SIEMENS

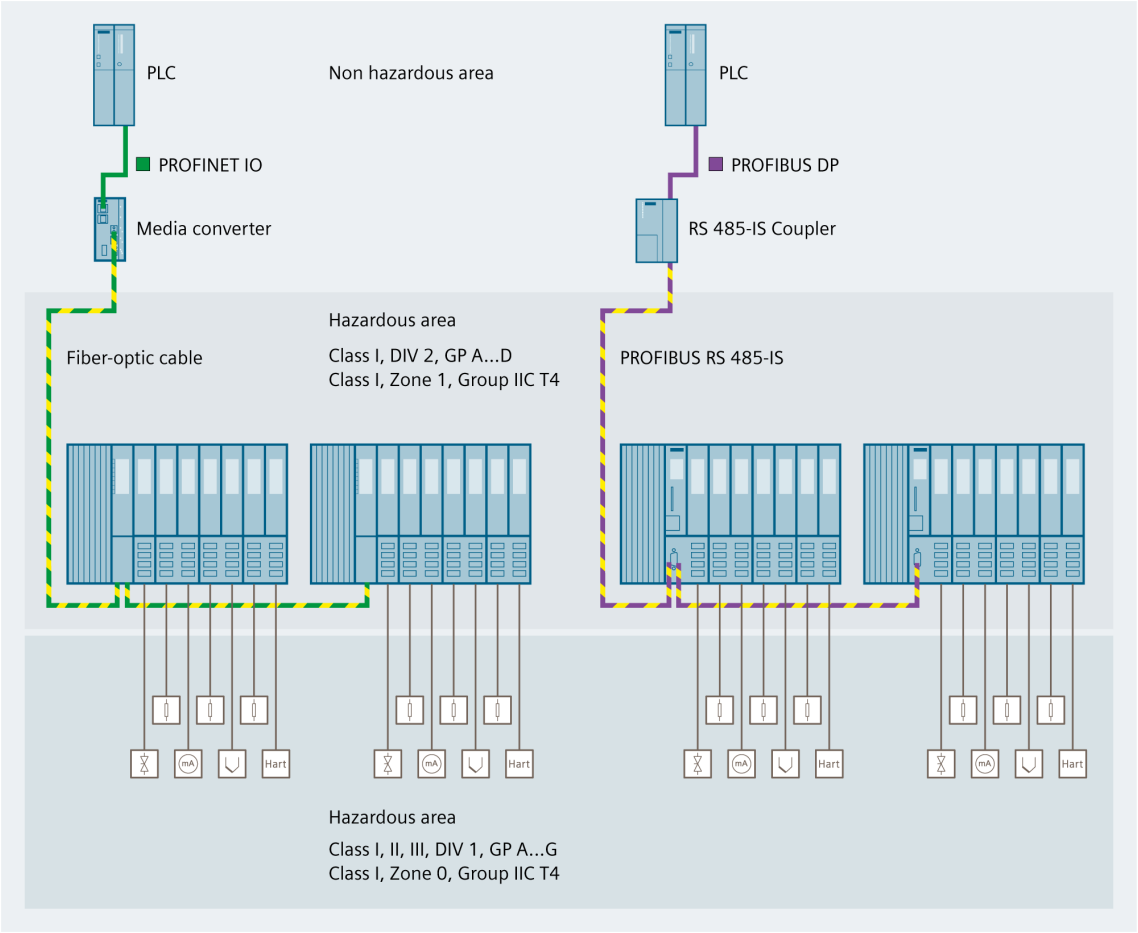
Intrinsic Safety Control Drawing

A5E00455287-AG

ET 200iSP

System in total

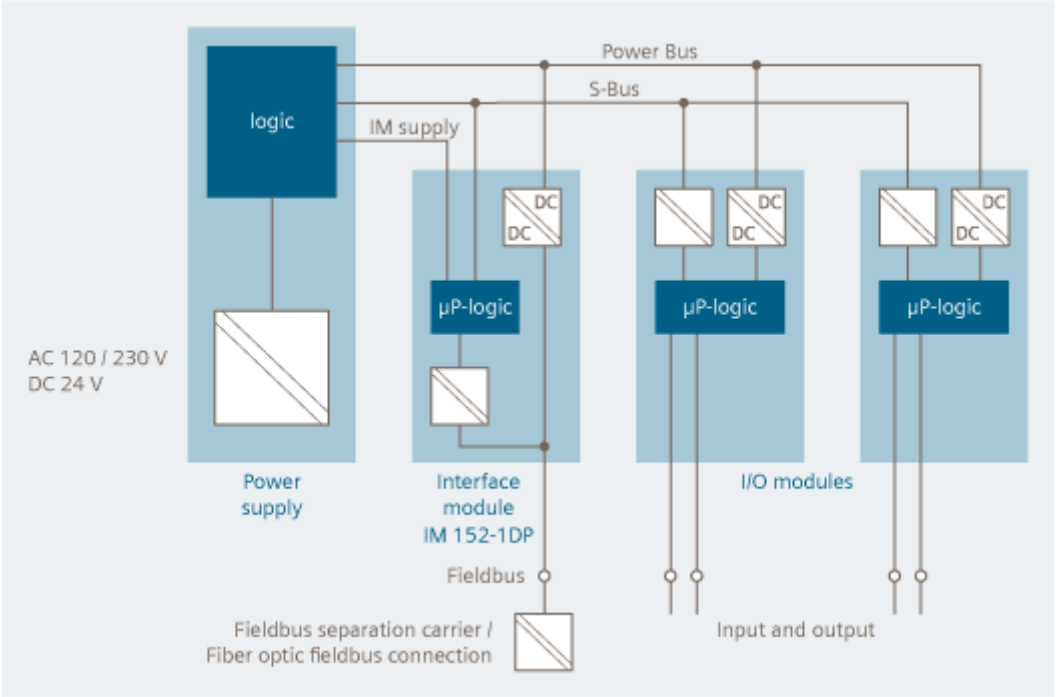
"No revision to drawing without prior approval by certification authorities!"

