



Figure similar

SIMATIC, electronic module for ET200iSP, 4 AI, RTD, for connection of resistance thermometers PT100/Ni100, Ex ib (ia Ga) IIC T4 Gb, Ex ib [ia IIC Da] IIC T4 Gb, Ex ib [ia] I Mb

| General information                                   |                                                                                                                                                                                        |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product type designation                              | 4AI RTD                                                                                                                                                                                |
| HW functional status                                  | 4                                                                                                                                                                                      |
| Firmware version                                      | V1.1.0                                                                                                                                                                                 |
| Product function                                      |                                                                                                                                                                                        |
| • Isochronous mode                                    | No                                                                                                                                                                                     |
| CiR - Configuration in RUN                            |                                                                                                                                                                                        |
| Reparameterization possible in RUN                    | Yes                                                                                                                                                                                    |
| Installation type/mounting                            |                                                                                                                                                                                        |
| Rack mounting                                         | No                                                                                                                                                                                     |
| Front mounting                                        | Yes                                                                                                                                                                                    |
| Rail mounting                                         | Yes                                                                                                                                                                                    |
| Wall mounting/direct mounting                         | No                                                                                                                                                                                     |
| Supply voltage                                        |                                                                                                                                                                                        |
| Type of supply voltage                                | DC                                                                                                                                                                                     |
| permissible range, lower limit (DC)                   | 20.4 V                                                                                                                                                                                 |
| permissible range, upper limit (DC)                   | 28.8 V                                                                                                                                                                                 |
| Input current                                         |                                                                                                                                                                                        |
| Current consumption, typ.                             | 19 mA                                                                                                                                                                                  |
| from load voltage (power bus), max.                   | 22 mA                                                                                                                                                                                  |
| Power loss                                            |                                                                                                                                                                                        |
| Power loss, typ.                                      | 0.4 W                                                                                                                                                                                  |
| Hardware configuration                                |                                                                                                                                                                                        |
| Fieldbus connection via separate transceiver          | Yes                                                                                                                                                                                    |
| Analog inputs                                         |                                                                                                                                                                                        |
| Number of analog inputs                               | 4                                                                                                                                                                                      |
| Cycle time (all channels) max.                        | 320 ms; 66 ms basic conversion time x 4 channels with interference frequency suppression 60 Hz, 80 ms basic conversion time x 4 channels with interference frequency suppression 50 Hz |
| Technical unit for temperature measurement adjustable | Yes                                                                                                                                                                                    |
| Input ranges                                          |                                                                                                                                                                                        |
| • Voltage                                             | No                                                                                                                                                                                     |
| • Current                                             | No                                                                                                                                                                                     |
| • Thermocouple                                        | No                                                                                                                                                                                     |
| • Resistance thermometer                              | Yes                                                                                                                                                                                    |
| • Resistance                                          | Yes                                                                                                                                                                                    |
| Input ranges (rated values), resistance thermometer   |                                                                                                                                                                                        |
| • Ni 100                                              | Yes                                                                                                                                                                                    |

