

SIMATIC NET

S7-300 Compact Switch Module CSM 377

Operating Instructions

Introduction	1
Network topologies	2
Product properties	3
Installation	4
Maintenance and troubleshooting	5
Approvals and markings	6
References	7
Graphics	8

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 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.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Table of contents

1	Introduction	5
1.1	Preface	5
1.2	Security information	6
1.3	Introduction.....	7
2	Network topologies	9
2.1	Network topologies.....	9
3	Product properties	11
3.1	Components of the product	11
3.2	Unpacking and checking	12
3.3	CSM 377 product characteristics	13
3.4	TP ports	14
3.5	Displays	16
3.6	Technical specifications	17
4	Installation.....	19
4.1	Important notes on using the device	20
4.2	Installation	24
4.3	Installation on a standard rail	25
4.4	Power supply	26
4.5	Grounding	28
4.6	Fitting the IE FC RJ-45 Plug 180	29
4.7	Disassembly.....	31
5	Maintenance and troubleshooting	33
5.1	Possible sources of problems and how to deal with them	34
6	Approvals and markings	35
6.1	Notes on the CE Mark.....	36
7	References	41
7.1	References	41
7.2	Internet	42
8	Graphics	43
8.1	Dimension drawings	43
	Index	49

Introduction

1.1 Preface

Overview

This section provides you with an overview of the functions of the unmanaged compact switch module CSM 377.

Purpose of the Commissioning Manual

This commissioning manual supports you when commissioning networks with the compact switch module CSM 377.

Validity of this Commissioning Manual

This commissioning manual is valid for the following device:

CSM 377
6GK7377-1AA00-0AA0

Audience

This commissioning manual is intended for personnel involved in the commissioning of networks with the CSM 377 compact switch module.

Further documentation

The "SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks" manual contains additional information on other SIMATIC NET products that you can operate along with the CSM 377 switch in an Industrial Ethernet network.

SIMATIC NET glossary

Explanations of many of the specialist terms used in this documentation can be found in the SIMATIC NET glossary.

You will find the SIMATIC NET glossary here:

- SIMATIC NET Manual Collection or product DVD
The DVD ships with certain SIMATIC NET products.
- On the Internet under the following address:
50305045 (<https://support.industry.siemens.com/cs/ww/en/view/50305045>)

Security information

1.2 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit

<https://www.siemens.com/industrialsecurity> (<https://www.siemens.com/industrialsecurity>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

<https://www.siemens.com/cert> (<https://www.siemens.com/cert>).

Device defective

If a fault develops, send the device to your SIEMENS representative for repair. Repairs on-site are not possible.

Recycling and disposal



The products are low in pollutants, can be recycled and meet the requirements of the WEEE directive 2012/19/EU for the disposal of electrical and electronic equipment.

Do not dispose of the products at public disposal sites.

For environmentally friendly recycling and the disposal of your old device contact a certified disposal company for electronic scrap or your Siemens contact (Product return (<https://support.industry.siemens.com/cs/ww/en/view/109479891>)).

Note the different national regulations.

Trademarks

The following and possibly other names not identified by the registered trademark sign ® are registered trademarks of Siemens AG:

SCALANCE, C-PLUG, OLM

1.3 Introduction

What is possible?

The CSM 377 device allows the cost-effective installation of Industrial Ethernet bus or star structures with switching functionality.

Note

It is not possible to use the CSM 377 switch in a redundant ring because it does not support redundancy.

Note

If the CSM 377 switch is supplied over long 24 V power supply lines or networks, measures are necessary to prevent interference by strong electromagnetic pulses on the supply lines. These can result, for example, due to lightning or switching of large inductive loads.

One of the tests used to attest the immunity of the switch to electromagnetic interference was the "surge immunity test" according to EN61000-4-5. This test requires overvoltage protection for the power supply lines. A suitable device is, for example, the Dehn Blitzductor VT AD 24 V type no. 918 402 or comparable protective element.

Manufacturer:

DEHN+SÖHNE GmbH+Co.KG Hans Dehn Str.1 Postfach 1640 D-92306 Neumarkt, Germany



WARNING

When used under hazardous conditions (zone 2), the CSM 377 switch must be installed in an enclosure.

To comply with ATEX 95 (EN 60079-15), this enclosure must be at least IP54 in compliance with EN 60529.

WARNING – EXPLOSION HAZARD: DO NOT DISCONNECT EQUIPMENT WHEN A FLAMMABLE OR COMBUSTIBLE ATMOSPHERE IS PRESENT.

Network topologies

2.1 Network topologies

Switching technology allows extensive networks to be set up with numerous nodes and simplifies network expansion.

Which topologies can be implemented?

Linear (bus) and star topologies can be implemented with the compact switch module CSM 377.

Note

Make sure that the maximum permitted cable lengths for the relevant devices are not exceeded. You will find the permitted cable lengths in the technical specifications.

