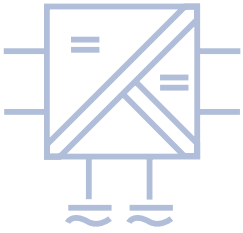


# VariTrans B 13000 Standard-Signal Isolators

**The cheap alternative for industrial standard applications. With calibrated range selection and broad-range mains adapter.**

### The task

Guaranteeing reliable and safe system operation requires galvanic isolation between the measuring signal sensors and the control (e.g. PCS, SPC etc.).

### The problems

In addition to the lack of space for installing the isolators problems are often caused by financial pressure, particularly in large systems. Low-priced single-range isolators have led to relatively high acquisition, logistics and storage costs, for example, due to the spare parts.

### The innovation

Calibrated selection of the input and output ranges with DIP switches allows the new VariTrans B 13000 basic standard-signal isolators from Knick to be used universally without tiresome readjustment. Settings are simply made with DIP switches.

### The housing

The new 12.5 mm slim modular housing can also resist high mechanical loading. Adjusting the isolator is simplified greatly by the easily opened housing mechanism.

### The function principle

The analog signal transfer with transformer isolation and the new digitally controlled range selection system guarantee trouble-free use in all standard industrial applications.

### The technology

A microcontroller monitors the control element settings and controls the calibrated range selection. Signal transmission interference – caused for example by contact resistances at the range selectors – is therefore ruled out.


The integrated power supply unit is suitable for 230 V AC or 24 V AC/DC. The extremely low power consumption and the resulting minimum self-heating significantly increase the reliability. This is why we give a 5-year warranty.

***Warranty***

*Defects occurring within 5 years from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).*

**Reasonably priced**
The reasonably priced solution for standard applications; notable reduction of purchasing, logistics and stockkeeping costs, for example concerning spare parts

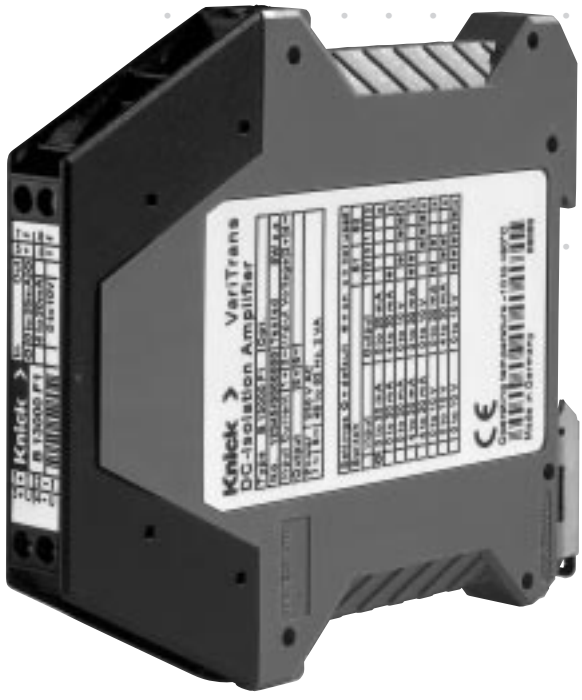
**Flexible and precise**
Calibrated signal switch-over, easy selection of input and output range without tedious readjustments

**Extremely compact design**
12.5-mm modular case; up to 80 active isolators per meter top-hat rail

**Quick and easy configuring**
Housing can easily be opened. A pull-out lock on the electronics section prevents disengagement of the pcb

**3-port isolation**
Protects against erroneous measurements or damage due to parasitic voltages

**Maximum reliability**
Omits repair effort and the related costs



## Product line

| Instruments | Input | Output | Ref. No. |
|---|---|---|---|
| B 13000 input and output adjustable to calibrated ranges | – | – | B 13000 F1 |
| B 13000 with permanent settings | 0 to 20 mA | 0 to 20 mA | B 13016 F1 |
| | 0 to 20 mA | 4 to 20 mA | B 13017 F1 |
| | 0 to 20 mA | 0 to 10 V | B 13018 F1 |
| | 4 to 20 mA | 0 to 20 mA | B 13026 F1 |
| | 4 to 20 mA | 4 to 20 mA | B 13016 F1 |
| | 4 to 20 mA | 0 to 10 V | B 13028 F1 |
| | 0 to 10 V | 0 to 20 mA | B 13036 F1 |
| | 0 to 10 V | 4 to 20 mA | B 13037 F1 |
| | 0 to 10 V | 0 to 10 V | B 13038 F1 |

