

Distributed Controllers

based on ET 200pro
Standard CPUs

IM 154-8 PN/DP CPU

Overview



- CPU with PLC functionality equivalent to S7-315-2 PN/DP provides distributed intelligence for preprocessing
- Interface module for exchanging pre-processed I/O data between the ET 200pro and a higher-level master/I/O controller via PROFIBUS DP/PROFINET IO
- PROFINET IO controller for operating distributed I/O on PROFINET
- Component-based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component-based Automation (CBA)
- PROFINET interface with 3-port switch
- Isochronous mode on PROFIBUS or PROFINET
- Integrated web server with the option of creating user-defined web pages
- CPU with PLC functionality equivalent to S7-315-2 PN/DP provides distributed intelligence for preprocessing
- Fast, simple and end-to-end programming of a system with modular programs via STEP 7
- Fail-safe IM 154-8F PN/DP CPU PROFI-safe available

Note

SIMATIC Micro Memory Card required for operation of CPU.

Ordering data

Article No.

IM 154-8 PN/DP CPU interface module, V3.2

PROFINET IO controller for operating distributed I/Os on PROFINET, with integrated PLC functionality.

6ES7154-8AB01-0AB0

Accessories

MMC 64 KB ¹⁾

For program backup.

6ES7953-8LF31-0AA0

MMC 128 KB ¹⁾

For program backup.

6ES7953-8LG31-0AA0

MMC 512 KB ¹⁾

For program backup.

6ES7953-8LJ31-0AA0

MMC 2 MB ¹⁾

For program backup and/or firmware updates.

6ES7953-8LL31-0AA0

MMC 4 MB ¹⁾

For program backup.

6ES7953-8LM32-0AA0

MMC 8 MB ¹⁾

For program backup.

6ES7953-8LP31-0AA0

Connection module

For CPU IM154-8 PN/DP, with 4 x M12 and 2 x 7/8", for connecting PROFINET and PROFIBUS DP.

6ES7194-4AN00-0AA0

Industrial Ethernet FC RJ45 plug 180

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

Industrial Ethernet FastConnect installation cables

- FastConnect standard cable
- FastConnect trailing cable
- FastConnect marine cable

6XV1840-2AH10
6XV1840-3AH10
6XV1840-4AH10

Industrial Ethernet FastConnect installation cables

- IE FC TP trailing cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.
- IE TP torsion cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.

6XV1870-2D

6XV1870-2F

Industrial Ethernet FastConnect

Stripping tool

6GK1901-1GA00

¹⁾ An MMC is essential for operating the CPU

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Standard CPUs

IM 154-8 PN/DP CPU

Ordering data

Article No.

Article No.

IE connecting cable M12-180/M12-180

- Pre-assembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two 4-pin M12 plugs (4-pin, D-coded), degree of protection IP65/IP67, in various lengths:
 - 0.3 m
 - 0.5 m
 - 1.0 m
 - 1.5 m
 - 2.0 m
 - 3.0 m
 - 5.0 m
 - 10 m
 - 15 m
 - 20 m
 - 30 m
 - 40 m
 - 50 m
- PROFINET M12 trailing connecting cable, pre-assembled at both ends with angled M12 plugs (male contact insert), in various lengths:
 - 3.0 m
 - 5.0 m
 - 10 m
- PROFINET M12 trailing connecting cable, pre-assembled at one end with angled M12 plug (male contact insert at one end, other end open), in various lengths:
 - 3.0 m
 - 5.0 m
 - 10 m

6XV1870-8AE30
6XV1870-8AE50
6XV1870-8AH10
6XV1870-8AH15
6XV1870-8AH20
6XV1870-8AH30
6XV1870-8AH50
6XV1870-8AN10
6XV1870-8AN15
6XV1870-8AN20
6XV1870-8AN30
6XV1870-8AN40
6XV1870-8AN50

3RK1902-2NB30
3RK1902-2NB50
3RK1902-2NC10

3RK1902-2HB30
3RK1902-2HB50
3RK1902-2HC10

IE FC M12 plug PRO

PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet.

- 1 unit
- 8 units
- PROFINET M12 plug connector, D-coded, angled.

6GK1901-0DB20-6AA0
6GK1901-0DB20-6AA8
3RK1902-2DA00

IE panel feedthrough

Cabinet bushing for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units.

6GK1901-0DM20-2AA5

7/8" connecting cable to power supply

5-wire, 5x1.5 mm², trailing, pre-assembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m, in various lengths:

- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m

- Trailing power cable, 5x1.5 mm², pre-assembled at both ends with 7/8" angled plugs (female contact insert at one end, male contact insert at the other end), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

- Trailing power cable, 5x1.5 mm², pre-assembled at one end with 7/8" angled plug with female contact insert (socket at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

6XV1822-5BH15
6XV1822-5BH20
6XV1822-5BH30
6XV1822-5BH50
6XV1822-5BN10
6XV1822-5BN15

3RK1902-3NB30
3RK1902-3NB50
3RK1902-3NC10

3RK1902-3GB30
3RK1902-3GB50
3RK1902-3GC10

Power line

5-wire, 5x1.5 mm², trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1000 m.

6XV1830-8AH10

7/8" connection plug

For ET 200eco, with axial cable outlet

- With male contact insert, 5-pack
- With female contact insert, 5-pack
- Angled, with female contact insert, 1 unit
- Angled, with male contact insert, 1 unit

6GK1905-0FA00
6GK1905-0FB00
3RK1902-3DA00

3RK1902-3BA00

7/8" cover cap, 10 per pack

6ES7194-3JA00-0AA0

Twisted pair cables 4x2 with RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60
6XV1870-3QN10

Crossed twisted pair cables 4x2 with RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

6XV1870-3RE50
6XV1870-3RH10
6XV1870-3RH20
6XV1870-3RH60
6XV1870-3RN10

Distributed Controllers

based on ET 200pro

Standard CPUs

IM 154-8 PN/DP CPU

Ordering data	Article No.		Article No.
M12 sealing cap For protection of unused M12 connections with ET 200pro	3RX9802-0AA00	PROFIBUS FC standard cable GP Standard type with special design for quick mounting, 2-wire, shielded. Sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0EH10
M12 sealing caps with female thread 5 units	6ES7194-4JD60-0AA0	PROFIBUS FC trailing cable 2-wire, shielded.	6XV1830-3EH10
PROFIBUS M12 connecting cable Pre-assembled, with two 5-pin M12 plugs/sockets, up to 100 m, in various lengths:		PROFIBUS FC food cable 2-wire, shielded. Sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0GH10
1.5 m	6XV1830-3DH15	PROFIBUS FC robust cable 2-wire, shielded Sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m.	6XV1830-0JH10
2.0 m	6XV1830-3DH20	PROFIBUS M12 connection plug 5-pin, B-coded, metal housing, 1 pack = 5 units. • Female contact insert	6GK1905-0EB00
3.0 m	6XV1830-3DH30		
5.0 m	6XV1830-3DH50		
10 m	6XV1830-3DN10		
15 m	6XV1830-3DN15		
M12 bus termination connector for PROFIBUS, female contact insert	6GK1905-0ED00		
M12 bus termination connector for PROFIBUS, male contact insert	6GK1905-0EC00		
M12 plug connector, axial outlet, with male contact insert	6GK1905-0EA00		

