



 **IO-Link**

#### Nominal temperature

- ▶ process connection in stainless steel:  
from -40 up to 150 °C
- ▶ process connection in PVDF:  
from -30 up to 125 °C

#### Digital output signal

IO-Link according to specification V 1.1  
smart sensor profile  
data transfer rate 38.4 kbit/s  
SIO mode (PNP / NPN), switchable

#### Analogue output

3-wire: 4 ... 20 mA or 0 ... 10 V,  
switchable

#### Special characteristics

- ▶ indication of measured values  
on a 4-digit LED display
- ▶ rotatable and configurable  
display module
- ▶ parameter settings via IO-Link  
or menu (VDMA-conform)

#### Optional versions

- ▶ customer specific versions

# LTS 300-IO

## Electronic Temperature Switch

with IO-Link interface

Temperature sensor Pt 1000 (class A)

accuracy according to IEC 60770:  
0.35 % FSO

The electronic temperature switch **LTS 300-IO** is equipped with an IO-Link interface as standard in order to exchange process data, diagnostic reports and status messages with a superordinate control level.

The parameters are set either also via the control level or via the VDMA-compliant menu system, which can be carried out at a local level using two keys.

The **LTS 300-IO** is designed for the mechanical and plant engineering sectors, to control temperature in industrial processes and manage the operation efficiently.

In addition, unusual display positions can be compensated to the multiple rotatability of the display so that the user is able to read the vital information without any problems.

#### Preferred areas of use are



Plant and machine engineering

- temperature detection
- status display
- system monitoring



 **IO-Link**

# LTS 300-IO

Electronic Temperature Switch with IO-Link Interface

Technical Data

| Measurement category   |   |   |  |  |  |  |
|--|---|---|--|--|--|--|
| Version of process connection  | stainless steel   | PVDF  |  |  |  |  |
| Temperature measuring range  | -40 ... 150 °C  | -30 ... 125 °C  |  |  |  |  |
| Pressure resistance  | max. 160 bar<br>within complete<br>temperature range                | max. 70 bar @ 23°C  |  |  |  |  |
| Measuring resistance   | temperature sensor Pt 1000 according to DIN EN 60751 class A        |   |  |  |  |  |
| Supply   |   |   |  |  |  |  |
| Voltage supply   | $V_S = 18 \dots 30 \text{ V}_{\text{DC}}$                           |   |  |  |  |  |
| Output signal  |   |   |  |  |  |  |
| Output signal 1  | IO-Link / SIO (PNP / NPN) switchable                                |   |  |  |  |  |
| Output signal 2  | 4 ... 20 mA / 3-wire<br>0 ... 10 V / 3-wire<br>PNP / NPN switchable | or<br>or  |  |  |  |  |
| Signal characteristics switching signal  |   |   |  |  |  |  |
| Accuracy <sup>1</sup>  | $\leq \pm 0.5\% \text{ FSO}$  |   |  |  |  |  |
| Repeatability  | $\leq \pm 0.2\% \text{ FSO}$  |   |  |  |  |  |
| Switching current  | max. 200 mA   |   |  |  |  |  |
| Switching frequency  | max. 200 Hz   |   |  |  |  |  |
| Delay time   | 0.0 ... 50.0 sec  |   |  |  |  |  |
| Switching cycles   | $> 100 \times 10^6$   |   |  |  |  |  |
| Response time  | < 12 msec   |   |  |  |  |  |
| Standby delay time   | 110 msec  |   |  |  |  |  |
| Signal characteristics analogue signal   |   |   |  |  |  |  |
| Accuracy <sup>1</sup>  | $\leq \pm 0.35\% \text{ FSO}$                                       |   |  |  |  |  |
| Long term stability  | $\leq \pm 0.3\% \text{ FSO} / \text{year}$ at reference conditions  |   |  |  |  |  |
| Permissible load (4 ... 20 mA)   | $R_{\text{max}} = 330 \Omega$                                       |   |  |  |  |  |
| Permissible load (0 ... 10 V)  | $R_{\text{min}} = 10 \text{ k}\Omega$                               |   |  |  |  |  |
| Influence effects  | supply: 0.05 % FSO<br>load: $\leq 0.1\% \text{ FSO}$                |   |  |  |  |  |
| Adjustability  | offset: $\pm 5\%$<br>span: -10 %                                    |   |  |  |  |  |
| <sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) |   |   |  |  |  |  |
| Thermal effects (offset and span)  |   |   |  |  |  |  |
| Thermal error  | $\leq \pm 0.3^\circ\text{C} + 0.005 + T$                            |   |  |  |  |  |
| In compensated range   | 0 ... 80 °C   |   |  |  |  |  |
| Permissible temperatures   |   |   |  |  |  |  |
| Permissible temperatures   | operating area<br>medium:<br>electronics / environment:<br>storage: | process connection in stainless steel<br>-40 ... 150 °C<br>-40 ... 85 °C<br>-40 ... 85 °C | process connection in PVDF<br>-30 ... 125 °C<br>-40 ... 85 °C<br>-40 ... 85 °C |  |  |  |
| Electrical protection  |   |   |  |  |  |  |
| Short-circuit protection   | permanent   |   |  |  |  |  |
| Reverse polarity protection  | no damage, but also no function                                     |   |  |  |  |  |
| Electromagnetic compatibility  | emission and immunity according to EN 61326                         |   |  |  |  |  |
| IO-Link  |   |   |  |  |  |  |
| Interface  | IO-Link 1.1; slave  |   |  |  |  |  |
| Data transfer  | COM2 / 38.4 kbit/s  |   |  |  |  |  |
| Mode   | SIO / IO-Link   |   |  |  |  |  |
| Standard   | IEC 61131-2<br>IEC 61131-9  |   |  |  |  |  |
| Mechanical stability   |   |   |  |  |  |  |
| Vibration  | 10 g / 25 Hz ... 2 kHz  |   | according to DIN EN 60068-2-6  |  |  |  |
| Shock  | 500 g / 1 msec  |   | according to DIN EN 60068-2-27   |  |  |  |
| Materials  |   |   |  |  |  |  |
| Display housing  | PA 6.6  |   |  |  |  |  |
| Housing  | standard: stainless steel 1.4435 (316L)<br>option: PVDF             |   |  |  |  |  |
| Seal   | FKM   |   | others on request  |  |  |  |
| Media wetted parts   | process connection, seal  |   |  |  |  |  |