Bus topology

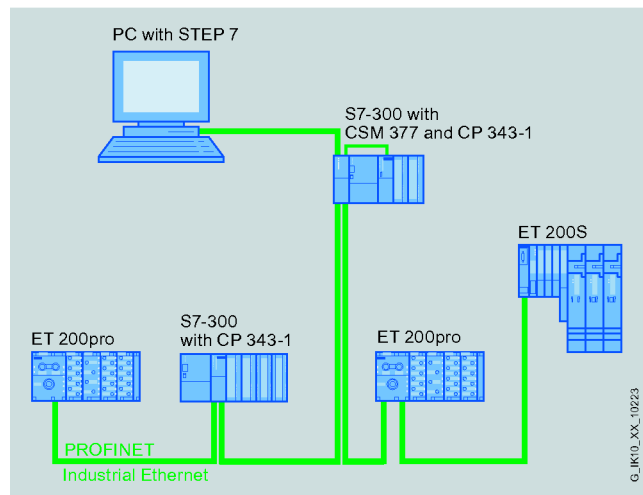


Figure 2-1 Bus topology with the CSM 377

Star topology

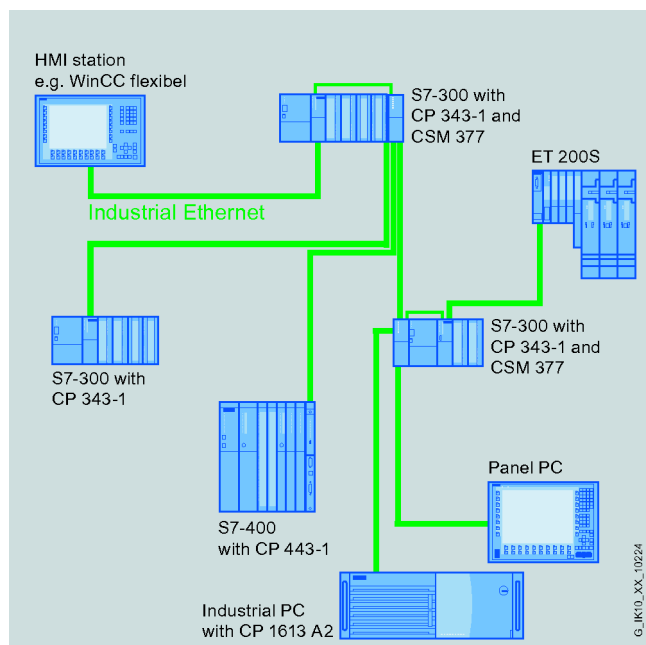


Figure 2-2 Star topology. Example with the CSM 377

Product properties

3.1 Components of the product

The CSM 377 compact switch module always ships with the following:

- 2-pin terminal block (power supply)
- Operating Instructions (on the CD)
- CD

3.2 Unpacking and checking

Unpacking, checking

1. Make sure that the package is complete.
2. Check all the parts for transport damage.

**WARNING**

Do not use any parts that show evidence of damage!

3.3 CSM 377 product characteristics

Possible attachments

The CSM 377 has four RJ-45 jacks for the connection of end devices or other network segments.



Figure 3-1 Compact Switch Module CSM 377

3.4 TP ports

Connector pinout

On the CSM 377, the TP ports are implemented as RJ-45 sockets with MDI-X assignment (Medium Dependent Interface–Autocrossover) of a network component.

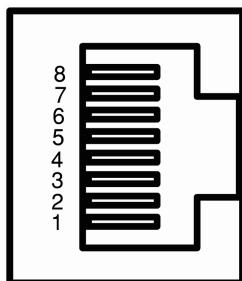


Figure 3-2 RJ-45 jack

Table 3-1 Pin assignment of the RJ-45 jack

Pin number	Assignment
Pin 8	n. c.
Pin 7	n. c.
Pin 6	TD-
Pin 5	n. c.
Pin 4	n. c.
Pin 3	TD+
Pin 2	RD-
Pin 1	RD+

Note

TP cords or TP-XP cords with a maximum length of 10 m can be connected to the RJ-45 TP port. With the IE FC cables and IE FC RJ-45 plug 180, an overall cable length of up to 100 m is permitted between two devices depending on the cable type.

Autonegotiation

Autonegotiation means the automatic detection of the functionality of the port at the opposite end. Using autonegotiation, network components or end devices can detect the functionality available at the port of a partner device allowing automatic configuration of different types of device. With autonegotiation, two components connected to a link segment can exchange parameters and set themselves to match the supported communication functionality.

Note

Devices not supporting autonegotiation must be set to 100 Mbps/ half duplex or 10 Mbps half duplex.

Note

The CSM 377 is a plug-and-play device that does not require settings to be made for commissioning.

Auto polarity exchange

If the pair of receiving cables are incorrectly connected (RD+ and RD- swapped over), the polarity is adapted automatically.

