ABB ABB Series Service Manual

AI843

1. Description

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.

3. Product Information

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 form 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

MTUs that match this product

,

TU830V1

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

Detailed data

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

Diagnostics

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

Environment and certification

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

Compatibility

Use with MTU TU818, TU830, TU833, TU842, TU843

Keying code BA

Dimensions

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.)