

**Technical data**

|                             |                                                                                                                                                                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Medium                      | water, coolant                                                                                                                                                                                                          |
| Function                    | minimum - operating current (oc)                                                                                                                                                                                        |
| Operating voltage           | 12 / 24 V (-25% / +50%) (9 - 36 VDC)                                                                                                                                                                                    |
| Current consumption         | < 8 mA                                                                                                                                                                                                                  |
| Output                      | low side switch<br>≤ 1 A over the whole temperature range<br>short-circuit and overload protected over the ambient temperature range. At inductive loads freewheeling diode e.g. 1N4007, has to be mounted at the load. |
| Mounting thread             | M14x1,5                                                                                                                                                                                                                 |
| Function control            | 2 seconds ± 5%                                                                                                                                                                                                          |
| Fault indication delay      | 7 seconds ± 5% <sup>ⓑ</sup>                                                                                                                                                                                             |
| Connection                  | connector ISO 15170-A1-3.1-Sn/K1 (former DIN72585)                                                                                                                                                                      |
| Housing material            | CuZn38Pb2<br>EN12164; CW608N<br>capacitive connected to ground                                                                                                                                                          |
| Probe coating               | Tefzel® ETFE                                                                                                                                                                                                            |
| Probe protection            | IP 69K to DIN40050 with mounted mating connector <sup>ⓑ</sup>                                                                                                                                                           |
| Weight                      | approx. 85 g                                                                                                                                                                                                            |
| Marking                     | manufacturer; type; manufacturer no.; SN; year / week; approval                                                                                                                                                         |
| Switch point hysteresis     | < 3 mm                                                                                                                                                                                                                  |
| Medium temperature          | -40 °C to +125 °C (-40 °F to +257 °F)                                                                                                                                                                                   |
| Ambient temperature         | -40 °C to +125 °C (-40 °F to +257 °F)                                                                                                                                                                                   |
| Storage temperature         | -50 °C to +125 °C (-58 °F to +257 °F)                                                                                                                                                                                   |
| Mounting position           | optional                                                                                                                                                                                                                |
| Reverse polarity protection | inbuilt between positive and negative terminal                                                                                                                                                                          |

**Caution!!**

Do not connect negative potential to signal terminal of the sensor and positive potential to negative terminal of the sensor.

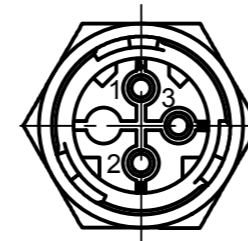
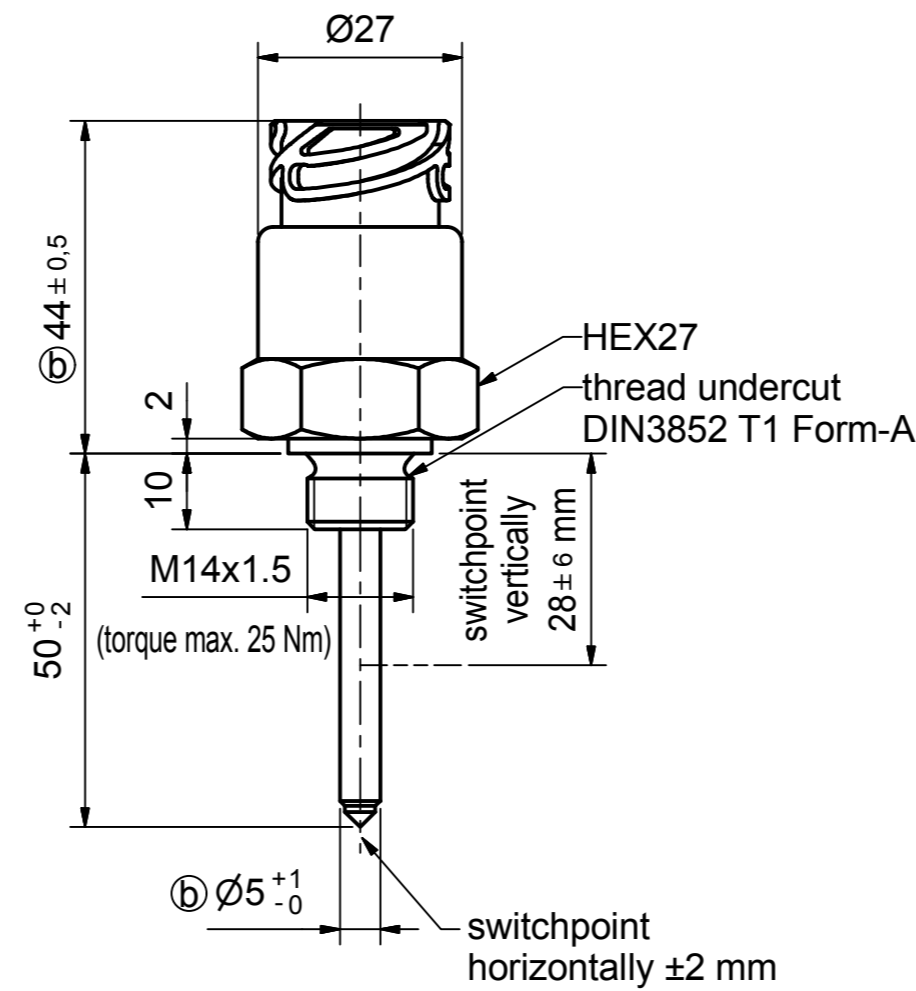
|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| Approval              | <span style="border: 1px solid black; padding: 2px;">e1</span> |
|                       | 035459                                                         |
| Customs tariff number | 90261029                                                       |

