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## Sensors and switches for Pressure, Temperature, Level and Flow



**Sensors and switches for  
Pressure, Temperature,  
Level and Flow**



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### EMEA Product Information Centre

**Free phone:** 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

### US Product Information Centre

**Toll-free number:** 1-800-27 27 537

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# Parker's Motion & Control Technologies



At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



## Aerospace

### Key Markets

Aerospace

Commercial transports

Engines

General & business aviation

Helicopters

Launch vehicles

Military aircraft

Missiles

Power generation

Regional transports

Unmanned aerial vehicles

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# Product overview

## Measurement

### Pressure and temperature sensors

SCP03	SCP04	SCP07
		
Pressure sensor for mobile and industrial applications	Pressure transmitter for hydrogen applications	Pressure sensor for safety requirements
Page 12-16	Page 17-21	Page 22-23

SCP08	SCPSi
	
Pressure sensor for press construction and die-casting	Pressure switch with IO-Link
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### Volumetric flow rate sensors

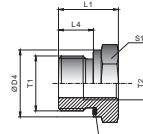
SCQ	SCFT	SCVF
		
For quick flow changes	Low loss measuring of volume flow	Measures different substances
Measures in both directions		Measures lower volume flows (leakage measurements)
Page 31-34	Page 35-38	Page 39-44

# Product overview

## Measurement, display and switching

	SCPSD	SCTSD	SCTSD-L	SCLSD
<b>The Controller Family</b>				
Pressure display and monitoring	Temperature display and monitoring	Temperature display and level monitoring	Level display and monitoring	
Page 47-52	Page 53-64	Page 65-68	Page 69-74	
<b>SCLTSD</b>				
Level/temperature display and monitoring				
Page 75-80		Page 81-86		

## Accessories

	SCK cable	SCA adapter	Software ControllerWIN
			
Page 87-88	Page 89-90		Page 91-92

# Selection guide pressure sensors

		SCP03	SCP04	SCP07	SCP08
Pressure-range	0...bar / (psi) relative	04...1000 (58...14,504)	04...1000 (58...14,504)	10...600 (145...8702)	600/1000 (8702...14,504)
	-1...bar / -14.5 (psi) relative	3...24 (43,5...348)			
	0...bar / (psi) absolut				
Order qty.		50 pcs	50 pcs	50 pcs	1 / 5 / 50 pcs
Accuracy		0,5 %	0,5 %	0,5 %	0,5 %
Display					
Output	Switching Output				
	IO-Link				
	0,5...4,5 V (ratiometric 5V)	•	•		
	0,5...4,5 V (nominal 24V)	•			
	0...5 V	•			
	1...6 V	•			
	0...10 V	•	•		•
	0...20 mA	•			
	4...20 mA (3-wire)	•		•	
	4...20 mA (2-wire)	•	•		•
Electrical Plug	CAN				
	M12	•	•	•	•
	DIN EN 175301-803	•	•		•
	Form A				
	DIN Micro 9.4				
	AMP Superseal	•			
	Deutsch DT04 4-pin	•			
	Deutsch DT04 3-pin	•	•		
Thread	Junior Timer	•			
	Cable 2m	•			
	G1/4 BSPP ED	•	•	•	•
	G 1/4 O-ring	•			
	1/4 NPT	•	•		
Wetted parts	7/16-20 UNF	•	•		
	9/16-20 UNF	•			
Approvals	Stainless steel/ Soft sealing	FKM		FKM	FKM
	Stainless steel/ Metall sealing		•		

# Selection guide pressure controller

		SCPSi	SCPSD
<b>Pressure-range</b>	0...(bar) / (psi) relative		
	-1...bar / -14.5 (psi) relative		
	0...(bar) / (psi) absolut		
<b>Order qty.</b>			
<b>Accuracy</b>			
<b>Display</b>			•
<b>Output</b>	Switching	•	•
	IO-Link	•	
	0,5...4,5 V (ratiometric 5V)		
	0,5...4,5 V (nominal 24V)		
	0...5 V		
	1...6 V		
	0...10 V		
	0...20 mA		•
	4...20 mA (3-wire)		
	4...20 mA (2-wire)		
	CAN		
<b>Electrical Plug</b>	M12	•	•
	DIN EN 175301-803		•
	Form A		
	DIN Micro 9.4		
	AMP Superseal		
	Deutsch DT04 4-pin		
	Deutsch DT04 3-pin		
	Junior Timer		
<b>Thread</b>	Cable 2m		
<b>Thread</b>	G1/4 BSPP ED	•	
	G 1/4 O-Ring		
	1/4 NPT		
	7/16-20 UNF		
	9/16-20 UNF		
<b>Wetted parts</b>	Stainless steel/ Soft sealing	NBR	NBR
	Stainless steel/ Metall sealing		•
<b>Approvals</b>	CE		•
	Marine		•
	Safety SIL / PL		

# Certified sensors and switches for maritime applications



The products designed for maritime use meet the current international approvals:

- **ABS** American Bureau of Shipping
- **DNV** Det Norske Veritas
- **GL** Germanischer Lloyd

The portfolio extends from pressure sensors to electronic switches with display for pressure / level / temperature. Parker offers the chance to upgrade from mechanical to electronic measuring devices in the hydraulic system, with the following advantages:

<ul style="list-style-type: none"><li>■ High accuracy</li><li>■ Long lifetime</li><li>■ Reliability</li></ul>	<ul style="list-style-type: none"><li>■ Safety</li><li>■ Comfortable functions</li><li>■ High quality standards</li></ul>
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These certified products will enhance the safety and reliability of maritime hydraulic systems:

**SCP01/ SCPSD / SCPSDi / SCLTSD / SCTSD-L**



# Pressure and temperature sensors

## Device features

- Long-term stability
- Immune to interference
- Rugged design
- Dependable



**SensoControl®** sensors feature long-term stability, interference immunity, a sturdy high-quality construction and a wide range of variants.

The sensors are designed and manufactured in our own production facilities under established standards for the industrial instrumentation and control systems. This allows us to easily adapt them to customer requirements or to critical applications.

We carefully consider the special requirements for automation and mobile hydraulics during the design phase. So our **SensoControl®** sensors are ideally suitable for the permanent series use in industrial and mobile applications.

### Pressure sensors

The housing and all parts of the pressure sensors that touch the substances are manufactured from stainless steel. This provides a large range of media tolerability. A wide range of applications is possible due to the combination of high interference immunity and high resistance to external influences (shock, vibration and temperature).

The application areas are varied: from process engineering test rigs, conveying and lifting equipment, mobile hydraulics, general machine construction, pneumatic construction and hydraulic plant construction.

The SCP should be used when the pressure needs to be monitored reliably for long periods.

In this case the optimal sensor type can be selected from different product series according to the needs of the application. Different connecting plugs, output signals and connection threads are also available.

### Temperature sensors

The SCT temperature sensor should be used when a temperature signal is required.

These are characterised by their pressure resistance up to 630 bar.

# Pressure and temperature sensors

## Overview

	SCP03	SCP04	SCP07
<b>Range of use</b>	Pressure sensor for mobile and industrial applications <ul style="list-style-type: none"><li>■ Up to 1000 bar (14,504 psi)</li><li>■ G1/4 DIN 3852-11 (E)</li><li>■ Compact design</li><li>■ Long term stability</li><li>■ Wide temperature range -40...125°C (-40...257°F)</li></ul>	Pressure sensor for hydrogen applications <ul style="list-style-type: none"><li>■ Stainless steel measuring cell</li><li>■ Small design</li><li>■ Stainless steel housing</li><li>■ Up to 1000 bar (14,504 psi)</li><li>■ EC79/2009 pending</li><li>■ High protection degree</li><li>■ Resistant to shock and vibration</li></ul>	Pressure sensor for safety requirements <ul style="list-style-type: none"><li>■ PLd</li><li>■ SIL 2</li><li>■ Two inverted 4-20 mA outputs</li><li>■ Up to 600 bar (8702 psi)</li><li>■ G1/4 DIN 3852-11 (E)</li><li>■ Compact design</li><li>■ Long term stability</li><li>■ Wide temperature range -40...85°C (-40...185°F)</li></ul>
<b>Application</b>	<ul style="list-style-type: none"><li>■ Mobile hydraulic</li><li>■ Transport vehicles</li><li>■ Conveyor vehicles</li><li>■ Commercial vehicles</li><li>■ Automotive technology</li><li>■ Brake systems</li><li>■ Oil pressure</li><li>■ Test equipment and technology</li><li>■ Gearbox control</li></ul>	<ul style="list-style-type: none"><li>■ Hydrogen applications</li></ul>	<ul style="list-style-type: none"><li>■ Safety requirements</li><li>■ Mobile hydraulic</li><li>■ Cranes</li><li>■ Suspended loads</li><li>■ Tire presses</li></ul>
<b>Order code</b>	SCP03-xxx-xx-xx	SCP04-xxx-xx-0xQ8	SCP07-xxx-24-05Q8
<b>Refer to page</b>	12-16	17-21	22-23

# Pressure and temperature sensors

SCP08



SCPSi



Range of use	Pressure sensor for press construction and die-casting	IO-Link Pressure sensor or switch
	<ul style="list-style-type: none"><li>■ 600 / 1000 bar (8702 / 14,504 psi)</li><li>■ G1/4"</li><li>■ 0-10 V / 4...20 mA 2-wire</li><li>■ M12x1 / DIN</li><li>■ Reinforced internal design</li><li>■ Persistence against shock &amp; vibration</li><li>■ Made for high pressure acceleration</li><li>■ High dynamic signal</li></ul>	<ul style="list-style-type: none"><li>■ Pressure sensor / -switch</li><li>■ Temperature measurement</li><li>■ Industry 4.0-ready</li><li>■ IO-Link 1.1</li><li>■ Smart Sensor Profile 2<sup>nd</sup> edition</li><li>■ Plug &amp; Play</li><li>■ Compact</li><li>■ Optimized design</li><li>■ Adjustable via IO-link</li><li>■ Readable via IO-Link</li><li>■ Useable as IO-Link sensor or switch</li><li>■ Monolithic pressure cell</li></ul>
Application	<ul style="list-style-type: none"><li>■ Press construction</li><li>■ Die-casting</li></ul>	<ul style="list-style-type: none"><li>■ Injection-mould machines</li><li>■ Tool-making machines</li><li>■ Power packs</li><li>■ Special machine construction</li><li>■ Replacement for mechanical pressure switches</li></ul>
Order code	SCP08-xxxx-x4-0x	SCPSi-xxx-04-07
Refer to page	24-25	26-28

# SCP03 pressure sensor

## Device features

- Monolithic design
  - No internal seal
  - No material mix
  - No weld seam
- High media compatibility
- Measuring range from -1 to 1000 bar / -14.5 to 14,504 psi
- Negative pressure resistant
- Many connections



The SCP03 is a pressure sensor for liquid and gaseous media.

The digitally calibrated piezoresistive measuring cell detects negative pressures from -1 bar up to high pressures of 1000 bar.

The pressure connection in contact with the medium has a monolithic design. This eliminates the need for internal seals and weld seams. A mix of materials is avoided.

The resulting low permeability in combination with the stainless steel results in broad media resistance.

The compact stainless-steel housing allows space-saving use, even in harsh environmental conditions. With its wide range of pressure ranges, output signals and connectors, the SCP03 can be used in industrial and mobile applications.

The packaging variant optimized for OEM's is environmentally friendly, cost-optimized and facilitates handling.

## Typical application range

- Mobile hydraulics
- Transport vehicles
- Conveyor vehicles
- Commercial vehicles
- Automotive technology
- Brake systems
- Oil pressure
- Test equipment and technology
- Gearbox control

# SCP03 pressure sensor

## Technical data

SCP03-	004R	010R	010R	025R
Pressure range -1 ... bar P <sub>n</sub> relative (-14.5 ... psi)	3 (43,5)	9 (130)	15 (218)	24 (348)

SCP03-	004	010	016	025	035	040	060	100	250	400	500	600	1000
Pressure range P <sub>n</sub> relative 0 ... bar / (psi)	4 (58)	10 (145)	16 (232)	25 (363)	35 (500)	40 (580)	60 (870)	100 (1450)	250 (3626)	400 (5800)	500 (7300)	600 (8702)	1000 (14,504)
Overload pressure P <sub>max</sub> DIN EN 60770-1 (bar) relative													2 x P <sub>n</sub>
Burst pressure P <sub>burst</sub> DIN EN 60770-1 (bar) relative													3 x P <sub>n</sub>

SCP03-	0150P	0250P	1000P	3000P	5000P	9000P	
Pressure range P <sub>n</sub> relative 0... (psi)	150	250	1000	3000	5000	9000	
Overload pressure* P <sub>max</sub>							2 x P <sub>n</sub>
Burst pressure** P <sub>burst</sub>							3 x P <sub>n</sub>

General		
Response time	≤1 ms	
Load change	> 100 million	
Material Housing	EN/DIN 1.4301	
Material Electr. Connector	PBT-GF30 black	
Weight	Approx. 80 g	
Accuracy parameter		
Non-linearity + Hysteresis + Repeatability	≤0.3 %FS	
Long-term stability	≤1.0 %FS / year	
Overall Accuracy		
	< 10 bar (145 psi)	≥ 10 bar (145 psi)
@ 25°C	≤ 0.5 %FS	≤ 0.5 %FS
@ 0°C...+85°C	≤ 2 %FS	≤ 1 %FS

Ambient conditions	
Media temperature	-40...+125 °C / (-40...257°F)
Operation / Ambient temperature	-40...+105 °C / (-40...221°F)
Storage temperature	-40...+125 °C / (-40...257°F)
Vibration resistance	IEC 60068-2-6: 20 g
Shock resistance	IEC 60068-2-27: 1000 g
Conformity	
CE	EN 61326-1 EN61326-3-1
RoHs	Yes
MTTFd	> 100 years

Process connection	Seal	Wetted parts
G1/4A BSPP; DIN 3852 T11, Form E	DIN 3869-14-FKM	EN/DIN 1.4404 / FKM
SAE-4: 7/16-20 UNF O-ring	FKM	EN/DIN 1.4404 / FKM
SAE 6: 9/16-18 UNF O-ring	FKM	EN/DIN 1.4404 / FKM
G1/4 DIN ISO 228-1 O-ring	FKM	EN/DIN 1.4404 / FKM
1/4 NPT		EN/DIN 1.4404

# SCP03 pressure sensor

## Pin assignment

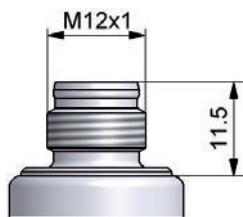
Output signal	(2 wire) 4....20 mA	0...20 mA	0.5...4.5 V	1...6 V 0...10 V	0.5...4.5 V ratio.
Supply Voltage $V_+$	10...32 VDC	12...32 VDC	8...32 VDC	12...32 VDC	5 V ±10%
Load $_{max}$	$\leq (V_+ - 10V) / 20 \text{ mA} [\text{k}\Omega]$			4.7 [kΩ]	
Overvoltage			50 VDC		
Short circuit			Yes		
Rever polarity			Yes		
Signal on GND / $V_+$			Yes		
<b>M12x1 4-pole</b>					
Pin 1			$V_+$		
Pin 2			P-Signal		
Pin 3	n.c.		0 V / GND		
Pin 4	n.c.			n.c.	
IP 67					
<b>DIN EN 175301-803 Form A 4-pole (old 43650)</b>					
Pin 1			P-Signal		
Pin 2	n.c.		0 V / GND		
Pin 3			$V_+$		
Pin 4 / GND			n.c.		
IP 65					
<b>AMP Superseal 1.5</b>					
Pin 1	P-Signal		0 V / GND		
Pin 2	n.c.		P-Signal		
Pin 3			$V_+$		
IP 65					
<b>DT04-4P</b>					
Pin 1			$V_+$		
Pin 2	P-Signal		0 V / GND		
Pin 3	n.c.		P-Signal		
Pin 4 / GND			n.c.		
IP 65					
<b>DT04-3P</b>					
A			$V_+$		
B	n.c.		P-Signal		
C	P-Signal		0 V / GND		
IP 65					
<b>Junior Timer</b>					
Pin 1	P-Signal		0 V / GND		
Pin 2	n.c.		P-Signal		
Pin 3			$V_+$		
IP 65					
<b>Cable</b>					
Bn			$V_+$		
Black			P-Signal		
Blue	n.c.		0 V / GND		
IP 69K					

# SCP03 pressure sensor

## Pin assignment

SCP03-....-x7

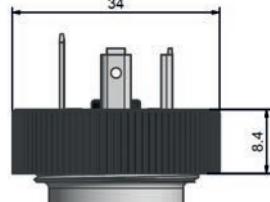
M12 4P



SCP03-....-x6

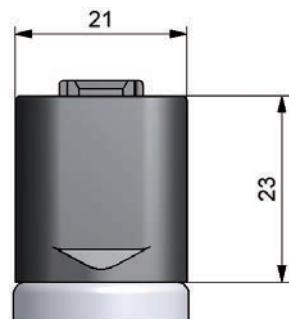
DIN EN 175301-803

Form A



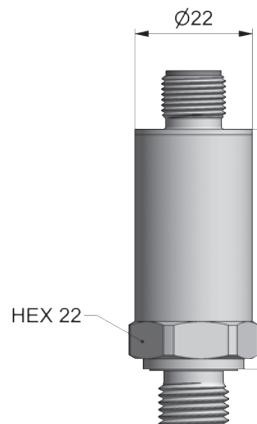
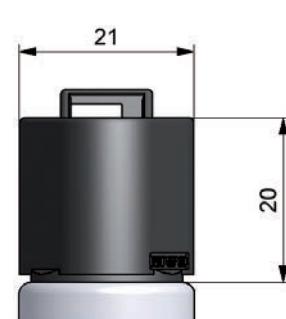
SCP03-....-xD

DT04 4P



SCP03-....-xE

DT04 3P



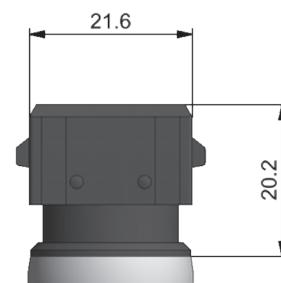
SCP03-....-xA

Superseal



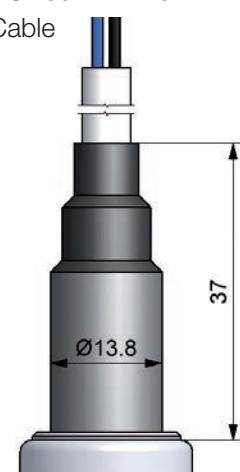
SCP03-....-xJ

Junior Timer 3P



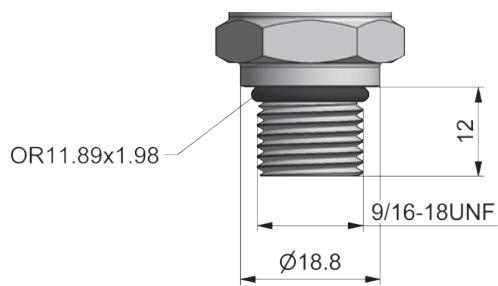
SCP03-....-x0

Cable



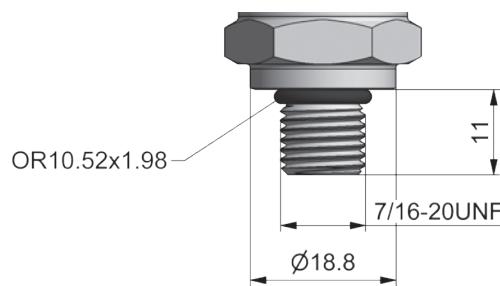
SCP03-xxx-x6-xx

SAE 06 - O-ring



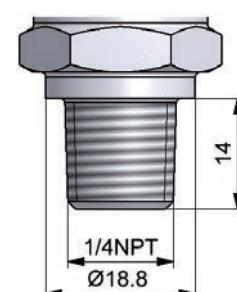
SCP03-xxx-x7-xx

SAE 04 - O-ring



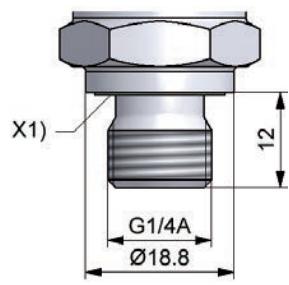
SCP03-xxx-x5-xx

1/4 NPT



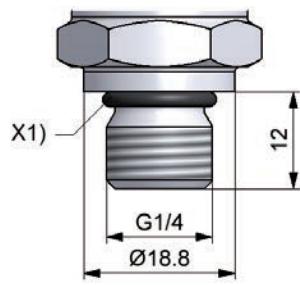
SCP03-xxx-x4-xx

G 1/4, DIN 3852 T 11 (Form E)



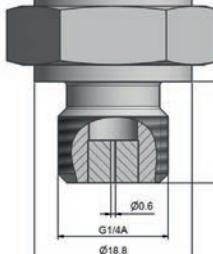
SCP03-xxx-x8-xx

G 1/4 O-ring



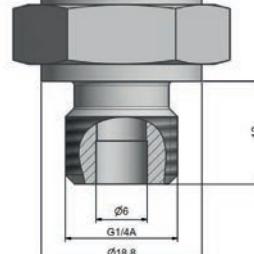
SCP03-xxx-xx-Dx

G 1/4, with damping



SCP03-xxx-xx-xx

G 1/4, without damping



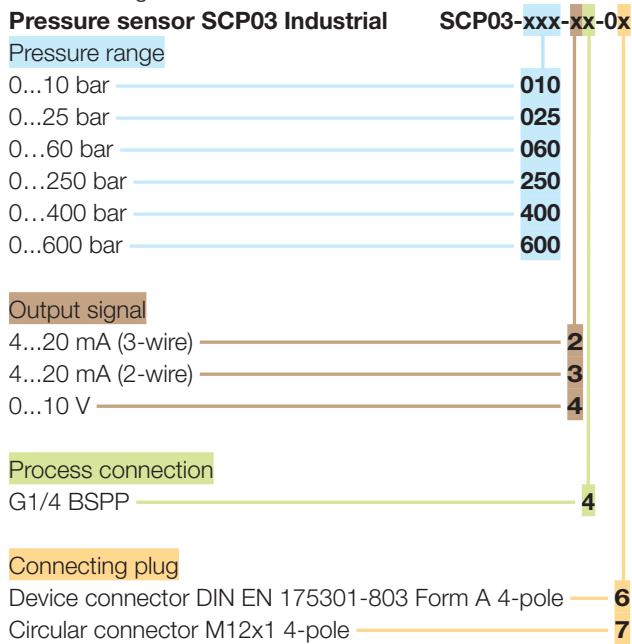
# SCP03 pressure sensor

## Order code

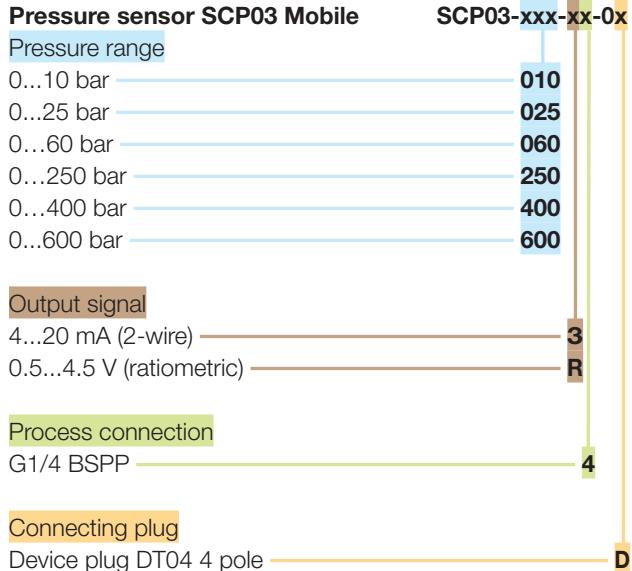
### Order quantity

Available single versions

#### Pressure sensor SCP03 Industrial



#### Pressure sensor SCP03 Mobile



## Order example

150x SCP03-400-34-07Q8

150 Single sensors (multiple of 50's)

Pressure range 0...400 bar

Output signal 4 to 20 mA (2-wire)

G1/4 BSPP

Without damping

M12 connecting plug 4-pole

### Pressure sensor SCP03

Pressure range

-1...3 bar	004R
-1...9 bar	010R
-1...15 bar	016R
-1...24 bar	025R
0...4 bar	004
0...10 bar	010
0...16 bar	016
0...25 bar	025
0...35 bar	035
0...60 bar	060
0...100 bar	100
0...160 bar	160
0...250 bar	250
0...400 bar	400
0...500 bar	500
0...600 bar	600
0...1000 bar	1000
0...150 psi	0150P
0...250 psi	0250P
0...1000 psi	1000P
0...3000 psi	3000P
0...5000 psi	5000P
0...9000 psi	9000P

Output signal

0...20 mA	1
4...20 mA (3-wire)	2
4...20 mA (2-wire)	3
0...10 V	4
0...5 V	A
1...6 V	B
0.5...4.5 V (ratiometric)	R
0.5...4.5 V (nom.)	S

Process connection

G1/4 BSPP	4
1/4 NPT (P <sub>n</sub> max. = 600 bar)	5
9/16-18 UNF, SAE 6 O-ring (P <sub>n</sub> max. = 400 bar)	6
7/16-20 UNF SAE-4 O-ring (P <sub>n</sub> max. = 400 bar)	7
G1/4 O-ring (P <sub>n</sub> max. = 600 bar)	8

Damping

Without damping	0
With damping	D

Connecting plug

Device connector DIN EN 175301-803 Form A 4-pole	6
Circular connector M12x1 4-pole	7
Stationary cable 2 m	10
Device plug AMP Superseal	A
Device plug DT04 4 pole	D
Device plug DT04 3 pole	E
Junior Timer 3-pole	J

Minimum order qty:

Q8: Multiple of 50 pcs.

# SCP04 pressure sensor

## Device features

- Monolithic design
  - No internal seal
  - No material mix
  - No weld seam
- EC79/2009 pending
- High media compatibility (hydrogen)
- Measuring range from 4 to 1000 bar / 58 to 14,504 psi
- Negative pressure resistant
- Special connections



The SCP04 pressure sensor is designed to meet the chemical and physical requirements of hydrogen applications.

The digitally calibrated piezoresistive stainless steel measuring cell detects pressures from 4 bar up to 1000 bar. The connection to the connection pins is made via a special bonding and thus remains stable even at low temperatures, shocks or vibrations.

The measuring cell and the pressure connection in contact with the medium are made in one piece. This eliminates the need for internal seals and weld seams. A mix of materials is avoided. The construction was designed to prevent embrittlement of the metal surface by ionized hydrogen.

The monolithic design eliminates leakage due to material fatigue at internal seals. The SCP04 has no pressure transfer fluid, no large pressurized areas, and is vacuum-tight and elastomer-free.

The resulting low permeability in combination with the stainless steel results in a wide media resistance. The process connections have been designed to be gasket-free for hydrogen applications.

The compact stainless steel housing allows space-saving use, even under harsh environmental conditions.

