

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
U_i	26 V	-
I_i	113 mA	-
P_i	660 mW	-
	max. inductivity capacity	
C_i	1 nF	1 nF
L_i	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 : 3kV AC Input/Output/Power supply

Test voltage

Ambient conditions

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

Input

- Voltage input : 0..10V oder 2..10 V switchable, R_i = 30 kΩ, overload max. 26 V DC
 Current input : 0..20 mA or 4..20 mA switchable; R_i = 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

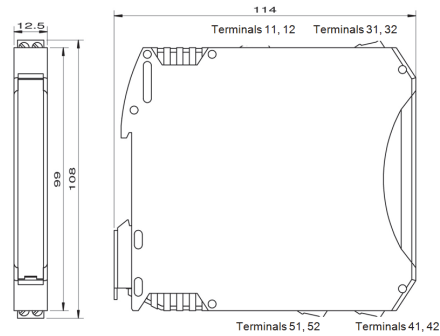
Transmitter feed
Rated voltage at 20 mA output current : > 15 V DC; terminals 51, 52
> 14 V DC; terminals 51, 41, Ri = 300 Ω

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

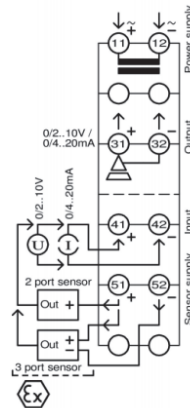
Safety Integrity Level
: Sil 2 (parameters in accordance with EN 61508 and SN 29500) for input types 4..20 mA or 2..10 V and output types 4..20 mA or 2..10 V

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)

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

Controls, functional description

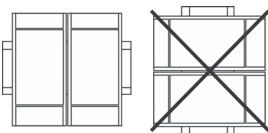


Status-LED	Message
Green LED illuminates	Operating voltage connected
Red and green LED illuminates	See manual tab. 7: Status messages
Red LED illuminates	Electronic defect

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.

Order code

1. 2. 3. 4.
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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 separate information sheet power rail