

User Guide

EtherNet/IP Gateways



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1 About this guide

1.1 Read me first

Please read this guide carefully before using the device to ensure safe and proper use. Softing does not assume any liability for damages due to improper installation or operation of this product.

This document is not warranted to be error-free. The information contained in this document is subject to change without prior notice. To obtain the most current version of this guide, visit the [Download Center](#) on our website.

1.2 Target audience

This guide is intended for experienced operation personnel and network specialists responsible for configuring and maintaining field devices in process automation networks. Before installing and operating the EtherNet/IP Gateway make sure that you have read and fully understood the safety requirements and working instructions in this guide.

1.3 Typographic conventions

The following conventions are used throughout Softing customer documentation:

Keys, buttons, menu items, commands and other elements involving user interaction are set in bold font and menu sequences are separated by an arrow

Open **Start** → **Control Panel** → **Programs**

Buttons from the user interface are enclosed in brackets and set to bold typeface

Press **[Start]** to start the application

Coding samples, file extracts and screen output is set in Courier font type

```
MaxDlsapAddressSupported=23
```

File names and directories are written in italic

Device description files are located in C:
 \<Application name>\delivery\software\Device
 Description files



CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Note

This symbol is used to call attention to notable information that should be followed during installation, use, or servicing of this device.



Hint

This symbol is used when providing you with helpful user hints.



Video

Dieses Symbol weißt auf ein Video zum entsprechenden Thema hin.

1.4 Document history

Document version	Changes since last version
1.00	First version
1.10	communication port ¹⁷ details added
1.11	password rules ⁴² and user role <i>diagnosis</i> added

1.5 Related documentation and videos

The following links direct you to additional information about our EtherNet/IP Gateways. Select the gateway model and go to:

- [Manuals & Documentation](#)
- [Videos](#)

1.6 Document feedback

We would like to encourage you to provide feedback and comments to help us improve the documentation. You can write your comments and suggestions to the PDF file using the editing tool in Adobe Reader and email your feedback to support.automation@softing.com.

If you prefer to write your feedback directly as an email, please include the following information with your comments:

- document name
- document version (as shown on cover page)
- page number

2 About the EtherNet/IP Gateways

The Softing EtherNet/IP Gateway offers robust data mapping between an EtherNet/IP scanner and a PROFIBUS master for easy connection of PROFIBUS network slave devices to an EtherNet/IP control system.

- The **epGate PA** is available as a 2-channel model and a 4-channel model. Both models integrate PROFIBUS PA (**P**rocess **A**utomation) networks in EtherNet/IP systems at a fixed speed of 31.25 kbit/s. The 2-channel model supports up to 32 PROFIBUS PA devices and the 4-channel model up to 64 PROFIBUS PA devices. This gateway is typically used in areas of process automation with explosive atmosphere.
- The **epGate PB** integrates PROFIBUS PA (**P**rocess **A**utomation) and PROFIBUS DP (**D**ecentralised **P**eripherals) networks in EtherNet/IP systems at speeds of up to 12Mbit/s. It maps two PROFIBUS PA and one PROFIBUS DP network segments supporting up to 32 PROFIBUS PA and 32 PROFIBUS DP devices. This gateway is typically used with a centralized controller in factory automation.
- The **epGate DP** integrates one PROFIBUS DP (**D**ecentralised **P**eripherals) network with up to 32 PROFIBUS DP devices in EtherNet/IP systems at speeds of up to 12Mbit/s.

All three gateways support industry-standard device configuration, parameterization and condition-monitoring tools.

Engineering systems and asset management systems

The EtherNet/IP Gateway can be managed with the following tools:

- EtherNet/IP engineering system (e.g. Rockwell Studio 5000, Emerson DeltaV)
- FDT frame application (e.g. PACTware)
- Siemens SIMATIC PDM (Process Device Manager)

2.1 Intended use

This series of gateways has been designed to integrate PROFIBUS network slaves in EtherNet/IP networks. Any other use is not intended. Follow the instructions in this document on how to configure and operate the gateways.



CAUTION

Do not use this device in hazardous areas! See Section [Specifications](#)⁸ for permissible ambient conditions.

2.2 Supported features

The EtherNet/IP Gateway supports the following features:

- Simple connection to PROFIBUS PA and PROFIBUS DP slaves
- Integration in FDT frame applications
- Configuration of the gateway in a web browser
- Integrated configurator to start up the PROFIBUS slaves
- Access to process values of PROFIBUS slaves (input and output) in the Ethernet/IP control program
- Read access to status information of the PROFIBUS slaves in the Ethernet/IP control program

- Changing of operation state of the PROFIBUS master (STOP/RUN) in the Ethernet/IP control program
- Detailed display of the status by LEDs
- Two Ethernet interfaces (switched internally)
- Power supply by connectors or rail connectors

2.3 System requirements

This gateway can be used in combination with an Ethernet/IP engineering system such as Rockwell Studio 5000 or Emerson DeltaV. When the gateway is used to parametrize PROFIBUS devices you need a Siemens SIMATIC PDM or an FDT frame application like PACTware. Also required are:

- 24V power supply
- one power conditioner per PROFIBUS PA segment
- field barrier (for Ex environment)
- PC with web browser
- GSD file for each PROFIBUS device on your network

2.4 Specifications

Power supply	18 VDC...32 VDC; SELV/PELV supply mandatory, typical input current 200 mA (max. 1 A, considering rush-in current at switch-on).
Ethernet	IEEE 802.3 100BASE-TX/10BASE-T
Minimum ambient operating temperature	-40 °C (see Installation positions ^{□12} for the maximum ambient temperature depending on the mounting position)
Storage temperature	-40 °C...+85 °C
Relative humidity	10 %...95 % (non-condensing)
Altitude	must not exceed 2000 m
Location	indoor use only; no direct sunlight

2.5 Safety precautions



CAUTION

During operation, the device's surface will be heated up. Avoid direct contact. When servicing, turn off the power supply and wait until surface has cooled down.



Note

Do not open the housing of the Ethernet/IP Gateway. It does not contain any parts that need to be maintained or repaired. In the event of a fault or defect, remove the device and return it to the vendor. Opening the device will void the warranty!

3 Installation

3.1 Hardware installation



Note

With an ambient temperature above 55 °C at the place of installation it is very likely that the temperatures of connecting cables will increase if the cables are installed in an unfavourable position. In such cases, measure the temperature to ensure that the service temperature of the cables is not exceeded or use cables sustaining high temperatures of at least 90 °C.

3.1.1 Mounting and dismounting



Note

Make sure the EtherNet/IP Gateway is mounted in such a way that the power supply can be easily disconnected.



Note

Depending on the installation position, the maximum ambient operating temperature may differ. See Section [Installation positions](#) ¹² for details.

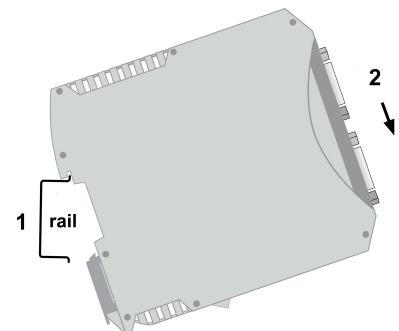


Installation and inspection

Installation and inspection must be carried out by qualified personnel only (personnel qualified according to the German standard TRBS 1203 - Technical Regulations for Operational Safety). The definition of terms can be found in IEC 60079-17.

Mounting

1. Hook the upper notch of the cut-out on the back of the EtherNet/IP Gateway into a 35 mm DIN rail.
2. Press the EtherNet/IP Gateway down towards the rail until it slides into place over the lip of the locking bar.

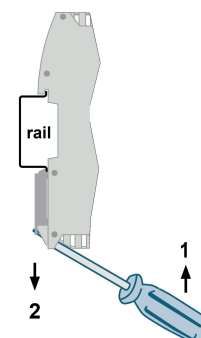


Note

Do not put stress on the system by bending or torsion.

Dismounting

1. Slide a screwdriver diagonally under the housing into the locking bar.
2. Lever the screwdriver upwards, pull the locking bar downwards - without tilting the screwdriver - and move the gateway upwards off the rail.

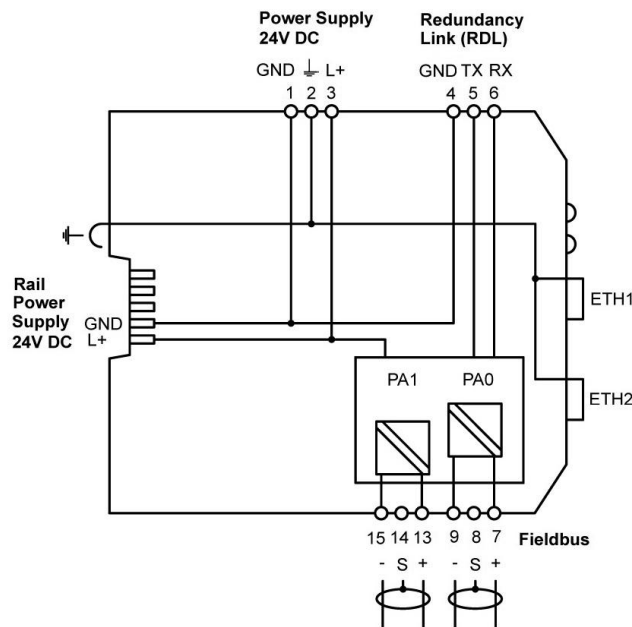


3.1.2 Connection diagrams PA Model

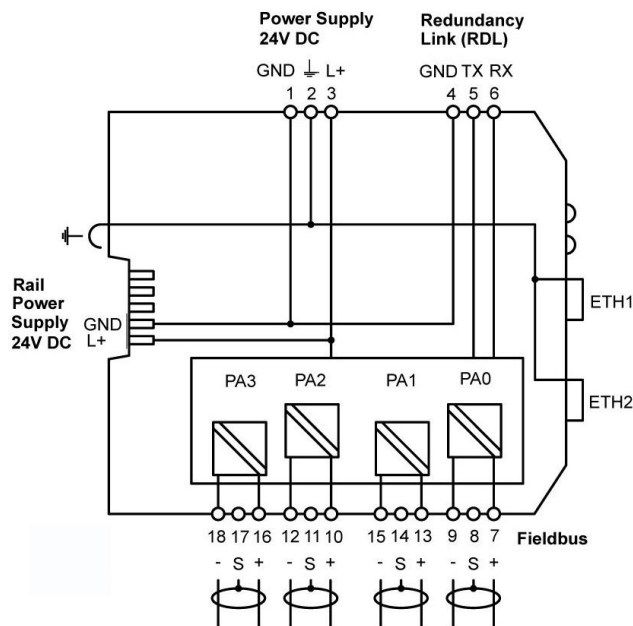
The epGate PA is available as a 2-channel model and a 4-channel model. The 2-channel model has 2 physical PROFIBUS segment connections (PA0 to PA1) while the 4-channel model has 4 physical PROFIBUS segment connections (PA0 to PA3).

