



Electronic Distance Sensor HLS 528

Description:

The distance sensor HLS 528 is a non-contact, highly compact sensor for measuring distances to fluids and objects.

By definition, its functional principle (measurement of sound transmission time) means that it operates with an extremely high resolution and measurement rate.

The HLS 528 is available for measuring ranges up to 6000 mm and is available in three signal output versions (2 switching outputs; 1 analogue output, either 4 .. 20 mA or 0 .. 10 V, plus 1 or 2 switching outputs).

The sensor can be adjusted simply and conveniently using two push-buttons and a self-explanatory menu structure. A 3-digit display indicates the latest distance and 2 three-colour LEDs also show the operating condition.

Special features:

- Contact-free distance measurement
- Measurement range up to 6000 mm
- Various signal output versions available
- Very high resolution and measurement rate
- Integrated temperature compensation
- 3-digit display to show the latest distance
- 2 three-colour LEDs to display the operating status
- Switching and switch-back points can be adjusted independently
- Selectable analogue output (optional)
- Only for use in depressurised applications

Technical data:

Input data					
Operating range	250;	350;	1300;	3400;	6000 mm
Blind zone	0 .. 30;	0 .. 85;	0 .. 200;	0 .. 350;	0 .. 600 mm
Maximum range	350;	600;	2000;	5000;	8000 mm
Resolution	≤ 0.18 mm				
Output data					
Accuracy	≤ ± 1 % of the latest measured value				
Repeatability	± 0.15 % of the latest measured value				
Versions	2 switch outputs		1 switch outp. +1 analog. outp. / 2 switch outputs + 1 analogue output		
Analogue output (optional)					
Signal; selectable (short-circuit resistant, invertible)			4 .. 20 mA, $R_{Lmax} = 100 \Omega (U_B \leq 20 V)$ $R_{Lmax} = 500 \Omega (U_B > 20 V)$ 0 .. 10 V, $R_{Lmin} = 100 k\Omega (U_B \geq 18 V)$		
Switch outputs					
Switching output (short-circuit resistant)	2 x PNP $I_{max} = 2 \times 200 \text{ mA}$		1 x PNP $I_{max} = 200 \text{ mA}$ 2 x PNP $I_{max} = 2 \times 200 \text{ mA}$		
Switching direction	N/O or N/C, adjustable				
Reaction time	50;	70;	110;	180;	240 ms
Environmental conditions					
Operating temperature	-25 °C .. +70 °C				
Storage temperature range	-40 °C .. +85 °C				
CE mark	DIN EN 60947-5-2 DIN EN 60947-5-7				
Protection class to EN 60529	IP 67				
Other data					
Supply voltage	9 .. 30 V DC without analogue output 18 .. 30 V DC with analogue output				
Time delay before availability	< 300 ms				
Residual ripple	± 10%				
No-load current consumption	≤ 80 mA				
Electrical connection	Male M12x1, 5 pole				
Housing	Brass, nickel-plated; Ultrasonic transducer with PEEK film				
Controls	2 push-buttons				
Display	3-digit, LED-display, 2 three-colour-LEDs				
Weight	150;	150;	150;	210;	270 g

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

Setting options:

All the settings available on the HLS 528 are grouped in two easy-to-navigate menus. In order to prevent unauthorised adjustment of the instrument, a key-lock can be set.

Setting ranges of the switching points and switch-back hystereses:

Switching point function distance

Oper. scanning range	Switching point*	Hysteresis*
250 mm	30 .. 350 mm	1 .. 320 mm
350 mm	85 .. 600 mm	1 .. 515 mm
1300 mm	200 .. 999 mm 100 .. 200 cm	1 .. 999 mm 100 .. 180 cm
3400 mm	350 .. 999 mm 100 .. 500 cm	1 .. 999 mm 100 .. 465 cm
6000 mm	600 .. 999 mm 100 .. 800 cm	1 .. 999 mm 100 .. 740 cm

Window function distance

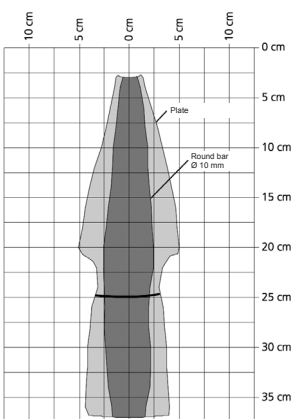
Oper. scanning range	Lower switch value*	Upper switch value*
250 mm	30 .. 348 mm	32 .. 350 mm
350 mm	85 .. 598 mm	87 .. 600 mm
1300 mm	200 .. 999 mm 100 .. 198 cm	202 .. 999 mm 100 .. 200 cm
3400 mm	350 .. 999 mm 100 .. 498 cm	352 .. 999 mm 100 .. 500 cm
6000 mm	600 .. 999 mm 100 .. 798 cm	602 .. 999 mm 100 .. 800 cm

* The increment for all units is 1 mm or cm.

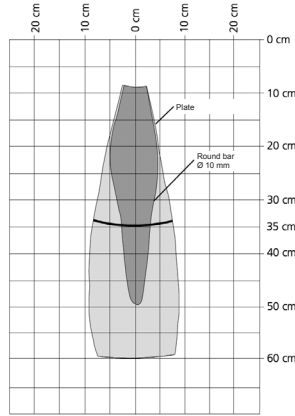
Recording ranges (for different objects):

The dark-grey areas specify the range in which the normal reflector (round bar) is detected safely. This is the typical working range of the sensors. The light grey areas illustrate the range in which a very large reflector, e.g. a very large plate, is still detected, provided it is aligned optimally to the sensor. Ultrasonic reflections cannot be evaluated outside the light grey area.

