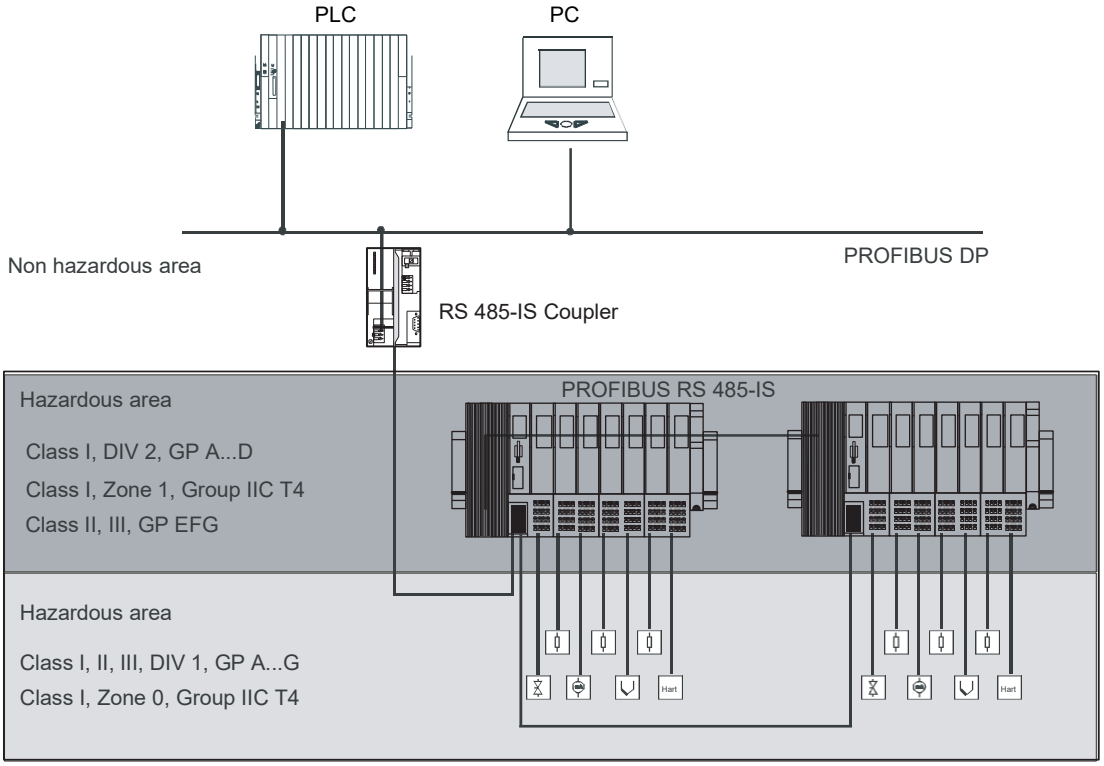
SIEMENS

Intrinsic Safety Control Drawing

A5E00455287-AE

ET 200iSP **system in total**

"No revision to drawing without prior Approval by FM Approvals!"



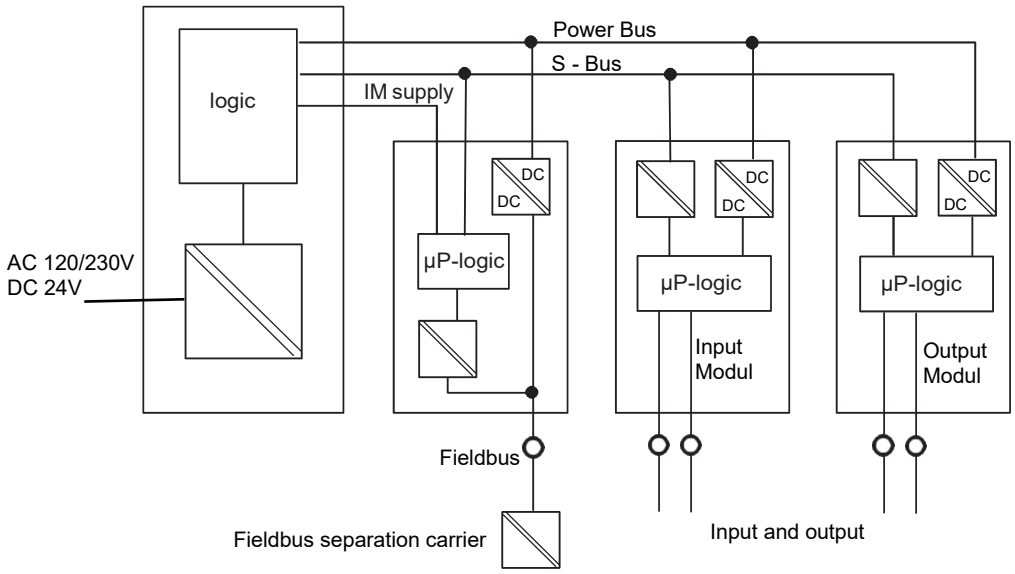
The complete interface system ET 200iSP with its components is represented in the Control Drawing.

You can find the pin configuration in the manuals “Distributed I/O ET 200iSP” or "ET 200iSP Distributed I/O Device - Fail-safe Modules".

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ET 200iSP system in total

The supply (of electrical energy) of the components is represented in the following drawing.



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 field bus 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 Station Type 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.

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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.