The gateway has two 10/100 Base-T Ethernet ports (ETH1/ETH2). Both RJ45 ports correspond to IEEE 802.3 and are connected to an internal switch for line topologies. The following diagrams show the side profile of the two epGate PA models with the input and output interfaces and fieldbus connections at the bottom:

2-channel model

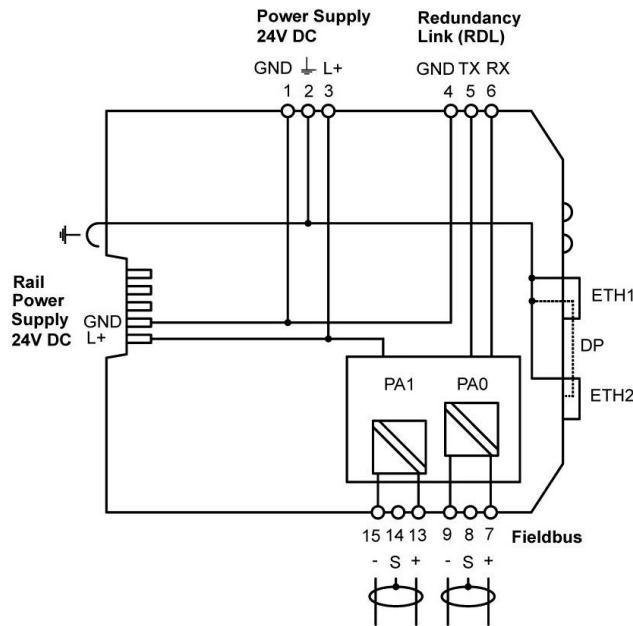


4-channel model



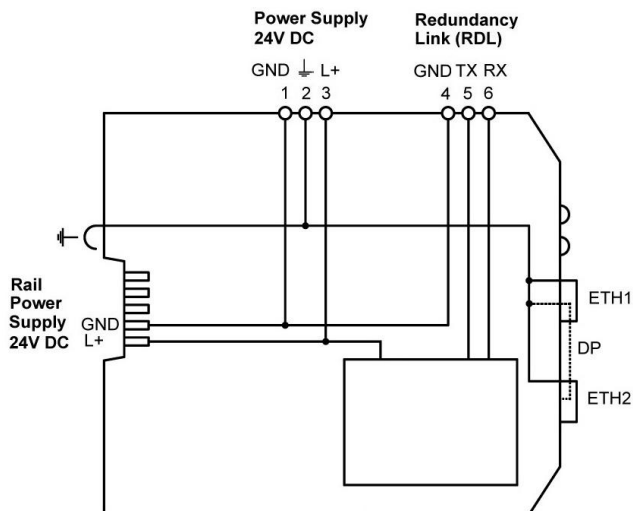
3.1.3 Connection diagram PB Model

The epGate PB has two physical PROFIBUS PA segment connections (PA0 to PA1) and one RS-485 connection (DP). The gateway has two 10/100 Base-T Ethernet ports (ETH1/ETH2). Both RJ45 ports correspond to IEEE802.3 and are connected to an internal switch for line topologies. The following diagram shows the side profile of the epGate PB model with the input and output interfaces and fieldbus connections:



3.1.4 Connection diagram DP Model

The epGate DP has one PROFIBUS RS-485 connection (DP). The gateway has two 10/100 Base-T Ethernet ports (ETH1/ETH2). Both RJ45 ports correspond to IEEE 802.3 and are connected to an internal switch for line topologies. The following diagram shows the side profile of the epGate DP model with the input and output interfaces and fieldbus connections:



3.1.5 Connecting the power supply



Note

As the epGate PA and epGate PB does not supply power to the PROFIBUS PA connections, each PA segment of your PROFIBUS network requires its own power supply with power conditioning (such as power conditioner R.STAHL 9412).

Connect the gateway to a 24 V DC power supply. The supply voltage (18 VDC 32 VDC) is connected by a 3-pole terminal block. The power supply is connected to the plug connector via flexible wires with a cross section of 0.75 to 1.5 mm². The ground connection wire must have a cross section of 1.5 mm².

Pin	Signal	Description
1	GND	Ground
2		Functional earth
3	L+	Positive supply voltage



CAUTION

The Functional Earth (FE) connection of the device has to be connected at low inductance with the Protective Earth (PE) of the system.



Note

As the connection diagrams show, the power can also be applied by a special DIN rail connector (Rail Power Supply). For further information contact [Softing Industrial Automation GmbH](#).



Note

See also the maximum ambient temperatures in the Section [Installation Positions](#)¹².

3.1.6 Installation positions

The EtherNet/IP Gateway can be mounted horizontally and vertically. Depending on the installation position, different ambient operating temperatures (T_a) are allowed.



Minimum distance

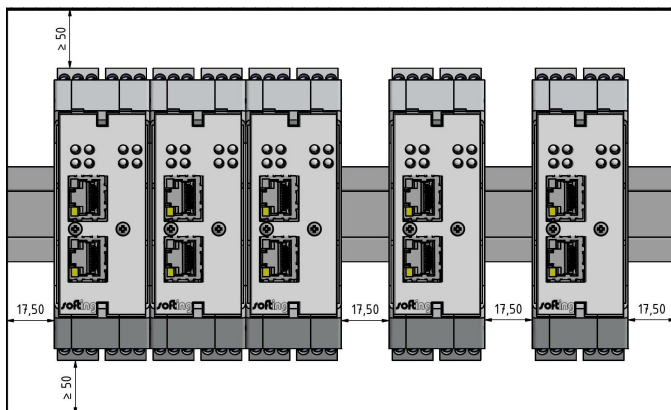
Provide a minimum distance of 50 mm to the air inlet and air outlet to ensure natural convection.



Rotated installation position

The maximum permissible ambient temperature values also apply to a 180° rotated installation position.

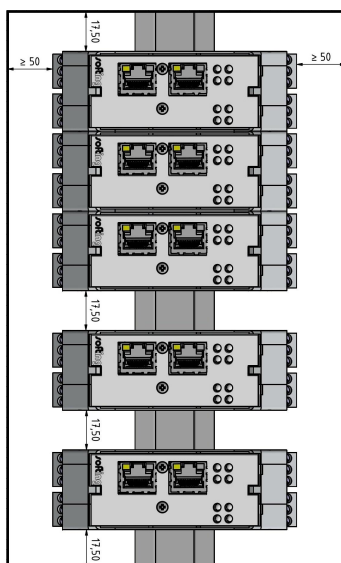
Horizontal installation position and maximum temperatures



Number of PA channels used	Maximum PA fieldbus voltage	Minimum distance	Maximum ambient temperature T_a
0 - 4	32VDC	0 mm	50 °C
0 - 2*	24VDC	0 mm	55 °C
0 - 4	32VDC	17.5 mm	60 °C
0 - 2*	24VDC	17.5 mm	60 °C

* epGate DP models have no PA channel

Vertical installation position and maximum temperatures



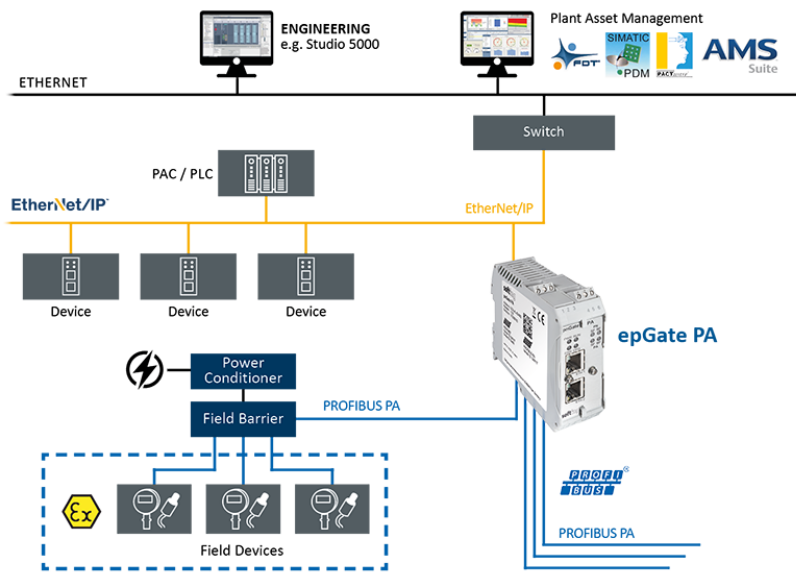
Number of PA channels used	Maximum PA fieldbus voltage	Minimum distance	Maximum ambient temperature T_a
0 - 4	32VDC	0 mm	40 °C
0 - 2*	24VDC	0 mm	45 °C
0 - 4	32VDC	17.5 mm	50 °C
0 - 2*	24VDC	17.5 mm	55 °C

* epGate DP models have no PA channel

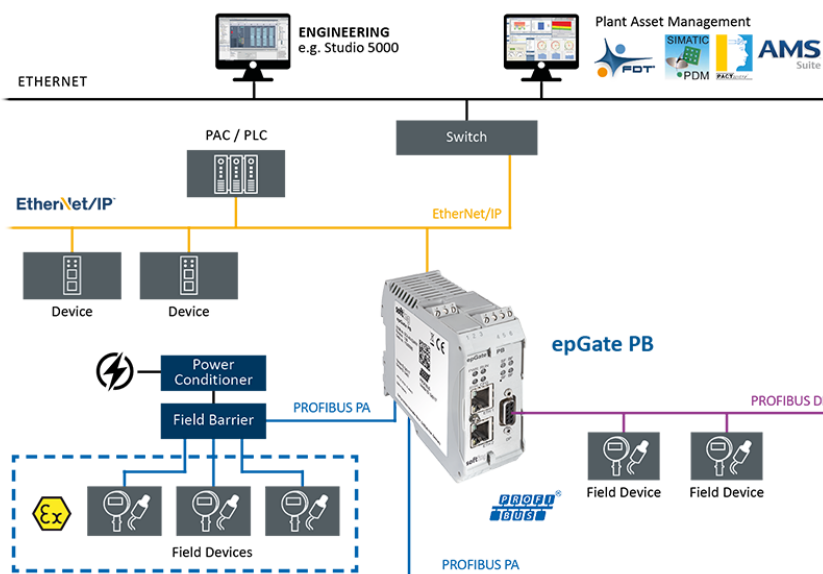
3.1.7 Connecting to the network

1. Connect each segment of your PROFIBUS network to a port of your gateway. Be sure that each segment is powered by a power conditioner. If you connect to field devices in explosive atmospheres ensure that you also connect a field barrier in between.
2. Connect the gateway from one of the two Ethernet ports with your EtherNet/IP network.
3. Connect your PC running the engineering and asset management tools using the second Ethernet port.

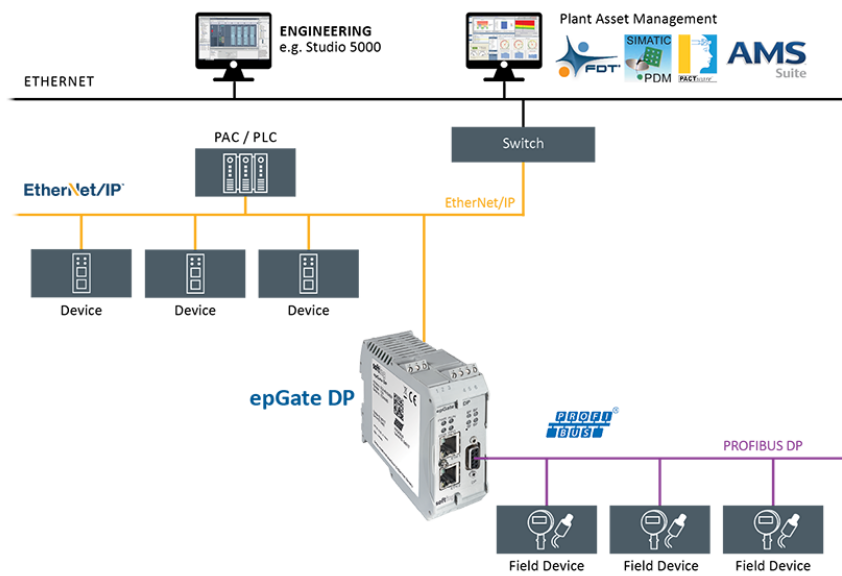
epGate PA (2-channel model)



epGate PB



epGate DP



3.1.8 Powering up the device

Turn on the power supply. The boot process will take around 15 seconds. For indication of proper operation refer to [LED status indicators](#)³⁵.

3.2 Software installation



Note

When you install a Softing product for the first time, you will be asked if you trust the publisher. Activate the option **Always trust software from Softing AG** if you do not want to be asked in subsequent installations and select **[Install]** to start the installation.

1. Go to the [product web page](#) to download the latest software.
2. Start by downloading and installing the **Search and Configure** tool.
3. Follow the on-screen installation instructions.
4. Read the license agreement carefully.
If you have questions, you can **[Cancel]** the installation at this point and contact us. Click **[Print]** if you want to print the license agreement to a PDF or on a printer.
5. Select **I accept the terms in the license agreement** and click **[Next]**.
6. Click **[Install]** to install the selected software application on your PC.
While the installation is in progress, the status bar of the installation wizard shows the different steps that are being executed. If you want to abort the installation, click **[Cancel]** button. The installation wizard will undo all modifications that have been made to your computer up to this point. Otherwise, wait until the installation is completed.
7. Press **[Finish]** to complete the installation and exit the wizard.



Note

Proceed with the installation of the other software packages.

Additional installations

Depending on your use case, install one of the following software packages:

- Install an FDT frame application (e.g. **PACTware**) if you are using FDT technology.
- Install **PROFIdtm** separately if you are not using PACTware but another FDT frame application like FieldCare or FieldMate.
- Install **PDM libraries** for integration into Siemens PDM.

