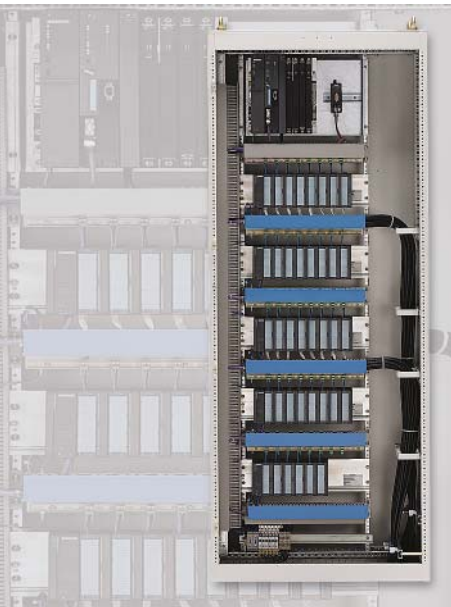


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SIMATIC PCS 7 cabinet design

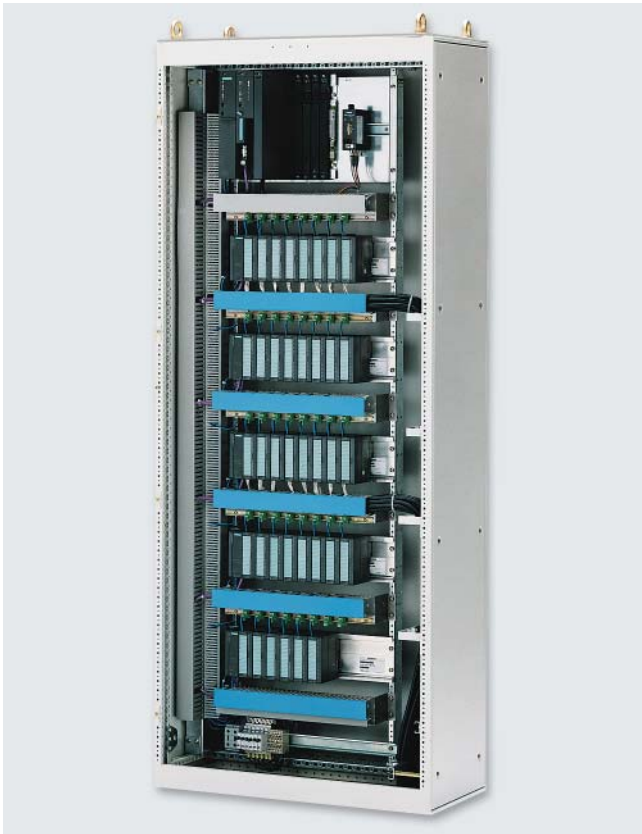


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SIMATIC PCS 7 cabinet design

Introduction

Cabinet packaging system



Overview

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The cabinet design for components close to the process (automation systems and I/Os) fulfills the technical and economical demands placed on the AS 488/TM automation systems.

The cabinets consisting of system-specific modules (system and I/O units) and system-neutral modules (basic cabinets and options) comply with CE requirements and conform to the guidelines for electromagnetic compatibility. They are designed according to the VGB 4 guidelines, and provide exceptional protection against unauthorized interventions, mechanical effects, contamination and corrosion.

As a result of their variable modular design, the cabinets can be readily adapted to different types of system (for batch processes or continuous processes) and system sizes.

The Siemens standard cabinet 8MC with degree of protection IP 40 is the preferred basic cabinet. Cabinets with degree of protection IP 20 and IP 55 are alternatively available.

Modular design

System-specific modules

- AS 488/TM system unit
- ET 200M I/O unit (ET 200U/ET 200B on request)

System-neutral modules

- Basic cabinet, consisting of framework, door, outer walls, internal mechanical parts and power supply assembly with:
 - Compartment for documents
 - Trim
 - AC 230 V socket
 - AC 230 V or DC 24 V cabinet illumination
 - I & C monitoring via automation system or cabinet lamp

Options

- Circuit-breaker for protection of max. 6 cabinet tiers
- I/O modules for ET 200M I/O unit

High flexibility

- Future compatibility as result of universal, system-neutral modules
- Modular packaging system permits flexible adaptation to the respective application
- Basic and expansion cabinets based on the same set of modules
- Up to 4 system units or 6 I/O units can be fitted in a cabinet
- System units and I/O units can be combined within the cabinet
- Side walls or partitions can be selected specific to the application
- Cabinets can be screwed together into double units or rows
- Design supports installation, commissioning, servicing and repairs
- Design supports correct handling when replacing modules
- All installation, commissioning, servicing and repair work can be carried out from the front of the cabinet
- Design of power supply assembly: either with Siemens circuit-breakers or with circuit-breakers with monitoring contact for connection to receptacles (from company ETA)
- Wiring for electronics supply as well as load power supply to I/O modules
- Wiring of PROFIBUS-DP either with copper or fiber-optic cables

Consideration of Ex(i)-specific requirements

- The construction of the system and I/O units permits a cabinet design which satisfies the Ex(i)-specific requirements
- Uniform installation and replacement for all I/O modules from the ET 200M range, including Ex(i) modules (plug connection for load power supply above the modules).

