

DCL 571

Stainless Steel Probe with RS485 Modbus RTU

Ceramic Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option 0.25 % FSO



Nominal pressure

from 0 ... 1 mH₂O up to 0 ... 100 mH₂O

Output signal

RS485 with Modbus RTU protocol

Special characteristics

- ▶ diameter 22 mm
- ▶ good long term stability
- ▶ especially for waste water
- ▶ reset function

Optional versions

- ▶ accuracy: 0.25 % FSO
- ▶ different designs
- ▶ drinking water certificate according to DVGW and KTW
- ▶ different kinds of cables and elastomers

The stainless steel probe DCL 571 with RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master slave architecture with which up to 247 slaves can be questioned by a master – the data will transfer in binary form.

The probe was developed for level measurement in waste water, sludge or water courses. The mechanical robustness of the flush ceramic diaphragm facilitates an easy disassembly and cleaning of the probe in case of service.

Compared to the level probe DCL 551 the outside-diameter is only 22 mm, which allows an easy installation and back fitting in 1" tubes or in cramped fitting conditions.

Preferred areas of use



Water

groundwater and level monitoring



Sewage

waste water treatment, water recycling



Fuel and oil

tank battery, biogas plants



Modbus®

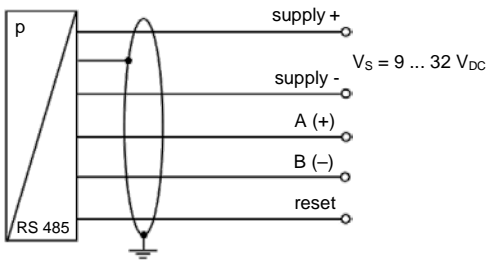
Input pressure range												
Nominal pressure gauge	[bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Level	[mH ₂ O]	1	1.6	2.5	4	6	10	16	25	40	60	100
Overpressure	[bar]	3	4	5	5	7	7	12	20	20	20	20
Max. ambient pressure (housing): 40 bar												
Nominal pressure absolute	[bar]	1.2	1.4	1.6	1.8	2	2.5	3	4	6	10	
Overpressure	[bar]	7	7	12	12	12	12	20	20	20	20	
Burst pressure ≥	[bar]	9	9	18	18	18	18	25	25	30	30	
Max. ambient pressure (housing): 40 bar												
Output signal												
Digital (pressure and temperature)	RS485 with Modbus RTU protocol											
Supply												
Direct current	V _s = 9 ... 32 V _{DC}											
Performance												
Accuracy ¹	standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO others on request											
Long term stability	≤ ± 0.1 % FSO / year											
Measuring rate	500 Hz											
Delay time	500 msec											
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)												
Thermal effects (offset and span)												
Tolerance band	≤ ± 1 % FSO											
In compensated range	-20 ... 80 °C											
Permissible temperatures												
Medium / storage	-25 ... 85 °C											
Electrical protection ²												
Short-circuit protection	permanent											
Reverse polarity protection	no damage, but also no function											
Electromagnetic compatibility	emission and immunity according to EN 61326											
² additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request												
Electrical connection												
Cable with sheath material ³	TPE-U (-10 ... 70 °C) blue Ø 7.4 mm (with drinking water approval) PUR (-10 ... 70 °C) black Ø 7.4 mm											
Cable capacitance	signal line/shield also signal line/signal line: 160 pF/m											
Cable inductance	signal line/shield also signal line/signal line: 1 µH/m											
Bending radius	static installation: 10-fold cable diameter dynamic application: 20-fold cable diameter											
³ shielded cable with integrated ventilation tube for atmospheric pressure reference												
Materials (media wetted)												
Housing	stainless steel 1.4404 (316 L)										others on request	
Cable	TPE-U, blue (with drinking water approval)										others on request	
Seals (O-rings)	EPDM (with drinking water approval), FKM										others on request	
Diaphragm	ceramics Al ₂ O ₃ 99,9 %											
Protection cap	POM-C											
Cable sheath	TPE-U, PUR											
Miscellaneous												
Drinking water certificate ⁴	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)											
Adjustable units	pressure: mmH ₂ O, mmHg, psi, bar, mbar, g/cm ² , kg/cm ² , Pa, kPa, torr, atm, mH ₂ O, MPa											
Read out	serial number, date of calibration, min- and max-value for pressure											
Current consumption	max. 10 mA											
Weight	approx. 180 g (without cable)											
Ingress protection	IP 68											
CE-conformity	EMC Directive: 2014/30/EU											
⁴ only possible with EPDM seal in combination with TPE-U cable												