|                                                                                                                                 |                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| — Input resistance (Ni 100)                                                                                                     | 2 000 kΩ                                                                  |
| • Pt 100                                                                                                                        | Yes                                                                       |
| — Input resistance (Pt 100)                                                                                                     | 2 000 kΩ                                                                  |
| <b>Input ranges (rated values), resistors</b>                                                                                   |                                                                           |
| • 0 to 600 ohms                                                                                                                 | Yes; also 1 000 ohms                                                      |
| — Input resistance (0 to 600 ohms)                                                                                              | 1 000 kΩ                                                                  |
| <b>Characteristic linearization</b>                                                                                             |                                                                           |
| • Parameterizable                                                                                                               | Yes                                                                       |
| — for resistance thermometer                                                                                                    | Yes                                                                       |
| <b>Cable length</b>                                                                                                             |                                                                           |
| • shielded, max.                                                                                                                | 500 m                                                                     |
| <b>Analog value generation for the inputs</b>                                                                                   |                                                                           |
| Measurement principle                                                                                                           | integrating (Sigma-Delta)                                                 |
| <b>Integration and conversion time/resolution per channel</b>                                                                   |                                                                           |
| • Resolution with overrange (bit including sign), max.                                                                          | 16 bit                                                                    |
| • Integration time, parameterizable                                                                                             | Yes                                                                       |
| • Basic conversion time, including integration time (ms)                                                                        | 80 ms at 50 Hz; 66 ms at 60 Hz                                            |
| — additional conversion time for wire-break monitoring                                                                          | 5 ms                                                                      |
| • Interference voltage suppression for interference frequency $f_1$ in Hz                                                       | 50 / 60 Hz                                                                |
| <b>Smoothing of measured values</b>                                                                                             |                                                                           |
| • Parameterizable                                                                                                               | Yes; in 4 stages                                                          |
| • Step: None                                                                                                                    | Yes; 1x cycle time                                                        |
| • Step: low                                                                                                                     | Yes; 4x cycle time                                                        |
| • Step: Medium                                                                                                                  | Yes; 32x cycle time                                                       |
| • Step: High                                                                                                                    | Yes; 64x cycle time                                                       |
| <b>Encoder</b>                                                                                                                  |                                                                           |
| <b>Connection of signal encoders</b>                                                                                            |                                                                           |
| • for resistance measurement with two-wire connection                                                                           | Yes                                                                       |
| • for resistance measurement with three-wire connection                                                                         | Yes                                                                       |
| • for resistance measurement with four-wire connection                                                                          | Yes                                                                       |
| <b>Errors/accuracies</b>                                                                                                        |                                                                           |
| Linearity error (relative to input range), (+/-)                                                                                | 0.015 %                                                                   |
| Temperature error (relative to input range), (+/-)                                                                              | 0.02 %/K                                                                  |
| Crosstalk between the inputs, min.                                                                                              | -50 dB                                                                    |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)                                                       | 0.01 %                                                                    |
| <b>Operational error limit in overall temperature range</b>                                                                     |                                                                           |
| • Resistance thermometer, relative to input range, (+/-)                                                                        | 0.15 %; Applies to resistances standard $\pm 0.8$ K, climatic $\pm 0.3$ K |
| <b>Basic error limit (operational limit at 25 °C)</b>                                                                           |                                                                           |
| • Resistance thermometer, relative to input range, (+/-)                                                                        | 0.1 %; Applies to resistances standard $\pm 0.5$ K, climatic $\pm 0.2$ K  |
| <b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b> |                                                                           |
| • Series mode interference (peak value of interference < rated value of input range), min.                                      | 70 dB                                                                     |
| • Common mode interference, min.                                                                                                | 90 dB                                                                     |
| <b>Interfaces</b>                                                                                                               |                                                                           |
| Number of PROFINET interfaces                                                                                                   | 0                                                                         |
| <b>Protocols</b>                                                                                                                |                                                                           |
| Supports protocol for PROFINET IO                                                                                               | No                                                                        |
| PROFIsafe                                                                                                                       | No                                                                        |
| PROFIBUS                                                                                                                        | No                                                                        |
| <b>Further protocols</b>                                                                                                        |                                                                           |
| • other bus systems                                                                                                             | No                                                                        |
| <b>Interrupts/diagnostics/status information</b>                                                                                |                                                                           |
| <b>Alarms</b>                                                                                                                   |                                                                           |
| • Diagnostic alarm                                                                                                              | Yes                                                                       |
| • Limit value alarm                                                                                                             | Yes                                                                       |
| <b>Diagnoses</b>                                                                                                                |                                                                           |
| • Diagnostic information readable                                                                                               | Yes                                                                       |

