

Distributed I/O

SIMATIC ET 200



5/2	ET 200S I/O modules Power modules for PM-E electronic modules Digital electronic modules <u>IO-Link master modules</u> 4SI IO-Link electronic module 4SI SIRIUS electronic module <u>Software</u> Motor Starter ES
5/10	ET 200pro IM 154-6 PN IWLAN SIMATIC ET 200pro PS SIMATIC RF180C/RF182C
5/16	ET 200eco PN ET 200eco PN

Distributed I/O SIMATIC ET 200

ET 200S – I/O modules

Power modules for PM-E electronic modules

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)

5

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 	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

Distributed I/O SIMATIC ET 200

ET 200S – I/O modules

Power modules for PM-E electronic modules

Ordering data	Order No.	Order No.
PM-E 24 V DC Standard power module¹⁾ For electronic modules; with diagnostics	6ES7 138-4CA01-0AA0	
PM-E 24 V DC High Feature power module¹⁾ For electronic modules; with diagnostics	6ES7 138-4CA60-0AB0 	
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

5

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				●

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						
	15S26-A1	15S24-A1	15S24-01	15S23-01	15S24-AT	30S44-01	30S46-A1
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							

Distributed I/O SIMATIC ET 200

ET 200S – I/O modules

Digital electronic modules

Ordering data	Order No.	Order No.
Digital input modules		
Ordering unit 5 items		
• 2 DI 24 V DC Standard	6ES7 131-4BB01-0AA0	
• 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	
• 2 DI 120 V AC	6ES7 131-4EB00-0AB0	
• 2 DI 230 V AC	6ES7 131-4FB00-0AB0	
• 4 DI 24 ... 48 V UC	6ES7 131-4CD00-0AB0	
• 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 <small>NEW</small>	
• 8 DO 24 V DC/0.5 A High Feature	6ES7 132-4BF00-0AB0 <small>NEW</small>	
• 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 <small>NEW</small>	
• 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 <small>NEW</small>	
• 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	
Accessories		
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

Distributed I/O SIMATIC ET 200

ET 200S – IO-Link master modules

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

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)

Overview



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.
Electronic module 4SI IO-Link IO-Link master <u>Connection method:</u> Screw terminal, spring-loaded terminal or FastConnect	6ES7 138-4GA50-0AB0

Ordering data	Order No.
4SI SIRIUS electronic module IO-Link master <u>Connection method:</u> Screw-type terminal, spring-loaded terminal or FastConnect	3RK1 005-0LB00-0AA0

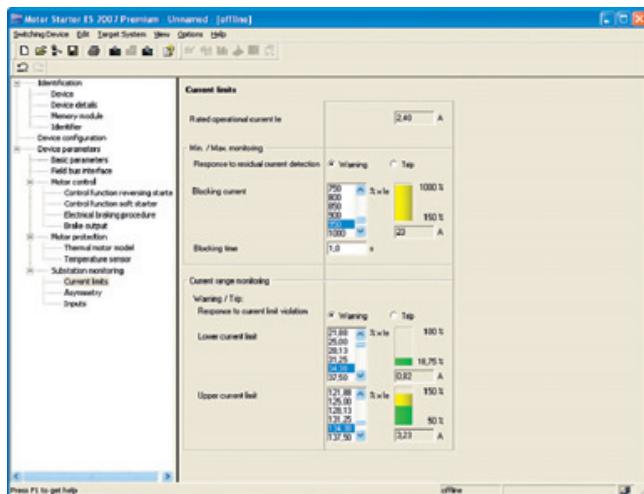
More information

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

More information

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 --> "IO-Link"
 --> "Master"
 --> IO-Link master module SIRIUS for ET 200S

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 **NEW**.

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⁾ Typical 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.

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 disk⁴⁾	≥ 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.

