Distributed I/O
SIMATIC ET 200

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Distributed I/O SIMATIC ET 200
ET 200S – I/O modules

Power modules for PM-E electronic modules

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■ Overview

- For monitoring and, depending on the version, fusing the load and sensor supply voltage
- Can be plugged onto TM-P terminal modules with automatic coding.
- Diagnostics message for voltage and blown fuse (can be switched off via configuration)
- PM-E 24 V DC Standard
  - Load voltage diagnostics
- PM-E 24 V DC High Feature
  - Load voltage and reverse voltage diagnostics
  - With status information
  - Option handling (only in combination with the IM 151-1 Standard, IM 151-1 FO Standard and IM 151-1 High Feature)
- 24 to 48 V DC PM-E power module
  - Load voltage diagnostics
  - With status information
  - Option handling (only in combination with the IM 151-1 Standard, IM 151-1 FO Standard and IM 151-1 High Feature)
- PM-E 24 V DC to 230 V AC power module
  - power module for universal use
  - with integral replaceable fuse
  - With status information
  - Option handling (only in combination with the IM 151-1 Standard, IM 151-1 FO Standard and IM 151-1 High Feature)

■ Design

PM-E power modules are plugged into the TM-P terminal modules provided for the purpose.

The first module after the IM 151-3 must be a power module.

The version for fusing has a fusible link (5 x 20 mm). Up to 6 replacement fuses can be stored in the terminating module (see IM 151).

Possible combinations of the TM-E terminal modules and power modules

Power modules	TM-P terminal modules for power modules				
Screw-type terminal	**15S23-A1**	**15S23-A0**	**15S22-01**	**30S44-A0**	**F30S47-F0**
Order No. 6ES7 193…	…4CC20-0AA0	…4CD20-0AA0	…4CE00-0AA0	…4CK20-0AA0	3RK1903-3AA0
Spring-loaded terminal	**15C23-A1**	**15C23-A0**	**15C22-01**	**30C44-A0**	**–**
Order No. 6ES7 193…	…4CC30-0AA0	…4CD30-0AA0	…4CE10-0AA0	…4CK30-0AA0	–
FastConnect	**15N23-A1**	**15N23-A0**	**15N22-01**	–	–
Order No. 6ES7 193…	…4CC70-0AA0	…4CD70-0AA0	…4CE60-0AA0	–	–
PM-E 24 V DC ST	●	●	●		
PM-E 24 V DC HF	●	●	●		
PM-E 24 to 48 V DC	●	●	●		
PM-E 24 … 48 V DC/24 … 230 V AC	●	●	●		

*Possible combinations
of the electronics modules and power modules*

Power modules	Electronic modules
PM-E 24 V DC ST	Can be used for all electronics modules except 2 DI 120 V AC ST, 2 DI 230 V AC ST and 2 DO 120/230 V AC
PM-E 24 V DC HF 🔴NEW	Can be used for all electronics modules except 2 DI 120 V AC ST, 2 DI 230 V AC ST and 2 DO 120/230 V AC
PM-E 24 to 48 V DC	Can be used for all 15 mm-wide electronics modules except 2 DI 120 V AC ST, 2 DI 230 V AC ST and 2 DO 120/230 V AC as well as for 4 DI 24 to 48 V UC in AC operation
PM-E 24 … 48 V DC/24 … 230 V AC	Can be used with all 15 mm-wide electronic modules

Power modules for PM-E electronic modules

Ordering data	Order No.
PM-E 24 V DC **Standard power module** [1] For electronic modules; with diagnostics	**6ES7 138-4CA01-0AA0**
PM-E 24 V DC **High Feature power module** [1] For electronic modules; with diagnostics	**6ES7 138-4CA60-0AB0** NEW
24 … 48 V DC **PM-E power module** For electronic modules; with diagnostics, with status bit "load voltage" present	**6ES7 138-4CA50-0AB0**
Power module PM-E **24 … 48 V DC, 42 … 230 V AC** For electronic modules; with diagnostics and fuse	**6ES7 138-4CB11-0AB0**

[1] Can be used for all electronic and technology modules
   except 2 DI 120 V AC / 2 DI 230 V AC / 2 DO 120/230 V AC

Accessories	Order No.
Label sheets DIN A4 **(10 pieces)** Each sheet contains 60 label strips for peripheral modules and 20 label strips for interface modules	
• petrol	**6ES7 193-4BH00-0AA0**
• red	**6ES7 193-4BD00-0AA0**
• yellow	**6ES7 193-4BB00-0AA0**
• light beige	**6ES7 193-4BA00-0AA0**

Selection tool for terminal modules

Power modules	TM-P terminal modules for power modules			
Screw-type terminal type designation	**TM-P15S23-A1**	**TM-P15S23-A0**	**TM-P15S22-01**	**TM-P30S44-A0**
Order No. 6ES7 193...	4CC20-0AA0	4CD20-0AA0	4CE00-0AA0	4CK20-0AA0
Spring-loaded terminal type designation	**TM-P15C23-A1**	**TM-P15C23-A0**	**TM-P15C22-01**	**TM-P30C44-A0**
Order No. 6ES7 193...	4CC30-0AA0	4CD30-0AA0	4CE10-0AA0	4CK30-0AA0
FastConnect type designation	**TM-P15N23-A1**	**TM-P15N23-A0**	**TM-P15N22-01**	**Soon to come**
Order No. 6ES7 193...	4CC70-0AA0	4CD70-0AA0	4CE60-0AA0	
PM-E 24 V DC	●	●	●	
PM-E 24 … 48 V DC	●	●	●	
PM-E 24 V DC/120/230 V AC	●	●	●	
PM-E F 24 V DC PROFIsafe				●

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Distributed I/O SIMATIC ET 200
ET 200S – I/O modules

Digital electronic modules

Overview

- 2, 4 and 8-channel digital inputs and outputs for the ET 200S
- Can be plugged onto TM-E terminal modules with automatic coding.
- High-feature versions for enhanced plant availability, additional functions and comprehensive diagnostics
- Hot swapping of modules possible

Design

Different potentials are available on the terminals depending on the selected terminal module.

Possible combinations of the TM-E terminal modules and digital modules

Electronic modules	TM-E terminal modules for electronics modules						
Screw-type terminal	**15S26-A1**	**15S24-A1**	**15S24-01**	**15S23-01**	**15S24-AT**	**30S44-01**	**30S46-A1**
Order No. 6ES7 193…	…4CA40-0AA0	…4CA20-0AA0	…4CB20-0AA0	…4CB00-0AA0	…4CL20-0AA0	…4CG20-0AA0	…4CF40-0AA0
Spring-loaded terminal	**15C26-A1**	**15C24-A1**	**15C24-01**	**15C23-01**	**15C24-AT**	**30C44-01**	**30C46-A1**
Order No. 6ES7 193…	…4CA50-0AA0	…4CA30-0AA0	…4CB30-0AA0	…4CB10-0AA0	…4CL30-0AA0	…4CG30-0AA0	…4CF50-0AA0
FastConnect	**15N26-A1**	**15N24-A1**	**15N24-01**	**15N23-01**	–	–	–
Order No. 6ES7 193…	…4CA80-0AA0	…4CA70-0AA0	…4CB70-0AA0	…4CB60-0AA0			
2DI 24 V DC ST 2DI 24 V DC HF 4DI 24 V DC ST 4DI 24 V DC HF 4DI 24 V DC /SRC ST	●	●	●	●			
4DI 24 … 48 V UC HF	●	●	●	●			
4 DI NAMUR	●	●	●	●			
8 DI 24 V DC, ST 8 DI, 24 VDC ST source input	●		●	●			
2 DI 120 V AC ST	●	●	●	●			
2 DI 230 V AC ST	●	●	●	●			
2 DO 24 V DC/0.5 A ST 2 DO 24 V DC/0.5 A HF 4 DO 24 V DC/0.5 A ST 4 DO, 24 VDC / 0.5 A ST sink output 4 DO 24 V DC/0.5 A HF **NEW**	●	●	●	●			
8 DO 24 V DC/0.5 A ST 8 DO, 24 VDC / 0.5 A ST sink output 8 DO 24 V DC/0.5 A HF **NEW**	●		●				
2 DO 24 V DC/2 A ST 2 DO 24 V DC/2 A HF 4 DO 24 V DC/2 A ST 4 DO 24 V DC/2 A HF **NEW**	●	●	●	●			
2 DO 24 … 230 V AC/2 A	●	●	●	●			
2RO NO 24 … 120 V DC/5 A, 24 … 230 V AC/5 A 2RO NO/NC 24 … 48 V DC/5 A, 24 … 230 V AC/5 A 2RO NO/NC 24 … 48 V DC/5 A, 24 … 230 V AC/5 A, with manual operation **NEW**	●	●	●	●			

