SIEMENS

SIMATIC

SIMATIC TOP connect System cabling for S7-300

Manual

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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.

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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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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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Preface

Purpose of this documentation

This documentation provides important information on wiring the I/O modules (input and output modules) of the S7-300 SIMATIC controller and the ET 200M modular I/O system with SIMATIC TOP connect system cabling.

Basic knowledge required

Basic knowledge of automation technology is required to understand the documentation.

Scope of this documentation

This documentation applies to all SIMATIC products in the S7-300 product family with ET 200M.

Conventions

Please pay particular attention to notes highlighted as follows:

Note

A note contains important information about the product described, about handling the product or about a specific section of the documentation that requires particular attention.

Recycling and disposal

The products can be recycled as their components are low in pollutants. For the environmentally friendly recycling and disposal of your old device, contact a certificated disposal service for electronic scrap.

Additional support

- You can find information on the technical support service in the appendix to this documentation.
- The technical documentation for the various SIMATIC products and systems is available on the Internet (http://www.siemens.com/simatic-tech-doku-portal).
- You can find the online catalog and online ordering system on the Internet (http://mall.automation.siemens.com).

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Safety notes

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Warning

When electrical devices are operated, parts of these devices will necessarily carry dangerous voltages.

If these devices are not correctly handled/operated, this can result in death or severe injury as well as significant material damage.

Only appropriately qualified personnel may work on or in the vicinity of this device.

This device can only function correctly and safely if it is transported, stored, set up and installed correctly.

Before installation or maintenance work can begin, the system's main switch must be switched off and measures taken to prevent it being switched on again.

If this instruction is not followed, touching live parts can result in death or serious injury.

Documentation guide

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Introduction

The documentation for the SIMATIC products is modular in structure and covers a wide range of subjects relating to your automation system.

The complete documentation for SIMATIC products in the S7-300 product family with ET 200M consists of the system manuals, function manuals and manuals.

Overview of documentation for SIMATIC S7-300 / ET200M

The tables below set out the documentation for SIMATIC S7-300 / ET 200M with the relevant content for system cabling.

Table 2-1 Documentation for SIMATIC S7-1500 / ET 200MP system cabling

Topic	Documentation	Most important content
Digital modules and analog modules	SIMATIC S7-300 Automation System S7-300 Module Data (http://support.automation.siemens.com/WW/view/en/8859629)	• Digital modules • Analog modules
Manual	SIMATIC S7-300 CPU 31xC and CPU 31x manual: Installation (http://support.automation.siemens.com/WW/view/en/13008499)	• Installation sequence • Configuring • Wiring
Manual	SIMATIC S7-300 CPU 31xC and CPU 31x manual: Technical specifications (http://support.automation.siemens.com/WW/view/en/12996906)	• Technical specifications
Manual	Distributed I/O Device ET 200M (http://support.automation.siemens.com/WW/view/en/1142798)	• Configuring the mechanical and electrical structure • Mounting and wiring

SIMATIC manuals

The latest versions of all SIMATIC manuals are available on the Internet (http://www.siemens.com/automation/service&support) for download.

Product overview

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3.1 What is SIMATIC TOP connect system cabling?

Introduction

SIMATIC TOP connect system cabling is an efficient way to connect the I/O modules (input and output modules) of the SIMATIC controller S7-300 and ET 200M I/O modules. SIMATIC TOP connect uses standardized connectors and reduces the wiring work required.

There are two types of connection:

- Fully modular connection:
  for connecting sensors and actuators in the field.
  The fully modular connection replaces the previously used terminal strips.
- Flexible connection:
  for simple wiring inside the control cabinet.

Area of application

SIMATIC TOP connect allows you to wire actuators and sensors "locally" to one or more terminal modules. Connection to the I/O modules takes place via connecting cable.

Figure 3-1 SIMATIC TOP connect with an S7-300

Design

System cabling with SIMATIC TOP connect always consists of the following components:

- The front connector module with one or more 16-pin male connectors for connecting cables
- One or more terminal modules
- One or more connecting cables with plug connectors at the ends

Fully modular connection

The fully modular connection for the system cabling comprises the following components:

- Front connector module ① for connecting to the I/O modules of the SIMATIC S7-300/ ET200M
- Connecting cables ②, pre-assembled
- Terminal modules ③, for connection to sensors and actuators in the field ④

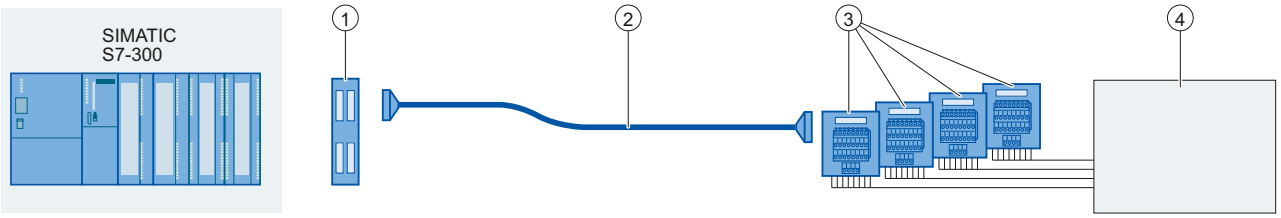


Figure 3-2 Fully modular connection

The components can be combined to suit the application and connected with simple plug-in connections. The terminal modules are used instead of conventional terminal blocks and act as the interface to the sensors and actuators.

In addition to the terminal module versions with screw-type terminals or push-in systems, there are also versions with LED signaling and signal conditioning, for example, from 230 V AC to 24 V DC.

Flexible connection

The flexible connection for the system cabling comprises a front connector module ① for connection to the SIMATIC S7-300/ET200M digital I/O modules. The front connector is already wired with 20 or 40 single wires ② which connect the SIMATIC S7-300/ET200M digital I/O modules directly to the sensors and actuators in the control cabinet.

Figure 3-3 Flexible connection

The single wires (cross-section: 0.5 mm²) are available in different lengths and in the following designs:

- H05V-K cable (PVC insulation)
- UL/CSA approval

3.2 Components

This section gives you an overview of the components of the SIMATIC TOP connect system cabling.

Components for fully modular connection

The table below lists the components for fully modular connection of the SIMATIC TOP connect system cabling.

Table 3-1 Components for fully modular connection of SIMATIC TOP connect

Component	Function	Figure
Front connector module	Front connector modules are modified front connectors and are plugged into the I/O module to be wired. The front connector module has IDC female connectors for connecting the connecting cables. Front connector modules are available in the following designs: • For DI/DO digital modules (power supply with spring-loaded or screw-type terminals) • For 2 A digital output 1 x 8 DO (power supply with spring-loaded or screw-type terminals) • For analog modules • For integrated I/O of the Compact CPU	
Connecting cable	Connecting cables connect the front connector module with the terminal modules. Connecting cables are available in the following versions: • 16-pin round cable (shielded or unshielded), pre-assembled[1], max. length 10 m • Connecting cable unshielded for SIMATIC S7-300 and ET200M between front connector module 4 x 16-pin and terminal module 1 x 50-pin [1]Pre-assembled: One IDC connector (insulation displacement connector) (flat socket) at each end.	
Terminal module	Digital and analog terminal modules are available for connecting the I/O signals. These are attached to the standard mounting rail. The terminal modules are available in the following connecting systems: • Push-in system • Screw-type terminals All digital terminal modules also have LED for channel display.	

Accessories for fully modular connection

The following components are ordered separately:

Table 3-2 Accessories for fully modular connection of SIMATIC TOP connect

Accessories	Function
Labels	Labels (20 mm x 7 mm, pale turquoise) are available for labeling the terminal modules.
Shield plate	The shield plate can be optionally fitted onto the terminal module for analog signals. The terminal module with the fitted shield plate is fastened to the standard mounting rail.
Shield connection clamps for the shield plate	The shield connection clamps provide contact plating for cable shields on the shield plate.

Components for flexible connection

The table below lists the components for flexible connection of the SIMATIC TOP connect system cabling.

Table 3-3 Components for flexible connection of SIMATIC TOP connect

Component	Function	Figure
Front connector with single wires	Up to 16 or 32 digital input and output channels can be connected directly to the I/O with a front connector with single wires. The single wires are installed with screw or crimp contacts in the front connector and are cut off straight at the other end. The wires can be easily identified as they are marked at regular intervals in accordance with the pin designations on the front connector. The front connectors are available in the following designs: • For 16 DI/DO modules • For 32 DI/DO modules	

Overview of order numbers for all components

Note

Order numbers for the accessories of the fully modular connection are provided in the section Accessories (Page 107).

Components for fully modular connection of SIMATIC TOP connect

Table 3-4 Front connector modules

Front connector modules		Article number	Power supply
for Compact CPU modules	CPU 312C	6ES7921-3AK20-0AA0	Screw-type terminals
	CPU 313C / 314C-2PtP / 314C-2DP	6ES7921-3AM20-0AA0	Screw-type terminals
for digital modules	2 x 8 I/O digital	6ES7921-3AA00-0AA0	Spring-loaded system
		6ES7921-3AB00-0AA0	Screw-type terminals
	4 x 8 I/O digital	6ES7921-3AA20-0AA0	Spring-loaded system
		6ES7921-3AB20-0AA0	Screw-type terminals
for 2 A digital output		6ES7921-3AC00-0AA0	Spring-loaded system
		6ES7921-3AD00-0AA0	Screw-type terminals
For analog modules	20-pin	6ES7921-3AF00-0AA0	Spring-loaded system
		6ES7921-3AG00-0AA0	Screw-type terminals
	40-pin	6ES7921-3AF20-0AA0	Spring-loaded system
		6ES7921-3AG20-0AA0	Screw-type terminals

Table 3-5 Connecting cables between front connector module and terminal module with IDC connector

Connecting cable	Shielding	Article number	Cable length
Round cable 16-pin assembled with IDC connectors	16-pin unshielded	6ES7923-0BA50-0CB0	L = 0.5 m
		6ES7923-0BB00-0CB0	L = 1.0 m
		6ES7923-0BB50-0CB0	L = 1.5 m
		6ES7923-0BC00-0CB0	L = 2.0 m
		6ES7923-0BC50-0CB0	L = 2.5 m
		6ES7923-0BD00-0CB0	L = 3.0 m
		6ES7923-0BE00-0CB0	L = 4.0 m
		6ES7923-0BF00-0CB0	L = 5.0 m
		6ES7923-0BG50-0CB0	L = 6.5 m
		6ES7923-0BJ00-0CB0	L = 8.0 m
		6ES7923-0CB00-0CB0	L = 10.0 m
	16-pin shielded	6ES7923-0BB00-0DB0	L = 1.0 m
		6ES7923-0BC00-0DB0	L = 2.0 m
		6ES7923-0BC50-0DB0	L = 2.5 m
		6ES7923-0BD00-0DB0	L = 3.0 m
		6ES7923-0BE00-0DB0	L = 4.0 m
		6ES7923-0BF00-0DB0	L = 5.0 m
		6ES7923-0BG50-0DB0	L = 6.5 m
		6ES7923-0BJ00-0DB0	L = 8.0 m
		6ES7923-0CB00-0DB0	L = 10.0 m

Table 3-6 Adapter cable

Connecting cable	Shielding	Article number	Cable length
• Pre-assembled round cable • 4 x 16-pin pin connector to 50-pin pin connector	Unshielded	6ES7923-5BA50-0EB0	L = 0.5 m
		6ES7923-5BB00-0EB0	L = 1.0 m
		6ES7923-5BB50-0EB0	L = 1.5 m
		6ES7923-5BC00-0EB0	L = 2.0 m
		6ES7923-5BC50-0EB0	L = 2.5 m
		6ES7923-5BD00-0EB0	L = 3.0 m
		6ES7923-5BE00-0EB0	L = 4.0 m
		6ES7923-5BF00-0EB0	L = 5.0 m
		6ES7923-5BG50-0EB0	L = 6.5 m
		6ES7923-5BJ00-0EB0	L = 8.0 m
		6ES7923-5CB00-0EB0	L = 10.0 m

Table 3-7 Terminal modules for 16-pin connecting cable with IDC connector

Type	Signaling	Article number	Terminal	Preferred application
TP1	without LED	6ES7924-0AA20-0AA0	Screw-type terminals	DI/DO
		6ES7924-0AA20-0AC0	Push-in system	
	with LED	6ES7924-0AA20-0BA0	Screw-type terminals	
		6ES7924-0AA20-0BC0	Push-in system	
TP2	without LED	6ES7924-0BB20-0AA0	Screw-type terminals	2A DO
		6ES7924-0BB20-0AC0	Push-in system	
TP3	without LED	6ES7924-0CA20-0AA0	Screw-type terminals	DI/DO
		6ES7924-0CA20-0AC0	Push-in system	
	with LED	6ES7924-0CA20-0BA0	Screw-type terminals	
		6ES7924-0CA20-0BC0	Push-in system	
TPF	LED fuse	6ES7924-0CL20-0BA0	Screw-type terminals	DI/DO
		6ES7924-0CL20-0BC0	Push-in system	
TPS	LED switch	6ES7924-0CH20-0BA0	Screw-type terminals	
		6ES7924-0CH20-0BC0	Push-in system	
TPA	without LED	6ES7924-0CC21-0AA0	Screw-type terminals	AI/AO
		6ES7924-0CC21-0AC0	Push-in system	
TPRi 230 V	with LED	6ES7924-0BE20-0BA0	Screw-type terminals	DI
		6ES7924-0BE20-0BC0	Push-in system	
TPRi 110 V	with LED	6ES7924-0BG20-0BA0	Screw-type terminals	
		6ES7924-0BG20-0BC0	Push-in system	
TPRo	with LED	6ES7924-0BD20-0BA0	Screw-type terminals	DO
		6ES7924-0BD20-0BC0	Push-in system	
TPOo	with LED	6ES7924-0BF20-0BA0	Screw-type terminals	
		6ES7924-0BF20-0BC0	Push-in system	

Table 3-8 Terminal modules for 50-pin connecting cable with IDC connector

Type	Signaling	Article number	Terminal	Preferred application
TP1	without LED	6ES7924-2AA20-0AA0	Screw-type terminals	DI/DO
		6ES7924-2AA20-0AC0	Push-in system	
	with LED	6ES7924-2AA20-0BA0	Screw-type terminals	
		6ES7924-2AA20-0BC0	Push-in system	
TP3	without LED	6ES7924-2CA20-0AA0	Screw-type terminals	
		6ES7924-2CA20-0AC0	Push-in system	
	with LED	6ES7924-2CA20-0BA0	Screw-type terminals	
		6ES7924-2CA20-0BC0	Push-in system	

Components for flexible connection of SIMATIC TOP connect

Table 3-9 Front connector with single wires for S7-300 / ET 200M

Connection	I/O type	Number of connector pins	Wire type	Order number	Length	Packaging unit
Screw-type terminals	16 DI/DO	20-pin	H05V-K	6ES7922-3BC50-0AB0	L = 2.5 m	1
				6ES7922-3BD20-0AB0	L = 3.2 m	
				6ES7922-3BF00-0AB0	L = 5.0 m	
				6ES7922-3BC50-5AB0	L = 2.5 m	5
				6ES7922-3BD20-5AB0	L = 3.2 m	
				6ES7922-3BF00-5AB0	L = 5.0 m	
	32 DI/DO	40-pin		6ES7922-3BC50-0AC0	L = 2.5 m	1
				6ES7922-3BD20-0AC0	L = 3.2 m	
				6ES7922-3BF00-0AC0	L = 5.0 m	
				6ES7922-3BC50-5AC0	L = 2.5 m	5
				6ES7922-3BD20-5AC0	L = 3.2 m	
				6ES7922-3BF00-5AC0	L = 5.0 m	
Crimp	16 DI/DO	20-pin		6ES7922-3BC50-0AF0	L = 2.5 m	1
				6ES7922-3BD20-0AF0	L = 3.2 m	
				6ES7922-3BF00-0AF0	L = 5.0 m	
	32 DI/DO	40-pin		6ES7922-3BC50-0AG0	L = 2.5 m	
				6ES7922-3BD20-0AG0	L = 3.2 m	
				6ES7922-3BF00-0AG0	L = 5.0 m	
Screw-type terminals	16 DI/DO	20-pin	UL/CSA	6ES7922-3BD20-0UB0	L = 3.2 m	
				6ES7922-3BF00-0UB0	L = 5.0 m	
	32 DI/DO	40 pin		6ES7922-3BD20-0UC0	L = 3.2 m	
				6ES7922-3BF00-0UC0	L = 5.0 m	

3.3 Connectable I/O modules

The tables below list all input and output modules of the SIMATIC controller S7-300 or ET 200M Ex I/O modules that can be connected to the SIMATIC TOP connect fully modular connection.

Table 3-10 Connectable I/O modules SIMATIC S7-300 Compact CPU

I/O module (compact)	Article number
Compact CPU 312C	6ES7312-5BF04-0AB0
Compact CPU 313C	6ES7313-5BG04-0AB0
Compact CPU 313C-2PtP	6ES7313-6BG04-0AB0
Compact CPU 313C-2DP	6ES7313-6CG04-0AB0
Compact CPU 314C-2PtP	6ES7314-6BH04-0AB0
Compact CPU 314C-2DP	6ES7314-6CH04-0AB0

Table 3-11 Connectable I/O modules SIMATIC S7-300/ET200M digital, for terminal modules with 16-pin connecting cable

I/O module (digital)	Article number
SM 321	
DI 32 x DC 24 V	6ES7321-1BL00-0AA0
DI 16 x DC 24 V	6ES7321-1BH02-0AA0
DI 16 x DC 24 V High Speed	6ES7321-1BH10-0AA0
DI 16 x DC 24 V; Sourcing	6ES7321-1BH50-0AA0
SM 322	
DO 32 x DC 24 V/0.5 A	6ES7322-1BL00-0AA0
DO 16 x DC 24 V/0.5 A	6ES7322-8BH10-0AB0
DO 16 x DC 24 V/0.5 A	6ES7322-1BH01-0AA0
DO 16 x DC 24 V/0.5 A High Speed	6ES7322-1BH10-0AA0
DO 8 x DC 24 V/0.5 A	6ES7322-8BF00-0AB0
DO 8 x DV 24 V/2 A	6ES7322-1BF01-0AA0
SM 323	
DI 16/DO 16 x DC 24 V/0.5 A	6ES7323-1BL00-0AA0
DI 8/DO 8 x DC 24 V/0.5 A	6ES7323-1BH01-0AA0

Table 3-12 Connectable I/O modules for SIMATIC S7-300/ET200M analog, for terminal modules with 16-pin connecting cable

I/O module (analog)	Article number
SM 331	
AI 8 x 14-bit	6ES7331-7HF01-0AB0

I/O module (analog)	Article number
AI 8 x 13-bit	6ES7331-1KF02-0AB0
AI 2 x 9/12/14-bit	6ES7331-7KB02-0AB0
AI 8 x 9/12/14-bit	6ES7331-7KF02-0AB0
AI 8 x 16-bit	6ES7331-7NF00-0AB0
AI 8 x 16-bit	6ES7331-7NF10-0AB0
AI 8 x 16-bit (internal 24-bit)	6ES7331-7PF01-0AB0
AI 8 x 16-bit	6ES7331-7PF11-0AB0
SM 332	
AO 2 x 11/12-bit	6ES7332-5HB01-0AB0
AO 4 x 11/12-bit	6ES7332-5HD01-0AB0
AO 8 x 11/12-bit	6ES7332-5HF00-0AB0
AO 4 x 15-bit	6ES7332-7ND02-0AB0
SM 334	
AI 4/AO 2 x 8/8-bit	6ES7334-0CE01-0AA0
AI 4/AO 2 x 12/12-bit	6ES7334-0KE00-0AB0
SM 335	
AI 4 x 14-bit	6ES7335-7HG02-0AB0

Connecting

4

4.1 Safety regulations

Introduction

When used in plants or systems, SIMATIC TOP connect system cabling is subject to special rules and regulations in line with the area of application.

This section provides an overview of the most important rules for connecting SIMATIC TOP connect.

You can also find rules and regulations governing the integration of the S7-300 into a plant or system in the section "Basic Rules and Regulations" in the "SIMATIC Automation Systems S7-300, ET 200M I/O Modules" (http://support.automation.siemens.com/WW/view/en/1096709) manual.

Specific application scenario

Please observe the safety and accident prevention regulations that apply to specific applications, for example, the machinery directives.

Line voltage

Note the line voltage:

- For stationary plants and systems without an all-pole line disconnector, there must be a disconnector unit (all-pole) fitted in the building installation.
- Any fluctuation/deviation in the line voltage from the rated value must be within the permitted tolerance for all S7-300 electric circuits.

24 V DC supply

Note the following for the 24 V DC supply:

- Power supplies for 24 V DC must have secure electrical isolation in accordance with IEC 60364-4-41.
- Surge arrestors must be fitted to protect against lighting and overvoltage.

You can find components for lightning and overvoltage protection in the "Designing interference-free controllers" function manual (http://support.automation.siemens.com/WW/view/en/59193566).

Protection from electric shock

The S7-300 automation system mounting rail must be connected (conductive connection) to the protective conductor to prevent electric shock.

Protection from external electrical interference

To prevent electrical interference and faults, note the following:

- Each plant or system fitted with an S7-300 must be connected to a protective conductor with a sufficient cross-section to handle electromagnetic interference.
- For supply, signal and bus cables, you must make sure that the cables are correctly routed and installed.
- For signal and bus cables, you must make sure that an open circuit or crossover will not result in undefined plant or system states.

Reference

You can find more information in the "Designing Interference-free Controllers" function manual.

4.2 Wiring rules

The tables below list the wiring rules for connecting supply voltage of I/O modules to the terminal modules or front connector module.