## Typical application range

- Hydrogen applications

# SCP04 pressure sensor

## Technical data

SCP04-	004	025	400	500	600	1000
Pressure range P <sub>n</sub> relative 0 ... bar / (psi)	4 (58)	25 (363)	400 (5800)	500 (7300)	600 (8702)	1000 (14,504)
Overload pressure P <sub>max</sub> DIN EN 60770-1 (bar) relative			2 x P <sub>n</sub>		1,4 x P <sub>n</sub>	
Burst pressure P <sub>burst</sub> DIN EN 60770-1 (bar) relative			3 x P <sub>n</sub>			

General		
Response time	$\leq$ 1 ms	
Load change	> 100 million	
Material Housing	EN/DIN 1.4301	
Weight	Approx. 120 g	
Accuracy parameter		
Non-linearity + Hysteresis + Repeatability	$\leq$ 0.3 %FS	
Long-term stability	$\leq$ 1.0 %FS / year	
Overall Accuracy		
	< 10 bar (145 psi)	$\geq$ 10 bar (145 psi)
@ 25°C	$\leq$ 0.5 %FS	$\leq$ 0.5 %FS
@ 0°C...+80°C	$\leq$ 2 %FS	$\leq$ 1 %FS

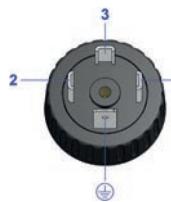
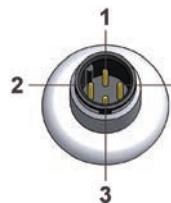
Ambient conditions	
Media temperature	-40...+125 °C / (-40...257°F)
Operation / Ambient temperature	-40...+105 °C / (-40...221°F)
Storage temperature	-40...+125 °C / (-40...257°F)
Vibration resistance	IEC 60068-2-6: 20 g
Shock resistance	IEC 60068-2-27: 1000 g
Conformity	
CE	EN 61326-1 EN61326-3-1
RoHs	Yes
MTTFd	> 100 years

Process connection	Wetted parts
7/16"-20 UNF	316L; EN/DIN 1.4404
G1/4 B (EN 837)	316L; EN/DIN 1.4404
1/4 NPT	316L; EN/DIN 1.4404

# SCP04 pressure sensor

## Pin assignment

Output signal	(2 wire) 4....20 mA	0...10 V	0.5...4.5 V ratio.
Supply Voltage $V_+$	10...32 VDC	12...32 VDC	5 V $\pm 10\%$
Load $_{max}$	$\leq (V_+ - 10V) / 20 \text{ mA} [\text{k}\Omega]$		4,7 [ $\text{k}\Omega$ ]
Overvoltage		50 VDC	
Short circuit		Yes	
Rever polarity		Yes	
Signal on GND / $V_+$		Yes	
<b>M12x1 4-pole</b>			
Pin 1		$V_+$	
Pin 2		P-Signal	
Pin 3	n.c.	0 V / GND	
Pin 4	n.c.		n.c.
IP 67			
<b>DIN EN 175301-803 Form A 4-pole (old 43650)</b>			
Pin 1		P-Signal	
Pin 2	n.c	0 V / GND	
Pin 3		$V_+$	
Pin 4 / GND		n.c.	
IP 65			
<b>DT04-3P</b>			
A		$V_+$	
B	n.c	P-Signal	
C	P-Signal	0 V / GND	
IP 65			

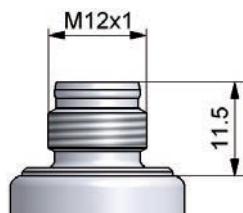


# SCP04 pressure sensor

## Pin assignment

**SCP04-....-07**

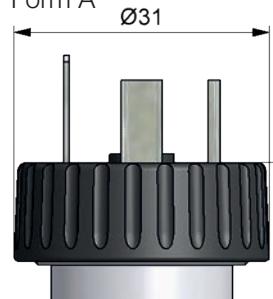
M12 4P



**SCP04-....-06**

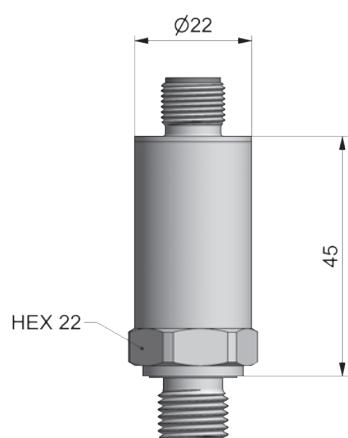
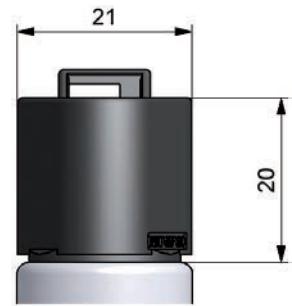
DIN EN 175301-803

Form A



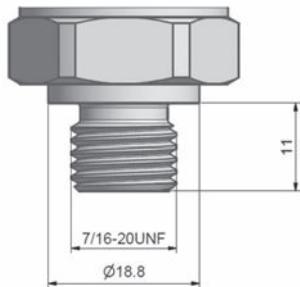
**SCP04-....-0E**

DT04 3P



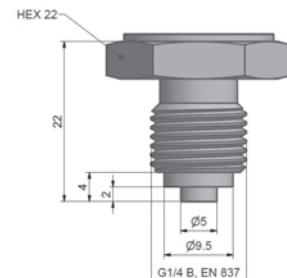
**SCP04-xxx-x4-0x**

7/16"-20UNF-2A



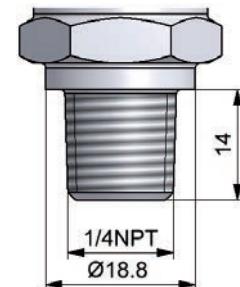
**SCP04-xxx-x5-0x**

G 1/4 B (EN 837)



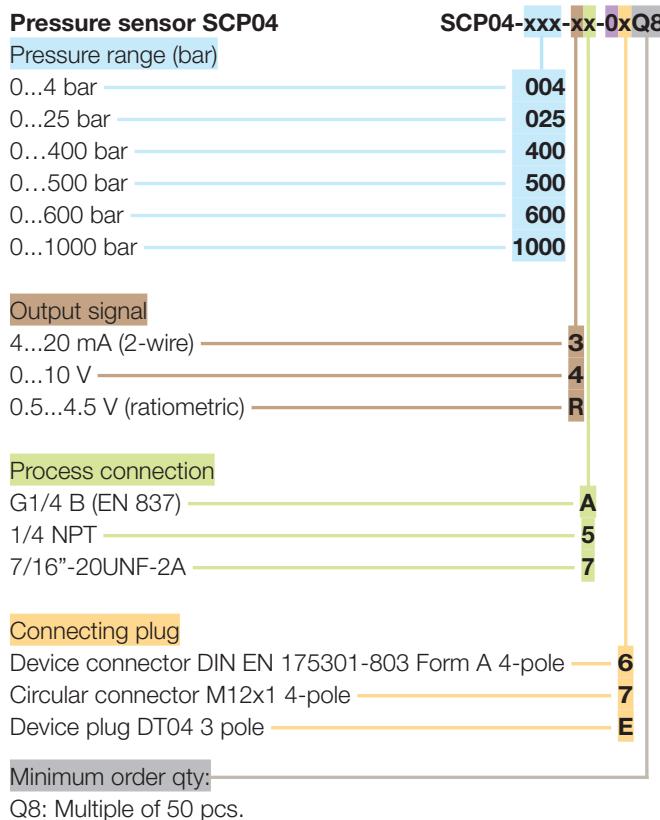
**SCP04-xxx-x6-0x**

1/4 NPT



# SCP04 pressure sensor

## Order code



### Additional Variances

ATEX, IECEx, CSA	available
Individual Pressure-ranges / calibration	available
Additional Ports	available
Individual Pin configuration	available
Brand label	available

# Pressure sensor SCP07

## Device features

- For safety requirements
- PLd
- SIL 2
- Two inverted 4-20 mA outputs
- Up to 600 bar (8,702 psi)
- G1/4 DIN 3852-11 (E)
- Compact design
- Long term stability
- Wide temperature range -40...85°C  
(-40...185°F)



The SCP07 is a safety-related pressure transmitter and can be used in applications that require a Performance Level d according to EN ISO13849 or a SIL 2 according to IEC61508.

The SCP07 supervises the signals of its measurement cell and convert the pressure in two inverted 4-20 mA output signals. The control unit can monitor the safety-related functionality and the electrical connectivity of the SCP07.

## Typical application range

- Mobile hydraulic
- Cranes
- Suspended loads
- Tire presses

# Pressure sensor SCP07

## Technical data

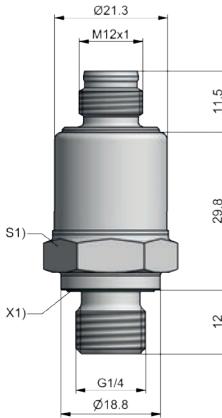
SCP07-	010	025	060	100	250	400	600
Pressure range $P_n$ 0... bar / (psi) relative	10 (145)	25 (363)	60 (870)	100 (1450)	250 (3626)	400 (5802)	600 (8702)
Overload pressure $P_{max}$ DIN EN 60770-1 bar / (psi) relative	50 (725)	50 (725)	200 (2901)	200 (2901)	500 (7252)	800 (11,603)	1600 (23,206)
Burst pressure $P_{burst}$ 60770-1 bar / (psi) relative	250 (3626)	250 (3626)	1000 (14,504)	1000 (14,504)	2500 (36,259)	4000 (58,015)	>4000 (>58,015)
<b>General</b>							
Response time	$\leq 1$ ms						
Load change	>100 million						
Material Housing	Stainless steel 1.4301						
Weight	Approx. 50 g						
Process Connection	G1/4, DIN 3852 T11 (E)						
Material	Stainless steel 1.4548						
Material diaphragm	Stainless steel 1.4548						
Wetted parts	FKM Stainless steel 1.4548						
Seal	ED Type: FKM						
Installation torque	Max. 35 Nm						
<b>Ambient Conditions</b>							
Media temperature	-40...125°C / (-40...257°F)						
Operation / Ambient temperature	-40...85°C / (-40...185°F)						
Storage temperature	-40...100°C / (-40...212°F)						
Vibration	IEC 60068-2-6 :20g						
Shock	IEC 60068-2-27 :500g						
<b>Conformity</b>							
CE	EN 61326-1, EN 61326-3-1						
E1	All vehicle types with +12/24 V and battery (-) at the chassis						
<b>Accuracy Parameter</b>							
Non-linearity + Hysteresis+Repeatability	$\leq 0,5$ %FS						
Long-term stability	$\leq 0,2$ %FS / year						
<b>Overall Accuracy</b>							
@ -40°C...-25°C	$\leq 2,5$ %FS						
@ -25°C...0°C	$\leq 1,5$ %FS						
@ 0...85°C	$\leq 1$ %FS						
<b>Safety classification</b>							
IEC 61508:2010	SIL 2						
Safety-related subsystem	Type B						
Hardware architecture	1oo1						
HFT	0						
SFF (incl. control unit)	95 %						
PFH	8,4 *10E-9						
EN ISO 13849-1:2010	PLd						
Category	2						
DC (incl. control unit)	93,8 %						
CCF	70						
MTTF <sub>D</sub>	>100 years						
MTBF (SN29500)	420,7 years						

### Electrical Connection

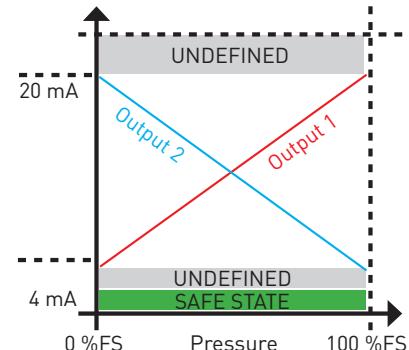
Output signal	4...20 mA / 20...4 mA	
Supply voltage $V_+$	9...32 VDC ripple @50HZ 10 %	
Load <sub>max</sub>	$(V_+ - 5,5 \text{ V}) / 0,02 \text{ A} [\Omega]$	
Protection	Overvoltage	yes
	Short circuit	yes
	Reverse polarity	yes
	Signal on GND/ $V_+$	yes

### M12x1

Protection class IEC 60529 (mounted connector)	IP67	
Material	PBT-GF30	
Pin 1	$V_+$	
Pin 2	20...4 mA	
Pin 3	GND	
Pin 4	4...20 mA	
Pin 5	Do not connect!	



### Signal



### Order code

Pressure sensor SCP07

SCP07-xxx-24-05Q8

### Pressure range

0...10 bar.....	-010
0...25 bar.....	-025
0...60 bar.....	-060
0...100 bar.....	-100
0...250 bar.....	-250
0...400 bar.....	-400
0...600 bar.....	-600

### Order quantity

Q8: Multiple of 50 pcs.

# Pressure sensor SCP08

## Device features

- 600 / 1000 bar (8,702 / 14,504 psi)
- G1/4"
- 0-10V / 4...20mA 2-wire
- M12x1 / DIN
- Reinforced internal design
- Persistence against shock & vibration
- Made for high pressure acceleration
- High dynamic signal



Particularly in die-casting applications the controlling for the piston requires a high dynamic pressure sensor. During this fast, high energetic process the components are stressed by shock, vibration and pressure acceleration.

The pressure sensor SCP08 measures the pressure via a special designed measurement cell and has a high adapted overload pressure to withstand the pressure peaks.

To avoid abrasion of the cell due to Diesel or similar effects, the process connection is protected by an adjusted drilling. The dimension of the drilling still guarantees an instantaneous pressure response.

To increase shock and vibration resistance, the relevant internal components are covered and reinforced. The speed of the sensor influences directly the quality of the production process.

The unique combination of accuracy, durability and high dynamic response makes the SCP08 ideal for the requirements of die-casting applications.

## Typical applications

- Press construction
- Die-casting

# Pressure sensor SCP08

## Technical data

SCP08-	600	1000
Pressure range $P_n$ 0... bar / (psi) relative	600 (8702)	1000 (14,504)
Overload pressure $P_{max}$ bar / (psi) relative	1200 (17,405)	1500 (21,756)
Burst pressure $P_{burst}$ bar / (psi) relative	1800 (26,107)	2000 (29,008)

General	
Response time	0...10 V $\leq$ 0,3 ms 4...20 mA 2-Leiter $\leq$ 0,5 ms*
Load change	>10 million.
Material Housing	Stainless steel 304
Weight	Approx. 80 g

Ambient Conditions	
Media temperature	-40...125°C / (-40...257°F)
Operation- / Ambient temperature	-40 to 105°C / (-40...221°F)
Storage temperature	-40 to 125°C / (-40...257°F)
Vibration	20 g rms
Shock	1 m on concrete

Conformity	
CE	yes
Overall Accuracy	
@ RT *1	$\leq$ 0,5 %FS
@ -10°C...85°C *1 *2	$\leq$ 2 %FS
@ -40...105°C *1 *2	$\leq$ 2,5 %FS
Long-term stability	$\leq$ 0,2 %FS / year

\*1 incl. Non-linearity + Hysteresis + Offset + Gain

\*2 incl. Repeatability + Temperature effects

RT = Room Temperature 20°C

Process Connection	
Thread	G1/4, DIN 3852 T11 (E)
Eroding milling	0,6 mm
Volume measured	<1 mm <sup>3</sup>
Seal	ED Type: FKM
Material	Stainless steel 17-4 PH
Material diaphragm	Stainless steel 17-4 PH
Wetted parts	FKM Stainless steel 17-4 PH

Installation	
Installation torque	Max. 35 Nm
General	no restriction

Recommended preventive activities to avoid air inclusion:

- Bleed air
- Installation with Process connection on top

\*with 2 m cable

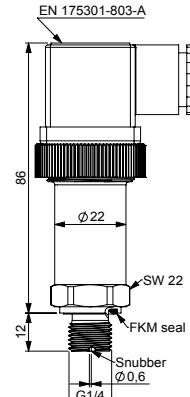
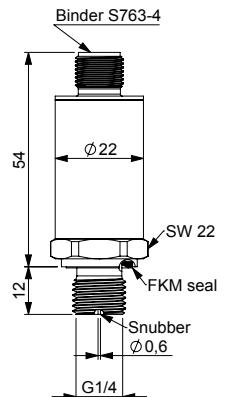
Output signal	0...10 V	4...20 mA 2-wire
Supply voltage $V_+$	12...32 VDC	10...32 VDC
Load <sub>max</sub>	10 k $\Omega$	( $V_+$ - 10 V) / 20 mA
Pro- tection	Overvoltage	36 signal on GND/ $V_+$
	Short circuit	yes
	Reverse polarity	yes
	Signal on GND/ $V_+$	yes

### M12x1

Protection class (mounted connector)	IP67	0...10 V	4...20 mA 2-wire
			
Pin 1	$V_+$	$V_+$	
Pin 2	P-signal	P-signal	
Pin 3	$V_-$		
Pin 4			

### DIN EN 175301-803 Form A

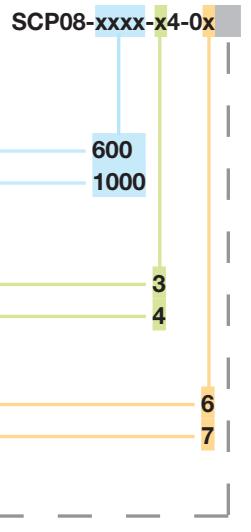
Protection class (mounted connector)	IP65	0...10 V	4...20 mA 2-wire
			
Pin 1	$V_+$	$V_+$	
Pin 2	$V_-$	P-signal	
Pin 3	P-signal		
Pin 4			



## Order code

### Pressure sensor SCP-08

4...20 mA; 2-wire



### Pressure range (bar)

0...600 bar

0...1000 bar

### Output signal

4...20 mA (2-wire)

0...10V

### Connecting plug

DIN EN 175301-803 Form A 4 pole

M12x1 4 pole

### Order quantity

Q2: Multiple of 5 pcs.

Q8: Multiple of 50 pcs.

# SCPSi pressure switch

## Device features

- Pressure sensor / -switch
- Temperature measurement
- Industry 4.0-ready
- IO-Link 1.1
- Smart Sensor Profile 2<sup>nd</sup> edition
- Plug & Play
- Compact
- Optimized design
- Adjustable via IO-Link
- Readable via IO-Link
- Useable as IO-Link sensor or switch
- Monolithic pressure cell



The fully electronic pressure switch SCPSi is adjustable and free from susceptible mechanical and moving components.

With its digital interface and smart functions, the SCPSi is future-proof for the increasing demands of automation solutions.

The 2 switching outputs are individually and safely parameterized from the machine control system via the standardized digital IO-Link interface (IEC 61131-9). This replaces manual programming and the commissioning phase is considerably shortened. Devices can be replaced during operation without the need for reparameterization. In order to react promptly to machine status changes or process adjustments, the re-parameterization is carried out during operation.

As an alternative to the switching functions, diagnostic values, process data and status messages are recorded directly via IO-Link and enable subsequent more complex analyses. Via the integrated temperature measurement of the pressure measuring cell, the media or ambient temperature is recorded.

IO-Link replaces time-consuming manual programming and eliminates the need for a sensitive key display with the manufacturer-dependent setting menu. This more compact, more resistant design without key display, in combi-

nation with the smart functions & setting options, opens up new possibilities in machine design for the machine designer, with considerable savings potential.

The compact stainless steel housing allows space-saving use, even in harsh environments.

The proven stainless steel measuring cell with the wide pressure range (from -1 up to 600 bar) allows a wide range of applications for liquid and gaseous media. The media-contacting pressure connection with the pressure measuring cell is monolithically manufactured from a stainless steel without welds and sets new standards in media compatibility and pressure resistance.

The packaging variant optimized for OEM's is environmentally friendly, cost-optimized and facilitates handling.

## Application examples

- Injection-mould machines
- Tool-making machines
- Power packs
- Special machine construction
- Replacement for mechanical pressure switches

# SCPSi pressure switch

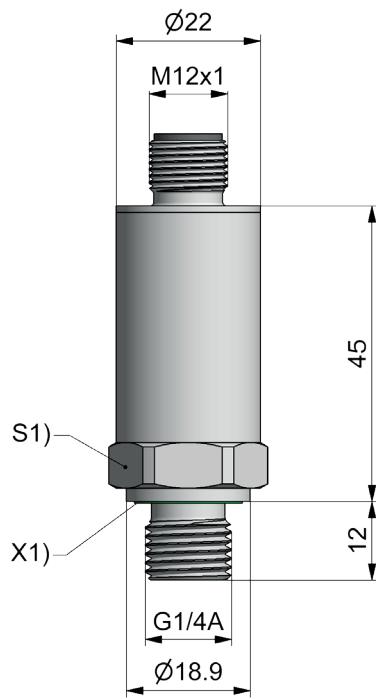
## Technical data

SCPSi		001	004	010	025	060	100	250	400	600
Pressure range P <sub>n</sub> vacuum tight / relative P <sub>n</sub>	bar (psi)	-1...1 (-14...14)	-1...4 (-14...58)	-1...10 (14...145)	-1...25 (-14...362)	0...60 (0...870)	0...100 (0...1450)	0...250 (0...3625)	0...400 (0...5801)	0...600 (0...8702)
Overload pressure relative P <sub>max</sub>	bar (psi)	6 (87)	10 (145)	030 (435)	80 (1160)	200 (2900)	300 (4351)	750 (10877)	1200 (17404)	1400 (20305)
Burst pressure relative P <sub>burst</sub>	bar (psi)	9 (130)	15 (217)	100 (1450)	150 (2175)	500 (7251)	800 (11603)	1000 (14504)	2000 (29007)	2200 (31908)
Wetted parts		1.4542 (17-4PH); 1.4548; FKM								
Set point SP Range						1 - 100 %				
Reset point rP Range						0 - 99 %				
Steps / Incremental	mbar	0,1	1	1	1	10	10	10	100	100
Smallest hysteresis (SP-rP) & (FH-FL)	bar	0,001	0,01	0,01	0,01	0,1	0,1	0,1	1	1

General	
Overall Accuracy @ RT [ <sup>1)</sup>	≤ 0,5 %FS
Min. pressure cycles	> 100 million
Material housing	Stainless steel 1.4404
Weight	approx. 80 g
Conformity	
RoHS	2011/65/EU, 2015/863
CE	Yes
UKCA	Yes
Process connection	
Thread	G1/4, DIN 3852 T11 (E)
Seal	ED type: FKM
Installation torque	Max. 35 Nm
Ambient conditions	
Media temperature	-25 to 85 °C (-13 to 185°F)
Operation / Ambient temperature	-25 to 85 °C (-13 to 185°F)
Storage temperature	-40 to 85 °C (-40 to 185°F)
Vibration	DIN EN 60068-2-6, 20 g
Shock	DIN EN 60068-2-27, 500 g
MTTFd	>100 year
Accuracy	
@ -40°C...-25°C	≤ 2,5 %FS
@ -25...0°C	≤ 1,5 %FS
@ 0...85°C	≤ 1 %FS
Temperature signal	
Output	Via IO-Link
Short circuit	-40 to 125 °C
Resolution	1 K
Accuracy	± 10°K
t <sub>0,9</sub>	80 sek.
Protection	
Overvoltage	70 V
Short circuit	yes
Reverse polarity	yes
Signal on GND/V <sub>+</sub>	yes
Factory setting	
SP1 / rP1	40 / 60% FS; Hno
SP2 / rP2	30 / 70% FS; Hno

Electronic Connectivity	
Power supply voltage V <sub>(+)</sub>	18...30VDC
Connector	M12
Consumption	< 15 mA @ 24V
Output	2 switching outputs, NPN / PNP, 1 IO-Link output
Switch current	Max. 200mA
Max. switch frequency	200 Hz
Response time	≥ 3 ms
IO-Link Interface	
Revision	IO-Link V1.1 Process Data Variable; Device Identification; Device Diagnosis
Min. process cycle time	4 ms
Transmission type	COM2, 38.4kBaud
Profile	Smart Sensor Profile 2 <sup>nd</sup> Edition v1.1.2
SIO-Mode	yes
Master port type	A
Process data analogue (in Pa)	2 Byte Process data 1 Byte scaling factor
Process data binary	1 byte
SDCI Standard	IEC 61131-9
Vendor ID	271 / 10f (hex)
Device IODD	<a href="https://ioddfinder.io-link.com/#/">https://ioddfinder.io-link.com/#/</a>
M12x1	
Protection class (mounted connector)	IP67
	Pin 1 V <sub>(+)</sub> Pin 2 S2 out Pin 3 0V / GND Pin 4 S1 out / IO-Link

# SCPSi pressure switch



## Order code

SCPSi Pressure switch

SCPSi-xxx-04-07

Druckbereich

0...001 bar	001
0...004 bar	004
0...010 bar	010
0...025 bar	025
0...060 bar	060
0...100 bar	100
0...250 bar	250
0...400 bar	400
0...600 bar	600

# Volumetric flow rate sensors

## Device features

- Different measurement techniques
  - Quick
  - Not dependent on viscosity
  - Without loss
- Many measurement ranges
- Analogue output signal
- M12 connecting plug
- 24 VDC



The flow sensors used in **SensoControl®** provide accurate volume flow information in hydraulic systems (e.g. in testing equipment).

The sensors deliver a output signal that is proportional to the volumetric flow rate for further processing to an electronic system. They are compatible with conventional, well-known standards.

- M12 connecting plug
- 24 VDC
- 0/4 to 20 mA

The volumetric flow rate can be easily displayed when using the **SCE-020** panel meter.

In order to meet the many different application requirements, three different measuring principles are available:

- **SCVF** geared counter
- **SCFT** turbine
- **SCQ** spring/piston

The volumetric flow rate sensors are used in control, regulation or monitoring systems where analogue signals are needed to capture the volume flow.

# Volumetric flow rate sensors

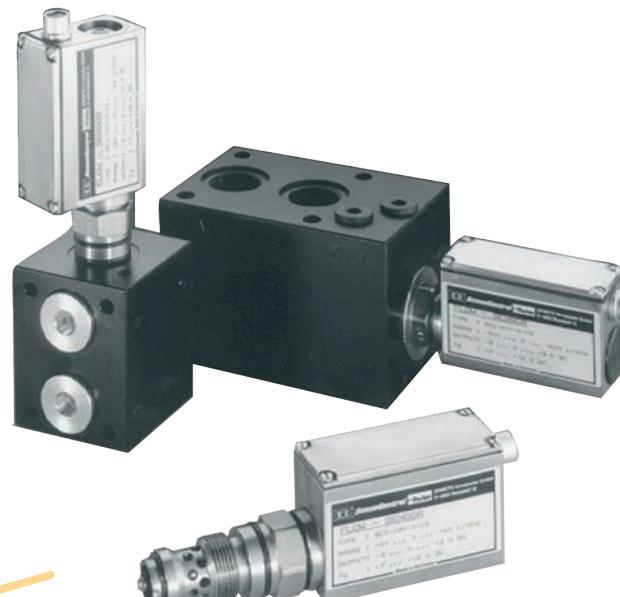
## Overview

	SCQ	SCFT	SCVF
<b>Range of use</b>	For quick flow changes Measures in both directions	Low loss measuring of volume flow	Measures different substances Measures lower volume flows (leakage measurements)
	<ul style="list-style-type: none"><li>■ Response speed <math>\leq 2</math> ms</li><li>■ Reverse operation</li><li>■ Wide viscosity range</li><li>■ Compact size</li><li>■ Up to 420 bar (6092 psi)</li></ul>	<ul style="list-style-type: none"><li>■ Response speed <math>\leq 50</math> ms</li><li>■ Many measurement ranges</li><li>■ Low flow resistance</li><li>■ Up to 800 l/min</li><li>■ Up to 420 bar (6092 psi)</li></ul>	<ul style="list-style-type: none"><li>■ Very wide measurement range</li><li>■ Not dependent on viscosity</li><li>■ Up to 400 bar (5802 psi)</li></ul>
<b>Applications</b>	<ul style="list-style-type: none"><li>■ Test rigs</li><li>■ General machine construction</li><li>■ Hydraulic plant construction</li></ul>		
<b>Order code</b>	SCQ-xxx-10-07	SCFT-xxx-22-07	SCVF-xxx-10-07
<b>Refer to page</b>	31-34	35-38	39-44

# SCQ flow meter

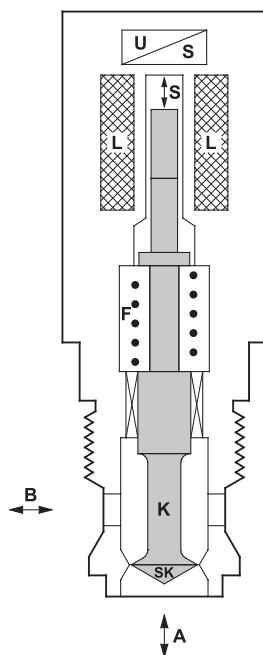
## Device features

- Measurement principle Spring/piston principle
- Response time  $\leq$  2 ms
- Measurement in both directions
- Wide viscosity range
- Compact design
- Withstands pressures up to 420 bar (6092 psi)



## Function

The piston (K) is moved due to a flow from A to B or from B to A. In the idle state, the spring (F) and the piston (K) are in equilibrium. The delta (S) is proportional to the flow and is converted to a value through the built-in electronics. Through the change in direction of the piston (B to A), the flow direction can be indicated. (e.g. -45.8 l/min) The reaction time of the piston movement is less than 2 ms.



