

# Electronic level switch TS-LSD 30

Rotatable, easily readable and rugged 14-segment LED display  
Range up to 669 mm



## Application

- Machine tools
- Hydraulics and pneumatics
- Cooling and lubrication systems
- Mechanical engineering

## Description

- Easily readable and rugged 14-segment LED display, 180° electronically rotatable
- User-friendly 3-button control
- Simple menu navigation (acc. to VDMA standards)
- Flexible initial operation provided by independent rotatability of M12x1 connector (320°) and display (330°)
- Two switching outputs and one analog output possible
- Ranges: 189, 309, 349, 459, 669 mm

The TS-LSD 30 is easily adaptable to the installation situation on initial operation. Based on a double housing construction rotatability of more than 300° the display can be adjusted independently from the electrical connection. The display always allows alignment to the operators view angle and the M12 connector can be positioned to the desired cable routing. The display is 180° electronically rotatable for overhead mounting situations.

The electrical connector housing and thread are made of stainless steel. Overtightening or plug blowoff is almost impossible.

Technical data	Type: TS-LSD 30
Sensor	Resistance measuring chain with reed switches and float
Resolution	< 6 mm
Response time	< 700 ms
Range	189, 309, 349, 459, 669 mm
Specific gravity range of the medium	0,7 g / cm <sup>3</sup>
Maximum working pressure	3 bar
Analog output	4 ... 20 mA, 0 ... 10 V DC
Contact output	DC PNP, max. 200 mA
Update time	200 ms
Media temperature	-20 ... +80 °C
Ambient temperature	-20 ... +80 °C
Process connection	G 3/4 A DIN 3852-E or 3/4 NPT
Electrical connection	Connector M12x1 IP 67

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Technical data	Type: TS-LSD 30
Material	
Wetted parts	
Pressure Connection	CrNi-Steel 316Ti
Guide tube	CrNi-Steel 316Ti
Float	NBR (see „Media compatibility“)
Housing	
Case	CrNi-Steel 304
Display head	PC + ABS-Blend
Keypad	TPE-E
Display window	PC
Operating voltage $U_B$	15 ... 35 V DC
Output signal and permitted max. load $R_A$	4 ... 20 mA, 3-wire $R_A \leq 0,5 \text{ k}\Omega$ (Output signal 4 ... 20 mA or 0 ... 10 V DC, has to be specified when ordering) 0 ... 10 V DC, 3-wire $R_A > 10 \text{ k}\Omega$
Offset adjustment (display)	Max. +1500 mm
Scaling (display and analogue signal)	
Zero point	Max. +25 % of span
Final value	Max. -25 % of span
Measuring element	
Resolution	< 6 mm
Response time	< 700 ms
Switching and indication accuracy	1 % of span (display $\pm 1$ digit) at room temperature
Current consumption	Max. 100 mA
Total current consumption	Max. 600 mA incl. switching current
Switching output	Adjustable individually by external keypad
Type	transistor switching output PNP
Numbers of outputs	1 or 2
Output function	NO / NC; window- and hysteresis function freely adjustable
Switching voltage	Operating voltage $U_B$ minus 1 V DC
Switching current	SP1: 250 mA SP2: 250 mA
Settling time	$\leq 200$ ms
Accuracy	2,5 mm steps
Isolating voltage	500 DC V
Display	
Principle	14-segment LED, red 4-digit, figures height 9 mm, 180° electronically rotatable
Accuracy	$\leq 1,0$ % of range $\pm 1$ Digit
Permitted temp. ranges	
Media	-20 ... +80 °C
Environment	-20 ... +80 °C
Storage	-20 ... +80 °C
permitted humidity	45 ... 75 % relativid
Nominal temp. range	0 ... +80 °C
Reference conditions	Relative humidity: 45 ... 75 % acc. to IEC 61298-1
RoHS-conformity	Yes
CE- conformity	
EMV-guideline	2004/108/EG, EN 61326-2-3 emission (group 1, class B) interference immunity (industrial use)
Weight	~ 300 g
Electrical protection class	
Overvoltage protection	40 V DC
Short-circuit strength	S+ / SP1 / SP2 against U-
Polarity protection	U+ against U-