Terminal modules

Table 4-1 Wirings rules for terminal modules

Wiring rules for ...	Terminal module	
	Push-in system	Screw-type terminal
Connectable cable cross-sections		
... solid cables	No	
... flexible cables		
... without end sleeve	0.2 to 2.5 mm²	
... with end sleeve according to DIN 46228/1	0.2 to 2.5 mm²	0.5 to 2.5 mm² (2.5 mm² with crimp acc. to EN 60947-1)
... with end sleeve in accordance with DIN 46228/4 with plastic collar	0.2 to 2.5 mm²	
Number of cables per connection	Combination of 1 or 2 conductors to make up the cross-sections specified above (in total) in one end sleeve.	
Max. diameter of insulation		
Stripped length of the cables		
... without insulating collar		
... with insulating collar		
Blade of the screwdriver	0.6 x 3.5	0.6 x 3.5
Tightening torque for connecting the cables		0.4 Nm

Front connector modules

Table 4-2 Wirings rules for front connector module for 20-pin module

	Spring-loaded terminal system	Screw-type system
Connectable cable cross-sections		
... solid cables	No	
... flexible cables with/without wire end sleeve	0.25 to 1.5 mm²	
Number of cables per connection	1 or a combination of 2 cables up to 1.5 mm² (total) in a common wire end sleeve	
Diameter of the cable insulation, max.	3.1 mm	
Stripped length of the cables		
... without insulating collar	6 mm	
... with insulating collar	-	
Wire end sleeves according to DIN 46228		
... without insulating collar	Form A, 5 to 7 mm length	
… with insulating collar 0.25 to 1.0 mm²	-	
… with insulating collar 1.5 mm²	-	
Blade width of the screwdriver	3.5 mm (cylindrical form)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Table 4-3 Wirings rules for front connector module for 40-pin module

	Spring-loaded terminal system	Screw-type system
Connectable cable cross-sections		
... solid cables	No	
... flexible cables with/without wire end sleeve	0.25 to 0.75 mm²	
Number of cables per connection	1 or a combination of 2 cables up to 0.75 mm² (total) in a common wire end sleeve	
Diameter of the cable insulation, max.	2.0 mm	
Stripped length of the cables		
... without insulating collar	6 mm	
... with insulating collar	-	
Wire end sleeves according to DIN 46228		
... without insulating collar	Form A, 5 to 7 mm length	
… with insulating collar 0.25 to 1.0 mm²	-	
… with insulating collar 1.5 mm²	-	
Blade width of the screwdriver	3.5 mm (cylindrical form)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

See also

Connecting the connecting cable and supply voltage to the front connector module (Page 25)

4.3 Connecting components

Introduction

⚠ WARNING
Risk of electrocution
Touching live parts can result in death or serious injury.
Before you connect a module, make sure that it is disconnected from the power supply.

The procedure for connecting the front connector modules is basically the same as for the standard front connectors. Connecting the standard front connectors is described in detail in the manual "S7-300 CPU 31xC and CPU 31x: Installation" (http://support.automation.siemens.com/WW/view/en/13008499) manual.

Before connecting the front connector modules, read the following sections of the manual:

- Requirements for wiring the S7-300
- Connecting the mounting rail with a protective conductor
- Wiring the front connector
- Connect shielded wires to the shield connection element
- Plugging the front connector into the module

Abbreviations used

The meanings of the abbreviations in the figures below are as follows:

AI	Analog input module
BR	Potential bridges
M	Connection for ground
L+	Connection for supply voltage
Mn	Measuring input, channel n
ICn+/ICn-	Current output power supply, thermal resistance (RTD), channel n
Un+/Un-	Voltage input, channel n
In+/In-	Current input, channel n
COMP+/COMP-	Compensation input
IComp+/IComp-	Current output power supply, compensation
UV	Feed voltage at channel for 2-wire transducer (2DMU)
UCM	Potential difference between reference points of the measuring inputs / the analog ground MANA
UISO	Potential difference between reference points of the measuring inputs and the central grounding point
MANA	Reference point of the analog ground

Wiring sequence

Step	Action	See section
1	Wiring the front connector module	Wiring the front connector module (Page 25)
2	Connecting the connecting cable to the terminal module	Connecting the connecting cable and supply voltage to the front connector module (Page 25)
3	Wire the terminal module inputs and outputs	Connecting the connecting cable to the terminal module (Page 33)

4.3.1 Wiring the front connector module

Introduction

This section explains how to wire the front connector modules.

Note

Read section "Wiring SIMATIC TOP connect to the I/O modules (Page 37)" for special connection examples and selection criteria for front connector modules.

Functions of the front connector module

The front connector module is used to connect the connecting cable to the I/O module. The supply voltage cables for the modules can also be connected to the front connector module.

4.3.1.1 Connecting the connecting cable and supply voltage to the front connector module

Requirements

- Supply voltages are switched off
- Cables have been prepared in line with the terminal system used; see "Wiring rules (Page 22)" for more on this.

Connecting the connecting cable to the front connector module

⚠ WARNING

Risk of electrocution

Touching live parts can result in death or serious injury.

Before you connect a module, make sure that it is disconnected from the power supply.

Note

Connection to the front connector module is shown here using the 2 x 8 I/O module as an example.

1. Switch off the load current supply.
2. Open the front door.

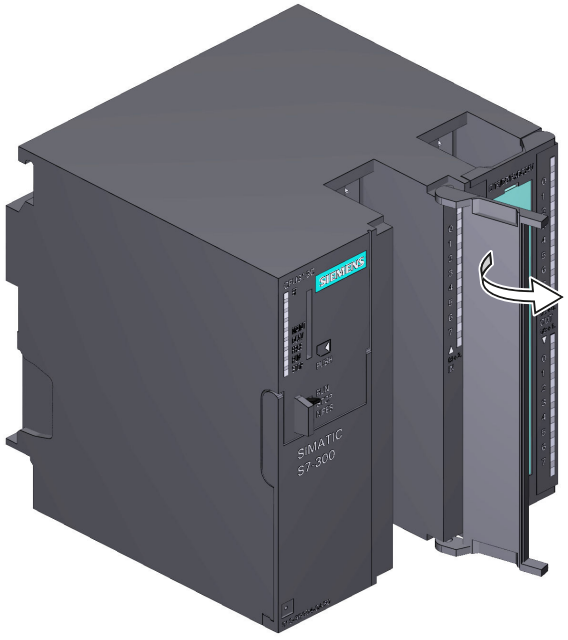


Figure 4-1 Front flap of the I/O module open (example)

3. Place the front connector in the pre-wiring position.
   To do this, slide the front connector into the signal module until it clicks into place. In this position, the front connector still protrudes from the module.
   Advantage of the pre-wiring position: Convenient wiring.
   The front connector has no contact to the module in the wiring position.

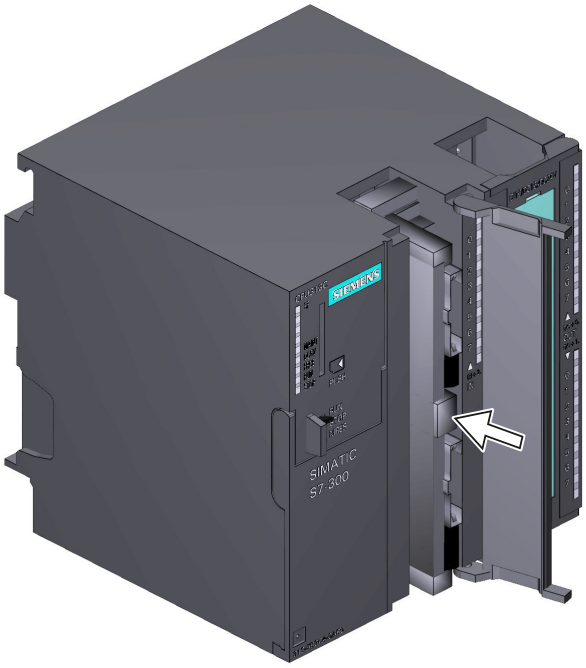


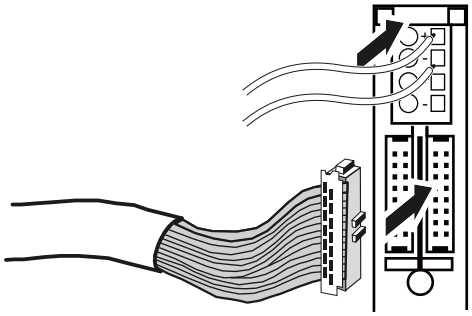
Figure 4-2 Front connector module in the pre-wiring position (example)

Note

In this position, the front connector module is still protruding from the I/O module (see figure above). The front connector module and I/O module are not yet electrically connected. The pre-wiring position makes it easy to wire the front connector module.

4. If required, connect the cables for the I/O module supply voltage to the front connector module.

5. Connect the connecting cables to the front connector module.



Note

Make sure that you follow the correct assignment when connecting the supply voltage cables for the I/O module and connecting cables to the front connector module:

- The assignment of supply voltage cables to cable connections
- The assignment of cable connections to the address bytes of the module

The assignment is set out in the graphics below with keys.

6. Insert the wire fitted with an end sleeve into the duct.
7. Insert the strain relief (cable tie) provided for the cabling into the front connector module. The strain relief holds the cabling (supply voltage cables and connecting cables) in the cable storage space of the I/O module.
8. Press the release button on the front connector module.

9. Press the front connector module into the slot until it clicks into place.

Note

Front connector modules with 40-pin connecting cable have a screw instead of a release button.

For 40-pin front connector modules, tighten the fastening screw in the middle of the front connector module.

This pulls the front connector module onto the module and establishes the contact.

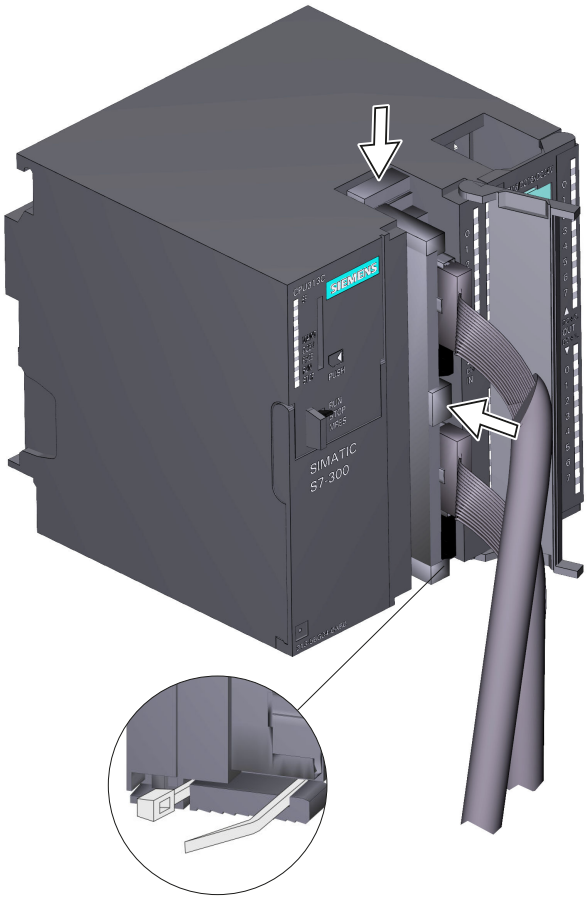


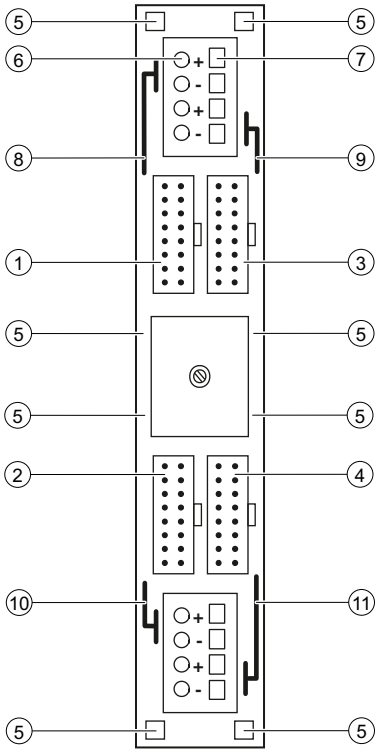
Figure 4-3 Fitted strain relief (example)

10. Run the connecting cables and the cables for the I/O module supply voltage down and out of the I/O module.
11. Tighten the strain-relief.
12. Close the front door.

For 32-channel digital modules and Compact CPU for the connection X2:

Relates to the following order numbers:

- 6ES7921-3AA20-0AA0
- 6ES7921-3AB20-0AA0



① Cable connections
② Cable connections
③ Cable connections
④ Cable connections
⑤ Openings for strain relief
⑥ Opening for connecting cable
⑦ Opening for screwdriver
⑧ Supply connections for ①
⑨ Supply connections for ③
⑩ Supply connections for ②
⑪ Supply connections for ④

The connections for the supply voltage are only available as the screw-loaded terminals. These are also available as a screw-type version.

The following table shows the assignment of the respective cable connections to the channels of the signal modules via the address assignment.

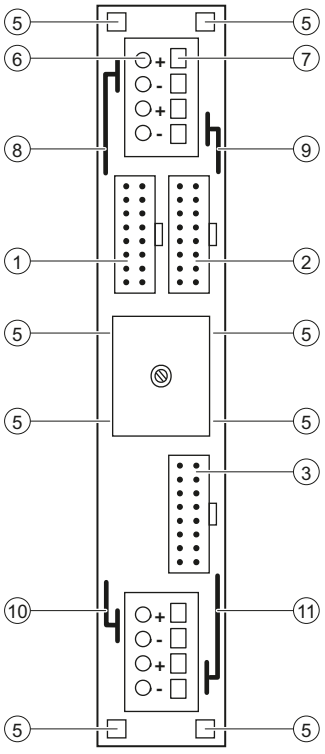
Assignment of the cable connections to the address bytes of the 32-channel digital modules and compact CPUs for the X2 interface			
Cable connections	**Address assignment for**		
	Digital input module	Digital output module	Digital input/output module and Compact CPU connection X2
①	IB x	QB x	IB x
②	IB (x+1)	QB (x+1)	IB (x+1)

Assignment of the cable connections to the address bytes of the 32-channel digital modules and compact CPUs for the X2 interface			
③	IB (x+2)	QB (x+2)	QB x
④	IB (x+3)	QB (x+3)	QB (x+1)

For the Compact CPU 312C for the connection X1:

Relates to the following order number:

- 6ES7921-3AK20-0AA0



① Cable connections
② Cable connections
③ Cable connections
⑤ Openings for strain relief
⑥ Opening for connecting cable
⑦ Opening for screwdriver
⑧ Supply connections for ① and ②
⑨ Supply connections for ① and ②
⑩ Supply connections for ③
⑪ Supply connections for ③

The connectors for the supply voltage are only available in the screw-type version.

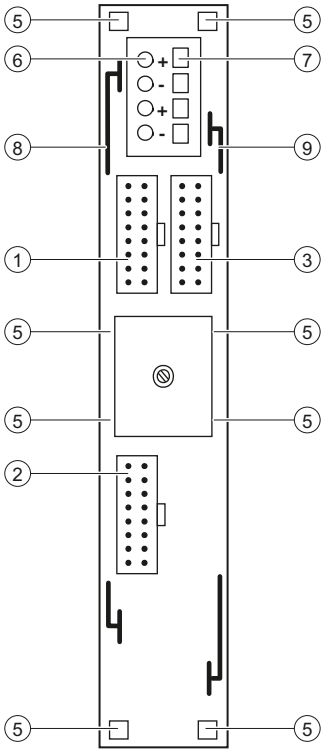
The following table shows the assignment of the respective connecting cable connectors to the channels of the Compact CPU 312C via the address assignment (X1).

Assignment of the cable connections to the address bytes (X1) of the compact CPU 312C	
Cable connections	**Address assignment (X1) for Compact CPU 312C**
①	IB x
②	IB (x+1)
③	QB x

For the Compact CPU 312C, 314C-2PtP, 314C-2DP for the connection X1:

Relates to the following order number:

- 6ES7921-3AM20-0AA0



① Cable connections
② Cable connections
③ Cable connections
⑤ Openings for strain relief
⑥ Opening for connecting cable
⑦ Opening for screwdriver
⑧ Supply connections for ① and ②
⑨ Supply connections for ③

The connectors for the supply voltage are only available in the screw-type version.

The following table shows the assignment of the respective cable connections to the channels of the Compact CPU via the address assignment (X1).

Assignment of the cable connections to the address bytes (X1) of the compact CPU 313C, 314C-2PtP, 314C-2DP	
Cable connections	Address assignment (X1) for Compact CPU
①	PIW x+0; PIW x+2; PIW x+4
②	PIW x+6; PIW x+8; PQW x+0; PQW x+2
③	IB x

See also

Wiring rules (Page 22)

4.3.2 Connecting the connecting cable to the terminal module

Introduction

This section details how to wire the terminal modules.

Note

Also read the information in the section "Wiring SIMATIC TOP connect to the I/O modules (Page 37)". These include the selection criteria for the terminal modules and information on wiring.

Terminal module function

The terminal module is the interface between the connection cables from the field and the SIMATIC S7-300/ET200M. The supply voltage cables for the I/O modules can also be connected to the terminal module.

Fitting the terminal module and connecting cable

1. Fasten the terminal module to a 35 mm standard mounting rail (DIN EN 60715).
2. Connect the connecting cable to the terminal module as shown in the figure below.

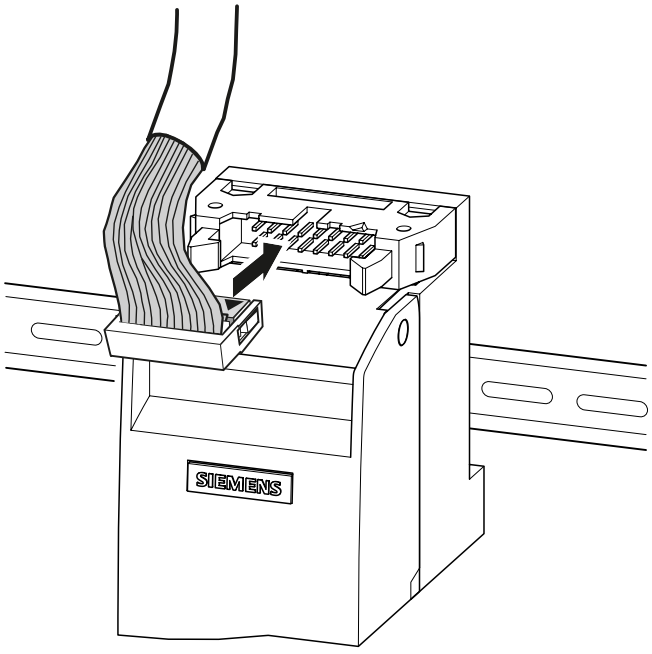


Figure 4-4 Connecting the connecting cable to the terminal module

See also

Wiring SIMATIC TOP connect to the I/O modules (Page 37)

4.3.3 Connecting the actuators/sensors to the terminal module

The connecting cables of the actuators/sensors are connected to the terminals of the terminal module. Terminal modules are available with the following types of terminal:

- Screw-type terminals
- Push-in terminals

4.4 Labeling terminal modules

Introduction

The terminal modules are identified using labels. The labels are perforated and are attached to the front flap of the terminal module.

The following types of labels are available:

- Insertable for terminal modules

Preparing and attaching labels

1. Remove the completed label from the sheet.
2. Insert the label into the holder ① on the outside of the front flap.

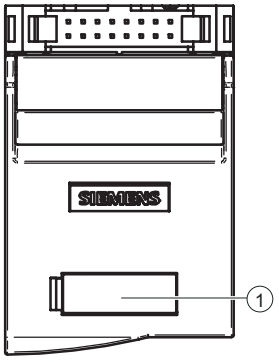


Figure 4-5 Label holder with labels (example)

Wiring SIMATIC TOP connect to the I/O modules

5

Introduction

You can use SIMATIC TOP connect system cabling to wire I/O modules with actuators/ sensors. The SIMATIC TOP connect components used depend on the following factors:

- The I/O module to be wired and
- The connection system (screw-type terminal / push-in system, 1-wire, 3-wire, 2 A connection, fuses, disconnect terminals, relay or optocoupler).

5.1 SIMATIC TOP connect - components and selection help

SIMATIC TOP connect components

The tables below list the SIMATIC TOP connect system cabling components.