Technical specifications

Article number	6ES7154-8AB01-0AB0 ET 200pro: IM 154-8 PN/DP CPU, 384 KB	Article number	6ES7154-8AB01-0AB0 ET 200pro: IM 154-8 PN/DP CPU, 384 KB
General information		Data areas and their retentivity	
Engineering with		Flag	
• Programming package	STEP 7 V5.5 or higher	• Size, max.	2 048 byte
Supply voltage		Address area	
Rated value (DC)	24 V	I/O address area	
Memory		• Inputs	2 048 byte
Work memory		• Outputs	2 048 byte
• integrated	384 kbyte	Process image	
• expandable	No	• Inputs, adjustable	2 048 byte
Load memory		• Outputs, adjustable	2 048 byte
• Plug-in (MMC), max.	8 Mbyte	Time of day	
CPU processing times		Clock	
for bit operations, typ.	0.05 µs	• Hardware clock (real-time)	Yes
for word operations, typ.	0.09 µs	Operating hours counter	
for fixed point arithmetic, typ.	0.12 µs	• Number	1
for floating point arithmetic, typ.	0.45 µs	Interfaces	
Counters, timers and their retentivity		Interfaces/bus type	1x MPI/PROFIBUS DP, 1x PROFINET (3 ports)
S7 counter		1. Interface	
• Number	256	Interface type	Integrated RS 485 interface
IEC counter		Interface types	
• present	Yes	• RS 485	Yes
S7 times		Protocols	
• Number	256	• MPI	Yes
IEC timer		• PROFIBUS DP master	Yes
• present	Yes	• PROFIBUS DP device	Yes
		• Point-to-point connection	No
		PROFIBUS DP master	
		• max. number of DP devices	124

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Standard CPUs

IM 154-8 PN/DP CPU

Technical specifications

Article number	6ES7154-8AB01-0AB0 ET 200pro: IM 154-8 PN/DP CPU, 384 KB
2. Interface	
Interface type	PROFINET
Interface types	
• Number of ports	3
Protocols	
• MPI	No
• PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	128
- Of which IO devices with IRT, max.	64
- Number of IO Devices with IRT and the option "high flexibility"	128
- Number of connectable IO Devices for RT, max.	128
Protocols	
SIMATIC communication	
• S7 routing	Yes
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8
• ISO-on-TCP (RFC1006)	Yes
- Number of connections, max.	8
• UDP	Yes
- Number of connections, max.	8
Web server	
• supported	Yes

Article number	6ES7154-8AB01-0AB0 ET 200pro: IM 154-8 PN/DP CPU, 384 KB
Communication functions	
PG/OP communication	Yes
Global data communication	
• supported	Yes
S7 basic communication	
• supported	Yes
S7 communication	
• supported	Yes
Number of connections	
• overall	16
Degree and class of protection	
IP degree of protection	IP65/67
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
- HiGraph®	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	135 mm
Height	130 mm
Depth	65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover for RJ45 socket
Weights	
Weight, approx.	720 g

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1513pro-2 PN

Overview



- CPU 1513pro-2 PN for SIMATIC ET 200pro based on S7-1500 CPU 1513-1 PN
- For applications with medium requirements on the program scope and processing speed, for distributed setup via PROFINET IO.
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- PROFINET shared I-Device for 4 controllers
- PROFINET IO RT/IRT interface with integrated 3-port switch
- Additional PROFINET IO RT interface with separate IP address
- Isochronous mode on PROFINET
- Integrated motion control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- OPC UA server and client (data access) as runtime option for the easy connection of SIMATIC ET 200pro to non-Siemens devices/systems
- Integrated web server with the option of creating user-defined web pages

Note

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

CPU 1513pro-2 PN

300 KB work memory for program, 1.5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface, SIMATIC Memory Card required

6ES7513-2PL00-0AB0

600 KB work memory for program, 2.5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface, SIMATIC Memory Card required

6ES7513-2PM03-0AB0

Accessories

SIMATIC Memory Card

4 MB¹⁾

6ES7954-8LC04-0AA0

12 MB¹⁾

6ES7954-8LE04-0AA0

24 MB¹⁾

6ES7954-8LF04-0AA0

256 MB¹⁾

6ES7954-8LL04-0AA0

2 GB¹⁾

6ES7954-8LP04-0AA0

32 GB¹⁾

6ES7954-8LT04-0AA0

Connection module

CM CPU 2PN M12 / 7/8";
With 3 x M12 and 2 x 7/8",
for connecting 2 x PROFINET

6ES7194-4AP00-0AA0

Industrial Ethernet FC RJ45 plug 180

RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

Industrial Ethernet FastConnect installation cables

- FastConnect standard cable
- FastConnect trailing cable
- FastConnect marine cable

6XV1840-2AH10
6XV1840-3AH10
6XV1840-4AH10

Industrial Ethernet FastConnect installation cables

- IE FC TP trailing cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.
- IE TP torsion cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.

6XV1870-2D

6XV1870-2F

Industrial Ethernet FastConnect

Stripping tool

6GK1901-1GA00

¹⁾ An MMC is essential for operating the CPU

Distributed Controllers

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Standard CPUs

CPU 1513pro-2 PN

Ordering data

Article No.

Article No.

IE connecting cable M12-180/M12-180

- Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two 4-pin M12 plugs (D-coded), degree of protection IP65/IP67, in various lengths:

- 0.3 m
- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m
- 20 m
- 30 m
- 40 m
- 50 m

- PROFINET M12 trailing connecting cable, preassembled at both ends with angled M12 plugs (contact pin insert), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

- PROFINET M12 trailing connecting cable, preassembled at one end with angled M12 plug (contact pin insert at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

IE FC M12 plug PRO

PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet.

- 1 unit
- 8 units
- PROFINET M12 plug connector, D-coded, angled.

IE panel feedthrough

Cabinet bushing for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units.

7/8" connecting cable to power supply

5-wire, 5 x 1.5 mm², trailable, preassembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m, in various lengths:

- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m

6XV1870-8AE30
6XV1870-8AE50
6XV1870-8AH10
6XV1870-8AH15
6XV1870-8AH20
6XV1870-8AH30
6XV1870-8AH50
6XV1870-8AN10
6XV1870-8AN15
6XV1870-8AN20
6XV1870-8AN30
6XV1870-8AN40
6XV1870-8AN50

3RK1902-2NB30
3RK1902-2NB50
3RK1902-2NC10

3RK1902-2HB30
3RK1902-2HB50
3RK1902-2HC10

6GK1901-0DB20-6AA0
6GK1901-0DB20-6AA8
3RK1902-2DA00

6GK1901-0DM20-2AA5

6XV1822-5BH15
6XV1822-5BH20
6XV1822-5BH30
6XV1822-5BH50
6XV1822-5BN10
6XV1822-5BN15

- Trailing power cable, 5 x 1.5 mm², preassembled at both ends with 7/8" angled plugs (socket insert at one end, contact pin insert at the other end), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

- Trailing power cable, 5 x 1.5 mm², preassembled at one end with 7/8" angled plug with socket insert (socket at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

Power cable

5-wire, 5 x 1.5 mm², trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1000 m.

