Distance Switch
HLS 528

Ultrasound | **Display**

Up to 2 switching outputs

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 sampling rate.

Thanks to the integrated temperature compensation, the sensors can be used in a wide temperature range.

The HLS 528 is available for measuring ranges up to 6000 mm, 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 most recent distance and two three-colour LEDs also show the operating condition.

Technical data:

Input data						
Operating range	mm	250	350	1300	3400	6000
Blind zone	mm	0 .. 30	0 .. 85	0 .. 200	0 .. 350	0 .. 600
Maximum range	mm	350	600	2000	5000	8000
Resolution			≤ 0.18 mm			
Mechanical connection			M30x1.5			
Output data						
Switching outputs			1; 2 PNP transistor outputs Switching current: 1 SP: max. 200 mA 2 SP: max. 200 mA per output Switching cycles: > 100 million			
Analogue output, permitted load resistance			Selectable (invertible): 4 .. 20 mA, R_{Lmax} = 100 Ω (U_B ≤ 20 V) R_{Lmax} = 500 Ω (U_B > 20 V) 0 .. 10 V, R_{Lmin} = 100 kΩ (U_B ≥ 18 V)			
Accuracy			≤ ± 1 % of the actual measured value			
Repeatability			± 0.15 % of the actual measured value			
Reaction time	ms	50	70	110	180	240
Environmental conditions						
Ambient temperature range			-25 °C .. +70 °C			
Storage temperature range			-40 °C .. +85 °C			
Max. tank pressure			Only for depressurised vessels			
CE mark			DIN EN 60947-5-2 DIN EN 60947-5-7			
Vibration resistance acc. to DIN EN 60068-2-6 (5 .. 2000 Hz)			≤ 2 g			
Shock resistance acc. to DIN EN 60068-2-27 (11 ms)			≤ 30 g			
Protection class acc. to DIN EN 60529[1)]			IP 67			
Other data						
Supply voltage			9 .. 30 V DC without analogue output 18 .. 30 V DC with analogue output			
Residual ripple of supply voltage			± 10 %			
Current consumption			≤ 80 mA			
Housing			Brass, nickel-plated; ultrasonic transducer with PEEK film			
Display			3-digit LED display, 2 three-colour LEDs			
Weight	g	~ 150	~ 150	~ 150	~ 210	~ 270

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

[1)] With mounted mating connector in corresponding protection class

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 switch points and switch-back hystereses:

Switch point function distance

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

Window function distance

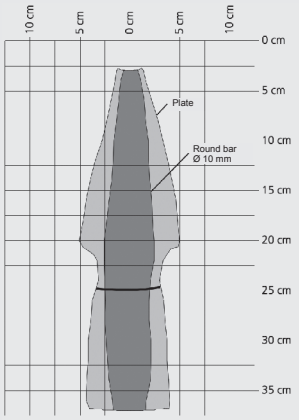
Operating range	Lower switch value*	Upper switch value*
250 mm	30 .. 348 mm	32 .. 350 mm
350 mm	85 .. 598 mm	87 .. 600 mm
1300 mm	200 .. 999 mm	202 .. 999 mm
	100 .. 198 cm	100 .. 200 cm
3400 mm	350 .. 999 mm	352 .. 999 mm
	100 .. 498 cm	100 .. 500 cm
6000 mm	600 .. 999 mm	602 .. 999 mm
	100 .. 798 cm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

* The increment for all devices is 1 mm or cm

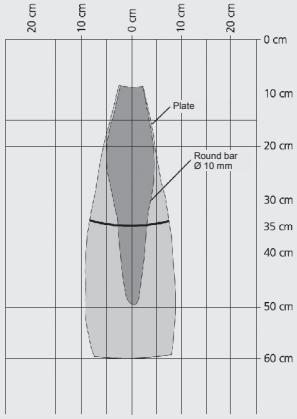
Recording ranges (for different objects):

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.