5.2 S7-300 Compact CPU modules

Module		Order number of the module	Plug	Pins	Front connector modules: for digital modules: 4 x I/O: Spring-loaded terminals	Front connector modules: for digital modules: 4 x I/O: Screw-type terminals	Front connector modules: for compact CPU modules: CPU 312C: Screw-type terminals	Front connector modules: for compact CPU modules: CPU 313C/314C-2: Screw-type terminals	Connecting cables: Round cable assembled with IDC connectors: 16-pin unshielded	Connecting cables: Round cable assembled with IDC connectors: 16-pin shielded
6ES731.-...										
Compact CPU	312C	6ES7312-5BF04-0AB0	X1	40			X		X	X [3]
	313C	6ES7313-5BG04-0AB0	X1	40				X	X [4]	X [3]
			X2	40	X	X			X	X [3]
	313C-2PtP	6ES7313-6BG04-0AB0	X1							
			X2	40	X	X			X	X [3]
	313C-2DP	6ES7313-6CG04-0AB0	X1							
			X2	40	X	X			X	X [3]
	314C-2PtP	6ES7314-6BH04-0AB0	X1	40				X	X [4]	X [3]
			X2	40	X	X			X	X [3]
	314C-2DP	6ES7314-6CH04-0AB0	X1	40				X	X [4]	X [3]
			X2	40	X	X			X	X [3]
Order number					6ES7921-3AA20-0AA0	6ES7921-3AB20-0AA0	6ES7921-3AK20-0AA0	6ES7921-3AM20-0AA0	6ES7923-0XXX0-0CB0	6ES7923-0XXX0-0DB0

X module can be used
[1] Only for digital outputs (max. 2 x)
[2] Only for digital outputs (max. 1 x)
[3] The shielded cable must be used for the analog signals.
If needed, it can also be used for digital signals. A shield support must be provided by the user.
[4] Only for digital inputs (max. 2 x)
[5] Unshielded only

Lengths
xxx BA5 = 0.5 m [5]
xxx BB0 = 1.0 m
xxx BB5 = 1.5 m [5]
xxx BC0 = 2.0 m
xxx BC5 = 2.5 m
xxx BD0 = 3.0 m
xxx BE0 = 4.0 m
xxx BF0 = 5.0 m
xxx BG5 = 6.5 m
xxx BJ0 = 8.0 m
xxx CB0 = 10.0 m

Terminal modules													
for 16-pin connecting cable													
max. number of required termination modules per module		TP1		TP3		TPF	TPS	TPRi 230 V	TPRi 110 V	TPRo	TPOo	TPA	Shield plate
8 I/O digital	I/O analog	without LED	with LED	without LED	with LED	LED Fuse	LED Switch	with LED	with LED	with LED	with LED	without LED	
3		X	X	X	X	X	X	X	X	X	X		
1	2	X	X	X	X	X	X	X	X			X	X
4		X	X	X	X	X	X	X[4)]	X[4)]	X[1)]	X[1)]		
4		X	X	X	X	X	X	X[4)]	X[4)]	X[1)]	X[1)]		
4		X	X	X	X	X	X	X[4)]	X[4)]	X[1)]	X[1)]		
1	2	X	X	X	X	X	X	X	X			X	X
4		X	X	X	X	X	X	X[4)]	X[4)]	X[1)]	X[1)]		
1	2	X	X	X	X	X	X	X	X			X	X
4		X	X	X	X	X	X	X[4)]	X[4)]	X[1)]	X[1)]		

Order number	6ES7924-0AA20-0Ax0	6ES7924-0AA20-0Bx0	6ES7924-0CA20-0Ax0	6ES7924-0CA20-0Bx0	6ES7924-0CL20-0Bx0	6ES7924-0CH20-0Bx0	6ES7924-0BE20-0Bx0	6ES7924-0BG20-0Bx0	6ES7924-0BD20-0Bx0	6ES7924-0BF20-0Bx0	6ES7924-0CC21-0Ax0	6ES7928-1AA20-4AA0

Terminal type

x A = Screw-type terminals

x C = Push-in terminals

5.3 S7-300 digital modules

Connecting cables and terminal modules 16-pin

module			Order number of the module	Pins	Front connector modules					
					for digital modules				Only for 2 A Digital output	
					2x8 I/O		4x8 I/O			
					Spring-loaded terminals	Screw-type terminals	Spring-loaded terminals	Screw-type terminals	Spring-loaded terminals	Screw-type terminals
6ES732.-...										
SM 321	DI 32 x	24 V DC	6ES7321-1BL00-0AA0	40			X	X		
	DI 16 x	24 V DC	6ES7321-1BH02-0AA0	20	X	X				
	DI 16 x	24 V DC High Speed	6ES7321-1BH10-0AA0	20	X	X				
	DI 16 x	24 V DC Sourcing	6ES7321-1BH50-0AA0	20	X	X				
SM 322	DO 32 x	24 V DC / 0.5 A	6ES7322-1BL00-0AA0	40			X	X		
	DO 16 x	24 V DC / 0.5 A	6ES7322-8BH10-0AB0	40			X	X		
	DO 16 x	24 V DC / 0.5 A	6ES7322-1BH01-0AA0	20	X	X				
	DO 16 x	24 V DC / 0.5 A High Speed	6ES7322-1BH10-0AA0	20	X	X				
	DO 8 x	24 V DC / 0.5 A	6ES7322-8BF00-0AB0	20	X	X				
	DO 8 x	24 V DC / 2 A	6ES7322-1BF01-0AA0	20					X	X
SM 323	DI 16/DO 16 x	24 V DC / 0.5 A	6ES7323-1BL00-0AA0	40			X	X		
	DI 8/DO 8 x	24 V DC / 0.5 A	6ES7323-1BH01-0AA0	20	X	X				
Order number					6ES7921-3AA00-0AA0	6ES7921-3AB00-0AA0	6ES7921-3AA20-0AA0	6ES7921-3AB20-0AA0	6ES7921-3AC00-0AA0	6ES7921-3AD00-0AA0

X module can be used
[1] Only for outputs
[2] Only for inputs
[3] If needed, the shielded cable can also be used for digital signals.
A shield support must be provided by the user.
[4] Unshielded only

Connecting cables		Terminal modules											
Round cable 16-pin assembled with IDC connectors		for 16-pin connecting cable											
16-pin unshielded	16-pin shielded	Max. number of required terminal modules per module 8 I/O	TP1		TP2	TP3		TPF	TPS	TPRi 230 V	TPRi 110 V	TPRo	TPOo
			without LED	with LED	without LED	without LED	with LED	LED Fuse	LED Switch	with LED	with LED	with LED	with LED
X	X 3)	4	X	X		X	X	X	X	X	X		
X	X 3)	2	X	X		X	X	X	X	X	X		
X	X 3)	2	X	X		X	X	X	X	X	X		
X	X 3)	2	X			X							
X	X 3)	4	X	X		X	X	X	X			X	X
X	X 3)	4	X	X		X	X	X	X			X	X
X	X 3)	2	X	X		X	X	X	X			X	X
X	X 3)	2	X	X		X	X	X	X			X	X
X	X 3)	2	X	X		X	X	X	X			X	X
X	X 3)	1			X								
X	X 3)	4	X	X		X	X	X	X	X 2)	X 2)	X 1)	X 1)
X	X 3)	2	X	X		X	X	X	X	X 2)	X 2)	X 1)	X 1)
Order number		Order number											
6ES7923-0XXX0-0CB0	6ES7923-0XXX0-0DB0		6ES7924-0AA20-0Ax0	6ES7924-0AA20-0Bx0	6ES7924-0BB20-0Ax0	6ES7924-0CA20-0Ax0	6ES7924-0CA20-0Bx0	6ES7924-0CL20-0Bx0	6ES7924-0CH20-0Bx0	6ES7924-0BE20-0Bx0	6ES7924-0BG20-0Bx0	6ES7924-0BD20-0Bx0	6ES7924-0BF20-0Bx0

Lengths

xxx BA5 = 0.5 m 4)
xxx BB0 = 1.0 m
xxx BB5 = 1.5 m 4)
xxx BC0 = 2.0 m
xxx BC5 = 2.5 m
xxx BD0 = 3.0 m
xxx BE0 = 4.0 m
xxx BF0 = 5.0 m
xxx BG5 = 6.5 m
xxx BJ0 = 8.0 m
xxx CB0 = 10.0 m

Terminal type

x A = Screw-type terminals
x C = Push-in terminals

Connecting cables and terminal modules 50-pin

Module			Order number of the module	Pins	Front connector modules for digital modules			
					2x8 I/O		4x8 I/O	
					Spring-loaded terminals	Screw-type terminals	Spring-loaded terminals	Screw-type terminals
6ES732.-...								
SM 321	DI 32 x	24 V DC	6ES7321-1BL00-0AA0	40			X	X
	DI 16 x	24 V DC	6ES7321-1BH02-0AA0	20	X	X		
	DI 16 x	24 V DC High Speed	6ES7321-1BH10-0AA0	20	X	X		
	DI 16 x	24 V DC Sourcing	6ES7321-1BH50-0AA0	20	X	X		
SM 322	DO 32 x	24 V DC / 0.5 A	6ES7322-1BL00-0AA0	40			X	X
	DO 16 x	24 V DC / 0.5 A	6ES7322-8BH10-0AB0	40			X	X
	DO 16 x	24 V DC / 0.5 A	6ES7322-1BH01-0AA0	20	X	X		
	DO 16 x	24 V DC / 0.5 A High Speed	6ES7322-1BH10-0AA0	20	X	X		
	DO 8 x	24 V DC / 0.5 A	6ES7322-8BF00-0AB0	20	X	X		
	DO 8 x	24 V DC / 2 A	6ES7322-1BF01-0AA0	20				
SM 323	DI 16/DO 16 x	24 V DC / 0.5 A	6ES7323-1BL00-0AA0	40			X	X
	DI 8/DO 8 x	24 V DC / 0.5 A	6ES7323-1BH01-0AA0	20	X	X		
Order number					6ES7921-3AA00-0AA0	6ES7921-3AB00-0AA0	6ES7921-3AA20-0AA0	6ES7921-3AB20-0AA0

Connecting cable	Terminal module 32/A				
Round cable assembled 4 x 16-pin pin connector to 50-pin pin connector	for 50-pin pin connector				Comment
	TP1		TP3		
Unshielded	without LED	with LED	without LED	with LED	Connection for two modules Slot must be adjacent
X	X	X	X	X	
X	X	X	X	X	X
X	X	X	X	X	X
X	X		X		X
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	
X	X	X	X	X	X
6ES7923-5xxx0-0EB0	6ES7924-2AA20-0Ax0	6ES7924-2AA20-0Bx0	6ES7924-2CA20-0Ax0	6ES7924-2CA20-0Bx0	

Lengths

xxx BA5 = 0.5 m
xxx BB0 = 1.0 m
xxx BB5 = 1.5 m
xxx BC0 = 2.0 m
xxx BC5 = 2.5 m
xxx BD0 = 3.0 m
xxx BE0 = 4.0 m
xxx BF0 = 5.0 m
xxx BG5 = 6.5 m
xxx BJ0 = 8.0 m
xxx CB0 = 10.0 m

Terminal type

x A = Screw-type terminals
x C = Push-in terminals

5.4 S7-300 analog modules

module		Order number of the module	Pins	Front connector modules for analog modules 20-pin 40-pin: Spring-loaded terminals	Front connector modules for analog modules 20-pin 40-pin: Screw-type terminals	Front connector modules for analog modules: Spring-loaded terminals	Front connector modules for analog modules: Screw-type terminals	Connecting cables Round cable 16-pin assembled with IDC connectors: 16-pin shielded	Terminal modules for 16-pin Connecting cable: Max. number of required terminal modules per module	Terminal modules for 16-pin Connecting cable: TPA without LED	Terminal modules for 16-pin Connecting cable: Shield plate
6ES733.-...											
SM 331	AI 8 x 13 Bit	6ES7331-1KF02-0AB0	40			X	X	X	4	X	X
	AI 2 x 9/12/14 Bit	6ES7331-7KB02-0AB0	20	X	X			X	1	X	X
	AI 8 x 9/12/14 Bit	6ES7331-7KF02-0AB0	20	X	X			X	2	X	X
	AI 8 x 16 Bit	6ES7331-7NF00-0AB0	40			X	X	X	4	X	X
	AI 8 x 16 Bit	6ES7331-7NF10-0AB0	40			X	X	X	4	X	X
	AI 8 x RTD x 16-bit (internal 24-bit)	6ES7331-7PF01-0AB0	40			X	X	X	4	X	X
	8 x TC x 16 Bit	6ES7331-7PF11-0AB0	40			X	X	X	4	X	X
SM 332	AO 2 x 11/12 Bit	6ES7332-5HB01-0AB0	20	X	X			X	1	X	X
	AO 4 x 11/12 Bit	6ES7332-5HD01-0AB0	20	X	X			X	2	X	X
	AO 8 x 11/12 Bit	6ES7332-5HF00-0AB0	40			X	X	X	4	X	X
	AO 4 x 15 Bit	6ES7332-7ND02-0AB0	20	X	X			X	2	X	X
SM 334	AI 4/AO 2 x 8/8 Bit	6ES7334-0CE01-0AA0	20	X	X			X	2	X	X
	AI 4/AO 2 x 12/12 Bit	6ES7334-0KE00-0AB0	20	X	X			X	2	X	X
SM 335	AI 4 x 14 Bit	6ES7335-7HG02-0AB0	20	X	X			X	2	X	X
				6ES7921-3AF00-0AA0	6ES7921-3AG00-0AA0	6ES7921-3AF20-0AA0	6ES7921-3AG20-0AA0	6ES7923-0XXX0-0DB0		6ES7924-0CC21-0Ax0	6ES7928-1AA20-4AA0

X module can be used

Lengths

- **xxx** BB0 = 1.0 m
- **xxx** BC0 = 2.0 m
- **xxx** BC5 = 2.5 m
- **xxx** BD0 = 3.0 m
- **xxx** BE0 = 4.0 m
- **xxx** BF0 = 5.0 m
- **xxx** BG5 = 6.5 m
- **xxx** BJ0 = 8.0 m
- **xxx** CB0 = 10.0 m

Terminal type

- **x** A = Screw-type terminals
- **x** C = Push-in terminals

5.5 Note on connecting digital I/O modules

Introduction

This section contains information on connecting digital I/O modules to SIMATIC TOP connect using TP3 as an example.

Note

The information provided here does not apply to the 2 A output module.

For the connection of the 2 A output module, see section "Note on connecting the 2 A output module (Page 47)".

Using potential bridges

If you want to supply load groups with the same potential (non-isolated), use the potential bridges. This saves you having to wire a terminal point with two wires.

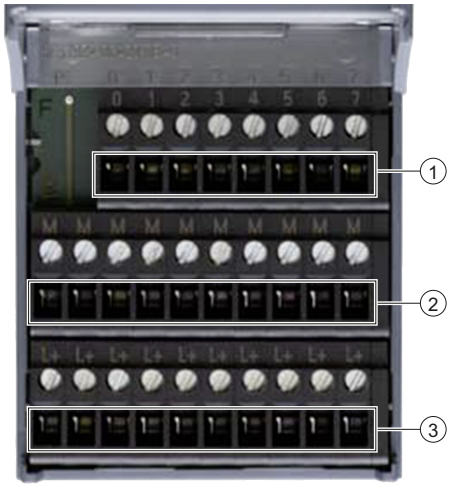
The exact application is described in the respective manual of the I/O module to be wired for the example of the front connector. You can find an overview of this documentation in the section "Documentation guide (Page 9)". The procedure described in the front connector documentation can also be followed for the front connector modules.

Note

The potential bridges can be wired either to the front connector module or to the terminal module.

NOTICE
High continuous current damages components.
The current must not exceed the maximum current carrying capacity of 8 A per potential bridge.
Make sure when you wire the potential bridges that no continuous current of over 8 A per potential bridge can occur.

Terminal module assignment for 3-wire connection

Front view of terminal module, 3-wire connection	Terminal assignment
	Top row, terminals for: • Bits 0 to 7 ① Middle row, terminals for: • M potential (all bridged internally) ② Bottom row, terminals for: • L+ potential (all bridged internally) ③

See also

Note on connecting the 2 A output module (Page 47)

Documentation guide (Page 9)

5.6 Note on connecting the 2 A output module

Introduction

This section contains information on connecting the 2 A output module (2 amperes) with SIMATIC TOP connect.

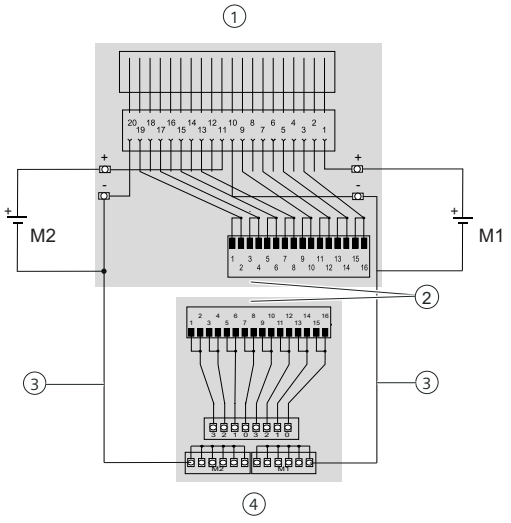
Connecting the supply voltage

Note

Before starting work, make sure you have read the wiring rules in "Wiring rules (Page 22)".

The potential supply must be at the front connector module, and a supplementary ground connection to the terminal module is required for this purpose. To create this ground connection, follow these steps:

1. Connect the supply voltage to each of the two potential clamps on the front connector module using separate cables.
2. In addition to the connecting cable, connect one cable for M1 or M2 to each terminal module.
3. Connect M1 / M2 with a separate cable to the front connector module and terminal module. The potential of M1 and M2 can be bridged.



① Front connector module 2 A
② Standard connecting cable between front connector module and terminal module
③ Additional connecting cable for M1 and M2
④ 2 A output module

Terminal module assignment for 2 A connection

Front view of 2 A terminal module	Terminal assignment, left	Terminal assignment, right
	**Top row** Terminals 0 to 3 ⑥: CH0 to CH3 **Middle row** M1 potential ⑤ (all "M1" terminal points bridged internally) **Bottom row** M1 potential ④ (all "M1" terminal points bridged internally)	**Top row** Terminals 0 to 3 ①: CH4 to CH7 **Middle row** M2 potential ② (all "M2" terminal points bridged internally) **Bottom row** M2 potential ③ (all "M2" terminal points bridged internally)

See also

Wiring rules (Page 22)

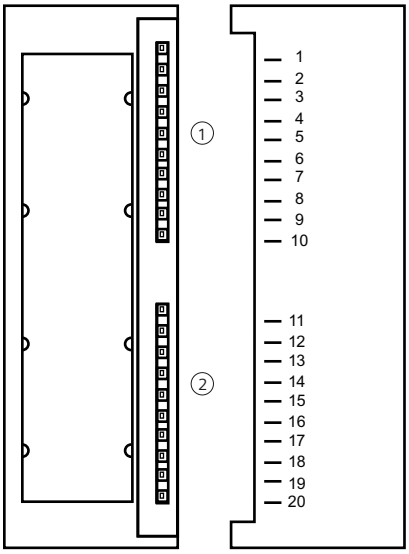
5.7 Note on connecting analog I/O modules

20-pin analog I/O modules

Up to 2 analog terminal modules can be connected to the 20 clamping points of a 20-pin analog I/O module.

The alphabetically labeled clamping points of the analog terminal module are connected to the numbered clamping points of the I/O module as shown in the table below.

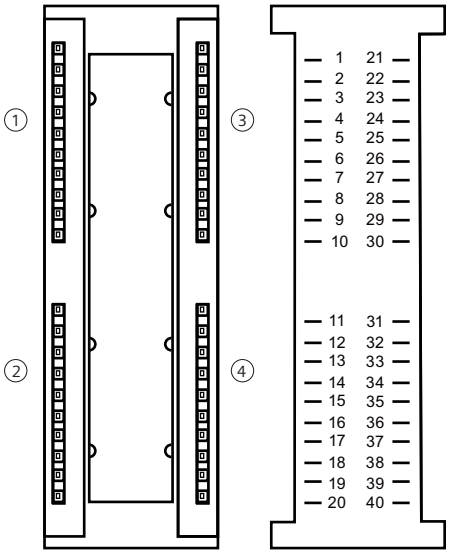
The upper socket of the front plug module is the connector for terminal module 1 and the lower socket of the front connector module is the connector for terminal module 2.

Clamping points			
Slot allocation	I/O module	Terminal module ①	Terminal module ②
	1	Y	Y
	2	B	
	3	C	
	4	D	
	5	E	
	6	F	
	7	G	
	8	H	
	9	I	
	10	K	K
	11	A	A
	12		B
	13		C
	14		D
	15		E
	16		F
	17		G
	18		H
	19		I
	20	Z	Z

40-pin analog I/O modules

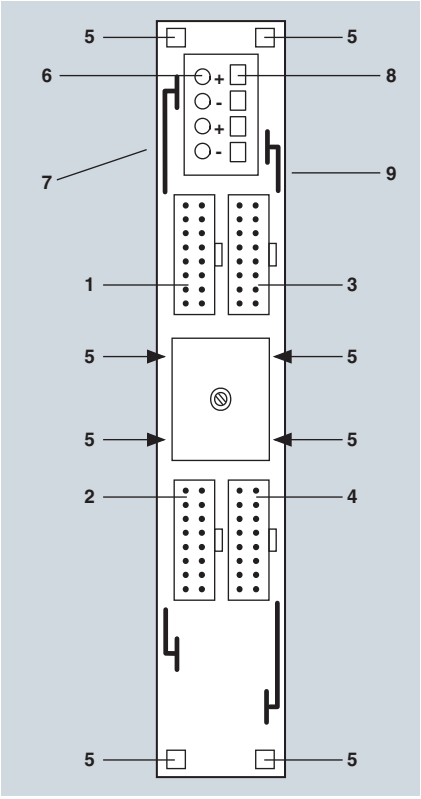
Up to 4 analog terminal modules can be connected to the 40 clamping points of a 40-pin analog I/O module. Two terminal modules can be connected to each side of the I/O module.

The alphabetically labeled clamping points of the analog terminal module are connected to the numbered clamping points of the I/O module as shown in the table below.



Clamping points						
Slot allocation	Terminal module ①	Terminal module ②	I/O module, left	I/O module, right	Terminal module ③	Terminal module ④
	Y	Y	1	21	Y	
	B		2	22	B	
	C		3	23	C	
	D		4	24	D	
	E		5	25	E	
	F		6	26	F	
	G		7	27	G	
	H		8	28	H	
	I		9	29	I	
	K	K	10	30	K	K
	A	A	11	31	A	A
		B	12	32		B
		C	13	33		C
		D	14	34		D
		E	15	35		E
		F	16	36		F
		G	17	37		G
		H	18	38		H
		I	19	39		I
	Z	Z	20	40	Z	Z

Terminal block assignment to the 40-pin analog front connector module



① … ④ Cable connections

⑤ Openings for strain relief

⑥ Opening for connecting cable

⑦ Supply connections for 1 and 2

⑧ Opening for screwdriver

⑨ Supply connections for 3 and 4

Figure 5-1 Terminal block assignment to the 40-pin analog front connector module

Cable connection (for assignment, see figure of 40-pin analog front connector module)	Terminal module assignment to the 40-pin analog front connector module
①	Terminal module 1
②	Terminal module 2
③	Terminal module 3
④	Terminal module 4

5.8 Shield connection of the signal cables

Shield connection options

There are two options for grounding the signal cable shield:

- Directly on the S7-300, see "S7-300 CPU 31xC and CPU 31x: Installation" (http://support.automation.siemens.com/WW/view/en/13008499) manual.
- At the terminal module directly with a shield plate; see the description below.

Attaching the shield plate to the terminal module

The shield plate is used to connect the shield.

1. Position the shield plate on the back of the terminal module with the gaps in the shield plate fitted over the corresponding parts on the terminal module.

