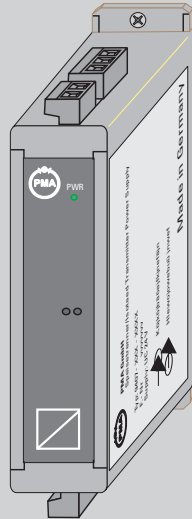# Isolating Power Supply TPS-HART

## For 2-wire transmitter

**Snap-on technology in compact design**

**Comprehensive galvanical isolation**

**Also for HART communication**

**Ex-protection EEx ib / IIC**

## GENERAL

The isolating power supply unit for 2-wire transmitters is designed to energize transmitters (operating in the hazardous area) with and without "SMART" function. It enables also the communication by means of a communication unit. Operation with transmitters without communication and in the non hazardous area certainly also is possible.

## DESCRIPTION

The connected transmitter is powered by the internal (intrinsically safe) power supply. The current is measured by the input amplifier and is transferred via the signal separation to the output amplifier The communication-signals of a communication unit will be fed from the output of the TPS-HART via the signal separation to the connected transmitter. Therefore the unit can be connected either via the output load (min. 250 Ω) or to the communication sockets in the front. For the latter the output is connected in series with a 250 Ω resistor, which makes additional connection of an external resistor unnecessary.

⚠ It is necessary to close the current loop in the output prior to any communcation.

## TECHNICAL DATA

### INPUT

**Input signal:** 4...20 mA
*Input resistance:* approx. 80 Ω

Available voltage for 2-wire-transmitter at 20 mA: ≥ 14 V.

### OUTPUT

**Standard signal:** 4...20 mA
**without** *communiation*: 0...10 V
$\qquad\qquad$ 0...20 mA
**Load:** with current $\qquad$ ≤ 750 Ω
with SMART operation $\qquad$ ≥ 250 Ω
with voltage $\qquad$ ≥ 500 kΩ

*Output resistance:* at 0/1...5 V $\quad$ 250 Ω
$\qquad\qquad\qquad$ at 0/2...10 V 500 Ω

*Ripple of output signal:* $U_{PP}$ <100 mV
*Effect of load:* ≤ 0,1% / 100%

**Input loop monitoring**

short circuit $\qquad$ $I_{Out}$ ≥ 22 mA
open input $\qquad$ $I_{Out}$ approx. 0 mA

**Characteristic:** linear
*Conformity error:* ≤ ± 0,15 %
(referred to fsd of output signal).

**Dynamic response**

Time constant $T_{90}$ 0,1 ms

## SUPPLY

**Universal current:** 24 V SELV*
AC 24 V ± 15 %, 47...63 Hz
DC 18...32 V
**AC voltage:** 95...253 VAC, 47...63 Hz

*Power consumption at nominal voltage*
DC: 2,2 W
AC: 3,5 VA

*Effect of supply:* ≤ ± 0,1 %/10 %

Permissible ripple (for DC): $U_{PP}$ ≤ 2,5 V
(within the permissible tolerances of supply)

## ELECTRICAL SAFETY

**Galvanical Isolation**

between supply and input
$\qquad$ supply and output
$\qquad$ input and output

Usable voltage to DIN EN 61 010
at 230 V $\quad$ AC 250 V
at 24 V $\quad$ AC 150 V

**Electrical safety**

Contamination class $\qquad$ 2
Overvoltage category $\qquad$ II
Test voltage at 24 V $\qquad$ AC 1,5 kV
Test voltage at 230 V $\qquad$ AC 2,3 kV

* SELV = Safe extra low voltage

## ENVIRONMENTAL CONDITIONS

### Permissible temperatures

Nominal temperature: -20...+65°C
For operation: -25...+70°C
Storage and transport: -40...+85°C

## ELECTROMAGNETIC COPMPATIBILITY

Complies with
DIN EN 50 081-1, DIN EN 50 082-2,
Low Voltage Directive DIN EN 61 010

CE marking

## EXPLOSION PROTECTION

to DIN EN 50 014 and DIN EN 50 020
Input circuit intrinsically safe

**Protection:** EEx ib/ IIC
$U_i$: ≤ 25 V
Short circuit current: 87,4 mA
Energy: 547 mW

External capacity $C_O$ ≤ 105 nF
External inductivity $L_O$ ≤ 4 mH

Certificate of Conformity
BVS 98.D.2056X

## GENERAL

Housing material: PC/GV 25

**Protection mode:** IP20 (EN 60529)

### Electrical connection

Plug-in screw terminals up to max. 2,5 mm$^2$

**Weight:** 0,15 kg

## ORDERING DATA

| | |
|---|---|
| lot EEx, without communication | **1** |
| Ex, without communication | **2** |
| lot EEx, HART communication | **3** |
| Ex, HART communication | **4** |
| **EEx, Communication** | |

**9 4 0 7 2 1 0 ☐ ☐ 0 ☐ 1**

| Supply / mains | |
|---|---|
| 95...253 VAC | **0** |
| 24 VUC | **1** |

$^1)$ no communication

**Output signal**

| | |
|---|---|
| **0** | 4...20 mA |
| **1** | 0...20 mA$^1)$ |
| **2** | 0...10 V$^1)$ |

## MOUNTING

Rail 35 mm to DIN EN 50 022

## ACCESSORIES

Instructions 9499-040-55501
Pluggable screw terminals

### Transmitters to be connected

| | |
|---|---|
| ABB Kent | Kamstrup |
| E+H (HART) | PMA |
| Fisher Rosemount | Sensycon |
| Honeywell | Siemens |
| and more | |

*Fig. 1 Dimensions and electrical connections*