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SIEMENS

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PROFIBUS bus connector

Equipment Manual

06/2022

A5E50543113-AB

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.

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Introduction

1

1.1 Preface

Purpose of the documentation

This equipment manual contains a compact description of the module-specific information on the following devices:

Device	**Article number**
PROFIBUS bus connector plug with/without PG socket up to 12 Mbaud	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0
PROFIBUS bus connector plug up to 1.5 MBaud	6ES7972-0BA30-0XA0
PROFIBUS bus connector plug with/without PG socket up to 12 Mbaud	6ES7972-0BA42-0XA0 6ES7972-0BB42-0XA0
PROFIBUS FastConnect bus connector with/without PG socket up to 12 Mbaud	6ES7972-0BA52-0XA0 6ES7972-0BB52-0XA0
PROFIBUS FastConnect bus connector with/without PG socket up to 12 Mbaud	6ES7972-0BA61-0XA0 6ES7972-0BB61-0XA0
PROFIBUS FastConnect bus connector with/without PG socket up to 12 Mbaud	6ES7972-0BA70-0XA0 6ES7972-0BB70-0XA0

The system-related functions are described in the respective system manuals. All system-spanning functions are described in the function manuals.

1.2 Siemens Industry Online Support

You can find current information on the following topics quickly and easily here:

- **Product support**

  All the information and extensive know-how on your product, technical specifications, FAQs, certificates, downloads, and manuals.

- **Application examples**

  Tools and examples to solve your automation tasks – as well as function blocks, performance information and videos.

- **Services**

  Information about Industry Services, Field Services, Technical Support, spare parts and training offers.

- **Forums**

  For answers and solutions concerning automation technology.

- **mySupport**

  Your personal working area in Industry Online Support for messages, support queries, and configurable documents.

This information is provided by the Siemens Industry Online Support in the Internet (http://www.siemens.com/automation/service&support).

1.3 Industry Mall

The Industry Mall is the catalog and order system of Siemens AG for automation and drive solutions on the basis of Totally Integrated Automation (TIA) and Totally Integrated Power (TIP).

You can find catalogs for all automation and drive products on the Internet (https://mall.industry.siemens.com).

Safety instructions

2

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).

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 customers' exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed visit (https://www.siemens.com/industrialsecurity).

Device description

3

3.1 6ES7972-0Bx12-0XA0

The following provides you with product information about the PROFIBUS bus connector with/without PG socket up to 12 MBaud 6ES7972-0Bx12-0XA0:

You can use the PROFIBUS bus connector to

- Connect stations with an electrical 9-pin D-sub interface according to IEC 61158-2 directly to the SIMATIC NET PROFIBUS lines.
- Electrical segments or individual stations can be connected to the Optical Link Module (OLM, OBT).
- Stations or programming devices are connected to the repeater.

More information

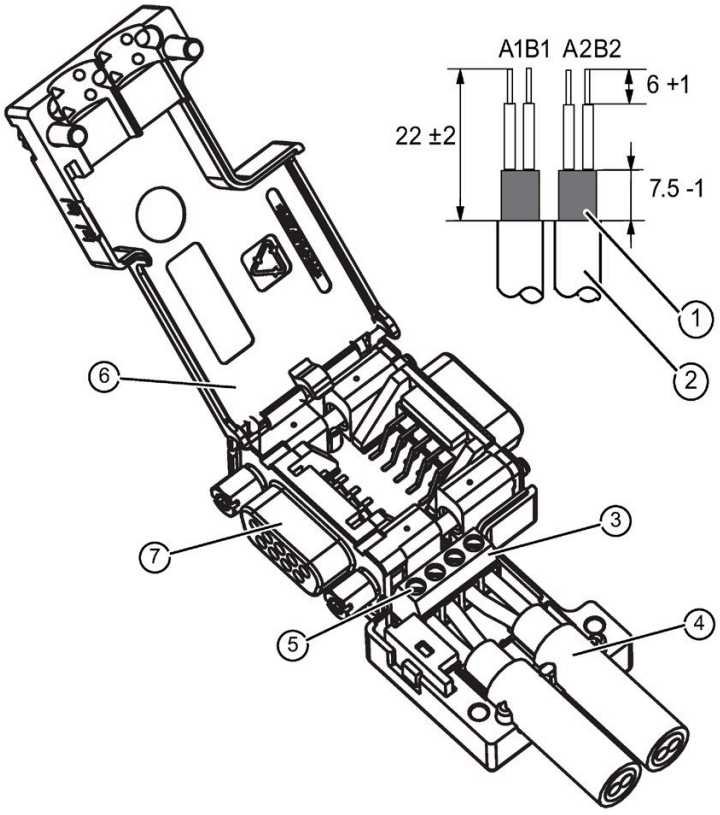
You can find more information about the PROFIBUS bus connector in the SIMATIC NET PROFIBUS manual. The manual can be obtained at the nearest offices of your Siemens representative or free of charge on the Internet at the following link (http://support.automation.siemens.com/WW/view/en/35222591).

Maintenance

The PROFIBUS bus connector requires no maintenance. In the event of a fault, contact your Siemens representative responsible for spare parts/repairs:

Services (https://support.industry.siemens.com/cs/ww/en/sc/2154)

Bus cable assembly



No.	Description
1	Cable shield
2	Bus cable (e.g. 6XV1 830-0EH10) - strip insulation, e.g. with stripping tool 6GK1905-6AA00
3	Screw terminal block on connector board for bus cable connection. - Insert green and red wire into screw terminal block (A1, B1 or A2, B2) (Recommendation: A = green, B = red)
4	Press cable between the two terminal blocks. Cable shield must be stripped on contact element.
5	Screw the green and red wires tightly into the screw terminal.
6	Close the enclosure cover and screw it tight.
7	PG socket (only for 6ES7972-0BB12-0XA0)

Note

If the switch is set to ON, the PROFIBUS to the other stations is disconnected at this point (e.g. for service purposes).

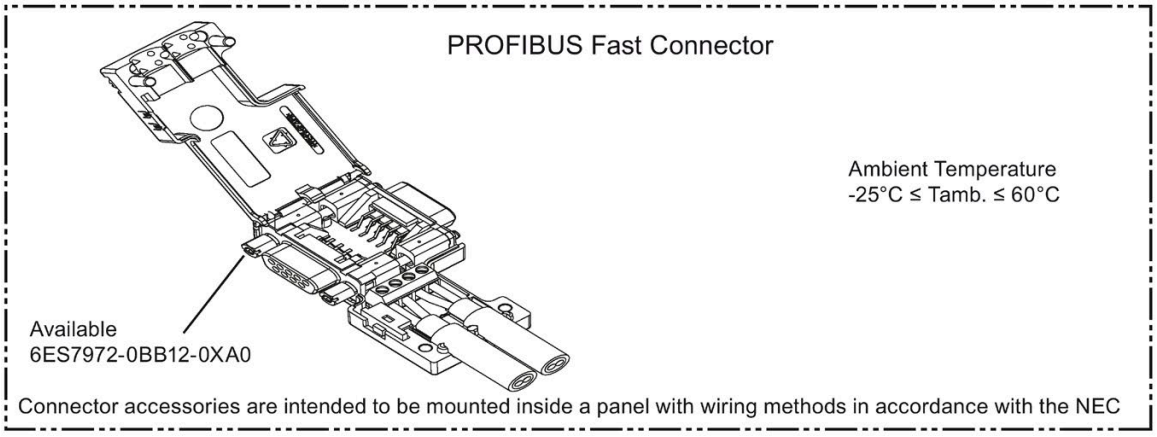
Bus connection for the first and last station on the PROFIBUS

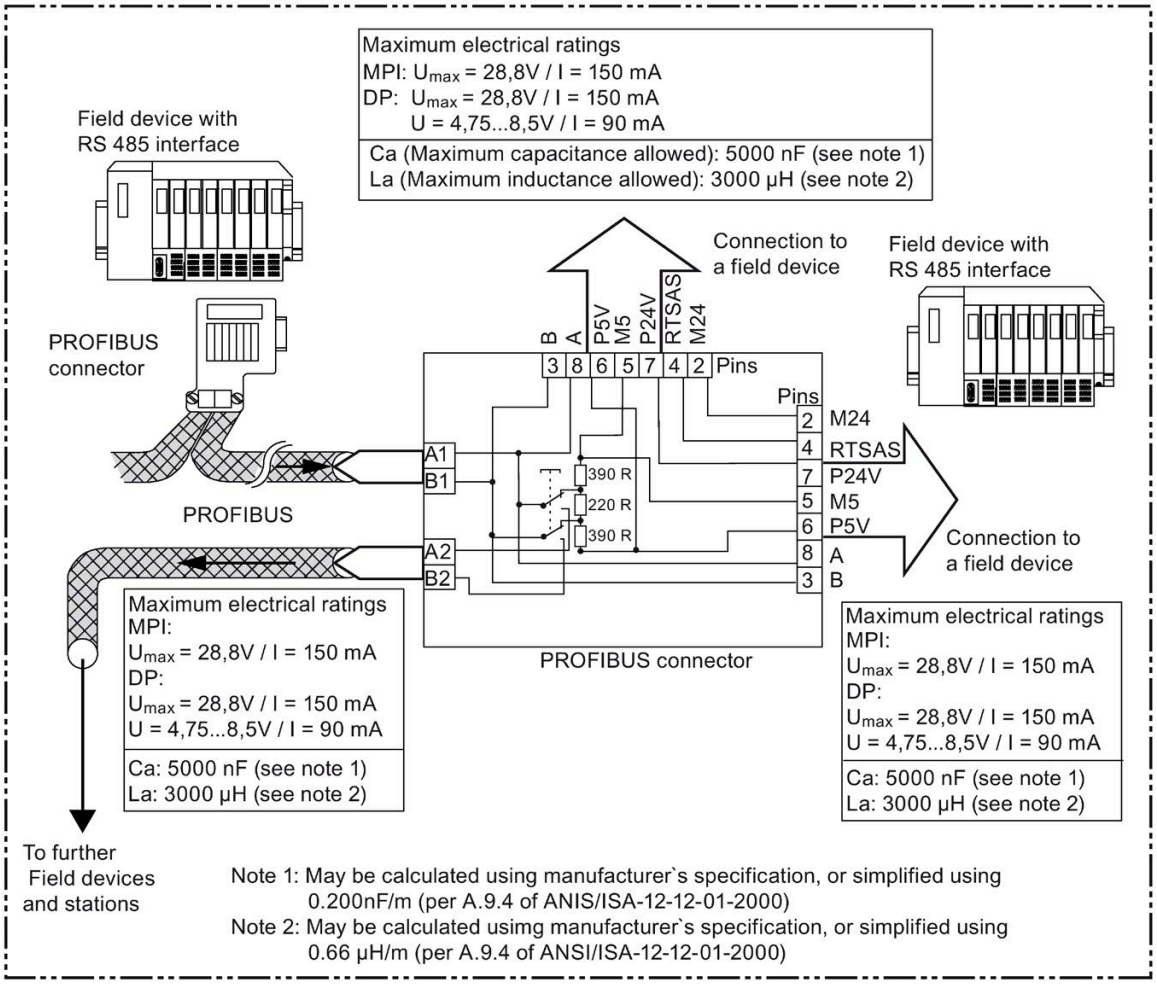
Cable must always be connected on the left (see marking A1, B1), switch position must be "ON" for the first and last station on the PROFIBUS. (terminating resistor switched on).

