



IsoTrans® A 47 Loop-Powered Isolators

Separate 0 to 20 mA standard signals, up to 4 channels

The task

is to ensure reliable and safe plant operation through galvanical isolation between sensor and controller (such as PCS or SPC).

The problems

– especially in larger plants – lie in the small mounting space for the isolators and the increasing operating temperatures in distribution and control cabinets.

The innovation

by Knick is the new IsoTrans® A 47 Advanced Series of Loop-Powered Isolators. An extremely high packing density of 177 channels per meter top-hat rail and outstanding characteristics such as protective separation defy all competition!

New modular cases

with 12.5 mm width for 1 or 2 channels and 22.5 mm width for 4 channels with convenient plug-in terminals now allow quick and easy mounting or prewiring of the control cabinet.

The principle

The IsoTrans® A 47 directly draws its power as voltage drop from the measured signal without distorting it. The costs for a mains adapter and its wiring are omitted.

In the IsoTrans® A 47, there is virtually no self-heating that leads to faster aging of electronic components. Together with a patented circuit design, this provides maximum reliability. The consequence of this extraordinary durability: a 5-year warranty!

The technology

convinces: An accuracy of 0.1 %, excellent square wave reproduction and very low residual ripple guarantee perfect signal transmission. The low power consumption of approx. 2.5 V has almost no effect on the signal. The high test voltage of up to 4 kV and protective separation up to 300 V according to VDE 0100 Part 410 protect the service staff against mains voltage, for example.



Extremely compact design
up to 177 channels per meter

1-, 2- and 4-channel versions

reduce costs and allow for versatile applications

Convenient plug-in terminals

allow quick and easy mounting and prewiring of control cabinets

Galvanical isolation across input and output

protects against erroneous measurements or damage due to parasitic voltages

No power supply required

saving costs since wiring is reduced and line influences are omitted. No unnecessary heating – therefore maximum component life.

High accuracy

no distortion of measured signal

Maximum reliability

eliminates maintenance effort and the related costs



Warranty

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



Product line

Instruments

Ref. No.

| | | |
|----------------|---|-----------|
| IsoTrans® A 47 | 1-channel, modular case H1 (width: 12.5 mm) | A 47 H1/1 |
| | 2-channel, modular case H1 (width: 12.5 mm) | A 47 H1/2 |
| | 4-channel, modular case H3 (width: 22.5 mm) | A 47 H3/4 |

Options

| | | |
|----------|---|-----|
| Opt. 506 | Increased test voltage 4kV AC/DC, protective separation | 506 |
|----------|---|-----|

Specification

Input data

| | |
|-------------------|--|
| Input | 0 to 20 mA/max. 30 V (linear transmission up to 50 mA) |
| Operating current | < 20 μ A |
| Voltage drop | Approx. 2.5 V at 20 mA |
| Overload | 100 mA, 30 V |

Output data

| | |
|----------------------------|-----------------------------------|
| Output | 0 to 20 mA/max. 27.5 V |
| Response time (T_{99}) | Approx. 5 ms at 500 Ω load |
| Ripple | < 5 mV _{rms} |

Further data

| | |
|-------------------------------------|--|
| Chopper frequency | Approx. 100 kHz |
| Transmission error | < 0.1 % full scale |
| Load error | < 0.02 % of meas. value / 100 Ω |
| Temperature influence ¹⁾ | < 20 ppm/K of meas. value per 100 Ω load |
| Test voltage | 1.5 kV AC input against output of same channel / 2.3 kV AC across channels |

Data for Option 506

| | |
|-------------------------------------|---|
| Test voltage | 4 kV AC input against output of same channel / 2.3 kV AC across channels |
| Protection against electrical shock | Reinforced insulation to EN 61010 Part 1 and protective separation up to 300 V between all isolating distances for overvoltage category II and pollution degree 2 according to VDE 0100 Part 410 as defined in VDE 0106 Part 101. For applications with high working voltages, take measures to prevent accidental contact and make sure there is sufficient distance to adjacent instruments or sufficient insulation between them. |