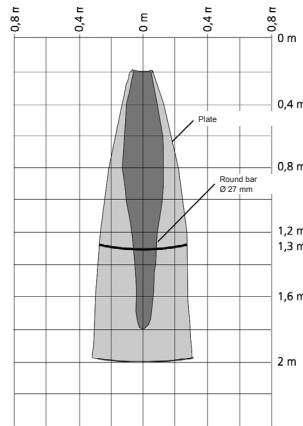
Operational scanning range 250 mm:



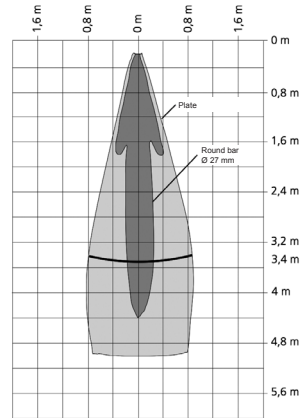
Operational scanning range 350 mm:



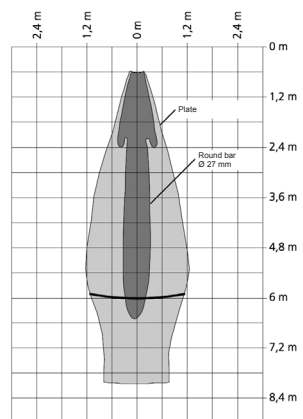
Operational scanning range 1300 mm:



Operational scanning range 3400 mm:



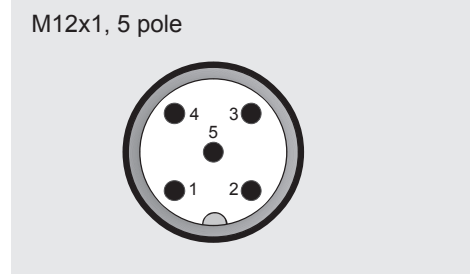
Operational scanning range 6000 mm:



Additional functions:

- Switching mode of the switching outputs adjustable (switching point function or window function)
- Switching direction of the switching outputs adjustable (N/C or N/O function)
- Switch-on delay adjustable from 0 to 20 seconds
- Energy saving mode

Pin connections:



Pin	HLS 528-2
1	+U _B
2	D1 (switching output 1)
3	-U _B (0 V)
4	D2 (switching output 2)
5	Synchronisation

Pin	HLS 528-3
1	+U _B
2	Analogue
3	-U _B (0 V)
4	D (switching output)
5	Synchronisation

Pin	HLS 528-5
1	+U _B
2	Analogue
3	-U _B (0 V)
4	D2 (switching output 2)
5	D1 (switching output 1)

Model code:

HLS 5 2 8 - X - XXXX - 000 - F

Mechanical connection

2 = M30x1.5

Electrical connection

8 = Male M12x1, 5 pole
(connector not supplied)

Output

2 = 2 switching outputs
3 = 1 switching output and 1 analogue output
5 = 2 switching outputs and 1 analogue output

Operational scanning range in mm

0250; 0350; 1300, 3400, 6000

Modification number

000 = Standard

Type of protection, front face of sensor

F = Foil

Note:

On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories:

Appropriate accessories, such as electrical connectors, can be found in the Accessories brochure.

Note:

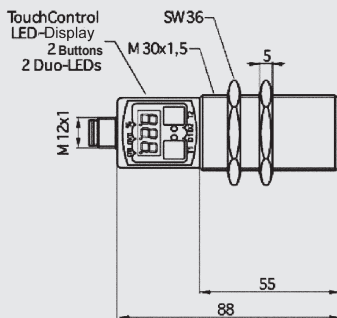
The information in this brochure relates to the operating conditions and applications described.

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

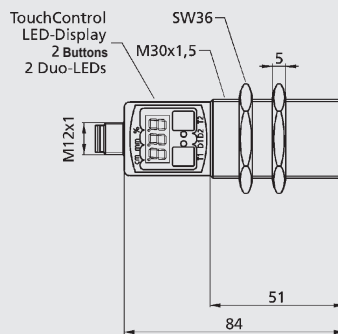
Subject to technical modifications.

Dimensions:

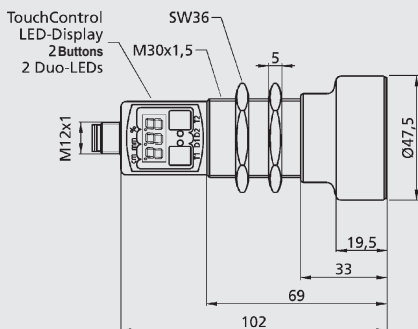
Operational scanning range:
250 mm



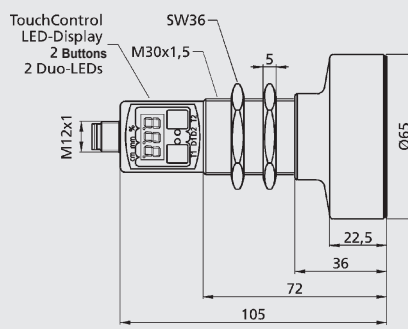
350 mm, 1300mm



Operational scanning range:
3400 mm



6000 mm



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