## Assembled cable and connection accessories (see page 208)



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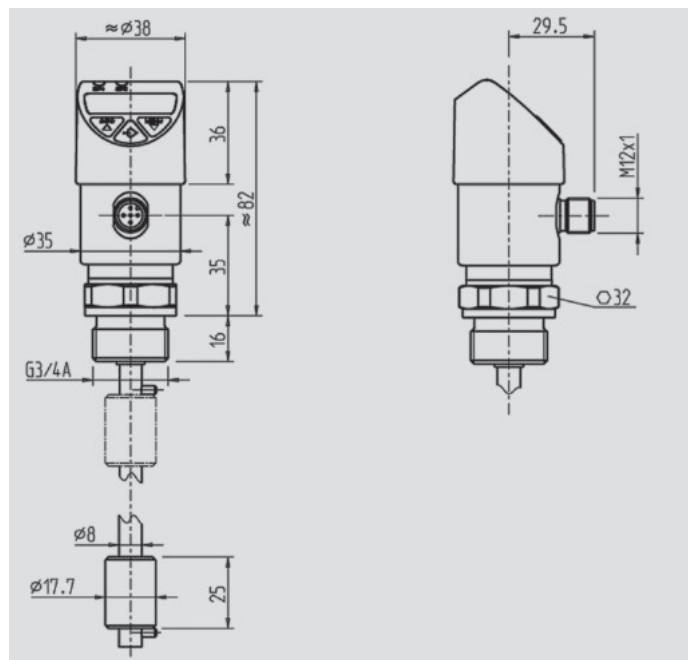
## Media compatibility

Test following ISO 7620, section 6, table 1

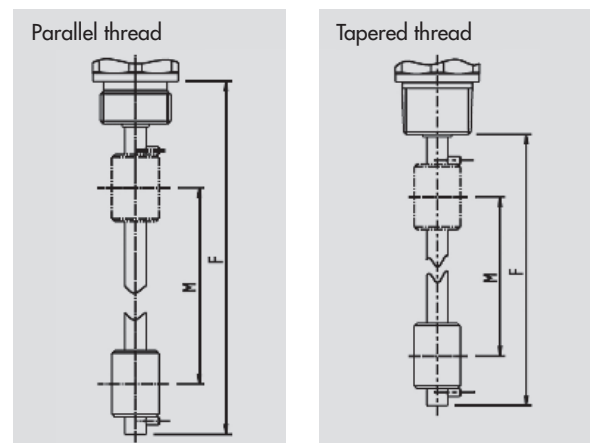
Medium		Standard
Mineral oil	HLP	per DIN 51524
Aqueous solution	HFC	per VDMA 24317
Organic ester	HFD-U	per VDMA 24317
Triglyzeride (rape oil)	HETG	per VDMA 24568
Synthetc ester	HEES	per VDMA 24568
Poyglycols	HEPG	per VDMA 24568

## Dimensional drawing

Level switch



Insertion length



F	M
250	189
370	309
410	349
520	459
730	669

F	M
250	189
370	309
410	349
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730	669

Connection diagram

Circular connector M12x1, 4 pin

Assignment

U <sub>+</sub>	U <sub>-</sub>	S <sub>+</sub>	SP1	SP2
1	3	2	4	2

Circular connector M12x1, 5 pin

Assignment

U <sub>+</sub>	U <sub>-</sub>	S <sub>+</sub>	SP1	SP2
1	3	5	4	2

Process connections

G1	L1
G 3/4 A DIN 3852-E	16

G1	L1
3/4 NPT	20

**Legend:**

U <sub>+</sub>	positive operating voltage
U <sub>-</sub>	negative operating voltage
SP1	switching output 1
SP2	switching output 2
S <sub>+</sub>	analog output