

1.4 SCT-150-14-00 Temperature sensor

- ✓ Pressure-proof up to 630 bar
- ✓ Compact construction
- ✓ Rugged steel housing
- ✓ Simple installation
- ✓ -50 °C to +125 °C
- ✓ 0/4...20 mA



Compact construction and high pressure resistance are the main features of the SCT temperature sensor.

The SCT comes into its own if temperatures at higher pressures are to be measured and a compact construction is required.

With its pressure resistance up to 630 bar, the SCT temperature sensor is very suitable for hydraulic application requirements.

It has the ability to make precise, rapid temperature measurements.

SCT series temperature sensors are compatible with the SCE built-in measuring instruments. With the latter, besides the hydraulic pressure, the temperature of the medium too can be measured, controlled and evaluated.

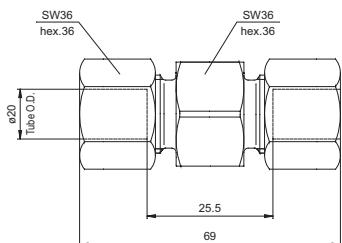
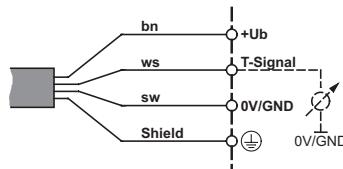


Input	
measurement element	silicon chip
measurement range	-25...+125 °C
measurement medium	fluid media (oil); no aggressive media
accuracy	< ± 2% FS (in built-in condition)
response time	$\tau_{0.9} = 13.5$
Output	
output _T	0...20 mA = -50...+125 °C 4...20 mA = -15...+125 °C
working resistance	$\leq 250 \Omega$
Pressure connection	
screw-in stud	M10x1
sealing	O-ring 7,65x1,78 FKM
housing	steel C15K galvanised
working pressure P _n	630 bar

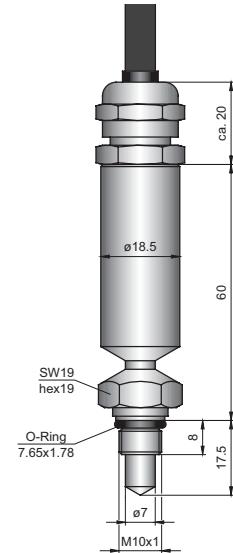
Environmental conditions	
voltage supply U _b	+11...+30 VDC
current consumption	< 30 mA
environmental temperature range	-20...+70 °C
fluid temperature range	-25...+125 °C
storage temperature	-25...+80 °C
electrical connection	fixed cable; length 3 m; open cable end; 3x0,14 mm ² screened
protection class	IP 65 DIN EN 60529

Connection designation

bn = brown
ws = white
sw = black

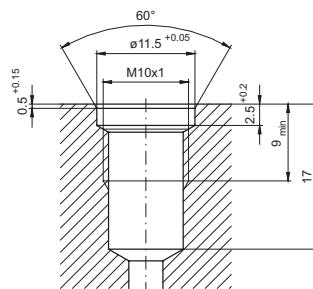


Dimension diagram SCA-GMA3/20S/T



SCT-150 witt SCA-GMA

Dimension diagram SCT-150-14-00



Screw-in hole M10x1/OR

Order codes

Screw-in probe with fixed cable connection (cable length 3 m)

SCT-150-14-00

In-line tube mounting adaptor

SCA-GMA3/20S/T

4.2 SCTSD TemperatureController

- ✓ **Compact**
- ✓ **Rugged**
- ✓ **Reliable**
- ✓ **Easy operation**
- ✓ **Metal housing**
- ✓ **High protection class**
- ✓ **Modular construction**
- ✓ **Many variants**
- ✓ **Rotatable**
- ✓ **Analogue output**
- ✓ **Password**
- ✓ **°C, °F**



The TemperatureController combines the functions of a temperature switch, a temperature sensor and a display instrument:

- ✓ **Temperature display (thermometer)**
- ✓ **Switching outputs**
- ✓ **Analogue signal**

Simple operation, comprehensive functionality and modular construction are the most important features of the **TemperatureController**.

The TemperatureController offers excellent technical parameters and optimal temperature management combined with many mounting possibilities. Consequently it is ideal where temperature must be safely monitored and easily viewed.

Easy to operate

During temperature monitoring the usual matching of the limiting values (eg. cooling and alarm) is effected via the keys or a programming module.

High functionality

Every switching output can be individually set:

- ✓ Normally closed/normally open contacts
- ✓ Temperature on/off switch
- ✓ Delay times
- ✓ Hysteresis/window function

Intelligent settings can be achieved with these convenient switch functions; these would simply not be possible with a mechanical switch. Consequently several switches can be replaced by one Controller.

The **analogue output** is individually settable

- ✓ 0/4...20 mA switchable
- ✓ Settable starting temperature
- ✓ Settable final temperature

Reliable/safe

An existing functional error is signalled and can be processed in accordance with DESINA. Unauthorised changes to parameters can be avoided thanks to the password.

Rugged

The housing is made from metal and is protected against humidity and shock, and is resistant to vibrations. The electronics are protected against reverse polarity, overvoltage and short circuits.

Everything within view

The large luminescent display is readable even from a considerable distance. Temperatures can be shown either as °C or °F.

Temperatures can always be observed in an optimum way because of the modular construction and rotatable housing.