MDI /MDIX autocrossover function

The advantage of the MDI /MDIX autocrossover function is that straight-through cables can be used throughout and crossover Ethernet cables are unnecessary. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

Note

Please note that the direct connection of two ports on the switch or accidental connection over several switches causes an illegal loop. Such a loop can lead to network overload and network failures.

3.5 Displays

Power indicator (green LED)

The status of the power supply is indicated by a green LED:

Status	Meaning
LED lit green	Power supply is connected
LED not lit	Power supply is not connected or <14 V Also see the <<Note>> in section <<4.6>>

Port status indicator (green/yellow LEDs)

The status of the ports is indicated by four green/yellow LEDs.

Status	Meaning
Port 1 through 4 LED lit green	TP link exists, no data reception
Port 1 through 4 LED lit yellow	TP link exists, data received at TP port
Ports 1 through 4 LEDs flashing synchronously	Test phase during power on

3.6 Technical specifications

Technical specifications of the CSM 377

Connectors	
Attachment of end devices or network components over twisted pair	4 x RJ-45 sockets with MDI-X pinning 10/100 Mbps (half/ full duplex), floating
Connector for power supply	2-terminal plug-in block
Electrical data	
Power supply	Infeed 19.2 to 28.8 V DC Safety extra-low voltage (SELV)
Power loss at 24 V DC	1.6 W
Current consumption at rated voltage	70 mA
Overvoltage protection at input	PTC resettable fuse (0.5 A / 60 V)
Permitted cable lengths	
Connection over Industrial Ethernet FC TP cables 0 – 100 m 0 – 85 m	Industrial Ethernet FC TP standard cable with IE FC RJ45 plug 180 or over Industrial Ethernet FC outlet RJ45 with 0 - 90 m Industrial Ethernet FC TP standard cable + 10 m TP cord Industrial Ethernet FC TP marine/trailing cable with IE FC RJ45 plug 180 or 0 - 75 m Industrial Ethernet FC TP marine/trailing cable + 10 m TP cord
learnable MAC addresses / Aging Time	
learnable MAC addresses	1024
Aging time	300 seconds

Permitted ambient conditions	
Operating temperature	0 °C to +60 °C
Storage/transport temperature	-40 °C to +70 °C
Relative humidity in operation	< 95% (no condensation)
Operating altitude	2000 m at max 56 °C ambient temperature 3000 m at max. 50 °C ambient temperature
Immunity	EN 61000-6-2
Emission	EN 61000-6-4
Degree of protection	IP20
MTBF	
MTBF	144 years
Construction	
Dimensions (W x H x D) in mm	40 x 125 x 118

3.6 Technical specifications

Permitted ambient conditions	
Weight in g	200
Installation options	S7-300 mounting rail
Order numbers	
CSM 377	6GK7377-1AA00-0AA0
"Industrial Ethernet TP and Fiber Optic Networks" manual	6GK1970-1BA10-0AA0
TP Cord RJ45/RJ45 0.5 m	6XV1850-2GE50
IE FC Stripping Tool	6GK1901-1GA00
IE FC blade cassettes	6GK1901-1GB00
IE FC TP standard cable	6XV1840-2AH10
IE FC TP trailing cable	6XV1840-3AH10
IE FC TP marine cable	6XV1840-4AH10
IE FC RJ45 Plug 180 pack of 1	6GK1 901-1BB10-2AA0
IE FC RJ45 Plug 180 pack of 10	6GK1 901-1BB10-2AB0
IE FC RJ45 Plug 180 pack of 50	6GK1 901-1BB10-2AE0

Note

The number of connected switches influences the frame delay.

When a frame passes through the CSM 377, it is delayed by the store and forward function of the switch

- with a 64 byte frame length by approx. 8 µs (at 100 Mbps)
- with a 1500 byte frame length by approx. 125 µs (at 100 Mbps)

This means that the more CSM 377 switches that a frame passes through, the higher the frame delay will be.

Installation

**CAUTION**

To prevent injury and damage, read the manual before using the device.

4.1 Important notes on using the device

Read the safety notices

Note the following safety notices. These relate to the entire working life of the device.



WARNING

If a device is operated in an ambient temperature of more than 55 °C, the temperature of the device enclosure may be higher than 70 °C. The device must therefore be installed so that it is only accessible to service personnel or users that are aware of the reason for restricted access and of the required safety measures at an ambient temperature higher than 55 to 70 °C.



WARNING

If the cable or conduit entry point exceeds 70 °C or the branching point of conductors exceeds 80 °C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 60 °C, only use cables with admitted maximum operating temperature of at least 80 °C.

NOTICE

Improper mounting

Improper mounting may damage the device or impair its operation.

- Before mounting the device, always ensure that there is no visible damage to the device.
- Mount the device using suitable tools. Observe the information in the respective section about mounting.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion



WARNING

EXPLOSION HAZARD

Do not open the device when the supply voltage is turned on.



