

# AI843

## Compact Product Suite hardware selector



The AI843 Thermocouple/mV Input Module provides 8 differential input channels for Thermocouple/mV measurements.

Measurement ranges configurable per channel are: -30 mV to +75 mV linear, or TC Types B, C, E, J, K, L, N, R, S, T and U. A separate Pt100 channel is used for “Cold Junction” (ambient) temperature measurements, thus serving as CJ-channel for Ch. 1...8.

The junction temperature may be measured locally on the MTUs screw terminals, or on a connection unit distant from the device. Alternatively, a fix junction temperature for the module may be set by the user (as parameter) or a junction temperature set by the application.

### Features and benefits

- 8 differential input channels for thermocouple/mV
- Single or redundant operation
- A separate channel is used as CJ-channel (4-wire Pt100 RTD)
- Variety of thermocouples with the following characteristics: B, C, E, J, K, L, N, R, S, T and U
- 16 Bit resolution (A/D converter)
- Inputs are monitored for wire-break open-circuit

# More info

## Signal range / linearization

| Input Type              | Temperature Range              |
|-------------------------|--------------------------------|
| TC type B (1)           | 44...1820°C, 111.2...3308°F    |
| TC type C               | 0...2300°C, 32...4172°F        |
| TC type D               | 0...2300°C, 32...4172°F        |
| TC type E (1)           | -270...1000°C, -454...1832°F   |
| TC type J (1)           | -210...1200°C, -346...2192°F   |
| TC type K (1)           | -270...1372°C, -454...2501.6°F |
| TC type L               | -200...900°C, -328...1652°F    |
| TC type N (1)           | -270...1300°C, -454...2372°F   |
| TC type R (1)           | -50...1768°C, -58...3214.4°F   |
| TC type S (1)           | -50...1768°C, -58...3214.4°F   |
| TC type T (1)           | -270...400°C, -454...752°F     |
| TC type U               | -200...600°C, -328...1112°F    |
| Linear range            | -30...75 mV                    |
| Pt100 RTD (for CJC) (2) | -40...100°C, -40...212°F       |

(1)Linearization per IEC 584-1 1995, and following ITS 90 requirements.

(2)Sensor Type applies to Cold Junction channel only, for the measuring of the Cold Junction Compensation temperature.

| General info         |   |
|----------------------|---|
| Article number       | 3BSE028925R1  |
| Type                 | Analog Input  |
| Signal specification | -30..75 mVlinear, TC types B, C, E, J, K, L, N, R, S, T and U |
| Number of channels   | 8   |
| Signal type          | See table   |
| HART                 | No  |
| SOE                  | No  |
| Redundancy           | Yes   |
| High integrity       | No  |
| Intrinsic safety     | No  |
| Mechanics            | S800  |

| <b>Detailed data</b>                |  |
|-------------------------------------|--|
| Resolution                          | 16 bits  |
| Input impedance                     | > 1 MΩ   |
| Isolation                           | Groupwise isolated from ground   |
| Error                               | Max. 0.1%  |
| Temperature drift                   | Typ. 10 ppm/°C, Max. 25 ppm/°C   |
| Input filter (rise time 0-90%)      | 1.1 kHz  |
| Update cycle time                   | 320 + 80 * (no of active channels) ms at 50 Hz 267 + 67 * (no of active channels) at 60 Hz |
| Maximum field cable length          | 600 meters (656 yards) or max. 500 Ω   |
| CMRR, 50Hz, 60Hz                    | 100 dB   |
| NMRR, 50Hz, 60Hz                    | > 40 dB  |
| Rated insulation voltage            | 50 V   |
| Dielectric test voltage             | 500 V a.c.   |
| Power dissipation                   | 1.5 W  |
| Current consumption +5 V Modulebus  | 60 mA  |
| Current consumption +24 V Modulebus | 50 mA  |
| Current consumption +24 V external  | 0  |

| <b>Diagnostics</b>               |   |
|----------------------------------|---|
| Front LED's                      | F(ault), R(un), W(arning)   |
| Supervision                      | Module error: reference channels outside limits, power supply low<br>Channel error: open-circuit,<br>CJ channel error (ch 8): out of range <-40°C (-40°F) and >100°C (212°F)<br>Junction channel)<br>Channel error Linear: none |
| Status indication of supervision | Module Error, Module Warning, Channel error   |

| <b>Environment and certification</b> |   |
|--------------------------------------|---|
| CE mark                              | Yes   |
| Electrical safety                    | EN 61010-1, UL 61010-1, EN 61010-2-201, UL 61010-2-201              |
| Hazardous Location                   | C1 Div 2 cULus, C1 Zone 2 cULus, ATEX Zone 2                        |
| Marine certification                 | -   |
| Temperature, Operating               | 0 to +55 °C (+32 to +131 °F), approvals are issued for +5 to +55 °C |
| Temperature, Storage                 | -40 to +70 °C (-40 to +158 °F)                                      |
| Pollution degree                     | Degree 2, IEC 60664-1   |
| Corrosion protection                 | ISA-S71.04: G3  |
| Relative humidity                    | 5 to 95 %, non-condensing   |
| Max ambient temperature              | 55 °C (131 °F), for vertical mounting in compact MTU 40 °C (104 °F) |
| Protection class                     | IP20 according to IEC 60529   |
| Mechanical operating conditions      | IEC/EN 61131-2  |
| EMC                                  | EN 61000-6-4 and EN 61000-6-2                                       |
| Overvoltage categories               | IEC/EN 60664-1, EN 50178  |
| Equipment class                      | Class I according to IEC 61140; (earth protected)                   |
| RoHS compliance                      | DIRECTIVE/2011/65/EU (EN 50581:2012)                                |
| WEEE compliance                      | DIRECTIVE/2012/19/EU  |

| <b>Compatibility</b> |                                   |
|----------------------|-----------------------------------|
| Use with MTU         | TU818, TU830, TU833, TU842, TU843 |
| Keying code          | BA                                |

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**Dimensions**

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|        |  |
|--------|--|
| Width  | 45 mm (1.77")                                      |
| Depth  | 102 mm (4.01"), 111 mm (4.37") including connector |
| Height | 119 mm (4.7")                                      |
| Weight | 0.157 kg (0.35 lbs.)                               |

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# Related products



TU830V1



TU833



TU842



TU843



TU852

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