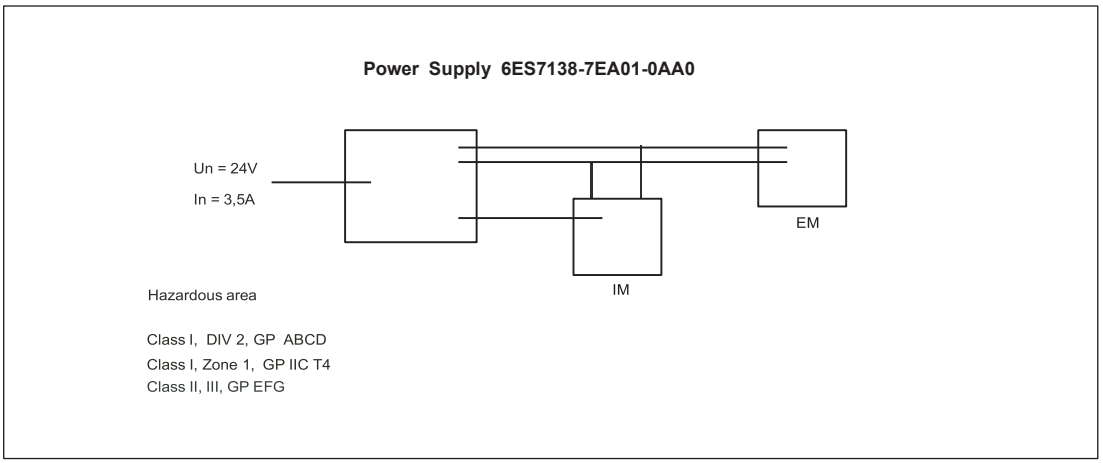
TABLE 1:

I.S. Equipment		Associated Apparatus
V max (or Ui)	≥	Voc or Vt (or Uo)
I max (or Ii)	≥	Isc or It (or Io
P max, Pi	≥	Po
Ci + Ccable	≤	Ca (or Co)
Li + Lcable	≤	La (or Lo)

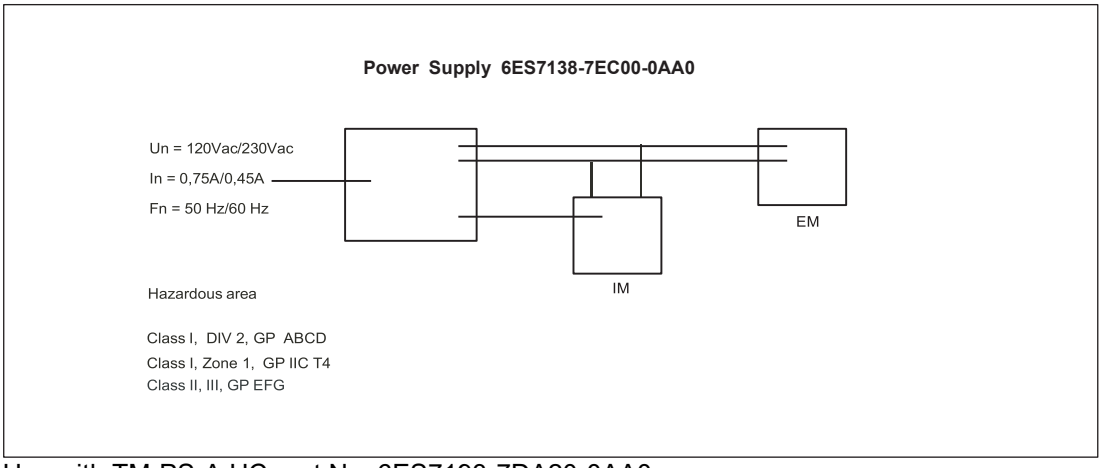
5. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.
6. Capacitance and inductance of the field 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, Ccable, plus intrinsically safe equipment capacitance, Ci must be less than the marked capacitance, Ca (or Co), shown on any associated apparatus used. The same applies for inductance (Lcable, Li and La or Lo, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft., Lcable = 0.2 µH/ft.
7. The maximum voltage U_M used or generated by the equipment installed outside the hazardous area may not exceed 250 Vac, 250 Vdc.
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. For installation in Class II, Division 1 or 2 and Class III, Division 1 or 2 Hazardous (Classified) Locations, the system must be installed in a FM or NRTL listed dust-ignition-proof enclosure suitable for such locations.
10. 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.
11. 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.
12. WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY OR SUITABILITY FOR DIVISION 2
13. 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 Station Type ET 200iSP".
14. Module power supply 6ES7138-7EA01-0AA0 is factory sealed. Do not open.
    The Distributed I/O Station Type 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.
15. The nonincendive field wiring circuit concept allows interconnection of nonincendive field wiring apparatus with associated noninccendive field wiring apparatus, using any of the wiring methods permitted for unclassified locations.

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ET 200iSP



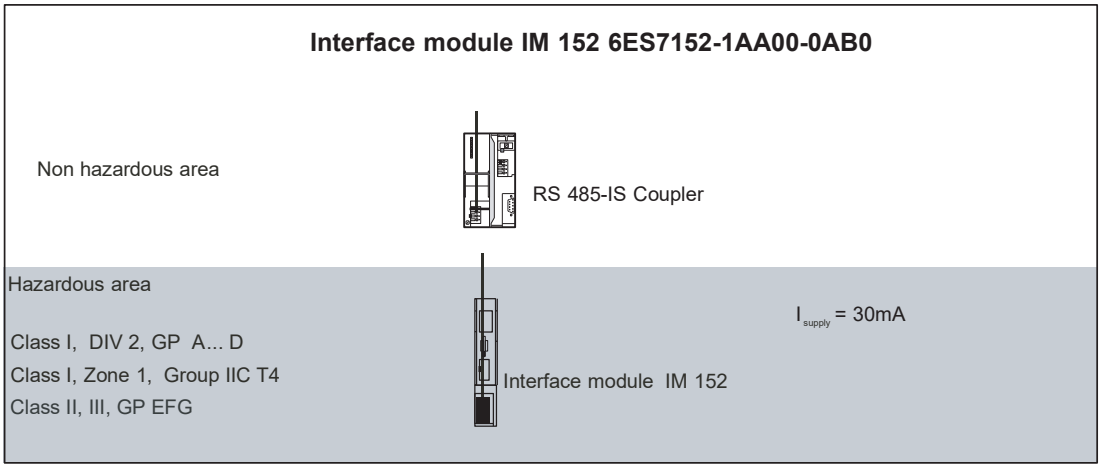
Use with TM-PS-A part No. 6ES7193-7DA10-0AA0 or
TM-PS-B part No. 6ES7193-7DB10-0AA0 or
TM-PS-A UC part No. 6ES7193-7DA20-0AA0 or
TM-PS-B UC part No. 6ES7193-7DB20-0AA0.