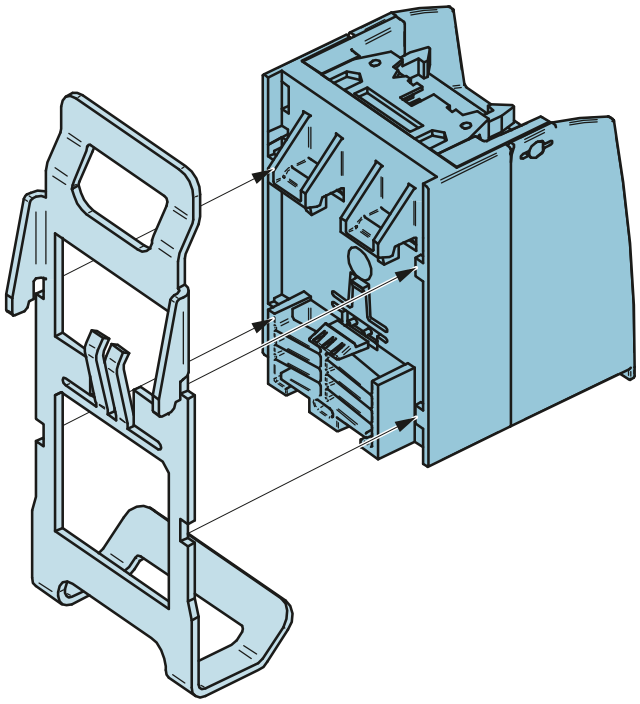


Figure 5-2 Fit the shield plate over the back of the terminal module (example)

2. Push the shield plate up against the terminal module and up.

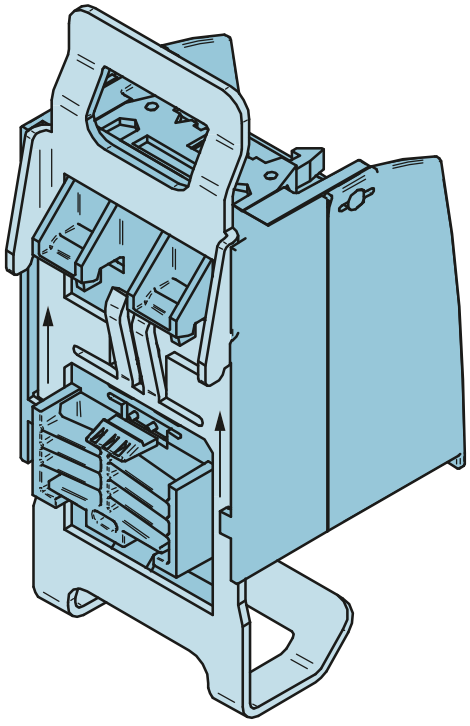


Figure 5-3 Position shield plate and push up

3. Check that the latch ① has fully engaged.
   The latch holds the shield plate in the correct position.

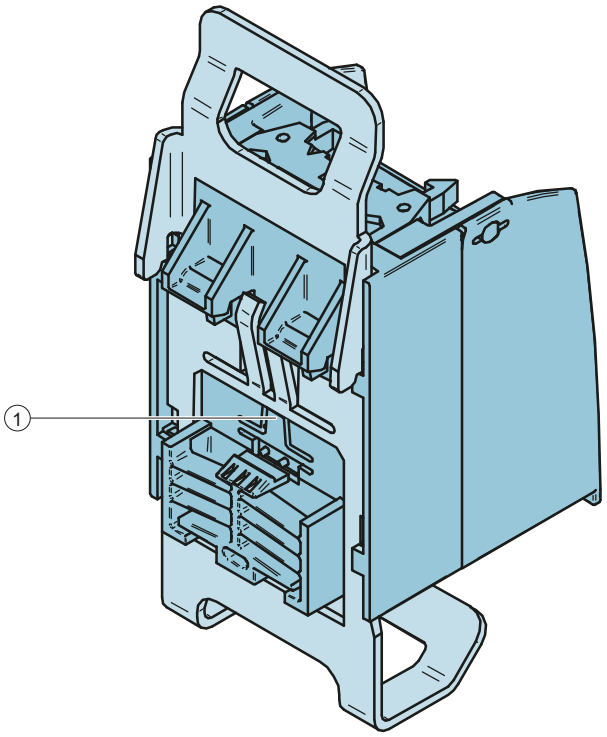


Figure 5-4 Shield plate with latch engaged

4. Mount the terminal module with attached shield plate on the standard mounting rail.
   The shield plate connects the terminal module to the grounded mounting rail.
5. Position the shield of the signal cables with the shield connection terminals on the shield plate.

Connecting the connecting cable to the shield at the front connector module

The exact procedure for attaching the shield connecting element and shield connection clamps is described in the manual "S7-300 CPU 31xC and CPU 31x: Installation" (http://support.automation.siemens.com/WW/view/en/13008499) manual.

Depending on the shield diameters of the cables used, you need to use the following shield connection terminals:

Cable with shield diameter	Shield connection clamps order number:
2 cables each with 2 mm to 6 mm shield diameter	6ES7 390-5AB00-0AA0
1 cable with 3 mm to 8 mm shield diameter	6ES7 390-5BA00-0AA0
1 cable with 4 mm to 13 mm shield diameter	6ES7 390-5CA00-0AA0

The shield connecting element is 80 mm wide and offers space in two rows for each of the 4 shield connection clamps.

Connecting cables

The connecting cables have prepared points for the shield connection. These points are protected by a protective sheath (shrink-on sheath) on delivery, which will need to be removed at the required place.

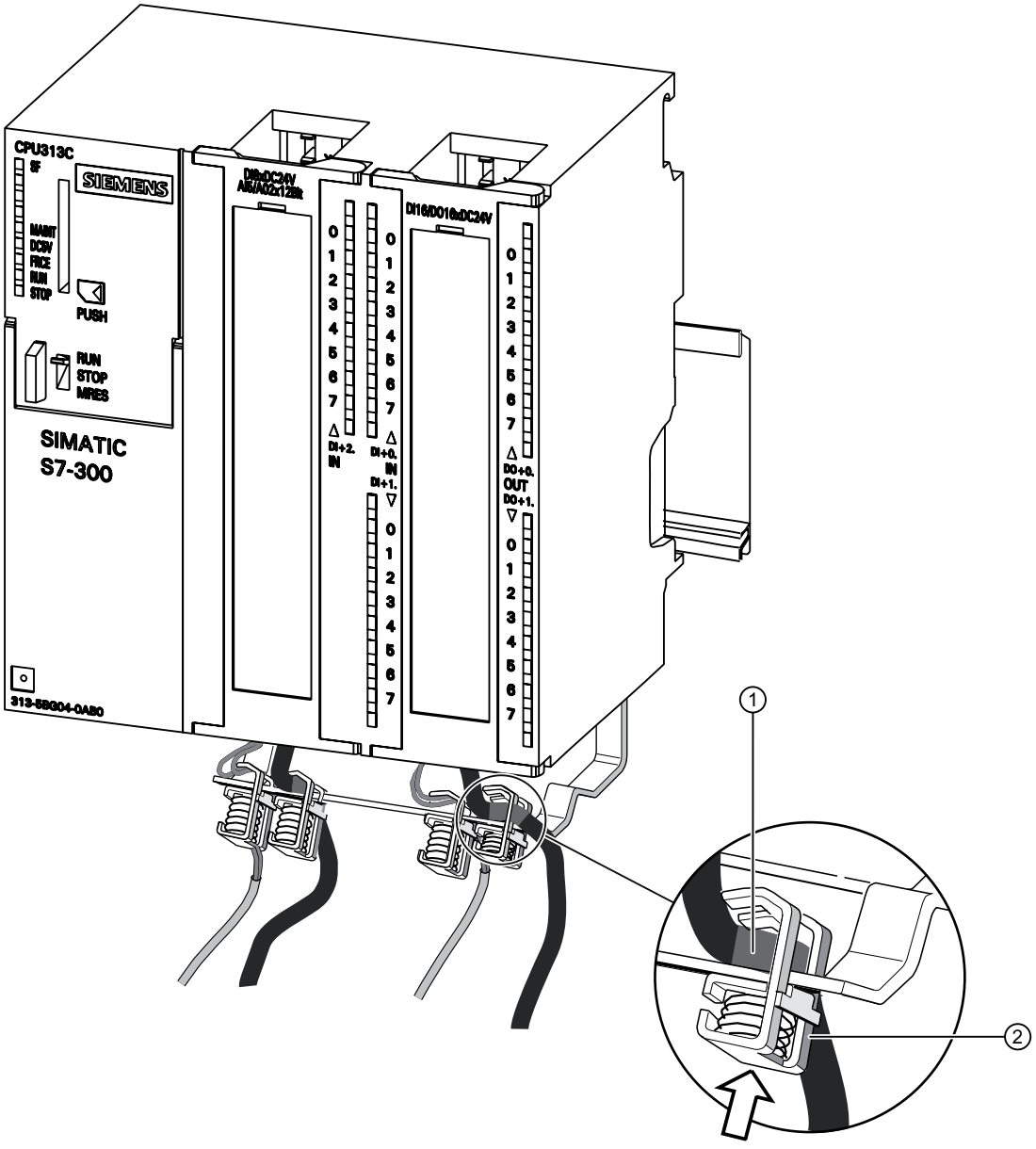


Figure 5-5 Shield connection in various connection positions

Procedure

1. Uncover the cable sheath by removing the protective sheath (shrink-on sheath) at the required location (here ①).
2. To do this, press the shield connection clamp ② in the direction of the module and feed the wire under the terminal.
3. Connect the connecting cable to the front connector module.

5.9 Connecting cable

Connecting cable (4 x 16-pin to 1 x 50-pin connector)

The connecting cable is used to connect the digital front connector modules of the S7-300 with the digital terminal modules for 32 I/O. The signals from a 32 I/O module can also be transmitted to a terminal module via a cable.

Two 16 I/O modules (slot next to each other) of the S7-300 can also be connected to the digital terminal modules for 32 I/O.

Assignment of cable ends

Table 5-1 Assignment of cable ends to the connectors of the front connector module

Module 6ES732.-…			MFLB of the module	Pins	See figure
SM 321	DI 32 x	24 V DC	6ES7321-1BL00-0AA0	40	1
	DI 16 x	24 V DC	6ES7321-1BH02-0AA0	20	2
	DI 16 x	24 V DC High Speed	6ES7321-1BH10-0AA0	20	2
	DI 16 x	24 V DC Sourcing	6ES7321-1BH50-0AA0	20	2
SM 322	DO 32 x	24 V DC / 0.5 A	6ES7322-1BL00-0AA0	40	1
	DO 16 x	24 V DC / 0.5 A Can be redundant	6ES7322-8BH01-0AB0	40	1
	DO 16 x	24 V DC / 0.5 A	6ES7322-1BH01-0AA0	20	2
	DO 16 x	24 V DC / 0.5 A High Speed	6ES7322-1BH10-0AA0	20	2
	DO 8 x	24 V DC / 0.5 A	6ES7322-8BF00-0AB0	20	2
	DO 8 x	24 V DC / 2 A	6ES7322-1BF01-0AA0	20	2
SM 323	DI 16/DO 16 x	24 V DC / 0.5 A	6ES7323-1BL00-0AA0	40	1
	DI 8/DO 8 x	24 V DC / 0.5 A	6ES7323-1BH01-0AA0	20	2

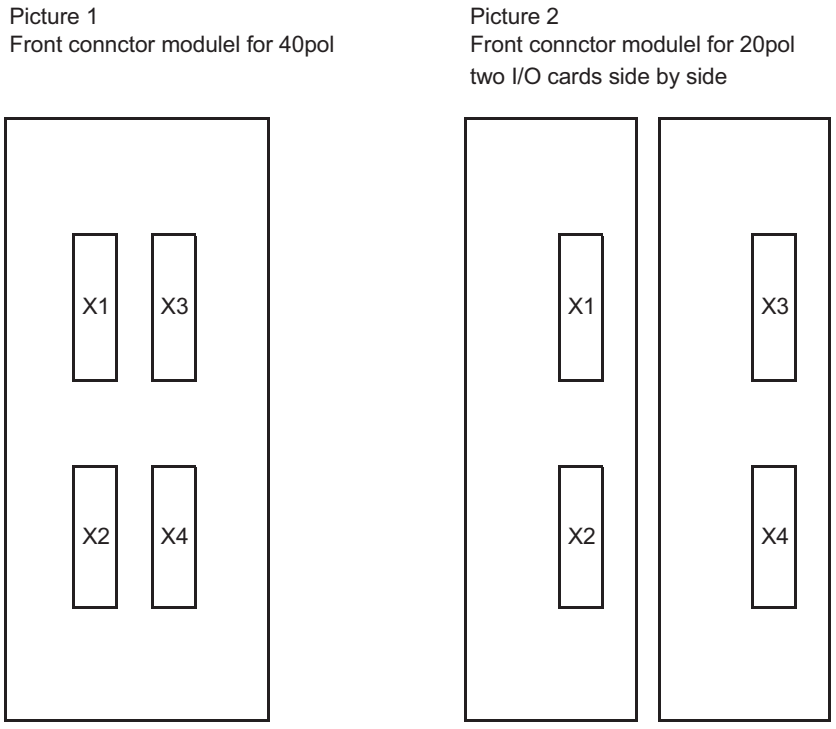


Figure 5-6 Assignment for round cable 4 x 16-pin to 50-pim pin connector

Schematic representation of the adapter cable

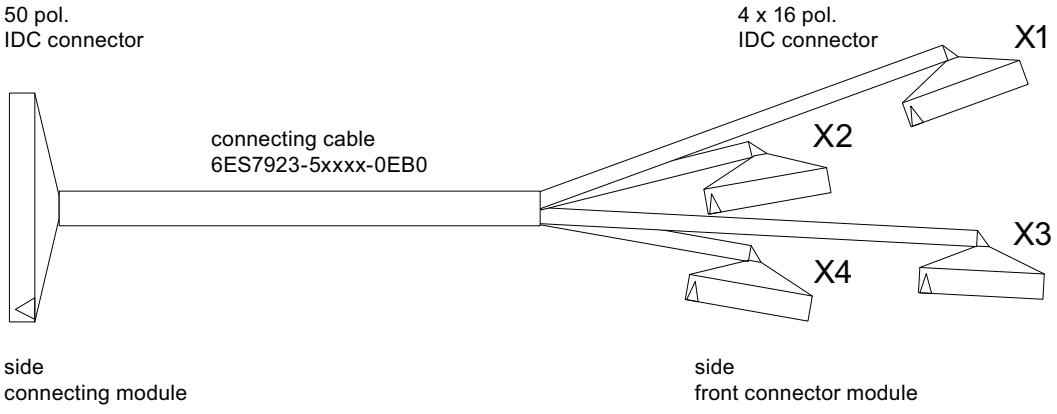


Figure 5-7 Schematic representation of the adapter cable

See also

"Connecting cables and termination modules 50-pin" in the section S7-300 digital modules (Page 41).

Technical specifications

6

Introduction

The technical specifications contain:

- The standards and test values satisfied by the terminal modules of the SIMATIC TOP connect system cabling.
- The technical specifications for the components of the SIMATIC TOP connect system cabling.

Technical specifications of the I/O modules

The technical specifications of the I/O modules are also available in the product manuals for the relevant modules. See the overview of documentation on SIMATIC TOP connect system cabling under "Documentation guide (Page 9)".

If the information in this document differs from that in the product manuals, the product manuals take priority.

6.1 Standards and approvals

Introduction

This section sets out the standards and test values satisfied by the terminal modules of the SIMATIC TOP connect system cabling.

Note

Components of the SIMATIC TOP connect system cabling

The valid marks and approvals are printed on the components of the SIMATIC TOP connect system cabling.

Reference

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

CE marking

The SIMATIC TOP connect cabling system satisfies the requirements and objectives of the following EC directives and satisfies the Harmonized European Standards (EN) for Programmable Logic Controllers which were published in the official journals of the European Community:

- 2006/95/EC "Electrical Equipment Designed for Use within Certain Voltage Limits" (Low-Voltage Directive)
- 2004/108/EC "Electromagnetic Compatibility" (EMC Directive)

The EC declarations of conformity are held for the competent authorities by:
Siemens Aktiengesellschaft
Industry Sector
I IA AS FA WF AMB
Postfach 1963
D-92209 Amberg

These files are also available for download from the Customer Support pages, under "Declaration of Conformity".

cULus approval

Underwriters Laboratories Inc., to

- UL 508 (Industrial Control Equipment)
- C22.2 No. 142 (Process Control Equipment)

IEC 61131

The SIMATIC TOP connect system cabling meets the requirements and criteria of the IEC 61131-2 standard (Programmable Logic Controllers, Part 2: Equipment Requirements and Tests).

Industrial applications

SIMATIC products are designed for industrial applications.

Field of application	Noise emission requirements	Noise immunity requirements
Industry	EN 61000-6-4: 2007	EN 61000-6-2: 2005

Use in residential areas

Note

SIMATIC TOP connect system cabling and the S7-300 automation system are designed for use in industrial areas; their use in residential areas could interfere with radio and TV reception.

To operate SIMATIC TOP connect system cabling and S7-300 automation systems in a residential area, the RF emission must comply with Limit Value Class B to EN 55011. Suitable measures for achieving RF interference Limit Class B include, for example:

- Fitting the cabling system and automation system in grounded control cabinets/control boxes
- Use of noise filters in the supply lines

6.2 Electromagnetic compatibility

Definition

Electromagnetic compatibility (EMC) is the capacity of an electrical installation to function satisfactorily in its electromagnetic environment without affecting that environment. SIMATIC TOP connect system cabling also meets the requirements of EMC legislation for the European internal market in addition other requirements. This requires the S7-300 system to meet the specifications and directives for electrical installation.

6.3 Shipping and storage conditions

Introduction

SIMATIC TOP connect system cabling meets IEC 61131-2 requirements for shipping and storage conditions. The following information applies to modules that are shipped and/or stored in their original packaging.

Shipping and storage conditions for modules

Type of condition	Permissible range
Drop test (in transport package)	≤1 m
Temperature	From -40 °C to +70 °C
Air pressure	From 1080 to 660 hPa (corresponds to an altitude of -1000 to 3500 m)
Relative humidity	5% to 95%, without condensation
Sinusoidal oscillation to IEC 60068-2-6	5 to 9 Hz: 3.5 mm 9 to 500 Hz: 9.8 m/s²
Shock conforming to IEC 60068-2-27	250 m/s², 6 ms, 1000 shocks

6.4 Mechanical and climatic ambient conditions

Operating conditions

SIMATIC TOP connect system cabling is designed for stationary use in weather-proof locations. The conditions of use meet the requirements of DIN IEC 60721-3-3:

- Class 3M3 (mechanical requirements)
- Class 3K3 (climatic requirements)

Testing mechanical ambient conditions

Testing for...	Test standard	Remarks
Vibration	Vibration test according to IEC 60068-2-6 (sine)	Vibration type: Frequency sweep with rate of change 1 octave/minute. 5 Hz ≤ f ≤ 8.4 Hz, constant amplitude 7 mm; 8.4 Hz ≤ f ≤ 150 Hz, constant acceleration 2 g; Vibration duration: 10 frequency cycles per axis in each of the 3 axes which are perpendicular to each other
Shock	Shock, tested to IEC 60068-2-27	Type of shock: Half-sine Shock intensity: 15 g peak value, 11 ms duration Direction of shock: 3 shocks in each direction +/- at each of 3 vertically aligned axes
Continuous shock	Shock, tested to IEC 60068-2-27	Type of shock: Half-sine Shock intensity: 250 m/s2 peak value, 6 ms duration Direction of shock: 1000 shocks in each direction +/- at each of 3 vertically aligned axes

Reduction of vibrations

If your SIMATIC TOP connect system cabling is exposed to severe shocks or vibration, take appropriate measures to reduce the acceleration or amplitude. We recommend fitting the SIMATIC TOP connect cabling system to shock-absorbent material (for example, metal shock absorbers).

Ambient climatic conditions

SIMATIC TOP connect system cabling components may only be used in the ambient climatic conditions specified in the technical specifications.

Please see the following sections.

6.5 Technical specifications for front connector modules

Note

Total current less than 4 A per byte

The infeed point of the positive potential of an external supply voltage can be connected to the terminal module. The supply voltage is directed thereby through the connecting cable. Due to the limited current carrying capacity of the connecting cable, the total current of 4 A/byte must not be exceeded under any circumstances.

Note

Total current more than 4 A per byte

With additional connecting cables, total currents of more than 4 A are conducted to the module from an external power supply. These additional connecting cables are connected to special connection sockets on the front connectors.

Table 6-1 Technical specifications of front connector module

For all front connector modules	
Rated operating voltage	24 V DC
Max. permissible operating voltage	60 V DC
Max. permissible continuous current per connector pin	1 A
Max. permissible total current	4 A/byte
Permissible ambient temperature	0 to + 60 °C
Test voltage	0.5 kV, 50 Hz, 60 s
Clearance and creepage distances	IEC 664 (1980), IEC 664 A (1981), according to DIN VDE 0110 (01.89), overvoltage class II, degree of pollution 2

6.6 Technical specifications for connecting cables

Table 6-2 Connecting cables

For 6ES7923 - * connecting cables	
Type of supply voltage	DC
Operating voltage	max. 60 V
Max. permissible continuous current	
Per signal line	1 A
Permissible total current per group	
16-pin	4 A / byte
50-pin	2 A / byte
External diameter of pre-fabricated round cable	

For 6ES7923 - * connecting cables	
Unshielded	16-pin: Approx. 6.5 mm
	50-pin: Approx. 10.5 mm
Shielded	16-pin: Approx. 7 mm

6.7 Technical specifications for terminal modules

Note

The "x" in the article numbers is a placeholder for the terminal module version with push-in or screw-type terminals.

In place of the "x", there is either an "A" for the version with screw-type terminals or a "C" for the version with a push-in system.

