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Isolating Signal Converter TV 500-Ex ...with intregr. transmitter supply ST 500-Ex

Features

- Switch-selectable inputs
  0/4 ... 20 mA and 0/2 ... 10 V DC
  intrinsically safe ATEX II (1) G [Ex ia] IIC
  ATEX II (1) D [Ex iaD]
- Switch-selectable outputs
  0/4 ... 20 mA simultaneous 0/2 ... 10 V DC
- Supply voltage 85 ... 253 V AC or
  10 ... 30 V AC/DC
- Full 3-port isolation
- Integrated transmitter supply
  for active 2- and 3-wire sensors
  (ST500-Ex only)
- Power-on LED
- 22.5 mm case for DIN rail mounting

General information

The isolating signal converter can be used to isolate industry standard signals 0/4 ... 20 mA or 0/2 ... 10 V DC out of the Ex area. The universal design of the in- and outputs and the wide range of supply voltage limits the devices into 2 models. The ST500Ex provides an isolated transmitter supply for direct connection of active 2-wire sensors (4 ... 20 mA) and 3-wire sensors in the Ex-area.

Short information

Ex-i inputs	The connected devices need to be certified depending on the operation-place.
Current output	Max. burden 1 kΩ for direct driving of propotional 20 mA valves.
Multi-range	Inputs and outputs are configurable between 0/4...20 mA and 0/2...10 V by DIP-switches on the front panel.

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Technical data

Power supply

Supply voltage		: 85 ... 253 V AC/110 ... 125 V DC or 10 ... 30 V AC/DC
Frequency		: 40 ... 400 Hz
Power consumption		: < 3.5 VA
Operating temperature		: -10...55 °C (14 ... 131 °F)
Rated voltage		: 253 V AC or 125 V DC (Um) acc. EN 60079-0, 250 V AC acc. to EN 60664-1, degree of pollution 2, over-voltage category III between input/output/supply voltage
Test voltage		: 3 kV AC between input/output/supply voltage
CE-conformity		: ATEX-directive 94/9/EG, *European standard:*
(Certificate ST500ATEX.002)		: EN60079-0:2006, EN60079-11:2007, EN61241-0:2006, EN61241-11:2006 EN61316-1:2004-05, EMV-directive 2004/108/EG

Explosion protection

Certification		: TÜV 97 ATEX 1150, 2. supplement
Protection		: Ex II (1) G [Ex ia] IIC, II (1) D [Ex iaD]
U_0		: 25.2 V
I_0	TV500Ex	: 1 mA
	ST500Ex	: 95 mA
P_0	TV500Ex	: < 1 mW (curve linear)
	ST500Ex	: 600 mW (curve linear)

Area classification Ex ia		*IIC*		*IIB*	
L_0	TV500Ex	100 mH	0,5 mH	100 mH	0,5 mH
	ST500Ex	2 mH	0,2 mH	15 mH	1 mH
C_0	TV500Ex	84 nF	100 nF	460 nF	570 nF
	ST500Ex	47 nF	107 nF	370 nF	430 nF

The effective internal capacitances C_i and inductances L_i are nigligibly small.
The maximum values of C_0 and L_0 are also allowed to be used up to the permissible limits as concentrated capacitances and as concentrated inductances (mixed circuits).
The intrinsically safe circuits are galvanically separated from the non-intrinsically safe circuits up to a peak crest value of the voltage of 375 V.

Inputs

Current input	: 0/4 ... 20 mA switch selectable,	R_i = 25 Ω, overload max. 100 mA
Voltage input	: 0/2 ... 10 V DC switch selectable,	R_i ca. 40 kΩ, overload max. 100 V
Span and	: adjustable approx. +/-20 %	
Start value 4 mA/2 V		
Transmitter supply	: approx. 20 V DC, R_i approx. 300 Ω (ST500-Ex only)	
Short circuit (Term. 1, 2)	: output current < 27 mA	

Outputs

Current output	: 0/4 ... 20 mA switch selectable, max. burden 1kΩ
Voltage output	: 0/2 ... 10 V DC switch selectable, max. load 15mA, short circuit protected (simultaneous to current outp. max. 5mA)
Rated voltage	: 253 V AC or 125 V DC (U_m) acc. to EN 60079-0 Permissible short circuit current of the connected apparatus max. 2 A
Rise time (T_{90})	: < 100ms
Accuracy	: ≤ 0.3%
Temperature coefficient	: ≤ 0.01%/K
Repeat accuracy	: < 0.1%
Supply error	: < 0.1%

Behavior of current output on sensor errors at configuration 4 ... 20 mA (for input and output)

Input →	Cl. 1, 2 shorted	Cl. 2, 3 shorted	Broken	Overdriven (max. 100 mA)
ST500Ex	23 ... 27 mA	< 2.5 mA	< 2.5 mA	limit value 23 ... 27 mA
TV500Ex		< 2.5 mA	< 2.5 mA	limit value 23 ... 27 mA

Case

Type	: DIN rail case of polycarbonate 8020 UL94-V1
Weight	: approx. 200 g
Protection	: case IP30, terminals IP20 finger safe acc. German BGV A3
Connection	: screw terminals with pressure plate, max. 2,5 mm² wire
Mounting place	: mounting in dry, clean and well monitored area acc to EN60079-11:2007, part 6.1

