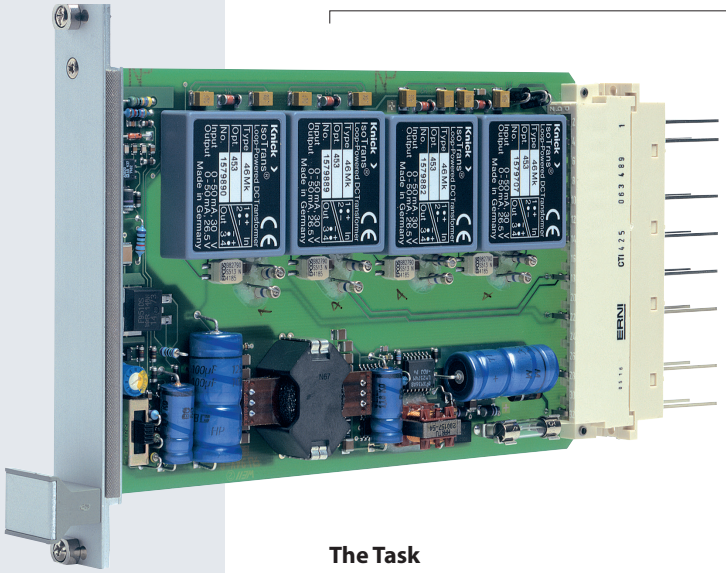
IsoAmp EK 30/31

For isolation and conversion of impressed measurement signals.



The Task

Reliable transmission and conversion of 0(4) … 20 mA and 0 … 10-V with high precision into up to four 0(4) … 20-mA output signals.

The Problems

Virtually perfect signal transmission without a risk of dangerous electric shocks.

The Solution

The Knick standard-signal multipliers provide perfect solutions for

– signal multiplication to up to four output channels with galvanic isolation,
– increasing the output load to a max. of 40 V (series connection of output circuits),
– converting the standard current or voltage input signal to any standard current output signals,
– protective separation to prevent dangerous electric shocks.

The Housing

The compact design allows for the use of a Eurocard with a width of just 4 HP.
This allows you to install up to 84 output channels in a 19" rack.

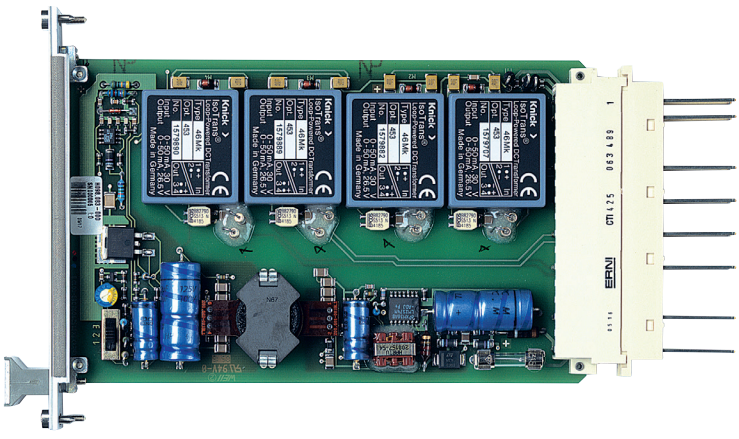
The Advantages

There are no negative feedback resistors as normally required in conventional amplifiers. This reduces the required number of components to a minimum, resulting in a corresponding increase in precision and reliability.

The modular concept allows simple retrofitting of output channels. Your point of measurement is therefore expandable for future measuring tasks.

The Technology

With an optimized circuit design, the Knick standard-signal multipliers achieve almost perfect signal transmission.



Knick

Facts

– **Easy signal switching**
Universal use for numerous signal combinations

– **3-port isolation**
Protection against incorrect measurements or damage to the equipment due to parasitic voltages

– **Protective separation according to EN 61140**
protects against excessively high voltages

– **Compact design**
Eurocard with just 4 HP width, up to 84 output channels in a 19" rack

– **Extremely high accuracy**
No distortion of the measurement signal

– **Maximum reliability**
No repair or failure costs

– **Expandable**
Retrofittable outputs, expandable for future measuring tasks

– **5-year warranty**

Warranty
5 years!

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

Product Line

Devices	Equipment	Order No.
IsoAmp EK 30 Eurocards	2 output channels	**EK 30 / 2**
	3 output channels	**EK 30 / 3**
	4 output channels	**EK 30 / 4**
IsoAmp EK 30 with protective separation including the outputs	2 output channels	**EK 31 / 2**
	3 output channels	**EK 31 / 3**
	4 output channels	**EK 31 / 4**

Power supply

24 V AC/DC

Options	Order No.
INTERMAS SP / K3-n04T front panel, width 20 mm, plastic, gray, mounted	**301**

Accessories	Order No.
Output module for IsoAmp EK 30, individually retrofittable	**46 Mk**
Output module with protective separation, for IsoAmp EK 31, individually retrofittable	**46 Mk Opt. 453**

