

SIEMENS

SIMATIC

Industrial Software Engineering Tools TS Adapter IE Advanced

Manual

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04/2014

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Legal information

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 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.

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Preface

Purpose of the documentation

This documentation provides important information for configuring and commissioning the TS Adapter IE Advanced .

Basic knowledge required

The following knowledge is required in order to understand the documentation:

- General knowledge of automation technology
- Knowledge of the industrial automation system SIMATIC
- Knowledge about the use of Windows-based computers
- Working knowledge of the TIA Portal
- Knowledge about Ethernet communication
- Knowledge of network technology

Validity of the documentation

This documentation is valid for the following components:

Component	Article number	as of Version	
		Firmware	Hardware
TS Adapter IE Advanced	6ES7972-0EA00-0XA0	V 1.0.0	01
TS Module GSM	6GK7972-0MG00-0XA0	-	01

Conventions

The term "CPU" is used in this manual to refer to the CPUs of the SIMATIC S7.

Please also observe notes labeled as follows:

Note

The notes contain important information on the product described in the documentation, on the handling of the product or on part of the documentation to which particular attention should be paid.

Recycling and disposal

The products can be recycled due to their low pollutant content. For environmentally compliant recycling and disposal of your old device, please contact a company certified for the disposal of electronic waste.

Additional assistance

- Information about the technical support (<http://www.siemens.com/automation/support-request>) available can be found in the appendix to this documentation.
- The range of technical documentation for the individual SIMATIC products and systems can be found on the Internet (<http://www.siemens.com/simatic-tech-doku-portal>).
- The online catalog and the ordering system are available on the Internet (<http://mall.automation.siemens.com>).

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To ensure the secure operation of a plant or machine it is also necessary to take suitable preventive action (e.g. cell protection concept) and to integrate the automation and drive components into a state-of-the-art holistic industrial security concept for the entire plant or machine. Any third-party products that may be in use must also be taken into account. Please find further information at: (<http://www.siemens.com/industrialsecurity>)

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Documentation guide

Introduction

This manual gives you a complete overview of the TS Adapter IE Advanced. It serves as an aid for installing and commissioning the software and hardware. It explains the requirements for operation, the hardware configuration, and the connection of the adapter to the Ethernet.

The manual is intended for programmers and for individuals involved in configuring, commissioning, and servicing of automation systems.

Furthermore, the information system of the TIA Portal (online help) offers you assistance in configuring and programming your automation system.

Overview of the documentation on the topic of communication

The following table lists additional documentation that supplements the descriptions given here.

Topic	Documentation	Key contents
TIA Portal as of V12 SP1	Online help for TIA Portal	<ul style="list-style-type: none"> • Online functions • Diagnostics functions
TS Adapter IE Advanced	Manual (this manual)	<ul style="list-style-type: none"> • Product overview • Connecting • Commissioning • Parameter assignment • Diagnostics
Setup	Function Manual EMC/EMI compatible installation of control systems (http://support.automation.siemens.com/WW/view/en/59193566)	<ul style="list-style-type: none"> • Basics • Electromagnetic compatibility • Lightning protection

SIMATIC manuals

All current manuals for SIMATIC products are available for download free of charge from the Internet (<http://www.siemens.com/automation/service&support>) (or here (<http://www.industry.siemens.com/topics/global/en/industry-online-support/Pages/home.aspx>)).

Product overview

2.1 Properties

Article number

6ES7972-0EA00-0XA0

View of the module



Figure 2-1 View of the TS Adapter IE Advanced

Properties

The TS Adapter IE Advanced has the following properties:

- Technical properties
 - Direct connection to the plant network (Industrial Ethernet); 2 ports (LAN)
 - Connection to the public network; 1 port (WAN)
 - 24 V DC connection
 - Plug-in modules
 - Parameter assignment via the Web interface
 - Integrated hardware clock with battery backup (can be set via the Web interface; can be synchronized via a time server)
- Supported system functions
 - Firmware update
 - Import/export of parameter set

Additional information

Additional information on the properties of the TS modules can be found in the Modular TS Adapter Manual (<http://support.automation.siemens.com/WW/view/de/51280219/0/en>).

2.2 Accessories

TS Module GSM

The TS module forms the electrical interface to the mobile phone network. The TS module is supplied with power from the basic device via the shared plug-in connection.

The TS Module GSM contains a wireless modem for connecting to the GSM/GPRS network.

The TS Module GSM has an interface for connecting a GSM/GPRS antenna and a slot for a SIM card.

Designation	Article number
TS Module GSM	6GK7972-0MG00-0XA0
Antenna ANT794-4MR	6NH9860-1AA00

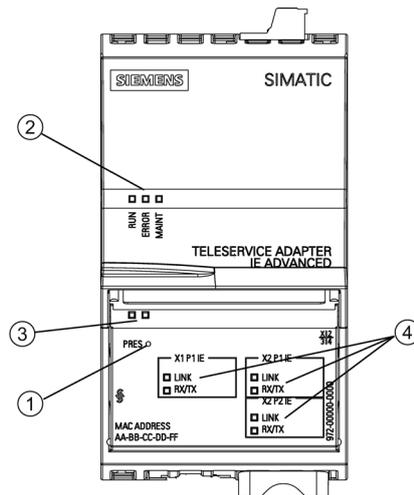
Additional information

A detailed description of the TS Module GSM can be found in the Modular TS Adapter (<http://support.automation.siemens.com/WW/view/de/51280219/0/en>) Manual.

2.3 Operating and display elements

Front view of the TS Adapter IE Advanced

The following figure shows the displays and operator controls of the TS Adapter IE Advanced (with front cover open).



- ① P RES button for resetting the parameter assignment
- ② RUN, ERROR, MAINT LEDs
- ③ ONLINE, VPN LEDs
- ④ Two LINK, RX/TX LEDs per interface

Additional information

Additional information on the displays of the TS Adapter IE Advanced can be found in chapter Status and error displays (Page 65).

2.4 Functions

Functionality of the TS Adapter IE Advanced

The TS Adapter IE Advanced provides the following functionality:

- VPN connection for remote maintenance
- IPv4 and IPv6 support on the WAN port (IPv6 as of firmware version 1.1.0)
- Password/security policy
- User management
- Addition or routes
- Event logging (security log) + export
- Time-controlled WAN connectivity
- Port forwarding
- Packet filter configuration
- System time/real time clock
- List of accessible devices
- NAT functions
- SNMP support
- E-mail sending
- Firmware update
- Enabling and disabling of routes (VPN tunnel, Internet access)
- Export and import of the parameter set (device configuration)
- Support for Dynamic DNS in the IPv6 mode

2.5 Connection types

Connection types of the TS Adapter IE Advanced

The following figures show the possible connection types of the TS Adapter IE Advanced.

Direct connection to programming device/PC

When a direct connection to the programming device or PC is used, you can assign the TS Adapter IE Advanced parameters via Ethernet (LAN).

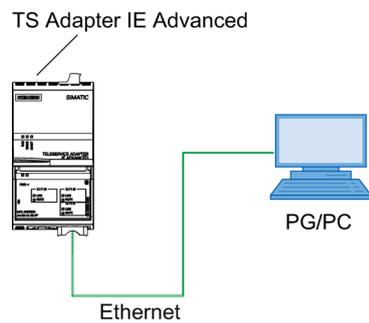


Figure 2-2 TS Adapter IE Advanced - direct connection to programming device/PC

Connection to the GSM network

For a connection to the GSM network, you must operate the TS Adapter IE Advanced together with the TS Module GSM.

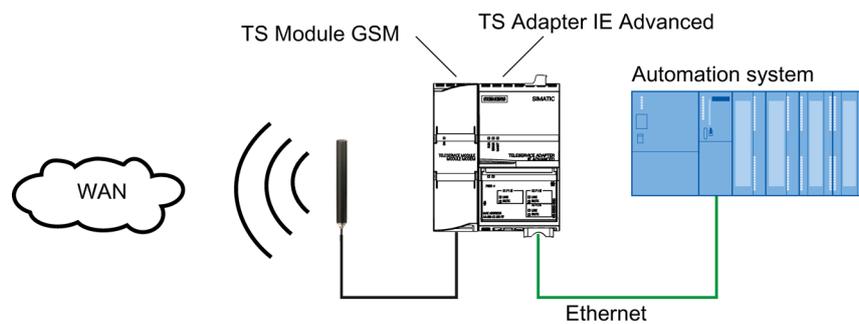


Figure 2-3 TS Adapter IE Advanced - connection to the GSM network

Connection to the Internet (DSL modem/router)

For connection to the Internet, you must operate a DSL modem/router connected to the WAN port of the TS Adapter IE Advanced.

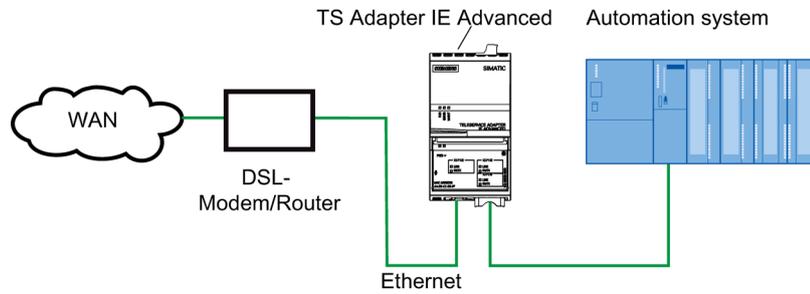


Figure 2-4 TS Adapter IE Advanced - connection to the Internet (DSL modem/router)

Recommended routers:

SCALANCE M874

- M874-3 HSPA+: 6GK5874-3AA00-2AA2

Connection to the company network (intranet)

For connection to an intranet, you must operate the plant network (Ethernet) connected to one of the two LAN ports of the TS Adapter IE Advanced.

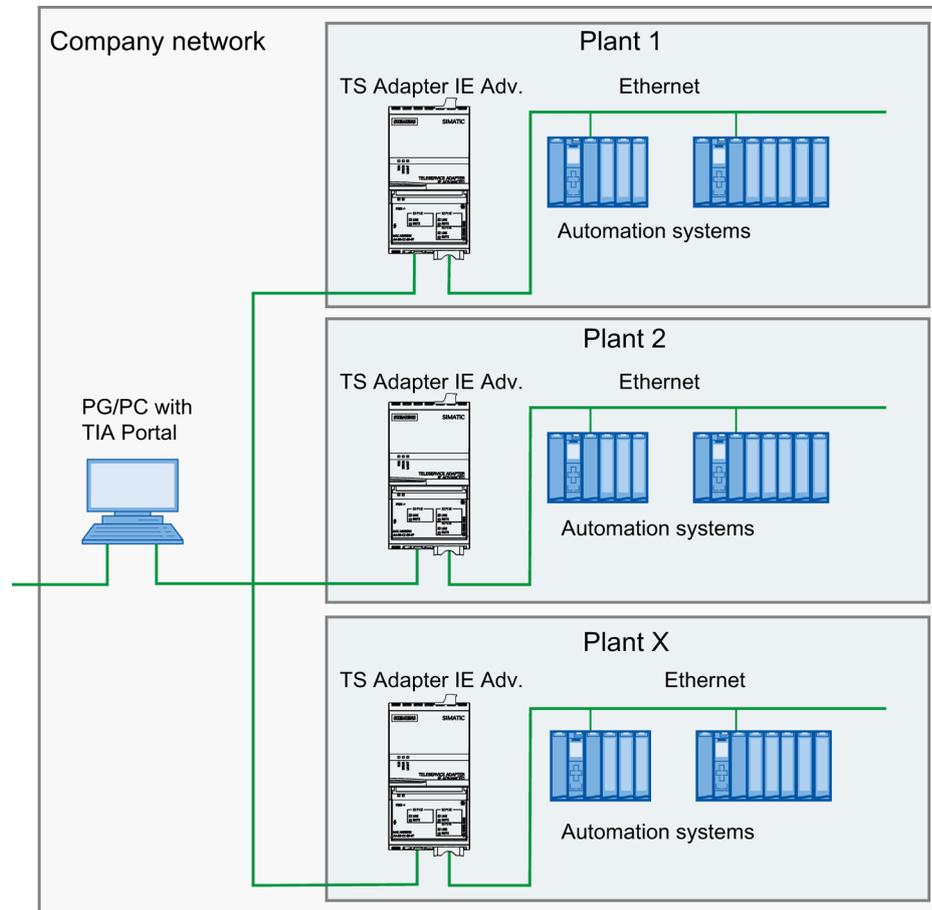


Figure 2-5 TS Adapter IE Advanced - connection to the company network (intranet)

Additional information

Additional information on the TS modules can be found in the Modular TS Adapter Manual (<http://support.automation.siemens.com/WW/view/de/51280219/0/en>).

2.6 Installation types

Alternative installation types

You have the following three alternatives for installing the TS Adapter IE Advanced:

- On the mounting rail of the S7-300 (Page 19)
using a mounting rail adapter (to be ordered separately)
 - 6ES7972-0SE00-7AA0 for 60 mm rail
 - 6ES7972-0SE10-7AA0 for 75 mm rail
- On a standard mounting rail (Page 20)
- Wall mounting (Page 22)
- Installation in an enclosure (Page 23)

Additional information

Additional information regarding installation of the TS Adapter IE Advanced can be found in the Modular TS Adapter Manual (<http://support.automation.siemens.com/WW/view/de/51280219/0/en>).