Optimal built-in possibilities

Different probe lengths are available for various tank sizes. These can be connected either directly or via a cable to the TemperatureController. There is also a temperature probe up to 630 bar available for high pressure applications.

Universal

There are many types available for a wide range of applications.

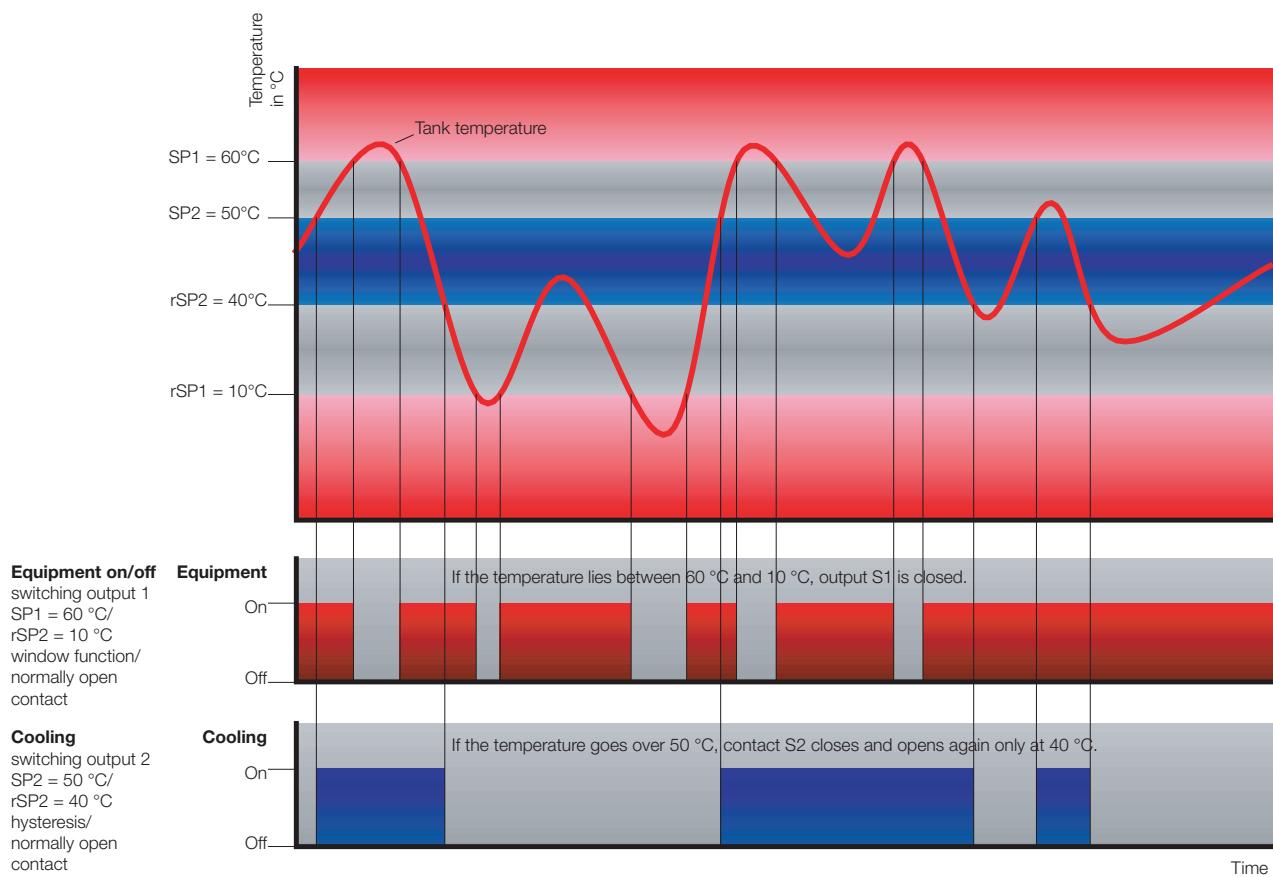
Application example: tank temperature monitoring

a) The equipment should shut down if the tank temperature falls below 10 °C or exceeds 60 °C.

In this regard, protection against wire breakage should be given consideration for safety reasons.

b) Cooling

If the tank temperature climbs above 50 °C, a cooler brings it down again to 40 °C.



- ✓ Optical interface
- ✓ Switch status display

Everything in view

- ✓ Angled display
- ✓ Digital display
 - ✓ Large
 - ✓ Illuminated
- ✓ Display
 - ✓ °C/F
 - ✓ Actual temperature
 - ✓ Minimum temperature
 - ✓ Maximum temperature
 - ✓ Switch points

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
- ✓ Scalable
- ✓ Plugs
 - ✓ M12
 - ✓ DIN EN
175301-803 form A
(formerly DIN43650)

**Rugged**

- ✓ Metal housing
- ✓ Watertight
- ✓ High interference resistance
- ✓ Vibration resistant
- ✓ Shockproof

- ✓ Can be set using
ControllerWIN software

**Flexible installation**

- ✓ Compact
- ✓ 290° rotatable

Tube clamp

SCSD-S27

Cable

SCK-410-03-45-45

High pressure**temperature sensor**

- ✓ 630 bar
- ✓ SCTT-20-010-07

Temperature probe

- ✓ Stainless steel
- ✓ Wide media compatibility
- ✓ Various lengths
- ✓ SCTT-10-xxx-07

Height adjustable clamping fitting

- ✓ SCA-TT-10-1/2

Connection adaptor

- ✓ SCA-TT-10-SD

Immersion tube

- additional with
- ✓ higher pressures
 - ✓ aggressive media
 - ✓ SCA-TT-10-xxx immersion tube