Terminal modules for 16-pin connecting cable

Table 6-3 Technical specifications for terminal modules TP1 and TP3 without LED

Terminal modules TP1 and TP3, 16-pin **1-wire connection without LED 6ES7924-0AA20-0Ax0** **3-wire initiators without LED 6ES7924-0CA20-0Ax0**	
Type of supply voltage	DC
Operating voltage	max. 50 V
Max. permissible continuous current per signal	1 A
Max. permissible total current (power supply)	4 A / byte
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, Overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
1-wire connection 6ES7924-0AA20-0Ax0	Approx. 40 x 58 x 50
For 3-wire initiators 6ES7924-0CA20-0Ax0	Approx. 57 x 76 x 60

Table 6-4 Technical specifications of terminal modules TP1 and TP3 with LED

Terminal modules TP1 and TP3, 16-pin **1-wire connection with LED 6ES7924-0AA20-0Bx0** **3-wire initiators with LED 6ES7924-0CA20-0Bx0**	
Type of supply voltage	DC
Operating voltage	max. 24 V
Max. permissible continuous current per signal	1 A
Max. permissible total current (power supply)	4 A / byte
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, degree of pollution 2
Dimensions (W x H x D) in mm	
1-wire connection 6ES7924-0AA20-0Bx0	Approx. 40 x 58 x 50
For 3-wire initiators 6ES7924-0CA20-0Bx0	Approx. 57 x 76 x 60

Table 6-5 Technical specifications for terminal module TPA

Terminal modules TPA, 16-pin, for analog modules of S7-300 or ET200M **6ES7924-0CC21-0Ax0**	
Type of supply voltage	DC
Operating voltage	max. 50 V
Max. permissible continuous current per signal line	1 A
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0CC21-0Ax0	Approx. 57 x 76 x 60

Table 6-6 Technical specifications for terminal module TPF with LED

Terminal modules TPF (use), 3-wire initiators with LED, incl. fuse in the signal path 6ES7924-0CL20-0Bx0	
Type of supply voltage	DC
Operating voltage	max. 24 V
Max. permissible continuous current per signal	1 A (limited with 0.6 A microfuse)
Max. permissible total current (power supply)	4 A / byte
Fuse	
Factory fittings	5 mm x 20 mm microfuse 0.6 A / 250 V quick-response
General data	
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160,0 overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
For 3-wire initiators with fuse 6ES7924-0CL20-0Bx0	Approx. 57 x 76 x 60

Table 6-7 Technical specifications for terminal module TPS with LED

Terminal modules TPS (witch), 3-wire initiators with LED, incl. switch in the signal path 6ES7924-0CH20-0Bx0	
Type of supply voltage	DC
Operating voltage	max. 24 V
Max. permissible continuous current per signal	1 A
Max. permissible total current (power supply)	4 A / byte
Switch	
Type	DIP slide switch
Activation during operation	Activation during operation permitted, Max. switching capacity 10VA, ON = "top" position, set to "ON"
General data	
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any

Terminal modules TPS (witch), 3-wire initiators with LED, incl. switch in the signal path 6ES7924-0CH20-0Bx0	
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, Overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
For 3-wire initiators with disconnector 6ES7924-0CH20-0Bx0	Approx. 57 x 76 x 60

Table 6-8 Technical specifications for terminal module TP2 without LED

Terminal modules TP2, 2 A modules without LED 6ES7924-0BB20-0Ax0	
Type of supply voltage	DC
Operating voltage	max. 50 V
Max. permissible continuous current per signal	2 A
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, Overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
For 2 A modules 6ES7924-0BB20-0Ax0	Approx. 57 x 76 x 60

Table 6-9 Technical specifications for terminal module TPRi 230 V

Terminal module TPRi 230 V with relay for inputs 6ES7924-0BE20-0Bx0	
Energizing side	
Operating voltage for coil	230 V AC / from 207 – 264 V AC
Input circuit	Suppressor diode
Contact side	
Number of relay outputs	8 NO contacts
Contact design	Single contact, 1 NO contact
Switching capacity (resistive load)	max. 50 mA / 24 V DC
	max. 50 mA / 48 V DC
	max. 50 mA / 60 V DC
	Recommended minimum load ≥ 5mA
Switching frequency	500 cycles/minute
Service life	
Mechanical	10 x 10^6 switching cycles

Terminal module TPRi 230 V with relay for inputs 6ES7924-0BE20-0Bx0	
Electrical	3 x 10^6 switching cycles at 230 V AC/50 mA/ cos φ = 1
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 … +60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0BE20-0Bx0	Approx. 130 x 76 x 60

Table 6-10 Technical specifications for terminal module TPRi 110 V

Terminal module TPRi 110 V with relay for inputs 6ES7924-0BG20-0Bx0	
Energizing side	
Operating voltage for coil	115 V AC / from 103 – 132 V AC
Input circuit	Suppressor diode
Contact side	
Number of relay outputs	8 NO contacts
Contact design	Single contact, 1 NO contact
Switching capacity (resistive load)	max. 50 mA / 24 V DC
	max. 50 mA / 48 V DC
	max. 50 mA / 60 V DC
	Recommended minimum load ≥ 5mA
Switching frequency	500 cycles/minute
Service life	
Mechanical	10 x 10^6 switching cycles
Electrical	3 x 10^6 switching cycles at 230 V AC/50 mA/ cos φ = 1
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 … +60° C
Mounting position	Any
Clearance and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0BG20-0Bx0	Approx. 130 x 76 x 60

Table 6-11 Technical specifications for terminal module TPRo

Terminal module TPRo with relays for outputs 6ES7924-0BD20-0Bx0	
Energizing side	
Operating voltage for coil	24 V DC 19 - 28.8 V
Input circuit	Reverse polarity protection and freewheeling diodes
Contact side	
Number of relay outputs	8 NO contacts
Contact design	Single contact, 1 NO contact
Switching capacity (resistive load)	max. 4 A / 250 V AC
	max. 3 A / 30 V DC
	max. 0.6 A / 48 V DC
	max. 0.4 A / 60 V DC
	Recommended minimum load ≥ 1 mA
Switching frequency	6 cycles/minute
Service life	
Mechanical	3 x 10^6 switching cycles
Electrical	5 x 10^4 switching cycles at 230 V AC/4 A/ cos φ = 1, 6 x per minute
Inductive loads	To protect the relay contacts, inductive loads must be dampened externally with an effective protective circuit. No measures are provided for this in the TPR.
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Operating temperature	0 … +60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0BD20-0Bx0	Approx. 100 x 76 x 60

Table 6-12 Technical specifications for terminal module TPOo

Terminal module TPOo optocoupler for outputs 6ES7924-0BF20-0Bx0	
Input data for supply voltage	
Potential connection (L1/M1)	24 V DC (20.4 ... 28.8 V DC)
Status display "L1"	Green LED
Input data for switching inputs	

Terminal module TPOo optocoupler for outputs 6ES7924-0BF20-0Bx0	
Number of switching inputs	8 channels (channel 0 ... 7) With reverse polarity protection
Input voltage "off"	0 V DC (0 ... 5 V DC)
Input voltage "on"	24 V DC (15 ... 28.8 V DC)
Input current	min. 5 mA with 20 V DC, per channel
Status display "on"	Green LED per channel
Output data for supply voltage	
Operating voltage V_{op} (L2/M2, L3/M3)	24 V DC (20 ... 30 V DC), one per group of 4
V_{op} with conditional reverse polarity protection	Up to 30 V DC (Protected against reverse polarity if the ground potential of the output load is directly connected to the 0 V supply of the power supply unit.)
Current consumption	Approx. 10 mA at 24 V DC + output currents
Total current	max. 16 A per group of 4
Switching outputs	
Number	8 channels (channel 0 ... 7)
Short-circuit protection	When Vop < 24 V DC or 20 … 30 V DC / max. 20 A No continuous short-circuit protection, max. duration approx. 60 min.
Output voltage	Typ. V_{op} – 0.5 V (for input "on")
Output current	Max. 4 A per channel
Lamp load	max. 40 W at 24 V per channel
Short-circuit response	Clocked output signal (approx. 2 ... 20 ms)
On/Off-delay	Typ. 100 µs / 250 µs with resistive load
Switching frequency	max. 500 Hz with 4 A resistive load (square wave voltage, pulse/pause 1:1)
"Overload" fault display	Red LED per channel, in the event of wire break or short-circuit
Wire break display active	With output "off" and R_{load} > 2 MΩ
Recommended conductor cross-section for cable	1.5 mm ^{2}
Group fault messages SF1, SF2	
Monitored channels	SF1: Channels 0 … 3, SF2: Channels 4 … 7
Voltage V_{SF1}, V_{SF2}	
No error at the switching output	Typ. Vop – 2 V
Wire break at the switching output	Approx. 0 V
Short-circuit at the switching output	0 V to V_{op}, clocked
Current I_{SF1}, I_{SF2}	min. 4 mA/max. 200 mA
General data	
Connection to SIMATIC fitted for	16-pin IDC connector with fitted strain relief
Degree of protection	IP20
Operating temperature	0 … 60 °C

Terminal module TPOo optocoupler for outputs 6ES7924-0BF20-0Bx0	
Mounting position	Any, except overhead
Connecting terminals	Screw-type terminal or push-in system
Stripped length	9 mm
Conductor cross-section	
Finely stranded without end sleeve	0.5 … 2.5 mm^2
With end sleeve for screw-type terminals	0.5 ... 2.5 mm^2 in accordance with DIN 46222-1
With end sleeve, push-in system	0.2 … 2.5 mm^2
Screwdriver	According to DIN 5264 B 0.6 x 3.5 mm
Tightening torque of screw-type terminals	0.4 … 0.7 Nm
Weight	
Screw model	0.29 kg
Push-in model	0.25 kg
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
6ES7924-0BF20-0Bx0	Approx. 130 x 76 x 60

Terminal modules for 50-pin connecting cable

Table 6-13 Technical specifications for terminal modules TP1 and TP3 without LED

Terminal modules TP1 and TP3, 50-pin 1-wire connection without LED 6ES7924-2AA20-0Ax0 3-wire initiators without LED 6ES7924-2CA20-0Ax0	
Type of supply voltage	DC
Operating voltage	max. 50 V
Max. permissible continuous current per signal	1 A
Max. permissible total current (power supply)	2 A / byte
Connection to SIMATIC fitted for	50-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, Overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
1-wire connection 6ES7924-2AA20-0Ax0	Approx. 100 x 76 x 60
For 3-wire initiators 6ES7924-2CA20-0Ax0	Approx. 175 x 76 x 60

Table 6-14 Technical specifications for terminal modules TP1 and TP3 with LED

Terminal modules TP1 and TP3, 50-pin **1-wire connection with LED 6ES7924-2AA20-0Bx0** **3-wire initiators with LED 6ES7924-2CA20-0Bx0**	
Type of supply voltage	DC
Operating voltage	max. 24 V
Max. permissible continuous current per signal	1 A
Max. permissible total current (power supply)	2 A / byte
Connection to SIMATIC fitted for	50-pin IDC connector with fitted strain relief
Operating temperature	0 to + 60° C
Mounting position	Any
Clearances and creepage distances	IEC 60664-1, IEC61131-2, CSA C22.2 No 142 UL 508, VDE 0160, overvoltage category II, pollution degree 2
Dimensions (W x H x D) in mm	
1-wire connection 6ES7924-2AA20-0Bx0	Approx. 100 x 76 x 60
For 3-wire initiators 6ES7924-2CA20-0Bx0	Approx. 175 x 76 x 60

6.8 Technical specifications of front connector with single wires

Front connector with 20 wires

Table 6-15 Technical specifications of front connector with 20 wires

Front connector with 20 wires	
Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all cores, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Wire type	H05V-K or with UL 1007/1569; CSA TR64
Number of single cores	20
Wire cross-section	0.5 mm^2; Cu
Bundle diameter in mm	Approx. 15
Wire color	Blue, RAL 5010
Labels for wires	Numbered from 1 to 20 (Front connector contact = Wire number)
Assembly	Screw-type or crimp contacts

Front connector with 40 wires

Table 6-16 Technical specifications of front connector with 40 wires

Front connector with 40 wires	
Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all cores, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Wire type	H05V-K or with UL 1007/1569; CSA TR64
Number of single cores	40
Wire cross-section	0.5 mm^2; Cu
Bundle diameter in mm	Approx. 17
Wire color	Blue, RAL 5010
Labels for wires	Numbered from 1 to 40 (Front connector contact = Wire number)
Assembly	Screw-type or crimp contacts

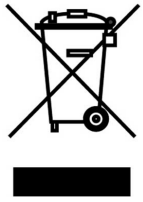
Environment

7

The device conforms to the RoHS Directive.

No materials used release silicone.

Disposal provisions

	The packaging and packing products are recyclable and should be recycled. The product itself must not be disposed of in the household waste.

Dimension drawings

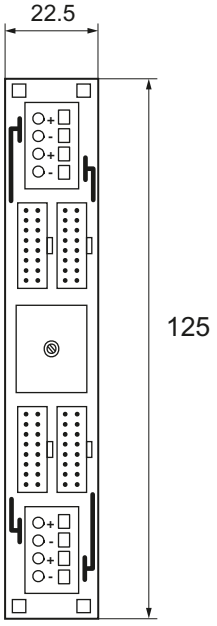
A

A.1 Front connector modules

Front connector modules 6ES7921-3AA20-0AA0 and 6ES7921-3AB20-0AA0

Front connector modules for digital 32 I/O modules of S7-300:

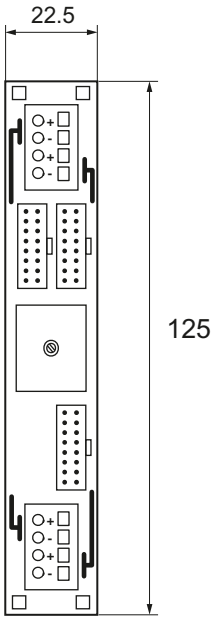
- 6ES7921-3AA20-0AA0 spring-loaded terminals
- 6ES7921-3AB20-0AA0 screw-type terminals



Front connector module 6ES7921-3AK20-0AA0

Front connector module for compact CPU 312C for terminal X1:

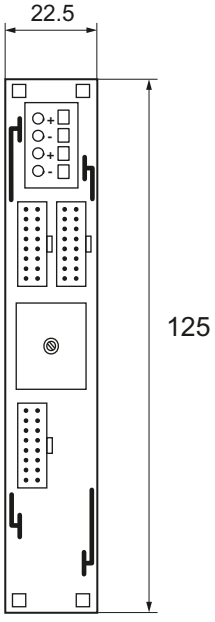
- 6ES7921-3AK20-0AA0 screw-type terminals



Front connector module 6ES7921-3AM20-0AA0

Front connector module for compact CPU 313C/314C-2PTP/314C-2DP for terminal X1:

- 6ES7921-3AM20-0AA0 screw-type terminals



Front connector modules 6ES7921-3AA00-0AA0 and 6ES7921-3AB00-0AA0

Front connector modules for digital 16 I/O modules of S7-300:

- 6ES7921-3AA00-0AA0 spring-loaded terminals
- 6ES7921-3AB00-0AA0 screw-type terminals

Note

The terminal assignments of these front connector modules are unambiguous, so dimension drawings can be omitted.

Front connector modules 6ES7921-3AC00-0AA0 and 6ES7921-3AD00-0AA0

Front connector modules for 2 A digital outputs:

- 6ES7921-3AC00-0AA0 spring-loaded terminals
- 6ES7921-3AD00-0AA0 screw-type terminals

Note

The terminal assignments of these front connector modules are unambiguous, so dimension drawings can be omitted.

Front connector modules 6ES7921-3AF00-0AA0 and 6ES7921-3AG00-0AA0

Front connector modules for analog modules, 20-pin:

- 6ES7921-3AF00-0AA0 spring-loaded terminals
- 6ES7921-3AG00-0AA0 screw-type terminals

For additional information, see Note on connecting analog I/O modules (Page 49).

Front connector modules 6ES7921-3AF20-0AA0 and 6ES7921-3AG20-0AA0

Front connector modules for analog modules, 40-pin:

- 6ES7921-3AF20-0AA0 spring-loaded terminals
- 6ES7921-3AG20-0AA0 screw-type terminals

For additional information, see Note on connecting analog I/O modules (Page 49).

A.2 Terminal modules

Views

All views in the dimension drawings below are numbered.

The following applies:

Number	View
①	Front view
②	Front view with front flap closed
③	Left view with front flap closed

Note

All dimensions in millimeters (mm).

Note

The dimensions for terminal modules with screw-type terminals are the same as for those with the push-in system.

You can see the screw terminals in the figure. The code in the last group of the order number ...-0Ax0 refers to the terminal type.

- x replaced by A = Screw-type terminal
- x replaced by C = Push-in terminal

A.2.1 Terminal modules for 16-pin connecting cable

Terminal modules for 16-pin connecting cable

This section presents the dimension drawings of the terminal modules for 16-pin connecting cables

