

# 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 mH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

### 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 <sub>2</sub> 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 <sup>1</sup>	standard: $\leq \pm 0.35 \% \text{ FSO}$ option: $\leq \pm 0.25 \% \text{ FSO}$ <span style="float: right;">others on request</span>
Long term stability	$\leq \pm 0.1 \% \text{ FSO} / \text{year}$
Measuring rate	500 Hz
Delay time	500 msec

<sup>1</sup> 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 <span style="float: right;">in compensated range 0 ... 70 °C</span>

Permissible temperatures	
Permissible temperatures	medium / storage: -25 ... 85 °C

Electrical protection <sup>2</sup>	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

<sup>2</sup> additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request

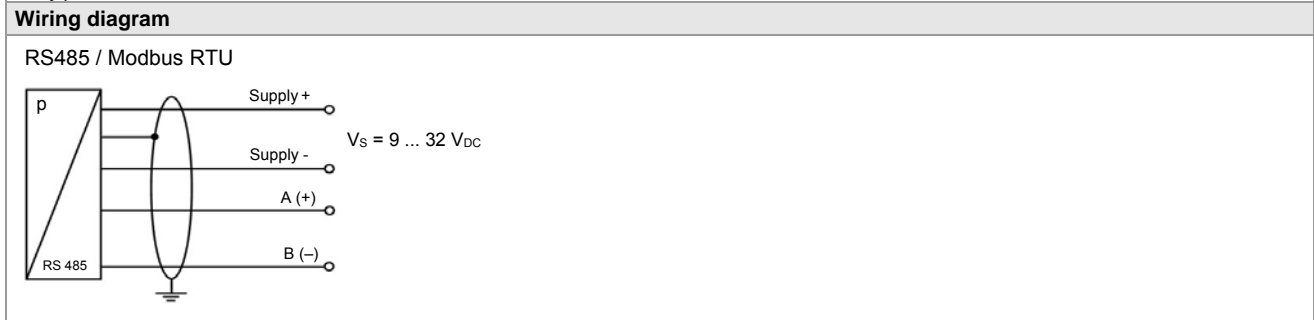
Electrical connection	
Cable with sheath material <sup>3</sup>	TPE-U (-10 ... 70 °C) blue Ø 7.4 mm (with drinking water approval)
Cable capacitance	signal line/shield also signal line/signal line: 160 pF/m
Cable inductance	signal line/shield also signal line/signal line: 1 µH/m
Bending radius	static installation: 10-fold cable diameter dynamic application: 20-fold cable diameter

<sup>3</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference

Materials (media wetted)	
Housing	stainless steel 1.4404 (316 L) <span style="float: right;">others on request</span>
Cable	TPE-U, blue (with drinking water approval) <span style="float: right;">others on request</span>
Seals (O-rings)	EPDM (with drinking water approval) <span style="float: right;">others on request</span>
Diaphragm	ceramics Al <sub>2</sub> O <sub>3</sub> 99,9 %
Protection cap	POM-C
Cable sheath	TPE-U

Miscellaneous	
Drinking water certificate <sup>4</sup>	according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)
Adjustable units	pressure: mmH <sub>2</sub> O, mmHg, psi, bar, mbar, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Pa, kPa, torr, atm, mH <sub>2</sub> 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

<sup>4</sup> only possible with EPDM seal in combination with TPE-U cable



# DCL 571

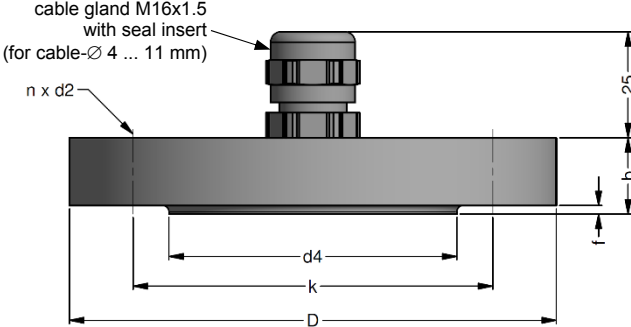
Stainless Steel Probe with RS485 Modbus RTU

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)	

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

**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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## Ordering code DCL 571

DCL 571



<b>Pressure</b>												
	gauge in bar	3	6	0								
	gauge in mH <sub>2</sub> O	3	6	1								
<b>Input</b>												
	[mH <sub>2</sub> 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
<b>Housing</b>												
	stainless steel 1.4404 (316L)						1					
	customer						9					consult
<b>Design</b>												
	probe						1					
<b>Diaphragm</b>												
	ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 %							C				
	customer							9				consult
<b>Output</b>												
	RS485 Modbus RTU							L5				
	customer							9				consult
<b>Seals</b>												
DVGW / KTW:	EPDM <sup>1</sup>							3T				
	customer							9				consult
<b>Electrical connection</b>												
DVGW / KTW:	TPE-U-cable (blue, Ø 7.4 mm) <sup>1,2</sup>								F			
	customer								9			consult
<b>Accuracy</b>												
standard	0.35 % FSO								3			
option	0.25 % FSO								2			
	customer								9			consult
<b>Cable length</b>												
	in m									9	9	9
<b>Special version</b>												
	standard									0	0	0
	customer									9	9	9
												consult

<sup>1</sup> drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F)

<sup>2</sup> shielded cable with integrated ventilation tube for atmospheric pressure reference