7/8" connection plug

For ET 200eco, with axial cable outlet

- With contact pin insert, 5-pack
- With socket insert, 5-pack
- Angled, with socket insert, 1 unit
- Angled, with contact pin insert, 1 unit

7/8" cover cap, 10 per pack

Twisted pair cables 4x2 with RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

Crossed twisted pair cables 4x2 with RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

M12 sealing cap

For protection of unused M12 connections with ET 200pro

M12 sealing caps with internal thread

5 units

3RK1902-3NB30
3RK1902-3NB50
3RK1902-3NC10

3RK1902-3GB30
3RK1902-3GB50
3RK1902-3GC10

6XV1830-8AH10

6GK1905-0FA00
6GK1905-0FB00
3RK1902-3DA00
3RK1902-3BA00

6ES7194-3JA00-0AA0

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60
6XV1870-3QN10

6XV1870-3RE50
6XV1870-3RH10
6XV1870-3RH20
6XV1870-3RH60
6XV1870-3RN10

3RX9802-0AA00

6ES7194-4JD60-0AA0

Distributed Controllers

based on ET 200pro

Standard CPUs

CPU 1513pro-2 PN

Technical specifications

Article number	6ES7513-2PL00-0AB0 ET 200pro: CPU 1513pro-2 PN	6ES7513-2PM03-0AB0 ET 200pro: CPU 1513pro-2 PN
General information		
Product type designation	CPU 1513pro-2 PN	CPU 1513pro-2 PN
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V16	V20 (FW V4.0) / V19 (FW V3.1) or higher; configurable with older TIA Portal versions as 6ES7513-2PL00-0AB0
Supply voltage		
Rated value (DC)		24 V
Memory		
Work memory		
• integrated (for program)	300 kbyte	600 kbyte
• integrated (for data)	1.5 Mbyte	2.5 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	40 ns	6 ns
for word operations, typ.	48 ns	7 ns
for fixed point arithmetic, typ.	64 ns	9 ns
for floating point arithmetic, typ.	256 ns	37 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
1. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X1 P3	Yes; X1 P3
• Number of ports	3; 2x M12 + 1x RJ45	3; 2x M12 + 1x RJ45
• integrated switch	Yes	Yes
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes

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Standard CPUs

CPU 1513pro-2 PN

Technical specifications

Article number	6ES7513-2PL00-0AB0 ET 200pro: CPU 1513pro-2 PN	6ES7513-2PM03-0AB0 ET 200pro: CPU 1513pro-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	Yes	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes
- IRT	Yes	Yes; per user program
- PROFINergy	Yes	Yes; Max. 32 PROFINET devices
- Prioritized startup	Yes; Max. 32 PROFINET devices	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	64
- Of which IO devices with IRT, max.	64	128
- Number of connectable IO Devices for RT, max.	128	128
- of which in line, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- Number of IO Devices per tool, max.	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- Updating times	1	1
- PROFINET Security Class		
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	Yes
- IRT	Yes	Yes; per user program
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	Yes
- Shared device	Yes	4
- Number of IO Controllers with shared device, max.	4	Yes; per user program
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	SNMP Configuration and DCP Read Only
- PROFINET Security Class		
2. Interface		
Interface types		
• RJ 45 (Ethernet)	No	No
• Number of ports	1; 1x M12	1; 1x M12
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	No	No

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CPU 1513pro-2 PN

Technical specifications

Article number	6ES7513-2PL00-0AB0 ET 200pro: CPU 1513pro-2 PN	6ES7513-2PM03-0AB0 ET 200pro: CPU 1513pro-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- Direct data exchange	No	No
- IRT	No	No
- PROFINergy	Yes	Yes; per user program
- Prioritized startup	No	No
- Number of connectable IO Devices, max.	32; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	32	32
- of which in line, max.	32	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- IRT	No	No
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices		Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class		SNMP Configuration and DCP Read Only
Protocols		
Number of connections		
• Number of connections, max.	128; Via integrated interfaces of the CPU	128; Via integrated interfaces of the CPU
Redundancy mode		
Media redundancy		
- Media redundancy		Yes; only via 1st interface (X1)
- MRP	Yes; as MRP redundancy manager and/or MRP client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported		Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes; Data access (read, write), method call, custom address space	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space; embedded 2017 UA server profile V1.02	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions		Yes

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1513pro-2 PN

Technical specifications

Article number	6ES7513-2PL00-0AB0 ET 200pro: CPU 1513pro-2 PN	6ES7513-2PM03-0AB0 ET 200pro: CPU 1513pro-2 PN
Supported technology objects		
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	800	1 120
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Product functions/security		
PROFINET Security Class		1
signed firmware update		Yes
Secure Boot		Yes
safely removing data		Yes
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-25 °C	-25 °C
• horizontal installation, max.	55 °C	55 °C
• vertical installation, min.	-25 °C	-25 °C
• vertical installation, max.	55 °C	55 °C
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data		Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe		No
• Protection level: Complete protection	Yes	Yes
• User administration		Yes; device-wide and centralized
• Number of users		100
Dimensions		
Width	135 mm	135 mm
Height	130 mm	130 mm
Depth	65 mm	65 mm; without connection module M12 7/8 inch
Weights		
Weight, approx.	614 g	474 g; device only

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1516pro-2 PN

Overview



- CPU 1516pro-2 PN for SIMATIC ET 200pro based on S7-1500 CPU 1516-3 PN/DP
- For applications with high requirements on the program scope and processing speed, for distributed setup via PROFINET IO
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- PROFINET shared I-Device for 4 controllers
- PROFINET IO RT/IRT interface with integrated 3-port switch
- Additional PROFINET IO RT interface with separate IP address
- Isochronous mode on PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- OPC UA Server and Client (Data Access) as runtime option for the easy connection of SIMATIC ET 200pro to non-Siemens devices/systems
- Integrated web server with the option of creating user-defined web pages

Note

SIMATIC Memory Card required for operation of the CPU

Ordering data

Article No.

CPU 1516pro-2 PN

1 MB work memory for program, 5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface; SIMATIC Memory Card required

6ES7516-2PN00-0AB0

2 MB work memory for program, 7.5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface; SIMATIC Memory Card required

6ES7516-2PP03-0AB0

Accessories

SIMATIC Memory Card

4 MB¹⁾
12 MB¹⁾
24 MB¹⁾
256 MB¹⁾
2 GB¹⁾
32 GB¹⁾

6ES7954-8LC04-0AA0
6ES7954-8LE04-0AA0
6ES7954-8LF04-0AA0
6ES7954-8LL04-0AA0
6ES7954-8LP04-0AA0
6ES7954-8LT04-0AA0

Connection module

CM CPU 2PN M12 / 7/8";
With 3 x M12 and 2 x 7/8",
for connecting 2 x PROFINET

6ES7194-4AP00-0AA0

Industrial Ethernet FC RJ45 plug 180

RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

Industrial Ethernet FastConnect installation cables

- FastConnect standard cable
- FastConnect trailing cable
- FastConnect marine cable

6XV1840-2AH10
6XV1840-3AH10
6XV1840-4AH10

Industrial Ethernet FastConnect installation cables

- IE FC TP trailing cable GP 2x2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.
- IE TP torsion cable GP 2x2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.

6XV1870-2D

6XV1870-2F

Industrial Ethernet FastConnect

Stripping tool

6GK1901-1GA00

¹⁾ An MMC is essential for operating the CPU

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1516pro-2 PN

Ordering data

Article No.

Article No.

IE connecting cable M12-180/M12-180

- Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two 4-pin M12 plugs (4-pin, D-coded), degree of protection IP65/IP67, in various lengths:

- 0.3 m
- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m
- 20 m
- 30 m
- 40 m
- 50 m

- PROFINET M12 trailing connecting cable, preassembled at both ends with angled M12 plugs (contact pin insert), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

- PROFINET M12 trailing connecting cable, preassembled at one end with angled M12 plug (contact pin insert at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

6XV1870-8AE30
6XV1870-8AE50
6XV1870-8AH10
6XV1870-8AH15
6XV1870-8AH20
6XV1870-8AH30
6XV1870-8AH50
6XV1870-8AN10
6XV1870-8AN15
6XV1870-8AN20
6XV1870-8AN30
6XV1870-8AN40
6XV1870-8AN50

3RK1902-2NB30
3RK1902-2NB50
3RK1902-2NC10

3RK1902-2HB30
3RK1902-2HB50
3RK1902-2HC10

IE FC M12 plug PRO

PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet.

- 1 unit
- 8 units
- PROFINET M12 plug connector, D-coded, angled.

