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Data sheet 6ES7138-7FA00-0AB0



SIMATIC, fail-safe electronic module for ET200iSP, 4F-AI HART Ex I, up to category 4 (EN954-1)/ SIL3 (IEC61508)/PLE (ISO13849), for connecting (HART) 2-wire transmitters, supported HART protocol version 7.0, Ex ib (ia Ga) IIC T4 Gb, Ex ib [ia IIIC Da] IIC T4 Gb, Ex ib [ia] I Mb

General information	
Product type designation	4F-AI I Ex HART
Installation type/mounting	
Rack mounting	No
Front mounting	Yes
Rail mounting	Yes
Wall mounting/direct mounting	Yes
Supply voltage	
Type of supply voltage	DC
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	30 V
Input current	
Current consumption, typ.	315 mA
from supply voltage L+, max.	490 mA; int. Powerbus
Output voltage	
Power supply to the transmitters	
● short-circuit proof	Yes
● Supply current, max.	25 mA; Plus 4 mA per channel
Power loss	
Power loss, typ.	3.8 W
Power loss, max.	5.4 W
Address area	
Address space per module	
● Address space per module, max.	16 byte; 12 bytes in the I area / 4 bytes in the O area
Hardware configuration	
Fieldbus connection via separate transceiver	Yes
Analog inputs	
Number of analog inputs	4
Cycle time (all channels) max.	See data in manual
Input ranges	
● Voltage	No
● Current	Yes
● Thermocouple	No
● Resistance thermometer	No
● Resistance	No
Input ranges (rated values), currents	
● 0 to 20 mA	Yes
● 4 mA to 20 mA	Yes
Cable length	

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● shielded, max.	500 m
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
● Resolution with overrange (bit including sign), max.	16 bit
● Integration time, parameterizable	Yes
● Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Smoothing of measured values	
● Parameterizable	Yes; in 4 stages
● Step: None	Yes; 1x cycle time
● Step: low	Yes; 4x cycle time
● Step: Medium	Yes; 16x cycle time
● Step: High	Yes; 64x cycle time
Encoder	
Connection of signal encoders	
● for current measurement as 2-wire transducer	Yes
— Burden of 2-wire transmitter, max.	750 Ω
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.015 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.015 %
Operational error limit in overall temperature range	
● Current, relative to input range, (+/-)	0.35 %
Basic error limit (operational limit at 25 °C)	
● Current, relative to input range, (+/-)	0.1 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency	
● Series mode interference (peak value of interference < rated value of input range), min.	40 dB
● Common mode interference, min.	50 dB
Interfaces	
Number of PROFINET interfaces	0
Protocols	
PROFINET IO	No
PROFIsafe	Yes
PROFIBUS	No
Further protocols	
● other bus systems	No
Interrupts/diagnostics/status information	
Alarms	
● Diagnostic alarm	Yes; Parameterizable
Diagnoses	
● Diagnostic information readable	Yes
● Wire break	Yes
● short-circuit	Yes
Diagnostics indication LED	
● Group error SF (red)	Yes
Potential separation	
Potential separation analog inputs	
● between the channels	No
● between the channels and backplane bus	Yes
● Between the channels and load voltage L+	Yes; Power bus
Permissible potential difference	
between different circuits	60 V DC/30 V AC
Degree and class of protection	
IP degree of protection	IP30
Standards, approvals, certificates	

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CE mark	Yes
Suitable for safety functions	Yes
reference designation according to IEC 81346-2 (2009)	K
Highest safety class achievable in safety mode	
● acc. to EN 954	4
● Performance level according to ISO 13849-1	PLe
● SIL acc. to IEC 61508	SIL 3
Use in hazardous areas	
● ATEX marking	II 2 G (1) GD Ex ib[ia Ga][ia IIIC Da] IIC T4 GB and I M2 Ex ib[ia Ma] I Mb
● ATEX certificate	10 ATEX 0058
● Explosion protection category for gas	ATEX gas explosion protection, Zone 1
● Explosion protection category for dust	ATEX dust explosion protection, Zone 21 always install in corresponding enclosure
● associated equipment (Ex ia)	Yes
● associated equipment (Ex ib)	Yes
Connection method	
Design of electrical connection	Screw/spring-type terminal
Dimensions	
Width	30 mm
Height	129 mm
Depth	136.5 mm
Weights	
Weight, approx.	299 g

Classifications

	Version	Classification
eClass	16	27-24-26-01
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

Miscellaneous

Metrological Approval

General Product Approval

Manufacturer Declaration

China RoHS

For use in hazardous locations

For use in hazardous locations

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FM | IECEx | Miscellaneous | CCC | CCC-Ex | INMETRO

For use in hazardous locations	Functional Saftey	Maritime application

UL | Miscellaneous | Type Examination Certificate | TUEV | TUEV | ABS

Maritime application	Environment

LRS | PRS | EPD

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