Ordering data	Order No.		Order No.
Digital input modules		*Accessories*	
Ordering unit 5 items		**Label sheets DIN A4 (10 pieces)**	
• 2 DI 24 V DC Standard	6ES7 131-4BB01-0AA0	Each sheet contains 60 label strips for peripheral modules and 20 label strips for interface modules	
• 2 DI 24 V DC High Feature	6ES7 131-4BB01-0AB0		
• 4 DI 24 V DC Standard	6ES7 131-4BD01-0AA0		
• 4 DI 24 V DC High Feature	6ES7 131-4BD01-0AB0	• petrol	6ES7 193-4BH00-0AA0
• 2 DI 120 V AC	6ES7 131-4EB00-0AB0	• red	6ES7 193-4BD00-0AA0
• 2 DI 230 V AC	6ES7 131-4FB00-0AB0	• yellow	6ES7 193-4BB00-0AA0
• 4 DI 24 … 48 V UC	6ES7 131-4CD00-0AB0	• light beige	6ES7 193-4BA00-0AA0
• 4 DI 24 V DC SOURCE INPUT	6ES7 131-4BD51-0AA0		
Ordering unit 1 item			
• 4 DI 24 V DC NAMUR	6ES7 131-4RD00-0AB0		
• 8 DI 24 V DC Standard	6ES7 131-4BF00-0AA0		
• 8 DI, 24 VDC, standard SOURCE INPUT	6ES7 131-4BF50-0AA0		
Digital output modules			
Ordering unit 5 items			
• 2 DO 24 V DC/0.5 A Standard	6ES7 132-4BB01-0AA0		
• 2 DO 24 V DC/0.5 A High Feature	6ES7 132-4BB01-0AB0		
• 2 DO 24 V DC/2 A Standard	6ES7 132-4BB31-0AA0		
• 2 DO 24 V DC/2 A High Feature	6ES7 132-4BB31-0AB0		
• 4 DO 24 V DC/0.5 A Standard	6ES7 132-4BD02-0AA0		
• 4 DO, 24 VDC / 0.5 A, standard SOURCE OUTPUT	6ES7 132-4BD50-0AA0		
• 4 DO 24 V DC/0.5 A High Feature	6ES7 132-4BD00-0AB0 🆕		
• 8 DO 24 V DC/0.5 A High Feature	6ES7 132-4BF00-0AB0 🆕		
• 4 DO 24 V DC/2 A Standard	6ES7 132-4BD32-0AA0		
• 4 DO 24 V DC/2 A High Feature	6ES7 132-4BD30-0AB0 🆕		
• 2 DO 24 … 230 V AC/2 A	6ES7 132-4FB01-0AB0		
• 2 DO 24 V DC … 230 V AC/5 A relay, NO contact	6ES7 132-4HB01-0AB0		
• 2 DO 24 ... 48 V DC/5 A, 24 ... 230 V AC/5 A relay, changeover contact	6ES7 132-4HB10-0AB0		
Ordering unit 1 item			
• 2 DO 24 ... 48 V DC/5 A, 24 ... 230 V AC/5 A relay, changeover contact, with manual operation	6ES7 132-4HB50-0AB0 🆕		
• 8 DO 24 V DC/0.5 A Standard	6ES7 132-4BF00-0AA0		
• 8 DO, 24 VDC / 0.5 A, standard SOURCE OUTPUT	6ES7 132-4BF50-0AA0		

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Distributed I/O SIMATIC ET 200
ET 200S – IO-Link master modules

4SI IO-Link electronic module
4SI SIRIUS electronic module

■ Overview	**■ Overview**

The 4SI IO-Link electronic module is an IO-Link master and supports the easy integration of sensors and actuators from different manufacturers in the multifunctional, distributed I/O system SIMATIC ET 200S on a total of four ports.

Features

- Up to 4 IO-Link devices can be connected to each IO-Link master module (3-wire connection)

- Up to 4 standard actuators or sensors (2-wire/3-wire connection) can be connected.

- The electronic module 4SI IO-Link is 15 mm in width and can be used with the following universal terminal modules:
  - TM-E15S26-A1 (screw-type terminal)
  - TM-E15C26-A1 (spring-loaded terminal)
  - TM-E15N26-A1 (FastConnect)

- Supports firmware update (STEP 7 V5.4 SP4 and higher)

The 4SI SIRIUS electronic module supports easy, cost-effective connection of SIRIUS switching devices with IO-Link to the multifunctional, distributed I/O system SIMATIC ET 200S on a total of four ports.

Features

- Up to 4 SIRIUS switching devices (max. 16 for groups of four) can be connected to each IO-Link SIRIUS module using IO-Link (3-wire connection)

- The electronic module 4SI SIRIUS is 15 mm in width and can be used with the following universal terminal modules:
  - TM-E15S26-A1 (screw-type terminal)
  - TM-E15C26-A1 (spring-loaded terminal)
  - TM-E15N26-A1 (FastConnect)

- Supports firmware update (STEP 7 V5.4 SP5 and higher).

■ Ordering data	**Order No.**	**■ Ordering data**	**Order No.**
Electronic module 4SI IO-Link	**6ES7 138-4GA50-0AB0**	**4SI SIRIUS electronic module**	**3RK1 005-0LB00-0AA0**
IO-Link master		IO-Link master	
Connection method:		Connection method:	
Screw terminal, spring-loaded terminal or FastConnect		Screw-type terminal, spring-loaded terminal or FastConnect	

| **■ More information**	**■ More information**
Further information and technical data can be found in the Industry M under: "Automation technology" --> "Industrial Communication" --> "IO-Link" --> "Master" --> IO-Link master module for ET 200S	Further information and technical data can be found in the Industry M under: "Automation technology" --> "Industrial Communication" --> "IO-Link" --> "Master" --> IO-Link master module SIRIUS for ET 200S

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■ Overview
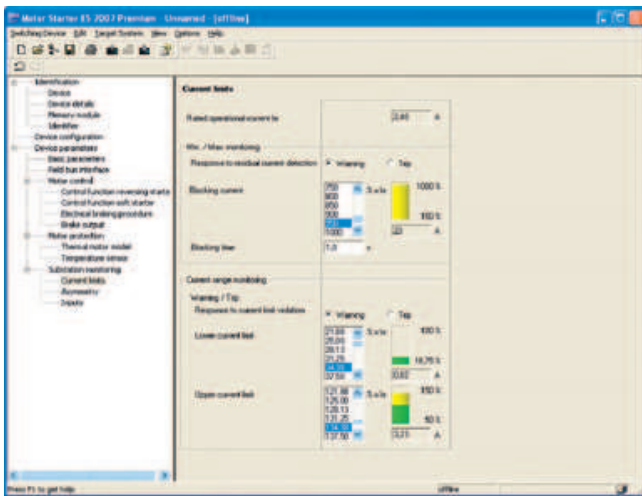
Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES 2007

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200S, ET 200pro, ECOFAST and M200D product families.

Interfacing is performed

- Through the local interface on the device
- With PROFIBUS DP V1-capable motor starters from any point in PROFIBUS or in PROFINET (applies for ET 200pro/ ECOFAST/M200D)
- With PROFINET-capable motor starters from any point in PROFINET or PROFIBUS (applies for M200D).

Using Motor Starter ES, the communication-capable motor starters are easily parameterized during start-up, monitored during normal operation and successfully diagnosed for service purposes. Preventative maintenance is supported by a function for reading out diverse statistical data (e.g. operating hours, operating cycles, cut-off currents, etc.). The user is supported during these procedures with comprehensive Help functions and plain text displays.

The advantages of Motor Starter ES:

- Clearly arranged configuring of device functions and their parameters – online and offline
- Effective diagnostics functions on the soft starter and display of the most important measured values
- Trace function (oscilloscope function) for recording measured values and events (included in the Motor Starter ES Standard and Premium software version for M200D PROFIBUS and PROFINET).

Motor Starter ES can either be used as a stand-alone program or it can be integrated into STEP 7 via an object manager.

Efficient engineering with new program versions

The Motor Starter ES software program is available in three versions which differ in their user-friendliness, scope of functions and price.

Motor Starter ES	Basic	Standard	Premium
Access through the local interface on the device	✔	✔	✔
Parameter assignment	✔	✔	✔
Operating	✔	✔	✔
Diagnostics	--	✔	✔
Creating typicals	--	✔[1]	✔[1]
Comparison functions	--	✔	✔
Standards-conform printout according to EN ISO 7200	--	✔	✔
Service data (slave pointer, statistics data)	--	✔	✔
Access through PROFIBUS	--	--	✔
Access through PROFINET	--	--	✔[2] NEW
S7 Routing	--	--	✔
Teleservice through MPI	--	--	✔
STEP 7 object manager	--	--	✔
Trace function	--	✔[2]	✔[2] NEW

✔ Function available   -- Function not available
[1] Typicals with Service Pack 1 and higher.
[2] Trace function and access through PROFINET Service Pack 2 and higher.

Motor Starter ES	Basic	Standard	Premium
ET 200S High Feature PROFIBUS IM	✔	✔	--
ET 200S High Feature PROFINET IM	✔	✔	--
ECOFAST AS-Interface High Feature	✔	✔	--
ECOFAST PROFIBUS	✔	✔	✔
ET 200pro PROFIBUS IM	✔	✔	✔
ET 200pro PROFINET IM	✔	✔	✔
M200D AS-Interface Standard	✔[1]	✔[1][2]	--
M200D PROFIBUS	✔[1]	✔[1]	✔[1]
M200D PROFINET	✔[1]	✔[1]	✔[1]

✔ Function available   -- Function not available
[1] With Service Pack 2 and higher.
[2] Trace function is not supported.

