NORGREN HERION

Temperature Switches Series 7T

OBSOLETE DOCUMENT Technical Reference Only

Capillary type thermal element

- **High accuracy**
- **No auxiliary energy required**

Technische Daten

Fluid:
Neutral gaseous and liquid fluids

Repeatability:
± 3% (referred to $\vartheta_{vo\ max.}$)

Switching element:
Microswitch

Degree of protection:
IP 65

Lenght of capillary:
1.5 m

Material (sensor):
Cu

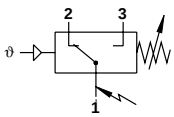
Temperature at switching element:
Max. + 80 °C

Mounting position:
Optional

Max. allowable vibrations:
4 g (sinusoidal)

Further versions on request

- Weatherproof design
- Capillary tube and sensor of stainless steel
- Longer capillary tube



Switching function:
Microswitch SPDT

Terminal 1 – 3: Contacts close on rising temperature

Terminal 1 – 2: Contacts open on rising temperature

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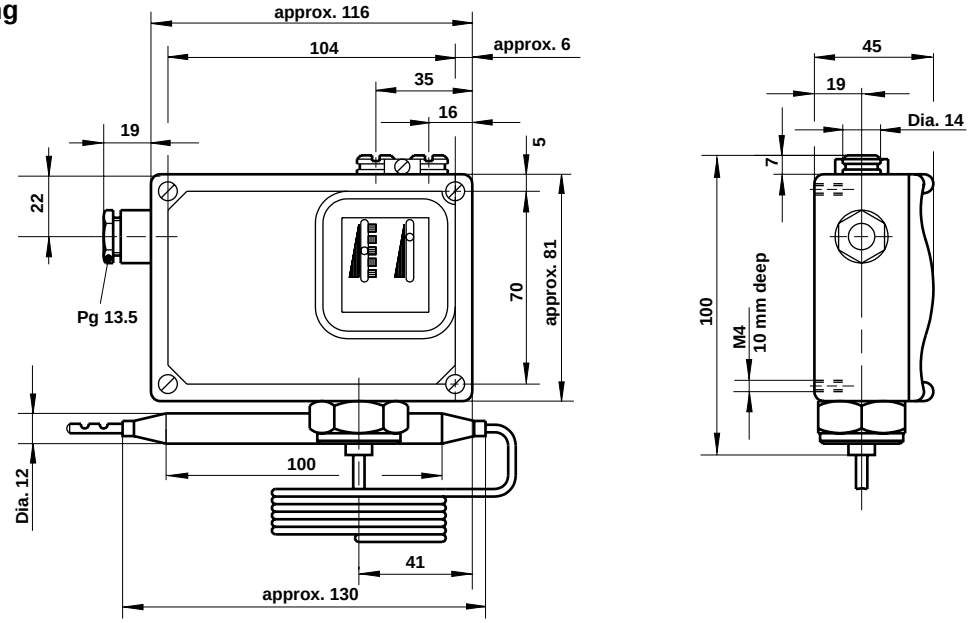
General information

Type	Adjustable range	Switching temperature difference		Rapidity of temperature change	Maximum allowable temperature	Total weight	Dimensional drawing
	$p_{vu\ min.}$ ... $p_{vu\ max.}$ (°C)	Lower range (K)	Upper range (K)	(K/min.) $\frac{\Delta\Theta}{\Delta t}$	(C°)	(kg)	No.
Switching temperature difference not adjustable							
0891500	– 30 ... + 40	4	2	2	+ 70	0.95	01
0891700	+ 10 ... + 75	5	2.5	2	+ 95	0.95	01
0891800	+ 60 ... +165	12	4	2	+ 190	0.95	01
0891900	+160 ... + 280	14	6	2	+ 320	0.95	01
Switching temperature difference adjustable							
		min.	max.				
0890500	– 30 ... + 40	8 ... 6.5	20 ... 8	2	+ 70	1.0	01
0890700	+ 10 ... + 75	9 ... 4	25 ... 10	2	+ 95	1.0	01
0890800	+ 60 ... +165	18 ... 6	30 ... 10	2	+ 190	1.0	01
0890900	+160 ... + 280	20 ... 8	40 ... 15	2	+ 320	1.0	01

1) Characteristic data to VDI 3283.

