Temperature switch for high temperature ranges
Stainless steel version, IP 65
Model TWG

Applications

- Temperature monitoring and direct switching of electrical loads
- Control and regulation of industrial processes
- Universally suitable for machine building, plant, vessel, apparatus construction and food industry, chemical industry, petrochemical industry
- Ignition protection type GAS Ex-ia IIC T6 and T4 - Dust Ex-iaD A20 IP 65 T85 and T135

Special features

- Electropolished case
- Ingress protection IP 65, NEMA 4
- Ambient temperature -40 ... +85 °C
- 1 or 2 independent switch points, high contact rating up to 15 A / AC 220 V
- Directly connected or via capillary (up to 10 m capillary)

Fig. left: Temperature switch, model TWG-B
Fig. right: Temperature switch with capillary, model TWG-C

Description

These high-quality and robust temperature switches have been developed specifically for safety-critical applications. High quality and product manufacturing ensures reliable monitoring of your plant. The manufacturer Cella is certified to ISO 9001. In production, the switches are traced by quality assurance software at every step and subsequently are 100 % tested.

All wetted parts materials are from stainless steel. Each switch family is available in IP 65, Ex-ia or Ex-d versions.

In order to ensure as flexible operation as possible, the temperature switches are equipped with micro switches, which make it possible to switch an electrical load of up to 15 A / AC 220 V directly. For smaller contact ratings, such as for PLC applications, Argon gas-filled micro switches with gold-plated contacts can be selected as an option.

With its flexible AISI 316 spiral protection hose, the model TWG temperature switch is extremely robust and guarantees optimal operating characteristics for applications requiring particularly high corrosion protection.

Data sheets showing similar products:
Temperature switch, Ex protection EEx-d, IP 65; model TAG; see data sheet TV 31.61
Compact temperature switch, IP 65; model TCS; see data sheet TV 31.64
Mini temperature switch; model TXS; see data sheet TV 31.70

Standard version

Case
Stainless steel, electropolished case cover with bayonet ring closure, secured against unauthorised opening by an anti-rotation mechanism

Ingress protection
IP 65 per EN 60529 / IEC 529

Permissible ambient temperature
-40 ... +85 °C

Connection to thermowell
Stainless steel, connection thread ½ NPT

Stem
AISI 316
Diameter: 12 mm
Length: 85 mm

Measuring system
Gas actuated temperature system (SAMA class III B)

Type of mounting

Type of mounting	Code
Direct assembly [1]	B
Capillary	C

1) max. setting range 400 °C with a permanent working temperature of max. 250 °C

Capillary length

Length	Code
2 m	K2m
4 m	K4m [2]
6 m	K6m [2]
8 m	K8m [2]
10 m	K10m [2]

2) The maximum permissible height difference between sensor and housing is 2 m.

Immersion depth
The maximum immersion depth Y (see dimensional drawing) can be calculated as per the following equation:
Capillary length in metre x 145 mm

Example:
Capillary length 2 m
=> 2 x 145 mm = 290 mm = max. immersion depth

The length K is reduced accordingly.

Switch contacts
1 or 2 SPDT (change-over) micro switches selectable, DPDT function through two SPDT micro switches with simultaneous triggering within 0.2 % of full temperature range, in the following variants:

Switch	Code
1 x SPDT	U
2 x SPDT	D

Code	Design	Electrical rating (resistive load) [3] AC	DC
	Fixed switch hysteresis		
1	**Silver contacts**	15 A, 220 V	2 A, 24 V 0.5 A, 125 V 0.25 A, 220 V
2	**Gold-plated contacts**	1 A, 125 V	0.5 A, 24 V
3	**Silver contacts** inert gas filled T_{amb}: -30 ... +70 °C	15 A, 220 V	2 A, 24 V 0.5 A, 220 V
4	**Gold-plated contacts** inert gas filled T_{amb}: -30 ... +70 °C	1 A, 125 V	0.5 A, 24 V
	Adjustable switch hysteresis		
5	**Silver contacts** [4]	20 A, 220 V	2 A, 24 V 0.5 A, 220 V

3) Only the underlined data are shown on the product label
4) Max. 1 switch contact

Repeatability
≤ 0.5 % of the full temperature range

Setting ranges, max. test temperature, max. switch hysteresis

Setting range	Max. test temperature	Max. switch hysteresis 1 contact	2 contacts	1 contact, adjustable hysteresis
-30 ... +70 °C	+120 °C	4.5 °C	4.5 °C	15 ... 35 °C
0 ... +100 °C	+120 °C	4.5 °C	4.5 °C	15 ... 35 °C
0 ... +160 °C	+190 °C	5 °C	5 °C	18 ... 35 °C
0 ... +250 °C	+300 °C	6 °C	6 °C	21 ... 45 °C
0 ... +400 °C	+500 °C	10 °C	10 °C	33 ... 77 °C
0 ... +600 °C [5]	+600 °C	17 °C	17 °C	50 ... 115 °C

5) Stem dimensions: X = 102, Y = 163

Switch points
After unscrewing the case cover, switch point adjustment can be made using the adjustment screw. The switch point is settable within the entire measuring range with the following general rule:

- Define the value A = 2 x repeatability + switch hysteresis
- If the temperature is rising, the switch point should be set between (min. + value A) up to max. of the setting range
- If the temperature is falling, the switch point should be set between min. up to (max. - value A) of the setting range

Example:
Setting range: 0 ... 100 °C with one switch contact
Repeatability: 0.5 % of 100 °C = 0.5 °C
Switch hysteresis = 4.5 °C (see table setting ranges)
Value A = 2 x 0.5 °C + 4.5 °C = 5 °C
If the temperature is rising, the switch point should be set between 5 °C and 100 °C.
If the temperature is falling, the switch point should be set between 0 °C and 95 °C (95 °C = 100 °C - 5 °C).
For optimal performance we suggest the switch point lies between 25 % and 75 % of the setting range.