Motor Starter ES

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)		
<ul style="list-style-type: none"> • 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		
<ul style="list-style-type: none"> • License key on USB stick, Class A, including CD • License key download, Class A, no CD 	3ZS1 310-4CC10-0YA5	3ZS1 310-6CC10-0YA5
	3ZS1 310-4CE10-0YB5	3ZS1 310-6CE10-0YB5
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		
<ul style="list-style-type: none"> • License key on USB stick, Class A, including CD • License key download, Class A, no CD 	3ZS1 310-5CC10-0YA5	3ZS1 310-6CC10-0YE5
	3ZS1 310-5CE10-0YB5	
Upgrade for Motor Starter ES 2006	3ZS1 310-5CC10-0YE5	
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		
Powerpack for Motor Starter ES 2007 Basic	3ZS1 310-5CC10-0YD5	
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		
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 310-5CC10-0YL5	3ZS1 310-6CC10-0YL5
Accessories		
For ET 200S High Feature motor starters		
<ul style="list-style-type: none"> • Control module 2DI DC 24 V COM, for ET 200S High-Feature starter, Failsafe Starter A • LOGO! PC cables 	3RK1 903-0CH10	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)		
<ul style="list-style-type: none"> • 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

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

5

Technical specifications

IM 154-6 PN IWLAN interface module	6ES7 154-6AB00-0AB0 6ES7 154-6AB50-0AB0
Supply voltage for electronic components 1L+	24 V DC 20.4 V DC 28.8 V DC
• 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+	24 V DC 20.4 V DC 28.8 V DC
• 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)		Ordering data	Order No.
IM 154-6 PN IWLAN interface module	6ES7 154-6AB00-0AB0 6ES7 154-6AB50-0AB0	IM 154-6 PN HF IWLAN interface module	
Parameters		For communication between ET 200pro and host controllers over Industrial Wireless LAN (IWLAN) radio networks; support of PROFIsafe	
• Diagnostic interrupt	Yes	With various national approvals; refer to the current list of approvals	6ES7 154-6AB00-0AB0
• Maintenance alarm	Yes	With approval for U.S.A.	6ES7 154-6AB50-0AB0
• 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	Mounting directly on IM154-6 PN HF IWLAN	
• Group fault (red)	Yes	• ANT IM 154-6 IWLAN; 2 units	6ES7 194-4MA00-0AA0
• Bus fault (red)	Yes	For wall or pipe mounting	
• Maintenance information (yellow)	Yes	• ANT 792-6MN; rod antenna N-Connect female 2.4 GHz; 1 unit	6GK5 792-6MN00-0AA6
• Monitoring 24 V power supply ON (green)	Yes	• ANT793-6MN; rod antenna N-Connect female 5 GHz; 1 unit	6GK5 793-6MN00-0AA6
• Load voltage monitoring 24 V DC (green)	Yes	For use with the RCoax antenna system	
• Connection to an Access Point R1 LINK (green)	Yes	• ANT 792-4DN; RCoax N-Connect female 2.4 GHz; 1 unit	6GK5 792-4DN00-0AA6
• Data exchange R1 RX/TX (yellow)	Yes	• ANT793-4MN; RCoax N-Connect female 5 GHz; 1 unit	6GK 5793-4MN00-0AA6
• 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	Antenna cables IWLAN RCoax; N-Connect / R-SMA	
• Between Ethernet and supply voltage 1L+ and 2L+	Yes	• 1 m long	6XV1 875-5CH10
• Between the supply voltage and electronic components	Yes	• 2 m long	6XV1 875-5CH20
Operating temperature		• 5 m long	6XV1 875-5CH50
• Minimum	-25 °C	• 10 m long	6XV1 875-5CN10
• Maximum	55 °C	IWLAN terminating resistor 50 Ohm for second R-SMA antenna socket, 3 items	6GK5 795-1TR10-0AA6
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		