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Distributed I/O SIMATIC ET 200
ET 200S – Software

Motor Starter ES

■ **Overview** (continued)

More functions

- Standards-conform printouts
  The software tool greatly simplifies machine documentation.It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.

- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition, it is possible to specify which of these parameters are fixed and which can be adapted, e.g. by the startup engineer.

- Teleservice through MPI
  The Motor Starter ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

Types of delivery and license

Motor Starter ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal).

Following delivery versions are also available for Motor Starter ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Motor Starter ES 2006 to Motor Starter ES 2007.

- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Motor Starter ES 2007 for switching from Standard to Premium.

- Software Update Service
  To keep you up to date at all times, we offer a special service which supplies you automatically with all service packs and upgrades.

- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

System requirements

Parameterization, start-up and diagnostics software Motor Starter ES 2007 For ECOFAST Motor Starter, SIMATIC ET 200S High-Feature Starter, SIMATIC ET 200pro Starter and M200D (AS-I Standard, PROFIBUS, PROFINET)	
Operating system	Windows XP Professional (Service Pack 2, Service Pack 3[1]), Windows Vista Ultimate 32/ Business 32[2] (Service Pack 1[3])
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows Vista)
RAM	≥ 512 MB/≥ 1 GB (Windows Vista)
Monitor resolution	≥ 1024 x 768
Free space on hard disk[4]	≥ 400 MB
CD-ROM/DVD drive	Yes (only when installing from CD)
Serial interface (COM)	Yes
PC cable/parameterization cable/ connection cable	Yes
PROFIBUS card/PROFIBUS processor	Optional, for parameterization and diagnostics through PROFIBUS
Ethernet interface/PROFINET card	Optional, for parameterization and diagnostics through PROFINET

[1] Windows XP Professional Service Pack 3 with Motor Starter ES 2007 + SP2 and higher.

[2] Windows Vista Ultimate 32/Business 32 with Motor Starter ES 2007 + SP1 and higher.

[3] Windows Vista Ultimate 32/Business 32 Service Pack 1 with Motor Starter ES 2007 + SP2 and higher.

[4] Allow for additional free space, e.g. for swap-out files.

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Ordering data

	Order No.		Order No.

Parameterization, start-up and diagnostics software
Motor Starter ES 2007

For ECOFAST Motor Starter, SIMATIC ET 200S
High-Feature Starter, SIMATIC ET 200pro Starter and M200D
(AS-I Standard, PROFIBUS, PROFINET)

- Can be run under WIN XP PROF/
  Windows Vista Ultimate 32/Business 32
- Without PC cable

Motor Starter ES 2007 Basic

Floating license for one user
E-SW, software and documentation on CD,
3 languages (German/English/French),
communication through system interface

• License key on USB stick, Class A, including CD	**3ZS1 310-4CC10-0YA5**
• License key download, Class A, no CD	**3ZS1 310-4CE10-0YB5**

Motor Starter ES 2007 Standard

Floating license for one user
E-SW, software and documentation on CD,
3 languages (German/English/French),
communication through system interface

• License key on USB stick, Class A, including CD	**3ZS1 310-5CC10-0YA5**
• License key download, Class A, no CD	**3ZS1 310-5CE10-0YB5**

Upgrade for Motor Starter ES 2006 Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	**3ZS1 310-5CC10-0YE5**
Powerpack for Motor Starter ES 2007 Basic Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	**3ZS1 310-5CC10-0YD5**
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface	**3ZS1 310-5CC10-0YL5**

Motor Starter ES 2007 Premium

Floating license for one user
E-SW, software and documentation on CD,
3 languages (German/English/French),
communication through system interface or PROFIBUS

• License key on USB stick, Class A, including CD	**3ZS1 310-6CC10-0YA5**
• License key download, Class A, no CD	**3ZS1 310-6CE10-0YB5**

Upgrade for Motor Starter ES 2006 Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	**3ZS1 310-6CC10-0YE5**
Powerpack for Motor Starter ES 2007 Standard Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	**3ZS1 310-6CC10-0YD5**
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface or PROFIBUS	**3ZS1 310-6CC10-0YL5**

Accessories

For ET 200S High Feature motor starters	
• Control module 2DI DC 24 V COM, for ET 200S High-Feature starter, Failsafe Starter A	**3RK1 903-0CH10**
• LOGO! PC cables	**6ED1 057-1AA00-0BA0**
For ET 200pro motor starters RS232 interface cable, serial data connection between ET 200pro MS/FC and laptop/PC/PG or MS	**3RK1 922-2BP00**
For ECOFAST High Feature motor starters (interface cable)	
• PC cables	**3RK1 911-0BN20**
USB/serial adapters To connect a serial PC cable (for connection to the serial PC interface / RS 232), we recommend using modular safety system 3RK3, soft starter 3RW44, ET 200S/ ECOFAST/ET200pro motor starter, AS-i safety monitor and AS-i analyzer in conjunction with SIMOCODE pro 3UF7	**3UF7 946-0AA00-0**

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Distributed I/O SIMATIC ET 200

ET 200pro

IM 154-6 PN IWLAN

Overview

Interface module for handling communication between ET 200pro and host PROFINET IO controllers over Industrial Wireless LAN (IWLAN) radio networks for 2.4 GHz or 5 GHz with data transfer rates up to 54 Mbit/s.

- Protection against illegal access, espionage, tapping and falsification through use of effective encryption mechanisms
- Fast exchange of devices through use of interchangeable medium MICRO MEMORY CARD

Technical specifications

IM 154-6 PN IWLAN interface module	6ES7 154-6AB00-0AB0 6ES7 154-6AB50-0AB0
Supply voltage for electronic components 1L+	
• Rated value	24 V DC
• Valid range, lower limit	20.4 V DC
• Valid range, upper limit	28.8 V DC
• Short-circuit protection	Yes; replaceable fuse
• Reverse polarity protection	Yes; against destruction
• Max. infeed current	5 A
Load voltage 2L+	
• Rated value (DC)	24 V DC
• Lower limit of permissible range (DC)	20.4 V DC
• Upper limit of permissible range (DC)	28.8 V DC
• Short-circuit protection	Yes, for potential group
• Reverse polarity protection	Yes; against destruction
• Max. infeed current	8 A
Current consumption from supply voltage 1L+, typ.	335 mA
Power loss, typ.	8.5 W
Memory type	Micro Memory Card, is required
Address range/address volume	
• Outputs	256 byte
• Inputs	256 byte
Reports	
• PROFINET IO	Yes
• Industrial Wireless LAN	Yes
PROFINET IO services	ARP, PING, SNMP
Industrial Wireless LAN	
• Transmission rate, max.	54 Mbit/s
• Standards for wireless communication	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11h (not valid for 6ES7 154-6AB50-0AB0) IEEE 802.11e IEEE 802.11i
• Radio frequency for WLAN in 2.4 GHz frequency band	2,4 ... 2.4835 GHz
• Radio frequency for WLAN in 5 GHz frequency band	5,15 ... 5.825 GHz
• Transmission method	Direct Sequence Spread Spectrum (DSSS) Complementary Code Keying (CCK) Orthogonal Frequency Division Multiplexing (OFDM)
• Supported IWLAN services	Current approvals can be found in the Internet at http://support.automation.siemens.com/WW/view/de/19812553
• Connection for external antenna	

Technical specifications (continued)

IM 154-6 PN IWLAN interface module	6ES7 154-6AB00-0AB0 6ES7 154-6AB50-0AB0
Parameters	
• Diagnostic interrupt	Yes
• Maintenance alarm	Yes
• Hardware interrupt	Yes
• Swapping interrupt	Yes
• Identifier-related diagnostic data	Yes
• Module status	Yes
• Channel-specific diagnostics	Yes
• Start-up if preset configuration is not equal to actual configuration	Yes
• Module replacement during operation	Yes
Diagnostics indication (LED)	Yes
• Group fault (red)	Yes
• Bus fault (red)	Yes
• Maintenance information (yellow)	Yes
• Monitoring 24 V power supply ON (green)	Yes
• Load voltage monitoring 24 V DC (green)	Yes
• Connection to an Access Point R1 LINK (green)	Yes
• Data exchange R1 RX/TX (yellow)	Yes
• Connection to a PG/PC (green)	Yes
• Data exchange with a PG/PC (yellow)	Yes
Insulation tested at	500 V DC
Isolation	
• Between the backplane bus and supply voltage 1L+ and 2L+	Yes
• Between Ethernet and supply voltage 1L+ and 2L+	Yes
• Between the supply voltage and electronic components	Yes
Operating temperature	
• Minimum	-25 °C
• Maximum	55 °C
Storage/transport temperature	
• Minimum	-40 °C
• Maximum	70 °C
Degree of protection	IP65, IP66, IP67
General information	
• Manufacturer's code (VendorID)	0x002A
• Device ID	0x0305
Dimensions	
• Width	135 mm
• Height	130 mm
• Depth	60 mm
Weight, approx.	1085 g

Ordering data | Order No.

