DPS5000 CANBus

Digital pressure sensing platform

The new DPS5000 CANBus from Baker Hughes, part of the UNIK5000 family, offers integrated digital electronics to the performance level of the UNIK 5000 Pressure Sensing Platform to levels unmatched by traditional analogue sensors. It uses CANopen protocol, over which fully compensated readings of pressure and temperature are sent, as well as control of many functions of the device.

High quality

With 40 years of pressure measurement experience, our field-proven Druck technology is at the heart of the new platform, resulting in a range of high quality, high stability pressure sensors.

Expertise

We have the people and the knowledge to support your needs for accurate and reliable product performance; our team of experts can help you make the right sensor selection, guiding you and providing the help and tools you need. It is important that you ensure that the sensor materials and performance selected are suitable for your application.

Features

- Ranges from 200 mbar to 700 bar
- Total accuracy to ±0.1 % FS
- Stainless steel construction
- Wide temperature range -40 °C to 125 °C
- Fast update rate 1 ms
- Customer set filter setting
- Baud rate upto 1000k bit/s
- Excellent long-term stability

DPS5000 CANBus specifications

Operating pressure ranges

Gauge ranges

Any range from 200 mbar to 100 bar (3 to 1500 psi)

Ranges up 70 bar are enabled in negative gauge to the range or a maximum of -1 bar (-15 psi)

Absolute ranges

Any range from 700 mbar to 700 bar (10 to 10000 psi)

All ranges are zero based

Wet Dry differential

Any range from 200 mbar to 35 bar (3 to 500 psi)
All units are bidirectional

Wet Wet differential

Any range from 700 mbar to 35 bar (10 to 500 psi)
All units are bidirectional

Ordering

When ordering, specify maximum working pressure.
The lower pressure limit will be specified inline with rules stated above.

Over pressure

At least 2 × Pressure range with negligible calibration change

For differential versions, the negative side must not exceed its positive side by more than

2 × Pressure range up to a maximum of 15 bar

Containment pressure

4 × Pressure range for gauge ranges
(200 bar (3000 psi) maximum)

200 bar (3000 psi) for absolute ranges below 100 bar (1500 psi)

1200 bar (17000 psi) for absolute ranges above 100 bar (1500 psi)

For differential versions, the negative side must not exceed its positive side by more than

2 × Pressure range up to a maximum of 15 bar

Supply

Voltage: 5 Vdc to 32 Vdc
Current: <30 mA

Output/communications

CANopen V2.0B

CAN setting options

Node ID: Can be set to any integer between 2 and 127 (default setting is 2)

Baud rate: Can be set to 10k, 20k, 50k, 125k, 250k, 500k, 800k, 1000k (default setting is 250k)

Power on time

500 ms to acquisition from power on

Insulation resistance

>100 MΩ at 500 Vdc performance

Performance

Pressure performance

Accuracy over the calibrated temperature range including zero and span setting and the effects of non-linearity, hysteresis and repeatability

Gauge/absolute/wet dry differential

A3 Premium: ±0.1 % FS over -20 to 80 °C (-4 to 176 °F)

A2 Improved: ±0.2 % FS over -40 to 125 °C (-40 to 257 °F)

Wet wet differential

Premium: ±0.2 % FS over -20 to 80 °C (-4 to 176 °F)

Improved: ±0.4 % FS over -40 to 125 °C (-40 to 257 °F)

Increases pro-rata for pressures below 700 mbar

Temperature performance

Accuracy over the calibrated temperature range
±3 °C (6 °F) with 0.1 °C (0.2 °F) Resolution

Long term stability

±0.05 % FS/year typical

±0.1 % FS maximum at reference conditions

Increases pro-rata below 700 mbar (10 psi)

Line pressure effects (differential sensors only)

Zero shift: <±0.03% span/bar

Span shift: <±0.03% span/bar

Effects increase pro-rata for ranges below 700 mbar

Physical specifications

Environmental protection

IP67

Operating temperature range

-40 °C to 125 °C (-40 °F to 257 °F)

Pressure media

Fluids compatible with stainless steel 316L and Hastelloy C276

Statement in accordance with the European pressure equipment directive

Enclosure materials

Stainless steel 316L (body)

Pressure connectors

PA	G1/4 female
PB	G1/4 male flat
PE	1/4 NPT female
PF	1/4 NPT male
PJ	M14×1.5 60° Int Cone
PZ	M10×1 80° Int Cone

Other connectors may be available. Contact Baker Hughes to discuss your requirement.

