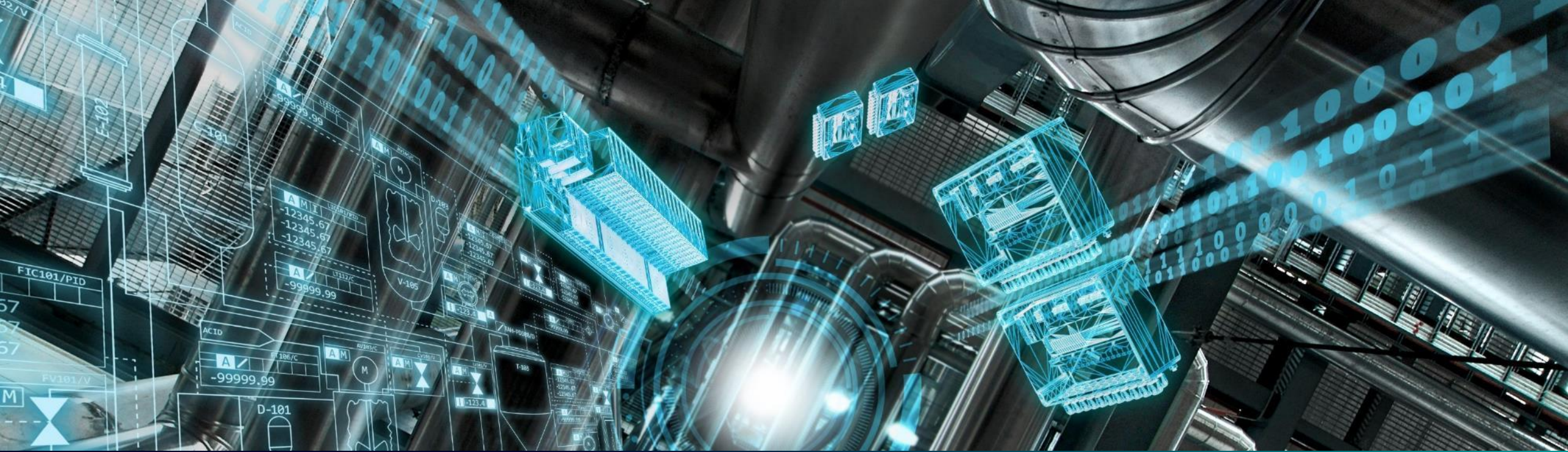




I/O Comparison: SIMATIC ET 200M to SIMATIC ET 200SP HA

Disclaimer

© Siemens 2024

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or other rights of Siemens AG, its affiliated companies or other companies whose use by third parties for their own purposes could violate the rights of the respective owner.

ET 200M to ET 200SP HA comparison

Motivation and guidance

ET 200SP HA is the SIMATIC I/O line which fits the needs of the Process Industry. This document introduces ET 200SP HA to customers who are experienced with well-known ET 200M.

Numerous improvements have also led to some differences compared to ET 200M. This guidance compares main technical features for each I/O module.

Hints for easy usage:

- Use the links in the overview page to access the individual module comparison
- For searching the document use [Ctrl] + [F]
- The overview also includes I/O modules which are in spare part phase (discontinued) or end of life (eol)

ET 200M to ET 200SP HA comparison

Digital I/O Modules

ET 200M	ET 200SP HA	Name
6ES7321-1BH02-0AA0 6ES7321-1BH10-0AA0 6ES7321-7BH01-0AB0	6DL1131-6BH00-0PH1	DI 16x24VDC HA
	6DL1131-6BL00-0PH1	DI 32x24VDC HA
6ES7321-1BL00-0AA0	6DL1131-6BH00-0PH1	DI 16x24VDC
6ES7321-7TH00-0AB0	6DL1131-6TH00-0PH1	DI 16xNAMUR HA
6ES7321-1CH00-0AA0	6DL1131-6DF00-0PK0	DI 8x24 ... 125VDC HA
6ES7321-1CH20-0AA0 6ES7321-7EH00-0AB0	6DL1131-6DF00-0PK0	DI 8x24 ... 125VDC HA
6ES7321-1EL00-0AA0 6ES7321-1FF01-0AA0	6DL1131-6GF00-0PK0	DI 8x230VAC HA
6ES7321-1FF10-0AA0 6ES7321-1FH00-0AA0	6DL1131-6GF00-0PK0	DI 8x230VAC HA
6ES7321-1BH50-0AA0	6DL1131-6BH60-0PH1	DI 16x24VDC NPN HA
6ES7321-7RD00-0AB0	6DL1131-6TD00-0HX1	Ex-DI 4xNAMUR
6ES7326-1RF00-0AB0 6ES7326-1RF01-0AB0	6DL1136-6TH00-0PH1	F-DI 16xNAMUR HA
6ES7326-1BK02-0AB0	6DL1136-6BA00-0PH1	F-DI 16x 24VDC HA

ET 200M	ET 200SP HA	Name
6ES7322-8BF00-0AB0 6ES7322-8BH10-0AB0 6ES7322-8BH01-0AB0	6DL1132-6BH00-0PH1	DQ 16x24VDC/0.5A HA
6ES7322-1BH01-0AA0 6ES7322-1BH00-0AA0 6ES7322-1BH10-0AA0	6DL1132-6BH00-0PH1	DQ 16x24VDC/0.5A HA
6ES7322-1BL00-0AA0	6DL1132-6BL00-0PH1	DQ 32x24VDC/0.5A HA
6ES7322-1BF01-0AA0	6DL1132-6BF20-0PK0	DQ 8x24VDC/2A
6ES7322-1HF01-0AA0 6ES7322-1HF10-0AA0 6ES7322-5HF00-0AB0	6DL1132-6HD50-0PK0	RQ 4x120VDC-230VAC/5A CO HA
6ES7322-1HH01-0AA0	6DL1132-6HD50-0PK0	RQ 4x120VDC-230VAC/5A CO HA
6ES7323-1BH01-0AA0	6DL1133-6EW00-0PH1	AI-DI 16/DQ16x24VDC HART HA
6ES7322-5SD00-0AB0	6DL1132-6EB00-0HX1	Ex-DQ 2x23.1VDC/20mA
6ES7322-5RD00-0AB0	6DL1132-6CB00-0HX1	Ex-DQ 2x17.4VDC/27mA
6ES7326-2BF10-0AB0	6DL1136-6DA00-0PH1	F-DQ 10x24VDC/2A HA

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog I/O modules, Counter module