Terminal module 6ES7924-0AA20-0Ax0

TP1 without LED

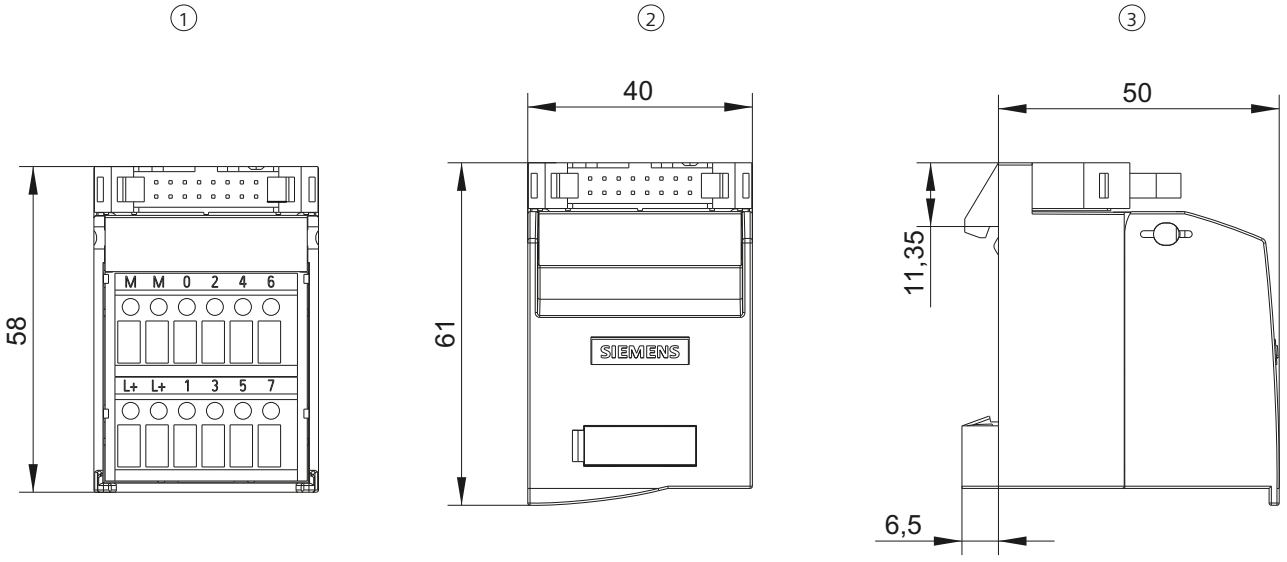


Figure A-1 6ES7924-0AA20-0Ax0

Terminal module 6ES7924-0AA20-0Bx0

TP1 with LED

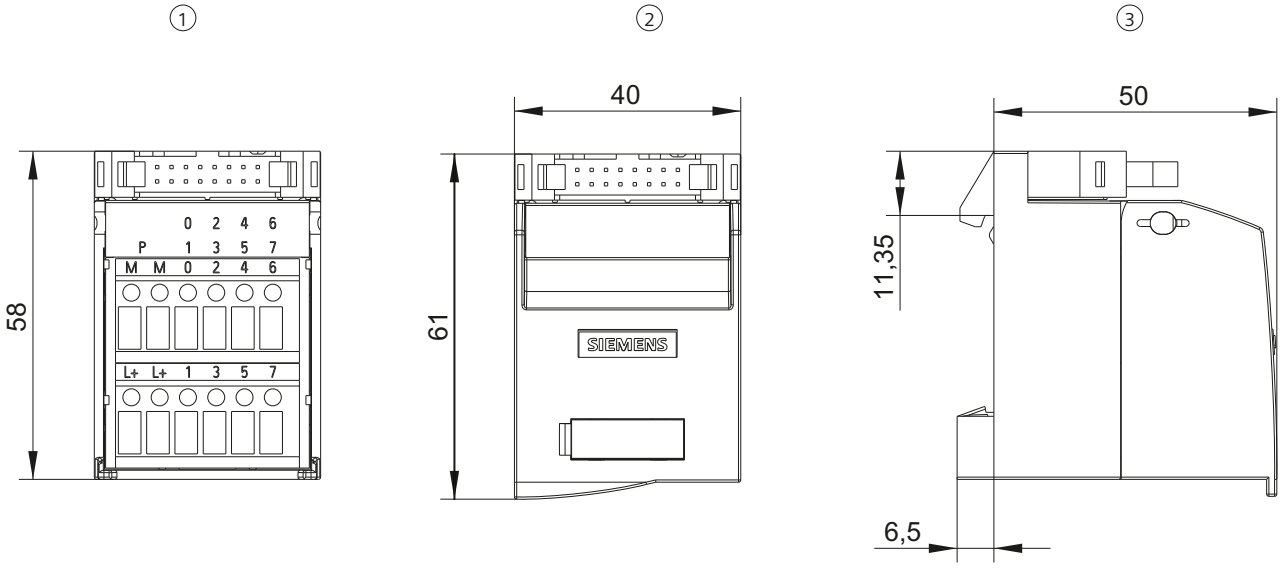


Figure A-2 6ES7924-0AA20-0Bx0

Terminal module 6ES7924-0BB20-0Ax0

TP2 without LED

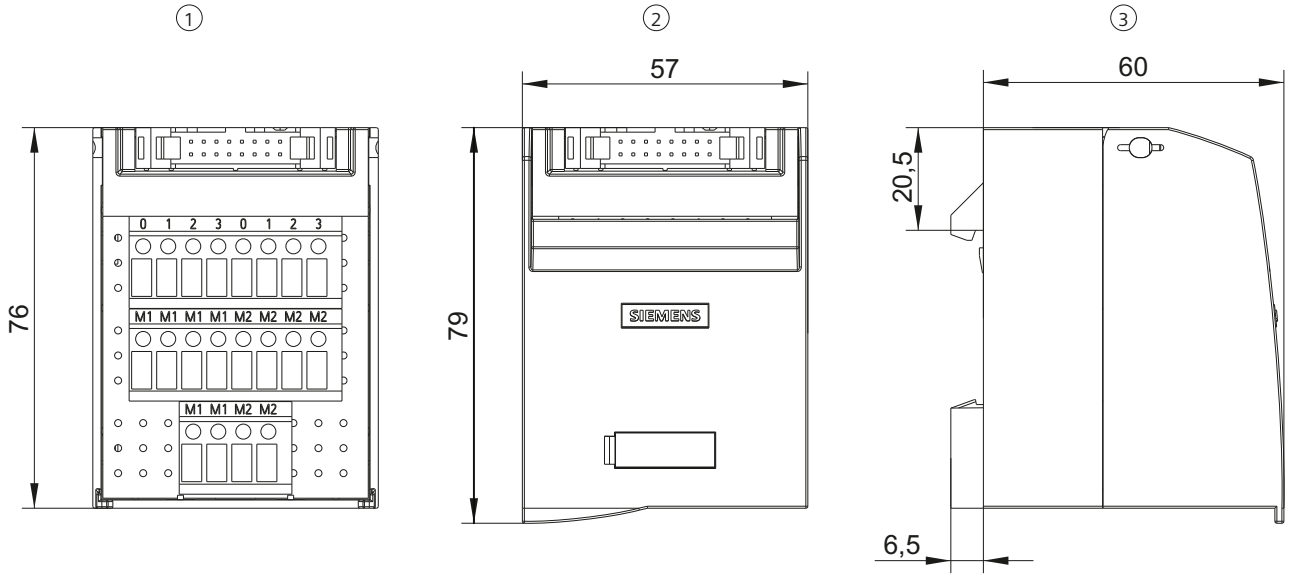


Figure A-3 6ES7924-0BB20-0Ax0

Terminal module 6ES7924-0CA20-0Ax0

TP3 without LED

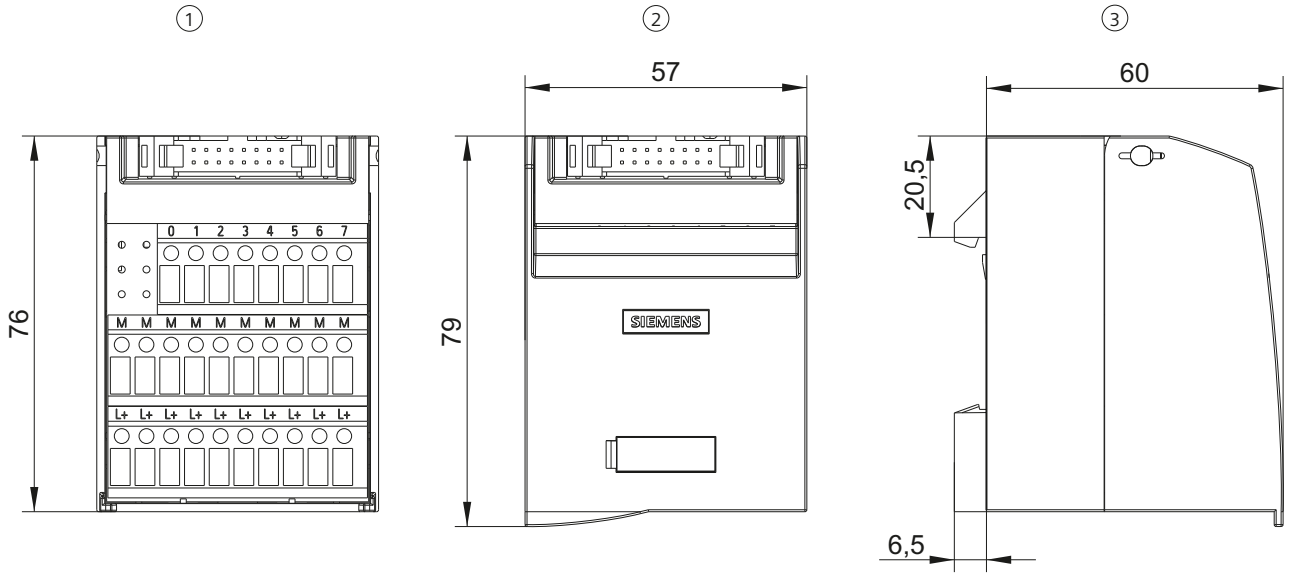


Figure A-4 6ES7924-0CA20-0Ax0

Terminal module 6ES7924-0CA20-0Bx0

TP3 with LED

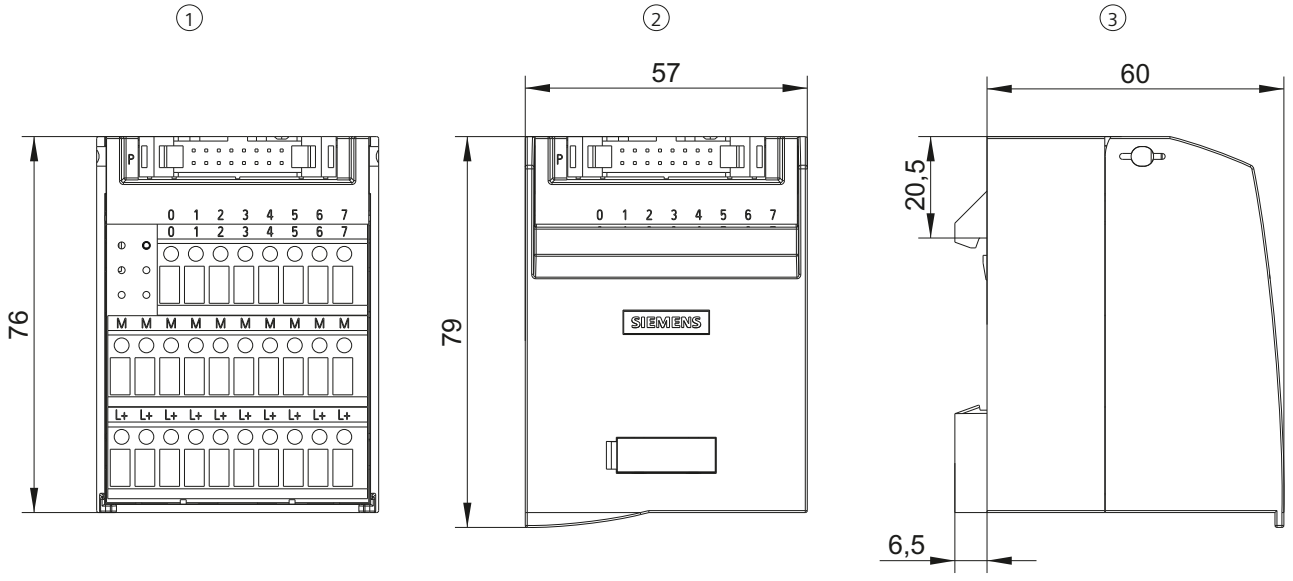


Figure A-5 6ES7924-0CA20-0Bx0

Terminal module 6ES7924-0CC21-0Ax0

TPA without LED

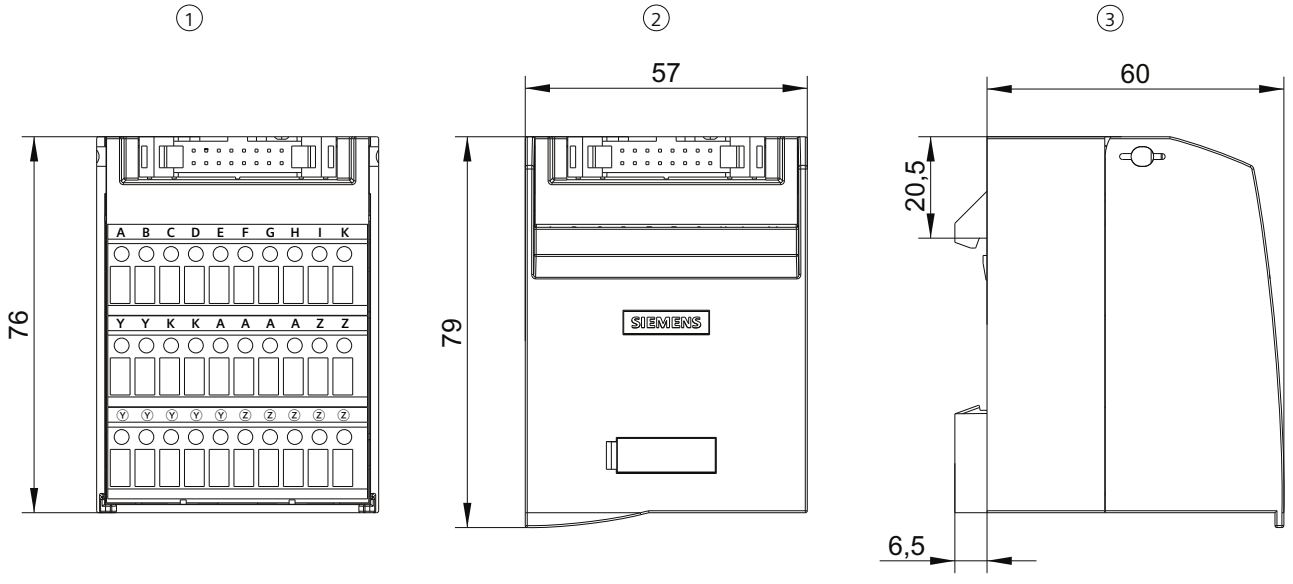


Figure A-6 6ES7924-0CC21-0Ax0

Terminal module 6ES7924-0BE20-0Bx0

TPRi 230 V with LED

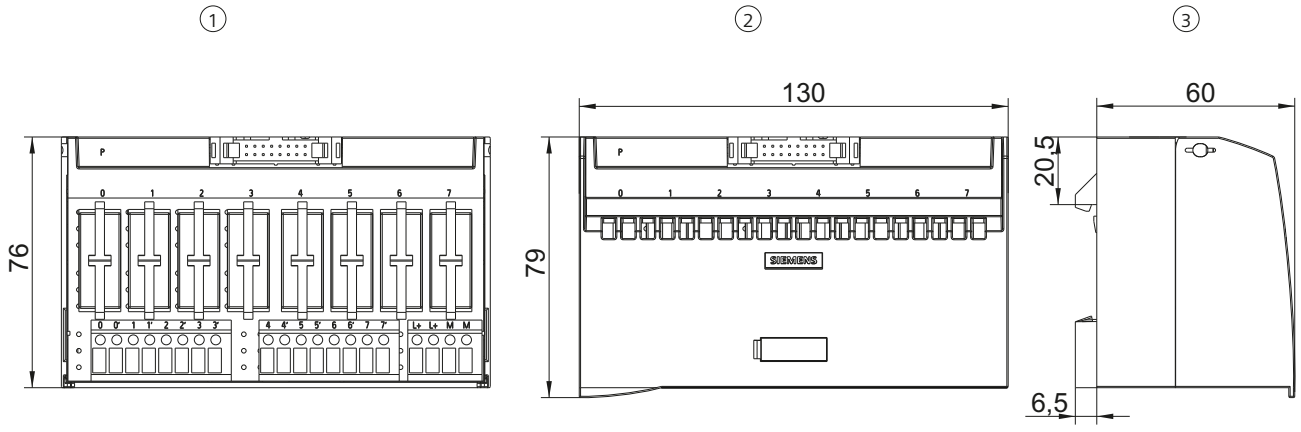


Figure A-7 6ES7924-0BE20-0Bx0

Terminal module 6ES7924-0BG20-0Bx0

TPRi 110 V with LED

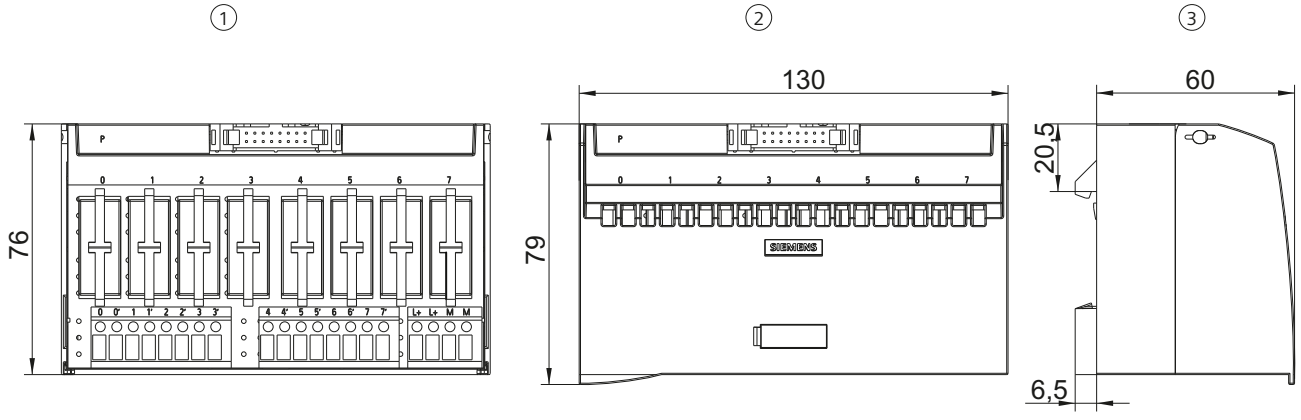


Figure A-8 6ES7924-0BG20-0Bx0

Terminal module 6ES7924-0BD20-0Bx0

TPRo with LED

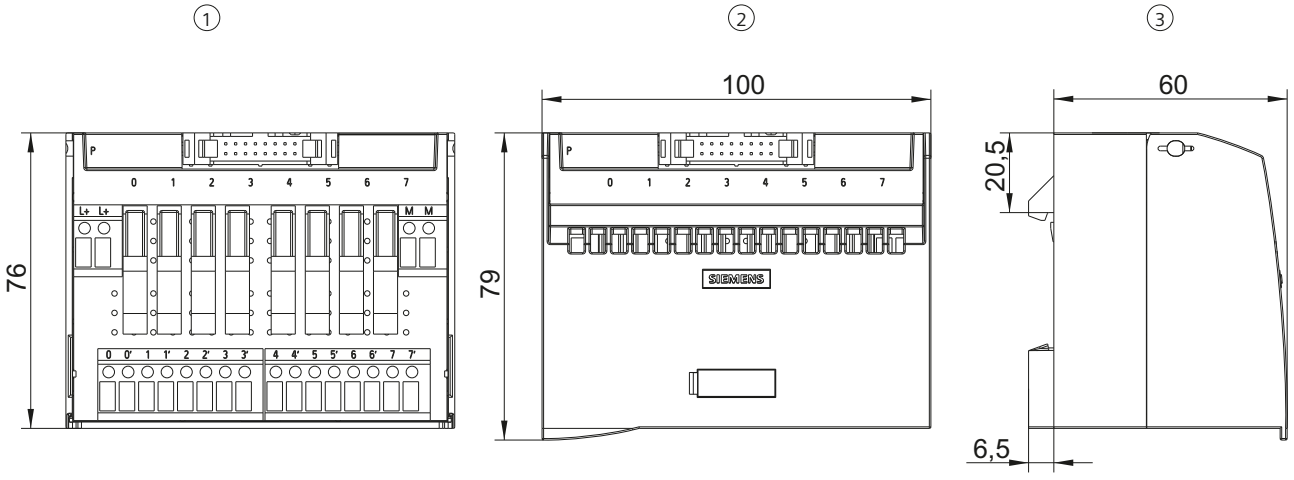


Figure A-9 6ES7924-0BD20-0Bx0

Terminal module 6ES7924-0BF20-0Bx0

TPOo with LED

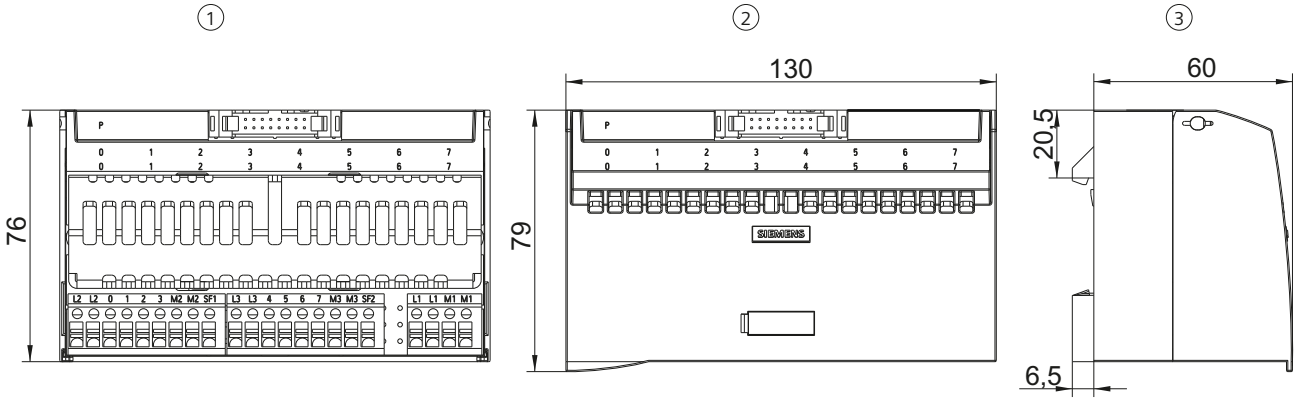


Figure A-10 6ES7924-0BF20-0Bx0

Terminal module 6ES7924-0CL20-0Bx0

TPS

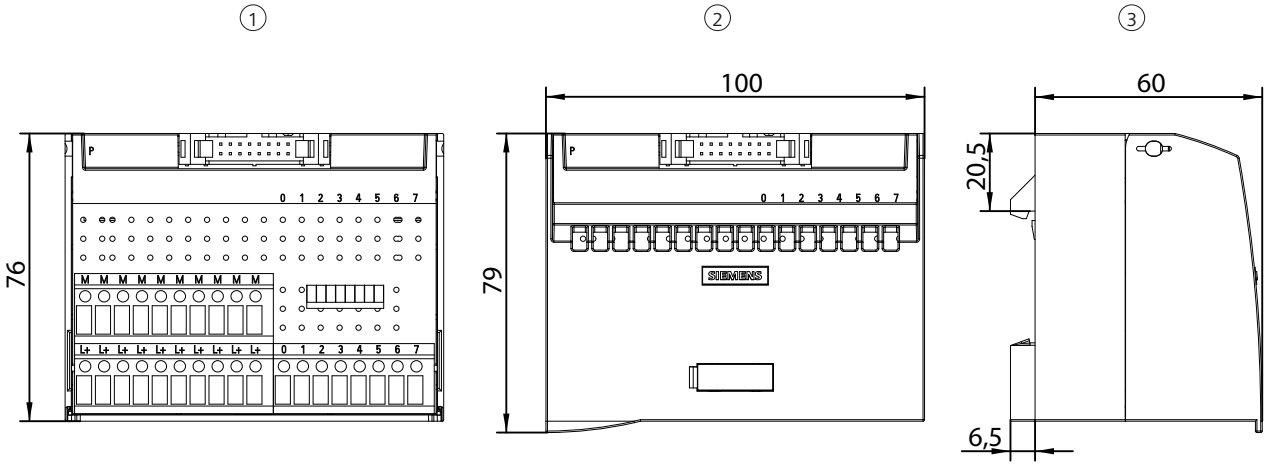


Figure A-11 6ES7924-0CL20-0Bx0

Terminal module 6ES7924-0CH20-0Bx0

TPF

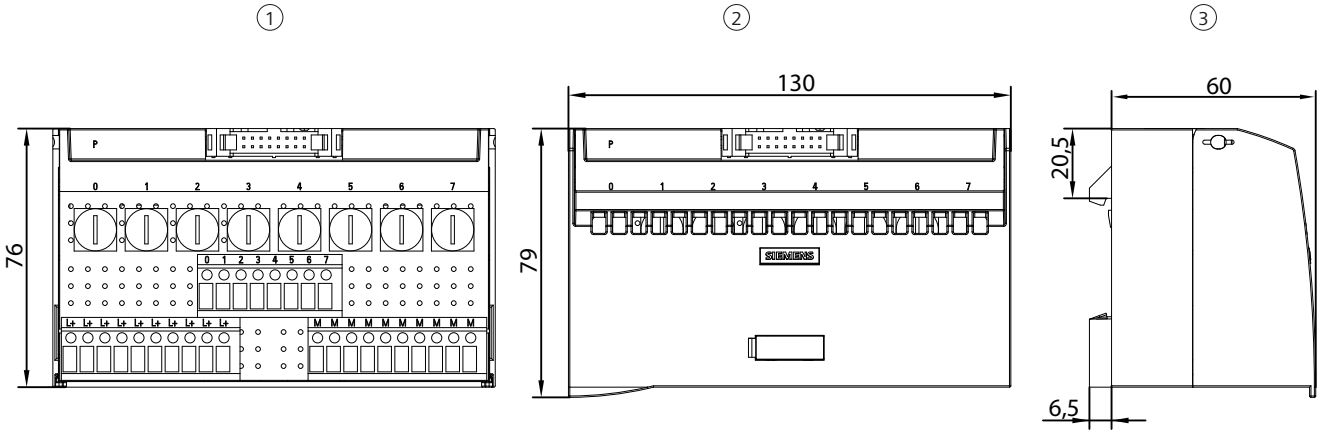


Figure A-12 6ES7924-0CH20-0Bx0

A.2.2 Terminal modules for 50-pin connecting cables

Terminal modules for 50-pin connecting cable

This section presents the dimension drawings of the terminal modules for 16-pin connecting cables