4 Configuration

The EtherNet/IP Gateway comes with an integrated web server which is used to configure the gateway and the connected PROFIBUS devices. The default IP address of the integrated web server is 192.168.0.10. To access the EtherNet/IP Gateway from your PC, you either have to change the default IP address of the integrated web server to an address on your network or change the IP address on your PC to match the network address of your gateway (e.g. 192.168.0.1). Section 4.2¹⁷ and Section 4.3²⁰ describe how to perform either of the two settings.

4.1 Prerequisites

- Ensure that you have downloaded and installed the latest firmware.
- The EtherNet/IP Gateway is connected to the PROFIBUS PA or PROFIBUS DP segment.
- The EtherNet/IP Gateway is connected with a PC which runs a Chrome or Firefox browser supporting JavaScript.
- GSD files (electronic device descriptions) corresponding to the connected PROFIBUS devices are available on the PC.
- The Search and Configure tool is installed.

EtherNet/IP Gateway requires the following communication ports to be available:

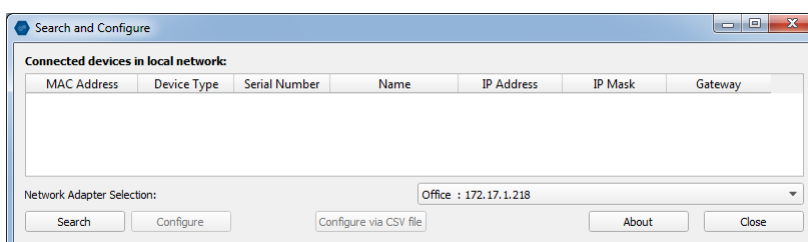
Application	Port	Port Type
Web Interface	80/443	TCP
Search and configure	1900, 2355, 5353	UDP/Multicast
PDM, DTM	2357	TCP
Modbus Communication	502 (default)	TCP

4.2 Changing the IP address of a gateway

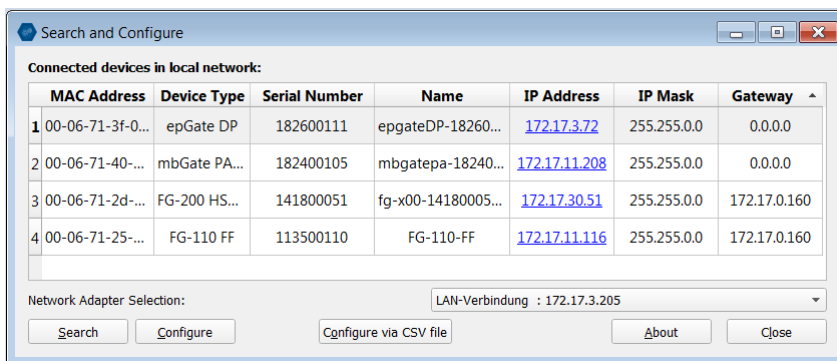
Before you can operate the connected EtherNet/IP Gateway you will have to change the default IP address of your gateway so that your PC can communicate with the integrated web server over the Local Area Network.

The following steps apply to Windows 10.

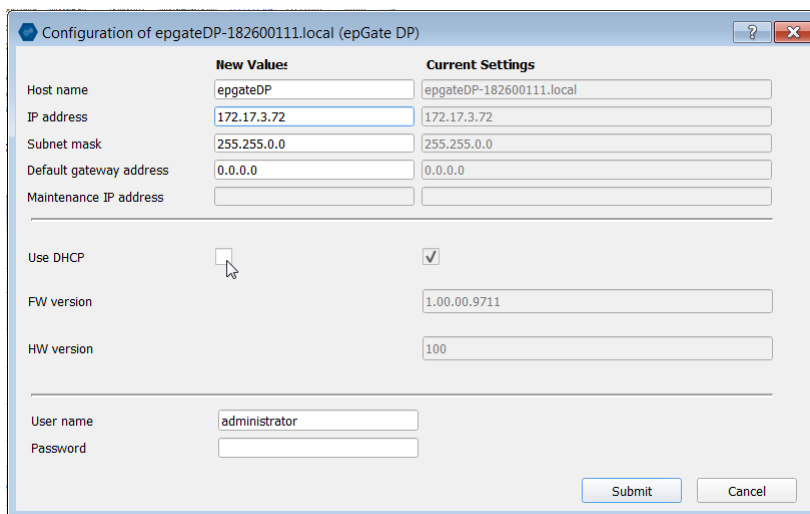
1. Click **Start** → **Softing** → **Search and Configure**.
The application window is opened.



2. Click the dropdown list of the **Network Adapter Selection**.
This selection menu shows all networks you can access from your PC.
3. Select the network adapter which is connected to the gateway.
4. Click **[Search]** to start searching for connected gateways.
The search may take a moment.



5. Select the gateway you want to configure.
6. Click **[Configure]** or double-click the device.
The configuration window opens. Here you can change the IP settings.



Note

You may also change the hostname. However, ensure that you follow hostname specifications RFC 952 and RFC 1123.

7. Enter a dedicated IP address and subnet mask or click **Use DHCP** to obtain the IP settings from a DHCP server.

**Note**

Ensure that you do not use the same IP address for EtherNet/IP communication and the web server of the gateway. You can change the IP address of the EtherNet/IP connection in the [web interface of the gateway](#)⁵¹.

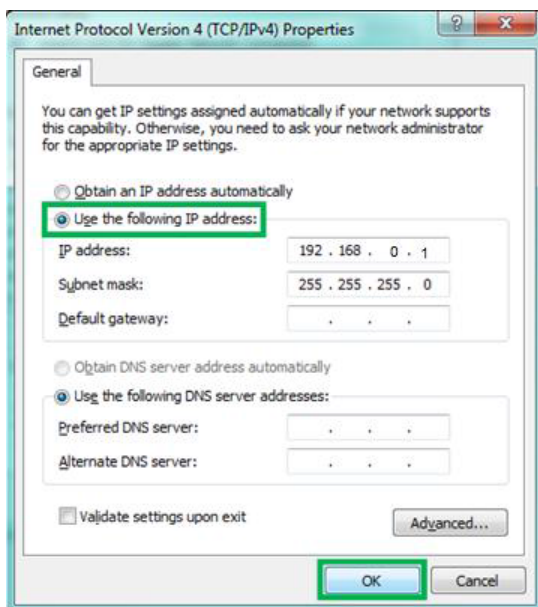
8. Enter the default password **FGadmin!1** for username **administrator**.
9. Click **[Submit]**.
The changed settings are written to the device.

4.3 Setting the IP address of your PC

If you have not changed the IP address of the EtherNet/IP Gateway as described in the previous [Section](#)¹⁷ you will need to configure the IP address of your PC to access the gateway from your PC.

The following chapter describes how to set a static IP address in Windows 10.

1. Click **Start → Windows System → Control Panel** from your task bar.
2. Select **Network and Internet → Network and Sharing Center**.
A new window opens where you can view your basic network information.
3. Click on your Internet connection (either Ethernet or wireless) next to Connections under **View your active networks**.
A new window opens.
4. Click **[Properties]**.
5. Select **Internet Protocol Version 4 (TCP/IPv4)**.
The following window opens.



6. Select **Use the following IP address** and enter a specific IP address and Subnet mask. In our example we use the following settings:
IP-Adresse: 192.168.0.1
Subnet mask: 255.255.255.0
7. Click **[OK]** to confirm.

4.4 Login to user interface

1. Open your Internet browser and enter the IP address of your gateway.



Note

If you can't recall the IP address of your gateway, start the [Search And Configure](#) ¹⁷ tool to find out what it is (see Step 2 below).

2. Click the IP address of the gateway to launch the login window in your web browser.

Connected devices in local network:

	MAC Address	Device Type	Serial Number	Name	IP Address	IP Mask	Gateway
1	00-06-71-40-...	mbGate PA...	182400105	mbgatepa-1824...	172.17.11.208	255.255.0.0	0.0.0.0
2	00-06-71-3f-0...	epGate DP	182600111	epgateDP-1826...	172.17.3.72	255.255.0.0	0.0.0.0
3	00-06-71-2d-...	FG-200 HS...	171800133	fg-200-hse-ff-1...	172.17.11.172	255.255.0.0	0.0.0.0

3. Select the administrator symbol and enter **FGadmin!1** in the password field.

The login interface displays three user roles with corresponding icons: 'administrator (Administrator)' with a person icon, 'config (Maintenance)' with a wrench and screwdriver icon, and 'view (Observer)' with a binoculars icon. Below these, there are input fields for 'User Name' (containing 'administrator') and 'Password' (empty). A 'Login' button is positioned at the bottom.

The gateway's web-based interface opens with the information page.

4.5 Configuring EtherNet/IP

1. Select **EtherNet/IP → Settings**.
2. Enter a dedicated IP address and subnet mask or tick the checkbox **Obtain IP settings from DHCP server**.
3. Click **[Apply]**.
4. Click **[Restart Device]** in top menu bar left to the Logout option.



Note

See chapter [EtherNet/IP Settings](#)⁵¹ for details.

4.6 Configuring PROFIBUS



Note

As all three gateways have the same PROFIBUS master interface, the configuration instructions for epGate PA also apply to epGate PB and epGate DP.



Video

Watch the video **PROFIBUS configuration** to find out how to configure the PROFIBUS master interface of your gateway.

5 Connection to a controller

The following chapter describes how to establish a EtherNet/IP connection using the engineering systems Rockwell Studio 5000 or Emerson DeltaV.

5.1 EtherNet/IP Mapping

The EtherNet/IP Gateway maps the I/O data and statuses of the configured PROFIBUS slaves to EtherNet/IP input and output assemblies.

5.1.1 Assemblies

The EtherNet/IP Gateway supports two input and two output assemblies with a maximum size of 255 bytes per assembly. The following table shows the assembly IDs that are used for the different assemblies.

Assembly	Assembly ID
Input Assembly #1	100
Input Assembly #2	101
Output Assembly #1	150
Output Assembly #2	151

Select **EthernetIP** → **Mapping** to view the EtherNet/IP mapping table.



Note

The table shows the mapping of the current configuration in the PROFIBUS configuration page. It may alter from the configuration applied to the gateway.

EIP Mapping									
Input Assembly 1									
Assembly Type:		Input							
Assembly Id:		100							
Add On Instruction:		epGate_PB_11							
User Defined Type:		epGate_PB_11Data							
User Defined Type		Assembly		IO Channel					
Field Name	Field Type	Offset	Segment	Slave Address	Device Name	Device Tag	Slot	Channel Id	
HaStatus	HaStatus	4							
DeviceFailure	DINT[2]	12							
DeviceStatus	SINT[2]	20							
OUT_long_1_3_1_1	REAL	22	PA0	3	FBK Starter Kit	FBK Starter Kit	1	1	
OUT_long_1_3_1_2	SINT	26	PA0	3	FBK Starter Kit	FBK Starter Kit	1	2	
OUT_long_1_3_2_1	REAL	27	PA0	3	FBK Starter Kit	FBK Starter Kit	2	1	
OUT_long_1_3_2_2	SINT	31	PA0	3	FBK Starter Kit	FBK Starter Kit	2	2	
OUT_D_1_3_5_1	PbUnsigned8Unsigned8	32	PA0	3	FBK Starter Kit	FBK Starter Kit	5	1	
SP_D_RB_D_1_3_6_2	PbUnsigned8Unsigned8	34	PA0	3	FBK Starter Kit	FBK Starter Kit	6	2	
FG_TEST_I_1_4_1_1	REAL	36	PA0	4	PA-FGT	PA-FGT	1	1	
FG_TEST_I_1_4_1_2	SINT	40	PA0	4	PA-FGT	PA-FGT	1	2	
FG_TEST_I_1_4_1_3	SINT	41	PA0	4	PA-FGT	PA-FGT	1	3	
FG_TEST_I_1_4_1_4	SINT	42	PA0	4	PA-FGT	PA-FGT	1	4	
FG_TEST_I_1_4_1_5	INT	43	PA0	4	PA-FGT	PA-FGT	1	5	
FG_TEST_I_1_4_1_6	DINT	45	PA0	4	PA-FGT	PA-FGT	1	6	
FG_TEST_I_1_4_1_7	SINT	49	PA0	4	PA-FGT	PA-FGT	1	7	
FG_TEST_I_1_4_1_8	INT	50	PA0	4	PA-FGT	PA-FGT	1	8	
FG_TEST_I_1_4_1_9	DINT	52	PA0	4	PA-FGT	PA-FGT	1	9	
FG_TEST_I_1_4_1_10	REAL	56	PA0	4	PA-FGT	PA-FGT	1	10	
FG_TEST_I_1_4_1_11	SINT[8]	60	PA0	4	PA-FGT	PA-FGT	1	11	

The following table explains the columns of the EtherNet/IP mapping shown above.

