

Installation

7.1 Basics

Introduction

All modules of the ET 200SP distributed I/O system are open equipment. This means you may only install the ET 200SP distributed I/O system in housings, cabinets or electrical operating rooms and in a dry indoor environment (degree of protection IP20). The housings, cabinets and electrical operating rooms must guarantee protection against electric shock and spread of fire. The requirements regarding mechanical strength must also be met. The housings, cabinets, and electrical operating rooms must not be accessible without a key or tool. Personnel with access must have been trained or authorized.

Installation location

Install the ET 200SP distributed I/O system in a suitable enclosure/control cabinet with sufficient mechanical strength and fire protection. Take into account the environmental conditions for operating the devices.

Mounting position

You can mount the ET 200SP distributed I/O system in any position. The preferred mounting position is horizontal mounting on a vertical wall.

The ambient temperature may be restricted in certain installation positions. You will find more information in section Mechanical and climatic environmental conditions ([Page 330](#)). Pay attention to chapter "Installation conditions for motor starters ([Page 116](#))" when using motor starters.

Mounting rail

Install the ET 200SP distributed I/O system on a mounting rail in accordance with ISO 60715 (35 × 7.5 mm or 35 × 15 mm) or on a SIMATIC system rail.

The ET 200SP R1 system must be mounted on the SIMATIC system rail only.

You need to ground the mounting rail separately in the control cabinet. Exception: If you install the rail on grounded, zinc-plated mounting plates, there is no need to ground the rail separately.

NOTE

If the ET 200SP distributed I/O system is exposed to vibration and shock loads, both ends of the ET 200SP system assembly must be mechanically fixed to the mounting rail (e.g using 8WA1010-1PH01 ground terminals). This measure prevents the ET 200SP distributed I/O system from shifting to the side.

NOTE

If the ET 200SP, distributed IO system is exposed to increased vibrations and shock, fasten the mounting rail to the mounting surface at intervals of approx. 200 mm.

For increased vibration and shock loads, you can mount the ET 200SP system on the SIMATIC system rail.

The following are suitable surfaces for the mounting rails:

- Steel strip in accordance with Appendix A of EN 60715 or
 - Tinned steel strip. We recommend these in conjunction with the mounting rails in the section Accessories/spare parts ([Page 339](#)).
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NOTE

If you use mounting rails from other manufacturers, make sure that they have the required properties for your ambient climatic conditions.

Minimum clearances

The figure below shows the minimum clearances you must observe when installing or dismantling the ET 200SP distributed I/O system.