Bus connection for all other stations on the PROFIBUS

Cable feed must always be connected on the left (see marking A1, B1). Cable continuation must always be connected on the right (see label A2, B2). Switch position must be "OFF" for all other stations on the PROFIBUS. (terminating resistor switched off).

Connection


PROFIBUS Fast Connector
Ambient Temperature
-25°C ≤ Tamb. ≤ 60°C
Available
6ES7972-0BB12-0XA0
Connector accessories are intended to be mounted inside a panel with wiring methods in accordance with the NEC


Maximum electrical ratings
MPI: Umax = 28,8V / I = 150 mA
DP: Umax = 28,8V / I = 150 mA
U = 4,75...8,5V / I = 90 mA
Ca (Maximum capacitance allowed): 5000 nF (see note 1)
La (Maximum inductance allowed): 3000 µH (see note 2)
Field device with RS 485 interface
Connection to a field device
Field device with RS 485 interface
PROFIBUS connector
B A P5V M5 P24V RTSAS M24
3 8 6 5 7 4 2 Pins
Pins
2 M24
4 RTSAS
7 P24V
5 M5
6 P5V
8 A
3 B
A1
B1
390 R
220 R
390 R
A2
B2
PROFIBUS
Connection to a field device
PROFIBUS connector
Maximum electrical ratings
MPI:
Umax = 28,8V / I = 150 mA
DP:
Umax = 28,8V / I = 150 mA
U = 4,75...8,5V / I = 90 mA
Ca: 5000 nF (see note 1)
La: 3000 µH (see note 2)
Maximum electrical ratings
MPI:
Umax = 28,8V / I = 150 mA
DP:
Umax = 28,8V / I = 150 mA
U = 4,75...8,5V / I = 90 mA
Ca: 5000 nF (see note 1)
La: 3000 µH (see note 2)
To further Field devices and stations
Note 1: May be calculated using manufacturer`s specification, or simplified using 0.200nF/m (per A.9.4 of ANIS/ISA-12-12-01-2000)
Note 2: May be calculated usimg manufacturer`s specification, or simplified using 0.66 µH/m (per A.9.4 of ANSI/ISA-12-12-01-2000)

Approvals

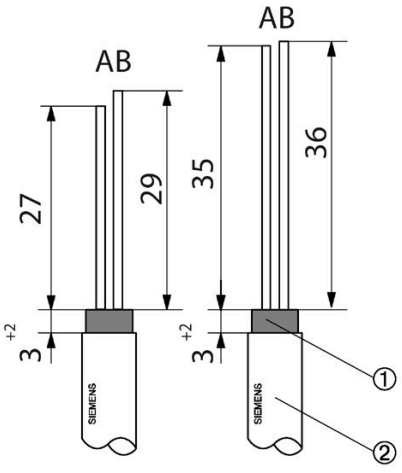
You can find information on the approvals under Standards, approvals and safety notes (Page 29).

Module-specific data

You can find information under Module-specific data (Page 37).

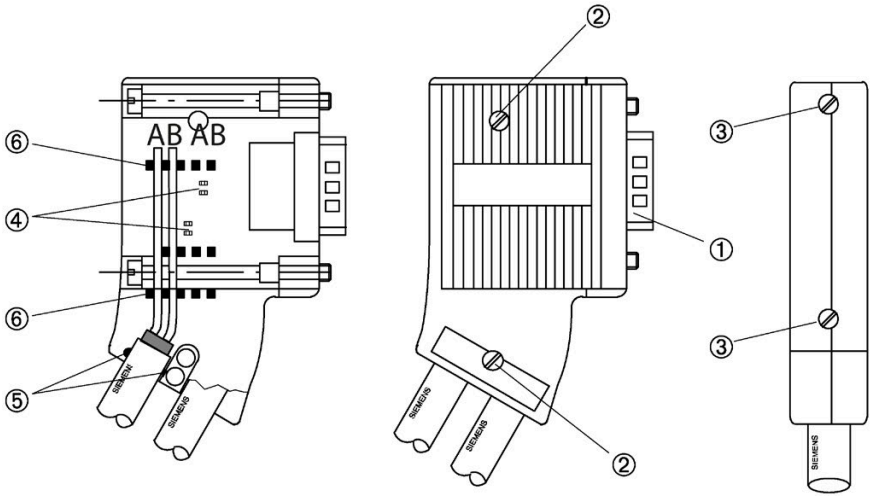
3.2 6ES7972-0BA30-0XA0

The following provides you with product information about the PROFIBUS bus connector 6ES7 972-0BA30-0XA0:



No.	Description
1	Cable shield
2	Bus cable, 6XV1 830-0AH10

Bus connection for the stations on the PROFIBUS where no terminating resistor is connected.



No.	Description
1	9-pin D-sub connector for connection at the station (pin 3 and 8 allocated)
2	Housing screws
3	Screws for fastening to the station
4	Insulation displacement terminals for bus cable connection
5	Strain relief
6	Guides

Mounting the bus cable

1. Strip the insulation from the bus cable as shown in Fig. 1.
2. Open the casing of the bus connector by undoing the screws ②
   and removing the cover.
3. Press the bus cable into the strain relief ⑤
   (cable shield must be bare on the metal guide).
4. Place the wires in the guides ⑥ over the insulation displacement terminals ④.
   Ensure that the same wires are always connected to the same connection A or B
   (always wire connection A with green wire and connection B
   with red wire).
5. Press the red and green wires lightly into the insulation displacement terminals with your thumb.
6. Screw the cover back on tightly.

Note

Connection of the bus lines

The bus lines are connected using an insulation displacement system (Fast Connect). The insulation displacement terminals are designed for 3 connection cycles. If you want to reconnect a line that has already been connected, you must first cut it off.

Approvals

You can find information on the approvals under Standards, approvals and safety notes (Page 29).

Module-specific data

You can find information under Module-specific data (Page 37).

3.3 6ES7972-0Bx42-0XA0

The following provides you with product information about the PROFIBUS bus connector with/without PG socket up to 12 MBaud 6ES7972-0Bx42-0XA0:

You can use the PROFIBUS bus connector to

- Connect stations with an electrical 9-pin D-sub interface according to IEC 61158-2 directly to the SIMATIC NET PROFIBUS lines.
- Electrical segments or individual stations can be connected to the Optical Link Module (OLM, OBT).
- Stations or programming devices are connected to the repeater.

More information

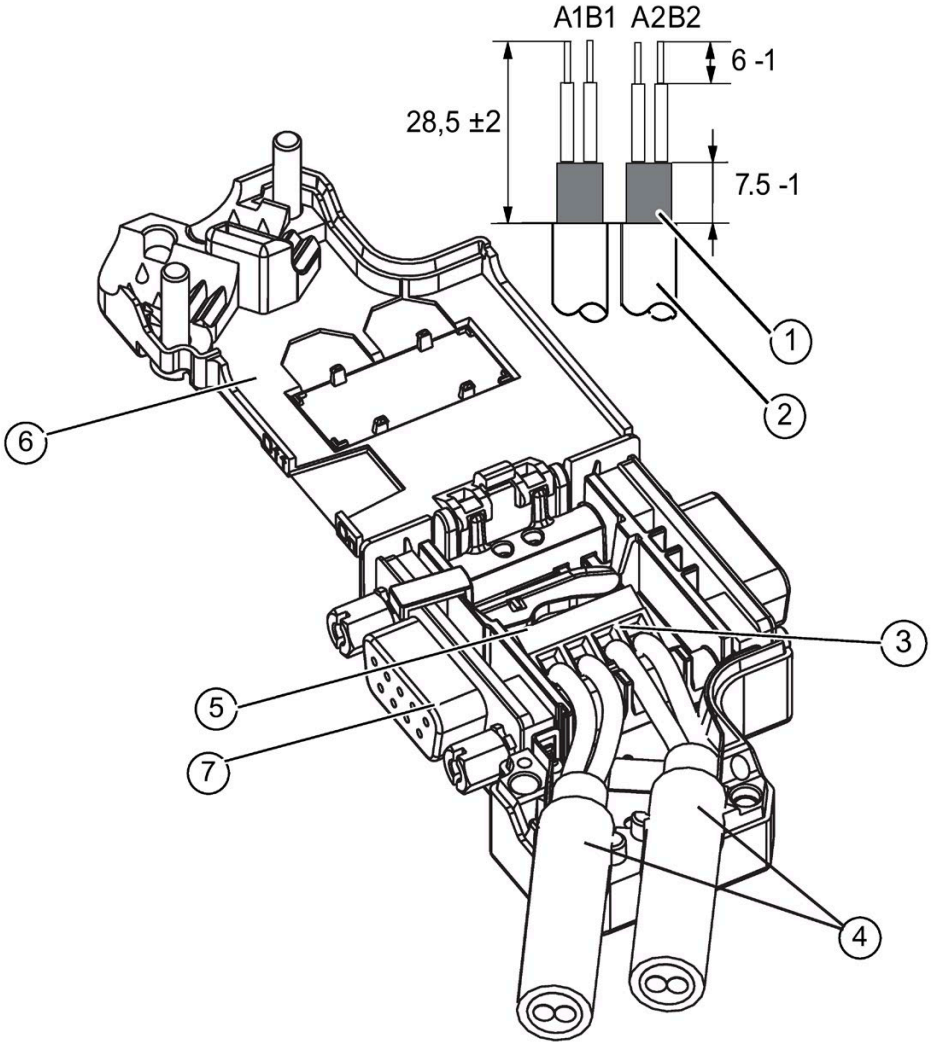
You can find more information about the PROFIBUS bus connector in the SIMATIC NET PROFIBUS manual. The manual can be obtained at the nearest offices of your Siemens representative or free of charge on the Internet at the following link (http://support.automation.siemens.com/WW/view/en/35222591).