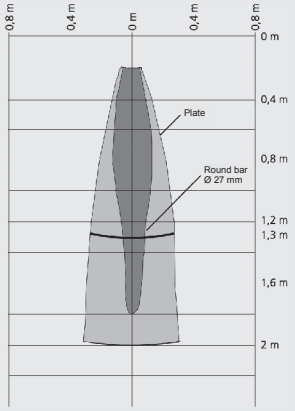
Operating range 250 mm:



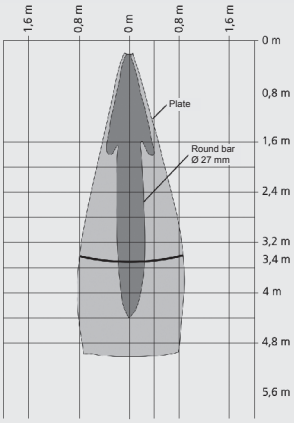
Operating range 350 mm:



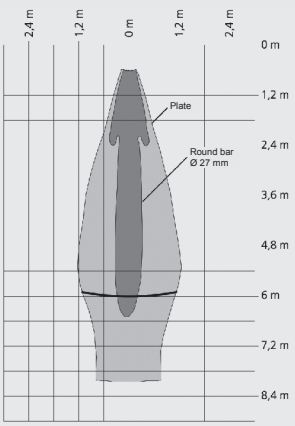
Operating range 1300 mm:



Operating range 3400 mm:



Operating range 6000 mm:

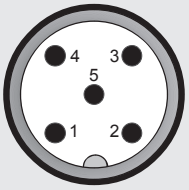


Additional functions:

- Switching mode of the switching outputs adjustable (switch 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:

M12x1, 5 pole



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

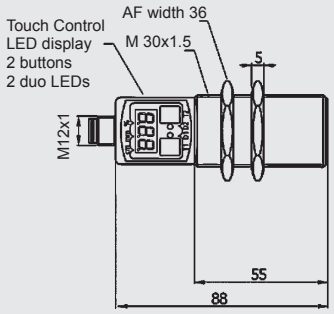
Pin	HLS 528-3
1	$+U_B$
2	Analogue
3	$-U_B$ (0 V)
4	D (switching output)
5	Synchronisation

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

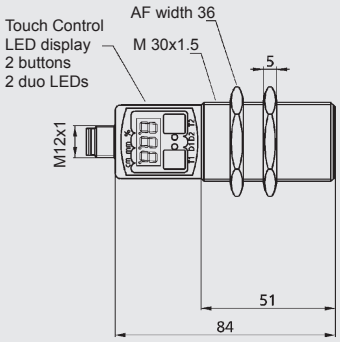
Dimensions:

Operating range:

250 mm

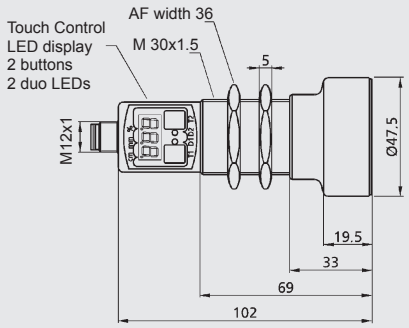


350 mm,1300 mm

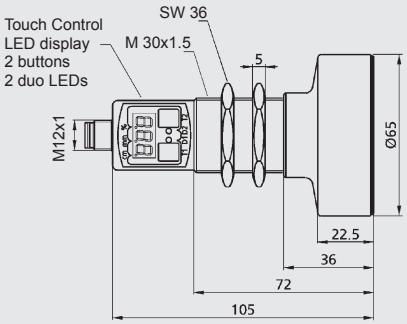


Operating range:

3400 mm



6000 mm



Model code:

HLS 5 2 8 – X – XXXX – 000 – F

Mechanical connection
2 = M30x1.5

Electrical connection
8 = male M12x1, 5 pole
(mating connector not supplied)

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

Operating range in mm
0250; 0350; 1300, 3400, 6000

Modification number
000 = standard

Design, front face of sensor
F = foil

Accessories:
Appropriate accessories, such as mating 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.

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
Internet: www.hydac.com