**Environmental simulations**

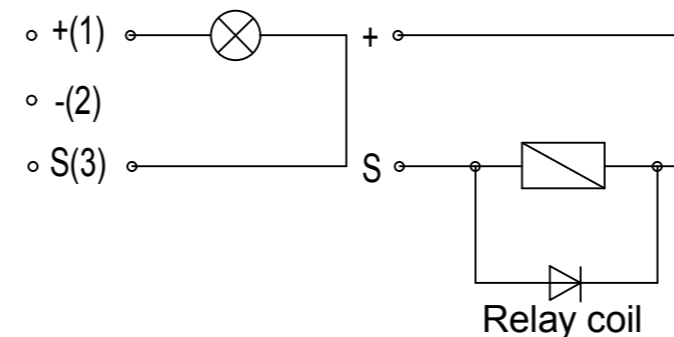
|                         |                              |                                 |
|-------------------------|------------------------------|---------------------------------|
| Vibration               | ISO 16750-3:2007             | 10 Hz - 2000 Hz 20 g            |
| Free Fall               | IEC 16750                    |                                 |
| Mechanical Shock        | DIN EN 60068-2-27:1995;      | 100 g / 11ms                    |
| Dry Cold                | DIN EN 60068-2-1:2006;       | -40 °C / 24 h (-40 °F / 24 h)   |
| Dry Heat                | DIN EN 60068-2-2:2008;       | +125 °C / 96 h (+257 °F / 96 h) |
| Temperature cycling     | DIN EN 60068-2-14:2000       |                                 |
| Damp Heat               | DIN EN 60068-2-78:2002       |                                 |
| Damp Heat, steady state | DIN EN 60068-2-30:2006       |                                 |
| Salt spray              | DIN EN 60068-2-52:1996       |                                 |
| Pressure resistance     | 2,5 MPa (25 bar / 362,6 psi) | (25 °C / 77 °F / 1 h)           |