Maintenance

The PROFIBUS bus connector requires no maintenance. In the event of a fault, contact your Siemens representative responsible for spare parts/repairs:

Services (https://support.industry.siemens.com/cs/ww/en/sc/2154)

Bus cable assembly



No.	Description
1	Cable shield
2	Bus cable (e.g. 6XV1 830-0EH10) - strip insulation, e.g. with stripping tool 6GK1905-6AA00
3	Screw terminal block on connector board for bus cable connection. - Insert green and red wire into screw terminal block (A1, B1 or A2, B2; (recommendation: A = green, B = red)
4	Press cable between the two terminal blocks. Cable shield must be stripped on contact element.
5	Screw the green and red wires tightly into the screw terminal.
6	Close the enclosure cover and screw it tight.
7	PG socket (only for 6ES7972-0BB42-0XA0)

Note

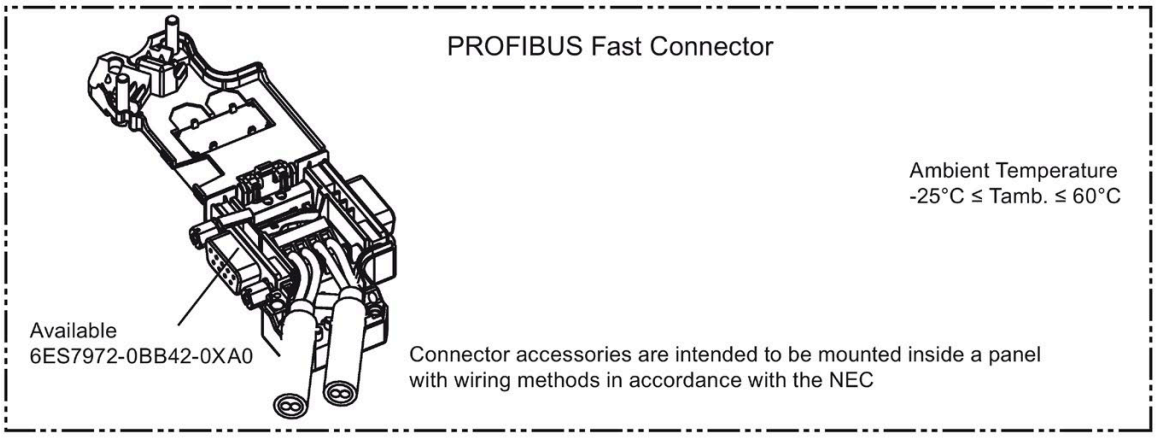
If the switch is set to ON, the PROFIBUS to the other stations is disconnected at this point (e.g. for service purposes).

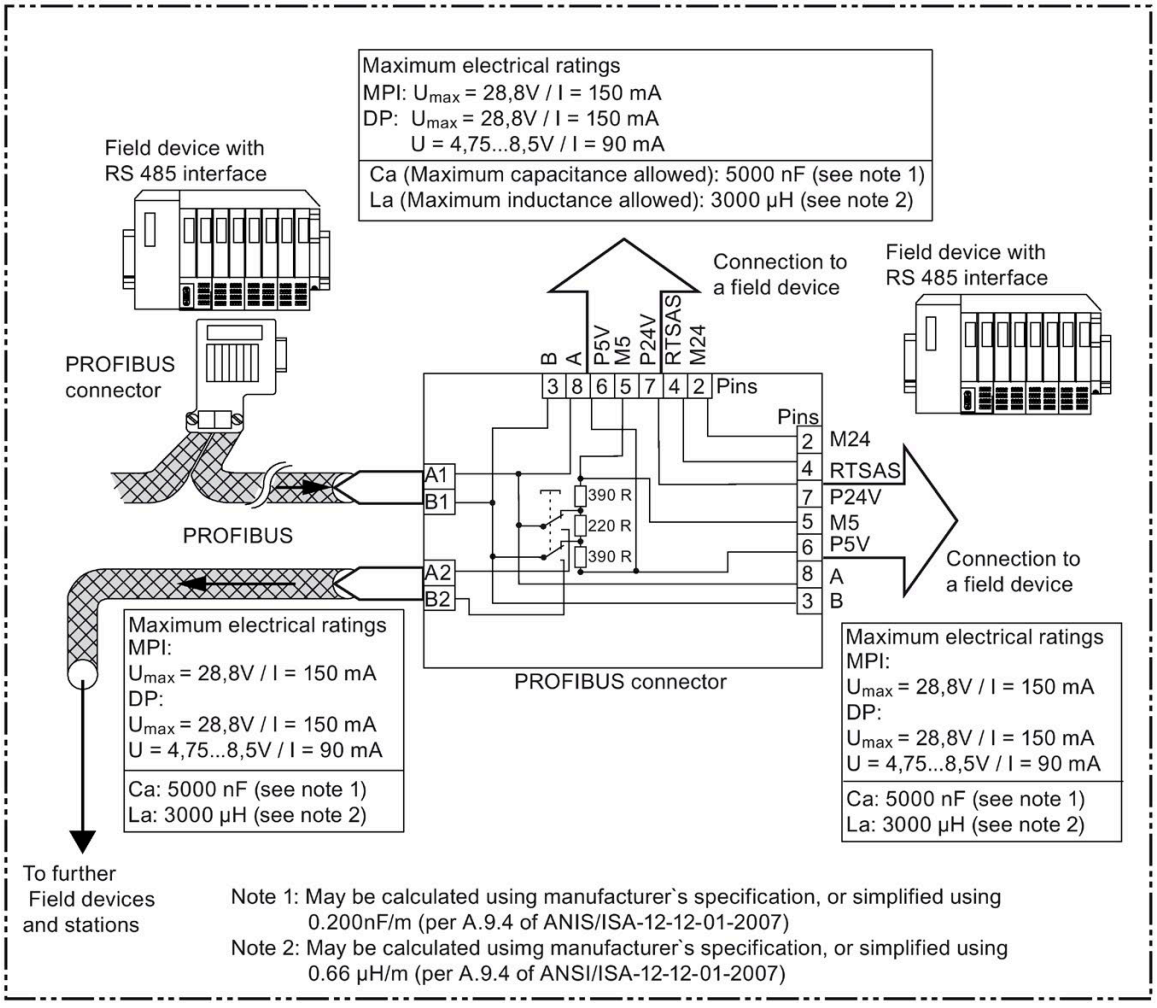
Bus connection for the first and last station on the PROFIBUS

Cable must always be connected on the left (see marking A1, B1), switch position must be "ON" for the first and last station on the PROFIBUS. (terminating resistor switched on).

Bus connection for all other stations on the PROFIBUS

Cable feed must always be connected on the left (see marking A1, B1). Cable continuation must always be connected on the right (see label A2, B2). Switch position must be "OFF" for all other stations on the PROFIBUS. (terminating resistor switched off).





Approvals

You can find information on the approvals under Standards, approvals and safety notes (Page 29).

Module-specific data

You can find information under Module-specific data (Page 37).

3.4 6ES7972-0Bx52-0XA0

The following provides you with product information about the PROFIBUS FastConnect bus connector with/without PG socket up to 12 MBaud 6ES7972-0Bx52-0XA0:

You can use the PROFIBUS bus connector to

- Connect stations with an electrical 9-pin D-sub interface according to IEC 61158-2 directly to the SIMATIC NET PROFIBUS lines.
- Electrical segments or individual stations can be connected to the Optical Link Module (OLM, OBT).
- Stations or programming devices are connected to the repeater.

More information

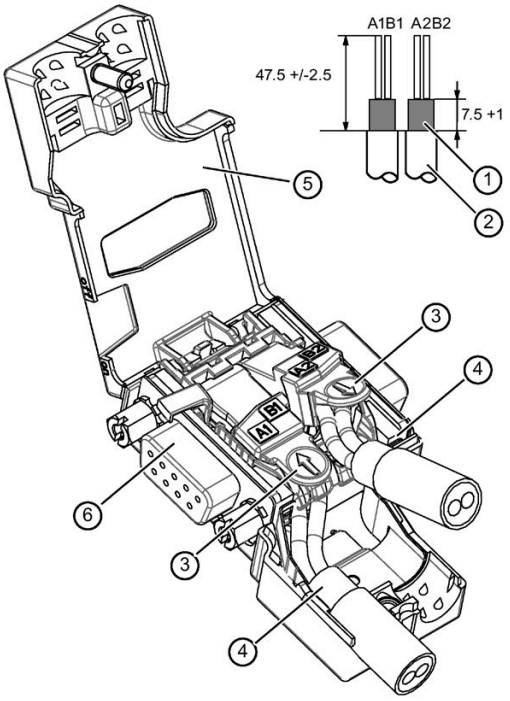
You can find more information about the PROFIBUS bus connector in the SIMATIC NET PROFIBUS manual. The manual can be obtained at the nearest offices of your Siemens representative or free of charge on the Internet at the following link (http://support.automation.siemens.com/WW/view/en/35222591).

Maintenance

The PROFIBUS bus connector requires no maintenance. In the event of a fault, contact your Siemens representative responsible for spare parts/repairs:

Services (https://support.industry.siemens.com/cs/ww/en/sc/2154)

Bus cable assembly



No.	Description
1	Cable shield
2	Bus cable (e.g. 6XV1 830-0EH10) - strip insulation, e.g. with stripping tool 6GK1905-6AA00
3	Contact cover for insulation displacement terminal - Insert the green and red wires into the open contact cover as far as they will go. - Close the contact cover completely (press it down as far as it will go).
4	Press cable into recess (cable shield must be bare on contact element)
5	Close the enclosure cover and screw it tight.
6	PG socket (only for 6ES7972-0BB52-0XA0)

Note

Connection of the bus lines

The bus lines are connected using an insulation displacement system (Fast Connect). The insulation displacement terminals are designed to withstand 10 terminating cycles. If you want to reconnect a line that has already been connected, you must first cut it off.