Distributed I/O SIMATIC ET 200

ET 200pro

IM 154-6 PN WLAN

5

Ordering data	Order No.	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 - 1000 mm - 2000 mm, can be cut to length
• 1.5 m long	6XV1 822-5BH15	
• 2.0 m long	6XV1 822-5BH20	
• 3.0 m long	6XV1 822-5BH30	
• 5.0 m long	6XV1 822-5BH50	
• 10 m long	6XV1 822-5BN10	
• 15 m long	6XV1 822-5BN15	
• Other special lengths with 90° or 180° cable outlet	See http://support.automation.siemens.com/WW/view/en/26999294	• Compact, for interface, electronics and power modules - 500 mm - 1000 mm - 2000 mm, can be cut to length
Power line	6XV1 830-8AH10	• Wide, for interface, electronics, power modules and motor starters - 500 mm - 1000 mm - 2000 mm, can be cut to length
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		- 500 mm - 1000 mm - 2000 mm, can be cut to length
7/8" cable connector	6GK1 905-0FB00	
For ET 200eco, with axial cable outlet; with socket insert, pack of 5		• Wide, for I/O modules and motor starters - 500 mm - 1000 mm - 2000 mm
Twisted Pair cables 4x2 with RJ45 connectors		Spare fuse
• 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	
• 6 m long	6XV1 870-3QH60	
• 10 m long	6XV1 870-3QN10	
Crossed Twisted Pair cables 4x2 with RJ45 connectors		Labels
• 0.5 m long	6XV1 870-3RE50	20 x 7 mm, pale turquoise, 340 items per pack
• 1 m long	6XV1 870-3RH10	
• 2 m long	6XV1 870-3RH20	
• 6 m long	6XV1 870-3RH60	
• 10 m long	6XV1 870-3RN10	
IE FC RJ45 Plug 180		SIMATIC Micro Memory Card
180° cable outlet; for line components and CPs/CPUs with Industrial Ethernet interface		• 64 KB • 128 KB • 512 KB
• 1 pack = 1 item	6GK1 901-1BB10-2AA0	
• 1 pack = 10 items	6GK1 901-1BB10-2AB0	
IE FC RJ45 Plug 90		SIMATIC Manual Collection
90° cable outlet; e.g. for ET 200S		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)
• 1 pack = 1 item	6GK1 901-1BB20-2AA0	
• 1 pack = 10 items	6GK1 901-1BB20-2AB0	
		SIMATIC Manual Collection – Update service for 1 year
		Scope of supply: Current DVD "S7 Manual Collection" and the three subsequent updates

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

SIMATIC ET200pro PS

Application



The power supplies with IP67 degree of protection, SITOP PSU300P and SIMATIC ET200pro PS¹⁾, 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	24 V/8 A (SIMATIC ET 200pro PS) 6ES7 148-4PC00-0HA0
Order No.	
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)
Oversupply 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 A ² s
Built-in incoming fuse	Internal, 4 A
Required protection in the main supply conductor	<i>With power loop-through fuse ≤ 25 A or circuit breaker e.g. 3RV1021-1DA15 or 3RV1742-5DD10 (UL 489)</i>
Output	<i>Controlled DC voltage galvanically connected with PE</i>
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)	<ul style="list-style-type: none"> • 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	24 V/8 A (SIMATIC ET 200pro PS) 6ES7 148-4PC00-0HA0
Order No.	8 A
Rated current value $I_{\text{out rated}}$	0 ... 8 A (up to +55 °C)
Current range	–
• Up to +60 °C	
• Derating	
Dynamic overcurrent on	Approx. 50 A for 100 ms
• Power-up on short circuit	Approx. 50 A for 100 ms
• Short circuit during operation	
Parallel switching for enhanced performance	No
Efficiency	
Efficiency at $V_{\text{out rated}}$, $I_{\text{out rated}}$	Typ. 88 %
Power loss at $V_{\text{out rated}}$, $I_{\text{out rated}}$	Typ. 25 W
Closed-loop control	
Dyn. mains compensation ($V_{\text{in rated}} \pm 15\%$)	Typ. $\pm 0.5\% V_{\text{out}}$
Dynamic load smoothing ($I_{\text{out}}: 50/100/50\%$)	Typ. $\pm 1\% V_{\text{out}}$
Load step settling time	Typ. < 2 ms
• 50 to 100 %	Typ. < 2 ms
• 100 to 50 %	
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, <i>protectiv extra low output voltage</i> 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

Distributed I/O SIMATIC ET 200

ET 200pro

SIMATIC ET200pro PS

Technical specifications (continued)