SCQ measurement principle

## Application

When working with high-pressure hydraulics, it is very important to be able to quickly detect the flow rate.

Installation with a connection block permits the combined measurement of p, T and Q. Rapid assembly of the **SCQ**s is achieved with an in-line adaptor for tube or hose installation. Use under extreme conditions (such as high load changes or rapid pressure increases) is possible because of the sturdy construction.

The **SCQ** is the perfect solution when recording highly dynamic volume flow changes. Rapid load changes, which can cause damage for example in valves and pumps, can be safely detected. Due to its unique measurement process, the **SCQ** can capture volume flow in both directions.

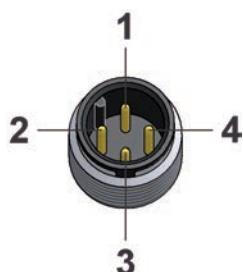
# SCQ flow meter

## Technical data

<b>SCQ-</b>	<b>150</b>
Measuring range QN	-150...+150 l/min
Qmax	-165...+165 l/min
Substance connection	M42 (NG16)
Weight (g)	1050
<b>Accuracy</b>	
Deviation from characteristic curve	±2 % FS @ 46cSt.
Response time	2 ms
Thermal drift	±0.05 % FS/°C
Repeat accuracy	± 0.5 % FS
<b>Resistance to pressure</b>	
Pressure range	3...420 bar
Operating pressure $P_n$	315 bar / (4569 psi)
Overload pressure $P_{max}$	420 bar / (6092 psi)
Pressure drop $\Delta P$ (bar) @ (FS)	Refer to diagram
<b>Material</b>	
Housing	Steel
Seal	NBR
Parts in contact with substances	Steel, NBR
<b>Ambient conditions</b>	
Operating temperature	+10...+60 °C / (50...140°F)
Storage temperature	-20...80 °C / (-4...176°F)
Tmax Fluid	+80 °C / (176°F)
Filtration	25 µm
<b>Viscosity range</b>	
Protection degree	IP67 DIN EN 60529
<b>Electrical connection</b>	
Plug	M12x1; 4-pole
Supply voltage	+18...+30 VDC
Current consumption	40 mA
Output	0...20 mA = -FS...+FS (10 mA = 0 l/min)
Load	≤ 150 Ω
Signal noise	< 5 mV
<b>EM compatibility</b>	
Disturbance emissions	EN 61000-6-3
Resistance to interference	EN 61000-6-2

## Pin assignment

M12x1; 4-pole

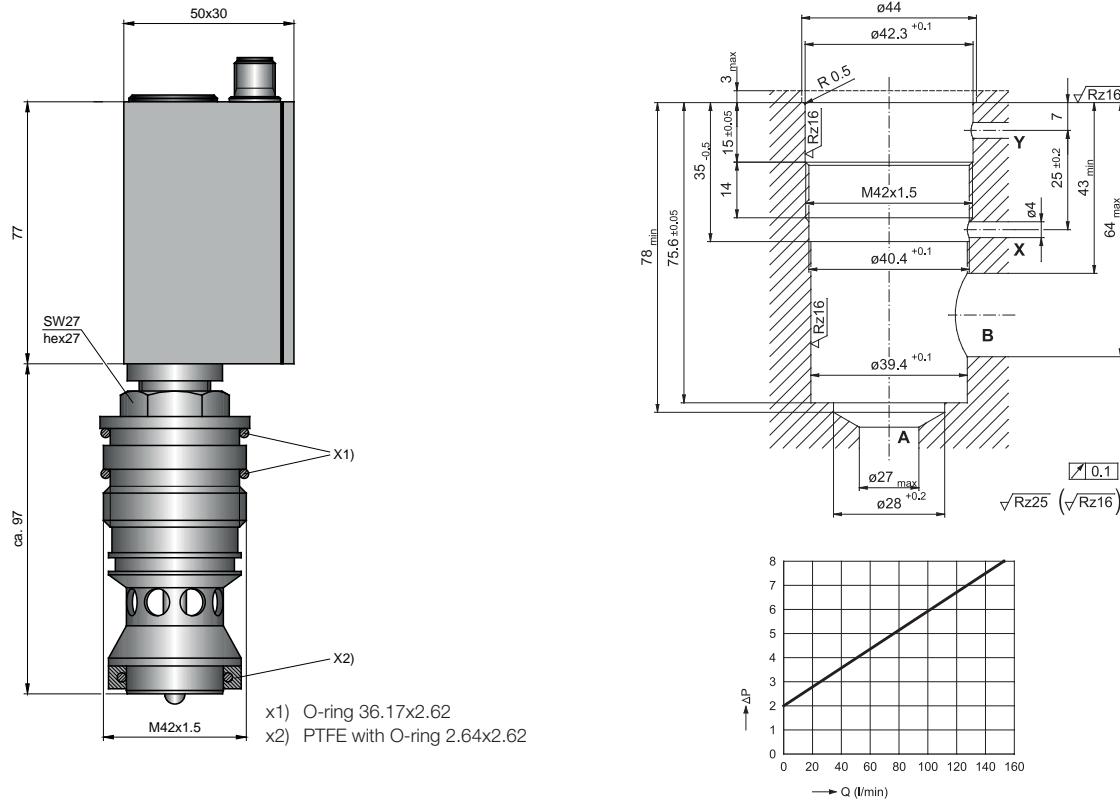


<b>PIN</b>	<b>Assignment</b>
1	$V_+$
2	Q signal
3	0 V / GND
4	-

# SCQ flow meter

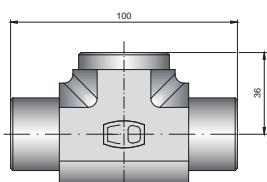
Screw plug hole and pressure-drop curve SCQ-150

30 Nm torque

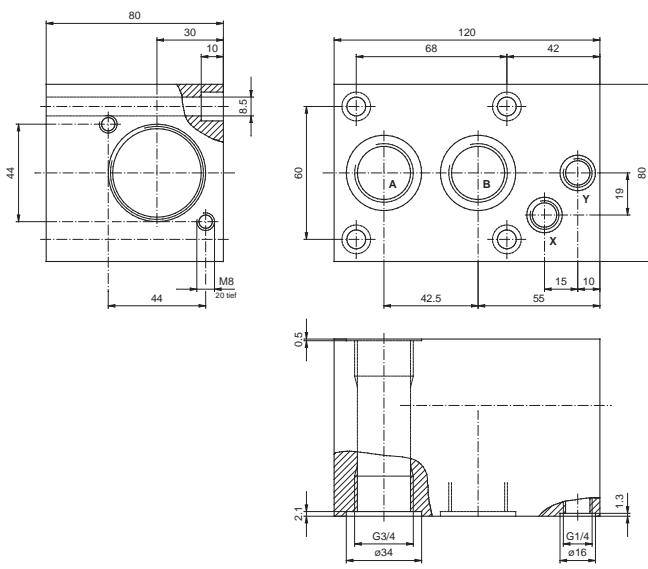


# SCQ flow meter

## SCAQ-GI-R1/2



## SCAQ-150



## Order code

**SCQ-150 (-150 to +150 l/min)**  
M12x1, 4-pole; connecting plug; IP67  
0 to 20 mA; -150...+150 l/min

**SCQ-150-10-07**

### Accessories SCQ-150

Connector block  
G3/4 BSPP inner (A-B) and M42 inner  
With screw plug:  
M42 outer and  
G3/4 BSPP outer (A-B)

**SCAQ-150**

### Spare parts

Spacer ring for SCQ-060  
Seal kit for SCQ-060  
Seal kit for SCQ-150

**SC-910**  
**SC-911**  
**SC-912**

## Connection cable and single plug

**Connection cable, assembled**  
(open cable end)

**SCK-400-xx-xx**

### Cable length (m)

2 m **02**  
5 m **05**  
10 m **10**

### Connecting plug

M12 cable jack; straight **45**  
M12 cable jack; 90° angled **55**

### Single connector

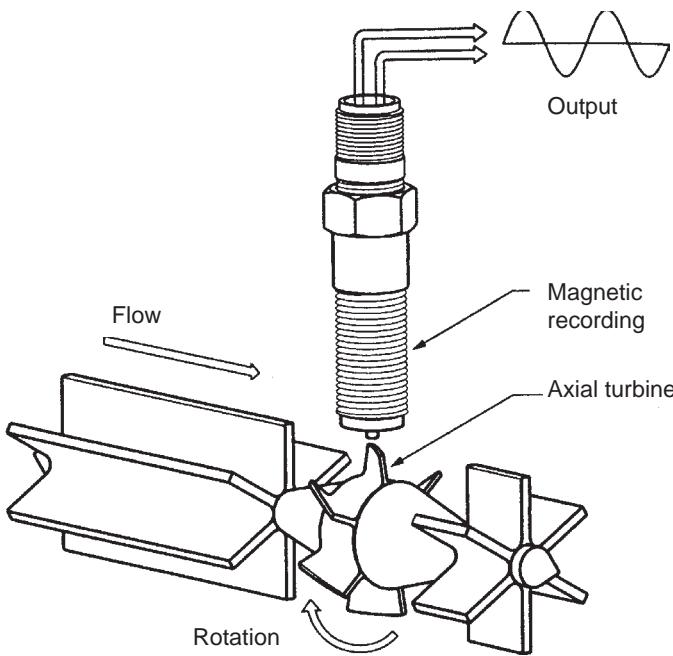
M12 cable jack; straight  
M12 cable jack; 90° angled

**SCK-145**  
**SCK-155**

# SCFT measurement turbine

## Device features

- Measurement principle: Turbine
- Response speed  $\leq 50$  ms
- Measurement range from 1 to 800 l/min
- Low flow resistance
- Suitable for reverse operation
- Built-in pressure and temperature ports



## Function

The turbine wheel is driven by the oil flow. The generated frequencies are processed through the digital electronics and influences from the disturbing flow effects are compensated for. Because of the low flow resistance  $Q_R$ , the hydraulic circuit operates with very low losses.

Reverse operation is also possible because of the special vane (winged) design - so the turbine can be operated in both directions.

The turbine is fitted with an EMA-3 screw coupling for measuring pressure. Oil temperature can be measured directly in the oil flow of the turbine by connecting the temperature sensor (SCT-150). This provides all important measurements at the installation location.

## Application

The **SCFT** is the ideal solution if the volumetric flow rate needs to be recorded loss-free across a wide flow range (up to 800 l/min.).

# SCFT measurement turbine

## Technical data

SCFT-	015	060	150	300	600	800
Flow measuring range Qn (l/min)	1...15	3...60	5...150	8...300	15...600	20...800
Accuracy ( $\pm$ %) FS/IR @ 21cSt.	$\pm$ 1 % FS	$\pm$ 1 % IR				
Operating pressure Pn bar / (psi)	350 (5076)	350 (5076)	350 (5076)	350 (5076)	290 (4206)	400 (5801)
Ports (A - B)	G1/2 BSPP	G3/4 BSPP	G3/4 BSPP	G1 BSPP	G1 1/4 BSPP	G1 7/8 UNF
Pressure drop $\Delta$ P (bar) @ (FS)	1.5	1.5	1.5	4	4	5
Weight (g)	700	1600	1600	1700	2700	5000

FS = Full Scale

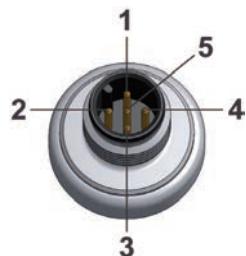
IR = Indicated Reading

Accuracy	
Response time	50 ms
Thermal drift	$\pm$ 0.05 % FS/°C
Repeat accuracy	$\pm$ 0.5 % FS
Resistance to pressure	
$Q_{\max}$ (l/min)	$Q_N \times 1.1$
Overload pressure $P_{\max}$	$P_N \times 1.2$
Material	
Housing	Aluminium
Seal	FKM
Parts in contact with substances	Aluminium, steel, FKM
Ambient conditions	
Ambient temperature	-10...+50 °C / (14...122°F)
Storage temperature	-20...+80 °C / (-4...176°F)
$T_{\max}$ Fluid	-20...+80 °C / (-4...176°F)
Filtration	25 $\mu$ m (10 $\mu$ m for SCFT-015)
Viscosity range	15...100 cSt.
Protection class	IP66 EN60529

Ports	
Temperature measurement (SCT-150-14-07)	M10x1 OR
Pressure connection	EMA3
Pressure (VSTI)	G1/4 BSPP
Electrical connection	
Plug	M12x1; 5-pole
Power supply $V_+$	18...30 V
Output signal	4...20 mA $\Delta$ 0...FS l/min
Complete output current range	0...21 mA
Current consumption	< 30 mA
Protection degree	IP66 EN60529

## Pin assignment

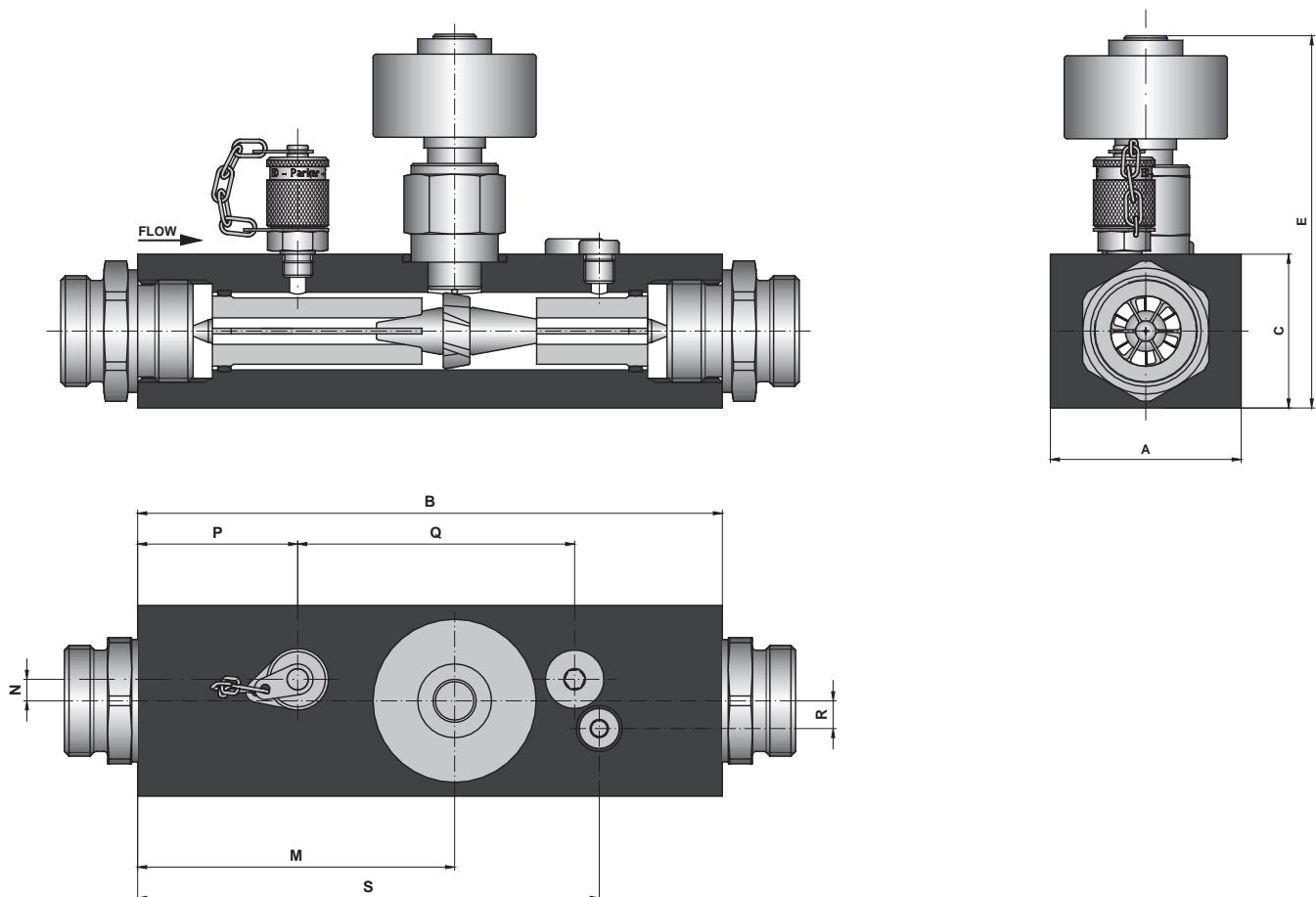
M12x1; 5-pole



PIN	Assignment
1	$V_+$
2	n.c.
3	Q signal
4	n.c.*
5	0 V / GND

\*n.c. = do not connect

# SCFT measurement turbine



#	SCFT-015	SCFT-060	SCFT-150	SCFT-300	SCFT-600	SCFT-800
A	37	62	62	62	62	100
B	136	190	190	190	212	212
C	37	50	50	50	75	75
E	115	130	130	134	149	152
M	70	103	103	103	127	126
N	0	5	5	7	9	10
P	25	50	50	52	62	60
Q	N/A	92	92	90	106	104
R	0	5	5	9	11	10
S	115	157	157	150	168	181

# SCFT measurement turbine

## Order code

### SCFT

M12x1, 5-pole; connecting plug; IP66

4...20 mA (3-wire)

1...15 l/min

**SCFT-015-22-07**

3...60 l/min

**SCFT-060-22-07**

5...150 l/min

**SCFT-150-22-07**

8...300 l/min

**SCFT-300-22-07**

15...600 l/min

**SCFT-600-22-07**

20...800 l/min

**SCFT-800-22-07**

## Connection cable and single plug

### Connection cable, assembled

(open cable end)

**SCK-400-xx-xx**

#### Cable length (m)

2 m

**02**

5 m

**05**

10 m

**10**

#### Connecting plug

M12 cable jack; straight

**45**

M12 cable jack; 90° angled

**55**

### Single connector

M12 cable jack; straight

**SCK-145**

M12 cable jack; 90° angled

**SCK-155**

# SCVF volume counter

## Device features

- Measurement principle: Volume/geared counter
- Eight measurement ranges from 0.01 - 2 to 1 - 300 l/min
- Accuracy  $\pm 0.5\% \text{ FS}$
- Withstands pressures up to 400 bar (5802 psi)
- High viscosity range
- Low noise
- Exact flow rate measurement over a wide viscosity range
- Versatile usage for different substances



**Gear counter for highly accurate flow rate measurements in hydraulic systems**

### Function

The SCVF geared counter functions as a volume flow meter. A very precisely crafted pair of geared wheels is driven by the fluid flow.

The SCVF works over a wide viscosity range. Different seals permit usage in many different applications.

### Applications

Due to the wide viscosity range, any liquid can be measured that can be pumped and has a certain degree of lubricating capability.

- Brake fluid (EPDM seal)
- Skydrol
- Mineral oils
- Hydraulic oil and
- Grease

The SCVF is the ideal solution when carrying out precise flow rate measurements over a wide viscosity range.

# SCVF volume counter

## Technical data

SCVF-	002	004	015	040	060	080	150	300
Flow measuring range (l/min)	0.01...2.0	0.02...4.0	0.2...15	0.4...40	0.4...60	0.4...80	0.6...150	1.0...300
Pressure range P <sub>N</sub> bar / (psi)	400 (5802)	315 (4569)	400 (5802)	400 (5802)	400 (5802)	400 (5802)	315 (4569)	315 (4569)
Overload pressure P <sub>O</sub> bar / (psi)	480 (6962)	400 (5802)	480 (6962)	480 (6962)	480 (6962)	480 (6962)	350 (5076)	350 (5076)
Connection	G3/8 BSPP	G3/8 BSPP	G3/8 BSPP	G1/2 BSPP	G1/2 BSPP	G1/2 BSPP	G1 BSPP	G1 BSPP
Sound level dB (A)	< 60	< 60	< 60	< 70	< 70	< 70	< 70	< 72
Resolution (pulses / litre)	40,000	25,000	4082	965	965	965	333.33	191

Accuracy	
Deviation from characteristic curve	± 0.3 % FS ≥ 20 cSt. ± 0.5 % FS ≥ 20 cSt.
Response time	< 10 ms
Repeat accuracy	0.01 % FS
Substance *)	Hydraulic oil (25 micron filter)
Material	
	Material 1.7139 Contains no non-ferrous metal or silicone
Housing	Steel
Seal	FKM EPDM on request
Ambient conditions	
Ambient temperature	0...+55 °C / (32...131°F)
Storage temperature	-25...+85 °C / (-13...185°F)
Fluid temperature	-30...120 °C / (-22...148°F)
Viscosity range	Refer to diagram p. 48
Protection degree	IP65 DIN EN 60529

FS = Full scale value

\*) When using other substances, please state the viscosity range and the type of seals. (Attach the data sheet of the substance if possible)

Electrical connection	
Plug	M12x1; 4-pole
Power supply V <sub>+</sub>	+18...+30 VDC
Current consumption	< 28 mA
Output signal	0...20 mA ≤ 0...FS l/min
Load	≤ 150 Ω
EM compatibility	
Disturbance emissions	EN 61000-6-3
Resistance to interference	EN 61000-6-2