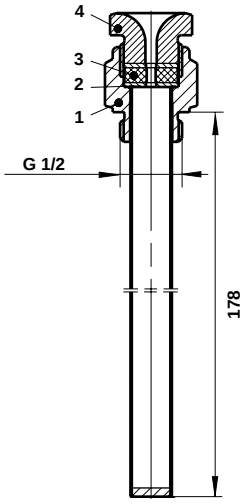
Dimensional drawing

01



Accessories Closed protection sleeve G 1/2 for sensor cartridge
Material Brass Type **0574758**

Material St. st. 1.4571
(with brass plug)
Type **0574760**



1 Union
2 Disc
3 Seal
4 Union

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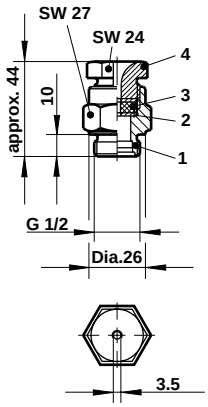
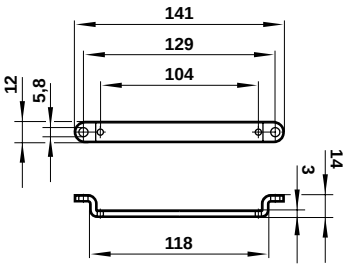
Accessories

Removable screw coupling G 1/2
Material brass, with seal
(without protection sleeve, up to max. 6 bar)
Type **0574755**



1 Union
2 Disc
3 Seal
4 Union

7 T-support
(2 brackets, 4 screws)
Type **0574755**



Switch selection and mounting instructions

The switching points should normally be in about the middle of the adjustable range.
Observe switching temperature range, do not subject switch to max. allowable temperature during normal operation.
Do not exceed electrical ratings.

Electrical connection by a Pg 13.5 cable gland, in accordance with local regulations. For outdoor installation sufficient protection has to be provided for. Critical conditions are: Aggressiveness of air, high or low temperatures, drastic changes in temperatures, solar radiation, penetration, of water.

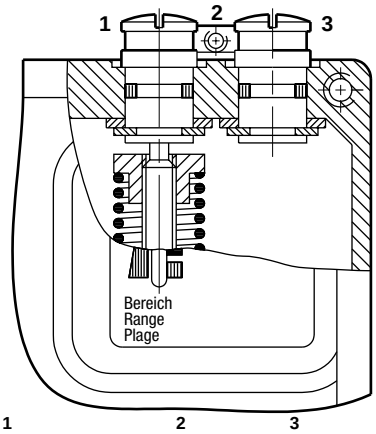
Setting of the switching points

Use range spindle to set the upper or lower switching point on design with **fixed** switching temperature difference. The opposite one is determined by the fixed switching pressure difference.
On designs with **adjustable** switching temperature difference, use range spindle to set the lower switching point, then use differential spindle to set the upper switching point by adding the desired switching temperature difference.
Turning the range spindle anticlockwise shifts both switching points upwards. Turning the differential spindle anticlockwise shifts only the upper switching point upwards, i.e. the switching pressure difference (distance between the upper and lower switching point) increases.

