

# DCL 531

## Stainless Steel Probe with RS485 Modbus RTU

Stainless Steel 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 ... 250 mH<sub>2</sub>O

### Output signal

RS485 with Modbus RTU protocol

### Special characteristics

- ▶ diameter 26.5 mm
- ▶ small thermal effect
- ▶ excellent accuracy
- ▶ good long term stability

### Optional versions

- ▶ drinking water certificate according to DVGW and KTW
- ▶ cable protection via corrugated pipe
- ▶ different kinds of cables
- ▶ different kinds of seal materials

The stainless steel probe DCL 531 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 are transferred in binary form.

Basic element is a high quality stainless steel sensor with high requirements for exact measurement with good long term stability.

### Preferred areas of use are

#### Water / filtrated sewage



drinking water system, ground water level measurement, rain spillway basin pump and booster stations level measurement in container water treatment plants water recycling



#### Fuel and oil

fuel storage tank farm



**Modbus®**



# DCL 531

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)  |                           |
|                       |                           |

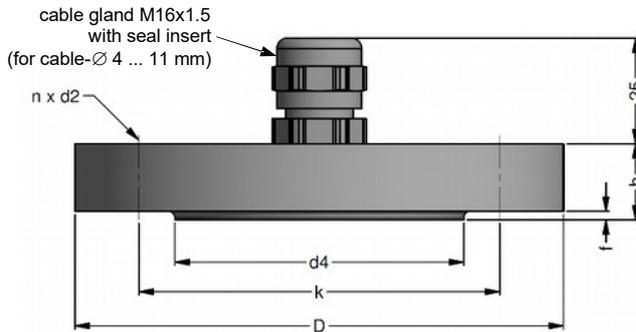
| Configuration Modbus RTU                               |     |   |   |   |   |
|--|-----|---|---|---|---|
| Standard configuration                                 | 001 | - | 1 | - | 1 |
| <b>Address</b>   |     |   |   |   |   |
| address  | 001 |   |   |   |   |
|  | ... |   |   |   |   |
|  | 247 |   |   |   |   |
| <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><br>(specified when ordering) |     |   |   |   |   |
|  |     | - |   | - |   |

# DCL 531

Stainless Steel Probe with RS485 Modbus RTU

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

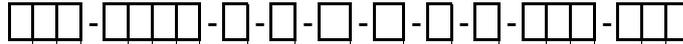
|   |   |
|---|---|
| Suitable for                                    | all probes with cable Ø 5.5 ... 10.5 mm                               |
| Material of housing                             | standard: steel, zinc plated optionally: stainless steel 1.4301 (304) |
| Material of clamping jaws and positioning 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       |               |

© 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.

## Ordering code DCL 531

DCL 531



|                              |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|------------------------------|---|------------|---|---|---|---|---|----|---|--|--|---|---|---|---------|
| <b>Pressure</b>              |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | in bar                                      | 4          | 5 | 0 |   |   |   |    |   |  |  |   |   |   |         |
|                              | in mH <sub>2</sub> O                        | 4          | 5 | 1 |   |   |   |    |   |  |  |   |   |   |         |
| <b>Input</b>                 | [mH <sub>2</sub> O]                         | [bar]      |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | 1.0   | 0.10       | 1 | 0 | 0 |   |   |    |   |  |  |   |   |   |         |
|                              | 1.6   | 0.16       | 1 | 6 | 0 |   |   |    |   |  |  |   |   |   |         |
|                              | 2.5   | 0.25       | 2 | 5 | 0 |   |   |    |   |  |  |   |   |   |         |
|                              | 4.0   | 0.40       | 4 | 0 | 0 |   |   |    |   |  |  |   |   |   |         |
|                              | 6.0   | 0.60       | 6 | 0 | 0 |   |   |    |   |  |  |   |   |   |         |
|                              | 10  | 1.0        | 1 | 0 | 0 |   |   |    |   |  |  |   |   |   |         |
|                              | 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 |   |    |   |  |  |   |   |   |         |
|                              | 160   | 16         | 1 | 6 | 0 | 2 |   |    |   |  |  |   |   |   |         |
|                              | 250   | 25         | 2 | 5 | 0 | 2 |   |    |   |  |  |   |   |   |         |
|                              | customer                                    |            | 9 | 9 | 9 |   |   |    |   |  |  |   |   |   | consult |
| <b>Housing</b>               |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | stainless steel 1.4404 (316L)               |            |   |   |   | 1 |   |    |   |  |  |   |   |   |         |
|                              | customer                                    |            |   |   |   | 9 |   |    |   |  |  |   |   |   | consult |
| <b>Diaphragm</b>             |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | stainless steel 1.4435 (316L)               |            |   |   |   | 1 |   |    |   |  |  |   |   |   |         |
|                              | customer                                    |            |   |   |   | 9 |   |    |   |  |  |   |   |   | consult |
| <b>Output</b>                |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | RS485 Modbus RTU                            |            |   |   |   |   | L | 5  |   |  |  |   |   |   |         |
| <b>Seals</b>                 |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | FKM   |            |   |   |   |   |   | 1  |   |  |  |   |   |   |         |
|                              | EPDM  |            |   |   |   |   |   | 3  |   |  |  |   |   |   |         |
| <b>DVGW/KTW:</b>             | EPDM <sup>1</sup>                           |            |   |   |   |   |   | 3T |   |  |  |   |   |   |         |
|                              | customer                                    |            |   |   |   |   |   | 9  |   |  |  |   |   |   | consult |
| <b>Accuracy</b>              |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | standard for P <sub>N</sub> ≥ 0.4 bar:      | 0.35 % FSO |   |   |   |   |   | 3  |   |  |  |   |   |   |         |
|                              | standard for P <sub>N</sub> < 0.4 bar:      | 0.50 % FSO |   |   |   |   |   | 5  |   |  |  |   |   |   |         |
|                              | option for P <sub>N</sub> ≥ 0.4 bar:        | 0.25 % FSO |   |   |   |   |   | 2  |   |  |  |   |   |   |         |
|                              | customer                                    |            |   |   |   |   |   | 9  |   |  |  |   |   |   | consult |
| <b>Electrical connection</b> |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | PUR-cable (black, Ø 7.4 mm) <sup>2</sup>    |            |   |   |   |   |   |    | 2 |  |  |   |   |   |         |
|                              | FEP-cable (black, Ø 7.4 mm) <sup>2</sup>    |            |   |   |   |   |   |    | 3 |  |  |   |   |   |         |
| <b>DVGW/KTW:</b>             | TPE-U cable (blue, Ø 7.4 mm) <sup>1,2</sup> |            |   |   |   |   |   |    | F |  |  |   |   |   |         |
|                              | customer                                    |            |   |   |   |   |   |    | 9 |  |  |   |   |   | consult |
| <b>Cable length</b>          |   |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
|                              | in m  |            |   |   |   |   |   |    |   |  |  |   |   |   |         |
| <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