ABB ABB Series Service Manual

AI835A

1. Description

The AI835/AI835A 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, N, R, S and T, for AI835A also D, L and U.

3. Product Information

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One of the channels (Channel 8) may be configured for “Cold Junction” (ambient) temperature measurements, thus serving as CJ-channel for Ch. 1...7. 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 for AI835A also from the application. Channel 8 may be used in the same manner as Ch. 1...7 when no CJ-temperature measurement is needed.

Features and benefits

8 differential input channels for thermocouple/mV.

Channel 8 can be designated as the CJ-channel (4-wire Pt100 RTD)

Variety of thermocouples with the following characteristics: B, C, E, J, K, N, R, S and T for AI835A also D, L and U

15 Bit resolution (A/D)

Inputs are monitored for wire-break open-circuit

MTUs that match this product

,

TU810V1

General info

Article number 3BSE051306R1

Type Analog Input

Signal specification -30..75 mV linear; TC types B, C, D, E, J, K, L, N, R, S, T and U

Number of channels 8

Signal type See table in S800 Modules and Termination Units, 3BSE020924

HART No

SOE No

Redundancy No

High integrity No

Intrinsic safety No

Mechanics S800

Detailed data

Resolution 15 bits

Input impedance > 1 MΩ

Isolation Groupwise isolated from ground

Error Max. 0.1%

Temperature drift Typ. 5 ppm/°C, Max. 7 ppm/°C

Update cycle time 280 + 80 * (number of active channels) ms at 50 Hz; 250 + 70 * (number of active channels) ms at 60 Hz

Maximum field cable length 600 meters (656 yards)

CMRR, 50Hz, 60Hz 120 dB

NMRR, 50Hz, 60Hz > 60 dB

Rated insulation voltage 50 V

Dielectric test voltage 500 V a.c.

Power dissipation 1.6 W

Current consumption +5 V Modulebus 75 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, power supply low

Channel error: open-circuit

CJ-channel (ch 8): < -40 °C (-40°F) and > 100 °C (212°F)

Status indication of supervision Module Error, Module Warning, Channel error (8)

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 ABS, BV, DNV, LR

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 TU810, TU812, TU814, TU818, TU830, TU833

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 0.22 kg (0.49 lbs.)