstack Master PA PA-Master 6.60.00.13712 fting\Profi	
pnGate PB / mbGate PB Segment_PA0	IP-Address IP-Port	192.168.12.41 2357	
	Device Names	<pre>\\\PROFIBUS\Board0\Board \\\PROFIBUS\Board0\Pb0\Service \\\PROFIBUS\Board0\Pb0\DpData</pre>	
	Alias Dev. Names	\\\PROFIBUS\Segment_PA0\Board \\\PROFIBUS\Segment_PA0\Service \\\PROFIBUS\Segment_PA0\DpData	
	<	>	
his device is working properly			

Proceed as well for the other PA segments. In our example, we have the PA1 segment as well:

 ¹/₂ PROFIBUS Control Panel
 ×

S PROFIBUS	pnGate PB / mbGa	ate PB Segment_PA1	Add
PROFIboard PCI PROFIcard 2	Item	Data	Remove
PBpro USB / PROFlusb PBpro PC104+ / PBpro PCI104	Interface Number Interface Type Serial Number	1 mbGate PB 200900105	E dit
PBpro PCIe PBpro ETH / FG series	Firmware Type Firmware Version	PROFIstack Master PA PA-Master 6.60.00.13712 🛛 🖬	
pnGate PB / mbGate PB Segment_PA0 Segment PA1	IP-Address IP-Port	192.168.12.41 2357	
	Device Names	<pre>\\\PROFIBUS\Board1\Board \\\PROFIBUS\Board1\Pb0\Service \\\PROFIBUS\Board1\Pb0\DpData</pre>	
	Alias Dev. Names	\\\PROFIBUS\Segment_PA1\Board \\\PROFIBUS\Segment_PA1\Service \\\PROFIBUS\Segment_PA1\DpData	
his device is working properly			
his device is working properly		Cancel Apply	

Click on the button "OK" to close the configuration.





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5.3.2 CommDTM Configuration

• Right-click on the Network Tag "Host PC" and select the menu "Add Device...":

Network					
Network Tag			onnection	Channel	Address
Host PC					
	Ŀ	ŀ	<u>A</u> dd Device		
	1	k	<u>D</u> elete D	evice	
	X		Launch \	Wizard	

• Select the CommDTM "PROFIdtm DPV1" from Softing and click on the button "OK":

🖽 Add New Device						- 0	\times
Filter							
Manufacturer:						Filte	r
,							
🛆 Device	Version	Class		Manufacturer	Protocol		^
Modbus Serial Communication D	V2.6.12 (2019-03-20)	2	dtmSpecific	Schneider Electric	MODBUS_SERIAL		
Modbus TCP Communication D	V2.6.12 (2019-03-20)	0	dtmSpecific	Schneider Electric	Modbus over TCP		
PCP (Readwin) TXU10/FXA291	V1.01.18 (2014-02-21)	0	•	Endress+Hauser	PCP		
PRM Comm	V1.x	9	dtmSpecific	Schneider Electric	Profibus DP/V1		
PROFIdtm DPV1	V 2.23.0(163) (2019-04-08) 🥎	•	Softing Industrial Automation GmbH	Profibus DP/V1		
SFGNetwork	V1.10.00.343 (2016-08-12) 👰	dtmSpecific	Endress+Hauser	SFG5xx		
							*
	Device	type (DTM) informat	tion				
Device:	PROFI	ttm DPV1					
Manufacturer:	Softing	Industrial Automatio	n GmbH				
Device ID / SubID:	0xB203						
Manufacturer ID:							
Hardware revision:							
Software revision:							
Device revision:							
Is generic:	No						
						ОК	Cancel

• CommDTM is inserted in the project view. Double click on it:

Network

Network Tag	Co	Channel	A	Device type (DTM)	Physical Device
Host PC					
PROFIdtm DPV1	$\langle \rangle$			PROFIdtm DPV1	



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• Both configured connections appear in the list box of the menu "Board Name":

oard		
loard Name:	Segment_PA0 Station Address: 0	
	Segment_PA0 Segment_PA1 1	
isc		
laud Rate:	93.75 kBit/s	for Baud Rate
lax. Retry Limit:	1	
ap Update Factor:	10 Highest Station Address: 126	
Min. Station Delay: Netup Time:	450 250	4.80 ms 2.67 ms
uiet Time:	JU 0000	007
	leven	307 115
can Range	0 End Address: 126	

Select for example "Segment PAO" and click on the button "OK"

5.3.3 PROFIBUS PA Segments Scanning

• Select the CommDTM and click on the button Create Network:

<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>I</u>	<u>D</u> evice Operati	on	DTM <u>C</u> atalog	<u>T</u> ools	<u>W</u> indow	E <u>x</u> tras	<u>H</u> elp	
🛯 🛐 🎽 📔		D	🗎 🗞 - 😰	: 🖏	ि 🙀	<u>*</u>	1	
Network					2			
Network Tag	Co Channel	A	Device type (DTM)	Physical De	vice			
Host PC 1								
PROFIdtm DPV1		0	PROFIdtm DPV1					

