Universal Isolating Amplifier TV125M / ST125M

- Standard inputs and outputs with adjustment function
- Safe electrical isolation between input / output / power supply by reinforced insulation in accordance to DIN EN 61010-1
- Functional safety to EN61508 SIL2
- Input intrinsically safe for the connection of sensors in the Ex-zone 0 and 20 possible
- Equipment installation in ex-zone 2
- Wide range power supply for AC and DC supply
- Power rail supply
- Output accuracy < 0.2% of full scale
- Operating display and status messages bi-color LED
- Configuration via front panel dip switches
- Coded Plug-in terminal blocks
- Small design, width 12.5 mm
- Mounting rail TS 35 and EN60715

Characteristics

Isolation amplifiers of series TV/ST125M are suitable for potential separation or to convert the standard signals. The universal design of inputs and outputs, and the internal power supply with wide-range power supply enable a wide spectrum of applications with only one type of device.

Alternatively the power supply can be carried out via a mounting rail bus connector. The pluggable terminal strips allow a simple and time-saving wiring.

The configuration of input and output signals is done by front panel dip switches in a very easy and fast way.

Because of the microprocessor design it´s possible to interpret undershooting or exceedance of the measurement range and reported about by a bi-color status LED on the front panel. In case of an error the output is then set to a defined initial value or ending value.

The initial value and the end value of the measuring range can be adjusted by means of two front-mounted trimmers.
The device version of ST125 additionally provides a transmitter power supply for external 2-, 3- and 4-conductor sensors.

Technical data

Explosion protection

Gas	:	II (1) G [Ex ia Ga] IIC/IIB
Dust	:	II (1) D [Ex ia Da] IIIC
Intrinsically safe + Zone 2:		II 3 G nA nC [ic] IIB T4 Gc *)
Ignition protection type „n“:		II 3 G nA nC IIB T4 Gc X *)

*) Installation in a clean environment in a conductive, earthed housing (switch cabinet) with a minimum protection rating of IP54.

Characteristics intrinsically safe circuits

	All types (Terminals 41, 42)	ST125M(MP)-Ex (Terminals 51, 52)
U0	27,6 V	25,9 V
I0	1,3 mA	92,6 mA
P0	9,6 mW	598 mW
Ui	26 V	-
Ii	113 mA	-
Pi	660 mW	-
	max. inductivity capacity	
Ci	1 nF	1 nF
Li	240 nH	240 nH
	IIB / IIIC	
C0	667 nF	769 nF
L0	200 mH	8 mH
	IIC	
C0	85 nF	99 nF
L0	100 mH	2 mH

External Power

Auxiliary voltage

Wide-range power supply	: 20..125 V DC / 85..253 V AC (47..63Hz)
Power-Rail-supply	: 24 V DC +/- 15 %
Wide-range power supply	: < 4 VA
Power-Rail-supply	: < 2 W
Conformity	: Directive 2014/35/EU
EMC	: Directive 2014/30/EU
Standards	: EN 61010-1: 2010, EN 61326-1: 2013, EN 61326-3-1: 2008,
Rated voltage	: 253 V AC, 125 V DC according to EN 60079-11 300 V AC/DC according to DIN EN 61010-1 with overvoltage Category 2 and Degree of Contamination 2 between all circuits. Safe separation with amplified isolation
Test voltage	: 3kV AC Input/Output/Power supply

Ambient conditions

Working temperature	: -10..60°C
Storage temperature	: -20..80°C
Relatvice air humidity	: 10..90% (no condensation)

Input

Voltage input	: 0..10V oder 2..10 V switchable, Ri = 30 kΩ. overload max. 26 V DC
Current input	: 0..20 mA or 4..20 mA switchable; Ri = 51 Ω, 113mA
Measuring span	: adjustable ± 2 %
Zero point	: adjustable ± 2 %

Output

Voltage output	: 0…10 V or 2…10 V switchable, Load > 500 Ω.
Current output	: 0..20 mA or 4..20 mA switchable, Load < 600 Ω.
Step response T90	: 40 ms
Standard error	: < 0,2 % of the end value
Temperature coefficient	: < 0,01 % / K

