Electronic Temperature Switch
ETS 3800
for Separate Temperature Probe with IO-Link Interface

IO-Link

Description:

The ETS 3800 with IO-Link communication interface is a compact, electronic temperature switch with 4-digit display. The version for a separate temperature probe has a measuring range of -22..302°F and is used primarily with the TFP 100 temperature probe which was specially developed for tank installation.
It is also possible, however, to evaluate commonly-available PT 100 temperature probes. The instrument has one switching output and an additional output that can be configured as either switching or analog (4 .. 20 mA or 0 .. 10 V).

Compared with the standard version, the IO-Link interface enables bidirectional communication between the device and the control. Parameterization and cyclical transmission of process and service data is therefore possible.

The temperature switch series ETS 3800 with communication interface IO-Link according to specification V1.1 was specially designed to connect sensors in automation systems. Typical fields of application are machine tools, handling and assembly automation, intralogistics or the packaging industry.

Special features:

- IO-Link interface
- 1 PNP transistor switching output
- Additional signal output, can be configured as PNP transistor switching output or analog output
- 4-digit digital display
- Optimum alignment of the display − can be rotated in two axes

Technical data:

Input data	
Measuring range[1)]	-22..302 °F (-30..150°C)
Connection, separate temperature probe	Female cable connection M12x1, 4 pole
Output data	
Accuracy (display, analog output)	± 2.0 °F (+ PT100 error)
Temperature drift (environment)	≤ ± 0.0085% FS/°F max. zero point ≤ ± 0.0085% FS/°F max. range
Analog output (optional)	
Signal	selectable: 4 .. 20 mA load resist. ≤ 500 Ω 0 .. 10 V load resist. min. 1 kΩ corresp. in each case to -22 .. 302 °F
Switch outputs	
Type	PNP transistor switching output
Switching current	max. 250 mA per output
Switching cycles	> 100 million
Parameterization	**Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the ETS 3800**
Environmental conditions	
Ambient temperature range	-13..+176°F
Storage temperature range	-40..+176°F
CE mark	EN 61000-6-1 / -2 / -3 / -4
Vibration resistance according to DIN EN 60068-2-6 (0 .. 500 Hz)	≤ 10 g
Shock resistance according to DIN EN 60068-2-29 (11 ms)	≤ 50 g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage	9 .. 35 V DC (without analog output) 18 .. 35 V DC (with analog output)
Current consumption	≤ 0.535 A with active switching outputs ≤ 35 mA with inactive switching outputs ≤ 55 mA with inactive switching output and analog output
Residual ripple of supply voltage	≤ 5 %
Display	4-digit, LED, 7-segment, red, height of digits 7 mm
Weight	~ 87 g (excluding connector and probe)

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.
FS (**F**ull **S**cale) = relative to the full measuring range

1) Depending on the temperature range of the connected temperature sensor, the measurement range of the ETS 3800 may be reduced.

Setting options:

All terms and symbols used for setting the ETS 3800 as well as the menu structure comply with the specifications in the VDMA Standard for temperature switches.

Setting ranges for the switch outputs:

Measurement range	Lower limit of RP / FL	Upper limit of SP / FH
-30 .. +150 °C	-28.0 °C	150.0 °C
-22 .. +302 °F	-19 °F	302 °F

Measuring range	Min. difference betw. RP and SP & FL and FH	Increment*
-30 .. +150 °C	2.0 °C	0.5 °C
-22 .. + 302 °F	3 °F	1 °F

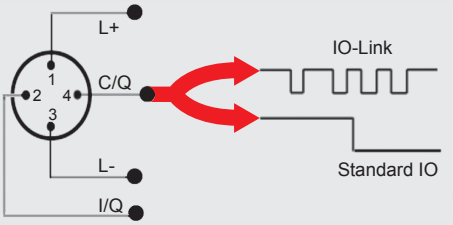
* All ranges given in the table are adjustable by the increments shown.
SP = switch point
RP = switch-back point
FL = temperature window lower value
FH = temperature window upper value

Additional functions:

- Switching mode of the switching outputs adjustable (switching point function or window function)
- Switching direction of the switching outputs adjustable (N/C or N/O function)
- Switch-on and switch-off delay adjustable from 0.00 .. 99.99 seconds
- Choice of display (actual temperature, peak temperature, switching point 1, switching point 2, display off)

Pin connections:

M12x1, 4 pole



Pin	Signal	Description
1	L+	Supply voltage
2	I/Q	Switching output (SP2) / analog output
3	L-	Gnd
4	C/Q	IO-Link communication / switching output (SP1)

Separate temperature sensor:

(not supplied with instrument)

- TFP 106 - 000 Part. No.: 921330
  with male electr. conn.
  4 pole M12x1
  (connector not supplied)
- Tank install. sleeve Part No.: 906170
  for TFP 100

IO-Link-specific data:

Baud rate	38.4 kBaud *
Cycle time	2.5 ms
Process data width	16 Bit
Frame type	2.2
Specification	V1.1

* Connection with unshielded standard sensor line possible up to a max. line length of 20 m.

Download the IO Device Description (IODD) from:
http://www.hydac.com/de-en/service/downloads-software-on-request/

Model code:

ETS 3 8 6 6 – F31 – 000 – 400

Type
8 = For separate temperature probe

Mechanical connection
6 = Female cable connection M12x1, 4 pole

Electrical connection
6 = Male M12x1, 4 pole
(connector not supplied)

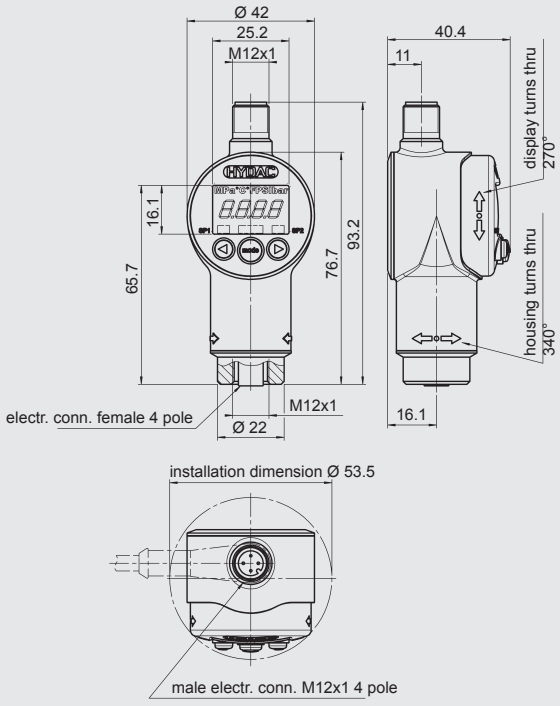
Output
F31 = IO Link interface

Sensor length in mm
000 = Separate temperature probe

Modification number
400 = Standard in °F

Accessories:
A male cable connector M12x1, 4 pole, to connect the separate temperature sensor and a 3 m sensor cable, LIYCY 4 x 0.25 mm² are supplied with the instrument. Other accessories, such as electrical connectors, splash guards, clamps for wall-mounting, etc. can be found in the Accessories brochure.

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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