DPS5000 I2C

Digital pressure sensing platform

The new DPS5000 I2C from Druck, part of the UNIK5000 family, offers integrated digital electronics to enhance the performance level of the UNIK 5000 Pressure Sensing Platform to levels unmatched by traditional analogue sensors. It features an I2C digital interface, 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.

Bespoke as standard

Custom-built from standard components, manufacturing sensors to your requirements is fast and simple; each UNIK 5000 is a “bespoke” pressure sensing solution, but with the short lead times and competitive pricing you would expect from standard products.

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 70 mbar to 100 bar
- Total accuracy to ±0.1 % FS
- Barometric performance conforms to AWOS
- Stainless steel construction
- 3 V supply voltage
- Low power
- I2C digital output
- Sleep mode
- Hazardous area certifications
- Excellent long-term stability

DPS5000 I2C specifications

Operating pressure ranges

Gauge ranges

Zero-based ranges

- 50 mbar
- 70 mbar
- 130 mbar
- 150 mbar
- 200 mbar
- 350 mbar
- 400 mbar
- 700 mbar
- 800 mbar
- 1 bar
- 1.6 bar
- 2 bar
- 3.5 bar
- 7 bar
- 10 bar
- 20 bar
- 28 bar
- 35 bar
- 70 bar
- 100 bar

Absolute ranges

Calibrated ranges

- 0.8 to 3 bar
- 1 to 7 bar
- 2 to 12 bar
- 3 to 28 bar
- 5 to 40 bar
- 10 to 70 bar
- 18 to 90 bar
- 15 to 100 bar

Units continue to give readings down to zero pressure absolute.

Barometric range

Calibrated range

- 450 to 1100 hPa

Over pressure

- 2 × pressure range for absolute ranges and barometric range
- 4 × pressure range for gauge ranges

Containment pressure

- 6 × pressure range for gauge ranges (200 bar maximum)
- 200 bar for absolute ranges and barometric range

Supply

Supply voltage

2.7 to 3.6 Vdc

Current consumption

- <50 µA standby
- <2 mA average during acquisition

Output/communications

I2C slave device, 100 kHz maximum data rate

Power-on time

30 ms to acquisition from standby

Insulation resistance

500 Vdc ≥ 100 MΩ

Performance

Pressure performance

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

Gauge reference

±0.1 % FS

Increases pro-rata for pressure ranges below 700 mbar

Absolute reference

±0.2 % of reading (RDG) over calibrated range

Barometric range

±0.6 hPa over calibrated range (-40°C to +60°C)

Temperature performance

Accuracy over the operating temperature range ±3°C

Long-term stability

- ±0.05 % FS/year typical
- ±0.1 % FS/year maximum
- ±0.2% FS/5 year maximum (via special design consult factory)

All values at reference conditions

Increases pro-rata for pressure ranges below 700 mbar

Physical specifications

Environmental protection

- Internal version – not applicable
- External version – IP68 to 200 mH_2O

Operating temperature range

- -40°C to +85°C (-40°F to +185°F)
- -40°C to +80°C (-40°F to +176°F) for intrinsically safe version

Pressure media

- Fluids compatible with stainless steel 316L and Hastelloy C276.
- Statement in accordance with the European pressure equipment directive.
- Refer to document K0581 for product classification and regulatory information.

Oxidizer Warning:

Not suitable for media that has an oxygen concentration >21 % or other strong oxidizing agents. This product contains materials or fluids that may degrade or combust in the presence of strong oxidizing agents.

Enclosure materials

Stainless steel (body)

Pressure connectors

- PA G1/4 female
- PB G1/4 male flat
- PE 1/4 NPT female
- PF 1/4 NPT male
- PG 1/8 NPT male
- PS 1/4 Swagelok Bulkhead
- PW G1/4 female with Depth Cone
- PZ M10 x 1.0 80° int cone

Other connectors may be available. Contact Druck to discuss your requirement.

Electrical connector

Option code	Description	IP rating
0 Internal	None (flying leads)	-
3 External	Polyurethane cable	IP68 to 200 mH2O
4 External	Hytrel Cable	IP68 to 200 mH2O
N External	Kynar Cable	IP68 to 200 mH2O

Wiring details

Internal		External	Function
Pin	**Color**	**Color**	
1	Red	Red	Supply +ve
2	Yellow	Orange	I2C SDA
3	Green	Black	I2C SCL
4	Blue	White	0 V
5	Orange	Yellow	Do not connect
6	Black	Blue	Do not connect
-	-	Screen	Case

Regulatory compliance information

Australia /New Zealand

- EMC (ACMA RCM) - Compliant
- IECEx - Intrinsic Safety (optional, refer to approvals)

Brazil (external version only)

- Hazardous area Intrinsic Safety (optional, refer to approvals)

Canada

- CRN registered, OF18611.513467890YTN-Rev1 & OF18611.52 New design for Alberta, for operating pressures <= 350 bar (5076 psi)

Canada & USA (external version only)

- Hazardous locations Intrinsic Safety (optional, refer to approvals)

China

- RoHS - compliant

European Union: CE Marked (external version only)

- PED 2014/68/EU - Sound engineering practice
- ATEX Directive 2014/34/EU - (optional, refer to approvals)
- EMC Directive 2014/30/EU - compliant
- RoHS Directive 2011/65/EU - compliant
- WEEE 2012/19/EU - compliant
- REACH EC 1907/2006- compliant

