

## Isolated Signal Converter with Universal Power Supply

### DR-I4E

Signal converter for electrical signals, isolated, for industrial applications

Isolated signal converter for electrical signals. Accepts a wide range of AC and DC voltages, with ranges from 50 mV ac/dc up to 600 V ac/dc, and a wide range of AC and DC current signals, from 5 mA ac/dc up to 5 A ac/dc. The instrument can be configured to measure frequency from any of the AC voltage and AC current signals accepted. Unipolar and bipolar signals accepted for DC voltage and DC current signals.

### DR-I4L

Signal converter for load cells and millivolts, isolated, industrial applications

Isolated signal converter for load cell signals and millivolts. Provides +5 V dc excitation voltage to power the load cell, and 'sense' function to compensate for excitation voltage variations. Accepts direct connection of 1, 2, 3, or up to 4 load cells (typical 350 Ohm load cells). Accepts 4 and 6 wire load cells. Accepts unipolar and bipolar ranges up to ±80 mV.

### DR-I4P

Signal converter for process and temperature signals, isolated, industrial applications

Isolated signal converter for process and temperature signals. Accepts a wide range of process signals including 4/20 mA, 0/10 V dc, potentiometers and resistance measurements, providing excitation voltage to power the transducer when needed. Accepts a wide range of temperature signals, including Pt100, Pt500, Pt1000, thermocouples J, K, N, E, T, R, S, C and B, NTC sensors from 44004 to 44008 and from 44030 to 44034, and a configurable NTC range with configurable  $R_{25}$  and  $\beta$  parameters.

### DR-I4 Series Features for all Models

Configurable output in 4/20 mA (active or passive) or 0/10 V dc. Universal power supply from 18 to 265 V ac/dc. 3 way isolation between input, output and power circuits. Circuit isolation prevents ground loops and transient propagation, protecting remote equipment and signal integrity.

Predefined configuration codes are available for fast and easy configuration. An advanced configuration menu is available to customize input and output signal ranges to specific values required. Configuration is done through the front push-button keypad. Front information displays available for configuration and system information (input signal value, output signal value, configured label, signal percentage and process value).

Built-in 'force' functions to manually generate low and high output signals and to validate remote instrumentation during installation. 'SOS' mode to help on critical maintenance and repairs. Configurable power frequency rejection filter. 'Password' function to block non-authorized access to 'configuration menu'. Designed for industrial use, with potential integration into a wide range of applications,

reduced cost, excellent quality and available customization.

### DR-I4 Series: Technical Specifications

| DR-I4E: INPUT SIGNAL RANGES                       |   |
|---|---|
| <b>INPUT SIGNAL RANGES V AC</b>                   |   |
| Ranges  | From 50 mV ac up to 600 V ac  |
| Type of measure                                   | True RMS  |
| Connections accepted                              | Phase-to-phase<br>Phase-to-neutral  |
| Category of measure                               | CAT-II up to 300 V ac   |
| <b>INPUT SIGNAL RANGES V DC</b>                   |   |
| Ranges unipolar                                   | From 0/50 mV dc up to 0/600 V dc  |
| Ranges bipolar                                    | From ±50 mV dc up to ±600 V dc  |
| <b>INPUT SIGNAL RANGES A AC</b>                   |   |
| Ranges  | From 5 mA ac up to 5 A ac   |
| Type of measure                                   | True RMS  |
| Connections accepted                              | Phase-to-neutral<br>Phase-to-phase  |
| <b>INPUT SIGNAL RANGES A DC</b>                   |   |
| Ranges unipolar                                   | From 0/5 mA dc up to 0/5A dc  |
| Ranges bipolar                                    | From ±5 mA dc up to ±5 A dc   |
| <b>FREQUENCY AC</b>                               |   |
| Ranges  | Up to 100Hz   |
| Measured from                                     | Measured from existing V ac and A ac signal ranges  |
| <b>ACCURACY AT 25°C</b>                           | See manual for each type of signal'   |
|   | 'Accuracy values are indicated for 4/20 mA output. For 0/10Vdc output, add +0.05% to indicated accuracy values. |
| <b>THERMAL DRIFT</b>                              | 150 ppm/°C  |
| <b>STEP RESPONSE</b>                              |   |
| AC signals  | <350 mSec. typ. (0 to 99%)  |
| DC signals'                                       | <90 mSec. typ. (0 to 99%) 'no filter'   |
|   | <175 mSec. typ. (0 to 99%) '50 Hz filter' or '60 Hz filter'   |
|   | <350 mSec. typ. (0 to 99%) '50 and 60 Hz filter'  |
| <b>DR-I4L: INPUT SIGNAL RANGES FOR LOAD CELLS</b> |   |
| Signal ranges                                     | From 0/5 mV up to 0/80 mV   |
| Bipolar signal ranges                             | From ±5 mV up to ±80 mV   |
| Excitation voltage                                | +5 V dc   |