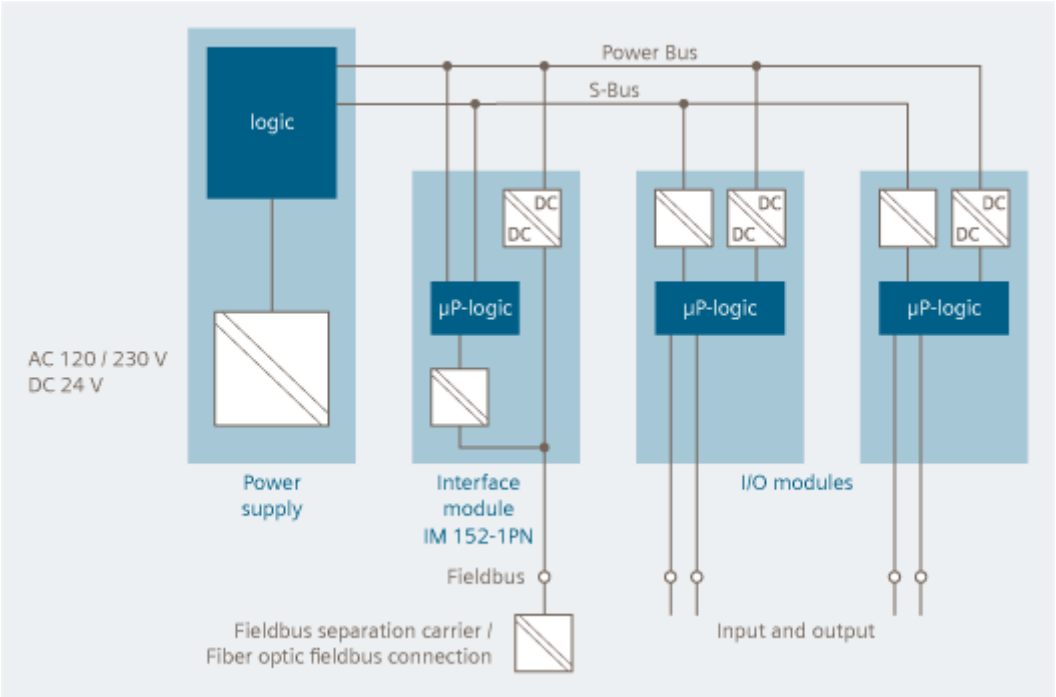


The complete interface system ET 200iSP with its components is represented in the Control Drawing.
You can find the pin configuration in the manuals "Distributed I/O ET 200iSP" or "ET 200iSP Distributed I/O Device - Fail-safe Modules". For all screw terminals of the system, the torque value is 0.5 to 0.7 Nm.

ET 200iSP system in total

The supply (of electrical energy) of the components is represented in the following drawings for interface modules IM 152-1DP and IM 152-1PN.





Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP system in total

Notes

1. POWER SUPPLY
   The power supply supplies the Interface Module, the I/O electronic modules and the field circuit. The power supply provides the following supplies:
   - Power Bus for the I/O modules and the field circuit
   - Electrical circuit for S-Bus
   - Electrical circuit for Interface Modules

   The power supply is specified in the following.
2. INTERFACE MODULES
   The Interface Modules are the connector between the fieldbus and the internal Bus of the ET 200iSP with the I/O modules. The input and output data are processed.
   The Interface Module supplies the Electrical circuit for external fieldbus system.
3. I/O MODULES
   There are as many as 32 I/O modules arranged in the internal bus system (taking into account a maximum supply current of 5 A total). You can find the rule to determine the maximum number of modules in the manual "Distributed I/O ET 200iSP". Respective to the module type they enable the activation of the process interface.
   This applies to the complete system installed within the hazardous (classified) area. The maximum current drawn by each module is shown as I_{supply} on the following pages.
4. Selected intrinsically safe equipment and associated apparatus must be third party listed for the application and have entity parameters conforming with Table 1 below. When installing according to FM requirements, all intrinsically safe apparatus must be FM approved.

   TABLE 1:

I.S. Equipment		Associated Apparatus
V_{max} (or U_i)	≥	V_{oc} or V_t (or U_o)
I_{max} (or I_i)	≥	I_{sc} or I_t (or I_o)
P_{max}, P_i	≥	P_o
$C_i + C_{cable}$	≤	C_a (or C_o)
$L_i + L_{cable}$	≤	L_a (or L_o)

5. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable. A simple apparatus is defined as an electrical component or combination of components of simple construction with well-defined electrical parameters that does not generate more than 1.5 V, 100 mA, and 25 mW, or a passive component that does not dissipate more than 1.3 W and is compatible with the intrinsic safety of the circuit in which it is used.
6. Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, C_{cable}, plus intrinsically safe equipment capacitance, C_i must be less than the marked capacitance, C_a (or C_o), shown on any associated apparatus used. The same applies for inductance (L_{cable}, L_i and L_a or L_o, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: C_{cable} = 60 pF/ft., L_{cable} = 0.2 µH/ft.

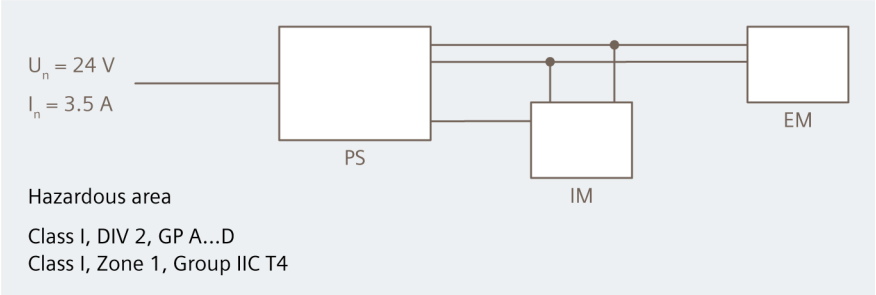
Copyright 2025 by Siemens AG. All Rights Reserved