Terminal module 6ES7924-2AA20-0Ax0

TP1 without LED

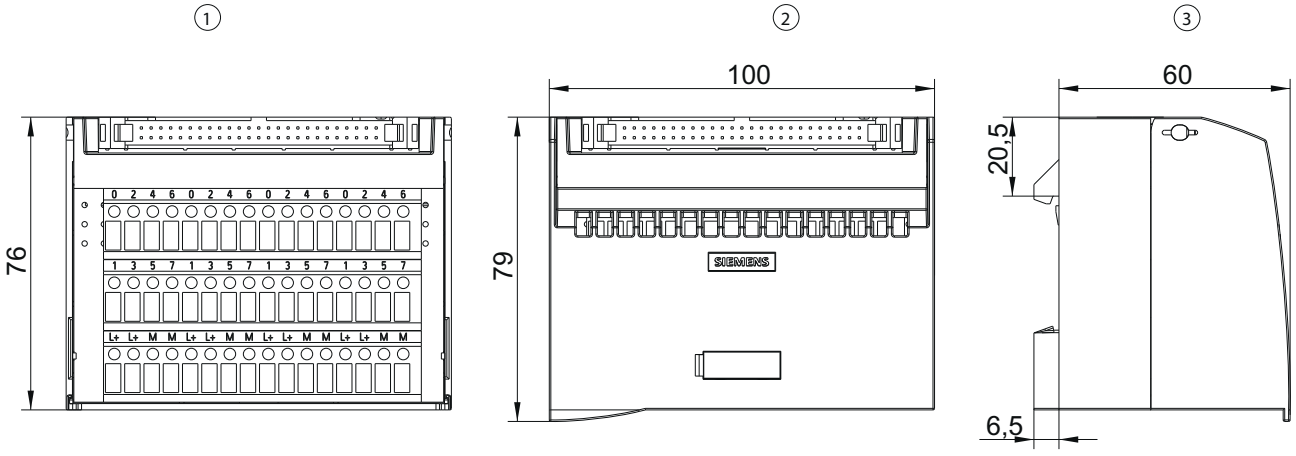


Figure A-13 6ES7924-2AA20-0Ax0

Terminal module 6ES7924-2AA20-0Bx0

TP1 with LED

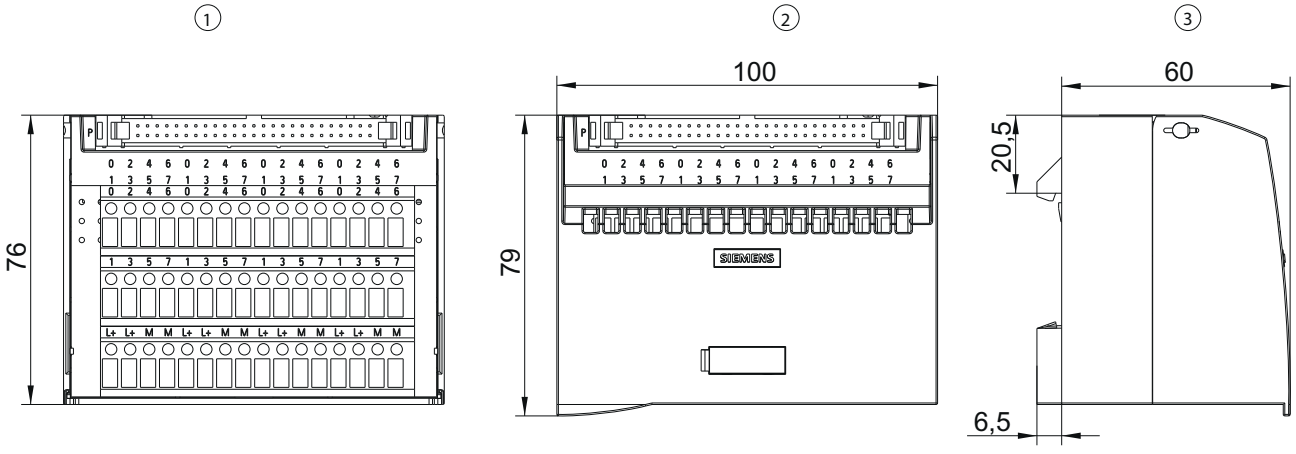


Figure A-14 6ES7924-2AA20-0Bx0

Terminal module 6ES7924-2CA20-0Ax0

TP3 without LED

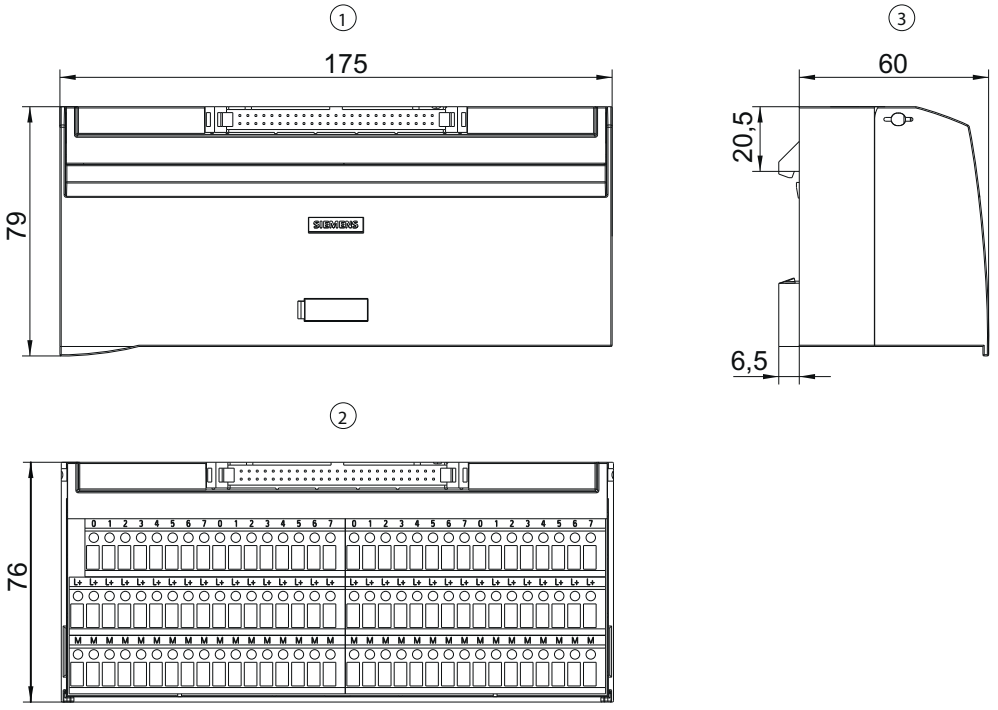


Figure A-15 6ES7924-2CA20-0Ax0

Terminal module 6ES7924-2CA20-0Bx0

TP3 with LED

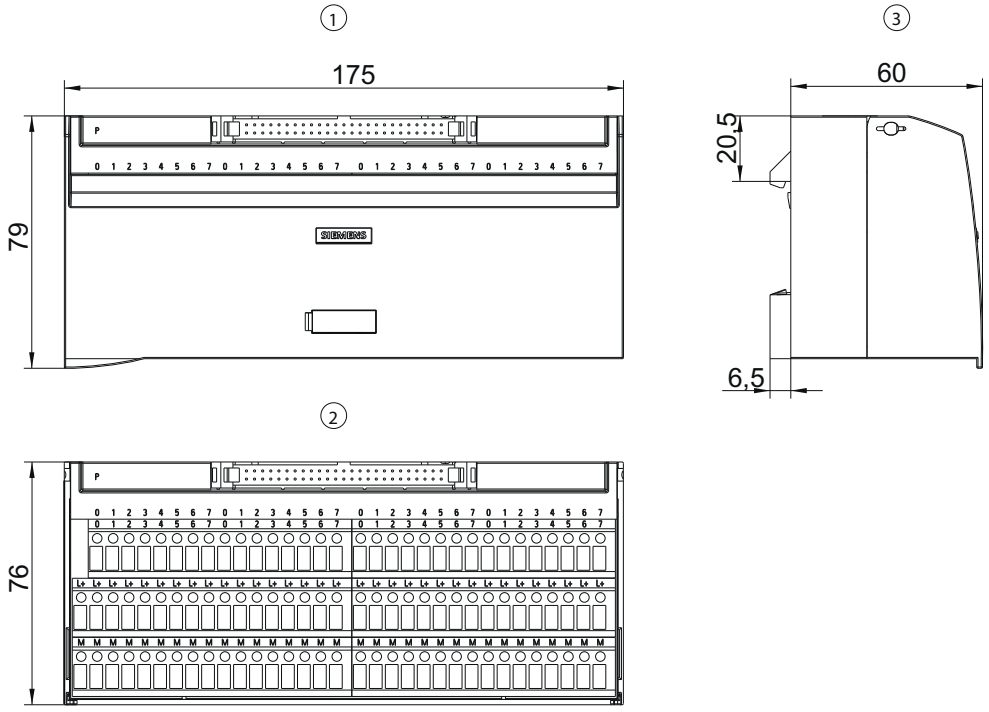


Figure A-16 6ES7924-2CA20-0Bx0

Circuit diagrams

B

B.1 Front connector modules S7-300

Front connector module 6ES7921-3AK20-0AA0

For S7-300 / ET200M, CPU312C

Front connector module with potential supply, screw-type system

Article number

6ES7921-3AK20-0AA0

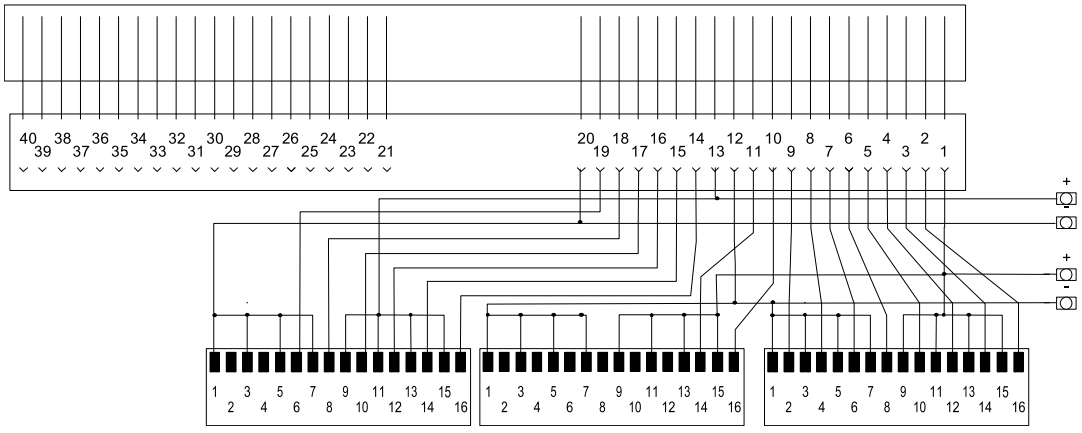


Figure B-1 6ES7921-3AK20-0AA0

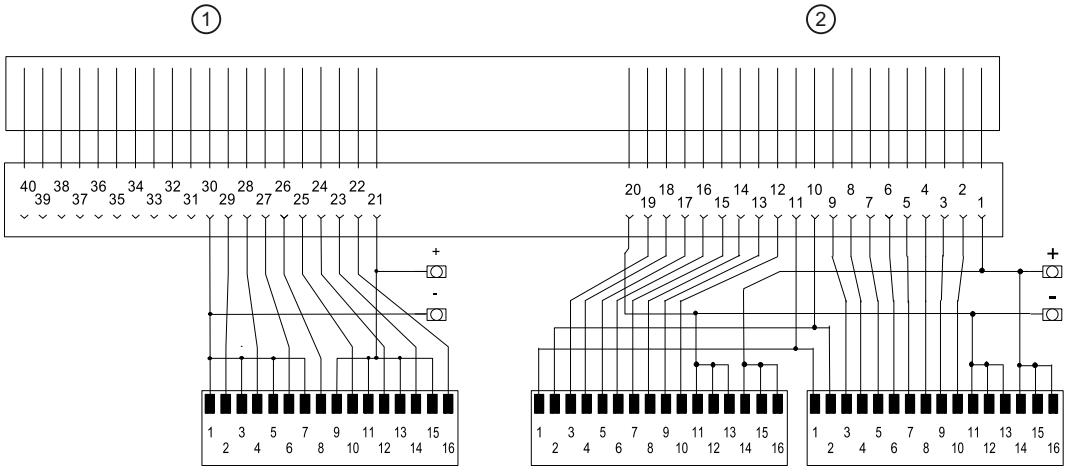
Front connector module 6ES7921-3AM20-0AA0

For S7-300 / ET200M, CPU313C/314C-2PtP/314C-2DP

Front connector module with potential supply, screw-type system

Article number

6ES7921-3AM20-0AA0



① Digital part

② Analog part

Figure B-2 6ES7921-3AM20-0AA0

Front connector module 6ES7921-3AA00-0AA0 / 6ES7921-3AB00-0AA0

For S7-300 / ET200M, digital 2 x 8 I/O

Front connector module with potential supply

Connecting terminals in

Spring-loaded terminal system: 6ES7921-3AA00-0AA0

Screw-type system: 6ES7921-3AB00-0AA0

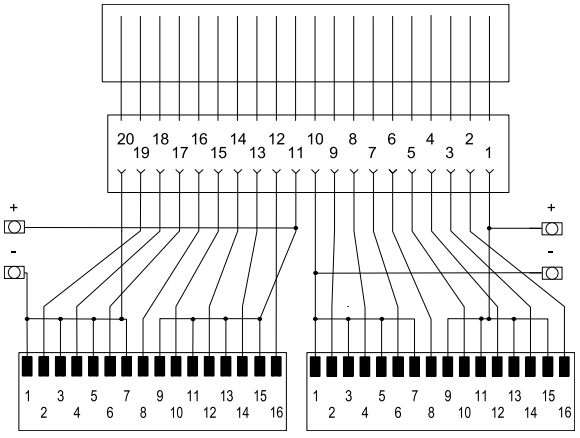


Figure B-3 6ES7921-3AA00-0AA0 / 6ES7921-3AB00-0AA0

Front connector module 6ES7921-3AA20-0AA0 / 6ES7921-3AB20-0AA0

For S7-300 / ET200M, digital 4 x 8 I/O

Front connector module with potential supply

Connecting terminals in

Spring-loaded terminal system: 6ES7921-3AA20-0AA0

Screw-type system: 6ES7921-3AB20-0AA0

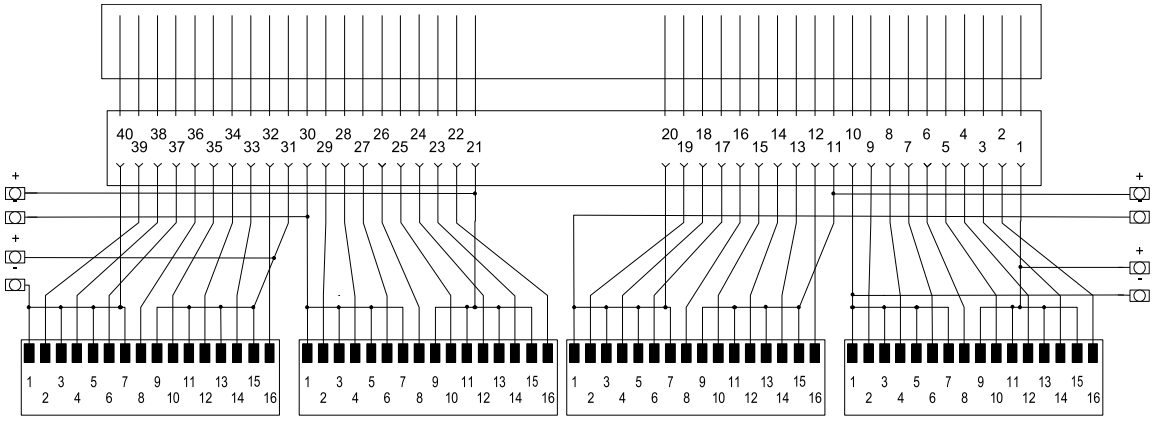


Figure B-4 6ES7921-3AA20-0AA0 / 6ES7921-3AB20-0AA0

Front connector module 6ES7921-3AC00-0AA0 / 6ES7921-3AD00-0AA0

For S7-300 / ET200M, 2 A digital 1 x 8 A

Front connector module with potential supply

Connecting terminals in

Spring-loaded terminal system: 6ES7921-3AC00-0AA0

Screw-type system: 6ES7921-3AD00-0AA0

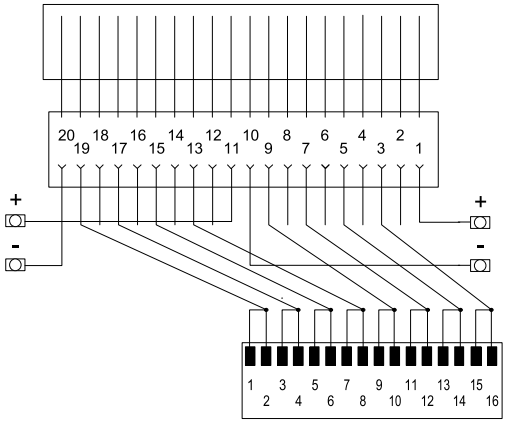


Figure B-5 6ES7921-3AC00-0AA0 / 6ES7921-3AD00-0AA0

Front connector module 6ES7921-3AF00-0AA0 / 6ES7921-3AG00-0AA0

For S7-300 / ET200M, analog 20-pin I/O module

Front connector module with potential supply

Connecting terminals in

Spring-loaded terminal system: 6ES7921-3AF00-0AA0

Screw-type system: 6ES7921-3AG00-0AA0

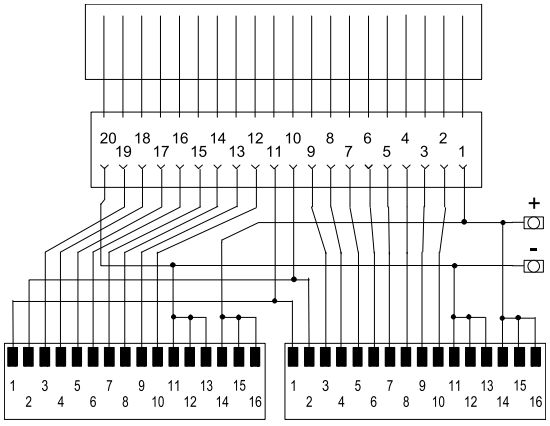


Figure B-6 6ES7921-3AF00-0AA0 / 6ES7921-3AG00-0AA0

Front connector module 6ES7921-3AF20-0AA0 / 6ES7921-3AG20-0AA0

For S7-300 / ET200M, analog 40-pin I/O module

Front connector module with potential supply

Connecting terminals in

Spring-loaded terminal system: 6ES7921-3AF20-0AA0

Screw-type system: 6ES7921-3AG20-0AA0

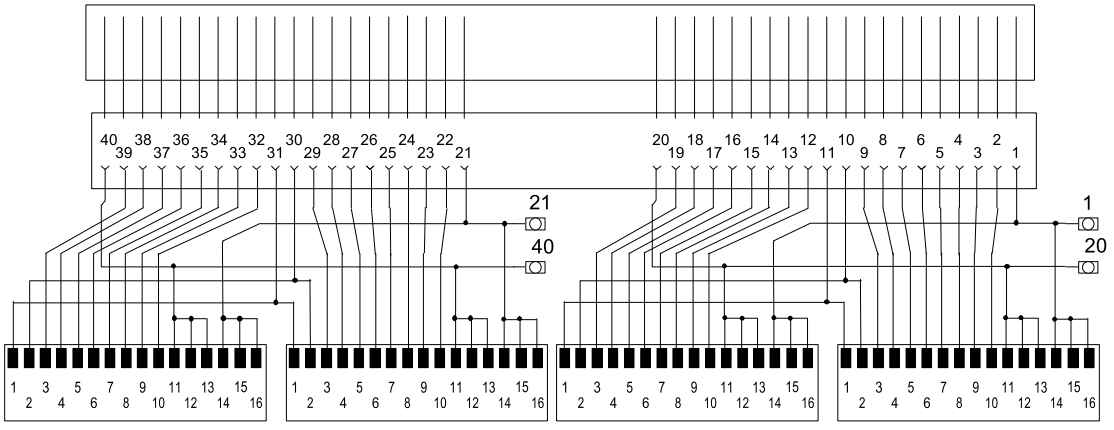


Figure B-7 6ES7921-3AF20-0AA0 / 6ES7921-3AG20-0AA0

B.2 Circuit diagrams, terminal modules for 16-pin connecting cable

Terminal module 6ES7924-0AA20-0Ax0

Terminal module TP1

For S7-300 / ET200M, for 8 I/O (16-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-0AA20-0AA0

Push-in system: 6ES7924-0AA20-0AC0

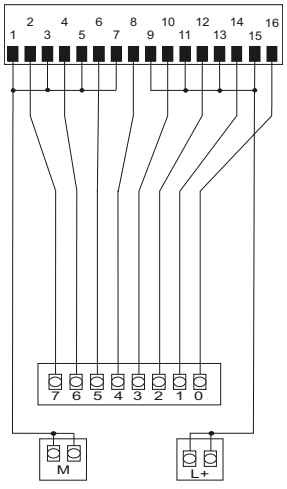


Figure B-8 6ES7924-0AA20-0Ax0

Terminal module 6ES7924-0AA20-0Bx0

Terminal module TP1 with LED

For S7-300 / ET200M, for 8 I/O (16-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-0AA20-0BA0

Push-in system: 6ES7924-0AA20-0BC0

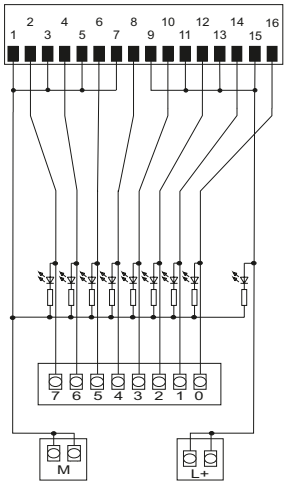


Figure B-9 6ES7924-0AA20-0Bx0

Terminal module 6ES7924-0BB20-0Ax0

Terminal module TP2

For S7-300 / ET200M, for 2 A output module

Connecting terminals in

Screw-type system 6ES7924-0BB20-0AA0

Push-in system 6ES7924-0BB20-0AC0

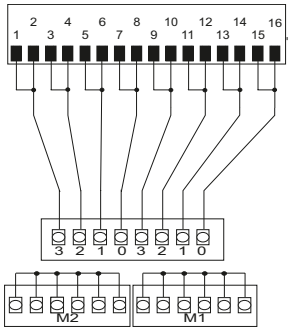


Figure B-10 6ES7924-0BB20-0Ax0

Terminal module 6ES7924-0CA20-0Ax0

Terminal module TP3 without LED

For S7-300 / ET200M, for 8 I/O (16-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-0CA20-0AA0

