

Electronic Temperature Switch with Display Model TSD-30

WIKA Datasheet TSD-30

Applications

- Machine tools
- Hydraulics
- Coolant and lubrication systems
- Machine building

Special Features

- Available with single or dual NPN or PNP solid state user-programmable switches
- High visibility, rugged 14-segment red LED display electronically rotates 180° for top-down or horizontal installation
- Independent rotation between the M12x1 electrical connection and the display to optimize installation position
- User-friendly, intuitive 3-key operation
- Versions with 4-20 mA or 0-10V analog output available
- Programming menu meets VDMA Standards for user friendly navigation

Description

Award-winning in design and functionality

The design and outstanding functionality of the PSD-30 pressure switch received the IF Product Design Award in 2009. The TSD-30 temperature switch uses a similar design and functionality. The display, with its .35" (9 mm) high digits, was designed to be as large as possible and positioned at an angle, so the temperature reading is visible from a distance of at least 10 feet (3 meters). Rugged LED technology with a 14-segment display is used so alphanumeric messages are much easier to understand when compared to typical 7-segment displays.

The large, ergonomically designed programming push buttons provide the user with tactile feedback for immediate confirmation that the touch event was registered by the switch. The user-friendly menu navigation layout meets the



TSD-30 Temperature Switch

VDMA standard for fluid sensors (24574-2, part 2, temperature switches). The goal of the VDMA is to simplify the use of switches by standardizing menu navigation and display parameters.

Flexible and adaptable

The TSD-30 can be adjusted three different ways to fit specific installation requirements. The display and electrical connection can be rotated independently to maximize visibility while still orienting the electrical connection in the best position for the cable connector. The display can be electronically rotated 180° if needed for specific installation requirements.

Quality and reliability

Time tested, proven WIKA technology is an integral part of the TSD-30 providing the high quality and long-term reliability users demand.

Data sheets showing similar products:

Electronic pressure switch with display; model PSD-30; see data sheet PE 81.67
WIKA data sheet TE 67.03 · 01/2012 Page 1 of 4
WIKA data sheet TE 67.03

Measuring ranges

Temperature	Standard	Option 1)
°F	-4 ... +176	-4 ... +248
°C	-20 ... +80	-20 ... +120

1) see "Operating conditions"

Display

14-segment LED, red, 4-digit, character size .35" (9 mm).
Display can be rotated 180° using the programming menu.

Display update

200 ms

Output signal

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

Also available with NPN switch output.

Temperature offset adjustment

± 3 % of span

Scale setting

Zero point: max. +25 % of span

Span value: max. -25 % of span

Analog signal

Load

- Current: ≤ 500 Ω
- Voltage: > 10 kΩ

Switching output

Switch point 1 and 2 are independently user adjustable

Function

- Normally open / closed: user adjustable
- Window and hysteresis: user adjustable

Switching voltage: Power supply – 1 V

Switching current: max. 250 mA per switch 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)

Inches (mm)					
.98" (25)	1.97" (50)	3.94" (100)	5.91" (150)	9.84" (250)	13.78" (350)

Response time

T05 < 5 s (per DIN EN 60751)

T09 < 10 s (per DIN EN 60751)

Maximum working pressure

2250 psi (150 bar)

Accuracy

Analog signal

≤ ± 0.5 % of span

Switching output

≤ ± 0.8 % of span

Display

≤ ± 0.8 % of span ± 1 digit

Temperature sensor

± (0.15 K + 0.002 | t |)

| t | is the value of the temperature in °C independent from the sign.

The actual achievable accuracy is determined by the specific installation (immersion depth, sensor length, and operating conditions). This applies more for large temperature gradients between the environment and the medium.

Reference conditions

Temperature: 59-77 °F (15 ... 25 °C)

Atmospheric pressure: 950 ... 1,050 mbar

Humidity: 45 ... 75 % relative

Nominal position: Process connection lower mount (LM)

Power supply: DC 24 V

Load: see "output signal"

Operating conditions

Temperatures and humidity

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

Installation instructions

Mounting position: as required

At high medium or ambient temperatures, take steps to make sure that the instrument case temperature does not exceed 176 °F (80 °C) in continuous operation (the temperature is measured at the hex of the process connection).

The thread must not be immersed into medium at temperatures above 176 °F (80 °C)

Process connections

Connections

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

Other connections available – contact factory
Details on the sensor dimensions see “Dimensions in mm”.