7. The maximum voltage U_M used or generated by the equipment installed outside the hazardous area may not exceed 250 V_{ac}, 250 V_{dc}.
8. Associated apparatus must be installed in an enclosure suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code for installations in Canada, or other local codes, as applicable.
9. Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) or other local codes, as applicable.
10. Where multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30(B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA RP12.6 for installing intrinsically safe equipment.
11. WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY OR SUITABILITY FOR DIVISION 2
12. WARNING: TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATHMOSPHERES, READ, UNDERSTAND AND ADHERE TO THE SERVICING AND MAINTENANCE PROCEDURES IN THE Manual "Distributed I/O ET 200iSP".
13. Module power supply 6ES7138-7EA01-0AA0 is factory sealed. Do not open.
    The Distributed I/O ET 200iSP shall be installed in a FM or NRTL approved enclosure with degree of protection IP 54 in accordance with IEC 60529, per requirements of ANSI/ISA-60079-7.
14. The nonincendive field wiring circuit concept allows interconnection of nonincendive field wiring apparatus with associated nonincendive field wiring apparatus, using any of the wiring methods permitted for unclassified locations.

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP **6ES7138-7EA01-0AA0**
6ES7138-7EC00-0AA0

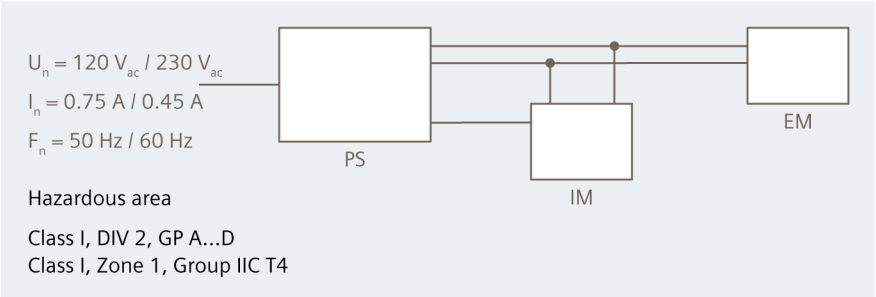
Power Supply 6ES7138-7EA01-0AA0



Use with:

- TM-PS-A part No. 6ES7193-7DA10-0AA0 or
- TM-PS-B part No. 6ES7193-7DB10-0AA0 or
- TM-PS-A part No. 6ES7193-7DA20-0AA0 or
- TM-PS-B part No. 6ES7193-7DB20-0AA0.

Power Supply 6ES7138-7EC00-0AA0



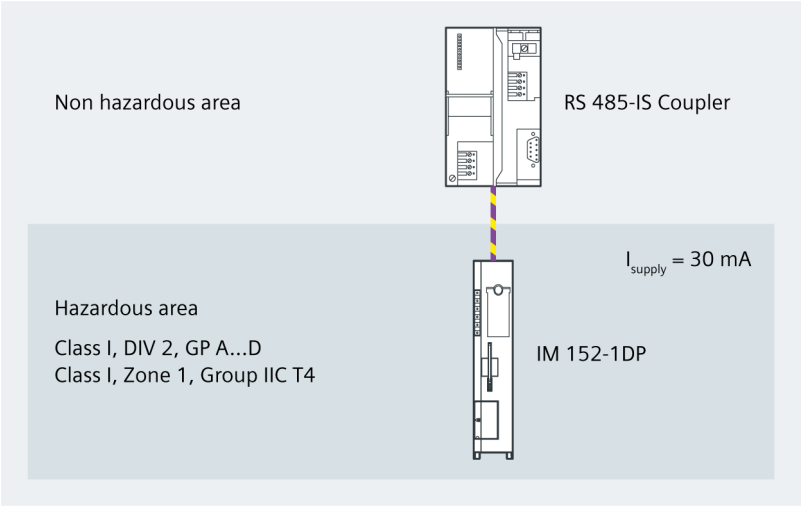
Use with:

- TM-PS-A part No. 6ES7193-7DA20-0AA0 or
- TM-PS-B part No. 6ES7193-7DB20-0AA0.

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP 6ES7152-1AA00-0AB0

Interface module IM 152-1DP 6ES7152-1AA00-0AB0



You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "PROFIBUS interface module IM 152-1DP".
Use with TM-IM/IM P/N 6ES7193-7AB00-0AA0 or TM-IM/EM P/N 6ES7193-7AA**-0AA0.
The following parameters for the PROFIBUS RS 485-IS fieldbus connection apply to the interface module:

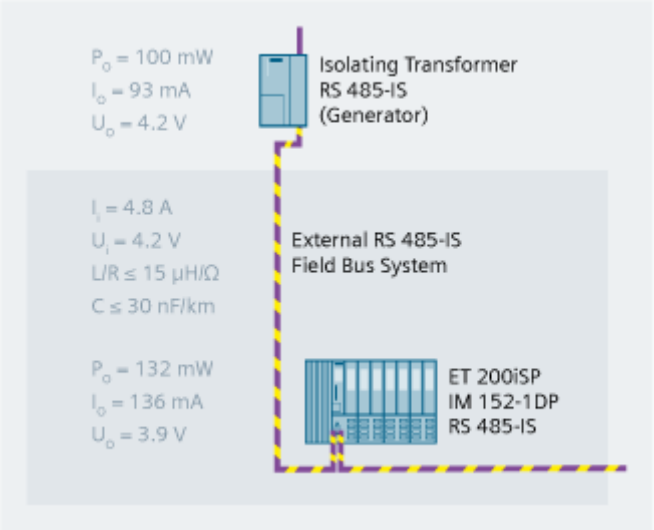
	Fieldbus
U_o, V_{oc} [V_{dc}]	3.9
I_{sc}, I_o [mA]	136
P_o [mW]	132
U_i, V_{max} [V_{dc}]	4.2 (*)
I_i, I_{max}, P_i [A]	4.8
P_i [W]	5