DCL 571

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Technical Data

Wiring diagram

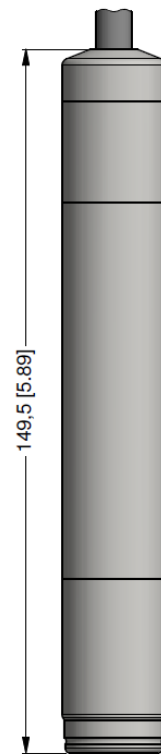
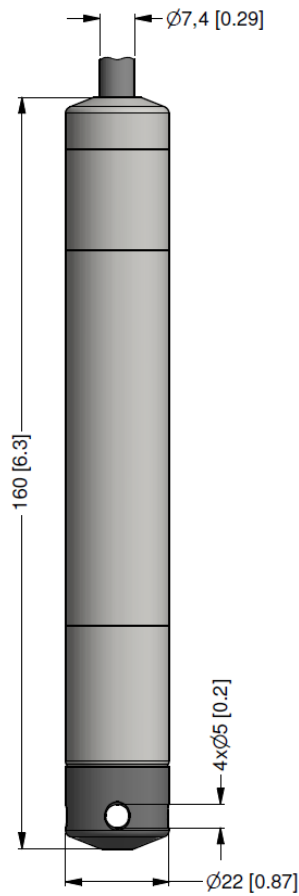


Pin configuration

Electrical connection	cable colours (IEC 60757)
Supply +	WH (white)
Supply -	BN (brown)
A +	GN (green)
B -	YE (yellow)
Reset	PK (pink)
Shield	GNYE (green-yellow)

Dimensions (mm / in)

