4.4  SCLTSD LevelTempController

- Proven measurement system
- Rotatable
- Level display
- mm/inch/% display
- High & low display
- Analogue output
- Switching outputs
- Only one bore
- No surge tube required
- Genuine 5 mm resolution
- Replaces several mechanical switches

With the LevelTempController it is now possible to set and display separately both temperature and level on a common platform. It is in tank monitoring that the integration of level and temperature opens up possibilities for you in a unique way.

The LevelTempController combines the functions of a level/temperature switch, a level/temperature sensor and a level/temperature display:

- Level/temperature display (thermometer/sight glass)
- Switching outputs
- Analogue signal

Level
The position of the float is continually captured in fine steps (≥5 mm) and shown on the display in mm or inches. Because of continual capture of the level, there is no longer the danger from „stickiness“ of individual mechanical contacts. This substantially increases the operational safety of the installation being monitored.

With the selectable percentage display, the fullness status is shown in a uniform manner to the operator independently of the tank shape. An offset (difference from probe to tank bottom) can also be input so that the level up from the tank bottom can be shown realistically.

With the menu-driven level switching points, the most varied of applications can be conveniently achieved, or be subsequently corrected.

Because switching points no longer have to be notified at the time of ordering, this reduces the large variety of mechanical level switches which are usually needed.

Temperature
The temperature of the medium is continually captured and shown on the display. Just as with the LevelController, all the switching outputs can be set individually. In this connection, all the convenient switch functions such as window and hysteresis, normally-closed and normally-open contacts and also an analogue output for temperature, are of course available.

Reliable/safe
A password enables unauthorised parameter changes to be avoided.

Universal
In combination with convenient switch functions such as hysteresis and window, and normally closed and normally open contacts, intelligent settings can be achieved with the LevelController; these are not possible with mechanical level switches. This means that several switches can be replaced by a single Controller. In addition, with the optional analogue outputs there is the possibility of monitoring levels even more conveniently with a single control.

Level: eg. leakage monitoring
Temperature: eg. cooler, heating, warning, switch off.
### SCLSD

- **Fill tank**
  - Switching output 1
    - SP1 = 300 mm
    - rSP1 = 60 mm
    - Window function: normally open
  - Switching output 2
    - SP2 = 260 mm
    - rSP2 = 130 mm
    - Hysteresis: normally closed

- **Equipment on/off**
  - If the level falls short of 130 mm, the contact closes and opens again only when falling short of 260 mm.
  - If the level lies between 300 and 60 mm, output S1 is closed.

- **Filling**
  - If the temperature goes above 50 °C, contact S2 closes and opens again only at 40°C.
  - If the temperature lies between 60 °C and 10 °C, output S1 is closed.

### SCTSD

- **Equipment on/off**
  - Switching output 1
    - SP1 = 60 °C
    - rSP1 = 10 °C
    - Window function: normally open
  - Switching output 2
    - SP2 = 50 °C
    - rSP2 = 40 °C
    - Hysteresis: normally open

- **Cooling**
  - If the temperature goes above 50 °C, contact S2 closes and opens again only at 40°C.

Application example see page 59.
4.4 SCLTSD LevelTempController

**Instrument features**

- **Optical interface**
- **Switch status display**

**Everything in view**

- **Angled display**
- **Digital display**
  - Large
  - Luminescent
- **Display**
  - mm/inch/%
  - Actual level
- **High & low display**
- **Temperature display**
  - °C/°F
  - Actual temperature

**Easy to operate**

- **3 large keys**
- **Display of units**

**Connect as required**

- **2 switching outputs**
- **Analogue output**
  - 0…20 or 4…20 mA
- **Freely programmable**
- **Scaleable**
- **M12 plug –in connector**

**Rugged**

- **Metal housing**
- **Watertight**
- **High interference resistance**
- **Vibration-proof**
- **Shock-proof**

- **Settable with ControllerWIN software**

**Twin concept**

- 2 in 1

**Connect as required**

- **One connecting bore**
- **Compact**
- **290° rotatable**
- **G3/4 BSPP**
- **DIN flange**

**Level**

- **Proven measurement system**
- **High float dynamics**
- **Small construction**
- **Universal applicability**

**No surge tube required**

- **Electronic damping**
  - Damping settable

**Temperature probe**

- **Integrated into rod end**
### Technical data

#### Electrical connection

<table>
<thead>
<tr>
<th>Power supply</th>
<th>15...30 VDC nominal 24 VDC, protection class 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical connection</td>
<td>M12x1; 4-pole; 5-pole; with gold-plated contacts</td>
</tr>
<tr>
<td>Short circuit protection</td>
<td>Yes</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>Yes</td>
</tr>
<tr>
<td>Overload protection</td>
<td>Yes</td>
</tr>
<tr>
<td>Current consumption</td>
<td>&lt; 100 mA</td>
</tr>
</tbody>
</table>

#### Housing

| Directionally adjustable | up to 290° |
| Material                | zinc die-casting Z 410: painted |
| Foil material           | polyester |
| Display                 | 4-figure 7-segment LED; red; digit height 9 mm |
| Protection class        | IP67 DIN EN 60529 |