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP **6ES7152-1AA00-0AB0**

The following merits apply to the fieldbus line:
Must be in accordance with NEC 504.30B:

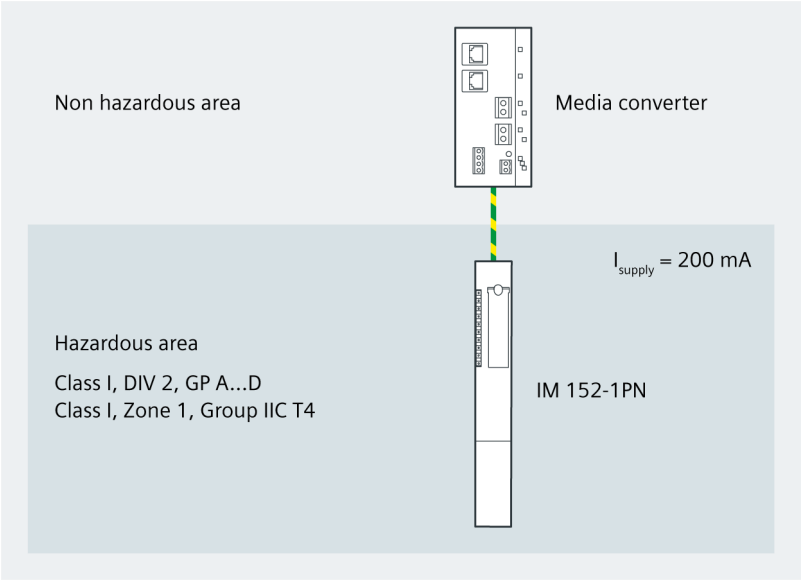
- L‘ / R‘ ≤ 22 µH / Ω (loopresistance)
- C‘ ≤ 250 nF / km
- Litz wire diameter ≤ 0.2 mm
- Concentrated inductance and capacitance are not allowed in the running of the external RS-485 fieldbus system.
- In applications where concentrated inductance and capacitance are considered the following values apply: C_o, C_a ≤ 100 µF (A, B/IIC) or ≤ 1000 µF (C, D/IIB) and L_o, L_a < 3 mH (A, B/IIC) or < 15 mH (C, D/IIB)



Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP 6ES7152-1BA00-0AB0

Interface module IM 152-1PN 6ES7152-1BA00-0AB0

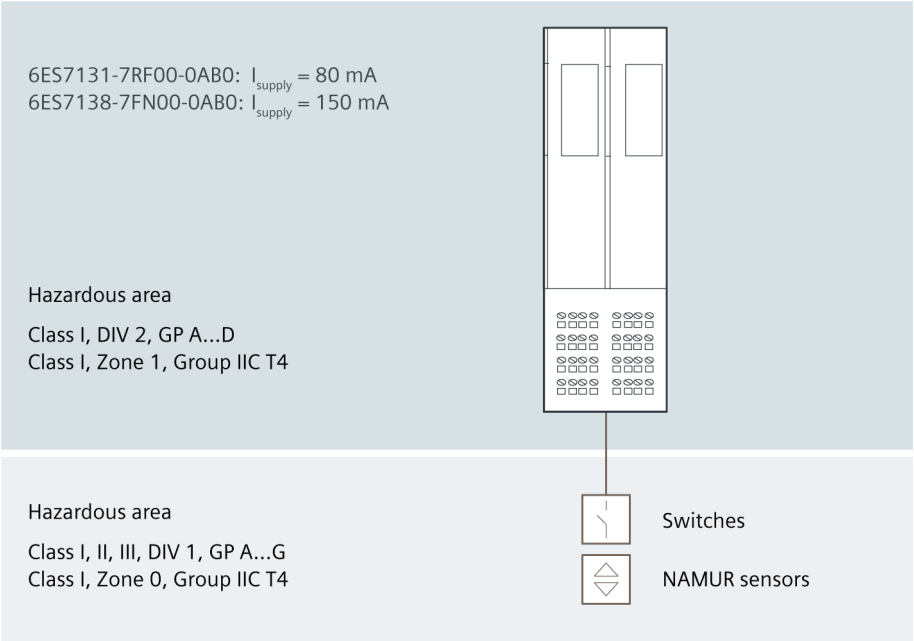


You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "PROFINET interface module IM 152-1PN".
Use with TM-IM/IM P/N 6ES7193-7AB00-0AA0 or TM-IM/EM P/N 6ES7193-7AA**-0AA0.
Use optical transceivers that meet the limits of Class 1 according to IEC 60825-1.

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP **6ES7131-7RF00-0AB0**
6ES7138-7FN00-0AB0

Digital electronic module 8 DI NAMUR 6ES7131-7RF00-0AB0
Digital electronic module 8F DI Ex NAMUR 6ES7138-7FN00-0AB0



You can find the pin configuration in the manuals:

- "Distributed I/O ET 200iSP", chapter "Digital electronics module 8 DI NAMUR".
- "ET 200iSP Distributed I/O Device - Fail-safe Modules", chapter "Digital electronic module 8 F-DI Ex NAMUR". Also see notes under "system in total".

Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The following parameters for the input circuits are applicable for the electronic module 6ES7131-7RF00-0AB0:

	1 input		2 inputs		4 inputs		8 inputs	
U_o, V_{oc} [V_{dc}]	9.6		9.6		9.6		9.6	
I_o, I_{sc} [mA]	16		32		52		92	
P_o [mW]	38		76		124		220	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
C_o, C_a [µF]	3.6	28	3.6	28	3.6	28	3.6	28
L_o, L_a [mH]	110	400	30	110	12	45	3	13

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP **6ES7131-7RF00-0AB0**
6ES7138-7FN00-0AB0

The following parameters for the input circuits are applicable for the electronic module 6ES7138-7FN00-0AB0:

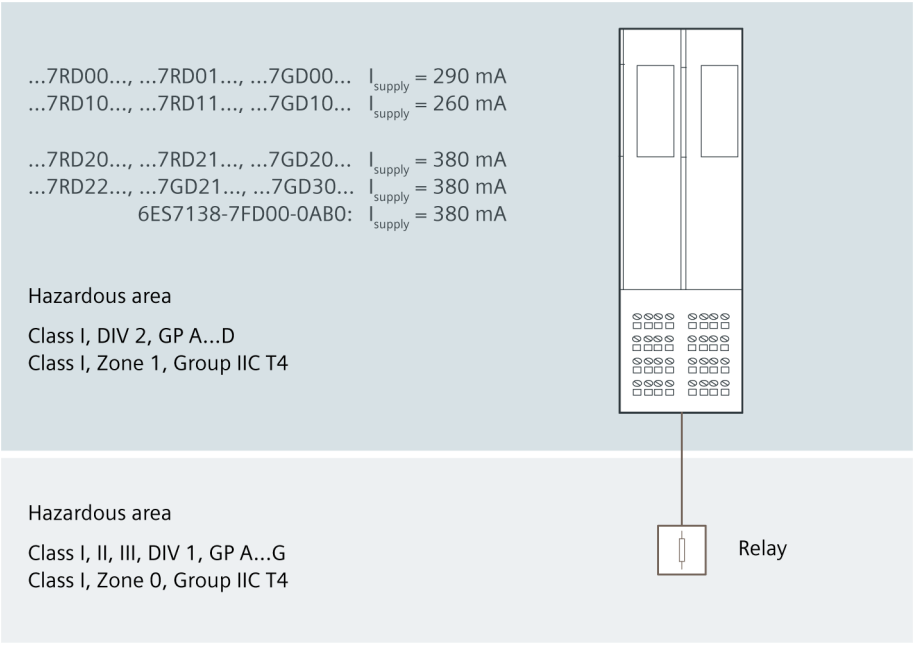
	1 input		2 inputs		4 inputs		8 inputs	
U_o, V_{oc} [V_{dc}]	8.8		8.8		8.8		8.8	
I_o, I_{sc} [mA]	8.81		17.62		35.24		70.48	
P_o [mW]	19.4		38.8		77.6		155.2	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
C_o, C_a [µF]	5.37	45.87	5.24	45.74	4.98	45.48	4.46	44.96
L_o, L_a [mH]	458	1000	114	440	28	114	7	27

Copyright 2025 by Siemens AG. All Rights Reserved

Intrinsic Safety Control Drawing A5E00455287-AG

ET 200iSP **6ES7132-7RD**-0AB0**
6ES7132-7GD-0AB0**
6ES7138-7FD00-0AB0

Digital electronic module 4 DO DC23.1V/20mA 6ES7132-7RD00-0AB0
Digital electronic module 4 DO DC17.4V/27mA 6ES7132-7RD10-0AB0
Digital electronic module 4 DO DC17.4V/40mA 6ES7132-7RD20-0AB0
Digital electronic module 4 DO DC23.1V/20mA SHUT DOWN "H" 6ES7132-7RD01-0AB0
Digital electronic module 4 DO DC17.4V/27mA SHUT DOWN "H" 6ES7132-7RD11-0AB0
Digital electronic module 4 DO DC17.4V/40mA SHUT DOWN "H" 6ES7132-7RD21-0AB0
Digital electronic module 4 DO DC17.4V/40mA SHUT DOWN "H" 6ES7132-7RD22-0AB0
Digital electronic module 4 DO DC23.1V/20mA SHUT DOWN "L" 6ES7132-7GD00-0AB0
Digital electronic module 4 DO DC17.4V/27mA SHUT DOWN "L" 6ES7132-7GD10-0AB0
Digital electronic module 4 DO DC17.4V/40mA SHUT DOWN "L" 6ES7132-7GD20-0AB0
Digital electronic module 4 DO DC17.4V/40mA SHUT DOWN "L" 6ES7132-7GD21-0AB0
Digital electronic module 4 DO DC25.5V/22mA SHUT DOWN "L" 6ES7132-7GD30-0AB0
Digital electronic module 4F DO Ex17.4V/40mA 6ES7138-7FD00-0AB0



You can find the pin configuration in the manuals:

- "Distributed I/O ET 200iSP", chapter "Digital electronics module 4 DO",
- "ET 200iSP Distributed I/O Device - Fail-safe Modules", chapter "Digital electronic module 4 F-DO Ex 17.4V/40mA". Also see notes under "system in total".

Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.

Copyright 2025 by Siemens AG. All Rights Reserved

The following parameters for the output circuits are applicable for the electronic module 6ES7132-7RD00-0AB0, 6ES7132-7RD01-0AB0, 6ES7132-7GD00-0AB0:

	1 output	
U_o, V_{oc} [V_{dc}]	25.6	
I_o, I_{sc} [mA]	96	
P_o [mW]	610	
	A,B/IIC	C-G/IIB
C_o, C_a [nF]	98	790
L_o, L_a [mH]	3	13

The following parameters for the output circuits are applicable for the electronic modules 6ES7132-7RD10-0AB0 and 6ES7132-7RD20-0AB0, 6ES7132-7RD11-0AB0 and 6ES7132-7RD21-0AB0, 6ES7132-7GD10-0AB0 and 6ES7132-7GD20-0AB0:

	1 output		2 outputs	
U_o, V_{oc} [V_{dc}]	19.4		19.4	
I_o, I_{sc} [mA]	132		264	
P_o [mW]	640		1280	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
C_o, C_a [nF]	230	1500	230	1500
L_o, L_a [mH]	1.9	8	0.35	2

The following parameters for the output circuits are applicable for the electronic module 6ES7132-7RD22-0AB0 and 6ES7132-7GD21-0AB0:

	1 output		2 outputs	
U_o, V_{oc} [V_{dc}]	19.4		19.4	
I_o, I_{sc} [mA]	118		236	
P_o [mW]	572		1144	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
C_o, C_a [nF]	240	1500	230	1500
L_o, L_a [mH]	2.5	11	0.6	2.7

