

# Modular Housings

**Knick** >

## IsoTrans® A 47



**For isolation of  
0(4) ... 20 mA standard  
signals, up to 4 channels.**

### The Task

Guaranteeing reliable and safe system operation requires galvanic isolation between sensors and controller (e. g. PCS or DCS).

### The Problems

are often, particularly in large plants, the lack of space for mounting the isolators and the increasing operating temperatures in distributors and enclosures.

### The Solution

comes in the form of the Knick Advanced Series IsoTrans® A 47 loop-powered isolators. An extremely high component density of 177 channels per meter mounting rail and excellent technical properties, such as their safe isolation, make the isolators unbeatable!

### The Housing

The modern modular housings with a width of 12.5 mm for one or two channels and 22.5 mm width for four channels with practical plug-in terminals allow simple and quick assembly or prewiring of the enclosure.

### The Function Principle

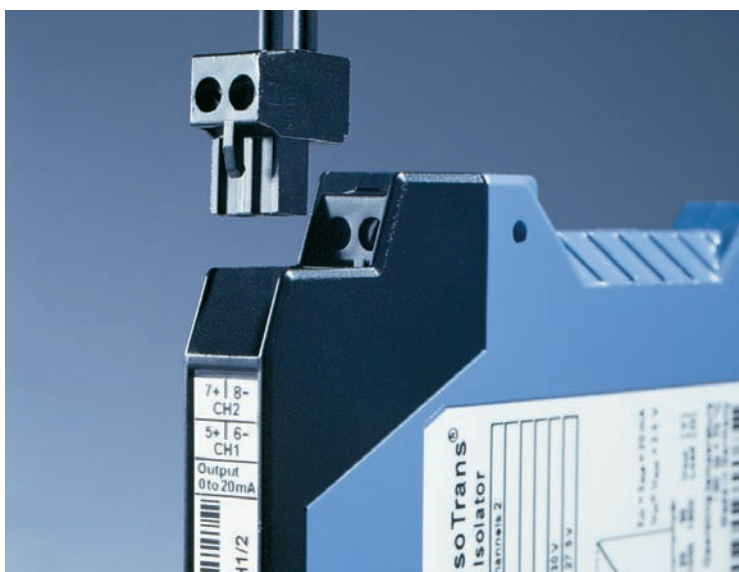
The IsoTrans® A 47 obtains its power as a voltage drop directly from the measurement signal without falsifying it. There are no costs for a power supply and wiring.

The IsoTrans® A 47 has virtually no self-heating that would cause the electronic components to age faster. Together with a patented switching technique, this means maximum reliability. Due to this extraordinary long service life: a 5-year warranty!

### The Technology

A transmission error of just 0.1 %, excellent square-wave response and very low residual ripple guarantee perfect signal transmission. The low voltage drop of approx. 2.5 V only loads the signal slightly.

The high test voltage up to 4 kV and Safe Isolation up to 300 V according to EN 61140 protect operating personnel against the mains voltage, for example.



# Loop-Powered Isolators for Standard Signals

Isolation Amplifiers  
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings



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## ■ The Facts

### Extremely compact design

Up to 177 channels per meter

### 1-, 2-, and 4-channel versions

Cheap and flexible for a wide range of applications

### Practical screw terminals

Simple, time-saving assembly and prewiring of enclosures

### Galvanic isolation between input and output

Protection against incorrect measurements or damage to the equipment due to parasitic voltages

### No power supply required

Cost savings due to lower wiring requirement, no mains influences, no unnecessary heating and therefore maximum service life of components

