

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 as of 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
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
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) • Interference voltage suppression for interference frequency f1 in Hz	20 / 16,667 50 / 60 Hz
Smoothing of measured values	
• Number of smoothing levels • parameterizable • Step: None • Step: low • Step: Medium • Step: High	7 Yes Yes; 1x conversion cycle time Yes; 2x / 4x conversion cycle time Yes; 8x / 16x conversion cycle time Yes; 32x / 64x conversion cycle time
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer — Burden of 2-wire transmitter, max. • for current measurement as 4-wire transducer	Yes 650 Ω 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 $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min. • Common mode interference, min.	40 dB 70 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm • Limit value alarm	Yes No
Diagnostic messages	
• Monitoring the supply voltage • Wire-break • Short-circuit	Yes Yes; Measuring range 4 to 20 mA only Yes
Diagnostics indication LED	
• RUN LED • ERROR LED • Monitoring of the supply voltage (PWR-LED)	Yes; green LED Yes; red LED Yes; green PWR LED

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|---------------------------|--------------------|
| • Channel status display | Yes; green LED |
| • for channel diagnostics | Yes; red LED |
| • for module diagnostics | Yes; green/red LED |

Potential separation

Potential separation channels

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|--|-----|
| • 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
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Isolation

Isolation tested with	707 V DC (type test)
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Standards, approvals, certificates

Highest safety class achievable in safety mode

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| • 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)

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| — 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

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|---------------------------------|-------|
| • 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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last modified: 05/06/2020