	Order No.
IM 154-6 PN HF IWLAN interface module	
For communication between ET 200pro and host controllers over Industrial Wireless LAN (IWLAN) radio networks; support of PROFIsafe	
With various national approvals; refer to the current list of approvals	**6ES7 154-6AB00-0AB0**
With approval for U.S.A.	**6ES7 154-6AB50-0AB0**
Antennas with omnidirectional characteristic	
Mounting directly on IM154-6 PN HF IWLAN	
• ANT IM 154-6 IWLAN; 2 units	**6ES7 194-4MA00-0AA0**
For wall or pipe mounting	
• ANT 792-6MN; rod antenna N-Connect female 2.4 GHz; 1 unit	**6GK5 792-6MN00-0AA6**
• ANT793-6MN; rod antenna N-Connect female 5 GHz; 1 unit	**6GK5 793-6MN00-0AA6**
For use with the RCoax antenna system	
• ANT 792-4DN; RCoax N-Connect female 2.4 GHz; 1 unit	**6GK5 792-4DN00-0AA6**
• ANT793-4MN; RCoax N-Connect female 5 GHz; 1 unit	**6GK 5793-4MN00-0AA6**
Antenna cables IWLAN RCoax; N-Connect / R-SMA	
• 1 m long	**6XV1 875-5CH10**
• 2 m long	**6XV1 875-5CH20**
• 5 m long	**6XV1 875-5CH50**
• 10 m long	**6XV1 875-5CN10**
IWLAN terminating resistor 50 Ohm for second R-SMA antenna socket, 3 items	**6GK5 795-1TR10-0AA6**

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Distributed I/O SIMATIC ET 200

ET 200pro

IM 154-6 PN IWLAN

Ordering data	Order No.	General accessories	Order No.
Accessories		***General accessories***	
7/8" connecting cable to power supply		**ET 200pro rack**	
5-core, 5 x 1.5 mm^2, trailing type, pre-assembled with two 7/8" connectors		• Narrow, for interface, electronics and power modules	
		- 500 mm	**6ES7 194-4GA00-0AA0**
• 1.5 m long	**6XV1 822-5BH15**	- 1000 mm	**6ES7 194-4GA60-0AA0**
• 2.0 m long	**6XV1 822-5BH20**	- 2000 mm, can be cut to length	**6ES7 194-4GA20-0AA0**
• 3.0 m long	**6XV1 822-5BH30**	• Compact, for interface, electronics and power modules	
• 5.0 m long	**6XV1 822-5BH50**	- 500 mm	**6ES7 194-4GC70-0AA0**
• 10 m long	**6XV1 822-5BN10**	- 1000 mm	**6ES7 194-4GC60-0AA0**
• 15 m long	**6XV1 822-5BN15**	- 2000 mm, can be cut to length	**6ES7 194-4GC20-0AA0**
• Other special lengths with 90° or 180° cable outlet	See http://support.automation.siemens.com/WW/view/en/26999294	• Wide, for interface, electronics, power modules and motor starters	
		- 500 mm	**6ES7 194-4GB00-0AA0**
Power line	**6XV1 830-8AH10**	- 1000 mm	**6ES7 194-4GB60-0AA0**
5-core, 5 x 1.5 mm^2, trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1,000 m		- 2000 mm, can be cut to length	**6ES7 194-4GB20-0AA0**
		• Wide, for I/O modules and motor starters	
7/8" cable connector	**6GK1 905-0FB00**	- 500 mm	**6ES7 194-4GD00-0AA0**
For ET 200eco, with axial cable outlet; with socket insert, pack of 5		- 1000 mm	**6ES7 194-4GD10-0AA0**
		- 2000 mm	**6ES7 194-4GD20-0AA0**
Twisted Pair cables 4x2 with RJ45 connectors		**Spare fuse**	**6ES7 194-4HB00-0AA0**
• 0.5 m long	**6XV1 870-3QE50**	12.5 A quick-response, for interface and power modules, 10 items per package unit	
• 1 m long	**6XV1 870-3QH10**		
• 2 m long	**6XV1 870-3QH20**	**Labels**	**3RT1 900-1SB20**
• 6 m long	**6XV1 870-3QH60**	20 x 7 mm, pale turquoise, 340 items per pack	
• 10 m long	**6XV1 870-3QN10**		
Crossed Twisted Pair cables 4x2 with RJ45 connectors		**SIMATIC Micro Memory Card**	
• 0.5 m long	**6XV1 870-3RE50**	• 64 KB	**6ES7 953-8LF20-0AA0**
• 1 m long	**6XV1 870-3RH10**	• 128 KB	**6ES7 953-8LG11-0AA0**
• 2 m long	**6XV1 870-3RH20**	• 512 KB	**6ES7 953-8LJ20-0AA0**
• 6 m long	**6XV1 870-3RH60**	**SIMATIC Manual Collection**	**6ES7 998-8XC01-8YE0**
• 10 m long	**6XV1 870-3RN10**	Electronic manuals on DVD, multi-language: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	
IE FC RJ45 Plug 180			
180° cable outlet; for line components and CPs/CPUs with Industrial Ethernet interface			
• 1 pack = 1 item	**6GK1 901-1BB10-2AA0**	**SIMATIC Manual Collection – Update service for 1 year**	**6ES7 998-8XC01-8YE2**
• 1 pack = 10 items	**6GK1 901-1BB10-2AB0**	Scope of supply: Current DVD "S7 Manual Collection" and the three subsequent updates	
IE FC RJ45 Plug 90			
90° cable outlet; e.g. for ET 200S			
• 1 pack = 1 item	**6GK1 901-1BB20-2AA0**		
• 1 pack = 10 items	**6GK1 901-1BB20-2AB0**		

More information

Radio approvals

Current approvals can be found in the Internet.

In Germany

http://intranet.automation.siemens.com/net/html_00/ftp/support/lz_laenderliste_wlan_de.pdf

Outside Germany:

http://intranet.automation.siemens.com/net/html_00/ftp/support/lz_laenderliste_wlan_en.pdf

Distributed I/O SIMATIC ET 200
ET 200pro

Application

The power supplies with IP67 degree of protection, SITOP PSU300P and SIMATIC ET200pro PS[1], serve as electronics/encoder and load power supplies for the new I/O device.

With a signaling contact for "24 V OK" and "Overtemperature", and in the case of SIMATIC ET 200pro with a second plug-in connector for input voltage loop-through.

[1] Available with a second plug connector for loop-through of the input voltage as SIMATIC ET 200pro PS (6ES7148-4PC00-0HA0).

Technical specifications

Power supply, type Order No.	24 V/8 A (SIMATIC ET 200pro PS) 6ES7 148-4PC00-0HA0
Input	3-phase AC
Rated voltage value $V_{in\ rated}$	**400/480 V 3 AC** Wide-range input
Voltage range	340 ... 550 V (320 ... 340 V for mx. 1 min)
Overvoltage resistance	Implemented internally with varistors
Mains buffering at $I_{out\ rated}$	> 15 ms at V_{in} = 400 V
Rated line frequency; range	50/60 Hz; 45 ... 66 Hz
Rated current value $I_{in\ rated}$	0.5 A (at V_{in} 400 V)
Making current limit (+25 °C)	< 40 A
$I^2 t$	< 3.5 A²s
Built-in incoming fuse	Internal, 4 A
Required protection in the main supply conductor	*With power loop-through fuse ≤ 25 A or circuit breaker e.g. 3RV1021-1DA15 or 3RV1742-5DD10 (UL 489)*
Output	*Controlled DC voltage galvanically connected with PE*
Rated voltage value $V_{out\ rated}$	24 V DC
Total tolerance	< ±3 ... -5 %
• Static mains compensation	Approx. 0.5 %
• Static load balancing	Approx. 0.5 %
Residual ripple	< 200 mV$_{pp}$
Spikes (bandwidth: 20 MHz)	< 250 mV$_{pp}$
Adjustment range	–
Status display	Green LED for 24 V OK
Signaling (max. 30 V, 10 mA)	• Power Good (High level 1L+ for V_{out} in range 21.3 ... 29 V) • Overtemperature warning at least 30 s before switch-off (High level 1L+ when the max. internal temperature is exceeded)
On/off behavior	Overshoot of V_{out} approx. < 2 %
Startup delay/voltage rise	< 1.5 s/< 400 ms

Power supply, type Order No.	24 V/8 A (SIMATIC ET 200pro PS) 6ES7 148-4PC00-0HA0
Rated current value $I_{out\ rated}$	**8 A**
Current range	
• Up to +60 °C	0 ... 8 A (up to +55 °C)
• Derating	–
Dynamic overcurrent on	
• Power-up on short circuit	Approx. 50 A for 100 ms
• Short circuit during operation	Approx. 50 A for 100 ms
Parallel switching for enhanced performance	No
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$	Typ. 88 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$	Typ. 25 W
Closed-loop control	
Dyn. mains compensation ($V_{in\ rated}$ ±15 %)	Typ. ±0.5 % V_{out}
Dynamic load smoothing (I_{out}: 50/100/50 %)	Typ. ±1 % V_{out}
Load step settling time	
• 50 to 100 %	Typ. < 2 ms
• 100 to 50 %	Typ. < 2 ms
Protection and monitoring	
Output overvoltage protection	< 33 V
Current limitation	Typ. 9.4 A
Short-circuit protection	Electronic shutdown, automatic restart
Sustained short-circuit current rms value	< 10 A
Overload/short-circuit indicator	–
Safety	
Primary/secondary isolation	Yes, *protectiv extra low output voltage* V_{out} according to EN 60950 and EN 50178
Protection class	Class I
Leakage current	< 3.5 mA
Safety approval	Yes, CB scheme
CE mark	Yes
UL/cUL (CSA) approval	Prepared for UL-listed (UL 508)
Degree of protection (EN 60529)	IP67, enclosure type 4 indoor