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

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



You can find the pin configuration in the manual „ Distributed I/O System ET 200iSP “, chapter 11.

Use with TM-IM/IM P/N 6ES7193-7AB00-0AA0 or TM-IM/EM P/N 6ES7193-7AA*0-0AA0.

The following parameters for the PROFIBUS RS 485 – IS fieldbus connection apply to the interface module:

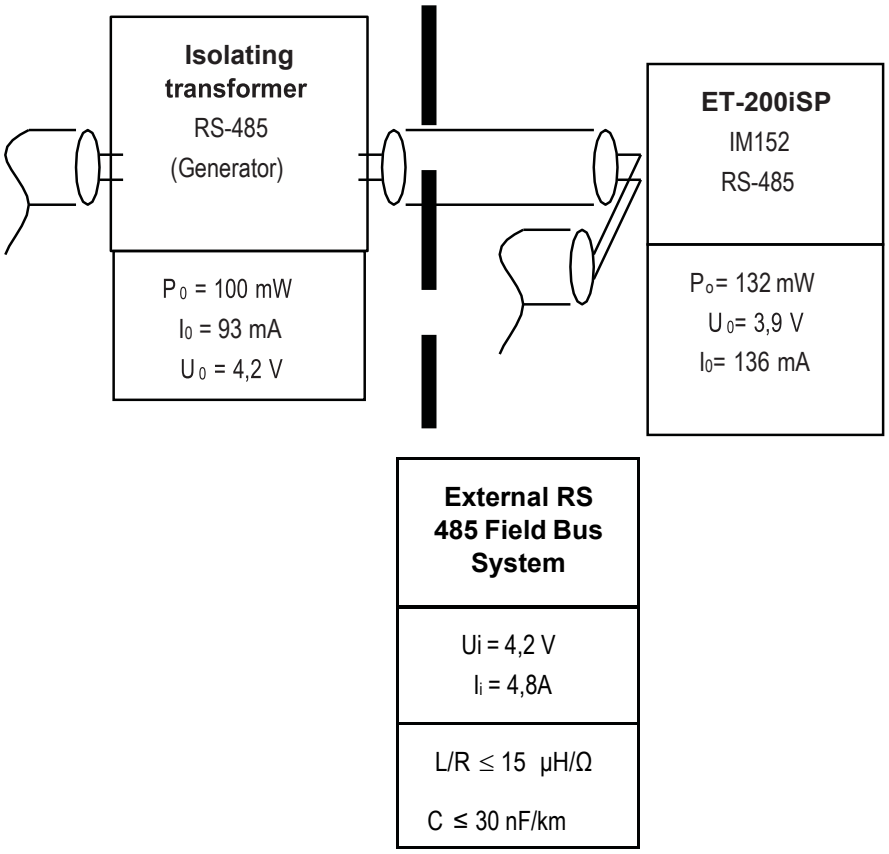
	Fieldbus
U_o, V_{oc} [V_{dc}]	3.9
I_{sc}, I_o [mA]	136
P_o, [mW]	132
U_i, V_{max} [V_{dc}]	4.2 (*)
I_i, I_{max}, P_i [A]	4.8
P_i [W]	5

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The following merits apply to the fieldbus line:

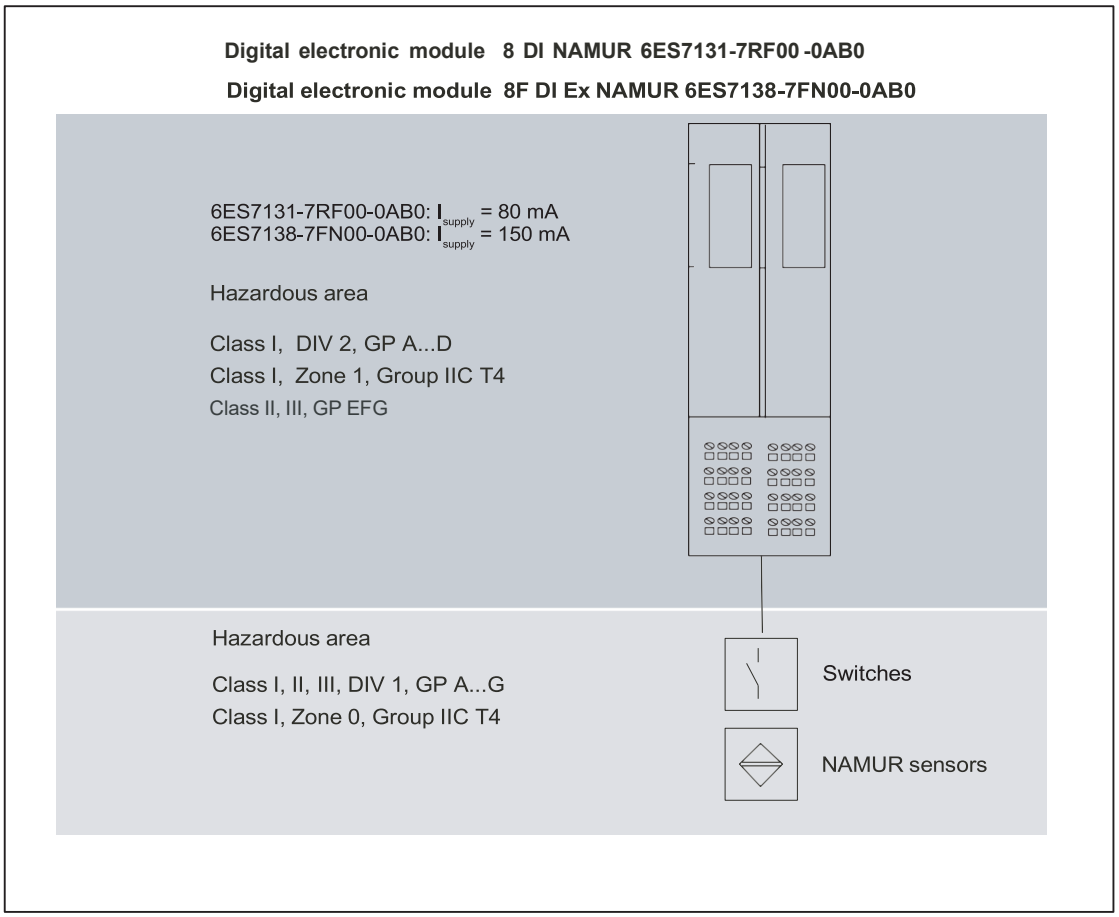
Must be in accordance with NEC 504.30B:

- 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 < 3mH (A, B/IIC) or < 15 mH (C, D/IIB)



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



You can find the pin configuration in the manuals:
“Distributed I/O ET 200iSP”, chapter 12.1 for 8 DI Namur.
"ET 200iSP Distributed I/O Device - Fail-safe Modules", chapter 7.1 for 8 F-DI Ex NAMUR
Also see notes under “system in total”.

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

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

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

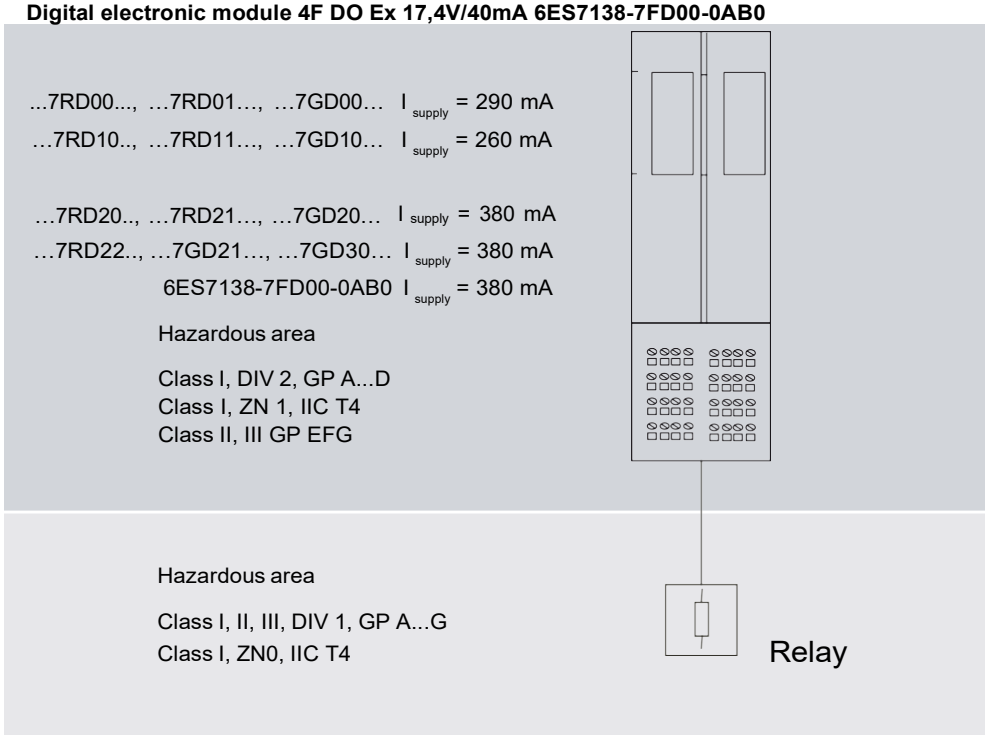
	1 input		2 inputs //		4 inputs //		8 inputs //	
U_o, V_{oc} [V_{dc}]	8.8		8.8		8.8		8.8	
I_o, I_{sc} [mA]	8.81		17.62		35.24		70.48	
P_o [mW]	19.4		38.8		77.6		155.2	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
C_o, C_a [µF]	5.37	45.87	5.24	45.74	4.98	45.48	4.46	44.96
L_o, L_a [mH]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

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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 DC 23,1V/20mA SHUT DOWN „H“ 6ES7132-7RD01-0AB0
Digital electronic module 4 DO DC 17,4V/27mA SHUT DOWN „H“ 6ES7132-7RD11-0AB0
Digital electronic module 4 DO DC 17,4V/40mA SHUT DOWN „H“ 6ES7132-7RD21-0AB0
Digital electronic module 4 DO DC 17,4V/40mA SHUT DOWN „H“ 6ES7132-7RD22-0AB0
Digital electronic module 4 DO DC 23,1V/20mA SHUT DOWN „L“ 6ES7132-7GD00-0AB0
Digital electronic module 4 DO DC 17,4V/27mA SHUT DOWN „L“ 6ES7132-7GD10-0AB0
Digital electronic module 4 DO DC 17,4V/40mA SHUT DOWN „L“ 6ES7132-7GD20-0AB0
Digital electronic module 4 DO DC 17,4V/40mA SHUT DOWN „L“ 6ES7132-7GD21-0AB0
Digital electronic module 4 DO DC 25,5V/22mA SHUT DOWN „L“ 6ES7132-7GD30-0AB0
Digital electronic module 4F DO Ex 17,4V/40mA 6ES7138-7FD00-0AB0



You can find the pin configuration in the manuals:
“Distributed I/O ET 200iSP”, chapter 12.2 for 4 DO,
"ET 200iSP Distributed I/O Device - Fail-safe Modules", chapter 7.2 for 4 F-DO Ex 17.4V/40mA
Also see notes under “system in total”.