Transmitter feed

Rated voltage at 20 mA output current	: > 15 V DC; terminals 51, 52 > 14 V DC; terminals 51, 41, Ri = 300 Ω

Housing

Material	: Polyamid (PA) 6.6, UL94V-0
Weight	: 91g
Protection class	: Housing IP30, terminals IP20 BGV A3
Colour	: light grey
Installation width	: 12,5 mm
Dimension (HxT)	: 108 x 114 mm
Assembly	: Mounting rail assembly TS35 DIN EN 60715

Safety Integrity

Level	: Sil 2 (parameters in accordance with EN 61508 and SN 29500) for input types 4..20 mA or 2..10 V and output types 4..20 mA or 2..10 V
Device type	: B
HFT	: 0
Error signalling	: Output 0 V respective 0 mA
Reaction time	: Normal function → error: 40 ms, error → normal function: 1s (self resetting)

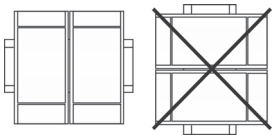
Controls, functional description

Status-LED	Message
Green LED illuminates	Operating voltage connected
Red and green LED illuminates	See manual tab. 7: Status messages
Red LED illuminates	Electronic defect

Configuration:

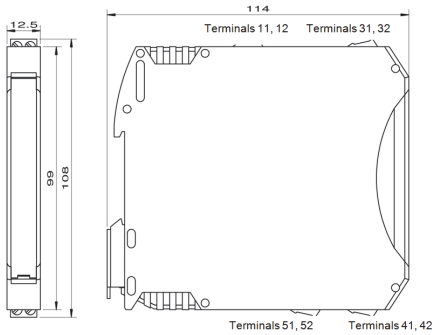
DIP	On	Off
S1	Voltage input	Current input
S2	Voltage output	Current output
S3	Input: S1 = On: 0 … 10 V, S1 = Off: 0 … 20 mA	Input: S1 = On: 2 … 10 V, S1 = Off: 4 … 20 mA
S4	Output: S2 = On: 0 … 10 V, S2 = Off: 0 … 20 mA	Output: S2 = On: 2 … 10 V, S2 = Off: 4 … 20 mA

Mounting

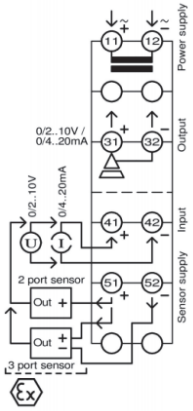


Carrier rail mounting TS35, DIN EN 60715
Mounting of multiple units without distance is only permitted in horizontal orientation.

Mechanical design / dimensions



Connection diagram



Power supply:
85…253 VAC / 20 … 125 VDC
or 24 VDC +/- 15 %

Output:
0/2 … 10V or 0/4…20 mA

Input:
0/2 … 10 V or 0/4…20 mA

Order code

1. 2. 3. 4.

1.	**Device version**	
	TV125M	Wide-range mains adapter
	TV125MP	Mounting rail bus connection *), Auxiliary voltage 24 V DC +/- 15 %
	ST125M	Transmitter feed, Wide-range mains adapter
	ST125MP	Transmitter feed, mounting rail bus connection *), Auxiliary voltage 24 V DC +/- 15 %
2.	**Explosion protection**	
	00	No intrinsically safe input and no intrinsically safe transmitter feed. The devices TV125MP and ST125MP may be installed in zone 2 according to ATEX-ignition protection type “n”
	Ex	**In case of installing the devices out of the ex-zone:** Input and transmitter feed are intrinsically safe in accordance to ignition protection type “ia” for zones 0 and 20. **The devices TV125MP and ST125MP** may be installed in zone 2 according to ATEX-ignition protection type „ic“
3.	**Input**	
	10	0/2…10 V / 0/4…20 mA
4.	**Options**	
	00	without option
	01	Push-In terminals (plug-in)

*) see seperate information sheet power rail