ET 200M	ET 200SP HA	Name
6ES7331-7TF01-0AB0 6ES7331-7TF00-0AB0	6DL1134-6TH00-0PH1	AI 16xI 2-WIRE HART HA
6ES7331-1KF02-0AB0 6ES7331-1KF01-0AB0 6ES7331-1KF00-0AB0 6ES7331-7KF02-0AB0 6ES7331-7KF01-0AB0 6ES7331-7KF00-0AB0 6ES7331-7KB02-0AB0 6ES7331-7KB01-0AB0 6ES7331-7KB00-0AB0	6DL1134-6AF00-0PH1	AI 8xU/I/TC/ 4xRTD HA
6ES7331-7HF01-0AB0 6ES7331-7HF00-0AB0	6DL1134-6GH00-0PH1	AI 16xI 2-wire HA
6ES7331-7NF00-0AB0	6DL1134-6TH00-0PH1	AI 16xI 2-wire HART HA
	6DL1134-6AF00-0PH1	AI 8xU/I/TC/ 4xRTD HA
6ES7331-7NF10-0AB0	6DL1134-6TH00-0PH1	AI 16xI 2-WIRE HART HA
	6DL1134-6JH00-0PH1	AI 16xTC/8xRTD 2-/3-/4-WIRE
6ES7331-7PF01-0AB0	6DL1134-6JH00-0PH1	AI 16xTC/8xRTD 2-/3-/4-WIRE HA
6ES7331-7PF11-0AB0	6DL1134-6JH00-0PH1	AI 16xTC/8xRTD 2-/3-/4-WIRE HA
6ES7331-7RD00-0AB0	6DL1134-6TB00-0HX1 (Ex) 6DL1134-6UD00-0PK0 (non-Ex)	Ex-AI 2xI 2-Wire HART AI 4xI 2-/4-wire HART ISOL HA
6ES7331-7TB10-0AB0	6DL1134-6TB00-0HX1	Ex-AI 2xI 2-Wire HART
6ES7331-7SF00-0AB0	6DL1134-6JD00-0HX1	Ex-AI 4xTC/2xRTD 2-/3-/4-Wire
6ES7336-4GE00-0AB0	6DL1136-6AA00-0PH1	F-AI 8xI 2-,4-Wire HART HA

ET 200M	ET 200SP HA	Name
6ES7332-8TF01-0AB0 6ES7332-8TF00-0AB0	6DL1135-6TF00-0PH1	AQ 8xI HART HA
6ES7332-5HB01-0AB0 6ES7332-5HB00-0AB0 6ES7332-5HD01-0AB0 6ES7332-5HD00-0AB0 6ES7332-5HF00-0AB0	6DL1135-6TF00-0PH1	AQ 8xI HART HA
6ES7332-7ND02-0AB0 6ES7332-7ND01-0AB0 6ES7332-7ND00-0AB0	6DL1135-6UD00-0PK0	AQ 4xI 2-WIRE ISOL HART HA
6ES7332-5RD00-0AB0	6DL1135-6TB00-0HX1 (Ex) 6DL1135-6UD00-0PK0 (non-Ex)	Ex-AQ 2xI HART AQ 4xI 2-WIRE ISOL HART HA
6ES7332-5TB10-0AB0	6DL1135-6TB00-0HX1	Ex-AQ 2xI HART

ET 200M	ET 200SP HA	Name
6ES7350-2AH01-0AE0	6DL1138-6EA00-0EH1	FIO & Counter HA

ed in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.



ET 200M to ET 200SP HA comparison

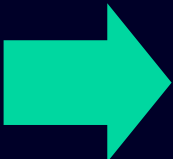
Digital Input

	S7-300, SM321, 16DI, DC24V  6ES7321-1BH02-0AA0	S7-300, SM321, 16DI, DC24V, 0.05ms Input Delay  6ES7321-1BH10-0AA0	S7-300, SM321, 16DI, 24VDC, „SoE“  6ES7321-7BH01-0AB0	ET 200SP HA, DI 16x24VDC HA  6DL1131-6BH00-0PH1
IO module redundancy:	Yes	No	Yes	Yes
Time stamp:	No	No	Yes, 1 ms (SoE)	Yes, 1 ms (SoE)
Input delay:	1,2,... 4,8 ms	0,025 ... 0,075 ms	0,1 ... 20 ms	0,05 ... 20 ms
Channel diagnostic alarms:	No	No	Yes, wire-break	Yes, wire-break, short-circuit
Channelwise field device supply:	No	No	No, 2 groups of 8 channels	Yes, per channel
Channelwise short circuit protection:	No	No	No, 2 groups of 8 channels	Yes, per channel
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m	1000 / 600 m	1000 m / 600 m
Isolation tested with:	500 VDC	500 VDC	500 VDC	1500 VDC
Width:	40 mm	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Input

	S7-300, SM321, 32DE, DC24V 6ES7321-1BL00-0AA0 
IO module redundancy:	Yes
Channels at <40 °C:	32
Channels at >40 °C:	16 (derating)
Input delay:	1,2 ... 4,8 ms
Channel diagnostic alarms:	No
Field device supply:	No
Short circuit protection:	No
Cable length (shielded / unshielded):	1000 / 600 m
Isolation tested with:	500 VDC
Width:	40 mm



	ET 200SP HA, DI 32x24VDC HA 6DL1131-6BL00-0PH1 
IO module redundancy:	No *
Channels at <40 °C:	32
Channels at >40 °C:	32
Input delay:	2,9 ... 5,3 ms
Channel diagnostic alarms:	Yes, wire-break
Field device supply:	Yes, with Terminal Block Type P0
Short circuit protection:	Yes, with Terminal Block Type P0
Cable length (shielded / unshielded):	1000 m / 600 m
Isolation tested with:	1500 VDC
Width:	22.5 mm

*: IO module redundancy can be realized with DI 16x24VDC (6DL1131-6BH00-0PH1)

ET 200M to ET 200SP HA comparison

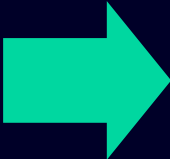
Digital Input

	S7-300, SM321, 16 DI, 24VDC, DIAGNOSTICS 	ET 200SP HA, DI 16xNAMUR HA 
	6ES7321-7TH00-0AB0	6DL1131-6TH00-0PH1
IO module redundancy:	Yes	Yes
Time stamp:	Yes, 10 ms	Yes, 10 ms
NAMUR encoder:	Yes	Yes
Channel diagnostic alarms:	Yes	Yes
Channelwise Field device supply:	No, 4 groups of 4 channels	Yes, per channel
Channelwise Short circuit protection:	No, 4 groups of 4 channels	Yes
Potential difference (between different circuits):	75 VDC / 60 VAC	60 VDC / 30 VAC
Cable length (shielded / unshielded):	400 m / No	600 m / 200 m
Isolation tested with:	600 VDC	1500 VDC
Width:	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Input NPN

