

**HYDAC INTERNATIONAL**


## Electronic Temperature Switch

### ETS 320 Pressure-Resistant for Inline Mounting

**Description:**

The ETS 320 is a compact electronic temperature switch with a 3-digit display.

Pressure resistant to 600 bar with an integral 18 mm temperature probe, this model can be mounted directly inline or on the hydraulic block and has a measuring range of  $-25 \dots +100 \text{ }^\circ\text{C}$ .

Different output models with one or two switching outputs, and with the possible option of an additional analogue output signal of  $4 \dots 20 \text{ mA}$ , 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:**

- Compact temperature switch with integral temperature probe
- 2 transistor switching outputs, up to 1.2 A load per output
- Analogue output signal selectable  $4 \dots 20 \text{ mA}$
- 3-digit display
- Switching point or window function
- Switching / switch-back points and many useful additional functions can be set using keypad

**Technical specifications:**

Input data	
Measuring range	$-25 \dots 100^\circ\text{C}$ ( $-13 \dots 212 \text{ }^\circ\text{F}$ )
Probe length	18 mm
Pressure resistance	600 bar
Mechanical connection	G1/2 A DIN 3852
Torque value	45 Nm
Parts in contact with medium	Mech. connection: Stainless steel Seal: FPM
Output data	
Accuracy (display, analogue output)	$\leq \pm 1.0 \text{ }^\circ\text{C}$ ( $\leq \pm 2.0 \text{ }^\circ\text{F}$ )
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	$4 \dots 20 \text{ mA}$ ohmic resistance max. $400 \ \Omega$ corresponds to $-25 \dots +100 \text{ }^\circ\text{C}$
Switching outputs	
Type	PNP transistor switching outputs
Switching current	max. 1.2 A per output
Switching cycles	> 100 million
Rise time to DIN EN 60751	$t_{50}$ : 3 s $t_{90}$ : 9 s
Environmental conditions	
Ambient temperature range	$-25 \dots +80 \text{ }^\circ\text{C}$
Storage temperature range	$-40 \dots +80 \text{ }^\circ\text{C}$
Fluid temperature range (for the probe)	$-40 \dots +100 \text{ }^\circ\text{C}$
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 10 \text{ g}$
Shock resistance to DIN EN 60068-2-29 (1 ms)	$\leq 50 \text{ g}$
Protection class to DIN 40050	IP 65
Other data	
Supply voltage	$20 \dots 32 \text{ V DC}$
Current consumption	approx. 100 mA without switch output
Residual ripple of supply voltage	$\leq 5 \text{ } \%$
Display	3-digit, LED, 7 segment, red, height of digits 9.2 mm
Weight	approx. 300 g

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

### Setting options:

All the settings available on the ETS 320 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	-22.0 .. 100.0	1.0 .. 178.0	1.0
°F	-10.0 .. 212.0	2.0 .. 320.0	2.0

Window function

Unit	Lower switch value	Upper switch value	Increment*
°C	-23.0 .. 99.0	-22.0 .. 100.0	1.0
°F	-12.0 .. 210.0	-10.0 .. 212.0	2.0

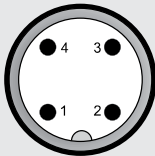
\* All ranges given in the table are adjustable by the increments shown.

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

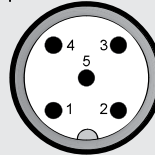
### Pin connections:

M12x1, 4 pole



Pin	ETS 326-2	ETS 326-3
1	+U <sub>B</sub>	+U <sub>B</sub>
2	SP 2	Analogue
3	0 V	0 V
4	SP 1	SP 1

M12x1, 5 pole



Pin	ETS 328-5
1	+U <sub>B</sub>
2	Analogue
3	0 V
4	SP 1
5	SP 2

### Model code:

ETS 3 2 X - X - 100 - X00

#### Mechanical connection

2 = G1/2 A DIN 3852 (male)

#### 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"

#### Measuring range

-25 .. +100°C (-13 ... +212 °F)

#### Modification number

000 = display in °C

400 = display in °F

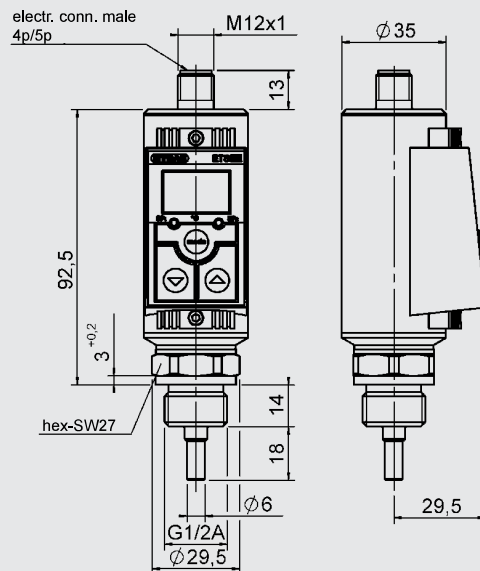
#### Note:

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

#### Accessories:

Appropriate accessories, such as electrical connectors, clamps for wall-mounting etc can be found in the Accessories section.

### 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.

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