

I/O systems

ET 200 systems for the control cabinet

ET 200S - I/O modules

Analog electronic modules

Technical specifications (continued)

Article number	6ES7134-4GB11-0AB0 ET200S, EL-MOD., 2AI STD I-4DMU, 0-20MA,	6ES7134-4MB02-0AB0 ET200S, EL-MOD., 2AI HF I, +/-20MA	6ES7134-4GD00-0AB0 ET200S, EL-MOD., 4AI STANDARD I 2-WIRE	6ES7134-4FB52-0AB0 ET200S, EL-MOD., 2AI HS U, +/-10V, 15BIT	6ES7134-4GB62-0AB0 ET200S, EL-MOD., 2AI HS I-4WIRE, 0-20MA
Galvanic isolation					
Galvanic isolation analog inputs					
• between the channels	No	No; however, increased permissible potential difference between the inputs.	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes	Yes	Yes
• between the channels and the load voltage L+	No	Yes	No	Yes	Yes
Permissible potential difference					
between MANA and M internally (UISO)					75V DC/60V AC
Isolation					
Isolation checked with	500 V DC		500 V DC	500 V DC	
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Height	81 mm	81 mm	81 mm	81 mm	81 mm
Depth	52 mm	52 mm	52 mm	52 mm	52 mm
Weights					
Weight, approx.	40 g	45 g	40 g	45 g	45 g
Article number	6ES7134-4JB01-0AB0 ET200S, EL-MOD., 2AI TC, +/-80MV, 15BIT	6ES7134-4JB51-0AB0 ET200S, EL-MOD., 2/4 AI RTD STANDARD	6ES7134-4JD00-0AB0 ET200S, EL-MOD., 4AI TC, +/-80MV, 15BIT	6ES7134-4NB01-0AB0 ET200S, EL-MOD., 2AI TC HF, 15BIT	6ES7134-4NB51-0AB0 ET200S, EL-MOD., 2AI RTD HF, 15BIT
Product type designation					
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V; From power module	24 V; From power module	24 V; From power module	24 V; From power module	24 V; From power module
• Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Input current					
from load voltage L+ (without load), max.	30 mA	30 mA	30 mA	30 mA	30 mA
from backplane bus 3.3 V DC, max.	10 mA	10 mA	10 mA	10 mA	10 mA
Output voltage					
Power supply to the transmitters					
• present		Yes			
• short-circuit proof		Yes			
Power losses					
Power loss, typ.	0.6 W	0.6 W	0.6 W	0.6 W	0.6 W
Address area					
Address space per module					
• Address space per module, max.	4 byte	8 byte	8 byte	4 byte	4 byte

Technical specifications (continued)

Article number	6ES7134-4JB01-0AB0 ET200S, EL-MOD., 2AI TC, +/-80mV, 15BIT	6ES7134-4JB51-0AB0 ET200S, EL-MOD., 2/4 AI RTD STANDARD	6ES7134-4JD00-0AB0 ET200S, EL-MOD., 4AI TC, +/-80mV, 15BIT	6ES7134-4NB01-0AB0 ET200S, EL-MOD., 2AI TC HF, 15BIT	6ES7134-4NB51-0AB0 ET200S, EL-MOD., 2AI RTD HF, 15BIT
Analog inputs					
Number of analog inputs	2	4; 2 for 3 or 4-wire connection	4	2	2
permissible input voltage for voltage input (destruction limit), max.	10 V; Permanent	9 V	10 V; Permanent	20 V; +/-20 V, continuous	9 V
Constant measurement current for resistance-type transmitter, typ.		1.67 mA			1.25 mA
Cycle time (all channels) max.	Number of active channels per module x basic conversion time	Number of active channels per module x basic conversion time	Number of active channels per module x basic conversion time	Number of active channels per module x basic conversion time	Number of active channels per module x basic conversion time
Technical unit for temperature measurement adjustable	No	No	No	Yes	Yes
Input ranges					
• Voltage	Yes	No	Yes	Yes	No
• Current	No	No	No	No	No
• Thermocouple	Yes	No	Yes	Yes	No
• Resistance thermometer	No	Yes	No	No	Yes
• Resistance	No	Yes	No	No	Yes
Input ranges (rated values), voltages					
• -80 mV to +80 mV	Yes		Yes	Yes	
• Input resistance (-80 mV to +80 mV)	1 MΩ		1 MΩ	1 MΩ	
Input ranges (rated values), thermoelements					
• Type B	Yes		Yes	Yes	
• Input resistance (Type B)	1 MΩ		1 MΩ	1 MΩ	
• Type C				Yes	
• Input resistance (Type C)				1 MΩ	
• Type E	Yes		Yes	Yes	
• Input resistance (Type E)	1 MΩ		1 MΩ	1 MΩ	
• Type J	Yes		Yes	Yes	
• Input resistance (type J)	1 MΩ		1 MΩ	1 MΩ	
• Type K	Yes		Yes	Yes	
• Input resistance (Type K)	1 MΩ		1 MΩ	1 MΩ	
• Type L	Yes		Yes	Yes	
• Input resistance (Type L)	1 MΩ		1 MΩ	1 MΩ	
• Type N	Yes		Yes	Yes	
• Input resistance (Type N)	1 MΩ		1 MΩ	1 MΩ	
• Type R	Yes		Yes	Yes	
• Input resistance (Type R)	1 MΩ		1 MΩ	1 MΩ	
• Type S	Yes		Yes	Yes	
• Input resistance (Type S)	1 MΩ		1 MΩ	1 MΩ	
• Type T	Yes		Yes	Yes	
• Input resistance (Type T)	1 MΩ		1 MΩ	1 MΩ	