|  |   |
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| Excitation voltage variations  | Automatic compensation  |
| Excitation current   | Max. 70 mA  |
| <b>INPUT SIGNAL RANGES FOR MILLIVOLTS</b>  |   |
| Signal ranges  | From 0/5 mV up to 0/80 mV   |
| Bipolar signal ranges  | From ±5 mV up to ±80 mV   |
| Excitation voltage   | No  |
| Input impedance  | 10 MOhm typical (with 1 MOhms during 150 milliseconds, every 10 seconds approx.)  |
| <b>ACCURACY AT 25°C</b>  | See manual for each type of signal'<br>'Accuracy values are indicated for 4/20 mA output. For 0/10 Vdc output, add +0.05 % to indicated accuracy values |
| <b>THERMAL DRIFT</b>   | ±150 ppm/°C (F.S.) for ranges up to 5 mV<br>±100 ppm/°C (F.S.) for ranges up to 20 mV<br>±75 ppm/°C (F.S.) for ranges up to 80 mV                       |
| <b>STEP RESPONSE</b>   |   |
| Typical response times to reach 99% of the output signal, in response to a 100% step at the input. |   |
| With 'no filter'   | <115 mSec. typ. (0 to 99%)  |
| With '50hz filter' or '60hz filter'  | <150 mSec. typ. (0 to 99%)  |
| With '50 and 60hz filter'  | <300 mSec. typ. (0 to 99%)  |
| <b>DR-I4P: INPUT SIGNAL RANGES</b>   |   |
| Process  | 4/20 mA, 0/10Vdc (active and passive)<br>excitation voltage +15 V dc @25 mA   |
| Thermocouples  | J, K, N, E, T, R, S, C and B conforming to ITS-90   |
| 'Pt' sensors   | Pt100 (2 wires and 3 wires)<br>Pt500, Pt1000 (2 wires)  |
| 'NTC' sensors  | (see manual)  |
| Resistances  | Ranges from 0/1Kohm up to 0/1MOhm   |

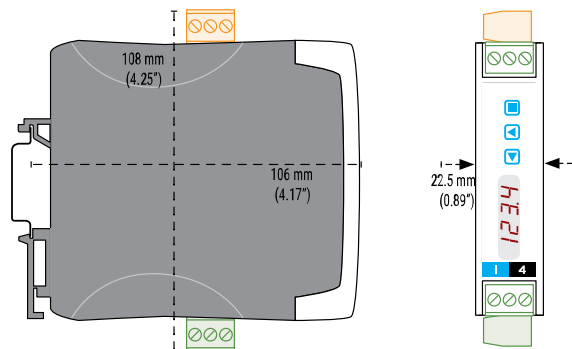
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|--|--|
| Potentiometers                           | Nominal value from 250Ohm to 15 KOhm   |
| <b>ACCURACY AT 25 °C</b>                 |  |
|  | See user's manual for each type of signal<br>*Accuracy values are indicated for 4/20mA output. For 0/10Vdc output, add +0.05% to indicated accuracy values.                            |
| <b>THERMAL DRIFT</b>                     |  |
|  | ±100ppm/°C (F.S.)  |
|  | ±0.05°C/°C (thermocouple cold junction)  |
| <b>STEP RESPONSE</b>                     | Step response is associated to the configured power filter. Typical response values to reach 99% of the output signal, as a response to a 100% step at the signal input (see Table 1). |
| <b>OUTPUT SIGNAL RANGES (ALL MODELS)</b> |  |
| Active current output                    | 4/20mA active<br>Max. <22mA, min. 0mA<br>Maximum load <400Ohm  |
| Passive current output                   | 4/20 mA passive<br>Max. 30 V dc on terminals   |
| Voltage output                           | 0/10 V dc,<br>Max. <11 V dc,<br>min. -0.05Vdc (typ.)<br>Minimum load >10 KOhm  |
| <b>CONFIGURATION SYSTEM</b>              |  |
| Key pad + display                        | Accessible at the front of the instrument  |
| Configuration                            | 'Configuration menu' and predefined 'codes'  |
| Scalable units                           | Scalable input ranges<br>Scalable output ranges<br>Scalable process display  |
| <b>POWER SUPPLY</b>                      |  |
| Voltage range                            | 18 to 265V ac/dc isolated<br>(20 to 240V ac/dc ±10%)   |
| AC frequency                             | 45 to 65 Hz  |
| Consumption                              | <3.0W  |
| Power wires                              | 1mm <sup>2</sup> to 2.5mm <sup>2</sup> (AWG17 to AWG14)  |
| Overvoltage category                     | 2  |

|                       |  |
|-----------------------|--|
| <b>ISOLATION</b>      |  |
| Input - output        | 3000 Veff (60 seconds)                 |
| Power - input         | 3000 Veff (60 seconds)                 |
| Power - output        | 3000 Veff (60 seconds)                 |
| <b>ENVIRONMENTAL</b>  |  |
| IP protection         | IP30                                   |
| Impact protection     | IK06                                   |
| Operation temperature | From 0 to +50°C                        |
| Storage temperature   | From -20 to +70°C                      |
| 'Warm-up' time        | 15 minutes                             |
| Humidity              | 0 to 95% non condensing                |
| Altitude              | Up to 2000meters                       |
| <b>MECHANICAL</b>     |  |
| Size                  | 106x108x22.5mm                         |
| Mounting              | Standard DIN rail (35x7.5 mm)          |
| Connections           | Plug-in screw terminal (pitch 5.08 mm) |
| Housing material      | Polyamide V0                           |
| Weight                | <150 grams                             |
| Packaging             | 120x115x30mm, cardboard                |

| Type of Signal | No Filter  | 50 Hz or 60 Hz Filter | Both       |
|----------------|------------|-----------------------|------------|
| Process        | <60 mSec.  | <250 mSec.            | <600 mSec. |
| Pt100          | <100 mSec  | <320 mSec             | <2 Sec.    |
| Thermocouple   | <100 mSec. | <200 mSec.            | <1 Sec.    |
| Resistances*   | <100 mSec. | <200 mSec.            | <200 mSec. |

\*For a 1 MOhm range, the response time is doubled.

## Dimensions



| Model Number | Description   |
|--------------|---|
| DR-I4E       | Signal converter for electrical signals, isolated, for industrial applications          |
| DR-I4L       | Signal converter for load cells and millivolts, isolated, industrial applications       |
| DR-I4P       | Signal converter for process and temperature signals, isolated, industrial applications |