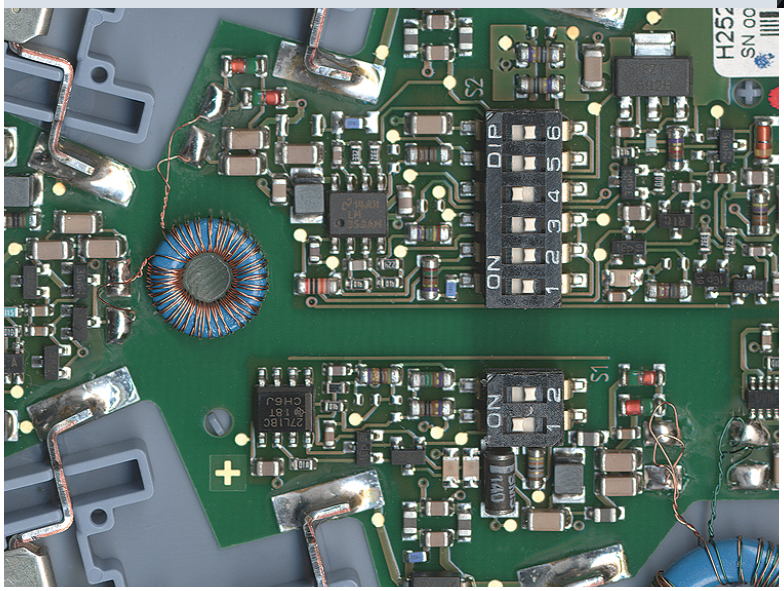
Knick

IsoAmp® PWR A 20100

Repeater power supply in a 6-mm housing with calibrated switching of output signals, HART® transmission, and Safe Isolation



The Task
Flexible and safe supply of 2-wire transmitters via the 4 ... 20-mA current loops with simultaneous transmission of data protocols for SMART transmitters / HART® communication. Conversion of output signals to 0 … 20 mA or 0 ... 10 V, if required.

The Problems
Good isolator properties combined with high transmission accuracy often result in complex systems that cost space and money.
Galvanic isolation of the supply and signal processing, however, are frequently indispensable to exclude measuring problems from the start. Therefore, the selection of possible alternatives within the budget is often limited.

The Solution
Knick is the first manufacturer to provide a repeater power supply for 2-wire transmitters in an extremely compact 6-mm housing. The IsoAmp® PWR A 20100 supplies the transmitter with power and transmits the measurement signal galvanically isolated to the output with a high level of accuracy. In case a signal other than the 4 to 20 mA current loop signal is required, the repeater power supply provides a selection of output signals via DIP switches.

HART® signals are of course transmitted without alteration. The width of just 6 mm also allows use of the repeater power supply in the tightest of spaces.

The Housing
Mounted in tried and tested 6.1 mm wide modular housing with screw terminals. The outputs are selected using DIP switches that can be accessed without opening the housing.

The Advantages
The new IsoAmp® PWR A 20100 repeater power supply combines small dimensions with excellent features! Safe Isolation and 0.1 % accuracy also allow use for applications with increased requirements.

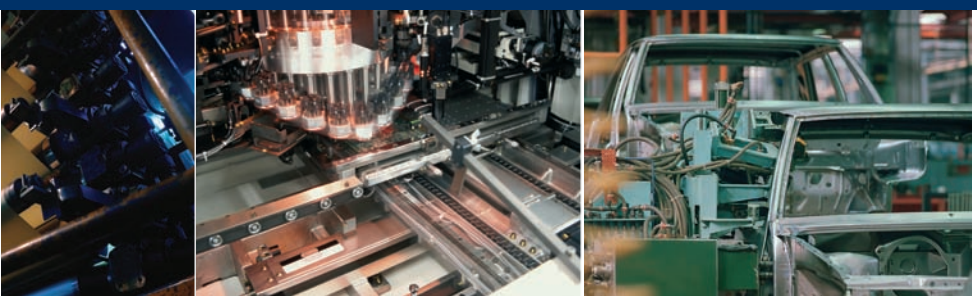
The Technology
The output signal is switchable between 0 ... 20 mA,
4 ... 20 mA, and 0 … 10 V.
The calibrated ranges are selected via DIP switches. In addition to the analog signal, the repeater power supply transmits data protocols for SMART transmitters (according to HART® specification).

