



DCT 561

Industrial Pressure Transmitter with RS485 Modbus RTU

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

- ▶ from 0 ... 600 mbar up to 0 ... 600 b

Output signal

RS485 with Modbus RTU protocol

Special characteristic

- ▶ good thermal behaviour
- ▶ good long term stability
- ▶ reset function

Optional versions

- ▶ pressure port G 1/2" open port
PVDF for aggressive media
(up to 60 bar)
- ▶ oxygen application

The DCT 561 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 sensor technology of the DCT 561 is the same as those of the proven pressure transmitter DMK 331, whereby the DCT 561 is suitable for pasty, polluted and aggressive media as well as for low-pressure oxygen applications.

The modular concept of the pressure transmitter allows customized electrical or mechanical connections, so it is easy to adapt the DCT 561 to different conditions on-site.

Preferred areas of use are



Plant and machine engineering



Environmental engineering
(water - sewage - recycling)



Medical technology



Modbus®

| Input pressure range ¹ | | | | | | | | | | |
|-----------------------------------|----------|-----|---|-----|-----|----|----|----|----|--|
| Nominal pressure gauge [bar] | -1 ... 0 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | |
| Nominal pressure absolute [bar] | - | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | |
| Overpressure [bar] | 3 | 2 | 3 | 5 | 5 | 12 | 12 | 20 | 50 | |
| Burst pressure ≥ [bar] | 4 | 4 | 4 | 7 | 7.5 | 15 | 18 | 30 | 70 | |

| | | | | | | | | | |
|---|-----------------------------|-----|-----|-----|-----|-----|------|------|--|
| Nominal pressure gauge / absolute [bar] | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | |
| Overpressure [bar] | 50 | 120 | 120 | 200 | 400 | 400 | 650 | 800 | |
| Burst pressure ≥ [bar] | 75 | 150 | 180 | 300 | 500 | 750 | 1000 | 1100 | |
| Vacuum resistance | unlimited vacuum resistance | | | | | | | | |

¹ PVDF pressure port possible for nominal pressure ranges up to 60 bar

| Output signal | |
|--------------------|--------------------------------|
| Digital (pressure) | RS485 with Modbus RTU protocol |

| Supply | |
|----------------|---------------------------|
| Direct current | $V_S = 9 \dots 32 V_{DC}$ |

| Performance | |
|-----------------------|---|
| Accuracy ² | $\leq \pm 0.5 \% \text{ FSO}$ |
| Long term stability | $\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions |
| Measuring rate | 500 Hz |
| Delay time | 500 msec |

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) / Permissible temperatures | |
|--|--|
| Thermal error | $\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ |
| In compensated range | 0 ... 85 °C |
| Permissible temperatures ³ | medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 80 °C |

³ for pressure port in PVDF the medium temperature is -25 ... 60 °C

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

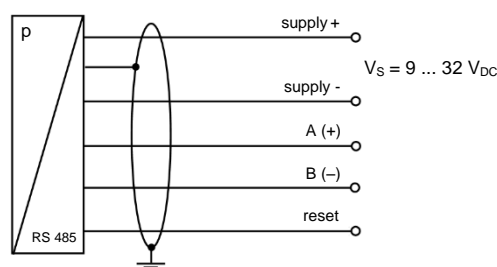
| Mechanical stability | |
|----------------------|--|
| Vibration | 10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |

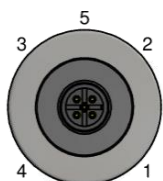
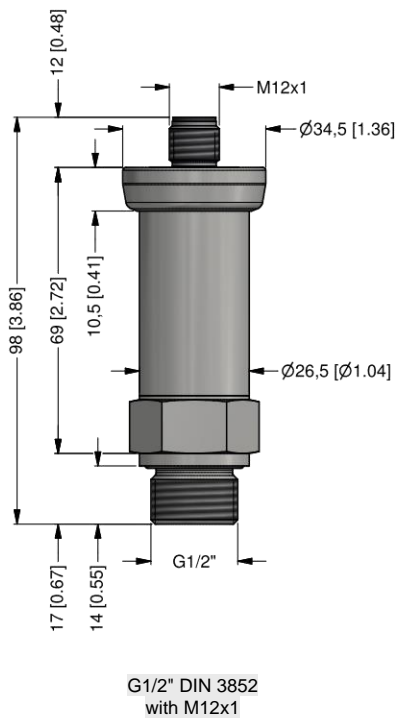
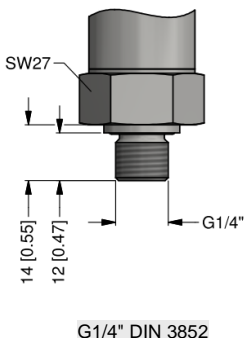
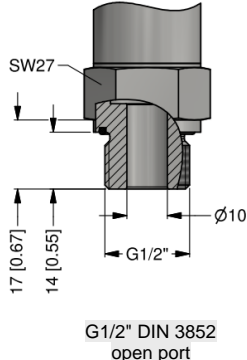
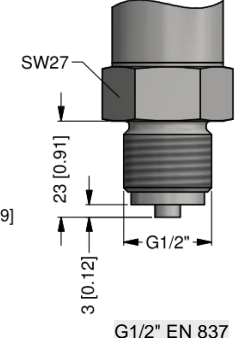
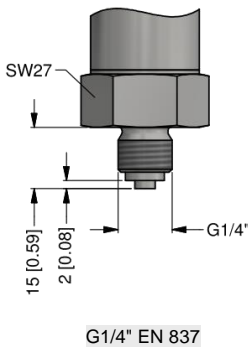
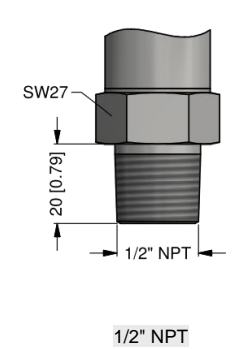
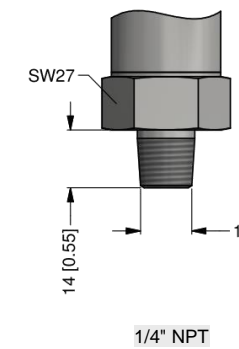
| Materials | |
|--------------------|--|
| Pressure port | standard: stainless steel 1.4404 (316 L) optional for G1/2" open port with nominal pressure range up to 60 bar: PVDF others on request |
| Housing | stainless steel 1.4404 (316L) |
| Seals | standard: FKM options: EPDM (for $p_N \leq 160 \text{ bar}$) others on request |
| Diaphragm | ceramic Al_2O_3 96 % |
| Media wetted parts | pressure port, seal, diaphragm |

| Miscellaneous | |
|---------------------------|--|
| Option oxygen application | for $p_N \leq 25 \text{ bar}$: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150 °C |
| Current consumption | max. 10 mA |
| Weight | approx. 210 g |
| Installation position | any |
| Protection class | IP 67 |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁴ |

⁴ This directive is only valid for devices with maximum permissible overpressure > 200 bar

| Wiring diagram | |
|----------------|--|
|----------------|--|



| Pin configuration | | |
|--|----------------------|---|
| Electrical connection | M12x1, metal (5-pin) |  |
| Supply + | 1 | |
| Supply – | 3 | |
| A (+) | 2 | |
| B (–) | 4 | |
| Reset | 5 | |
| Shield | plug housing | |
| Dimensions (mm / in) | | |
| <div><div><div><div>standard</div><div><p>G1/2" DIN 3852 with M12x1</p></div></div><div><div>options</div><div><div><p>G1/4" DIN 3852</p></div><div><p>G1/2" DIN 3852 open port</p></div><div><p>G1/2" EN 837</p></div><div><p>G1/4" EN 837</p></div><div><p>1/2" NPT</p></div><div><p>1/4" NPT</p></div></div></div></div></div> | | |

⇒ metric threads and other versions on request

| 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) | | | | | |
| | | - | | - | |