**EMC**

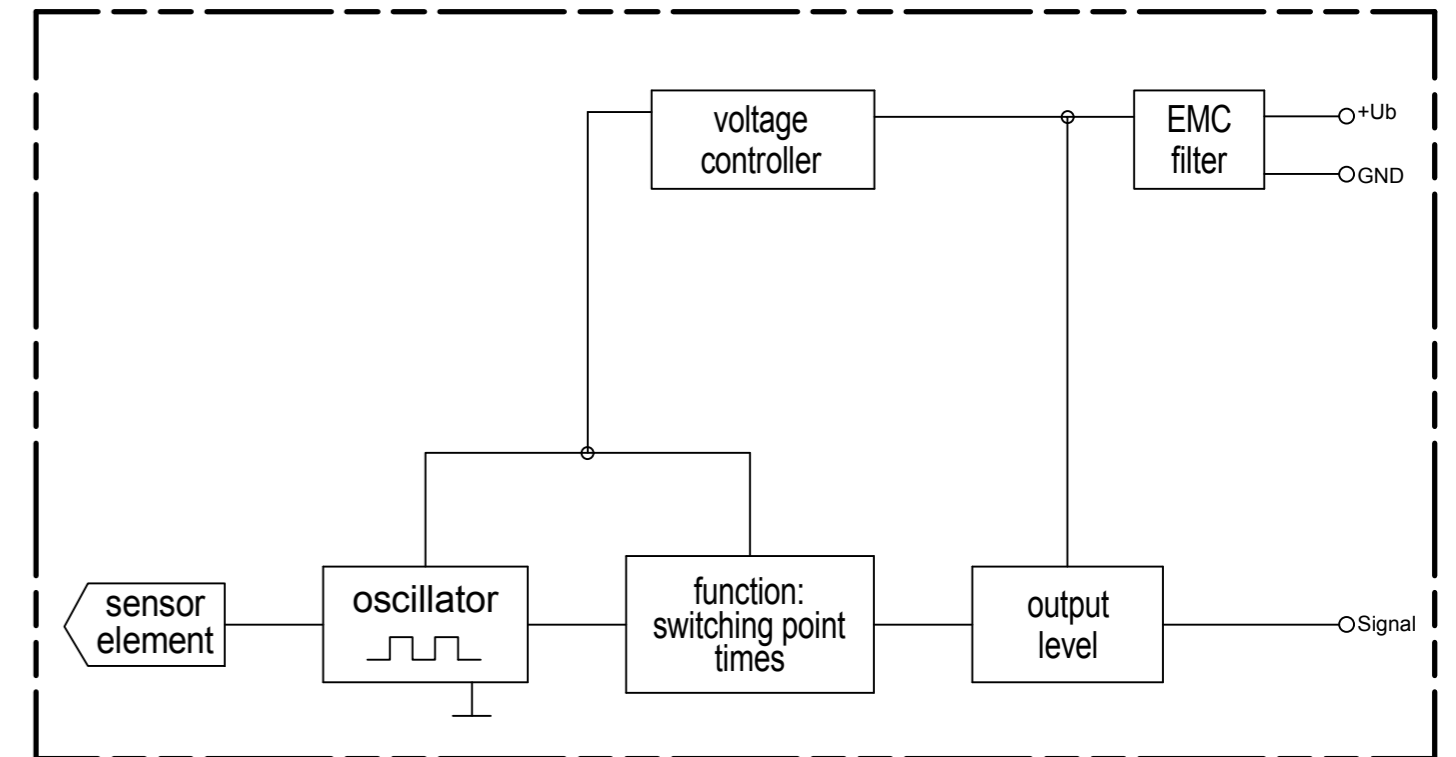
|                                                        |                 |                                      |
|--------------------------------------------------------|-----------------|--------------------------------------|
| Radiated emission                                      | 2004/104/EG     | 30 MHz - 1 GHz; 1 m                  |
| Conducted transient emission                           | ISO 7637-2:2004 |                                      |
| Immunity to RF electromagnetic fields                  | ISO 11452-1/-2  | 1000 MHz - 2000 MHz; 150 V / m (rms) |
| Immunity to RF electromagnetic fields in the stripline | ISO 11452-1/-5  | 20 MHz - 1000 MHz; 150 V / m (rms)   |
| Transient immunity test on power lines                 | ISO 7637-2/2004 | Impulse 1, 2a, 2b, 3a, 3b, 4         |



