

Product information

Universal Isolating Amplifier TV125M / ST125M



- Potential separation, conversion, supply and adjustment of standard signals (mA, V ↔ mA, V)
- Functional safety up to SIL2
- Supply of 2-, 3- or 4-wire transmitters (ST125M)
- Intrinsically safe types for zone 0/20
- Installation up to zone 2
- Minimized type variants due to wide-range power supply
- Efficient wiring with scale-able Power Rail-devices
- Short downtime due to clear indication
- Fast commissioning due to front sided controls
- Plug-able, coded and numbered terminals for reliable and interchange-proof wiring

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 under- or overshooting the measurement range and indicate 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

Ignition protection typ ia

Intrinsically safe Inputs

Type	: TV125M(P)-Ex, ST125M(P)-Ex
Zone 0/1/2	: II (1)G [Ex ia Ga] IIC/IIB
Zone 20/21/22	: II (1)D [Ex ia Da] IIIC

Ignition protection typ ic

Intrinsically safe Inputs + zone 2 installation

Type	: TV125MP-Ex, ST125MP-Ex
Zone 2	: II 3G Ex ec [ic] IIB T4 Gc

Limit values

Input circuit

IIB/IIIC (IIC)	: U _o =27,6V; I _o = 1,3mA; P _o =9,6mW; Co=667nF (85nF); Lo=200mH (100mH) Ui=26V; Ii=113mA; Pi=660mW Ci=1nF; Li=240nH
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Output circuit (ST125M(P)Ex, only)

IB/IIIC (IIC)	: U _o =25,9V; I _o =92,6mA; Po=598mW; Co=769nF (99nF); Lo=8mH(2mH); Ci=1nF; Li=240nH
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Ignition protection typ ec

Without intrinsically safe Inputs, Zone 2 installation

Type	: TV125MP-00, ST125MP-00
Zone 2	: II 3G Ex ec IIB T4 Gc

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 %

Power consumption

Wide-range power supply	: < 4 VA
Power-Rail-supply	: < 2 W

CE Conformity

Low-voltage	: 2014/35/EU
EMC	: 2014/30/EU
ATEX	: 2014/34/EU

Rated voltage	: 300 V AC/DC with overvoltage category 2 and degree of contamination 2 between all circuits. Safe separation with amplified isolation
Ex-operation	: 253 V AC, 125 V DC

Test voltage	: 3kV AC Input/Output/Power supply
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Ambient conditions

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

Input

Voltage input	: 0...10V or 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 %

Product information

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 power supply (ST125M(P), only)

Nominal voltage at 20 mA output current : > 15 V DC
 Terminals 51, 52 : > 14 V DC
 Terminals 51, 41 : > 14 V DC
 Ri : 300 Ω

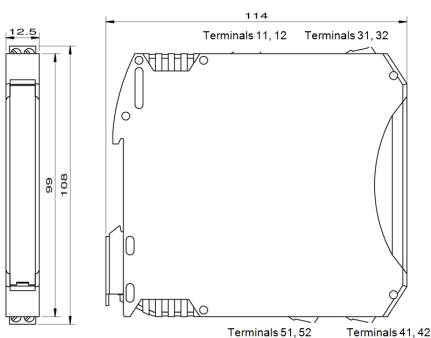
Housing

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
 Screw terminals : 0,2..2,5 mm², AWG 24..14, removable
 encoded
 Push-In terminals (option) : 0,5..1,5 mm², AWG 25..16,
 (spring clamps) double connection
 (12A between the connectors),
 removable encoded
 Power Rail (TV/ST125MP) : 8A over entire bus system (supply via
 removable terminals 0.2..2.5 mm²,
 AWG 24..14

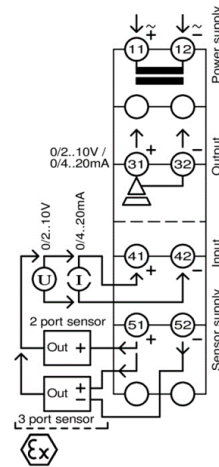
Safety Integrity

Level : SIL 2 for
 Input : 4..20 mA or 2..10 V and
 Output : 4..20 mA or 2..10 V
 Device type : B
 HFT : 0 (1oo1)
 Error signaling : Output 0 V respective 0 mA
Reaction time
 Normal function → error : 40 ms
 error → normal function : 1s (self resetting)

Mechanical design / dimensions



Connection diagram



Order code

1. 2. 3. 4.
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1. Device version	
TV125M	Wide-range power supply 20..125 V DC / 85..253 V AC
TV125MP*	Power supply 24 V DC +/- 15 % via rail mounted connecting terminal (Power Rail)
ST125M	Transmitter power supply, Wide-range power supply 20..125 V DC / 85..253 V AC
ST125MP*	Transmitter power supply, Power supply 24 V DC +/- 15 % via rail mounted connecting terminal (Power Rail)
2. Explosion protection	
00	No intrinsically safe input and no intrinsically safe transmitter power supply. The devices TV125MP and ST125MP may be installed in Zone 2 acc. to ATEX-ignition type "ec".
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 acc. to ATEX-ignition type "ic".
3. Input	
10	0/2...10 V / 0/4...20 mA
4. Options	
00	without option
01	Push-In terminals (plug-in)

* Rear bus plug included

Accessories

Art. No.	Type	Description
190109	PRVK	Power Rail 5- pole supply terminal. Connection site: left