DCT 561
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RS485 Modbus RTU

Ordering code DCT 561

DCT 561

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| Pressure | | | | | | | | | | | |
|-----------------------|---|---|---|---|---|---|---|---|---|---|---------|
| | gauge | 2 | 5 | 0 | | | | | | | |
| | absolute | 2 | 5 | 1 | | | | | | | |
| Input | | | | | | | | | | | |
| | [bar] | | | | | | | | | | |
| | 0.6 | 6 | 0 | 0 | 0 | | | | | | |
| | 1.0 | 1 | 0 | 0 | 1 | | | | | | |
| | 1.6 | 1 | 6 | 0 | 1 | | | | | | |
| | 2.5 | 2 | 5 | 0 | 1 | | | | | | |
| | 4.0 | 4 | 0 | 0 | 1 | | | | | | |
| | 6.0 | 6 | 0 | 0 | 1 | | | | | | |
| | 10 | 1 | 0 | 0 | 2 | | | | | | |
| | 16 | 1 | 6 | 0 | 2 | | | | | | |
| | 25 | 2 | 5 | 0 | 2 | | | | | | |
| | 40 | 4 | 0 | 0 | 2 | | | | | | |
| | 60 | 6 | 0 | 0 | 2 | | | | | | |
| | 100 | 1 | 0 | 0 | 3 | | | | | | |
| | 160 | 1 | 6 | 0 | 3 | | | | | | |
| | 250 | 2 | 5 | 0 | 3 | | | | | | |
| | 400 | 4 | 0 | 0 | 3 | | | | | | |
| | 600 | 6 | 0 | 0 | 3 | | | | | | |
| | -1 ... 0 | X | 1 | 0 | 2 | | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | | consult |
| Output | | | | | | | | | | | |
| | RS485 Modbus RTU | | | | | L | 5 | | | | |
| Accuracy | | | | | | | | | | | |
| | 0.5 % FSO | | | | | | 5 | | | | |
| | customer | | | | | | 9 | | | | consult |
| Electrical connection | | | | | | | | | | | |
| | male plug M12x1 (5-pin) / metal | | | | | | | N | 1 | 1 | |
| | customer | | | | | | | 9 | 9 | 9 | consult |
| Mechanical connection | | | | | | | | | | | |
| | G1/2" DIN 3852 | | | | | | | 1 | 0 | 0 | |
| | G1/2" EN 837 | | | | | | | 2 | 0 | 0 | |
| | G1/4" DIN 3852 | | | | | | | 3 | 0 | 0 | |
| | G1/4" EN 837 | | | | | | | 4 | 0 | 0 | |
| | G1/2" DIN 3852 open pressure port | | | | | | | H | 0 | 0 | |
| | 1/2" NPT | | | | | | | N | 0 | 0 | |
| | 1/4" NPT | | | | | | | N | 4 | 0 | |
| | customer | | | | | | | 9 | 9 | 9 | consult |
| Seal | | | | | | | | | | | |
| | FKM | | | | | | | | 1 | | |
| | EPDM ² | | | | | | | | 3 | | |
| | customer | | | | | | | | 9 | | consult |
| Pressure port | | | | | | | | | | | |
| | stainless steel 1.4404 (316L) | | | | | | | | 1 | | |
| | PVDF ³ | | | | | | | | B | | |
| | customer | | | | | | | | 9 | | consult |
| Diaphragm | | | | | | | | | | | |
| | ceramics Al ₂ O ₃ 96% | | | | | | | | 2 | | |
| | customer | | | | | | | | 9 | | consult |
| Special version | | | | | | | | | | | |
| | standard | | | | | | | | 0 | 0 | 0 |
| | oxygen application ⁴ | | | | | | | | 0 | 0 | 7 |
| | customer | | | | | | | | 9 | 9 | 9 |

¹ metric threads and others on request

² possible for nominal pressure range $p_N \leq 160$ bar

³ PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar); permissible medium temperature: -25 ... 60 °C

⁴ oxygen application with FKM-seal up to 25 bar