## Pin assignment

M12x1; 4-pole

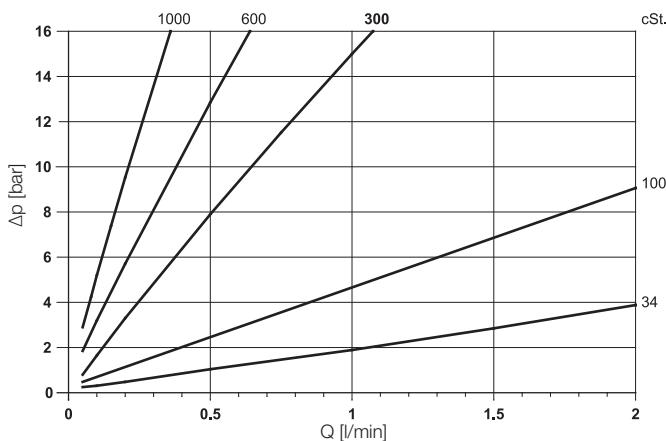


PIN	Assignment
1	V <sub>+</sub>
2	Q-signal
3	0 V / GND
4	-

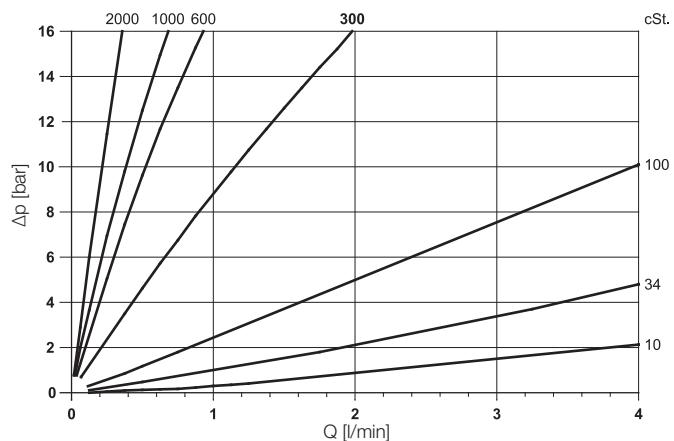
# SCVF volume counter

## Technical data

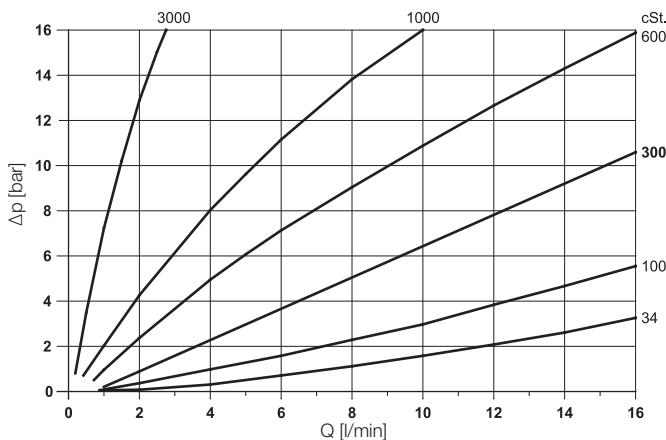
### SCVF-002 Δp - Viscosity



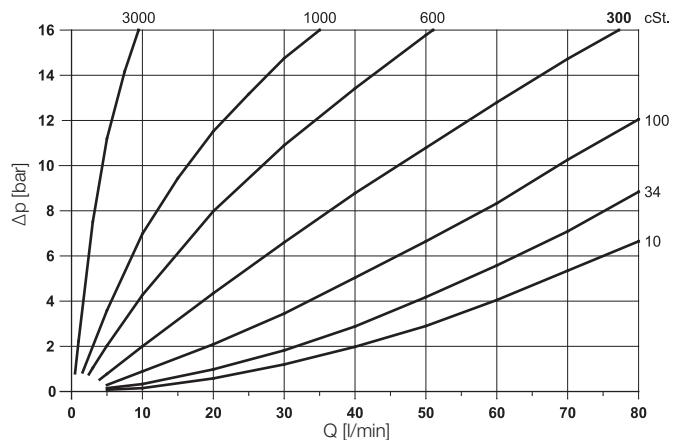
### SCVF-004 Δp - Viscosity



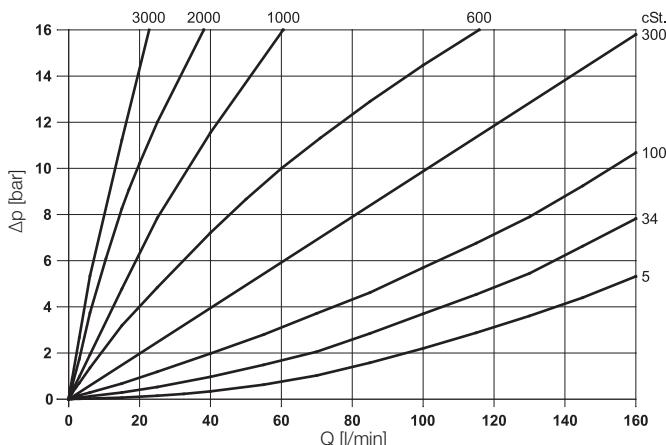
### SCVF-015 Δp - Viscosity



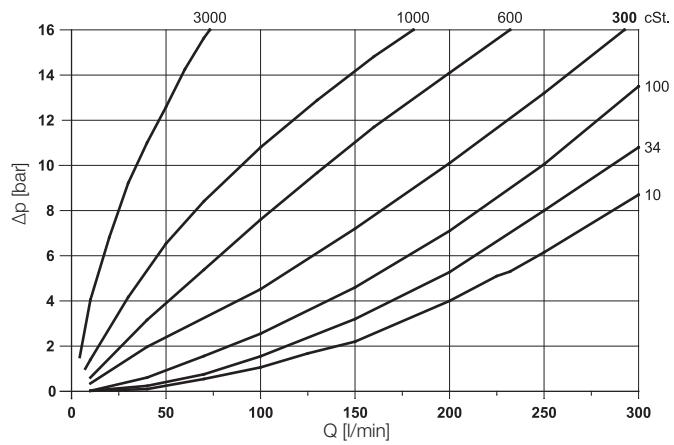
### SCVF-040/060/080 Δp - Viscosity



### SCVF-150 Δp - Viscosity

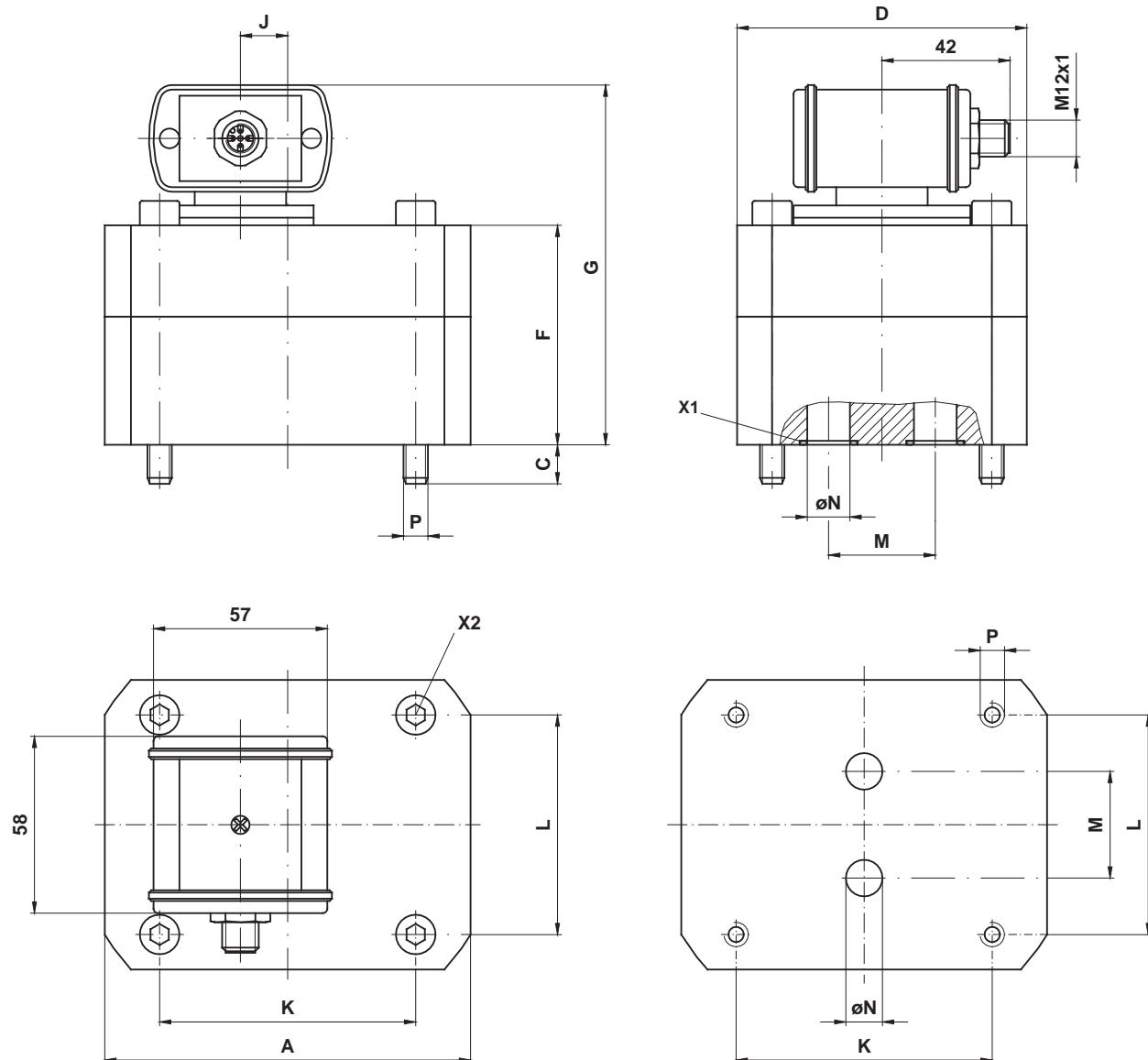


### SCVF-300 Δp - Viscosity



$\Delta p$  = pressure loss

# SCVF volume counter

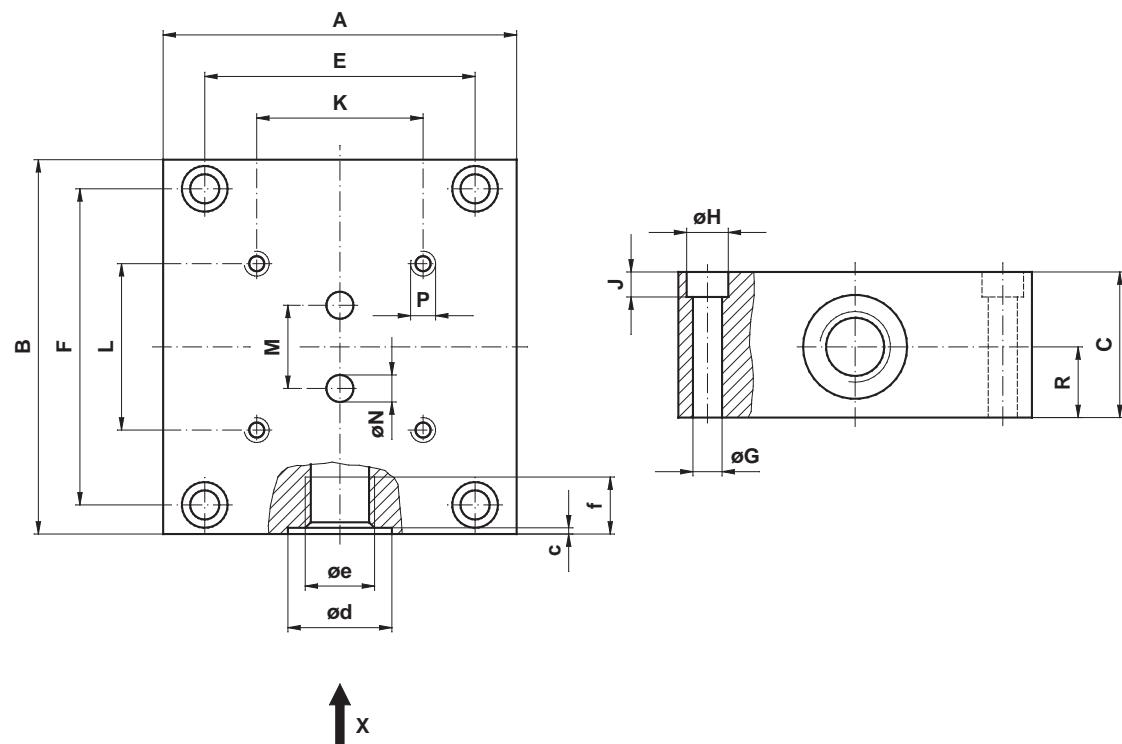


Type	Weight [kg]	Torque [Nm]	A	C	D	F	G	J	K	L	M	øN	P
SCVF-002	1.8	14	85	10	60	50	87	-	70	40	20	6.5	M6
SCVF-004	2	14	85	9	60	56	-	-	70	40	20	6.5	M6
SCVF-015	2	14	85	13	60	57	94	-	70	40	20	9	M6
SCVF-040													
SCVF-060	5.2	35	120	13	95	72	109	10.5	84	72	35	16	M8
SCVF-080													
SCVF-150	9	120	170	18	120	89	140	46.5	46	95	50	25	M12
SCVF-300	13	120	170	22	120	105	142	40	46	95	50	25	M12

All measurements in mm

# SCVF volume counter

## Dimensioned drawings connection plate



Type	kg	A	B	C	E	F	øG	øH	J	K	L	M	øN	P	R	c	ød	øe BSPP	f
SCVF-002																			
SCVF-004	1.8	85	90	35	65	76	7	11	7	70	40	20	6.5	M6/t = 14	17	0.7	25	G3/8	13
SCVF-015																			
SCVF-040																			
SCVF-060	2.9	100	120	37	80	106	7	11	7	84	72	35	12	M8/t = 18	17.5	0.7	29	G 1/2	15
SCVF-080																			
SCVF-150																			
SCVF-300	14	160	165	80	140	145	9	15	9	46	95	50	25	M12/t = 24	28	1	42	G1	19

All measurements in mm

# SCVF volume counter

## Order code

### SCVF

M12x1, 4-pole; connecting plug; IP65; incl. connection plate

0...20 mA

0.01...2 l/min

**SCVF-002-10-07**

0.02...4 l/min

**SCVF-004-10-07**

0.2...15 l/min

**SCVF-015-10-07**

0.4...40 l/min

**SCVF-040-10-07**

0.4...60 l/min

**SCVF-060-10-07**

0.4...80 l/min

**SCVF-080-10-07**

0.6...150 l/min

**SCVF-150-10-07**

1...300 l/min

**SCVF-300-10-07**

## Connection cable and single plug

**Connection cable, assembled**  
(open cable end)

**SCK-400-xx-xx**

Cable length (m)

2 m

**02**

5 m

**05**

10 m

**10**

Connecting plug

M12 cable jack; straight

**45**

M12 cable jack; 90° angled

**55**

### Single connector

M12 cable jack; straight

**SCK-145**

M12 cable jack; 90° angled

**SCK-155**

# The Controller Family

## Device features

- Large display
- Freely adjustable
- Rugged metal construction
- Compact size
- Long-term stability
- Dependable
- Immune to interference



This controller is used in control, regulation or monitoring systems where switching signals or analogue signals are used or a display is required.

The controller can replace the following:

- Mechanical switches
- Mechanical displays (pressure gauges, thermometers, inspection glass)
- Sensors

All the above mentioned functions can be combined in one device.

All control devices have a compact and pivoting metal housing so that they can be mounted optimally under adverse installation conditions. The large display can always be perfectly positioned so that it is easy to read even at longer distances.

Both of the switching outputs can be set individually either as NO or NC. They also both have hysteresis and the window functions. Therefore the on and off switching values as well as delay times (attenuation) for each of the switching points can be chosen freely.

Thanks to these easy switching functions, intelligent adjustments can be set which are normally not possible using a mechanical switch. Therefore, many switches can be replaced with one controller.

The controllers offer good practical characteristics combined with diverse mounting and setting options.

Because of its compact design, long lifespan and high functionality, this controller is ideal for the permanent series use in hydraulic and pneumatic applications.

# The Controller Family

## Overview

	SCPSD	SCTSD	SCTSD-L
<b>Range of use</b>	Pressure display and monitoring <ul style="list-style-type: none"> <li>■ Compact size</li> <li>■ Resistant to pressure peaks</li> <li>■ Resistant to shock and vibration</li> </ul>	Temperature display and monitoring <ul style="list-style-type: none"> <li>■ Temperature display</li> <li>■ Modular design</li> <li>■ Suitable for control panel and tank construction</li> <li>■ High pressure version</li> </ul>	Temperature display and level monitoring <ul style="list-style-type: none"> <li>■ Temperature display</li> <li>■ Fixed level contacts</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ Test benches</li> <li>■ Processing equipment</li> <li>■ Conveying and lifting equipment</li> <li>■ General machine construction</li> <li>■ Pneumatic plant construction</li> <li>■ Hydraulic plant construction</li> </ul>		
<b>Order code</b>	SCPSD-xxx-xx4-xx	SCTSD-150-xx-xx	SCTSD-L-xxxxx-xxxxQ2
<b>Refer to page</b>	47-52	53-64	65-68
	SCLSD	SCLTSD	SCOTC
<b>Range of use</b>	Level indication and monitoring <ul style="list-style-type: none"> <li>■ Level display</li> <li>■ Practical monitoring with window function</li> <li>■ Continuous level measurement</li> </ul>	Level/temperature display and monitoring <ul style="list-style-type: none"> <li>■ Level display</li> <li>■ Temperature display</li> <li>■ Continuous level measurement</li> <li>■ One bore hole</li> </ul>	<ul style="list-style-type: none"> <li>■ Level display</li> <li>■ Temperature display</li> <li>■ Continuous level measurement</li> <li>■ One bore hole</li> <li>■ Connection to the filling coupling</li> <li>■ Connection to the air filter</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ Test benches</li> <li>■ Processing equipment</li> <li>■ Conveying and lifting equipment</li> <li>■ General machine construction</li> <li>■ Pneumatic plant construction</li> <li>■ Hydraulic plant construction</li> </ul>		
<b>Order code</b>	SCLSD-xxx-x0-07	SCLTSD-xxx-x0-07	SCOTC-xxx-x0-07
<b>Refer to page</b>	69-74	75-80	81-86

# SCPSD PressureController

## Device features

- Compact size
- Rugged
- Dependable
- Easily operable
- Long-term stability
- Excellent interference immunity
- Metal housing
- High protection class
- Many variants
- Pivoting
- Analogue output
- Password
- MPa, bar, PSI



The PressureController combines the functions of a pressure switch, a pressure sensor and a display device.

- Pressure gauge (manometer)
- Switching outputs
- Analogue signal

The PressureController is easy to operate, has a compact design and is very reliable. The PressureController features excellent technical specifications, optimal pressure management and a wide variety of installation options. This makes it perfect for permanent series use in industrial applications.

### Easy to use

The parameters are set using the keys or over a programming module.

### High functionality

Each switching output can be adjusted individually:

- NO/NC contact
- On/off switching pressures
- Delay times
- Hysteresis / window function
- Attenuation

Thanks to these easy switching functions, intelligent adjustments can be set which are normally not possible using a mechanical switch. Therefore, many switches can be replaced with one controller.

The analogue output is individually adjustable

- 0/4...20 mA switchable
- Starting pressure selectable
- End pressure selectable

### Reliable and safe

The pressure is recorded with a long term stable measuring cell. A functional error is signalled and can be processed further according to DESINA. Parameters can be password protected to avoid unauthorised changes.

### Rugged

The housing is made of metal and is resistant to moisture, shock and vibrations. The electronics are protected against reverse polarity, over-voltage and short-circuits.

### Everything at a glance

The large illuminated display can be read from long distances. The pressures can be displayed in MPa, bar or PSI.

### Optimal installation possibilities

The SCPSD is ideal for installation under critical conditions because of its compact design and excellent interference immunity. The display is always easy to read because the housing can be positioned as needed.

### Universal

Diverse versions are available for the many different applications.

# SCPSD PressureController

## Device features

### Everything at a glance

- Sloped display
- Digital display
  - Large
  - Illuminated
- Display
  - PSI/bar/Mpa
  - Current pressure
  - Minimum pressure
  - Maximum pressure
  - Switching points

### Variable installation

- Compact size
- 290° pivotable

### Pressure port

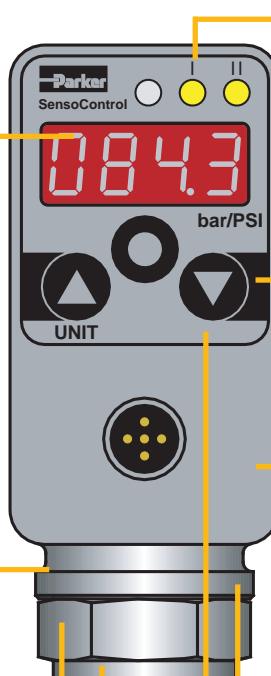
- Stainless steel
- Long term stable measuring cell
- Wide range of compatible substances

### Thread

- Inner thread



- Outer thread



### Optical interface

- Switch status is shown

### Easy to use

- 3 large buttons
- Display of the unit

### Rugged

- Metal housing
- Waterproof
- Excellent interference immunity
- Vibration proof
- Shock proof

### Tube clamp

- Safe installation with the sturdy SCSD-S27 clamp



### Programming module

- Adjustable through ControllerWIN Software

# SCPSD PressureController

## Technical data

SCPSD-	004	010	016	060	100	250	400	600
Pressure range $P_n$ relative bar / (psi) Adjusting range RSP...SP	-1...4 (-14.5...58)	-1...10 (-14.5...145)	-1...16 (-14.5...232)	0...60 (0...870)	0...100 (0...1450)	0...250 (0...3626)	0...400 (0...5802)	0...600 (0...8702)
Overload pressure $P_n$ bar / (psi)	10 (145)	20 (290)	40 (580)	120 (1740)	200 (2400)	500 (7521)	800 (11,603)	1200 (17,405)
Burst pressure $P_n$ bar / (psi)	12 (174)	25 (363)	50 (725)	550 (7977)	800 (11,603)	1200 (17,405)	1700 (24,656)	2200 (31,908)
Display resolution bar / (psi)	0.01 (0.15)	0.01 (0.15)	0.01 (0.15)	0.1 (1.45)	0.1 (1.45)	1 (14.5)	1 (14.5)	1 (14.5)
Smallest adjustable difference between SP and RSP (SP-RSP) bar / (psi)	0.03 (0.44)	0.06 (0.87)	0.09 (1.31)	0.3 (4.35)	0.6 (8.7)	2 (29)	3 (43.5)	3 (43.5)
Measuring component	Ceramic			Thin film DMS				
Parts in contact with substances	Stainless steel 1.4404; Ceramic Al <sub>2</sub> O <sub>3</sub> ; NBR		Stainless steel 1.4404; 1.4542					

Input parameters	
Switching cycles	≥ 100 million
Polling rate	≥ 5 ms
Connector thread	G1/4 BSPP; ED soft seal NBR* (DIN 3852 T2, Form X); ED (DIN3852 T11, Form E)
Tightening torque	35 Nm
Temperature range of substance	-20...+85 °C (-4...185°F)
Weight	Approx. 300 g
MTTFd	> 100 years
Output values	
Accuracy	± 0.5 % FS typ.; ± 1 % FS max.
Temperature drift	± 0.02 % FS/°K type (at -20...+85 °C) ± 0.03 % FS/°K max.
Long-term stability	± 0.2 % FS/a
Repeat accuracy	± 0.25 % FS
Switching point accuracy	± 0.5 % FS typ.; ± 1 % FS max.
Display accuracy	± 0.5 % FS type ± 1 Digit ± 1 % FS max. ± 1 Digit
Response speed	
Switching output	≤ 10 ms
Analogue output	≤ 10 ms

Electrical connection	
Supply voltage $V_+$	15 to 30 VDC nominal 24 VDC; Protection class 3
Electrical connection	M12x1; 4-pole; 5-pole; with gold-plated contacts device connector
Short-circuit protection	Yes
Protection against wrong insertion	Yes
Overload protection	Yes
Current consumption	< 100 mA
Housing	
	Adjustable direction to 290°C (554°F)
Material	Painted zinc die cast Z 410
Foil material	Polyester
Display	4-digit 7-segment LED; red; digit height 9 mm
Protection degree	IP67 DIN EN 60529;

# SCPSD PressureController

## Technical data

Ambient conditions	
Ambient temperature range	-20...+85 °C (-4...185°F)
Storage temperature range	-40...+100 °C (-40...212°F)
Vibration resistance	20 g; 10...500 Hz IEC60068-2-6**
Shock resistance	50 g; 11 ms IEC60068-2-29**
EM compatibility	
Disturbance emissions	EN 61000-6-3
Resistance to interference	EN 61000-6-2
Outputs	
Switching outputs	Two MOSFET high-side switches (PNP)
Contact functions	NO / NC contact; window / hysteresis; function freely adjustable
Switching voltage	$V_+$ -1.5 VDC
Switching current max.	0.5 A per switch
Short-circuit current	2.4 A per switch
Analogue output	0/4...20 mA; programmable; freely scalable; $RL \leq (Supply\ voltage - 8\ V) / 20\ mA (\leq 500\ \Omega)$

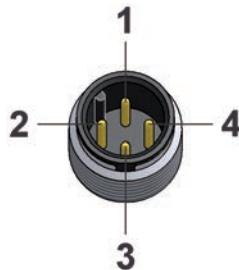
\* different sealing material (FKM, EPDM etc.) upon request

\*\* does not apply for version DIN EN 175301-803 Form A (old DIN43650)

## Pin assignment

### SCPSD-xxx-14-x7

1 switching and 1 analogue output  
M12x1; 4-pole

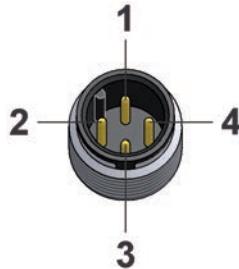


PIN	Assignment
1	$V_+$
2	Analogue out
3	0 V / GND
4	S1 out



### SCPSD-xxx-04-x7

2 switching outputs;  
M12x1; 4-pole

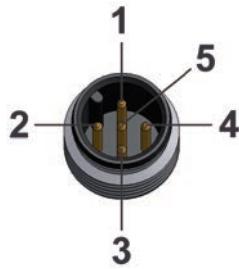


PIN	Assignment
1	$V_+$
2	S2 out
3	0 V / GND
4	S1 out



### SCPSD-xxx-14-x5

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

# SCPSD PressureController

## Outer thread

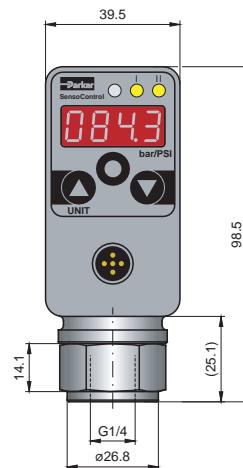
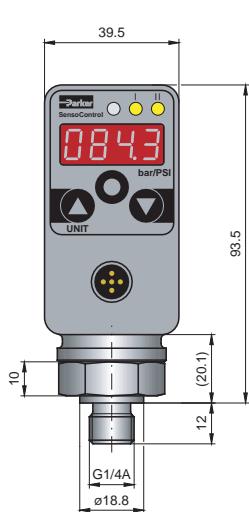
SCPSD-xxx-x4-1x

## Inner thread

SCPSD-xxx-x4-2x

Up to 10 bar (145 psi)

From 16 bar (232 psi)

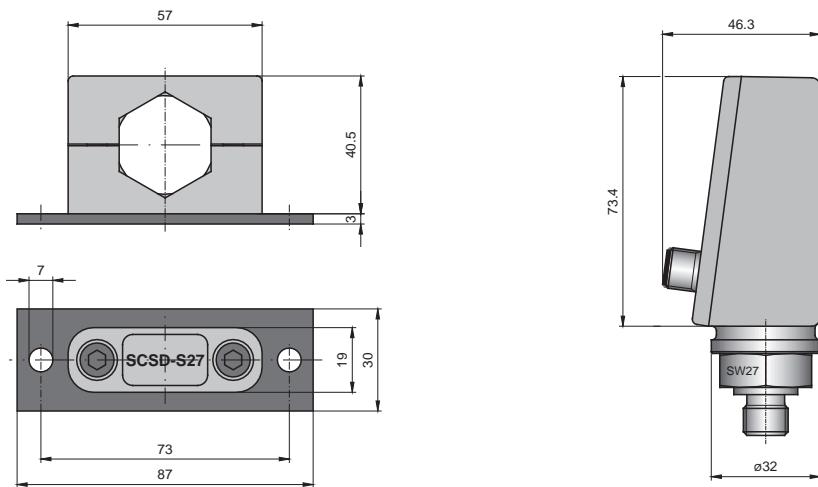


## M12 connecting plug

SCPSD-xxx-x4-x5

## Clamp (accessory)

SCSD-S27



# SCPSD PressureController

## Order code

SCPSD digital pressure switch

2 switching outputs; no analogue output: SCPSD-xxx-04-x7

M12x1 connecting plug; 4-pole

1 switching output; with analogue output: SCPSD-xxx-14-x7

M12x1 connecting plug; 4-pole

2 switching outputs; with analogue output SCPSD-xxx-14-x5

M12x1 connecting plug; 5-pole

Pressure range

004	004
010	010
016	016
060	060
100	100
250	250
400	400
600	600

Version

G1/4 BSPP outer thread

G1/4 BSPP inner thread

### Accessories:

PC Programming KIT

Securing clamp

Reducing adapter M22x1.5

Reducing adapter G1/2 BSPP

Attenuation adapter

Attenuation adapter

Flange adapter

for mechanical pressure switch

SCSD-PRG-KIT

SCSD-S27

SCA-1/4-M22x1.5-ED

SCA-1/4-ED-1/2-ED

SCA-1/4EDX1/4-D

SCA-1/2EDX1/2-D

SCAF-1/4-40

## Order example

**SCPSD-100-04-27**

Pressure range 100 bar

2 switching outputs

G1/4 BSPP inner thread

M12 connecting plug



**SCPSD-004-14-17**

Pressure range 4 bar

1 switching output

1 analogue output

G1/4 BSPP outer thread

M12 connecting plug



## Connection cable and single plug

Connection cable, assembled

(open cable end)

SCK-400-xx-xx

Cable length (m)

2 m

5 m

10 m

02

05

10

Connecting plug

M12 cable jack; straight

45

M12 cable jack; 90° angled

55

Single connector

M12 cable jack; straight

SCK-145

M12 cable jack; 90° angled

SCK-155

# SCTSD TemperatureController

## Device features

- Compact size
- Rugged
- Dependable
- Easily operable
- Metal housing
- High protection class
- Modular construction
- Many variants
- Analogue output
- Pivoting
- Password
- °C, °F



The TemperatureController combines the functions of a temperature switch, a temperature sensor and a display device.

- Temperature display (Thermometer)
- Switching outputs
- Analogue signal

Simple operation, extensive functionality and a modular design are the most important characteristics of the TemperatureController.

The TemperatureController offers excellent technical specifications, optimum temperature management, combined with a variety of installation options. It is perfect for applications when the temperature needs to be reliably monitored and easily viewed.

## Easy to use

The normal temperature monitoring limit values adjustments (e.g. cooling and alarm) are made either with the keys or the programming module.

## High functionality

Each switching output can be adjusted individually:

- NO/NC contact
- On/off switching pressures
- Delay times
- Hysteresis / window function
- time delay

Thanks to these easy switching functions, intelligent adjustments can be set which are normally not possible using a mechanical switch. Therefore, many switches can be replaced with one controller.

The analogue output is individually adjustable

- 0/4...20 mA switchable
- Adjustable start temperature
- Adjustable end temperature

## Reliable and safe

A functional error is signalled and can be processed further according to DESINA. Parameters can be password protected to avoid unauthorised changes.

## Rugged

The housing is made of metal and is resistant to moisture, shock and vibrations. The electronics are protected against reverse polarity, over-voltage and short-circuits.

## Everything at a glance

The large illuminated display can be read from long distances. The temperature can be selected to °C or °F. The temperature is always optimally readable due to the modular construction and the pivoting housing.

## Optimal installation possibilities

Sensors in various lengths are available for different tank sizes. These can be directly connected to the TemperatureController via a cable. Additionally the temperature sensor is available up to 630 bar for high pressure applications.

## Universal

Diverse versions are available for the many different applications.