**Options**

| | | |
|---|---|---|
| Opt. 336 | Power supply 24 V AC/DC | 336 |

## Specifications

**Input data**

| | | |
|---|---|---|
| Inputs | 0 to 20 mA<br>4 to 20 mA<br>0 to 10 V | terminal/switch selectable (factory setting 0 to 20 mA)<br>or with permanent setting (see Product line) |
| Input resistance | Current input<br>Voltage input | voltage drop approx. 500 mV at 20 mA<br>approx. 1 MΩ |
| Input capacitance | Approx. 1 nF | |
| Overload | Current input<br>Voltage input | ≤300 mA<br>V limiting by suppressor diode to 30 V,<br>max. permissible permanent current 30 mA |

**Output data**

| | | |
|---|---|---|
| Outputs | 0 to 20 mA<br>4 to 20 mA<br>0 to 10 V | switch selectable (factory setting 0 to 20 mA)<br>or with permanent setting (see Product line) |
| | (negative signals are transmitted up to approx. –5 % full scale) | |
| Load | For output current<br>For output voltage | ≤10 V (500 Ω at 20 mA)<br>≤10 mA (1 kΩ at 10 V)[1] |
| Offset | 20 µA / 10 mV | |
| Residual ripple | <20 $mV_{rms}$ | |

[1] Higher load at voltage output on request

# Specifications

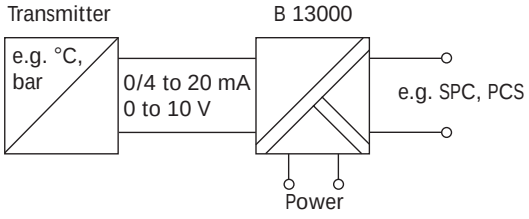
## Further data

| | |
|---|---|
| Gain error | < 0.4 % meas. value |
| Temperature coefficient [2] | < 150 ppm/K of final value |
| Bandwidth | > 1 kHz |
| Test voltage | 3.25 kV~ input against output against power supply |
| Working voltage (basic insulation) | 600 V AC/DC for overvoltage category II and pollution degree 2 to EN 61010-1.<br>For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance to adjacent devices or sufficient insulation between them. |
| EMC [3] | 89/336/EEC<br>EN 50081-1, EN 50081-2<br>EN 50082-1, EN 50082-2 |
| Surge withstand | 5 kV, 1.2/50 ms, to IEC 255-4 |
| Ambient temperature | Operation –10 to +60 °C<br>Transport and storage –20 to +85 °C |
| Power supply | 230 V AC, –15 % +10 %, 48 to 62 Hz, approx. 2 VA<br>Opt. 336: 24 V AC/DC<br>AC: ±15 %, 48 to 62 Hz, approx. 2 VA<br>DC: ±15 %, approx. 0.9 W |
| Construction | Modular case type F1 with screw clamp terminals,<br>For dimensions see dimension drawings |
| Protection | IP 20 |
| Weight | approx. 150 g |

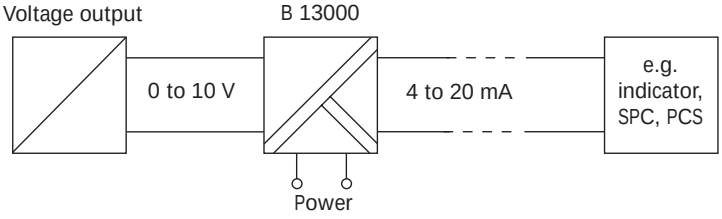
[2] Average TC in specified operating temperature range –10 °C to +60 °C
[3] Minor deviations possible during interference

# Typical applications

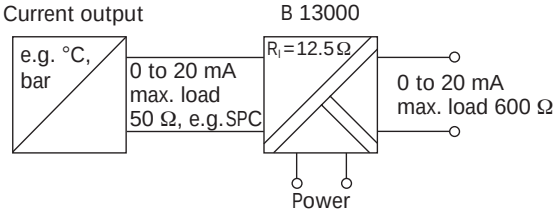
**Potential isolation**
for safe coupling of the measuring signals to the evaluating electronics




**Signal conversion**
e.g. for converting voltage into current signals
for interference-free signal transmission over large distances