	S7-300, SM321, 16 DI, 24 VDC, sourcing input 
	6ES7321-1BH50-0AA0
IO module redundancy:	No
Time stamp:	
NAMUR encoder:	No
Channel diagnostic alarms:	No
Channelwise Field device supply:	No
Channelwise Short circuit protection:	No
Potential difference (between different circuits):	
Cable length (shielded / unshielded):	1000 m / 600 m
Isolation tested with:	500 VDC
Width:	40 mm



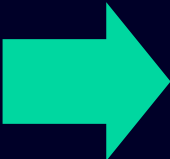
ET 200SP HA, DI 16x24 VDC NPN HA 
6DL1131-6TH00-0PH1
No
Yes, 10 ms
No
Yes
Yes, per channel
Yes
1000 m / 600 m
1500 VDC
22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Digital Input

	S7-300, SM321, 16 DI, AC/DC 24-48V, 1ch/common	
	6ES7321-1CH00-0AA0	
Input voltage:	24 ... 48V AC/DC	
Channels:	16	
I/O module redundancy:	No	
Time stamp:	No	
Channel diagnostic alarms:	No	
Potential separation:	Yes, single channel	
Potential difference:	Yes, 170VDC, 120V AC (between different circuits)	
Cable length (shielded / unshielded):	1000 / 600 m	
Isolation tested with:	1500 VAC	
Width:	40 mm	



ET 200SP HA, DI 8x24 ... 125VDC HA	
6DL1131-6DF00-0PK0	
24 ... 125VDC	
8	
No	
Yes, 1 ms (SoE)	
Yes, wire-break	
No	
Yes, 300VDC (between different circuits)	
1000 m / 600 m	
3500 VDC	
22.5 mm	

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Digital Input

	S7-300, SM 321, isolated, 16 DI, 48-125 VDC 	S7-300, SM 321 digital input, 16 DI, 24/125 VDC, DIAGNOSTICS 	ET 200SP HA, DI 8x24 ...125VDC HA 
	6ES7321-1CH20-0AA0	6ES7321-7EH00-0AB0	6DL1131-6DF00-0PK0
IO module redundancy:	No	No	No
Channels:	16	16	8
Time stamp:	No	Yes, 1 ms (SoE)	Yes, 1 ms (SoE)
Type of supply voltage	48 V ... 125 VDC	24 ... 125 VDC	24 ... 125 VDC
Channel diagnostic alarms:	No	No	Yes, wire-break
Potential separation:	No	No	No
Potential difference: (between different circuits)	146 VDC / 132 VAC	300 VDC / 250 VAC	300 VDC / 250 VAC
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m	1000 m / 600 m
Isolation tested with:	1500 VDC	3500 VDC	3500 VDC
Width:	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Input

	S7-300, SM 321, isolated, 32 DI, 120 V AC  6ES7321-1EL00-0AA0	S7-300, SM 321, isolated, 8 DI, 120V/230 V AC, 1x 20-pole  6ES7321-1FF01-0AA0		ET 200SP HA, DI 8x230VAC HA  6DL1131-6GF00-0PK0
IO module redundancy:	No	Yes		No
Channels:	32	8		8
Type of supply voltage	120 VAC	120 VAC / 230 VAC		120 VAC ... 230 VAC
Input delay:	15 ... 25 ms	15 ... 25 ms		1.5 ... 10 ms
Channel diagnostic alarms:	No	No		Yes
Potential separation:	No	No		Yes, 4 groups of 2
Potential difference: (between different circuits)	250 VAC	500 VAC		120VAC / 230 VAC (different / same system phase)
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m		1000 m / 600 m
Isolation tested with:	2500 VDC	4000 VDC		4200 VDC
Width:	40 mm	40 mm		22.5 mm

ET 200M to ET 200SP HA comparison

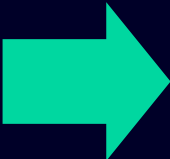
Digital Input

	S7-300, SM 321, isolated, 8 DI, 120/230 V AC 	S7-300, SM 321, isolated 16 DI, 120/230 V AC 	ET 200SP HA, DI 8x230VAC HA 
	6ES7321-1FF10-0AA0	6ES7321-1FH00-0AA0	6DL1131-6GF00-0PK0
IO module redundancy:	No	No	No
Channels:	8	16	8
Type of input voltage:	120 VAC / 230 VAC	120 VAC / 230 VAC	120 VAC ... 230 VAC
Input delay:	15 ... 25 ms	15 ... 25 ms	1.5 ... 10 ms
Channel diagnostic alarms:	No	No	Yes
Potential separation:	Yes, per channel	No	Yes, 4 groups of 2
Potential difference: (between different circuits)	500 VAC	230 VAC	120 VAC / 230 VAC (different / same system phase)
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m	1000 m / 600 m
Isolation tested with:	1500 VDC	4000 VDC	4200 VDC
Width:	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Input

	S7-300, SM 321, isolated 16DI, 24 VDC, source input	
	6ES7321-1BH50-0AA0	
Input voltage:	24VDC, sourcing input	
Channels:	16	
I/O module redundancy:	No	
Time stamp:	No	
Channel diagnostic alarms:	No	
Potential separation:	No	
Cable length (shielded / unshielded):	1000 m/ 600 m	
Isolation tested with:	500 V DC	
Width:	40 mm	



ET 200SP HA, DI 16x24VDC NPN HA	
6DL1131-6BH60-0PH1	
24 VDC, sourcing input	
16	
No	
Yes, resolution 10 ms	
Yes, wire-break	
No	
1000 m / 600 m	
1500 V DC	
22.5 mm	

ET 200M to ET 200SP HA comparison

Ex Digital Input

	S7-300, SM321, 4DI, DC24V, HAZARDOUS AREAS, NAMUR 6ES7321-7RD00-0AB0 
IO module redundancy:	No
Channels:	4
Type of protection for hazardous area:	[Ex ib]
Cable length (shielded / unshielded):	200 m / No
Channel diagnostic alarms:	Yes, short-circuit, wire-break
Short circuit protection:	Yes
Isolation tested with:	2500 VDC
Width:	40 mm



ET 200SP HA, Ex-DI 4xNAMUR HA 6DL1131-6TD00-0HX1 
No
4
[Ex ia]
500 m / 300 m; Ex characteristic values must be considered
Yes, short-circuit, wire-break
Yes
707 VDC
22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Failsafe Digital Input