Electrical connector

Option code	Description	IP rating
G	M12x1 5-PIN	-
6	BAYONET MIL-C-26482	-

Wiring details

Electrical connector	Pin	Function
M12x1 (5-PIN)	1	-
	2	+ VE Supply
	3	- VE Supply/CAN OV
	4	CAN Hi
	5	CAN Lo
BAYONET (MIL-C-26482)	A	+ VE Supply
	B	CAN Hi
	C	CAN Lo
	D	- VE Supply
	E	-
	F	CAN OV

General certifications

RoHS 2002/95/EC

CRN Certified OF 13650.513467890YTN for pressure ranges up to and including 100 bar

CE conformity

Pressure Equipment Directive 97/23/EC: Sound Engineering Practice

EMC directive 2004/108/EC

BS EN 61326-1:2013

BS EN 61000-6-1: 2007

BS EN 61000-6-3: 2007 + A1:2011

Ordering information

1) Select part number
Main product family
DPS Digital Output Transducer

5 5000 series

Diameter and material
0 25mm stainless steel

Electrical connection
G M12x1 5 Pin
6 MIL-C-26482

Electronics option
C CANBus

Compensated temperature range
TB -20 to 80 °C (See note 2)
TD -40 to 125 °C (See note 3)

Accuracy
A2 Improved
A3 Premium

Calibration
CC Full thermal

Hazardous area certification
H0 None

Pressure connector
PA G1/4 female (See note 1)
PB G1/4 male Flat
PE 1/4 NPT female (See note 1)
PF 1/4 NPT male
PJ M14x1.5 60° Int cone
PZ M10x1 80° Int cone

Sensor output
L Level
T Temperature
P Pressure
V Voltage
N None

DPS	5	0	G	C	TB	A3	CC	H0	PA	LTPV*

**Sensor Output Options configurable dependent upon options selected and choice of order. One output option (L, T, P or V) must be chosen*

2. Specify maximum working pressure unit and reference. Available units are:

Symbol	Description	Symbol	Description	Symbol	Description
bar	bar	mmH_2O	millimeters water	inHg	inches mercury
mbar	millibar	cmH_2O	centimeters water	Kgf/cm^2	Kilograms force/centimeters square
psi	pounds/square inch	mH_2O	meters water	atm	atmosphere
Pa	Pascal	in H_2O	inches water	Torr	torr
hPa	hecto Pascal	ft H_2O	feet water		
Kpa	Kilo Pascal	mmHg	millimeters mercury		

3. Specify node id and baud rate
(Default: node id-2, baud rate-250k)

Notes:

- Choose this pressure connector for range over 100 bar (1500 psi).
- Choose A3-Premium accuracy with this option.
- Choose A2-Improved accuracy with this option.

Typical order examples

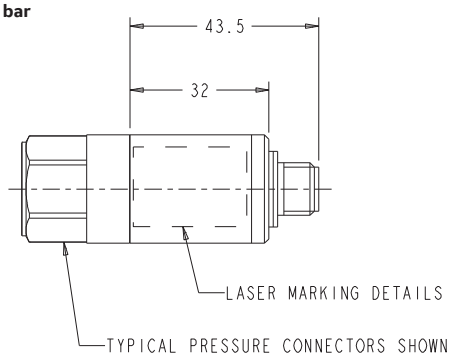
DPS 50GC – TB – A3 – CC – H0 – PZ – PTLV 700 mbar gauge Node id – 2, Baud rate – 250k PTLV - Pressure, Temperature, Level, Voltage Output in specific order.