• PROFIBUS PA field devices connected are succesfully inserted in the project:

Network Tag	Connection	Channel	Address	Device type (DTM)	Physical Device
Host PC					
PROFIdtm DPV1			0	PROFIdtm DPV1	
PA0004	$\triangleleft \triangleright$	Channel	13	Deltabar S / xMD 7x / PA / FW 4.01.zz / Dev.Rev. 3	Deltabar S
PA0020	$\triangleleft \triangleright$	Channel	20	Gammapilot M / FMG 60 / PA / V1.xx	GAMMAPILOT M
PA0012	$\triangleleft \triangleright$	Channel	21	TTEMP / TMT84 / PA / FW 1.01.zz / Dev.Rev. 2	ITEMP TMT84
PA0005	$\triangleleft \triangleright$	Channel	24	Promag / 50 / PA / V3.06.xx	PROMAG 50 PBUS



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• Repeat previous steps to insert the field devices connected to segment PA1 as well:

Network								
Network Tag	Connection	Channel	Address	Device type (DTM)	Physical Device			
Host PC								
PROFidtm DPV1			0	PROFIdtm DPV1				
PA0004	$\triangleleft \triangleright$	Channel	13	Deltabar S / xMD 7x / PA / FW 4.01.zz / Dev.Rev. 3	Deltabar S			
PA0020	$\triangleleft \triangleright$	Channel	20	Gammapilot M / FMG 60 / PA / V1.xx	GAMMAPILOT M			
PA0012	$\triangleleft \triangleright$	Channel	21	iTEMP / TMT84 / PA / FW 1.01.zz / Dev.Rev. 2	iTEMP TMT84			
PA0005	$\triangleleft \triangleright$	Channel	24	Promag / 50 / PA / V3.06.xx	PROMAG 50 PBUS			
PROFIdtm DPV1(1)			0	PROFIdtm DPV1				
PA0002	$\triangleleft \triangleright$	Channel	11	Cerabar M / PMx5x / PA / FW 1.00.zz / Dev.Rev. 1	Cerabar M 5x			
PA0006	$\triangleleft \triangleright$	Channel	15	Levelflex / FMP 5x / PA / FW 1.01.zz / Dev.Rev. 2	Levelflex 5x			
PA0007	$\triangleleft \triangleright$	Channel	16	Prosonic M / FMU4x / PA / V4.xx	PROSONIC M			
PA0010	$\triangleleft \triangleright$	Channel	19	Micropilot / FMR5x / PA / FW 1.01.zz / Dev.Rev. 2	Micropilot 5x			

5.3.4 Online Connection

• Select the deviceDTM and click on the button "Connect":

: 🛐 🎽 📂 🔚 🚛		DTMs	k - I	🗊 : Ta T _k Ta Ta Tâ 👔 🐐	*	₽ _f -
Network				2		÷ ×
Network Tag	Connection	Channel	Address	Device type (DTM) 🤝	Physical Device	
Host PC						
PROFIdtm DPV1	$\triangleleft \triangleright$		0	PROFIdtm DPV1		
PROFIdtm DPV1(1)			0	PROFIdtm DPV1		
PA0002	$\triangleleft \triangleright$	Channel	11	Cerabar M / PMx5x / PA / FW 1.00.zz / Dev.Rev. 1	Cerabar M 5x	
PA0006	$\triangleleft \triangleright$	Channel	15	Levelflex / FMP 5x / PA / FW 1.01.zz / Dev.Rev. 2	Levelflex 5x	1
PA0007		Channel	16	Prosonic M / FMU4x / PA / V4.xx	PROSONIC M	
PA0010	$\triangleleft \triangleright$	Channel	19	Micropilot / FMR5x / PA / FW 1.01.zz / Dev.Rev. 2	Micropilot 5x	





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• Then double-click on the deviceDTM to open the Online Parameterization window:

PA0007	(Online Paran	neterize) ×					x
Language							
	🥏 🐼 🔽 😫	i 🖉 🖬					
Device Type:	Prosonic M	Software Revision:	01.04.00	measured value:	98.36 %		
Model:	FMU 4x	TAG:	PA0007	measured dist.:	0.476 m		
Status signal	и ок			Access rights:	Service		Endress+Hauser
Label align instru- ter align instru- align instru- ter align instru- align instru-	Iment health statu Jard View (manufar sic Setup ifety Settings imperature nearisation (tended Calibration orbibus Parameters isplay iagnostics system Parameters ervice sonic Level Meter lentification put utput ertificates and App	rovals	strum ☑ OK	ient hea	alth status		
Conline		☆ ⊯		Instrument health st	tatus		
	🖅 🖅 Connec	sted					?





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