It allows bidirectional communication with the field device via a host computer or HART® communicators (hand-held communicator).

Warranty
5 years!

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

Repeater Power Supplies



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The Facts

Extremely flat
3-port isolation in a
6 mm modular housing

Flexible and highly accurate
Calibrated output
signal switching

Fast and easy configuration
with DIL switches on the side so they are easy to access and still protected against accidental adjustment

Low-cost assembly
Supply of the current loop and galvanic isolation of the measured signal in one device

Safe Isolation
up to 300 V according to
EN 61140

SMART transmitter
(to HART® specification)

Cross-connections for power supply
Power supply only wired once for almost any number of parallel repeater power supplies

5-year warranty

HART® is a registered trademark of the HART Communication Foundation

6 mm CLASS

c UL us

IsoAmp® PWR A 20100

Product Line

Devices	Input	Output	Order No.
IsoAmp® PWR A 20100	4 ... 20 mA	4 ... 20 mA, 0 ... 20 mA, 0 ... 10 V, calibrated selection	A 20100 F0

Power supply
24 V DC

Accessories		
Cross-connections	Pluggable cross-connection for looping through of the power supply for up to 41 power supply connections of B 10XXX F0 and A 20XXX F0, separable.	ZU 0542

Specifications

Input data

Input (current loop)	4 ... 20 mA, supply voltage 16.5 V, constant for 3 ... 22 mA, current limited to max. 25 mA
Residual ripple	< 10 mV_{rms}

Output data

Output	4 ... 20 mA, 0 ... 20 mA or 0 … 10 V, calibrated selection	
Output signal with input short-circuit	22 ... 25 mA or 11 ... 12.5 V	
Output signal with open input	< 3 mA or 0 for 0 ... 20 mA or 0 ... 10 V outputs	
Load	With output current With output voltage	≤ 10 V (≤ 500 ohms at 20 mA) ≤ 1 mA (≥ 10 kohms at 10 V)
Offset	Current output[1)] Voltage output	< 30 µA < 30 mV
Residual ripple at output	< 10 mV_{rms}	

1) Additional error 30 µA for output 0 ... 20 mA

Specifications *(continued)*

Transmission behavior

Gain error	Current output	< 0.1% meas. val.
	Voltage output	< 0.2% meas. val.
Response time	< 2 ms	
Communication[2] (output 4 ... 20 mA)	Bidirectional transmission of FSK signals according to the HART® specification between output and current loop	

Power supply

Power supply	24 V DC (±15 %), approx. 1 W The power supply can be routed from one device to another via cross-connections.

Isolation

Galvanic isolation	3-port isolation between current loop, output, and power supply
Test voltage	2.5 kV AC current loop against output/power supply 510 V AC output against power supply
Working voltage (basic insulation)	Up to 600 V AC/DC across current loop and output/power supply with overvoltage category II and pollution degree 2, up to 100 V AC/DC across output and power supply with category II and degree 2 according to EN 61010-1. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
Protection against electric shock	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1. Up to 300 V across current loop and output/power supply 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[3]	Product standard:	EN 61326
	Emitted interference:	Class B
	Immunity to interference:	Industry
Approval	cURus, File No. E 220033, Standards: UL 508 and CAN/CSA 22.2 no. 14-95	

2) HART® attenuation <6 dB
3) Slight deviations are possible while there is interference