Push-in system: 6ES7924-0CA20-0AC0

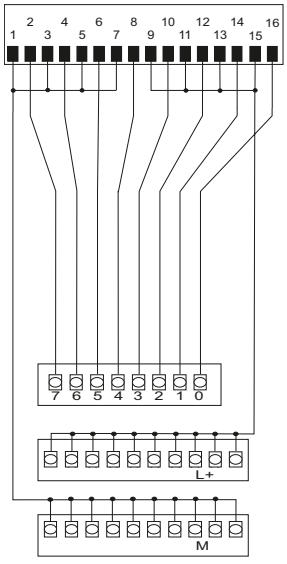


Figure B-11 6ES7924-0CA20-0Ax0

Terminal module 6ES7924-0CA20-0Bx0

Terminal module TP3 with LED

For S7-300 / ET200M, for 8 I/O (16-pin connecting cables)

Connecting terminals in

Screw-type system:6ES7924-0CA20-0BA0

Push-in system: 6ES7924-0CA20-0BC0

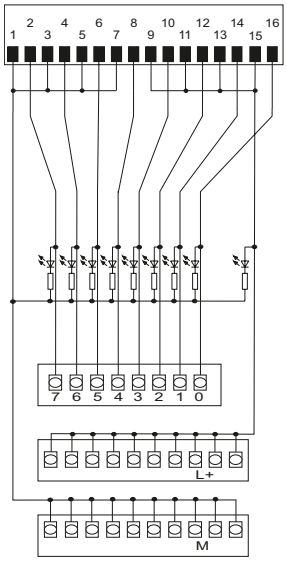


Figure B-12 6ES7924-0CA20-0Bx0

Terminal module 6ES7924-0CC21-0Ax0

Terminal module TPA (S7-300)

For S7-300 / ET200M

Connecting terminals in

Screw-type system: 6ES7924-0CC21-0AA0

Push-in system: 6ES7924-0CC21-0AC0

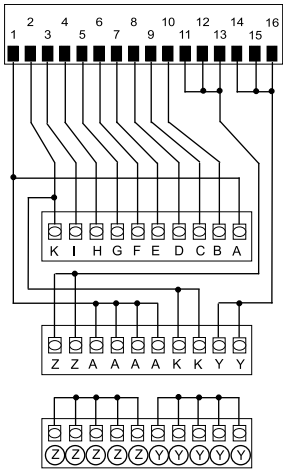


Figure B-13 6ES7924-0CC21-0Ax0

Terminal module 6ES7924-0BE20-0Bx0

Terminal module TPRi 230 V

For S7-300 / ET200M

Connecting terminals in

Screw-type system: 6ES7924-0BE20-0BA0

Push-in system: 6ES7924-0BE20-0BC0

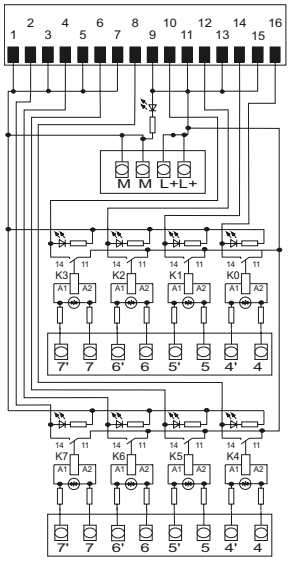


Figure B-14 6ES7924-0BE20-0Bx0

Terminal module 6ES7924-0BG20-0Bx0

Terminal module TPRi 110 V

For S7-300 / ET200M

Connecting terminals in

Screw-type system: 6ES7924-0BG20-0BA0

Push-in system:6ES7924-0BG20-0BC0

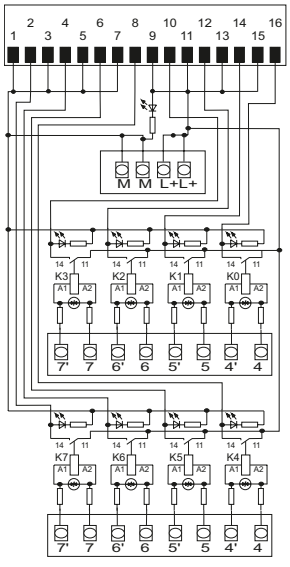


Figure B-15 6ES7924-0BG20-0Bx0

Terminal module 6ES7924-0BD20-0Bx0

Terminal module TPRo

For S7-300 / ET200M

Connecting terminals in

Screw-type system: 6ES7924-0BD20-0BA0

Push-in system: 6ES7924-0BD20-0BC0

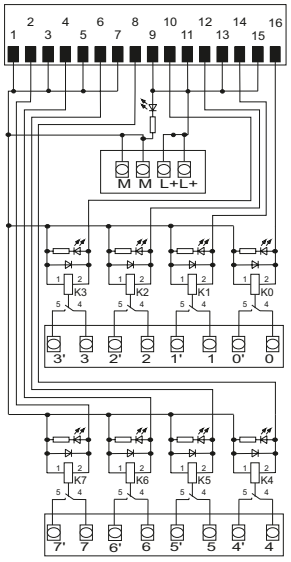


Figure B-16 6ES7924-0BD20-0Bx0

Terminal module 6ES7924-0BF20-0Bx0

Terminal module TPOo

For S7-300 / ET200M

Connecting terminals in

Screw-type system: 6ES7924-0BF20-0BA0

Push-in system: 6ES7924-0BF20-0BC0

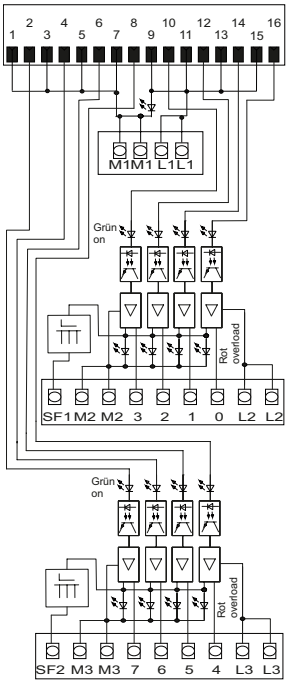


Figure B-17 6ES7924-0BF20-0Bx0

Terminal module 6ES7924-0CH20-0Bx0

Terminal module TPS, with LED switch

For S7-300 / ET200M, for 8 I/O (16-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-0CH20-0BA0

Push-in system: 6ES7924-0CH20-0BC0

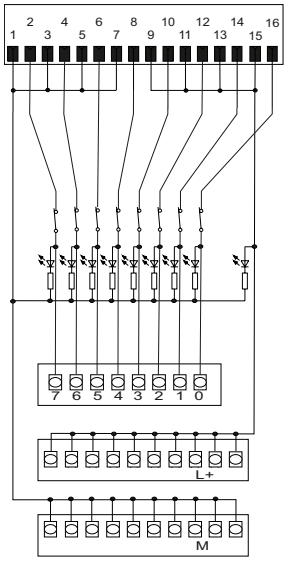


Figure B-18 6ES7924-0CH20-0Bx0

Terminal module 6ES7924-0CL20-0Bx0

Terminal module TPF with LED fuse

For S7-300 / ET200M, for 8 I/O (16-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-0CL20-0BA0

Push-in system: 6ES7924-0CL20-0BC0

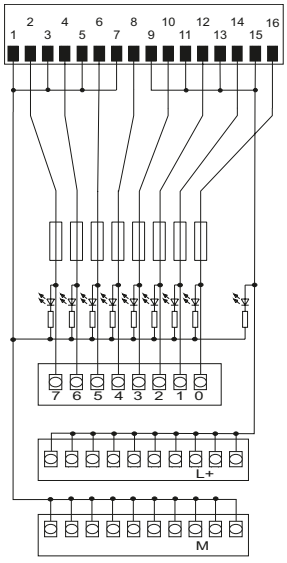


Figure B-19 6ES7924-0CL20-0Bx0

B.3 Circuit diagrams, terminal modules for 50-pin connecting cable

Terminal module 6ES7924-2AA20-0Ax0

Terminal module TP1 without LED

for S7-300 / S7-1500 / ET200MP 32 I/O (50-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-2AA20-0AA0

Push-in system: 6ES7924-2AA20-0AC0

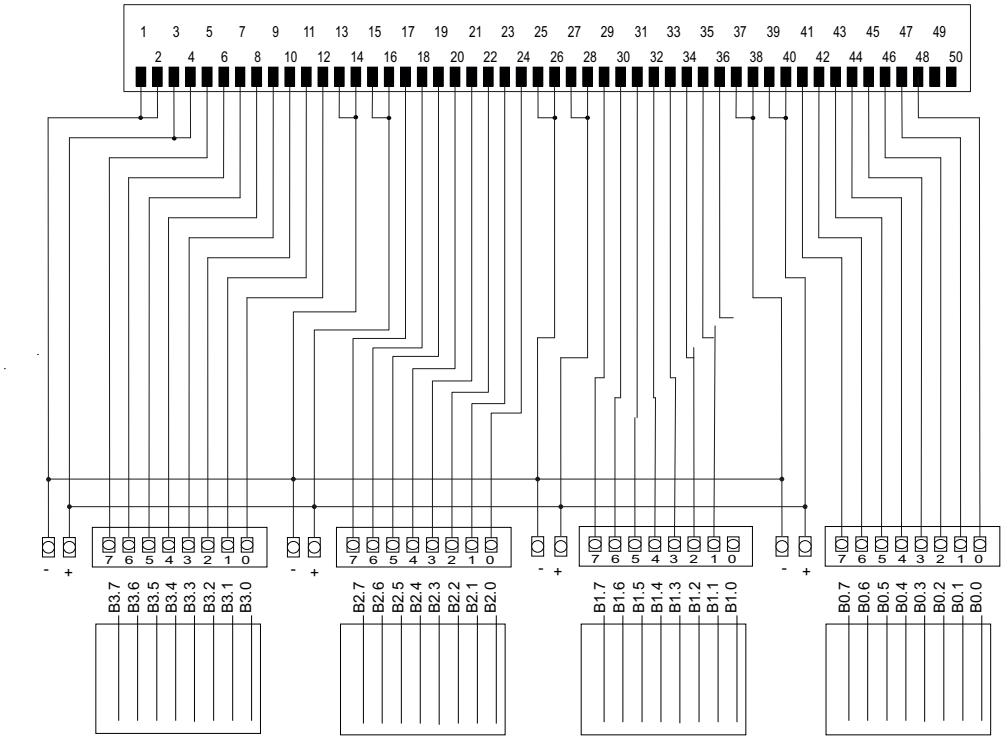


Figure B-20 6ES7924-2AA20-0Ax0

Terminal module 6ES7924-2AA20-0Bx0

Terminal module TP1 with LED

for S7-300 / S7-1500 / ET200MP 32 I/O (50-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-2AA20-0BA0

Push-in system: 6ES7924-2AA20-0BC0

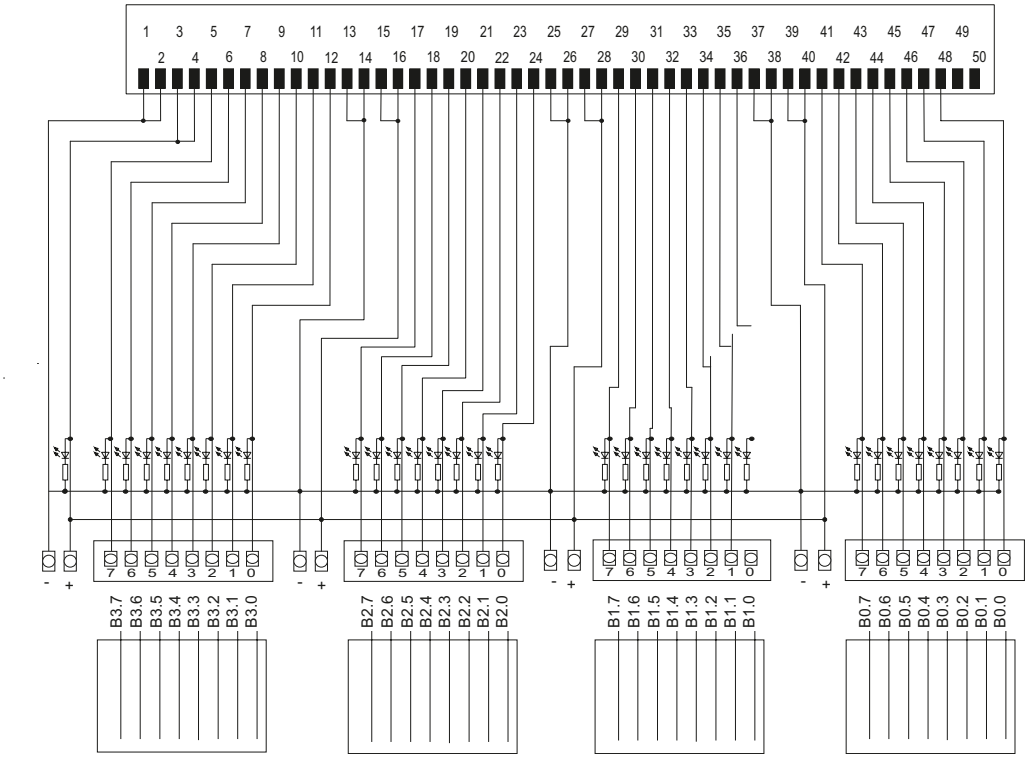


Figure B-21 6ES7924-2AA20-0Bx0

Terminal module 6ES7924-2CA20-0Ax0

Terminal module TP3 without LED

for S7-300 / S7-1500 / ET200MP 32 I/O (50-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-2CA20-0AA0

Push-in system: 6ES7924-2CA20-0AC0

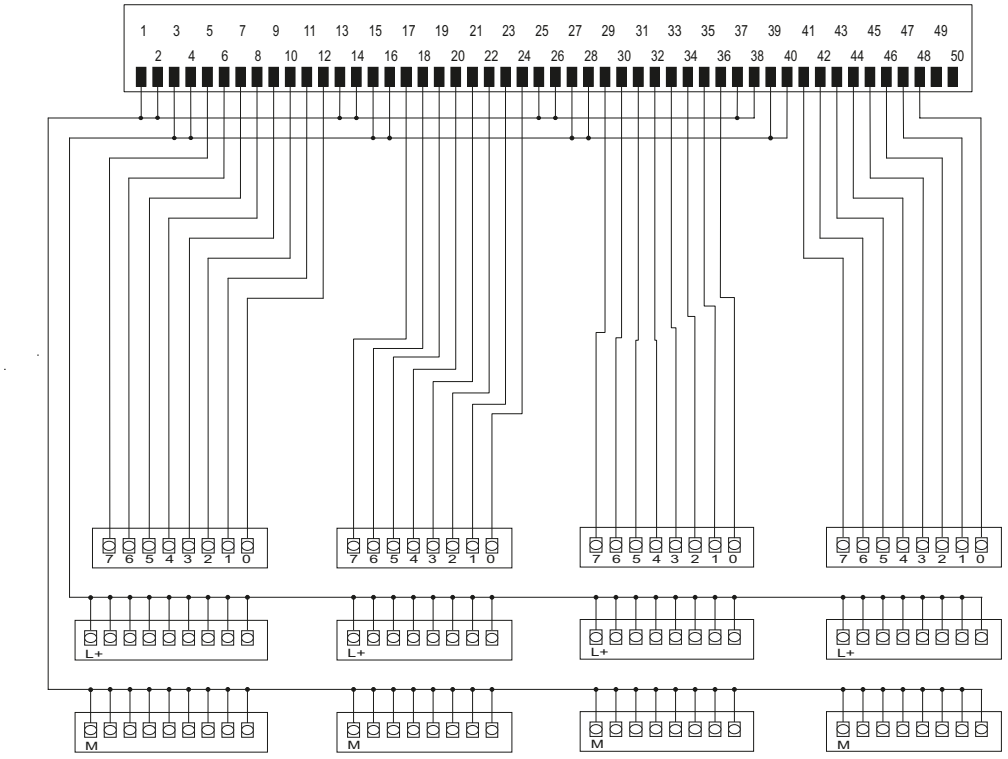


Figure B-22 6ES7924-2CA20-0Ax0

Terminal module 6ES7924-2CA20-0Bx0

Terminal module TP3 with LED

for S7-300 / S7-1500 / ET200MP 32 I/O (50-pin connecting cables)

Connecting terminals in

Screw-type system: 6ES7924-2CA20-0BA0

Push-in system: 6ES7924-2CA20-0BC0

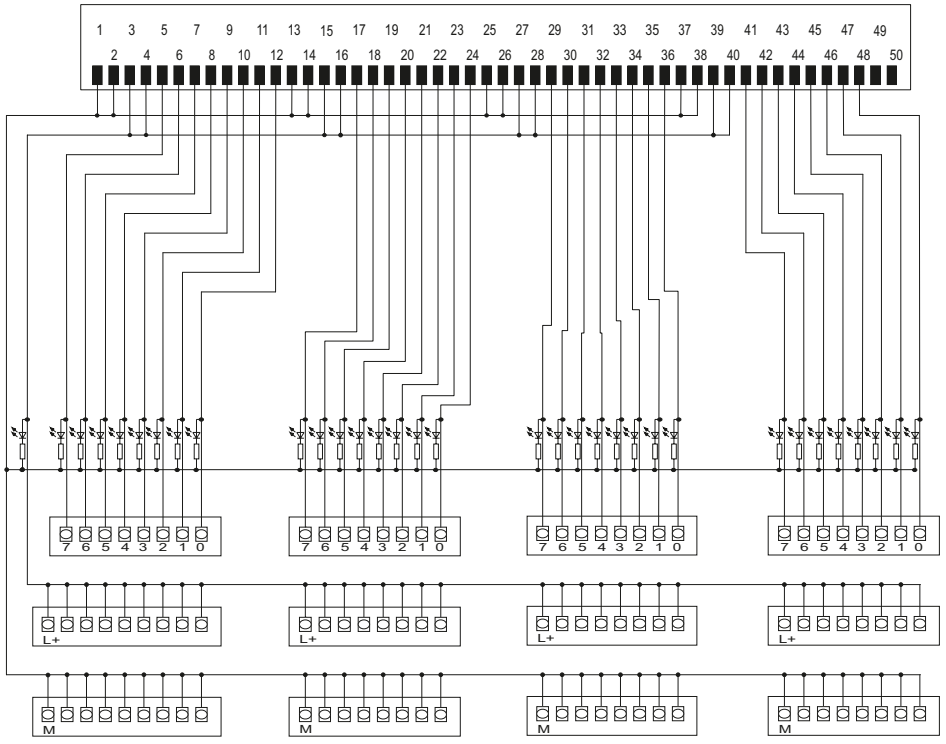


Figure B-23 6ES7924-2CA20-0Bx0

Spare parts / Accessories

C

C.1 Accessories

Accessories for SIMATIC TOP connect system cabling

Designation	Order number
Label for terminal module, 340 x, insertable	3RT1900-1SB20
Shield plate TPA for 8 bits, set of 4	6ES7928-1AA20-4AA0
Shield plate TPA for 32 bits, set of 4	6ES7928-1BA20-4AA0
Shield connection clamps for shield plate SIMATIC end, set of 10	6ES7590-5BA00-0AA0
Shield connection clamps for shield plate field end φ 2x 2…6 mm VPE set of 2	6ES7390-5AB00-0AA0
Shield connection clamps for shield plate field end φ 3…8 mm VPE set of 2	6ES7390-5BA00-0AA0
Shield connection clamps for shield plate field end φ 4…13 mm VPE set of 2	6ES7390-5CA00-0AA0
Relay for TPRo 24 V DC, set of 4	6ES7928-3AA20-4AA0
Relay for TPRi 230 V AC, set of 4	6ES7928-3BA20-4AA0
Relay for TPRo 230 V AC VPE set of 4, optocoupler 24VDC switching power 230VAC, alternative for relay with TPRo	6ES7928-3CA20-4AA0
Relay for TPRo 60 V DC VPE set of 4, optocoupler 24VDC switching power 60VDC, alternative for relay with TPRo	6ES7928-3DA20-4AA0
Relay for TPRi 110 V AC, set of 4	6ES7928-3EA20-4AA0
0.6 A fuses, set of 10	6ES7928-6AA20-0AA0
Enclosure cover for terminal module TP1 8-bit, set of 4	6ES7928-5AA20-4AA0
Enclosure cover for terminal module TP2 / TP3 / TPA 8-bit VPE set of 4	6ES7928-5BA20-4AA0
Enclosure cover for terminal module TP3 32-bit, set of 4	6ES7928-5CA20-4AA0
Enclosure cover for terminal module TPS / TPRo 8-bit and TP1 32-bit VPE set of 4	6ES7928-5DA20-4AA0
Enclosure cover for terminal module TPF / TPRi / TPOo 8-bit and TPA 32-bit VPE set of 4	6ES7928-5EA20-4AA0

Online catalog and ordering system

The online catalog and the online ordering system can be found on the homepage of the Industry Mall (http://www.siemens.com/industrymall).

Service and Support

D

Online support

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You will find the online support on the Internet at:

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You can reach Technical Support for all PD products as follows:

- Phone: + 49 (0) 911 895 7222
- E-mail (mailto:support.automation@siemens.com)
- Internet: Web form for support request (http://www.siemens.com/automation/support-request)

Technical documentation on the Internet

The technical documentation for the various SIMATIC products and systems is available on the Internet (http://www.siemens.com/simatic-tech-doku-portal).

Homepage

You can find news about the SIMATIC TOP connect on the Internet (http://www.automation.siemens.com/mcms/automation/de/automatisierungssysteme/systemverkabelung/simatic-top-connect).

Contacts

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