Note

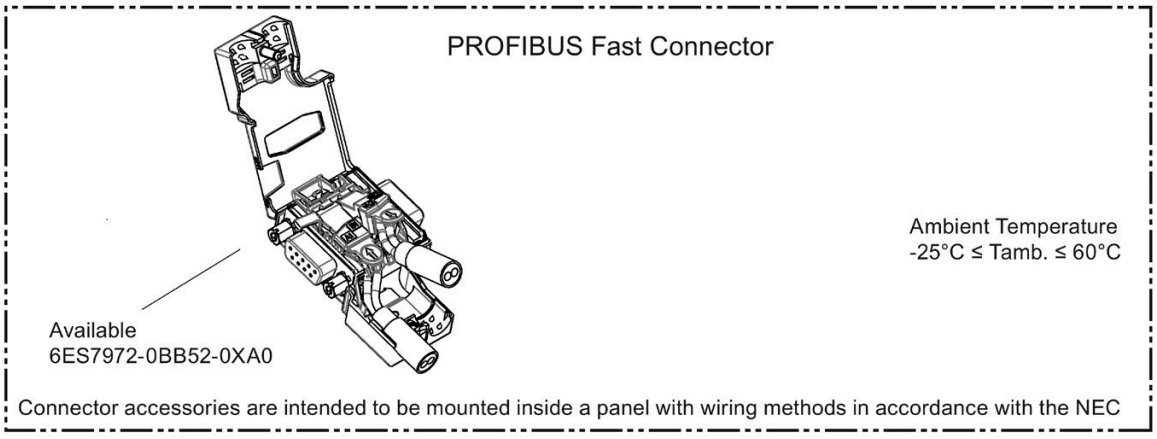
If the switch is set to ON, the PROFIBUS to the other stations is disconnected at this point (e.g. for service purposes).

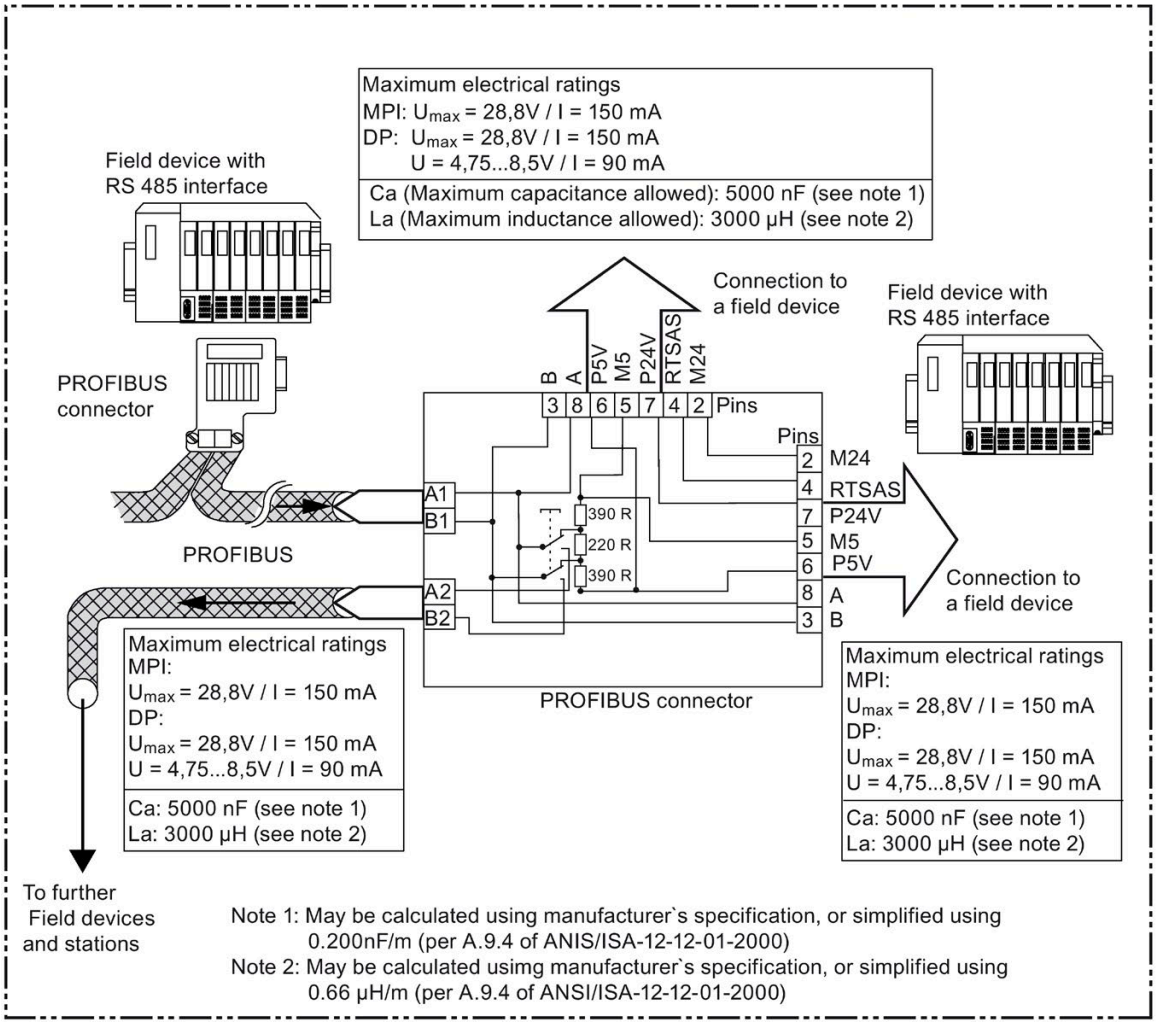
Bus connection for the first and last station on the PROFIBUS

Cable must always be connected on the left (see marking A1, B1), switch position must be "ON" for the first and last station on the PROFIBUS. (terminating resistor switched on).

Bus connection for all other stations on the PROFIBUS

Cable feed must always be connected on the left (see marking A1, B1). Cable continuation must always be connected on the right (see label A2, B2). Switch position must be "OFF" for all other stations on the PROFIBUS. (terminating resistor switched off).





Approvals

Standards, approvals and safety notes (Page 29)

Module specific data

You can find information under Module-specific data (Page 37).

3.5 6ES7972-0Bx61-0XA0

The following provides you with product information about the PROFIBUS FastConnect bus connector with/without PG socket up to 12 MBaud 6ES7972-0Bx61-0XA0:

You can use the PROFIBUS bus connector to

- Connect stations with an electrical 9-pin D-sub interface according to IEC 61158-2 directly to the SIMATIC NET PROFIBUS lines.
- Electrical segments or individual stations can be connected to the Optical Link Module (OLM, OBT).
- Stations or programming devices are connected to the repeater.

More information

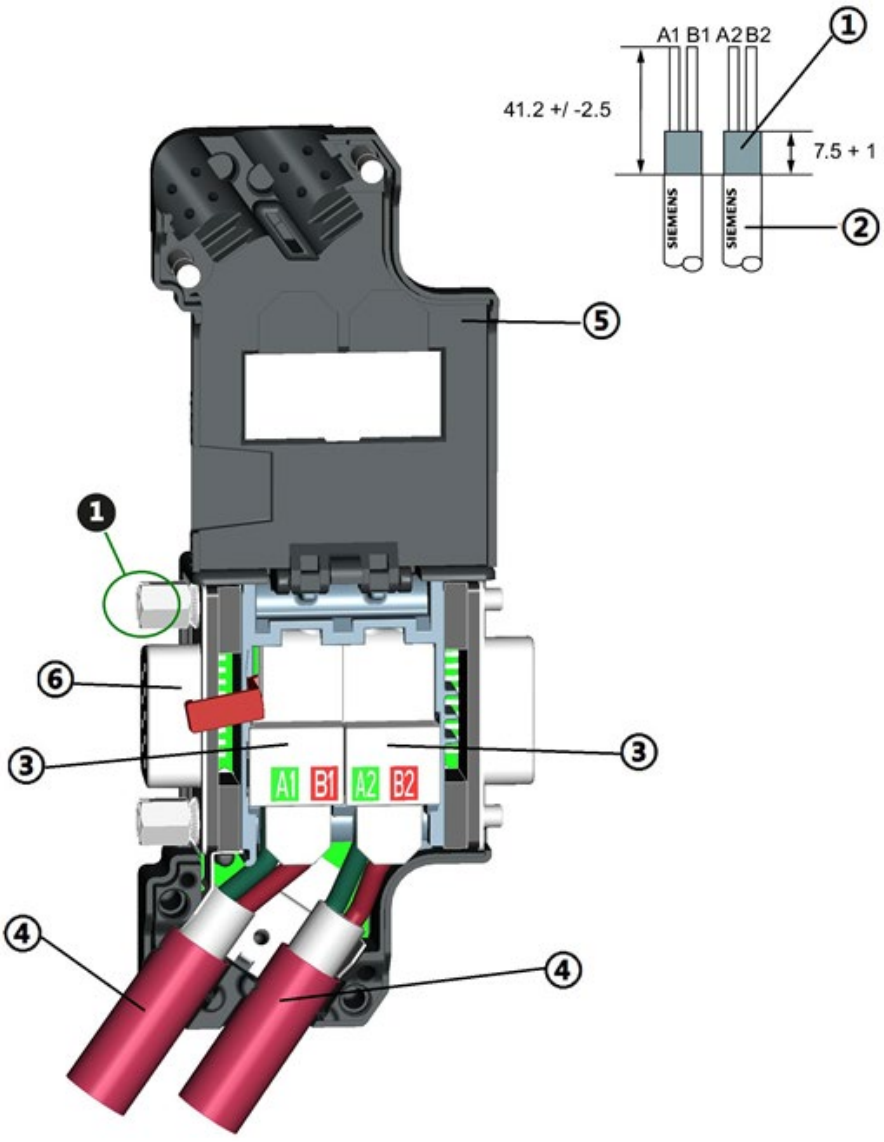
You can find more information about the PROFIBUS bus connector in the SIMATIC NET PROFIBUS manual. The manual can be obtained at the nearest offices of your Siemens representative or free of charge on the Internet at the following link (http://support.automation.siemens.com/WW/view/en/35222591).