WARNING

EXPLOSION HAZARD

Replacing components may impair suitability for Class 1, Division 2 or Zone 2.

** WARNING**

The device is intended for indoor use only.

** WARNING**

The device may only be operated in an environment of contamination class 1 or 2 (see EN/IEC 60664-1, GB/T 16935.1).

** WARNING**

When used in hazardous environments corresponding to Class I, Division 2 or Class I, Zone 2, the device must be installed in a cabinet or a suitable enclosure.

** WARNING****EXPLOSION HAZARD**

Do not connect or disconnect cables to or from the device when a flammable or combustible atmosphere is present.

** WARNING****Unsuitable cables or connectors**

Risk of explosion in hazardous areas

- Only use connectors that meet the requirements of the relevant type of protection.
- If necessary, tighten the connector screw connections, device fastening screws, grounding screws, etc. according to the specified torques.
- Close unused cable openings for electrical connections.
- Check the cables for a tight fit after installation.

** WARNING****Lack of equipotential bonding**

If there is no equipotential bonding in hazardous areas, there is a risk of explosion due to equalizing current or ignition sparks.

- Ensure that equipotential bonding is available for the device.

4.1 Important notes on using the device

! WARNING

Unprotected cable ends

There is a risk of explosion due to unprotected cable ends in hazardous areas.

- Protect unused cable ends according to IEC/EN 60079-14.

! WARNING

Improper installation of shielded cables

There is a risk of explosion due to equalizing currents between the hazardous area and the non-hazardous area.

- Ground shielded cables that cross hazardous areas at one end only.
- Lay a potential equalization conductor when grounding at both ends.

! WARNING

Insufficient isolation of intrinsically safe and non-intrinsically safe circuits

Risk of explosion in hazardous areas

- When connecting intrinsically safe and non-intrinsically safe circuits, ensure that the galvanic isolation is performed properly in compliance with local regulations (e.g. IEC 60079-14).
- Observe the device approvals applicable for your country.

Notes for use in hazardous locations according to ATEX, IECEx, UKEX and CCC Ex

If you use the device under ATEX, IECEx, UKEX or CCC Ex conditions you must also keep to the following safety instructions in addition to the general safety instructions for protection against explosion:

! WARNING

To comply with EU Directive 2014/34 EU (ATEX 114), UK-Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB 3836.8.

! WARNING

If the temperature of the cable or housing socket exceeds 60 °C or the temperature at the branching point of the cables exceeds 80 °C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 60 °C, only use cables with admitted maximum operating temperature of at least 80 °C.

** WARNING****Transient overvoltages**

Take measures to prevent transient overvoltages of more than 40% of the rated voltage (or more than 119 V). This is the case if you only operate devices with SELV (safety extra-low voltage).

Safety notices when using the device according to Hazardous Locations (HazLoc)

If you use the device under HazLoc conditions you must also keep to the following safety notices in addition to the general safety notices for protection against explosion:

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

This equipment is suitable for use in Class I, Zone 2, Group IIC or non-hazardous locations only.

** WARNING****EXPLOSION HAZARD**

DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS.

4.2 Installation

Type of mounting

The Compact Switch Module CSM 377 is intended exclusively for mounting on a SIMATIC S7-300 mounting rail.

Note

When installing and operating the device, keep to the installation instructions and safety-related notices as described here and in the manual SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks /1/.

Note

Provide suitable shade to protect the device against direct sunlight. This avoids unwanted warming of the device and prevents premature aging of the device and cabling.

4.3 Installation on a standard rail

Installation on a SIMATIC S7-300 standard rail

Note

The CSM 377 does not have a feedthrough for the backplane bus. It must therefore be mounted either at the start or end of the station!

1. Place the upper guide at the top of the CSM housing in the S7 standard rail.
2. Screw the CSM 377 compact switch module to the underside of the standard rail.
3. Fit the connectors for the power supply. See << Link to Figure 4.3>>
4. Insert the terminal block into the sockets on the device. See << Link to Figure 4.2>>



Figure 4-1 CSM 377 installation on a SIMATIC S7-300 standard rail

Uninstalling

To remove a CSM 377 compact switch module from the SIMATIC S7-300 standard rail:

1. First disconnect all connected cables. See << Link to Figure 4.6>>
2. Loosen the device screws on the underside of the S7 standard rail and lift the device away from the rail.

4.4 Power supply

Power supply

The power supply is connected using a 2-terminal plug-in block. The power supply is connected over a high resistance to the S7 mounting rail to allow an ungrounded set up. The power supply is non-floating.

