

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

Optional versions

- ▶ accuracy: 0.25 % FSO
- ▶ drinking water certificate according to DVGW and KTW

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

Output signal	
Digital (pressure and temperature)	RS485 with Modbus RTU protocol

Supply	
Direct current	$V_s = 9 \dots 32 V_{DC}$

Performance	
Accuracy ¹	standard: $\leq \pm 0.35 \% \text{ FSO}$ option: $\leq \pm 0.25 \% \text{ FSO}$ others on request
Long term stability	$\leq \pm 0.1 \% \text{ FSO / year}$
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)	
Thermal error	$\leq 1.0 \% \text{ FSO}$ for nominal pressure ranges in compensated range 0 ... 70 °C

Permissible temperatures	
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)
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

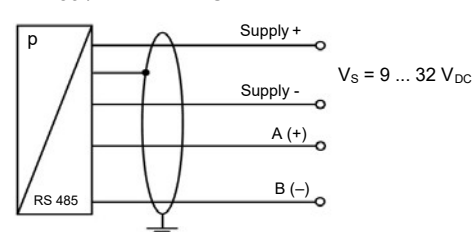
Materials (media wetted)	
Housing	stainless steel 1.4404 (316 L) others on request
Cable	TPE-U, blue (with drinking water approval) others on request
Seals (O-rings)	EPDM (with drinking water approval) others on request
Diaphragm	ceramics Al ₂ O ₃ 99,9 %
Protection cap	POM-C
Cable sheath	TPE-U

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. 7 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

Wiring diagram

RS485 / Modbus RTU



DCL 571

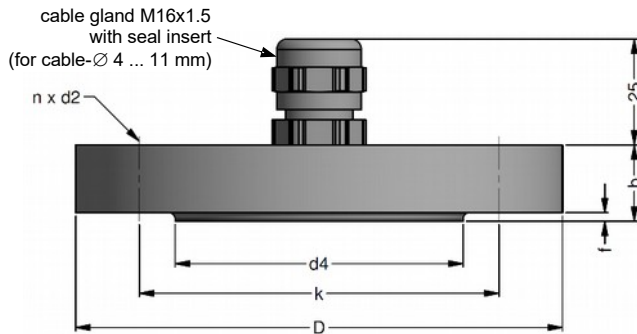
Stainless Steel Probe with RS485 Modbus RTU

Technical Data

Pin configuration	
Electrical connection	cable colours (IEC 60757)
Supply +	WH (white)
Supply -	BN (brown)
A +	GN (green)
B -	YE (yellow)
Shield	GNYE (green-yellow)
Dimensions (mm / in)	
protection cap removable	

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 (specified when ordering)					
		-		-	

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

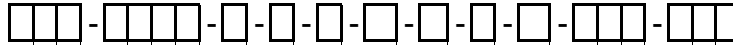


Technical data

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		

Ordering code DCL 571

DCL 571



Pressure																
	gauge in bar	3	6	0												
	gauge in mH ₂ O	3	6	1												
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										
	16	1.6	1	6	0	1										
	25	2.5	2	5	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
Diaphragm																
	ceramics Al ₂ O ₃ 99.9 %															C
	customer															9
																consult
Output																
	RS485 Modbus RTU															L5
	customer															9
																consult
Seals																
DVGW / KTW:	EPDM ¹															3T
	customer															9
																consult
Electrical connection																
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															999
Special version																
	standard															000
	customer															999
																consult

© 2019 The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.

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