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

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

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

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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	
Uo, Voc [Vdc]	27.9	
Io, Isc [mA]	110	
Po [mW]	760	
	A,B/IIC	C-G/IIB
Co, Ca [nF]	81	651
Lo, La [mH]	3	13

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

	1 output		2 outputs //	
Uo, Voc [Vdc]	18.5		18.5	
Io, Ioc [mA]	112.2		224.4	
Po [mW]	519		1040	
	A,B/IIC	C-G/IIB	A,B/IIC	C-G/IIB
Co, Ca [nF]	267	1650	254	1640
Lo, La [mH]	2.8	11.3	0.7	2.8

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

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

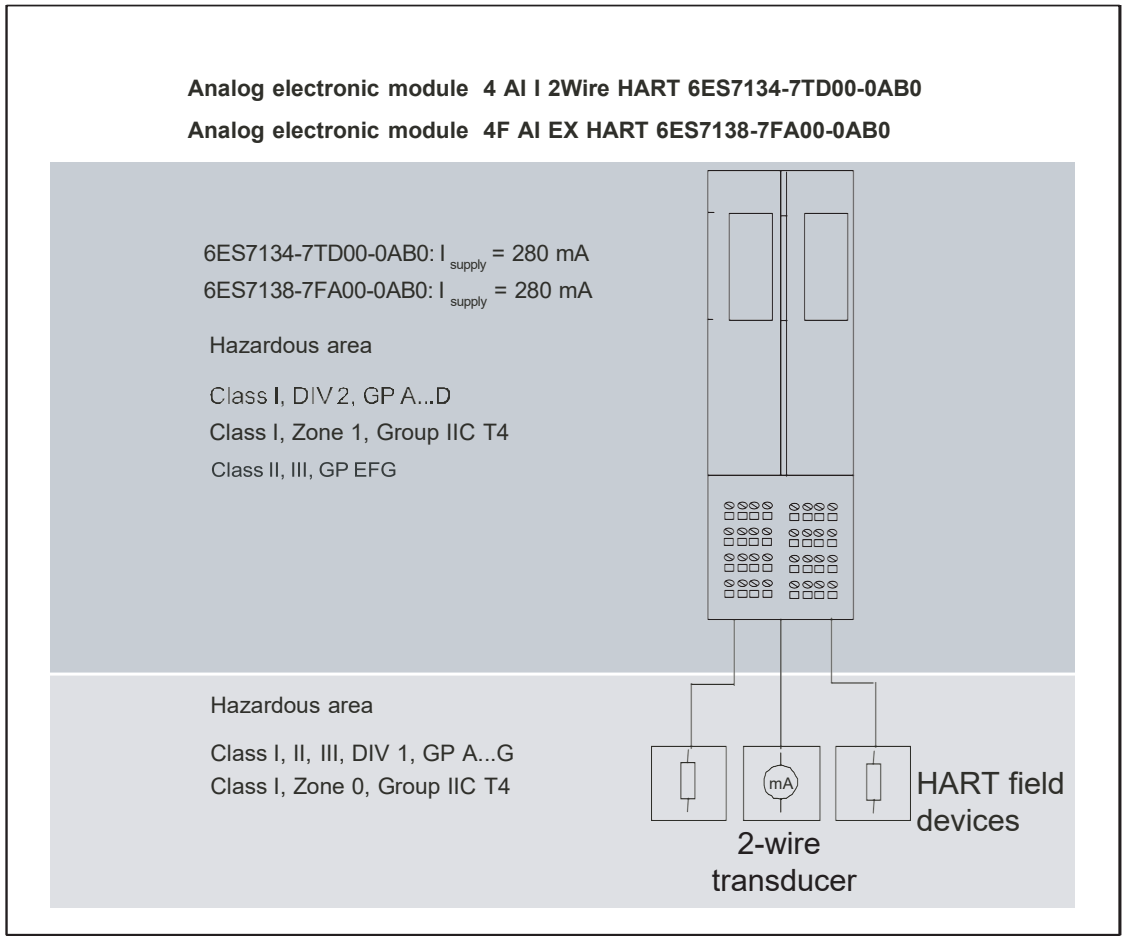
	1 input
U_i, V_{max} [V_{dc}]	28
I_i, I_{max} [mA]	308
P_i [W]	1.2
Ci [nF]	3
Li [mH]	0

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 Lineare Kennlinie
Ci [nF]	36.3
Li [mH]	0

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



You can find the pin configuration in the manuals:
“Distributed I/O ET 200iSP”, chapter 13.2 for 4 AI I 2WIRE HART,
"ET 200iSP Distributed I/O Device - Fail-safe Modules", chapter 8.1 for 4 F-AI Ex HART.
Also see notes under “system in total”.

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

The connection of Ex ic field devices is only permitted if the module is installed in zone 2 or in the safe area.

