

# Electronic level switch with display

## Model LSD-30

WIKA data sheet LM 40.01

### Applications

- Machine tools
- Hydraulic aggregates
- Tank monitoring
- Machine building

### Special features

- Easily-readable, robust display
- Intuitive and fast setup
- Easy and flexible mounting configurations

### Description

#### Award-winning in design and functionality

The successful design and the excellent functionality of the WIKA switch family were already confirmed by winning the "iF product design award 2009" for the pressure switch model PSD-30.

The robust LED display has been designed using 9 mm high characters (the largest possible) and with a slight incline in order to make reading the level as easy as possible from a long way off. A 14-segment display has been used, since it represents text very well.

The 3-key operation makes simple, intuitive menu navigation possible, with no need for additional assistance. The menu navigation is designed in accordance with the latest VDMA standard. The VDMA standard for fluid sensors (24574-4, part 4 - level switches) has the aim of considerably simplifying the use of level switches by standardising menu navigation and display.

The control keys have been designed as large as possible and are arranged ergonomically to ensure fast and easy adjustments. Operation without any additional assistance is made easier through the tactile feedback.



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#### Customised installation

The installation of the model LSD-30 level switch can be flexibly adapted to the individual mounting situation. Due to the almost unlimited rotation of the display and case by more than 300°, the display can be adjusted independently of the electrical connection. The display can thus always be aligned to face the operator, and the M12 x 1 connection positioned to suit the desired cable routing.

#### High quality

During development of the WIKA switch family a high value was placed on a robust design and the selection of appropriate materials suited to machine-building applications. For this reason the case and the threaded connection of the electrical connector are made from stainless steel. Overwinding or tearing off the connector is therefore virtually impossible.

## Measuring ranges

### for process connection G 3/4 A

|                        |      |       |       |       |       |
|------------------------|------|-------|-------|-------|-------|
| Sensor length F (mm)   | 250  | 370   | 410   | 520   | 730   |
| Measuring range (mm)   | 189  | 309   | 349   | 459   | 669   |
| Measuring range (inch) | 7.44 | 12.17 | 13.74 | 18.07 | 26.34 |

### for process connection 3/4 NPT

|                        |      |       |       |       |       |
|------------------------|------|-------|-------|-------|-------|
| Sensor length F (mm)   | 250  | 370   | 410   | 520   | 730   |
| Measuring range (mm)   | 205  | 325   | 365   | 475   | 684   |
| Measuring range (inch) | 8.07 | 12.80 | 14.37 | 18.70 | 26.93 |

Insertion lengths see "Dimensions in mm"

### Specific gravity range of the medium

≥ 0.7 g/cm<sup>3</sup>

## Output signal

| Switching output |     | Analogue signal        |
|------------------|-----|------------------------|
| SP1              | SP2 |                        |
| PNP              | -   | 4 ... 20 mA (3-wire)   |
| PNP              | -   | DC 0 ... 10 V (3-wire) |
| PNP              | PNP | -                      |
| PNP              | PNP | 4 ... 20 mA (3-wire)   |
| PNP              | PNP | DC 0 ... 10 V (3-wire) |

Optionally also available with an NPN instead of a PNP switching output.

### Switching thresholds

Switch point 1 and 2 are both individually adjustable

### Switching functions

Normally open, normally closed, window, hysteresis  
Freely adjustable

### Switching voltage

Power supply - 1 V

### Switching current

max. 250 mA per switching output

### Adjustment accuracy

2.5 mm steps

### Response time

< 200 ms

### Lettering (display and analogue signal)

Zero point: max. +25 % of span

Full scale: max. -25 % of span

### Offset adjustment (display)

max. +1,500 mm

### Load

- Analogue signal 4 ... 20 mA: ≤ 500 Ω
- Analogue signal DC 0 ... 10 V: > 10 kΩ

## Display

14-segment LED, red, 4-digit, character size 9 mm

Display can be turned electronically through 180°

### Update

200 ms

## Voltage supply

### Power supply U<sub>+</sub>

DC 15 ... 35 V

### Current consumption

Switching outputs with

- Analogue signal 4 ... 20 mA: 70 mA
- Analogue signal DC 0 ... 10 V: 45 mA
- without analogue signal: 45 mA