#### Environmental conditions

| Environmental temperature range | -20...+85 °C |
| Storage temperature range       | -40...+100 °C |

#### EM compatibility

| Interference emissions | EN 61000-6-3 |
| Interference resistance  | EN 61000-6-2 |

#### Outputs

| Switching outputs | 2 MOSFET high side switches (PNP) |
| Contact functions | Normally-open/normally-closed; window/hysteresis; function freely settable |
| Switch voltage    | Power supply -1,5 VDC |
| Switch current max. | 0,5 A per switch |
| Short circuit current | 2,4 A per switch |
| Analogue output   | 0/4...20 mA; programmable; freely scalable; RL ≤ (power supply - 8 V)/20 mA (≤ 500 Ω) |

#### Level

<table>
<thead>
<tr>
<th>Input quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement element</td>
</tr>
<tr>
<td>Connection thread</td>
</tr>
<tr>
<td>Parts in contact with media</td>
</tr>
<tr>
<td>Temperature range of medium</td>
</tr>
<tr>
<td>Media compatibility</td>
</tr>
</tbody>
</table>

#### Output quantities

| Switch point accuracy | ± 1 % FS at 25 °C |
| Display accuracy      | ± 1 % FS ± 1 digit at 25 °C |
| Response speed        | ≤ 700 ms |
| Resolution            | 7,5 mm |

#### Float

| Material | NBR |
| Dimenstions | Ø 18 mm, length 35 mm |

#### Level rod

| Material | Brass |
| Dimensions | Ø 8 mm |
| Working pressure | 1 bar |

#### Temperatur

<table>
<thead>
<tr>
<th>Input quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display range</td>
</tr>
<tr>
<td>Probe input</td>
</tr>
<tr>
<td>Probe connection</td>
</tr>
</tbody>
</table>

#### Output quantities

| Switch point accuracy | ± 0,35 % FS bei 25 °C |
| Display accuracy      | ± 0,35 % FS ± 1 digit at 25 °C |
| Response speed        | ≤ 300 ms |

*Other seal materials (FKM, EPDM etc.) on request*
### 4.4 SCLTSD LevelTempController Display possibilities & connection designations

#### Percentage display example

**mm display example**

<table>
<thead>
<tr>
<th>Probe length measurement range</th>
<th>L1</th>
<th>L2</th>
<th>Display resolution increment</th>
<th>Increment</th>
<th>Smallest reverse switch value RSP</th>
<th>Greatest switch value SP</th>
<th>Smallest settable distance between SP and RSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 mm</td>
<td>40…210 mm</td>
<td>1 mm</td>
<td>5 mm</td>
<td>40</td>
<td>210</td>
<td>5 mm</td>
<td></td>
</tr>
<tr>
<td>370 mm</td>
<td>40…330 mm</td>
<td>1 mm</td>
<td>5 mm</td>
<td>40</td>
<td>330</td>
<td>5 mm</td>
<td></td>
</tr>
<tr>
<td>520 mm</td>
<td>40…480 mm</td>
<td>1 mm</td>
<td>5 mm</td>
<td>40</td>
<td>480</td>
<td>5 mm</td>
<td></td>
</tr>
</tbody>
</table>

**Connection designation**

**SCLTSD-xxx-00-07 temperature/level respectively**

- 2 switching outputs; M12x1; 4-pole

- **SCLTSD-xxx-10-07 temperature/level respectively**

- 1 switching output; 1 analogue output; M12x1; 4-pole

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bn = brown  
bk = black  
wh = white  
bl = blue

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Catalogue 4083-2/UK
4.4 SCLTSD LevelTempController

**SCLTSD LevelTempController**

- **Level**
  - 2 switching outputs; without analogue output
  - M12x1; plug-in connector; 4-pole
- **Temperature**
  - 2 switching outputs; without analogue output
  - M12x1; plug-in connector; 4-pole

**SCLTSD-xxx-00-07**

- Level
  - 2 switching outputs; without analogue output
  - M12x1; plug-in connector; 4-pole
- Temperature
  - 2 switching outputs; without analogue output
  - M12x1; plug-in connector; 4-pole

**SCLTSD-xxx-10-07**

- Level
  - 1 switching output; with analogue output
  - M12x1; plug-in connector; 4-pole
- Temperature
  - 1 switching output; with analogue output
  - M12x1; plug-in connector; 4-pole

**SCLTSD-xxx-10-05**

- Level
  - 2 switching outputs; with analogue output
  - M12x1; plug-in connector; 5-pole
- Temperature
  - 2 switching outputs; with analogue outputs
  - M12x1; plug-in connector; 5-pole

**Accessories**

- **PC Programming kit**
  - SCS-PRG-KIT
- **Flange adaptor, 6-hole connection DIN 24557, part 2**
  - SCAF-3/4-90

**Connecting cable & separate plugs**

- **Connecting cable, made up**
  - (open cable end)
  - SCK-400-xx-xx

**Cable length in m**

- 02 2 m
- 05 5 m
- 10 10 m

**Plug-in connector**

- 45 M12 cable socket; straight
- 55 M12 cable socket; 90° angled

**Separate plugs**

- M12 cable socket; straight
- M12 cable socket; 90° angled
  - SCK-145
  - SCK-155