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

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

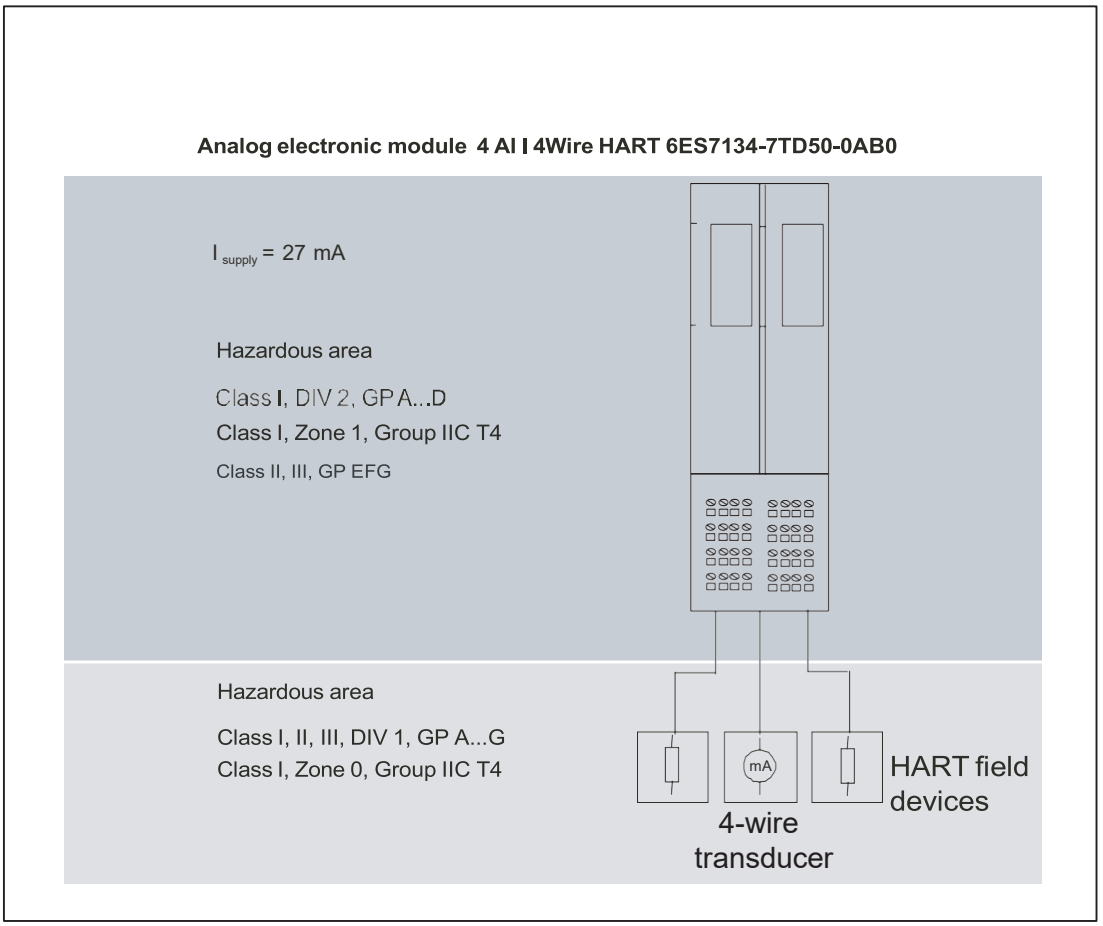
	1 input		
U_o, V_{oc} [V_{dc}]	27.6		
I_o, I_{sc} [mA]	88.2		
P_o [mW]	610		
	A,B/IIC	C-G/IIB	AEx ic IIC
C_o, C_a [nF]	83	665	282
L_o, L_a [mH]	3	15.7	4.9

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

	1 input		
Uo, Voc [Vdc]	27.7		
Io, Ioc [mA]	98		
Po [mW]	679		
	A,B/IIC	C-G/IIB	AEx ic IIC
Co, Ca [nF]	71.3	649	267.3
Lo, La [mH]	3	14	3

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ET 200iSP **6ES7134-7TD50-0AB0**



You can find the pin configuration in the manual „Distributed I/O System Type ET 200iSP“, chapter 13.3. Also see notes under „system in total“.

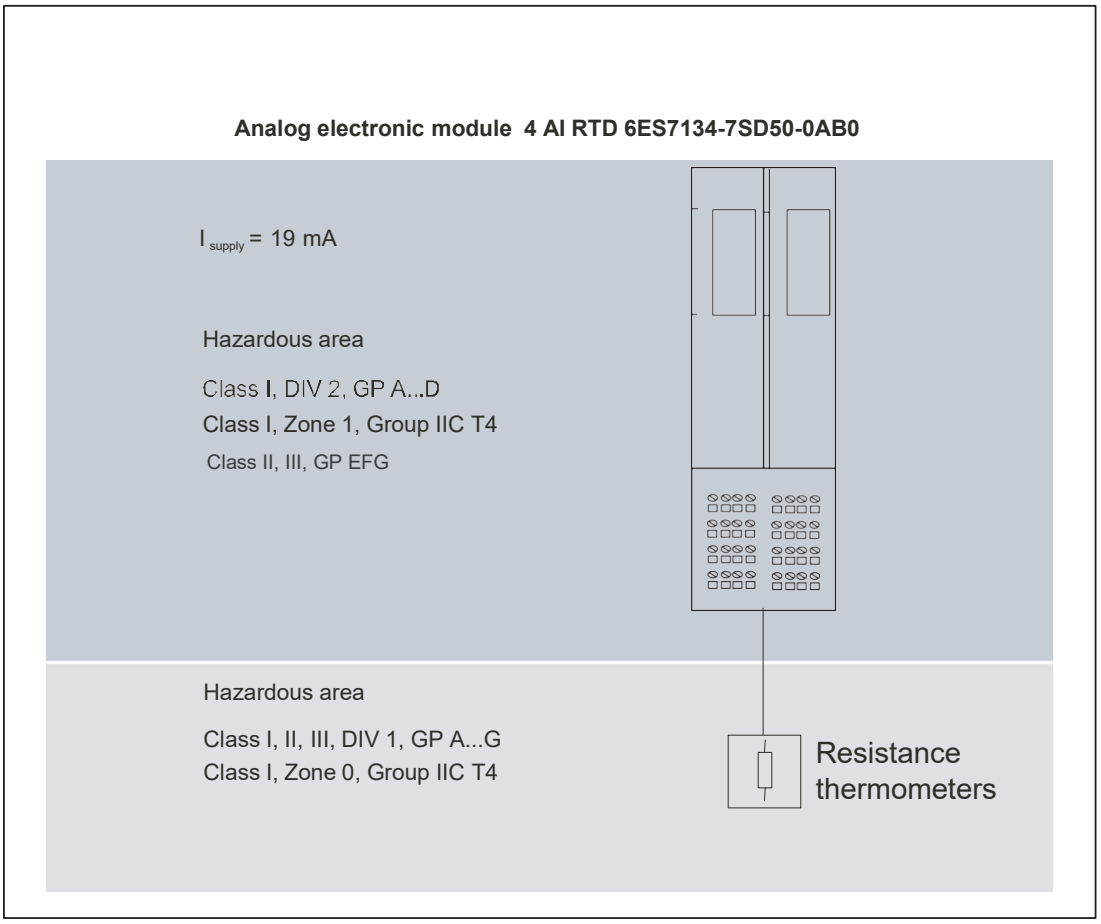
Use with TM-IM/EM P/N 6ES7193-7AA*0-0AA0 or TM-EM/EM P/N 6ES7193-7CA*0-0AA0.