IsoAmp® PWR A 20100

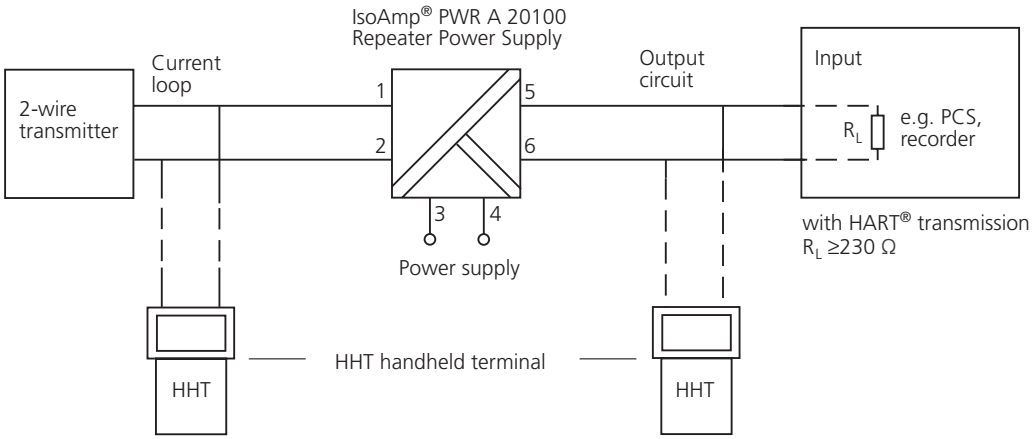
Specifications *(continued)*

Other data

MTBF[4)]	Approx. 450 years
Ambient temperature	Operation: 0 … +55 °C Transport and storage: –25 … +85 °C
Design	Modular housing with screw terminals, width 6.1 mm See dimension drawings for further measurements
Ingress protection	IP 20
Mounting	For 35 mm top hat rail to EN 50022, see dimension drawing for conductor cross-section
Weight	Approx. 50 g

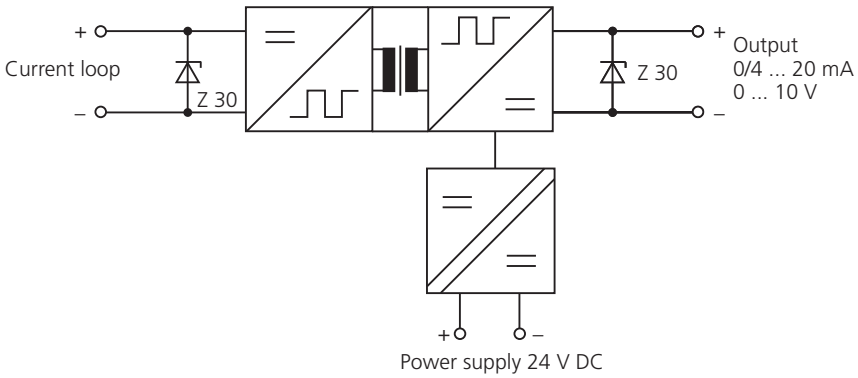
4) Mean Time Between Failures – MTBF – according to EN 61709 (SN 29500).
Conditions: stationary operation in well-kept rooms, average ambient temperature 40 °C, no ventilation, continuous operation

Application Example

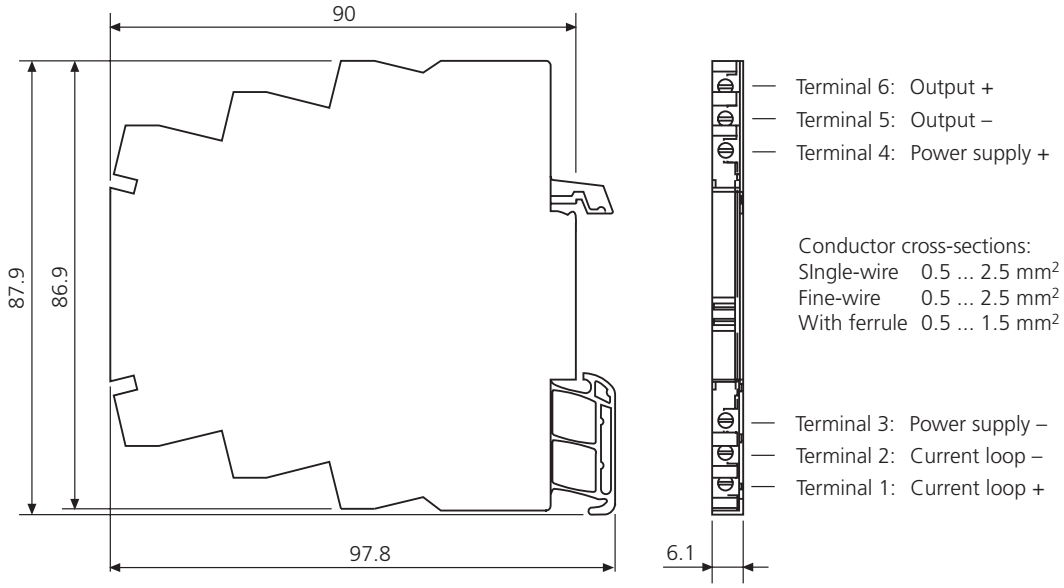


Repeater Power Supplies

Block Diagram



Dimension Drawings and Terminal Assignments



All dimensions in mm!