




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 | |
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| Product type designation | F-AI 4xI 0(4)..20mA 2-/4-wire HF |
| Firmware version | |
| <ul style="list-style-type: none"> FW update possible | Yes |
| usable BaseUnits | BU type A0, A1 |
| Color code for module-specific color identification plate | CC00 |
| Product function | |
| <ul style="list-style-type: none"> I&M data | Yes; I&M0 to I&M3 |
| Engineering with | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> 24 V | Yes; min. L+ (-1.5 V) |
| <ul style="list-style-type: none"> Short-circuit protection | Yes |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> Inputs | 14 byte; S7-300/400F CPU, 13 byte |
| <ul style="list-style-type: none"> Outputs | 5 byte; S7-300/400F CPU, 4 byte |
| Hardware configuration | |
| Automatic encoding | Yes |
| <ul style="list-style-type: none"> Electronic coding element type F | Yes |

| Analog inputs | |
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| Number of analog inputs | 4 |
| <ul style="list-style-type: none"> For current measurement | 4 |
| permissible input current for current input (destruction limit), max. | 35 mA |
| Input ranges (rated values), currents | |
| <ul style="list-style-type: none"> 0 to 20 mA — Input resistance (0 to 20 mA) | Yes 125 Ω |
| <ul style="list-style-type: none"> 4 mA to 20 mA — Input resistance (4 mA to 20 mA) | Yes 125 Ω |
| Cable length | |
| <ul style="list-style-type: none"> shielded, max. | 1 000 m |
| Analog value generation for the inputs | |
| Measurement principle | Sigma Delta |
| Integration and conversion time/resolution per channel | |
| <ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Interference voltage suppression for interference frequency f_1 in Hz | 16 bit Yes 20 / 16,667 50 / 60 Hz |
| Smoothing of measured values | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> 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 | |
| <ul style="list-style-type: none"> Current, relative to input range, (+/-) | 2 % |
| 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. Common mode interference, min. | 40 dB 70 dB |
| Interrupts/diagnostics/status information | |
| Diagnostics function | Yes |
| Alarms | |
| <ul style="list-style-type: none"> Diagnostic alarm Limit value alarm | Yes No |
| Diagnoses | |
| <ul style="list-style-type: none"> Monitoring the supply voltage Wire-break Short-circuit | Yes Yes Yes |
| Diagnostics indication LED | |
| <ul style="list-style-type: none"> RUN LED ERROR LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics | Yes; green LED Yes; red LED Yes; green PWR LED Yes; green LED 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 |
| last modified: | 12/28/2021  |