



Temperature Switch ETS 3800

Separate temperature probe

Display

Up to 2 switching outputs
Analogue output



Description:

The ETS 3800 is a compact electronic temperature switch with a 4-digit display.

The version for a separate temperature probe has a measuring range of -30 .. +150 °C 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. Different output models with one or two switching outputs, optionally with an additional analogue output signal, offer a variety of application possibilities.

The switch points and the associated hystereses can be adjusted very quickly and easily using the key pad.

For optimum adaptation to the particular application, the instrument has many additional adjustment parameters (e.g. switching delay times, N/C / N/O function etc.).

The ETS 3800 is also available in a variant with menu navigation in accordance with VDMA.

Technical data:

Input data	
Measuring element	PT 100 (TFP 100)
Connection, separate temperature probe	Female cable connector M12x1, 4 pole
Measuring range ¹⁾	-30 .. +150 °C (-22 .. +302 °F)
Output data	
Switching outputs	1 or 2 PNP transistor outputs Switching current: max. 1.2 A per switching output Switching cycles: > 100 million
Analogue output, permitted load resistance	Selectable: 4 .. 20 mA load resist. max. 500 Ω 0 .. 10 V load resist. min. 1 kΩ corresp. in each case to -30 .. +150 °C
Accuracy (at room temperature)	≤ ± 1.0 °C (≤ ± 2.0 °F) (+error separate temperature probe)
Temperature drift (environment)	≤ ± 0.015 % FS / °C
Repeatability	≤ ± 0.25 % FS max.
Environmental conditions	
Operating temperature range	-25 .. +80 °C (-13 .. +176 °F) (-25 .. +60 °C [-13 .. +140 °F] for UL-Spec.)
Storage temperature range	-40 .. +80 °C (-40 .. +176 °F)
CE mark	EN 61000-6-1 / -2 / -3 / -4
cULus mark ²⁾	Certificate-No.: E318391
Vibration resistance acc. to DIN EN 60068-2-6 at 0 .. 500 Hz	≤ 10 g
Shock resistance acc. to DIN EN 60068-2-27 (11 ms)	≤ 50 g
Protection class acc. to DIN EN 60529 ³⁾	IP 67
Other data	
Supply voltage	9 .. 35 V DC, without analogue output 18 .. 35 V DC, with analogue output
when applied acc. to UL specifications	- limited energy – acc. to 9.3 UL 61010; Class 2; UL 1310 / 1585; LPS UL 60950
Residual ripple of supply voltage	≤ 5 %
Current consumption	≤ 2.455 A total ≤ 35 mA with inactive switching outputs ≤ 55 mA with inactive switching output and analogue output
Display	4-digit, LED, 7-segment, red, height of digits 7 mm
Weight	~ 87 g (excluding cable connector and probe)

Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

FS (Full Scale) = relative to complete measuring range

¹⁾ Depending on the fluid temperature range of the connected temperature sensor, the measurement range of the ETS 3000 may be reduced.

²⁾ Environmental conditions acc. to 1.4.2 UL 61010-1; C22.2 No. 61010-1

³⁾ With mounted mating connector in corresponding protection class

Setting options:
Standard design

All the settings available on the ETS 3800 are combined in two easy-to-navigate menus. In order to prevent unauthorised adjustment of the device, a programming lock can be set.

Setting ranges for the
switching outputs:

Switch point function			
Unit	Switch point	Hysteresis	Increment*
°C	-27.0 .. 150.0	1.0 .. 178.0	0.5
°F	-17 .. 302	2 .. 320	1
Window function			
Unit	Lower switch value	Upper switch value	Increment*
°C	-27.0 .. 146.5	-25.5 .. 148.0	0.5
°F	-17 .. 296	-14 .. 298	1

* All ranges given in the table can be adjusted by the increments shown.

Setting options:
menu navigation acc. to
VDMA

All terms and symbols used for setting the ETS 3800 as well as the menu structure comply with the specifications in the VDMA Standard (VDMA 24574-2) for temperature switches. The ETS 3800 can easily be adjusted via three push-buttons.