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Input ranges (rated values), resistance thermometer • Cu 10 • Input resistance (Cu 10) • Ni 100 • Input resistance (Ni 100) • Ni 1000 • Input resistance (Ni 1000) • Ni 120 • Input resistance (Ni 120) • Ni 200 • Input resistance (Ni 200) • Ni 500 • Input resistance (Ni 500) • Pt 100 • Input resistance (Pt 100) • Pt 1000 • Input resistance (Pt 1000) • Pt 200 • Input resistance (Pt 200) • Pt 500 • Input resistance (Pt 500)		Yes; Standard/climate 2 000 kΩ			Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ
Input ranges (rated values), resistors • 0 to 150 ohms • Input resistance (0 to 150 ohms) • 0 to 300 ohms • Input resistance (0 to 300 ohms) • 0 to 600 ohms • Input resistance (0 to 600 ohms) • 0 to 3000 ohms • Input resistance (0 to 3000 ohms)		Yes 2 000 kΩ Yes 2 000 kΩ Yes 2 000 kΩ			Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ
Thermocouple (TC) Temperature compensation - internal temperature compensation - external temperature compensation with compensations socket	Not possible Yes; possible, one external compensating box per channel		Not possible Yes; possible, one external compensating box per channel	Yes; possible with TM-E15S24-AT, TM-E15C24-AT Yes; one external compensating box per channel	Yes
Characteristic linearization • Parameterizable - for thermocouples - for resistance thermometer	Yes; Type B, E, J, K, L, N, R, S, T to IEC 584	Yes; for Pt100, Ni100 Pt100 (standard, climatic range), Ni100 (standard, climatic range)	Yes; Type B, E, J, K, L, N, R, S, T to IEC 584	Yes Type B, C, E, J, K, L, N, R, S, T to IEC 584	Yes; for Ptxxx, Nixxx Ptxxx, Nixxx
Cable length • shielded, max.	50 m	200 m	50 m	50 m	200 m

Technical specifications (continued)

