Limit transducer - electromechanical
- Creep contact / magnetic snap contact -

DESCRIPTION

It is the task of the limit transducer to close or open power circuits via a contact arm that is moved by the current value indicator. The target value indicator is set to the value at which the switching process is to take place, using a removable key. The target value indicator can be adjusted over the entire range of the scale.

The standard power connection is via a cable connection box.

Limit transducers can be installed in pressure meters and thermometers!

Creep contacts S are used under normal, vibration-free operating conditions with a low contact load. They are not suitable for liquid-filled measuring devices.

Magnetic snap contacts M are used under normal and difficult (high-vibration) operating conditions, even with liquid-filled devices. Electromechanical contacts are not suitable for use in locations with a risk of explosions.

SWITCH FUNCTIONS

Type abbreviations: **S** = creep contact
M = magnetic snap contact

The **reference number 1** stands for the switch function "closes when the target value is exceeded **in a** clockwise direction" (i.e. it opens in an anti-clockwise direction).

The **reference number 2** stands for the switch function "opens when the target value is exceeded **in a** clockwise direction (i.e. it closes in an anti-clockwise direction).

The **reference number 3** stands for a change-over contact.

Principle circuit diagram	Switch functions /control behaviour for indicator movements in clockwise direction	Reference No. with reference letter for contact type: Creep	Magnetic snap
Limit transducer with one limit value			
	Opener	S 2	M 2
	Closer	S 1	M 1
Limit transducer as a change-over			
	Connections 1 and 4: Closer Connections 2 and 4: Opener	S 3	M 3

Limit transducer with two limit values			
	1st and 2nd limit value: Opener	S 22	M 22
	1st limit value: Opener 2nd limit value: Closer	S 21	M 21
	1st and 2nd limit value: Closer	S 11	M 11
	1st limit value: Closer 2nd limit value: Opener	S 12	M 12

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Limit transducer with 3 or 4 limit values is optionally available. The switch functions are indicated in a clockwise direction for indicator movements.

Stackability:

Triple GSG: Target value indicators are stackable

Quadruple GSG: 3 target value indicators can be stacked
A dot indicates which target value indicator in the stack is currently linked.

Example: M222.1 => the 1st, 2nd and 3rd contact (opener) can be stacked, the 4th contact (closer) is on the right-hand side

Smallest distance of the currently linked target value indicator: NG 100: 15°, NG 106: 10°

TECHNICAL DATA

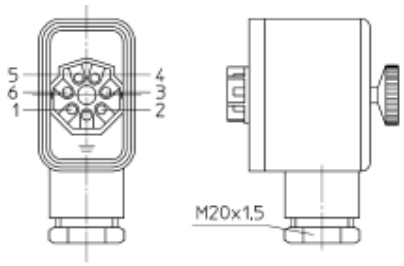
Contact pins	standard material silver/nickel, 10 µ gold-plated (Ag80Ni20-Au10µ)
Adjustment device	depending on the version: - cast in the centre of the viewing panel (for polycarbonate) or - made from nickel-plated brass, installed in the centre of the viewing panel
CE labelling	according to 89/336/EWG (EMV-RL), but limited to a maximum of 5 switching functions per minute

Electrical connection

depending on the design of the measuring device (see measuring device data sheet).

- Connection cable, length approximately 1 m, with M12 x 1.5 cable connections with a cable grip and free cable ends labelled according to the circuit diagram at left, with a protective earth conductor (green/yellow).

- Plug-in connection with M20 x 1.5 cable connection and cable grip, terminals numbered according to the circuit diagrams at left (see sketch), with terminal for protective earth conductor.



The exact position of the cable duct or the plug-in connection may be seen from the data sheets for the various devices.

Load tables for electromechanical limit transducers

Recommended contact load for resistive and inductive load and operation in air

Voltage according to DIN IEC 38		Creep contact			Magnetic snap contact		
		Resistive load		Inductive load	Resistive load		Inductive load
Direct voltage V	Alternating voltage V	Direct current mA	Alternating current mA	Alternating current cos φ > 0,7 mA	Direct current mA	Alternating current mA	Alternating current cos φ > 0,7 mA
220	230	40	45	25	100	120	65
110	110	80	90	45	200	240	130
48	48	120	170	70	300	450	200
24	24	200	350	100	400	600	250

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Recommended contact load for resistive and inductive load and operation in air (according to EN 60947-5-1:1991)

	Creep contact	Magnetic snap contact
Rating insulation voltage	60 < U_i ≤ 250 V	60 < U_i ≤ 250 V
Rating operating voltage U_{eff}	max. 250 V	max. 250 V
Nominal operating voltage Switch-on current Switch-off current Continuous current	 0,7 A 0,7 A 0,6 A	 1,0 A 1,0 A 0,6 A
Switching capacity	10 W 18 VA	30 W 50 VA[1)]

In the case of limit transducers with light spirals, the nominal operating current must be reduced by half, due to the small diameter of the spiral spring.

To ensure the greatest possible switching reliability, a knowledge of the complete electrical system is essential and all relevant partners have to be taken into account.

Special versions

- **Material**: Limit switches are subject to a certain amount of wear and tear, depending on the switching conditions, which is caused by both the mechanical load and the effects of electric heat and the electric arc.
  Because of the wide range of applications, the standard material used is silver/nickel, 10 µ gold-plated (Ag80Ni20Au10µ). This alloy has a particularly high resistance against the effects of the electric arc. The gold-plating increases the corrosion resistance and prevents the formation of an oxide layer. This increases the switching reliability for lower switching capacities. Precious metal alloyws (**gold and platinum alloys, silver palladium)** are available on request for particularly difficult applications.

- **Separate power circuits**: possible for double and multiple contacts.

- Limit transducer with 2 limit values, optionally with **linked limit values** or with a target value indicator and a **fixed distance between the contacts** (e.g. contact spacing 3 °)

- Adjustment device (MS-nickel-plated) with **fixed key**;
  Adjustment device made from CrNi steel with a loose or fixed key on request.

- Other plug-in connections on request

Accessories

Pulse-controlled multifunctional relay of the MSR type

Types: MSR 010 = 1 limit value
MSR 020 = 2 limit values and
MSR 011 = interval (no switching delay)

ORDER INFORMATION

Please add to the measuring device specifications:

- Type reference letter **S** or **M**
- Reference number for the switch function (see above).
- Possible special features

Our products are constantly in further development, therefore subjects to modifications.

[1)] only applies to **unfilled** devices; for filled manometers, the maximum is **20 W / 20 VA**!

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