# SCTSD Temperature Controller

## Application example Tank temperature monitoring

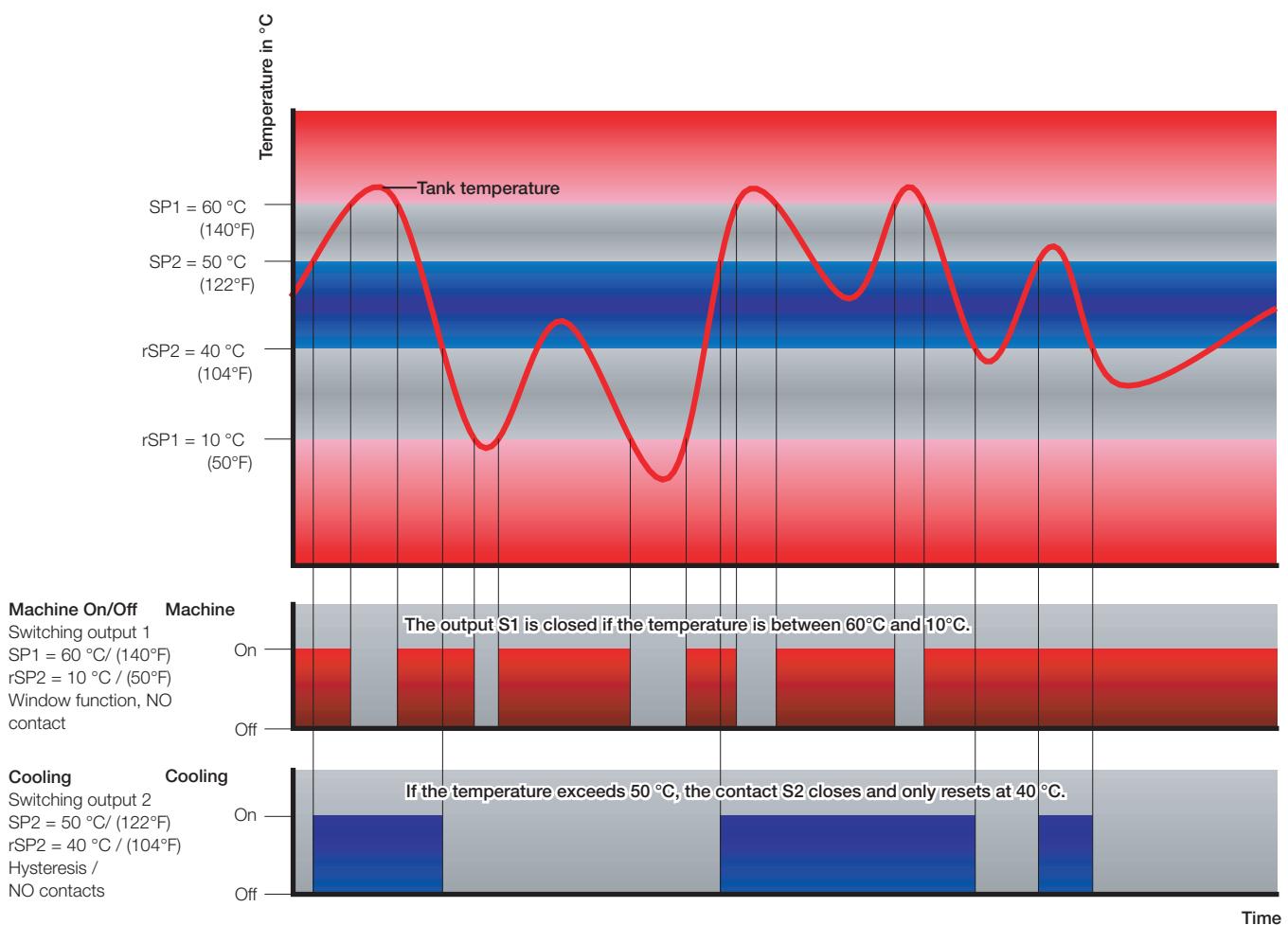
### Machine On / Off

The facility should shut down when the tank temperature falls below 10°C (50°F) or climbs above 60°C (140°F).

A protective wire-break mechanism should be considered to improve safety.

### Cooling

If the temperature climbs above 50°C (122°F), the tank temperature should be cooled with a refrigerating unit down to 40°C (104°F).



# SCTSD Modular TemperatureController

## Device features

### Everything at a glance

- Sloped display
- Digital display
- Large
- Illuminated
- Display
- °C, °F
- Current temperature
- Minimum temperature
- Maximum temperature
- Switching points

### Variable installation

- Compact size
- 290° pivotable

### Connect as required

- 2 switching outputs
- Analogue output
- 0...20 or 4...20 mA
- Freely programmable
- Scalable
- Plug
  - M12
  - DIN EN



175301-803 Form A  
(old DIN43650)



### Optical interface

- Switch status is shown

### Easy to use

- 3 large buttons
- Display of the unit

### Rugged

- Metal housing
- Waterproof
- Excellent interference immunity
- Vibration proof
- Shock proof

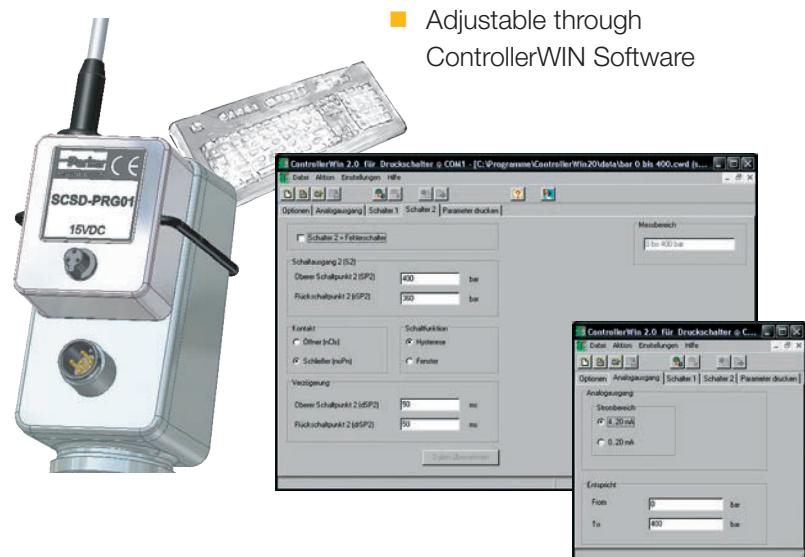
### Tube clamp

- Safe installation with the sturdy SCSD-S27 clamp



### Programming module

- Adjustable through ControllerWIN Software



# SCTSD Modular TemperatureController

## Device features

### Adjustable height

Through clamping thread

- SCA-TT-10-1/2



### Cable

- SCK-410-03-45-45



### Temperature sensor

- Stainless steel
- Wide range of compatible substances
- Diverse lengths
- SCTT-10-xxx-07



### Connection adapter

- SCA-TT-10-SD



### Immersion tube

Additional with

- High pressures
- Aggressive substance
- Immersion tube SCA-TT-10-xxx



# SCTSD Modular TemperatureController

## Technical data

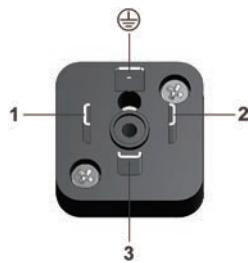
Input parameters SCT-150		Housing
Display range	-50...+150 °C / (-58...302°F)	Orientation adjustable to 290°
Sensor input	PT1000	Die-cast zinc Z 410; painted
Sensor connection	M12x1; 4-pole	Foil material Polyester
Output values		Display 4-digit 7-segment LED; red; digit height 9 mm
Switching accuracy at 25 °C	± 0.35 % FS	Protection degree IP67 EN 60529 IP65 with device plug DIN EN 175301-803 Form A (old DIN43650)
Display accuracy at 25 °C	± 0.35 % FS ± 1 Digit	
Electrical connection		Ambient conditions
Supply voltage V <sub>+</sub>	15...30 VDC nominal 24 VDC; Protection class 3	Ambient temperature range -20...+85 °C / (-4...185°F)
Electrical connection	M12x1; 4-pole; 5-pole; Device plug DIN EN 175301-803 Form A (old DIN43650)	Storage temperature range -40...+100 °C / (-40...212°F)
Short-circuit protection	Yes	Vibration resistance 20 g; 10...500 Hz IEC60068-2-6*
Overload protection	Yes	Shock resistance 50 g; 11 ms IEC60068-2-29*
Current consumption	< 100 mA	
EM compatibility		Outputs
Disturbance emissions	EN 61000-6-3	Switching outputs 2 x PNP high-side switch, 0.7 A/switch
Resistance to interference	EN 61000-6-2	Contact functions NO / NC contact; window / hysteresis
* does not apply for version DIN EN 175301-803 Form A (old DIN43650)		Response speed 300 ms
		Accuracy ± 1 % FS
		Analogue output 0/4...20 mA; programmable; freely scalable; 4...20 mA = -40...125 °C / (-40...257°F)
Temperature sensor SCTT-10-xxx-07		High pressure sensor SCTT-20-010-07
Measuring component	PT1000/DIN EN 60751, Class B	Measuring component PT1000/DIN EN 60751, Class B
Measuring range	-40...+125 °C	Measuring range -40...+125 °C / (-40...257°F)
Response time	$\tau_{0.5} = 6 \text{ s} / \tau_{0.9} = 25 \text{ s}$	Response time $\tau_{0.5} = 3 \text{ s} / \tau_{0.9} = 15 \text{ s}$
Accuracy	± 0.3 K + 0.005*t	Accuracy ± 0.3 K + 0.005*t
Material	Stainless Steel 1.4571	Material Stainless Steel 1.4404
Nominal pressure (max)	10 bar (145 psi)	Threaded stud M10x1
Temperature of substance	-40...+125 °C / (-40...257°F)	Seal O ring 7.65x1.78 mm; FKM
Ambient temperature	-25...+80 °C / (-13...176°F) (for the connector area)	Measuring pipe diameter 7 mm
Storage temperature	-25...+85 °C / (-13...185°F)	Installation length 18.5 mm
		Nominal pressure P <sub>n</sub> 630 bar / (9137 psi)
		Overload pressure P <sub>max</sub> 800 bar / (11,603 psi)
		Burst pressure P <sub>burst</sub> 1200 bar / (17,405 psi)
		Temperature of substance -40...+125 °C / (-40...257°F)
		Ambient temperature -25...+80 °C / (-13...176°F) (for the connector area)
		Storage temperature -25...+85 °C / (-13...185°F)

# SCTSD Modular TemperatureController

## Pin assignment

### SCTSD-150-00-06

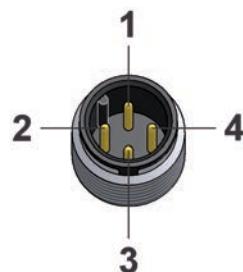
1 switching output  
DIN EN 175301-803 Form A 4-pole (old 43650)



PIN	Assignment
1	V <sub>+</sub>
2	0 V / GND
3	S1 out
4	-

### SCTSD-150-00-07

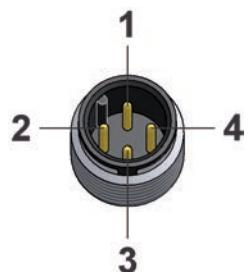
2 switching outputs  
M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out

### SCTSD-150-10-07

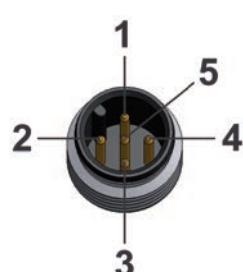
1 switching output, 1 analogue output  
M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	Analogue out
3	0 V / GND
4	S1 out

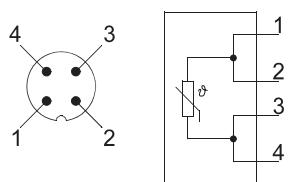
### SCTSD-150-10-05

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



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

### SCTT-x0-xxx-07

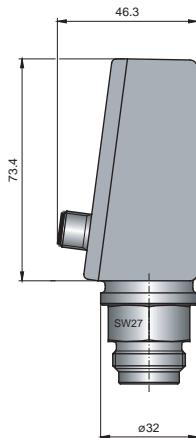


Measuring range	Display resolution Increment size	Lowest reset switch point RSP	Largest switching value SP	Smallest adjustable difference between SP and RSP (SP-RSP)
-50...150 °C / (-58...302°F)	0.1 °C / (32.2°F)	-50 °C / (-58°F)	150 °C / (302°F)	0.8 / (33.4°F)

# SCTSD Modular TemperatureController

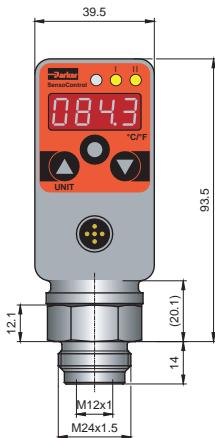
## M12 connecting plug

SCTSD-150-x4-05



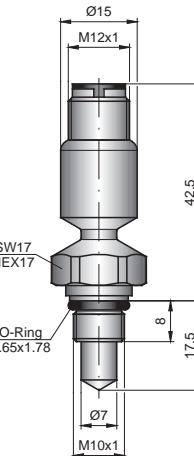
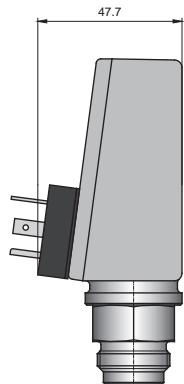
## DIN 43650

SCTSD-xxx-00-06



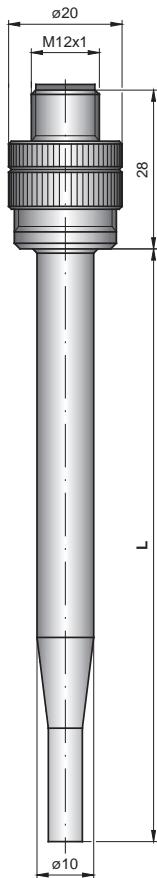
## High pressure temperature sensor

SCTT-20-010-07



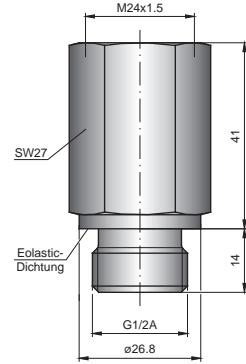
## Temperature sensor

SCTT-10-xxx-07



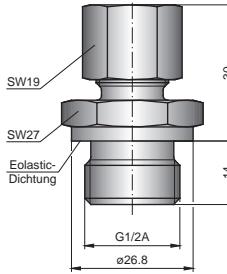
## Connection adapter (accessory)

SCA-TT-10-SD



## Clamping thread (accessory)

SCA-TT-10-1/2



### Material:

Stainless Steel 1.4404

### Male stud:

G1/2A BSPP DIN3852-E

### Seal type:

ED (Elastic seal type)

### Screw plug hole

G1/2A BSPP DIN3852-E

### Replacement seals:

ED1/2VITX (FKM)

### GE10LR1/2EDOMD71:

(with 10 mm bore hole)

Stainless Steel 1.4571

### EO-2-functional nut:

FM10L71

### Male stud:

G1/2A BSPP DIN3852-E

### Seal type:

ED (Elastic seal type)

### Replacement seal:

ED1/2VITX (FKM)

# SCTSD Modular TemperatureController

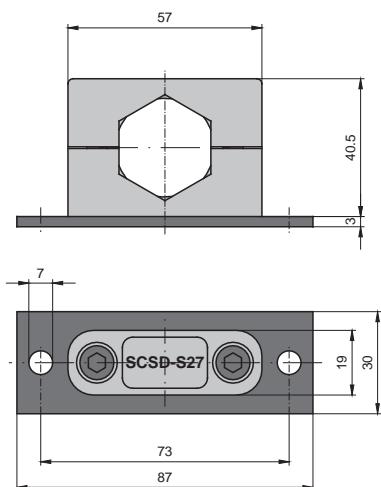
## Sensor cable 3 m (accessory)

SCK-410-03-45-45



## Clamp (accessory)

SCSD-S27



## Order example

### Components for the control panel - high pressure version

Securing clamp  
Sensor cable 3 m (SCTSD-SCTT)  
High pressure temperature sensor

**SCSD-S27**  
**SCK-410-03-45-45**  
**SCTT-20-10-07**

### Components for the control panel

Securing clamp  
Sensor cable 3 m (SCTSD-SCTT)  
Clamping thread G1/2 BSPP  
Temperature sensor 150 mm  
Optional: Immersion tube G1/2 BSPP 100 mm

**SCSD-S27**  
**SCK-410-03-45-45**  
**SCA-TT-10-1/2**  
**SCTT-10-150-07**  
**SCA-TT-10-100**

### Direct mounting components

Connection adapter (SCTSD-SCTT)  
Temperature sensor 100 mm  
Optional: Immersion tube G1/2 BSPP 200 mm

**SCA-TT-10-SD**  
**SCTT-10-100-07**  
**SCA-TT-10-200**

## Order code

### SCTSD module

**1 switch output; no analogue output** **SCTSD-150-00-06**  
DIN EN 175301-803 Form A  
(old DIN 43650) connecting plug

**2 switch outputs; no analogue output** **SCTSD-150-00-07**  
M12x1 connecting plug; 4-pole

**1 switch output; with analogue output** **SCTSD-150-10-07**  
M12x1 connecting plug; 4-pole

**2 switch outputs; with analogue output** **SCTSD-150-10-05**  
M12x1 connecting plug; 5-pole

### Accessories:

Securing clamp  
Sensor cable 3 m (SCTSD-SCTT)  
Clamping thread G1/2 BSPP  
Connection adapter (SCTSD-SCTT)  
High pressure temperature sensor  
Immersion tube G1/2 BSPP

**SCSD-S27**  
**SCK-410-03-45-45**  
**SCA-TT-10-1/2**  
**SCA-TT-10-SD**  
**SCTT-20-10-07**  
**SCA-TT-10-xxx**

### Length mm

100 mm **100**  
150 mm **150**  
250 mm **250**

### Temperature sensor

**SCTT-10-xxx-07**

### Length mm

100 mm **100**  
150 mm **150**  
250 mm **250**

## Connection cable and single plug

### Connection cable, assembled (open cable end)

**SCK-400-xx-xx**

### Cable length (m)

2 m **02**  
5 m **05**  
10 m **10**

### Connecting plug

M12 cable jack; straight **45**  
M12 cable jack; 90° angled **55**

### Single connector

M12 cable jack; straight **SCK-145**  
M12 cable jack; 90° angled **SCK-155**

# SCTSD high pressure TemperatureController

## Device features

### Everything at a glance

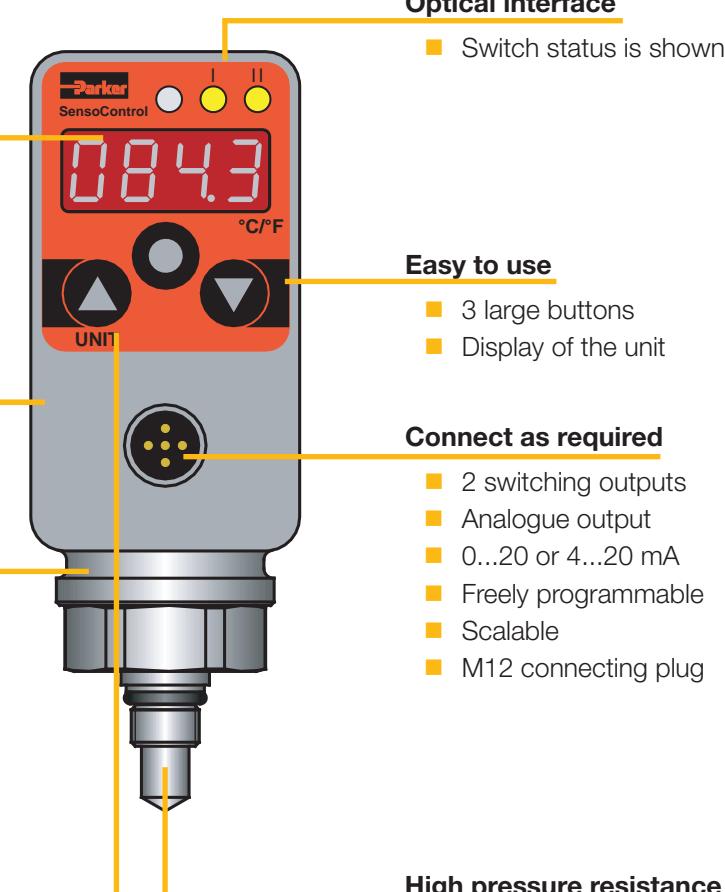
- Sloped display
- Digital display
- Large
- Illuminated
- Display
- °C, °F
- Current temperature
- Minimum temperature
- Maximum temperature
- Switching points

### Rugged

- Metal housing
- Waterproof
- Excellent interference immunity
- Vibration proof
- Shock proof

### Variable installation

- Compact size
- 290° pivotable



### Programming module

- Adjustable through ControllerWIN Software



# SCTSD high pressure TemperatureController

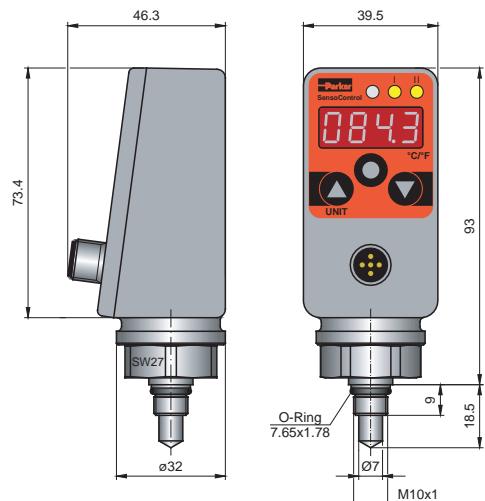
## Technical data

Input values SCTSD-150-x2-0x		Ambient conditions	
Measuring range	-40...+100 °C / (-40...212°F)	Ambient temperature range	-25...+80 °C / (-13...185°F)
Input for measuring element	PT1000/DIN EN 60751; Class B	Storage temperature range	-25...+85 °C / (-13...185°F)
Range of use	Liquid media, air	Media temperature range	-40...+100 °C / (-40...212°F)
Output values		EM compatibility	
Switching accuracy at 25 °C	± 0.35 % FS	Disturbance emissions	EN 61000-6-3
Display accuracy at 25 °C	± 0.35 % FS ± 1 Digit	Resistance to interference	EN 61000-6-2
Temperature margin of error	± 0.01 % FS/°C typ. (for -20...+85 °C / -4...185°F)	Outputs	
Long-term stability	± 0.2 % FS/a	Switching outputs	2 x PNP high-side switch
Electrical connection		Contact functions	NO / NC contact; window / hysteresis
Supply voltage V <sub>+</sub>	15 to 30 VDC (with protection against polarity reversal)	Switching current:	0.5 A / switch to 85 °C / (185°F); 0,7 A / switch to 70 °C / (158°F)
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	Measuring range	0/4...20 mA
Current consumption	< 100 mA	Response speed (0-95 %)	≤ 300 ms
Mechanical connection		Analogue output error	± 1 % FS
Threaded male stud	M10x1	Load	≤ 500 Ω from V <sub>+</sub> > 18 VDC
Seal	O-ring 7.65x1.78 mm; FKM	Housing	
Measuring pipe diameter	7 mm		Adjustable direction to 290°C
Installation length	18.5 mm	Material	Die-cast zinc Z 410; painted
Material	Stainless Steel 1.4404	Foil material	Polyester
P <sub>N</sub> pressure	630 bar	Display	4-digit 7-segment LED; red; digit height 9 mm
P <sub>max</sub>	800 bar	Protection degree	IP67 EN 60529
Burst pressure	1200 bar		

# SCTSD high pressure TemperatureController

## M12 connecting plug

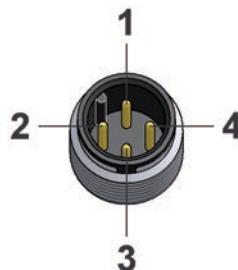
SCTSD-150-x4-05



## Pin assignment

SCTSD-150-02-07

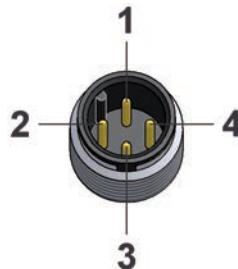
2 switching outputs  
M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out

SCTSD-150-12-07

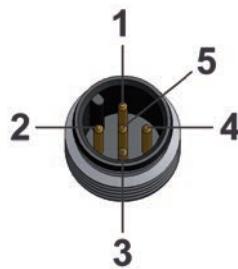
1 switching output, 1 analogue output  
M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	Analogue out
3	0 V / GND
4	S1 out

SCTSD-150-12-05

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



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

Measuring range	Display resolution Increment size	Lowest reset switch point RSP	Largest switching value SP	Smallest adjustable difference between SP and RSP (SP-RSP)
-40...100 °C / (-40...212°F)	0.1 °C / (32.2°F)	-40 °C / (-40°F)	100 °C / (212°F)	0.8 / (33.4°F)

# SCTSD high pressure TemperatureController

## Order code

**SCTSD high pressure**

**2 switch outputs; no analogue output** SCTSD-150-02-07  
M12x1 connecting plug; 4-pole

**1 switch output; with analogue output** SCTSD-150-12-07  
M12x1 connecting plug; 4-pole

**2 switch outputs; with analogue output** SCTSD-150-12-05  
M12x1 connecting plug; 5-pole

## Accessories

**PC Programming Kit** SCSD-PRG-KIT

## Connection cable and single plug

### Connection cable, assembled

(open cable end)

#### Cable length (m)

2 m 02  
5 m 05  
10 m 10

SCK-400-xx-xx

#### Connecting plug

M12 cable jack; straight 45  
M12 cable jack; 90° angled 55

### Single connector

M12 cable jack; straight  
M12 cable jack; 90° angled

SCK-145  
SCK-155

# 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

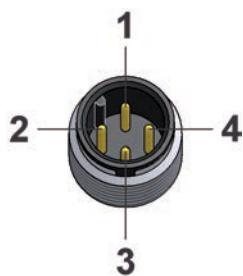
# SCTSD-L combination switch

## Technical data

General		Preset temperatures	
Measurement principle	Magnetic float reed switches	Switching output 1*	50 °C (122°F) contact closed (cooling on)
Float	NBR, Ø 18 mm, length 25 mm, magnetic		45 °C (113°F) contact open (cooling off)
Viscosity	Max. 250 cSt at 25 °C	Switching output 2*	63 °C (145°F) contact open (shutdown)
Density	at least 0.750 g/cm³		60 °C (140°F) contact closed
Connector thread	G3/4 outer thread	Level switching outputs	
Protection tube	Ø 8 mm	Switching current:	0.5 A max.
Probe length Lmax	Lowest switching point + 35 mm	Switching voltage	100 V max.
Operating pressure	1 bar max. / (14,5 psi)	Switching power	10 W max.
Accuracy	±2 mm	Switching function	NO or NC (bi-stable)
Material		Contact material	Rhodium
Protection tube	Brass	Plug	M12x1; 4 pin
Connector thread	Brass	Smallest difference between L1 and L2	30 mm
Ambient conditions		Smallest switching position L1	30 mm from the tank lid
Temperature of substance	-20...+85 °C / (-4...185°F)	*) Each temperature switching output can be individually re-programmed or adjusted:	
Storage temperature	-40...+100 °C / (-40...212°F)	<ul style="list-style-type: none"> <li>■ NO/NC contact</li> <li>■ On/off switching temperature</li> <li>■ Hysteresis / window function</li> <li>■ Time delay and attenuation</li> </ul>	

## 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

# 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

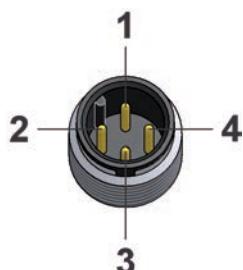


PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out

SCTSD-L-xxxxx-xxxxx-17-KIT5

1 switching output, 1 analogue output

M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	Analogue out
3	0 V / GND
4	S1 out

SCTSD-L-xxxxO-xxFO

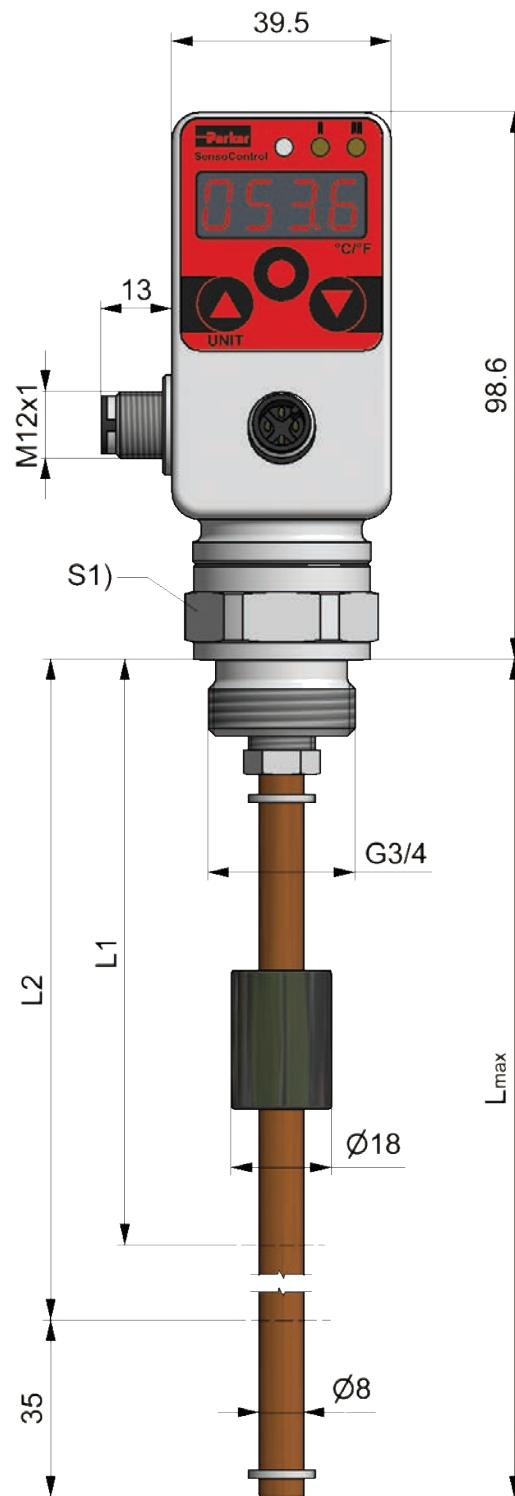
SCTSD-L-xxxxx-xxxxx-15-KIT5

2 switching outputs, 1 analogue output

M12x1; 5-pole



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



# SCTSD-L combination switch

## Order code

**Combination switch** SCTSD-L-xxxxx-xxxxx-Q2  
**Combination switch Marine** SCTSD-L-xxxxx-xxxxx-MAQ2

(approved by DNV/GL/ABS)

2 level outputs, temperature display

2 temperature switching outputs

**Combination switch** SCTSD-L-xxxxx-xxxxx-1xQ2  
**Combination switch Marine** SCTSD-L-xxxxx-xxxxx-1x-MAQ2

(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

Rising 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

**Q2:** Minimum order qty. 5 pcs.

\*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

# SCLSD LevelController

## Device features

- Proven measuring system
- Level display
- mm / inch / % display
- High and low display
- Analogue output
- Switching outputs
- No surge pipe necessary
- Replacement for several mechanical switches
- Pivoting



The LevelController combines the functions of a level switch, a level sensor and a level display.