Safety integrity level:

IO module redundancy:

Channels:

Channel-wise Field device supply:

Channel-wise short circuit diagnostic:

Channel-wise wire break detection:

Max. cable length (shielded /unshielded):

Voting:

Highest safety class achievable:

Isolation between channels tested with:

Width:

S7, SM 326, 8 DI, 24 VDC, NAMUR



6ES7326-1RF01-0AB0
6ES7326-1RF00-0AB0 (discontinued)

SIL 2 (1 channel)
SIL 3 (2 channels)

No

8

No, only per module

Yes

Yes

200 / 100 m

1oo1 / 1oo2

SIL3/Cat.4/Ple for (2 channels)

1500 VAC

80 mm



ET 200SP HA, F-DI 16xNAMUR HA



6DL1136-6TH00-0PH1

SIL 3 (1 channel)

No

16

Yes, per channel

Yes

Yes

600 / 200 m

In Controller

SIL3/Cat.4/Ple (1 channel)

1500 VDC

22.5 mm

ET 200M to ET 200SP HA comparison

Failsafe Digital Input

	S7-300, SM 326, F-DI 24x24 VDC 6ES7326-1BK02-0AB0 
IO module redundancy:	Yes
Output current per channel:	0.5 A
Channels:	24
Sensor supply outputs:	4
Channel diagnostic alarms:	Yes
Short circuit detection:	Yes (to M/L+/other channel)
Wire break detection:	No
Overload protection:	Yes
Max. cable length (shielded / unshielded):	200 / 100 m
Voting:	1oo1 / 1oo2
Highest safety class achievable:	SIL3/Cat.4/Plc for 12 channels
Isolation tested with:	500 VDC
Width:	80 mm



ET 200SP HA, F-DI 16x24VDC HA		
6DL1136-6BA00-0PH1		
IO module redundancy:	Yes	
Output current per channel:	0.5 A	
Channels:	16	
Sensor supply outputs:	16	
Channel diagnostic alarms:	Yes	
Short circuit detection:	Yes (to M/L+/other channel)	
Wire break detection:	Yes	
Overload protection:	Yes	
Max. cable length (shielded / unshielded):	1000 / 600 m	
Voting:	1oo1 / 1oo2	
Highest safety class achievable:	SIL3/Cat.4/Plc for single channel	
Isolation tested with:	1500 VDC	
Width:	22.5 mm	

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Digital Output

	S7-300, SM 322, isolated, 8 DO, 24 VDC, 0.5A  6ES7322-8BF00-0AB0	S7/PCS7, SM 322, 16 DO, 24 VDC / 0.5 A  6ES7322-8BH10-0AB0 6ES7322-8BH00-0AB0 (discontinued) 6ES7322-8BH01-0AB0 (discontinued)	ET 200SP HA, DQ 16x24VDC/0.5A HA  6DL1132-6BH00-0PH1
IO module redundancy:	Yes	Yes	Yes
Channels:	8	16	16
Output current per channel:	0.5 A	0.5 A	0.5 A
Channel diagnostic alarms:	Yes	Yes	Yes, wire-break, short-circuit to M and L+
Short circuit protection:	Yes	Yes	Yes, per Channel
Overload protection:	No	No	Yes
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m	1000 / 600 m
Isolation tested with:	500 VDC	500 VDC	1500 VDC
Width:	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

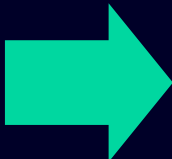
Digital Output

	S7-300, SM 322, isolated, 16 DO, 24 VDC, 0.5A  6ES7322-1BH01-0AA0 6ES7322-1BH00-0AA0 (eol)	S7-300, SM 322 High Speed, isolated, 16 DO, 24 VDC, 0.5A  6ES7322-1BH10-0AA0	ET 200SP HA, DQ 16x24VDC/0.5A HA  6DL1132-6BH00-0PH1
IO module redundancy:	No	No	Yes
Channels:	16	16	16
Output current per channel:	0.5 A	0.5 A	0.5 A
Output delay 0-1/1-0:	100/500 µs max.	100/200 µs max.	50/100 µs typ.
Channel diagnostic alarms:	No	No	Yes, wire-break, short-circuit to M and L+
Short circuit protection:	Yes	Yes	Yes, per Channel
Overload protection:	No	No	Yes
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m	1000 / 600 m
Isolation tested with:	500 VDC	500 VDC	1500 VDC
Width:	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Output

	S7-300, SM 322, isolated, 32 DO, 24 VDC, 0.5A 
	6ES7322-1BL00-0AA0
IO module redundancy:	Yes
Channels:	32
Output current per channel:	0.5 A
Total output current:	12 A at 60 °C
Channel diagnostic alarms:	No
Short circuit protection:	Yes, 4 groups of 8 channels
Overload protection:	No
Cable length (shielded / unshielded):	1000 / 600 m
Isolation tested with:	500 VDC
Width:	40 mm



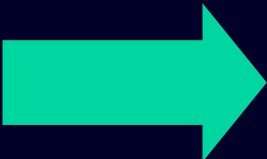
ET 200SP HA, DQ 32x24VDC/0.5A HA 
6DL1132-6BL00-0PH1
No
32
0.5 A
10 A at 70 °C
Yes, short-circuit to M
Yes, per channel
Yes
1000 / 600 m
1500 VDC
22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Digital Output

	S7-300, SM 322, isolated, 8 DO, 24 V DC, 2A  6ES7322-1BF01-0AA0
IO module redundancy:	Yes
Channels:	8
Output current per channel:	2 A
Total output current:	8 A
Output delay 0-1/1-0:	100/500 µs max.
Channel diagnostic alarms:	No
Short circuit protection:	Yes
Overload protection:	Yes (3 A)
Cable length (shielded / unshielded):	1000 / 600 m
Isolation tested with:	500 VDC
Width:	40 mm



	ET 200SP HA, DQ 8x24 VDC/2 A  6DL1132-6BF20-0PK0
IO module redundancy:	No
Channels:	8
Output current per channel:	2 A
Total output current:	10 A
Output delay 0-1/1-0:	80/300 µs max.
Channel diagnostic alarms:	Yes
Short circuit protection:	Yes
Overload protection:	Yes (3 A)
Cable length (shielded / unshielded):	1000 / 600 m
Isolation tested with:	1500 VDC
Width:	22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Digital Output

