

## Bipolar isolated converter

### 3117

- Conversion of voltage and current bipolar process signals to unipolar signals
- Output: Current and voltage
- Excellent accuracy, better than 0.05 % of span
- Fast response time < 7 ms and high output load stability
- Multiple signal ranges are selectable via DIP-switches



#### Functional highlights

- Isolating converter which can be used for signal conversion of standard bipolar analog process signals into a unipolar analog signal.
- High 3-port isolation provides surge suppression that protects the control system from transients and noise and eliminates ground loops.
- All terminals are over-voltage protected, polarity protected and short-circuit protected.
- The device can be mounted in Safe area or in Zone 2 / Division 2 areas and is approved for marine applications.

#### Technical highlights

- Flexible 24 VDC ( $\pm 30\%$ ) supply via power rail or connectors.
- Excellent conversion accuracy in all available ranges, better than 0.05% of span.
- Fast response time < 7 ms / > 100 Hz bandwidth — 10 Hz bandwidth damping possible via DIP switch.
- Meeting the NAMUR NE21 recommendations, this device ensures top measurement performance in harsh EMC environments.
- Excellent signal/noise ratio > 60 dB.
- High galvanic isolation of 2.5 kVAC.
- Inputs and outputs are floating and galvanically separated.
- A green front LED indicates normal operation and malfunction.
- Wide ambient temperature range: -25...+70°C.

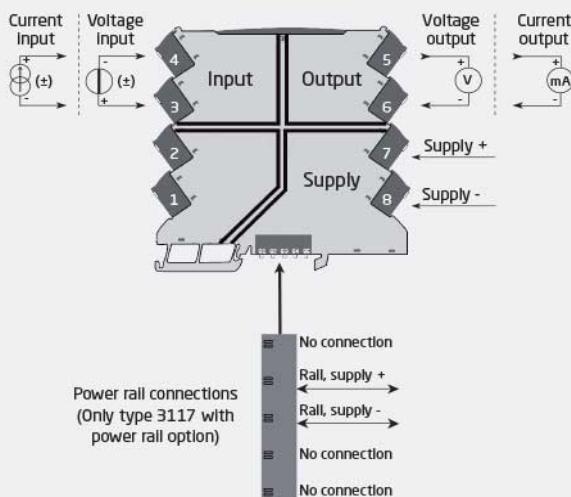
#### Programming

- Fast and easy configuration of factory-calibrated measurement ranges via DIP switches.

#### Mounting / installation

- The narrow 6.1 mm housing allows up to 163 units per meter.
- Units can be mounted side by side, horizontally and vertically, without air gap on a standard DIN rail, even at 70°C ambient temperature.
- Units can be supplied separately or installed on PR 9400 power rail.

#### Applications



*Safe Area or  
Zone 2 & Cl. 1, Div. 2, gr. A-D*

## Order

| Type | Version                                  |
|------|--|
| 3117 | With power rail connector / terminals :- |
|      | Supplied via terminals :-N               |

Example: 3117

## Environmental Conditions

|                              |  |
|------------------------------|--|
| Operating temperature.....   | -25°C to +70°C                                   |
| Storage temperature.....     | -40°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).....    | 113 x 6.1 x 115 mm                                     |
| Weight approx.....         | 70 g   |
| DIN rail type.....         | DIN EN 60715/35 mm                                     |
| Wire size.....             | 0.13...2.5 mm <sup>2</sup> / AWG 26...12 stranded wire |
| Screw terminal torque..... | 0.5 Nm   |
| Vibration.....             | IEC 60068-2-6  |
| 2...25 Hz.....             | ±1.6 mm  |
| 25...100 Hz.....           | ±4 g   |

