SCTSD-L combination switch

Device features

- Compact design
- Temperature display
- Individually adjustable temperature switching outputs
- Small switching hysteresis
- Preset
  - For standard oils
  - For cooling
  - For switching off (T_{max})
- Fixed level contacts
- Only one float
- Preset level
  - Warning and shutdown min.
  - Shut-down min./max.
- Up to one meter probe length



The SCTSD-L combination switch was designed to meet the requirements of hydraulic facility construction. It combines the functions of a fixed mechanical level switch with an adjustable temperature switch with display.

Level

The tank level is measured using a highly dynamic, fully encapsulated magnetic float which switches the bi-stable reed contacts. The M12 pin assignments are compatible with conventional existing systems. The level contacts are pre-determined according to the normal tank sizes. There are two standard switch output versions available:

- Warning minimum level and shutdown minimum level
- Shutdown maximum and minimum levels

The switching positions were chosen according to the proven experiences of plant constructors and the DIN. For safety reasons (fail-safe / closed circuit), the switching behaviour of the standard switch is an NC contact.

Optionally the contacts can be changed at the factory and pre-set in line with the customer's requirements.

Temperature

The temperature is detected using a sensor; it is then evaluated and constantly displayed using the SCTSD TemperatureController (as described in the SCTSD section). Thanks to the easy switching functions (e.g. switching windows), intelligent switching settings can be achieved that are not possible using a mechanical temperature switch.

Normally the outputs for the normal temperature functions cooling on/off and shutdown are pre-installed as standard. The temperature thresholds were designed for standard oils (HLP).

It is possible to adjust the temperature monitoring temperature limits (e.g. cooling and shutdown) for each output individually using the keys:

- On/off switching temperature limits
- NO/NC contact
- Hysteresis / window function
- Time delay and attenuation

Optional (see: SCTSD-L-….-KIT5) 3 different versions of temperature switching outputs are available:

- 2 switching outputs
- 1 switching and 1 analogue output
- 2 switching outputs and one analogue output

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SCTSD-L combination switch

Technical data

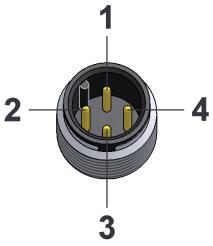
General	
Measurement principle	Magnetic float reed switches
Float	NBR, Ø 18 mm, length 25 mm, magnetic
Viscosity	Max. 250 cSt at 25 °C
Density	at least 0.750 g/cm³
Connector thread	G3/4 outer thread
Protection tube	Ø 8 mm
Probe length Lmax	Lowest switching point + 35 mm
Operating pressure	1 bar max.
Accuracy	±2 mm
Material	
Protection tube	Brass
Connector thread	Brass
Ambient conditions	
Temperature of substance	-20...+85 °C
Storage temperature	-40...+100 °C

Preset temperatures	
Switching output 1*	50 °C contact closed (cooling on)
	45 °C contact open (cooling off)
Switching output 2*	63 °C contact open (shutdown)
	60 °C contact closed
Level switching outputs	
Switching current:	0.5 A max.
Switching voltage	100 V max.
Switching power	10 W max.
Switching function	NO or NC (bi-stable)
Contact material	Rhodium
Plug	M12x1; 4 pin
Smallest difference between L1 and L2	30 mm
Smallest switching position L1	30 mm from the tank lid

*) Each temperature switching output can be individually re-programmed or adjusted:
- NO/NC contact
- On/off switching temperature
- Hysteresis / window function
- Time delay and attenuation

Fill level pin assignments

M12x1; 4-pole



PIN	Assignment
1	IN
2	OUT S2
3	n.c.*
4	OUT S1

*n.c. = do not connect

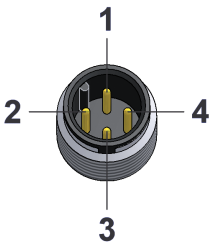
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SCTSD-L combination switch

Temperature pin assignment

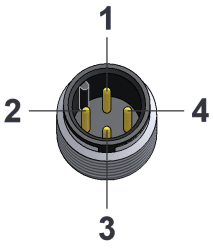
SCTSD-150-0X-0X
(Refer chapter SCTSD)

SCTSD-L-xxxxO-xxFO
SCTSD-L-xxxxx-xxxxx-KIT5
2 switching outputs
M12x1; 4-pole



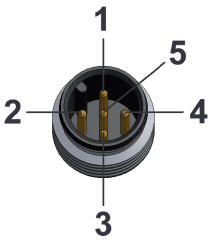
PIN	Assignment
1	V_+
2	S2 out
3	0 V / GND
4	S1 out