Example:

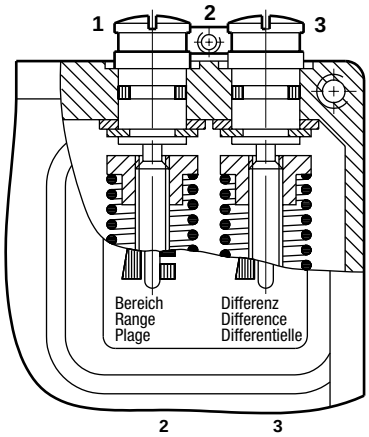
Desired:	Lower switching point	40 °C
	Upper switching point	55 °C
	Switching temperature difference	15 °C
Setting:	with range spindle	40 °C
	with differential spindle	15 °C

To set precise switching points, a thermometer is required. (The temperature switch is a switching and regulating device and not a measuring instrument - even if it has a scale to assist in the setting).
The setting can be changed at any time, even during operation.



1	2	3
Bereichsspindel	**Arretierung**	**Blindzapfen**
Range spindle	**Detend**	**Blanking plug**
Broche de la plage	**Blocage**	**Faux bouchon**

With fixed temperature difference



1	2	3
Bereichsspindel	**Arretierung**	**Differenzspindel**
Range spindle	**Detend**	**Differential spindle**
Broche de la plage	**Blocage**	**Broche de la fourchette**

With adjustable temperature difference

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Making and/or breaking capacity / Change-over switch with silver spring contacts

Type of current	Type of load	Voltage Us (V)			
		24	60	110	230
		Make and break current I (A)			
AC	Resistive load	15	15	15	15
AC	Inductive load, cos φ ≈ 0.7	4	2.5	1.5	0.9
AC	Inductive load, spark quenching with RC-link	6	4	2.5	1.5
DC	Resistive load	2	0.9	0.45	0.2
DC	Inductive load, L/R ≈ 10 ms	1	0.3	0.09	0.02
DC	Inductive load, spark quenching with diode	1.5	0.7	0.35	0.15

Reference number of switchings: 60/min.
Reference temperature + 30 °C
(with a reference temperature of + 70 °C, Imax corresponds to 50% of the tabulated values only).

Contact-life appr. 1 x 10^6 switching cycles at max. current (at 50% of max. current, contact life is appr. 3 times as long).

Mechanical life appr. 5 x 10^6 switching cycles.

For non-aggressive atmosphere, which in particular does not contain any sulphur, the following limits are valid:

Microswitch with standard silver contacts:
V_{min} appr. 8 ... 12 V, I_{min} appr. 10 mA,
Maximum values acc. to table above.

Microswitch with gold-plated contacts: (available at extra charge):
V_{min} and I_{min}: No lower limit Sensible upper limit:
V_{max} appr. 48 V, I_{max} appr. 20 mA; (for higher values silver spring contacts are completely sufficient).

Creepage and air paths correspond to insulation group B according to VDE Reg. 0110 (except contact clearence of microswitch).

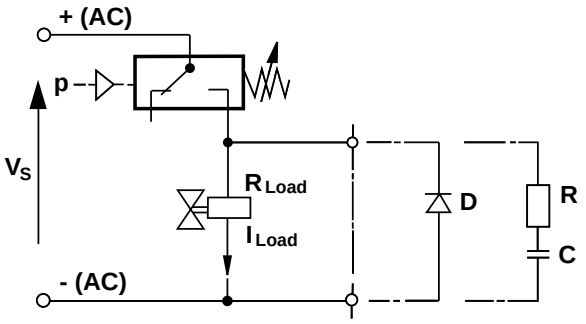
Spark quenching (direct current):

1. Diode in parallel to inductive load Make sure polarity is correct when making connections.

   Dimensioning of quenching diode (rectifier):
   Rated voltage of diode $V_D \geq 1.4 \times V_{Term.}$
   Rated current of diode $I_{Rated} \geq I_{load}$
   Choose quick switching diode (recovery trr ≤ 200 ns).

2. RC-link in parallel to load (or in parallel to switching contact). Suited for direct and alternating current.

Ratings: R in [Ω] ≈ 0.2 · R_{Load} in [Ω]
C in [µF] ≈ I_{Load} in [A]



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