Electronic Temperature Switch
ETS 380
for Separate Temperature Probe

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 analogue output signal of 4 .. 20 mA open up a multitude of application opportunities.

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 instrument has many additional adjustment parameters (e.g. switching delay times, N/C / N/O function, etc.).

Special features:

- 2 transistor switching outputs, up to 1.2 A load per output
- Optional analogue output signal 4 .. 20 mA
- 3-digit display
- Switching point or window function
- Switching / switch-back points and many useful additional functions can be set using the keypad

Technical data:

Input data	
Measuring range[1)]	-30 .. +150 °C (-22 .. 302 °F)
Connection, separate temperature probe	Female cable connection M12x1, 4 pole
Output data	
Accuracy (display, analogue output)	≤ ± 1.0 °C (≤ ± 2.0 °F)
Temperature drift (environment)	≤ ± 0.015 % FS / °C max. zero point ≤ ± 0.015 % FS / °C max. range
Analogue output (optional)	
Signal	4 .. 20 mA ohmic resistance max. 400 Ω corresponds to -30 .. +150 °C
Switch outputs	
Type	PNP transistor switching outputs
Switching current	max. 1.2 A per output
Switching cycles	> 100 million
Environmental conditions	
Ambient temperature range	-25 .. +80 °C
Storage temperature range	-40 .. +80 °C
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz)	≤ 10 g
Shock resistance to DIN EN 60068-2-29 (1 ms)	≤ 50 g
Protection class to IEC 60529	IP 65
Other data	
Supply voltage	20 .. 32 V DC
Current consumption	approx. 100 mA without switch output
Residual ripple of supply voltage	≤ 5 %
Display	3-digit, LED, 7 segment, red, height of digits 9.2 mm
Weight	~ 300 g

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

[1)] Depending on the temperature range of the connected temperature sensor, the indication range of the ETS 380 may be reduced.

Setting options:

All the settings available on the ETS 380 are combined in 2 easy-to-navigate menus.
To prevent unauthorised adjustment of the device, a programming lock can be set.

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	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

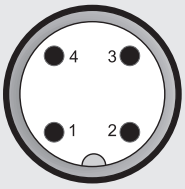
* All ranges given in the table are adjustable by the increments shown.

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-off delay adjustable from 0 .. 750 seconds
- Choice of display (actual temperature, peak temperature, switching point 1, switching point 2, display off)

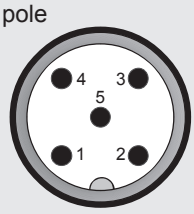
Pin connections:

M12x1, 4 pole



Pin	ETS 386-2	ETS 386-3
1	$+U_B$	$+U_B$
2	SP 2	Analogue
3	0 V	0 V
4	SP 1	SP 1

M12x1, 5 pole



Pin	ETS 388-5
1	$+U_B$
2	Analogue
3	0 V
4	SP 1
5	SP 2

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

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

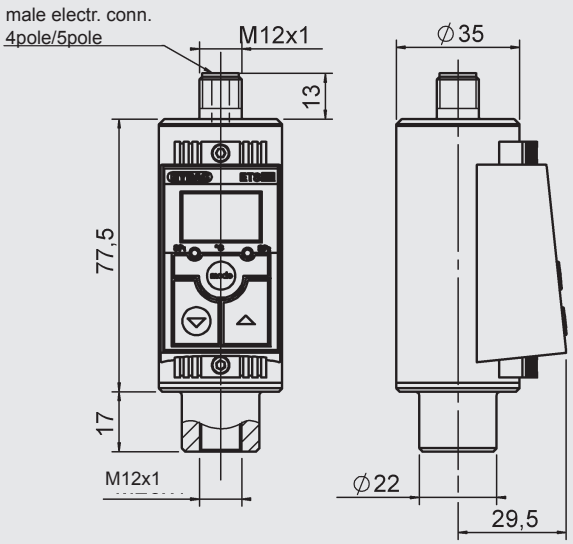
Accessories:
A male cable connection M12x1, 4 pole, to connect the separate temperature probe and a 3 m sensor cable, LIYCY 4 x 0.5 mm² are supplied with the instrument.
Other accessories, such as electrical connectors, clamps for wall-mounting, etc. can be found in the Accessories brochure.

Separate temperature probe:

(not supplied with the instrument)

- TFP 104 - 000 with male electr. conn. 4 pole Binder series 714 M18 (connector not supplied) — Part no. 904969
- TFP 106 - 000 with male electr. conn. 4 pole M12x1 (connector not supplied) — Part no. 921330
- Tank installation sleeve for TFP 100 — Part no. 906170

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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