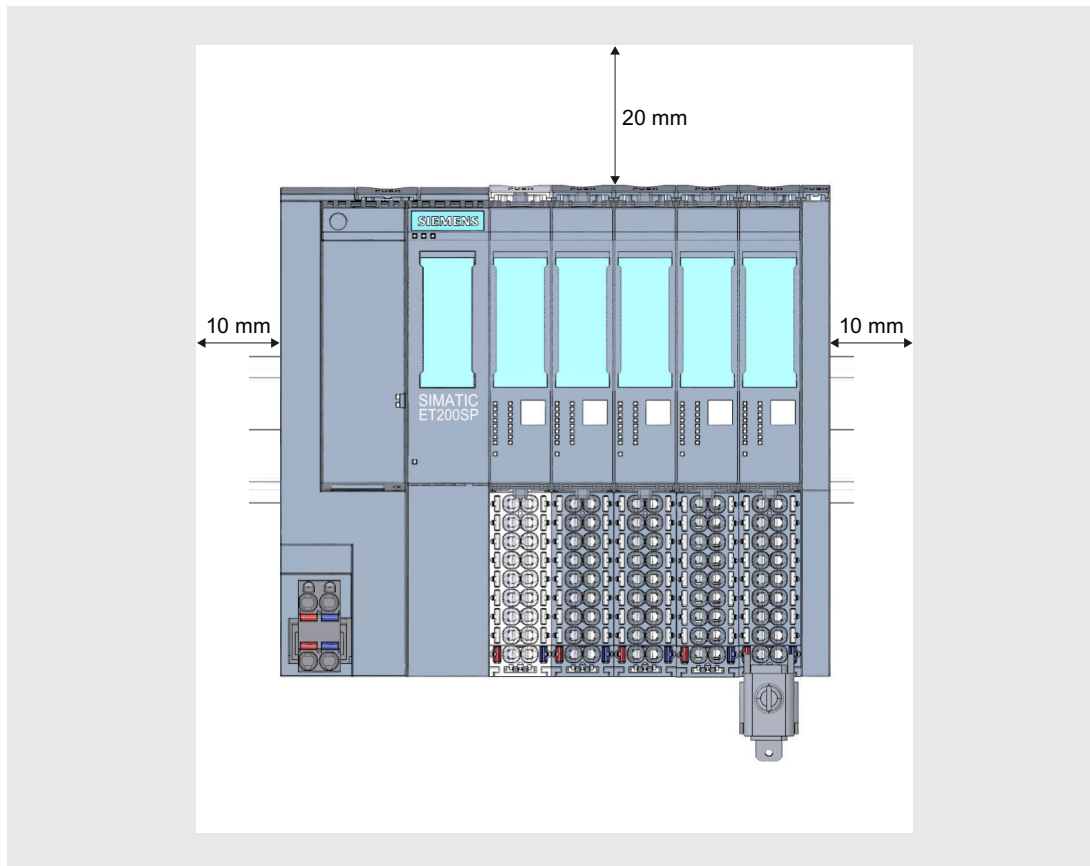


Figure 7-1 Minimum clearances

NOTE

Ex module group

When you are using an Ex module group in your configuration, you must observe other minimum clearances.

Additional information on minimum clearances and installing/removing Ex modules is available in the System Manual ET 200SP HA Distributed I/O system / ET 200SP Modules for devices used in an explosion hazardous environment

(<https://support.industry.siemens.com/cs/ww/de/view/109795533/en>).

General rules for installation

⚠ WARNING**Hazardous Voltage****Can Cause Death, Serious Injury, or Property Damage.**

Hazardous electrical voltage can cause electric shock, burns and property damage.

Disconnect your system and devices from the power supply before starting any assembly tasks.

Observe the following rules:

- Installation starts on the left-hand side with the CPU/interface module.
- A light-colored BaseUnit BU..D0, BU30-MS1 or BU30-MS3 with infeed of supply voltage L+ follows the CPU/interface module or is placed at the start of each potential group.
If you use a CPU or IM 155-6 (V3.0 or higher), the first BaseUnit in the installation of the ET 200SP may also be a dark-colored BaseUnit of type B1 or D0.
- This is followed by BaseUnits BU..B, BU30-MS2 or BU30-MS4 (with a dark-colored terminal box).
- The matching I/O modules / motor starters can be plugged onto the BaseUnits. You will find matching combinations of BaseUnits and I/O modules / motor starters in Application planning [\(Page 80\)](#).
- The server module completes the configuration of the ET 200SP distributed I/O system.

NOTE

Mount the ET 200SP distributed I/O system only with disconnected supply voltage.

⚠ WARNING**Protection from conductive contamination**

Taking into account the environmental conditions, the devices must be protected from conductive contamination.

This can be achieved, for example, by installing the devices in a control cabinet with the appropriate degree of protection.

Mounting rules for reducing the thermal load

The following rules reduce the thermal load of the ET 200SP distributed I/O system in the control cabinet:

- Separate 2 modules with high power dissipation with a module of low power dissipation or by an empty space.
- Mix modules with higher power dissipation and modules with less power dissipation. For example, modules with 16 outputs have a higher power dissipation than modules with 8 outputs.
- You should give preference to the horizontal mounting position.
- For vertical mounting position, plug modules with high power dissipation at the top, the interface module/CPU at the bottom.

- Mount an ET 200SP station with modules with high power dissipation in the lower area of the control cabinet.
- For a multi-tier configuration, plug modules with high power dissipation on the sides so that the waste heat can rise to the top unhindered.
- Avoid air movements at the terminals when using TC measurement with internal compensation.