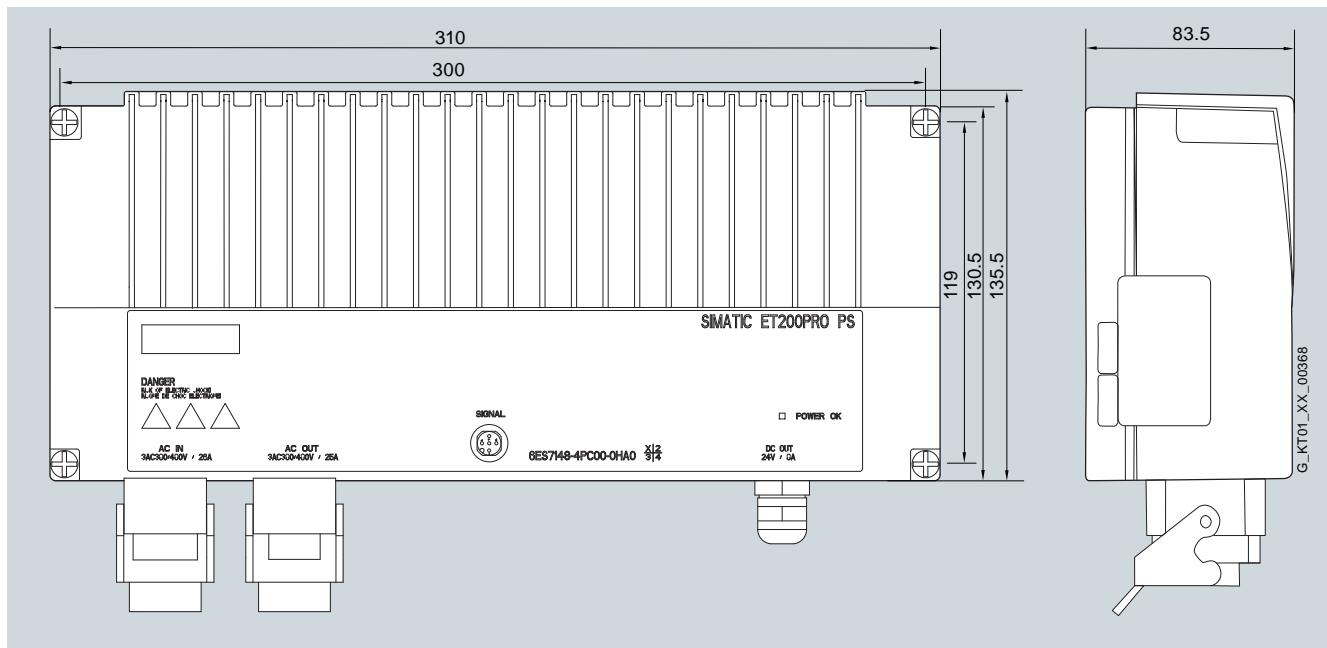
Power supply, type	24 V/8 A (SIMATIC ET 200pro PS)	Power supply, type	24 V/8 A (SIMATIC ET 200pro PS)
Order No.	6ES7 148-4PC00-0HA0	Order No.	6ES7 148-4PC00-0HA0
EMC		Mechanics	
Emitted interference	EN 55022 Class A	Connections	Plug connector HAN Q4/2 <i>The supply input is looped through internally and is made available via a second HAN Q4/2 plug connector.</i>
Supply harmonics limitation	–	• Supply input L1, L2, L3, PE	<i>2 x 1 mm²</i> (4-pole cable for +/- with open, labeled ends, 2 x 2.5 mm ²)
Noise immunity	EN 61000-6-2	• Output +	<i>2 x 1 mm²</i> (4-pole cable for +/- with open, labeled ends, 2 x 2.5 mm ²) M12 plug-in connector, 5-pin
Operating data		• Output -	Plug connector M12, 5-pole
Ambient temperature range	-25 ... +55 °C with natural convection	• Status signal	Dimensions (W x H x D) in mm 310 x 135 x 90 + additional height of connector
Transport/storage temperature range	-40 ... +70 °C	Weight, approx.	2.8 kg
Humidity class	Climate class 3K3 according to EN 60721, no condensation	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.))