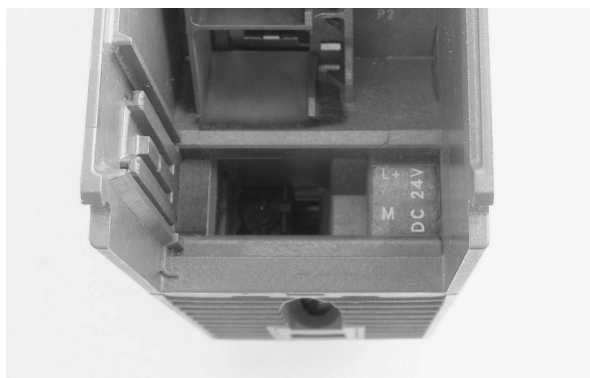


Figure 4-2 Connecting the power supply

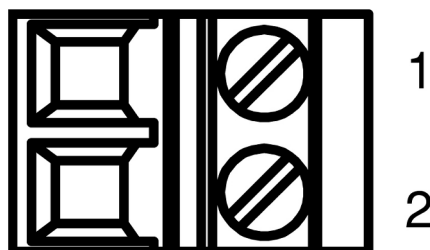


Figure 4-3 Pin assignment of the terminal block

Table 4-1 Pin assignment for the power supply

Pin number	Assignment
Pin 1	L+ (24 V DC)
Pin 2	M (chassis ground)



WARNING

Never connect the device to AC voltage.
Never operate the device with DC voltage higher than 28.8 V DC.

**WARNING****Power supply**

The device is designed for operation with a directly connectable safety extra low voltage (SELV) from a limited power source (LPS).

The power supply therefore needs to meet at least one of the following conditions:

- Only safety extra low voltage (SELV) with limited power source (LPS) complying with IEC 60950-1 / EN 60950-1 / VDE 0805-1 or IEC 62368-1 / EN 62368-1 / VDE 62368-1 may be connected to the power supply terminals.
- The power supply unit for the device must meet NEC Class 2 according to the National Electrical Code (r) (ANSI / NFPA 70).

If the equipment is connected to a redundant power supply (two separate power supplies), both must meet these requirements.

4.5 Grounding

S7 standard rail

The device is grounded over its rear panel and the neck of the screw.

4.6 Fitting the IE FC RJ-45 Plug 180

IE FC RJ45 Plug 180

The rugged node connectors are designed for industry with PROFINET-compliant connectors and provide additional strain and bending relief with a locking mechanism on the casing.

Assembly of the IE FC RJ45 Plug 180 to the IE FC Standard Cable

For information on assembling an IE FC RJ45 Plug 180 on a SIMATIC NET Industrial Ethernet FastConnect cable, please refer to the instructions supplied with the IE FC RJ45 Plug.

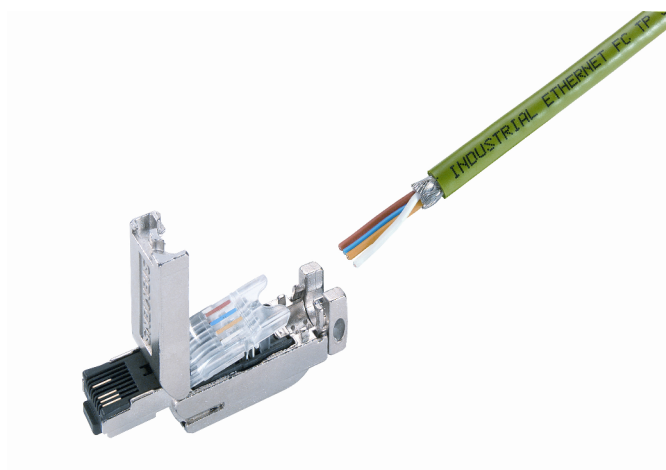


Figure 4-4 IE FC RJ45 Plug 180

Inserting the IE FC RJ45 Plug 180

Insert the IE FC RJ45 Plug 180 into the twisted-pair interface of the CSM 377 until it locks in place.



Figure 4-5 Inserting the IE FC RJ45 Plug 180

4.6 Fitting the IE FC RJ-45 Plug 180

With its tight fit and locking mechanism with the PROFINET-compliant male connector IE FC RJ45 Plug 180, the securing collar on the TP port of the CSM 377 ensures a rugged node attachment that provides strain and bending relief for the twisted pair jack.

Removing the IE FC RJ45 Plug 180

Use a 2.5 mm screwdriver to unlock the latching of the IE FC RJ45 Plug 180.

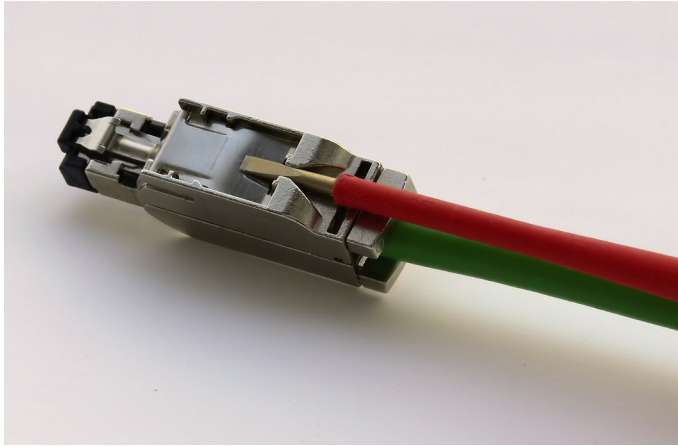


Figure 4-6 Releasing the latching of the RJ45 Plug

After releasing the latching, you can pull the IE FC RJ45 Plug 180 from the twisted pair socket.