Maintenance

The PROFIBUS bus connector requires no maintenance. In the event of a fault, contact your Siemens representative responsible for spare parts/repairs:

Services (https://support.industry.siemens.com/cs/ww/en/sc/2154)

Bus cable assembly



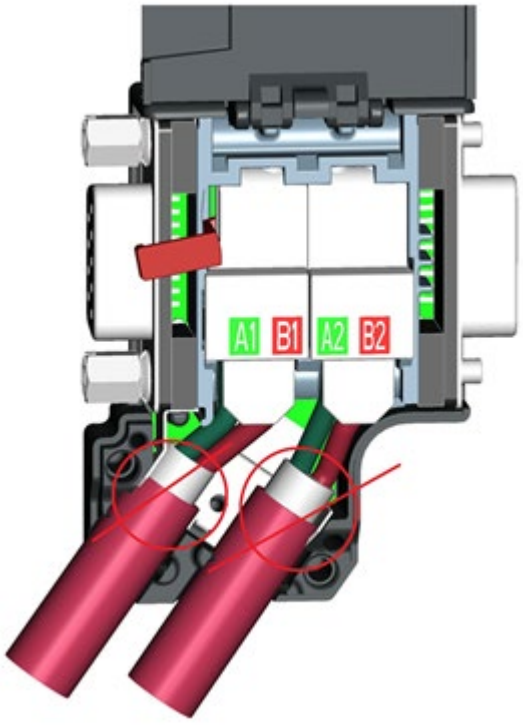
No.	Description
1	Cable shield
2	Bus cable (e.g. 6XV1 830-0EH10) - strip insulation, e.g. with stripping tool 6GK1905-6AA00
3	Contact cover for insulation displacement terminal - Insert the green and red wires into the open contact cover as far as they will go. - Close the contact cover completely (press it down as far as it will go).
4	Press cable into recess (cable sheath must not rest on the shield plate)
5	Close the enclosure cover and screw it tight.
6	PG socket (only for 6ES7972-0BB61-0XA0)

Note

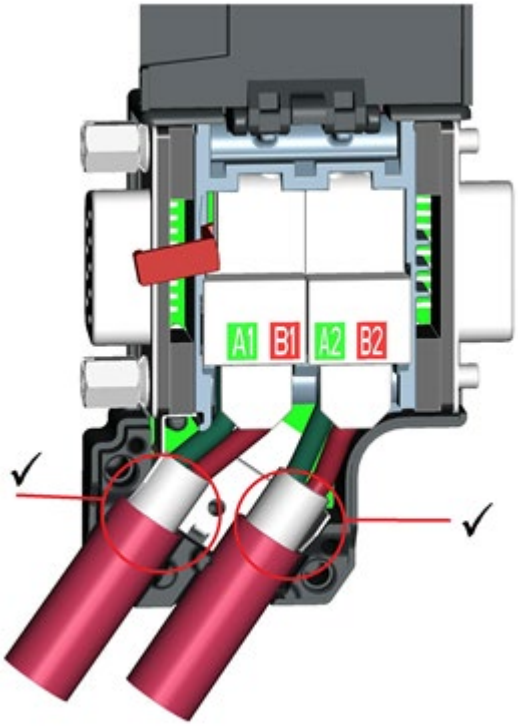
The tightening torque of the locking screws (marked in the figure) must not exceed 0.3Nm.

Note

Do not pull the mounted bus cable to open the contact cover!



Press cable into recess (wrong)



Press cable into recess (correct)

Note

Connection of the bus lines

The bus lines are connected using an insulation displacement system (Fast Connect). The insulation displacement terminals are designed to withstand 10 terminating cycles. If you want to reconnect a line that has already been connected, you must first cut it off.

Note

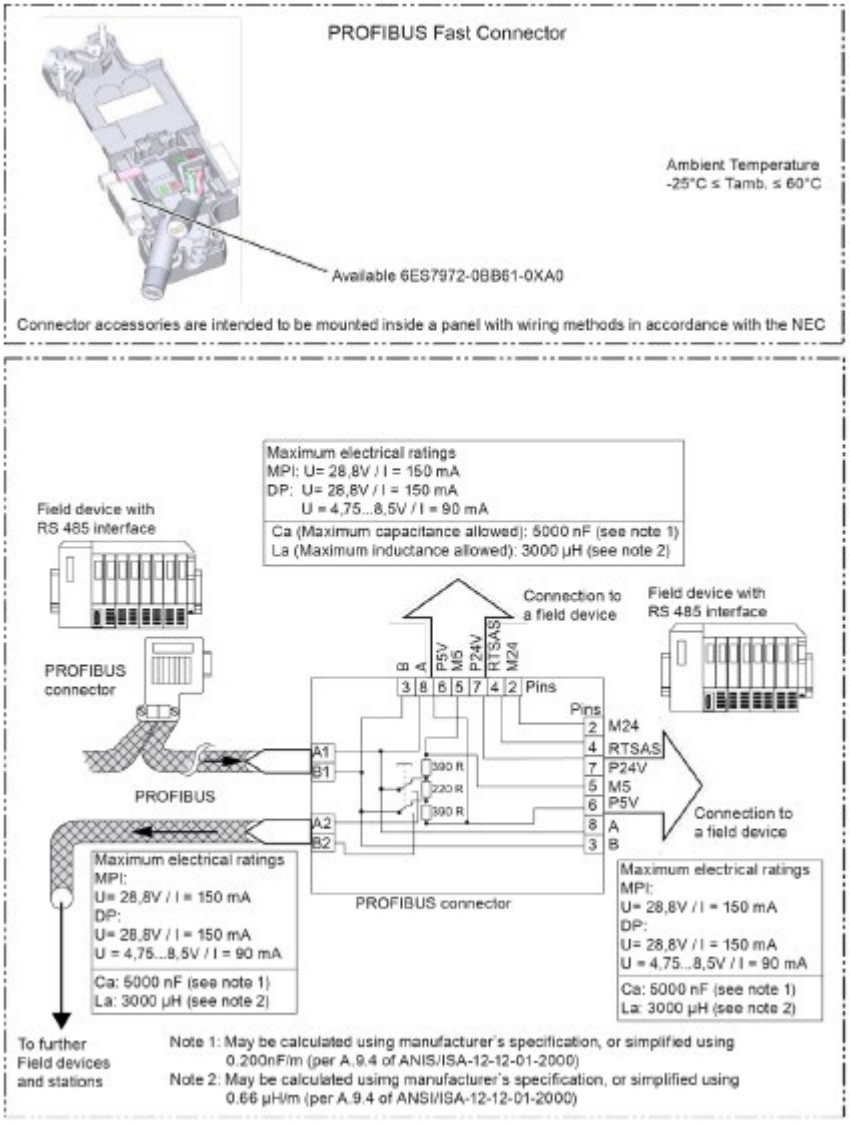
If the switch is set to ON, the PROFIBUS to the other stations is disconnected at this point (e.g. for service purposes).

Bus connection for the first and last station on the PROFIBUS

Cable must always be connected on the left (see marking A1, B1), switch position must be "ON" for the first and last station on the PROFIBUS. (terminating resistor switched on).

Bus connection for all other stations on the PROFIBUS

Cable feed must always be connected on the left (see marking A1, B1). Cable continuation must always be connected on the right (see label A2, B2). Switch position must be "OFF" for all other stations on the PROFIBUS. (terminating resistor switched off).



Approvals

You can find information on the approvals under Standards, approvals and safety notes (Page 29)

Module-specific data

You can find information under Module-specific data (Page 37).

3.6 6ES7972-0Bx70-0XA0

The following provides you with product information about the PROFIBUS FastConnect bus connector with/without PG socket up to 12 MBaud 6ES7972-0Bx70-0XA0:

You can use the PROFIBUS bus connector to

- Connect stations with an electrical 9-pin D-sub interface according to IEC 61158-2 directly to the SIMATIC NET PROFIBUS lines.
- Electrical segments or individual stations can be connected to the Optical Link Module (OLM, OBT).
- Stations or programming devices are connected to the repeater.

More information

You can find more information about the PROFIBUS bus connector in the SIMATIC NET PROFIBUS manual. The manual can be obtained at the nearest offices of your Siemens representative or free of charge on the Internet at the following link (http://support.automation.siemens.com/WW/view/en/35222591).

Maintenance

The PROFIBUS bus connector requires no maintenance. In the event of a fault, contact your Siemens representative responsible for spare parts/repairs:

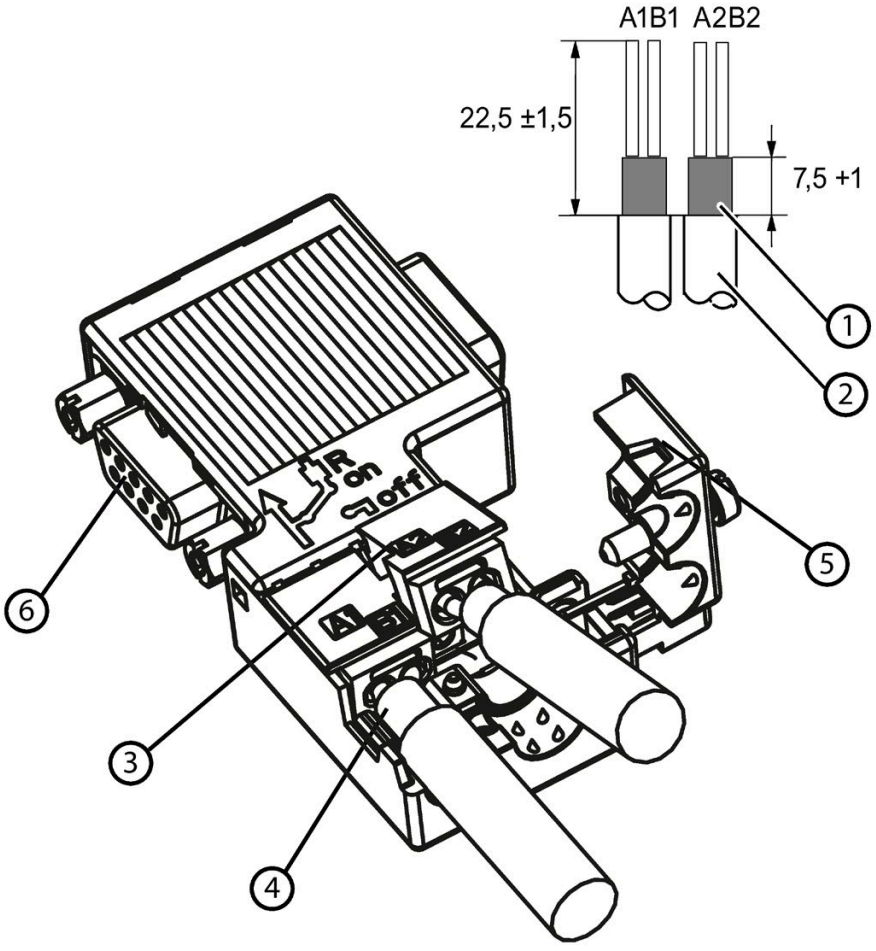
Services (https://support.industry.siemens.com/cs/ww/en/sc/2154)

Bus cable assembly

Note

Connection of the bus lines

The bus lines are connected using an insulation displacement system (Fast Connect). The insulation displacement terminals are designed to withstand 10 terminating cycles. If you want to reconnect a line that has already been connected, you must first cut it off.



