

# AI843

## Freelance 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 Channel error: open-circuit, CJ channel error (ch 8): out of range <-40°C (-40°F) and >100°C (212°F) Junction channel) 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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