ABB ABB Series Service Manual

DI890

1. Description

The DI890 Digital Input Module has 8 channels. The module includes Intrinsic Safety protection components on each channel for connection to process equipment in hazardous areas without the need for additional external devices. Each channel is galvanically isolated from the power supply, ground, and each other. Intrinsically safe Proximity sensors or volt-free contacts can be powered and monitored by any channel.

3. Product Information

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The Proximity sensor should conform to the NAMUR standard and line faults can be detected without any additional external components. For line faults to be detected when using volt-free contacts, external resistors should be connected in series and in parallel to enable the state of the field circuit to be sensed by the input channel. All eight channels are galvanic isolated from the ModuleBus and power supply individually. Power to the input stages is converted from the 24 V on the power supply connections. Three LEDs indicate module status Fault (Red), Run (Green), and Warning (Yellow).

TU890 and TU891 Compact MTU can be used with this module and it enables two wire connections to the process devices without additional terminals. TU890 for Ex applications and TU891 for non Ex applications.

Features and benefits

8 channels with process voltage supervision

Output status indicators

OSP sets outputs to predetermined state upon error detection

Short-circuit protection to ground and 30 V

Over-voltage and over-temperature protection

Intrinsic Safety support

NAMUR inputs

G3 compliant

General info

Article number 3BSC690073R1

Type Digital Input

Signal specification NAMUR input level

Number of channels 8

Signal type Proximity sensor (NAMUR) or Voltage free contact

HART No

SOE No

Redundancy No

High integrity No

Intrinsic safety Yes

Mechanics S800

Detailed data

Isolation Individually isolated, channel-to-channel and to circuit common ground

Filter times (digital, selectable) 2, 4, 8, 16 ms; analog filter 1 ms

Current limiting Built in current limited sensor power

Rated insulation voltage 50 V

Dielectric test voltage 500 V a.c.

Power dissipation 1.4 W

Current consumption +5 V Modulebus Typ. 120 mA, Max. <150 mA

Current consumption +24 V external Typ. 50 mA, Max. <70 mA

Diagnostics

Front LED’s F(ault), R(un), W(arning), Channel 1-8 status and F(ault)

Supervision Internal process supply

Loop supervision

Environment and certification

CE mark Yes

Electrical safety EN 61010-1, EN 61010-2-201

Hazardous Location ATEX/IECEx Zone 2 with interface to Zone 0, cFMus C1, Div 2/Zone 2 with interface to C1, C2, C3 Div 1/Zone 0

Marine certification ABS, BV, DNV, LR

Temperature, Operating 0 to +55 °C (+32 to +131 °F)

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, 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 TU890, TU891

Keying code AA

Dimensions

Width 45 mm (1.77”)

Depth 102 mm (4.01”), 111 mm (4.37”) including connector

Height 119 mm (4.7”)

Weight 0.2 kg (0.44 lbs.)