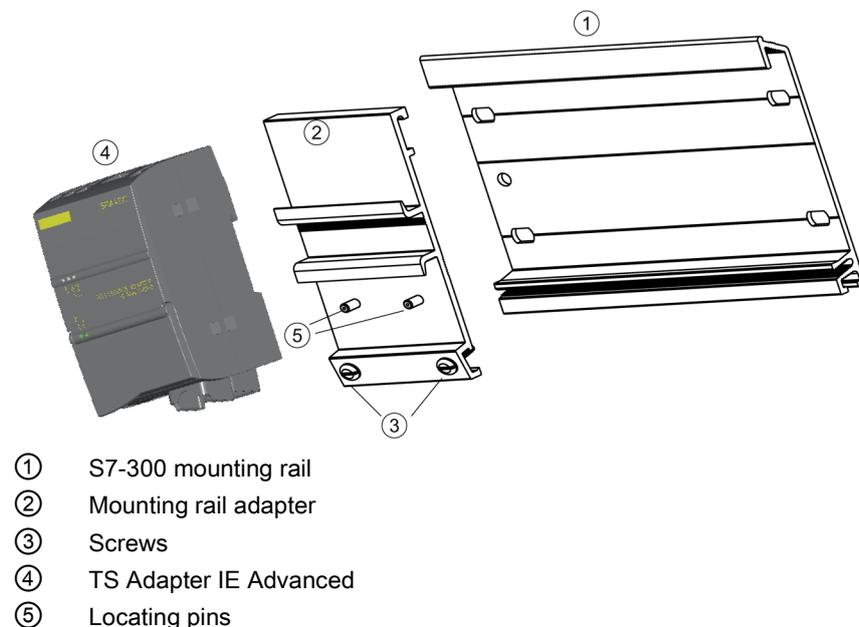
2.6.1 Installation on the S7-300 mounting rail

Requirement

The S7-300 mounting rail is installed.

Procedure - Installing

1. Hook the mounting rail adapter (optional) ② on the top edge of the S7-300 mounting rail ①.
2. Secure the mounting rail adapter ② to the S7-300 mounting rail ① using the two screws ③.
3. Hook the TS Adapter IE Advanced ④ on the standard mounting rail section ② and swivel it backwards until it engages audibly. When doing so, make certain that you position the TS Adapter IE Advanced exactly over the locating pins.



Procedure - Uninstalling

⚠ WARNING

Unplug the connector

Unplug the Ethernet cable connectors from the TS Adapter IE Advanced (and, if necessary, the cables from the TS module) before unplugging the voltage connector and thereby disconnecting the ground connection of the TS Adapter IE Advanced.

1. Using a flat-blade screwdriver, pull down the fastening slide on the bottom of the TS Adapter IE Advanced to release the latching mechanism.
2. Swivel the TS Adapter IE Advanced forward and out of the mounting rail adapter.

Additional information

You can find an animated guide for assembly and disassembly on the Internet (<http://support.automation.siemens.com/WW/view/en/90731722>).

2.6.2 Installation on a standard mounting rail

Requirement

The standard mounting rail is installed.

Procedure - Installing

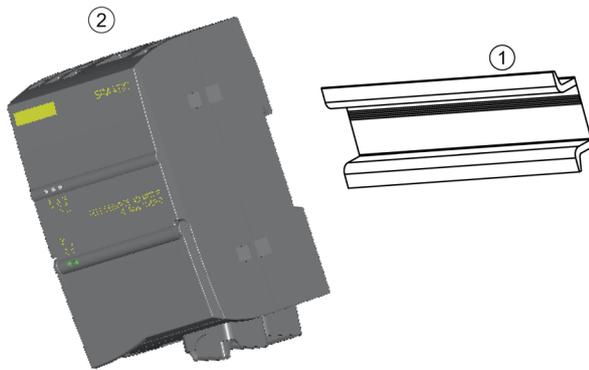
Note

High-vibration environment

If you are using the TS Adapter IE Advanced together with a TS module in a vertical mounting arrangement or in a high-vibration environment, please use end bracket 8WA1 808 on the standard mounting rail to prevent the TS Adapter IE Advanced from loosening.

Alternatively, the module can be secured with screws as described in "Wall mounting (Page 22)".

1. Hook the TS Adapter IE Advanced ② on the standard mounting rail ①.
2. Swivel the TS Adapter IE Advanced backwards until it engages audibly.



- ① Standard mounting rail
- ② TS Adapter IE Advanced

Procedure - Uninstalling

 **WARNING**

Unplug the connector

Unplug the Ethernet cable connectors from the TS Adapter IE Advanced (and, if necessary, the cables from the TS module) before unplugging the voltage connector and thereby disconnecting the ground connection of the TS Adapter IE Advanced.

1. Using a flat-blade screwdriver, pull down the fastening slide on the bottom of the TS Adapter IE Advanced to release the latching mechanism.
2. Swivel the TS Adapter IE Advanced forward and out of the mounting rail.

Additional information

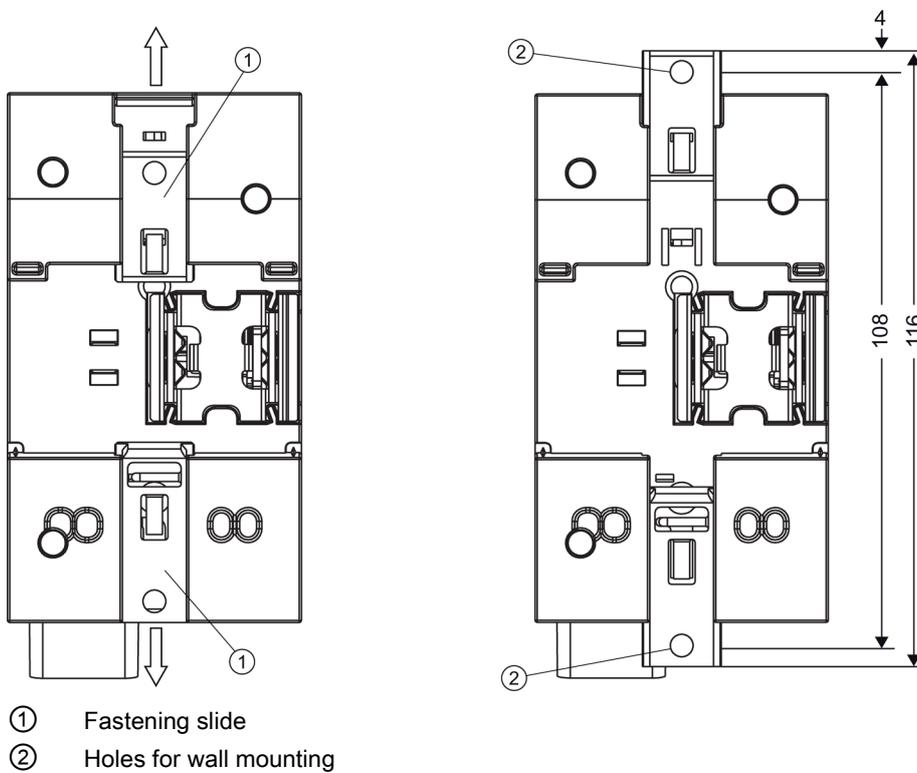
You can find an animated guide for assembly and disassembly on the Internet (<http://support.automation.siemens.com/WW/view/en/90731722>).

2.6.3 Wall mounting

Procedure - Wall mounting

1. Slide the fastening slide ① on the back of the TS Adapter IE Advanced in the direction of the arrow until it engages.
2. Screw the TS Adapter IE Advanced to the intended mounting wall at the points marked with ②.

The following figure shows the rear view of the TS Adapter IE Advanced with the fastening slide ① in both positions.



Procedure - Uninstalling

⚠ WARNING
Unplug the connector
Unplug the Ethernet cable connectors from the TS Adapter IE Advanced (and, if necessary, the cables from the TS module) before unplugging the voltage connector and thereby disconnecting the ground connection of the TS Adapter IE Advanced.

1. Unscrew the TS Adapter IE Advanced from the mounting wall.

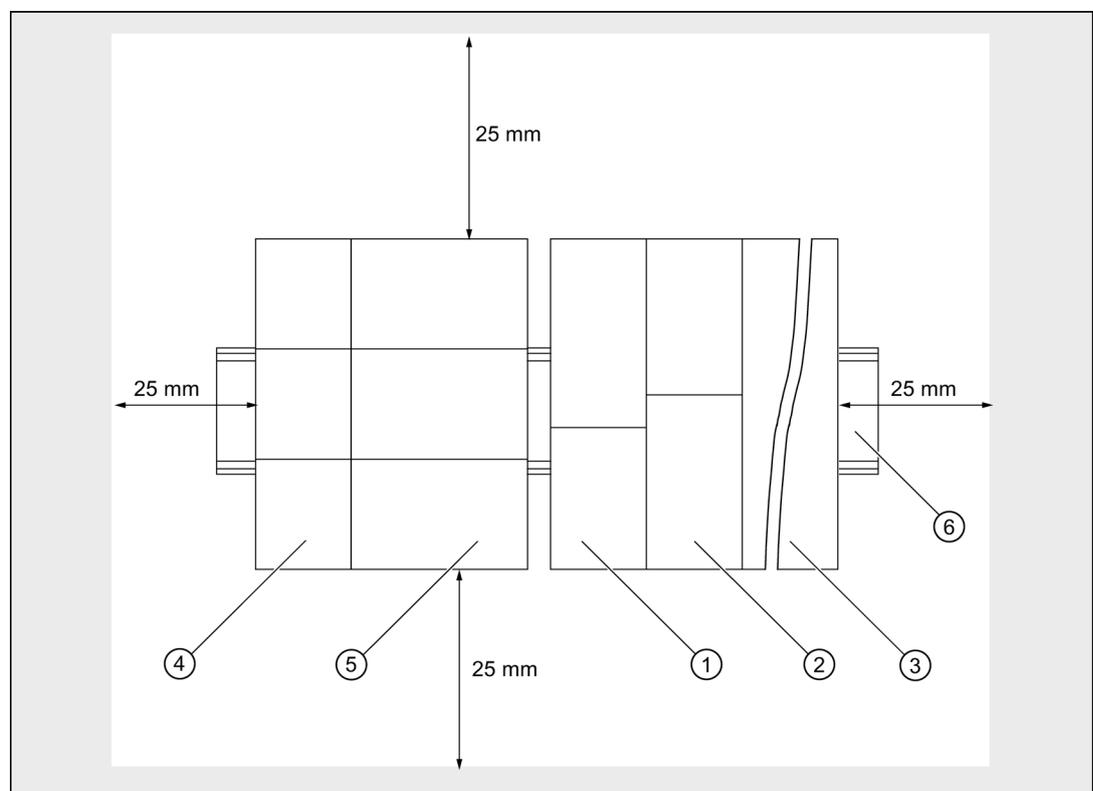
Additional information

You can find an animated guide for assembly and disassembly on the Internet (<http://support.automation.siemens.com/WW/view/en/90731722>).

2.6.4 Installation in an enclosure

Minimum clearances for installation, wiring, and heat dissipation

If you are installing the modular TS Adapter IE Advanced in an enclosure, you must ensure the following minimum clearances on the sides and at the top and bottom of the modules.



- ① Power supply module
- ② CPU
- ③ Modules
- ④ TS module
- ⑤ TS Adapter IE Advanced
- ⑥ S7-300 mounting rail or standard mounting rail

The distance between the front of the module and the enclosure cover or front door must be at least 25 mm.

2.7 Scope of delivery and spare parts

Scope of delivery

- TS Adapter IE Advanced; article number 6ES7972-0EA00-0XA0
- TS Adapter IE Advanced CD containing software and documentation

Spare parts

Designation	Article number
Adapter for installation on the S7-300 mounting rail	<ul style="list-style-type: none">• 60 mm rail: 6ES7972-0SE00-7AA0• 75 mm rail: 6ES7972-0SE10-7AA0
Connector for the 24 V DC power supply	A5E02504537

To order spare parts, contact your local Siemens representative.

2.8 Requirements for operation

Software requirement

To work with the TS Adapter IE Advanced, you need a PC with Windows 7 or Windows Server 2008 (or higher) operating system and TIA Portal V12 SP1 (or higher) software.

Hardware requirement

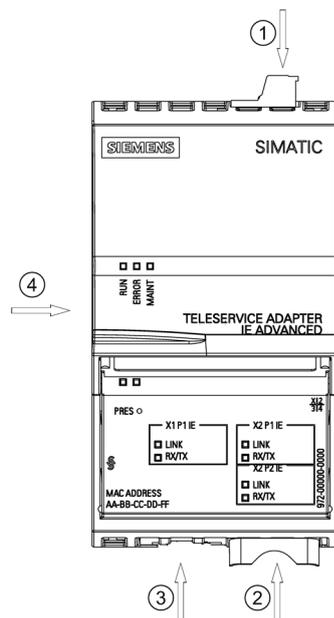
To operate the TS Adapter IE Advanced, you need a programming device or PC with CD/DVD drive and Ethernet interface.

