

## IsoAmp PWR A 20100

Repeater power supply in a 6 mm housing with calibrated switching of output signals, HART transmission and protective separation.



### 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 the output signal into 0 ... 20 mA or 0 ... 10 V, if necessary.

### 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 in order to exclude measuring problems right from the start. Thus the range 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. It supplies the transmitter with power and transmits the measurement signal to the output with galvanic isolation and high accuracy. In case a signal other than the 4 to 20 mA current loop signal is required, the repeater power supply provides various output signals which can be selected via DIP switches.

Of course, HART signals are transmitted unaltered. The width of just 6 mm also allows for the use of the repeater power supply in the tightest of spaces.

### The Housing

Mounted in a tried and tested modular housing with a width of 6.1 mm and 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!

Protective separation and 0.1 % accuracy also allow use for applications with increased requirements.

### The Technology

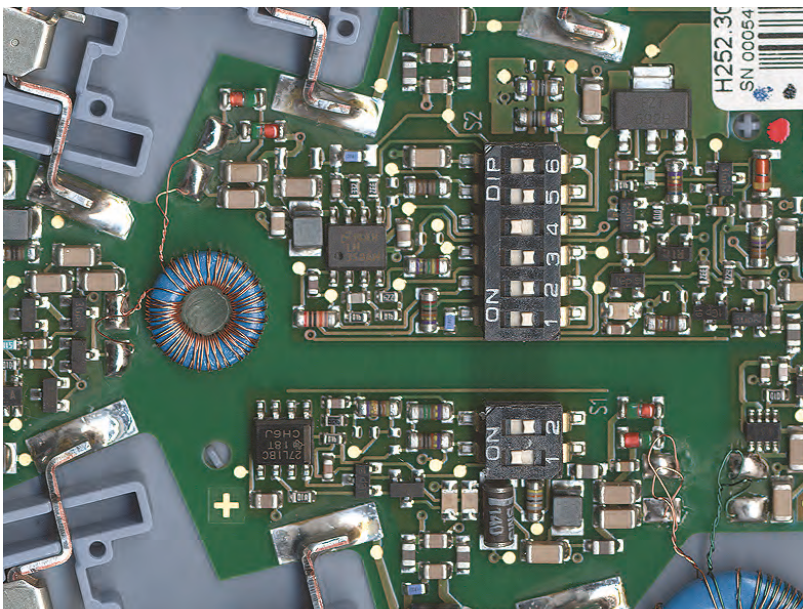
The output signal is switchable between 0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V. The calibrated ranges are selected using DIP switches. In addition to the analog signal, the repeater power supply transmits data protocols for SMART transmitters (according to the HART specification).

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

# IsoAmp PWR A 20100

## Facts and Features

- **Extremely flat**  
3-port isolation in a 6 mm modular housing
- **Flexible and extremely precise**  
Calibrated switching of output signals
- **Quick and easy configuration**  
using lateral DIP switches – easy to access, yet protected against accidental adjustment
- **Low-cost assembly**  
Supply of the current loop and galvanic isolation of the measurement signal in one device
- **Protective separation**  
up to 300 V according to EN 61140
- **SMART transmitter**  
(acc. to HART specification)
- **Cross-connection combs for power supply**  
Power supply only wired once for almost any number of parallel repeater power supplies
- **5-year warranty**



**Product Line**

Device	Input	Output	Order no.
IsoAmp PWR A 20100	4 ... 20 mA	0 ... 20 mA 4 ... 20 mA 0 ... 10 V calibrated switching	<b>A 20100 P0</b>

**Power supply**

24 V DC

**Accessories**

		Order no.
Cross-connections	Pluggable cross-connection for looping through of the power supply for up to 41 power supply connections of the B 10XXX F0 and A 20XXX F0, splittable	<b>ZU 0542</b>