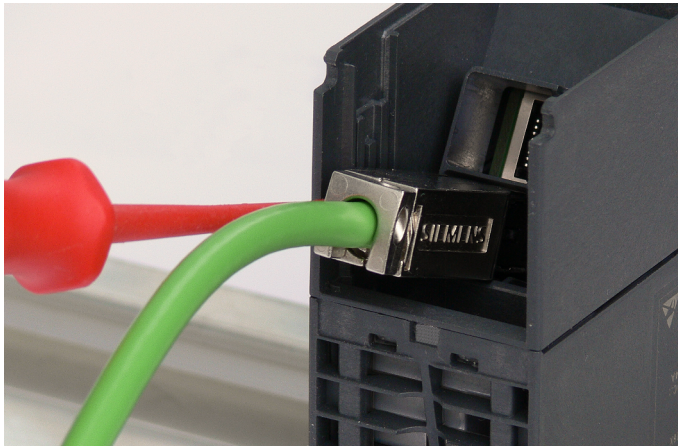


Figure 4-7 Removing the IC FC RJ45 Plug by unlatching the RJ45 plug with a screwdriver

4.7 Disassembly

WARNING

Improper disassembly

Improper disassembly may result in a risk of explosion in hazardous areas.

For proper disassembly, observe the following:

- Before starting work, ensure that the electricity is switched off.
- Secure remaining connections so that no damage can occur as a result of disassembly if the system is accidentally started up.

Maintenance and troubleshooting



WARNING

Unauthorized repair of devices in explosion-proof design

Risk of explosion in hazardous areas

- Repair work may only be performed by personnel authorized by Siemens.



WARNING

Impermissible accessories and spare parts

Risk of explosion in hazardous areas

- Only use original accessories and original spare parts.
- Observe all relevant installation and safety instructions described in the manuals for the device or supplied with the accessories or spare parts.



CAUTION

Hot surfaces

Risk of burns during maintenance work on parts with a surface temperature above 70 °C (158 °F).

- Take appropriate protective measures, for example, wear protective gloves.
- Once maintenance work is complete, restore the touch protection measures.

NOTICE

Cleaning the housing

If the device is not in a hazardous area, only clean the outer parts of the housing with a dry cloth.

If the device is in a hazardous area, use a slightly damp cloth for cleaning.

Do not use solvents.

5.1 Possible sources of problems and how to deal with them

Fuses

Note

The CSM 377 compact switch module has a resettable fuse / PTC. If the fuse triggers (all LEDs are off despite correctly applied power supply), the device should be disconnected from the power supply for approximately 30 minutes before turning it on again.

LED display when voltage drops

If the power supply sinks below approximately 14 V, the internal power supply switches off, the L-LED and all port LEDs go off. The functionality of the CSM 377 is no longer available.

Device defective

If a fault develops, please send the device to your SIEMENS service center for repair. Repairs on-site are not possible.

Approvals and markings

The SIMATIC NET products described in these Operating Instructions have the approvals listed below.

Note

Issued approvals on the type plate of the device

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

Current approvals on the Internet

You will find the current approvals for the product on the Internet pages of Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/15273/cert>).

6.1 Notes on the CE Mark

Product name

Compact switch module		
SIMATIC NET	CSM 377	6GK7377-1AA00-0AA0

Observe installation guidelines

The product meets the requirements if you keep to the installation instructions and safety-related notices as described here and in the manual "SIMATIC NET Industrial Ethernet Twisted Pair and Fiber Optic Networks" /1/ when installing and operating the device.

Notes for the manufacturers of machines

This product is not a machine in the sense of the EC Machinery Directive or the Supply of Machinery (Safety) Regulations (UK).

There is therefore no declaration of conformity relating to the EC Machinery Directive 2006/42/EEC or the Supply of Machinery (Safety) Regulations 2008 (UK) for this product.

If the product is part of the equipment of a machine, it must be included in the procedure for obtaining the EU/UK conformity assessment by the manufacturer of the machine.

Machinery directive

The product is a component in compliance with the EC Machinery Directive 2006/42/EEC and the Supply of Machinery (Safety) Regulations 2008 (UK).

According to the Machinery Directive respectively the Supply of Machinery (Safety) Regulations (UK), we are obliged to point out that the product described is intended solely for installation in a machine.