6GK1901-0DB20-6AA0
6GK1901-0DB20-6AA8
3RK1902-2DA00

IE panel feedthrough

Cabinet bushing for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units.

6GK1901-0DM20-2AA5

7/8" connecting cable to power supply

5-wire, 5 x 1.5 mm², trailable, preassembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m, in various lengths:

- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m

6XV1822-5BH15
6XV1822-5BH20
6XV1822-5BH30
6XV1822-5BH50
6XV1822-5BN10
6XV1822-5BN15

- Trailing power cable, 5 x 1.5 mm², preassembled at both ends with 7/8" angled plugs (socket insert at one end, contact pin insert at the other end), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

- Trailing power cable, 5 x 1.5 mm², preassembled at one end with 7/8" angled plug with socket insert (socket at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

3RK1902-3NB30
3RK1902-3NB50
3RK1902-3NC10

3RK1902-3GB30
3RK1902-3GB50
3RK1902-3GC10

Power cable

5-wire, 5 x 1.5 mm², trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1000 m.

6XV1830-8AH10

7/8" connection plug

For ET 200eco, with axial cable outlet

- With contact pin insert, 5-pack
- With socket insert, 5-pack
- Angled, with socket insert, 1 unit
- Angled, with contact pin insert, 1 unit

6GK1905-0FA00
6GK1905-0FB00
3RK1902-3DA00
3RK1902-3BA00

7/8" cover cap, 10 per pack

6ES7194-3JA00-0AA0

Twisted pair cables 4x2 with RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60
6XV1870-3QN10

Crossed twisted pair cables 4x2 with RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

6XV1870-3RE50
6XV1870-3RH10
6XV1870-3RH20
6XV1870-3RH60
6XV1870-3RN10

M12 sealing cap

For protection of unused M12 connections with ET 200pro

3RX9802-0AA00

M12 sealing caps with internal thread

5 units

6ES7194-4JD60-0AA0

Distributed Controllers

based on ET 200pro

Standard CPUs

CPU 1516pro-2 PN

Technical specifications

Article number	6ES7516-2PN00-0AB0 ET 200pro: CPU 1516PRO-2 PN	6ES7516-2PP03-0AB0 ET 200pro: CPU 1516pro-2 PN
General information		
Product type designation	CPU 1516pro-2 PN	CPU 1516pro-2 PN
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V17 (FW V2.9) / V14 (FW V2.0) or higher	V20 (FW V4.0) / V19 (FW V3.1) or higher; configurable with older TIA Portal versions as 6ES7516-2PN00-0AB0
Supply voltage		
Rated value (DC)	24 V	24 V
Memory		
Work memory		
• integrated (for program)	1 Mbyte	2 Mbyte
• integrated (for data)	5 Mbyte	7.5 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	10 ns	6 ns
for word operations, typ.	12 ns	7 ns
for fixed point arithmetic, typ.	16 ns	9 ns
for floating point arithmetic, typ.	64 ns	37 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
1. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X1 P3	Yes; X1 P3
• Number of ports	3; 2x M12 + 1x RJ45	3; 2x M12 + 1x RJ45
• integrated switch	Yes	Yes
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1516pro-2 PN

Technical specifications

Article number	6ES7516-2PN00-0AB0 ET 200pro: CPU 1516PRO-2 PN	6ES7516-2PP03-0AB0 ET 200pro: CPU 1516pro-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	Yes
- IRT	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
2. Interface		
Interface types		
• RJ 45 (Ethernet)	No	No
• Number of ports	1; 1x M12	1; 1x M12
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	No	No

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1516pro-2 PN

Technical specifications

Article number	6ES7516-2PN00-0AB0 ET 200pro: CPU 1516PRO-2 PN	6ES7516-2PP03-0AB0 ET 200pro: CPU 1516pro-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- Direct data exchange	No	No
- IRT	No	No
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Number of connectable IO Devices, max.	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	32	32
- of which in line, max.	32	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- IRT	No	No
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class		SNMP Configuration and DCP Read Only
Protocols		
Number of connections		
• Number of connections, max.	128; Via integrated interfaces of the CPU	128; Via integrated interfaces of the CPU
Redundancy mode		
Media redundancy		
- Media redundancy	Yes; only via 1st interface (X1)	Yes; only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes

Distributed Controllers

based on ET 200pro
Standard CPUs

CPU 1516pro-2 PN

Technical specifications

Article number	6ES7516-2PN00-0AB0 ET 200pro: CPU 1516PRO-2 PN	6ES7516-2PP03-0AB0 ET 200pro: CPU 1516pro-2 PN
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	2 400	2 400
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Product functions/security		
PROFINET Security Class		1
signed firmware update		Yes
Secure Boot		Yes
safely removing data		Yes
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-25 °C	-25 °C
• horizontal installation, max.	55 °C	55 °C
• vertical installation, min.	-25 °C	-25 °C
• vertical installation, max.	55 °C	55 °C
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data	Yes	Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe		No
• Protection level: Complete protection	Yes	Yes
• User administration		Yes; device-wide and centralized
• Number of users		100
Dimensions		
Width	135 mm	135 mm
Height	130 mm	130 mm
Depth	65 mm	65 mm; without connection module M12 7/8 inch
Weights		
Weight, approx.	614 g	474 g; device only

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

IM 154-8 F PN/DP CPU

Overview



- Interface module for SIMATIC ET 200pro with integrated fail-safe CPU
- CPU with PLC functionality equivalent to CPU S7-315F PN/DP; with distributed intelligence for preprocessing
- For constructing a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, IEC 62061 and PL e according to ISO 13849-1:2006
- For high-performance control solutions in ET 200pro
- Increase in availability of systems and machines
- Integral web server with the option of creating user-defined web pages
- Isochronous mode on PROFIBUS or PROFINET
- PROFINET IO controller for up to 128 IO devices
- PROFINET interface with integrated 3-port switch
- With multiple communication options: PG/OP communication, PROFINET IO, PROFINET CBA, open IE communication (TCP, ISO-on-TCP and UDP), web server and S7-communication (with loadable FBs)
- Fast, simple and end-to-end programming of a system with modular programs via STEP 7
- Compact SIMATIC Micro Memory Card (MMC)

Note:

SIMATIC Micro Memory Card required for operation of CPU.

Ordering data

Article No.

IM 154-8 F PN/DP CPU interface module, V3.2

Fail-safe PROFINET IO controller for operating distributed I/O on PROFINET, with integrated PLC functionality.

- 512 KB work memory

6ES7154-8FB01-0AB0

S7 Distributed Safety V5.4 SP5 Update 2 programming tool

Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit),
Windows 10 Professional/Enterprise (64-bit),
Windows Server 2008 R2 SP1 (64-bit),
Windows Server 2012 R2 (64-bit),
Windows Server 2016 (64-bit);
STEP 7 from V5.5 SP1;
Please also note the operating systems that have been released for the STEP 7 version used

Floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user, software, documentation and license key for download¹⁾; Email address required for delivery

6ES7833-1FC02-0YH5

S7 Distributed Safety upgrade

From V5.x to V5.4;
floating license for 1 user;
software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

STEP 7 Safety Advanced V20

Task:

Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe I/O ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco

Requirement:

STEP 7 Professional V20

Note:

As of TIA Portal V16, the SIMATIC STEP 7 Safety software is an integral component of the SIMATIC STEP 7 product setup. The functionality of SIMATIC STEP 7 Safety is activated by means of the license key supplied in each case.

Floating license for 1 user;
license key on USB flash drive

6ES7833-1FA24-0YA5

Floating license for 1 user, license key for download¹⁾; Email address required for delivery

6ES7833-1FA24-0YH5

¹⁾ Up-to-date information and download availability can be found at <http://www.siemens.com/tia-online-software-delivery>.