Parameter	Meaning
Field Name	Name of the field
Field type	Data type of the field
Offset	Byte offset in the assembly
Device Name	Device type name as stated in the GSD file
Device Tag	Name specified in the PROFIBUS configuration web page
Slot	Slot number in which the module is plugged
Channel Id	Number of the PROFIBUS IO Channel starting with 1
Channel Name	Name of the PROFIBUS IO Channel
Channel Type	Data type of the PROFIBUS IO Channel

The field name is the identifier for the data that is mapped in this field. For the process data of the configured PROFIBUS slaves the field names are generated using the name of the module and a four-level address that is appended to the name.

The address is composed as `<segment>_<address>_<slot>_<iochannel>`, where:

- `<segment>` is the PROFIBUS segment (PA0, PA1, PA2, PA3 or DP)
- `<address>` is the PROFIBUS address of the slave
- `<slot>` is the slot number
- `<iochannel>` is the IO channel number (1 ...)

Input Assembly

In addition to the input process data the first input assembly contains the following fields:

- **HaStatus**
This field is reserved for future High Availability feature.

- **DeviceFailure**
The DeviceFailure field represents a bit array with a fixed size of 8 bytes that indicates if an error condition is present for the configured PROFIBUS slaves. Each bit in the bit array corresponds to one slave. If an error condition is present on a slave, the value of the corresponding bit is 1. If not, the value is 0. The concrete error is stated in the field *DeviceStatus*. The order of the configured PROFIBUS slaves in the bit array is computed out of the segment they are connected to and their slave address. All slaves of one segment are consecutively and are ordered from lowest to biggest address. The different segments are ordered the following way PA0, PA1, PA2, PA3, DP.

▪ DeviceStatus

The field DeviceStatus is a byte array containing the status of all configured PROFIBUS slaves in all segments. Each byte represents the status of one slave. The order of the PROFIBUS slaves in the byte array is analog to the field *DeviceFailure*.

The following table explains the slave status with corresponding value and meaning:

Slave Status	Value	Meaning
Data Exchange	4	Cyclic data exchange is activated for the device.
Not Accessible	5	The selected station address is not assigned to any device or the device cannot be accessed.
Prm Fault	6	The device shows a parameterization error.
Cfg Fault	7	The device shows a configuration error.
Idle	8	Cyclic data exchange is deactivated for the device.

Output Assembly

In addition to the output process data the first output assembly contains the following fields:

▪ HaControl

This field is reserved for future High Availability feature.

▪ MasterTargetState

The field MasterTargetState allows to change the operation mode of PROFIBUS masters of **all** segments.

When PROFIBUS master instances are started they take on the operation mode **Stop**. In this mode, PROFIBUS input data is read but no output data is written to the PROFIBUS slaves. If you want the PROFIBUS master instances to write output data to the PROFIBUS slaves, you must set the master instances to operation mode **Run** by writing value 3 to the MasterTargetState output field.

The following table shows the operation modes and corresponding values:

Parameter	Value	Meaning
Offline	1	Cyclic data exchange is deactivated.
Stop	2	Cyclic data exchange is activated, but only input data is read (Fail Safe Mode).
Run	3	Cyclic data exchange is activated. Input data is read and output data is written.



Note

The PROFIBUS masters cannot be set to Offline mode by writing the *MasterTargetState* field.

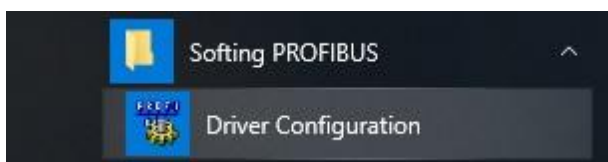
6 Asset Management

According to ISO 55000, the term Asset Management defines the factors which influence the type of assets an organization requires to achieve its objectives. But what is an asset? In the broader sense of the term, an asset is a physical or non-physical entity, item or thing that has potential or actual value to an organization. Seen in the context of process automation, asset management involves controlling and governing physical assets (device assets) to lower costs and improve plant performance.

The following chapter describes the tools and technologies which can be used with EtherNet/IP Gateways for the purpose managing the assets of network devices by configuration, parameterization, troubleshooting and maintenance.

6.1 Preparations

1. Click the Windows **Start button** to open the start menu.
2. Select **Softing PROFIBUS → Drivers and API → Runtime System → Driver Configuration** to configure the PROFIBUS driver.



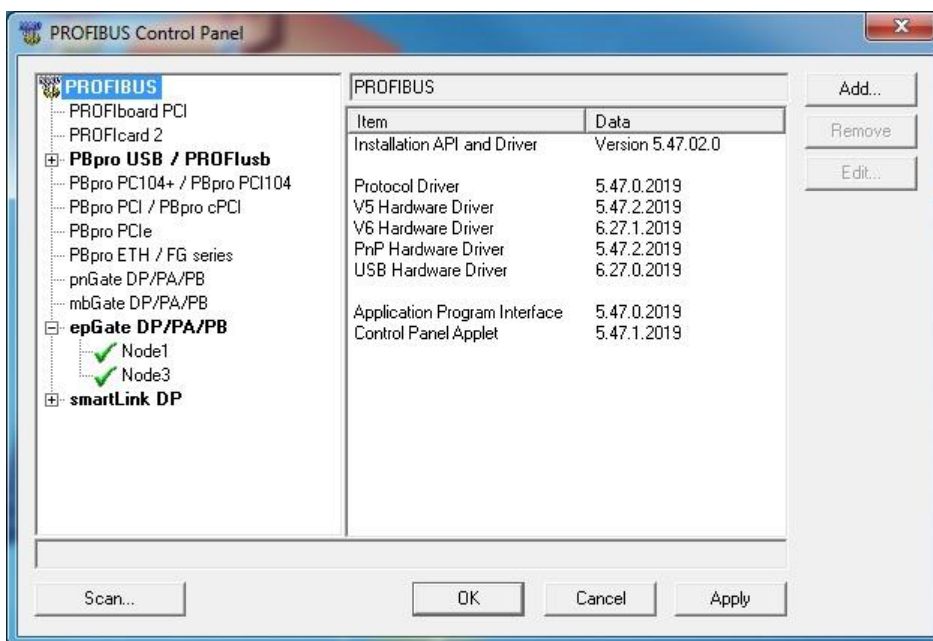
3. Allow Windows User Account Control (UAC) to modify settings.
The **PROFIBUS Control Panel** is opened.
4. If you intend to work with SIMATIC PDM, first remove any previously added entries.
To do this, select each entry one by one and press **[Remove]** each time.
Ignore this step if you intend to work with PACTware only.
5. Double-click **epGate PA/DP/PB** .
The PROFIBUS access window **Select Node Name** is opened.
6. Enter a symbolic node name (default value is Node0).
7. Click **[Next]**.
The window **Select Addresses for epGate PA/DP/PB** is opened.
8. Enter the IP address for EtherNet/IP Gateway (**192.168.0.10** in our example).
9. Select a bus segment.
10. Click **[Next]**.
The window **Select Timeouts for epGate PA/DP/PB** is opened.
11. Set timeouts for EtherNet/IP Gateway (Timeout for Connect and Max Idle Time). In most cases default settings can be used.

12. Click **[Finish]**

The configuration wizard is closed. In the **Control Panel** the node name is shown on the left side underneath **epGate PA/DP/PB**. The question mark on a yellow background means that the connection to the EtherNet/IP Gateway has not yet been tested.

13. Click **[Apply]** in the **PROFIBUS Control Panel** to save all settings and confirm with **[Yes]**.

The PROFIBUS Control Panel tests the connection to the EtherNet/IP Gateway. After a short while, the yellow question mark is replaced by a green check mark. If a red cross appears instead, check the network cables and the IP settings of your PC and the gateway. Ensure that the PC and the EtherNet/IP Gateway are on the same IP subnet.

14. Click **[OK]** to close the **PROFIBUS Control Panel**.

6.2 Setting device parameters with PACTware

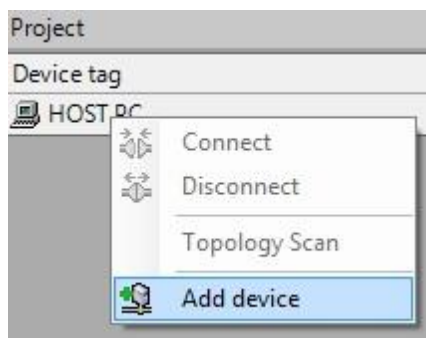
PACTware is an FDT frame application which allows you to view field devices of different suppliers in a graphical interface similar to a browser window. To manage the information of these devices, PACTware uses a Device Type manager (DTM) within the frame application. The DTM is a software which allows you to access a field device similar to a device driver. It contains the complete logic (data and functions) of the field device. Using DTMs the same device setting procedures can be used in any FDT environment.

6.2.1 Prerequisites

- The default IP address of the built-in web server has been changed to an address on your network or the IP address of your PC has been changed to an IP address corresponding to the network address of your gateway (e.g. 192.168.0.1). See Chapter [Setting the IP address of the PC](#)²⁰.
- PACTware 4.1 or any other FDT frame application is installed.
- PROFIdtm is installed.
- Users of Windows 7 who have disabled the automatic update service must check if Microsoft hotfix KB3033929 is installed.
Open a command line, click **[Start]**, type **cmd** and in the command window that opens, type **wmic qfe | find "3033929"**.
The answer contains information about the time, date and Internet address of the installation.

6.2.2 Creating a project in PACTware

1. Start PACTware.
2. Create a new Project and save the project.
3. Right-click **Host PC** → **Add Device** in the device tag column of the project view.



A new window appears with the available devices.

4. Select **PROFIdtm DPV1** from the list and confirm with **[OK]**.
The device is displayed in the project view.



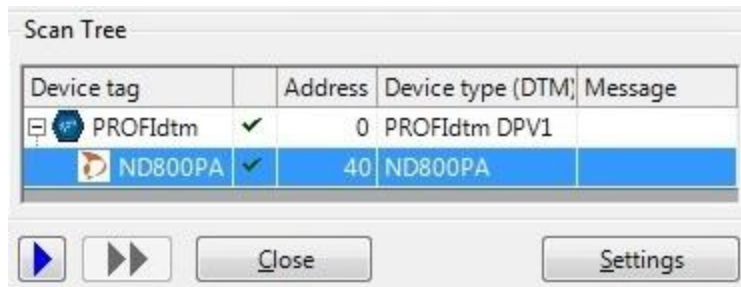
Note

Before starting a topology scan ensure that suitable Device DTMs are installed for the connected PROFIBUS devices.

5. Right-click **PROFIdtm** and select **Topology Scan**.
6. Click the arrow in the scan window to start the topology scan.



PROFIdtm and the detected PROFIBUS devices are displayed in the scan window.



7. Close the scan window. The detected PROFIBUS device is now included in the project view.

6.3 Setting device parameters with SIMATIC PDM

With the SIMATIC PDM, Siemens provides a framework for configuring, parameterizing, commissioning and monitoring smart field devices independent of the automation and control system used. SIMATIC PDM is an open software tool for devices of a range of manufacturers. To integrate a field device in a framework you need to import its Electronic Device Description (EDD). This is a file containing all relevant device data. It is typically made available by the device manufacturer for download from its website.

6.3.1 Prerequisites

- The default IP address of the built-in web server has been changed to an address on your network or the IP address of your PC has been changed to an IP address corresponding to the network address of your gateway (e.g. 192.168.0.1). See Chapter [Setting the IP address of the PC](#)^{□20}.
- Users of Windows 7 who have disabled the automatic update service must check if Microsoft hotfix KB3033929 is installed.
Open a command line, click **[Start]**, type **cmd** and in the command window that opens, type **wmic qfe | find "3033929"**.
The answer contains information about the time, date and Internet address of the installation.
- EDD files and libraries of the PA devices must be imported in the PDM Device Integration Manager. If not available, download them from the Siemens support website and import them in the DIM.
- The PDM libraries of the Softing PROFIBUS must have been downloaded from the [epGate product website](#) and must be installed.

