Universal converter, EMPHASIS assessed

9116A-EMP

- Input for RTD, TC, Ohm, potentiometer, mA and V
- Supply for 2-wire transmitters
- Active / passive mA output and relay output
- EMPHASIS assessed instrument for nuclear industry
- SIL 2-certified via Full Assessment

Advanced features
- Configuration and monitoring by way of detachable display front (PR 4511/4501); 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 the display front.
- TC inputs with internal CJC or external CJC for higher accuracy.
- Active / passive mA output via the same two terminals.

Applications

• 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 the display front.
• TC inputs with internal CJC or external CJC for higher accuracy.
• Active / passive mA output via the same two terminals.

Application
- The device can be mounted in and receive signals from non-classified area and zone 2.
- 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.
- 9116A-EMP 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.
- Can be supplied separately or installed on power rail, PR type 9400.

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
Installation in........... Pollution degree 2 & meas. / overvoltage cat. II

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......................... 185 g
Weight incl. 4501 / 451x (approx.).. 200 g / 215 g
DIN rail type................. DIN EN 60715/35 mm
Wire size...................... 0.13...2.06 mm² AWG 26...14 stranded wire
Screw terminal torque............. 0.5Nm
Vibration.................... IEC 60068-2-6
2.13 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%, 100...10%)................ 1...60 s
mA / V input (programmable)............. 0.4...60 s

Auxiliary supplies
9116x1x: 2-w. sup. (term. 54...52)........... 28...16.5 VDC / 0...20 mA
9116x2x: 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/P
Cable resistance per wire.............. 50 Ω (max.)
Sensor current......................... Nom. 0.2 mA
Effect of sensor cable resistance (3-wire).............. < 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 and 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 VA / 32 W

Observed authority requirements
EMC........................................... 2014/30/EU
LVD.......................................... 2014/35/EU
RoHS........................................... 2011/65/EU
EAC.......................................... TR-CU 020/2011

Approvals
ATEX....................................... KEMA 10ATEX0053 X
IECEx....................................... KEM 10.0022X
UL........................................... UL 61010-1
DNV-GL Marine..................... 1.0.12 Certific. No. 2.4
ClassNK................................. TA18527M
SIL.......................................... SIL 2 certified & fully assessed acc. to IEC 61508