Before the final product can be put into operation, it must be tested to ensure that it conforms with the Machinery Directive 2006/42/EEC and the Supply of Machinery (Safety) Regulations 2008 (UK).

EC declaration of conformity



The SIMATIC NET products described in these operating instructions meet the requirements and safety objectives of the following EC directives and comply with the harmonized European

standards (EN) which are published in the official documentation of the European Union and here.

- **2014/34/EU (ATEX explosion protection directive)**
Directive of the European Parliament and the Council of 26 February 2014 on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres, official journal of the EU L96, 29/03/2014, pages. 309-356
- **2014/30/EU (EMC)**
EMC directive of the European Parliament and of the Council of February 26, 2014 on the approximation of the laws of the member states relating to electromagnetic compatibility; official journal of the EU L96, 29/03/2014, pages. 79-106
- **2011/65/EU (RoHS)**
Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, official journal of the EC L174, 01/07/2011, pages 88-110

You will find the EC declaration of conformity for these products on the Internet pages of Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/15273/cert>).

The EC Declaration of Conformity is available for all responsible authorities at:

Siemens Aktiengesellschaft

Digital Industries
DE-76181 Karlsruhe
Germany

UK Declaration of Conformity



The UK declaration of conformity is available to all responsible authorities at:

Siemens Aktiengesellschaft
Digital Industries
Process Automation
DE-76181 Karlsruhe
Germany

Importer UK:

Siemens plc,
Manchester M20 2UR

You can find the current UK Declaration of Conformity for these products on the Internet pages under Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/15273/cert>).

The SIMATIC NET products described in this document meet the requirements of the following directives:

- UK-Regulation
SI 2016/1107 Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016, and related amendments
- EMC Regulation
SI 2016/1091 Electromagnetic Compatibility Regulations 2016, and related amendments
- RoHS Regulation
SI 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012, and related amendments

ATEX, IECEx, UKEX and CCC Ex certification

 WARNING
Risk of explosion in hazardous areas When using SIMATIC NET products in hazardous area zone 2, make absolutely sure that the associated conditions in the following document are adhered to: "SIMATIC NET Product Information Use of subassemblies/modules in a Zone 2 Hazardous Area". You will find this document • on the data medium that ships with some devices. • on the Internet pages under Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/view/78381013). Enter the document identification number "C234" as the search term.

The markings of the electrical devices are:

UK
CA



II 3 G Ex ec IIC T4 Gc
 DEKRA 18ATEX0025 X
 DEKRA 21UKEX0001 X
 IECEx DEK 18.0017X
 Importer UK:
 Siemens plc,
 Manchester
 M20 2UR
 (Ex na IIC T4 Gc, not on the nameplate)
 2020322310002626
 2020322310002915
 2020322310002987

The products meet the requirements of the following standards:

- EN/IEC 60079-7, GB 3836.8
- EN IEC/IEC 60079-0, GB 3836.1

You will find the current versions of the standards in the currently valid certificates.

EMC (electromagnetic compatibility)

The SIMATIC NET products described in these operating instructions meet the electromagnetic compatibility requirements according to the EU Directive 2014/30/EU as well as the UK-Regulation SI 2016/1091 and their associated amendments.

Applied standards:

- EN 61000-6-2 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN 61000-6-4 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

You will find the current versions of the standards in the currently valid EC/UK Declaration of Conformity.

RoHS

The SIMATIC NET products described in these operating instructions meet the requirements on the restriction of the use of certain hazardous substances in electrical and electronic equipment according to the EU Directive 2011/65/EU as well as the UK-Regulation SI 2012/3032 and their associated amendments.

Applied standard:

- EN IEC 63000

FM

The product meets the requirements of the standards:

- Factory Mutual Approval Standard Class Number 3611
- FM Hazardous (Classified) Location Electrical Equipment:
Non Incendive / Class I / Division 2 / Groups A,B,C,D / T4 and
Non Incendive / Class I / Zone 2 / Group IIC / T4

cULus approval for industrial control equipment

cULus Listed IND. CONT. EQ.

Underwriters Laboratories Inc. complying with

- UL 508
- CSA C22.2 No. 142-M1987

Report no. E85972

cULus for Hazardous Locations

ANSI/ISA 12.12.01-2007, CSA C22.2 No. 213-M1987

CL. 1, Div. 2 GP. A.B.C.D T..

CL. 1, Zone 2, GP, IIC, T..

(T.. = For detailed information on the temperature class, refer to the type plate)

Note for Australia - RCM

The product meets the requirements of the RCM standard.

Applied standards:

- AS/NZS CISPR11 (Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement).
- EN 61000-6-4 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

You will find the current versions of the standards in the currently valid RCM SDoCs (Self-Declaration of Conformity).

