Universal converter

9116B

- Input for RTD, TC, Ohm, potentiometer, mA and V
- Supply for 2-wire transmitters
- Active / passive mA output and relay output
- Can be supplied separately or installed on power rail, PR type 9400
- SIL 2-certified via Full Assessment

Advanced features

- Configuration and monitoring by way of detachable display front (PR 45xx); process calibration, signal and relay simulation.
- Advanced relay configuration, e.g. setpoint, window, delay, sensor error indication and power monitoring.
- Copying of the configuration from one device to others of the same type via PR 45xx.
- Reduced Uo Ex data < 8.3 V for active input signals.
- TC inputs with internal CJC or external CJC for higher accuracy.
- Active / passive mA output via the same two terminals.

Application

- 9116B can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class I/II/III, Div. 1, Gr. A-G.
- Conversion and scaling of temperature, voltage, potentiometer and linear resistance signals.
- Power supply and signal isolator for 2-wire transmitters.
- Monitoring of error events and cable breakage via the individual status relay and/or a collective electronic signal via the power rail.
- The 9116 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.
- Suitable for the use in systems up to Performance Level “d” according to ISO-13849.

Technical characteristics

- 1 green and 1 red front LED indicate operation status and malfunction. 1 yellow LED indicates relay status.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

- The devices can be mounted vertically or horizontally without distance between neighbouring units.
Environmental Conditions

- Operating temperature: -20°C to +60°C
- Storage temperature: -20°C to +85°C
- Calibration temperature: 20...28°C
- Relative humidity: <95% RH (non-cond.)
- Protection degree: IP20

Mechanical specifications

- Dimensions (HxWxD): 109 x 23.5 x 104 mm
- Dimensions (HxWxD) w/ 4501/451x: 109 x 23.5 x 116 / 131 mm
- Weight approx: 1.5 kVAC / 150 VAC
- Weight incl. 4501 / 451x: 200 g / 215 g
- DIN rail type: DIN EN 60715/35 mm
- Screw terminal torque: 0.5 Nm
- Vibration: IEC 60068-2-6
- 2...13.2 Hz: ±1 mm
- 13.2...100 Hz: ±0.7 g

Common specifications

Supply

- Supply voltage: 19.2...31.2 VDC
- Fuse: 1.25 A SB / 250 VAC
- Max. required power: ≤2.1 W
- Max. power dissipation: ≤1.7 W

Isolation voltage

- Test/working: Input to any: 2.6 kVAC / 300 VAC
- Analog output to supply: 2.6 kVAC / 300 VAC
- Status relay to supply: 1.5 kVAC / 150 VAC

Response time

- Temperature input, programmable: 0...50% (0...100%)
- (0...50% / 0...100%): 1...60 s
- mA / V input (programmable): 0.4...60 s

Auxiliary supplies

- 9116x1: 2-w. sup. (term. 54...52): 28...165 VDC / 0...20 mA
- 9116x2: 2-w. sup. (term. 54...52): 21.4...16.5 VDC / 0...20 mA
- Signal dynamics, input: 24 bit
- Signal dynamics, output: 16 bit
- Signal / noise ratio: Min. 60 dB (0...100 KHz)
- Accuracy: Better than 0.1% of sel. range

Input specifications

RTD input

- RTD type: Pt10/20/50/100/200/250/300/Pt100/500/1000; NTC 100/500/100/120/1000
- Cable resistance per wire: 50 Ω (max.)
- Effect of cable resistance: Nom. 0.2 mA
- Signal error detection: <0.002 Ω / Ω
- Sensor error detection: Programmable ON / OFF
- Short circuit detection: Yes
- TC input

Output specifications

Current output

- Signal range: 0...23 mA
- Programmable signal ranges: 0...20/4...20/0...20/4...20 mA
- Load (@ current output): ≤600 Ω
- Load stability: ≤0.01% of span / 100 Ω
- Sensor error indication: 0 / 3.5 / 23 mA / none
- NAMUR NE43 Upscale/Downscale: 23 mA / 3.5 mA
- Current limit: ≤28 mA

Passive 2-wire mA output

- Max. external 2-wire supply: 26 VDC
- Effect of external 2-wire supply voltage variation: <0.005% of span / V

Relay output

- Relay functions: Setpoint, Window, Sensor error, Power and Off
- Max. voltage: 250 VAC / VDC
- Max. current: 2 A
- Max. AC power: 500 VA
- Max. DC current, resistive load: >30 VDC
- See manual for details

Status relay

- Max. voltage: 125 VAC / 110 VDC
- Max. current: 0.5 AAC / 0.3 ADC
- Max. AC power: 62.5 WA / 32 W

Observed authority requirements

EMC: 2014/30/EU
LVD: 2014/35/EU
ATEX: 2014/34/EU
RoHS: 2011/65/EU
EAC: 2011/20/2010
EAC: 2012/10/2011

Approvals

- ATEX: KEMA 10ATEX0053 X
- IECEx: KEMA 10.0022X
- FM: FM19CA0031X
- INMETRO: DEKRA 16.0004 X
- cULus: E314307
- cUL: UL 61010-1
- cUL: UL 913
- EAC: E233311 (only 9116xx-U9)
- DNV-GL Marine: TXA0000JD