Connecting

3.1 Connections

Front view of the TS Adapter IE Advanced

The following figure shows the connections of the TS Adapter IE Advanced (with front cover open).



- ① Incoming socket for power supply
- ② Two RJ45 Ethernet interfaces (LAN)
- ③ One RJ45 Ethernet interface (WAN)
- ④ Module interface (for an optional TS module)

3.2 Power supply

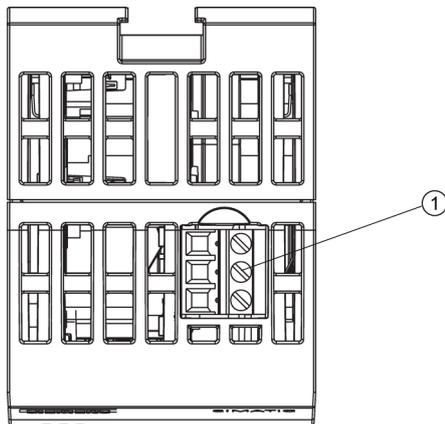
Rules for wiring the voltage connector

Follow the rules below when connecting lines to the voltage connector:

Wiring rules	
Solid conductors	No
Flexible conductor without end sleeve	0.25 mm ² to 2.5 mm ²
Flexible conductor with end sleeve	0.25 mm ² to 1.5 mm ²
Number of conductors per terminal	1 or 2 conductors up to 1.5 m ² (total) in a shared end sleeve
Diameter of the line insulation	Maximum 3.8 mm
Stripped length of individual conductors	8 to 10 mm without end sleeve 10 mm with end sleeve
End sleeves according to DIN 46228 without insulating collar	Form A, 10 mm to 12 mm long
End sleeves according to DIN 46228 with insulating collar	Form E, up to 12 mm long

Wiring the connector

The supplied voltage connector is used to supply 24 V DC and ground the TS Adapter IE Advanced via the power feed socket located on top. The following graphic shows the top view of the TS Adapter IE Advanced with the voltage connector.



① Female socket for the 24 V DC supply

! DANGER

Safety extra-low voltage

For the power supply, you must use extra-low 24 V DC voltage that is safely separated from the supply system.

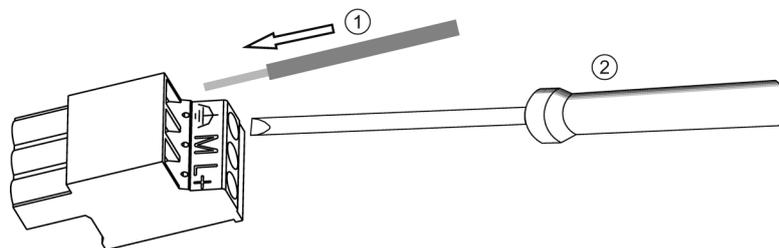
The safe separation can be achieved by meeting one of the following requirements:

- VDE 0100-410 / HD 384-4-41 S2 / IEC 60364-4-41 (as protective extra-low voltage)
- VDE 0805 / EN 60950 / IEC 60950 (as safety extra-low voltage SELV) or VDE 0106 Part 101.

The line cross sections must meet the minimum requirements of the respective installation guideline.

To wire the voltage connector, follow these steps:

1. You have the following options for wiring the voltage connector
 - Strip 10 mm of insulation from the wires, and crimp the lines with end sleeves.
 - Strip 8 to 10 mm of insulation from the wires.
2. Connect the cores (①).
3. Screw the cores to the voltage connector, tightening torque: 0.6 to 0.8 Nm (②).

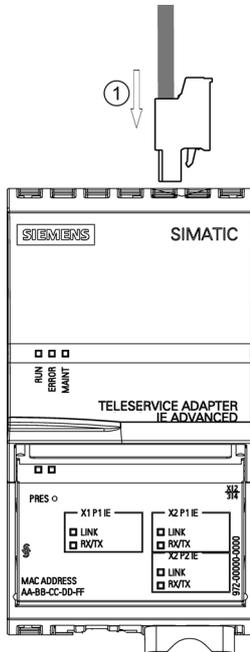


L+ 24 V DC
M Ground
⏏ Ground connection

Figure 3-1 Wiring the voltage connector

Plugging in the voltage connector

Plug the wired voltage connector ① into the incoming socket as far as it will go (until it engages).



① Voltage connector

Figure 3-2 Plugging the voltage connector into TS Adapter IE Advanced

3.3 Ethernet interfaces

Note

Secure plant configuration

Separate the plant network from the public network. Use the TS Adapter IE Advanced as the sole interface between the two networks.

The TS Adapter IE Advanced has three Ethernet interfaces with 8-pin RJ45 sockets. Connect industrial-grade Ethernet cables to these sockets. (The cables are not included in the scope of delivery of the TS Adapter IE Advanced.)

You can use either a standard Ethernet cable or a crossover cable. The TS Adapter IE Advanced supports automatic switchover between the two cable variants.

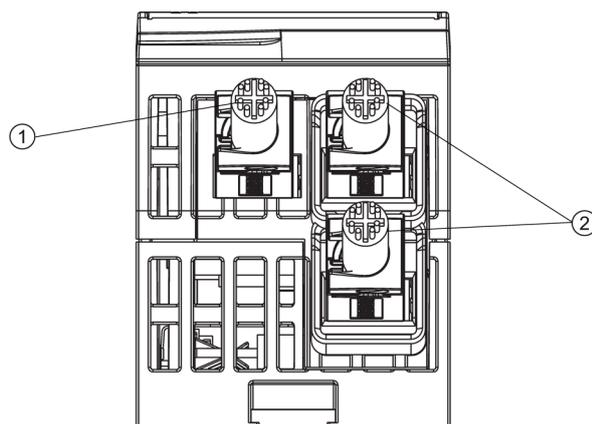
The cable must be equipped with 8-pin RJ45 connectors whose configuration complies with ISO/IEC 8877:1992. This connector type is recommended according to IEEE 802.3 for 10BASE-T and 100BASE-TX.

Detailed information on RJ45 connectors can be found in the Internet (<http://www.siemens.de/automation/service&support>).

Plugging in the system connector

As an alternative to an Ethernet cable with an IEEE 802.3-compliant connector, you can also use an Ethernet cable with system connector Industrial 6GK1901-1BB30-0AA0 (145⁰).

- Plug the system connectors into the LAN ports ② until they are engaged in the support collar.
- Plug the connector into the WAN port ① until it engages.



- ① WAN port (X1P1)
- ② LAN ports (X2P1 + X2P2)

Figure 3-3 Bottom view of TS Adapter IE Advanced

NOTICE
Interference immunity and interference emission
The specifications for interference immunity and interference emission apply only when using lines and connectors that meet the requirements for industrial use according to EN 61000-6-4:2007 and EN 61000-6-2:2005.

Note

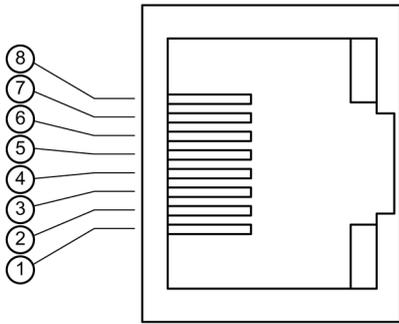
Strain relief

Provide strain relief for the Ethernet cables at a short distance below the TS Adapter IE Advanced, for example, by securing them to an S7-300 shield connecting element with a cable tie.

Unplugging the system connector

Release the lock of the system connector and withdraw the system connector.

Connector assignment and signal description of the Ethernet interfaces

Diagram	Pin number	Signal name
	1	TX+
	2	TX-
	3	RX+
	4	-
	5	-
	6	RX-
	7	-
	8	-

3.4 Module interface

The module interface is located on the left side of the TS Adapter IE Advanced. You can plug an optional TS module into this interface.

Note

Firmware version V1.0.0

TS Module GSM is supported as of firmware version V1.0.0.

NOTICE

Modules can be damaged.

- Do not attempt to plug modules from another system into a TS Adapter IE Advanced by force.
- The design of the TS Adapter IE Advanced, including its coded guide pins, ensures that only TS modules can be plugged in. Do not modify the mechanical design by force or remove or damage the guide pins.
- Plugging of the TS module into the TS Adapter IE Advanced may only take place in the de-energized state.

Additional information about the TS modules and the modular design can be found in the *TS Adapter modular* Manual.

Procedure - Connecting

1. Remove the cover of the module interface.
2. Connect the TS module to the TS Adapter IE Advanced. When doing so, ensure that the guide elements ② are positioned correctly.



- ① Module interface
- ② Guide elements

Procedure - Disconnecting

1. Disconnect the TS module from the TS Adapter IE Advanced.
2. Reattach the cover of the module interface ①.

3.5 Installation guidelines

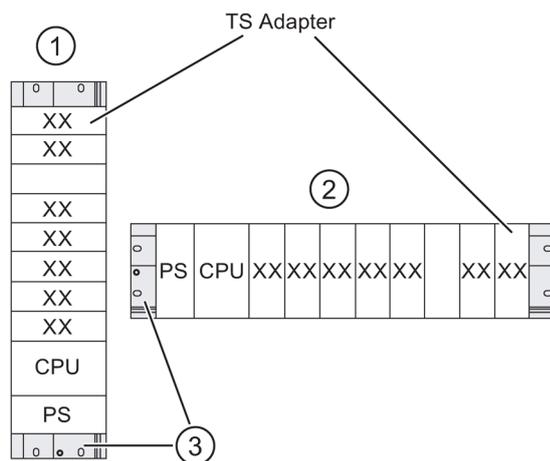
Important considerations

The general installation guidelines must be taken into consideration (see the Designing interference-free controllers (<http://support.automation.siemens.com/WW/view/en/59193566>) Function Manual).

To comply with the required EMC values (electromagnetic compatibility), the cable shield must be connected to a shield bus.

Horizontal and vertical arrangement

Observe the general SIMATIC installation guidelines. Cabinet installation is mandatory. You have the option of using the TS Adapter IE Advanced in a vertical or horizontal arrangement. Observe the permissible ambient temperatures for this (see Technical data (Page 67)).



- ① Vertical arrangement
- ② Horizontal arrangement
- ③ Mounting rail

Working with the TS Adapter IE Advanced

4.1 Safety notices

Qualified personnel

Only qualified personnel are permitted to work on the device.

Qualified personnel in the context of the safety notices in this manual are persons who are authorized to commission, ground, and tag devices, systems, and circuits according to safety engineering standards.

 WARNING
Intended use The device may only be used for the applications described in the catalog and the technical description and only in conjunction with products and components from other other manufacturers that have been recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation, and maintenance are required to ensure that the product operates safely and without any problems.

Security updates and virus scanners

Note**Service PC**

Install the latest security updates (e.g., via Windows Update®) and use an up-to-date virus scanner on all computers that establish a remote connection and/or are used for parameter assignment of the TS Adapter IE Advanced.

User administration and passwords

Note

User administration and passwords

To the extent possible, you should avoid assigning administrator rights to users.

Administrator rights are not required to establish VPN connections or to maintain the system downstream of the TS Adapter IE Advanced.

Passwords should be sufficiently long (at least 8 characters and ideally 16 characters) and contain upper and lower case letters, numbers, and special characters.

4.2 First commissioning (local)

4.2.1 Setting the IP parameters of the TS Adapter IE Advanced (first-time)

Note

Installing the CA certificate (optional)

The first-time setup of the TS Adapter IE Advanced takes place via a local HTTPS connection. Because a CA certificate for this TS Adapter IE Advanced is not yet installed on the service PC at this time, a security warning appears. You can acknowledge this security warning, or you can install the CA certificate included on the CD in the Windows certificate store prior to the first commissioning.

Note

First commissioning

Perform the first commissioning of the TS Adapter IE Advanced only in a secure environment. You should use a computer for this task that has the latest security updates and an up-to-date virus scanner.

Delivery state

The TS Adapter IE Advanced has no valid IP address in the delivery state or after resetting the parameters.

In order to operate the TS Adapter IE Advanced, its IP parameters must first be assigned.

Requirement

- You have a LAN connection from your programming device or PC (with installed TIA Portal software) to the TS Adapter IE Advanced and have connected the TS Adapter IE Advanced to the power supply.
- The IP address of the interface card of your programming device or PC is within the same subnet as the IP address you have assigned to the TS Adapter IE Advanced.

Procedure - Principle

When setting up the LAN port for the first time, follow these steps:

1. In the project tree of the TIA Portal, select the "Online access > <Ethernet interface>" menu command.
2. Double-click the "Update accessible devices" command in the shortcut menu.
The list of accessible devices is compiled.
3. Select the TS Adapter IE Advanced (device <MAC address>).
4. Double-click the "Online & Diagnostics" command.
5. Select the "Functions > Assign IP address" menu command in the work area.
6. Enter the desired IP address and the subnet mask, and click the "Assign IP address" button.

Result

If you now select "Update accessible devices" again, the TS Adapter IE Advanced is displayed with its IP address.