	S7-300, SM322, 8DA, 24VDC/2A or 230V AC/2A 	S7-300, SM322, 8DA, 24VDC/5A OR 230V AC/5A 	S7-300, SM322, 8DO Relay, 24VDC, 120-230V AC, 5A 	ET 200SP HA, RQ 4x120VDC-230VAC/5A CO HA 
	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6DL1132-6HD50-0PK0
Type of Relay:	Normally Open Relay (NO)	Normally Open Relay (NO)	Normally Open Relay (NO)	Switchover Relay (NO/NC)
Channels:	8	8	8	4
Max. current per channel:	2 A	5 A	5 A	5 A
Keep last value when CPU STOP:	No	No	Yes, per channel	Yes, per channel
Relay contact type:	Wet contacts in groups of 2	Individual dry contacts	Individual dry contacts	Individual dry contacts
Combination of voltages:	Free combination in groups of 2	No combination of 24V (SELV/PELV) with 230V AC	No combination of 24V (SELV/PELV) with 230V AC	Free combination per channel
Potential separation between channels:	No, 4 groups of 2 channels	Yes, per channel	Yes, per channel	Yes, per channel
Cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m	1000 / 600 m	1000 / 200 m
Isolation channels to backplane:	2000 VAC	1500 VAC	1500 VAC	4200 VDC
Width:	40 mm	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Output

	S7-300, SM 322, Isolated 16 DO, relay contacts  6ES7322-1HH01-0AA0	S7-300, SM322, 8DA, 24VDC/2A or 230V AC/2A  6ES7322-1HF01-0AA0	ET 200SP HA, DQ 8x24-230VAC/2A CO HA  6DL1132-6FF00-0PK0
Type of Relay:	Normally Open Relay (NO)	Normally Open Relay (NO)	Semiconductor, contactless (NO)
Channels:	16	8	8
Max. current per channel:	2 A	2 A	2 A
Keep last value when CPU STOP:	No	No	Yes, per channel
Relay contact type:	Wet contacts in group of 8 channels	Wet contacts in groups of 2	Semiconductor, contactless
Potential separation between channels:	No, 2 groups of 8 channels	No, 4 groups of 2 channels	Yes, per channel
Cable length (shielded / unshielded):	1000 m / 600 m	1000 / 600 m	1000 m / 200 m
Isolation channels to backplane:	1500 VAC	2000 VAC	4200 VDC
Width:	40 mm	40 mm	22.5 mm

ET 200M to ET 200SP HA comparison

Digital Input / Digital Output

	S7-300, SM323, 8DI/8DO, DC24V, 0.5A 		ET 200SP HA, AI-DI 16/DQ16x24VDC HART HA 
	6ES7323-1BH01-0AA0 6ES7323-1BH81-0AA0 (eol)		6DL1133-6EW00-0PH1
IO module redundancy:	No		Yes
Channels:	8 DI and 8 DQ		AI, DI, DQ (16 channels free configurable)
Max. current per channel:	0.5 A (max. 4 A per module)		0.5 A (max. 2 A per module)
Time stamp:	No		Yes, 1 ms SoE (for DI as DI/DQ)
Input delay:	1.2 ... 4.8 ms		0.05 ... 20 ms
Channel diagnostic alarms (DI):	No		Yes, wire-break, short-circuit to M
Channel diagnostic alarms (DQ):	No		Yes, wire-break, short-circuit
Channel diagnostic alarms (AI):	AI not supported		Yes, wire-break, short-circuit to M
Field device supply (DI and AI):	No		Yes, with short-circuit protection and channel wise diagnostic
Cable length (shielded / unshielded):	1000 m / 600 m		1000 m / 600 m
Isolation tested with:	500 VDC		1500 VDC
Width:	40 mm		22.5 mm

ET 200M to ET 200SP HA comparison

Ex Digital Output

S7-300, SM322, 4DO,
24VDC,10MA, HAZARDOUS
AREAS



6ES7322-5SD00-0AB0

IO module redundancy:	No
Channels:	4
Output per channel:	24 VDC/10 mA
Max. output current:	20 mA (parallel wiring of two outputs)
Type of protection for hazardous area:	[Ex ib]
Cable length (shielded / unshielded):	200 m / No
Channel diagnostic alarms:	Yes, short-circuit, wire-break
Short circuit protection:	Yes
Isolation tested with:	2500 V
Width:	40 mm



ET 200SP HA,
Ex-DQ 2x23.1VDC/20MA



6DL1132-6EB00-0HX1

No
2
23,1 VDC/20 mA
20 mA (per channel)
[Ex ia]
500 m / 500 m; Ex characteristic values must be considered
Yes, short-circuit, wire-break
Yes
707 VDC
22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Ex Digital Output

	S7-300, SM322, 4DO, 15VDC,20MA, HAZARDOUS AREAS 6ES7322-5RD00-0AB0 
IO module redundancy:	No
Channels:	4
Output per channel:	15 VDC/20 mA
Max. output current:	40 mA (parallel wiring of two outputs)
Type of protection for hazardous area:	[Ex ib]
Cable length (shielded / unshielded):	200 m / No
Channel diagnostic alarms:	Yes, wire-break, short-circuit
Short circuit protection:	Yes
Isolation tested with:	2500 V
Width:	40 mm



ET 200SP HA, Ex-DQ 2x17.4VDC/27MA 6DL1132-6CB00-0HX1 
No
2
17,4 VDC/27 mA
54mA (parallel wiring of two outputs)
[Ex ia]
500 m / 500 m; Ex characteristic values must be considered
Yes, wire-break, short-circuit
Yes
707 VDC
22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Failsafe Digital Output

	S7-300, SM 326, F-DO 10 x DC 24V/2A PP	ET 200SP HA, F-DQ 10x24VDC/2A HA
	6ES7326-2BF10-0AB0 	6DL1136-6DA00-0PH1 
IO module redundancy:	Yes	Yes
Channels:	10	10
Output current per channel:	2 A	2 A
Total current of the outputs:	10 A	10 A
Channel diagnostic alarms:	Yes	Yes
Short circuit detection:	Yes (to M/L+)	Yes (to M/L+/other channel)
Wire break detection:	Yes	Yes
Overload protection:	Yes	Yes
Max. cable length (shielded / unshielded):	1000 / 600 m	1000 / 600 m
Voting:	1oo1 / 1oo2	1oo1 / 1oo2
Highest safety class achievable:	SIL3/Cat.4/Ple for single channel	SIL3/Cat.4/Ple for single channel
Isolation tested with:	370 VDC	1500 VDC
Width:	40 mm	22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input

	S7-300, SM331, 8AI, 0/4-20mA HART  6ES7331-7TF01-0AB0 6ES7331-7TF00-0AB0 (eol)
IO module redundancy:	Yes
Channels:	8
Type of analog input:	I, HART
Resolution (max):	16 bit
Channelwise sensor-supply:	No
Channel diagnostic alarms:	Yes, wire-break
Max Cable length (shielded / unshielded):	800m / No
Isolation tested with:	500VDC
Width:	40mm