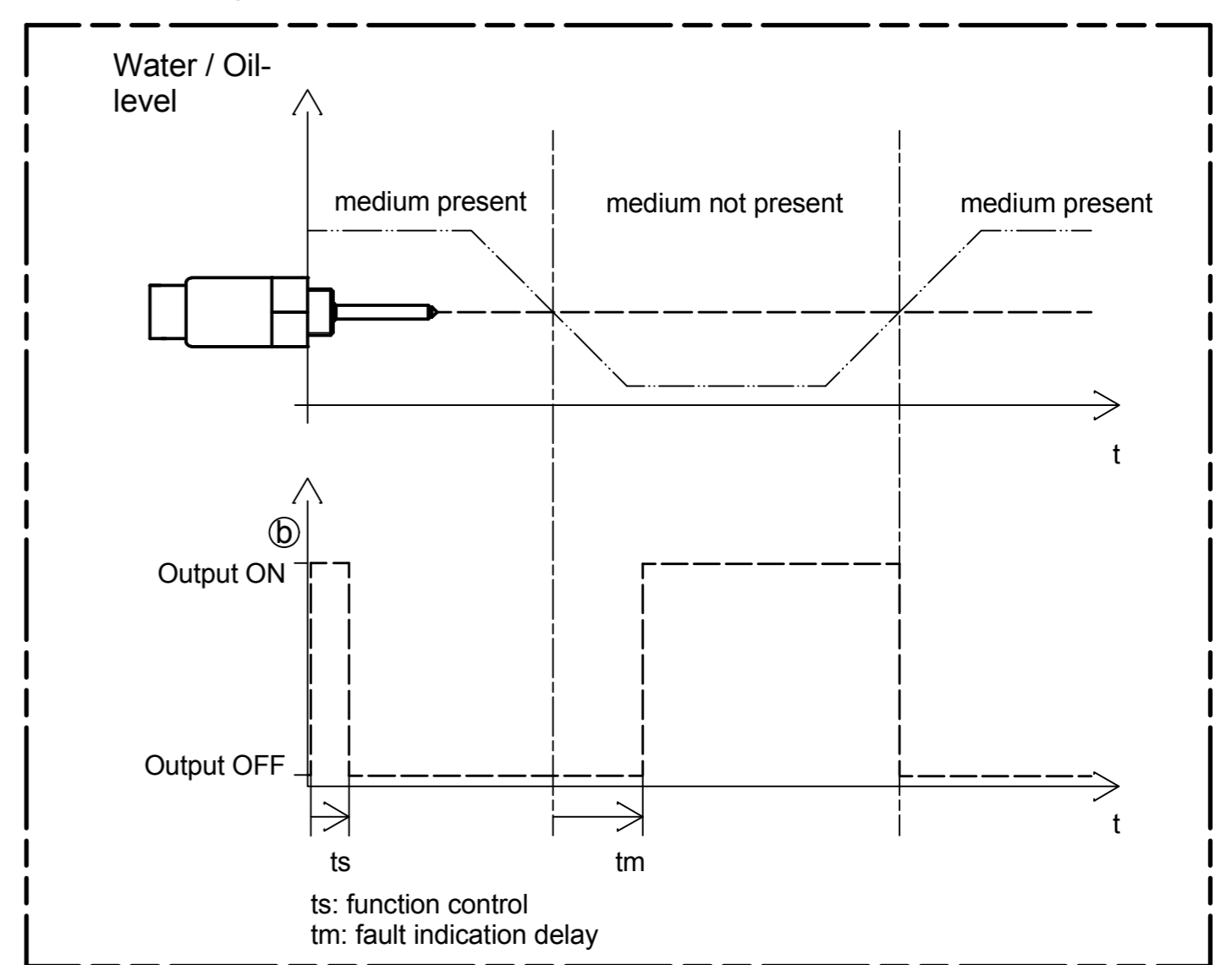
- 1 = positive (+)
- 2 = negative (-)
- 3 = signal (S)



**Block diagram**



**Functional diagram for MINIMUM Probes**



|                      |                       |                      |                                                                                                           |                                        |            |          |
|----------------------|-----------------------|----------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------|------------|----------|
| field of application |                       | admissible tolerance | surface                                                                                                   | scale 1:1                              | position - | amount - |
|                      |                       | ISO2768-mK           |                                                                                                           |                                        |            |          |
|                      | date                  | name                 | description                                                                                               |                                        |            |          |
|                      | created by 25.05.2009 | Schetnikova          | CLS-40 water level sensor<br>low side switch - operating current<br>with connector ISO 15170-A1-3.1-Sn/K1 |                                        |            |          |
|                      | checked by 26.10.2009 | Saß                  |                                                                                                           |                                        |            |          |
|                      | revised               | 25.04.12             | Möderer/Stark                                                                                             | drawing number                         |            |          |
|                      | admissible tol.       | 22.06.10             | Möderer/Saß                                                                                               | 320400                                 |            |          |
|                      | rev. modification     | date                 | name/checked by                                                                                           | sheet 1/1                              |            |          |
|                      |                       |                      |                                                                                                           | drawing path: I:\CAD\320\320400\US.idw |            |          |