



## Position Switch HLS 100 for series applications

Increased Functional Safety



### Description:

The position switch series HLS 100 has been specifically developed to detect the end position of safety-related devices on mobile machinery.

The position switches are designed for continuous use in safety circuits/safety functions as part of the functional safety of machines up to SIL 2 (IEC 61508) or PL d (ISO 13849).

The HLS 100 consists of two parts, the encoder magnet and the sensor unit.

Using two Hall sensors integrated into the sensor unit, the sensor detects the defined position (end position) of the magnet and transmits the switching condition "ON" if this position is detected, or otherwise the switching condition "OFF".

Switching conditions are output as permanent PWM signals.

During stable normal operation, the position switch cyclically performs internal diagnostic steps, which identify systematic and random errors.

Errors which occur are therefore detected immediately. The output signal is then deactivated completely and the sensor is restarted.

### Special features:

- Compact design
- Robust housing suitable for mobile applications
- High operating temperature range
- PWM output
- IP 67 male connector
- SIL 2 / PL d certification

### Technical data:

Input data	
Switching range <sup>1)</sup>	± 3 .. ± 9 mm
Switching distance magnet-sensor <sup>1)</sup>	0 .. 11 mm
Lateral offset magnet-sensor <sup>1)</sup>	± 6 mm
Plate thickness	Magnet: min. 5 mm Sensor: 6 .. 8 mm
Output data	
Type	PWM 50 Hz ± 3 % (push-pull)
Duty cycle of the output signal OFF (magnet outside the switching range)	26 ± 1 %
Duty cycle of the output signal ON (magnet within the switching range)	74 ± 1 %
Output current consumption	
High level	60 mA min. / 150 mA max.
Low level	30 mA min. / 110 mA max.
Output voltage	
High level	> +U <sub>B</sub> - 1.2 V with I = 10 mA
Low level	< GND + 0.2 V with I = 10 mA
Response times after activation	0.5 .. 1.5 s
Output signal response time	< 100 ms
Internal diagnosis interval	≤ 500 ms typ. (hardware) ≤ 1 s (memory elements)
Environmental conditions	
Nominal temperature range (function)	-30 .. +85 °C
Operating temperature range (failsafe)	-40 .. +100 °C
Storage temperature range	-60 .. +110 °C
CE mark	EN 61000-6-1 / 2 / 3 / 4
Functional safety	SIL 2 acc. to EN 61508 PL d acc. to ISO 13849
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz	25 g
Shock resistance acc. to DIN EN 60068-2-27 (6 ms)	50 g (half sine)
Protection class acc. to DIN EN 60529	IP 67
Other data	
Electrical connection <sup>2)</sup>	Male connector ITT Canon Sure Seal, 3 pole
Supply voltage	8 .. 32 V DC
Current consumption	< 10 mA (inactive output)
Residual ripple of supply voltage	≤ 5 %
Life expectancy	10 years
Weight	Sensor ~ 75 g Magnet ~ 25 g
Safety-related data	
Performance level	
Based on	DIN EN ISO 13849-1: 2008
PL	d
Architecture	Category 2
Safety Integrity Level	
Based on	DIN EN 61508: 2001 1oo1 - B
SIL	2

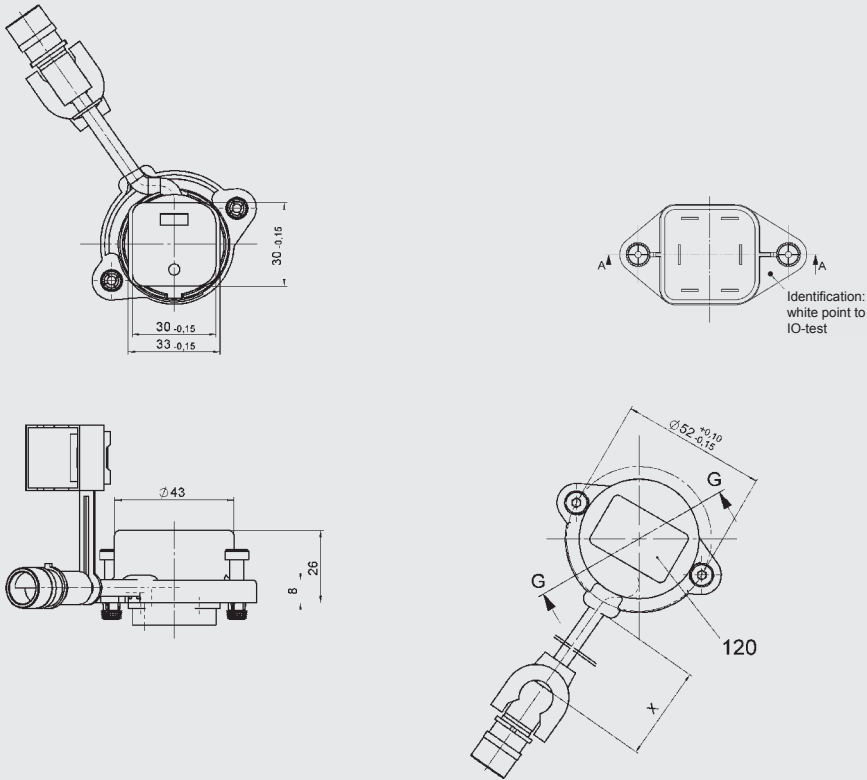
Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

**FS (Full Scale)** = relative to complete measuring range

<sup>1)</sup> All values apply to installation in magnetic steel plate of the required plate thickness. If installed in thicker steel plates or other materials, the entire system must be tested in detail.

<sup>2)</sup> Other connectors available on request

## Dimensions:



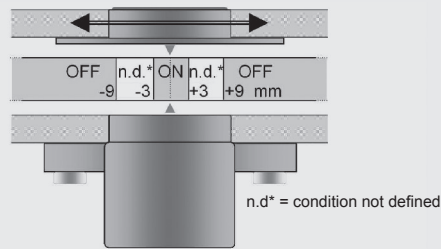
## Order details:

The electronic positioning switch HLS 100 has been especially developed for OEM customers and is available for minimum order quantities of 100 units per type.

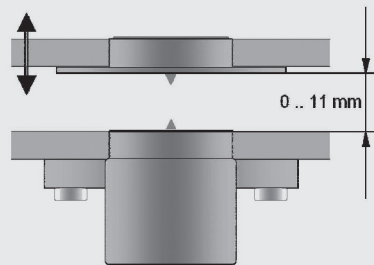
For precise specifications, please contact the Sales Department of HYDAC ELECTRONIC.

## Switching ranges:

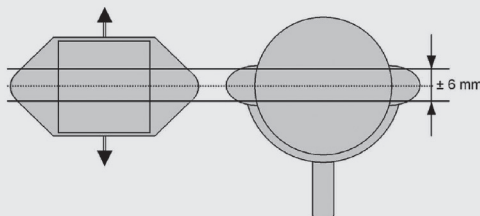
### Switching range:



### Switching distance:



### Lateral offset:



## Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

**HYDAC ELECTRONIC GMBH**  
 Hauptstraße 27, 66128 Saarbrücken  
 Germany  
 Telephone +49 (0)6897 509-01  
 Fax +49 (0)6897 509-1726  
 E-mail: [electronic@hydac.com](mailto:electronic@hydac.com)  
 Internet: [www.hydac.com](http://www.hydac.com)