Input quantities SCT-150	
display range	-50...+150 °C (-58...+302 °F)
Probe input	PT1000
Probe connection	M12x1; 4-pole
Output quantities	
switch point accuracy at 25 °C	± 0,35 % FS
display accuracy at 25 °C	± 0,35 % FS ± 1 digit
Electrical connection	
power supply	15...30 VDC nominal 24 VDC; protection class 3
electrical connection	M12x1; 4-pole; 5-pole; connector plug DIN EN 175301-803 form A (formerly DIN43650)
short circuit protection	yes
overload protection	yes
current consumption	< 100 mA
Housing	
	directionally adjustable up to 290°
material	zinc diecasting Z 410; painted
foil material	polyester
display	4-figure 7-segment LED; red; digit height 9 mm
connection thread	M24x1,5
protection class	IP67 EN 60529 IP 65 with appliance inlet connector* DIN EN 175301-803 form A (formerly DIN43650)

SCTT-10-xxx-07 temperature probe	
measuring element	PT1000/DIN EN 60751, class B
measurement range	-40...+125 °C; (-40...+256 °F)
response time	$\tau_{0,5} = 6 \text{ s}/\tau_{0,9} = 25 \text{ s}$
accuracy	± 0,3 K + 0,005* t
material	stainless steel 1.4571
nominal pressure (max)	10 bar
temperature of media	-40...+125 °C
environmental temperature	-25...+80 °C (for the range of plugs)
storage temperature	-25...+85 °C

* higher switch currents on request

** does not apply for DIN EN 175301-803 form A (formerly DIN43650) type

Environmental conditions	
environmental temperature range	-20...+85 °C
storage temperature range	-40...+100 °C
vibration resistance	20 g; 10...500 Hz IEC60068-2-6*
shock resistance	50 g; 11 ms IEC60068-2-29**
EM compatibility	
interference emissions	EN 61000-6-3
interference resistance	EN 61000-6-2
Outputs	
switching outputs	2 x PNP
contact functions	normally open/normally closed; window/hysteresis
switch current max.	0,7 A/switch*
response speed	300 ms
accuracy	± 1 % FS

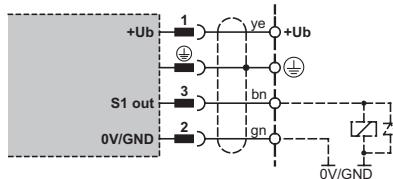
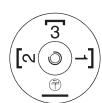
SCTT-20-010-07 high pressure probe	
measurement element	PT1000/DIN EN 60751, class B
measurement range	-40...+125 °C; (-40...+256 °F)
usage range	fluid media, air
response time	$\tau_{0,5} = 3 \text{ s}/\tau_{0,9} = 15 \text{ s}$
accuracy	± 0,3 K + 0,005*t
material	stainless steel 1.4404
screw-in stud thread	M10x1
sealing	O-ring 7,65x1,78 mm; FKM
measurement tube diameter	7 mm
built-in length	18,5 mm
nominal pressure	630 bar
overload pressure	800 bar
burst pressure	1200 bar
media temperature	-40...+125 °C
environmental temperature	-25...+80 °C (for the range of plugs)
storage temperature	-25...+85 °C

Connection designations

SCTSD-150-00-06

1 switching output;

DIN EN 175301-803 form A (formerly DIN43650)

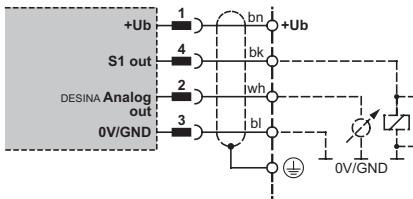
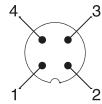


SCTSD-150-10-07

1 switching output;

1 analogue output;

M12x1; 4-pole

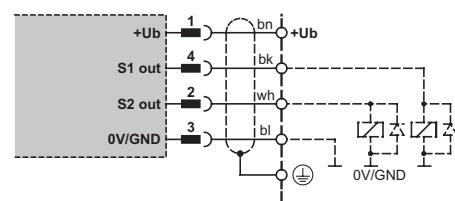
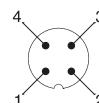
ye = yellow
bn = browngn = green
bk = blackwh = white
bl = blue

gr = grey

SCTSD-150-00-07

2 switching outputs;

M12x1; 4-pole

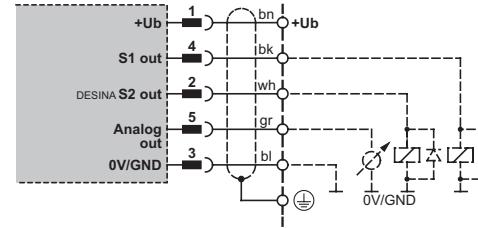


SCTSD-150-10-05

2 switching outputs;

1 analogue output;

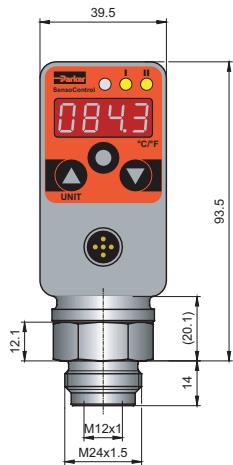
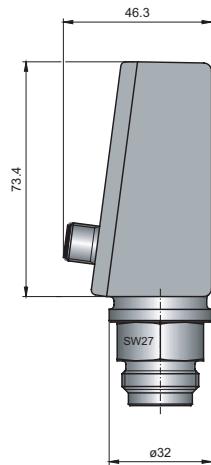
M12x1; 5-pole