4.2.2 Guided Tour

When you log on the first time, you will be taken on a Guided Tour of the settings required for commissioning the TS Adapter IE Advanced.

The individual steps of the Guided Tour are listed and explained below.

Assign TS Adapter parameters

Select "Assign TS Adapter IE Parameters" in the TIA Portal.

The Web interface of the TS Adapter IE Advanced opens.

Log on

Log on with user name "Administrator" and password "admin".

Set system time

Set the "System time parameters" here. Note that the time of day must be entered in UTC.

Example: UTC 12:45; time zone difference Berlin +1; 12:45 + 1 = 13:45 local time.

The system time is used to generate certificates, among other things.

You can also activate the use of NTP servers after the Guided Tour. The system time of the TS Adapter IE Advanced is then automatically synchronized with one or more NTP servers.

Web interface: **Parameters > System time > Settings**

Specific password rules

You can specify the rules for the password check in the Web interface of the TS Adapter IE Advanced.

Any new or modified password must conform to these password rules.

Web interface: **Security > Password > Settings**

Change the administrator password

When you first log on, you are prompted to replace the default password "admin" of the "Administrator" standard user with a new password.

Make sure that the password you select complies with the rules for the password check ("Specific password rules").

Web interface: **Security > User administration > Overview**

CA certificate generation

You are prompted to generate a new CA certificate. The default CA certificate will be overwritten by the new CA certificate.

Web interface: **Security > Certificates > Generation**

Note

VPN connections

In order to establish a VPN connection, this certificate must be installed in the Windows certificate store of the service PC (see also online help of TIA Portal).

4.2.3 Setting parameters for remote maintenance (IPv4)

Specify how the TS Adapter IE Advanced is to be accessed remotely. This is also dependent on your configuration (see Configurations for remote maintenance (Page 39)).

After a remote connection is established, you can perform remote servicing of the automation components connected to the TS Adapter IE Advanced via a LAN connection.

Requirement

- You have successfully completed the Guided Tour.
- The Web interface of the TS Adapter IE Advanced is open.
- You have selected the IPv4 protocol in the tab "Parameters > Public Network > IP version".

Parameters for remote servicing

Specify how the TS Adapter IE Advanced is to be accessed remotely.

1. Select the remote address assignment in the "Parameters > Public network > IP parameters".
 - **WAN IP address**

The WAN IP address (statically or via DHCP) is referenced as remote address. The TS Adapter IE Advanced can be accessed remotely under this remote address.
 - **Free input**

Configure the remote address as DNS name or IP address by which the TS Adapter IE Advanced should be accessed remotely.
2. Enable the IP address assignment for the WAN port.
 - **Static**

Assign parameters for the IP address, subnet mask, and standard gateway.

If the TS Adapter IE Advanced is connected to a router via the WAN port, enter the IP address of the router under "Standard gateway".

Assign parameters for the DNS servers (maximum of three).
 - **DHCP**

All parameters are obtained from the DHCP server automatically.
3. On the "Parameters > Plant network > IP Parameters" tab, enter the IP address that is to be assigned to the service PC when a VPN connection is established.
4. Select the "ONLINE + VPN" option in the "Information > Connections" tab.
5. Create an additional user on the "Security > User administration" tab, because the "Administrator" user cannot establish a VPN connection.

For additional explanations, refer to the online help in the corresponding tabs of the Web interface.

Result

After assigning parameters, you are able to establish a remote connection to the TS Adapter IE Advanced under a newly furnished user name.

4.2.4 Setting parameters for remote maintenance (IPv6)

Specify how the TS Adapter IE Advanced is to be accessed remotely. This is also dependent on your configuration (see Configurations for remote maintenance (Page 39)).

After a remote connection is established, you can perform remote servicing of the automation components connected to the TS Adapter IE Advanced via a LAN connection.

Requirement

- You have successfully completed the Guided Tour.
- The Web interface of the TS Adapter IE Advanced is open.
- You have selected the IPv6 protocol in the tab "Parameters > Public Network > IP version".

Parameters for remote servicing

Specify how the TS Adapter IE Advanced is to be accessed remotely.

1. Select the accessibility for remote maintenance in the tab "Parameters > Public network > Remote access".
 - **Local network (ULA)**
Configure the remote address under which the TS Adapter IE Advanced should be accessible from the local network (Unique Local Address).
 - **Public network (GA)**
Configure the remote address under which the TS Adapter IE Advanced should be accessible from the global network (Global Address).
 - **Public network (GA) + DDNS**
Configure the remote address / alias under which the TS Adapter IE Advanced should be accessible via the dynamic DNS service.
2. **Only required for "Public network (GA) + DDNS"**
In the "Parameters > Public network > DDNS", enter the update URL of the dynamic DNS service and the preferred update interval.
3. On the "Parameters > Plant network > IP Parameters" tab, enter the IP address that is to be assigned to the service PC when a VPN connection is established.
4. Select the "ONLINE + VPN" option in the "Information > Connections" tab.
5. Create an additional user on the "Security > User administration" tab, because the "Administrator" user cannot establish a VPN connection.

For additional explanations, refer to the online help in the corresponding tabs of the Web interface.

Result

After assigning parameters, you are able to establish a remote connection to the TS Adapter IE Advanced under a newly configured user name.

4.3 Configurations for remote maintenance

Supported configurations

The following configurations are supported:

- SOHO router (connected to the Internet via IPv4 or IPv6)
- Corporate Network (IPv4 and/or IPv6 / Corporate Router, VPN Router)
- Mobile network (IPv4 / GPRS with static, private IP; GPRS with private IP; and service for establishing VPN connections¹⁾ to the mobile phone network)

¹⁾ Provision of a special access point that devices outside of the mobile phone network can use to establish a VPN connection to the mobile phone network (e.g., m2m service provider mdex GmbH).

SOHO router connected to the Internet

You can connect the SOHO router to the Internet via IPv4 and IPv6.

- **IPv4**

Make certain that TCP port 443 (HTTPS) can be accessed from the Internet via the WAN port of the TS Adapter IE Advanced. It can be accessed by configuring a DSL router that forwards port 443 to the TS Adapter IE Advanced (port forwarding).

Note

Recommended routers: SCALANCE M874

M874-3 HSPA+: 6GK5874-3AA00-2AA2

If the WAN port is to be used, a TS module must not be connected.

Some routers allow remote access over an Internet connection (HTTPS port 443). In this case, it is not possible to forward Port 443 to the TS Adapter IE Advanced. You must then use a different port for remote access to the router (e.g., port 5443).

It is not possible to change port 443 for VPN connections (SSTP) in Windows and thus also not on the TS Adapter IE Advanced.

- **IPv6**

Ensure that the TS Adapter IE Advanced is connected to a router via its WAN port which can also access the Internet via IPv6. Set the router so that the TS Adapter IE Advanced obtains a global IPv6 address (GA) and allow access to the TS Adapter IE Advanced in the firewall of the router.

Note

TS module

A TS module must not be connected to the TS Adapter IE Advanced.

IPv6 address

The IPv6 address must not contain colons as separators.

As an example, the matching DNS name is formed from the following address:

2002:54A3:9932:0000:021B:1BFF:FE13:682C

2002-54A3-9932-0000-021B-1BFF-FE13-682C.ipv6-literal.net

Use either the static global IPv6 address of the TS Adapter IE Advanced or a DNS name as a remote address.

Ensure that the DNS name is always assigned to the current global IPv6 address of the TS Adapter IE Advanced. To do this, use the DNS Update Service of the TS Adapter IE Advanced or your router.

Availability of the TS Adapter IE Advanced

You can make the TS Adapter IE Advanced accessible via the public network as follows:

- Via a standard DSL router (smaller plants; only one TS Adapter IE Advanced can be accessed)

Set up the router in such a way that it forwards incoming connections via Port 443 to the TS Adapter IE Advanced.

Corporate network

You can make the TS Adapter IE Advanced accessible via the public network as follows:

- **IPv4**

The plant has an office VPN infrastructure.

Establish a VPN connection to the corporate network (access to the office VPN network required).

Then use the first VPN connection to establish a second VPN connection (with the TIA Portal) to the TS Adapter IE Advanced (tunnel in tunnel). Several TS Adapter IE Advanced with downstream automation systems can be located in the company network (Intranet).

The VPN tunnel to the corporate network has nothing to do with the VPN tunnel of the TS Adapter IE Advanced (plant network).

- **IPv6**

Connect the WAN port of your TS Adapter IE Advanced with the IPv6 corporate network.

Ensure that the TS Adapter IE Advanced on the WAN port obtains a Unique Local Address (ULA) from the corporate network via DHCPv6 or SLAAC.

Establish a VPN connection to the TS Adapter IE Advanced using the TIA Portal.

Use either the Unique Local Address (ULA) of the TS Adapter IE Advanced or a DNS name as remote address.

Ensure that the DNS name is always assigned the Unique Local Address (ULA) of the TS Adapter IE Advanced. Use the DNS service of the corporate network for this.

Note

IPv6 address

The IPv6 address must not contain colons as separators.

As an example, the matching DNS name is formed from the following address:

2002:54A3:9932:0000:021B:1BFF:FE13:682C

2002-54A3-9932-0000-021B-1BFF-FE13-682C.ipv6-literal.net

IPv4 Mobile Network (GPRS)

Requirement:

- The TS Adapter IE Advanced is connected to a TS Module GSM.
- The TS Module GSM has a:
 - **Standard SIM card**, if only outgoing connections are required.

Mobile terminals are frequently assigned only private IP addresses in the mobile phone network. As a result, outgoing connections are possible. However, incoming connections are not possible because the mobile terminal cannot be accessed from the outside.

If you only require outgoing connections (e.g., for sending e-mail), a standard SIM card or standard mobile wireless plan with data option is sufficient.

- **Special SIM card** (e.g., mdex GmbH), if incoming connections are also required.

To enable additional remote servicing (incoming connection) or port forwarding, you need a special SIM card and a corresponding contract with a mobile wireless provider (e.g., mdex GmbH). These providers assign special static IP addresses in a separate self-contained network that allow the TS Adapter IE Advanced to be reached for incoming connections (VPN or Port forwarding).

IPv6 Mobile Network (GPRS)

Note

TS Module GSM

This configuration is not supported, because the TS Module GSM only accesses the Internet via IPv4.

4.4 Parameter assignment of the TS Adapter IE Advanced

Note

Language selection of the Web interface

The connection to the web server of the TS Adapter IE Advanced is established from the TIA-Portal using Microsoft Web Control.

If upon first contact, the web browser does not provide a language [en,de] or provides a language that is not supported by the web server, the Web interface starts with the default language of the web server ("en").

Note

Certificate management

In order for the TS Adapter IE Advanced to uniquely identify itself to the service PC as a connection partner, the TS Adapter IE Advanced generates a CA certificate with a unique fingerprint.

For the establishment of a VPN connection, it is essential that this CA certificate be stored in the Windows certificate store (local computer). If you call the web server when using a direct connection and the CA certificate is missing, a safety warning will be displayed. The safety warning can be accepted.

Opening the Web interface

You have the following options for opening the Web interface of the TS Adapter IE Advanced:

- Open a directly-connected web browser with TIA Portal (Page 43)
- Open web browser via a remote connection with TIA Portal (Page 44)
- Directly-connected standard web browser (Page 44)

4.4.1 Open a directly-connected web browser with TIA Portal

Requirement

- You have a LAN connection from your programming device or PC (with installed TIA Portal software) to the TS Adapter IE Advanced and have connected the TS Adapter IE Advanced to your power supply.
- The IP address of the interface card of your programming device or PC is within the same subnet as the IP address that you assigned to the TS Adapter IE Advanced.
- You have already assigned the IP parameters of the TS Adapter IE Advanced.

Procedure

1. In the project tree of the TIA Portal, select the "Online access" folder.
2. Double-click the Ethernet interface of your computer.
3. Double-click the "Update accessible devices" command.
The list of accessible devices is compiled. The TS Adapter IE Advanced is shown.
4. Open the <TS Adapter IE Advanced> folder in the device list.
5. Double-click the "Assign TS Adapter IE parameters" command.
The login menu of the Web interface of the TS Adapter IE Advanced is displayed in the work area of the TIA Portal.
6. Enter your user name and password in the "Assign TS Adapter IE parameters" window.
7. Click "Login".
8. Assign the desired parameters in the individual tabs of the dialog.
9. Confirm your inputs in each case with "Save settings".

Result

The assigned parameters are saved in non-volatile memory of the TS Adapter IE Advanced.

4.4.2 Open web browser via a remote connection with TIA Portal

Requirement

- The TS Adapter IE Advanced is connected to the public network via the WAN port.
- The TS Adapter IE Advanced is connected to your power supply.

Procedure

1. In the project tree of the TIA Portal, click the "Online access" folder.
2. Open the "TeleService" folder located there.
3. Establish a VPN connection from your PC to the TS Adapter IE Advanced.
4. Open the plant folder.
5. Double-click the "Assign TS Adapter IE parameters" command.

Result

You see the start screen of the Web interface.

4.4.3 Directly-connected standard web browser

Note

Standard web browser

The Web interface of the TS Adapter IE Advanced can also be opened without the TIA Portal. A standard web browser can be used for this purpose.