### Total current consumption

max. 600 mA (incl. switching current)

## Measuring element

Resistance measuring chain with reed switches and float

### Resolution

< 6 mm

### Response time

< 700 ms

### Maximum operating pressure

3 bar

### 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 |
| Triglyceride (rape oil) | HETG  | per VDMA 24568 |
| Synthetic ester         | HEES  | per VDMA 24568 |
| Polyglycols             | HEPG  | per VDMA 24568 |

## Accuracy data

### Switching output

1 % of span

### Display

1 % of span ±1 digit

### Analogue signal

≤ ±0.5 % of span

## Reference conditions

|                       |                                     |
|-----------------------|-------------------------------------|
| Temperature:          | 15 ... 25 °C                        |
| Atmospheric pressure: | 950 ... 1,050 mbar                  |
| Humidity:             | 45 ... 75 % r. h.                   |
| Nominal position:     | Process connection lower mount (LM) |
| Power supply:         | DC 24 V                             |
| Load:                 | see "Output signal"                 |

## Operating conditions

### Permissible temperatures

|          |                |
|----------|----------------|
| Medium:  | -20 ... +80 °C |
| Ambient: | -20 ... +80 °C |
| Storage: | -20 ... +80 °C |

### Humidity

45 ... 75 % r. h.

### Mounting position

vertical

## Process connections

### Available connections

| Standard            | Thread |
|---------------------|--------|
| DIN 3852-E          | G ¼ A  |
| ANSI / ASME B1.20.1 | ¼ NPT  |

Other connections on request.  
Details on the sensor dimensions see "Dimensions in mm".

### Sealings

| for connections per DIN 3852-E |         |
|--------------------------------|---------|
| Standard                       | NBR     |
| Option                         | Without |
| Option                         | FPM/FKM |

## Materials

### Wetted parts

|               |                                 |
|---------------|---------------------------------|
| Level sensor: | Stainless steel 316Ti           |
| Float:        | NBR (see "Media compatibility") |

### Non-wetted parts

|                 |                     |
|-----------------|---------------------|
| Case:           | Stainless steel 304 |
| Keyboard        | TPE-E               |
| Display window: | PC                  |
| Display head:   | PC+ABS-Blend        |

## Electrical connections

### Connections

- Circular connector M12 x 1, 4-pin
- Circular connector M12 x 1, 5-pin <sup>1)</sup>

1) Only for version with two switching outputs and additional analogue signal

### Ingress protection


IP 65 and IP 67


The stated ingress protection (per IEC 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

### Electrical safety

|                              |                                   |
|------------------------------|-----------------------------------|
| Short-circuit resistance:    | S <sub>+</sub> / SP1 / SP2 vs. U- |
| Reverse polarity protection: | U <sub>+</sub> vs. U-             |
| Insulation voltage:          | DC 500 V                          |
| Overvoltage protection:      | DC 40 V                           |

### Connection diagram

| Circular connector M12 x 1 (4-pin)  |                  |
|---|------------------|
|  | U <sub>+</sub> 1 |
|   | U <sub>-</sub> 3 |
|   | S <sub>+</sub> 2 |
|   | SP1 4            |
|   | SP2 2            |

| Circular connector M12 x 1 (5-pin)   |                  |
|--|------------------|
|  | U <sub>+</sub> 1 |
|  | U <sub>-</sub> 3 |
|  | S <sub>+</sub> 5 |
|  | SP1 4            |
|  | SP2 2            |

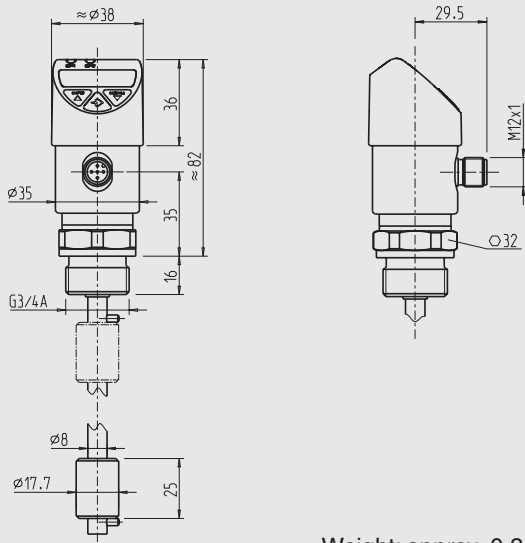
### Legend:

|                |                     |
|----------------|---------------------|
| U <sub>+</sub> | Power supply        |
| U <sub>-</sub> | Reference potential |
| SP1            | Switching output 1  |
| SP2            | Switching output 2  |
| S <sub>+</sub> | Analogue output     |