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP

6ES7132-7RD-0AB0**
6ES7132-7GD-0AB0**
6ES7138-7FD00-0AB0

The following parameters for the output circuits are applicable for the electronic module 6ES7132-7GD30-0AB0:

	1 output	
U_o, V_{oc} [V_{dc}]	27.9	
I_o, I_{sc} [mA]	110	
P_o [mW]	760	
	A,B/IIC	C-G/IIB
C_o, C_a [nF]	81	651
L_o, L_a [mH]	3	13

The following parameters for the output circuits are applicable for the electronic module 6ES7138-7FD00-0AB0:

	1 output		2 outputs	
U_o, V_{oc} [Vdc]	18.5		18.5	
I_o, I_{oc} [mA]	112.2		224.4	
P_o [mW]	519		1040	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
C_o, C_a [nF]	267	1650	254	1640
L_o, L_a [mH]	2.8	11.3	0.7	2.8

Copyright 2025 by Siemens AG. All Rights Reserved

The following parameters for the input circuits are applicable for the electronic modules 6ES7132-7RD*0-0AB0:

	1 input
U_i, V_{max} [V_{dc}]	28
I_i, I_{max} [mA]	308
P_i [W]	1.2
C_i [nF]	3
L_i [mH]	0

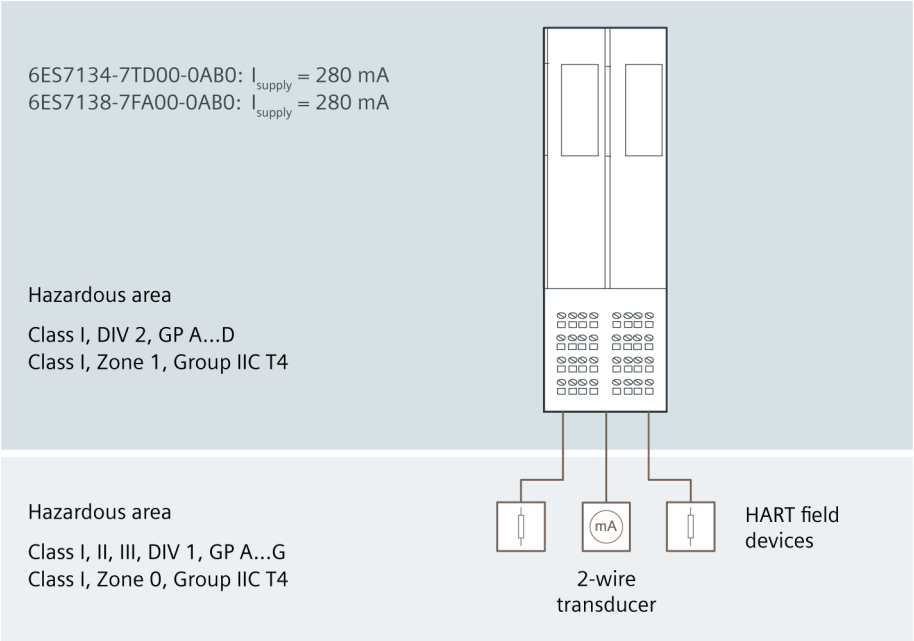
The following parameters for the input circuits are applicable for the electronic modules 6ES7132-7RD*1-0AB0, 6ES7132-7RD22-0AB0 and 6ES7132-7GD**-0AB0:

	1 input
U_i, V_{max} [V_{dc}]	28
I_i, I_{max} [mA]	7.1
P_i [mW]	50 Linear characteristic
C_i [nF]	36.3
L_i [mH]	0

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP **6ES7134-7TD00-0AB0**
6ES7138-7FA00-0AB0

Analog electronic module 4 AI I 2Wire HART 6ES7134-7TD00-0AB0
Analog electronic module 4F AI EX HART 6ES7138-7FA00-0AB0



You can find the pin configuration in the manuals:

- "Distributed I/O ET 200iSP", chapter "Analog electronics module 4 AI I 2WIRE HART",
- "ET 200iSP Distributed I/O Device - Fail-safe Modules", chapter "Analog electronic module 4 F-AI Ex HART". Also see notes under "system in total".

Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The connection of Ex ic field devices is only permitted if the module is installed in zone 2 or in the safe area.

Copyright 2025 by Siemens AG. All Rights Reserved

The following parameters for the input circuits are applicable for the electronic module 6ES7134-7TD00-0AB0:

	1 input		
U_o, V_{oc} [V_{dc}]	27.6		
I_o, I_{sc} [mA]	88.2		
P_o [mW]	610		
	A,B/IIC	C-G/IIB	AEx ic IIC
C_o, C_a [nF]	83	665	282
L_o, L_a [mH]	3	15.7	4.9

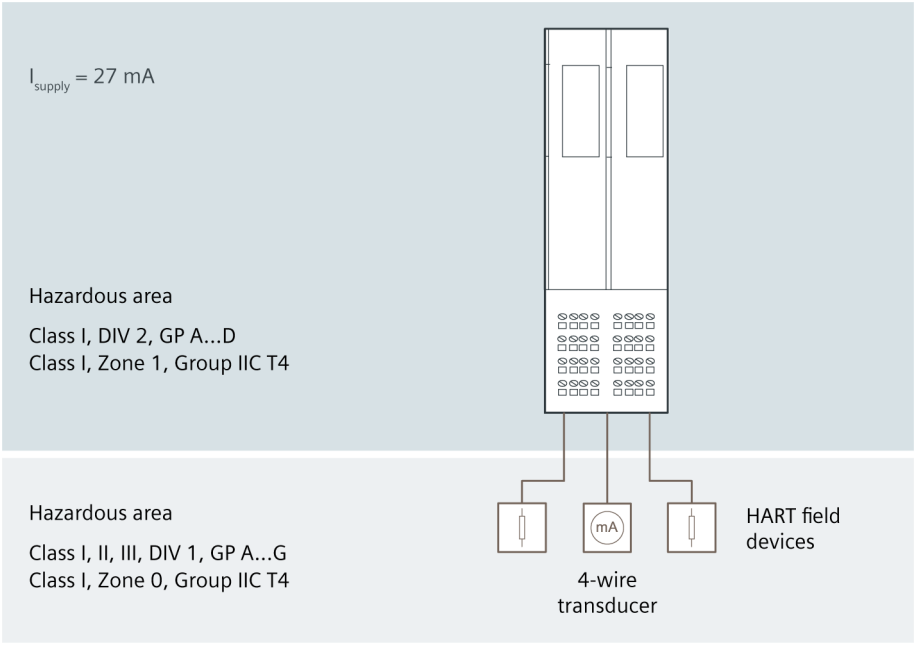
The following parameters for the input circuits are applicable for the electronic module 6ES7138-7FA00-0AB0:

	1 input		
U_o, V_{oc} [V_{dc}]	27.7		
I_o, I_{oc} [mA]	98		
P_o [mW]	679		
	A,B/IIC	C-G/IIB	AEx ic IIC
C_o, C_a [nF]	71.3	649	267.3
L_o, L_a [mH]	3	14	3

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP 6ES7134-7TD50-0AB0

Analog electronic module 4 AI I 4Wire HART 6ES7134-7TD50-0AB0



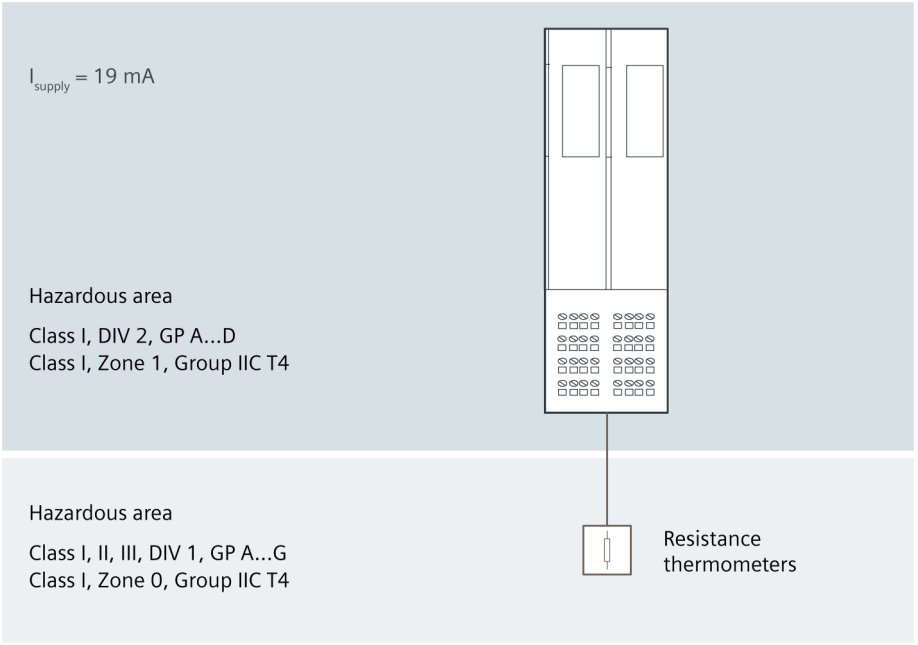
You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "Analog electronics module 4 AI I 4WIRE HART". Also see notes under "system in total".
Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The following parameters for the input circuits are applicable for the electronic modules:

	1 input
U_i, V_{max} [V_{dc}]	30
I_i, I_{max} [mA]	150
P_i [W]	1.2
C_i [nF]	0
Li [mH]	0
V_o, V_o [V_{dc}]	0.9
I_o, I_{se} [mA]	0.8
P_o [mW]	0.2
C_o, C_a [nF]	1000
L_o, L_a [mH]	1000

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP **6ES7134-7SD50-0AB0**
6ES7134-7SD51-0AB0

Analog electronic module 4 AI RTD 6ES7134-7SD50-0AB0



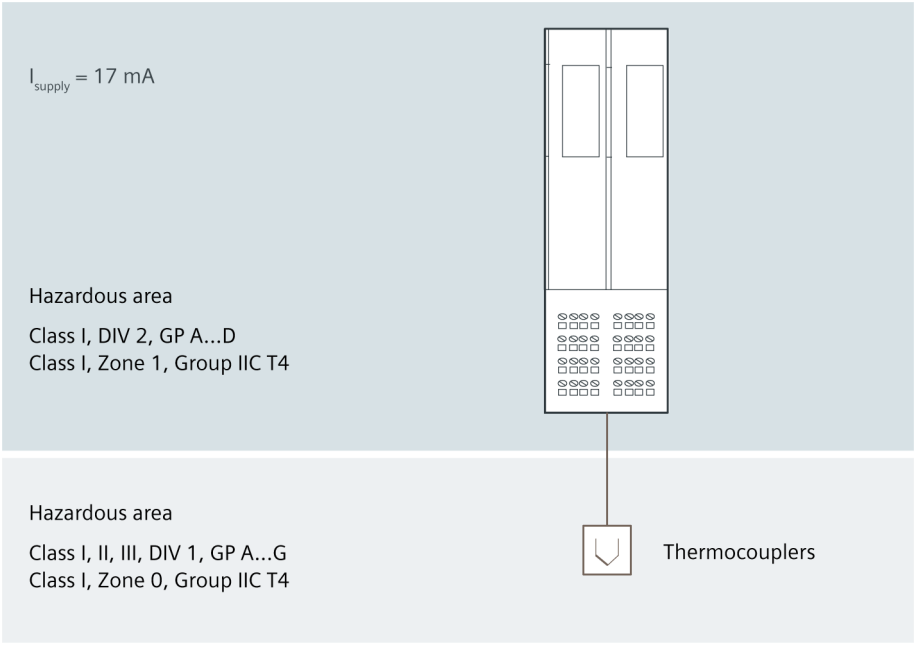
You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "Analog electronics module 4 AI RTD". Also see notes under "system in total".
Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The following parameters for the input circuits are applicable for the electronic module:

	4 inputs	
U_o, V_{oc} [V_{dc}]	5.9	
I_o, I_{sc} [mA]	24	
P_o [mW]	36	
	A,B/IIC	C-G/IIB
C_o, C_a [µF]	43	1000
L_o, L_a [mH]	50	200

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP 6ES7134-7SD00-0AB0

Analog electronic module 4 AI TC 6ES7134-7SD00-0AB0



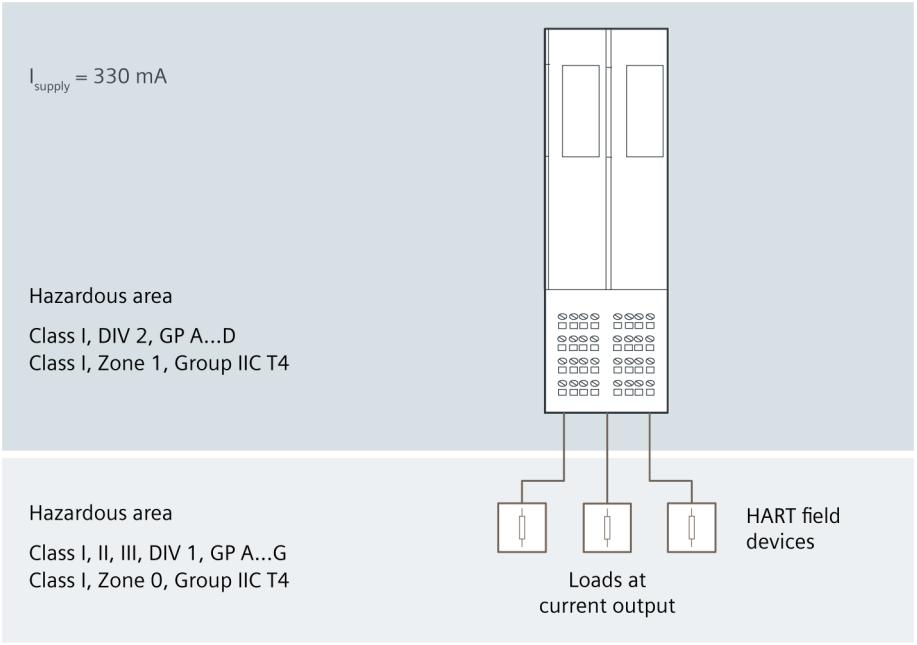
You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "Analog electronics module 4 AI TC". Also see notes under "system in total".
Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The following parameters for the input circuits are applicable for the electronic module:

	4 inputs	
U_o, V_{oc} [V_{dc}]	5.9	
I_o, I_{sc} [mA]	15	
P_o [mW]	23	
	A,B/IIC	C-G/IIB
C_o, C_a [µF]	43	1000
L_o, L_a [mH]	100	500

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP 6ES7135-7TD00-0AB0

Analog electronic module 4 AO I HART 6ES7134-7TD00-0AB0



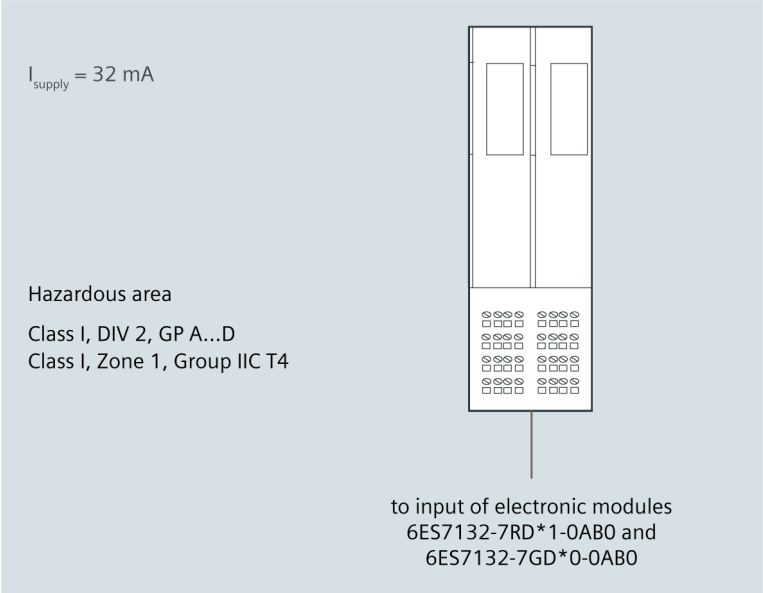
You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "Analog electronic module 4 AO I HART". Also see notes under "system in total".
Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The connection of Ex ic field devices is only permitted if the module is installed in zone 2 or in the safe area.
The following parameters for the output circuits are applicable for the electronic module:

	Output		
U_o, V_{oc} [V_{dc}]	27.6		
I_o, I_{sc} [mA]	88.2		
P_o [mW]	610		
	A,B/IIC	C-G/IIB	AEx ic IIC
C_o, C_a [nF]	83	665	282
L_o, L_a [mH]	3	15.7	4.9

Copyright 2025 by Siemens AG. All Rights Reserved

ET 200iSP 6ES7138-7BB00-0AB0

WATCHDOG Module 6ES7138-7BB00-0AB0



You can find the pin configuration in the manual "Distributed I/O ET 200iSP", chapter "Watchdog module". Also see notes under "system in total".
Use with TM-IM/EM P/N 6ES7193-7AA**-0AA0 or TM-EM/EM P/N 6ES7193-7CA**-0AA0.
The following parameters for the output circuits are applicable for the electronic module:

	Output	
U_o, V_{oc} [V_{dc}]	12.7	
I_o, I_{sc} [mA]	329	
P_o [mW]	910	
	A,B,C,D/IIC	C,D/IIB
C_o, C_a [µF]	2.3	5
L_o, L_a [mH]	0.8	3.1

Copyright 2025 by Siemens AG. All Rights Reserved