6.3.2 Connecting to SIMATIC PDM

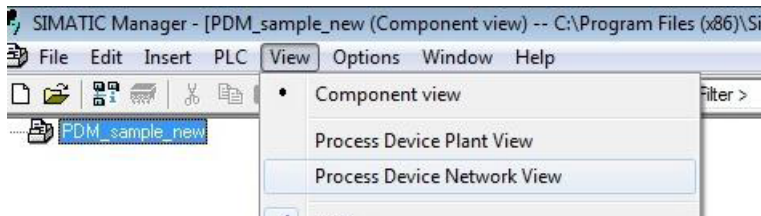
Connecting the SIMATIC Manager with the epGate PB device:

1. Start the SIMATIC Manager from the Windows start menu to create a new project: **Start → All Programs → Siemens Automation → SIMATIC → SIMATIC Manager**.
2. Click **Options → Select PG/PC Interface**.
A new window with a dropdown menu is opened.
3. Select from the dropdown menu **Interface Parameter Assignment used → Softing PROFIBUS Interface PROFIBUS.1**.
4. Set the timeout value to 60s and confirm with **[OK]**.
5. Check the board number to ensure that it corresponds to the number in the node name.
(See Step 6 in Section [Preparations](#)^{□26})
6. Click **[OK]**.
You will return to the main window (Component View).

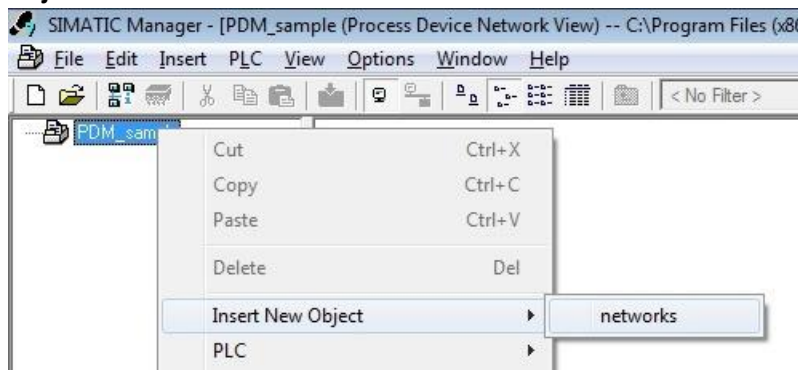
Note

A logical connection has been established between the epGate PB and the SIMATIC Manager.

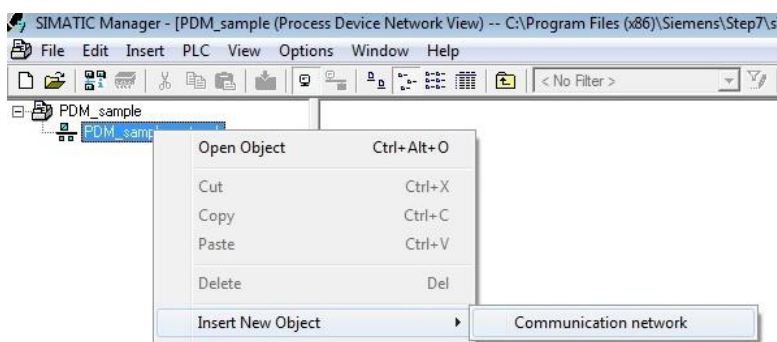
7. Go to **View → Process Device Network View**.



8. Right-click on the configuration symbol in the Process Device Network View and select **Insert New Object → networks**.

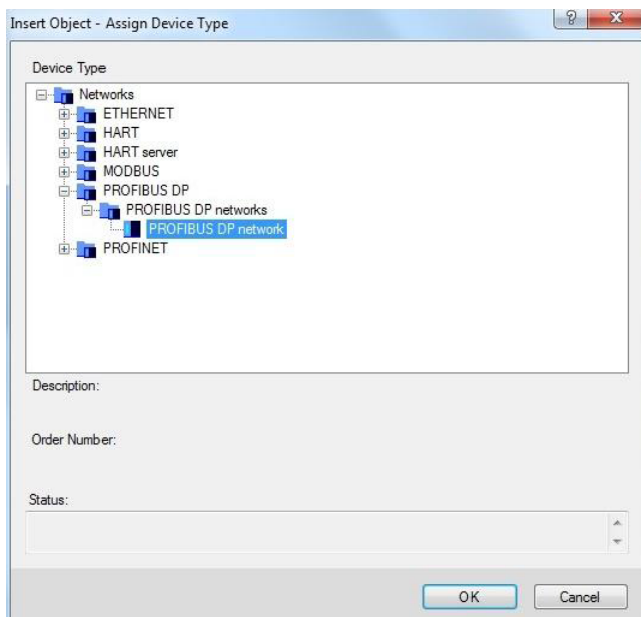


9. Right-click on the network symbol and select **Insert New Object → Communication network**.



10. Click the **[Assign Device Type...]** button.
The Assign Device Type window is opened.

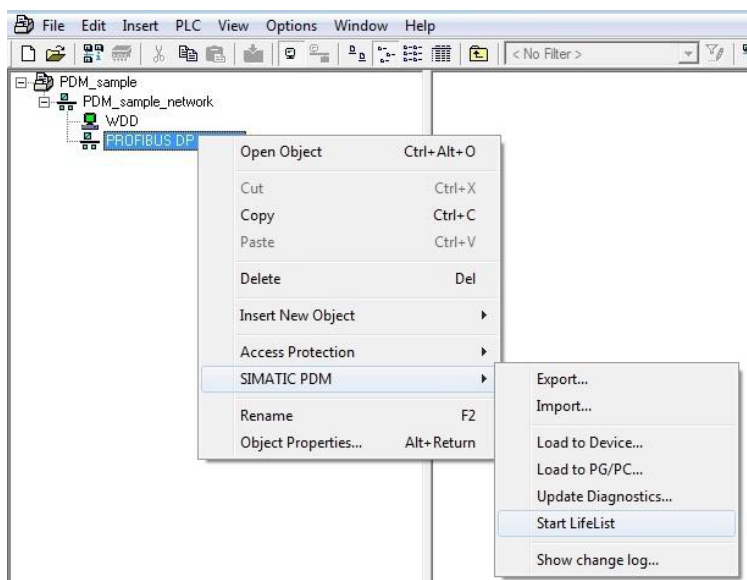
11. Select **PROFIBUS DP network**.



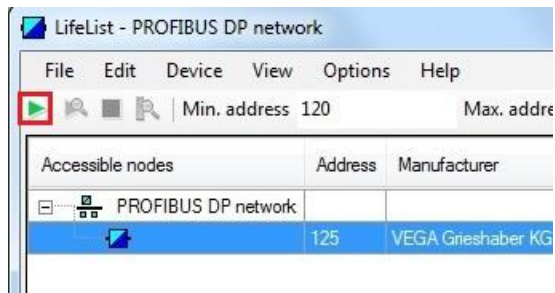
12. Click **[OK]** .


You are back in the Process Device Network View.

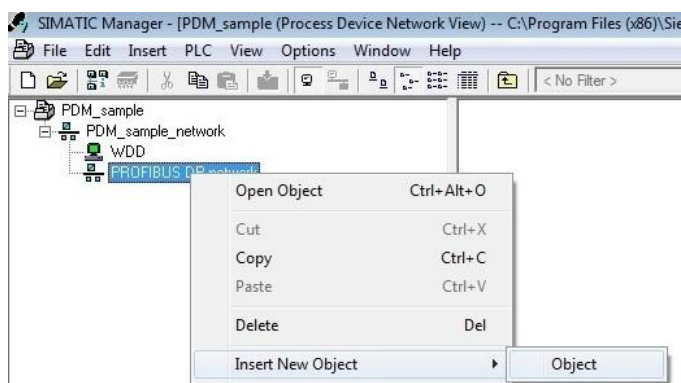
13. Right-click in the left column **PROFIBUS DP network** → **SIMATIC PDM** → **Start LifeList**.



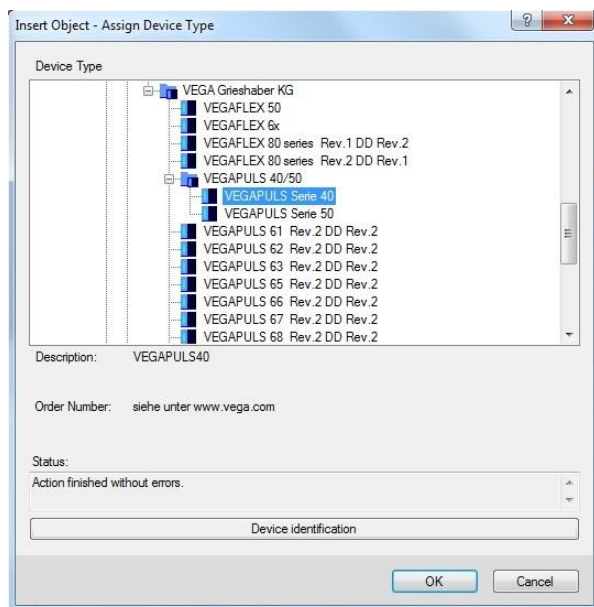
14. Click the **Start Scan** icon (▶) in the top left corner under the menu bar. This will run a network scan to verify that the PA device can be reached. The icon (🔍) indicates that a device can be reached to read and write process parameters.



15. Close the window in the top right corner ()
16. Right-click in the PROFIBUS DP network view and select **Insert New Object** → **Object**.




17. Click the **[Assign Device Type...]** button.
A new window opens.

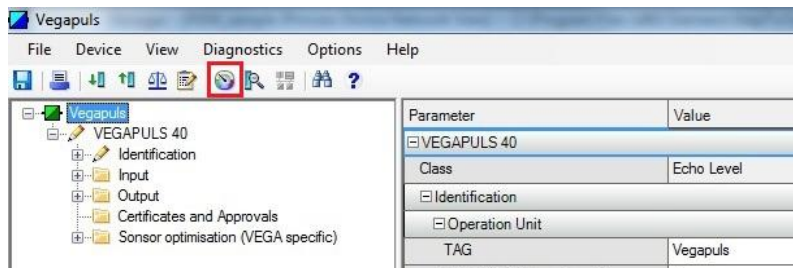


18. Select the device you want to access from the device type list and click **[OK]**.
19. Enter the PROFIBUS address.

- 20. Click **[OK]** to confirm.
The window is closed.

- 21. Right-click in the Process Device Network View on the device you have just selected and select **Object**.
This opens the SIMATIC PDM view which shows the parameter values of the selected device.

- 22. Click the Measured Value Display icon () underneath the menu bar to import the parameter values of the PA device to the Process Device Manger.