SCTSD-L-xxxxx-xxxxx-17-KIT5
1 switching output, 1 analogue output
M12x1; 4-pole

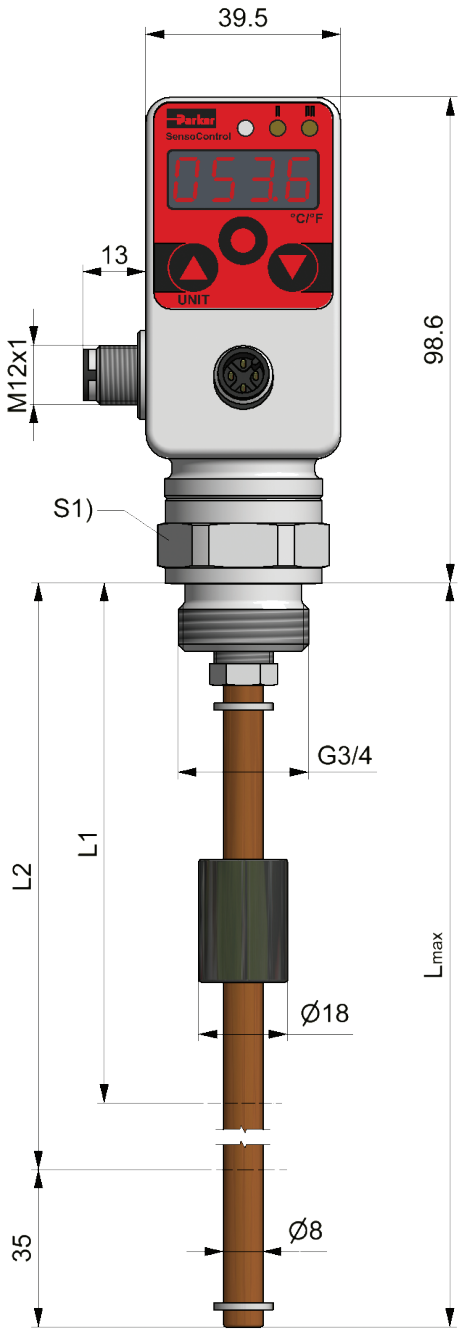


PIN	Assignment
1	V_+
2	Analogue out
3	0 V / GND
4	S1 out

SCTSD-L-xxxxO-xxFO
SCTSD-L-xxxxx-xxxxx-15-KIT5
2 switching outputs, 1 analogue output
M12x1; 5-pole



PIN	Assignment
1	V_+
2	S2 out
3	0 V / GND
4	S1 out
5	Analogue out



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SCTSD-L combination switch

Order code

Standard version

2 level outputs, temperature display
2 temperature switching outputs

Advanced warning & shut-off **SCTSD-L-xxxFO-xxxFO**
Warning = S1 out; falling open (L1)
Cut-out = S2 out; falling open (L2)

Length (L1 / L2 mm)		
60 / 90 mm	060	090
75 / 105 mm	075	105
90 / 120 mm	090	120
95 / 135 mm	095	135
110 / 150 mm	110	150
125 / 165 mm	125	165
135 / 165 mm	135	165
130 / 180 mm	130	180
145 / 195 mm	145	195
160 / 210 mm	160	210
140 / 220 mm	140	220
165 / 225 mm	165	225
180 / 240 mm	180	240
195 / 255 mm	195	255
210 / 270 mm	210	270
160 / 280 mm	160	280
225 / 285 mm	225	285
240 / 300 mm	240	300
245 / 315 mm	245	315
260 / 330 mm	260	330
275 / 345 mm	275	345
290 / 360 mm	290	360
315 / 385 mm	315	385
340 / 410 mm	340	410
355 / 435 mm	355	435
380 / 460 mm	380	460
420 / 500 mm	420	500
460 / 550 mm	460	550
510 / 600 mm	510	600
560 / 650 mm	560	650
600 / 700 mm	600	700
650 / 750 mm	650	750
700 / 800 mm	700	800
750 / 850 mm	750	850
800 / 900 mm	800	900
850 / 950 mm	850	950

Shutdown min. / max. **SCTSD-L-xxxRO-xxxFO**
Cut-out max = S1 out; rising open (L1)
Cut-out min = S2 out; falling open (L2)

Length (L1 / L2 mm)		
40 / 90 mm	040	090
50 / 120 mm	050	120
60 / 135 mm	060	135
90 / 165 mm	090	165
40 / 170 mm	040	170
60 / 250 mm	060	250
40 / 320 mm	040	320
60 / 370 mm	060	370
40 / 400 mm	040	400

Combination switch **SCTSD-L-xxxxx-xxxxx**
Combination switch Marine **SCTSD-L-xxxxx-xxxxx-MA**
(approved by DNV/GL/ABS)
2 level outputs, temperature display
2 temperature switching outputs

Length (L1 mm)
min. 40 mm / max. 950 mm — xxx

Version
Falling closed — FC
Falling open — FO
Rising closed — RC
Rising open — RO

Length (L2 in mm)
min. 40 mm / max. 950 mm — xxx

Version
Falling closed — FC
Falling open — FO
Rising closed — RC
Rising open — RO

Combination switch **SCTSD-L-xxxxx-xxxxx-1x**
Combination switch Marine **SCTSD-L-xxxxx-xxxxx-1x-MA**
(approved by DNV/GL/ABS)
2 level outputs, temperature display
1 temperature-analogue output
(0/4..20 mA)

Length (L1 mm)*
min. 40 mm / max. 950 mm — xxx

Version
Falling closing — FC
Falling open — FO
Rsing closing — RC
Rising open — RO

Length (L2 in mm)*
min. 40 mm / max. 950 mm — xxx

Version
Falling closing — FC
Falling open — FO
Rising closing — RC
Rising open — RO

Plug-in connection
M12; 4-pole (1 temperature switching output) — 7
M12; 5-pole (2 temperature switching outputs) — 5

*Switching output 1 (L1) can be above or below switching output 2 (L2)
L1 and L2 are multiples of 10 mm
Smallest difference between L1 and L2 = 30 mm