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

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



You can find the pin configuration in the manual „Distributed I/O System Type ET 200iSP“, chapter 13.4. Also see notes under „system in total“.

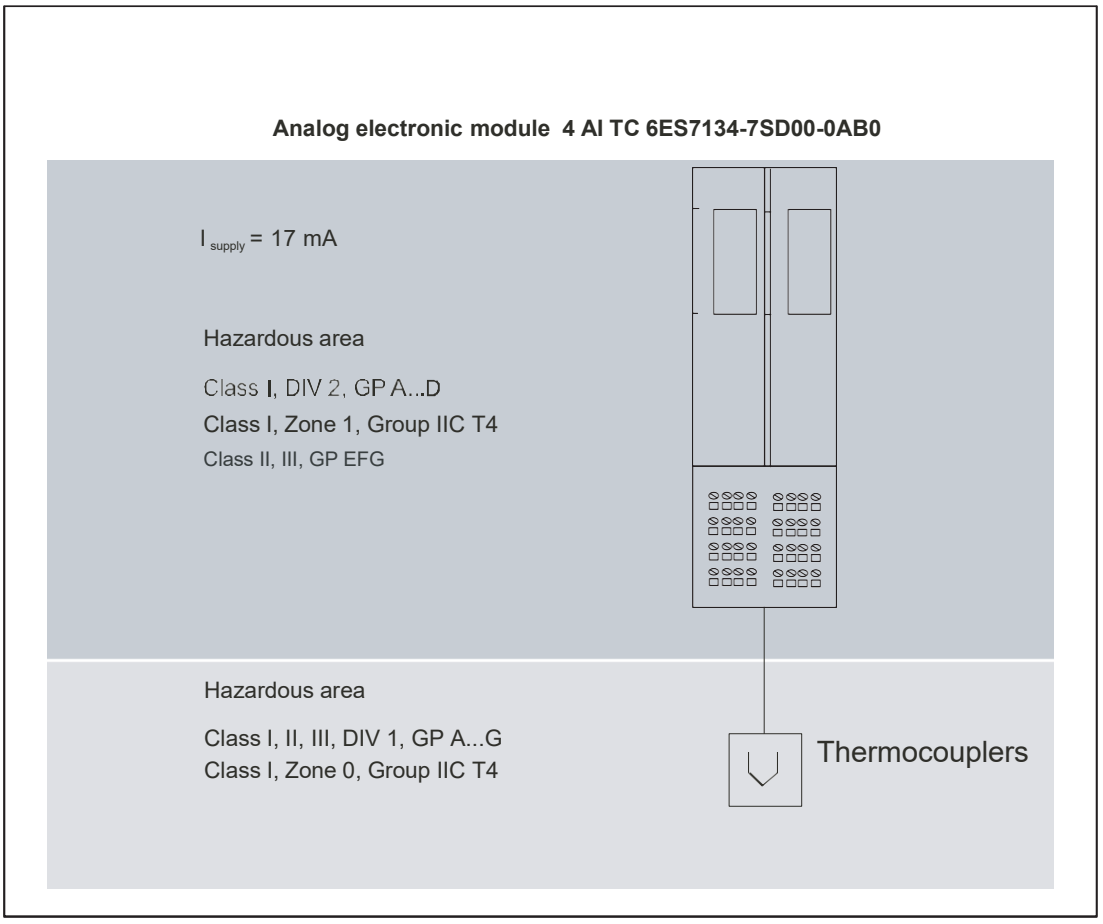
Use with TM-IM/EM P/N 6ES7193-7AA*0-0AA0 or TM-EM/EM P/N 6ES7193-7CA*0-0AA0.

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

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ET 200iSP **6ES7134-7SD00-0AB0**



You can find the pin configuration in the manual „Distributed I/O System Type ET 200iSP“, chapter 13.5. Also see notes under „system in total“.