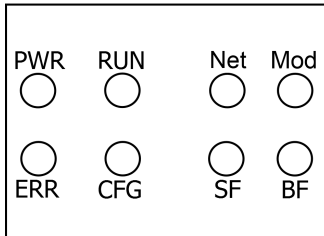


Parameter	Value
VEGAPULS 40	
Class	Echo Level
Identification	
Operation Unit	
TAG	Vegapuls

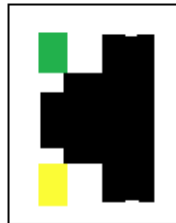
7 LED status indicators

The EtherNet/IP Gateway displays eight device status LEDs and two RJ45 connection status LEDs on the front side:

Device status LEDs



RJ45 status LEDs



PWR	=	power supply - refer to next section ^{□36}
RUN	=	running - refer to next section ^{□36}
ERR	=	error - refer to next section ^{□36}
CFG	=	configuration - displays configuration upload - refer to next section ^{□36}
Net	=	Network, displays EtherNet/IP Network status
Mod	=	Module, displays EtherNet/IP module status
SF	=	System faults - displays EtherNet/IP /PROFIBUS system faults (wrong configuration, internal error, ...) - refer to EtherNet/IP LEDs ^{□37} and PROFIBUS Master LEDs (PA) ^{□38}
BF	=	Bus faults - displays EtherNet/IP /PROFIBUS bus faults - refer to EtherNet/IP LEDs ^{□37} and PROFIBUS Master LEDs (PA) ^{□38}





















































































The device status LEDs are permanently on or flash in different colors and frequencies as indicated below:




























Symbol	Color	Lighting
	none	off
	red	permanent
	green	permanent
	red	flashing (1 Hz)
	red	flashing quickly (5 Hz)
	green	flashing (1 Hz)
	green	flashing slowly (0.5 Hz)
	green	flashing quickly (5 Hz)

The RJ45 status LEDs indicate the following behaviour:

Symbol	Color	Lighting
	green	permanent when Ethernet connection is on
	yellow	flashing when Ethernet connection is active








7.1 Status LEDs (PWR, RUN, ERR and CFG)

LEDs	Meaning						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Start-up phase (approximately 10 seconds) 24V DC power supply is ok.</p>
PWR 	RUN 						
							
ERR	CFG						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Operating system starts (approximately 2 seconds)</p>
PWR 	RUN 						
							
ERR	CFG						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Device is running in factory mode (only firmware update is possible)</p>
PWR 	RUN 						
							
ERR	CFG						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Device is running/operational</p>
PWR 	RUN 						
							
ERR	CFG						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Software error A software error occurred. Reboot the device.</p>
PWR 	RUN 						
							
ERR	CFG						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Permanent hardware fault detection during startup A fatal error has been detected.</p>
PWR 	RUN 						
							
ERR	CFG						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	<p>Software error occurred, device has restarted automatically and error is reported in log file</p>
PWR 	RUN 						
							
ERR	CFG						








LEDs	Meaning						
<table border="1"> <tr> <td>PWR </td> <td>RUN  / </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN  / 			ERR	CFG	Firmware update is running (in factory mode if RUN LED blinking red)
PWR 	RUN  / 						
							
ERR	CFG						
<table border="1"> <tr> <td>PWR </td> <td>RUN </td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>ERR</td> <td>CFG</td> </tr> </table>	PWR 	RUN 			ERR	CFG	No power on device Check power supply.
PWR 	RUN 						
							
ERR	CFG						

7.2 EtherNet/IP LEDs













Network status (Net)

LEDs	Meaning
	Not powered, no IP address, no Ethernet link The device is powered off, or is powered on with no IP address configured
	No connections An IP address is configured, but no CIP connection is established
	Connected An IP address is configured, at least one CIP connection is established
	Connection timeout An established connection has timed out
	Duplicate IP address For devices that support duplicate address detection, the device has detected that its IP address is already in use
 	Self-test The device is performing a power-up test

Module status (Mod)

LEDs	Meaning
	No power No power is supplied to the device
	Operating The device is operating correctly
	Standby The device has not been configured
	Major recoverable fault The device has detected a recoverable error Note: An incorrect or inconsistent configuration is considered a major recoverable fault
	Major unrecoverable fault The device has detected a non-recoverable error
 	Self-test The device is performing a power-up test

7.3 PROFIBUS LEDs

LEDs	Meaning
  SF BF	All channels offline
  SF BF	All devices exchange data on all channels
 /   SF BF	At least one used channel is not online
  /  SF BF	At least one slave is not in data exchange BF: green - all channels are online; red: not all channels are online.
  SF BF	Error in the PROFIBUS part of the device An error such as a software error or a license error has occurred.

8 Using the web interface

8.1 General functions

All interface windows display the following three functions:



Restart Device

This function is available only when logged in as administrator or maintenance engineer and is used to restart the gateway remotely as instructed in this user guide or whenever required in ongoing operation.

Logout

Select this function to log out as an active user.

Auto logout

This default setting logs out the current user from the gateway if the interface is inactive for a certain amount of time (as indicated in minutes).

8.2 Information

The **Information** window shows detailed product-related information in the menus **System**, **License** and **About**, including the type of gateway hardware, version, bootloader and firmware of your gateway.

epGate DP		Information	Settings	Diagnosis	EthernetIP	PROFIBUS
Views	Device / System					
System	Serial Number	182600111				
License	Firmware Version	1.00.00.9711				
About	Bootloader Version	1.04.01.6611				
	Factory Version	1.03.00.6611				
	Hardware Version	1.00				
	System ID	epGate DP				
	Host ID	#00-06-71-3F-01-4D#04AE#0AE241AF#				
	Motherboard					
	Serial Number	182400430				
	Hardware Version	1.00				
	Daughterboard					
	Serial Number	182400111				
	Hardware Version	1.00				

8.2.1 System

Select **Information** → **System** to view the hardware and software details of your device.

Parameter	Meaning
Serial Number	Serial number of the gateway.
Firmware Version	Version of the currently running firmware.
Bootloader Version	Version number of the boot loader.
Factory Version	Version number of the factory image.
Hardware Version	Version number of the hardware.
System ID	Gateway model = PA, PB or DP.
Host ID	This is the ID you will need to generate, install and activate a high availability licence (not available with current firmware version)

8.2.2 License

Select **Information** → **License** to view the licenses used by the gateway firmware under an [open source license](#).

8.2.3 About

Select **Information** → **About** to show information about Softing and other useful information.

8.3 Settings

8.3.1 Network

Select **Settings** → **Network** to view and change the TCP/IP settings.



Note

You need to be logged in as [administrator or config](#)⁴² to change default settings. If you change the settings you must restart the gateway.

The screenshot shows the 'epGate DP' web interface. The top navigation bar includes 'Information', 'Settings' (selected), 'Diagnosis', 'EthernetIP', and 'PROFIBUS'. The left sidebar shows 'Views' with 'Network' selected. The main content area is titled 'TCP/IP Settings' and contains the following options:

- Obtain IP settings from a DHCP server
- IP Address: 192.168.0.10 ✓
- Subnet Mask: 255.255.255.0 ✓
- Default Gateway: 0.0.0.0 ✓
- Hostname: epgatedp-182600111.local ✎
- NTP Server: [Empty field]
- Enable discover services

Below the settings, a note states: 'The new data is used after a restart of the device'. An 'Apply' button is located at the bottom of the settings area.

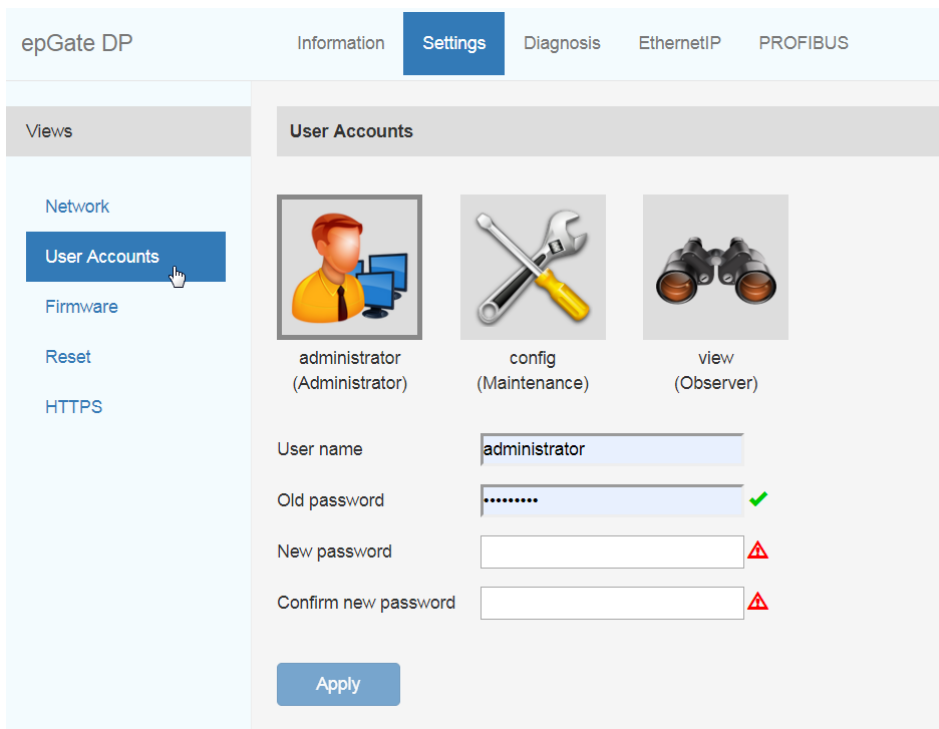
Parameter	Meaning
Obtain IP address from a DHCP server	The Dynamic Host Configuration Protocol (DHCP) is activated and the IP address is obtained from a DHCP server.
IP address	Internet Protocol (IP) address of the device used for web access.
Subnet mask	Subnet mask of the device used for web access.
Default gateway	Default gateway of the device used for web access.
Hostname	Name of the device used by a name server.
NTP Server	IP address of a Network Time Protocol (NTP) server used for time synchronisation.
Enable discover services	These include <i>Simple Service Discovery Protocol (SSDP) multicast DNS (mDNS)</i> and <i>SearchAndConfigure</i> is enabled.
Apply	Click [Apply] to confirm changes made in this window.

8.3.2 User accounts

In this section you will learn how to change accounts and passwords.

1. Select **Settings** → **User Accounts**.

As administrator you can change and confirm the passwords for different roles. See details below.



2. Click one of the icons (administrator, config or view) and enter the **Old Password** and the **New Password** in the corresponding fields according to the password rules.

3. Retype the password in the **Confirm new password** field and click **[Apply]** to save the modified password.

Access to your EtherNet/IP Gateway configuration tool is managed by user roles which come with predefined permissions. The following standard roles are available:

Role	Username	Password
Administrator	administrator	FGadmin!1
Maintenance	config	FGconfig!1
Observer	view	FGview!1

Additionally, your EtherNet/IP Gateway can be accessed remotely with the usernames **diagnosis** (psw: ? <fJ#\/\$eB2qtGd*) and **expert** (psw: FS-QsHnc7BWa {6w<). Both user roles are reserved strictly for Softing Support purposes.



Note

Enter the usernames diagnosis or expert manually instead of selecting one of the icons above and change the password immediately according to the password rules below.

Password rules

A password must contain between eight and 128 characters, including at least 1 lower case letter, 1 upper case letter, 1 number and 1 special character: !"#\$%&'()*+,-./:;<=>@[\\]^_`{|}~

Permission and roles

The following table shows the permissions of each user role:

Permission	Administrator	Service Engineer	Observer
Setting password	<input checked="" type="checkbox"/>		
Configuring gateway	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Reading configuration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Reading diagnostics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Updating firmware	<input checked="" type="checkbox"/>		
Resetting gateway	<input checked="" type="checkbox"/>		
Installing HTTPS certificates	<input checked="" type="checkbox"/>		

8.3.3 Firmware update

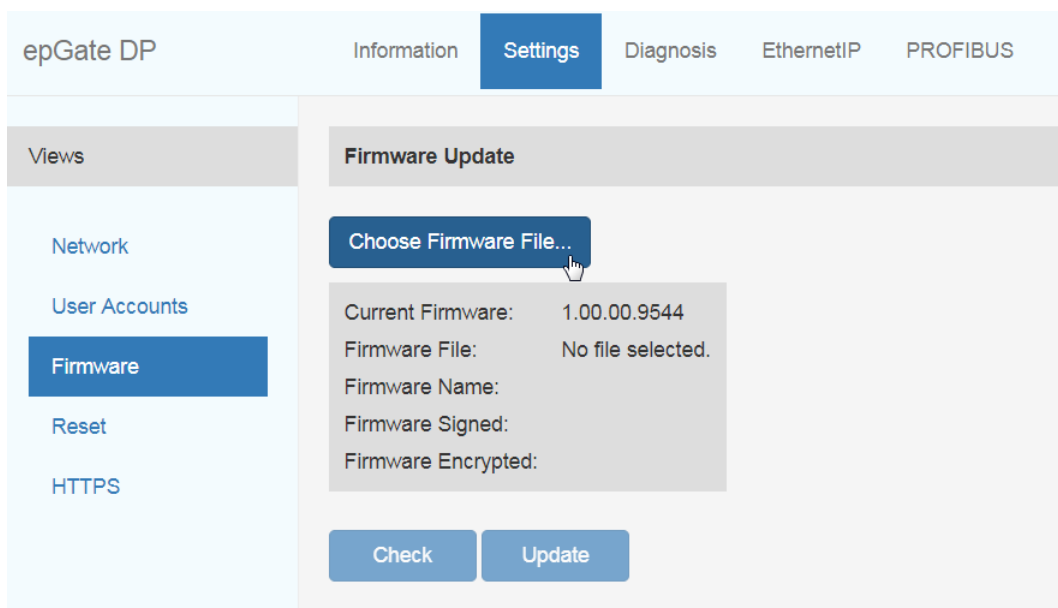
The gateway comes with pre-installed firmware which is maintained and updated to continuously enhance the functionality of the device. To ensure that your EtherNet/IP Gateway is running the latest firmware version check for the latest version in the Softing [Download Center](#). Bear in mind that the EtherNet/IP Gateway cannot be downgraded to a previous version.