No.	Description
1	Cable shield
2	Bus cable (e.g. 6XV1 830-0EH10) - strip insulation, e.g. with stripping tool 6GK1905-6AA00
3	Contact cover for insulation displacement terminal - Insert the green and red wires into the open contact cover. - Close contact cover (wires are pressed into insulation displacement terminal)
4	Cable shield must be bare on the metal guide
5	Close strain relief and screw down
6	PG socket (only for 6ES7972-0BB70-0XA0)

Note

Do not pull the mounted bus cable to open the contact cover!

Bus connection for the first and last station on the PROFIBUS

Cable must always be connected on the left (see marking A1, B1), switch position must be "ON" for the first and last station on the PROFIBUS. (terminating resistor switched on).

Note

If the switch is set to ON, the PROFIBUS to the other stations is disconnected at this point (e.g. for service purposes).

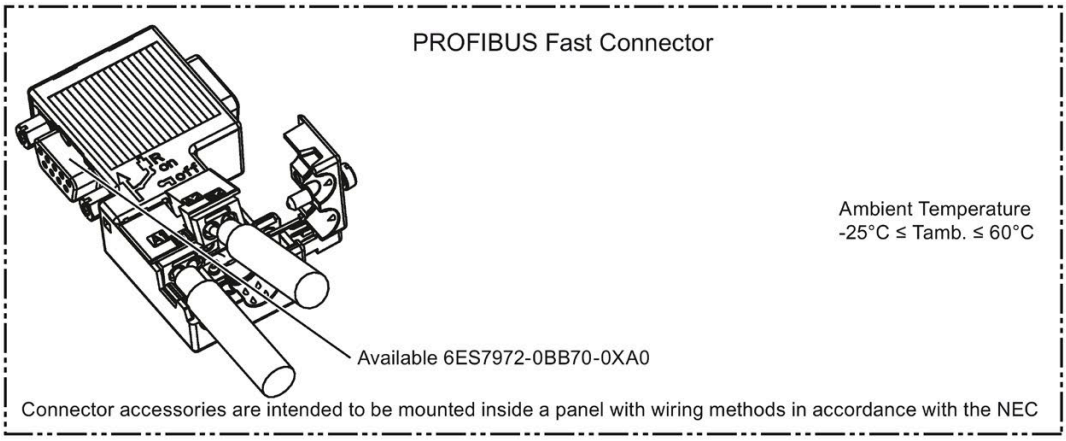
Bus connection for all other stations on the PROFIBUS

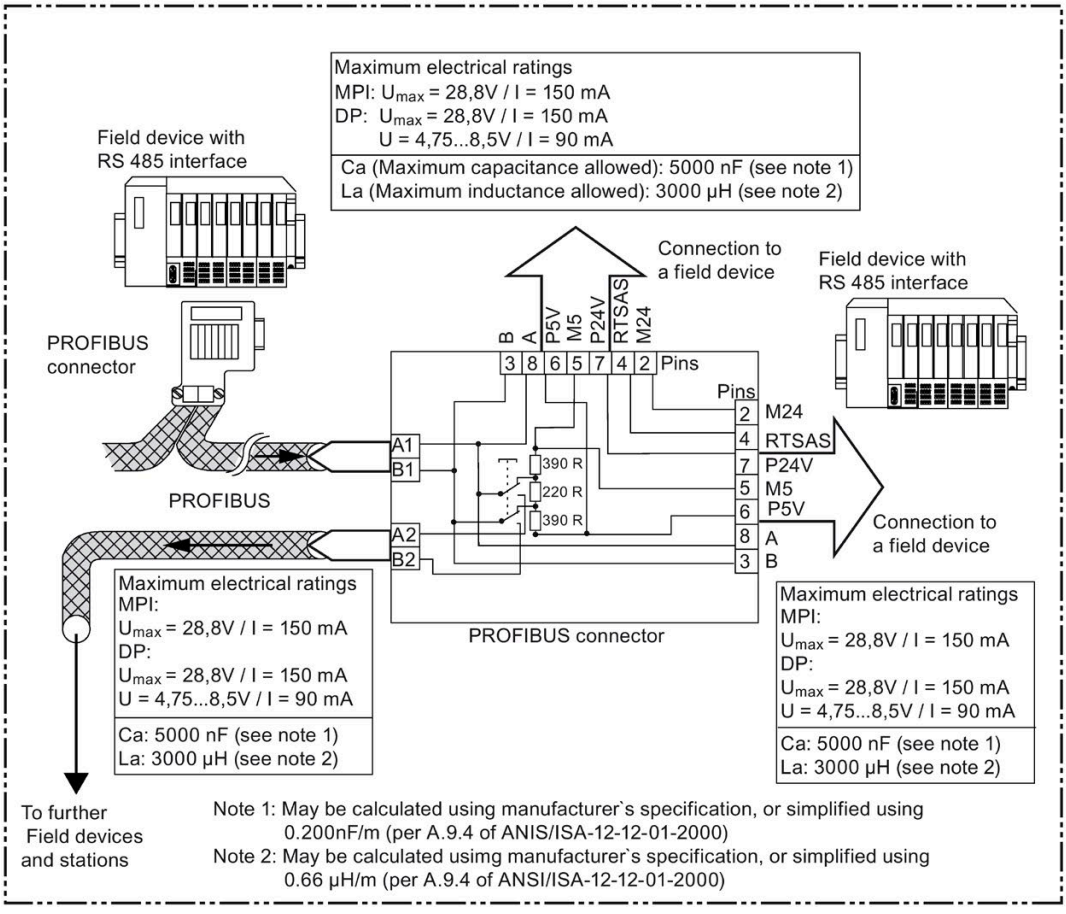
Cable feed must always be connected on the left (see marking A1, B1). Cable continuation must always be connected on the right (see label A2, B2). Switch position must be "OFF" for all other stations on the PROFIBUS. (terminating resistor switched off).

⚠ WARNING

Danger to life from live parts

- Explosion hazard - Do not disconnect circuit while power is present unless area is known to be non-hazardous.
- Explosion hazard - Replacement of components may adversely affect approval for Equipment Group I, Category 2 or Zone 2.
- This device is approved for operation in Equipment Group I, Category 2, Groups A, B, C, D; Equipment Group I, Zone 2; Equipment Group IIC or non-hazardous locations.





Approvals

You can find information on the approvals under Standards, approvals and safety notes (Page 29).

Module-specific data

You can find information under Module-specific data (Page 37).

Technical specifications

4

4.1 Introduction

Introduction

This chapter lists the technical specifications of the system:

- The standards and test values
- The test criteria according to which the devices were tested
- Module-specific data

4.2 Standards, approvals and safety notes

Currently valid markings and approvals

Note

Information on the components

The currently valid markings and approvals are printed on the components of the respective devices.

Safety information

⚠ WARNING

Personal injury and damage to property may occur

Personal injury and property damage can occur in potentially explosive atmospheres if plug-in connections are disconnected during operation.

Always switch off the power before disconnecting plug-in connections in hazardous areas.

⚠ WARNING

Explosion hazard

If you replace components, compliance with Class I, Div. 2 or zone 2 may become invalid.

⚠ WARNING

Area of application

This device is only suitable for use in Class I, Div. 2, Group A, B, C, D; Class I, zone 2, Group IIC, or in non-hazardous areas.

Safety of the plant or the system

NOTICE

Safety is the responsibility of the assembler

The safety of any plant or system incorporating the equipment is the responsibility of the assembler of the plant or system.

Five safety rules for work in or on electrical installations

A set of rules, which are summarized in DIN VDE 0105 as the "five safety rules", are defined for work in or on electrical installations as a preventative measure against electrical accidents:

1. Isolate
2. Secure against switching on again
3. Verify that the equipment is not live
4. Ground and short-circuit
5. Erect barriers around or cover adjacent live parts

These five safety rules must be applied in the above order prior to starting work on an electrical system. After completing the work, proceed in the reverse order.

It is assumed that every electrician is familiar with these rules.

CE marking



The devices meet the requirements and protection targets of the following directives and comply with the harmonized European standards (EN) published for programmable logic controllers in the Official Journals of the European Union:

- 2014/30/EU "Electromagnetic Compatibility" (EMC Directive)
- 2014/34/EU "Equipment and protective systems intended for use in potentially explosive atmospheres" (Explosion Protection Directive)
- 2011/65/EU "Restriction of the use of certain hazardous substances in electrical and electronic equipment" (RoHS Directive)

The EC Declarations of Conformity are available for the responsible authorities and are kept at the following address:

Siemens AG
Digital Industries

Factory Automation
DI FA TI COS TT
Postfach 1963
D-92209 Amberg

They are also available for download on the Siemens Industry Online Support (http://www.siemens.com/automation/service&support) website, keyword "Declaration of Conformity".

