

Electronic Temperature Sensor ETS 1700

Application:

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

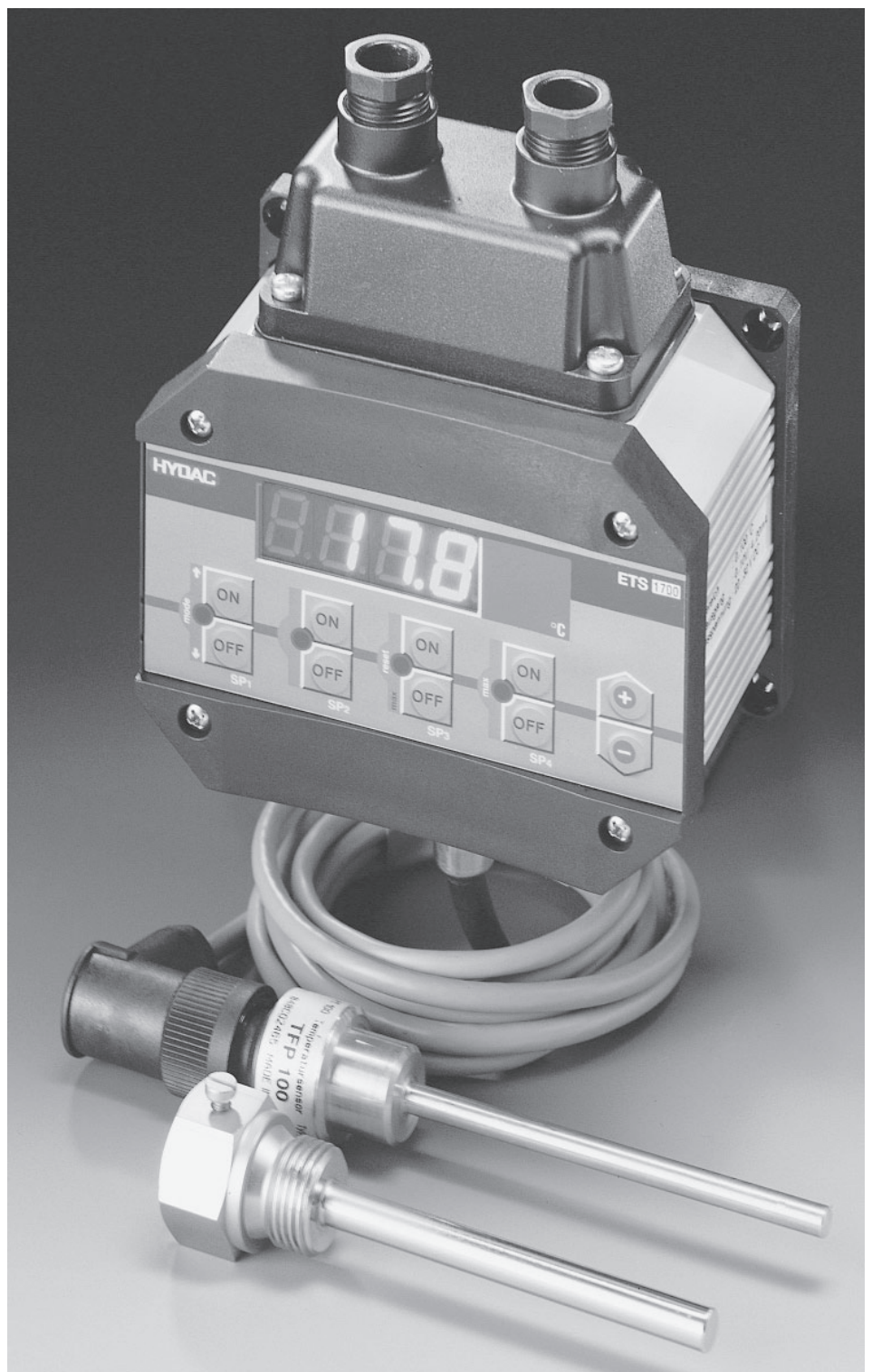
The 4-digit display can indicate the actual temperature, one of the switching points or the maximum temperature. The maximum temperature indicates the highest temperature which has occurred since the unit was switched on or was last reset.

