



Electronic Temperature Switch ETS 3800 for Separate Temperature Probe

Description:

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

The model for separate temperature probe has a measuring range of $-30 \dots +150 \text{ }^{\circ}\text{C}$ and is used primarily with the temperature probe TFP 100 which was specially developed for tank mounting.

It is also possible, however, to use standard PT 100 temperature probes. Different output models with one or two switching outputs, and with the possible option of an additional analogue output signal, offer a variety of application possibilities.

The switching points and the associated hystereses can be adjusted very quickly and easily using the keypad.

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

Special features:

- 2 switching outputs, up to 1.2 A load per output
- Analogue output signal selectable (4 .. 20 mA / 0 .. 10 V)
- 4-digit display
- Optimum alignment - display can be rotated in two planes (axes)
- Switching / switch-back points and many useful additional functions can be set using keypad
- Display of temperature and unit of measurement in $^{\circ}\text{C}$ or $^{\circ}\text{F}$

Technical specifications:

Input data	
Measuring range*	$-30 \dots +150 \text{ }^{\circ}\text{C}$ ($-22 \dots 302 \text{ }^{\circ}\text{F}$)
Connection, separate temperature probe	Female cable connection M12x1, 4 pole
Output data	
Accuracy (display, analogue output)	$\pm 1.0 \text{ }^{\circ}\text{C}$ (+ PT100 error)
Temperature drift (environment)	$\leq \pm 0.015 \text{ } \% \text{ FS / }^{\circ}\text{C}$ max. zero point $\leq \pm 0.015 \text{ } \% \text{ FS / }^{\circ}\text{C}$ max. range
Analogue output (optional)	
Signal	selectable: 4 .. 20 mA ohmic resist. max. 500 Ω 0 .. 10 V ohmic resist. min. 1 k Ω corresp. in each case to $-30 \dots +150 \text{ }^{\circ}\text{C}$
Switching outputs	
Type	PNP transistor switching outputs
Switching current	max. 1.2 A per output
Switching cycles	> 100 million
Ambient conditions	
Ambient temperature range	$-25 \dots +80 \text{ }^{\circ}\text{C}$ ($-25 \dots +60 \text{ }^{\circ}\text{C}$ acc. to UL spec.)
Storage temperature range	$-40 \dots +80 \text{ }^{\circ}\text{C}$
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark**	Certificate No.: E 318391
Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 10 \text{ g}$
Shock resistance to DIN EN 60068-2-29 (11 ms)	$\leq 50 \text{ g}$
Protection class to DIN 40050	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analogue output 18 .. 35 V DC with analogue output - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
for use acc. to UL spec.	
Current consumption	max. 2.455 A total max. 35 mA with inactive switch outputs max. 55 mA with inactive switch outputs and analogue output
Residual ripple of supply voltage	$\leq 5 \text{ } \%$
Display	4-digit, LED, 7 segment, red, height of digits 7 mm
Weight	approx. 87 g

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

FS (Full Scale) = relative to the complete measuring range

* Depending on the temperature range of the connected temperature sensor, the indication range of the ETS 3800 may be reduced.

** Ambient conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Setting options:

All the settings available on the ETS 3800 are combined in two easy-to-follow menus. To prevent unauthorised adjustment of the unit a program disable can be activated.

Setting ranges of the switching points and switch-back hystereses:

Switching point function

Unit	Switching 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

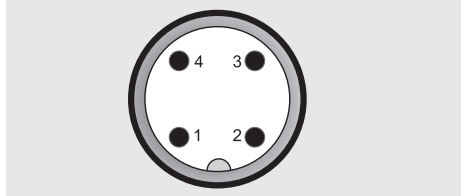
* All ranges given in the table are adjustable by the increments shown.

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)
- Switch-on and switch-back delay adjustable from 0.00 .. 99.99 seconds
- Choice of display (actual temperature, peak temperature, switching point 1, switching point 2, display off)

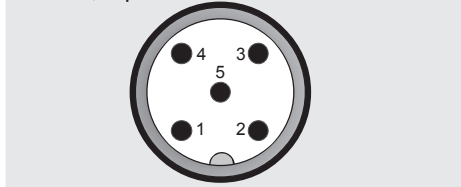
Pin connections:

M12x1, 4 pole



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

M12x1, 5 pole



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

Model code:

ETS 3 8 6 X - X - 000 - 000

Mechanical connection

6 = female cable connection M12x1, 4 pole

Electrical connection

6 = M12x1, 4 pole, male

only possible on output models "2" and "3"

8 = M12x1, 5 pole, male

only possible on output model "5"

Output

2 = 2 switching outputs

only in conjunction with electrical connection "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 type "8"

Probe length in mm

000 = separate temperature probe

Modification number

000 = standard

Note:

On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories:

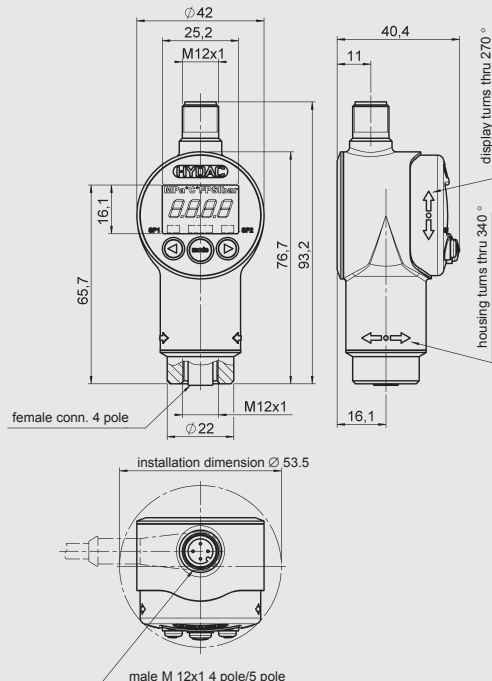
A male cable connector M12x1, 4 pole, to connect the external temperature probe and a 3 m sensor cable, LIYCY 4 x 0.25 mm² are supplied with the device. Other accessories, such as electrical connectors, splash guard, clamps for wall-mounting, etc. can be found in the Accessories section.

Separate temperature probe:

(Not supplied with unit)

- TFP 104 - 000 with electr. conn. 4 pole Binder series 714 M18 Part No.: 904696 (female connector supplied)
- TFP 106 - 000 with electr. conn. 4 pole M12x1 Part No.: 921330 (connector not supplied)
- Tank-mounting sleeve for TFP 100 Part No.: 906170

Dimensions:



Note:

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

HYDAC ELECTRONIC GMBH
Hauptstraße 27, D-66128 Saarbrücken
Telephone +49 (0)6897 509-01
Fax +49 (0)6897 509-1726
E-Mail: electronic@hydac.com
Internet: www.hydac.com