- Level display (inspection glass)
- Switching outputs
- Analogue signal

The LevelController is ideal for the monitoring tank contents.

### Easy to use

The parameters are set using the keys or over a programming module.

### High functionality

Each switching output can be adjusted individually:

- NO/NC contact
- Upper and lower level switching point
- Delay times
- Hysteresis / window function
- Attenuation

The analogue output is individually adjustable:

- 0/4...20 mA switchable
- Upper level adjustable
- Lower level adjustable

### Reliable and safe

The position of the float is finely ( $\geq 5$  mm) and continuously recorded and shown in the display in mm or inch. Through this continuous recording, the danger of individual mechanical contacts "sticking" no longer exists. Therefore the operational reliability of the monitored plant is increased. Parameters can be password protected to avoid unauthorised changes.

### Everything at a glance

The display can be read from long distances. Using the selectable percent display the full level is uniformly displayed independent of the tank shape. An offset can also be entered (difference from the sensor to the tank bottom) to give a realistic indication of the level from the tank bottom.

Different uses can easily be implemented or corrected at a later date using the menu-driven level switching points. As the switching point no longer needs to be specified at the time of order, the versions of mechanical level switches required is reduced.

### Universal

Thanks to these easy switching functions (hysteresis and window functions, NC or NO functions), intelligent adjustments can be set which are normally not possible using a mechanical level switch. Therefore, many switches can be replaced with one controller. With the optional analogue output, the level and temperature can be monitored easily with a controller (e.g. for leakage monitoring).

# SCLSD LevelController

## Application example: Tank temperature monitoring

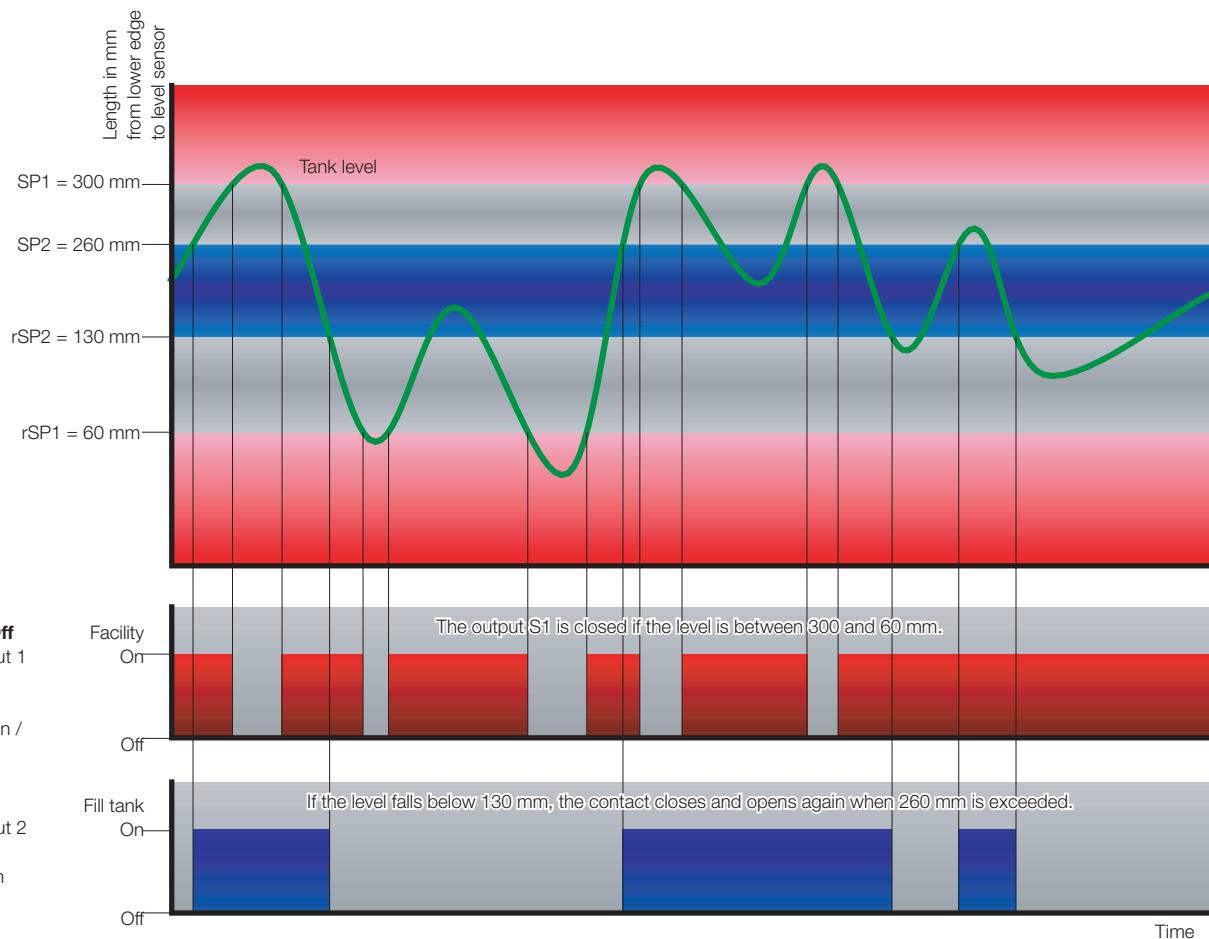
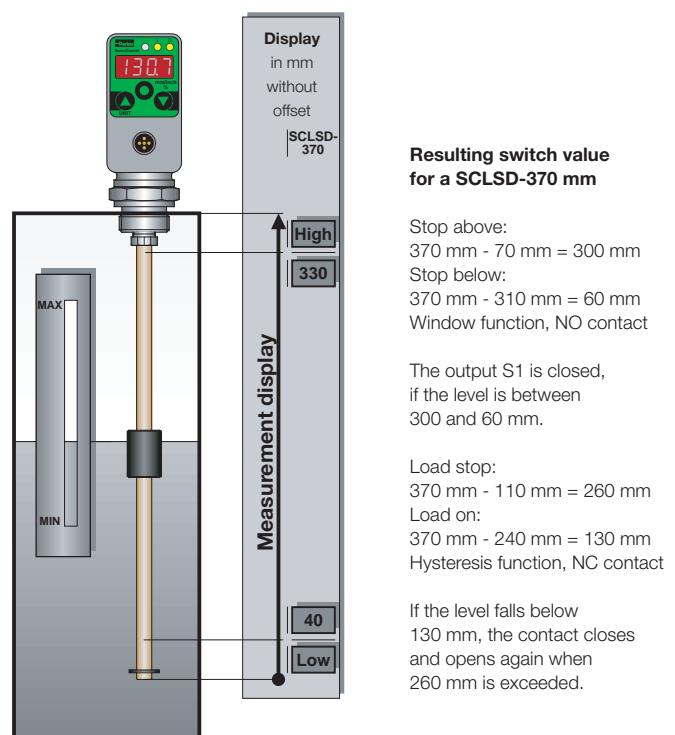
Since the conventional specifications for mechanical level switches (the mm data from the tank lid) are often used during project planning, these data are selected here for a practical example.

### Facility off

If the tank level falls below 310 mm (measured from the tank top / dry run) or climbs above 70 mm (measured from the tank top / overflow), switch off should occur. A protective wire-break mechanism should be considered to improve safety.

### Automatic tank filling

If the tank level falls below 240 mm (measured from the tank top), the tank should be automatically filled to 110 mm (measured from the tank top) with a pump.



# SCLSD LevelController

## Device features

### Everything at a glance

- Sloped display
- Digital display
  - Large
  - Illuminated
- Display
  - mm, inch, or %
  - Actual level
  - High and low display
  - Switching points

### Rugged

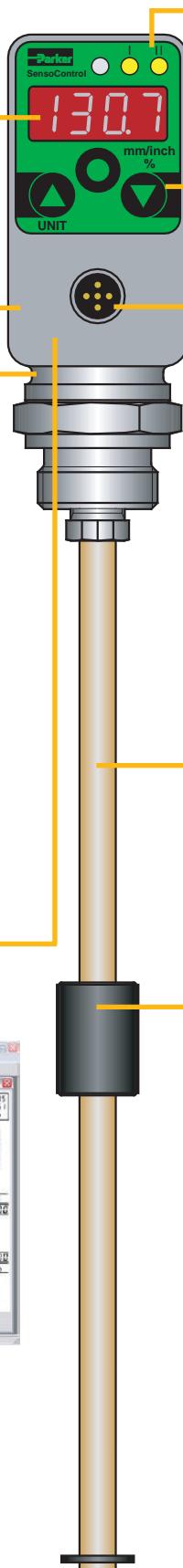
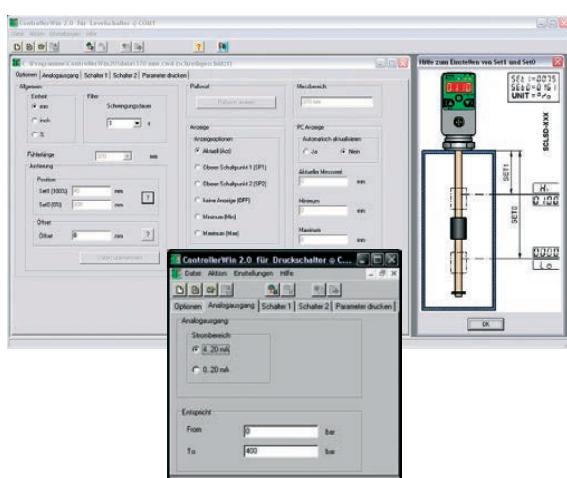
- Metal housing
- Waterproof
- Excellent interference immunity
- Vibration proof
- Shock proof

### Variable installation

- Compact size
- 290° pivotable
- G3/4 BSPP
- Flange for DIN

### Programming module

- Adjustable with ControllerWIN Software



### Optical interface

- Switch status is shown

### Easy to use

- 3 large buttons
- Display of the unit

### Connect as required

- 2 switching outputs
- Analogue output
- 0...20 or 4...20 mA
- Freely programmable
- Scalable
- M12 connecting plugs



### No surge pipe necessary

- Electronic attenuation
- Adjustable attenuation

### Proven measuring system

- High float dynamics
- Small design
- Universal usage

# SCLSD LevelController

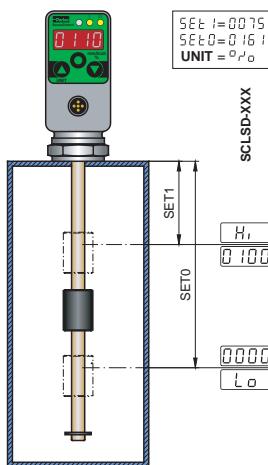
## Technical data

Input parameters		Housing	
Measuring component	Resistance reed chain with float		Adjustable direction to 290°C
Connector thread	G3/4 BSPP; nickel-plated brass; ED soft seal NBR*	Material	Die-cast zinc Z 410; painted
Parts in contact with substances	Brass; nickel-plated brass; NBR*	Foil material	Polyester
Temperature range of substance	-20...+85 °C / (-4...185°F)	Display	4-digit 7-segment LED; red; digit height 9 mm
Output values		Protection degree	IP67 DIN EN 60529
Switching point accuracy	± 1 % FS at 25 °C (77°F)	Ambient conditions	
Display accuracy	± 1 % FS ± 1 Digit at 25 °C (77°F)	Ambient temperature range	-20...+85 °C / (-4...185°F)
Response speed	≤ 700 ms	Storage temperature range	-40...+100 °C / (-40...212°F)
Resolution	7.5 mm	EM compatibility	
Float		Disturbance emissions	EN 61000-6-3
Material	NBR	Resistance to interference	EN 61000-6-2
Dimensions	Ø 18 mm, Length 35 mm	Outputs	
Viscosity	Max. 250 cSt at 25 °C (77°F)	Switching outputs	Two MOSFET high-side switches (PNP)
Density	at least 0.750 g/cm³	Contact functions	NO / NC contact; window / hysteresis function freely adjustable
Level rod		Switching voltage	V <sub>+</sub> -1.5 VDC
Material	Stainless steel	Switching current max.	0.5 A per switch
Dimensions	Ø 8 mm	Short-circuit current	2.4 A per switch
Operating pressure	1 bar	Analogue output	0/4...20 mA; programmable; freely scalable RL ≤ (power supply- 8 V)/ 20 mA (≤ 500 Ω)
Electrical connection		* different sealing material (FKM, EPDM etc.) upon request	
Supply voltage V <sub>+</sub>	15...30 VDC nominal 24 VDC; Protection class 3		
Electrical connection	M12x1; 4-pole; 5-pole; with gold-plated contacts		
Short-circuit protection	Yes		
Protection against wrong insertion	Yes		
Overload protection	Yes		
Current consumption	< 100 mA		

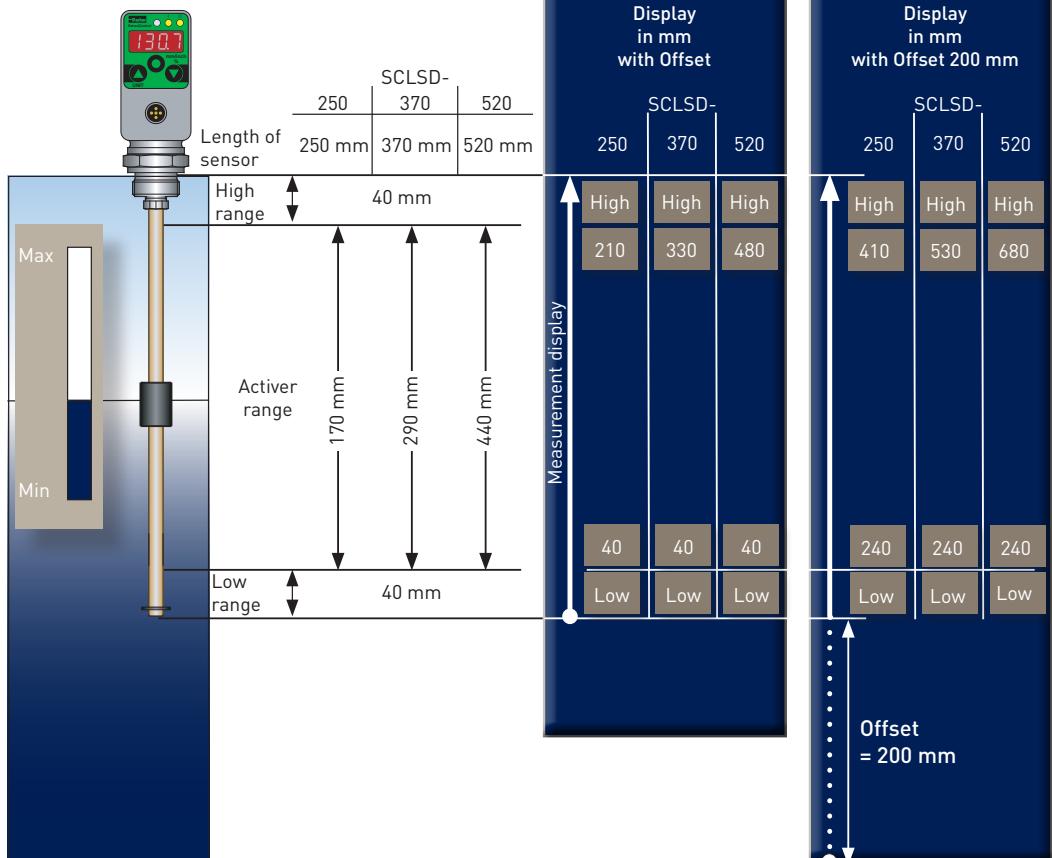
# SCLSD LevelController

## Display possibilities

### Example of a percent display



### Example of a mm display

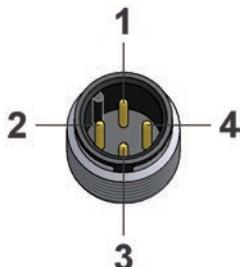


L1 Sensor length Measurement range	L2 active range	Display resolution Increment size	Incre- ment size	Lowest reset switch point RSP	Largest switch- ing value SP	Smallest adjustable difference between SP and RSP (SP-RSP)
250 mm	40...210 mm	1 mm	5 mm	40 mm	210 mm	5 mm
370 mm	40...330 mm	1 mm	5 mm	40 mm	330 mm	5 mm
520 mm	40...480 mm	1 mm	5 mm	40 mm	480 mm	5 mm
800 mm	40...760 mm	1 mm	10 mm	40 mm	760 mm	10 mm
1000 mm	40...960 mm	1 mm	10 mm	40 mm	960 mm	10 mm

## Pin assignment

SCLSD-xxx-00-07

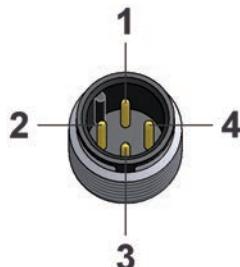
2 switching outputs; M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out

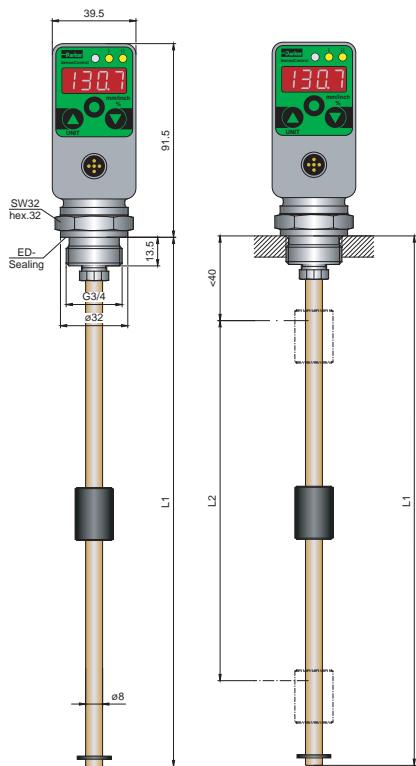
SCLSD-xxx-10-07

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



PIN	Assignment
1	V <sub>+</sub>
2	Analogue out
3	0 V / GND
4	S1 out

# SCLSD LevelController



L1 = length of the sensor (mm)

L2 = active range (mm)

## Order code

**SCLSD LevelController**  
**2 switching outputs;**  
**2 switching outputs Marine;**  
 (approved by DNV/GL/ABS)  
**no analogue output**  
 M12x1 connecting plug; 4-pole

**SCLSD-xxx-00-07**  
**SCLSD-xxx-00-07-MA**

**1 switching output;**  
**1 switching output Marine;**  
 (approved by DNV/GL/ABS)  
**with analogue output**  
 M12x1 connecting plug; 4-pole

**SCLSD-xxx-10-07**  
**SCLSD-xxx-00-07-MA**

**2 switching outputs;**  
**2 switching outputs Marine;**  
 (approved by DNV/GL/ABS)  
**with analogue output**  
 M12x1 connecting plug; 5-pole

**SCLSD-xxx-10-05**  
**SCLSD-xxx-10-05-MA**

**Length (Installation length L1 mm)**

250 mm	<b>250</b>
370 mm	<b>370</b>
520 mm	<b>520</b>
800 mm	<b>800</b>
1000 mm	<b>1000</b>

**SCLSD-xxx-10-05**

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



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

## Accessories

**PC Programming Kit**

**SCSD-PRG-KIT**

**Flange adapter**

**SCAF-3/4-90**

6-hole connection DIN 24557, part 2

## Connection cable and single plug

**Connection cable, assembled**  
 (open cable end)

**SCK-400-xx-xx**

**Cable length (m)**

2 m	<b>02</b>
5 m	<b>05</b>
10 m	<b>10</b>

**Connecting plug**

M12 cable jack; straight	<b>45</b>
M12 cable jack; 90° angled	<b>55</b>

**Single connector**

M12 cable jack; straight	
M12 cable jack; 90° angled	

**SCK-145**  
**SCK-155**

# SCLTSD LevelTempController

## Device features

- Proven measuring system
- Pivoting
- Level display
- mm / inch / % display
- High and low display
- Analogue output
- Switching outputs
- Only one hole
- No surge pipe necessary
- Replacement for several mechanical switches

With the **LevelTempController**, you can set up and display the temperature and the level individually using a common platform. When monitoring the tank, this integration of level and temperature functionality opens up many possibilities.

The **LevelTempController** combines the functions of a level and temperature switch, a level and temperature sensor and a level and temperature indicator:

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

### Level

The position of the float is finely ( $\geq 5$  mm) and continuously recorded and shown in the display in mm or inch. Because the level is continuously recorded, the danger of individual mechanical contacts "sticking" no longer exists. Therefore the operational reliability of the monitored plant is greatly increased.

Using the selectable percent display, the full level is uniformly displayed for the users, independent of the tank shape. An offset can also be entered (difference from the sensor to the tank bottom) to give a realistic indication of the level from the tank bottom.

Different uses can easily be implemented or corrected at a later date using the menu-driven level switching points.

As the switching point no longer needs to be specified at the time of order, the versions of mechanical level switches required is reduced.



### Temperature

The temperature in the substance is continuously recorded and displayed. The switching outputs can be individually set up just like the LevelController. Naturally all the convenient switching functions are available: window, hysteresis function and open / close as well as an analogue output for temperature.

### Reliable and safe

Parameters can be password protected to avoid unauthorised changes.

### Universal

Thanks to these easy switching functions (hysteresis and window functions, NC or NO functions), intelligent adjustments can be set on the LevelTempController which are normally not possible using a mechanical level switch. Therefore, many switches can be replaced with one controller. With the optional analogue outputs, the level and temperature can be monitored easily with a controller.

Level: e.g. for leakage monitoring

Temperature: e.g. coolers, heating, alarm, shutdown

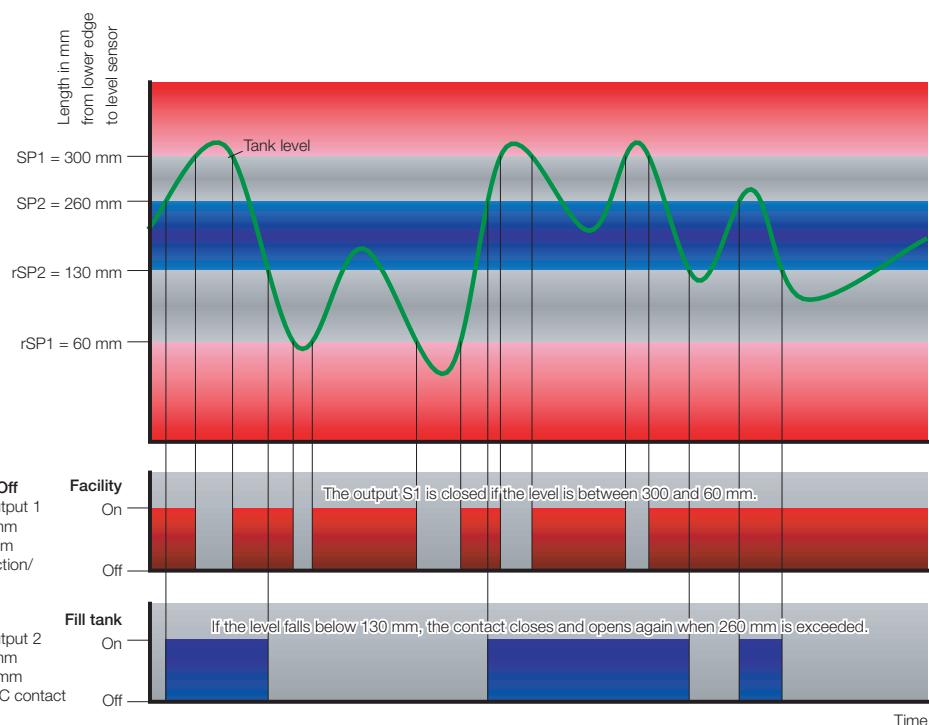
# SCLTSD LevelTempController

## Application examples

### SCLSD



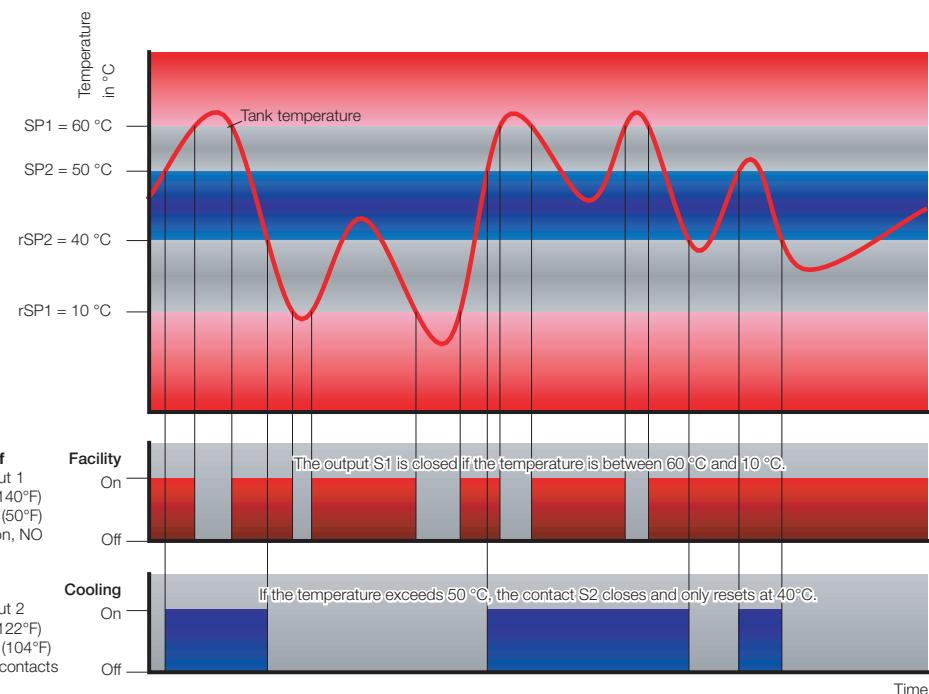
Application example  
Refer to page 70



### SCTSD



Application example  
Refer to page 54



# SCLTSD LevelTempController

## Device features

### Everything at a glance

- Sloped display
- Digital display
- Large
- Illuminated
- Switching points
- Display level
- mm, inch, or %
- Actual level
- High and low display
- Temperature display
- °C, °F
- Current temperature