Note: Refer to EU declaration of conformity for details on CE compliance standards

Hazardous area approvals

External version (apparatus)

- ATEX Ⓔx II 1G
- IECEx Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ 80°C)

Internal version (component)

- ATEX Ⓔx II 1G
- IECEx Ex ia IIC Ga

FM Approvals (Canada & US)

- Class I, Zone 0, AEx/Ex ia IIC T4 (-40°C ≤ Ta ≤ +80°C), Single Seal TYPE 4X, IP64

UL INMETRO

- Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +80°C)

Ordering information

Select part number

Main product family

DPS

Product diameter and material

50 — 25mm stainless steel

Electrical connector

0 — None (flying leads)

3 — Polyurethane cable (see note 1 and note 2)

4 — Hytrel Depth Cable (see note 1 and note 2)

N — Kynar Depth Cable (see note 1 and note 2)

Electronics option

D — Digital I2C bus

Compensated temperature range

TC — -40°C to +85°C (-40°F to +185°F)

TM — -40°C to +60°C (-40°F to +140°F) (see note 3)

Accuracy

A3 — Premium

Calibration

CC — Full thermal

Hazardous area certification

H0 — None

H1 — IECEx/ATEX intrinsically safe 'ia' group IIC

H6 — FM (C & US) intrinsically safe 'ia' group IIC

HS — IECEx/ATEX/FM (C & US) intrinsically safe 'ia' groups IIC [H1 + H6]

JA — INMETRO intrinsically safe 'ia' group IIC

Pressure connector

PA — G1/4 female

PB — G1/4 male flat

PE — 1/4 NPT female

PF — 1/4 NPT male

PG — 1/8 NPT male

PS — 1/4 Swagelok Bulkhead

PW — G1/4 female with Depth Cone

PZ — M10 x 1.0 80° int cone

DPS 50 3 D - TC - A3 - CC - H1 - PF **(Example part number)**

Approval codes and electrical connectors

Approval code	Electrical connector code			
	0	3	4	N
H0	Y	Y	Y	Y
H1	Y	Y	Y	Y
H6	N	Y	Y	Y
HS	N	Y	Y	Y
JA	N	Y	Y	Y

Ordering notes

Note 1: Maximum cable length 20 m

Note 2: CE marked option

Note 3: TM only available for Barometric range; Electrical connector option 0 only

Typical order example

DPS503D-TC-A3-CC-H1-PF 20 bar gauge

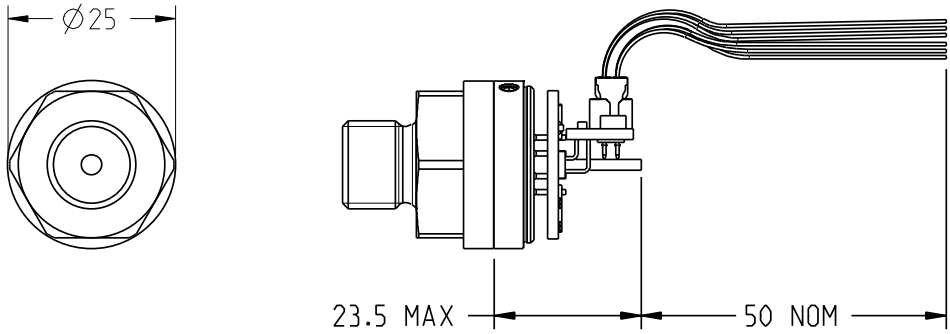
Accessories

6-Wire Cable 50 mm

6-Wire Cable 150 mm

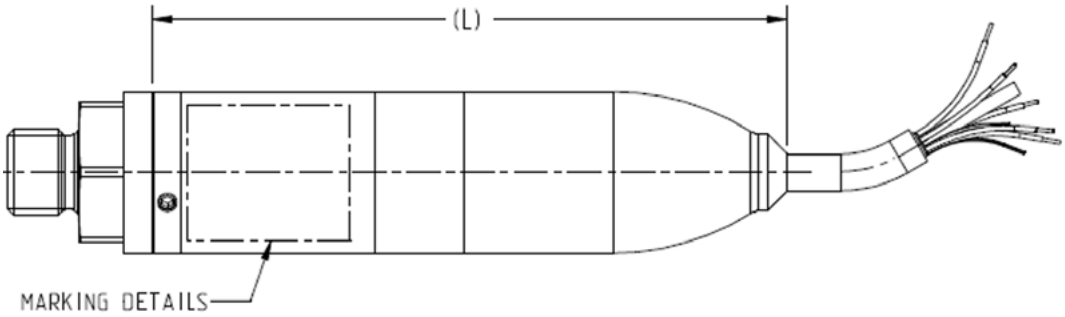
Mechanical drawings

Internal version



GAUGE SENSOR WITH PB PRESSURE
CONNECTOR SHOWN

External version



SENSOR WITH PB PRESSURE CONNECTOR SHOWN		
DPS503D	L	98.5
DPS504D/50ND	L	109.5

Note: All dimensions in millimeters.

Druck offers a portfolio of high accuracy, high performance test and calibration equipment that are ideal for the calibration and adjustment of Druck's pressure sensors.

Find out more at Druck.com

EP SRL
Via SAN Faustino 155/P
41124 MODENA

www.epsas.i
Tel. 059/357600
ep.ma@epsas,it

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