5

Ordering data	Order No.	Order No.
SIMATIC ET 200pro PS 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	6ES7 148-4PC00-0HA0	Accessories
		Power connection plugs for connection to distributed I/O system • for X1 (6 mm ²) • for X2 (6 mm ²)

Accessories	3RK1 911-2BE30
Power connection plugs for connection to distributed I/O system • for X1 (6 mm ²) • for X2 (6 mm ²)	3RK1 911-2BF10
Sealing caps for 9-pole power socket • X2 (1 unit per pack.) • X2 (10 units per pack.)	3RK1 902-0CJ00
	3RK1 902-0CK00

Dimensions



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

5

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

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 simultaneously 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. - at "1" to "0", max.	Typ. 3 ms Typ. 3 ms	Typ. 3 ms 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

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				
• Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Load voltage 2L+					
• Rated value (DC)	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				
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				
• 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				
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				
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				
• with inductive load, max.	0.5 Hz				
• on lamp load, max.	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				

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				
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				
• 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				
Isolation					
tested with					
• 24 V DC circuits	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				
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				
Weight					
• Weight	550 g	550 g	910 g	910 g	910 g

Technical specifications (continued)

6ES7 147-6BG00-0AB0		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		
Number of simultaneously 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		

Distributed I/O SIMATIC ET 200

ET 200eco PN

ET 200eco PN

Technical specifications (continued)

6ES7 147-6BG00-0AB0		6ES7 144-6KD00-0AB0	
Interrupts/diagnostics/ status information		Supply voltages	
Status indicator	Yes; green LED	Rated value	Yes
Alarms		• DC 24 V	Yes
• Diagnostic alarm	Yes	• permissible range, lower limit (DC)	20.4 V
Diagnoses		• permissible range, upper limit (DC)	28.8 V
• Diagnostics functions	Yes	• Reverse polarity protection	Yes
• Diagnostics information readable	Yes		
• Monitoring the voltage supply of the electronics	Yes; green LED "ON"		
• Wire break in actuator 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		Current consumption	
tested with		Current consumption, typ.	110 mA
• 24 V DC circuits	500 V		
• Interface	1 500 µV; according to IEEE 802.3		
Isolation		Current consumption/ power loss	
between the load voltages	Yes	Power loss, typ.	2.8 W
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		Interfaces	
IP 65	Yes	Number of PROFINET interfaces	2
IP 66	Yes	automatic detection of transmission speed	Yes
IP 67	Yes	Transmission speed, max.	100 Mbit/s
Dimensions and weight		Connection point	
Dimensions and weight		M12	Yes
• Width	60 mm		
• Height	175 mm		
• Depth	49 mm		
Weight			
• Weight	910 g		
		Protocols	
PROFINET IO		PROFINET IO	Yes
Protocols (Ethernet)			
• SNMP		Yes	
• DCP		Yes	
• LLDP		Yes	
• ping		Yes	
• arp		Yes	
Analog inputs		Analog inputs	
Number of analog inputs		Number of analog inputs	8
Number of analog inputs for voltage/current measurement		Number of analog inputs for resistance/temperature measurement	4
Number of analog inputs for resis- tance/temperature measurement		cable length, shielded, max.	4
cable length, shielded, max.		Input ranges (rated values), voltages	30 m
		• 0 to +10 V	Yes
		• 1 to 5 V	Yes
		• -10 V to +10 V	Yes
		• -80 mV to +80 mV	Yes

Technical specifications (continued)