### Rugged

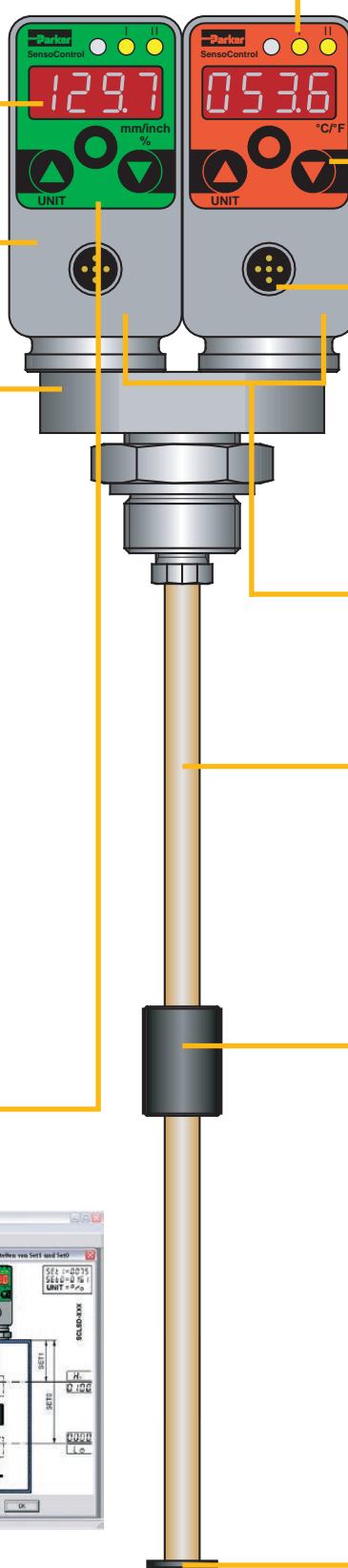
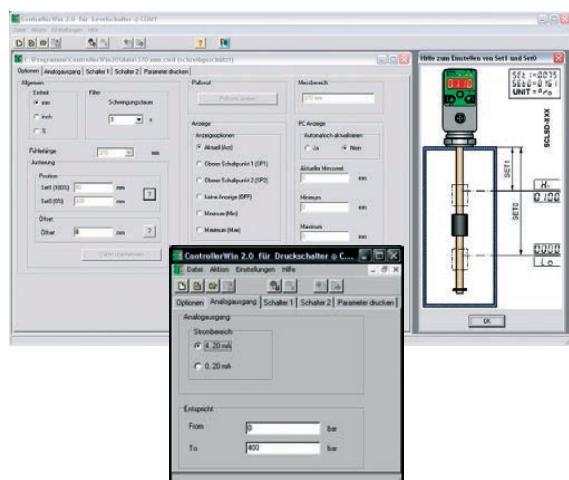
- Metal housing
- Waterproof
- Excellent interference immunity
- Vibration proof
- Shock proof

### Variable installation

- A coupling hole
- Compact size
- 290° pivotable
- G3/4 BSPP
- DIN flange

### Programming module

- Adjustable with
- ControllerWIN Software



# SCLTSD LevelTempController

## Technical data

Electrical connection	
Supply voltage $V_+$	15...30 VDC nominal 24 VDC; Protection class 3
Electrical connection	M12x1; 4-pole; 5-pole; with gold-plated contacts
Short-circuit protection	Yes
Protection against wrong insertion	Yes
Overload protection	Yes
Current consumption	< 100 mA
Housing	
	Adjustable direction to 290°C
Material	Die-cast zinc Z 410; painted
Foil material	Polyester
Display	4-digit 7-segment LED; red; digit height 9 mm
Protection degree	IP67 DIN EN 60529
Ambient conditions	
Ambient temperature range	-20...+85 °C / (-4...185°F)
Temperature range of substance	≤ 80 °C / (≤ 176°F)
Storage temperature range	-40...+100 °C / (-40...212°F)
EM compatibility	
Disturbance emissions	EN 61000-6-3
Resistance to interference	EN 61000-6-2
Outputs	
Switching outputs	Two MOSFET high-side switches (PNP)
Contact functions	NO / NC contact; window / hysteresis function freely adjustable
Switching voltage	$V_+$ -1.5 VDC
Switching current max.	0.5 A per switch
Short-circuit current	2.4 A per switch
Analogue output	0/4 to 20 mA; programmable; freely scalable $RL \leq (V_+ - 8 V) / 20 \text{ mA} \leq 500 \Omega$

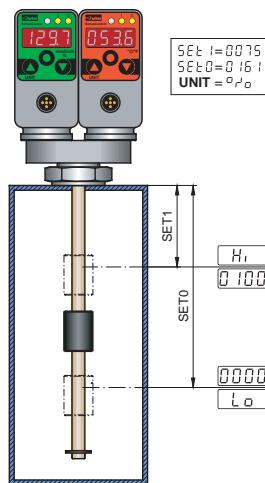
Level	
Input parameters	
Measuring component	Resistance reed chain with float
Connector thread	G3/4 BSPP; nickel-plated brass; ED soft seal NBR*
Parts in contact with substances	Brass; nickel-plated brass; NBR*
Temperature range of substance	≤ 80 °C / (≤ 176°F)
Output values	
Switching point accuracy	± 1 % FS at 25 °C / (77°F)
Display accuracy	± 1 % FS ± 1 Digit at 25 °C / (77°F)
Response speed	≤ 700 ms
Resolution	7.5 mm
Float	
Material	NBR
Dimensions	Ø 18 mm, Length 35 mm
Viscosity	Max. 250 cSt at 25 °C / (77°F)
Density	at least 0.750 g/cm³
Level rod	
Material	Stainless steel
Dimensions	Ø 8 mm
Operating pressure	1 bar
Temperature	
Output values	
Switching point accuracy	± 0.35 % FS at 25 °C / (77°F)
Display accuracy	± 0.35 % FS ± 1 Digit at 25 °C / (77°F)
Response speed	≤ 300 ms
Analogue output	0/4...20 mA; programmable; freely scalable; 4...20 mA = -40...125 °C / (-40...257°F)

\* different sealing material (FKM, EPDM etc.) upon request

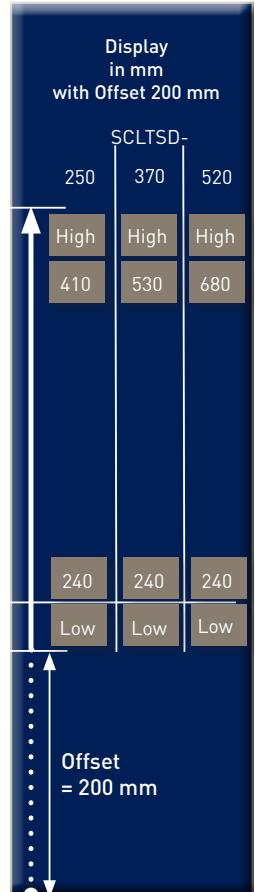
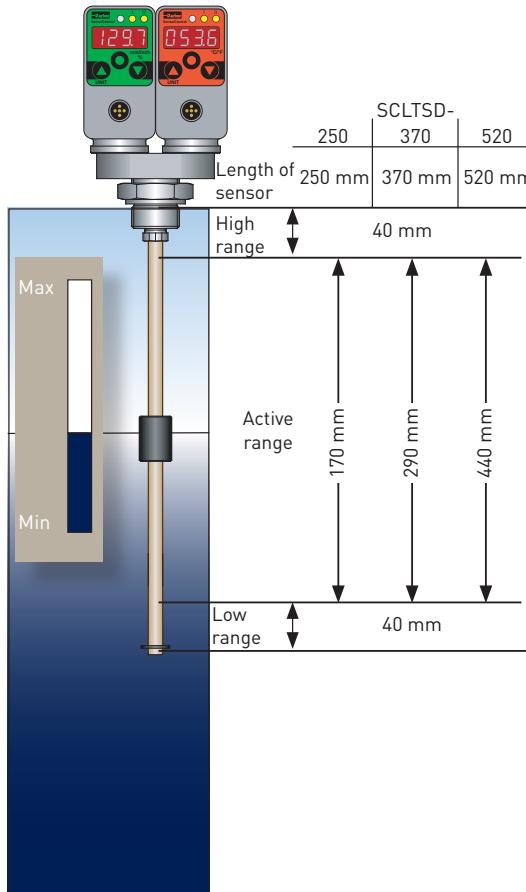
# SCLTSD LevelTempController

## Display possibilities

### Example of a percent display



### Example of a mm display

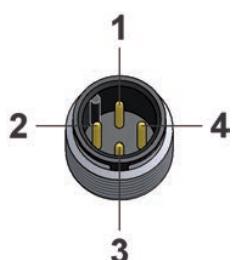


L1 Sensor length Measurement range	L2 active range	Display reso- lution Increment size	Increment size	Lowest reset switch point RSP	Largest switch- ing value SP	Smallest adjustable difference between SP and RSP (SP-RSP)
250 mm	40...210 mm	1 mm	5 mm	40 mm	210 mm	5 mm
370 mm	40...330 mm	1 mm	5 mm	40 mm	330 mm	5 mm
520 mm	40...480 mm	1 mm	5 mm	40 mm	480 mm	5 mm
800 mm	40...760 mm	1 mm	10 mm	40 mm	760 mm	10 mm
1000 mm	40...960 mm	1 mm	10 mm	40 mm	960 mm	10 mm

## Pin assignment

SCLTSD-xxx-00-07 for temperature and level

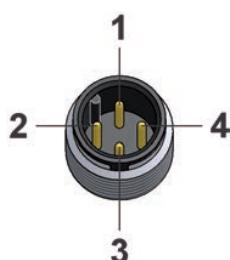
2 switching outputs; M12x1; 4-pole



PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out

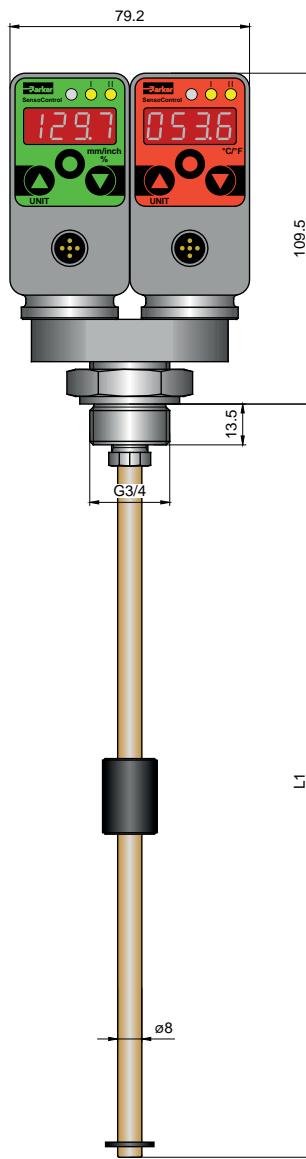
SCLTSD-xxx-10-07 for temperature and level

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



PIN	Assignment
1	V <sub>+</sub>
2	Analogue out
3	0 V / GND
4	S1 out

# SCLTSD LevelTempController

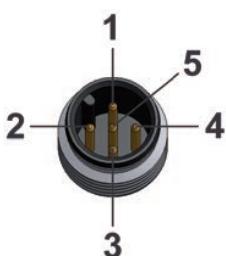


L1 = length of the sensor (mm)

L2 = active range (mm)

SCLTSD-xxx-10-05 for temperature and level

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



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

## Order code

**SCLTSD LevelTempController**  
**2 switching outputs;**  
**2 switching outputs Marine;**  
 (approved by DNV/GL/ABS)  
**no analogue output**  
 M12x1 connecting plug; 4-pole

SCLTSD-xxx-00-07  
 SCLTSD-xxx-00-07-MA

**1 switching output;**  
**1 switching output Marine;**  
 (approved by DNV/GL/ABS)  
**with analogue output**  
 M12x1 connecting plug; 4-pole

SCLTSD-xxx-10-07  
 SCLTSD-xxx-10-07-MA

**2 switching output;**  
**2 switching output Marine**  
 (approved by DNV/GL/ABS)  
**with analogue output**  
 M12x1 connecting plug; 5-pole

SCLTSD-xxx-10-05  
 SCLTSD-xxx-10-05-MA

Installation length (L1 mm)	
250 mm	250
370 mm	370
520 mm	520
800 mm	800
1000 mm	1000

## Accessories

**PC Programming Kit**

SCSD-PRG-KIT

SCAF-3/4-90

**Flange adapter**  
 6-hole connection DIN 24557, part 2

## Connection cable and single plug

**Connection cable, assembled**  
 (open cable end)

SCK-400-xx-xx

**Cable length (m)**

2 m	02
5 m	05
10 m	10

**Connecting plug**

M12 cable jack; straight

45

M12 cable jack; 90° angled

55

## Single connector

M12 cable jack; straight

SCK-145

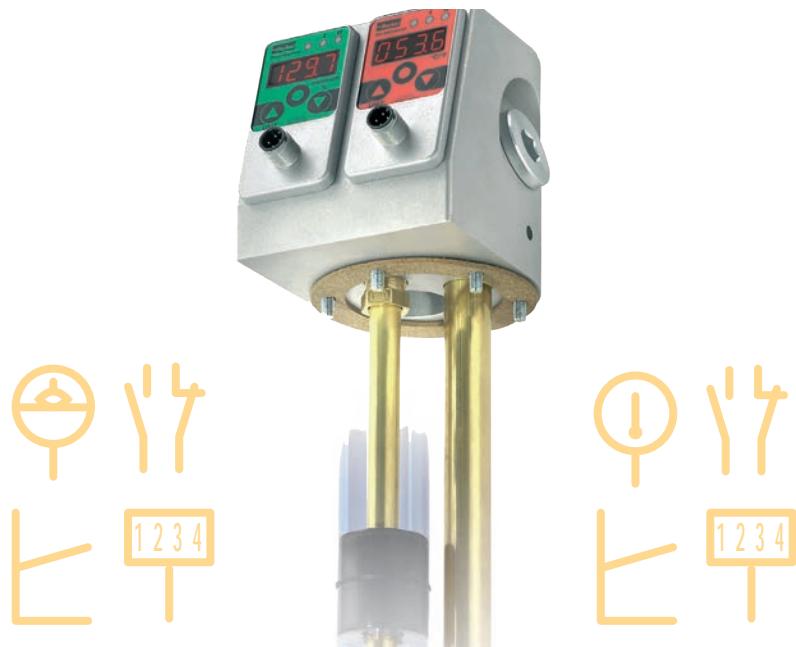
M12 cable jack; 90° angled

SCK-155

# SCOTC OilTankController

## Device features

- Proven measuring system
- Level and temperature display
- mm / inch / % display
- High and low display
- Only one hole
- Continuous level measurement
- Connection
  - Filling coupling
  - Air filter
  - Low pressure
- No surge pipe necessary



In addition to the **LevelTempController**, the **OilTankController** also offers standardised connections for an air filter and a fill coupling.

When monitoring the tank for series use, this integration of level and temperature functionality together with air filter and fill adapter port opens up many possibilities. An additional connecting hole is required for the four functions.

**The OilTankController combines the functions of a level and temperature switch, a level and temperature sensor and a level and temperature display:**

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

### Level

The position of the float is finely ( $\geq 5$  mm) and continuously recorded and shown in the display in mm or inch. Because the level is continuously recorded, the danger of individual mechanical contacts "sticking" no longer exists. Therefore the operational reliability of the monitored plant is greatly increased.

Using the selectable percent display, the full level is uniformly displayed for the users, independent of the tank shape. An offset can also be entered (difference from the sensor to the tank bottom) to give a realistic indication of the level from the tank bottom.

Different uses can easily be implemented or corrected at a later date using the menu-driven level switching points.

As the switching point no longer needs to be specified at the time of order, the versions of mechanical level switches required is reduced.

### Temperature

The temperature in the substance is continuously recorded and displayed. The switching outputs can be individually set up just like the LevelController. Naturally all the convenient switching functions are available: window, hysteresis function and open/close as well as an analogue output for temperature.

### Reliable and safe

Parameters can be password protected to avoid unauthorised changes.

### Universal

In combination with the comfortable switch functions like hysteresis and window function, open/close contact functions **LevelTempController** intelligent settings can be made which are not possible with a mechanical level/temperature switch. Therefore, many switches can be replaced with one controller. With the optional analogue outputs, the level and temperature can be monitored easily with a controller.

Level: e.g. for leakage monitoring

Temperature: e.g. coolers, heating, alarm, shutdown

# SCOTC OilTankController

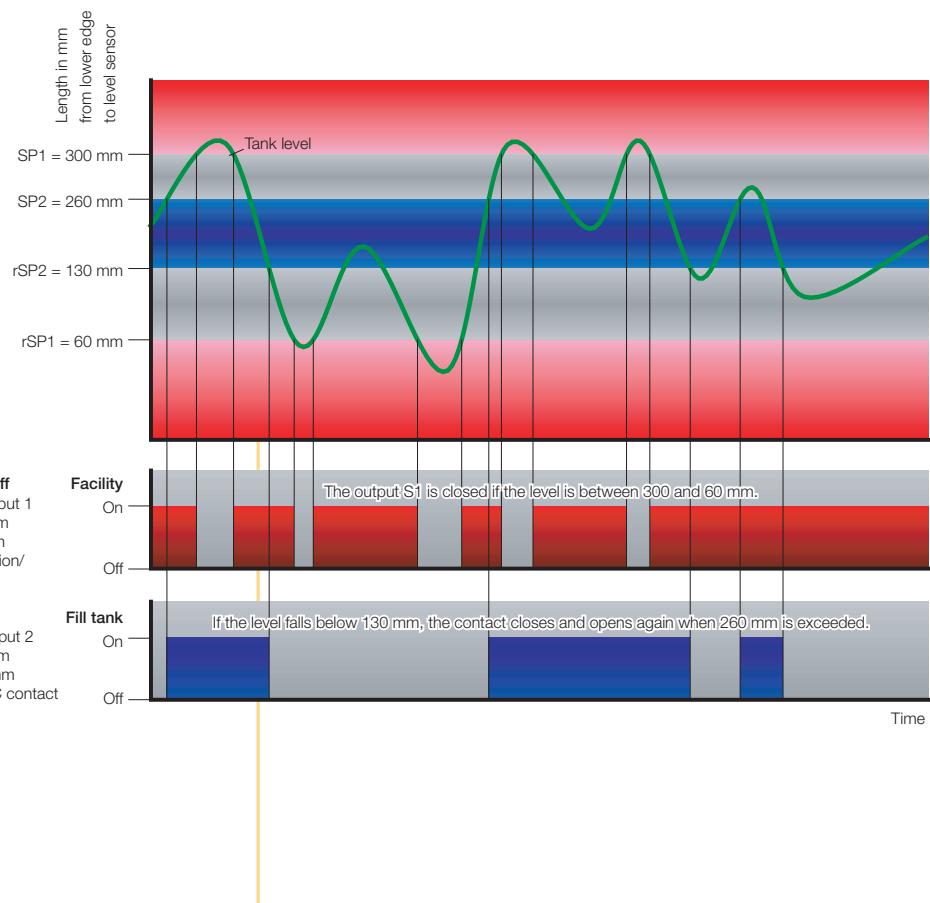
## Application examples

### SCLSD



#### Application example

Refer to page 70

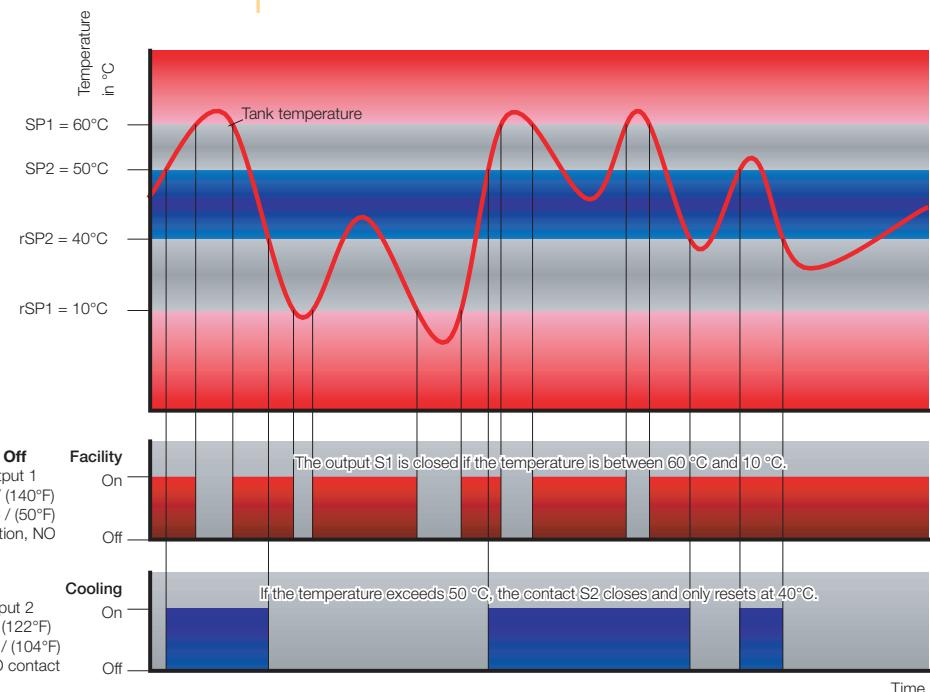


### SCTSD



#### Application example

Refer to page 54



# SCOTC Oil Tank Controller

## Device features

### Getting to the point

- Compact construction (4 in 1)
- Easy adjustment of the switching points using the menu
- Analogue output
- Safety control
- Cost savings in the logistics, assembly and maintenance

### Level and temperature

- Display
- Adjustable switching output
- Analogue output

### The extended version

with safety control

- Additional fixed switching contacts
- Level min/max
- Temperature too high

### Real fill level

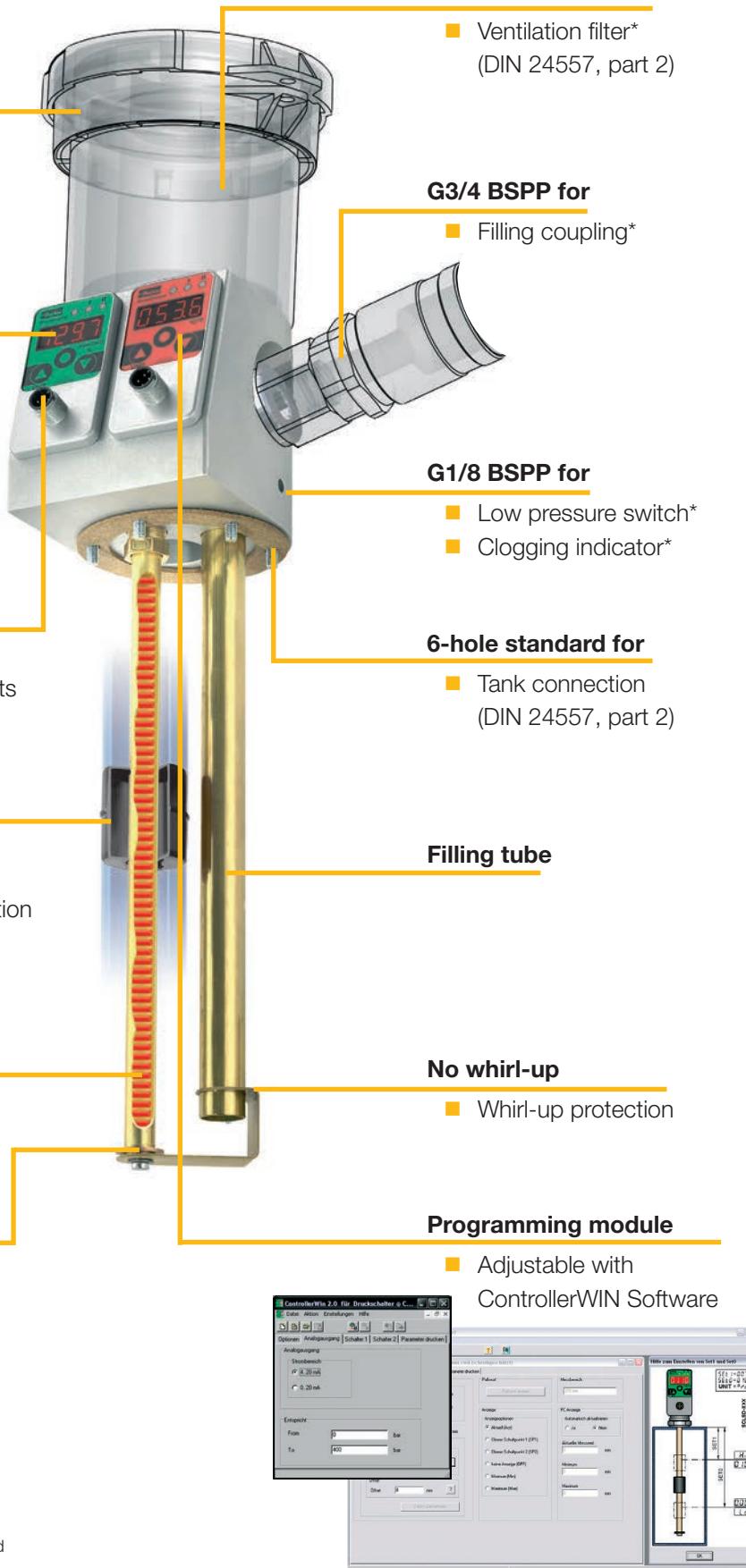
- The level controller continuously measures the position of the float and continuously shows the position in the display.
- Up to 1000 mm

### No surge pipe necessary

- Electronic attenuation
- Adjustable attenuation

### Temperature sensor

- Integrated in the rod end



\* Venting filter, filling coupling, low pressure switch and clogging indicator are not included in the delivery.