Electrical connection
½ NPT female, cable connection using internal terminal block, protective conductor connection using internal and external screw, max. earth cable cross-section 4 mm²

Temperature switch certified per:
Low voltage directive 73/23 EEC and 93/68 EEC

Dielectric strength
Safety class I (EN 61298-2: 1997-06)

Mounting
Direct or wall mounting
The preferred connection location of the temperature switch should be below. Alternatively the instrument can be installed so that internal access is from the front of the enclosure and the electrical connection is located on the side.

Weight
approx. 2.1 kg (with 2 m capillary)

Options

- Other connection to thermowell, also with adapter
- Electrical connection ¾ NPT, G ½ or M20 x 1.5 (female)
- Cable gland on request
- Switch point adjustment to customer specification
- 2" pipe-mounting kit (with clamping element)
- Stem diameter 9.5 mm (Y = 195 mm, X = 135 mm)
- Helical bulb (ambient temperature: -30 ... +70 °C)
- Version for offshore 6) or tropicalised application 6)
- Version for applications to NACE 6)
- Version for ammonia applications 6)
- Version to
  GAS Ex-ia IIC T6 and T4 - Dust Ex-iaD A20 IP 65 T85 and T135 6)
  Electrical characteristics: U_i = 30 V
  I_i = 100 mA
  P_i = 0.75 W
  C_i = 0 µF
  Li = 0 mH
- Accessories:
  Thermowells

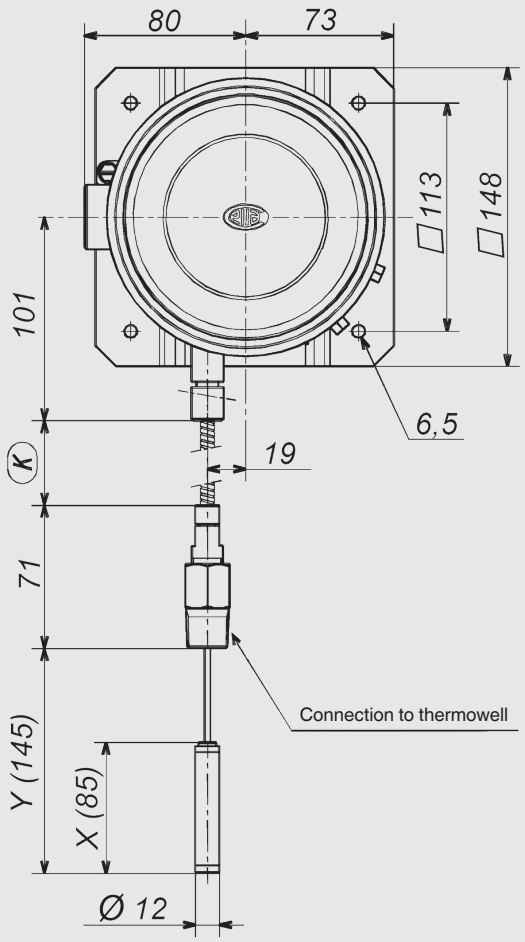
Approvals and certificates

- SIL-2 version 6) 7)
- GOST-R certificate
- Test certificate *CA* (confirmation of the switching accuracy)
- Test report *CP* (3-time listing of the switch point, requires switch point specification)
- Material certificate 3.1 per EN 10204

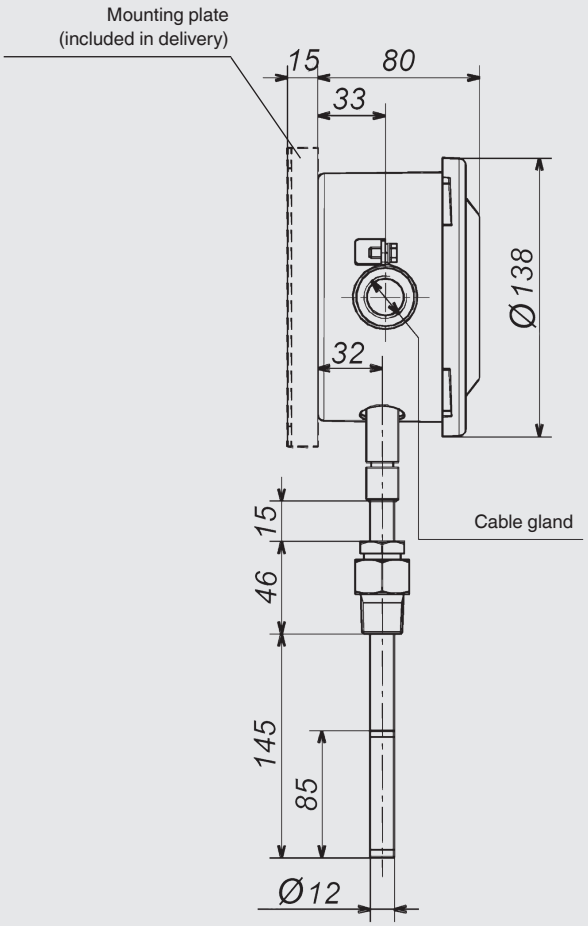
6) Inert gas filled contacts required
7) SIL-2 design only in conjunction with one (1) switch contact

Dimensions in mm

Version with capillary



Direct assembly version



Ordering information

Model / Mounting / Switch contacts with version / Capillary length / Setting range / Connection to thermowell / Electrical connection / Switch point(s) / Switch direction(s) / Options

Example: TWG - B - U1 - K2m - 0/100 °C - 1/2" NPT-M - 1/2" NPT-F

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