

Modular Housings

Knick >

IsoTrans® A 20400



The first reactionless passive isolator comprising the Bürdenstop® function to provide safe isolation of 0(4) ... 20 mA standard signals.

The Task

Measurement signals between sensor and controller should be isolated galvanically to ensure reliable and safe operation of the installation. Here, loop-powered standard signal isolators are a low-cost solution. There is no expenditure for power supply units and their wiring.

The Problems

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

The Solution

comes in the form of the Knick Advanced Series IsoTrans® A 20400 loop-powered isolators. An extremely high component density of up to 320 channels per meter top-hat rail and excellent technical properties, such as their safe isolation, make the isolators unbeatable – as does their price-performance ratio!

The Housing

The ultra-slim 6 mm wide modular housing for one or two channels allows simple and fast assembly.

The Function Principle

The IsoTrans® A 20400 obtains its power directly from the measurement signal as a voltage drop without distorting it.

There are no costs for a power supply and wiring.

The IsoTrans® A 20400 more or less has 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: 5 years 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. 1.7 V only loads the signal slightly.

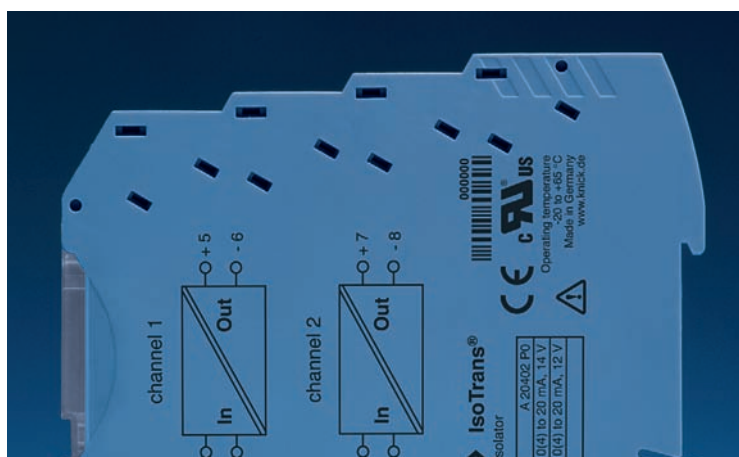
The high test voltage up to 2.5 kV and Safe Isolation up to 300 V according to EN 61140 protect the operating personnel against, for example, the mains voltage.

Interference-Free Functionality

Now Knick has considerably expanded the application possibilities of passive isolators by implementing a Bürdenstop® (load stop) function. Here, the current supplied at the primary side is maintained independently from the output load. Thus, for the first time any excessive load increase at the output, such as caused by line breakage or inconstant loads including complex impedances, can be compensated for.

Warranty
5 years!

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



Isolation Amplifiers for Standard Signals

Isolation Amplifiers
Transmitters

Indicators

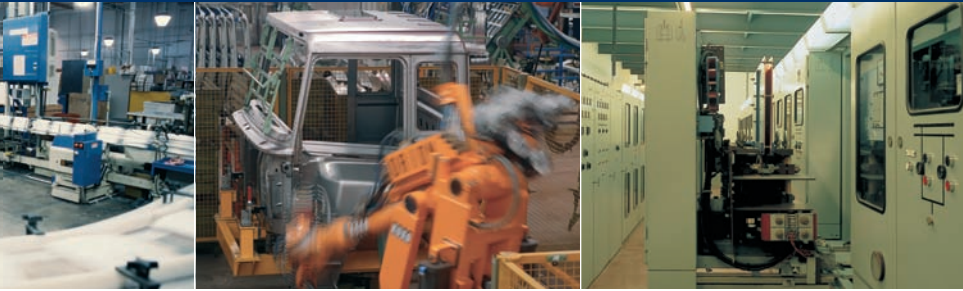
Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings



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■ The Facts

Extremely compact design
up to 320 channels per meter

1 and 2-channel versions
cheap and flexible for a wide range of applications

Galvanic isolation between input and output
Protection against incorrect measurements or damage to the equipment due to parasitic voltages

Safe Isolation up to 300 V AC/DC according to EN 61140
to protect personnel and equipment

Bürdenstop® prevents undesired feedback
e.g. in the case of an open output circuit

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 measurement signal

Maximum reliability

No repair and failure costs

International use

UL/CSA approvals

5-year warranty



6
mm
CLASS

GL

Modular Housings

Modular Housings

IsoTrans® A 20400

■ Product Line

Devices	Input	Order No.
IsoTrans® A 20400	1-channel, modular housing P0 (6 mm wide)	A 20401 P0
	2-channel, modular housing P0 (6 mm wide)	A 20402 P0
	1-channel, modular housing P0 (6 mm wide), with Bürdenstop®	A 20411 P0
	2-channel, modular housing P0 (6 mm wide), with Bürdenstop®	A 20412 P0

Power supply

None, supply from input signal

■ Specifications

Input data	A 20401 and A 20402 (without Bürdenstop®)	A 20411 and A 20412 (with Bürdenstop®)
Input	0(4) ... 20 mA/max. 18 V	0(4) ... 20 mA/max. 3 V
Operating current	Approx. 150 µA	Approx. 150 µA
Voltage drop	Approx. 1.7 V at 20 mA	Approx. 1.5 V at 20 mA
Overload	40 mA, 18 V	50 mA, 3 V
Output data		
Output	0(4) ... 20 mA/max. 12 V (600 ohm load at 20 mA)	0(4) ... 20 mA/max. 1.2 V (60 ohm load at 20 mA)
Residual ripple	< 10 mV _{rms}	< 10 mV _{rms}
Transmission behavior		
Transmission error	< 0.1 % full scale	< 0.1 % full scale
Load error	< 0.05 % meas. val./100 ohms	Negligible
Response time (T ₉₉)	Approx. 5 ms at 500 ohm load	Approx. 5 ms at 60 ohm load
Temperature coefficient ¹⁾	< 0.002 %/K of meas. val. per 100 ohm load (reference temperature 23 °C)	< 0.002 %/K of meas. val. (reference temperature 23 °C)

1) Average TC in specified operating temperature range -20 ... +65 °C

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Specifications (continued)

Isolation

Test voltage	2.5 kV AC
Working voltage (basic insulation)	Up to 600 V AC/DC with overvoltage category II and pollution degree 2 across input and output of the same channel and 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 input and output of the same channel and across different channels 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.