# SCOTC Oil Tank Controller

## Technical data

SCOTC	250	370	520	800	1000					
Tank installation length	250 mm	370 mm	520 mm	800 mm	1000 mm					
Adjustment range	40...210 mm	40...330 mm	40...480 mm	40...760 mm	40...960 mm					
<b>Electrical connection</b>										
Supply voltage $V_+$	15 to 30 VDC nominal 24 VDC; Protection class 3									
Electrical connection	M12x1; 4-pole; 5-pole; with gold-plated contacts									
Short-circuit protection	Yes									
Protection against wrong insertion	Yes									
Overload protection	Yes									
Current consumption	< 100 mA									
<b>Housing</b>										
Material	Die-cast zinc Z 410; painted Aluminium									
Foil material	Polyester									
Display	4-digit 7-segment LED; red; digit height 9 mm									
Protection degree	IP67 DIN EN 60529									
<b>Ambient conditions</b>										
Ambient temperature range	-20...+80 °C / (-4...176°F)									
Temperature range of substance	≤ 80 °C / (≤ 176°F)									
Storage temperature range	-40...+100 °C / (-40...212°F)									
Sampling period	300 ms									
Display refresh	1 s									
<b>EM compatibility</b>										
Disturbance emissions	EN 61000-6-3									
Resistance to interference	EN 61000-6-2									
<b>Outputs</b>										
Switching outputs	Two MOSFET high-side switches (PNP)									
Contact functions	NO / NC contact; window / hysteresis function freely adjustable									
Switching voltage	$V_+$ -1.5 VDC									
Switching current max.	0.5 A per switch									
Short-circuit current	2.4 A per switch									
<b>Optional analogue output</b>										
Measuring range	0/4...20 mA; programmable									
Response speed (0 to 95%)	≤ 300 ms									
Error	± 1 % FS									
Load	≤ 500 Ω from $V_b$ > 18 VDC									
<b>Level</b>										
<b>Input variables</b>										
Measuring component	Reed chain resistance									
Connector thread	6 hole standard-DIN 24557, part 2									
<b>Output variables</b>										
Switching point accuracy	± 1 % FS at 25 °C / (77°F)									
Display accuracy	± 1 % FS ± 1 Digit at 25 °C / (77°F)									
Response speed	≤ 700 ms									
Resolution	5 mm...520 mm; 10 mm > 520 mm									
<b>Float</b>										
Material	Polypropylene									
Dimensions	Ø 35 mm, Length 40 mm									
<b>Level rod</b>										
Material	Brass									
Dimensions	Ø 12 mm									
Operating pressure	1 bar max.									
<b>Optional Lo-Hi contact (S3 out)</b>										
Alarm contact	In series switched Lo and Hi NC contact									
Maximum load current	0.7 A									
<b>Temperature</b>										
<b>Input variables</b>										
Sensor element	PT1000									
Filling tube	Ø 18x1 mm									
Response time	$\tau_{0.9} = 60$ s									
<b>Output variables</b>										
Switching point accuracy	± 0.5 % FS at 25 °C / (77°F)									
Display accuracy	± 0.5 % FS ± 1 Digit at 25 °C / (77°F)									
Response speed	≤ 300 ms									
Analogue output	0/4...20 mA; programmable; freely scalable; 4...20 mA = -40...125 °C / (-40...257°F)									
<b>Optional temperature switch (S3 out)</b>										
Alarm contact with $> 65$ °C	Open contact									
Maximum charging current	0.7 A									

# SCOTC OilTankController

## Pin assignment

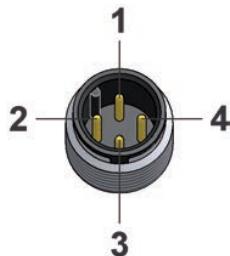
### Without safety-control-output

SCOTC-xxxx-00-07

for temperature and level

2 switching outputs

M12x1; 4-pole



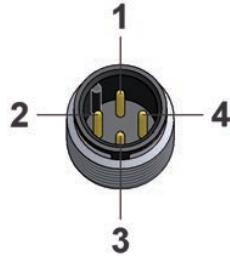
PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out

SCOTC-xxxx-10-07

for temperature and level

1 switching outputs, 1 analogue output

M12x1; 5-pole



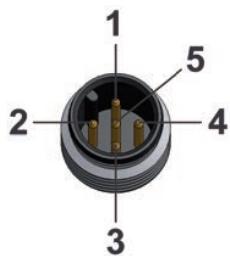
PIN	Assignment
1	V <sub>+</sub>
2	Analogue out
3	0 V / GND
4	S1 out
5	

SCOTC-xxxx-10-05

for temperature and level

2 switching outputs, 1 analogue output

M12x1; 5-pole



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

### With safety-control-output

SCOTC-xxxx-00-05

Level:

Two variable switching outputs,

One fixed safety-control-output level min/max;

M12x1; 5-pole



PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out
5	S3 out (L-Low / L-High)

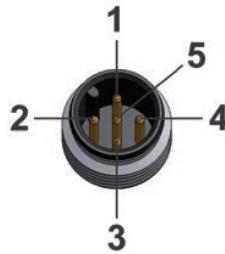
SCOTC-xxxx-00-05

Temperature:

Two variable switching outputs,

One fixed safety-control-output temperature max. 65 °C

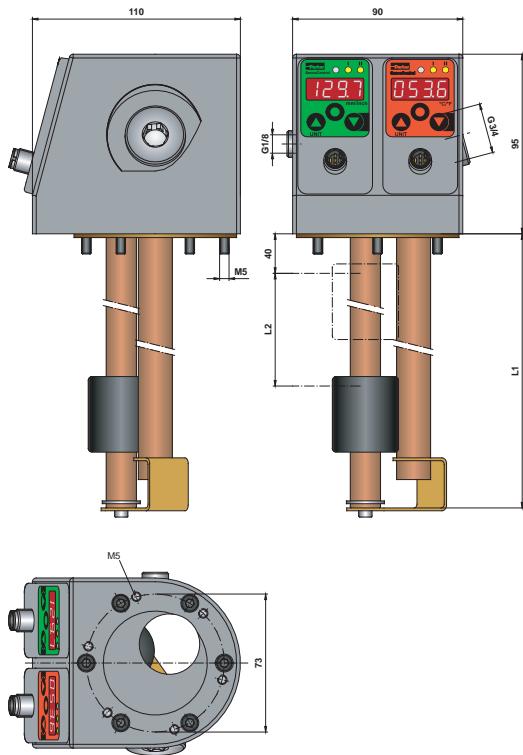
M12x1; 5-pole



PIN	Assignment
1	V <sub>+</sub>
2	S2 out
3	0 V / GND
4	S1 out
5	S3 out (T-High)

L1 Sensor length Measurement range	L2 active range	Display resolution increment size	Increment size	Lowest reset switch point RSP	Largest switch- ing value SP	Smallest adjustable difference between SP and RSP (SP-RSP)
250 mm	170 mm	1 mm	5 mm	40	210	5 mm
370 mm	290 mm	1 mm	5 mm	40	330	5 mm
520 mm	440 mm	1 mm	5 mm	40	480	5 mm
800 mm	720 mm	1 mm	10 mm	40	760	10 mm
1000 mm	920 mm	1 mm	10 mm	40	960	10 mm

# SCOTC OilTankController



L1 = length of the sensor (mm)

L2 = active range (mm)

## Order code

SCOTC OilTankController \*

2 switching outputs; no analogue output SCOTC-xxxx-00-07  
M12x1 connecting plug; 4-pole

2 switching outputs; with analogue output SCOTC-xxxx-10-07  
M12x1 connecting plug; 4-pole

1 switching output; with analogue output SCOTC-xxxx-10-05  
M12x1 connecting plug; 5-pole

3 switching outputs; no analogue output SCOTC-xxxx-00-05  
M12x1 connecting plug; 5-pole  
with safety control

Length (Installation length L1 mm)

250 mm	250
370 mm	370
520 mm	520
800 mm	800
1000 mm	1000

## Accessories

PC Programming Kit

SCSD-PRG-KIT

## Connection cable and single plug

Connection cable, assembled  
(open cable end)

SCK-400-xx-xx

Cable length (m)

2 m	02
5 m	05
10 m	10

Connecting plug

M12 cable jack; straight	45
M12 cable jack; 90° angled	55

Single connector

M12 cable jack; straight  
M12 cable jack; 90° angled

SCK-145

SCK-155

\* Venting filter, filling coupling, low pressure switch and clogging indicator are not included in the delivery.

# SCK cable

## Device features

- One cable for all
- Compact size
- Interference-free
- Compatible to:
  - Sensors
  - Controllers
- M12 plug
- DIN EN 175301 (Device plug)
- Available in a variety of lengths



The **SensoControl®** cable was designed for use with the industrial sensors and switches.

Thus the M12 cable and M12 plug are

- Compact
- Shielded
- Five-pole

### 5-pole version

The 5-pole cable is suitable for both 4-pole and 5-pole connections. The sensor variants with a 4-pole connector are fully compatible with the 5-pole cable.

So despite different pin counts on the pressures switch (Controller Family SCxSD and SCOTC) and sensors, it is always possible to use just one cable version (5-pole) regardless of the plug version.

The SCK-400-xxx-x5 cables fit to all components in this catalogue using M12 connectors.

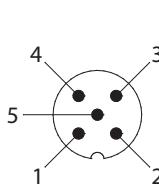
### Shielding

Shielding protects against interference and ensures improved operational safety.

- Higher EMC protection

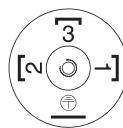
## Pin assignment

SCK-400-xx-x5



PIN			
1	bn	brown	braun
2	wh	white	weiß
3	bu	blue	blau
4	bk	black	schwarz
5	gy	grey	grau

SCK-400-xx-56

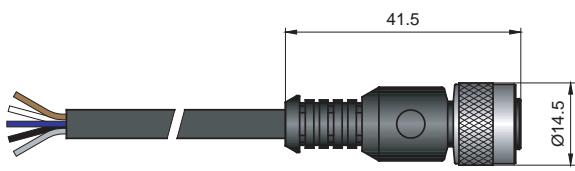


PIN			
1	ye	yellow	gelb
2	gn	green	grün
3	bn	brown	braun

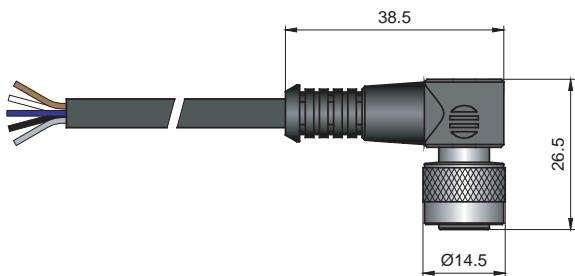
# SCK cable

## Connection cable

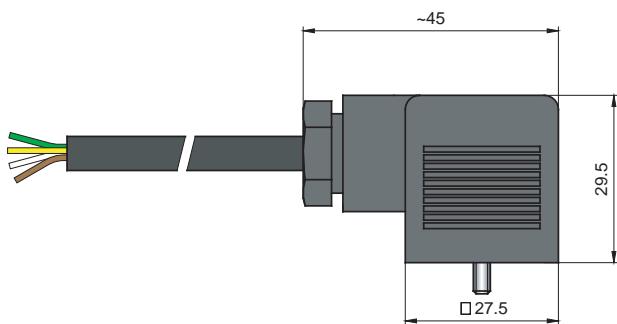
SCK-400-xx-45



SCK-400-xx-55

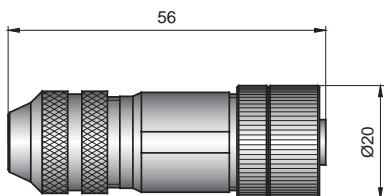


SCK-400-xx-56

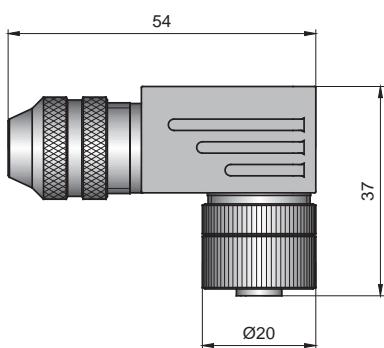


## Single connector

SCK-145

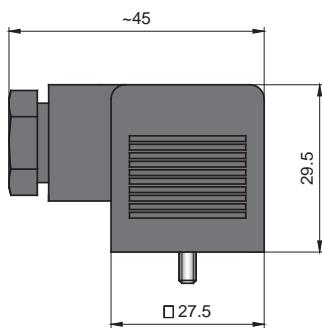


SCK-155



## Single connector

SCK-006 (Device plug)



## Connection cable and single plug

**Connection cable, assembled**  
(open cable end)

**SCK-400-xx-xx**

Cable length (m)

2 m	02
5 m	05
10 m	10

Connecting plug

M12 cable jack; straight	45
M12 cable jack; 90° angled	55
Cable socket DIN EN 175301-803 Form A (old DIN 43650)	56

## Single connector

M12 cable jack; straight  
M12 cable jack; 90° angled  
Cable socket DIN EN 175301-803 Form A  
(old DIN 43650)

**SCK-145**

**SCK-155**

**SCK-006**

# SCA adapter

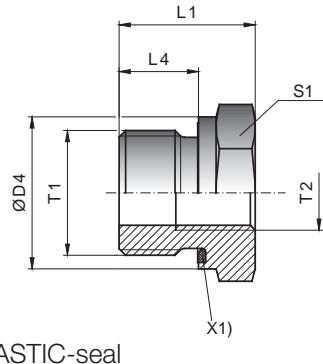
## SCA-1/4 reduction adapter

The SCA-1/4 provides compatibility for earlier sensor versions with the hydraulic connection M22x1.5 or G1/2 BSPP.

- When replacing earlier versions

This allows facilities to be updated without major planning overhead.

SCA-1/4-M22x1.5-ED  
SCA-1/4-ED1/2-ED



	T1	T2	ØD4	L1	L4	S1	Weight (g/1 St)	PN (bar) <sup>1)</sup>	DF **
<b>SCA-1/4-M22x1.5-ED</b>	M22x1.5	G1/4 BSPP	27	24	14	27	56	400	4
<b>SCA-1/4ED1/2-ED</b>	G1/2 BSPP	G1/4 BSPP	27	24	14	27	56	400	4

## SCA-1/4 attenuation adapter

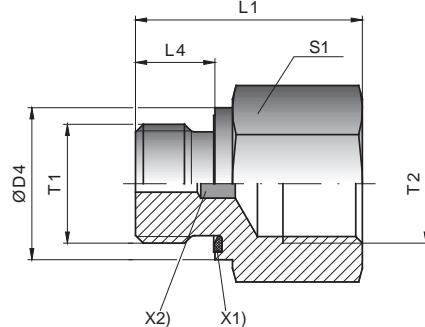
System-related pressure spikes are reduced with the SCA-1/4-EDX-1/4-D.

- Attenuation for pressure peaks

The G1/2 BSPP version ensures compatibility for earlier sensor versions to the G1/2 BSPP hydraulic connection.

- When replacing earlier versions

SCA-1/4-EDX-1/4-D



	T1	T2	ØD4	L1	L4	S1	Weight (g/1 St)	PN (bar) <sup>1)</sup>	DF **
<b>SCA-1/4EDX1/4-D</b>	G1/4A BSPP	G1/4 BSPP	19	34	12	22	61	630	3.5

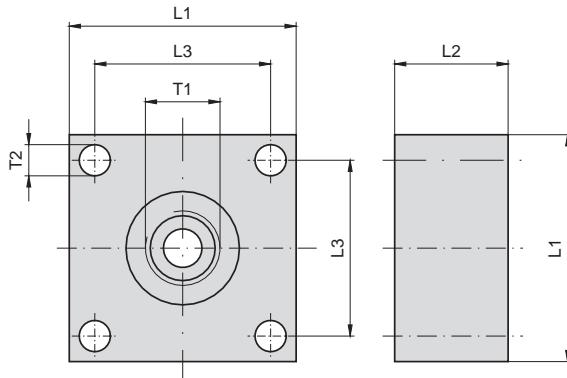
# SCA adapter

## SCPSD flange adapter SCAF-1/4-40 for mechanical pressure switch

When replacing existing mechanical pressures switches with 40x40mm flange connections

**SCAF-1/4-40**  
for mechanical pressure switch

**SCAF-1/4-40**



T1	T2	L1	L2	L3	Weight (g/1 St)	PN (bar) <sup>1)</sup> Alu	DF **
G1/4 BSPP	5.5	40	20	31	15	400	4

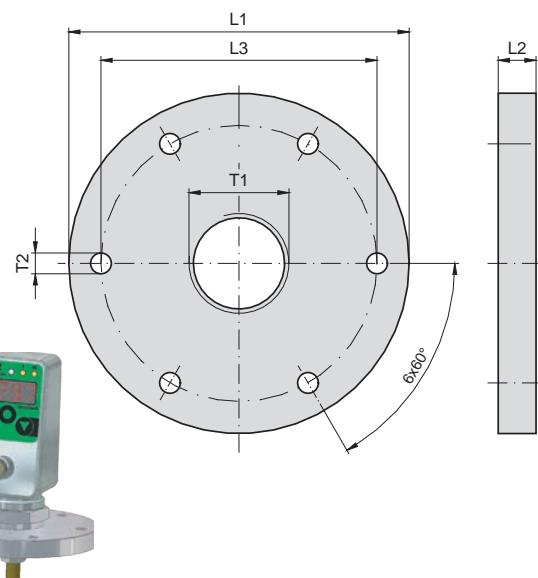
## SCLSD/SCLTSD flange adapter SCAF-3/4-90 6-hole connection DIN 24557, part 2

For LevelController and LevelTemp Controller (SCLSD and SCLTSD), a compatibility to the tank connections 6-hole DIN 24557, part 2, is ensured.

**SCAF-3/4-90**

**SCAF-3/4-90**  
6-hole connection DIN 24557, part 2

**SCAF-3/4-90**



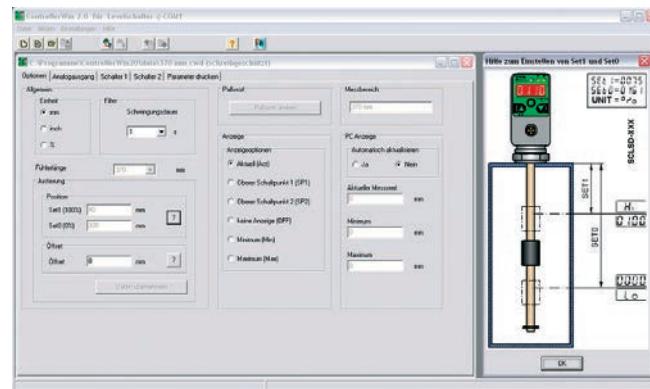
T1	T2	L1	L2	L3	Weight (g/1 St)	Material
G3/4 BSPP	5.5	90	10	73	520	Nickel-plated brass

\*\* DF = Design Factor (safety factor)

# ControllerWIN software

## Device features

- Suitable for the Controller Family
- Simple adjustment of all parameters
- Saving of the parameters
- Adjustment with PC/laptop
  - at the workbench
  - at the desk
  - in the plant



The ControllerWIN software allows the adjustment and saving of all parameters, including:

- Switching points
- NO / NC contact function
- Window / hysteresis
- Scaling of the analogue output
- Passwords

## From the Controller Family product series:

- SCPSD
- SCTSD
- SCLSD
- SCLTD
- SCOTC

## Function

A no-contact infra-red interface is used to compare the data with the corresponding functional controller. This can take place directly in the facility or externally using a power supply unit (not included in the delivery).

- It is not necessary to disconnect the power supply or pull the cable out (operations are not interrupted).

A programming adapter is connected to the corresponding controller and the data is transmitted to a PC.

The SCSD-PRG\_KIT programming kit includes all components (adapter, software and power supply) required for adjusting the controller with the PC or laptop:

- At the workbench
- At the desk
- In the plant

## Application

- Saving and logging the adjusted values
- Programming multiple controllers
- Easy exchange of existing controllers

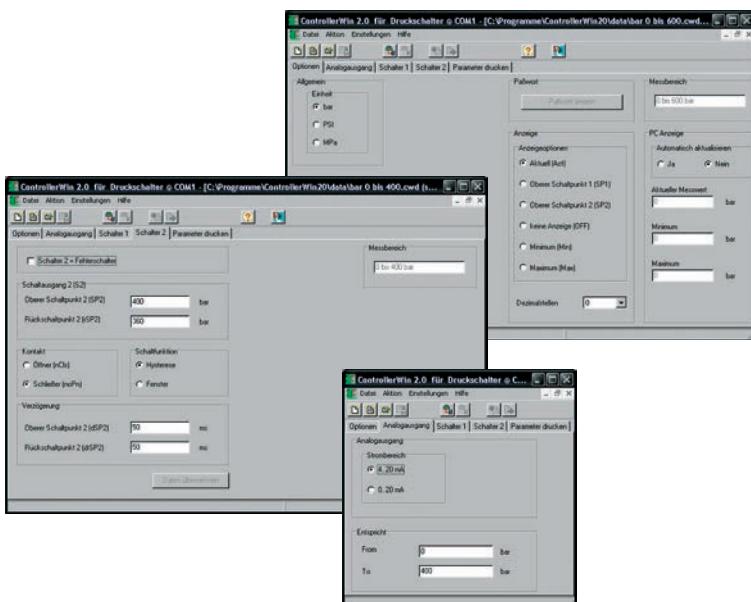
The programming kit is the ideal solution in each of these cases.

# ControllerWIN software

## Technical data

### System requirements

Operating system	PC / laptop connection	Controller connection
WIN 98/2000/ME/NT/XP	RS232 (USB using conventional adapter)	Parker infra-red interface SCxSD/SCOTC



### Accessories for:

PressureController	TemperatureController	LevelController	LevelTempController	OilTankController
Pressure display and monitoring	Temperature display and monitoring	Level indication and monitoring	Level and temperature display and monitoring	

## Order code

PC Programming KIT

SCSD-PRG-KIT



# Installation and safety instructions



The CE mark indicates a high-quality device that complies with the European directive 89/336/EWG and EMVG.

We confirm that these products comply with the following standards:

## EMC

- Electromagnetic emission: EN 61000-6-3
- Electromagnetic immunity: EN 61000-6-2

## Important

- Electromagnetic disturbances can affect the desired signal.
- Apply all general EMC strategies when planning facilities and machines.
- We recommend using shielded cables (SCK-400-xx-x5) in order to achieve better EMC immunity.
- Make sure you route analogue and data cables so that there is a sufficient gap between them.
- An effective earthing strategy will help you to avoid measuring errors.

Always connect metal housings with the reference ground. The PE protective earth should have a low-ohm connection. According to VDE 0701, the PE resistance must be measured.

## Power feed voltage



Each sensor series specifies the recommended feed voltage to be used when operating the standard sensor. We recommend using a low-noise, high-quality, constant voltage source. Certain specifications (such as sensitivity and thermal sensitivity shift) may change when other power feeds are used. Each sensor is trimmed to its peak performance. The sensor's performance may change when other power feed types are used. Make sure you comply with the polarity and earthing regulations.

Improperly connected feed wires can damage sensors and amplifiers!

If one pole of the sensor feed is automatically earthed via the sensor's processing system, then you should avoid an additional earth on the sensor signal wire. This would cause the sensor to short circuit and damage the sensor.

Do not apply feed-in voltage to the output wires. This will permanently damage the sensors!



The sensor will be damaged if the data sheet specifications and maximum recommended feed voltage levels are exceeded!

## Compatibility with media (substances)

SensoControl® products which come into contact with the substance are not produced in an oil-free or fat-free environment.

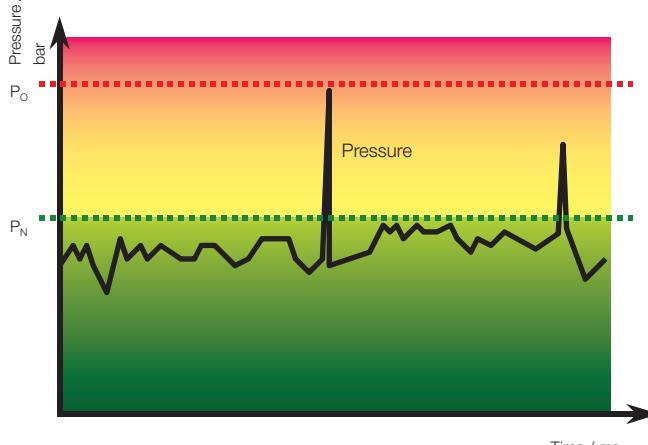
Therefore these products are **not** suitable for use in applications which use explosive mixtures of oil and gas (e.g. oxygen or compression). This could lead to a danger of explosion!

## Danger of explosion!

Only use substances which are compatible with the components that come into contact with the substance. (Refer to the data sheets)

Please consult with the plant manufacturer or the manufacturer of the substance if you have any questions. (Refer to catalogue 4100 chapter C).

## Pressure range selection



When selecting pressure components, ensure that the overload pressure  $P_{\text{max}}$  will not be exceeded.

It is possible that the pressure cell can be deformed when the overload pressure  $P_{\text{max}}$  is exceeded (depending on the duration, frequency and level of the pressure spike).

Note: The "diesel effect" caused by entrapped air can result in pressure spikes that far exceed the maximum pressure.

The nominal pressure  $P_{\text{N}}$  of the pressure component (sensor/switch) should be higher than the nominal pressure of the system to be measured.

# Appendix

## Temperature conversion table

Celsius to Fahrenheit

°C	°F
150	302
145	293
140	284
135	275
130	266
125	257
120	248
115	239
110	230
105	221
100	212
95	203
90	194
85	185
80	176
75	167
70	158
65	149
60	140
55	131
50	122
45	113
40	104
35	95
30	86
25	77
20	68
15	59
10	50
5	41
0	32
-5	23
-10	14
-15	5
-20	-4
-25	-13
-30	-22
-35	-31
-40	-40
-45	-49
-50	-58

Fahrenheit to celsius

°F	°C
340	171
330	166
320	160
310	154
300	149
290	143
280	138
270	132
260	127
250	121
240	116
230	110
220	104
210	99
200	93
190	88
180	82
170	77
160	71
150	66
140	60
130	54
120	49
110	43
100	38
90	32
80	27
70	21
60	16
50	10
40	4
30	-1
20	-7
10	-12
0	-18
-10	-23
-20	-29
-30	-34
-40	-40
-50	-46
-60	-51

## Pressure conversion table

bar to psi

bar	psi
1000	14505
800	11604
600	8703
500	7253
400	5802
250	3626
160	2321
100	1451
60	870
40	580
35	508
25	363
16	232
10	145
6	87
4	58
2.5	36
1.6	23
1	15

psi to bar

psi	bar
10000	689
9000	620
7000	483
6000	414
4000	276
3000	207
2500	172
1000	69
900	62
600	41
500	34
400	28
250	17
150	10.3
100	6.9
90	6.2
60	4.1
40	2.8
25	1.7
10	0.7

## Examples

### Temperature conversion

Initial value: 100

°C in °F: 212 °F

°F in °C: 37.78 °C

### Pressure conversion

Initial value: 35

bar in psi: 507.675 psi

psi in bar: 2.41296 bar

# Appendix

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## Old and new references

Old order number	New order number	Old order number	New order number
SCK-007	SCK-145	SCP-xxx-x4-0x-MO	SCP03-xxx-x4-0x
SCK-045	SCK-145	SCP-xxx-x4-0x	SCP03-xxx-x4-0x
SCK-047	SCK-145	SCP-xxx-10-06	SCP03-xxx-14-06 + SCA-1/4-M22x1.5-ED
SCK-055	SCK-155	SCP-xxx-10-07	SCP03-xxx-14-07 + SCA-1/4-M22x1.5-ED
SCK-057	SCK-155	SCP-xxx-12-06	SCP03-xxx-14-06 + SCA-1/4-ED-1/2-ED
SCK-147	SCK-145	SCP-xxx-12-07	SCP03-xxx-14-07 + SCA-1/4-ED-1/2-ED
SCK-157	SCK-155	SCP-xxx-20-06	SCP03-xxx-24-06 + SCA-1/4-M22x1.5-ED
SCK-200-xxx-45	SCK-400-xxx-45	SCP-xxx-20-07	SCP03-xxx-24-07 + SCA-1/4-M22x1.5-ED
SCK-200-xxx-47	SCK-400-xxx-45	SCP-xxx-22-06	SCP03-xxx-24-06 + SCA-1/4-ED-1/2-ED
SCK-200-xxx-55	SCK-400-..55	SCP-xxx-22-07	SCP03-xxx-24-07 + SCA-1/4-ED-1/2-ED
SCK-200-xxx-56	SCK400-xxx-56	SCP-xxx-30-06	SCP03-xxx-34-06 + SCA-1/4-M22x1.5-ED
SCK-200-xxx-57	SCK-400-..55	SCP-xxx-30-07	SCP03-xxx-24-07 + SCA-1/4-M22x1.5-ED
SCK-400-xxx-06	SCK-400-xxx-56	SCP-xxx-32-06	SCP03-xxx-34-06 + SCA-1/4-ED-1/2-ED
SCK-400-xxx-07	SCK-400-xxx-45	SCP-xxx-32-07	SCP03-xxx-24-07 + SCA-1/4-ED-1/2-ED
SCK-400-xxx-47	SCK-400-xxx-45	SCP-xxx-40-06	SCP03-xxx-44-06 + SCA-1/4-M22x1.5-ED
SCK-400-xxx-57	SCK-400-..55	SCP-xxx-40-07	SCP03-xxx-44-07 + SCA-1/4-M22x1.5-ED
SCPSD-xxx-04-05	SCPSD-xxx-04-17	SCP-xxx-42-06	SCP03-xxx-44-06 + SCA-1/4-ED-1/2-ED
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SCPSD-xxx-04-07	SCPSD-xxx-04-17	SCP01	SCP03
SCPSD-xxx-14-05	SCPSD-xxx-14-15	SCP02	SCP03

Please ask about compatible products for non-listed items.

## Notes



## Notes



## Notes