standard

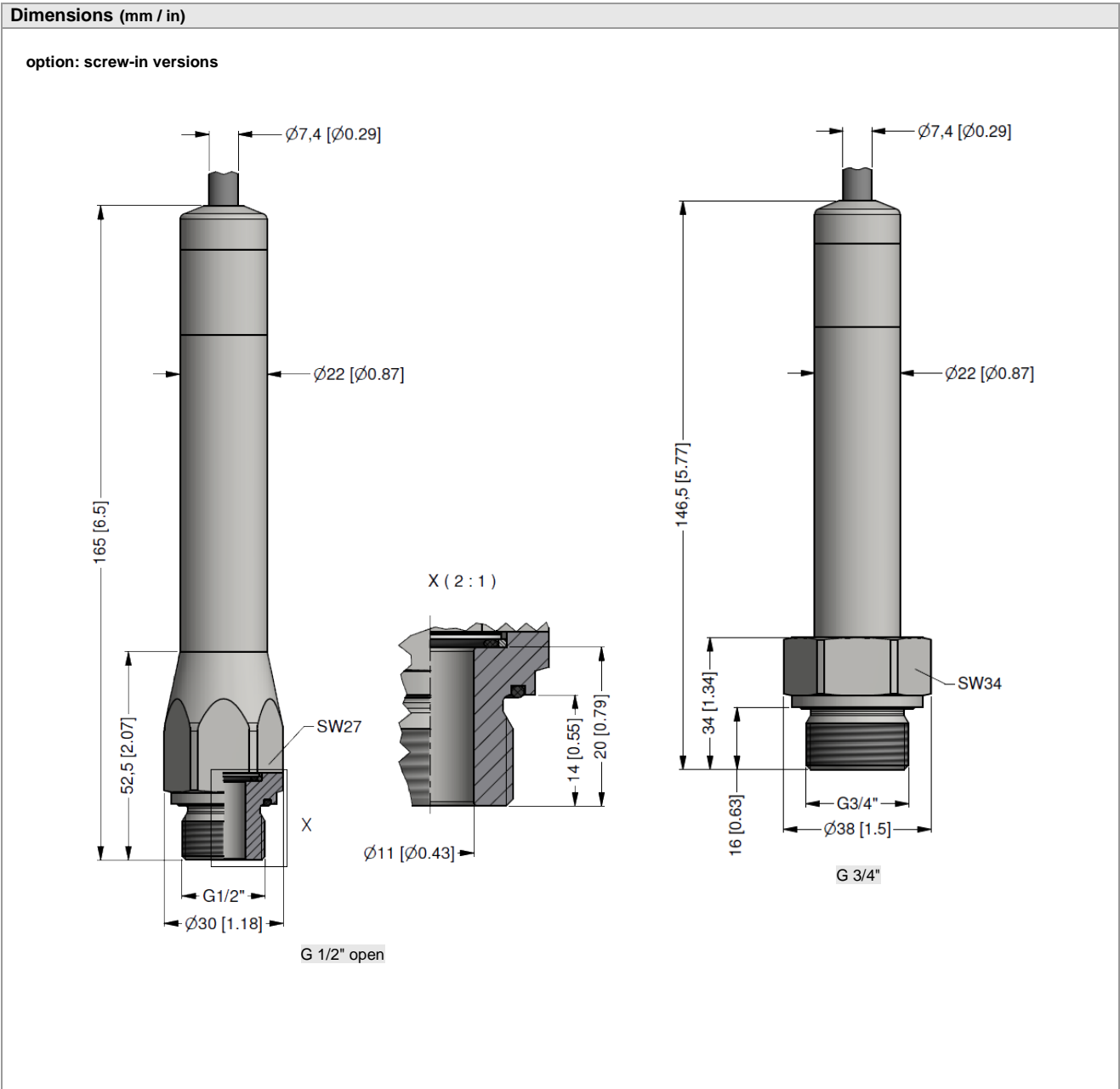


protection cap removable

DCL 571

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Technical Data



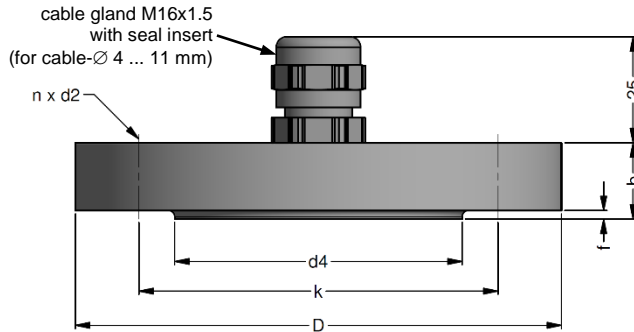
Configuration Modbus RTU					
Standard configuration	001	-	1	-	1
Address					
Address	001				
	...				
	247				
Baud Rate					
4800 Bd			0		
9600 Bd			1		
19200 Bd			2		
38400 Bd			3		
Parity					
None					0
Odd					1
Even					2
Configuration code (to specify with order)					
		-		-	

DCL 571

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Accessories

Mounting flange with cable gland



dimensions in mm			
size	DN25 / PN40	DN50 / PN40	DN80 / PN16
b	18	20	20
D	115	165	200
d2	14	18	18
d4	68	102	138
f	2	3	3
k	85	125	160
n	4	4	8

Technical data

Suitable for	all probes		
Flange material	stainless steel 1.4404 (316L)		
Material of cable gland	standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic		
Seal insert	material: TPE (ingress protection IP 68)		
Hole pattern	according to DIN 2507		

Ordering type	Ordering code	Weight
DN25 / PN40 with cable gland brass, nickel plated	ZMF2540	1.4 kg
DN50 / PN40 with cable gland brass, nickel plated	ZMF5040	3.2 kg
DN80 / PN16 with cable gland brass, nickel plated	ZMF8016	4.8 kg

Terminal clamp



Technical data

Suitable for	all probes with cable Ø 5.5 ... 10.5 mm		
Material of housing	standard: steel, zinc plated optionally: stainless steel 1.4301 (304)		
Material of clamping jaws and positioning clips	PA (fibre-glass reinforced)		
Dimensions (mm)	174 x 45 x 32		
Hook diameter	20 mm		

Ordering type	Ordering code	Weight
Terminal clamp, steel, zinc plated	Z100528	approx. 160 g
Terminal clamp, stainless steel 1.4301 (304)	Z100527	

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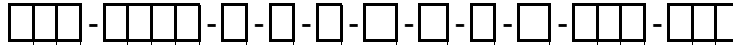
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BD|SENSORS
pressure measurement

Ordering code DCL 571

DCL 571



Pressure																					
	gauge in bar	3	6	0																	
	gauge in mH ₂ O	3	6	1																	
	absolute in bar	3	6	3																	
Input		[mH ₂ O]	[bar]																		
	1.0	0.10		1	0	0	0														
	1.6	0.16		1	6	0	0														
	2.5	0.25		2	5	0	0														
	4.0	0.40		4	0	0	0														
	6.0	0.60		6	0	0	0														
	10	1.0		1	0	0	1														
	12	1.2		1	2	0	1														
	14	1.4		1	4	0	1														
	16	1.6		1	6	0	1														
	18	1.8		1	8	0	1														
	20	2.0		2	0	0	1														
	25	2.5		2	5	0	1														
	30	3.0		3	0	0	1														
	40	4.0		4	0	0	1														
	60	6.0		6	0	0	1														
	100	10		1	0	0	2														
	customer			9	9	9	9													consult	
Housing																					
	stainless steel 1.4404 (316L)							1													
	customer							9													consult
Design																					
	probe								1												
	screw-in version G1/2" open								A												
	screw-in version G3/4" flush								B												
Diaphragm																					
	ceramics Al ₂ O ₃ 99.9 %									C											
	customer									9											consult
Output																					
	RS485 Modbus RTU									L5											
	customer									9											consult
Seals																					
	FKM									1											
DVGW / KTW:	EPDM ¹									3T											
	customer									9											consult
Electrical connection																					
	PUR-cable (black, Ø 7.4 mm) ²										2										
DVGW / KTW:	TPE-U-cable (blue, Ø 7.4 mm) ^{1,2}										F										
	customer										9										consult
Accuracy																					
standard	0.35 % FSO										3										
option	0.25 % FSO										2										
	customer										9										consult
Cable length																					
	in m											9	9	9							
Special version																					
	standard																				0 0 0
	customer																				9 9 9
																					consult

¹ drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F)
² shielded cable with integrated ventilation tube for atmospheric pressure reference

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