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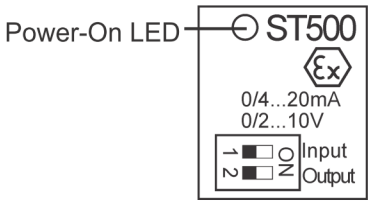
Front panel controls (front)

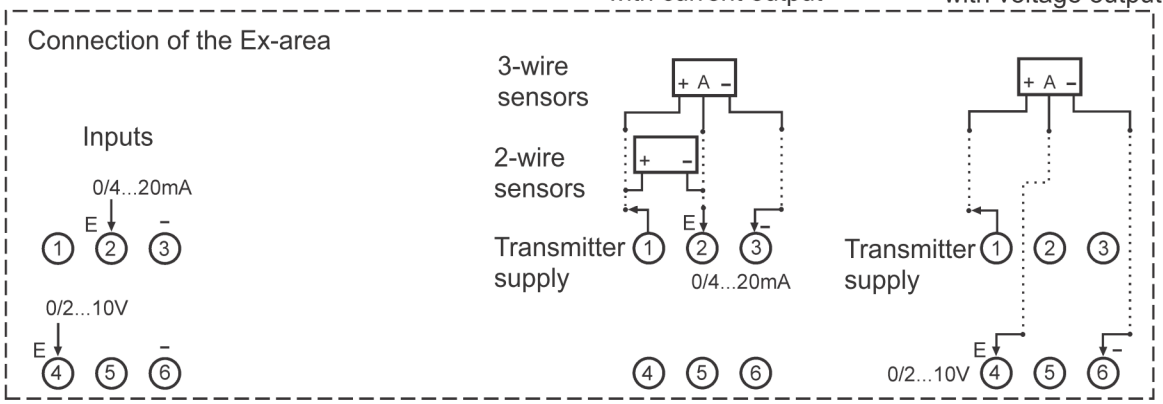


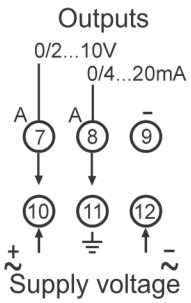
DIP-switch	0 ... 20 mA 0 ... 10 V	4 ... 20 mA 2 ... 10 V
Input	S1 OFF	S1 ON
Output	S2 OFF	S2 ON

Connection diagram

Converter TV500-Ex

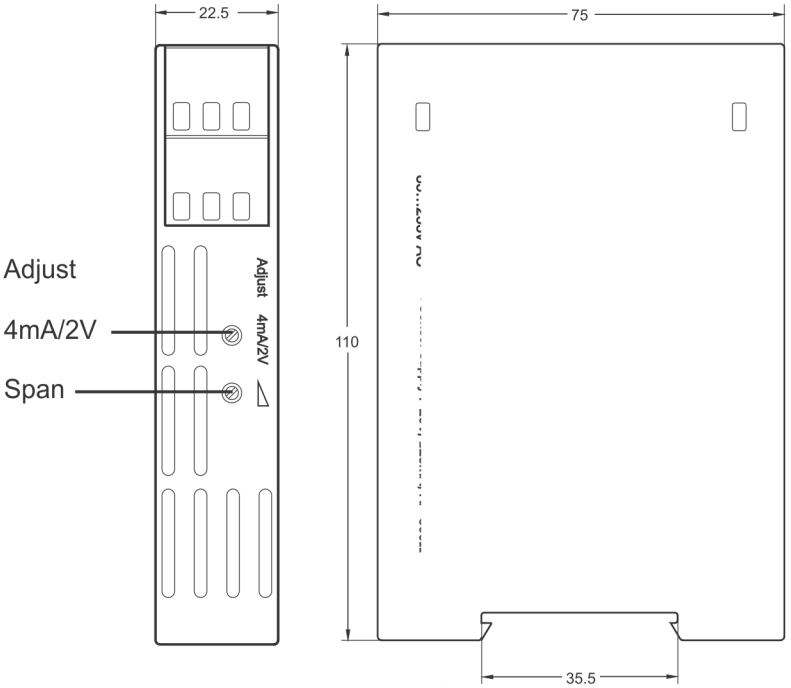
Converter ST500-Ex
Connection of sensors
with current output
with voltage output





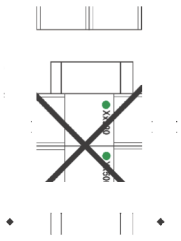
PA: Protective earth terminal (PE)
acc. to VDE0100 part 540

Dimensions and controls (narrow side)



TS35 DIN rail mounting
acc. to DIN 46277 and DIN EN 50022

Caution!
Mounting of multiple units without distance is only permitted in horizontal orientation.



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Ordering code

1.		2.		3.		4.
	-		-		-	

1. Device type

TV500Ex	Isolating signal converter
ST500Ex	Power feed signal converter

2. Measuring range

10	Inputs 0/4 ... 20 mA and 0/2 ... 10 V DC Outputs 0/4 ... 20 mA and 0/2 ... 10 V DC

3. Supply voltage

0	85 ... 253 V AC
5	10 ... 30 V AC/DC

4. Options

00	No options