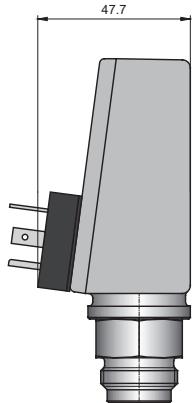
Measurement range	Display resolution increment	Smallest reverse switch value RSP	Greatest switch value SP	Smallest settable difference between SP and RSP (SP-RSP)
-50 to 150 °C	0,1 °C	-50 °C	150 °C	0,8

M12 plug-in connector

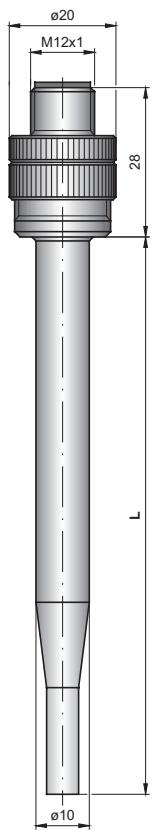
SCTSD-150-x4-05

**DIN 43650**

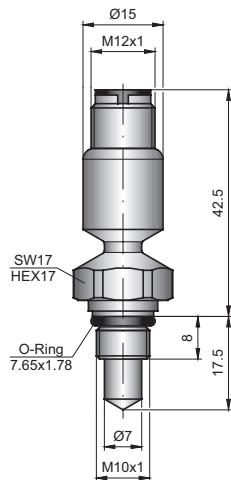
SCTSD-xxx-00-06

**Temperature probe**

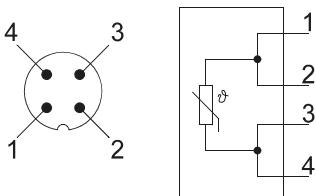
SCTT-10-xxx-07

**High pressure temperature probe**

SCTT-20-010-07

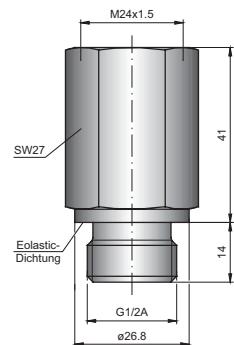
**Connection designation**

SCTT-x0-xxx-07



Accessory:

Connection adaptor
SCA-TT-10-SD

**Material:**

Stainless steel 1.4404

Stud adaptor:

G1/2A BSPP DIN3852-E

Seal configuration:

ED (Elastic seal)

Stud adaptor hole:

G1/2A BSPP DIN3852-E

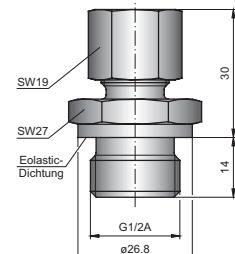
Spare seals:

O-ring 9,5x1,5 (FKM)

ED1/2VITX (FKM)

Accessory:

Clamping fitting
SCA-TT-10-1/2

**GE10LR1/2EDOMD71:**

(with 10 mm bore)

1.4571 stainless steel

EO2 functional nut:

FM10L71

Stud adaptor:

G1/2A BSPP DIN3852-E

Seal configuration:

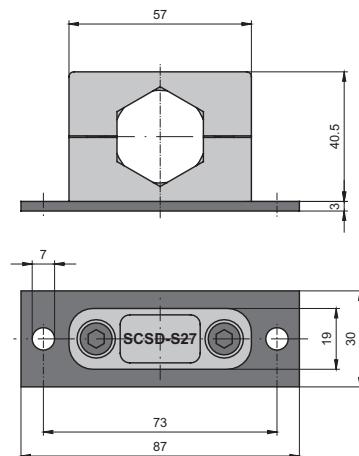
ED (Elastic seal)

Spare seal:

ED1/2VITX (FKM)

Accessory:

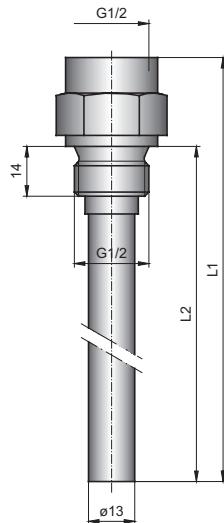
SCSD-S27 clamp

**Accessory:**

Probe cable 3 m
SCK-410-03-45-45

**Accessory:**

Immersion tube SCA-TT-10-xxx



L1 = total length (mm)

L2 = built-in length (mm)

	L1	L2
SCA-TT-10-100	107	82
SCA-TT-10-150	157	139
SCA-TT-10-250	257	239

SCTSD Modular

1 switching output; without analogue output DIN EN 175301-803 form A (formerly DIN 43650) plug-in connector	SCTSD-150-00-06
2 switching outputs; without analogue output M12x1; plug-in connection; 4-pole	SCTSD-150-00-07
1 switching output; with analogue output M12x1; plug-in connection; 4-pole	SCTSD-150-10-07
2 switching outputs; with analogue output M12x1; plug-in connection; 5-pole	SCTSD-150-10-05

**Components**

for control console
High pressure version

fixing clamp for SCTSD	SCSD-S27
3 m probe cable (SCTSD-SCTT)	SCK-410-03-45-45
high pressure temperature probe	SCTT-20-10-07