**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 <sub>eff</sub>	

**Output data**

Output	4 ... 20 mA, 0 ... 20 mA or 0 ... 10 V calibrated switching	
Output signal with shorted input	22 ... 25 mA or 11 ... 12.5 V	
Output signal with open input	< 3 mA or 0 for outputs 0 ... 20 mA or 0 ... 10 V	
Load	With output current	≤ 10 V (≤ 500 ohms at 20 mA)
	With output voltage	≤ 1 mA (≥ 10 kohms at 10 V)
Offset	Current output <sup>1)</sup>	< 30 μA
	Voltage output	< 30 mV
Residual ripple at output	< 10 mV <sub>eff</sub>	

**Transmission behavior**

Gain error	Current output	< 0.1 % meas. val.
	Voltage output	< 0.2 % meas. val.
Response time T <sub>90</sub>	< 2 ms	
Communication <sup>2)</sup> (output 4 ... 20 mA)	Bidirectional transmission of FSK signals between output and current loop according to HART specification	

**Power supply**

Power supply	24 V DC (±15 %), approx. 1 W The power supply can be routed from one device to another via cross-connectors.	
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# IsoAmp PWR A 20100

## Specifications (continued)

### 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 kV 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, furthermore 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, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent devices.
Protection against electric shock	Protective separation to EN 61140 by reinforced insulation according to EN 61010-1. Up to 300 V across current loop and output / power supplies with overvoltage category II and pollution degree 2. For applications with high working voltages, take measures to prevent accidental contact and make sure that there is sufficient distance or insulation between adjacent devices.

### Standards and approvals

EMC <sup>3)</sup>	Product family standard: EN 61326 Emitted interference: Class B Immunity to interference: Industrial environment
Approval	cULus Listed, file no. E340287, E308146, E340288 Standard: UL 61010-1 and CAN/CSA C22.2 No. 61010-1
Explosion protection	Europe: II 3G Ex nA IIC T6 Gc X USA: Class I Div.2 GRP A,B,C,D T6 Class I Zone 2 AEx nA IIC T6 Canada: Class I Zone 2 Ex nA IIC T6 XClass I Div.2 GRP A,B,C,D T6
RoHS conformity	According to directive 2011/65/EU

### Further data

MTBF <sup>4)</sup>	Approx. 450 years
Ambient temperature	Operation: 0 ... +55 °C Transport and storage: -25 ... +85 °C
Ambient conditions	Indoor use <sup>5)</sup> ; relative humidity 5 ... 95 %, no condensation; max. altitude 2000 m (air pressure: 790 ... 1060 hPa) <sup>6)</sup>
Design	Modular housing with screw terminals, 6.1 mm wide See dimension drawings for further measurements
Tightening torque	0.6 Nm
Ingress protection	IP 20
Mounting	For 35-mm DIN rail acc. to EN 60715
Connection	Conductor cross sections Single wire: 0.5 ... 2.5 mm <sup>2</sup> Stranded wire: 0.5 ... 2.5 mm <sup>2</sup> With ferrule: 0.5 ... 1.5 mm <sup>2</sup>
Weight	Approx. 50 g

<sup>1)</sup> Additional error 30 µA for output 0 ... 20 mA

<sup>2)</sup> HART attenuation < 6 dB

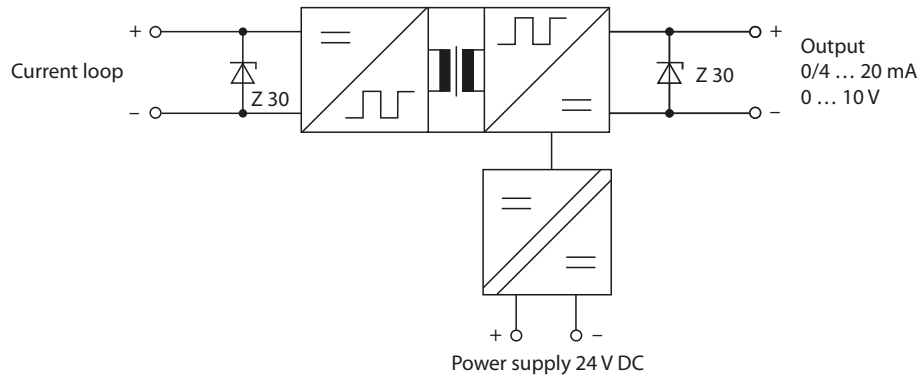
<sup>3)</sup> Slight deviations are possible while there is interference