## Dimensions in mm

### Level switch

with M12 x 1 circular connector  
4-pin / 5-pin



Weight: approx. 0.3 kg

## CE conformity

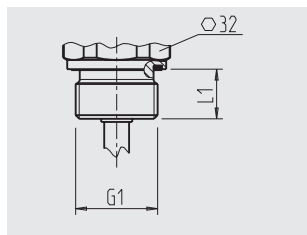
### EMC directive

2004/108/EC, EN 61326-2-3 emission (group 1, class B) and interference immunity (industrial application)

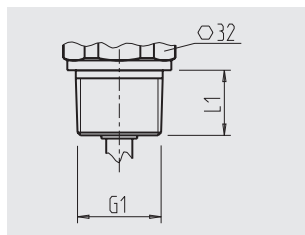
### RoHS conformity

2011/65/EU

### Process connections

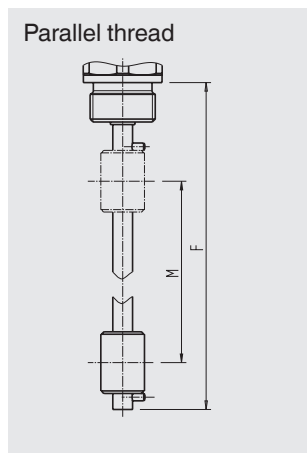


| G1                 | L1 |
|--------------------|----|
| G 3/4 A DIN 3852-E | 16 |

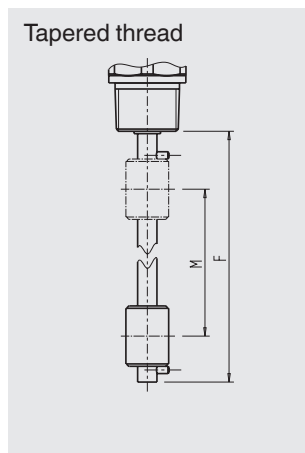


| G1      | L1 |
|---------|----|
| 3/4 NPT | 20 |

### Insertion lengths



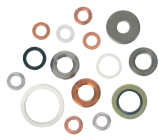
| F   | M   |
|-----|-----|
| 250 | 189 |
| 370 | 309 |
| 410 | 349 |
| 520 | 459 |
| 730 | 669 |



| F   | M   |
|-----|-----|
| 250 | 205 |
| 370 | 325 |
| 410 | 365 |
| 520 | 475 |
| 730 | 684 |

## Accessories and spare parts

### Sealings



| Description                                | Order no. |
|--|-----------|
| NBR profile sealing G 3/4 DIN 3852-E       | 1100378   |
| FPM / FKM profile sealing G 3/4 DIN 3852-E | 1158309   |

### Connectors with moulded cable



| Description  | Temperature range | Cable diameter | Order no. |
|--|-------------------|----------------|-----------|
| Straight version, cut to length, 4-pin, 2 m PUR cable, UL listed, IP 67  | -20 ... +80 °C    | 4.5 mm         | 14086880  |
| Straight version, cut to length, 4-pin, 5 m PUR cable, UL listed, IP 67  | -20 ... +80 °C    | 4.5 mm         | 14086883  |
| Straight version, cut to length, 4-pin, 10 m PUR cable, UL listed, IP 67 | -20 ... +80 °C    | 4.5 mm         | 14086884  |
| Straight version, cut to length, 5-pin, 2 m PUR cable, UL listed, IP 67  | -20 ... +80 °C    | 5.5 mm         | 14086886  |
| Straight version, cut to length, 5-pin, 5 m PUR cable, UL listed, IP 67  | -20 ... +80 °C    | 5.5 mm         | 14086887  |
| Straight version, cut to length, 5-pin, 10 m PUR cable, UL listed, IP 67 | -20 ... +80 °C    | 5.5 mm         | 14086888  |



