

Pressure sensor CANopen® Models D-20-9, D-21-9

WIKA data sheet PE 81.39

CANopen®

Applications

- Hydraulics and pneumatics
- Automation engineering
- Industrial applications

Special features

- Integrated CANopen interface per DS-301
- Device profile DS-404
- Measuring ranges: 0 ... 250 mbar to 0 ... 1,000 bar
- Version with integrated Y-connector



Fig. left: D-20-9

Fig. centre: D-20-9 with integrated Y-connector

Fig. right: D-21-9 with DIP switch

Description

The model D-20-9 and model D-21-9 pressure sensors are the ideal solution in the field of industrial pressure measurement when a high-performance yet cost-effective solution with a CANopen interface is needed. These pressure sensors feature a high accuracy and flexibility with their alignment to the widest variety of measuring tasks.

All wetted parts are manufactured from stainless steel and are fully welded. There are no internal sealing elements, which would otherwise entail restrictions in the selection of the medium.

Bus technology

The integrated interface is designed in accordance with the DS-301 CANopen specification from the CiA user organisation. The DS-404 instrument profile used has been designed

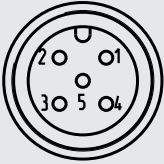
specifically for measurement and control instruments, which ensures compatibility with any CANopen system designed in accordance with CiA. A galvanic isolation of the output signals is available as an option.

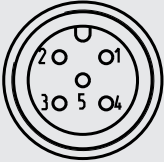
As communication services, amongst others, LSS, Node Guarding, Heartbeat, synchronous and asynchronous data transmission are supported. The baud rate can be set from 20 K baud up to 1 M baud. As an option, the configuration can be offered via DIP switches. For simple configuration, our EasyCom CANopen tool is available.

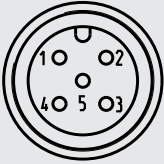
| Specifications | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-------------------------------|----|
| Measuring ranges [bar] | 0.25 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 |
| | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 1,000 (only for model D-20-9) | |
| Overload safety | Measuring ranges ≤ 1.6 bar: 5-fold Measuring ranges 2.5 ... 16 bar: 4-fold (measuring range 10 bar: 3-fold) Measuring ranges 25 ... 600 bar: 2-fold Measuring range 1,000 bar: 1.5-fold | | | | | | | | | |
| | {Vacuum, overpressure, +/- and absolute pressure are available} | | | | | | | | | |
| Material | Wetted parts Model D-20-9: Stainless steel Model D-21-9: Stainless steel (option: Hastelloy); O-ring: NBR (option: FPM/FKM or EPDM) Case: Stainless steel For other materials, see WIKA diaphragm seals product range | | | | | | | | | |
| Internal transmission fluid | Synthetic oil Halocarbon oil for oxygen versions (option) Listed by FDA for food industry (option) No transmission fluid for model D-20-9 with measuring range > 25 bar | | | | | | | | | |
| Power supply U+ | DC 10 ... 30 V | | | | | | | | | |
| Output signal | CANopen protocol in accordance with CiA DS-301 V. 4.02, device profile DS-404 V. 1.2 | | | | | | | | | |
| Power consumption | < 0.5 W < 0.7 W with galvanic isolation (option) | | | | | | | | | |
| Communication services | LSS (CiA DSP 305, version 1.1.1) services Configuration of the instrument address and baud rate Sync/Async, Node/Lifeguarding, Heartbeat Individually programmable filter in order to suppress, for example, specific resonant frequencies | | | | | | | | | |
| Response time (10 ... 90 %) | 1.5 ms (baud rate ≥ 125 K) | | | | | | | | | |
| Internal measuring rate | 1.000 Hz (adjustable up to approx. 4 Hz) | | | | | | | | | |
| Insulation voltage | DC 500 V | | | | | | | | | |
| Accuracy | ≤ 1 % of span ≤ 0.5 % of span (option) ≤ 0.3 % of span (option, not possible in combination with DIP switch) Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position, process connection facing downwards. In individual cases equipment exposed to strong electromagnetic fields with frequencies from 300 MHz to 700 MHz and 1 GHz to 2 GHz may show increased measuring errors of up to 3.2 %. To avoid such influences on the measuring signal do not operate the equipment in proximity to strong transmitting devices or radio installations, or use suitable sheath current filters. | | | | | | | | | |
| Non-linearity | ≤ 0.2 % of span (BFSL) per IEC 61298-2 | | | | | | | | | |
| Non-repeatability | ≤ 0.1 % of span | | | | | | | | | |
| Long-term stability | ≤ 0.2 % of span / year (at reference conditions) | | | | | | | | | |
| Permissible temperature ranges | Also meet EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3 | | | | | | | | | |
| Medium | -30 ... +100 °C -40 ... +125 °C (option) | | | | | | | | | |
| Ambient | -20 ... +80 °C | | | | | | | | | |
| Storage | -40 ... +100 °C | | | | | | | | | |
| Compensated temperature range | 0 ... 80 °C | | | | | | | | | |
| Temperature coefficients in the compensated temperature range | | | | | | | | | | |
| Mean TC of zero | ≤ 0.2 of span / 10 K | | | | | | | | | |
| Mean TC of span | ≤ 0.2 of span / 10 K | | | | | | | | | |

