

I/O systems

ET 200 systems for the control cabinet

ET 200S - I/O modules

Analog electronic modules

Technical specifications (continued)

Article number	6ES7135-4FB01-0AB0 ET200S, EL-MOD., 2AO U, +/-10V, 1-5V	6ES7135-4FB52-0AB0 ET200S, EL-MOD., 2AO U, +/-10V, 1-5V	6ES7135-4LB02-0AB0 ET200S, EL-MOD., 2AO HF U, +/-10V, 1-5V
Product type designation			
Supply voltage			
Load voltage L+			
• Rated value (DC)	24 V; From power module	24 V; From power module	24 V
• Reverse polarity protection	Yes	Yes	Yes
Input current			
from load voltage L+ (without load), max.	130 mA	100 mA	80 mA
from backplane bus 3.3 V DC, max.	10 mA	10 mA	10 mA
Power losses			
Power loss, max.	2 W	2 W	1.2 W
Address area			
Address space per module			
• Address space per module, max.	4 byte	4 byte	4 byte
Analog outputs			
Number of analog outputs	2	2	2
Voltage output, short-circuit protection	Yes	Yes	Yes
Voltage output, short-circuit current, max.	25 mA	25 mA	25 mA
Cycle time (all channels) max.	1.5 ms	0.25 ms	0.5 ms; At max. 0.5 µF
Output ranges, voltage			
• 1 V to 5 V	Yes	Yes	Yes; -5 to +5 V also implemented
• -10 V to +10 V	Yes	Yes; +/-5V as well	Yes
Connection of actuators			
• for voltage output two-wire connection	Yes; Without compensation of the line resistances	Yes; Without compensation of the line resistances	Yes
• for voltage output four-wire connection	Yes	Yes	Yes
Load impedance (in rated range of output)			
• with voltage outputs, min.	1 kΩ	1 kΩ	1 kΩ
• with voltage outputs, capacitive load, max.	1 µF	1 µF; 0.1 µF for Twa=0.1 ms	0.5 µF
Destruction limits against externally applied voltages and currents			
• Voltages at the outputs towards MANA	15 V; max. 15 V continuous; 75 V for max. 1 s (mark to space ratio 1:20)	15 V; Max. 15 V for max. 5 hours, 75 V for max. 1 s	15 V; as required
• Current, max.	50 mA; DC	30 mA; DC	
Cable length			
• shielded, max.	200 m	200 m; Max. 20 m for TWA 100 µs	200 m; 100m if Twa < 2ms

Technical specifications (continued)

Article number	6ES7135-4FB01-0AB0 ET200S, EL-MOD., 2AO U, +/-10V, 1-5V	6ES7135-4FB52-0AB0 ET200S, EL-MOD., 2AO U, +/-10V, 1-5V	6ES7135-4LB02-0AB0 ET200S, EL-MOD., 2AO HF U, +/-10V, 1-5V
Analog value creation			
Integration and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	14 bit; 1 to 5 V: 12 bits, +/-10 V: 13 bits + sign	16 bit; 1 to 5 V: 14 bits, +/-10 V: 15 bits + sign, +/-5 V: 14 bits + sign	16 bit; 15 bits + sign
Settling time			
• for resistive load	0.1 ms	0.05 ms	0.2 ms
• for capacitive load	0.5 ms	0.05 ms	0.5 ms; At max. 0.5 µF
• for inductive load	0.5 ms	0.05 ms	0.5 ms
Errors/accuracies			
Output ripple (based on output area, bandwidth 0 to 50 kHz), (+/-)	0.02 %	0.02 %	0.02 %
Linearity error (relative to output range), (+/-)	0.02 %	0.03 %	0.01 %
Temperature error (relative to output range), (+/-)	0.01 %/K	0.01 %/K	
Crosstalk between the outputs, min.		60 dB	60 dB
Repeat accuracy in steady state at 25 °C (relative to output area), (+/-)	0.05 %	0.03 %	0.01 %
Operational limit in overall temperature range			
• Voltage, relative to output area, (+/-)	0.4 %	0.2 %	0.1 %
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to output area, (+/-)	0.2 %	0.01 %	0.05 %
Isochronous mode			
Isochronous operation (application synchronized up to terminal)		Yes	Yes
Interrupts/diagnostics/ status information			
Substitute values connectable	Yes; 0 to 65535 (range of values must be within the rated range)	Yes; 0 to 65535 (range of values must be within the rated range)	Yes
Diagnostic messages			
• Diagnostic functions		Yes	
• Diagnostic information readable		Yes	Yes
• Wire break		No	
• Short circuit	Yes	Yes	Yes
• Group error	Yes	Yes	Yes
Diagnostics indication LED			
• Group error SF (red)	Yes	Yes	Yes
Parameter			
Remark	7 byte	7	7 byte
Output type/range	deactivated / 1 to 5 V / +/- 10 V	deactivated / 1 to 5 V / +/- 10 V / +/- 5 V	deactivated / 1 to 5 V / +/- 10 V / +/- 5 V
Diagnosis: short circuit	Disable / enable	Disable / enable	Disable / enable
Interference frequency suppression			No
Group diagnostics	Disable / enable	Disable / enable	Disable / enable
Behavior on CPU/Master STOP	Output current and de-energized/ substitute a value/keep last value	Output current and de-energized/ substitute a value/keep last value	Output current and de-energized/ substitute a value/keep last value