### High accuracy

No distortion of the measurement signal

### Maximum reliability

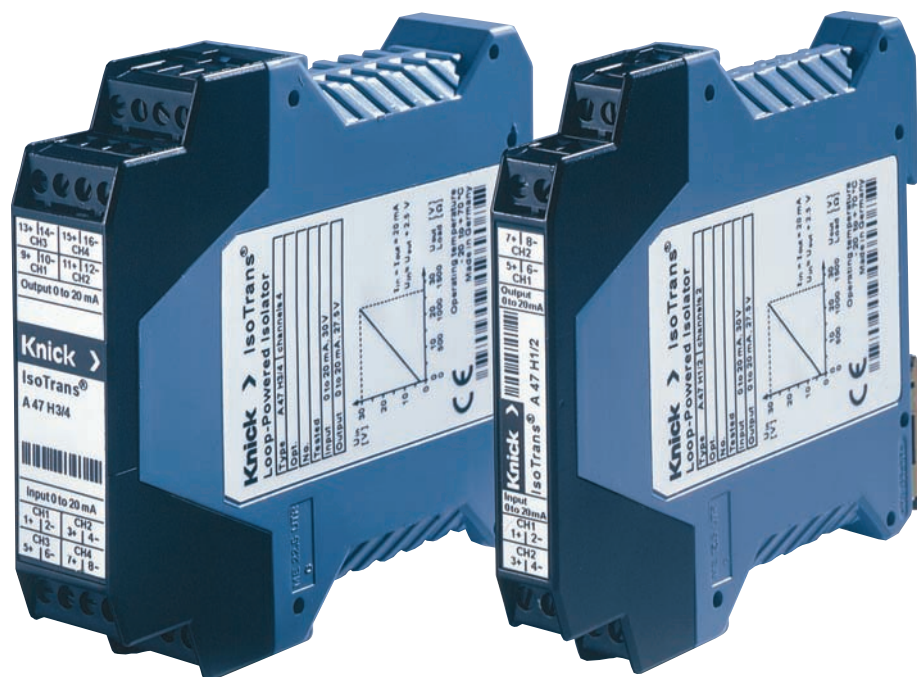
No repair and failure costs

### 5-year warranty

**RA** us

Warranty  
**5 years!**

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



Modular Housings

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## IsoTrans® A 47

### ■ Product Line

Devices		Order No.
IsoTrans® A 47	1-channel, H1 modular housing (width: 12.5 mm) 2-channel, H1 modular housing (width: 12.5 mm) 4-channel, H3 modular housing (width: 22.5 mm)	A 47 H1 / 1 A 47 H1 / 2 A 47 H3 / 4
Power supply	None, supply from input signal	
Options	Increased test voltage 4 kV AC, Safe Isolation	506

### ■ Specifications

#### Input data

Input	0(4) ... 20 mA/max. 30 V (linear transmission up to 50 mA)
Operating current	< 20 $\mu$ A
Voltage drop	Approx. 2.5 V at 20 mA
Overload	100 mA, 30 V

#### Output data

Output	0(4) ... 20 mA/max. 27.5 V (corresponds to 1375 ohms load)
Residual ripple	< 5 mV <sub>rms</sub>

#### Transmission behavior

Transmission error	< 0.1 % full scale
Load error	< 0.02 % meas. val./100 ohms
Response time ( $T_{90}$ )	Approx. 5 ms at 500 ohm load
Temperature coefficient <sup>1)</sup>	< 0.002 %/K of meas. val. per 100 ohms load (reference temperature 23 °C)

1) Average TC in specified operating temperature range -10 ... +70 °C

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## Specifications (continued)

### Isolation

Test voltage	1.5 kV AC input against output of the same channel 2.3 kV AC channels against each other
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### Standards and approvals

EMC <sup>2)</sup>	89/336/EEC directive, EN 61326
Approvals	UL: File No. E 220033, Standards: UL 508 and CAN/CSA 22.2 no. 14

### Data for Option 506

Test voltage	4 kV AC input against output of the same channel 2.3 kV AC channels against each other
Protection against electric shock	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1. Working voltages up to 300 V AC/DC across all terminals with overvoltage category II and pollution degree 2. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

### Other data

MTBF <sup>3)</sup>	Approx. 1031 years/channel
Ambient temperature	Operation: -10 ... +70 °C Transport and storage: -40 ... +85 °C
Design	Modular housing, width 12.5 or 22.5 mm, with pluggable screw terminal See dimension drawings for further measurements
Ingress protection	IP 20
Mounting	Metal lock for mounting on 35 mm top hat rail according to EN 50022 See dimension drawings for conductor cross section
Weight	Approx. 100 g

