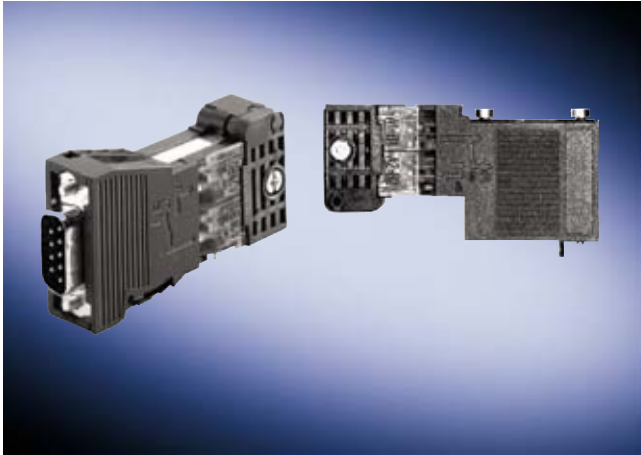## Overview

- This is used to connect PROFIBUS stations to the PROFIBUS bus cable
- Easy installation
- The insulation piercing method of the FastConnect connectors reduces installation time considerably
- Integrated matching resistors (not for 6ES7 972-0BA30-0XA0)
- Connection of PG using a special bus connector is possible without the need to install network nodes.

Application

The RS 485 bus connector for PROFIBUS is used to connect a PROFIBUS station or a PROFIBUS network component to the bus cable for PROFIBUS.

Design

Different versions of the bus connector, optimized for the connected devices, are available:

- Bus connectors with axial cable outlet (180 °C) e.g. for PCs and SIMATIC HMI OPs, for transmission rates up to 12 Mbit/s with integrated bus terminating resistor
- Bus connector with vertical cable outlet (90 °C)

This connector enables a vertical cable outlet (with and without PG interface) for transmission rates up to 12 Mbit/s with integrated bus terminating resistor. With transmission rates of 3, 6 or 12 Mbit/s, the SIMATIC S5/S7 connecting cable is required for the connection between the bus connector with additional PG interface and a programming device.

- Bus connector with 30° cable outlet (low-cost version) without PG interface for transmission rates up to 1.5 Mbit/s and without integrated bus terminating resistor.
- PROFIBUS FastConnect RS 485 bus connector (90° or 180° cable outlet) with transmission rates up to 12 Mbit/s for fast, easy mounting with insulation displacement method (for rigid and flexible wires).

Function

The bus connector is plugged directly to the PROFIBUS interface (9-pin Sub-D connector) of the PROFIBUS node or a PROFIBUS network component.

The incoming and outgoing PROFIBUS bus cable is connected through four terminals in the connector.

The line termination integrated in the bus connector can be connected through an externally accessible switch (not with 6ES7 972-0BA30-0XA0). Here, incoming and outgoing bus cables are separated in the connector (isolating function).
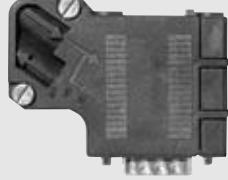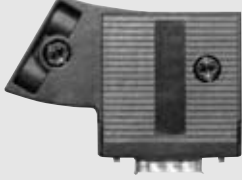
This is mandatory at both ends of a PROFIBUS segment.