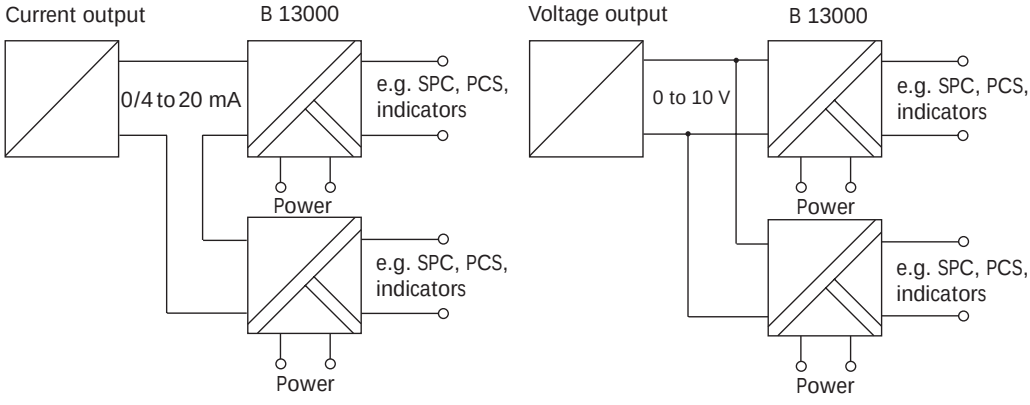

**Increase of load**
e.g. for measuring signals with low loadability



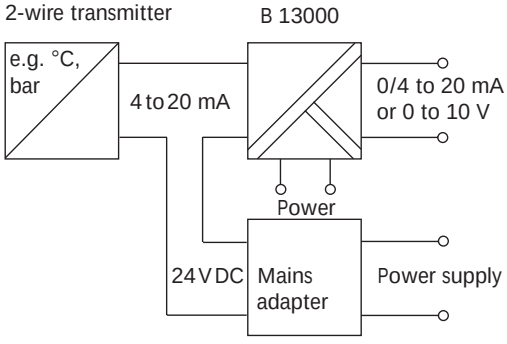

Subject to change!

# Typical applications

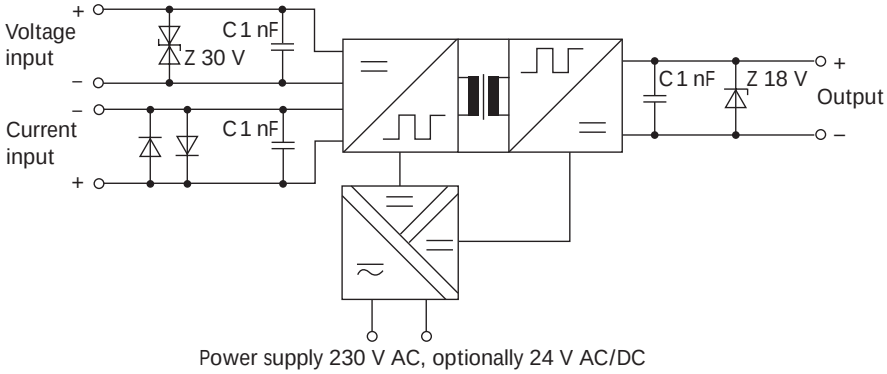
**Signal multiplication**
e.g. for safe evaluation of measuring signals in different instruments




**2-wire application**
for easy implementation of 2-wire loops

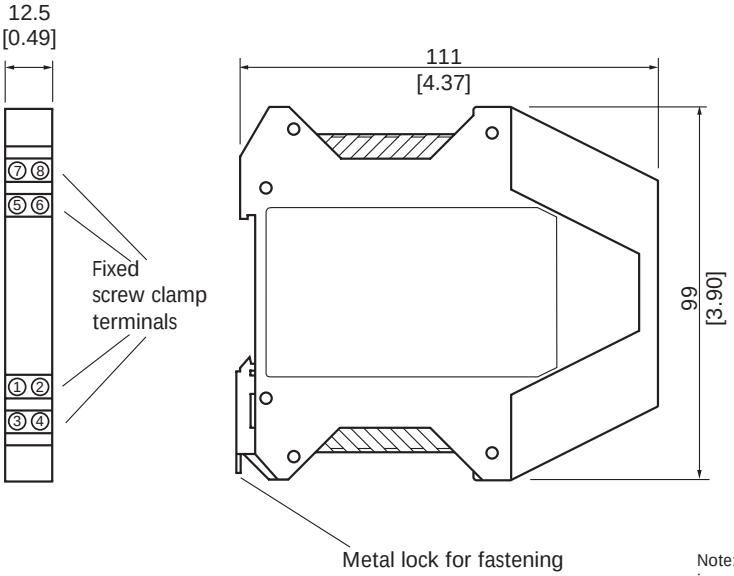



# Block diagram




Subject to change!

## Dimension drawings and terminal assignments




Note: All dimensions in mm [inches].

Terminal assingment

| | | | |
|---|---|---|---|
| 1 | Input | + | current |
| 2 | Input | – | current |
| 3 | Input | + | voltage |
| 4 | Input | – | voltage |
| 5 | Output | + | |
| 6 | Output | – | |
| 7 | Power supply | ≂ | |
| 8 | Power supply | ≂ | |

Wire cross-section max. 2.5 mm²

Multi-wire connection max. 1 mm²
(two wires with same cross-section)

Subject to change!