Article number	6ES7134-4JB01-0AB0 ET200S, EL-MOD., 2AI TC, +/-80mV, 15BIT	6ES7134-4JB51-0AB0 ET200S, EL-MOD., 2/4 AI RTD STANDARD	6ES7134-4JD00-0AB0 ET200S, EL-MOD., 4AI TC, +/-80mV, 15BIT	6ES7134-4NB01-0AB0 ET200S, EL-MOD., 2AI TC HF, 15BIT	6ES7134-4NB51-0AB0 ET200S, EL-MOD., 2AI RTD HF, 15BIT
Analog value creation					
Measurement principle	integrating	integrating	integrating	integrating	integrating (Sigma-Delta)
Integration and conversion time/ resolution per channel					
Resolution with overrange (bit including sign), max.	16 bit; 15 bits + sign	16 bit; 150 ohms: 14 bits; 300, 600 ohms: 15 bits, Pt100, Ni100: 16 bits	16 bit; 15 bits + sign	16 bit	16 bit; for Pt100, Ni100, Ni120, Pt200, Ni200, Pt 500, Ni 500, Pt1000, Ni1000, Cu10: 15 bits + sign; for 150, 300, 600, 3000 ohms: 15 bits; for PTC: 1 bits
Integration time, parameterizable	Yes	Yes	Yes		
Integration time (ms)	16,7 / 20 ms	16,7 / 20 ms	16,7 / 20 ms	16,7 / 20 ms	16,7 / 20 ms
Conversion time (per channel)	65 s; 55 / 65 ms (additional 20 ms on activated wire-break test)	66 / 80 ms; additional conversion time for diagnostic wire break test	65 ms; 55 / 65 ms (additional 20 ms on activated wire-break test)	66 ms; 66 / 80 ms; additional conversion time for diagnostic wire break test	Basic conversion time incl. integration time: 50 / 60 ms; additional conversion time for diagnostics of wire break test: 5 / 5 ms; additional conversion time for line compen- sation with 3-wire connection: 50 / 60 ms
Smoothing of measured values					
Parameterizable	Yes; In four stages by means of digital filtering	Yes; In four stages by means of digital filtering	Yes; In four stages by means of digital filtering	Yes; In four stages by means of digital filtering	Yes; In four stages by means of digital filtering
Step: None	Yes; 1 x cycle time	Yes; 1 x cycle time	Yes; 1 x cycle time	Yes; 1 x cycle time	Yes; 1 x cycle time
Step: low	Yes; 4 x cycle time	Yes; 4 x cycle time	Yes; 4 x cycle time	Yes; 4 x cycle time	Yes; 4 x cycle time
Step: Medium	Yes; 32 x cycle time	Yes; 32 x cycle time	Yes; 32 x cycle time	Yes; 32 x cycle time	Yes; 32 x cycle time
Step: High	Yes; 64 x cycle time	Yes; 64 x cycle time	Yes; 64 x cycle time	Yes; 64 x cycle time	Yes; 64 x cycle time
Encoder					
Connection of signal encoders					
for voltage measurement	Yes		Yes		
for resistance measurement with two-wire connection		Yes			Yes
for resistance measurement with three-wire connection		Yes			Yes; internal compen- sation of the line resis- tances
for resistance measurement with four-wire connection		Yes			Yes

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Technical specifications (continued)

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Errors/accuracies					
Linearity error (relative to input range), (+/-)	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K	0.005 %/K	0.005 %/K	0.0009 %/K
Crosstalk between the inputs, min.	-50 dB	-50 dB	-50 dB	-50 dB	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input area), (+/-)	0.05 %	0.05 %	0.05 %	0.05 %	0.05 %
Operational limit in overall temperature range					
• Voltage, relative to input area, (+/-)	0.6 %		0.6 %	0.1 %; +/-1.5 K for thermocouples, +/-7 K for thermocouples type C, +/-2.5 K with static thermal state (ambient temperature change < 0.3 K/min)	
• Resistance thermometer, relative to input area, (+/-)		0.6 %			Resistance-type transmitter: +/-0.1%; Pt100, Pt200, Pt500, Pt1000 standard: +/-1.0 K; Pt100, Pt200, Pt500, Pt1000 climate: +/-0.25 K; Ni100, Ni120, Ni200, Ni500, Ni1000 standard and climate: +/-0.4 K; Cu10 +/-1.5 K
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input area, (+/-)	0.4 %		0.4 %	0.05 %; +/-1 K with thermocouples, +/-5 K with thermocouples type C, +/-1.5 K with static thermal state (ambient temperature change < 0.3 K/min)	
• Resistance thermometer, relative to input area, (+/-)		0.4 %			Resistance-type transmitter: +/-0.05%; Pt100, Pt200, Pt500, Pt1000 standard: +/-0.6 K; Pt100, Pt200, Pt500, Pt1000 climate: +/-0.13 K; Ni100, Ni120, Ni200, Ni500, Ni1000 standard and climate: +/-0.2 K; Cu10 +/-1 K
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 =$ interference frequency					
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	70 dB	70 dB	70 dB	70 dB
• common mode voltage (USS < 2.5 V), min.	90 dB	90 dB	90 dB	90 dB	90 dB