<sup>4)</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

<sup>5)</sup> Closed, weather-protected operating areas (stationary operation), water or wind-driven precipitation (rain, snow, hail, etc.) excluded

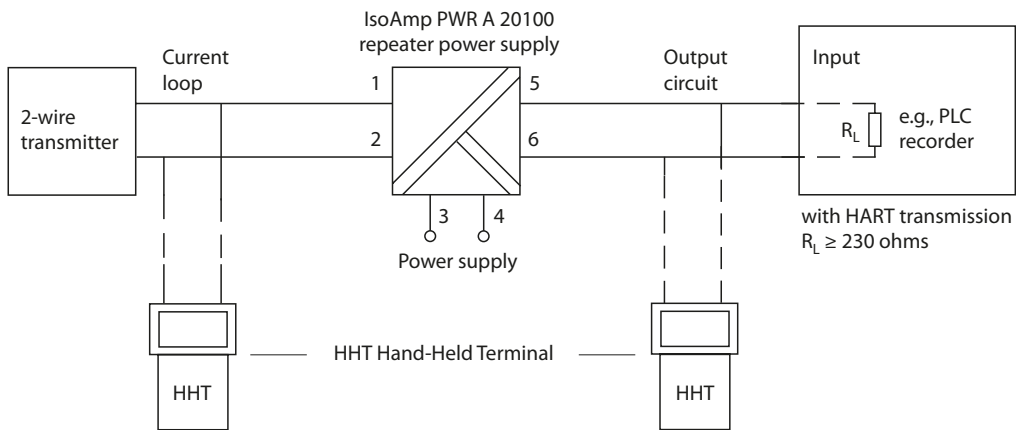
<sup>6)</sup> Lower air pressure reduces the allowable working voltages.

**Block Diagram**

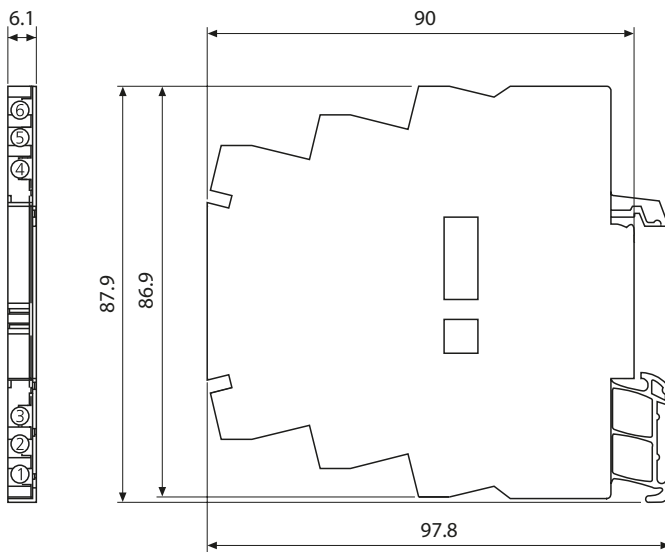


# IsoAmp PWR A 20100

## Typical Application



## Dimension Drawing and Terminal Assignments



### Terminal assignments

- 1 Current loop +
- 2 Current loop -
- 3 Power supply -
- 4 Power supply +
- 5 Output -
- 6 Output +

Conductor cross-sections:  
 single wire 0.5 ... 2.5 mm<sup>2</sup>  
 stranded wire 0.5 ... 2.5 mm<sup>2</sup>  
 with ferrule 0.5 ... 1.5 mm<sup>2</sup>

All dimensions in mm