|  |                |        |          |
|--|----------------|--------|----------|
| Angled version, cut to length, 4-pin, 2 m PUR cable, UL listed, IP 67  | -20 ... +80 °C | 4.5 mm | 14086889 |
| Angled version, cut to length, 4-pin, 5 m PUR cable, UL listed, IP 67  | -20 ... +80 °C | 4.5 mm | 14086891 |
| Angled version, cut to length, 4-pin, 10 m PUR cable, UL listed, IP 67 | -20 ... +80 °C | 4.5 mm | 14086892 |
| Angled version, cut to length, 5-pin, 2 m PUR cable, UL listed, IP 67  | -20 ... +80 °C | 5.5 mm | 14086893 |
| Angled version, cut to length, 5-pin, 5 m PUR cable, UL listed, IP 67  | -20 ... +80 °C | 5.5 mm | 14086894 |
| Angled version, cut to length, 5-pin, 10 m PUR cable, UL listed, IP 67 | -20 ... +80 °C | 5.5 mm | 14086896 |

### Ordering information

Model / Sensor length F / Output signal / Process connection / Sealing / Accessories and spare parts

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## Drucksachenänderung/Modification notice

**Dokument/Document**      **Data sheet LSD-30**  
**Sprache/Language**        **GB**  
**Ausgabe/Version**         **01/2014**  
**Dateiname/File name**     **DS\_LM4001\_GB**

Beiliegend erhalten Sie die aktuelle Ausgabe der oben genannten Technischen Dokumentation, die vorherige Ausgabe wird hiermit ungültig./Enclosed please find the current version of the above mentioned document. The previous edition becomes invalid.

Folgende Änderungen wurden durchgeführt/Following modifications have been made:

| Seite<br>Page | Änderungen (Text, Fotos, Zeichnungen)<br>Modifications (text, photo, drawings)   |
|---------------|--|
| 1             | Changed: Applications  |
| 2             | Changed: Output signal<br>- Analogue signal (3-wire) added<br><br>Changed: Accuracy<br>- Switching output and display splitted |
| 3             | Corrected: Process connections, Sealings<br><br>Changed: Materials, wetted parts<br>- Float NBR added                          |
| 5             | New: Accesories<br>- Connectors added  |

Ablagehinweis für den WIKA Gesamtkatalog, Rubrik  
 Sorting information for WIKA Full Catalog, section  
**LM, Level measurement**

Bitte teilen Sie Ihren Mitarbeitern diese Änderungen mit.  
 Please forward these modifications to your colleagues.

| Bearbeitet/Modified |    |             | Geprüft/Checked |         |            | Freigegeben/Approved |    |          |
|---------------------|----|-------------|-----------------|---------|------------|----------------------|----|----------|
| 07.01.2014          | MS | E.Lungavita | 07.01.2014      | TR-V-PM | E. Bossart | 07.01.2014           | MS | N. Kroth |

Alle gültigen Technischen Dokumentationen finden Sie online unter [www.wika.de](http://www.wika.de)  
 All valid Technical Documentation can be found at [www.wika.de](http://www.wika.de)

## History zu Datenblatt LSD-30 D

Sprache: D  
 Seitenzahl: 4  
 Erstellt von: E. Lungavita  
 Abteilung: MS  
 Erstveröffentlichung: 01/2012

### Beschreibungen zum Änderungsindex

| Index | Seite | geändert   | von          | Abteilung | am        | Ausgabe |
|-------|-------|--|--------------|-----------|-----------|---------|
| a     |       | Neues Datenblatt   | E. Lungavita | MS        | 23.1.2012 | 01/2012 |
| b     | 1     | Changed: Applications  | E. Lungavita | MS        | 7.1.2014  | 01/2014 |
|       | 2     | Changed: Output signal<br>- Analogue signal (3-wire) added<br><br>Changed: Accuracy<br>- Switching output and display splitted |              |           |           |         |
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|       |       |  |              |           |           |         |
|       |       |  |              |           |           |         |