Technical specifications (continued)

Article number	6ES7134-4JB01-0AB0	6ES7134-4JB51-0AB0	6ES7134-4JD00-0AB0	6ES7134-4NB01-0AB0	6ES7134-4NB51-0AB0
	ET200S, EL-MOD., 2AI TC, +/-80mV, 15BIT	ET200S, EL-MOD., 2/4 AI RTD STANDARD	ET200S, EL-MOD., 4AI TC, +/-80mV, 15BIT	ET200S, EL-MOD., 2AI TC HF, 15BIT	ET200S, EL-MOD., 2AI RTD HF, 15BIT
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No		No
Diagnostic messages					
• Diagnostic functions	Yes; Can be read out	Yes; Can be read out	Yes; Can be read out		
• Diagnostic information readable	Yes		Yes		
• Wire break	Yes; A break in the wire is only detected for thermocouples	Yes	Yes; A break in the wire is only detected for thermocouples	Yes; only thermo-couples	Yes
• Group error	Yes	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• Group error SF (red)	Yes	Yes	Yes	Yes	Yes
Parameter					
Remark	4 byte		4 byte	4 byte	7 byte
Diagnosis: wire break	Disable / enable (wire break is detected only in thermocouples)	Disable / enable	Disable / enable (wire break is detected only in thermocouples)	Disable / enable (wire break is detected only in thermocouples)	Disable / enable
Measurement type/range	Deactivated/ +/- 80 mV/ TC-EL Type T (Cu-CuNi)/ TC-EL Type K (NiCr-Ni)/ TC-EL Type B (PtRh-PtRh)/ TC-EL Type c (Wer-Wer) TC-EL Type N (NiCrSi-NiSi)/ TC-EL Type E (NiCr-CuNi)/ TC-EL Type R (PtRh-Pt)/ TC-EL Type S (PtRh-Pt)/ TC-EL Type J (Fe-Cu-Ni)/ TC	deactivated/ 150 ohms/; 300 ohms/ 600 ohms/ Pt100 climatic/ Pt100 standard; Ni100 standard / Ni100 climatic, 2, 3 or 4-wire	Deactivated/ +/- 80 mV/ TC-EL Type T (Cu-CuNi)/ TC-EL Type K (NiCr-Ni)/ TC-EL Type B (PtRh-PtRh)/ TC-EL Type c (Wer-Wer) TC-EL Type N (NiCrSi-NiSi)/ TC-EL Type E (NiCr-CuNi)/ TC-EL Type R (PtRh-Pt)/ TC-EL Type S (PtRh-Pt)/ TC-EL Type J (Fe-Cu-Ni)/ TC	Deactivated/ +/- 80 mV/ TC-EL Type T (Cu-CuNi)/ TC-EL Type K (NiCr-Ni)/ TC-EL Type B (PtRh-PtRh)/ TC-EL Type c (Wer-Wer) TC-EL Type N (NiCrSi-NiSi)/ TC-EL Type E (NiCr-CuNi)/ TC-EL Type R (PtRh-Pt)/ TC-EL Type S (PtRh-Pt)/ TC-EL Type J (Fe-Cu-Ni)/ TC	Deactivated/ 150 Ohm / 300 Ohm / 600 Ohm / Pt100/Pt200/Pt500/ Pt1000 each standard or climate range / Ni100/Ni120/Ni200/ Ni500/Ni1000 each standard or climate range / Cu10 each standard or climate range / PTC
Group diagnostics	Disable / enable	Disable / enable	Disable / enable	Disable / enable	Disable / enable
Overflow/underflow	Disable / enable	Disable / enable	Disable / enable	Disable / enable	Disable / enable
Comparison point	none / RTD		none / RTD	none / yes, internal	
Comparison point number	None / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8		None / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8		
Unit	Celsius		Celsius	Celsius / Fahrenheit	
Galvanic isolation					
Galvanic isolation analog inputs					
• between the channels	No	No	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes	Yes	Yes
• between the channels and the load voltage L+	Yes	Yes	Yes	Yes	Yes
Permissible potential difference					
between inputs and MANA (UCM)	2 V AC PP		2 V AC PP	140V DC/100V AC	
between MANA and M internally (UISO)	75V DC/60V AC	75V DC/60V AC	75V DC/60V AC	75V DC/60V AC	75V DC/60V AC
Isolation					
Isolation checked with	500 V DC	500 V DC	500 V DC	500 V DC	500 V DC
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Height	81 mm	81 mm	81 mm	81 mm	81 mm
Depth	52 mm	52 mm	52 mm	52 mm	52 mm
Weights					
Weight, approx.	40 g	40 g	40 g	40 g	40 g