Components

for control console



fixing clamp for SCTSD	SCSD-S27
clamping fitting G1/2 BSPP	SCA-TT-10-1/2
3 m probe cable (SCTSD-SCTT)	SCK-410-03-45-45
temperature probe	SCTT-10-xxx-07
optional: immersion tube G1/2 BSPP	SCA-TT-10-xxx
length: 100; 150; 250 mm	

Components

for direct mounting



connection adaptor (SCTSD-SCTT)	SCA-TT-10-SD
temperature probe	SCTT-10-xxx-07
optional: immersion tube G1/2 BSPP	SCA-TT-10-xxx
length: 100; 150; 250 mm	

Connecting cable & separate plugs

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

Cable length in m

02 2 m	_____
05 5 m	_____
10 10 m	_____

Plug-in connector

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

56 DIN EN 175301-803 form A plug connector (formerly DIN 43650)	_____
--------------------------------------------------------------------	-------

Separate plugs

M12 cable socket; straight	SCK-145
----------------------------	---------

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

DIN EN 175301-803 form A plug connector (formerly DIN 43650)	SCK-006
-----------------------------------------------------------------	---------

- ✓ Optical interface
- ✓ Switch status display

Everything in view

- ✓ Angled display
- ✓ Digital display
 - ✓ Large
 - ✓ Illuminated
- ✓ display
 - ✓ °C/°F
 - ✓ Actual temperature
 - ✓ Minimum temperature
 - ✓ Maximum temperature
 - ✓ Switching points

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
- ✓ Scalable
- ✓ M12 push-in connection

**Flexible installation**

- ✓ Compact
- ✓ 290° rotatable

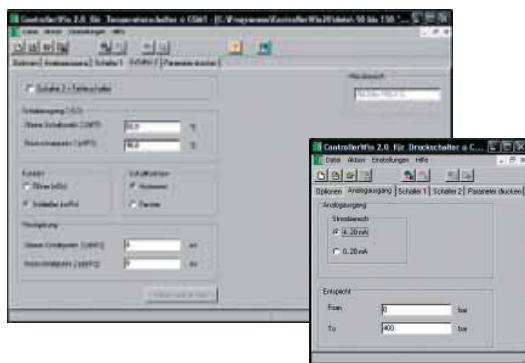
High pressure resistance

- ✓ to 630 bar

Rugged

- ✓ Metal housing
- ✓ Watertight
- ✓ High interference resistance
- ✓ Vibration resistant
- ✓ Shockproof

- ✓ Can be set with ControllerWIN software



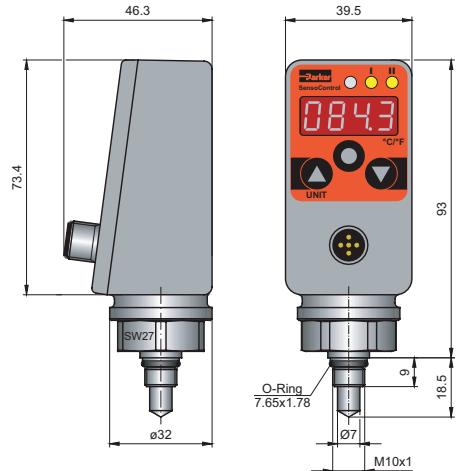
High pressure SCTSD

Input quantities SCTSD-150-x2-0x		Environmental conditions	
measurement range	-40...+100 °C	environmental temperature range	-25...+80 °C
input for measuring element	PT1000/DIN EN 60751; class B	storage temperature range	-25...+85 °C
applications	fluid media; air	temperature range of medium	-40...+100 °C
Output quantities			EM compatibility
switch point accuracy at 25 °C	± 0,35 % FS	interference emissions	EN 61000-6-3
display accuracy at 25 °C	± 0,35 % FS ± 1 digit	interference resistance	EN 61000-6-2
temperature probe	± 0,01 % FS/°C typ. (at -20...+85 °C)	Outputs	
long-term stability	± 0,2 % FS/a	switching outputs	2 x PNP
Electrical connection			contact functions
power supply	15...30 VDC (with reverse polarity protection)	switch current	0,5 A/switch to 85 °C; 0,7 A/switch to 70 °C
electrical connection	M12x1; 4-pole; 5-pole; with gold-plated contacts	response speed	≤ 0,7 s maximum load current
short circuit protection	yes	Optional analogue output	
overload protection	yes	measurement range	0/4...20 mA
current consumption	< 100 mA	response speed (0-95 %)	≤ 300 ms
Mechanical connection			analogue output error
threaded screw-in stud	M10x1	working resistance	≤ 500 Ω ab U _b > 18 VDC
sealing	O-ring 7,65x1,78 mm; FKM		
measuremet tube diameter	7 mm		
built-in length	18,5 mm		
material	1.4404 stainless steel		
P _N -pressure	630 bar		
P _{max}	800 bar		
burst pressure	1200 bar		
Housing			
	directionally adjustable to 290°		
material	Z 410 zinc pressure diecasting; painted		
foil material	polyester		
display	4-figure 7-segment LED; red; digit height 9 mm		
protection class	IP67 EN 60529		