IsoAmp EK 30/31

Specifications

Input data

Input[1)]	0 … 20 mA or 4 … 20 mA, voltage drop approx. 400 mV 0 … 10 V, input resistance 1 Mohm
Equipment	Max. 4 output channels
Overload capacity	100 mA

Output data

Output	up to 4 channels, 0 … 20 mA or 4 … 20 mA (selectable via slide switch for all channels at once)
Load	≤ 500 ohms per channel at 20 mA
Load error	< 0.02 % meas. val. per 100 ohms
Offset	20 µA for input 0 (4) … 20 mA 25 µA for input 0 … 10 V
Residual ripple	< 5 mV

Transmission behavior

Transmission error [2)]	0.1 % meas. val. for input 0 (4) … 20 mA 0.25 % meas. val. for input 0 … 10 V
Rise or fall time	Approx. 5 ms at 500 ohm load
Temperature coefficient[3)]	0.01 %/K meas. val. for input 0 (4) … 20 mA 0.015 %/K meas. val. for input 0 … 10 V

Power supply

Power supply	24 V DC –15 % +20 %, approx. 2.7 W 24 V AC –15 % +10 %, 48 … 500 Hz, approx. 3.5 VA

Isolation

Galvanic isolation	3-port isolation between input, output and power supply		
Test voltage	EK 30	Power supply against all other circuits	4 kV AC
		Outputs among each other and against input	510 V AC
	EK 31	All isolating distances	4 kV AC

Specifications (continued)

Working voltages (basic insulation)	according to EN 61010-1		
	Type EK30	Overvoltage category / Permissible pollution degree	Permissible working voltage
	Outputs among each other and against input	I / degree 4 II / degree 4 I / degree 4	150 V AC/DC 100 V AC/DC 50 V AC/DC
	Power supply against input and against output	II / degree 2 III / degree 2 III / degree 3 IV / degree 3	1000 V AC/DC 600 V AC/DC 410 V AC/DC 300 V AC/DC
	Type EK31	Overvoltage category / Permissible pollution degree	Permissible working voltage
	All isolating distances	II / degree 2 III / degree 2 III / degree 3 IV / degree 3	1000 V AC/DC 600 V AC/DC 410 V AC/DC 300 V AC/DC
	For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.		
Protection against electric shock	Protective separation according to EN 61140 through reinforced insulation according to EN 61010-1. Working voltages with overvoltage category III and pollution degree 2 With EK 30: 300 V AC/DC across power supply and all other circuits, With EK 31: 300 V AC/DC across every output and all other circuits and across power supply and all other circuits For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.		

Standards and approvals

EMC	EMC directive 89/336/EEC, EN 61326, NAMUR NE 21

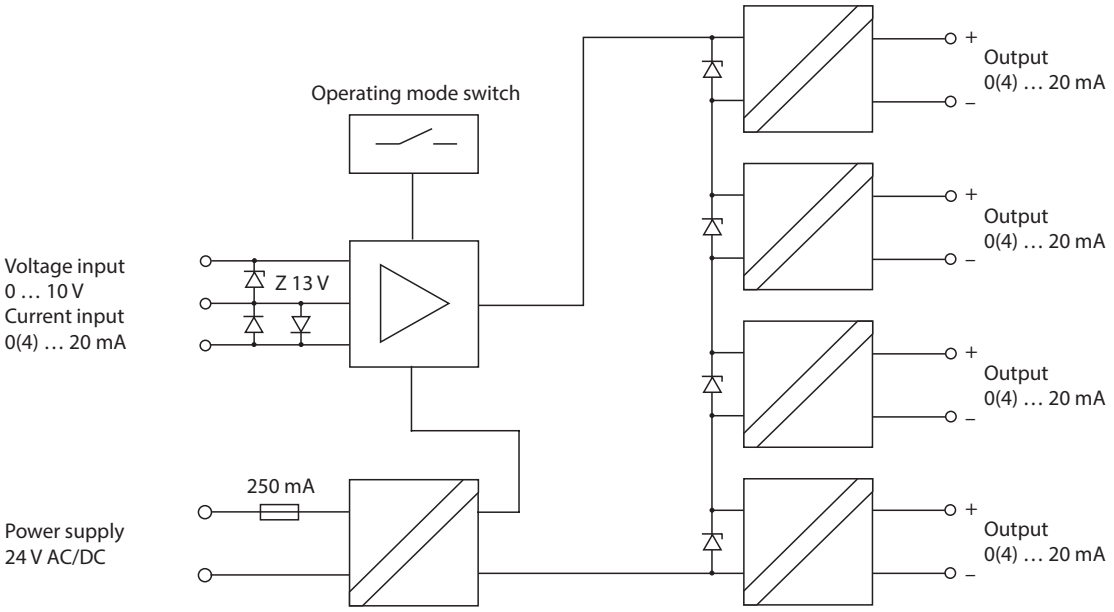
Further data

MTBF[4]	Approx. 144 years/channel	
Ambient temperature	Operation: Transport and storage:	–10 … +70 °C –30 … +80 °C
Design	Eurocard, 4 HP, also refer to dimension drawing	
Multipole connector	Type F according to DIN 41612, also refer to dimension drawing	
Socket connector	Type F according to DIN 41612 (included in package content), also refer to dimension drawings	
Weight	With 2 channels approx. 170 g, with 3 channels approx. 185 g, with 4 channels approx. 200 g	