UKCA mark



The devices comply with the designated British standards (BS) for programmable logic controllers published in the official consolidated list of the UK Government. The devices meet the requirements and protection targets of the following regulations and related amendments:

- Electrical Equipment (Safety) Regulations 2016 (Low-Voltage)
- Electromagnetic Compatibility Regulations 2016 (EMC)
- Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016 (Explosion Protection)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS)
- Supply of Machinery (Safety) Regulations 2008 for S7-1500/ET 200MP safety components (fail-safe modules)

UK declarations of conformity for the respective authorities are available from:

Siemens AG

Digital Industries

Factory Automation

DI FA TI COS TT

P.O Box 1963

D-92209 Amberg, Germany

The UK declarations of conformity are also available for download from the Siemens Industry Online Support website, under the keyword "Declaration of Conformity".

cULus approval



Underwriters Laboratories Inc., complying with

- UL 508 (Industrial Control Equipment) OR UL 61010-1 and UL 61010-2-201
- CAN/CSA C22.2 No. 142 (Process Control Equipment) OR CAN/CSA C22.2 No. 61010-1 and CAN/CSA C22.2 No. 61010-2-201

OR

cULus HAZ. LOC. approval



Underwriters Laboratories Inc., complying with

- UL 508 (Industrial Control Equipment) OR UL 61010-1 and UL 61010-2-201
- CAN/CSA C22.2 No. 142 (Process Control Equipment) OR CAN/CSA C22.2 No. 61010-1 and CAN/CSA C22.2 No. 61010-2-201
- ANSI/ISA 12.12.01
- CAN/CSA C22.2 No. 213 (Hazardous Location)

APPROVED for use in
Class I, Division 2, Group A, B, C, D T6;
Class I, Zone 2, Group IIC T6

Installation Instructions for cULus haz.loc.

- WARNING – Explosion Hazard – Do not disconnect while circuit is live unless area is known to be non-hazardous.
- WARNING - Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2 or Zone 2.
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, Group IIC; or non-hazardous locations.

WARNING: EXPOSURE TO SOME CHEMICALS MAY DEGRADE THE SEALING PROPERTIES OF MATERIALS USED IN THE RELAYS.

OR

FM approval



Factory Mutual Research (FM) according to

- Approval Standard Class Number 3611, 3600, 3810
- ANSI/UL 121201
- ANSI/UL 61010-1

APPROVED for use in Class I, Division 2, Group A, B, C, D T6;
Class I, Zone 2, Group IIC T6

Installation Instructions for FM

- WARNING – Explosion Hazard – Do not disconnect while circuit is live unless area is known to be non-hazardous.
- WARNING - Explosion Hazard - Substitution of components may impair suitability for Class I, Division 2 or Zone 2.
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, Group IIC; or non-hazardous locations.

WARNING: EXPOSURE TO SOME CHEMICALS MAY DEGRADE THE SEALING PROPERTIES OF MATERIALS USED IN THE RELAYS.

ATEX approval



According to EN 60079-15 (Electrical apparatus for potentially explosive atmospheres - Part 15: Type of protection "n") and EN 60079-0 (Electrical apparatus for potentially explosive gas atmospheres - Part 0: General Requirements).

II 3 G Ex nA IIC T6 Gc
DEKRA 14ATEX0049 X

OR

According to EN 60079-7 (Electrical apparatus for potentially explosive atmospheres - Part 7: Increased safety "e") and EN IEC 60079-0 (Electrical apparatus for potentially explosive gas atmospheres - Part 0: General Requirements).

II 3 G Ex ec IIC T6 Gc
DEKRA 20ATEX0104 X

Special conditions in hazardous areas:

1. The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
2. The equipment shall be installed in a suitable enclosure providing a degree of protection not less than IP54 in accordance with EN 60079-15 **or** EN 60079-7. The ambient conditions must be taken into consideration for use.

UKEX approval



According to EN 60079-7 (Electrical apparatus for potentially explosive atmospheres - Part 7:

Increased safety "e") and EN IEC 60079-0 (Electrical apparatus for potentially explosive gas atmospheres - Part 0: General requirements).

II 3 G Ex ec IIC T4 Gc
DEKRA 21UKEX0013 X

Special conditions in hazardous area:

1. The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
2. The equipment shall be installed in a suitable enclosure providing a degree of protection not less than IP54 in accordance with EN 60079-7. The ambient conditions must be taken into consideration for use.

IECEx approval



According to IEC 60079-15 (Explosive atmospheres - Part 15: Equipment protection by type of protection "n") and IEC 60079-0 (Explosive atmospheres - Part 0: Equipment - General requirements).

II 3 G Ex nA IIC T6 Gc
IECEx DEK 14.0043 X

OR

According to IEC 60079-7 (Explosive atmospheres - Part 7: Equipment protection by increase safety "e") and IEC 60079-0 (Explosive atmospheres - Part 0: Equipment - General requirements).

II 3 G Ex ec IIC T6 Gc
IECEx DEK 20.0060 X

Special conditions in hazardous areas:

1. The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.
2. The device must be installed in a suitable housing that ensures at least IP54 degree of protection according to IEC 60079-15 **or** IEC 60079-7. The ambient conditions must be taken into consideration for use.

CCCEx approval

According to GB/T 3836.3 (Explosive atmospheres - Part 83: Equipment protection by type of protection "e"), GB/T 3836.1 (Explosive atmospheres - Part 1: Equipment - General requirements).

Ex ec IIC T4 Gc

Special conditions in hazardous areas:

- The equipment shall only be used in an area of not more than pollution degree 2, as defined in GB/T 16935.1.
- The equipment shall be installed in a suitable enclosure providing a degree of protection not less than IP54 in accordance with GB/T 3836.1. The ambient conditions must be taken into consideration for use.
- Provisions shall be made to prevent the nominal voltage from being exceeded by transient disturbance voltages of more than 119 V.

RCM Declaration of conformity for Australia/New Zealand

The devices comply with the requirements of the standard EN 61000-6-4.

Marking for the Eurasian Customs Union

EAC (Eurasian Conformity)

Customs Union of Russia, Belarus and Kazakhstan

Declaration of conformity with the technical requirements of the Customs Union (TR CU).

IEC 61131-2

The devices meet the requirements and criteria of the standard IEC 61131-2 (Programmable Logic Controllers, Part 2: Equipment requirements and tests).

IEC 61010-2-201

The devices meet the requirements and criteria of the IEC 61010-2-201 standard.

(Safety requirements for electrical equipment for measurement, control, and laboratory use Part 2-201: Particular requirements for control equipment).

PROFIBUS standard

The devices are based on standard IEC 61158 Type 3.

Use in industrial environments

The devices are designed for industrial use. It meets the following standards for this type of use:

- Requirements on interference emission EN 61000-6-4: 2007 + A1: 2011
- Requirements on immunity EN 61000-6-2: 2005

Use in mixed areas

You can use the devices in a mixed area under certain conditions. A mixed area is used for residential purposes and for commercial operations that do not significantly impact the residential purpose.

If you use the devices in a mixed area, you must ensure the limits of generic standard EN 61000-6-3 with regard to the emission of radio interference. Suitable measures for observing these limits for use in a mixed area are, for example:

- Installation of the devices in grounded control cabinets
- Use of filters in the supply lines

An additional individual acceptance test is also required.

Use in residential areas

Note

The devices are not intended for use in residential areas.

If you use the devices in residential areas, radio or television reception may be affected.

Reference

The certificates for the markings and approvals can be found on the Internet under Service&Support (http://www.siemens.com/automation/service&support).

4.3 Module-specific data

PROFIBUS bus connector plug with/without PG socket up to 12 Mbaud

- 6ES7972-0BA12-0XA0
- 6ES7972-0BB12-0XA0

Article number	6ES7972-0BA12-0XA0	6ES7972-0BB12-0XA0
General information		
Product description	PROFIBUS bus connector, RS 485, screw, without programming port, 90°	PROFIBUS bus connector, RS 485, screw, with programming port, 90°
Suitability for use	For connecting PROFIBUS stations to the PROFIBUS bus cable	For connecting PROFIBUS stations to the PROFIBUS bus cable
Interfaces		
PROFIBUS DP		
• Transmission rate, min.	9.6 kbit/s	9.6 kbit/s
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
Degree and class of protection		
IP degree of protection		IP20
Standards, approvals, certificates		
UL approval	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C
• max.	60 °C	60 °C
Accessories		
belongs to product		SIMATIC DP
Connection method		
Design of electrical connection for network components/terminal equipment	9-pin sub D connector	9-pin sub D connector
Design of electrical connection for PROFIBUS cables	Screw	Screw
Programming device socket	No	Yes
FastConnect cable design	No	No
Number of electrical connections for PROFIBUS lines	2	2
Number of electrical connections for network components and terminal devices	1	1
Mechanics/material		
Type of terminating resistor	Resistor combination integrated and connectable via slide switch	Resistor combination integrated and connectable via slide switch
Interlock design	Screwed joint	Screwed joint
Outgoing feeder type	90 degree cable outlet	90 degree cable outlet
Material of housing	plastic	plastic
Material property		

Article number	6ES7972-0BA12-0XA0	6ES7972-0BB12-0XA0
• Silicone-free	Yes	Yes
Strain relief	Yes	Yes
Dimensions		
Width	15.8 mm	15.8 mm
Height	64 mm	64 mm
Depth	35.6 mm	35.6 mm
Weights		
Weight (without packaging)	36 g	45 g
Scope of supply		
Delivery quantity in pieces	1	1

PROFIBUS bus connector plug up to 1.5 MBaud

- 6ES7972-0BA30-0XA0

Article number	6ES7972-0BA30-0XA0
General information	
Product description	PROFIBUS bus connector, RS 485, Fast Connect, without programming port, 30°
Suitability for use	For connecting PROFIBUS stations to the PROFIBUS bus cable
Interfaces	
PROFIBUS DP	
• Transmission rate, min.	9.6 kbit/s
• Transmission rate, max.	1.5 Mbit/s
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
UL approval	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C
• max.	60 °C
Accessories	
belongs to product	SIMATIC DP
Connection method	
Design of electrical connection for network components/terminal equipment	9-pin sub D connector
Programming device socket	No
FastConnect cable design	Yes
Number of electrical connections for PROFIBUS lines	2
Number of electrical connections for network components and terminal devices	1

Article number	6ES7972-0BA30-0XA0
Mechanics/material	
Type of terminating resistor	No integrated terminating resistor
Interlock design	Screwed joint
Outgoing feeder type	30 degree cable outlet
Material of housing	plastic
Material property	
• Silicone-free	Yes
Strain relief	Yes
Dimensions	
Width	15 mm
Height	57.6 mm
Depth	39.5 mm
Weights	
Weight (without packaging)	30 g
Scope of supply	
Delivery quantity in pieces	1