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RS 485 bus connectors
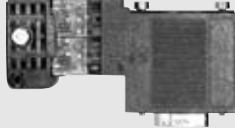
Technical specifications
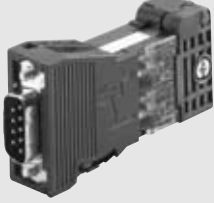
Bus connector	6ES7 972-0BA12-0XA0 6ES7 972-0BB12-0XA0	6ES7 972-0BA41-0XA0 6ES7 972-0BB41-0XA0	6ES7 972-0BA30-0XA0 [1]
Cable outlet	**90°** cable outlet	**35°** cable outlet	**30°** cable outlet
Data transmission rate	9.6 kbit/s...12 Mbit/s	9.6 kbit/s...12 Mbit/s	9.6 kbit/s...1500 kbit/s
Terminating resistance	Integral resistor combination and isolator function that can be selected using a slide switch: When the resistor is connected, the out-going bus is disconnected	Integral resistor combination and isolator function that can be selected using a slide switch: When the resistor is connected, the out-going bus is disconnected	No terminating resistance, **cannot be used for first and last device in the bus segment**
Interfaces • PROFIBUS nodes • PROFIBUS bus cable	9-pin Sub-D socket 4 terminal blocks for wires of up to 1.5 mm^2	9-pin Sub-D socket 4 terminal blocks for wires of up to 1.5 mm^2	9-pin Sub-D socket 4 insulation-piercing terminals for wires of 0.644 ± 0.040 mm^2
FastConnect insulation-piercing method	No	No	Yes
Supply voltage (must come from terminal unit)	4.75 V … 5.25 V DC	4.75 V … 5.25 V DC	-
Current consumption	max. 5 mA	max. 5 mA	-
Perm. ambient conditions • Operating temperature • Transport/storage temperature • Relative humidity	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C
Construction • Dimensions (W x H x D) in mm • Weight	15.8 x 54 x 34 approx. 40 g	16 x 54 x 38 approx. 40 g	15 x 58 x 34 approx. 30 g
PG connection socket	**0BA12: No; 0BB12: Yes**	**0BA41: No; 0BB41: Yes**	**No**
Degree of protection	IP20	IP20	IP20
UL listing	Yes	Yes	Yes
Used in PLC			
S7-200/S7-300/S7-400®	■ [2]	■	■
C7-633 DP, C7-634 DP, C7-635, C7-636	■	■	■
S5-115U to S5-155U	■	■	■
I/O station			
ET 200M/ET 200B/ET 200L/ET 200S	■	■	■
Programming device			
PG 720/720C/PG 740/PG 760		■	■
Interface			
IM 308-C	■	■	■
CP 5431 FMS/DP	■	■	■
CP 342-5	■	■	
CP 343-5	■	■	
CP 443-5	■	■	
IM 467	■	■	
CP 5511/CP 5512/CP 5611/ CP 5613/CP 5614	■	■	
SIMATIC OP			
OLM/OBT	■	■	
RS 485 repeater	■	■	■

■ Suitable for application

1) Flexible bus cables cannot be used with this connector
2) S7-400: Not used with MPI/DP interface when DP interface is assigned;
        not used with 1FM1 interface when 1FM2 interface is assigned

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■ **Technical specifications**

Bus connector	6ES7 972-0BA50-0XA0 6ES7 972-0BB50-0XA0	6ES7 972-0BA60-0XA0 6ES7 972-0BB60-0XA0	6GK1 500-0FC00	6GK1 500-0EA02
Cable outlet	**90**° cable outlet	**35**° cable outlet	**180**° cable outlet	**180**° cable outlet
Data transmission rate	9.6 kbit/s ... 12 Mbit/s	9.6 kbit/s ... 12 Mbit/s	9.6 kbit/s ... 12 Mbit/s	9.6 kbit/s ... 12 Mbit/s
Terminating resistance	Integral resistor combination and isolator function that can be selected using a slide switch: When the resistor is connected, the outgoing bus is disconnected. Connection using insulation-displacement method for FastConnect system	Integral resistor combination and isolator function that can be selected using a slide switch: When the resistor is connected, the outgoing bus is disconnected. Connection using insulation-displacement method for FastConnect system	Integral resistor combination and isolator function that can be selected using a slide switch: If the resistor is connected, the outgoing bus is disconnected. Connection with insulation-piercing/clamp method for FastConnect system	Integral resistor combination and isolator function that can be selected using a slide switch: When the resistor is connected, the outgoing bus is disconnected
Interfaces • PROFIBUS nodes • PROFIBUS bus cable	9-pin Sub-D socket 4 insulation-piercing terminals for all FastConnect PROFIBUS cables (except for FC Process Cable)	9-pin Sub-D socket 4 insulation-piercing terminals for all FastConnect PROFIBUS cables (except for FC Process Cable)	9-pin Sub-D socket 4 insulation-piercing terminals for all FastConnect PROFIBUS cables (except for FC Process Cable)	9-pin Sub-D socket 4 terminal blocks for wires of up to 1.5 mm^2
FastConnect insulation-piercing method	Yes	Yes	Yes	No
Supply voltage (must come from terminal unit)	4.75 V … 5.25 V DC	4.75 V … 5.25 V DC	4.75 V … 5.25 V DC	4.75 V … 5.25 V DC
Current consumption	max. 5 mA	max. 5 mA	max. 5 mA	max. 5 mA
Perm. ambient conditions • Operating temperature • Transport/storage temperature • Relative humidity	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C	0 °C … +60 °C -25 °C … +80 °C max. 75% at +25 °C
Construction • Dimensions (W x H x D) in mm • Weight	72.7 x 16 x 34 approx. 50 g	72.7 x 16 x 34 approx. 50 g	15.8 x 61.75 x 34.3 approx. 100 g	15 x 57 x 39 approx. 100 g
PG connection socket	**0BA50: No; 0BB50: Yes**	**0BA60: No; 0BB60: Yes**	No	No
Degree of protection	IP20	IP20	IP20	IP20
UL listing	Yes	Yes	Yes	No
Used in PLC				
S7-200/-300/-400	■	■		
C7-633 DP, C7-634 DP, C7-635, C7-636	■	■		
S5-115U to -155U	■	■		
I/O station				
ET 200M/ ET 200B/ ET 200L/ ET 200S	■	■		
Programming device				
PG 720/720C/PG 740/PG 760			■	■
Interface				
IM 308-C	■	■		
CP 5431® FMS/DP	■	■		
CP 342-5/ CP 343-5/ CP 443-5	■	■		
IM 467	■	■		
CP 5511/CP 5512/CP 5611/ CP 5613 A2/CP 5614 A2			■	■
SIMATIC OP			■	■
OLM/OBT	■	■	■	■
RS 485 repeater	■	■		

