Electronic temperature switch with display
Model TSD-30

Applications

- Machine tools
- Hydraulics
- Cooling and lubricant systems
- Machine building

Special features

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

Temperature switch model TSD-30

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 PSD-30 pressure switch.

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 temperature 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 (24574-2, part 2 temperature switches) has the aim of considerably simplifying the use of temperature 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.

Customised installation
The installation of the TSD-30 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.

Data sheets showing similar products:
Electronic pressure switch with display; model PSD-30; see data sheet PE 81.67
Electronic level switch with display; model LSD-30; see data sheet LM 40.01

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Measuring ranges

Temperature	Standard	Option
°C	-20 ... +80	-20 ... +120
°F	-4 ... +176	-4 ... +248

At temperatures above 80 °C the process connection must not be immersed into the medium.

Display

14-segment LED, red, 4-digit, character size 9 mm
Display can be turned electronically through 180°
Update: 200 ms

Output signal

Switching output 1	Switching output 2	Analogue signal
PNP	-	4 ... 20 mA
PNP	-	DC 0 ... 10 V
PNP	PNP	-
PNP	PNP	4 ... 20 mA
PNP	PNP	DC 0 ... 10 V

Alternatively also available with NPN rather than PNP switching output.

Temperature offset adjustment
± 3 °C

Scale setting
Zero point: max. +25 % of span
Final value: max. -25 % of span

Analogue signal
Load
- Current: ≤ 500 Ω
- Voltage: > 10 kΩ

Switching output
Switching output 1 and 2 are individually adjustable

Function
- Normally open / closed: freely adjustable
- Window and hysteresis: freely adjustable

Switching voltage: Power supply − 1 V
Switching current: max. 250 mA per switching output
Adjustment accuracy: ≤ 0.5 % of span

Voltage supply

Power supply
DC 15 ... 35 V

Current consumption
max. 100 mA

Total current consumption
max. 600 mA (incl. switching current)

Measuring element

Pt1000, 2-wire, DIN EN 60751 / class A

Insertion length (F)

F in mm					
25	50	100	150	250	350

Response time
T05 < 5 s (per DIN EN 60751)
T09 < 10 s (per DIN EN 60751)

Maximum working pressure
150 bar

Accuracy

Analogue signal
≤ ± 0.5 % of span

Switching output
≤ ± 0.8 % of span

Display
≤ ± 0.8 % of span ± 1 digit

Temperature sensor
$\pm (0.15\ K + 0.002 \cdot |t|)$

|t| is the value of the temperature in °C without consideration of the sign.

The actually achievable accuracy is significantly determined by the mounting situation (immersion depth, sensor length, operating conditions). This is especially the case for large temperature gradients between the environment and the medium.

Reference conditions

Temperature: 15 ... 25 °C / 59 ... 77 °F
Atmospheric pressure: 950 ... 1050 mbar
Humidity: 45 ... 75 % relative
Nominal position: Process connection lower mount (LM)
Supply voltage: DC 24 V
Load: see "Output signal"

Operating conditions

Temperatures and humidity

Ambient temperature: -20 ... +80 °C / -4 ... 176 °F
Storage temperature: -20 ... +80 °C / -4 ... 176 °F
Permissible humidity: 45 ... 75 % relative

Mechanics

Mounting position: vertical

Process connections

Connections

Standard	Thread	
DIN 3852-E	G 1/4 A	G 1/2 A
ANSI / ASME B1.20.1	1/4 NPT	1/2 NPT

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

Sealings

for connections per DIN 3852-E	
Standard	without
Option	NBR, FPM / FKM

Materials

Wetted parts

Temperature sensor: Stainless steel 316Ti

Non-wetted parts

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

Approvals, directives and certificates

CE conformity

EMC directive: 2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)
ROHS conformity: Yes

Electrical connections

Connections

Circular connector M12 x 1, 4-pin
Circular connector M12 x 1, 5-pin [1)]