Standards and approvals

EMC ²⁾	Product standard: EN 61326 Emitted interference: Class B Immunity to interference: Industry
Approvals	cUL: Standards: UL 508 and CAN/CSA 22.2 no. 14-95 GL: No. 32650-06 HH

Other data

MTBF ³⁾	Approx. 1031 years/channel
Chopper frequency	Approx. 100 kHz
Ambient temperature	Operation: -20 ... +65 °C Transport and storage: -25 ... +85 °C
Design	Modular housing with screw terminals, 6.2 mm wide, see dimension drawings for further measurements
Ingress protection	IP 20
Mounting	For 35 mm top hat rail to EN 50022
Weight	Approx. 50 g

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

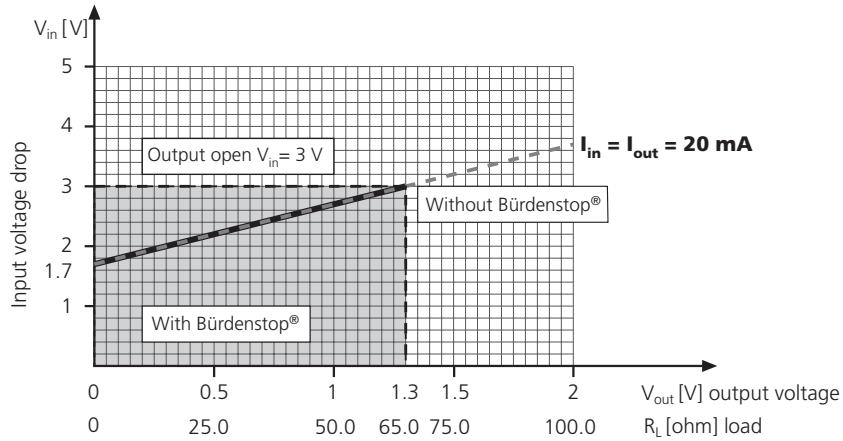
4) Mean Time Between Failures – MTBF – according to EN 61709 (SN 29500).

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

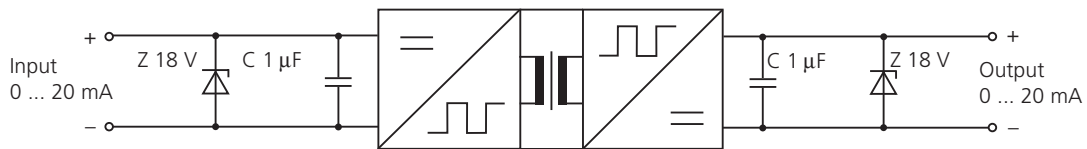
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IsoTrans® A 20400

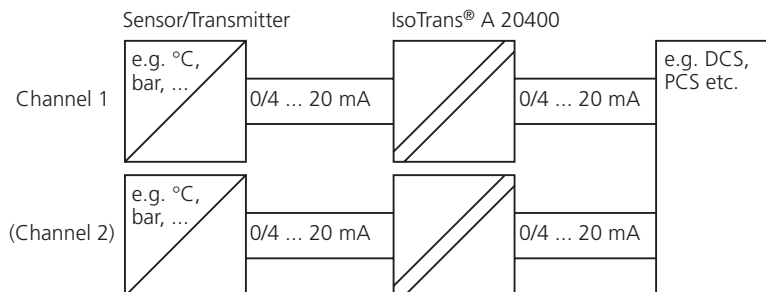
■ Transfer Function with Bürdenstop® (load stop)



■ Block Diagram



■ Application Example



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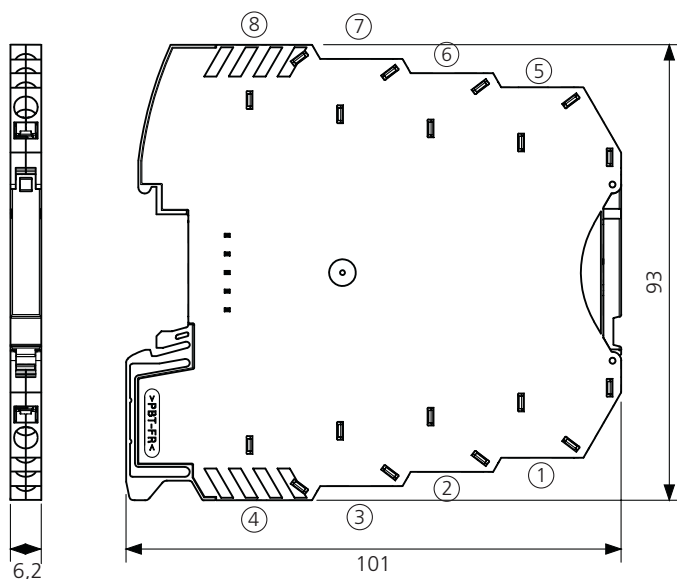
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■ Dimension Drawings and Terminal Assignments



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

Conductor cross-sections
 - Single-wire: 0.2 ... 2.5 mm²
 - Fine-wire: 0.2 ... 2.5 mm²
 - 24-14 AWG

All dimensions in mm!