■ Suitable for application

RS 485 bus connectors

◾ Ordering data

	Order No.		Order No.
Bus connector RS 485 with axial cable outlet (180°)	6GK1 500-0EA02	**PROFIBUS FastConnect bus connector RS 485 with 35° cable outlet**	
For the industrial PC, SIMATIC HMI OP, OLM; max transmission rate 12 Mbit/s		in insulation-displacement method, max. transmission rate 12 Mbit/s	
Bus connector RS 485 with 90° cable outlet		• without PG interface	6ES7 972-0BA60-0XA0
With screw-type terminals, max. transmission rate 12 Mbit/s		• with PG interface	6ES7 972-0BB60-0XA0
• without PG interface	6ES7 972-0BA12-0XA0	**PROFIBUS FastConnect bus connector RS 485 Plug 180**	6GK1 500-0FC00
• with PG interface	6ES7 972-0BB12-0XA0	in insulation-displacement method, and 180° cable outlet for the industrial PC, SIMATIC HMI OP, OLM; max transmission rate 12 Mbit/s	
Bus connector RS 485 with angled cable outlet (35°)			
With screw-type terminals, max. transmission rate 12 Mbit/s			
• without PG interface	6ES7 972-0BA41-0XA0	**SIMATIC S5/S7 plug-in cable for PROFIBUS**	6ES7 901-4BD00-0XA0
• with PG interface	6ES7 972-0BB41-0XA0	Preassembled with two 9-pole Sub-D connectors; max. transmission rate 12 Mbit/s; 3 m	
Bus connector RS 485 with 30° cable outlet	6ES7 972-0BA30-0XA0		
With screw-type terminals, low-cost version, max. transmission rate 1.5 Mbit/s		**Manual for PROFIBUS networks**	
		Paper version	
PROFIBUS FastConnect bus connector RS 485 with 90° cable outlet		Network architecture, project management, network components, mounting	
in insulation-displacement method, max. transmission rate 12 Mbit/s		• German	6GK1 970-5CA20-0AA0
• without PG interface	6ES7 972-0BA50-0XA0	• English	6GK1 970-5CA20-0AA1
• with PG interface	6ES7 972-0BB50-0XA0	**SIMATIC NET Manual Collection**	6GK1 975-1AA00-3AA0
		Electronic manuals for communication systems, communication protocols and communication products	
		on CD-ROM German/English	

Dimension drawings

Dimensions in mm

35.6

35.4

54.5

11.6

6ES7 972-0B.12-0XA0

15.8

7.9

34 ± 0.2

5

25

64

10

28.4

G_IK10_XX_50121

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Seating surface
Sub-D connector

15.8

7.9

6ES7 972-0B.50-0XA0

34 ± 0.2

5

25

75.15 ± 0.2

10 ± 0.1

Thread
4-40 UNC

G_IK10_XX_50122

61.75

44.1

28.4

34.3

6GK1 500-0FC00

15.8

G_IK10_XX_50123

56

OFF

ON

35   39

10

6GK1 500-0EA02

15

G_IK10_XX_50124