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Data sheet 6ES7136-6AA00-0CA1

SIMATIC DP, ELECTRONIC MODULE ET 200SP, F-AI 4xI(0)4..20mA HF FAILSAFE ANALOG INPUTS up to PL E (ISO 13849) up to SIL 3 (IEC 61508)

General information	
Product type designation	F-AI 4xI 0(4)..20mA 2-/4-wire HF
Firmware version	
● FW update possible	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
● I&M data	Yes; I&M0 to I&M3
Engineering with	
● STEP 7 TIA Portal configurable/integrated from version	V15 with HSP 203
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
power supply according to NEC Class 2 required	No
Input current	
Current consumption (rated value)	0.38 A
Current consumption, max.	0.4 A
Encoder supply	
24 V encoder supply	
● 24 V	Yes; min. L+ (-1.5 V)
● Short-circuit protection	Yes
● Output current, max.	300 mA; total current of all encoders/channels
Power	
Power available from the backplane bus	70 mW
Power loss	
Power loss, typ.	2 W
Address area	
Address space per module	
● Inputs	14 byte; S7-300/400F CPU, 13 byte
● Outputs	5 byte; S7-300/400F CPU, 4 byte
Hardware configuration	
Automatic encoding	Yes
● Electronic coding element type F	Yes

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Analog inputs	
Number of analog inputs	4
● For current measurement	4
permissible input current for current input (destruction limit), max.	35 mA
Input ranges (rated values), currents	
● 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	125 Ω
● 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	125 Ω
Cable length	
● shielded, max.	1 000 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
● Integration time, parameterizable	Yes
● Integration time (ms)	20 / 16,667
● Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Smoothing of measured values	
● Number of smoothing levels	7
● parameterizable	Yes
● Step: None	Yes; 1x conversion cycle time
● Step: low	Yes; 2x / 4x conversion cycle time
● Step: Medium	Yes; 8x / 16x conversion cycle time
● Step: High	Yes; 32x / 64x conversion cycle time
Encoder	
Connection of signal encoders	
● for current measurement as 2-wire transducer	Yes
— Burden of 2-wire transmitter, max.	650 Ω
● for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.1 %
Temperature error (relative to input range), (+/-)	0.023 %/K
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.1 %
Operational error limit in overall temperature range	
● Current, relative to input range, (+/-)	2 %
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.	70 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
● Diagnostic alarm	Yes
● Limit value alarm	No
Diagnoses	
● Monitoring the supply voltage	Yes
● Wire-break	Yes
● Short-circuit	Yes
Diagnostics indication LED	
● RUN LED	Yes; green LED
● ERROR LED	Yes; red LED
● Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
● Channel status display	Yes; green LED
● for channel diagnostics	Yes; red LED

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● for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
● between the channels	No
● between the channels and backplane bus	Yes
● between the channels and the power supply of the electronics	Yes
Permissible potential difference	
between the inputs (UCM)	10 Vpp
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
● Performance level according to ISO 13849-1	PLe
● Category according to ISO 13849-1	Cat. 4
● SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
— Low demand mode: PFDavg in accordance with SIL3	< 5.00E-05
— High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
● horizontal installation, min.	0 °C
● horizontal installation, max.	60 °C
● vertical installation, min.	0 °C
● vertical installation, max.	50 °C
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	48 g

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