

SIMATIC S7-200

Analog modules

Analog modules

Technical specifications EM 232

	6ES7 232-0HB22-0XA0
Current consumption	
from backplane bus DC 5 V, max.	20 mA
from sensor current supply or external current supply (DC 24 V), max.	70 mA
Power loss, typ.	2 W
Connection point	
pluggable I/O terminals	No
Analog outputs	
Number of analog outputs	2
Output ranges, voltage	
• -10 to +10 V	Yes
Output ranges, current	
• 4 to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	5 kΩ
• with current outputs, max.	0,5 kΩ
Analog value creation	
Integrations and conversion time/resolution per channel	
• Resolution (incl. overload area)	U/12 bit, I/11 bit
Settling time	
• for voltage output	100 μs
• for current output	2 ms

	6ES7 232-0HB22-0XA0
Displayable conversion value range	
• bipolar signals	-32.000 to +32.000
• unipolar signals	0 to 32.000
Errors/accuracies	
Operational limit in overall temperature range	
• Voltage, relative to output area	+/- 2 %
• Current, relative to output area	+/- 2 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output area	+/- 0.5 %
• Current, relative to output area	+/- 0.5 %
Isolation	
Isolation, analog outputs	
• Galvanic isolation, analog outputs	No
Dimensions and weight	
Width	46 mm
Height	80 mm
Depth	62 mm
Weights	
Weight, approx.	148 g

Technical specifications EM 235

	6ES7 235-0KD22-0XA0
Current consumption	
from backplane bus DC 5 V, max.	30 mA
from sensor current supply or external current supply (DC 24 V), max.	60 mA
Power loss, typ.	2 W
Connection point	
pluggable I/O terminals	No
Analog inputs	
Number of analog inputs	4; Difference
permissible input frequency for voltage input (destruction limit), max.	30 V
permissible input current for current input (destruction limit), max.	32 mA
Input ranges (rated values), voltages	
• Voltage	Yes
• 0 to +50 mV	Yes
• 0 to +100 mV	Yes
• 0 to +500 mV	Yes
• 0 to +1 V	Yes

	6ES7 235-0KD22-0XA0
• 0 to +5 V	Yes
• 0 to +10 V	Yes
• -1 V to +1 V	Yes
• -10 V to +10 V	Yes
• -100 mV to +100 mV	Yes
• -2.5 V to +2.5 V	Yes
• -25 mV to +25 mV	Yes
• -250 mV to +250 mV	Yes
• -5 V to +5 V	Yes
• -50 mV to +50 mV	Yes
• -500 mV to +500 mV	Yes
Input ranges (rated values), currents	
• Current	Yes
• 0 to 20 mA	Yes
Characteristic linearization	
• for voltage measurement	No
• for current measurement	No
Temperature compensation	
• programmable	No

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Analog modules

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3

Technical specifications EM 235 (continued)

	6ES7 235-0KD22-0XA0
Analog outputs	
Number of analg outputs	1
Output ranges, voltage	
• -10 to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	5 kΩ
• with current outputs, max.	0,5 kΩ
Analog value creation	
Integrations and conversion time/resolution per channel	
• Resolution with overload area (bit including sign), max.	12 Bit; 11 bits for current output
• Basic conversion time, ms	< 0.25 ms
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 Hz
Settling time	
• for voltage output	100 μs
• for current output	2 ms
Displayable conversion value range	
• bipolar signals	-32,000 to +32,000
• unipolar signals	0 to 32,000
Errors/accuracies	
Operational limit in overall temperature range	
• Voltage, relative to output area	+/- 2 %
• Current, relative to output area	+/- 2 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output area	+/- 0.5 %
• Current, relative to output area	+/- 0.5 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1$ = interference frequency	
• common mode voltage, max.	12 V
Isolation	
Isolation, analog outputs	
• Galvanic isolation, analog outputs	No
Isolation, analog inputs	
• Isolation, analog inputs	No
Dimensions and weight	
Width	71.2 mm
Height	80 mm
Depth	62 mm
Weights	
Weight, approx.	186 g

Ordering data

Order No.

EM 231 analog input module A)	6ES7 231-0HC22-0XA0
For CPU 222/224/224 XP/226; 4 inputs, 0 - 10 V, 12-bit resolution	
EM 232 analog output module A)	6ES7 232-0HB22-0XA0
For CPU 222/224/224 XP/226; 2 outputs, ± 10 V, 12-bit resolution	
EM 235 analog input/output module A)	6ES7 235-0KD22-0XA0
For CPU 222/224/224 XP/226; 4 inputs, 1 output, ±10 V DC, 12-bit resolution	
Grounding terminal	6ES5 728-8MA11
10 items	
Front flap set	
contains different covering flaps A) for CPU and EM; Spare part	6ES7 291-3AX20-0XA0
S7-200 programmable controller, system manual	
for CPU 221/222/224/224 XP/226 and STEP 7-Micro/Win V4	
German	6ES7 298-8FA24-8AH0
English	6ES7 298-8FA24-8BH0
French	6ES7 298-8FA24-8CH0
Spanish	6ES7 298-8FA24-8DH0
Italian	6ES7 298-8FA24-8EH0
Chinese	6ES7 298-8FA24-8FH0

A) Subject to export regulations: AL: N and ECCN: EAR99H