Note

You need to be logged in as [administrator](#)⁴².

1. Download the firmware update to your computer.
When you are downloading from this site for the first time you will have to register yourself in a few steps.
2. Log on to the web interface of the gateway.
3. Select **Settings** → **Firmware** in the side bar navigation.
4. Click [**Choose Firmware File...**] and select the file *firmware.bin* from the firmware update you downloaded.

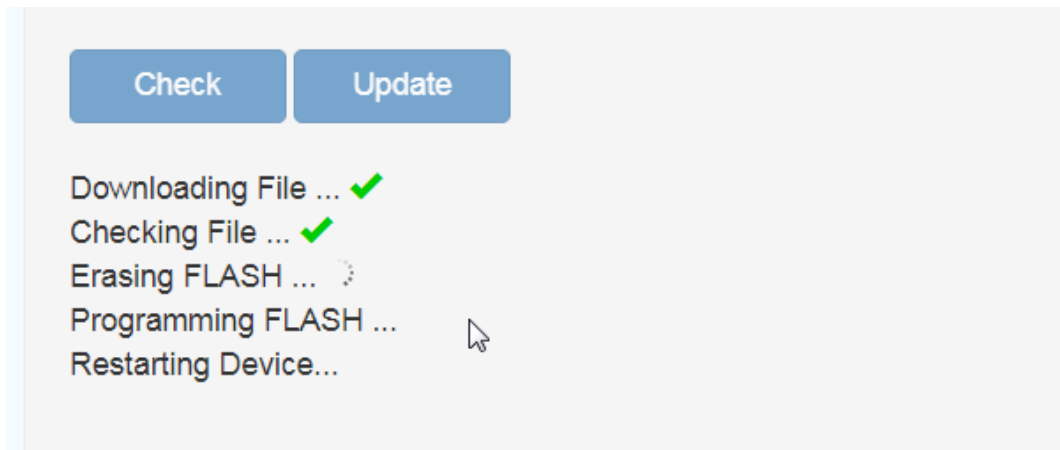


5. Click [**Update**] to install the latest firmware and [**OK**] in the message window. The update progress is shown beneath the update button.



Hint

Click [**Check**] to verify, if the file you have chosen is a valid firmware file.



The system performs a firmware file check. The download starts automatically. When the download is completed the EtherNet/IP Gateway will be rebooted. When the boot process is completed, the RUN LED is ON.

**Note**

After the gateway has rebooted you are automatically forwarded to the log in page. If this fails please reload the web page.

**Note**

If anything goes terribly wrong during the firmware update you can always repeat the firmware update.

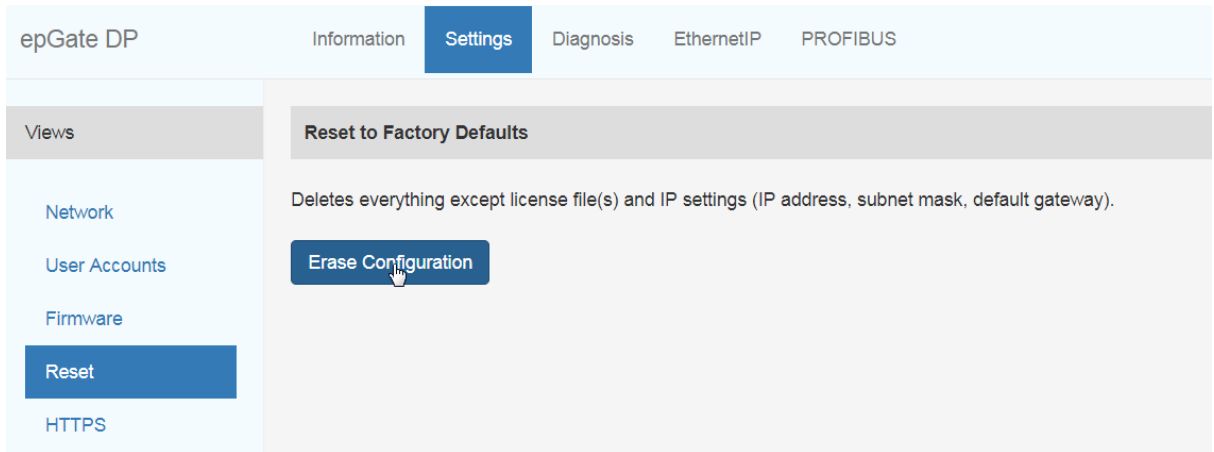
8.3.4 Reset

1. Select **[Erase Configuration]** to reset your device to default settings.



Note

You need to be logged in as [administrator](#)⁴².



2. Click **[OK]** to confirm your selection.
Your EtherNet/IP Gateway will be restarted with the default settings. License files and IP settings will not be deleted.

8.3.5 HTTPS certificates

If you access your gateway on an HTTPS connection, make sure the gateway uses a trusted certificate. You can check easily if the IP address of your gateway is secured by a certificate. Depending on the settings of your web browser, Chrome, Explorer, and Firefox typically display a padlock icon in the address bar to indicate that a secured HTTP connection is used. Click on the icon to find out which type of security and certificate is used.

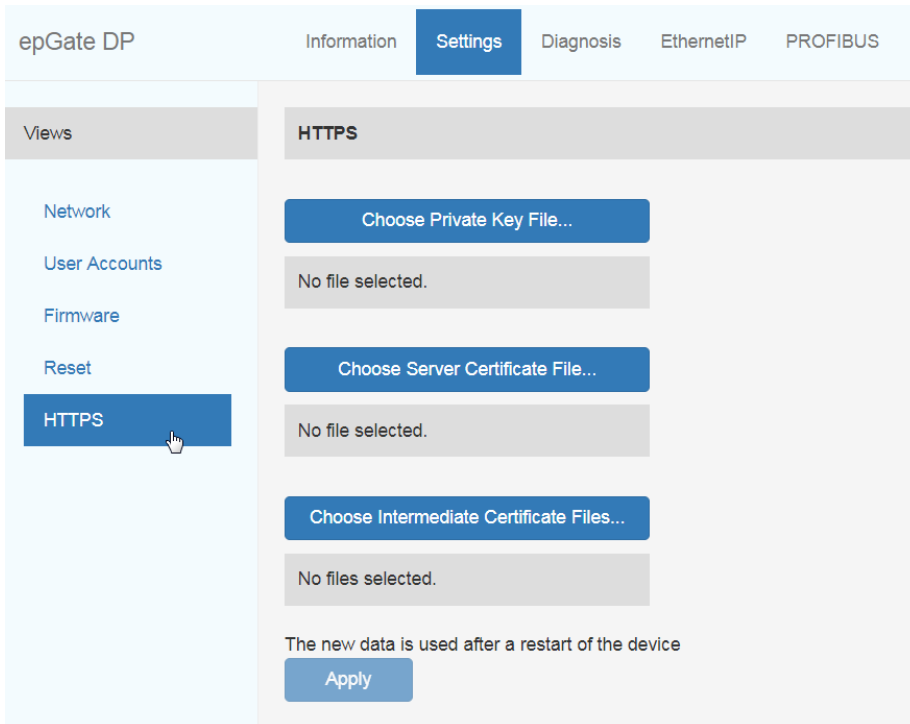
All three gateways use Open SSL V1.0.2 for TLS 1.2 with a self-signed Softing certificate. If you want to use a different certificate to secure your gateway, select **Settings** → **HTTPS** and choose the upload options to install a private key, server certificate file and intermediate certificate files.

When you configure the HTTPS settings, the initially installed self-signed certificate is replaced. You can restore the original certificate by resetting the default gateway configuration (**Settings** → **Reset** → **Erase Configuration**).



Note

You need to be logged in as [administrator](#)⁴² to change the HTTPS settings.



Parameter	Meaning
Choose private key file...	Install the private key file, containing the private key, generated simultaneously with the certificate signing request.
Choose server certificate file...	Install the server certificate file.
Choose Intermediate Certificate Files...	Optional for installing necessary intermediate certificate files.
Apply	Click button to activate your settings.

**Note**

If you change the settings you must restart the gateway.

**Note**

If you are experiencing problems with certificates, please update your web browser first with the most recent version before contacting Softing support.

**Note**

As your web browser might use cached data, please refresh the browser after rebooting the gateway.

8.4 Diagnosis

Select **Diagnosis** → **Settings** to view gateway settings and log file values. The settings can be viewed in any role. To change the settings you must have administration rights.

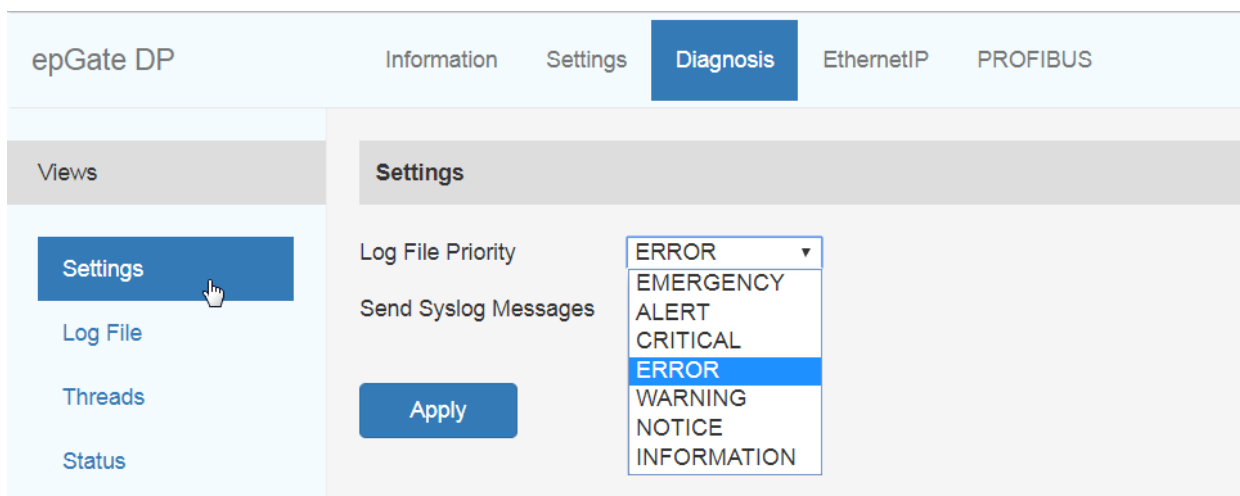


Note

The menu **Diagnosis** including all submenus **Settings**, **Log File**, **Threads**, **Status** is reserved for Softing Support to help Expert users analyse system data.

8.4.1 Settings

Select **Diagnosis** → **Settings** to view gateway settings and change your log file priority.



Parameter	Meaning
Log File Priority	Available values: Emergency, Alert, Critical, Error, Warning, Notice, Information. All messages with the set priority or higher are logged. The log file is shown under Diagnosis → Settings
Send Syslog Messages	Activate additional debug logging and sends the information to the network. Can be logged with wireshark, Visual Syslog Server or similar.

8.4.2 Logfile

Select **Diagnosis** → **Logfile** to view the log file entries. You can also filter the diagnostic log by ticking and unticking the checkboxes of the different priorities. This only affects the display of the log and not the setting of the log file priority under **Diagnosis** → **Settings**.

The screenshot shows the 'Log File' section of the epGate DP web interface. The top navigation bar includes 'Information', 'Settings', 'Diagnosis', 'EthernetIP', and 'PROFIBUS'. The 'Diagnosis' tab is active. On the left, a sidebar menu has 'Log File' selected. The main content area displays a table of log entries with the following columns: Severity, Timestamp (UTC), and Message. The log entries are as follows:

Severity	Timestamp (UTC)	Message
ERROR	1970-01-01 00:00:02.870172	<EPA2BPBAM> /epa2pbpam.lock exists
ERROR	1970-01-01 00:01:01.580457	data_len (126) is not match to the data length (125)
ERROR	1970-01-01 00:03:01.583581	data_len (126) is not match to the data length (125)
ERROR	1970-01-01 00:05:01.585843	data_len (126) is not match to the data length (125)
ERROR	1970-01-01 00:11:01.594616	data_len (126) is not match to the data length (125)
ERROR	1970-01-01 00:13:01.597606	data_len (126) is not match to the data length (125)
ERROR	1970-01-01 00:15:01.600947	data_len (126) is not match to the data length (125)

At the top of the log table, there are checkboxes for filtering by severity: EMERGENCY, ALERT, CRITICAL, ERROR, WARNING, NOTICE, INFORMATION, and DEBUG. All are checked. To the right of the table are buttons for 'Clear', 'Refresh', and 'Support Data'.