PROFIBUS bus connector plug with/without PG socket up to 12 Mbaud

- 6ES7972-0BA42-0XA0
- 6ES7972-0BB42-0XA0

Article number	6ES7972-0BA42-0XA0	6ES7972-0BB42-0XA0
General information		
Product description	PROFIBUS bus connector, RS 485, screw, without programming port, 35°	PROFIBUS bus connector, RS 485, screw, with programming port, 35°
Suitability for use	For connecting PROFIBUS stations to the PROFIBUS bus cable	For connecting PROFIBUS stations to the PROFIBUS bus cable
Interfaces		
PROFIBUS DP		
• Transmission rate, min.	9.6 kbit/s	9.6 kbit/s
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
Degree and class of protection		
IP degree of protection	IP20	IP20
Standards, approvals, certificates		
UL approval	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C
• max.	60 °C	60 °C
Accessories		
belongs to product	SIMATIC DP	SIMATIC DP

Article number	6ES7972-0BA42-0XA0	6ES7972-0BB42-0XA0
Connection method		
Design of electrical connection for network components/terminal equipment	9-pin sub D connector	9-pin sub D connector
Design of electrical connection for PROFIBUS cables	Screw	Screw
Programming device socket	No	Yes
FastConnect cable design	No	No
Number of electrical connections for PROFIBUS lines	2	2
Number of electrical connections for network components and terminal devices	1	1
Mechanics/material		
Type of terminating resistor	Resistor combination integrated and connectable via slide switch	Resistor combination integrated and connectable via slide switch
Interlock design	Screwed joint	Screwed joint
Outgoing feeder type	35 degree cable outlet	35 degree cable outlet
Material of housing	plastic	plastic
Material property		
• Silicone-free	Yes	Yes
Strain relief	Yes	Yes
Dimensions		
Width	15.8 mm	15.8 mm
Height	54 mm	54 mm
Depth	39.5 mm	39.5 mm
Weights		
Weight (without packaging)	29 g	34 g
Scope of supply		
Delivery quantity in pieces	1	1

PROFIBUS FastConnect bus connector with/without PG socket up to 12 Mbaud

- 6ES7972-0BA52-0XA0
- 6ES7972-0BB52-0XA0

Article number	6ES7972-0BA52-0XA0	6ES7972-0BB52-0XA0
General information		
Product description	PROFIBUS bus connector, RS 485, Fast Connect, without programming port, 90°	PROFIBUS bus connector, RS 485, Fast Connect, with programming port, 90°
Suitability for use	For connecting PROFIBUS stations to the PROFIBUS bus cable	For connecting PROFIBUS stations to the PROFIBUS bus cable
Interfaces		
PROFIBUS DP		
• Transmission rate, min.	9.6 kbit/s	9.6 kbit/s
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
Degree and class of protection		
IP degree of protection	IP20	IP20
Standards, approvals, certificates		
UL approval	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C
• max.	60 °C	60 °C
Accessories		
belongs to product	SIMATIC DP	SIMATIC DP
Connection method		
Design of electrical connection for network components/terminal equipment	9-pin sub D connector	9-pin sub D connector
Programming device socket	No	Yes
FastConnect cable design	Yes	Yes
Number of electrical connections for PROFIBUS lines	2	2
Number of electrical connections for network components and terminal devices	1	1
Mechanics/material		
Type of terminating resistor	Resistor combination integrated and connectable via slide switch	Resistor combination integrated and connectable via slide switch
Interlock design	Screwed joint	Screwed joint
Outgoing feeder type	90 degree cable outlet	90 degree cable outlet
Material of housing	plastic	plastic
Material property		
• Silicone-free	Yes	Yes
Strain relief	Yes	Yes

Article number	6ES7972-0BA52-0XA0	6ES7972-0BB52-0XA0
Dimensions		
Width	15.8 mm	15.8 mm
Height	59 mm	59 mm
Depth	35.6 mm	35.6 mm
Weights		
Weight (without packaging)	36 g	45 g
Scope of supply		
Delivery quantity in pieces	1	1

PROFIBUS FastConnect bus connector with/without PG socket up to 12 Mbaud

- 6ES7972-0BA61-0XA0
- 6ES7972-0BB61-0XA0

Article number	6ES7972-0BA61-0XA0	6ES7972-0BB61-0XA0
General information		
Product description	PROFIBUS bus connector, RS 485, Fast Connect, without programming port, 35°	PROFIBUS bus connector, RS 485, Fast Connect, with programming port, 35°
Suitability for use	For connecting PROFIBUS stations to the PROFIBUS bus cable	For connecting PROFIBUS stations to the PROFIBUS bus cable
Interfaces		
PROFIBUS DP		
• Transmission rate, min.	9.6 kbit/s	9.6 kbit/s
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
Standards, approvals, certificates		
UL approval	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C
• max.	60 °C	60 °C
Connection method		
Design of electrical connection for network components/terminal equipment	9-pin sub D connector	9-pin sub D connector
Design of electrical connection for PROFIBUS cables	Integrated insulation displacement terminals for 2-core PB FC installation cables	Integrated insulation displacement terminals for 2-core PB FC installation cables
Programming device socket	No	Yes
FastConnect cable design	Yes	Yes
Number of electrical connections for PROFIBUS lines	2	2
Number of electrical connections for network components and terminal devices	1	1

Article number	6ES7972-0BA61-0XA0	6ES7972-0BB61-0XA0
Mechanics/material		
Type of terminating resistor	Resistor combination integrated and connectable via slide switch	Resistor combination integrated and connectable via slide switch
Interlock design	Screwed joint	Screwed joint
Outgoing feeder type	35 degree cable outlet	35 degree cable outlet
Material of housing	plastic	plastic
Material property		
• Silicone-free	Yes	Yes
Strain relief	Yes	Yes
Dimensions		
Width	15.8 mm	15.8 mm
Height	54 mm	54 mm
Depth	39.5 mm	39.5 mm
Weights		
Weight (without packaging)	29 g	34 g
Scope of supply		
Delivery quantity in pieces	1	1

PROFIBUS FastConnect bus connector with/without PG socket up to 12 Mbaud

- 6ES7972-0BA70-0XA0
- 6ES7972-0BB70-0XA0

Article number	6ES7972-0BA70-0XA0	6ES7972-0BB70-0XA0
General information		
Product description	PROFIBUS bus connector, RS 485, Fast Connect, without programming port, 90°	PROFIBUS bus connector, RS 485, Fast Connect, with programming port, 90°
Suitability for use	For connecting PROFIBUS stations to the PROFIBUS bus cable	For connecting PROFIBUS stations to the PROFIBUS bus cable
Interfaces		
PROFIBUS DP		
• Transmission rate, min.	9.6 kbit/s	9.6 kbit/s
• Transmission rate, max.	12 Mbit/s	12 Mbit/s
Degree and class of protection		
IP degree of protection		IP20
Standards, approvals, certificates		
UL approval	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C
• max.	60 °C	60 °C

Article number	6ES7972-0BA70-0XA0	6ES7972-0BB70-0XA0
Accessories		
belongs to product		SIMATIC DP
Connection method		
Design of electrical connection for network components/terminal equipment	9-pin sub D connector	9-pin sub D connector
Design of electrical connection for PROFIBUS cables	Integrated insulation displacement contacts for 2-core PB FC installation cables	
Programming device socket	No	Yes
FastConnect cable design	Yes	Yes
Number of electrical connections for PROFIBUS lines	2	2
Number of electrical connections for network components and terminal devices	1	1
Mechanics/material		
Type of terminating resistor	Resistor combination integrated and connectable via slide switch. Isolation function: When resistor is connected, outgoing bus is disconnected	Resistor combination integrated and connectable via slide switch
Interlock design	Screwed joint	Screwed joint
Outgoing feeder type	90 degree cable outlet	90 degree cable outlet
Material of housing	plastic	plastic
Material property		
• Silicone-free	Yes	Yes
Strain relief	Yes	Yes
Dimensions		
Width	15.8 mm	15.8 mm
Height	72 mm	72 mm
Depth	36.4 mm	36.4 mm
Weights		
Weight (without packaging)	34 g	45 g
Scope of supply		
Delivery quantity in pieces	1	1

Safety-related symbols

A

A.1 Safety-related symbols for devices without Ex protection

The following table contains an explanation of the symbols located in your SIMATIC device, its packaging or the accompanying documentation.

Symbol	Meaning
	General warning sign **Caution/Notice** You must read the product documentation. The product documentation contains information about the potential risks and enable you to recognize risks and implement countermeasures.
	Read the information provided by the product documentation. ISO 7010 M002
	Ensure the device is only installed by electrically skilled person. IEC 60417 No. 6182
	Note that connected mains lines must be designed according to the expected minimum and maximum ambient temperature.
	Note that the device must be constructed and connected in accordance with EMC regulations.
	Note that a 230 V device can be exposed to electrical voltages which can be dangerous. ANSI Z535.2
	Note that a device of Protection Class III may only be supplied with a protective low voltage according to the standard SELV/PELV. IEC 60417-1-5180 "Class III equipment"
	Be aware that the device is only approved for the industrial field and only for indoor use.
	Note that an enclosure is required for installing the device. Enclosures are considered: • Standing control cabinet • Serial control cabinet • Terminal boxes • Wall enclosure

A.2 Safety-related symbols for devices with Ex protection

The following table contains an explanation of the symbols located in your SIMATIC device, its packaging or the accompanying documentation.

Symbol	Meaning
	The assigned safety symbols apply to devices **with Ex approval**. You must read the product documentation. The product documentation contains information about the potential risks and enable you to recognize risks and implement countermeasures.
	Read the information provided by the product documentation. ISO 7010 M002
	Ensure the device is only installed by electrically skilled person. IEC 60417 No. 6182
	Observe the mechanical rating of the device.
	Note that connected mains lines must be designed according to the expected minimum and maximum ambient temperature.
	Note that the device must be constructed and connected in accordance with EMC regulations.
	When the device is under voltage, note that it may not be installed or removed, or plugged or pulled.
	Note that a 230 V device can be exposed to electrical voltages which can be dangerous. ANSI Z535.2
	Note that a device of Protection Class III may only be supplied with a protective low voltage according to the standard SELV/PELV. IEC 60417-1-5180 "Class III equipment"
	Be aware that the device is only approved for the industrial field and only for indoor use.

Symbol	Meaning
	For Zone 2 potentially explosive atmospheres, be aware that the device may only be used when it is installed in an enclosure with a degree of protection ≥ IP54.
	For Zone 22 potentially explosive atmospheres, be aware that the device may only be used when it is installed in an enclosure with a degree of protection ≥ IP6x.

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