Sealing

for connections per DIN 3852-E

Standard	without
Option	NBR, FPM / FKM

Materials

Wetted parts

Temperature sensor: 316Ti SS

Non-wetted parts

Case:	304 SS
Keyboard:	TPE-E
Display window:	PC
Display head:	PC+ABS-Blend

Approvals, directives and certificates

CE conformity

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

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 SP1, SP2 and S+

Ingress protection

IP 65 and IP 67

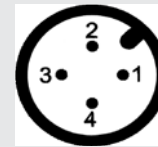
The stated ingress protection (per IEC 60529) only applies when installed using mating connectors that have the appropriate ingress protection.

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

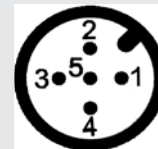
Circular connector M12 x 1, 4-pin



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

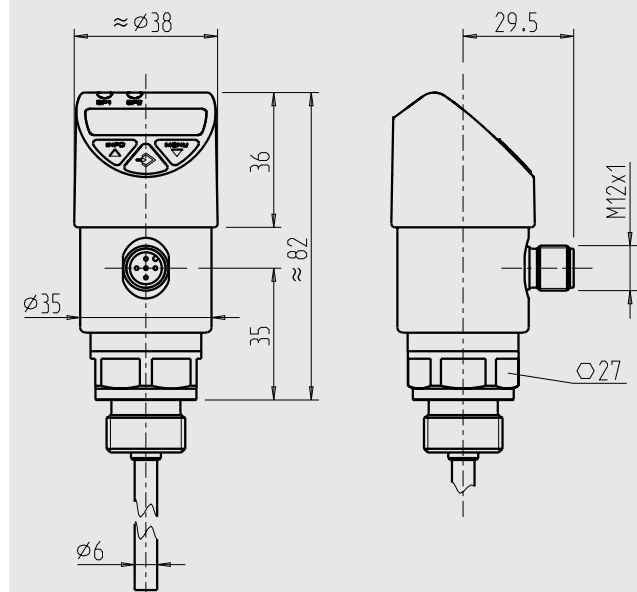
Legend:

U+	Positive supply voltage
U-	Reference potential
SP1	Switching output 1
SP2	Switching output 2
S+	Analog output

Dimensions in mm (1 inch = 25.4 mm)

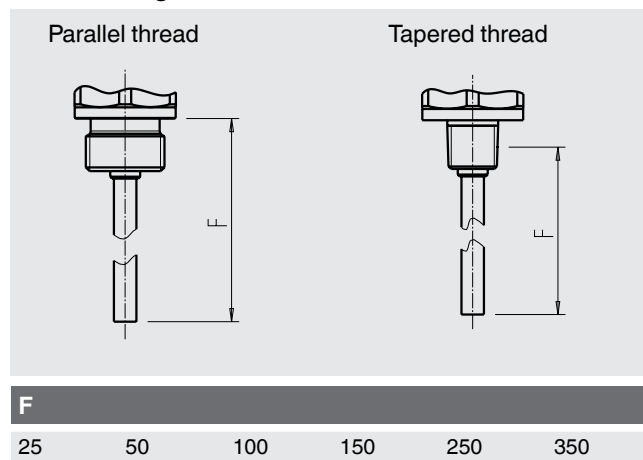
Temperature switch

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

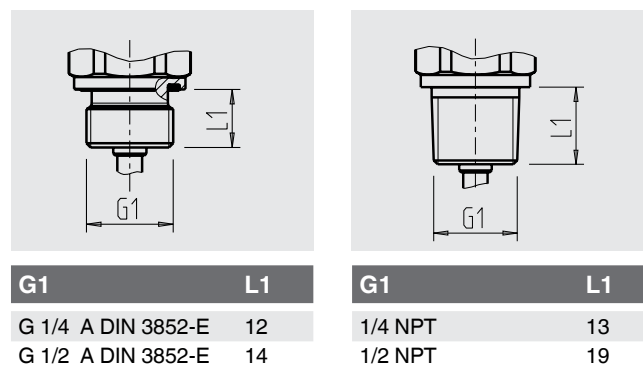


Weight: approx. 10.6 oz (0.3 kg)

Insertion length



Process connections



Accessories and spare parts

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

When using a compression fitting, a limited pressure strength applies.

Seals	Order no.
NBR profile sealing G 1/4 A DIN 3852-E	1537857
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 / Probe length / Process connection / Seal



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