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Distributed I/O SIMATIC ET 200
ET 200pro

SIMATIC ET200pro PS

Technical specifications (continued)

Power supply, type	24 V/8 A (SIMATIC ET 200pro PS)	Power supply, type	24 V/8 A (SIMATIC ET 200pro PS)
Order No.	**6ES7 148-4PC00-0HA0**	**Order No.**	**6ES7 148-4PC00-0HA0**
EMC		**Mechanics**	
Emitted interference	EN 55022 Class A	Connections	
Supply harmonics limitation	–	• Supply input L1, L2, L3, PE	Plug connector HAN Q4/2 *The supply input is looped through internally and is made available via a second HAN Q4/2 plug connector.*
Noise immunity	EN 61000-6-2		
Operating data		• Output +	*2 x. 1 mm ^{2}* (4-pole cable for +/- with open, labeled ends, 2 x 2.5 mm^2)
Ambient temperature range	-25 ... +55 °C with natural convection		
Transport/storage temperature range	-40 ... +70 °C	• Output -	*2 x 1 mm ^{2}* (4-pole cable for +/- with open, labeled ends, 2 x 2.5 mm^2) M12 plug-in connector, 5-pin
Humidity class	Climate class 3K3 according to EN 60721, no condensation	• Status signal	Plug connector M12, 5-pole
		Dimensions (W x H x D) in mm	310 x 135 x 90 + additional height of connector
		Weight, approx.	2.8 kg
		Installation	Can be mounted onto ET 200pro mounting rail
		Accessories	Power connector (3RK1911-2BE30 (6 mm^2)) Power feeder plug (3RK1911-2BF10 (4 mm^2)) Sealing caps for power socket (3RK1902-0CK00 (1 unit per pack.)), (3RK1902-0CJ00 (10 units per pack.))

Ordering data	Order No.		Order No.
SIMATIC ET 200pro PS	**6ES7 148-4PC00-0HA0**	*Accessories*	
stabilized power supply in the design of the distributed I/O system, with the possibility of power loop-through to other modules; IP67 degree of protection; Input: 400-480 V 3 AC Output: 24 V DC/8 A		**Power connection plugs** for connection to distributed I/O system	
		• for X1 (6 mm^2)	**3RK1 911-2BE30**
		• for X2 (6 mm^2)	**3RK1 911-2BF10**
		Sealing caps for 9-pole power socket	
		• X2 (1 unit per pack.)	**3RK1 902-0CJ00**
		• X2 (10 units per pack.)	**3RK1 902-0CK00**

SIMATIC ET200pro PS

Dimensions

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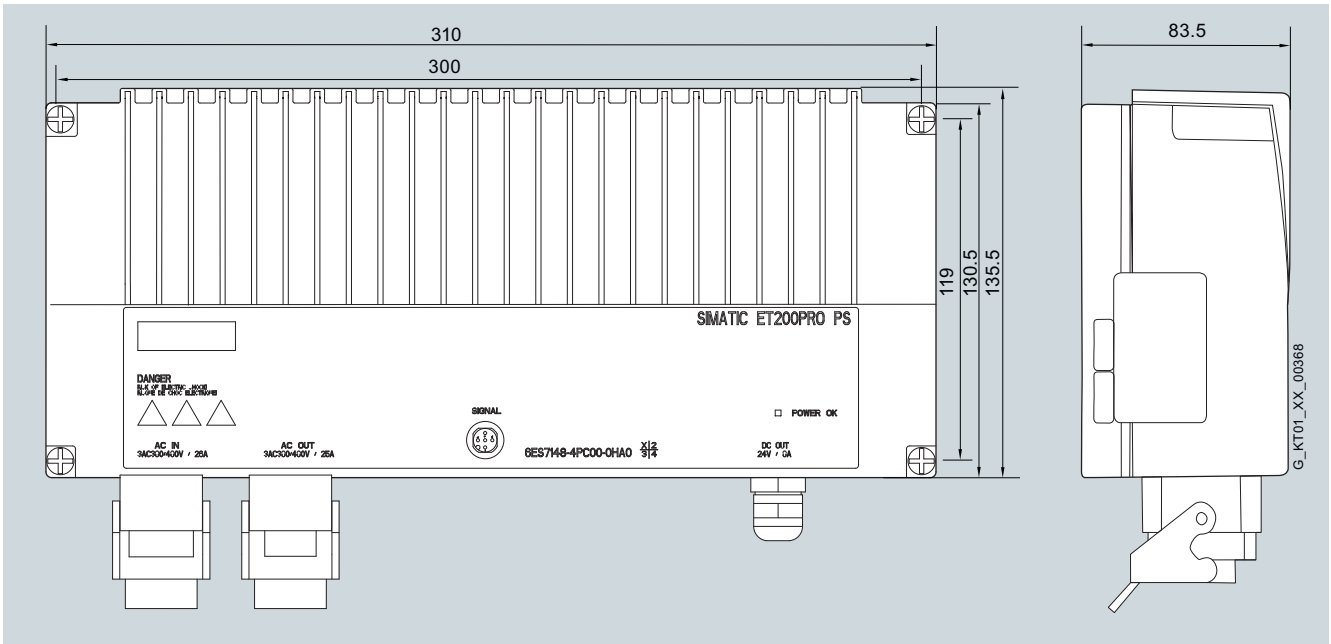
Distributed I/O SIMATIC ET 200
ET 200eco PN

ET 200eco PN

Overview

- Compact block I/O for processing digital, analog and IO-Link signals for connecting to the PROFINET bus system
- Cabinet-free design with degree of protection IP65/66/67 with M12 connections
- Very rugged and resistant metal enclosure and encapsulated

- Compact module in two types of enclosures:
  - 30 mm x 200 mm x 37 mm (W x H x D, long and narrow enclosure), with 4 x M12 for digital signals
  - 60 mm x 175 mm x 37 mm (W x H x D, short and wide enclosure), with 8 x M12 for digital signals and IO-Link
  - 60 mm x 175 mm x 37 mm (W x H x D, short and wide enclosure) with 4 x M12 or 8 x M12 for analog signals
- PROFINET connection: 2 x M12 and automatic PROFINET address assignment
- Data transmission rate 100 Mbit/s
- LLDP proximity detection without PG and Fast Startup (boot up within approx 0.5 seconds)
- Supply and load voltage connection: 2 x M12
- Module variance:
  - 8 DI
  - 16 DI
  - 8 DO (2 A)
  - 8 DO (1.3 A)
  - 8 DO (0.5 A)
  - 16 DO (1.3 A)
  - 8 DI/DO (1.3 A),
  - 8 AI (U, I, TC, RTD)
  - 4 AO (U, I)
  - 4 IO-Link + 8 DI + 4 DO (1.3 A)
- Channel-specific diagnostics

Technical specifications

	6ES7 141-6BF00-0AB0	6ES7 141-6BG00-0AB0	6ES7 141-6BH00-0AB0
Supply voltages			
Rated value			
• DC 24 V	Yes	Yes	Yes
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V
• Reverse polarity protection	Yes	Yes	Yes
Current consumption			
Current consumption, typ.	100 mA	100 mA	100 mA
Current consumption/power loss			
Power loss, typ.	5.5 W	4.5 W	6.5 W
interfaces			
Number of PROFINET interfaces	2	2	2
automatic detection of transmission speed	Yes	Yes	Yes
Transmission speed, max.	100 Mbit/s	100 Mbit/s	100 Mbit/s
Protocols			
PROFINET IO	Yes	Yes	Yes
Protocols (Ethernet)			
• SNMP	Yes	Yes	Yes
• DCP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
• ping	Yes	Yes	Yes
• arp	Yes	Yes	Yes

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Technical specifications (continued)