7.2 Installation conditions for motor starters

Observe the following installation conditions when using an ET 200SP motor starter:

- Mounting position
You can fit the motor starter vertically or horizontally. The mounting position refers to the alignment of the mounting rail. The maximum permissible ambient temperature range depends on the mounting position:
 - Up to 60° C: Horizontal mounting position
 - Up to 50° C: Vertical installation positionYou also need to consider the current carrying capacity of the ET 200SP components. In the case of a vertical mounting position, use end retainers "8WA1808" at both ends of the ET 200SP station:
- Mounting rail
Use one of the following mounting rails:
 - 35x15 mm DIN rail in accordance with DIN EN 60715
 - 35x7.5 mm DIN rail in accordance with DIN EN 60715
 - SIMATIC S7 mounting rail
- Current carrying capacity of the ET 200SP station
Current carrying capacity refers to the current load via the power bus and the infeed bus of the ET 200SP station.

Depending on the ambient conditions and mounting position, you have to take account of the fan unit or additional mechanical fixings.

Mechanical brackets

Use the mechanical brackets in the following situations:

- When using a 15 mm mounting rail with a single motor starter installation, i.e. no motor starter mounted directly next to it in the system
- With a vertical mounting position
- For applications according to shipbuilding standards in all mounting positions with 7.5 mm and 15 mm mounting rails

Designing interference-free motor starters

For interference-free operation of the ET 200SP station in accordance with standard IEC 60947-4-2, use a dummy module before the first motor starter. No dummy module is required to the right of the motor starter.

Note the following mounting rules:

Use the following dummy module on the standard mounting rail between the previous module and the SIMATIC ET 200SP motor starter:

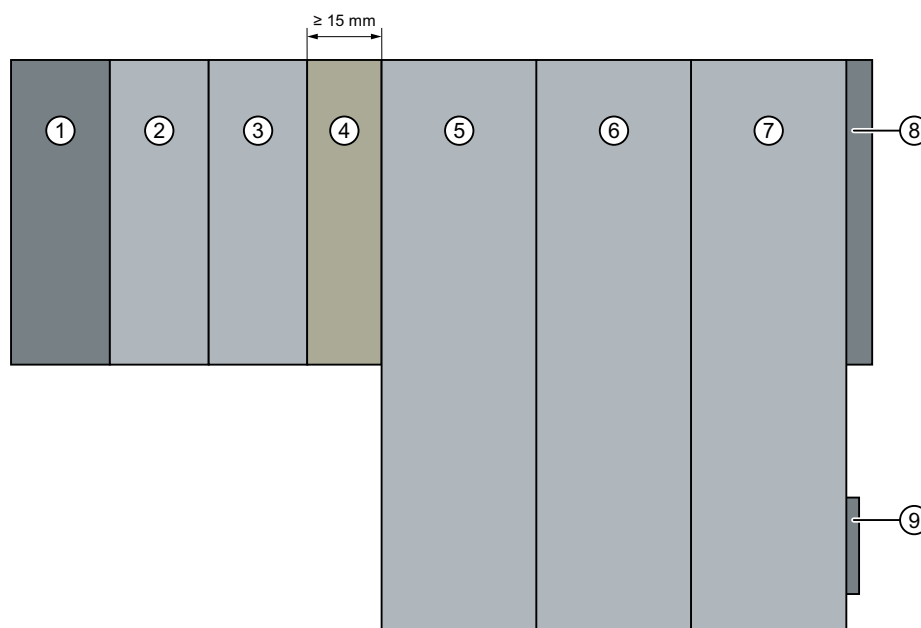
BU cover 15 mm: 6ES7133-6CV15-1AM0 with BaseUnit 6ES7193-6BP00-0BA0

For operation of the ET 200SP station with an unused BaseUnit, a cover must be provided for the open BaseUnit plug contacts (power connector, power bus connector, and backplane bus connector).

The cover protects the plug contacts against dirt. The BU cover can be ordered as an accessory.

Mount the dummy module

The figure below provides a schematic representation of how to implement measures for improving interference immunity.



- | | | | |
|---|-----------------------|---|------------------|
| ① | Interface module | ⑥ | Motor starter |
| ② | Digital input module | ⑦ | Motor starter |
| ③ | Digital output module | ⑧ | Server module |
| ④ | Dummy module | ⑨ | Infeed bus cover |
| ⑤ | Motor starter | | |

NOTICE

Ensure interference immunity

You must not plug any other module into the BaseUnit of the dummy module, otherwise interference immunity is no longer ensured.