Design guidelines

- The SIMATIC S7-300 and S7-400 design guidelines apply when installing the AS 488 in PCS 7 cabinets (only with exclusively distributed SIMATIC I/Os).

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SIMATIC PCS 7 cabinet design

Basic cabinet



Overview

The Siemens standard cabinet 8MC is the preferred basic cabinet. The Siemens standard cabinet 8MC is a sheet-steel cabinet with rear panel and front door which can be assembled individually or also in rows with further cabinets of this type.

Side walls and partitions are optional, thus permitting variable adaptation of the cabinet to different installation possibilities.

Up to four system units or six I/O units can be fitted in a cabinet in conjunction with a DC 24 V or AC 230 V power supply assembly. System and I/O units can also be combined together within a cabinet. The cables are introduced into the cabinet from below.

Mechanical design

Each delivered cabinet contains:

- 19-inch mounting frame
- Rear panel
- Door
- Transport lugs
- Clips for routing of process cables
- Cable duct for cabinet-internal wiring

Options for the mechanical design

When ordering the basic cabinet, the following options are available for the mechanical design of the cabinet:

- Plinth: a cabinet plinth should be used if cables cannot be connected through the floor. The plinths are preassembled, and available with a height of 100 or 200 mm
- Pocket for documents
- Trim
- Side walls/partitions: the basic cabinets are suitable for individual assembly or in rows. Therefore side walls and/or partitions can be selected when ordering.

Electrical design

Each delivered cabinet contains:

- Power supply assembly AC 230 V or DC 24 V
- Cable clamps and screen bars for I/O and bus cables
- Prewiring of power supply cables for central and I/O units
- Wiring of PROFIBUS-DP fieldbus
- Connector board for cabinet earth

Options for the electrical design

- AC 230 V socket (installed in power supply assembly)
- I & C monitoring (2 versions):
 - I & C monitoring via cabinet lamp. A blown fuse is signalled by a lamp in the cabinet door. OLM failure can be additionally displayed on the cabinet lamp
 - or
 - I & C monitoring via AS 488/TM and cabinet lamp. Temperature violations in the cabinet, an open door contact, a blown fuse and an OLM failure can be recorded by the IF 961-DIO interface module and additionally signalled by a lamp in the cabinet door
 - Single/redundant design of power supply assembly, optionally with 6 or 14 circuit-breaker receptacles
- Cabinet illumination

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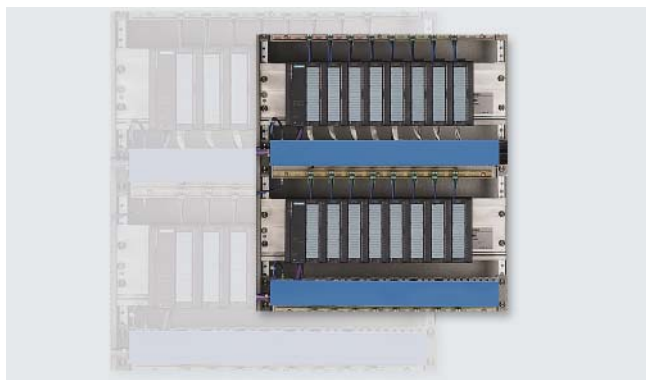
Technical Specifications

Siemens standard cabinet

Dimensions (<i>H x W x D</i>) in mm	2000 x 800 x 400
Framework, completely welded	Sheet-steel, 2 mm, frame profile with 10 edges, cross-member profile with 5 edges
Rear panel	Sheet-steel, 1.5 mm, canted
Roof	Sheet-steel, 1.5 mm, canted
Side wall (option)	Sheet-steel, 1.5 mm, canted
Partition (option)	Sheet-steel, 1.5 mm, canted
Single-leaf door on front of cabinet with hinge on right	Sheet-steel, 1.5 mm, opening angle approx. 180°; including rod lock with 3 mm lock insert and double-barb key DIN 43 668
Degree of protection to EN 60 529	IP 40, with single installation or together with cabinets of the same type
Color	Ergo gray to SN 30 920-C611-B13
Permissible ambient temperature	Max. 40 °C
Permissible temperature inside cabinet	Max. 55 °C
Permissible heat dissipation without fan	350 W, referred to maximum values of ambient temperature and temperature inside cabinet

SIMATIC PCS 7 cabinet design

ET 200M I/O unit



Overview

Complete ET 200M I/O stations are available for the cabinet packaging system. The station includes the power supply, components for connection to the PROFIBUS-DP fieldbus (electrical or optical design), selection of modules for hot swapping, and wiring of load current connections.

The modular ET 200M I/O station with degree of protection IP 20 can be equipped with signal and function modules from the SIMATIC S7-300 automation system. These modules must be additionally ordered as required.

Power supply

The ET 200M I/O station can be operated with DC 24 V or AC 120/230 V. With a DC 24 V supply, the I/O station is powered directly from the cabinet's power supply assembly, with an AC 120/230 V supply, a PS 307 power supply module is additionally required upstream of the IM 153 interface module in the I/O station in order to convert the AC 120/230 V into DC 24 V. The DC 24 V input voltage provided by the power supply assembly or the PS 307 power supply module is used to power the IM 153 and is the load power supply for the I/O modules.

