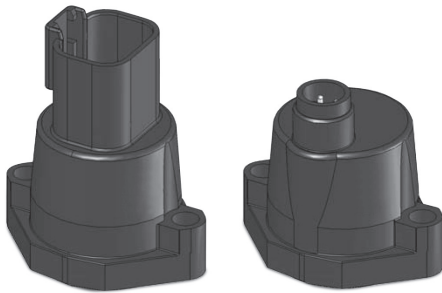


Spool Position Indicator HLS 200



Key features

The rugged design of HLS 200 results in several unique features. HLS 200 fulfills the safety regulations according to ISO 13849 at performance level "d" as well as providing high accuracy and repeatability in the switching points.

The operation principle of HLS 200 is based on light sensor technology; two opto-pairs are used in order to sense the position of a rod with a detection flag in direct contact to the spool. Special care has been given to the electronic circuit and components to assure a reliable and stable performance, such as a fast response time and a low current consumption.

The basic function of HLS 200 is to sense the neutral spool position, if the spool is moved out of neutral position the HLS 200 senses into which direction it is moved. The corresponding signals from the two outputs are used by the superior safety system as required by the application.

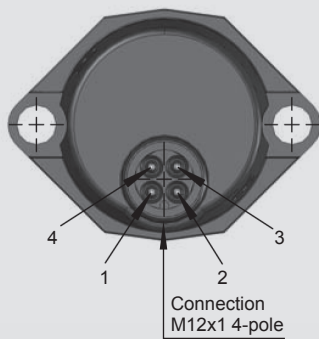
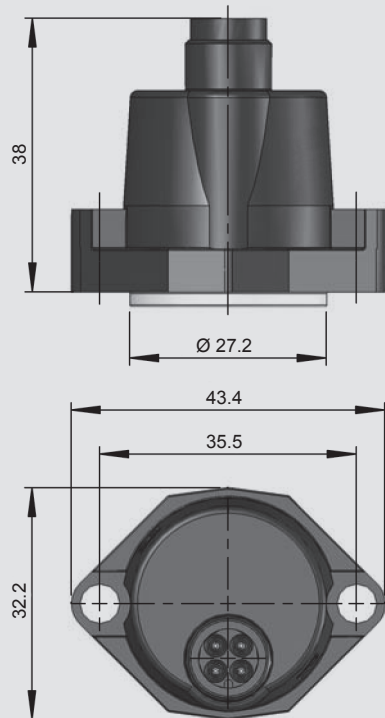
In case of a sensor error condition both outputs will be at low level.

Technical data

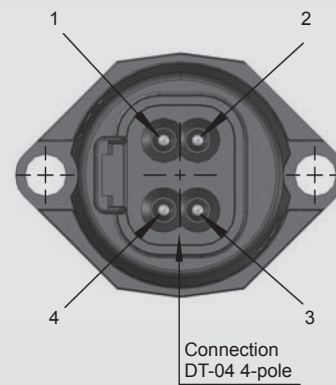
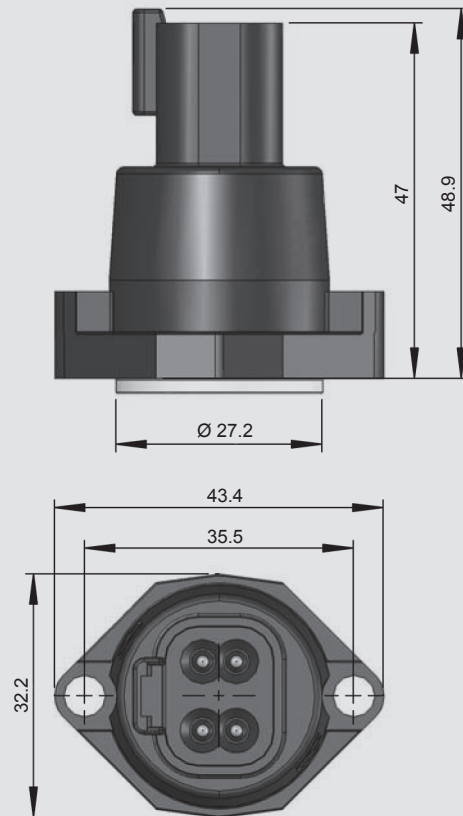
Sensor data	
Max. spool stroke:	+/- 7 mm
Nominal switching points:	±0.5 mm
Hysteresis:	~0.01 mm
Start up time:	<50 ms
Response time:	<10 ms
Response time sensor error condition:	<100 ms
Functional safety:	
PL = 'd', ISO 13849	
Electrical data	
Supply voltage U _{cc} :	9 – 36 V DC
Current consumption excluding outputs:	<25 mA
Output voltage high level:	>(+U _{cc} -2V)
Output voltage low level:	<(GND+1V)
Current per output:	max. 50 mA
Resistive load per output to GND:	<3.3 kΩ
Capacitive load per output to GND:	<33 nF
Environmental conditions	
Operating temperature range:	-30 °C to +60 °C
Protection class:	IP67, EN 60529
Temperature cycling:	-40 °C to +60 °C – IEC 60068-2-14
Damp heat cycling:	+25 °C to +60 °C at 95 % rH – IEC 60068-2-30
Corrosion protection:	96H – ISO 9227
Vibration:	<ul style="list-style-type: none"> ● Broadband IEC60068-2-64fh ● Shock IEC60068-2-27ea ● Free fall 1 m ● IEC60068-2-32Ed
Electromagnetic compability (EMC):	<ul style="list-style-type: none"> ● EN 61000-6-1 / 2 / 3 / 4 ● ISO 10605 ● ISO 7637-2, ISO 7637-3 ● ISO 11452-2, ISO 11452-4 ● EN 13309 ● EN 55025
Electrical connectors	
M12x1 (4 pole)	
DT-04 (4 pole)	