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

Ingress protection

IP 65 and IP 67

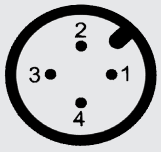
The stated ingress protection (per IEC 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

Electrical safety

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

Connection diagram

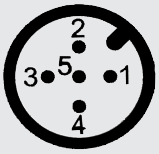
Circular connector M12 x 1, 4-pin



Assignment

U_+	U-	S_+	SP1	SP2
1	3	2	4	2

Circular connector M12 x 1, 5-pin



Assignment

U_+	U-	S_+	SP1	SP2
1	3	5	4	2

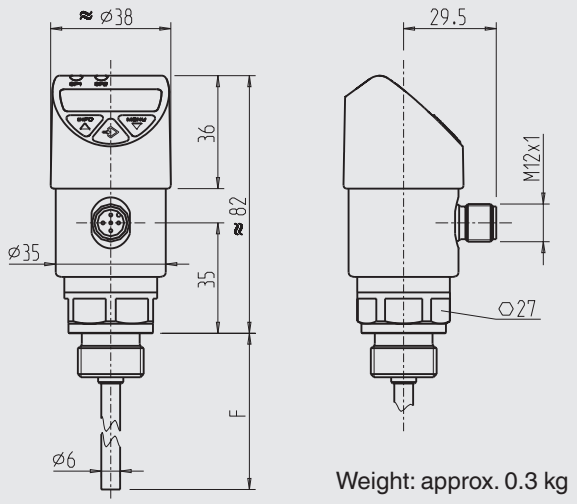
Legend:

U_+	Positive supply voltage
U-	Negative supply voltage
SP1	Switching output 1
SP2	Switching output 2
S_+	Analogue output

Dimensions in mm

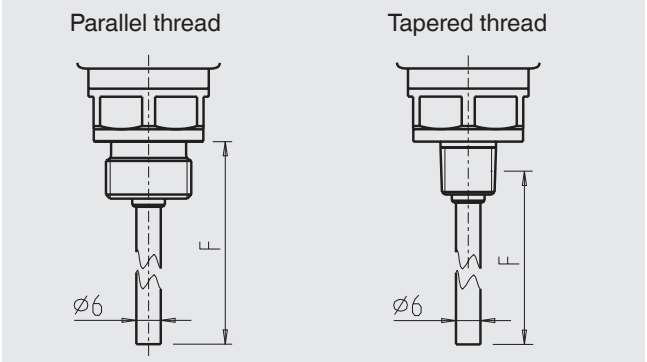
Temperature switch

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



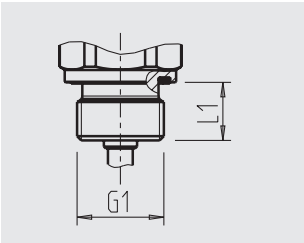
Weight: approx. 0.3 kg

Insertion length

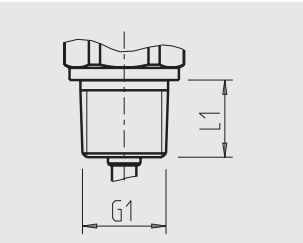


F
25
50
100
150
250
350

Process connections



G1	L1
G 1/4 A DIN 3852-E	12
G 1/2 A DIN 3852-E	14



G1	L1
1/4 NPT	13
1/2 NPT	19

Accessories and spare parts

Compression fittings	Order no.
G 1/4 B, ferrule stainless steel	3199101
G 1/2 B, ferrule stainless steel	3221555
1/4 NPT, ferrule stainless steel	3232905
1/2 NPT, ferrule stainless steel	3320710

Sealings	Order no.
NBR profile sealing G 1/4 A DIN 3852-E	1537875
FPM / FKM profile sealing G 1/4 A DIN 3852-E	1576534
NBR profile sealing G 1/2 A DIN 3852-E	1039067
FPM / FKM profile sealing G 1/2 A DIN 3852-E	1039075

Ordering information

Model / Measuring range / Output signal / Insertion length / Process connection

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We reserve the right to make modifications to the specifications and materials.

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