DPS 50GC – TD – A2 – CC – H0 – PA – LTNN 300 mbar wet dry differential Node id – 2, Baud rate – 500k LTNN - Level and Temperature Output Specified only, in specific order

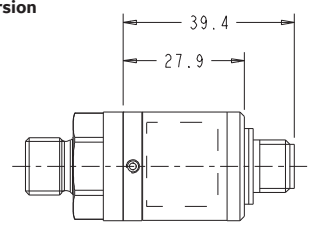
DPS 50GC – TB – A3 – CC – H0 – PB – VNNN 700 mbar gauge Node id – 2, Baud rate – 250k VNNN - Voltage Output Specified Only

Mechanical drawings

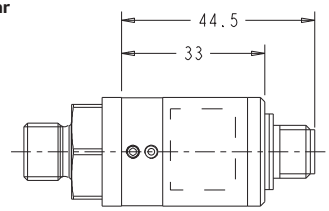
Pressure >100 bar



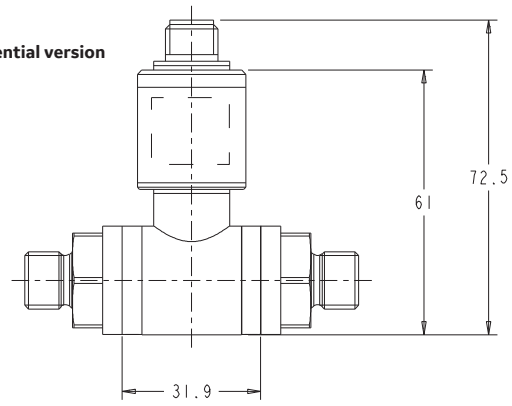
Pressure ≤ 100 bar
Absolute version



Pressure ≤ 100 bar
Gauge version



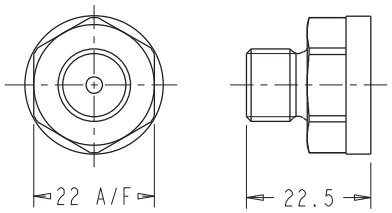
Differential version



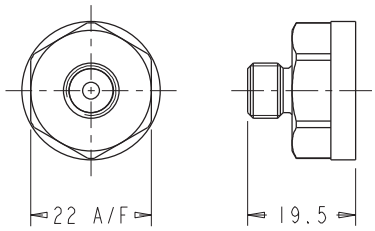
Note: All dimensions in millimeters.

Mechanical drawings

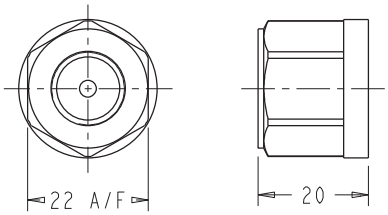
Pressure Connectors



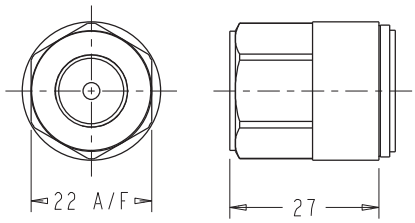
CODE PB: G1/4 MALE



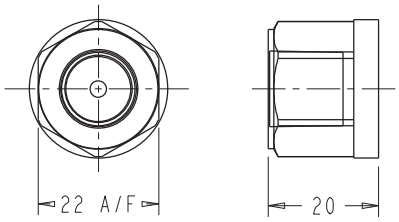
CODE PZ: M10x1 80° INT CONE



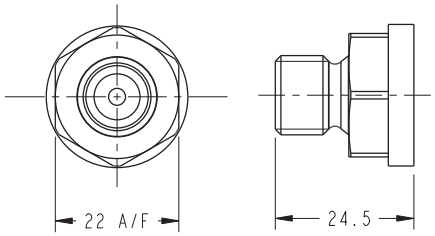
CODE PA: G1/4 FEMALE



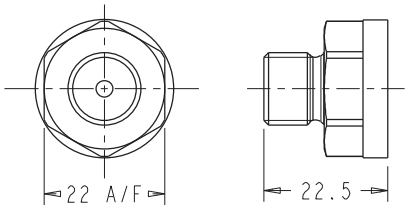
CODE: PA & PE (HIGH PRESSURE > 100bar):
G1/4 FEMALE AND 1/4 NPT RESPECTIVELY



CODE PE: 1/4 NPT FEMALE



CODE PJ: M14x1.5 60° INT CONE



CODE PF: 1/4 NPT MALE

Note: All dimensions in millimeters.

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