6ES7 144-6KD00-0AB0		6ES7 144-6KD00-0AB0	
Input ranges (rated values), currents		Encoder supply	
• 0 to 20 mA	Yes	Number of outputs	4
• -20 to +20 mA	Yes	24 V encoder supply	
• 4 to 20 mA	Yes	• Short-circuit protection	Yes; Electronic at 1.4 A
Input ranges (rated values), thermoelements		• Output current, max.	1 A
• Type E	Yes	Encoder	
• Type J	Yes	Number of connectable encoders, max.	8
• Type K	Yes	Connection of signal encoders	
• Type N	Yes	• for voltage measurement	Yes
Input ranges (rated values), resistance thermometers		• for current measurement as 2-wire transducer	Yes
• Ni 100	Yes	• for current measurement as 4-wire transducer	Yes
• Ni 1000	Yes	• for resistance measurement with 2-conductor connection	Yes
• Ni 120	Yes	• for resistance measurement with 3-conductor connection	Yes
• Ni 200	Yes	• for resistance measurement with 4-conductor connection	Yes
• Ni 500	Yes	Errors/accuracies	
• Pt 100	Yes	linearity error (based on input range)	+/- 0,01 %
• Pt 1000	Yes	Temperature error (relative to input areas)	U: 0,0035%/ $^{\circ}$ C; I: 0,006%/ $^{\circ}$ C; RTD: 0,0005%/ $^{\circ}$ C; TC: 0,0035%/ $^{\circ}$ C
• Pt 200	Yes	Crosstalk between the inputs, min.	85 dB
• Pt 500	Yes	Interference voltage suppression for $f = n \times (f_l \pm 1\%)$, f_l = interference frequency	
Voltage input		• Series mode interference (peak value of interference < rated value of input range), min.	46 dB
• permissible input frequency for voltage input (destruction limit), max.	28.8 V permanent, 35 V for max. 500 ms	• common mode voltage, min.	70 dB
Temperature compensation		Interrupts/diagnostics/status information	
• programmable	Yes	Alarms	
• internal temperature compensation	Yes	• Diagnostic alarm	Yes
• external temperature compensation with compensations socket	Yes	Diagnoses	
Analog value creation		• Diagnostic functions	Yes
Analog value display	SIMATIC S7 format	• Diagnostic information readable	Yes
Measurement principle	Integrating	• Monitoring the voltage supply to the electronics	Yes; Green "ON" LED
Integration and conversion time/resolution per channel		• Short circuit encoder supply	Yes; Per module
• Resolution (incl. overload area)	15 bits + sign	• Group error	Yes; Red/yellow "SF/MT" LED
• Integration time, parameterizable	Yes	• Overflow/underflow	Yes
• Integration time, ms	2 / 16.67 / 20 / 100 ms	Isolation	
• Interference voltage suppression for interference frequency f_1 in Hz	500 / 60 / 50 / 10 Hz	tested with	
• Conversion time (per channel)	4 / 19 / 22 / 102 ms	• 24 V DC circuits	500 V
Smoothing of measured values		• Interface	1 500 V; according to IEEE 802.3
• 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		

Distributed I/O SIMATIC ET 200

ET 200eco PN

ET 200eco PN

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		6ES7 148-6JA00-0AB0	
Encoder supply		Supply voltages	
Number of outputs	4	Rated value	
24 V encoder supply		• 24 V DC	Yes
• Short-circuit protection	Yes; Electronic at 1.4 A	• Permissible range, lower limit (DC)	20.4 V
• Output current, max.	1 A	• Permissible range, upper limit (DC)	28.8 V
Errors/accuracies		• Reverse polarity protection	Yes
Output ripple (based on output range, bandwidth 0 to 50 kHz)	U: ±0.6 mVrms; I: ±0.4 nArms	Load voltage 2L+	
Temperature error (relative to output area)	U: 0.001%/°C; I: 0.0025%/°C	• Rated value (DC)	24 V
Crosstalk between the outputs, min.	70 dB	• Permissible range, lower limit (DC)	20.4 V
Interrupts/diagnostics/ status information		• Permissible range, upper limit (DC)	28.8 V
Status indicator	Yes	• Reverse polarity protection	Yes
Substitute values connectable	Yes	Current consumption	
Alarms		from load voltage 1L+ (unswitched voltage)	4 A
• Diagnostic alarm	Yes	from load voltage 2L+, max.	4 A
Diagnoses		Current consumption/power loss	
• Diagnostic functions	Yes	Power loss, typ.	8 W
• Diagnostic information readable	Yes	Interfaces	
• Monitoring the voltage supply to the electronics	Yes; Green "ON" LED	Number of PROFINET interfaces	2
• Wire break	Yes; Channel-by-channel with current output	automatic detection of transmission speed	Yes
• Short circuit	Yes; Channel-by-channel with voltage output	Autocrossing	Yes
• Group error	Yes; Red/yellow "SF/MT" LED	integrated switch	Yes
Isolation		Transmission rate, max.	100 Mbit/s
between the load voltages	Yes	Connection point	
between load voltage and all other switching components	No	M12	Yes
between Ethernet and electronics	Yes	Protocols	
Isolation, analog outputs		PROFINET IO	Yes
• between the channels	No	Protocols (Ethernet)	
Permissible potential difference		• SNMP	Yes
between M internally and the outputs	10 Vpp AC	• DCP	Yes
Degree of protection		• LLDP	Yes
IP 65	Yes	• ping	Yes
IP 66	Yes	• arp	Yes
IP 67	Yes	PROFINET IO-Device	
General information		IRT with option "high flexibility", supported	Yes
Vendor identification (VendorID)	002AH	Digital inputs	
Device identifier (DeviceID)	0306H	Number of digital inputs	8
Dimensions and weight		Number of simultaneously controllable inputs	
Dimensions and weight		• all mounting positions	
• Width	60 mm	- Number of simultaneously controllable inputs, up to 60 °C	8
• Height	175 mm	Input characteristic according to IEC 1131, type 3	Yes
• Depth	49 mm	Input voltage	
Weight		• Rated value, DC	24 V
• Weight	930 g	• for signal "0"	-3 to +5 V
		• for signal "1"	11 to 30 V