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

IM 154-8 F PN/DP CPU

Ordering data	Article No.		Article No.
Accessories		Industrial Ethernet FastConnect installation cables	
SIMATIC Micro Memory Cards		IE FC TP trailing cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.	6XV1870-2D
MMC 64 KB ²⁾	6ES7953-8LF31-0AA0	IE TP torsion cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.	6XV1870-2F
For program backup.			
MMC 128 KB ²⁾	6ES7953-8LG31-0AA0		
For program backup.			
MMC 512 KB ²⁾	6ES7953-8LJ31-0AA0		
For program backup.			
MMC 2 MB ²⁾	6ES7953-8LL31-0AA0	Industrial Ethernet FastConnect	
For program backup and/or firmware updates.		Stripping tool	6GK1901-1GA00
MMC 4 MB ²⁾	6ES7953-8LM32-0AA0	IE connecting cable M12-180/M12-180	
For program backup.		- Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two 4-pin M12 plugs (D-coded), degree of protection IP65/IP67, in various lengths: - 0.3 m - 0.5 m - 1.0 m - 15 m - 2.0 m - 3.0 m - 5.0 m - 10 m - 15 m - 20 m - 30 m - 40 m - 50 m - PROFINET M12 trailing connecting cable, preassembled at both ends with angled M12 plugs (contact pin), in various lengths: - 3.0 m - 5.0 m - 10 m - PROFINET M12 trailing connecting cable, preassembled at one end with angled M12 plug (contact pin at one end, other end open), in various lengths: - 3.0 m - 5.0 m - 10 m	6XV1870-8AE30 6XV1870-8AE50 6XV1870-8AH10 6XV1870-8AH15 6XV1870-8AH20 6XV1870-8AH30 6XV1870-8AH50 6XV1870-8AN10 6XV1870-8AN15 6XV1870-8AN20 6XV1870-8AN30 6XV1870-8AN40 6XV1870-8AN50
MMC 8 MB ²⁾	6ES7953-8LP31-0AA0		
For program backup.			
Connection module	6ES7194-4AN00-0AA0		
For CPU IM154-8 PN/DP, with 4 x M12 and 2 x 7/8", for connecting PROFINET and PROFIBUS DP.			
Industrial Ethernet FC RJ45 plug 90			
RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 90° cable outlet.			
1 unit 10 units	6GK1901-1BB20-2AA0 6GK1901-1BB20-2AB0		
Industrial Ethernet FC RJ45 plug 180			
RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet			
1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0		3RK1902-2NB30 3RK1902-2NB50 3RK1902-2NC10
Industrial Ethernet FastConnect installation cables		IE FC M12 plug PRO	
- FastConnect standard cable - FastConnect trailing cable - FastConnect marine cable	6XV1840-2AH10 6XV1840-3AH10 6XV1840-4AH10	PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet.	
		1 unit 8 units - PROFINET M12 plug connector, D-coded, angled	6GK1901-0DB20-6AA0 6GK1901-0DB20-6AA8 3RK1902-2DA00
		IE panel feedthrough	
		Cabinet bushing for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units	6GK1901-0DM20-2AA5

²⁾ An MMC is essential for operating the CPU

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

IM 154-8 F PN/DP CPU

Ordering data

Article No.

7/8" connecting cable to power supply

- 5-wire, 5x1.5 mm², trailable, preassembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m, in various lengths:
 - 1.5 m
 - 2.0 m
 - 3.0 m
 - 5.0 m
 - 10 m
 - 15 m
- Trailing power cable, 5x1.5 mm², preassembled at both ends with 7/8" angled plugs (socket at one end, contact pin at the other end), in various lengths:
 - 3.0 m
 - 5.0 m
 - 10 m
- Trailing power cable, 5x1.5 mm², preassembled at one end with 7/8" angled plug with socket insert (socket at one end, other end open), in various lengths:
 - 3.0 m
 - 5.0 m
 - 10 m

6XV1822-5BH15
6XV1822-5BH20
6XV1822-5BH30
6XV1822-5BH50
6XV1822-5BN10
6XV1822-5BN15

3RK1902-3NB30
3RK1902-3NB50
3RK1902-3NC10

3RK1902-3GB30
3RK1902-3GB50
3RK1902-3GC10

Power line

5-wire, 5x1.5 mm², trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1000 m.

6XV1830-8AH10

7/8" connection plug

For ET 200eco, with axial cable outlet

- With pin insert, 5-pack
 - With socket insert, 5-pack
 - Angled, with socket insert, 1 unit
 - Angled, with pin insert, 1 unit
- 7/8" cover cap, 10 per pack

6GK1905-0FA00
6GK1905-0FB00
3RK1902-3DA00
3RK1902-3BA00
6ES7194-3JA00-0AA0

Twisted pair cables 4x2 with RJ45 plugs

0.5 m
1 m
2 m
6 m
10 m

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60
6XV1870-3QN10

Crossed twisted pair cables 4x2 with RJ45 plugs

0.5 m
1 m
2 m
6 m
10 m

6XV1870-3RE50
6XV1870-3RH10
6XV1870-3RH20
6XV1870-3RH60
6XV1870-3RN10

Article No.

M12 sealing cap

For protection of unused M12 connections with ET 200pro

3RX9802-0AA00

M12 sealing caps with internal thread

5 units

6ES7194-4JD60-0AA0

PROFIBUS M12 connecting cable

Preassembled, with two 5-pin M12 plugs/sockets, up to 100 m, in various lengths:

1.5 m
2.0 m
3.0 m
5.0 m
10 m
15 m

6XV1830-3DH15
6XV1830-3DH20
6XV1830-3DH30
6XV1830-3DH50
6XV1830-3DN10
6XV1830-3DN15

M12 bus termination connector for PROFIBUS, socket insert

6GK1905-0ED00

M12 bus termination connector for PROFIBUS, pin insert

6GK1905-0EC00

M12 plug connector, axial outlet, with pin insert

6GK1905-0EA00

PROFIBUS FC standard cable GP

Standard type with special design for quick mounting, 2-wire, shielded.

Sold by the meter;
max. delivery unit 1000 m,
minimum order quantity 20 m.

6XV1830-0EH10

PROFIBUS FC trailing cable

2-wire, shielded.

6XV1830-3EH10

PROFIBUS FC food cable

2-wire, shielded.

Sold by the meter;
max. delivery unit 1000 m,
minimum order quantity 20 m.

6XV1830-0GH10

PROFIBUS FC robust cable

2-wire, shielded.

Sold by the meter;
max. delivery unit 1000 m,
minimum order quantity 20 m.

6XV1830-0JH10

PROFIBUS M12 connection plug

5-pin, B-coded, metal enclosure, 1 pack = 5 units.