Note, however, that some web browsers have their own certificate management.

To prevent the safety warning from appearing when calling the Web interface, you must install the CA certificate in the certificate store of the web browser.

Requirement

- You have already assigned the IP parameters of the TS Adapter IE Advanced.
- The IP address of the interface card of your programming device or PC is within the same subnet as the IP address that you assigned to the TS Adapter IE Advanced.
- You have connected the TS Adapter IE Advanced to the power supply.
- You have connected the TS Adapter IE Advanced to your programming device or PC via an Ethernet cable.

Procedure

1. Start a browser.
2. Enter the IP address of the TS Adapter IE Advanced that you assigned in the address field of the browser in the form `https://<IP address>:5443`. Make certain to specify port 5443 under which the Web interface can be accessed.
3. Enter the user name and password.
4. Click "Login".

Result

You see the start screen of the Web interface.

4.4.4 Overview of the parameter assignment dialogs

The Web interface of the TS Adapter IE Advanced can be used to:

- Assign the TS Adapter IE Advanced parameters.
- Export the parameter set from the TS Adapter IE Advanced.
- Import a parameter set to the TS Adapter IE Advanced.

Useful information regarding parameter assignment

You can assign the TS Adapter IE Advanced parameters through a direct connection or via a previously established remote connection.

For parameter assignment, you require either:

- TIA Portal as of V12 SP1
- A browser

Note

Save changes

If you make changes in one tab of the Web interface and open another tab without saving the changes first, the changes are discarded without notification.

If you enter invalid values in a tab, the corresponding entry fields will turn red as soon as the "Save settings" button is clicked. In this case, the faulty values are not saved. Correct the invalid inputs, and then click the "Save settings" button again. As long as entries in a tab have not been saved with the "Save settings" button, you can undo the entries with the "Discard changes" button.

The parameter assignment data are written to the non-volatile memory of the TS Adapter IE Advanced.

Parameter assignment dialogs

A detailed description of the parameter assignment dialogs can be found in the online help of the corresponding tabs of the Web interface.

The Web interface of the TS Adapter IE Advanced contains the following tabs:

Register		Comments
Information		
	Connections	Connection information of the TS Adapter IE Advanced
	Adapter	General information about the TS Adapter IE Advanced
	TS module	General information about the TS module
	Status	Status information of the TS Adapter IE Advanced
	Events	Events of the TS Adapter IE Advanced
Parameters		
	TS module	Only appears if a TS module is plugged.
	TS Module GSM	Parameters of the TS Module GSM
	Mobile phone network	Parameters of the mobile phone network
	Public network	
	Remote access	Parameters of the public IPv6 network
	DDNS	Parameters of the dynamic DNS (IPv6)
	IP parameters	Parameters of the public network (IPv4)
	IP version	Selection of the Internet protocol
	Plant network	
	IP parameters	IP parameters of the plant network
	Routing	
	IP parameters	Parameters for the creation of routers
	Port forwarding	IPv4 mode only
	IP parameters	IP parameters for the port forwarding
	System time	
	Settings	Set real time clock; date and time (first logon)
	Parameters of the system time	Synchronize real time clock; date and time (NTP protocol parameters)

Register		Comments
Security		
Certificates		
	Generation	CA certificate generation Fingerprint CA certificate export
User management		
	Overview	List of users
	(Edit entry)	Edit entry from the list of users
Packet filter		
	VPN: Incoming connections	
	General	General packet filter settings for incoming connections
	SIMATIC protocols	SIMATIC-specific packet filter settings for incoming connections
	Internet protocols	Internet-specific packet filter settings for incoming connections
	Expert mode	Packet filter settings for incoming connections
	WAN: Outgoing connections	
	General	General packet filter settings for outgoing connections
	Internet protocols	Internet-specific packet filter settings for outgoing connections (IPv4)
	Expert mode	Packet filter settings for outgoing connections (IPv4)
Password		
	Settings	Specific password rules
Time control		
	Settings	Repeated attempt rules for time-controlled WAN connectivity
Actions		
Firmware		
	Firmware update	Firmware update of the TS Adapter IE Advanced
Parameter set		
	Export	Export parameter set from the TS Adapter IE Advanced
	Import	Import parameter set to the TS Adapter IE Advanced

4.5 Establishing a remote connection to the TS Adapter IE Advanced

Requirement

- You have connected the TS Adapter IE Advanced to the power supply.
- You have already installed the CA certificate.

Information on installing certificates can be found in the online help of the TIA Portal.

Procedure

The detailed procedure can be found in the information system of the TIA Portal under keyword "Establishing a remote connection to TeleService".

1. Start TIA Portal on your programming device or PC.
2. In the project tree of the TIA Portal, select the "Online access > TeleService" menu command.
3. Double-click the "Set up/close remote connection" command.

The "Set up remote connection to the remote system" dialog box opens.

4. Enter the desired settings here and click the "Establish" button.

Result

The remote connection is established and shown in the project tree with the specified address.

The commands underneath allow you to assign the TS Adapter IE Advanced parameters or to perform remote servicing of the plant.

4.6 Sending e-mail

The TS Adapter IE Advanced (gateway function) and the instructions for e-mail sending enable you to send e-mails from a SIMATIC CPU within the plant network (LAN) to a communication partner in the public network (WAN).

Note

IPv6

E-mails can only be sent in IPv4 mode.

Requirement

- The Web interface of the TS Adapter IE Advanced is open.

Parameters for e-mail sending

In order to support e-mail sending via the TS Adapter IE Advanced, the packet filter for SMTP or SMTPS must be activated. To do so, open the Web interface of the TS Adapter IE Advanced, select the SMTP or SMTPS protocol ("Security > Packet filter > WAN: Outgoing connections > Internet protocols") and save the setting. Activate ONLINE for connectivity of the WAN port ("Information > Connections").

For additional explanations, refer to the online help in the corresponding tabs of the Web interface.

Result

After assigning the parameters, you are able to send an e-mail from a SIMATIC CPU to an e-mail server via the TS Adapter IE Advanced.

Instructions for e-mail sending

To send an e-mail from a SIMATIC CPU, you need an instruction from the "TeleService" instruction library.

Depending on the CPU used, the following instructions are available:

- TMAIL_C for S7-1500 and S7-1200 (for firmware versions as of V4.x from the S7-1200 family)
- TM_MAIL for S7-1200 (for firmware versions V2.x and V3.x of a CPU from the S7-1200 family)
- AS_MAIL for S7-300/400

Additional information

Additional information about the instructions can be found in the online help.

4.7 Port forwarding

Note

IPv6

Port forwarding is only possible in IPv4 mode.

Port forwarding refers to passing an incoming connection at a certain port of a network node (TS Adapter IE Advanced) to another port on another node. This enables easier access to network nodes / components that are connected to the TS Adapter IE Advanced but cannot be accessed from the outside.

NOTICE
Plant security You reduce the security of your plant network by enabling the port for port forwarding. When port forwarding is used, devices in the plant network can be accessed directly from the public network without any access protection. In addition, the data packages for the network node are forwarded unchecked.

Note

Administrator rights

You must have administrator rights to assign parameters for port forwarding.

Setting up port forwarding

If the TS Adapter IE Advanced is to support port forwarding, you must enter settings in the Web interface in the "Security > Port forwarding > IP parameters" tab.

Example:

A TS Adapter IE Advanced is connected to the public network via its WAN port and to the plant network via a LAN port. A connection is to be established from a computer in the public network to a device inside the plant. Because the target device cannot be accessed directly, the connection is to be forwarded.

A VPN connection (SSTP tunnel) should also be established parallel to port forwarding. For this, router port 443 must be forwarded to the TS Adapter IE Advanced (router rules).

In order for the device inside the plant network to be accessible from the public network, a port forwarding rule for the device must be assigned both on the TS Adapter IE Advanced and on the router. The port number on the TS Adapter IE Advanced (451) may differ from the port number of the device (452).

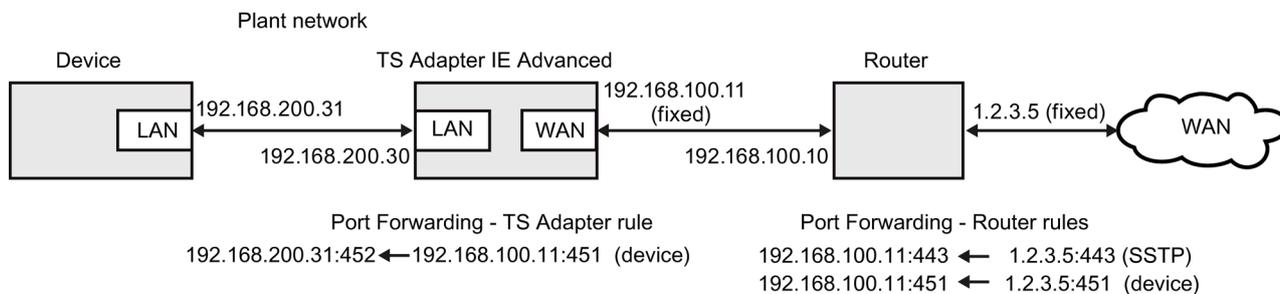


Figure 4-1 Port forwarding - Example

Additional information

For descriptions of the port forwarding parameters, refer to the online help in the corresponding tabs of the Web interface.

4.8 Time-controlled connections

Note

Administrator rights

You must have administrator rights to assign parameters for time-controlled connections.

Setting up time-controlled connections (WAN connectivity)

If you want to set up time-controlled connections on the TS Adapter IE Advanced, you must enter settings in the Web interface in the "Security > System time > Settings" tab.

The use of time-controlled connections enables you to define your own time windows for VPN connections and/or online connections.

The time window is set in UTC.

Outside of the specified time period, access to the WAN port will be automatically blocked.

Note

Existing VPN connections

If the connectivity is to be switched by the time control of "ONLINE+VPN" to "ONLINE" or "OFFLINE", an existing VPN connection is retained.

After the VPN connection has been disconnected, re-establishing the connection is not possible.

Additional information

For descriptions of the parameters for time-controlled connections, refer to the online help in the corresponding tabs of the Web interface.

4.9 Certificate handling

4.9.1 Information regarding certificates

NOTICE
Certificate misuse - compromised CA certificate
If you suspect that a CA certificate is being misused, you should always generate a new CA certificate for security purposes.
Ensure that the CA certificate is replaced on all service PCs concerned (by deleting the old CA certificate and importing the new one).
For security reasons, you should generate new CA certificates at regular intervals.

The CA certificate is a certificate that is issued by a certificate authority and from which the device certificates are derived. These include the SSL certificates that are required for authentication during online communication between a PC and a TS Adapter IE Advanced.

In this case, the certificate authority is the TS Adapter IE Advanced itself. If the "applicant" and "issuer" are the same, the certificate is a self-signed certificate, or in other words a certificate issued by the TS Adapter IE Advanced.

Certificates that are created by a certificate authority always have a private key that can be used to derive the device certificates.

Note

Certificate handling

The handling of certificates requires special knowledge of the PC operating system and should only be performed by personnel (administrators) with appropriate training.

Overview of certificates and keys

Key / certificate	Description
CA key	Created during parameter assignment and used subsequently for the signing of server certificates
CA certificate	Created during parameter assignment and must be exported to all service PCs that want to establish a remote connection.
SSTP server key	Private key of the SSTP server certificate.
SSTP server certificate	Transferred to the server PC when the remote connection is established, in order to validate the SSTP connection.
HTTPS server key	Private key of the HTTPS server certificate.
HTTPS server certificate	Transferred to the service PC for validation of the local HTTPS connection.

4.9.2 Management of certificates

Requirement

Before you can establish a secure connection, it is necessary for you to create keys and certificates on the TS Adapter IE Advanced. You will be prompted to do this during the Guided Tour.

If you specify the specific fingerprint of the CA certificate, the CA certificate is automatically downloaded and installed the first time a VPN connection is established with the TIA Portal. You must have administrator rights on the service PC for this.

Alternatively, you can use the Microsoft® Management Console to transfer the CA certificate to any PC that is to have access to the TS Adapter IE Advanced.

How to manage certificates for a computer

Certificates are managed using the Microsoft® Management Console as follows:

1. Log on to the system as administrator.
2. Open the Windows certificate management on your programming device or PC using the Microsoft® Management Console (administrator rights required).

To do so, click "Start", enter "mmc" in the Search field, and press the Enter key.

The console opens.

3. Select the "Add/Remove Snap-in..." command in the "File" menu.

The Add or Remove Snap-ins dialog opens.

4. Double-click "Certificates" in the "Snap-ins" list, and select "Computer account" in the subsequent dialog.

5. Select Local computer in the next dialog, and click "Finish" and then "OK".

The Console Root opens and shows the "Certificates (Local Computer)" folder.

6. Open the "Certificates (Local Computer)" folder and click "Trusted Root Certification Authorities".

7. Click the "Certificates" folder, and select the "All Tasks" > "Import..." command in the shortcut menu.

8. Note the information indicated in the "Certificate Import Wizard" dialog, and click "Next".

9. Click "Browse" in the next dialog, and select the desired CA certificate.

10. Now, click "Next" twice and then "Finish" to install the CA certificate.

The selected CA certificate will be installed at the specified location in the Windows certificate store.