Distributed I/O SIMATIC ET 200

ET 200eco PN

ET 200eco PN

Technical specifications (continued)

6ES7 148-6JA00-0AB0		6ES7 148-6JA00-0AB0	
Input current		Interrupts/diagnostics/ status information	
• for signal "0", max. (permissible quiescent current)	1.5 mA	Status indicator	Yes; green LED
• for signal "1", typ.	7 mA	Alarms	
Cable length		• Diagnostic alarm	Yes
• Cable length unshielded, max.	30 m	Diagnoses	
Digital outputs		• Diagnostics functions	Yes
Number of digital outputs	4	• Diagnostics information readable	Yes
Short-circuit protection	Yes	• Monitoring the voltage supply of the electronics	Yes; green LED "ON"
Switching capacity of the outputs		• Wire break in actuator cable	Yes
• on lamp load, max.	5 W	• Wire break in signal encoder cable	Yes
Controlling a digital input	Yes	• Short circuit	Yes
Output current		• Short circuit encoder supply	Yes
• for signal "1" rated value	1.3 A; maximum	• Group error	Yes; red/yellowLED "SF/MT"
• for signal "0" residual current, max.	1.5 mA		
Parallel switching of 2 outputs		Isolation	
• for increased power	No	tested with	
• for redundant control of a load	Yes	• 24 V DC circuits	500 V
Switching frequency		• interface	1 500 µV; according to IEEE 802.3
• with resistive load, max.	100 Hz		
• with inductive load, max.	0.5 Hz	Isolation	
• on lamp load, max.	1 Hz	between the load voltages	Yes
Aggregate current of the outputs (per group)		between load voltage and all other switching components	No
• up to 60 °C, max.	3.9 A	between Ethernet and electronics	Yes
Cable length		Galvanic isolation, digital inputs	
• Cable length unshielded, max.	30 m	• between the channels	No
Encoder supply		Isolation, digital outputs	
Number of outputs	6	• between the channels	No
Output current, rated value	200 mA; 100 mA per output on X5-X6	Degree of protection	
24 V encoder supply		IP 65	Yes
• Short-circuit protection	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