4.2.2 SCTSD High Pressure TemperatureController Dimensional drawing & connection

M12 plug-in connector

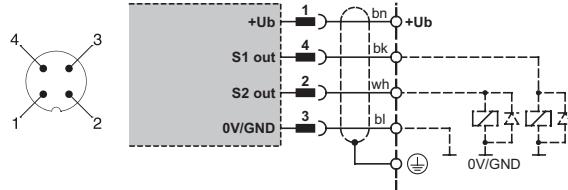
SCTSD-150-x4-05



Connection designation

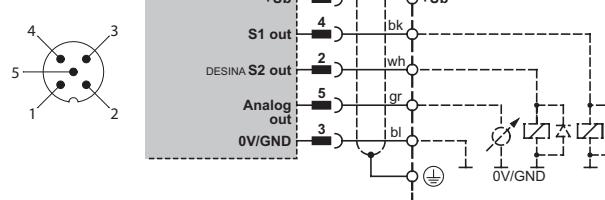
SCTSD-150-02-07

2 switching outputs;
M12x1; 4-pole



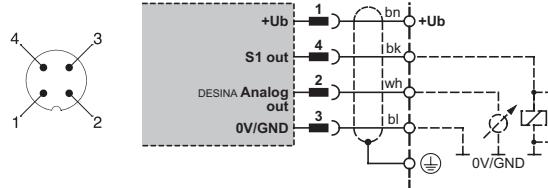
SCTSD-150-12-05

2 switching outputs;
1 analogue output;
M12x1; 5-pole



SCTSD-150-12-07

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



bn = brown bk = black bl = blue
gn = green wh = white gr = grey

Measurement range	Display resolution increment	Smallest reverse switch value RSP	Greatest switch value SP	Smallest settable difference between SP and RSP (SP-RSP)
-40 to 100 °C	0,1 °C	-40 °C	100 °C	0,8

High pressure SCTSD

2 switching outputs; without analogue output M12x1; plug-in connector; 4-pole	SCTSD-150-02-07
1 switching output; with analogue output M12x1; plug-in connector; 4-pole	SCTSD-150-12-07
2 switching outputs; with analogue output M12x1; plug-in connector; 5-pole	SCTSD-150-12-05

PC Programming kit

SCSD-PRG-KIT**Connecting cables & separate plugs**

Connecting cables, made up	SCK-400-xx-xx
(open cable end)	
Cable length in m	
02 2 m	<input type="text"/>
05 5 m	<input type="text"/>
10 10 m	<input type="text"/>
Plug-in connector	
45 M12 cable socket; straight	<input type="text"/>
55 M12 cable socket; 90° angled	<input type="text"/>

Separate plugs

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

5 Temperature Measurement

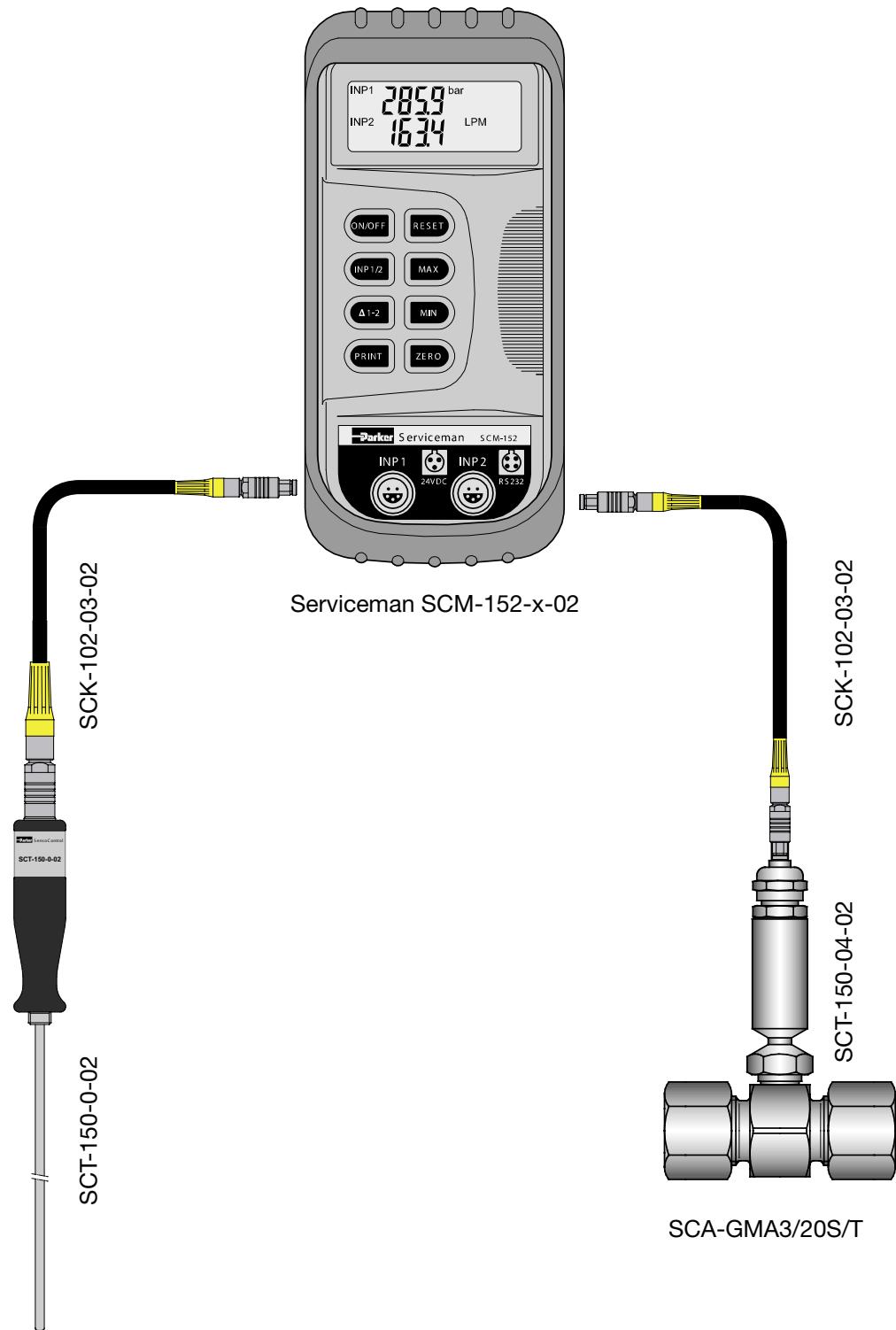
- **High pressure-proof temperature sensor**
- **Measurement of oil temperatures up to 125 °C**
- **Flexible operation**
- **Screw-in or manual sensor**
- **Screw-in sensor with socket for Serviceman and Service Master**

