

## Electronic Temperature Switch ETS 1700

### Description:

The electronic temperature switch ETS 1700 is used mainly together with the temperature probe TFP 100, which was specially developed for tank mounting.

The 4-digit display can indicate the actual temperature, one of the switching points or the maximum temperature value.

The maximum temperature indicates the highest temperature which has occurred since the unit was switched on or was last reset.

The 4 switching outputs can be used to control heating and cooling processes in hydraulic systems, for example.

Four switching and switch-back points which are independent of each other can be adjusted very simply via the keypad.

An analog output (4 .. 20 mA or 0 .. 10 V) is also available for integration into monitoring systems (e.g. with PLC).

### Special features:

- 4-digit display
- Simple operation due to key programming
- 4 limit relays, switching points and switch back points can be adjusted independently
- Optional analog output signal (4 .. 20 mA or 0 .. 10 V)
- Many useful additional functions
- Optional mounting position (sensor connection on the top/ bottom, keypad and display can be turned through 180°)

### Technical data:

<b>Input data</b>	
Measuring range <sup>1)</sup>	+32..212 °F (0..+100°C)
<b>Output data</b>	
Accuracy (display, analog output)	≤ ± 2.0 °F (+/- 1.0°C)
Repeatability	≤ ± 0.25 % FS
Temperature drift (environment)	≤ ± 0.017% FS/°F max. zero point ≤ ± 0.017% FS/°F max. range
<b>Analog output (optional)</b>	
Signal	selectable: 4 .. 20 mA      load resistance max. 400 Ω 0 .. 10 V      load resistance min. 2 kΩ corresponds in each case to 32..212°F
<b>Switch outputs</b>	
Type	4 relays with change-over contacts in 2 groups (common supply of each group connected)
Switching voltage	0.1 .. 250 V AC / DC
Switching current	0.009 .. 2 A per output
Switching capacity	400 VA, 50 W (for inductive load, use varistors)
Switching cycles	> 20 million at minimum load > 1 million at maximum load
<b>Environmental conditions</b>	
Ambient temperature range	-13..+140 °F
Storage temperature range	-40..+176 °F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz)	≤ 5 g
Shock resistance to DIN EN 60068-2-29 (1 ms)	≤ 10 g
Protection class to IEC 60529	IP 65
<b>Other data</b>	
Supply voltage	22 .. 32 V DC
Current consumption	approx. 200 mA
Residual ripple of supply voltage	≤ 10 %
Display	4-digit, LED, 7 segment, red, height of digits 13 mm
Weight	~ 800 g

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

<sup>1)</sup> Depending on the temperature range of the connected temperature sensor, the indication range of the ETS 1700 may be reduced.

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

## Setting options:

The microprocessor integrated into the ETS 1700 enables many useful extra functions in addition to the switching functions, when compared with a normal mechanical temperature switch.

It is possible, for example, to activate switching delay times or to change the relay switching direction.

All settings are made via the keypad.

## Setting ranges of the switching points and switch-back hysteresis:

- Switching point relays 1 to 4: 1.5 .. 100 % of the measuring range
- Switching point relays 1 to 4: 1 .. 99 % of the measuring range or alternatively
- Switch-back hysteresis 1 to 4: 1.. 99 % of the measuring range

## Additional functions:

- Switching direction of the relays 1 to 4 (N/C or N/O function)
- Switch-on delay relays 1 to 4 in the range from 0.0 .. 900.0 seconds
- Switch-off delay relays 1 to 4 in the range from 0.0 .. 900.0 seconds
- Switch-back mode (alternatively switch-back point or switch-back hysteresis)
- Display of the actual temperature, a switching point or of the peak value
- Display range individually selectable in °C or °F
- Measurement unit (°C, °F) is displayed
- Analog output (4 .. 20 mA or 0 .. 10 V)
- Programming lock

## Terminal assignment:

### Device connection

Pin	
1	+U <sub>B</sub>
2	0 V
3	Analog output Signal +
4	Analog output Signal - (0 V)
5	Relay 1 N/C
6	Relay 1 N/O
7	Center relay 1 and 2
8	Relay 2 N/C
9	Relay 2 N/O
10	Relay 3 N/C
11	Relay 3 N/O
12	Center relay 3 and 4
13	Relay 4 N/C
14	Relay 4 N/O

### Probe connection

Pin	
1	+U <sub>B</sub>
2	Signal +
3	n.c.
4	Signal -
5	0 V

## Model code:

ETS 1 7 0 X - 100 - 000

### Type of sensor

0 = For PT 100 sensors

### Display

2 = 4-digit display °F

### Measuring range

+32 .. 212 °F (0 .. 100 °C)

### Modification number

000 = Standard

### Accessories:

PG cable glands, mounting bolts, a 5 pole female connector (Binder series 681) for connecting the separate temperature probe and a 3 m sensor cable (LIYCY 4 x 0.25 mm<sup>2</sup>) are supplied with the instrument.

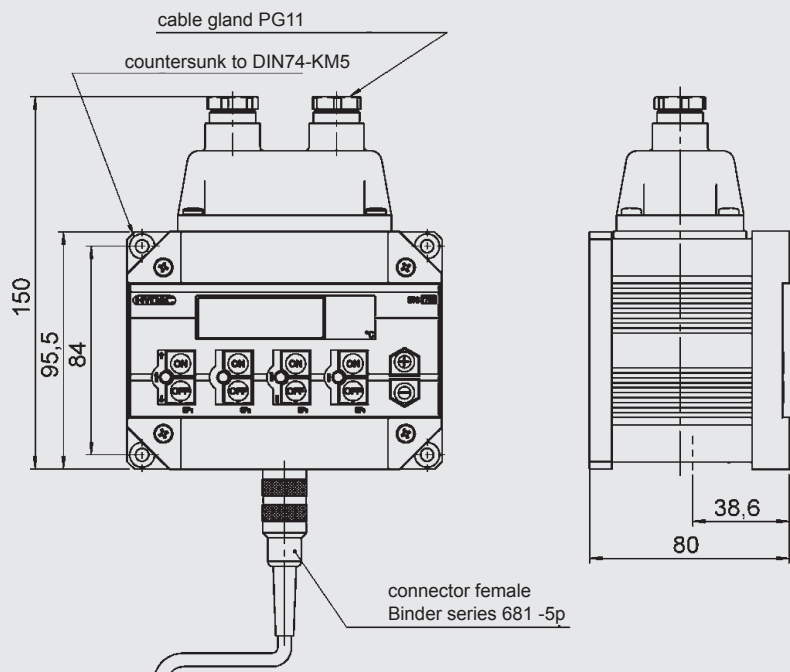
Other accessories, such as vibration mounts etc. can be found in the Accessories brochure.

## Separate temperature probe:

(not supplied with the instrument)

- TFP 104 - 000 with male electr. conn. 4 pole Binder series 714 M18 Part No.: 904696 (female connector supplied)
- TFP 106 - 000 with male electr. conn. 4 pole M12x1 Part No.: 921330 (female connector not supplied)
- 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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