	ET 200SP HA, AI 16xI 2-WIRE HART HA  6DL1134-6TH00-0PH1
IO module redundancy:	Yes
Channels:	16
Type of analog input:	I, HART
Resolution (max):	16 bit
Channelwise sensor-supply:	Yes, with short-circuit protection and channel wise diagnostic
Channel diagnostic alarms:	Yes, wire-break, short-circuit
Max Cable length (shielded / unshielded):	800m / 800m
Isolation tested with:	1500VDC
Width:	22.5mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input

	S7-300, SM 331, Isolated 8 AI, resolution 13 bits 	S7-300, SM 331, isolated, 8 AI, Resolution 9/12/14 bits 	S7-300, SM 331, isolated, 2 AI, Resolution 9/12/14 bits 	ET 200SP HA, AI 8xU/I/TC/ 4xRTD HA 
	6ES7331-1KF02-0AB0, 6ES7331-1KF01-0AB0 (eol) 6ES7331-1KF00-0AB0 (eol)	6ES7331-7KF02-0AB0 6ES7331-7KF01-0AB0 (eol) 6ES7331-7KF00-0AB0 (eol)	6ES7331-7KB02-0AB0 6ES7331-7KB01-0AB0 (eol) 6ES7331-7KB00-0AB0 (eol)	6DL1134-6AF00-0PH1
IO module redundancy:	Yes	Yes	No	No*
Channels:	8	8	2	8
Type of analog input:	U, I, RTD	U, I, TC, RTD	U, I, TC, RTD	U, I, TC, RTD
Resolution (max.):	13 bit	15 bit	15 bit	16 bit
Channel diagnostic alarms:	No	Yes	Yes	Yes, transmitter supply, short-circuit, wire-break
Short circuit protection:	No	No	Yes, 2 groups of 8 Ch.	Yes, per channel
Perm pot diff betw Inputs (UCM):	2 VDC	2,5 VDC	2,5 VDC	15 VDC
Cable length max. shield/unshielded:	200 m / No	200 m / No	200 m / No	200 m / No
Isolation tested with:	500 VDC	500 VDC	500 VDC	1500VDC
Width:	40 mm	40 mm	40 mm	22.5 mm

*: Redundancy can be realized with 6DL1134-6TH00-0PH1 for 0/4-20mA signals, or with 6DL1134-6JH00-0PH1 for TC/RTD signals

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input

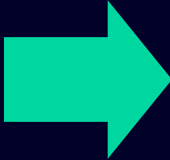
S7-300, SM331, 8AI, 14BIT, 0,052MS/channel

6ES7331-7HF01-0AB0

6ES7331-7HF00-0AB0 (eol)



IO module redundancy:	No
Channels:	8
Type of analog input:	I, U*)
Resolution (max):	14 bit
Short-circuit protection:	No
Channel diagnostic alarms:	Yes
Max Cable length (shielded / unshielded):	200m / No
Isolation tested with:	500VDC
Width:	40 mm
Notice:	*) Voltage measurement is supported by AI8x U/I/TC/4xRTD HA



ET 200SP HA, AI 16xI 2-wire HA

6DL1134-6GH00-0PH1



IO module redundancy:	No
Channels:	16
Type of analog input:	I
Resolution (max):	16 bit
Short-circuit protection:	Yes
Channel diagnostic alarms:	Yes
Max Cable length (shielded / unshielded):	800m / 200m
Isolation tested with:	1500VDC
Width:	22.5 mm
Notice:	

ET 200M to ET 200SP HA comparison

Analog Input

	S7-300, SM331, 8AI, +/-5/10V, 1-5V, +/-20mA, 0/4..20mA 6ES7331-7NF00-0AB0 
IO module redundancy:	Yes
Channels:	8
Type of analog input:	I, U*
Resolution (max):	16 bit
Channel diagnostic alarms:	Yes
Max Cable length (shielded / unshielded):	200m / No
Isolation tested with:	500VDC
Width:	40mm



ET 200SP HA AI 16xI 2-wire HART HA, 0/4..20mA 6DL1134-6TH00-0PH1 
Yes
16
2-wire/ 4-wire (passive mode)
16 bit
Yes, (supply voltage, short-circuit, wire-break)
800m / 800m (with unshielded cable: external EMC loads can cause incorrect measured values)
1500VDC/ 1 min
22.5mm

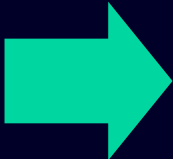
*: Voltage measurement can be realized with 6DL1134-6AF00-0PH1

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input

	S7-300, SM331,8AI,+/-5/10V,1-5V,+/-20mA,0/4-20mA	
	6ES7331-7NF10-0AB0	
IO module redundancy:	Yes	
Channels:	8	
Type of Analog Input:	I, U	
Resolution (max.):	16 bit	
Cable length (shielded / unshielded)	200 m / No	
Isolation channels to backplane:	500 V AC	
Width:	40 mm	



	ET 200SP HA, AI 8xU//TC/ 4xRTD HA	
	6DL1134-6AF00-0PH1	
IO module redundancy:	No *)	
Channels:	8	
Type of Analog Input:	I, U, TC, RTD	
Resolution (max.):	16 bit	
Cable length (shielded / unshielded)	200 m / No	
Isolation channels to backplane:	1500 VDC	
Width:	22.5 mm	

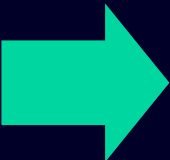
*) IO module redundancy can be realized with 6DL1134-6TH00-0PH1 for 0/4-20mA signals or with 6DL1134-6JH00-0PH1 for TC/RTD signals

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input

	S7-300, SM331, 8AI, 16bit, Thermocouples	
	6ES7331-7PF11-0AB0	
IO module redundancy:	No	
Channels:	8 TC	
Resolution (max.):	16 bit	
Channel diagnostic alarms:	Yes	
Permissible potential difference (UCM):	Not specified	
RTD type:	B, C, E, J, K, L, N, R, S, T, U, TXK/TXK(L)	
Cable length (shielded / unshielded)	100 m / No	
Isolation channels to backplane:	500 VDC	
Width:	40 mm	