| Specifications | |
|--|---|
| Shock resistance | 500 g to IEC 60068-2-27 (mechanical shock) |
| Vibration resistance | Version with DIP switch: 20 g per IEC 60068-2-6 (vibration under resonance) Version without DIP switch: 10 g per IEC 60068-2-6 (vibration under resonance) |
| Electrical safety | Reverse polarity protection UB+ vs. UB- |
| Ingress protection | IP67 The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection. |
| Weight | approx. 200 g approx. 300 g with integrated Y-connector |
| Restrictions for oxygen version | Model D-21-9 not available. Model D-20-9 only possible with medium temperature -20 ... +60 °C and wetted parts in stainless steel or Elgiloy®. |

Electrical connections

| Circular connector M12 x 1 (5-pin) | | |
|---|---------------|---|
|  | Shield | 1 |
| | UB+ (CAN V+) | 2 |
| | UB- (CAN GND) | 3 |
| | CAN-High | 4 |
| | CAN-Low | 5 |

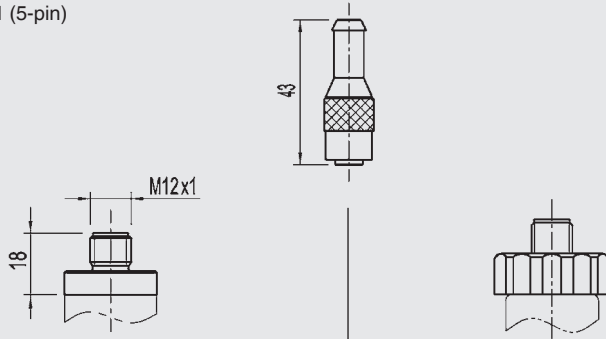
| Circular connector M12 x 1 (5-pin), Y-connector (male connector) | | |
|---|---------------|---|
|  | Shield | 1 |
| | UB+ (CAN V+) | 2 |
| | UB- (CAN GND) | 3 |
| | CAN-High | 4 |
| | CAN-Low | 5 |

| Circular connector M12 x 1 (5-pin), Y-connector (female connector) | | |
|---|---------------|---|
|  | Shield | 1 |
| | UB+ (CAN V+) | 2 |
| | UB- (CAN GND) | 3 |
| | CAN-High | 4 |
| | CAN-Low | 5 |

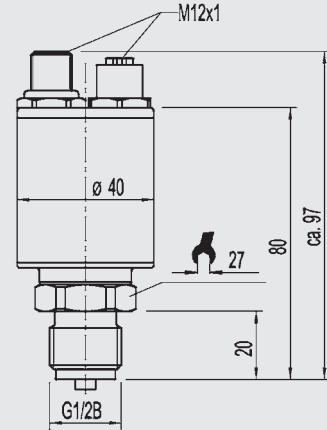
Dimensions in mm

Electrical connections

Circular connector
M12 x 1 (5-pin)