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

4 switching and switch-back points which are independent of each other can be adjusted very simply via a membrane keypad. For incorporation into monitoring systems (e.g. with PLC), an analogue output (4 .. 20 mA or 0 .. 10 V) is also available.

Special features:

- Temperature range 0 .. 100 °C (32 .. 212 °F)
- 4-digit digital display
- Simple operation by means of key programming
- 4 critical value relays, switching points and switch-back points can be adjusted independently
- Option for analogue 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°)



Setting options:

The integral microcomputer within the ETS 1700 enables many useful extra functions in addition to the switching functions, compared with a normal mechanical temperature sensor. It is possible, for example, to activate switching delay times or to change the relay switching direction. All settings are made via the membrane keypad.

Setting ranges of the switching points:

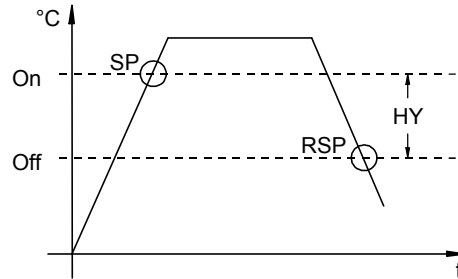
- Switching point relays 1 to 4: 1.5 .. 100 % of the measuring range
- Switch-back point relays 1 to 4: 1 .. 99 % of the measuring range or alternatively
- Switch-back hystereses 1 to 4: 1 .. 99 % the measuring range

Additional setting options:

- Switching direction of the relays 1 to 4 (pull-in or release when switching point is reached)
- Switch-on delay relays 1 to 4 in the range 0.00 .. 900.0 seconds
- Switch-back delay relays 1 to 4 in the range 0.00 .. 900.0 seconds
- Switch-back mode (alternatively switch-back point or switch-back hysteresis)
- Display of the actual temperature, one switching point or the peak value
- Individual scale of the display range in °C or °F
- Unit (°C, °F) is displayed
- Analogue output (4 .. 20 mA or 0 .. 10 V)
- Programming disable

Switching point / switch-back point:

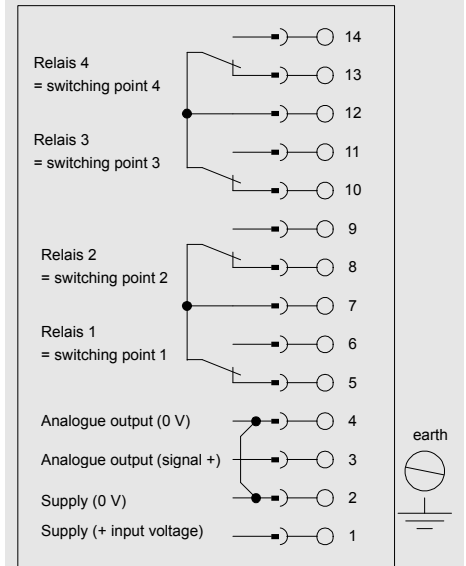
The switching point is defined as being the temperature value, which when it is reached (whilst temperature is increasing) causes a change in the relay state. This output state is maintained until the temperature falls below the switch-back point allocated to the switching point. The switch-back point is the temperature value at which the output relay switches back to its original state. The difference between the switching point and switch-back point is defined as being the switch-back hysteresis.



- SP = switching point
- RSP = switch-back point
- HY = switch-back hysteresis (switching point minus switch-back point)

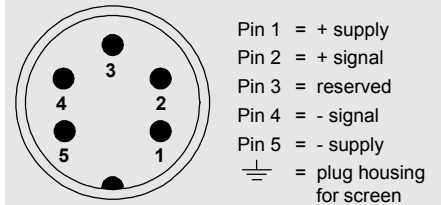
Pin connections:

