AMIKON TECHNICAL DOCUMENTATION

# Installation Instructions

## Siemens 6ES7195-1GG30-0XA0

620 mm Bus-Module Mounting Rail

| MOUNTING LENGTH | MOUNTING ARRANGEMENT | LISTED ASSEMBLIES | RAIL REMOVAL |
|---|---|---|---|
| **620 mm** | **Active bus modules** | **DP/PA link and Y-link** | **Power supplies isolated** |

For qualified personnel only. Isolate the equipment and follow the complete manufacturer and site safety procedures. This reference does not replace the approved project design or the full installation manual.

## 01 PREPARATION AND WIRING CHECKS

- Check the 620 mm rail against the layout, cabinet envelope and exact component combination.
- Switch off supplies before configuration changes or disassembly.
- Engage the starting bus module in the mounting rail as illustrated.
- Bring adjacent bus modules into contact before fitting the electronics.
- Use the fitted module screws to secure the bus modules to the rail.
- Restore the required bus module and backplane covers on the documented DP/PA arrangement.

## 02 ORIGINAL WIRING REFERENCE

Original source PDF pages 1, 2, 77, 78, 83, 84, 91, 92, 288. The following pages retain the original Siemens drawings and printed page numbers.

Siemens original installation documentation

SIEMENS

SIMATIC

# Bus links
# DP/PA coupler, DP/PA link, Y-link and active field distributors

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## 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.

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### 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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# Mounting

# 5

## 5.1 Mounting rules

Follow the PNO PROFIBUS mounting guideline:

PROFIBUS User Organization (https://www.profibus.com/downloads)

### Mounting position

The following modules can be installed vertically or horizontally:

- PROFIBUS DP interface module IM 153-2OD
- DP/PA coupler
- Y-coupler

**WARNING**

**Open equipment**

The devices are open equipment. This means that they may only be mounted in enclosures, cabinets, or electrical service rooms that can only be accessed by using a key or a tool. Only authorized personnel may have access to the enclosures, cabinets or electrical service rooms.

### Mounting system

The modules are mounted on rails for the S7 assembly system. Free space of 40 mm must be maintained above and below the modules for trouble-free mounting.

You can find additional information on the setup and mounting in the operating instructions SIMATIC ET 200M Distributed I/O Device (https://support.industry.siemens.com/cs/ww/en/view/1142798).

### Installation location

The DP/PA coupler (FDC 157-0 and FDC 157 Ex [ia]) or the DP/PA link with DP/PA coupler Ex [ia] can be operated in Zone 2 hazardous areas if they are installed in a suitable enclosure.

When using the DP/PA coupler Ex [ia], the PROFIBUS PA bus line may lead from the safe area to an area with Zone 0 / 20.

**⚠ DANGER**

**Approval**

For the DP/PA coupler FDC 157 Ex [ia] 6ES7157-0AD82-0XA0, the intrinsically safe PROFIBUS PA is approved for the following intrinsically safe electrical equipment:

- Equipment category 1G, 2G and 3G for Zones 0, 1, and 2
- Equipment category 1D, 2D and 3D for Zone 20, 21 and 22

You may use the DP/PA coupler FDC 157 Ex [ia] as a PROFIBUS node in equipment category 3G in the Zone 2 hazardous area (or in the safe area).

If you want to use the DP/PA coupler FDC 157 Ex [ia] in Zone 22, you must mount it in an approved enclosure certified for these zones.

## Enclosure for Zone 2

The DP/PA coupler FDC 157 Ex [ia] or the DP/PA link with DP/PA coupler FDC 157 Ex [ia] must be mounted in a enclosure with at least IP 54 degree of protection. A manufacturer's declaration for Zone 2 must be submitted for the enclosure (in accordance with EN 60079-0).

Use the following cable glands:

- Power supply and PROFIBUS DP Ex i: Cable gland with manufacturer's declaration for Zone 2
- PROFIBUS PA Ex i: Degree of protection Ex i

**⚠ DANGER**

**Explosion hazard**

Sparks capable of ignition or impermissible surface temperatures may possibly form during installation work.