Distributed I/O SIMATIC ET 200

ET 200eco PN

ET 200eco PN

Ordering data	Order No.	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	Accessories (continued)
• 8 DI 24 V DC; 8 x M12, degree of protection IP67	6ES7 141-6BG00-0AB0	IE FC TP Standard Cable GP 2 x 2 (Type A)
• 16 DI 24 V DC; 8 x M12, dual assignment, degree of protection IP67	6ES7 141-6BH00-0AB0	4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter; max. length 1000 m, minimum order 20 m
ET 200eco PN digital output module		IE FC TP Trailing Cable GP 2 x 2 (Type C)
• 8 DO 24 V DC/0.5 A; 4 x M12, dual assignment, 1 load voltage supply DO; degree of protection IP67	6ES7 142-6BF50-0AB0	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; Sold by the meter; max. length 1000 m, minimum order 20 m
• 8 DO 24 V DC/1.3 A; 4 x M12, dual assignment, degree of protection IP67	6ES7 142-6BF00-0AB0	PROFINET M12 connector, can be assembled
• 8 DO 24 V DC/1.3 A; 8 x M12, degree of protection IP67	6ES7 142-6BG00-0AB0	IE FC M12 connector PRO, can be assembled
• 8 DO 24 V DC/2 A; 8 x M12, degree of protection IP67	6ES7 142-6BR00-0AB0	• 1 unit
• 16 DO 24 V DC/1.3 A; 8 x M12, dual assignment, degree of protection IP67	6ES7 142-6BH00-0AB0	6GK1 901-0DB20-6AA0
ET 200eco PN digital input/output modules		• 8 units
• 8 DI/DO 24 V DC/1.3 A; 8 x M12, degree of protection IP67	6ES7 147-6BG00-0AB0	PROFINET M12 connecting cables
ET 200eco PN analog input modules		Pre-assembled connecting cable with two M12 connectors (D-coded) in various lengths:
• 8 AI 4 U/I + 4 RTD/TC; 8 x M12, degree of protection IP67	6ES7 144-6KD00-0AB0	• 0.3 m
ET 200eco PN analog output modules		6XV1 870-8AE30
• 4 AO U/I; 4 x M12, degree of protection IP67	6ES7 145-6HD00-0AB0	• 0.5 m
ET 200eco PN IO-Link master module		6XV1 870-8AE50
• 4 IO-L + 8 DI + 4 DO 24 V DC/1.3 A; 8 x M12, degree of protection IP67	6ES7 148-6JA00-0AB0	• 1.0 m
Accessories		6XV1 870-8AH10
• PD voltage distributor, 24 V DC; 1 X 7/8", 4 X M12	6ES7 148-6CB00-0AA0	• 1.5 m
• Terminal block for ET 200eco PN, 10 A insulation piercing connecting devices	6ES7 194-6CA00-0AA0	• 2.0 m
• Spare fuses for terminal block, 10 units	6ES7 194-6HB00-0AA0	• 3.0 m
• Mounting rail 0.5 m	6ES7 194-6GA00-0AA0	• 5.0 m
• Profile screw for mounting rail, 50 units	6ES7 194-6MA00-0AA0	• 10.0 m
• Cap M12 for modules IP67, 10 units	3RK1 901-1KA00	• 15.0 m
• Labels 10 x 7 mm, pastel turquoise, 816 units	3RT1 900-1SB10	M12 connector for load supply 24 V DC
		Connection socket for infeed of 24 V DC; 4-pin, A-coded, 3 units
		Connector for passing on the 24 V DC; 4-pin, A-coded, 3 units
		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

Distributed I/O SIMATIC ET 200

ET 200eco PN

ET 200eco PN

Ordering data	Order No.	Order No.
M12 coupling plug	<p>Can be assembled</p> <ul style="list-style-type: none"> • for connecting actuators or sensors, 4-pin • for connecting actuators or sensors, 5-pin 	M12 connecting cables (PUR jacket) Pre-assembled connecting cables for connecting digital sensors and actuators on both sides with M12 socket and connector 3 x 0.34 mm ² , in various lengths:
	3RX8 000-0CD40	3RX8 000-0GF32-1AA6
	3RX8 000-0CD55	3RX8 000-0GF32-1AB0
M12 angular circular connector	3RX8 000-0CE55	3RX8 000-0GF32-1AB5
Y cable M12	6ES7 194-6KA00-0XA0	on both sides with M12 socket and connector 4 x 0.34 mm ² , in various lengths: <ul style="list-style-type: none"> • 0.6 m • 1.0 m • 1.5 m
		3RX8 000-0GF42-1AA6
		3RX8 000-0GF42-1AB0
		3RX8 000-0GF42-1AB5