Setting ranges for the
switching outputs:

Measuring 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

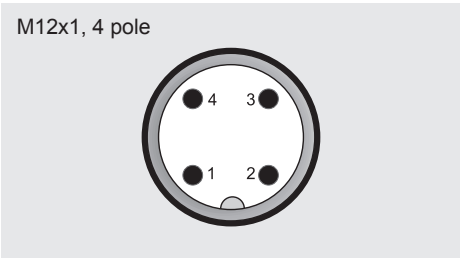
* All ranges given in the table can be adjusted by the increments shown.

SP = switch point
RP = switch-back point
FL = temperature window lower value
FH = temperature window upper value

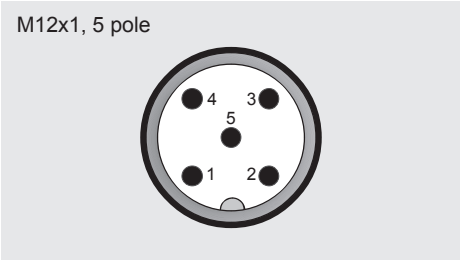
Additional functions:

- Switching mode of the switching outputs adjustable (switch 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
- Analogue output signal selectable 4 .. 20 mA or 0 .. 10 V
- Display of the actual temperature in °C or °F.
- Choice of display (actual temperature, peak temperature, switch point 1, switch point 2; additional, in standard version, display off)

Pin connections:

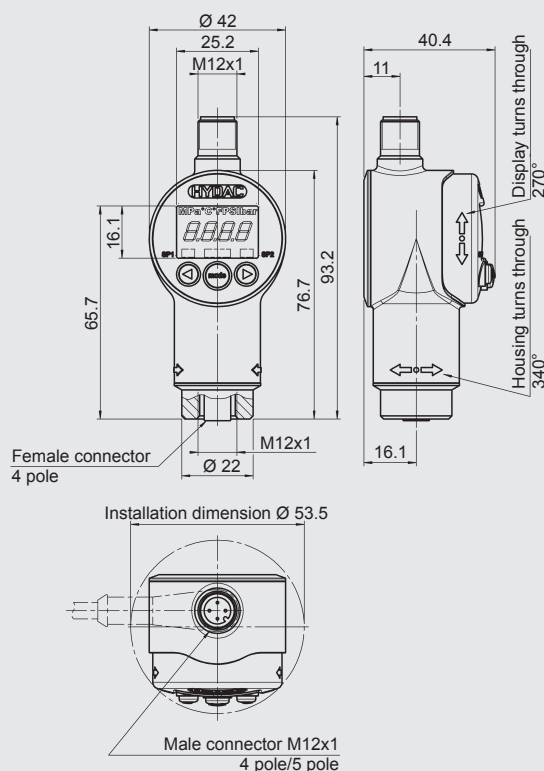


Pin	ETS 3866-2	ETS 3866-3
1	+U _B	+U _B
2	SP2	Analogue
3	0 V	0 V
4	SP1	SP1



Pin	ETS 3868-5
1	+U _B
2	Analogue
3	0 V
4	SP1
5	SP2

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.

Model code:

ETS 3 8 6 X - X - 000 - X00

Type

8 = for separate temperature probe

Mechanical connection

6 = female cable connector M12x1, 4 pole

Electrical connection

6 = male M12x1, 4 pole
only possible on output models "2" and "3"
(mating connector not supplied)

8 = male M12x1, 5 pole
only possible on output model "5" and modification "000"
(mating connector not supplied)

Output

2 = 2 switching outputs
only in conjunction with electrical connection type "6"

3 = 1 switching output and 1 analogue output
only in conjunction with electrical connection type "6"

5 = 2 switching outputs and 1 analogue output
only in conjunction with electrical connection code type "8"
and modification "000"

Probe length in mm

000 = separate temperature probe

Modification number

000 = standard
V00 = menu navigation acc. to VDMA (standard sheet 24574)

Accessories (supplied with instrument):

A male cable connector M12x1, 4 pole, to connect the separate temperature probe and a 3 m sensor cable, LIYCY 4 x 0.25 mm².

Accessories available (not supplied with instrument):

Separate temperature probe:

• TFP 106 - 000 with male 4 pole M12x1 Part no.: 921330
(mating connector not included)

• Tank installation sleeve for TFP 100 Part no.: 906170

Further information on accessories as well as further accessories, such as mating connectors, splash guards and clamps for wall-mounting etc., can be found in the Accessories brochure.