How to delete certificates

1. Steps 1 - 6 correspond to the steps for "How to manage certificates for a computer" (see above).
2. Click the "Certificates" folder, select the desired certificate, and select "Delete" in the shortcut menu.
3. Confirm the subsequent prompt with "Yes".

The selected CA certificate is deleted from the list of available certificates.

4.9.3 Information about server certificates

Automatic generation of server certificates

The SSTP server certificate and the HTTPS server certificate are generated automatically as soon as the corresponding parameters are changed in the Web interface. The server certificates are transferred automatically when the connection is established.

The following table shows the reasons why new certificates are created.

Reason	SSTP server certificate	HTTPS server certificate
First-time assignment of the LAN IP parameters	-	X
Change of the network parameters on the plant side	-	X
Change of the public network parameters	X	-
New generation of the CA certificate	X	X

Following the first-time assignment of the LAN IP parameters, only the HTTPS server certificate will be changed since the WAN port has not yet been activated. In case of subsequent changes of the CA certificate, all certificates will be generated.

Note

Default CA certificate

In the factory state, every TS Adapter IE Advanced has the same certificate (default CA certificate; included on the CD). Therefore, a new CA certificate must be generated during first commissioning.

SSTP server certificates

In order to establish a VPN connection to the TS Adapter IE Advanced, the name of the server certificate (common name) and the address to be used for establishing the connection must be identical.

For this reason, you must enter the remote address at which the TS Adapter IE Advanced can be accessed from the public network in the Web interface under "Parameters > Public network > IP parameters".

You need to change the "Remote address assignment" to "Free input" and enter the remote address in the following situations:

- If a router is connected to the TS Adapter IE Advanced using Port Forwarding, the public IP address of the router must be used for the certificate.
- If the router has a DNS name, the DNS-Name must be used instead of the IP address of the router.

If the TS Adapter IE Advanced is to be accessible directly at its WAN port without an upstream router, choose "WAN IP address" for the remote address assignment. The IP address at the WAN port will be automatically adopted for the server certificate.

4.9.4 Certificate import on the server PC

A CA key and a CA certificate are generated during first commissioning of the TS Adapter IE Advanced.

The CA certificate must be installed on every service PC that is to be capable of establishing a VPN connection to the TS Adapter IE Advanced.

To suppress the security warning when making a connection, the CA certificate should also be imported for local Web access.

You have the following options:

- Manual import of the CA certificate
- Automatic import of the CA certificate

Fingerprint

The service PC establishes a VPN connection to the TS Adapter IE Advanced, which then delivers a server certificate to the service PC. This must be verified by the CA certificate. Each certificate has a specific, unique fingerprint. This fingerprint can be transferred, for example, by phone to the remote partner or via a signed e-mail (more secure way).

Web interface: **Security > Certificates > Generation**

Automatic import of the CA certificate

The CA certificate is downloaded and installed automatically prior to establishing a connection the first time, when you specify the specific fingerprint of this CA certificate. You must have administrator rights on the service PC for this.

1. You obtain the fingerprint in one of the following ways:

- Public network

Take the fingerprint value from the CA certificate or the Web interface of the TS Adapter IE Advanced and transfer it to the user via a secure connection.

Enter the fingerprint in the "Fingerprint" column of the TeleService phone book or directly in the Connection dialog.

- Plant network

You are located inside the plant network. The value of the certificate fingerprint is indicated in the Web interface.

Copy the fingerprint value in the Web interface and save it in the TeleService phone book of the TIA Portal.

2. Click "Establish". The certificate with the specific fingerprint is searched for in the Windows certificate store of the service PC.

- If certificate is found: connection is established.
- If certificate is not found: a "standard" connection (not a VPN connection) is established, and the TS Adapter IE Advanced downloads the required certificate to the work memory of the service PC.

The fingerprint is then "calculated" (SHA1 algorithm) and compared with the specified fingerprint.

If they match, the certificate will be installed in the Windows certificate store (requires administrator rights).

If they do not match, an error message appears and the connection dialog remains open.

In this case, you should check the fingerprint.

Manual import of the CA certificate (inside the plant network)

The service PC is located inside the plant network.

1. Export the CA certificate via the Web interface, and save it on the service PC.
2. Install the CA certificate in the certificate store of every service PC that is to be capable of establishing a VPN connection to a TS Adapter IE Advanced.

If you specify the specific fingerprint of the CA certificate, the CA certificate is automatically downloaded and installed the first time a VPN connection is established with the TIA Portal. You must have administrator rights on the service PC for this.

Authentication of the TS Adapter IE Advanced

Please note that the server certificate authenticates only the TS Adapter IE Advanced.

The security of the plant is then largely dependent on the security of the user name and password.

Additional information

A detailed description of the installation of CA certificates for VPN connections can be found in the online help of the TIA Portal.

4.9.5 Replacement of a TS Adapter IE Advanced

Introduction

In order to prepare for the replacement of a TS Adapter IE Advanced, you must export its configuration so that it can then be imported to the new TS Adapter IE Advanced.

Note

Administrators only

Only users with administrator rights can export the parameter set from the TS Adapter IE Advanced.

Note

File names

The file name of the export file may only be changed in the <Date> section!

The CA key is exported using the parameter export (tsaie_<DATE>_cfg_usr_p12.tip) of the TS Adapter IE Advanced.

The export is encrypted, secured against manipulation and contains all the parameters, the CA certificate and the CA key.

When the parameters are imported, the HTTPS and SSTP certificates and keys are generated again and signed by the imported CA key.

The CA key is not deleted after generation of the certificate.

This has the following advantage:

If the IP address (LAN or WAN) is changed, the TS Adapter IE Advanced can generate a new server key and a new server certificate without having to update the CA certificate on the client PC.

Requirement

Prior to exporting the configuration of the TS Adapter IE Advanced, you must define a secure password.

Procedure

1. Open the Actions > Parameter set > Export tab of the Web interface.
2. Select "Parameter set, user data, and CA private key encrypted".
3. Enter and confirm the password under "Encryption".
4. Click the "Export parameters" button.
5. Click the "Save" button.
6. Replace the TS Adapter IE Advanced.
7. Open the Actions > Parameter set > Import tab of the Web interface.
8. Enter the password under "Encryption".
9. Enter the path and file name, or select the file name using the "Browse..." button.
10. Click the "Import parameters" button.

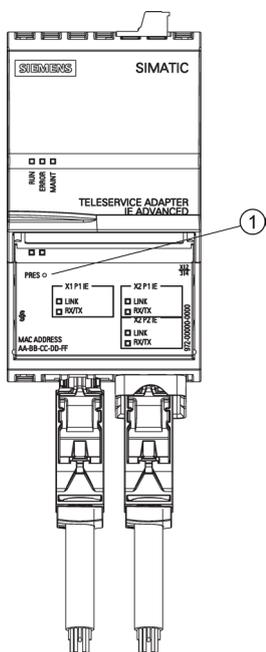
4.10 Reset parameter assignment to delivery state

It may be necessary to reset the parameter assignment if the adapter parameters have been changed in such a way that you can no longer access the TS Adapter IE Advanced.

P RES button

The TS Adapter IE Advanced has a reset button (P RES) you can use to reset the adapter parameter assignment to the delivery state.

The following figure shows the front of the TS Adapter IE Advanced with the opening behind which the P RES button is located. The P RES button is behind the front cover. The figure shows the TS Adapter IE Advanced without its front cover.



① P RES button for resetting the parameter assignment

Figure 4-2 Front view with P RES button

Procedure

Note

If you reset the parameter assignment of the TS Adapter IE Advanced, all parameter settings you entered and the CA certificate will be lost.

1. Use a pointed object, such as a paper clip, to press and hold the P RES button for approximately 2 s.

The RUN LED of the TS Adapter IE Advanced flashes three times to acknowledge a reset operation initiated with the P RES button.

Result

The TS Adapter IE Advanced is now restored to the delivery state.

Next, you must carry out first commissioning (see First commissioning (local) (Page 34)).

4.11 Firmware update

Note

Updating the firmware

Check regularly to find out if firmware updates are available.

Always install the latest firmware on the TS Adapter IE Advanced in order to receive security updates and additional functions.

Note that a user must have administrator rights to perform the firmware update.

The current firmware can be found on the Internet (<http://www.siemens.com/automation/service&support>).

Procedure

Note

Backup

You should perform a parameter export prior to a firmware update.

To update the firmware, follow these steps:

1. Search in Product Support for the term "TS Adapter IE Advanced".
2. Enter "Firmware" as the search word.
3. Download the firmware file to your PC.
4. Connect the TS Adapter IE Advanced directly to your programming device or PC using an Ethernet cable.
5. In the TIA Portal, open the Web interface of the TS Adapter IE Advanced, and double-click the "Assign TS Adapter IE parameters" command.
6. Log on with your user name and password.
7. Open the "Actions > Firmware > Firmware update" page.
8. Click the "Browse" button under "Path to the file with the new firmware".
9. Select the firmware file to be downloaded, and click the "Update firmware" button.

After the download is complete, the firmware will be written to non-volatile memory (installation). While this is taking place, the RUN LED flashes yellow on the front of the TS Adapter IE Advanced. The TS Adapter IE Advanced then performs a restart. This disconnects the connection to your browser. If you want to access the TS Adapter IE Advanced again, you must restore the connection to the Web interface of the TS Adapter IE Advanced, for example, by pressing the F5 key or using the "Refresh" button of your browser.

NOTICE

Interruption of the firmware update
--

If you disconnect the connection to the TS Adapter IE Advanced or switch off the power supply of the TS Adapter IE Advanced during the download operation or installation, the firmware update will not be successfully executed.

The TS Adapter IE Advanced continues working with the previous firmware version.
--

Make sure that neither the download operation nor the subsequent installation is interrupted.

Note

Firmware update via a remote connection

You can also perform the firmware update via a remote connection.

Note

Delivery version

The current firmware at the time of delivery can be found on the "TS Adapter IE Advanced" CD.

Status and error displays

You can use the LED displays to diagnose and eliminate simple faults yourself.

Meaning of the LED displays for RUN / ERROR / MAINT

LED			Meaning	Remedy
RUN	ERROR	MAINT		
 Off	 Off	 Off	No supply voltage	Restore the voltage supply.
 On	 Off	 Off	The TS Adapter IE Advanced is ready for operation.	--
--	 On	--	Error	Open the Web interface of the TS Adapter IE Advanced, and display the error on the "Information > Status" tab. Details about the error can be found in the LOG file.
			TS module is faulty	Replace the TS module.
			TS Adapter IE Advanced is faulty	Replace the TS Adapter IE Advanced.
--	--	 On	Unknown or new TS module	Use only supported TS modules. For supported TS modules, perform a firmware update.
 On	 On	--	Firmware is being downloaded.	Wait until the TS Adapter IE Advanced is ready for operation.
 Flashes	 Flashes	 Flashes	Hardware test and interface initialization	
 Flashes 3 times	--	--	You have restored the factory state by using the P RES reset button.	Perform first commissioning.
 On	--	--	A firmware update is in progress.	Wait until the TS Adapter IE Advanced is ready for operation.
 flashes 3 s long	 flashes 3 s long	 flashes 3 s long	Indicates the selected TS Adapter IE Advanced (the RUN LED lights up green, just as the MAINT and ERROR LEDs are OFF).	--

-- Any

Note

Startup of the TS Adapter IE Advanced

When the TS Adapter IE Advanced starts up, LEDs for LINK and RX/TX light up briefly on the WAN port. This also applies if the connectivity is switched "OFFLINE".

However, communication is not possible at this time.

Meaning of the LED displays for ONLINE and VPN

LED		Meaning
ONLINE	VPN	
□ Off	□ Off	Local communication only (LAN1/X2P1, LAN2/X2P2)
■ On	□ Off	Connection possible via WAN port (X1P1) or TS module (Internet or plant network)
■ On	■ On	TeleService VPN connection established

-- Any

Meaning of the LED displays for LINK and RX/TX

Each of the three Ethernet interfaces has the LINK and RX/TX LEDs.

LED		Meaning	Remedy
LINK	RX/TX		
□ Off	□ Off	No Ethernet cable is plugged in No connection to the remote station	Plug in the Ethernet cable. Check the remote station.
■ On	--	Connection established	--
■ On	☀ Flashes	Transmission is in progress	--

-- Any

Technical data

Technical specifications

6ES7972-0EA00-0XA0	
Product type designation	TS Adapter IE Advanced
General information	
Engineering with STEP 7 TIA Portal can be configured/integrated as of version	V12.0 SP1
Installation type/mounting	
Rail mounting possible	Yes
Wall/direct mounting possible	Yes
Supply voltage	
24 V DC	Yes
Permitted range	+19.2 V to +28.8 V
• Minimum	19.2 V
• Maximum	28.8 V
Input current	
Current consumption, typ.	100 mA
Current consumption, max.	200 mA; including TS module GSM
Inrush current, max.	4.3 A; at 3.1 ms
Power loss	
Power loss, typ.	2.4 W
Interfaces	
Industrial Ethernet	
Industrial Ethernet interface	3 x Ethernet (RJ45)
• 100 Mbit	Yes
• 1000 Mbit	No
Number of Industrial Ethernet interfaces	3

4.11 Firmware update

6ES7972-0EA00-0XA0	
Interrupts/diagnostics/status information	
LED diagnostics display	
RUN LED	Yes; multi-colored, green/yellow LED
ERROR LED	Yes; red LED
MAINT LED	Yes; yellow LED
LINK LED	Yes; 3 x green LED
ONLINE LED	Yes; green LED
VPN LED	Yes; green LED
RX/TX LED	Yes; 3 x yellow LED
Insulation	
Insulation test voltage	707 V DC (type test)
Ambient conditions	
Operating temperature	
Horizontal mounting position, min.	0 °C
Horizontal mounting position, max.	60 °C
Vertical mounting position, min.	0 °C
Vertical mounting position, max.	40 °C
Dimensions	
Width	55 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	225 g

6.1 Electromagnetic Compatibility

Definition of "EMC"

Electromagnetic Compatibility (EMC) defines the capability of electrical equipment to operate satisfactorily in its electromagnetic environment without influencing this environment.