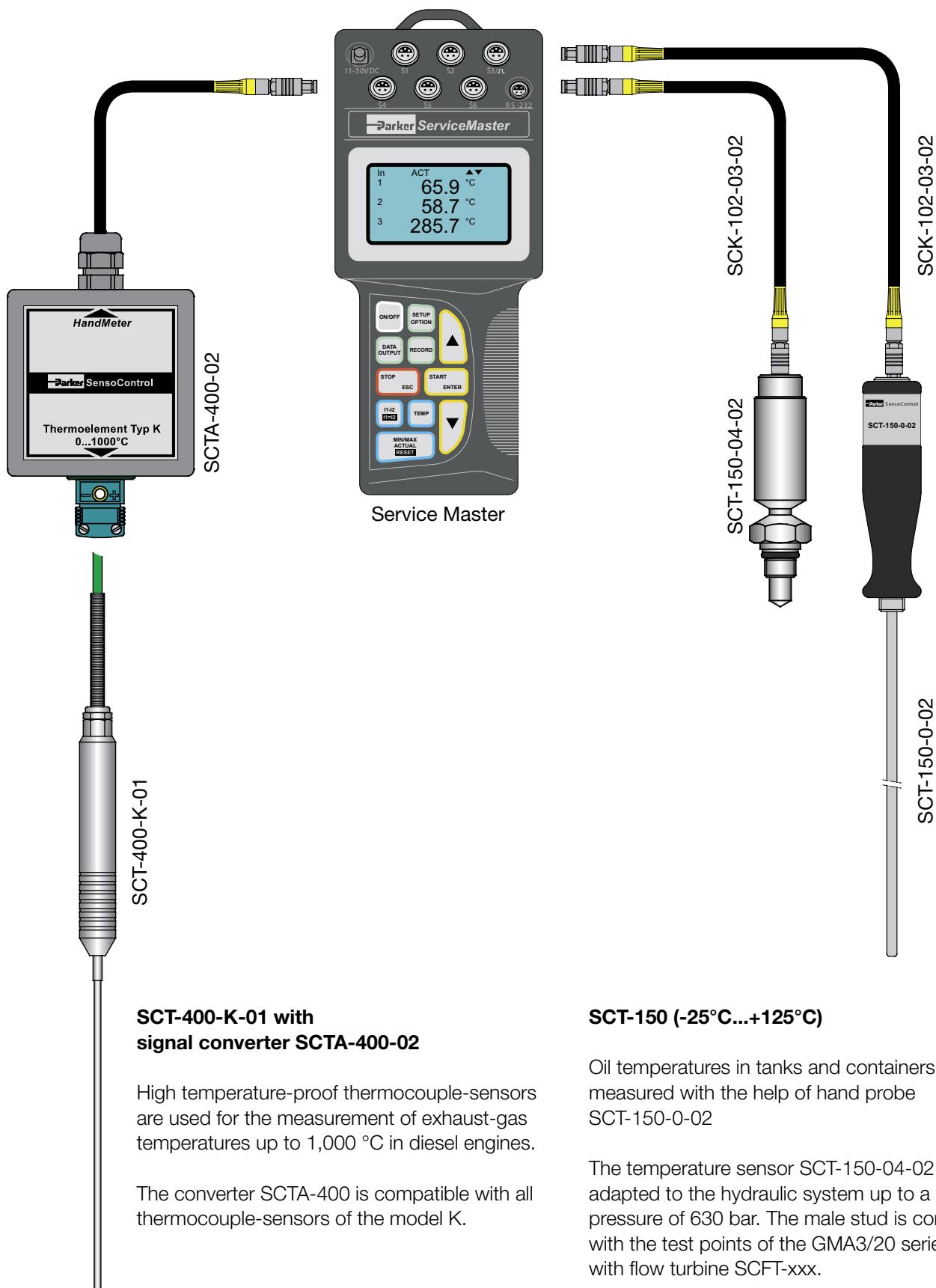


In hydraulics, temperature measurements serve to locate faults and avoid the kind of damage caused by excessive oil temperatures in critical parts such as pumps and proportional valves.

To get the exact temperature, the measurement is done directly in the tube or hose line.

The screw-in sensors SCT-150 are compatible with flow measurement turbines SCFT-xxx-02-02.