Ordering data	Article No.		Article No.
Analog input modules		Accessories for labeling	
Ordering unit 1 item		Label sheets DIN A4 (10 pieces)	
• 2 AI U High Speed	6ES7134-4FB52-0AB0	Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules	
• 2 AI U Standard	6ES7134-4FB01-0AB0	• petrol	6ES7193-4BH00-0AA0
• 2 AI U High Feature	6ES7134-4LB02-0AB0	• red	6ES7193-4BD00-0AA0
• 2 AI I Standard 2-wire	6ES7134-4GB01-0AB0	• yellow	6ES7193-4BB00-0AA0
• 2 AI I High Speed 2-wire	6ES7134-4GB52-0AB0	• light beige	6ES7193-4BA00-0AA0
• 2 AI High Speed 4-wire	6ES7134-4GB62-0AB0		
• 2 AI I Standard 4-wire	6ES7134-4GB11-0AB0	Accessories for system-integrated shield connection	
• 2 AI I High Feature 2-wire/4-wire (15 bits + sign)	6ES7134-4MB02-0AB0	Shield connection element	6ES7193-4GA00-0AA0
• 2 AI RTD standard	6ES7134-4JB51-0AB0	Ordering unit 5 items	
• 2 AI TC Standard	6ES7134-4JB01-0AB0	For plugging into TM-E and TM-P	
• 2 AI RTD High Feature	6ES7134-4NB51-0AB0	Shield clamps	6ES7193-4GB00-0AA0
• 2 AI TC High Feature	6ES7134-4NB01-0AB0	Ordering unit 5 items	
• 4 AI Standard 2-wire	6ES7134-4GD00-0AB0	For 3 × 10 mm busbars	
• 4 AI TC Standard	6ES7134-4JD00-0AB0	Grounding terminal	8WA2868
		Ordering unit 1 item	
Analog output modules		For cable cross-sections up to 25 mm²	
Ordering unit 1 item		3 × 10 mm busbars	8WA2842
• 2 AO U Standard	6ES7135-4FB01-0AB0	Ordering unit 1 item	
• 2 AO U High Speed	6ES7135-4FB52-0AB0		
• 2 AO U High Feature	6ES7135-4LB02-0AB0		
• 2 AO I Standard	6ES7135-4GB01-0AB0		
• 2 AO I High Speed	6ES7135-4GB52-0AB0		
• 2 AO I High Feature	6ES7135-4MB02-0AB0		

Overview (continued)

	SIPLUS analog electronic module 2 AI TC High Feature
Article No.	6AG1134-4NB01-7AB0
BasedOn Article No.	6ES7134-4NB01-0AB0
Ambient temperature range	0 ... +70 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. in sulfur chloride atmosphere).
Technical data	The technical data are identical with those of the BasedOn modules.

	SIPLUS analog electronic module 2 AO U Standard
Article No.	6AG1135-4FB01-2AB0
BasedOn Article No.	6ES7135-4FB01-0AB0
Ambient temperature range	-25 ... +60 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. in sulfur chloride atmosphere).
Technical data	The technical data are identical with those of the BasedOn modules.

	SIPLUS analog electronic module 2 AO U High Feature
Article No.	6AG1135-4LB02-7AB0
BasedOn Article No.	6ES7135-4LB02-0AB0
Ambient temperature range	-25 ... +60 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. in sulfur chloride atmosphere).
Technical data	The technical data are identical with those of the BasedOn modules.

	SIPLUS analog electronic module 2 AO I Standard
Article No.	6AG1135-4GB01-2AB0
BasedOn Article No.	6ES7135-4GB01-0AB0
Ambient temperature range	-25 ... +70 °C
Ambient conditions	Suitable for exceptional exposure to media (e.g. in sulfur chloride atmosphere).
Technical data	The technical data are identical with those of the BasedOn modules.

Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For further technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>