- Socket insert

6GK1905-0EB00

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

IM 154-8 F PN/DP CPU

Technical specifications

Article number	6ES7154-8FB01-0AB0 ET 200pro: IM 154-8F PN/DP CPU, 512KB
General information	
Engineering with	
• Programming package	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
Supply voltage	
Rated value (DC)	24 V
Memory	
Work memory	
• integrated	512 kbyte
• expandable	No
Load memory	
• Plug-in (MMC), max.	8 Mbyte
CPU processing times	
for bit operations, typ.	0.05 µs
for word operations, typ.	0.09 µs
for fixed point arithmetic, typ.	0.12 µs
for floating point arithmetic, typ.	0.45 µs
Counters, timers and their retentivity	
S7 counter	
• Number	256
IEC counter	
• present	Yes
S7 times	
• Number	256
IEC timer	
• present	Yes
Data areas and their retentivity	
Flag	
• Size, max.	2 048 byte
Address area	
I/O address area	
• Inputs	2 048 byte
• Outputs	2 048 byte
Process image	
• Inputs, adjustable	2 048 byte
• Outputs, adjustable	2 048 byte
Time of day	
Clock	
• Hardware clock (real-time)	Yes
Operating hours counter	
• Number	1
1. Interface	
Interface type	Integrated RS 485 interface
Interface types	
• RS 485	Yes
Protocols	
• MPI	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP device	Yes
• Point-to-point connection	No
PROFIBUS DP master	
• max. number of DP devices	124

Article number	6ES7154-8FB01-0AB0 ET 200pro: IM 154-8F PN/DP CPU, 512KB
2. Interface	
Interface type	PROFINET
Interface types	
• Number of ports	3
Protocols	
• MPI	No
• PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	128
- Of which IO devices with IRT, max.	64
- Number of IO Devices with IRT and the option "high flexibility"	128
- Number of connectable IO Devices for RT, max.	128
Protocols	
SIMATIC communication	
• S7 routing	Yes
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8
• ISO-on-TCP (RFC1006)	Yes
- Number of connections, max.	8
• UDP	Yes
- Number of connections, max.	8
Web server	
• supported	Yes
Communication functions	
PG/OP communication	Yes
Global data communication	
• supported	Yes
S7 basic communication	
• supported	Yes
S7 communication	
• supported	Yes
Number of connections	
• overall	16
Degree and class of protection	
IP degree of protection	IP65/67

Distributed Controllers
based on ET 200pro
Fail-safe CPUs

IM 154-8 F PN/DP CPU

Technical specifications

Article number	6ES7154-8FB01-0AB0 ET 200pro: IM 154-8F PN/DP CPU, 512KB
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
- HiGraph®	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Block encryption	Yes; With S7 block Privacy

Article number	6ES7154-8FB01-0AB0 ET 200pro: IM 154-8F PN/DP CPU, 512KB
Dimensions	
Width	135 mm
Height	130 mm
Depth	65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover for RJ45 socket
Weights	
Weight, approx.	720 g

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1513pro F-2 PN

Overview



- Fail-safe CPU 1513pro F-2 PN for SIMATIC ET 200pro based on S7-1500 CPU 1513F-1 PN
- For applications with medium requirements on the program scope and processing speed, for distributed setup via PROFINET IO.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- PROFIsafe in centralized and distributed configurations
- PROFINET shared I-Device for 4 controllers
- PROFINET IO RT/IRT interface with integrated 3-port switch
- Additional PROFINET IO RT interface with separate IP address
- Isochronous mode on PROFINET
- Integrated motion control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- OPC UA server and client (data access) as runtime option for the easy connection of SIMATIC ET 200pro to non-Siemens devices/systems
- Integrated web server with the option of creating user-defined web pages

Note

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

CPU 1513pro F-2 PN

450 KB work memory for program, 1.5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface, SIMATIC Memory Card required

6ES7513-2GL00-0AB0

900 KB work memory for program, 2.5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface, SIMATIC Memory Card required

6ES7513-2GM03-0AB0

Accessories

SIMATIC Memory Card

4 MB¹⁾

6ES7954-8LC04-0AA0

12 MB¹⁾

6ES7954-8LE04-0AA0

24 MB¹⁾

6ES7954-8LF04-0AA0

256 MB¹⁾

6ES7954-8LL04-0AA0

2 GB¹⁾

6ES7954-8LP04-0AA0

32 GB¹⁾

6ES7954-8LT04-0AA0

Connection module

CM CPU 2PN M12 / 7/8";
With 3 x M12 and 2 x 7/8",
for connecting 2 x PROFINET

6ES7194-4AP00-0AA0

Industrial Ethernet FC RJ45 plug 180

RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

Industrial Ethernet FastConnect installation cables

- FastConnect standard cable
- FastConnect trailing cable
- FastConnect marine cable

6XV1840-2AH10
6XV1840-3AH10
6XV1840-4AH10

Industrial Ethernet FastConnect installation cables

- IE FC TP trailing cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.
- IE TP torsion cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.

6XV1870-2D

6XV1870-2F

Industrial Ethernet FastConnect

Stripping tool

6GK1901-1GA00

¹⁾ An MMC is essential for operating the CPU

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1513pro F-2 PN

Ordering data

Article No.

Article No.

IE connecting cable M12-180/M12-180

Preassembled IE FC TP trailing cable GP 2x2 (PROFINET type C) with two 4-pin M12 plugs (4-pin, D-coded), degree of protection IP65/IP67, in various lengths:

- 0.3 m
- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m
- 20 m
- 30 m
- 40 m
- 50 m

PROFINET M12 trailing connecting cable, preassembled at both ends with angled M12 plugs (contact pin insert), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

PROFINET M12 trailing connecting cable, preassembled at one end with angled M12 plug (contact pin insert at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

IE FC M12 plug PRO

PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet.

- 1 unit
- 8 units
- PROFINET M12 plug connector, D-coded, angled.

IE panel feedthrough

Cabinet bushing for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units.

7/8" connecting cable to power supply

5-wire, 5x1.5 mm², trailable, preassembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m, in various lengths:

- 1.5 m
- 2.0 m
- 3.0 m
- 5.0 m
- 10 m
- 15 m

6XV1870-8AE30
6XV1870-8AE50
6XV1870-8AH10
6XV1870-8AH15
6XV1870-8AH20
6XV1870-8AH30
6XV1870-8AH50
6XV1870-8AN10
6XV1870-8AN15
6XV1870-8AN20
6XV1870-8AN30
6XV1870-8AN40
6XV1870-8AN50

3RK1902-2NB30
3RK1902-2NB50
3RK1902-2NC10

3RK1902-2HB30
3RK1902-2HB50
3RK1902-2HC10

6GK1901-0DB20-6AA0
6GK1901-0DB20-6AA8
3RK1902-2DA00

6GK1901-0DM20-2AA5

6XV1822-5BH15
6XV1822-5BH20
6XV1822-5BH30
6XV1822-5BH50
6XV1822-5BN10
6XV1822-5BN15

Trailing power cable, 5x1.5 mm², preassembled at both ends with 7/8" angled plugs (socket insert at one end, contact pin insert at the other end), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

Trailing power cable, 5x1.5 mm², preassembled at one end with 7/8" angled plug with socket insert (socket at one end, other end open), in various lengths:

- 3.0 m
- 5.0 m
- 10 m

Power cable

5-wire, 5x1.5 mm², trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1000 m.

7/8" connection plug

For ET 200eco, with axial cable outlet

- With contact pin insert, 5-pack
- With socket insert, 5-pack
- Angled, with socket insert, 1 unit
- Angled, with contact pin insert, 1 unit