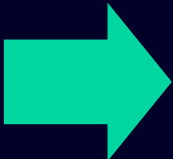
	ET 200SP HA, AI 16xTC/8xRTD 2-/3-/4-WIRE HA	
	6DL1134-6JH00-0PH1	
IO module redundancy:	Yes	
Channels:	16 TC (8 RTD)	
Resolution (max.):	16 bit	
Channel diagnostic alarms:	Yes	
Permissible potential difference (UCM):	75 VDC / 60 VAC	
RTD type:	B, C, E, J, K, L, N, R, S, T, U, TXK/TXK(L)	
Cable length (shielded / unshielded)	600 m / No	
Isolation channels to backplane:	1500 VDC	
Width:	22.5 mm	

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input

	S7-300, SM331, 8AI, resistor, PT100/200/1000, ..	
	6ES7331-7PF01-0AB0	
IO module redundancy:	No	
Channels:	8 RTD	
Resolution (max.):	16 bit	
Channel diagnostic alarms:	Yes	
Permissible voltage input (destruction limit):	35V continuous	
RTD type:	Cu10, NI100, NI120, NI200, NI500, NI1000, LG-NI1000, PT100, PT200, PT500, PT1000	
Cable length (shielded / unshielded)	200 m / No	
Isolation channels to backplane:	500 VDC	
Width:	40 mm	



ET 200SP HA, AI 16xTC/8xRTD 2-/3-/4-WIRE HA	
6DL1134-6JH00-0PH1	
Yes	
8 RTD (16 TC)	
16 bit	
Yes	
75 VDC / 60 VAC	
Cu10, NI100, NI120, NI200, NI500, NI1000, LG-NI1000, PT100, PT200, PT500, PT1000	
800 m / No	
1500 VDC	
22.5 mm	

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Input / Ex Analog Input

S7-300, SM 331 ANALOG INPUT 		ET 200SP HA, AI 4xI 2-/4-wire HART ISOL HA 		ET 200SP HA, Ex-AI 2xI 2-Wire HART 	
6ES7331-7RD00-0AB0		channel isolation usecase 6DL1134-6UD00-0PK0		Ex usecase 6DL1134-6TB00-0HX1	
IO module redundancy:	No	Yes	No		
Channels:	4	4	2		
Type of analog input	I	I, HART	I, HART		
Resolution (max):	16 bit	16 bit	16 bit		
Type of protection for hazardous area:	[Ex ib]		[Ex ia]		
Channelwise sensor-supply	Yes	Yes, with short-circuit protection and channel wise wire-break diagnostic	Yes, wire-break, short-circuit		
Potential separation between channels:	Yes	Yes, per channel			
Max Cable length (shielded / unshielded):	200 m / No	800 m / No	500 m / 300 m; Ex characteristic values must be considered		
Isolation tested with:	500 VDC	2100 VDC	707 VDC		
Width:	40 mm	22.5mm	22.5 mm		

ET 200M to ET 200SP HA comparison

Ex Analog Input

	S7-300, SM 331, HART ANALOG INPUT M	ET 200SP HA, Ex-AI 2xI 2-Wire HART
	6ES7331-7TB10-0AB0	6DL1134-6TB00-0HX1
IO module redundancy:	No	No
Channels:	2	2
Type of analog input:	I, HART	I, HART
Resolution (max.):	16 bit	16 bit
Channel diagnostic alarms:	Yes, wire-break, short-circuit	Yes, wire-break, short-circuit
Type of protection for hazardous area:	[Ex ib]	[Ex ia]
Cable length (shielded / unshielded):	400 m / No	500 m / 300 m; Ex characteristic values must be considered
Isolation tested with:	500 VDC	707 VDC
Width:	40 mm	22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Ex Analog Input

	S7-300, SM 331, ANALOG INPUT 6ES7331-7SF00-0AB0 
IO module redundancy:	No
Channels:	8 (TC), 4 (RTD)
Resolution (max.):	16 bit
Channel diagnostic alarms:	Yes, wire-break
Type of protection for hazardous area:	[Ex ib]
TC type:	B, E, J, K, L, N, R, S, T, U
RTD type:	NI100, PT100, PT200
Cable length (shielded):	RTD: 200 m, TC 50 m
Isolation tested with:	2500 VDC
Width:	40 mm



ET 200SP HA, Ex-AI 4xTC/2xRTD 2-/3-/4-Wire 6DL1134-6JD00-0HX1 
No
4 (TC), 2 (RTD)
16 bit
Yes, wire-break
[Ex ia]
B, C, E, J, K, L, N, R, S, T, U, TXK/TXK(L)
Cu10, NI100, NI120, NI200, NI500, NI1000, LG-NI1000, PT100, PT200, PT500, PT1000
200 m; Ex characteristic values must be considered
707 VDC
22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Failsafe Analog Input

	S7-300, SM 336, F-AI 6 x 0/4 ... 20 mA HART	
	6ES7336-4GE00-0AB0	
IO module redundancy:	Yes	
Channels:	6	
Input ranges:	0 ... 20 mA / 4 ... 20 mA	
Sensor supply output:	300 mA	
Channel diagnostic alarms:	Yes	
Sensor types:	2-/4-wire	
Short circuit detection:	Yes (to M/L+/other channel)	
Wire break detection:	Yes	
Max. cable length (shielded):	1000 m	
Voting:	1oo1 / 1oo2	
Highest safety class achievable:	SIL3/Cat.4/Pl	
Isolation tested with:	500 VDC	
Width:	40 mm	



	ET 200SP HA, F-AI 8x1 2-/4-Wire HART HA	
	6DL1136-6AA00-0PH1	
IO module redundancy:	Yes	
Channels:	8	
Input ranges:	0 ... 20 mA / 4 ... 20 mA	
Sensor supply output:	30 mA per channel	
Channel diagnostic alarms:	Yes	
Sensor types:	2-/4-wire	
Short circuit detection:	Yes (to M/L+/other channel)	
Wire break detection:	Yes	
Max. cable length (shielded):	1000 m	
Voting:	In Controller	
Highest safety class achievable:	SIL3/Cat.4/Pl	
Isolation tested with:	1500 VDC	
Width:	22.5 mm	

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Output

	S7-300, SM332, 8AO, 0/4 – 20mA HART  6ES7332-8TF01-0AB0 6ES7332-8TF00-0AB0 (eol)
IO module redundancy:	Yes
Channels:	8
Type of analog output:	I, HART
Resolution (max):	16 bit
Channel diagnostic alarms:	No
Max Cable length (shielded / unshielded):	200m / No
Isolation tested with:	500VDC
Width:	40mm



ET 200SP HA, AQ 8xI HART HA  6DL1135-6TF00-0PH1
Yes
8
I, HART
16 bit
Yes, wire-break, short-circuit
1000m / 800m
1500VDC
22.5mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Output