<p> WARNING</p> <p>Injury to persons or damage to property may occur.</p> <p>Installation of expansions that have not been approved for the TS Adapter IE Advanced can result in violations of the requirements and regulations for safety and electromagnetic compatibility.</p> <p>Always use expansions approved for the system.</p>
--

Note

The specifications relating to interference immunity and interference emission apply only when using devices, lines and connectors conforming to industrial requirements in accordance with EN 61000-6-4:2007 and EN 61000-6-2:2005.

Pulsed interference

The following table shows the electromagnetic compatibility of the TS Adapter IE Advanced with regard to pulsed interference. This requires that the electrical installation comply with relevant specifications and standards.

Table 6- 1 Pulsed interference

Pulsed interference	Test voltage	Equivalent to severity
Electrostatic discharge according to IEC 61000-4-2	Air discharge: ± 8 kV Contact discharge: ± 6 kV	3
Burst pulses to IEC 61000-4-4	2 kV (power supply line) 2 kV (signal line >30 m) 1 kV (signal line < 30 m)	3
Powerful single pulse (surge) according to IEC 61000-4-5		3
<ul style="list-style-type: none"> Asymmetric coupling 	2 kV (power supply line) DC with protective elements ¹ 1 kV (signal/data line only >30 m), with protective elements as required	
<ul style="list-style-type: none"> Symmetric coupling 	1 kV (power supply line) DC with protective elements ¹	
¹⁾ e.g., surge arresters from Dehn Type: BD VT AD24 Order no. 918402		

Sinusoidal interference

The table below shows the EMC characteristics of the TS Adapter IE Advanced with regard to sinusoidal interference.

Table 6-2 Sinusoidal interference

Sinusoidal interference	Test values	Equivalent to severity
HF irradiation (electromagnetic fields) according to IEC 61000-4-3	10 V/m with 80% amplitude modulation of 1 kHz in the range from 80 MHz to 1000 MHz and 1.4 GHz to 2 GHz. 1 V/m with 80% amplitude modulation of 1 kHz in the range from 2 GHz to 2.7 GHz	3
RF current coupling on cables and cable shields to IEC 61000-4-6	Test voltage 10 V, with 80% amplitude modulation of 1 kHz in the 10 MHz to 80 MHz range	3

Radio interference emission

Interference emission of electromagnetic fields in accordance with EN 61000-6-4.

Additional measures

If you wish to operate the TS Adapter IE Advanced in an office area, you must implement additional measures to meet the requirements of EN 61000-6-3.

Take suitable additional measures if you need to increase the interference immunity of the system due to high external interference levels.

6.2 Transportation and Storage Conditions

Transport and storage of modules

With regard to transport and storage conditions, the TS Adapter IE Advanced surpasses the requirements specified in IEC 61131-2. The following information applies to a TS Adapter IE Advanced that is transported and stored in its original packaging.

Climatic conditions compliant with IEC 60721-3-3, class 3K7 for storage and IEC 60721-3-2, class 2K4 for transportation.

Mechanical conditions compliant with IEC 60721-3-2, class 2M2.

Table 6- 3 Transport and storage conditions for modules

	Permitted range
Temperature	-40 to +70° C
Barometric pressure	1080 to 660 hPa (corresponding to an altitude of -1000 to 3500 m)
Relative humidity (at +25° C)	5 to 95%, without condensation
Sinusoidal vibration to IEC 60068-2-6	5 - 9 Hz: 3.5 mm 9 - 500 Hz: 9.8 m/s ²
Shock impact to IEC 60068-2-29	250 m/s ² , 6 ms, 1000 shocks

6.3 Mechanical and climatic ambient conditions for operation of the TS Adapter IE Advanced

Operating conditions

The TS Adapter IE Advanced is designed for stationary use in weather-proof locations. The TS Adapter IE Advanced fulfills the operating conditions according to DIN IEC 60721-3-3:

- Class 3M3 (mechanical requirements)
- Class 3K3 (climatic ambient conditions)

Operation with additional measures

The TS Adapter IE Advanced must not be used without additional measures in the following environments:

- In locations with high levels of ionizing radiation
- In locations subject to difficult operating conditions, such as dust, aggressive fumes or gases, severe electrical or magnetic fields
- In installations requiring special monitoring, such as elevators and electrical systems in high risk areas

A suitable additional measure might be installation of the TS Adapter IE Advanced in a cabinet or enclosure.

Mechanical ambient conditions

The mechanical ambient conditions for the TS Adapter IE Advanced are specified in the following table in terms of sinusoidal vibrations.

Table 6- 4 Mechanical ambient conditions

Frequency range in Hz	Test values
$5 \leq f < 9$	3.5 mm amplitude
$9 \leq f < 150$	9.81 m/s ² constant acceleration

Reduction of vibration

If the TS Adapter IE Advanced is subjected to greater shocks or vibrations, you must take appropriate measures to reduce the acceleration or amplitude.

6.3 Mechanical and climatic ambient conditions for operation of the TS Adapter IE Advanced

Testing of mechanical environmental conditions

The table below provides information on the type and scope of testing of mechanical ambient conditions.

Table 6- 5 Testing of mechanical environmental conditions

Test of ...	Test standard	Comments
Vibration	Vibration test to IEC 60068-2-6 (sine wave)	Vibration type: Frequency sweeps at a rate of change of 1 octave per minute. 5 Hz ≤ f < 9 Hz, constant amplitude 3.5 mm 9 Hz ≤ f < 150 Hz, constant acceleration 9.81 m/s ² Vibration period: 10 frequency sweeps per axis on each of the 3 perpendicular axes
Shock	Shock impact test to IEC 60068-2-29	Type of shock: Half-sine shock pulse Shock intensity: 150 m/s ² peak value, 11 ms period Direction of shock: 100 pulses on each of the 3 perpendicular axes

Climatic ambient conditions

The TS Adapter IE Advanced can be operated under the following climatic ambient conditions:

Table 6- 6 Climatic ambient conditions

Ambient conditions	Permitted range	Comments
Temperature	0 to +60° C 0 to +40° C	Horizontal installation Vertical installation
Temperature change	Max. 3° C per min.	
Relative humidity	Max. 95% at +25° C	No condensation, corresponding to RH loading level 2 to IEC 61131-2.
Barometric pressure	1080 to 795 hPa (corresponding to an altitude of -1000 to 2000 m)	-
Pollutant concentration	SO ₂ : <0.5 ppm; RH <60%, no condensation H ₂ S: <0.1 ppm; RH <60%, no condensation	Test: 10 ppm; 4 days Test: 1 ppm; 4 days

6.4 Specifications for protection class and degree of protection

Protection class

The modular TS Adapter IE Advanced meets the requirements for protection class III according to EN 61140:2002 (VDE 0140-1).

Protection against foreign bodies and water

The TS Adapter IE Advanced meets the requirements for IP20 degree of protection according to IEC 60529.

The TS Adapter IE Advanced is protected against contact with standard test fingers.

The TS Adapter IE Advanced is not protected against water penetration.

6.5 Standards, Approvals, Certificates, Guidelines, Labels and Declarations

Note

The currently valid approvals are to be found on the product rating plate.

Safety requirements

- The TS Adapter IE Advanced meets the requirements and criteria of IEC 61131-2.
- The Ethernet interface meets the requirements of the IEEE 802.3.

CE mark



Our products conform to the requirements and safety objectives of the EC Directives listed below. They are compliant with the harmonized European Standards (EN) for programmable logic controllers as published in the official gazettes of the European Community:

- 2004/108/EC "Electromagnetic Compatibility" (EMC Directive)
- 94/9/EC "Equipment and protective systems intended for use in potentially explosive atmospheres" (Explosion Protection Directive)

The EC declaration of conformity is held on file available to competent authorities at:

Siemens Aktiengesellschaft
Industry Sector
I IA AS RD ST Typetest
P.O. Box 1963
D-92209 Amberg

EMC Directive

SIMATIC products are designed for industrial applications.

Fields of application	Requirement for	
	Interference emission	Interference immunity
Industry	EN 61000-6-4 : 2007	EN 61000-6-2 : 2005

Explosion Protection Directive



Conforming to EN 60079-15:2005 and EN 60079-0:2006 (Electrical apparatus for potentially explosive atmospheres; Type of protection "n")

II 3 G Ex nA II T4

RTTE Directive

EMC: see EMC Directive

Marking for Australia and New Zealand



Our products meet the requirements of the EN 61000-6-4:2007 standard.

Note

Which of the following approvals has been issued in respect of your product is indicated by the markings on the rating plate.

cULus approval



Underwriters Laboratories Inc. to

- UL 508 (Industrial Control Equipment)
- CSA C22.2 No. 142 (Process Control Equipment)

cULus approval, Hazardous Location



cULus Listed 7RA9 INT. CONT. EQ. FOR HAZ. LOC.

Underwriters Laboratories Inc. to

- UL 508 (Industrial Control Equipment)
- CSA C22.2 No. 142 (Process Control Equipment)
- ISA-12-12-01 (Hazardous Location)
- CSA-213 (Hazardous Location)

APPROVED for Use in

- Cl. 1, Div. 2, GP. A, B, C, D T4A
- Cl. 1, Zone 2, GP. IIC T4

Note

The system installation must be compliant with NEC (National Electric Code) requirements.

For use in Class I, Division 2 environments, the TS Adapter IE Advanced must be installed in an enclosure with minimum IP54 degree of protection according to IEC 60529.

Information on use of the TS Adapter IE Advanced in Zone 2 hazardous areas is contained in the "Product Information ATEX Zone 2.pdf" file.

It is located on the product CD in the "_Product_Information" directory.

 WARNING
Explosion hazard Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2 or Class I, Zone 2. Explosion Hazard - Do not disconnect while circuit is live unless area is known to be non-hazardous.

FM approval



Factory Mutual Approval Standard Class Number 3611,

Class I, Division 2, Group A, B, C, D, T4A.

Class I, Zone 2, Group II C, T4.

WARNING

Personal injury or property damage

Injury to persons or damage to property may occur.

In hazardous areas, personal injury or property damage can result if you create or break an electrical circuit during operation of a TS Adapter IE Advanced (for example, by means of plug-in connections, fuses, switches).

Do not disconnect live circuits, except where the risk of explosion can be safely excluded.

For use under FM conditions, the TS Adapter IE Advanced must be installed in an enclosure with minimum IP54 degree of protection according to IEC 60529.

Safety requirements for mounting

The TS Adapter IE Advanced is "open equipment" in accordance with IEC 61131-2, and an "open type" in accordance with UL/CSA certification.

The alternative installation methods described below are stipulated in order to ensure safe operation with respect to mechanical strength, flame resistance, stability and touch protection:

- Installation in a suitable cabinet
- Installation in a suitable enclosure
- Installation in an appropriately equipped closed switchroom

Compliance with installation guidelines

The installation guidelines and safety instructions set out in this manual must be observed during commissioning and operation.

Connecting peripherals

Interference immunity requirements are met when connected to an industrial standard PC/modem in accordance with EN 61000-6-2:2005.

Dimensional drawing

A

This appendix contains the dimensional drawing of the TS Adapter IE Advanced. You must take these dimensions into account for installation in cabinets, control rooms, etc.