# LTS 300-IO

Electronic Temperature Switch with IO-Link Interface

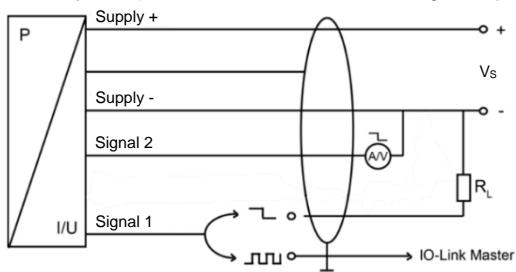
Technical Data

## Miscellaneous

|                       |   |
|-----------------------|---|
| Display               | 4-digit, 7-segment-LED display on black base body, white, blue foil<br>digit height 7 mm<br>range of indication -1999 ... +9999<br>visible range 22.5 x 10.5 mm<br>3 LEDs for unit switching (°C, °F, K)<br>LED status display for IO-Link and contacts |
| Operation             | 2 buttons / functions according to VDMA 24574-1   |
| Turn-on time          | 110 msec  |
| Weight                | approx. 220 g   |
| Current consumption   | ≤ 40 mA   |
| Protection class      | IP 67   |
| Installation position | any   |
| CE-conformity         | EMC Directive: 2014/30/EU   |

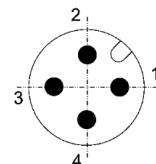
## Wiring diagram

3-wire-system (IO-Link / SIO with contact, analogue output)



## Electrical connection

| Pin configuration | Description  | M12x1 (4-pin), metal |
|-------------------|--|----------------------|
| Supply +          | supply   | 1                    |
| Supply -          | supply   | 3                    |
| Output signal 1   | IO-Link / SIO (PNP / NPN)                              | 4                    |
| Output signal 2   | 4 ... 20 mA – 3-wire / 0 ... 10 V – 3-wire (PNP / NPN) | 2                    |
| Shield            | shielding  | plug housing         |



## Dimensions (mm / in)

| process connection in stainless steel |  | process connection in PVDF  |  |
|---------------------------------------|--|-----------------------------|--|
|                                       |  |                             |  |
| G1/2" DIN 3852 with Pt 1000           |  | G1/2" DIN 3852 with Pt 1000 |  |

## Ordering code LTS 300-IO

| LTS 300-IO                                       | <input type="text"/> |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Measurement category</b>                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| temperature [°C, °F, K]                          | T                    | M                    | 5                    |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Input</b>                                     | <b>[°C]</b>          |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| -40 ... 150 <sup>1</sup>                         | M                    | 4                    | 0                    | 1                    | 5                    | 0                    |                      |                      |                      |                      |                      |                      |                      |                      |
| -30 ... 125 <sup>2</sup>                         | M                    | 3                    | 0                    | 1                    | 2                    | 5                    |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   | 9                    | 9                    | 9                    | 9                    | 9                    | 9                    |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Output</b>                                    | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| IO-Link + PNP/NPN + analogue output <sup>3</sup> | I                    | X                    |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Accuracy</b>                                  | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| 0.35 % FSO                                       |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Electrical connection</b>                     | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| male plug M12x1 (4-pin) / metal                  | M                    | 1                    | B                    |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   | 9                    | 9                    | 9                    |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Mechanical connection</b>                     | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| G1/2" DIN 3852 (with Pt 1000)                    |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Seal</b>                                      | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| FKM  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Prozess connection</b>                        | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| stainless steel 1.4435 (316L) <sup>1</sup>       |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| PVDF <sup>2</sup>                                |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <b>Special version</b>                           | consult              |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| standard   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| customer   |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |

<sup>1</sup> temperature measuring range -40 ... 150 °C and process connection in stainless steel have to be ordered together

<sup>2</sup> temperature measuring range -30 ... 125 °C and process connection in PVDF have to be ordered together

<sup>3</sup> contact PNP/NPN switchable; analogue output 0 ... 10 V / 4 ... 20 mA switchable