

## HYDAC INTERNATIONAL



### Temperature Switch ETS 380

Separate temperature probe

Display

Up to 2 switching outputs  
Analogue output

4

#### Description:

The ETS 380 is a compact electronic temperature switch with a 3-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, and with the possible option of an additional 4 ... 20 mA 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).

#### Technical data:

Input data	
Measuring element	PT 100 (TFP 100)
Connection, separate temperature probe	Female cable connector M12x1, 4 pole
Measuring range <sup>1)</sup>	-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	4 ... 20 mA; load resist. max. 400 Ω corresponds 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 max.
Repeatability	± 0.5 % FS max.
Environmental conditions	
Operating temperature range	-25 ... +80 °C (-13 ... +176 °F)
Storage temperature range	-40 ... +80 °C (-40 ... +176 °F)
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance acc. to DIN EN 60068-2-6 (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 <sup>2)</sup>	IP 65
Other data	
Supply voltage	20 ... 32 V DC
Residual ripple of supply voltage	≤ 5 %
Current consumption	~ 100 mA without switching output
Display	3-digit, LED, 7-segment, red, height of digits 8.4 mm
Weight	~ 300 g

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

FS (Full Scale) = relative to complete measuring range

<sup>1)</sup> Depending on the fluid temperature range of the connected temperature sensor, the measuring range of the ETS 380 may be reduced.

<sup>2)</sup> With mounted mating connector in corresponding protection class

## Setting options:

All settings available on the ETS 380 are grouped in two easy-to-navigate menus. In order to prevent unauthorised adjustment of the device, a programming lock can be set.

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

Switch point function

Unit	Switch point	Hysteresis	Increment*
°C	-27.0 .. 150.0	1.0 .. 178.0	1.0
°F	-16.0 .. 302.0	2.0 .. 320.0	2.0

Window function

Unit	Lower switch value	Upper switch value	Increment*
°C	-28.0 .. 149.0	-27.0 .. 150.0	1.0
°F	-18.0 .. 300.0	-16.0 .. 302.0	2.0

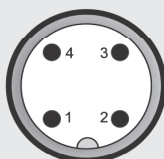
\* All ranges given in the table can be adjusted by the increments shown.

## 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 .. 750 seconds
- Choice of display (actual temperature, peak temperature, switch point 1, switch point 2, display off)

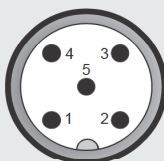
## Pin connections:

M12x1, 4 pole



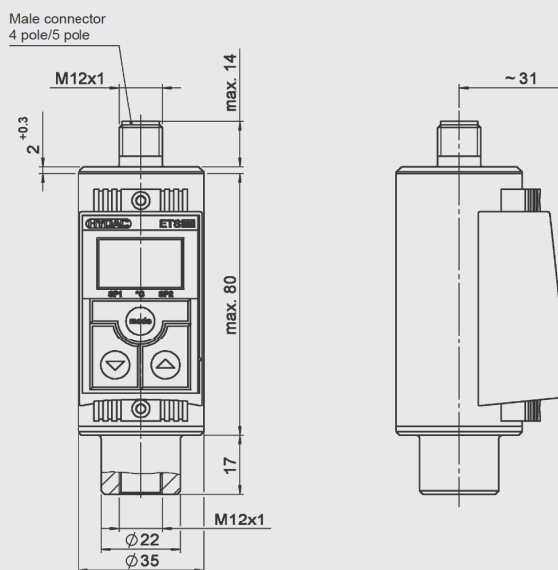
Pin	ETS 386-2	ETS 386-3
1	+U <sub>B</sub>	+U <sub>B</sub>
2	SP2	Analogue
3	0 V	0 V
4	SP1	SP1

M12x1, 5 pole



Pin	ETS 388-5
1	+U <sub>B</sub>
2	Analogue
3	0 V
4	SP1
5	SP2

## Dimensions:



## Model code:

ETS 3 8 X - X - 150 - X00

### Mechanical connection

8 = electrical connection for separate temperature probe

### Electrical connection

6 = male M12x1, 4 pole  
only possible on output models "2" and "3"  
8 = male M12x1, 5 pole  
only possible on output model "5"

### 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 type "8"

### Measuring range

-30 .. +150 °C (-22 .. +302 °F)

### Modification number

000 = display in °C  
400 = display in °F

### Accessories (supplied with instrument):

A male cable connector M12x1, 4 pole, to connect the separate temperature probe and a 3 m sensor cable, LIYY 4 x 0.5 mm<sup>2</sup>.

### Accessories available (not supplied with instrument)

#### Separate temperature probe:

- TFP 104 - 000 with male 4 pole, Binder series 714 M18 (including mating connector) Part no. 904696
- TFP 106 - 000 With male 4 pole M12x1 (mating connector not included) Part no.: 921330
- Tank installation sleeve for TFP 100 Part no.: 906170

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

## 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.