**Never install under explosive conditions!**

Switch off the voltage supply to the plant and adhere to the safety regulations.

# 5.3 Mounting the DP/PA link

## 5.3.1 Mounting the DP/PA link for non-redundant mode

### Required components

- Rail for the S7 mounting system
- PROFIBUS DP interface module (IM 153-2OD)
- 1 to 5 DP/PA couplers
- Bus module BM PS/IM or BM IM/IM
- Bus modules BM FDC

If the module exchange is not required during operation, the DP/PA couplers can be coupled via one bus connector each.
A bus connector is included in the delivery of the DP/PA coupler.

### Typical installation of the DP/PA link

The following figure shows the typical installation of the DP/PA link with two DP/PA couplers and PS 307 power supply with open front doors.

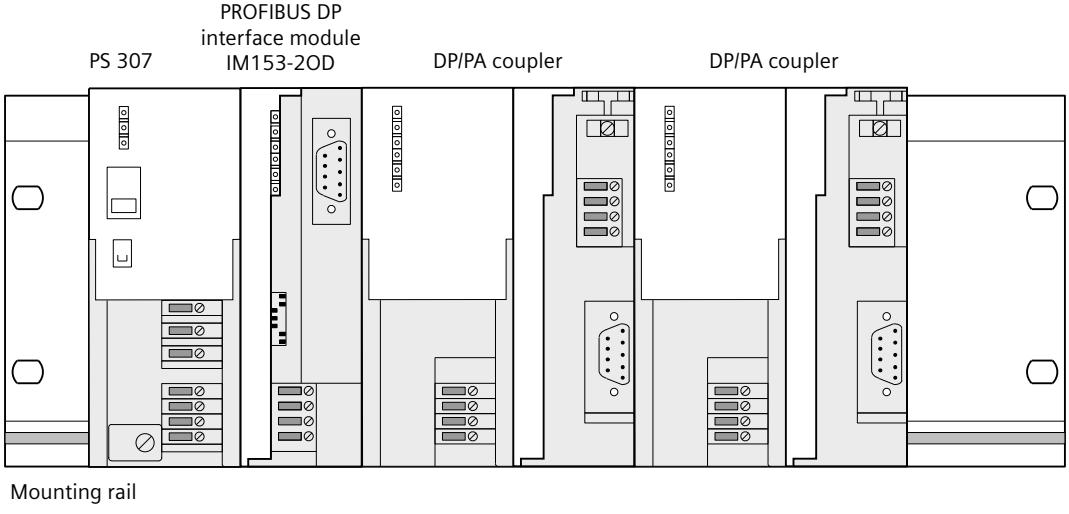



Figure 5-1 Typical installation of the DP/PA link for non-redundant mode

## Installing the DP/PA link

**Note**

**Changing a configuration**

If the DP/PA link is already in operation, switch off the power supply before changing the configuration.

1. Hang the BM PS/IM or BM IM/IM bus module with the lower edge onto the S7 mounting rail, press it into the S7 mounting rail and slide it into the desired position.
   With the recommended mounting rails, this is to the left up to the engagement position.
2. Hang the next bus module (BM FDC) onto the mounting rail and press it into the mounting rail. Slide it against the left bus module so that the module connection makes contact.
3. Hang the modules onto the mounting rail and swivel them down. Use the guides on the side of the bus modules for this. When screwing the modules tight, fasten the bus module to the mounting rail at the same time.
4. Plug the bus module cover onto the last bus module. If no module is plugged into a slot, plug the backplane bus cover into the unoccupied slot as well.

**Note**

**Mounting with bus connectors**

Before mounting a DP/PA coupler and the module to be mounted on the left (starting with the PROFIBUS DP interface module), observe the following:
(does not apply when mounting the last DP/PA coupler)

1. Plug in a bus connector to the right of the module to be mounted on the left.
2. Only then hang the module to be mounted on the left onto the S7 mounting rail and swivel the modules down.