	6ES7 141-6BF00-0AB0	6ES7 141-6BG00-0AB0	6ES7 141-6BH00-0AB0
Digital inputs			
Number of digital inputs	8	8	16
Number of simultanneously controllable inputs			
• Number of simultaneously controllable inputs, up to 60 °C	8	8	16
Input voltage			
• Rated value, DC	24 V	24 V	24 V
• for signal "0"	-3 to +5 V	-3 to +5 V	-3 to +5 V
• for signal "1"	11 to 30 V	11 to 30 V	11 to 30 V
Input current			
• for signal "0", max. (permissible quiescent current)	1.5 mA	1.5 mA	1.5 mA
• for signal "1", typ.	7 mA	7 mA	7 mA
Input delay (for rated value of input voltage)			
• for standard inputs			
- at "0" to "1", max.	Typ. 3 ms	Typ. 3 ms	Typ. 3 ms
- at "1" to "0", max.	Typ. 3 ms	Typ. 3 ms	Typ. 3 ms
Cable length			
• Cable length unshielded, max.	30 m	30 m	30 m
Encoder supply			
Number of outputs	4	8	8
Output current, rated value	100 mA; Per output	100 mA; Per output	100 mA; Per output
24 V encoder supply			
• Short-circuit protection	Yes	Yes	Yes
Interrupts/diagnostics/ status information			
Status indicator	Yes; Green LED	Yes; Green LED	Yes; Green LED
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
Diagnoses			
• Diagnostic functions	Yes	Yes	Yes
• Diagnostic information readable	Yes	Yes	Yes
• Monitoring the voltage supply to the electronics	Yes; Green "ON" LED	Yes; Green "ON" LED	Yes; Green "ON" LED
• Wire break in signal encoder cable	Yes	Yes	Yes
• Short circuit encoder supply	Yes; Per channel group	Yes; Per channel group	Yes; Per channel group
• Group error	Yes; Red/yellow "SF/MT" LED	Yes; Red/yellow "SF/MT" LED	Yes; Red/yellow "SF/MT" LED
Isolation			
tested with			
• 24 V DC circuits	500 V	500 V	500 V

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Distributed I/O SIMATIC ET 200
ET 200eco PN

ET 200eco PN

Technical specifications (continued)

	6ES7 141-6BF00-0AB0	6ES7 141-6BG00-0AB0	6ES7 141-6BH00-0AB0
Isolation			
between the load voltages	Yes	Yes	Yes
between load voltage and all other switching components	No	No	No
between Ethernet and electronics	Yes	Yes	Yes
Galvanic isolation, digital inputs			
• between the channels	No	No	No
Permissible potential difference			
between different circuits	75 V DC/60 V AC	75 V DC/60 V AC	75 V DC/60 V AC
Degree of protection			
IP 65	Yes	Yes	Yes
IP 66	Yes	Yes	Yes
IP 67	Yes	Yes	Yes
General information			
Vendor identification (VendorID)	002AH	002AH	002AH
Device identifier (DeviceID)	0306H	0306H	0306H
Dimensions and weight			
Dimensions and weight			
• Width	30 mm	60 mm	60 mm
• Height	200 mm	175 mm	175 mm
• Depth	49 mm	49 mm	49 mm
Weight			
• Weight	550 g	910 g	910 g

	6ES7 142-6BF50-0AB0	6ES7 142-6BF00-0AB0	6ES7 142-6BG00-0AB0	6ES7 142-6BR00-0AB0	6ES7 142-6BH00-0AB0
Supply voltages					
Load voltage 1L+					
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
• Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Load voltage 2L+					
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
• Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Current consumption					
from load voltage 1L+ (unswitched voltage)	100 mA	4 A	4 A	4 A	4 A
Current consumption/power loss					
Power loss, typ.	3 W	5.5 W	5.5 W	5 W	5.5 W

■ Technical specifications (continued)

	6ES7 142-6BF50-0AB0	6ES7 142-6BF00-0AB0	6ES7 142-6BG00-0AB0	6ES7 142-6BR00-0AB0	6ES7 142-6BH00-0AB0
Interfaces					
Number of PROFINET interfaces	2	2	2	2	2
automatic detection of transmission speed	Yes	Yes	Yes	Yes	Yes
Autocrossing	Yes	Yes	Yes	Yes	Yes
Transmission speed, max.	100 Mbit/s	100 Mbit/s	100 Mbit/s	100 Mbit/s	100 Mbit/s
Connection point					
M12	Yes	Yes	Yes	Yes	Yes
Protocols					
PROFINET IO	Yes	Yes	Yes	Yes	Yes
Protocols (Ethernet)					
• SNMP	Yes	Yes	Yes	Yes	Yes
• DCP	Yes	Yes	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes	Yes	Yes
• ping	Yes	Yes	Yes	Yes	Yes
• arp	Yes	Yes	Yes	Yes	Yes
Digital outputs					
Number of digital outputs	8	8	8	8	16
Short-circuit protection of the output	Yes; Electronic	Yes; Electronic	Yes; Electronic	Yes; Electronic	Yes; Electronic
• Response threshold, typ.	0.7 A	1.8 A	1.8 A	2.8 A	1.8 A
Limitation of inductive shutdown voltage to	Typ. (L1+, L2+) -47 V	Typ. (L1+, L2+) -47 V	Typ. (L1+, L2+) -47 V	Typ. (L1+, L2+) -47 V	Typ. (L1+, L2+) -47 V
Switching capacity of the outputs					
• on lamp load, max.	5 W	5 W	5 W	10 W	5 W
Controlling a digital input	Yes	Yes	Yes	Yes	Yes
Output current					
• for signal "1" rated value	0.5 A	1.3 A; maximum	1.3 A; maximum	2 A	1.3 A; maximum
• for signal "0" residual current, max.	1.5 mA	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Parallel switching of 2 outputs					
• for increased power	No	No	No	No	No
• for redundant control of a load	Yes	Yes	Yes	Yes	Yes
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	1 Hz	1 Hz	1 Hz	1 Hz	1 Hz
Aggregate current of the outputs (per group)					
• up to 55 °C, max.		3.9 A			
• up to 60 °C, max.	4 A	2.6 A	3.9 A	3.9 A	3.9 A
Cable length					
• Cable length unshielded, max.	30 m	30 m	30 m	30 m	30 m

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Distributed I/O SIMATIC ET 200
ET 200eco PN

ET 200eco PN

Technical specifications (continued)

	6ES7 142-6BF50-0AB0	6ES7 142-6BF00-0AB0	6ES7 142-6BG00-0AB0	6ES7 142-6BR00-0AB0	6ES7 142-6BH00-0AB0
Interrupts/diagnostics/status information					
Status indicator	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnoses					
• Diagnostic functions	Yes	Yes	Yes	Yes	Yes
• Diagnostic information readable	Yes	Yes	Yes	Yes	Yes
• Monitoring the voltage supply to the electronics	Yes; Green "ON" LED	Yes; Green "ON" LED	Yes; Green "ON" LED	Yes; Green "ON" LED	Yes; Green "ON" LED
• Wire break in acutator cable	Yes	Yes	Yes	Yes	Yes
• Short circuit	Yes	Yes	Yes	Yes	Yes
• Group error	Yes; Red/yellow "SF/MT" LED	Yes; Red/yellow "SF/MT" LED	Yes; Red/yellow "SF/MT" LED	Yes; Red/yellow "SF/MT" LED	Yes; Red/yellow "SF/MT" LED
Isolation					
tested with					
• 24 V DC circuits	500 V	500 V	500 V	500 V	500 V
Isolation					
between the load voltages	Yes	Yes	Yes	Yes	Yes
between load voltage and all other switching components	No	No	No	No	No
between Ethernet and electronics	Yes	Yes	Yes	Yes	Yes
Isolation, digital outputs					
• between the channels	No	No	No	No	No
Permissible potential difference					
between different circuits	75 V DC/60 V AC	75 V DC/60 V AC	75 V DC/60 V AC	75 V DC/60 V AC	75 V DC/60 V AC
Degree of protection					
IP 65	Yes	Yes	Yes	Yes	Yes
IP 66	Yes	Yes	Yes	Yes	Yes
IP 67	Yes	Yes	Yes	Yes	Yes
General information					
Vendor identification (VendorID)	002AH	002AH	002AH	002AH	002AH
Device identifier (DeviceID)	0306H	0306H	0306H	0306H	0306H
Dimensions and weight					
Dimensions and weight					
• Width	30 mm	30 mm	60 mm	60 mm	60 mm
• Height	200 mm	200 mm	175 mm	175 mm	175 mm
• Depth	49 mm	49 mm	49 mm	49 mm	49 mm
Weight					
• Weight	550 g	550 g	910 g	910 g	910 g

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■ Technical specifications (continued)

	6ES7 147-6BG00-0AB0
Supply voltages	
Rated value	
• 24 V DC	Yes
• Permissible range, lower limit (DC)	20.4 V
• Permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Load voltage 2L+	
• Rated value (DC)	24 V
• Permissible range, lower limit (DC)	20.4 V
• Permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Current consumption	
from load voltage 1L+ (unswitched voltage)	4 A
from load voltage 2L+, max.	4 A
Current consumption/power loss	
Power loss, typ.	6.5 W
interfaces	
Number of PROFINET interfaces	2
automatic detection of transmission speed	Yes
Autocrossing	Yes
Integrated switch	Yes
Transmission rate, max.	100 Mbit/s
Connection point	
M12	Yes
Protocols	
PROFINET IO	Yes
Protocols (Ethernet)	
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• ping	Yes
• arp	Yes
PROFINET IO-Device	
with option "high flexibility", supported	Yes
Prioritized power up, supported	Yes
Digital inputs	
Number of digital inputs	8
• in groups of	4