¹⁾ Average TC in the specified operating temp. range -10 to +70 °C

Specifications

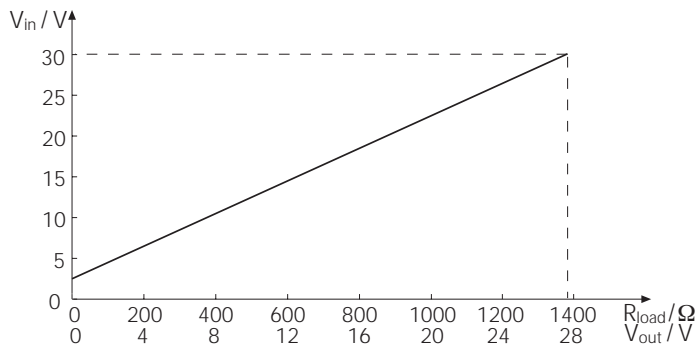
Further data

| | | |
|---------------------|---|---------------|
| EMC ²⁾ | to EMC directive 89-336-EEC, EN 50081-1, EN 50082-2 | |
| Ambient temperature | Operation | -10 to +70 °C |
| | Transport and storage | -40 to +85 °C |
| Construction | Modular case for dimensions see drawings, protection: IP 20 | |
| Weight | Approx. 100 g | |

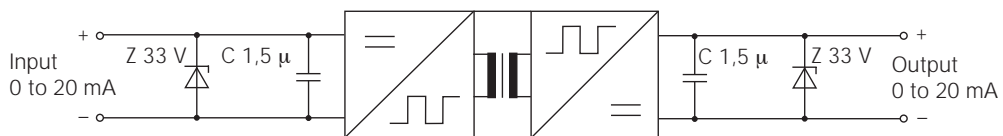
²⁾ For 4 to 20 mA, minor deviations are possible during interferences.

Input voltage

versus load at $I_{out} = 20 \text{ mA}$

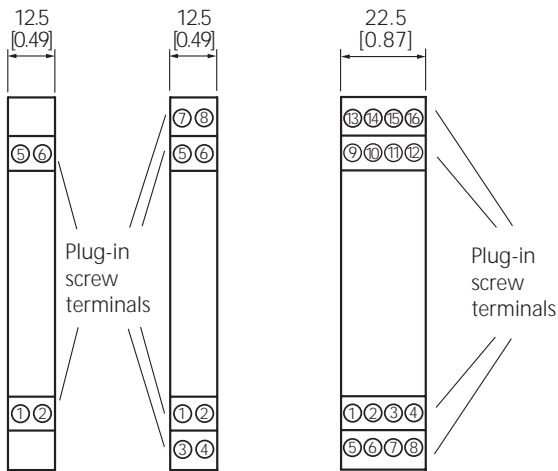


Block diagram



Subject to change!

Dimension drawings and terminal assignment

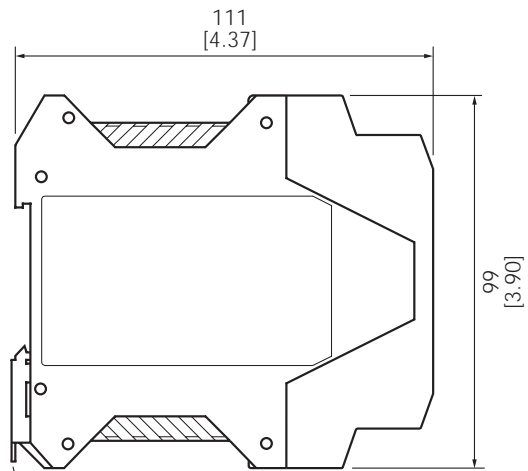


1- and 2-channel version

| | | |
|---|----------|-----------|
| 1 | Input + | Channel 1 |
| 2 | Input - | Channel 1 |
| 3 | Input + | Channel 2 |
| 4 | Input - | Channel 2 |
| 5 | Output + | Channel 1 |
| 6 | Output - | Channel 1 |
| 7 | Output + | Channel 2 |
| 8 | Output - | Channel 2 |

4-channel version

| | | |
|----|----------|-----------|
| 1 | Input + | Channel 1 |
| 2 | Input - | Channel 1 |
| 3 | Input + | Channel 2 |
| 4 | Input - | Channel 2 |
| 5 | Input + | Channel 3 |
| 6 | Input - | Channel 3 |
| 7 | Input + | Channel 4 |
| 8 | Input - | Channel 4 |
| 9 | Output + | Channel 1 |
| 10 | Output - | Channel 1 |
| 11 | Output + | Channel 2 |
| 12 | Output - | Channel 2 |
| 13 | Output + | Channel 3 |
| 14 | Output - | Channel 3 |
| 15 | Output + | Channel 4 |
| 16 | Output - | Channel 4 |



Metal lock for fastening to top-hat rail

Max. conductor size 2.5 mm²

Multi-conductor connection max. 1 mm²
(two conductors with same cross-section)

Note: All dimensions in mm [inches].

Subject to change!