## Removing / inserting a DP/PA coupler

If you want to pull or plug DP/PA couplers during operation, the DP/PA link must be assembled with bus modules.

## Removing a DP/PA link

If the DP/PA link is already in operation, switch off the power supplies before disassembly.

To disassemble the DP/PA link with bus connectors, proceed in reverse order. Start with the DP/PA coupler mounted to the far right.

## See also

Accessories for PROFIBUS DP (Page 289)

Accessories for PROFIBUS PA (Page 290)

# 5.4 Installing the Y-Link

## 5.4.1 Mounting the Y link

### Installation with bus modules

The Y-link must always be configured with bus modules.

### Required components

- Rail for installation with active bus modules ("Rail for module replacement in runtime")
- 2x PROFIBUS DP interface module (IM 153-2OD)
- Bus module BM IM/IM
- Y-coupler
- Bus module BM Y-coupler

### Typical installation

The following figure shows the typical design of a Y-Link with two PS 307 power supplies with the front doors open.

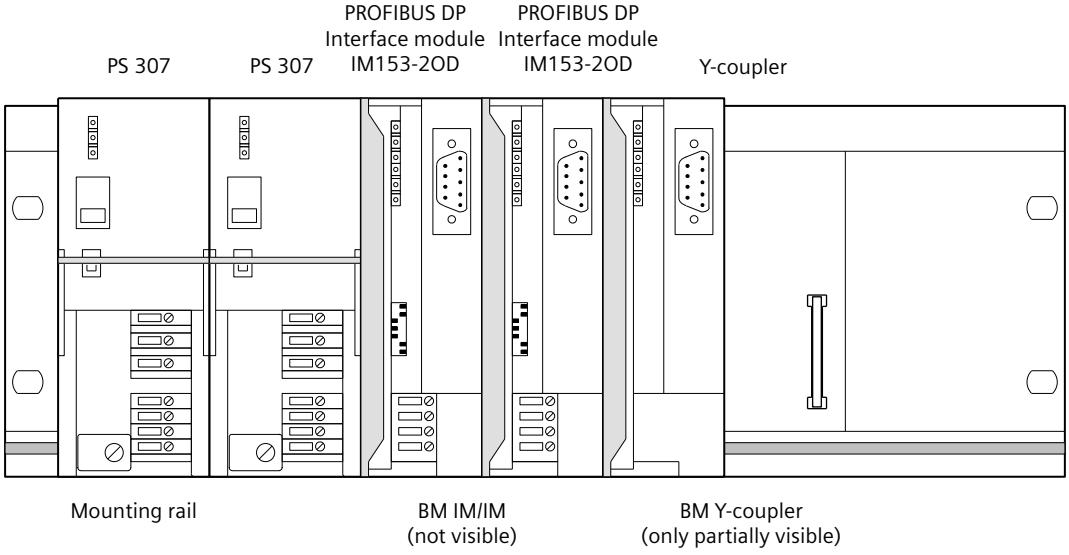
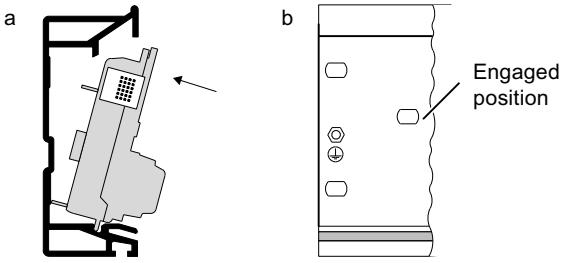



Figure 5-3 Typical installation of the Y-link

### Installing bus modules and modules

1. Hook the lower edge of the BM IM/IM bus module into the rail, press it into the rail (a) and slide it to the left up to the engagement position (b).
   If you are using the 530 mm rail and position the BM IM/IM in the engaged position on the right, you can install two additional PS 307; 2A or one PS 307; 5A to the left of the bus module.