7/8" cover cap, 10 per pack

Twisted pair cables 4x2 with RJ45 plugs

0.5 m
1 m
2 m
6 m
10 m

Crossed twisted pair cables 4x2 with RJ45 plugs

0.5 m
1 m
2 m
6 m
10 m

M12 sealing cap

For protection of unused M12 connections with ET 200pro

M12 sealing caps with internal thread

5 units

3RK1902-3NB30
3RK1902-3NB50
3RK1902-3NC10

3RK1902-3GB30
3RK1902-3GB50
3RK1902-3GC10

6XV1830-8AH10

6GK1905-0FA00
6GK1905-0FB00
3RK1902-3DA00
3RK1902-3BA00

6ES7194-3JA00-0AA0

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60
6XV1870-3QN10

6XV1870-3RE50
6XV1870-3RH10
6XV1870-3RH20
6XV1870-3RH60
6XV1870-3RN10

3RX9802-0AA00

6ES7194-4JD60-0AA0

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1513pro F-2 PN

Technical specifications

Article number	6ES7513-2GL00-0AB0 ET 200pro: CPU 1513pro F-2 PN	6ES7513-2GM03-0AB0 ET 200pro: CPU 1513pro F-2 PN
General information		
Product type designation	CPU 1513pro F-2 PN	CPU 1513pro F-2 PN
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V16	V20 (FW V4.0) / V19 (FW V3.1) or higher; configurable with older TIA Portal versions as 6ES7513-2GL00-0AB0
Supply voltage		
Rated value (DC)		24 V
Memory		
Work memory		
• integrated (for program)	450 kbyte	900 kbyte
• integrated (for data)	1.5 Mbyte	2.5 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	40 ns	6 ns
for word operations, typ.	48 ns	7 ns
for fixed point arithmetic, typ.	64 ns	9 ns
for floating point arithmetic, typ.	256 ns	37 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type		Hardware clock
1. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X1 P3	Yes; X1 P3
• Number of ports	3; 2x M12 + 1x RJ45	3; 2x M12 + 1x RJ45
• integrated switch	Yes	Yes
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1513pro F-2 PN

Technical specifications

Article number	6ES7513-2GL00-0AB0 ET 200pro: CPU 1513pro F-2 PN	6ES7513-2GM03-0AB0 ET 200pro: CPU 1513pro F-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	Yes	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes
- IRT	Yes	Yes; per user program
- PROFINergy	Yes	Yes; Max. 32 PROFINET devices
- Prioritized startup	Yes; Max. 32 PROFINET devices	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices, max.	128; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	64
- Of which IO devices with IRT, max.	64	128
- Number of connectable IO Devices for RT, max.	128	128
- of which in line, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- Number of IO Devices per tool, max.	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- Updating times	1	1
- PROFINET Security Class		
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	Yes
- IRT	Yes	Yes; per user program
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	Yes
- Shared device	Yes	4
- Number of IO Controllers with shared device, max.	4	Yes; per user program
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	SNMP Configuration and DCP Read Only
- PROFINET Security Class		
2. Interface		
Interface types		
• RJ 45 (Ethernet)	No	No
• Number of ports	1; 1x M12	1; 1x M12
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	No	No

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1513pro F-2 PN

Technical specifications

Article number	6ES7513-2GL00-0AB0 ET 200pro: CPU 1513pro F-2 PN	6ES7513-2GM03-0AB0 ET 200pro: CPU 1513pro F-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- Direct data exchange	No	No
- IRT	No	No
- PROFINergy	Yes	Yes; per user program
- Prioritized startup	No	No
- Number of connectable IO Devices, max.	32; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; In total, up to 512 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	32	32
- of which in line, max.	32	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- IRT	No	No
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices		Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class		SNMP Configuration and DCP Read Only
Protocols		
Number of connections		
• Number of connections, max.	128; Via integrated interfaces of the CPU	128; Via integrated interfaces of the CPU
Redundancy mode		
Media redundancy		
- Media redundancy		Yes; only via 1st interface (X1)
- MRP	Yes; as MRP redundancy manager and/or MRP client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported		Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions		Yes

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1513pro F-2 PN

Technical specifications

Article number	6ES7513-2GL00-0AB0 ET 200pro: CPU 1513pro F-2 PN	6ES7513-2GM03-0AB0 ET 200pro: CPU 1513pro F-2 PN
Supported technology objects		
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	800	1 120
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
Probability of failure (for service life of 20 years and repair time of 100 hours)		
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09
Product functions/security		
PROFINET Security Class		1
signed firmware update		Yes
Secure Boot		Yes
safely removing data		Yes
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-25 °C	-25 °C
• horizontal installation, max.	55 °C	55 °C
• vertical installation, min.	-25 °C	-25 °C
• vertical installation, max.	55 °C	55 °C
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC		Yes; either CFC or failsafe functionality
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes

Distributed Controllers
based on ET 200pro
Fail-safe CPUs

CPU 1513pro F-2 PN

Technical specifications

Article number	6ES7513-2GL00-0AB0 ET 200pro: CPU 1513pro F-2 PN	6ES7513-2GM03-0AB0 ET 200pro: CPU 1513pro F-2 PN
Access protection • protection of confidential configuration data • Protection level: Write protection • Protection level: Read/write protection • Protection level: Write protection for Failsafe • Protection level: Complete protection • User administration • Number of users	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes Yes; device-wide and centralized 100
Dimensions		
Width	135 mm	135 mm
Height	130 mm	130 mm
Depth	65 mm	65 mm; without connection module M12 7/8 inch
Weights		
Weight, approx.	614 g	474 g; device only

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1516pro F-2 PN

Overview



- Fail-safe CPU 1516pro F-2 PN for SIMATIC ET 200pro based on S7-1500 CPU 1516F-3 PN/DP
- For applications with high requirements on the program scope and processing speed, for distributed setup via PROFINET IO
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET shared I-Device for 4 controllers
- PROFINET IO RT/IRT interface with integrated 3-port switch
- Additional PROFINET IO RT interface with separate IP address
- Isochronous mode on PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- OPC UA Server and Client (Data Access) as runtime option for the easy connection of SIMATIC ET 200pro to non-Siemens devices/systems
- Integrated web server with the option of creating user-defined web pages

Note

SIMATIC Memory Card required for operation of the CPU.

Ordering data

Article No.

CPU 1516pro F-2 PN

1.5 MB work memory for program, 5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface; SIMATIC Memory Card required

6ES7516-2GN00-0AB0

3 MB work memory for program, 7.5 MB for data, PROFINET IO IRT interface, PROFINET IO RT interface; SIMATIC Memory Card required

6ES7516-2GP03-0AB0

Accessories

SIMATIC Memory Card

4 MB¹⁾

6ES7954-8LC04-0AA0

12 MB¹⁾

6ES7954-8LE04-0AA0

24 MB¹⁾

6ES7954-8LF04-0AA0

256 MB¹⁾

6ES7954-8LL04-0AA0

2 GB¹⁾

6ES7954-8LP04-0AA0

32 GB¹⁾

6ES7954-8LT04-0AA0

Connection module

CM CPU 2PN M12 / 7/8";
With 3 x M12 and 2 x 7/8",
for connecting 2 x PROFINET

6ES7194-4AP00-0AA0

Industrial Ethernet FC RJ45 plug 180

RJ45 connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

Industrial Ethernet FastConnect installation cables

- FastConnect standard cable
- FastConnect trailing cable
- FastConnect marine cable

6XV1840-2AH10
6XV1840-3AH10
6XV1840-4AH10

Industrial Ethernet FastConnect installation cables

- IE FC TP trailing cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.
- IE TP torsion cable GP 2 x 2; sold by the meter, max. delivery unit 1000 m; minimum order quantity 20 m.