7.3 Mounting the CPU/interface module

Introduction

The CPU/the interface module connects the ET 200SP distributed I/O system to the fieldbus and exchanges the data between the higher-level control system and the I/O modules / motor starters.

Requirement

The mounting rail is fitted.

Required tools

3 to 3.5 mm screwdriver (only for mounting and removing the BusAdapter)

Mounting the CPU/interface module

Watch the video sequence (<https://support.automation.siemens.com/WW/view/en/95886218>)

To install a CPU/interface module, follow these steps:

1. Install the CPU/interface module on the mounting rail.
2. Swivel the CPU/interface module towards the back until you hear the mounting rail release button click into place.

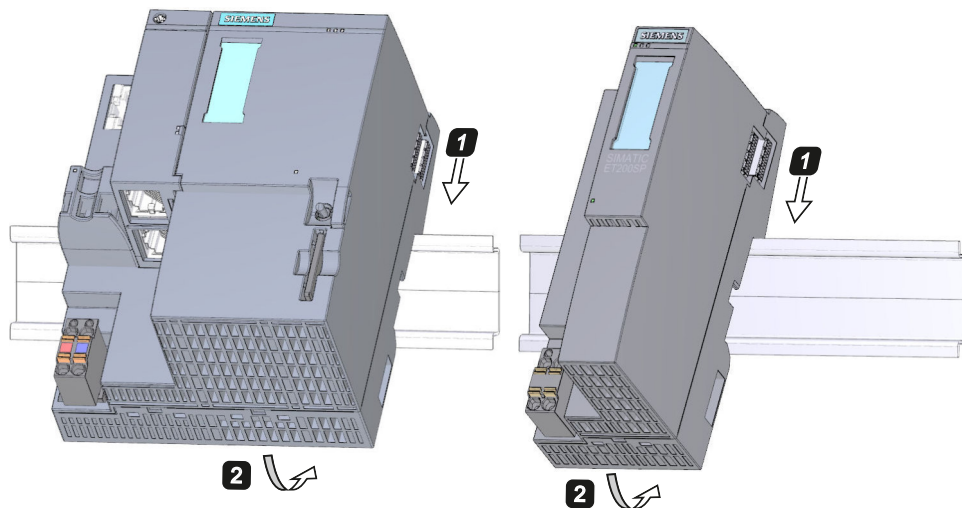


Figure 7-2 Mounting the CPU/interface module

Dismantling the CPU/interface module

The CPU/interface module is wired and BaseUnits are located to its right.

To remove the CPU/interface module, follow these steps:

1. Switch off the supply voltage for the CPU/interface module. Remove the 24 V DC connector from the CPU/interface module.
2. Press the mounting rail release button on the first BaseUnit. At the same time, shift the CPU/interface module parallel to the left until it detaches from the rest of the module group.
Note: The mounting rail release button is located above the CPU/interface module or BaseUnit.
3. While pressing the mounting rail release button on the CPU/interface module, swivel the CPU/interface module off of the mounting rail.

NOTE

It is not necessary to remove the BusAdapter from the CPU/interface module.

7.4 Installing ET 200SP R1

Introduction

The ET 200SP R1 system connects the ET 200SP distributed I/O system to the fieldbus and exchanges the data between the higher-level controller and the I/O modules / motor starters.

Requirement

The SIMATIC system rail is installed.

Tools required

3 to 3.5 mm screwdriver (only for mounting and removing the BusAdapter)

Mounting the ET 200SP R1 system

To mount the ET 200SP R1 system, proceed as follows:

1. Hang the BaseUnit BU type M0 onto the SIMATIC system rail.
2. Swivel the BaseUnit BU type M0 backwards until the system rail release audibly engages.
3. Plug the IM 155-6 PN R1 interface modules onto the BaseUnit BU type M0 until the lock audibly engages.
4. Plug the 24 V DC connectors into both interface modules.
5. Connect a BusAdapter to each interface module. Screw the BusAdapter to the interface module.