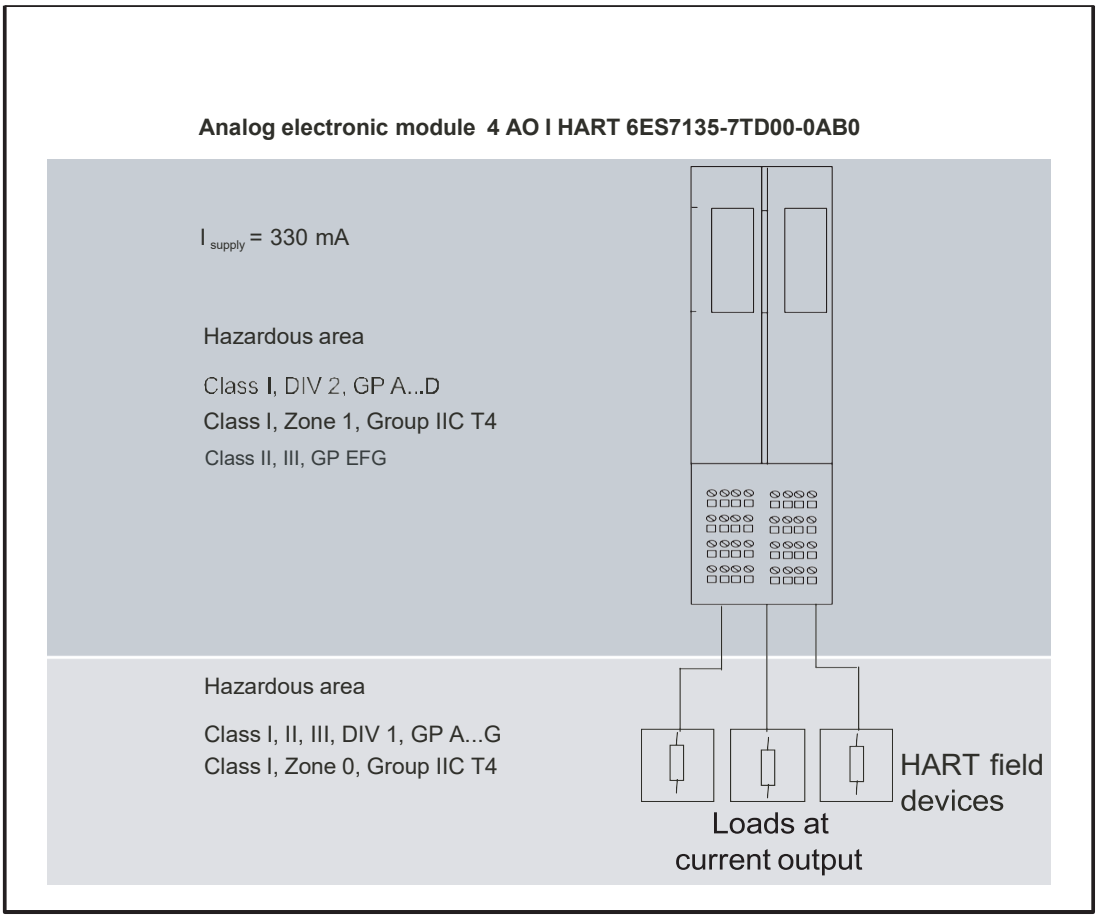
Use with TM-IM/EM P/N 6ES7193-7AA*0-0AA0 or TM-EM/EM P/N 6ES7193-7CA*0-0AA0.

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

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ET 200iSP **6ES7135-7TD00-0AB0**



You can find the pin configuration in the manual “Distributed I/O System Type ET 200iSP”, chapter 13.6. Also see notes under “system in total”.

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

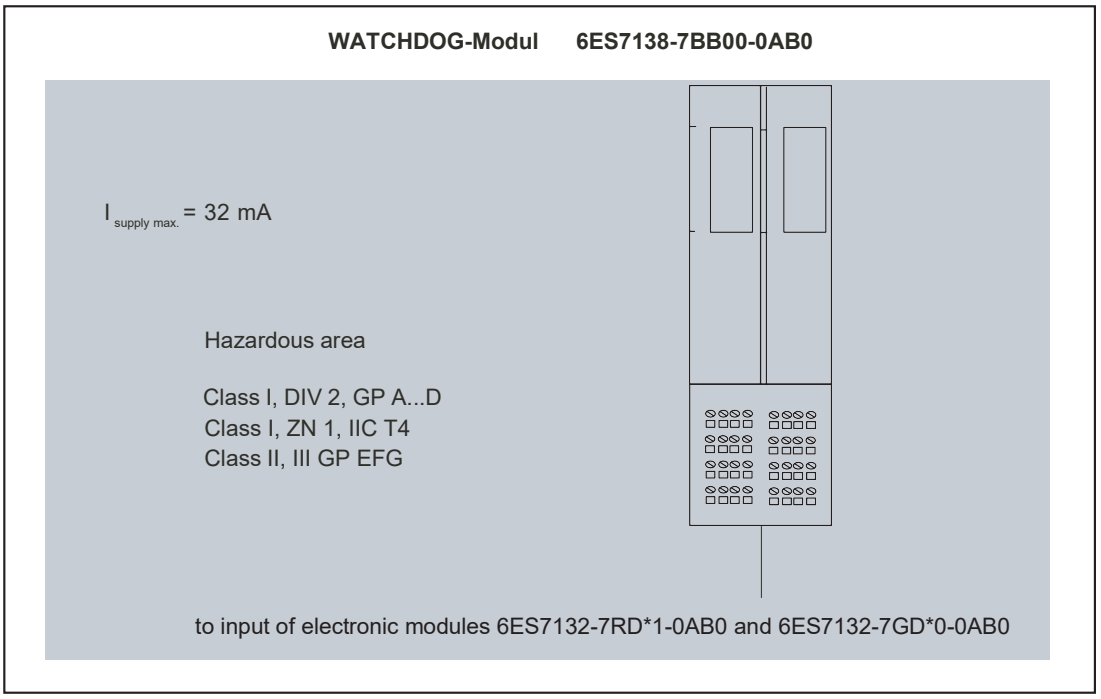
The connection of Ex ic field devices is only permitted if the module is installed in zone 2 or in the safe area.

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

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ET 200iSP **6ES7138-7BB00-0AB0**



You can find the pin configuration in the manual “Distributed I/O ET 200iSP”, chapter 14.2 for Watchdog module. Also see notes under “system in total”.

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

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

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