	6ES7 147-6BG00-0AB0
Number of simultanneously controllable inputs	
• all mounting positions	
- Number of simultaneously controllable inputs, up to 60 °C	8
Input characteristic according to IEC 1131, type 3	Yes
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-3 to +5 V
• for signal "1"	11 to 30 V
Input current	
• for signal "0", max. (permissible quiescent current)	1.5 mA
• for signal "1", typ.	7 mA
Cable length	
• Cable length unshielded, max.	30 m
Digital outputs	
Number of digital outputs	8
• in groups of	4
Short-circuit protection	Yes
Switching capacity of the outputs	
• on lamp load, max.	5 W
Controlling a digital input	Yes
Output current	
• for signal "1" rated value	1.3 A; maximum
• for signal "0" residual current, max.	1.5 mA
Parallel switching of 2 outputs	
• for increased power	No
• for redundant control of a load	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	1 Hz
Aggregate current of the outputs (per group)	
• up to 60 °C, max.	3.9 A
Cable length	
• Cable length unshielded, max.	30 m
Encoder supply	
Number of outputs	8
Output current, rated value	100 mA; per output
24 V encoder supply	
• Short-circuit protection	Yes

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■ **Technical specifications** (continued)

	6ES7 147-6BG00-0AB0
Interrupts/diagnostics/ status information	
Status indicator	Yes; green LED
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostics functions	Yes
• Diagnostics information readable	Yes
• Monitoring the voltage supply of the electronics	Yes; green LED "ON"
• Wire break in acutator cable	Yes
• Wire break in signal encoder cable	Yes
• Short circuit	Yes
• Short circuit encoder supply	Yes
• Group error	Yes; red/yellow LED "SF/MT"
Isolation	
tested with	
• 24 V DC circuits	500 V
• Interface	1 500 µV; according to IEEE 802.3
Isolation	
between the load voltages	Yes
between load voltage and all other switching components	No
between Ethernet and electronics	Yes
Galvanic isolation, digital inputs	
• between the channels	No
Isolation, digital outputs	
• between the channels	No
Degree of protection	
IP 65	Yes
IP 66	Yes
IP 67	Yes
Dimensions and weight	
Dimensions and weight	
• Width	60 mm
• Height	175 mm
• Depth	49 mm
Weight	
• Weight	910 g

	6ES7 144-6KD00-0AB0
Supply voltages	
Rated value	
• DC 24 V	Yes
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Current consumption	
Current consumption, typ.	110 mA
Current consumption/ power loss	
Power loss, typ.	2.8 W
Interfaces	
Number of PROFINET interfaces	2
automatic detection of transmission speed	Yes
Transmission speed, max.	100 Mbit/s
Connection point	
M12	Yes
Protocols	
PROFINET IO	Yes
Protocols (Ethernet)	
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• ping	Yes
• arp	Yes
Analog inputs	
Number of analog inputs	8
Number of analog inputs for voltage/current measurement	4
Number of analog inputs for resistance/temperature measurement	4
cable length, shielded, max.	30 m
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
• 1 to 5 V	Yes
• -10 V to +10 V	Yes
• -80 mV to +80 mV	Yes

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■ **Technical specifications** (continued)

	6ES7 144-6KD00-0AB0
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• -20 to +20 mA	Yes
• 4 to 20 mA	Yes
Input ranges (rated values), thermoelements	
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type N	Yes
Input ranges (rated values), resistance thermometers	
• Ni 100	Yes
• Ni 1000	Yes
• Ni 120	Yes
• Ni 200	Yes
• Ni 500	Yes
• Pt 100	Yes
• Pt 1000	Yes
• Pt 200	Yes
• Pt 500	Yes
Input ranges (rated values), resistors	
• 0 to 150 Ohm	Yes
• 0 to 300 Ohm	Yes
• 0 to 600 Ohm	Yes
• 0 to 3000 Ohm	Yes
Voltage input	
• permissible input frequency for voltage input (destruction limit), max.	28.8 V permanent, 35 V for max. 500 ms
Temperature compensation	
• programmable	Yes
• internal temperature compensation	Yes
• external temperature compensation with compensations socket	Yes
Analog value creation	
Analog value display	SIMATIC S7 format
Measurement principle	Integrating
Integration and conversion time/resolution per channel	
• Resolution (incl. overload area)	15 bits + sign
• Integration time, parameterizable	Yes
• Integration time, ms	2 / 16.67 / 20 / 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	500 / 60 / 50 / 10 Hz
• Conversion time (per channel)	4 / 19 / 22 / 102 ms
Smoothing of measured values	
• parameterizable	Yes
• Level: none	Yes; 1 x cycle time
• Level: weak	Yes; 4 x cycle time
• Level: middle	Yes; 16 x cycle time
• Level: strong	Yes; 64 x cycle time

	6ES7 144-6KD00-0AB0
Encoder supply	
Number of outputs	4
24 V encoder supply	
• Short-circuit protection	Yes; Electronic at 1.4 A
• Output current, max.	1 A
Encoder	
Number of connectable encoders, max.	8
Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with 2-conductor connection	Yes
• for resistance measurement with 3-conductor connection	Yes
• for resistance measurement with 4-conductor connection	Yes
Errors/accuracies	
linearity error (based on input rage)	+/- 0,01 %
Temperature error (relative to input areas)	U: 0,0035%/°C; I:0,006%/°C; RTD: 0,0005%/°C; TC: 0,0035%/°C
Crosstalk between the inputs, min.	85 dB
Interference voltage suppression for f = n x (fl +/- 1 %), fl = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	46 dB
• common mode voltage, min.	70 dB
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostic functions	Yes
• Diagnostic information readable	Yes
• Monitoring the voltage supply to the electronics	Yes; Green "ON" LED
• Short circuit encoder supply	Yes; Per module
• Group error	Yes; Red/yellow "SF/MT" LED
• Overflow/underflow	Yes
Isolation	
tested with	
• 24 V DC circuits	500 V
• Interface	1 500 V; according to IEEE 802.3

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▪ **Technical specifications** (continued)

	6ES7 144-6KD00-0AB0
Isolation	
between the load voltages	Yes
between load voltage and all other switching components	No
between Ethernet and electronics	Yes
Isolation, analog inputs	
• between the channels	No
Permissible potential difference	
between inputs and MANA (UCM)	10 Vpp AC
Degree of protection	
IP 65	Yes
IP 66	Yes
IP 67	Yes
General information	
Vendor identification (VendorID)	002AH
Device identifier (DeviceID)	0306H
Dimensions and weight	
Dimensions and weight	
• Width	60 mm
• Height	175 mm
• Depth	49 mm
Weight	
• Weight	930 g

	6ES7 145-6HD00-0AB0
Supply voltages	
Rated value	
• DC 24 V	Yes
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Current consumption	
Current consumption, typ.	280 mA
Current consumption/power loss	
Power loss, typ.	5.5 W
Interfaces	
Number of PROFINET interfaces	2
automatic detection of transmission speed	Yes
Autocrossing	Yes
integrated switch	Yes
Transmission speed, max.	100 Mbit/s
Connection point	
M12	Yes

	6ES7 145-6HD00-0AB0
Protocols	
PROFINET IO	Yes
Protocols (Ethernet)	
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• ping	Yes
• arp	Yes
Analog outputs	
Number of analg outputs	4
cable length, shielded, max.	30 m
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	30 mA
Current output, no-load voltage, max.	20 V
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 to 5 V	Yes
• -10 to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 to +20 mA	Yes
• 4 to 20 mA	Yes
Connection of actuators	
• for voltage output 2-conductor connection	Yes
• for current output 2-conductor connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 kΩ
• with voltage outputs, capacitive load, max.	1 µF
• with current outputs, max.	600 Ω
• with current outputs, inductive load, max.	1 mH
Destruction limits against externally applied voltages and currents	
• Voltages at the outputs towards MANA	28.8 V permanent, 35 V for max. 500 ms
Analog value creation	
Analog value display	SIMATIC S7 format
Measurement principle	Resistor network
Integration and conversion time/resolution per channel	
• Resolution (incl. overload area)	15 bits + sign
• Conversion time (per channel)	1 ms
Settling time	
• for resistive load	2 ms
• for capacitive load	1.8 ms
• for inductive load	2 ms

Technical specifications (continued)

	6ES7 145-6HD00-0AB0
Encoder supply	
Number of outputs	4
24 V encoder supply	
• Short-circuit protection	Yes; Electronic at 1.4 A
• Output current, max.	1 A
Errors/accuracies	
Output ripple (based on output range, bandwidth 0 to 50 kHz)	U: ±0.6 mVrms; I: ±0.4 nArms
Temperature error (relative to output area)	U: 0.001%/°C; I: 0.0025%/°C
Crosstalk between the outputs, min.	70 dB
Interrupts/diagnostics/ status information	
Status indicator	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostic functions	Yes
• Diagnostic information readable	Yes
• Monitoring the voltage supply to the electronics	Yes; Green "ON" LED
• Wire break	Yes; Channel-by-channel with current output
• Short circuit	Yes; Channel-by-channel with voltage output
• Group error	Yes; Red/yellow "SF/MT" LED
Isolation	
between the load voltages	Yes
between load voltage and all other switching components	No
between Ethernet and electronics	Yes
Isolation, analog outputs	
• between the channels	No
Permissible potential difference	
between M internally and the outputs	10 Vpp AC
Degree of protection	
IP 65	Yes
IP 66	Yes
IP 67	Yes
General information	
Vendor identification (VendorID)	002AH
Device identifier (DeviceID)	0306H
Dimensions and weight	
Dimensions and weight	
• Width	60 mm
• Height	175 mm
• Depth	49 mm
Weight	
• Weight	930 g