<sup>2)</sup> Applies to 4 ... 20 mA, slight deviations are possible while there is interference

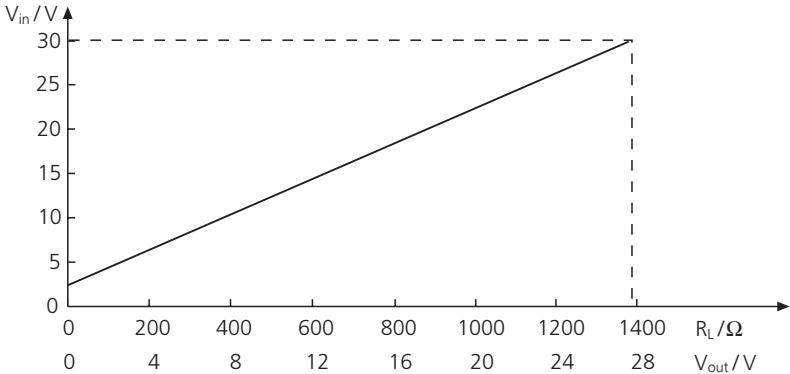
<sup>3)</sup> Mean Time Between Failures – MTBF – according to EN 61709 (SN 29500).

Conditions: stationary operation in well-kept rooms, average ambient temperature 40 °C, no ventilation, continuous operation

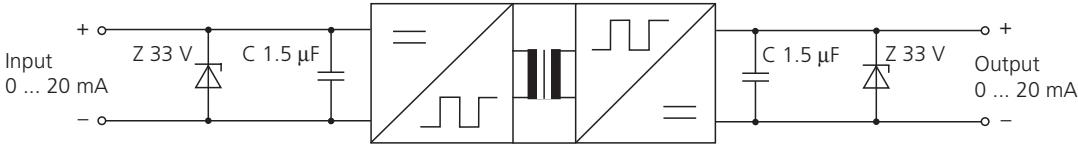
# Modular Housings

## IsoTrans® A 47

### Transfer Function



### Block Diagram



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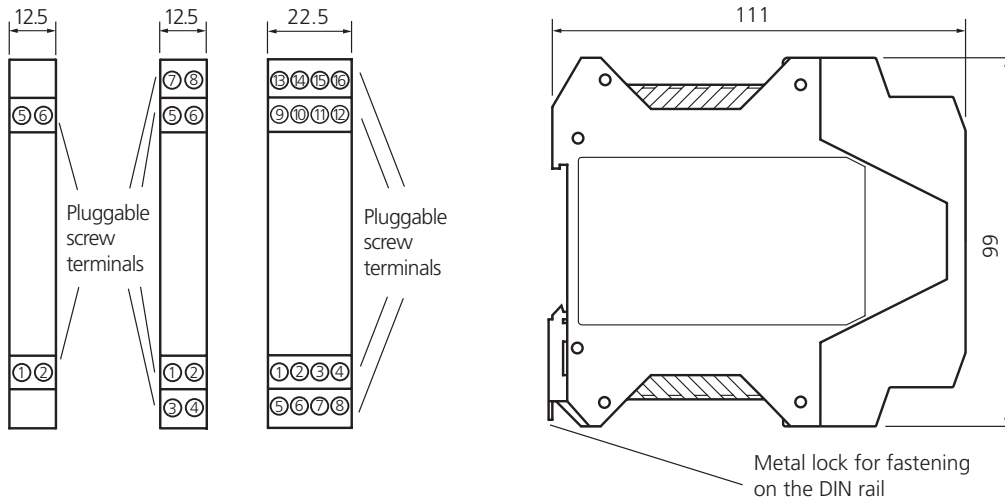
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## ■ Dimension Drawings and Terminal Assignments



Conductor cross-section max. 2.5 mm<sup>2</sup>

Multi-wire connection max. 1 mm<sup>2</sup>  
(two wires with same cross-section)

### 1- and 2-channel model

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 model

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

All dimensions in mm!