References

7.1 References

Sources of information and other documentation

1. SIMATIC NET Industrial Twisted Pair and Fiber-Optic Networks,
Order numbers:
6GK1970-1BA10-0AA0 German
6GK1970-1BA10-0AA1 English
6GK1970-1BA10-0AA2 French
6GK1970-1BA10-0AA4 Italian
2. PROFINET Cabling and Interconnection Technology Guideline
Can be ordered from the PROFIBUS User Organization (PNO)

7.2 Internet

Further information on the Internet

You will find additional information on SIMATIC NET products in the Internet at http://www.automation.siemens.com/net/index_00.htm

Graphics

8.1 Dimension drawings

Dimension drawing

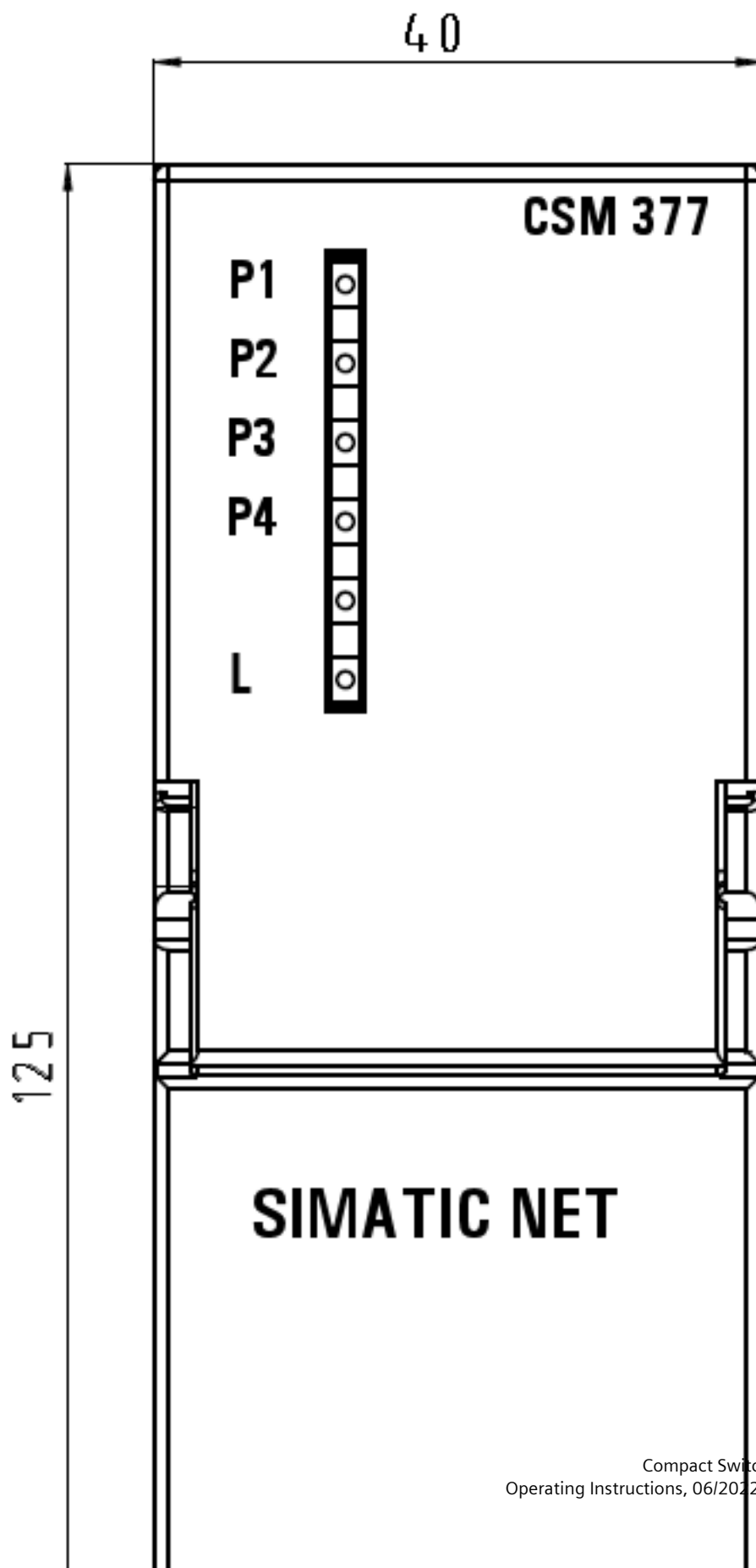


Figure 8-1 Dimension drawing, view from above

117

125

Figure 8-2 Dimension drawing, view from side

Index

A

Approvals, 36
ATEX 95, 7
Autonegotiation, 15

C

CE mark, 36
Connector pinout
 TP port, 14

D

defective, 34
Display, 16, 34

E

Error
 LED display when voltage drops, 34

G

Glossary, 5

I

Internet, 42

M

MDI /MDIX autocrossover function, 15

N

Network topology, 9
 Bus topology, 9
 Star topology, 10

P

Possible attachments, 13

R

Reduced voltage, 34

S

SIMATIC NET glossary, 5