	6ES7 148-6JA00-0AB0
Supply voltages	
Rated value	
• 24 V DC	Yes
• Permissible range, lower limit (DC)	20.4 V
• Permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Load voltage 2L+	
• Rated value (DC)	24 V
• Permissible range, lower limit (DC)	20.4 V
• Permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Current consumption	
from load voltage 1L+ (unswitched voltage)	4 A
from load voltage 2L+, max.	4 A
Current consumption/power loss	
Power loss, typ.	8 W
Interfaces	
Number of PROFINET interfaces	2
automatic detection of transmission speed	Yes
Autocrossing	Yes
integrated switch	Yes
Transmission rate, max.	100 Mbit/s
Connection point	
M12	Yes
Protocols	
PROFINET IO	Yes
Protocols (Ethernet)	
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
• ping	Yes
• arp	Yes
PROFINET IO-Device	
IRT with option "high flexibility", supported	Yes
Digital inputs	
Number of digital inputs	8
Number of simultanneously controllable inputs	
• all mounting positions	
- Number of simultaneously controllable inputs, up to 60 °C	8
Input characteristic according to IEC 1131, type 3	Yes
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-3 to +5 V
• for signal "1"	11 to 30 V

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■ **Technical specifications** (continued)

	6ES7 148-6JA00-0AB0
Input current	
• for signal "0", max. (permissible quiescent current)	1.5 mA
• for signal "1", typ.	7 mA
Cable length	
• Cable length unshielded, max.	30 m
Digital outputs	
Number of digital outputs	4
Short-circuit protection	Yes
Switching capacity of the outputs	
• on lamp load, max.	5 W
Controlling a digital input	Yes
Output current	
• for signal "1" rated value	1.3 A; maximum
• for signal "0" residual current, max.	1.5 mA
Parallel switching of 2 outputs	
• for increased power	No
• for redundant control of a load	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	1 Hz
Aggregate current of the outputs (per group)	
• up to 60 °C, max.	3.9 A
Cable length	
• Cable length unshielded, max.	30 m
Encoder supply	
Number of outputs	6
Output current, rated value	200 mA; 100 mA per output on X5-X6
24 V encoder supply	
• Short-circuit protection	Yes

	6ES7 148-6JA00-0AB0
Interrupts/diagnostics/ status information	
Status indicator	Yes; green LED
Alarms	
• Diagnostic alarm	Yes
Diagnoses	
• Diagnostics functions	Yes
• Diagnostics information readable	Yes
• Monitoring the voltage supply of the electronics	Yes; green LED "ON"
• Wire break in acutator cable	Yes
• Wire break in signal encoder cable	Yes
• Short circuit	Yes
• Short circuit encoder supply	Yes
• Group error	Yes; red/yellowLED "SF/MT"
Isolation	
tested with	
• 24 V DC circuits	500 V
• interface	1 500 µV; according to IEEE 802.3
Isolation	
between the load voltages	Yes
between load voltage and all other switching components	No
between Ethernet and electronics	Yes
Galvanic isolation, digital inputs	
• between the channels	No
Isolation, digital outputs	
• between the channels	No
Degree of protection	
IP 65	Yes
IP 66	Yes
IP 67	Yes
Dimensions and weight	
Dimensions and weight	
• Width	60 mm
• Height	175 mm
• Depth	49 mm
Weight	
• Weight	910 g

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Ordering data	Order No.
ET 200eco PN digital input module	
• 8 DI 24 V DC; 4 x M12, dual assignment, degree of protection IP67	6ES7 141-6BF00-0AB0
• 8 DI 24 V DC; 8 x M12, degree of protection IP67	6ES7 141-6BG00-0AB0
• 16 DI 24 V DC; 8 x M12, dual assignment, degree of protection IP67	6ES7 141-6BH00-0AB0
ET 200eco PN digital output module	
• 8 DO 24 V DC/0.5 A; 4 x M12, dual assignment, 1 load supply DO; degree of protection IP67	6ES7 142-6BF50-0AB0
• 8 DO 24 V DC/1.3 A; 4 x M12, dual assignment, degree of protection IP67	6ES7 142-6BF00-0AB0
• 8 DO 24 V DC/1.3 A; 8 x M12, degree of protection IP67	6ES7 142-6BG00-0AB0
• 8 DO 24 V DC/2 A; 8 x M12, degree of protection IP67	6ES7 142-6BR00-0AB0
• 16 DO 24 V DC/1.3 A; 8 x M12, dual assignment, degree of protection IP67	6ES7 142-6BH00-0AB0
ET 200eco PN digital input/output modules	
• 8 DI/DO 24 V DC/1.3 A; 8 x M12, degree of protection IP67	6ES7 147-6BG00-0AB0
ET 200eco PN analog input modules	
• 8 AI 4 U/I + 4 RTD/TC; 8 x M12, degree of protection IP67	6ES7 144-6KD00-0AB0
ET 200eco PN analog output modules	
• 4 AO U/I; 4 x M12, degree of protection IP67	6ES7 145-6HD00-0AB0
ET 200eco PN IO-Link master module	
• 4 IO-L + 8 DI + 4 DO 24 V DC/1.3 A; 8 x M12, degree of protection IP67	6ES7 148-6JA00-0AB0
Accessories	
• PD voltage distributor, 24 V DC; 1 X 7/8", 4 X M12	6ES7 148-6CB00-0AA0
• Terminal block for ET 200eco PN, 10 A insulation piercing connecting devices	6ES7 194-6CA00-0AA0
• Spare fuses for terminal block, 10 units	6ES7 194-6HB00-0AA0
• Mounting rail 0.5 m	6ES7 194-6GA00-0AA0
• Profile screw for mounting rail, 50 units	6ES7 194-6MA00-0AA0
• Cap M12 for modules IP67, 10 units	3RK1 901-1KA00
• Labels 10 × 7 mm, pastel turquoise, 816 units	3RT1 900-1SB10

	Order No.
Accessories (continued)	
IE FC TP Standard Cable GP 2 x 2 (Type A)	6XV1 840-2AH10
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; <u>Sold by the meter;</u> max. length 1000 m, minimum order 20 m	
IE FC TP Trailing Cable GP 2 x 2 (Type C)	6XV1 870-2D
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug for use in trailing cables; PROFINET-compatible; with UL approval; <u>Sold by the meter;</u> max. length 1000 m, minimum order 20 m	
PROFINET M12 connector, can be assembled	
IE FC M12 connector PRO, can be assembled	
• 1 unit	6GK1 901-0DB20-6AA0
• 8 units	6GK1 901-0DB20-6AA8
PROFINET M12 connecting cables	
Pre-assembled connecting cable with two M12 connectors (D-coded) in various lengths:	
• 0.3 m	6XV1 870-8AE30
• 0.5 m	6XV1 870-8AE50
• 1.0 m	6XV1 870-8AH10
• 1.5 m	6XV1 870-8AH15
• 2.0 m	6XV1 870-8AH20
• 3.0 m	6XV1 870-8AH30
• 5.0 m	6XV1 870-8AH50
• 10.0 m	6XV1 870-8AN10
• 15.0 m	6XV1 870-8AN15
M12 connector for load supply 24 V DC	
Connection socket for infeed of 24 V DC; 4-pin, A-coded, 3 units	6GK1 907-0DC10-6AA3
Connector for passing on the 24 V DC; 4-pin, A-coded, 3 units	6GK1 907-0DB10-6AA3
M12 power connection cables	
Pre-assembled power connection cables on both sides with M12 socket and connector 4 x 0.75 mm^2, in various lengths:	
• 0.3 m	6XV1 801-5DE30
• 0.5 m	6XV1 801-5DE50
• 1.0 m	6XV1 801-5DH10
• 1.5 m	6XV1 801-5DH15
• 2.0 m	6XV1 801-5DH20
• 3.0 m	6XV1 801-5DH30
• 5.0 m	6XV1 801-5DH50
• 10.0 m	6XV1 801-5DN10
• 15.0 m	6XV1 801-5DN15

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Ordering data	Order No.		Order No.
M12 coupling plug		**M12 connecting cables (PUR jacket)**	
Can be assembled		Pre-assembled connecting cables for connecting digital sensors and actuators	
• for connecting actuators or sensors, 4-pin	3RX8 000-0CD40	on both sides with M12 socket and connector 3 x 0.34 mm^2, in various lengths:	
• for connecting actuators or sensors, 5-pin	3RX8 000-0CD55	• 0.6 m	3RX8 000-0GF32-1AA6
M12 angular circular connector		• 1.0 m	3RX8 000-0GF32-1AB0
Can be assembled; for connecting actuators or sensors, 5-pin	3RX8 000-0CE55	• 1.5 m	3RX8 000-0GF32-1AB5
Y cable M12		on both sides with M12 socket and connector 4 x 0.34 mm^2, in various lengths:	
for double connection of I/O by means of single cable to ET 200, 5-pin	6ES7 194-6KA00-0XA0	• 0.6 m	3RX8 000-0GF42-1AA6
		• 1.0 m	3RX8 000-0GF42-1AB0
		• 1.5 m	3RX8 000-0GF42-1AB5

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