Properties:

- ✓ 1-dimensional 2-wire tilt switch*)
- ✓ Measuring range +/- 90°
- ✓ Median resolution and precision
- ✓ Connection compatible for applications that previously implemented with mechanical switches (e.g. mercury, pendulum or reed switches).
- ✓ Suitable for industrial use
  - IP rating: IP65/67
  - CE mark

Areas of application:

- ✓ Industrial automation
- ✓ Agricultural and forestry machinery
- ✓ Commercial vehicles, tail lifts
- ✓ Crane and lifting technology

*) Patent protected by EP3564980

Function: The HNSC-B tilt switch monitors inclination deviations from the horizontal around a specified axis (X-axis).
If a tilt deviation occurs on the X-axis that is greater than the defined OFF monitoring range, the switch switches to the low-resistance operating state (NO CONTACT). The indicator LED of the switch signals the respective switching status. The tilt switch only switches back to the high-resistance operating state when the tilt deviation falls below the defined switching point again.
The switching point is set according to customer specifications in a range between 3° inclination and 45° inclination (see order code). The hysteresis between the switch-off and switch-on points is approx. 2° inclination. The measuring limit frequency is approx. 5 Hz.

Special advantages: Special advantages: The HNSC-B tilt switch is particularly suitable for retrofitting in existing applications for which a 1:1 replacement is required due to increased requirements (robustness, accuracy, RoHS directive, etc.). In many cases, the switch offers a simple solution for this.
Example: The replacement of a mechanical tilt switch with the HNSC-B at a PLC input can be implemented without further measures due to the very low power consumption.

Customer-specific variants: Switching hysteresis and cut-off frequency of the switch are based on many years of experience but can be customized according to the respective application.

Mechanical data:

Housing material:	Plastic
Dimensions:	40 x 20 x 20 mm

Measuring range:

Measuring range X-axis:	-90°...+90°
Switching angle X-axis:	according to customer preference between 2° and 45°

Connections:

Connection:	Cable, 2-wire, length as per customer request (max. 3m)
Alternatively:	Cable with M12 connector, 4-pole, A-coded, see connection diagram.

Output/interface:

Switch type:	normally open (NO) contact

Operating condition:

Ambient temperature:	-25° C ... 70° C
Protection class:	DIN IP 67

Accuracy[1]:

Accuracy:	+/- 0.5°			
Hysteresis:	2° +/- 0.25°			
Limit frequency:	1 Hz			
Measuring principle:	MEMS			
	Min.	Typ.	Max.	
Temp. coefficient (relative):	0.002	0.010	0.020	[°/K]
Temp. coefficient at 0° C:	0.050	0.250	0.500	[°]
Temp. coefficient at 50° C:	0.050	0.250	0.500	[°]
Temp. coefficient at -25° C:	0.100	0.500	1.000	[°]
Temp. coefficient at 70° C:	0.090	0.450	0.900	[°]

[1] All properties have been determined at a tilt of 8°. Different switching angles may lead to slightly deviating results.

Electrical data:

Operating voltage U_B:	9-30 VDC
Rated voltage:	24 VDC
Ripple voltage:	< 15 %
Rated current:	100 mA
Residual current consumption:	ca. 500 µA
Switching output:	polarized NO contact
Voltage drop, static:	5 V, max.

Function displays:

LED, yellow:	contact closed

EMV:

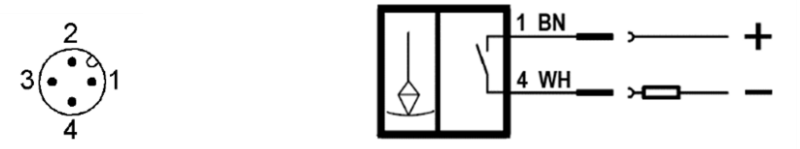
EU-Directive:	2014/30/EU EMV Directive, 2011/65/EU RoHS Directive
Applied standards:	EN 61000-6-3:2007 + A1:2011/ AC:2012 (emitted interference for residential, commercial and commercial and small businesses), EN 61000-6-2:2005 + AC:2005-09 (Interference immunity for industrial areas)

Functional safety:

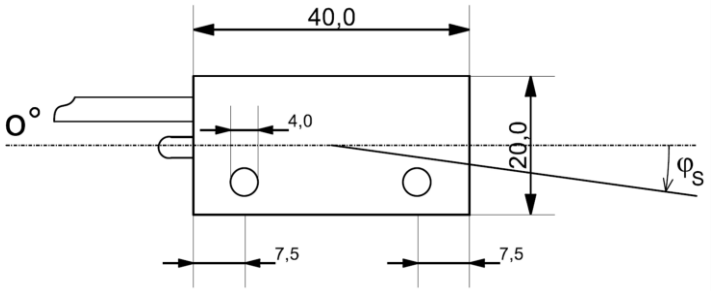
MTTFd:	1691 years
Service life:	20 years

The MTTF/service life values do not constitute binding quality and/or service life commitments; they are merely empirical values without binding character.
These values do not extend the limitation period for claims for defects or otherwise affect them in any way.

Connection diagram

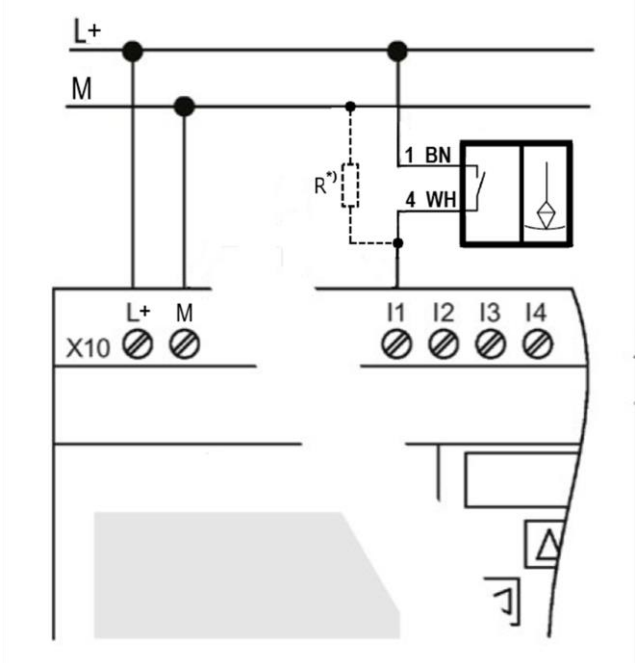


Mounting dimensions



The reference plane for the specified switching angle is the bottom of the housing.

Use with a PLC



Example: Wiring of the tilt switch HNSC-B to the digital input of a PLC

Please note: When using the tilt switch HNSC-B as a signal transmitter on a digital input of a PLC, the control system must tolerate a residual current of approx. 600 µA when detecting signal 0. Please observe the specifications in the technical data of the control system used.

R*): Alternatively, when using very sensitive digital inputs, a 2k resistor can be connected between the input used and ground.

Order Code:

HNSC-B-…-S-DC

Series
HNSC-B = two-wire tilt switch

Switching angle *)
03…45 = Switching angle in degrees of tilt

Power supply
DC = power supply DC

Switch type
S = Normally Open

***) Please specify the desired characteristics of the switch when ordering:**
Example: HNSC-B-***08***-S-DC, order designation for a switching angle of 8° tilt.
Please include the desired cable length (max. 3 m) when ordering.
If you wish to have the version with M12 connector, please specify it when placing your order.