The PS 307 power supply module is available in 5 A and 10 A versions. The PS 307-1E version with a rated output current of 5 A is standard. If the configuration of the I/O station with I/O modules results in a higher load, it is recommendable to use the PS 307-1K with a rated output current of 10 A. Note, however, that the PS 307-1K width of 200 mm (compared to 80 mm with the PS 307-1E) means that a maximum of six I/O modules can be plugged onto the rail.

One fuse is fitted in the power supply assembly for each I/O station. With a DC 24 V supply, the IM 153 module and the L+/M-power supply for I/O modules are fused together.

With an AC 120/230 V supply, the PS 307 power supply module is fused. The L+/M voltage for the I/O modules is also obtained from the PS 307.

Hot swapping

When ordering an ET 200M I/O station, it is additionally possible to order the hot swapping function.

In an I & C system, it may be necessary to replace modules during operation for reasons of increased availability. The I/O subsystem for hot swapping is available for this as a version of the ET 200M. This version permits replacement of modules without having to switch off the associated ET 200M subsystem. The functions of the inserted modules are not affected. The hot swapping subsystem consists of backplane modules which can be assembled to form a backplane of the required length, and a matching mounting rail.

Special bus modules are required for the hot swapping function. In addition to the PS/IM bus module for the IM 153-1, IM 153-2 and IM 153-3 modules, these are the bus module 2 x 40 for accommodation of two I/O modules with a width of 40 mm each and the bus module 1 x 80 for accommodation of one module with a width of 80 mm. Up to four bus modules for I/O modules can be plugged onto each rail in addition to the PS/IM bus module. Bus module covers can be ordered separately for unused I/O slots.

Ex(i) design

The cable duct with the Ex(i) version is designed as standard in blue. Ex process cables are routed separately from other cables in the cable duct. Furthermore, a mechanical separation is required between the IM 153 module and the first Ex I/O module. An Ex partition is fitted for the hot swapping function to guarantee the specified insulation distance between intrinsically-safe and non-intrinsically-safe areas of the ET 200M distributed I/Os.

The DM 370 spacer module is used for this purpose if the hot swapping function is not required.

Load power supply for I/O modules

The load power supply for the I/O modules is connected via plugs located above the I/O modules. One plug is provided for each I/O module. The load power supplies are available in versions for four or eight I/O modules. With fewer than four or eight I/O modules, the unused plug connectors are supplied separately should subsequent installation of I/O modules become necessary.

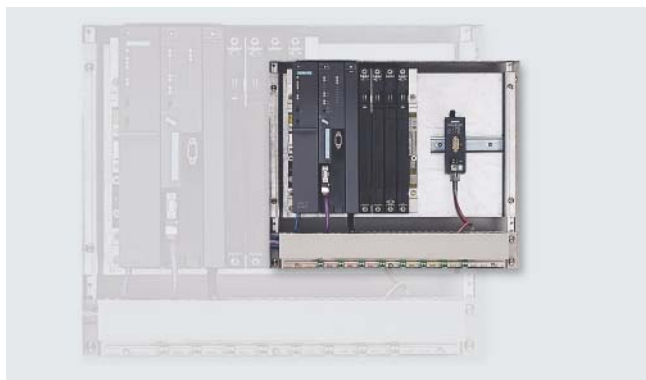
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AS 488/TM system unit



Overview

The scope of delivery of the AS 488/TM is variable, and is defined specific to the order.

Fundamental components of the AS 488/TM are:

- Mounting board for the UR2 rack and the rail for the OLM optical link module
- AS 488/TM CPU, comprising:
 - SIMATIC M7 CPU 486-3 or CPU 488-3
 - Memory module set with 2 x 8 Mbyte
 - UR2 rack (9 slots)
 - IF 962-COM serial interface module for commissioning terminal with two RS 232 interfaces
 - IF 961-DIO interface module for I & C monitoring functions
 - AS 488/TM system software on 8-Mbyte memory card
 - Commissioning terminal software on 3.5-inch diskette
- PROFIBUS-DP connection for distributed I/Os via EXM 478 extension module, as electrical or optical design. The components for a second PROFIBUS-DP line must be ordered separately.
- Components for connection to the CS 275 or PROFIBUS-TM system bus, components for PROFIBUS-TM as electrical or optical design.

- DC 24 V or AC 120/230 V power supply: depending on the input voltage, the AS 488/TM can be equipped either with a PS 407 power supply module (AC 120/230 V supply) or a PS 405 power supply module (DC 24 V supply), each rated at 10 A. These supply the AS 488/TM modules with the DC 5 V and DC 24 V operating voltages via the backplane bus. The PS 405 and PS 407 power supply modules also contain the backup batteries for buffering the time and date.
- Supplementary system documentation consisting of a manual for AS 388/TM, AS 488/TM and CS-L2 bridge in German or English.

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SIMATIC PCS 7 cabinet design



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