|                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Wire break</li> <li>• short-circuit</li> <li>• Group error</li> </ul>                                                                                                                                                                                                                                             | Yes; R > 2 kOhm<br>Yes<br>Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Diagnostics indication LED                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• Group error SF (red)</li> </ul>                                                                                                                                                                                                                                                                                   | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Ex(i) characteristics</b>                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Module for Ex(i) protection                                                                                                                                                                                                                                                                                                                                | Yes; for more Co/Lo combinations, see certificate IECEx KEM 05.0009                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| maximum values for connecting terminals for gas group IIC                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• U<sub>o</sub> (no-load voltage), max.</li> <li>• I<sub>o</sub> (short-circuit current), max.</li> <li>• P<sub>o</sub> (power output), max.</li> <li>• C<sub>o</sub> (permissible external capacity), max.</li> <li>• L<sub>o</sub> (permissible external inductivity), max.</li> </ul>                            | 5.9 V<br>24 mA<br>36 mW<br>43 µF<br>50 mH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Potential separation</b>                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Potential separation analog inputs                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• between the channels</li> <li>• between the channels and backplane bus</li> <li>• Between the channels and load voltage L+</li> </ul>                                                                                                                                                                             | No<br>Yes<br>Yes; Channels and power bus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Degree and class of protection</b>                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| IP degree of protection                                                                                                                                                                                                                                                                                                                                    | IP30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Standards, approvals, certificates</b>                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CE mark                                                                                                                                                                                                                                                                                                                                                    | CE 0344                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| UKCA mark                                                                                                                                                                                                                                                                                                                                                  | DEKRA 21UKEX0088 Importer UK: Siemens plc Manchester M20 2UR                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| cULus                                                                                                                                                                                                                                                                                                                                                      | LISTED E334384                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FM approval                                                                                                                                                                                                                                                                                                                                                | CLASSIFIED 3025852                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Suitable for safety functions                                                                                                                                                                                                                                                                                                                              | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| INMETRO certificate                                                                                                                                                                                                                                                                                                                                        | UL-BR 12.0069                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| reference designation according to IEC 81346-2 (2009)                                                                                                                                                                                                                                                                                                      | K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Highest safety class achievable in safety mode                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• acc. to EN 954</li> <li>• Performance level according to ISO 13849-1</li> <li>• SIL acc. to IEC 61508</li> </ul>                                                                                                                                                                                                  | n.a.<br>none<br>No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Use in hazardous areas</b>                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• ATEX marking</li> <li>• ATEX certificate</li> <li>• IECEx</li> <li>• CCC Ex</li> <li>• EAC Ex</li> <li>• FM marking</li> <li>• Explosion protection category for gas</li> <li>• Explosion protection category for dust</li> <li>• associated equipment (Ex ia)</li> <li>• associated equipment (Ex ib)</li> </ul> | II 2 G (1) G Ex ib [ia Ga] IIC T4 Gb II 2 G (1) D Ex ib [ia IIIC Da] IIC T4 Gb I M2 Ex ib [ia] I Mb<br>KEMA 04 ATEX 1247<br>IECEx KEM 05.0009<br>2020322316002944<br>PB Ex ib [ia] I Mb 1Ex ib [ia Ga] IIC T4 Gb [Ex ia Da] IIIC<br>Class I, Zone 1 AEx ib [ia] IIC T4 Ex ib IIC T4 NI, Class I, DIV.2, GP. A,B,C,D T4 AIS, Class I, DIV.1, GP. A,B,C,D T4 DIP Class II, III, GP. E,F,G<br>ATEX gas explosion protection, Zone 1<br>ATEX dust explosion protection, Zone 21 always install in corresponding enclosure<br>Yes<br>Yes |
| <b>Marine approval</b>                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• Germanischer Lloyd (GL)</li> <li>• American Bureau of Shipping (ABS)</li> <li>• Bureau Veritas (BV)</li> <li>• Det Norske Veritas (DNV)</li> </ul>                                                                                                                                                                | Yes<br>Yes<br>Yes<br>Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Connection method</b>                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Design of electrical connection                                                                                                                                                                                                                                                                                                                            | Screw/spring-type terminal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Dimensions</b>                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Width                                                                                                                                                                                                                                                                                                                                                      | 30 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Height                                                                                                                                                                                                                                                                                                                                                     | 129 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Depth                                                                                                                                                                                                                                                                                                                                                      | 136.5 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Weights</b>                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Weight, approx.                                                                                                                                                                                                                                                                                                                                            | 230 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

For use in hazardous locations

[China RoHS](#)
[Manufacturer Declaration](#)



[Miscellaneous](#)

For use in hazardous locations


[CCC-Ex](#)


[Miscellaneous](#)


Maritime application

Environment








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