SCT-400-K-01 with signal converter SCTA-400-02

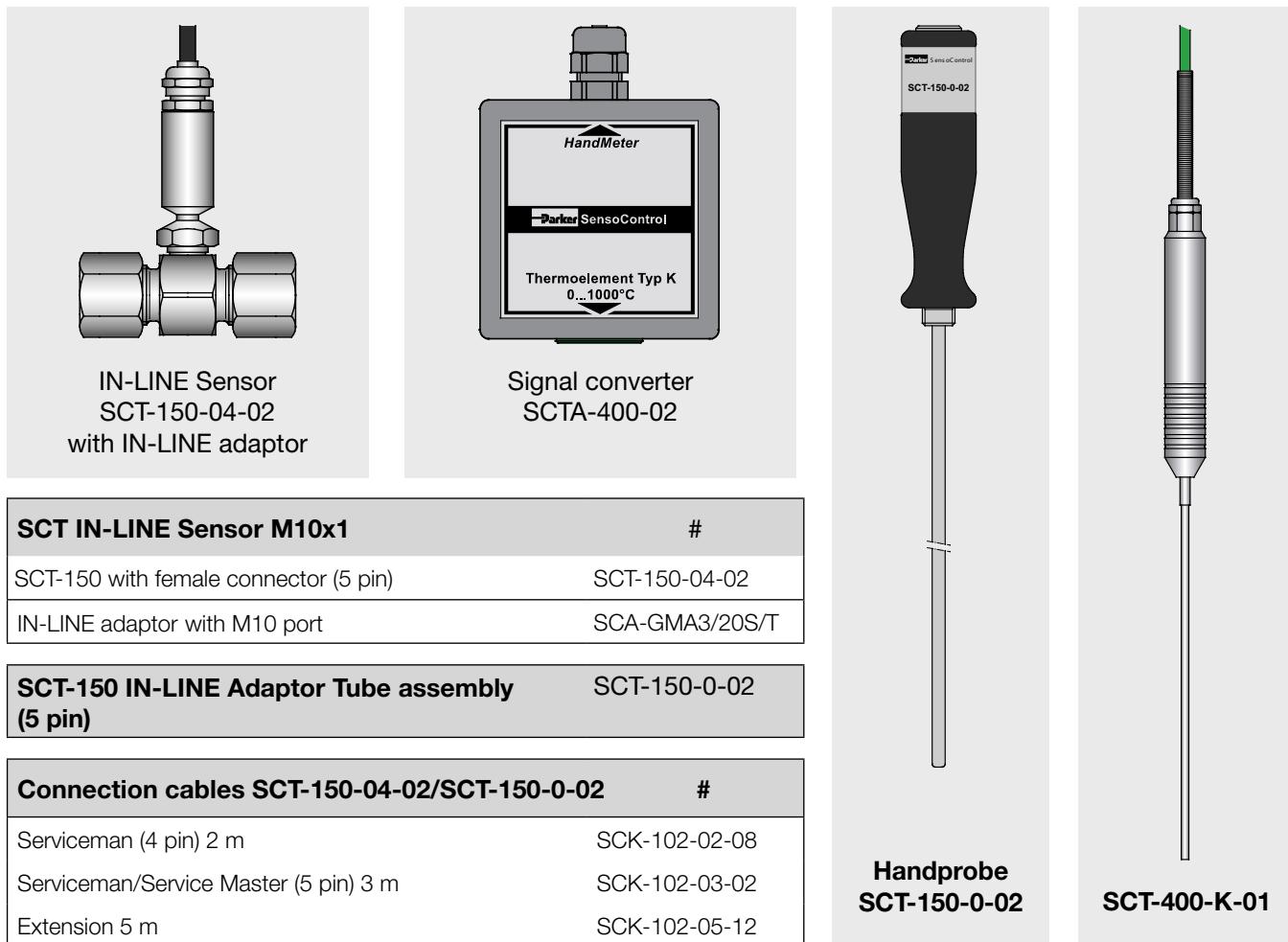
High temperature-proof thermocouple-sensors are used for the measurement of exhaust-gas temperatures up to 1,000 °C in diesel engines.

The converter SCTA-400 is compatible with all thermocouple-sensors of the model K.

SCT-150 (-25°C...+125°C)

Oil temperatures in tanks and containers are measured with the help of hand probe
SCT-150-0-02

The temperature sensor SCT-150-04-02 can be adapted to the hydraulic system up to a system pressure of 630 bar. The male stud is compatible with the test points of the GMA3/20 series and with flow turbine SCFT-xxx.



	SCT-150-04-02	SCT-150-0-02	SCT-400-K-01	SCTA-400-02
Measuring Range (°C)	-25...+125	-25...+125	0...+1.000	0...+1.000
Accuracy	± 1,5°C	± 1,5°C	± 1,5°C	± 1,0%FS
Response Time $T_{0,9}$ (sec.)	13,5	9,1	≤ 5	-
Ambient Temperature (°C)	-25...+70	-25...+70	-20...+150	0...+50
Storage Temperature (°C)	-25...+80	-25...+80	-20...+80	-25...+60
T_{max} (°C)	+125	+125	-	-
Operating Pressure (bar)	630	-	-	-
P_{max} (bar)	630	-	-	-
Burst Pressure (bar)	1.200	-	-	-
Housing	Steel C15K galvanized	Probe: Stainless Steel 1.4304 Grip: Delrin	Stainless Steel	ABS
Seal	Viton® (FKM)	-	-	-
Weight (g)	100	120	150	-
Parts in Contact with Media	Steel C15K galvanized Viton® (FKM)	Stainless Steel 1.4304	Stainless Steel	-

FS = FullScale