

Data sheet

6ES7650-8AK60-1AA0

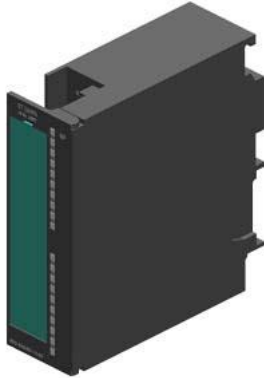


Figure similar

ET 200PA SMART, analog input 0/4 - 20 mA 8 AI, redundancy, 1 x 20-pole, IM 650-8PH required; conformal coating ISA-S71.04 severity level G1; G2; G3

General information	
Product function	
• Isochronous mode	No
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	20 mA
from backplane bus 5 V DC, max.	120 mA
Output voltage	
Power supply to the transmitters	
• present	Yes
• Rated value (DC)	24 V
• short-circuit proof	Yes; Short-circuit current approx. 40 mA to 60 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	8
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	150 Ω
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	150 Ω
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	150 Ω
Cable length	
• shielded, max.	800 m
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; 15 bit + sign
• Integration time, parameterizable	Yes
• Integration time (ms)	16.6 ms @ 60 Hz, 20 ms @ 50 Hz, 100 ms @ 10 Hz
• Basic conversion time, including integration time (ms)	55 ms @ 60 Hz, 65 ms @ 50 Hz, 305 ms @ 10 Hz
• Basic execution time of the module (all channels released)	520 ms; 440 ms @ 60 Hz, 520 ms @ 50 Hz, 2 440 ms @ 10 Hz
Smoothing of measured values	

<ul style="list-style-type: none"> parameterizable 	Yes; in 4 stages	
<ul style="list-style-type: none"> Step: None 	Yes; 1x cycle time	
<ul style="list-style-type: none"> Step: low 	Yes; 4x cycle time	
<ul style="list-style-type: none"> Step: Medium 	Yes; 32x cycle time	
<ul style="list-style-type: none"> Step: High 	Yes; 64x cycle time	
Encoder		
Connection of signal encoders		
<ul style="list-style-type: none"> for current measurement as 2-wire transducer 	Yes	
<ul style="list-style-type: none"> for current measurement as 4-wire transducer 	Yes	
Errors/accuracies		
Linearity error (relative to input range), (+/-)	0.01 %	
Temperature error (relative to input range), (+/-)	0.001 %/K	
Crosstalk between the inputs, min.	70 dB	
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.01 %	
Operational error limit in overall temperature range		
<ul style="list-style-type: none"> Current, relative to input range, (+/-) 	0.15 %	
Basic error limit (operational limit at 25 °C)		
<ul style="list-style-type: none"> Current, relative to input range, (+/-) 	0.1 %	
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency		
<ul style="list-style-type: none"> Series mode interference (peak value of interference < rated value of input range), min. 	40 dB	
<ul style="list-style-type: none"> Common mode interference, min. 	100 dB	
Interrupts/diagnostics/status information		
Status indicator	No	
Diagnostics function	Yes; Parameterizable	
Alarms		
<ul style="list-style-type: none"> Diagnostic alarm 	Yes; Parameterizable	
Diagnoses		
<ul style="list-style-type: none"> Diagnostic information readable 	Yes	
Diagnostics indication LED		
<ul style="list-style-type: none"> Group error SF (red) 	Yes	
Potential separation		
Potential separation analog inputs		
<ul style="list-style-type: none"> between the channels 	No	
<ul style="list-style-type: none"> between the channels and backplane bus 	Yes	
<ul style="list-style-type: none"> Between the channels and load voltage L+ 	Yes; only for 4-wire transducer	
Permissible potential difference		
between M internally and the inputs	75 V DC/60 V AC	
Isolation		
tested with		
<ul style="list-style-type: none"> between backplane bus and load voltage 	500 V DC	
<ul style="list-style-type: none"> Channels against backplane bus and load voltage L+ 	500 V DC	
<ul style="list-style-type: none"> Between channels 	No	
Ambient conditions		
Ambient temperature during operation		
<ul style="list-style-type: none"> min. 	0 °C	
<ul style="list-style-type: none"> max. 	60 °C; if the device is installed horizontally	
Connection method		
required front connector	20-pin	
Dimensions		
Width	40 mm	
Height	125 mm	
Depth	117 mm	
Weights		
Weight, approx.	205 g	
Classifications		
	Version	Classification

eClass	14	27-24-26-01
eClass	12	27-24-26-01
eClass	9.1	27-24-26-01
eClass	9	27-24-26-01
eClass	8	27-24-26-01
eClass	7.1	27-24-26-01
eClass	6	27-24-26-01
ETIM	10	EC001596
ETIM	9	EC001596
ETIM	8	EC001596
ETIM	7	EC001596
IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval	For use in hazardous locations
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[China RoHS](#)

[Manufacturer Declaration](#)



last modified:

6/7/2025

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