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Technical specifications (continued)

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Galvanic isolation			
Galvanic isolation analog outputs			
• between the channels	No	No	No
• between the channels and the backplane bus	Yes	Yes	Yes
• between the channels and the load voltage L+	Yes	Yes	Yes
Permissible potential difference			
between MANA and M internally (UISO)	75V DC/60V AC	75V DC/60V AC	75V DC/60V AC
Isolation			
Isolation checked with			500 V DC
Dimensions			
Width	15 mm	15 mm	15 mm
Height	81 mm	81 mm	81 mm
Depth	52 mm	52 mm	52 mm
Weights			
Weight, approx.	40 g	40 g	40 g
Article number	6ES7135-4GB01-0AB0 ET200S, EL-MOD., 2AO I, +/-20mA, 4-20mA	6ES7135-4MB02-0AB0 ET200S, EL-MOD., 2AO I HF, +/-20mA, 4-20mA	6ES7135-4GB52-0AB0 ET200S, EL-MOD., 2AO I, +/-20mA, 4-20mA
Product type designation			
Supply voltage			
Load voltage L+			
• Rated value (DC)	24 V; From power module	24 V	24 V
• Reverse polarity protection	Yes	Yes	Yes
Input current			
from load voltage L+ (without load), max.	150 mA	80 mA	150 mA; With load
from backplane bus 3.3 V DC, max.	10 mA	10 mA	10 mA
Power losses			
Power loss, max.	2 W	1.2 W	2.4 W; Typical
Address area			
Address space per module			
• Address space per module, max.	4 byte	4 byte	4 byte
Analog outputs			
Number of analog outputs	2	2	2
Current output, no-load voltage, max.	18 V	18 V	18 V
Cycle time (all channels) max.	1.5 ms	0.5 ms	250 µs
Output ranges, current			
• -20 mA to +20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes
Connection of actuators			
• for current output two-wire connection	Yes	Yes	Yes
• for current output four-wire connection	No	No	
Load impedance (in rated range of output)			
• with current outputs, max.	500 Ω	500 Ω	500 Ω
• with current outputs, inductive load, max.	1 mH	1 mH	1 mH; for TWA 100µs
Destruction limits against externally applied voltages and currents			
• Voltages at the outputs towards MANA	15 V; max. 15 V continuous; 75 V for max. 1 s (mark to space ratio 1:20)		
• Current, max.	50 mA; DC	50 mA	15 mA; Max. 15 V / 5 hours (higher voltages not permissible even briefly)
Cable length			
• shielded, max.	200 m	200 m; 100m if Twa < 2ms	200 m; Max. 20 m for TWA 100 µs

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
Analog output modules		Ordering unit 1 item	
Ordering unit 1 item		For cable cross-sections up to 25 mm²	
• 2 AO U Standard	6ES7135-4FB01-0AB0	3 × 10 mm busbars	8WA2842
• 2 AO U High Speed	6ES7135-4FB52-0AB0	Ordering unit 1 item	
• 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>