Dimensions

Type 1: M12 x 1



Type 2: DT-04



Connector

Pin 1	+ Ucc
Pin 2	Out (spool out (+))
Pin 3	GND
Pin 4	Out (spool in (-))

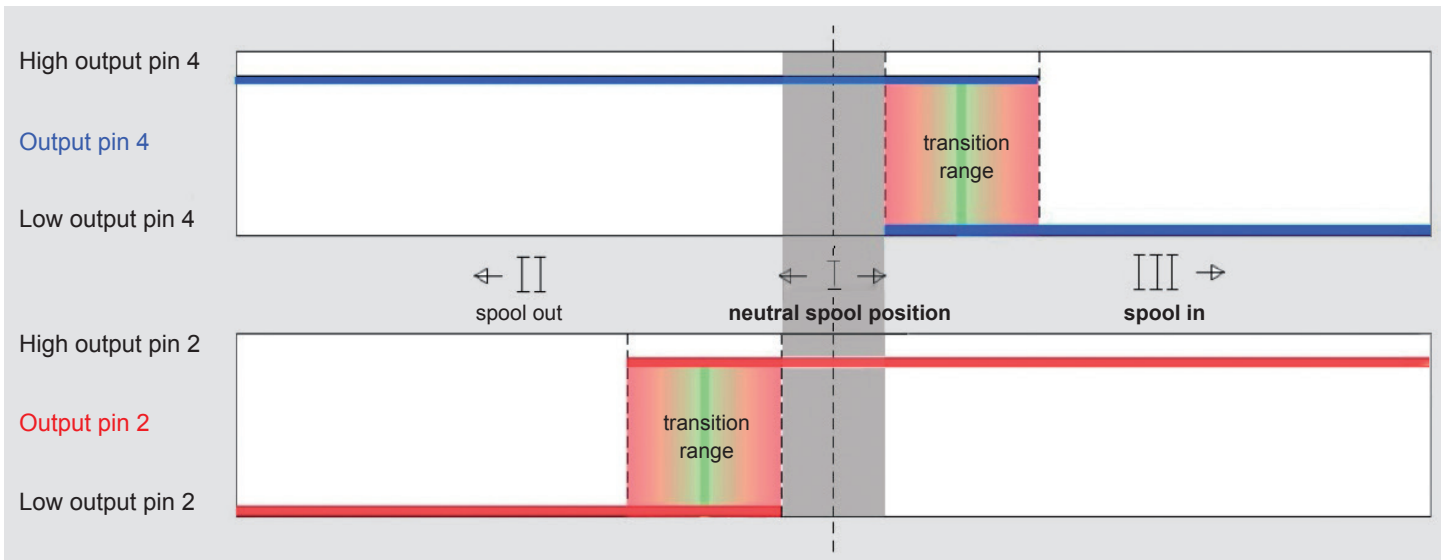
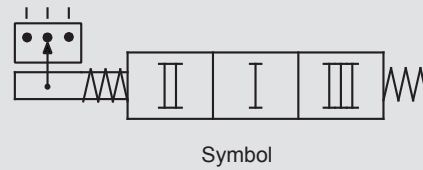
Function

For the spool in neutral position (I) both outputs O2 and O4 will be at high level.

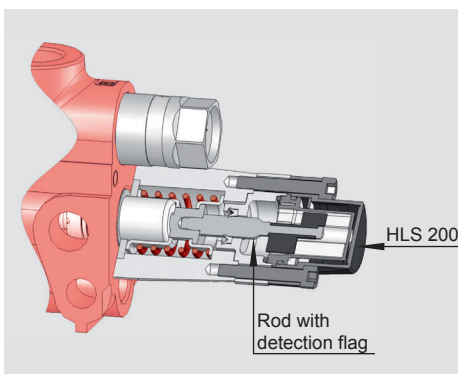
If the spool moves out of neutral position in the direction to "spool in" (III) O4 will be at low level and O2 at high level.

When the spool is out of neutral position in the direction to "spool out" (II) O2 will be at low level and O4 at high level.

In case of a sensor error condition, both O2 and O4 will be at low level simultaneously.



Typical interface towards a directional valve



HLS 200 assembled on a RS 210 sectional directional control valve.

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.



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