

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



## Features

- Switch-selectable inputs  
0/4 ... 20 mA and 0/2 ... 10 V DC  
intrinsically safe Ex II (1) G [Ex ia Ga] IIC  
Ex II (1) D [Ex ia Da] IIIC
- 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 proportional 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.

## 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 (U <sub>m</sub> ) 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, EMC directive 2004/108/EG, Generic standards: (Certificate ST500ATEX.003): EN 60079-0:2013, EN 60079-11:2012, EN 61326-1:2004-05

### Explosion protection

Certification	: TÜV 97 ATEX 1150
Protection	:  II (1) G [Ex ia] IIC, II (1) D [Ex iaD]
U <sub>0</sub>	: 25.2 V
I <sub>0</sub>	TV500Ex : 1 mA
	ST500Ex : 95 mA
P <sub>0</sub>	TV500Ex : < 1 mW (curve linear)
	ST500Ex : 600 mW (curve linear)

Area classification Ex ia		IIC		IIB	
L <sub>0</sub>	TV500Ex	100 mH	0,5 mH	100 mH	0,5 mH
	ST500Ex	2 mH	0,2 mH	15 mH	1 mH
C <sub>0</sub>	TV500Ex	84 nF	100 nF	460 nF	570 nF
	ST500Ex	47 nF	107 nF	370 nF	430 nF

The effective internal capacitances C<sub>i</sub> and inductances L<sub>i</sub> are negligibly small.

The maximum values of C<sub>0</sub> and L<sub>0</sub> 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 <sub>i</sub> = 25 Ω, overload max. 100 mA
Voltage input	: 0/2 ... 10 V DC switch selectable, R <sub>i</sub> 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<sub>i</sub> 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 <sub>m</sub> ) acc. to EN 60079-0 Permissible short circuit current of the connected apparatus max. 2 A

Rise time (T<sub>90</sub>) : < 100ms

Accuracy : ≤ 0.3%

Temperature coefficient : ≤ 0.01%/K

Repeat accuracy : < 0.1%

Supply error : < 0.1%

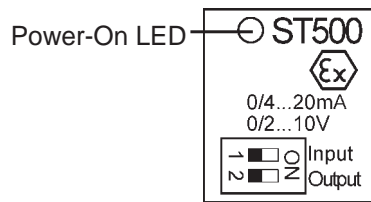
*Behavior of current output on sensor errors at configuration 4 ... 20 mA (for input and output)*

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 mm <sup>2</sup> wire
Mounting place	: mounting in dry, clean and well monitored area

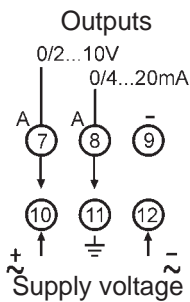
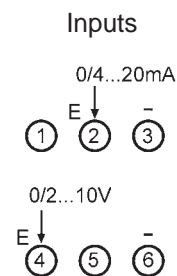
## Front panel controls (front)



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

## Connection diagram Converter TV500-Ex

Connection of the Ex-area

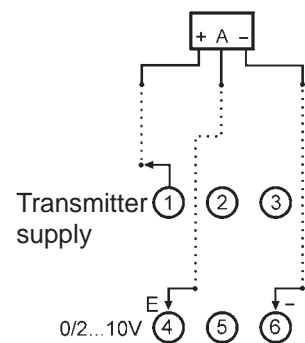
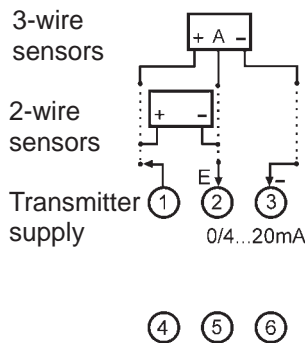


⊥ PA: Protective earth terminal (PE)  
acc. to VDE0100 part 540

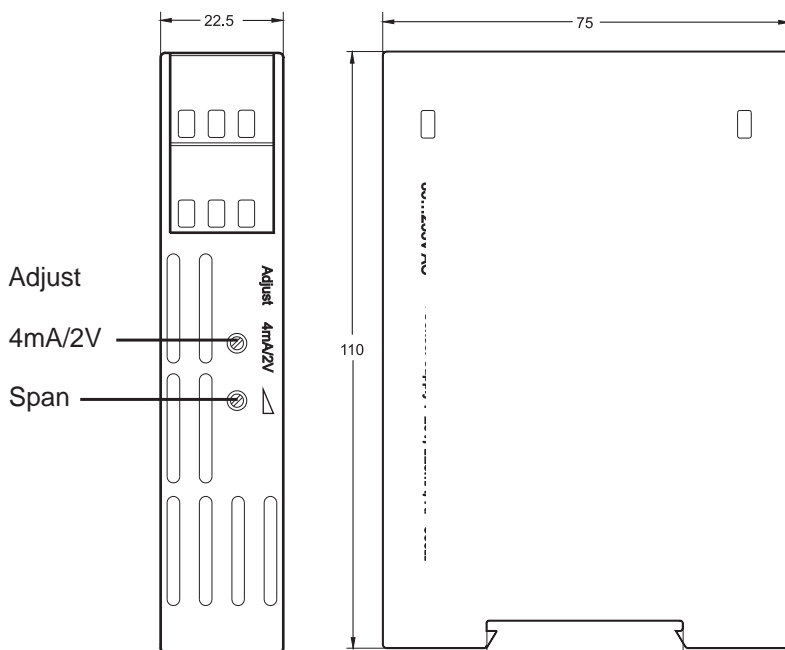
## Converter ST500-Ex Connection of sensors

with current output

with voltage output



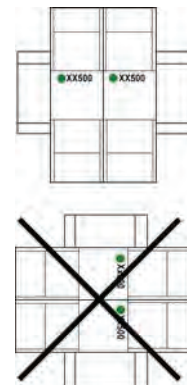
## Dimensions and controls (narrow side)



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.



### 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

<b>EG-KONFORMITÄTSBESCHEINIGUNG</b> EC-CERTIFICATE OF CONFORMITY	
	
	Zertifikat-Nr.: Certificate No.: <b>ST500ATEX.003</b>
Hersteller / Importeur: Manufacturer / Importer:	GHM Messtechnik GmbH Kiebitzhörn 18 D-22885 Barsbüttel
Produkt: Product:	ST500Ex / TV500Ex
Produktbeschreibung: Object description:	Speisetrenner / Trennverstärker Isolating signal converter / transmitter
Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Schutzanforderungen der Europäischen Richtlinien erfüllt. We hereby declare in sole responsibility that the designated product fulfills the safety requirements of the European directives.	
<b>Erfüllung der EMV-Richtlinie 2004/108/EG</b> Fulfills the EMC directive 2004/108/EG	
Prüfung nach den Normen: Tested in compliance with norms:	EN 61326-1: 2004-05
<b>Erfüllung der ATEX-Richtlinie 94/9/EG</b> Fulfills the ATEX directive 94/9/EG	
Prüfung nach den Normen: Tested in compliance with norms:	EN60079-0: 2013 EN60079-11: 2012
Datum der Erstanbringung des: CE-Zeichens auf das Produkt Date of the first application of the CE mark to the product	
06.1997	
Ort, Datum: Place, date:	Barsbüttel, den 14.05.2014
Rechtsverbindliche Unterschrift: Legally binding signature:	 Standortleitung, BU Manager

14/05-04