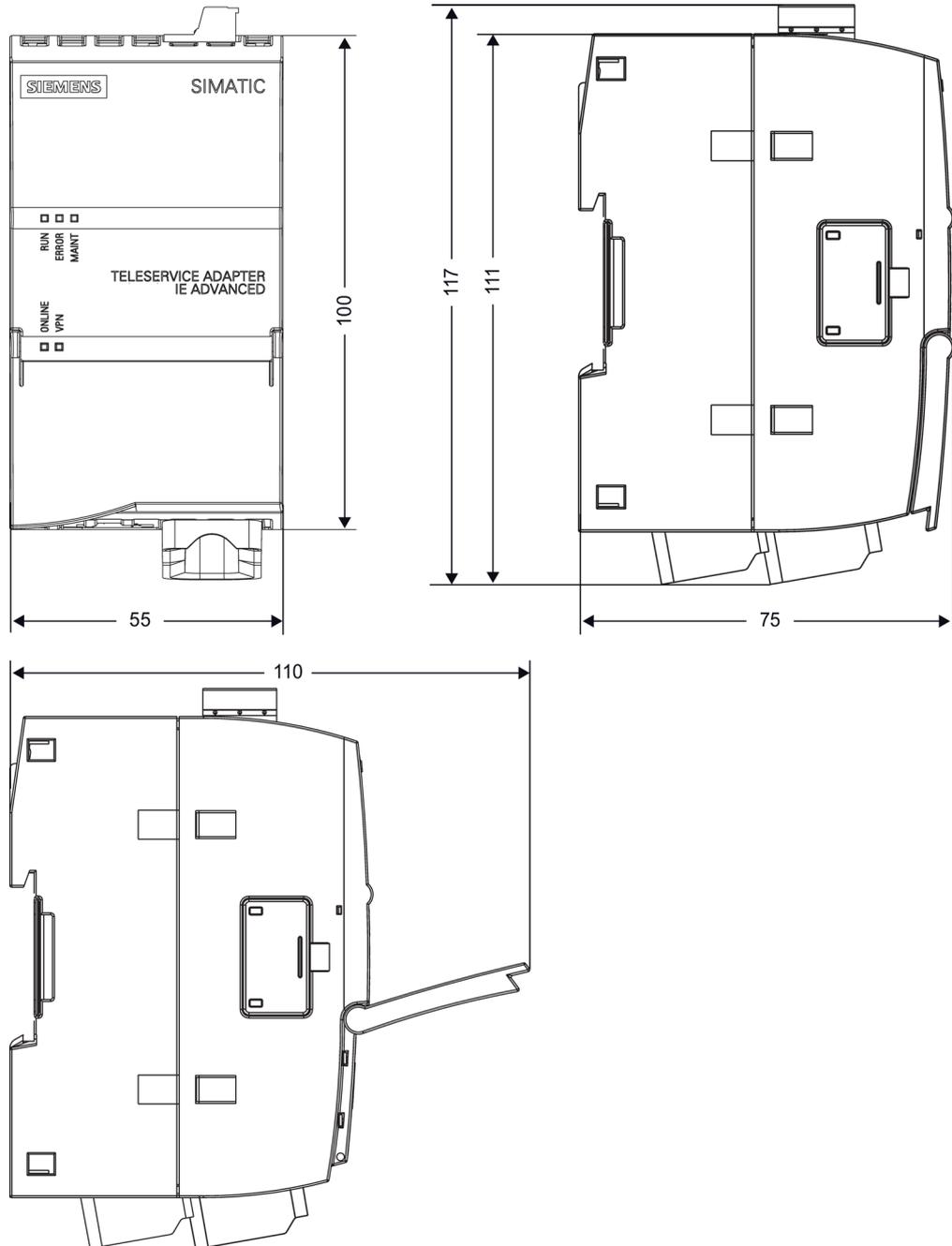
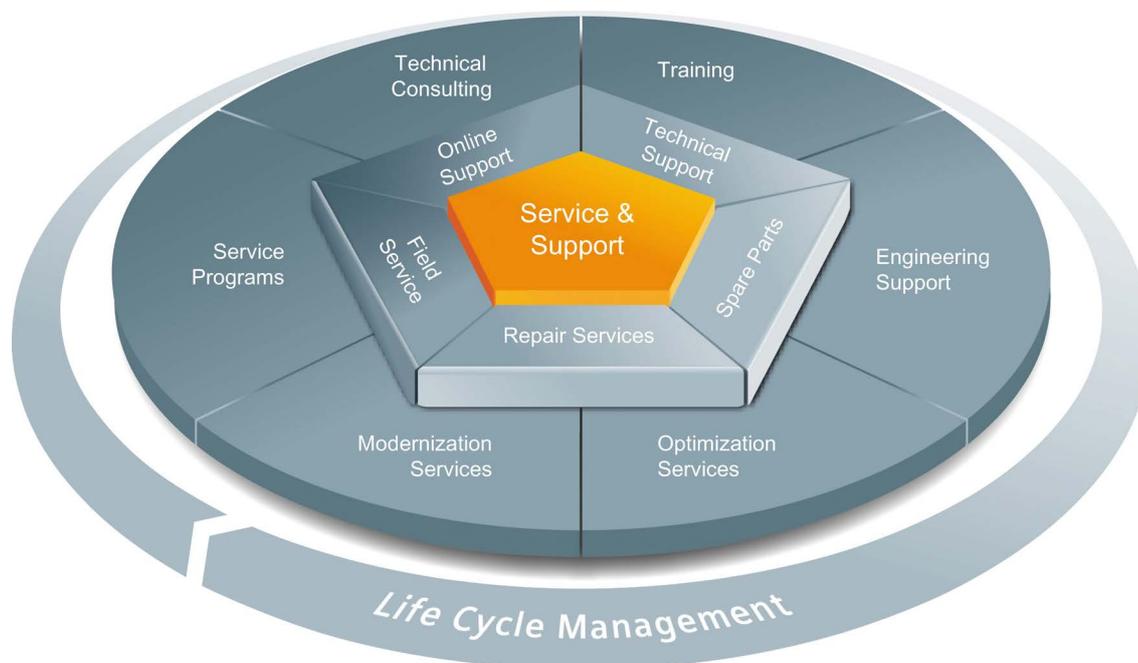


Figure A-1 Dimension drawing of the TS Adapter IE Advanced with closed and open front cover

Service & Support



Unmatched complete service for the entire life cycle

For machine manufacturers, solution providers and plant operators: The service offering from Siemens Industry Automation and Drive Technologies includes comprehensive services for a wide range of different users in all sectors of the manufacturing and process industry.

To accompany our products and systems, we offer integrated and structured services that provide valuable support in every phase of the life cycle of your machine or plant – from planning and implementation through commissioning as far as maintenance and modernization.

Our Service & Support accompanies you worldwide in all matters concerning automation and drive technology from Siemens. We provide direct on-site support in more than 100 countries through all phases of the life cycle of your machines and plants.

You have an experienced team of specialists at your side to provide active support and bundled know-how. Regular training courses and intensive contact among our employees – even across continents – ensure reliable service in the most diverse areas.

Online Support

The comprehensive online information platform supports you in all aspects of our Service & Support at any time and from any location in the world.

You can find Online Support at the following address on the Internet (<http://www.siemens.com/automation/service&support>).

Technical Consulting

Support in planning and designing your project: From detailed actual-state analysis, definition of the goal and consultation on product and system questions right through to the creation of the automation solution.

Technical Support

Expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

You can find Technical Support at the following address on the Internet (<http://www.siemens.com/automation/support-request>).

Training

Extend your competitive edge – through practical know-how directly from the manufacturer.

You can find the training courses at the following address on the Internet (<http://www.siemens.com/sitrain>).

Engineering Support

Support during project engineering and development with services fine-tuned to your requirements, from configuration through to implementation of an automation project.

Field Service

Our Field Service offers you services for commissioning and maintenance – to ensure that your machines and plants are always available.

Spare parts

In every sector worldwide, plants and systems are required to operate with constantly increasing reliability. We will provide you with the support you need to prevent a standstill from occurring in the first place: with a worldwide network and optimum logistics chains.

Repairs

Downtimes cause problems in the plant as well as unnecessary costs. We can help you to reduce both to a minimum – with our worldwide repair facilities.

Optimization

During the service life of machines and plants, there is often a great potential for increasing productivity or reducing costs.

To help you achieve this potential, we are offering a complete range of optimization services.

Modernization

You can also rely on our support when it comes to modernization – with comprehensive services from the planning phase all the way to commissioning.

Service programs

Our service programs are select service packages for an automation and drives system or product group. The individual services are coordinated with each other to ensure smooth coverage of the entire life cycle and support optimum use of your products and systems.

The services of a service program can be flexibly adapted at any time and used separately.

Examples of service programs:

- Service contracts
- Plant IT Security Services
- Life Cycle Services for Drive Engineering
- SIMATIC PCS 7 Life Cycle Services
- SINUMERIK Manufacturing Excellence
- SIMATIC Remote Support Services

Benefits at a glance:

- Reduced downtimes for increased productivity
- Optimized maintenance costs due to a tailored scope of services
- Costs that can be calculated and therefore planned
- Service reliability due to guaranteed response times and spare part delivery times
- Customer service personnel will be supported and relieved of additional tasks
- Comprehensive service from a single source, fewer interfaces and greater expertise

Contact

At your service locally, around the globe: your partner for consultation, sales, training, service, support, spare parts... for the entire range of products from Industry Automation and Drive Technologies.

You can find your personal contact in our contacts database on the Internet (<http://www.siemens.com/automation/partner>).

Glossary

AES

Advanced Encryption Standard is a symmetrical cryptographic system that provides a very high level of security.

Automation system

An automation system is a programmable logic controller consisting of at least one CPU, various input and output modules, and operator control and monitoring devices.

CHAP

Challenge Handshake Authentication Protocol (RFC 1994)

Access is checked by encrypting and decrypting a random number.

Configuring

Configuring refers to the configuration of separate modules of an automation system in the configuration table.

CPU

Central Processing Unit = Central module of the automation system that consists of the control and computing units, memory, system program, and interfaces to the I/O modules.

DDNS

Dynamic Domain Name System (Dynamic DNS): System for updating domains in the Domain Name System.

When the IP address changes, the corresponding domain entry is automatically changed. In this way, a device is always accessible under the same domain name, even if the current IP address for the user is unknown.

Default setting

The default setting is an appropriate initial setting that will always be used if another value is not entered.

DHCP

Dynamic Host Configuration Protocol: enables assignment of the network configuration to clients by a server (RFC 2131).

Diagnostics functions

The diagnostics functions cover the entire system diagnostics and include the recognition, interpretation and reporting of errors within the automation system.

DNS

Domain Name System: service for responding to requests for name resolution.

FTP

File Transfer Protocol: a network protocol specified in RFC 959 (1985) for transmitting files over IP networks.

GA

Global Address: Unique, global and permanently assigned IPv6 address that is also valid outside the local network.

GPRS

General Packet Radio Service: packet-oriented service for data transmission in GSM networks.

Hardware

Hardware is the entire physical and technical equipment of a automation system.

HTML

Hyper Text Markup Language: text-based markup language for structuring contents such as texts, images, and hyperlinks in documents. HTML documents are the basis of the World Wide Web and are displayed by a web browser.

HTTP

Hyper Text Transfer Protocol: Protocol for transferring data over a network. It is mainly used to download web pages from the World Wide Web to a web browser.

HTTPS

Hyper Text Transfer Protocol over Secure Socket Layer: Protocol for secure transmission of data over a network. Encrypted and authenticated transfer of data in the World Wide Web.

IP

Internet Protocol: network protocol that is used widely in computer networks and is the basis for the Internet.

LAN

Local Area Network: computer network whose area is limited to 500 m without additional measures and is generally used in small companies.

Lifetime

Service life / usability of an IPv6 address.

The following cases are distinguished:

- Preferred lifetime > 0: The address is available for new connections.
- Preferred lifetime = 0 and valid lifetime > 0: The address can only be used by existing connections.
- Preferred lifetime = 0 and valid lifetime = 0: The address is no longer usable.

MAC

The purpose of a Message Authentication Code is to provide certainty regarding the origin of data or messages and to check their integrity. MAC algorithms require two input parameters, i.e., the data to be protected and a secret key, from which a checksum, i.e., the Message Authentication Code, is calculated.

mdex GmbH

German m2m service provider (machine-to-machine) for world-wide connections of machines and control centers through mobile wireless and Internet.

Module parameters

Module parameters are values with which the behavior of the module can be set.

PAP

Password Authentication Protocol (RFC 1334)

The password for the authentication is transferred unencrypted together with the user ID. It is therefore vulnerable to capture through passive monitoring.

Parameter assignment

Parameter assignment refers to the setting of a module's behavior.

Parameters

Parameters are values that can be allocated. There are two different types of parameters: block parameters and module parameters.

POP3

Post Office Protocol Version 3: Transfer protocol to receive e-mails from an e-mail server (RFC1939).

Service life

See Lifetime

SLAAC

Stateless Address Autoconfiguration: Stateless address autoconfiguration in IPv6 mode (RFC 4862).

SMTP

Simple Mail Transfer Protocol: protocol of the Internet protocol family for exchanging e-mails in computer networks.

SMTPS

Simple Mail Transfer Protocol Secure: Protocol for e-mail exchange in computer networks including SSL encryption.

Software

Software refers to the entirety of all programs that are used on a computing system. The operating system and user programs belong to this.

SSTP

Secure Socket Tunneling Protocol: tunnel protocol for encapsulating a packet inside another packet. Tunnels the PPP or L2TP traffic through an SSL channel.

ULA

Unique Local Addresses (ULA): Local IPv6 addresses that are only valid within a local network (RFC 4193).

User program

The user program contains all instructions and declarations for processing the signals used for controlling a system or a process. In SIMATIC S7 the user program is structured and divided into small units, the blocks.

VPN

Virtual private network: VPN is used to connect nodes of one private network to another private network without the networks having to be compatible.

WAN

Wide area network: Computer network that differs from a LAN in that it extends over a very large geographic area. There is no limit on the number of connected computers.

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