2. Hang the BM Y-coupler bus module on the rail and press it down into the rail.
3. Push the bus modules together so that the module connections are in contact.
4. Insert the two PROFIBUS DP interface modules into the BM IM/IM bus module.
5. Insert the Y-coupler into the BM Y-coupler bus module. Use the guides on the side of the bus modules for this.
6. Screw down the modules. This also fixes the bus modules to the rail.

### Removing and inserting modules

Removal and insertion of modules during operation is possible on S7-400H in redundant mode. The following particularities must be noted for this:

- Removal and insertion of a PROFIBUS DP interface module is only allowed in the de-energized state. For this purpose, the 24 V DC supply of the PROFIBUS DP interface module must be switched off. To avoid a failure of the lower-level master system, the Y-link should be set up with independently switchable power supplies for the two PROFIBUS DP interface modules (e.g. by using two power supply modules).
- There is no restriction on removing and inserting the Y-coupler, but it causes the nodes connected to it to fail.

### Removing bus modules and modules

To remove the Y-link, proceed in the reverse order.

If the device is already in operation, then turn off the 24 V DC supplies before disassembly.

### See also

Accessories for PROFIBUS DP (Page 289)

Table A-8 Article numbers: Redundant DP/PA link

| Installation variant | Product | Article number | Outdoor use [1] |
|---|---|---|---|
| Redundant DP/PA link<br>(Max. 5 DP/PA coupler - take into consideration the required number of bus modules BM FDC, etc.) | • 2 x IM 153-2OD | • 6ES7153-2BA70-0XB0 | - |
| | • 1 x BM IM/IM<br>(or BM IM/IM Outdoor) | • 6ES7195-7HD10-0XA0<br>• 6ES7195-7HD80-0XA0 | • No<br>• YES |
| | • FDC 157<br>or<br>• FDC 157-Ex [ia] | • 6ES7157-0AC85-0XA0<br>or<br>• 6ES7157-0AD82-0XA0 | -<br><br>- |
| | • BM FDC<br>or<br>• BM FDC/FDC (redundant) | • 6ES7195-7HF80-0XA0<br>or<br>• 6ES7195-7HG80-0XA0 | -<br><br>- |

[1] Only the component that enables (YES) or prevents (No) outdoor use is marked for the installation variant.

Table A-9 Article numbers for Y-link

| Hardware components | Products | | Article number | Outdoor use |
|---|---|---|---|---|
| Complete package Y-link:<br>• 2 x PROFIBUS DP interface module IM 153-2OD<br>• 1 x bus module BM IM/IM<br>• 1 x Y-coupler<br>• 1 x bus module BM Y-coupler | Complete package for installation of a Y-link consisting of the following products: | | 6ES7197-1LA12-0XA0 | No |
| | 2 x IM 153-2OD | 6ES7153-2BA70-0XB0 | | |
| | 1 x BM IM/IM | 6ES7195-7HD80-0XA0 | | |
| | 1 x Y-coupler | 6ES7197-1LB00-0XA0 | | |
| | 1 x BM Y-coupler | 6ES7654-7HY00-0XA0 | | |

Table A-10 Article numbers for accessories for installation

| Component | Article number |
|---|---|
| Mounting rail for the "Module replacement in runtime" function<br>• 482.6 mm<br>• 530 mm<br>• 620 mm<br>• 2000 mm | <br>6ES7195-1GA00-0XA0<br>6ES7195-1GF30-0XA0<br>6ES7195-1GG30-0XA0<br>6ES7195-1GC00-0XA0 |
| Bus connector for S7 mounting rail (included with each DP/PA coupler) | 6ES7390-0AA00-0AA0 |
| Covers (included are 4 backplane bus covers and 1 bus module cover) | 6ES7195-1JA00-0XA0 |
| Sealing plugs for unused connections on the AF-DiSD (10 pieces) | 6ES7157-0AG80-1XA1 |