[1] other ranges upon request
[2] additional error of 20 µA for live-zero operation (operating mode switch settings 2 and 3)
[3] average TC, reference temperature 23 °C; additional error of 1 µA/K for live-zero operation (operating mode switch settings 2 and 3)
[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

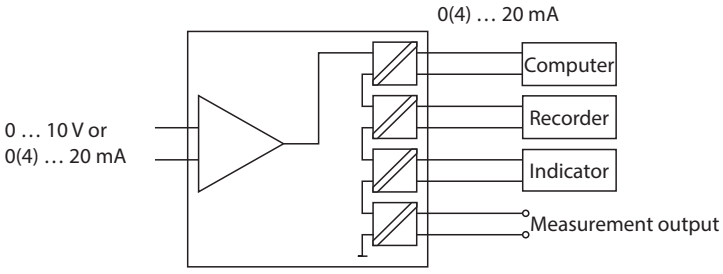
IsoAmp EK 30/31

Block Diagram

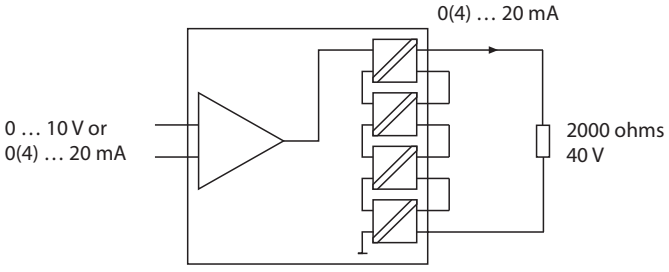


Typical Applications

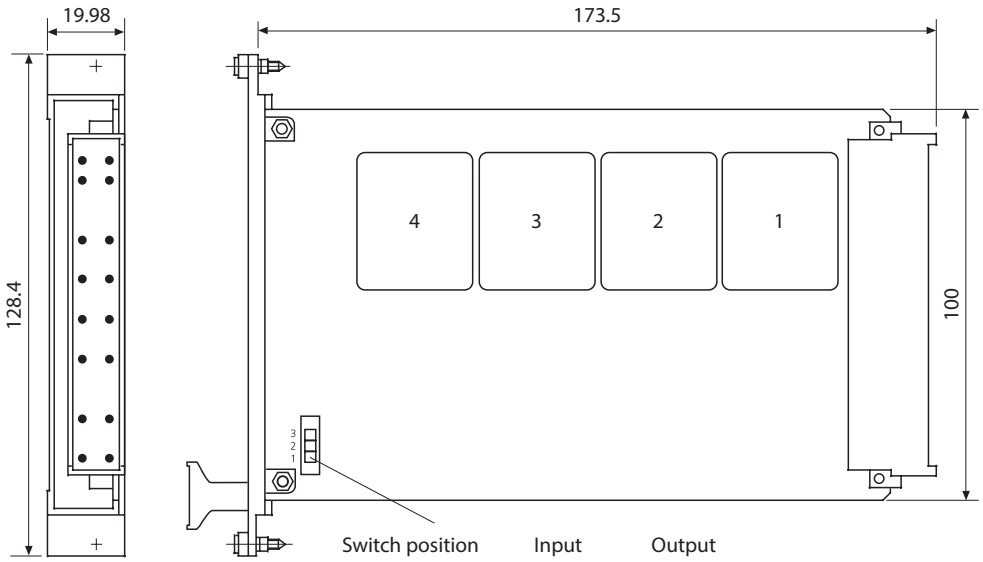
Galvanically isolated connection to a computer, recorder or indicator with additional measurement output



Series connection to increase the load voltage

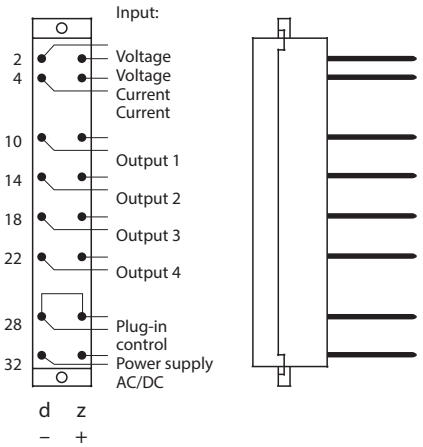


Dimension Drawing and Pin Assignments



Front panel, Opt. 301

Switch position	Input	Output
1	0 – 10 V 0 – 20 mA	0 – 20 mA
2	0 – 10 V 0 – 20 mA	4 – 20 mA
3	4 – 20 mA	0 – 20 mA



Connectors: Type F according to DIN 41612

Front panel Opt. 301: INTERMAS SP/K3-n04T, plastic, gray

Only trained personnel should perform installation, commissioning and maintenance!

All dimensions in mm