	S7-300, SM332, 2AO, U/I, 11/12Bit 	S7-300, SM332, 4AO, U/I, 11/12Bit 	S7-300, SM332, 8AO, U/I, 11/12Bit 	ET 200SP HA, AQ 8xI HART HA 
	6ES7332-5HB01-0AB0 6ES7332-5HB00-0AB0 (eol)	6ES7332-5HD01-0AB0 6ES7332-5HD00-0AB0 (eol)	6ES7332-5HF00-0AB0	6DL1135-6TF00-0PH1
IO module redundancy:	No	Yes	Yes	Yes
Channels:	2	4	8	8
Type of analog output:	U ^{*)} , I	U ^{*)} , I	U ^{*)} , I	I, HART
Resolution (max.):	12 bit	12 bit	12 bit	16 bit
Channel diagnostic alarms:	No	No	No	Yes
Potential sep. betw. Channels:	No	No	No	No
Max Cable length (shielded/ unshielded):	200m / No	200m / No	200m / No	1000m / 800m
Isolation tested with:	500VDC	500VDC	500VDC	1500VDC
Width:	40mm	40mm	40mm	22.5mm
Notice:	*) Voltage output is supported FIO & Counter (6DL1138-6EA00-0EH1) or via signal converters			

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Analog Output

	S7-300, SM332, 4AO, 0-10V, 0-5V,+/-10V,+/-20mA  6ES7332-7ND02-0AB0 6ES7332-7ND01-0AB0 (eol) 6ES7332-7ND00-0AB0 (eol)		ET 200SP HA, AQ 4xI 2-WIRE ISOL HART HA  6DL1135-6UD00-0PK0
IO module redundancy:	No		Yes
Channels:	4		4
Type of analog output:	U*), I		I, HART
Resolution (max):	16 bit		16 bit
Channel diagnostic alarms:	No		Yes, wire-break, short-circuit
Potential sep. betw. Channels:	Yes		Yes
Potential difference:	120 VAC / 200 VDC		125 VAC / 150 VDC
Max Cable length (shielded / unshielded):	200 m / No		1000 m / 800 m
Isolation tested with:	1500 VDC		2100 VDC
Width:	40mm		22.5mm

*) Voltage output is supported FIO & Counter (6DL1138-6EA00-0EH1) or via signal converters

ET 200M to ET 200SP HA comparison

Analog Output / Ex Analog Output

	S7-300, SM 332, ANALOG OUTPUT  6ES7332-5RD00-0AB0		ET 200SP HA, AQ 4xI 2-WIRE ISOL HART HA channel isolation usecase  6DL1135-6UD00-0PK0	ET 200SP HA, Ex-AQ 2xI HART Ex usecase  6DL1135-6TB00-0HX1
IO module redundancy:	No		Yes	No
Channels:	4	4	2	
Typ of analog input:	I	I, HART	I, HART	
Resolution (max.):	15 bit	16 bit	16 bit	
Channel diagnostic alarms:	No	Yes, wire-break, short-circuit	Yes, wire-break, short-circuit	
Type of protection for hazardous area:	[Ex ib]		[Ex ia]	
Cable length (shielded / unshielded):	200 m / No	1000 m / 800 m	500 m / 300 m; Ex characteristic values must be considered	
Potential sep. betw. Channels:	Yes	No	No	
Isolation tested with:	1500 VDC	2100 VDC	707 VDC	
Width:	40 mm	22.5 mm	22.5 mm	

ET 200M to ET 200SP HA comparison

Ex Analog Output

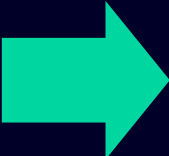
S7-300, SM 332, HART ANALOG OUTPUT		ET 200SP HA, Ex-AQ 2xI HART	
6ES7332-5TB10-0AB0		6DL1135-6TB00-0HX1	
IO module redundancy:	No	No	
Channels:	2	2	
Type of analog input:	I, HART	I, HART	
Resolution (max.):	12 bit	16 bit	
Channel diagnostic alarms:	Yes, wire-break	Yes, wire-break, short-circuit	
Type of protection for hazardous area:	[Ex ib]	[Ex ia]	
Cable length (shielded / unshielded):	400 m / No	500 m /300 m; Ex characteristic values must be considered	
Potential sep. betw. Channels:	Yes	No	
Isolation tested with:	500 VDC	707 VDC	
Width:	40 mm	22.5 mm	

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

ET 200M to ET 200SP HA comparison

Counter Input

	S7-300, FM350-2, Counter Mod., 8 Channels, 20KHz 
	6ES7350-2AH01-0AE0
Counter functions:	8 Counter, 0..31 Bit, -31..+31 Bit, Up/down counter, Continuous counting, Single counting, Periodic counting
Derating > 40°C:	Yes, max 4 Counter at > 40°C
Further functions:	Frequency measurement, Rotational speed measurement, Period measurement, Dosing
Encoder supplies:	4x 8,2V NAMUR encoder supply
Supported encoders:	NAMUR 8,2V encoder, Incremental encoder 24V, 24V pulse encoder with direction level, 24V initiators without direction level (e.g. proximity switch)
Namur 8,2V encoder (acc. DIN 19 234):	Max. 20 kHz, shielded cable < 100 m
24V incremental encoder, 24V switch:	Max. 20 kHz, shielded cable < 100 m
24V pulse encoder with direction signal:	Max. 10 kHz, shielded cable < 100 m
Start / Stop:	Software gate, Hardware gate
Isolation tested with:	500 VDC
Width:	40 mm



	ET 200SP HA, FIO & Counter HA 
	6DL1138-6EA00-0EH1
	up to 4x Counter, 32 Bit, Up/down counter, Continuous counting, Single counting, Periodic counting
	No derating
	Frequency measurement, up to 3x Speed measurements, Period measurement
	24 V, 500 mA, short-circuit proof per channel
	Incremental encoder 24V, 24V pulse generator with direction level, 24V pulse generator without direction level (e.g. proximity switch)
	No
	Max. 70 kHz, shielded cable <50 m
	No
	Software gate, Hardware gate
	1500 VDC
	22.5 mm

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

Disclaimer

© Siemens 2024

The information provided in this document does not reflect all features of the compared products. It must not be understood as a statement towards 1:1 compatibility. The values in the datasheets apply and those shall be compared for any specific usecase.

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or other rights of Siemens AG, its affiliated companies or other companies whose use by third parties for their own purposes could violate the rights of the respective owner.

| Contact



Siemens AG
DI PA AE HWP PER
Östl. Rheinbrückenstraße 50
76187 Karlsruhe

www.siemens.de/simatic-et200spha