Relay outputs, analogue output, supply voltage

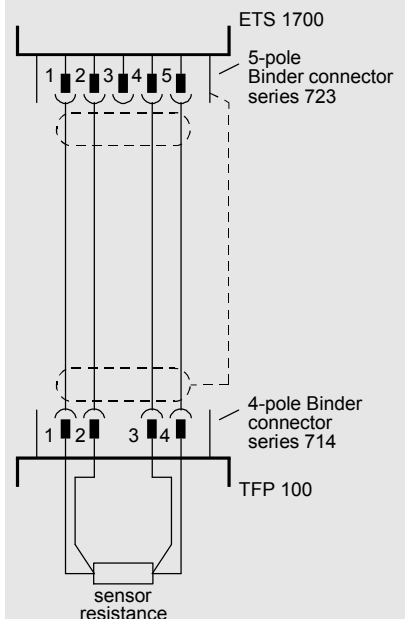
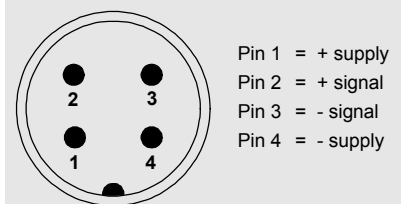


Sensor connection

Internal view of pin connections (on the ETS 1700)
5-pole Binder connector, series 723



Internal view of pin connections (on the TFP 100)
4-pole Binder connector, series 714



Assembly:

When used in critical applications (e.g. strong vibrations or knocks) the ETS 1700 must be mounted on rubber buffers (DIN vibration mounts).

When supplied the sensor connection is accessible from the bottom and the electrical connection is accessible from the top. Depending on the application, the front panel of the instrument can be turned through 180° so that the electrical connection can be made from underneath and the sensor connection can be made from the top.

Technical specifications:

| | |
|---|--|
| Input data: | |
| Measuring ranges: | 0 .. 100 °C / 32 .. 212 °F |
| Output data: | |
| Accuracy (display, analogue output): | ≤ ±1.0 % of the measuring range |
| Repeatability: | ≤ ±0.25 % of the measuring range |
| Temperature drift in the ambient temperature range: | ≤ ±0.03 %/°C / ≤ ±0.054 %/°F zero point ≤ ±0.03 %/°C / ≤ ±0.054 %/°F range |
| Analogue output: | |
| Signal: | 4 .. 20 mA, ohmic resistance ≤ 400 Ω 0 .. 10 V, ohmic resistance ≥ 2 KΩ |
| Switching outputs: | |
| Type: | 4 relays with change-over contacts in 2 groups (common supply of each group connected) |
| Switching voltage: | 0.1 .. 250 VAC / VDC |
| Switching current: | 0.009 .. 2 A |
| Switching capacity: | 400 VA, 50 W (for inductive load, use varistors) |
| Life expectancy of contacts: | ≥ 20 million min. load ≥ 1 million max. load |
| Reaction time (without switching delay): | approx. 20 ms |
| Setting range of switching points: | 1.5 .. 100 % of the measuring range |
| Setting range of hystereses/switch-back points: | 1 .. 99 % of the measuring range |
| Ambient conditions: | |
| Ambient temperature range: | -25 .. +60 °C / -13 .. +140 °F |
| Storage temperature range: | -40 .. +80 °C / -40 .. +176 °F |
| CE mark: | EN 50081-1, EN 50081-2 EN 50082-1, EN 50082-2 |
| Vibration resistance: | approx. 5 g |
| Shock resistance: | approx. 10 g |
| Other data: | |
| Sensor connection: | 5-pole Binder connector, series 681 |
| Electrical connection: | 14-pole, terminal strip, connection cross-section max. 1.5 mm ² |
| Supply voltage: | 22 .. 32 VDC, residual ripple ≤ 10% |
| Current consumption: | approx. 200 mA |
| Display: | 4-digit 7-segment LED display, red, height of digits 13 mm |
| Safety type: | IP 65 |
| Weight: | approx. 800 g |

Technical specifications - Accessories:

| | |
|--|--------------------------------------|
| Temperature sensor TFP 100 | |
| Temperature range of medium (for TFP 100) | -40 .. +125 °C / -40 .. +257°F |
| Safety sleeve for tank mounting the TFP 100 | |
| Parts in contact with fluid | All materials compatible with nickel |

Model code:

ETS 1 7 0 X - 100 - 000

Type of sensor

0 = for PT 100 sensors
(Temperature sensor TFP 100 must be ordered separately, see below)

Display

1 = 4-digit display °C
2 = 4-digit display °F

Measuring range

100 = 0 .. 100 °C / 32 .. 212 °F

Modification number

000 = standard (determined by manufacturer)

Accessories supplied with the unit:

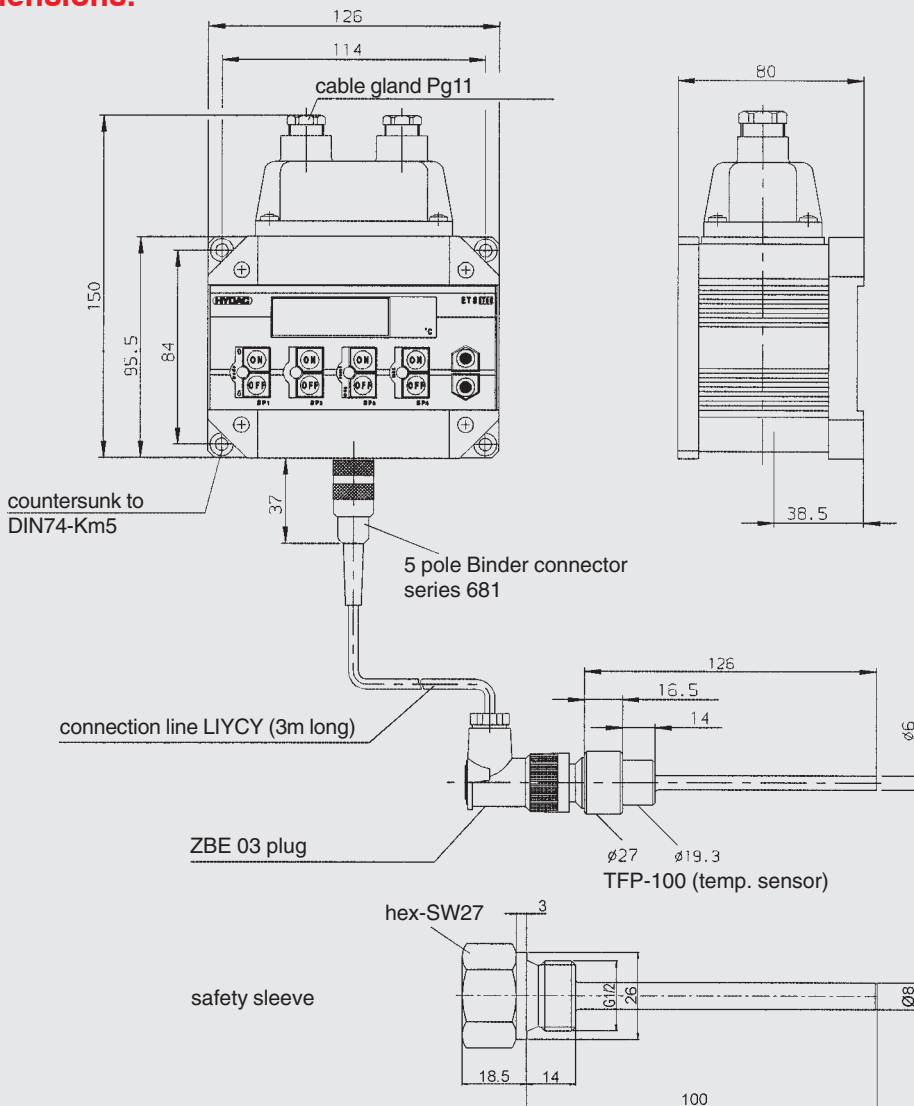
- PG 11 cable glands
- 4 mounting screws M5 x 20 mm
- 5-pole Binder connector, series 681
- 3 m connection line for TFP 100 (LIYCY 4 x 0.25 mm²)

Other accessories :

(must be ordered separately)

- Temperature sensor TFP 100 (ZBE 03 plug included)
- Safety sleeve for tank mounting
- Mounting kit (4 vibration mounts, 4 screws M5 x 6 mm)

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.