Note

Use the button **[Support Data]** to save the data to a file. The information contained in this file may provide us with valuable information to fix your issue.

Parameter	Meaning
Emergency, Alert, Critical, Error, Warning, Notice, Information.	Tick checkboxes to set a display filter.
Clear	Click this button to delete the log file entries.
Refresh	Click this button to update the message log entries.
Support Data	Click this button to upload a collection of all available logs for support requests.

8.4.3 Threads

Select **Diagnosis** → **Threads** to view currently running threads. The list you will see and the details contained may not be of any use to you but helps Softing support to diagnose device and performance errors.

Id	Name	State	Set Priority	Current Priority	Stack Base	Stack Size	Stack Used
1	idle Thread	RUNNABLE	31	31	0x0146D090	8192	240
2	Clock mgmt	SLEEP	20	20	0x01880C90	12032	288
3	main	SLEEP	10	10	0x0146F740	12000	1276
4	Network alarm support	SLEEP	27	27	0x0187DD1C	8192	824
5	Network support	RUNNABLE	28	28	0x016512DC	8192	1240
6	ifs2 gc thread	SLEEP	30	30	0x018B1828	2048	628
7	FG-2xx ifs task	SLEEP	30	30	0x00AD54C8	16384	1336
8	SysLog	SLEEP	30	30	0x0189E0A0	4096	1428
9	FG-2xx ecc task	SLEEP	30	30	0x00AF0288	4096	192
10	FG-2xx firmware task	SLEEP	27	27	0x00ADDD58	4096	240
11	FG-2xx capture task	SLEEP	27	27	0x00ACD748	4096	208
12	FG-2xx console task	SLEEP	25	25	0x00ACEB20	8192	1036

8.4.4 Status

Select **Diagnosis** → **Status** to view gateway diagnostics.

Status	
Uptime	3404
CPU Load (0.1s)	6
CPU Load (1s)	6
CPU Load (10s)	6
RAM size	95 MB
RAM static	23.668 MB
RAM dynamic used	282.492 KB
RAM dynamic free	71.056 MB
Current Temperatur	43

8.5 EtherNet/IP

8.5.1 Settings

To change the EtherNet/IP settings you need to be logged in as [administrator](#)⁴².

Select **EthernetIP** → **Settings** and follow the instructions in the section [Configuring EtherNet/IP](#)²².

The screenshot shows the 'epGate DP' web interface. The top navigation bar includes 'Information', 'Settings', 'Diagnosis', 'EthernetIP', and 'PROFIBUS'. The 'EthernetIP' tab is active. On the left, a 'Views' sidebar contains 'Settings' (highlighted), 'Mapping', and 'Log'. The main content area is titled 'EIP Settings'. It features a checkbox labeled 'Obtain IP settings from a DHCP server' which is currently unchecked. Below this are three input fields: 'IP Address' with the value '172.17.2.222', 'Subnet Mask' with '255.255.0.0', and 'Default Gateway' with '172.17.0.160'. Each input field has a green checkmark to its right. A note below the fields reads 'The new data is used after a restart of the device'. At the bottom of the settings area is a blue 'Apply' button.

Parameter	Meaning
Obtain IP settings from a DHCP server	If the checkbox is selected, the IP settings for EtherNet/IP access are obtained from DHCP server. IP Address, Subnet Mask and Default Gateway cannot be configured.
IP Address	IP address for EtherNet/IP access.
Subnet Mask	Subnet mask
Default Gateway	Default gateway
Apply	Click button to activate your settings.

8.5.2 Mapping

The EtherNet/IP mapping table displays the mapping of PROFIBUS IOs to EtherNet/IP (EIP).

The screenshot shows the 'EIP Mapping' configuration page in the epGate PB software. The interface includes a top navigation bar with tabs for 'Information', 'Settings', 'Diagnosis', 'EtherNet/IP', and 'PROFIBUS'. A left-hand navigation menu has 'Mapping' selected. The main content area displays the configuration for 'Input Assembly 1'.

Assembly Details:

- Assembly Type: Input
- Assembly Id: 100
- Add On Instruction: epGate_PB_11
- User Defined Type: epGate_PB_11Data

User Defined Type		Assembly		IO Channel				
Field Name	Field Type	Offset	Segment	Slave Address	Device Name	Device Tag	Slot	Channel Id
HaStatus	HaStatus	4						
DeviceFailure	DINT[2]	12						
DeviceStatus	SINT[2]	20						
OUT_long_1_3_1_1	REAL	22	PA0	3	FBK Starter Kit	FBK Starter Kit	1	1
OUT_long_1_3_1_2	SINT	26	PA0	3	FBK Starter Kit	FBK Starter Kit	2	1
OUT_long_1_3_2_1	REAL	27	PA0	3	FBK Starter Kit	FBK Starter Kit	2	2
OUT_long_1_3_2_2	SINT	31	PA0	3	FBK Starter Kit	FBK Starter Kit	5	1
OUT_D_1_3_5_1	PbUnsigned8Unsigned8	32	PA0	3	FBK Starter Kit	FBK Starter Kit	6	2
SP_D_RB_D_1_3_6_2	PbUnsigned8Unsigned8	34	PA0	3	FBK Starter Kit	FBK Starter Kit	1	1
FG_TEST_1_1_4_1_1	REAL	36	PA0	4	PA-FGT	PA-FGT	1	2
FG_TEST_1_1_4_1_2	SINT	40	PA0	4	PA-FGT	PA-FGT	1	3
FG_TEST_1_1_4_1_3	SINT	41	PA0	4	PA-FGT	PA-FGT	1	4
FG_TEST_1_1_4_1_4	SINT	42	PA0	4	PA-FGT	PA-FGT	1	5
FG_TEST_1_1_4_1_5	INT	43	PA0	4	PA-FGT	PA-FGT	1	6
FG_TEST_1_1_4_1_6	DINT	45	PA0	4	PA-FGT	PA-FGT	1	7
FG_TEST_1_1_4_1_7	SINT	49	PA0	4	PA-FGT	PA-FGT	1	8
FG_TEST_1_1_4_1_8	INT	50	PA0	4	PA-FGT	PA-FGT	1	9
FG_TEST_1_1_4_1_9	DINT	52	PA0	4	PA-FGT	PA-FGT	1	10
FG_TEST_1_1_4_1_10	REAL	56	PA0	4	PA-FGT	PA-FGT	1	11
FG_TEST_1_1_4_1_11	SINT[8]	60	PA0	4	PA-FGT	PA-FGT		

8.5.3 Log

The EtherNet/IP log represents the state of the EtherNet/IP connection. The data helps Softing Support to troubleshoot a connection problem.

8.6 PROFIBUS

8.6.1 Configuration

This section describes how to configure the gateway segments PA and DP for PROFIBUS communication. You need to be logged in as [administrator or config](#)⁴² to configure the gateway.

The screenshot shows the 'epGate PB' web interface. The top navigation bar includes 'Information', 'Settings', 'Diagnosis', 'EthernetIP', and 'PROFIBUS'. The 'PROFIBUS' tab is active. On the right, there are links for 'Restart Device', 'Logout administrator', and 'Auto logout in 9 min'. The main content area is divided into 'Views' (Configuration, Log) and 'Actions' (Import GSD, Remove All GSDs, Clear Configuration, Load Configuration, Save Configuration, Create Report, Apply Configuration). The 'Configuration' section is split into 'Device Catalog' and 'Segment Configuration'. The 'Device Catalog' shows two entries: 'FBK Starter Kit' (Ident Number: 0x0c5e, GSD File Name: SF010C5E.gsd) and 'PA-FGT' (Ident Number: 0x3822, GSD File Name: Simp_SF013822.gsd). The 'Segment Configuration' section shows three segments: 'Segment PA0', 'Segment PA1', and 'Segment DP0'. A modal window for 'Segment PA0' is open, showing 'Address: 3' and 'Device Type: FBK Starter Kit (Softing)'.

Actions	Meaning
Import GSD	Import GSD device description file to device catalog.
Remove all GSDs	Deletes all previously imported GSDs.
Clear Configuration	Deletes all configured devices.
Load Configuration	Loads a previously saved configuration.
Save Configuration	Saves the configuration to a file.
Create Report	Creates a configuration report.
Apply Configuration	Activates the configuration at the PROFIBUS masters.



Note

You can adapt the *baud rate* and *max retry limits* of the DP bus parameters. The default baud rate is set to 1.5 MBaud and the retry limit to 1.

Select the  icon in a DP segment to edit the bus parameters.

Terms / Abbreviations	Meaning
Baudrate	The rate at which data is transferred in a PROFIBUS communication segment. "1.5MBaud" means that segment can transfer a maximum of 1.5 megabits per second.
Tsl	Slot Time: This time determines the maximum time the sender waits for a response from the addressed device.
Min Tsdr	Minimum Station Delay Responder: The time that the slave must wait before it may respond to a request from the master. The default value is $11t_{Bit}$.
Max Tsdr	Maximum Station Delay Responder: The time in which the slave must respond to a request from the master. The value range is set between 60 and $800 t_{Bit}$.
Ttr	Target Rotation Time: This time is the maximum time available for one Token rotation. In this time span, all DP masters receive the Token once.
Highest Station Address	Indicates the highest valid device address in the PROFIBUS network.
Tset	Setup Time: This is the time that may pass between receiving a data telegram and the respective reaction within a device.
Max Retry Limit	The total number of retries.

8.6.2 Log

The PROFIBUS log represents the state of the PROFIBUS connection. The data helps Softing Support to troubleshoot a connection problem.

9 Declaration of conformity

This device is compliant with EC directive 2014/30/EG, "Electromagnetic Compatibility" (EMC directive) and meets the following requirements:

- EN 55011 Industrial, scientific and medical (ISM) devices - radio disturbance - limits and methods of measurement
- EN 55032 Electromagnetic compatibility of multimedia equipment (MME) and interference emission
- EN 61000-6-4 Electromagnetic compatibility (EMC); Part 6-4: generic standard – emission for industrial environments
- EN 61000-6-2 Electromagnetic compatibility (EMC); Part 6-2: generic standard - immunity for industrial environments



Note

To fulfill the EMC requirements, the other components of your installation (DC adapter, Industrial Ethernet devices, etc.) also have to meet the EMC requirements. A shielded cable must be used. In addition, the cable shield must be grounded properly.



CAUTION

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures!



CE

The CE marking indicates conformity with the above standards in a Declaration of Conformity which can be requested from Softing Industrial Automation GmbH.



RoHS

This product is compliant the Restriction of Hazardous Substances under Directive 2002/95/EC.



FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, under part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.



VCCI

This Class A product conforms to the regulations of Voluntary Control Council for Interference (VCCI) by Information Technology Equipment.



WEEE

In compliance with Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC, electrical and electronic equipment must be disposed of separately from normal waste at the end of its operational lifetime. Packaging material and worn components shall be disposed of according to the regulations applicable in the country of installation.




10 Glossary

Terms & Abbreviations	Definition
CE	Conformité Européenne" (French for "European Conformity")
DC	Direct Current - electric current flowing in only one direction
DIN	<i>Deutsches Institut für Normung</i>
DTM	Device Type Manager
DP	Decentralised Peripherals
EDD	Electronic Device Description. A file created by the device manufacturer or a service provider. It is shipped together with the device on a data carrier and / or made available for download from the Internet by the manufacturer.
EDDL	Electronic Device Description Language
EDS	Electronic Data Sheet. A file containing the manufacturer's EtherNet/IP device description.
ETH	Ethernet
Ex	Explosion protection
FCC	Federal Communications Commission
FDT	Field Device Tool
GND	Ground
GSD	General Station Description (a file containing the manufacturer's device data base)
I/O	Input/Output
IP	Internet Protocol
PA	Process Automation
PB	PROFIBUS
PDM	Process Device Manager (sometimes aka Plant Device Manager)
PLC	Programmable Logic Controller
RDL	Redundancy Link
RoHS	Restriction of Hazardous Substances
T	temperature
WEEE	Waste Electrical & Electronic Equipment

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