## Common specifications

|  |   |
|--|---|
| <b>Supply</b>  |   |
| Supply voltage.....  | 16.8...31.2 VDC                               |
| Max. required power.....                                   | 0.80 W  |
| Max. power dissipation.....                                | 0.43 W  |
| <b>Isolation voltage</b>                                   |   |
| Isolation voltage, test / working.....                     | 2.5 kVAC / 300 VAC (reinforced)               |
| Zone 2 / Div. 2.....                                       | 250 VAC                                       |
| <b>Response time</b>                                       |   |
| Response time (0...90%, 100...10%).....                    | < 7 ms or < 44 ms                             |
| MTBF, acc. to IEC 61709 (SN29500).....                     | > 241 years                                   |
| Signal / noise ratio.....                                  | Min. 60 dB (0...100 kHz)                      |
| Signal dynamics, input.....                                | Analog signal chain                           |
| Signal dynamics, output.....                               | Analog signal chain                           |
| Programming.....   | DIP-switches                                  |
| Cut-off frequency (3 dB).....                              | > 100 Hz or 10 Hz (selectable via DIP-switch) |
| Accuracy.....  | < ±0.05% of span                              |
| Temperature coefficient.....                               | < ±0.01% of span / °C                         |
| EMC immunity influence.....                                | < ±0.5% of span                               |
| Extended EMC immunity: NAMUR NE21, A criterion, burst..... | < ±1% of span                                 |

## Input specifications

|                                      |                  |
|--------------------------------------|------------------|
| <b>Current input</b>                 |                  |
| Measurement range.....               | -23...+23 mA     |
| Programmable measurement ranges..... | ± 10 and ± 20 mA |
| Input voltage drop.....              | < 1 VDC @ 23 mA  |
| <b>Voltage input</b>                 |                  |
| Measurement range.....               | -11.5...+11.5 V  |
| Programmable ranges.....             | ±5 and ±10 V     |
| Input resistance.....                | ≥ 1 MΩ           |

## Output specifications

### Current output

|                                 |                          |
|---------------------------------|--------------------------|
| Signal range.....               | 0...23 mA                |
| Programmable signal ranges..... | 0 / 4...20 mA            |
| Load (@ current output).....    | ≤ 600 Ω                  |
| Load stability.....             | ≤ 0.002% of span / 100 Ω |
| Current limit.....              | ≤ 28 mA                  |

### Voltage output

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Signal range.....               | 0...10 VDC                        |
| Programmable signal ranges..... | 0/1...5 and 0/2...10 V            |
| Load (@ voltage output).....    | ≥ 10 kΩ                           |
| of span.....                    | = of the presently selected range |

## I.S. / Ex marking

|             |  |
|-------------|--|
| ATEX.....   | II 3 G Ex ec IIC T4 Gc   |
| IECEx.....  | Ex ec IIC T4 Gc  |
| FM, US..... | Cl. I, Div. 2, Gp. A, B, C, D T4 or Cl. I, Zone 2, AEx nA IIC T4 |
| FM, CA..... | Cl. I, Div. 2, Gp. A, B, C, D T4 or Cl. I, Zone 2, Ex nA IIC T4  |

## Observed authority requirements

|             |                              |
|-------------|------------------------------|
| EMC.....    | 2014/30/EU & UK SI 2016/1091 |
| LVD.....    | 2014/35/EU & UK SI 2016/1101 |
| ATEX.....   | 2014/34/EU & UK SI 2016/1107 |
| RoHS.....   | 2011/65/EU & UK SI 2012/3032 |
| EAC.....    | TR-CU 020/2011               |
| EAC Ex..... | TR-CU 012/2011               |

## Approvals

|                          |                             |
|--------------------------|-----------------------------|
| ATEX.....                | KEMA 10ATEX0147 X           |
| IECEx.....               | KEM 10.0068X                |
| UKEX.....                | DEKRA 21UKEX0055X           |
| c FM us.....             | FM17US0004X / FM17CA0003X   |
| c UL us, UL 61010-1..... | E314307                     |
| CCC.....                 | 2020322310003554            |
| EAC Ex.....              | EAEU KZ 7500361.01.01.08756 |
| DNV Marine.....          | TAA00001RW                  |