6XV1870-2D

6XV1870-2F

Industrial Ethernet FastConnect

Stripping tool

6GK1901-1GA00

¹⁾ An MMC is essential for operating the CPU

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1516pro F-2 PN

Ordering data	Article No.	Article No.
IE connecting cable M12-180/M12-180 Preassembled IE FC TP trailing cable GP 2x2 (PROFINET type C) with two 4-pin M12 plugs (4-pin, D-coded), degree of protection IP65/IP67, in various lengths: • 0.3 m • 0.5 m • 1.0 m • 1.5 m • 2.0 m • 3.0 m • 5.0 m • 10 m • 15 m • 20 m • 30 m • 40 m • 50 m PROFINET M12 trailing connecting cable, preassembled at both ends with angled M12 plugs (contact pin insert), in various lengths: • 3.0 m • 5.0 m • 10 m PROFINET M12 trailing connecting cable, preassembled at one end with angled M12 plug (contact pin insert at one end, other end open), in various lengths: • 3.0 m • 5.0 m • 10 m	6XV1870-8AE30 6XV1870-8AE50 6XV1870-8AH10 6XV1870-8AH15 6XV1870-8AH20 6XV1870-8AH30 6XV1870-8AH50 6XV1870-8AN10 6XV1870-8AN15 6XV1870-8AN20 6XV1870-8AN30 6XV1870-8AN40 6XV1870-8AN50 3RK1902-2NB30 3RK1902-2NB50 3RK1902-2NC10 3RK1902-2HB30 3RK1902-2HB50 3RK1902-2HC10	Trailing power cable, 5x1.5 mm ² , preassembled at both ends with 7/8" angled plugs (socket insert at one end, contact pin insert at the other end), in various lengths: • 3.0 m • 5.0 m • 10 m Trailing power cable, 5x1.5 mm ² , preassembled at one end with 7/8" angled plug with socket insert (socket at one end, other end open), in various lengths: • 3.0 m • 5.0 m • 10 m Power cable 5-wire, 5x1.5 mm ² , trailing type, sold by the meter, minimum order quantity 20 m, maximum order quantity 1000 m. 7/8" connection plug For ET 200eco, with axial cable outlet • With contact pin insert, 5-pack • With socket insert, 5-pack • Angled, with socket insert, 1 unit • Angled, with contact pin insert, 1 unit 7/8" cover cap, 10 per pack Twisted pair cables 4x2 with RJ45 plugs 0.5 m 1 m 2 m 6 m 10 m Crossed twisted pair cables 4x2 with RJ45 plugs 0.5 m 1 m 2 m 6 m 10 m M12 sealing cap For protection of unused M12 connections with ET 200pro M12 sealing caps with internal thread 5 units
IE FC M12 plug PRO PROFINET M12 plug connector, D-coded with fast connection system, axial cable outlet. • 1 unit • 8 units • PROFINET M12 plug connector, D-coded, angled.	6GK1901-0DB20-6AA0 6GK1901-0DB20-6AA8 3RK1902-2DA00	3RK1902-3NB30 3RK1902-3NB50 3RK1902-3NC10 3RK1902-3GB30 3RK1902-3GB50 3RK1902-3GC10 6XV1830-8AH10
IE panel feedthrough Cabinet bushing for converting from the M12 connection system (D-coded, IP65/IP67) to the RJ45 connection system (IP20), 1 pack = 5 units.	6GK1901-0DM20-2AA5	6GK1905-0FA00 6GK1905-0FB00 3RK1902-3DA00 3RK1902-3BA00 6ES7194-3JA00-0AA0
7/8" connecting cable to power supply 5-wire, 5x1.5 mm ² , trailable, preassembled with two 7/8" connectors (axial cable outlet), 5-pin, up to 50 m, in various lengths: • 1.5 m • 2.0 m • 3.0 m • 5.0 m • 10 m • 15 m • Other special lengths with 90° or 180° cable outlet.	6XV1822-5BH15 6XV1822-5BH20 6XV1822-5BH30 6XV1822-5BH50 6XV1822-5BN10 6XV1822-5BN15 See under http://support.automation.siemens.com/WW/view/en/26999294 .	6XV1870-3QE50 6XV1870-3QH10 6XV1870-3QH20 6XV1870-3QH60 6XV1870-3QN10 6XV1870-3RE50 6XV1870-3RH10 6XV1870-3RH20 6XV1870-3RH60 6XV1870-3RN10 3RX9802-0AA00 6ES7194-4JD60-0AA0

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1516pro F-2 PN

Technical specifications

Article number	6ES7516-2GN00-0AB0 ET 200pro: CPU 1516PRO F-2 PN	6ES7516-2GP03-0AB0 ET 200pro: CPU 1516pro F-2 PN
General information		
Product type designation	CPU 1516pro F-2 PN	CPU 1516pro F-2 PN
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V17 (FW V2.9) / V14 (FW V2.0) or higher	V20 (FW V4.0) / V19 (FW V3.1) or higher; configurable with older TIA Portal versions as 6ES7516-2GN00-0AB0
Supply voltage		
Rated value (DC)	24 V	24 V
Memory		
Work memory		
• integrated (for program)	1.5 Mbyte	3 Mbyte
• integrated (for data)	5 Mbyte	7.5 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	10 ns	6 ns
for word operations, typ.	12 ns	7 ns
for fixed point arithmetic, typ.	16 ns	9 ns
for floating point arithmetic, typ.	64 ns	37 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
1. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X1 P3	Yes; X1 P3
• Number of ports	3; 2x M12 + 1x RJ45	3; 2x M12 + 1x RJ45
• integrated switch	Yes	Yes
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1516pro F-2 PN

Technical specifications

Article number	6ES7516-2GN00-0AB0 ET 200pro: CPU 1516PRO F-2 PN	6ES7516-2GP03-0AB0 ET 200pro: CPU 1516pro F-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	Yes
- IRT	Yes	Yes
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
2. Interface		
Interface types		
• RJ 45 (Ethernet)	No	No
• Number of ports	1; 1x M12	1; 1x M12
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	No	No

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1516pro F-2 PN

Technical specifications

Article number	6ES7516-2GN00-0AB0 ET 200pro: CPU 1516PRO F-2 PN	6ES7516-2GP03-0AB0 ET 200pro: CPU 1516pro F-2 PN
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- Direct data exchange	No	No
- IRT	No	No
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Number of connectable IO Devices, max.	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	32; in total, up to 1024 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	32	32
- of which in line, max.	32	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1	1
PROFINET IO Device		
Services		
- PG/OP communication	Yes	No
- Isochronous mode	No	No
- IRT	No	No
- PROFINergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
- PROFINET Security Class	SNMP Configuration and DCP Read Only	SNMP Configuration and DCP Read Only
Protocols		
Number of connections		
• Number of connections, max.	128; Via integrated interfaces of the CPU	128; Via integrated interfaces of the CPU
Redundancy mode		
Media redundancy		
- Media redundancy	Yes; only via 1st interface (X1)	Yes; only via 1st interface (X1)
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
• Alarms and Conditions	Yes	Yes

Distributed Controllers

based on ET 200pro

Fail-safe CPUs

CPU 1516pro F-2 PN

Technical specifications

Article number	6ES7516-2GN00-0AB0 ET 200pro: CPU 1516PRO F-2 PN	6ES7516-2GP03-0AB0 ET 200pro: CPU 1516pro F-2 PN
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	800	2 400
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
Probability of failure (for service life of 20 years and repair time of 100 hours)		
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09
Product functions/security		
PROFINET Security Class		1
signed firmware update		Yes
Secure Boot		Yes
safely removing data		Yes
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-25 °C	-25 °C
• horizontal installation, max.	55 °C	55 °C
• vertical installation, min.	-25 °C	-25 °C
• vertical installation, max.	55 °C	55 °C
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC		Yes; either CFC or failsafe functionality
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes

Distributed Controllers
based on ET 200pro
Fail-safe CPUs

CPU 1516pro F-2 PN

Technical specifications

Article number	6ES7516-2GN00-0AB0 ET 200pro: CPU 1516PRO F-2 PN	6ES7516-2GP03-0AB0 ET 200pro: CPU 1516pro F-2 PN
Access protection		
• protection of confidential configuration data	Yes	Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe		Yes
• Protection level: Complete protection	Yes	Yes
• User administration		Yes; device-wide and centralized
• Number of users		100
Dimensions		
Width	135 mm	135 mm
Height	130 mm	130 mm
Depth	65 mm	65 mm; without connection module M12 7/8 inch
Weights		
Weight, approx.	614 g	474 g; device only