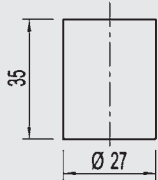


Two circular connectors M12 x 1 (5-pin)
Male and female connector (with integrated Y-connector)

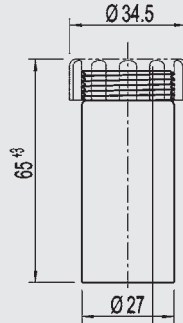


Case

Case with welded cover



Case with option of DIP switches or galvanic isolation

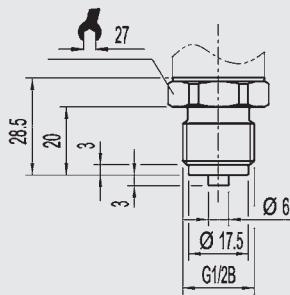


The variant depicted here can be combined with all of the process connections listed below.

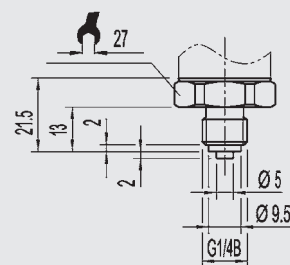
Others on request

Process connections D-20-9

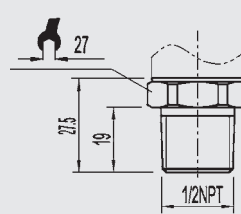
G 1/2 EN 837



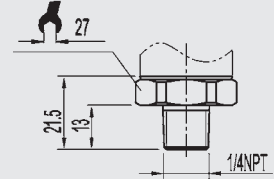
G 1/4 EN 837



1/2 NPT



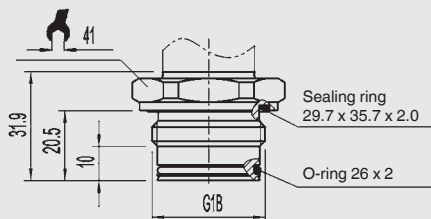
1/4 NPT



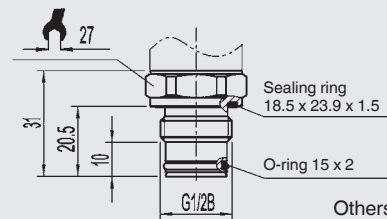
Others on request

Process connections D-21-9, flush

G 1
0 ... 0.1 to 0 ... 1.6 bar



G 1/2
from 1.6 bar



Others on request






For installation and safety instructions see the operating instructions for this product.

For information on tapped holes and welding sockets, please see Technical information IN 00.14 at www.wika.com

Accessories

| Description | Order number |
|--|--------------|
| Y-connector (M12 x 1 female connector – male/female connector) CAN | 2344526 |
| Terminating resistor (120 Ohm, M12 x 1 connector) CAN | 2308274 |
| Bus cable 0.5 m (M12 x 1 male/female connector) CAN | 2308240 |
| Bus cable 2 m (M12 x 1 male/female connector) CAN | 2308258 |
| Software EasyCom CANopen, incl. PCAN-USB adapter, cable set and power supply unit for configuration of CANopen transmitters. For Windows 98/ME/2000/XP/Vista | 7483167 |

Approvals

| Logo | Description | Country |
|---|--|-----------------------------|
|  | EU declaration of conformity <ul style="list-style-type: none"> ■ EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application) ■ Pressure equipment directive ■ RoHS directive | European Union |
|  | EAC EMC directive | Eurasian Economic Community |
|  | GOST Metrology, measurement technology | Russia |
|  | KazInMetr Metrology, measurement technology | Kazakhstan |
|  | Uzstandard Metrology, measurement technology | Uzbekistan |
| - | CRN Safety (e.g. electr. safety, overpressure, ...) | Canada |

Approvals and certificates, see website

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