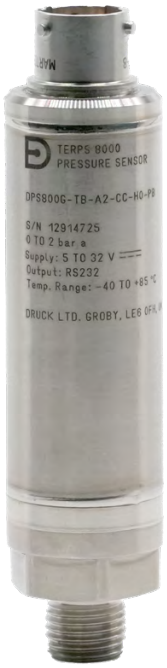
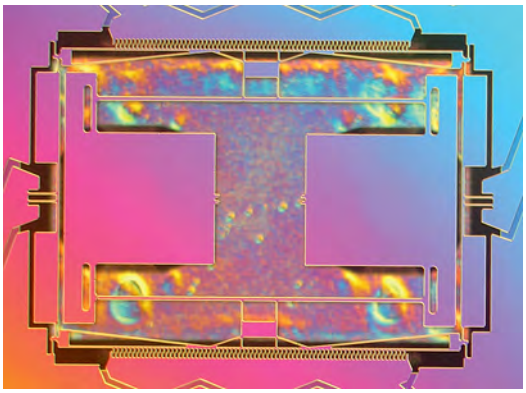




RPS/DPS 8100

High accuracy resonant pressure sensor

Since 1972, Druck has manufactured precision pressure sensors with a capability to meet critical applications in industrial, aerospace, oil and gas, and research environments. Today, Druck has continually worked to develop and improve on the performance of our pressure sensors to meet our customers' requirements.

The RPS/DPS 8100 incorporates the ground-breaking TERPS technology. TERPS is a resonant silicon pressure sensor technology platform that provides an order of magnitude greater accuracy and stability than current standard pressure measurement technologies.

In addition to providing the performance and packaging improvements available with TERPS, the RPS/DPS 8100 product line takes advantage of best practices to offer a wide range of pressure and electrical connections to enable a level of customization for your specific requirements never before available in the performance class of this sensor.

The combination of the power of the TERPS technology and the quality, reliability and flexibility of the RPS/DPS 8100 Series offers a truly unique solution for high accuracy and high stability pressure measurement requirements.

Features:

- High precision, ±0.01% FS over compensated temperature range
- High stability, ±50 ppm FS/year (typical)
- Wide temperature range, up to -55 to +125°C (-67 to 257°F)
- Multiple output configurations, RS232, RS485, USB 2.0, CANbus, Frequency & Diode (TTL)
- Wide selection of pressure and electrical connections to suit specific requirements
- Low acceleration effects

Druck
a Baker Hughes business

Specifications

Measurement

Base pressure ranges

- 0 to 2 bar (0 to 30 psi) absolute
- 0 to 3.5 bar (0 to 50 psi) absolute

Calibrated ranges

- Barometric: Up to 1.3 bar (18 psi) with minimum span of 350 mbar (5 psi)
- Low pressure: Up to 2 bar (30 psi) with minimum span of 0.5 bar (7 psi)
- High pressure: Up to 3.5 bar (50 psi) with minimum span of 1 bar (14 psi)

Note: Values in psi are approximate.

Alternative barometric ranges are available on request.

Higher pressure ranges are available in the RPS/DPS 8000 series.

Overpressure

2X FS

Pressure containment

7 bar (100 psi)

Supply and output

Electronics option	Supply voltage (Vdc)	Output	Current consumption[1] (mA)
1	5 to 32	Frequency[2] and Diode[3] (TLL)	<3.5
F	5 to 32	RS485	16.5 quiescent, 32 max
G	5 to 32	RS232	16.5 quiescent, 32 max
C	7.5 to 30	CANbus	25 quiescent, 32 max
V	4.8 to 5.2	USB 2.0	20 quiescent

1. Full temparature range
2. Square wave pressure signal, 25 kHz nominal, 3-9 kHz span
3. Voltage 0.4 to 0.8 V @ 25°C (77°F), typically –2 mV/°C

Response time

- TTL output: <25 ms for pressure change from 10% to 90% FS
- RS232/485/USB output: Dependent on the output update rate which is set by the user with a minimum of 10 ms (see manual K0473 for details)
- CANbus: Dependent on the output update rate which is set by the user with a minimum of 10 ms while maintaining specification (see manual K0533 for details)

Supply response

- TTL /RS232/485/USB: Accurate to specification within 500 ms of supply switch on, overall operating temperatures
- CANbus: Accurate to specification within 10 minutes of turning supply switch on

Electrical protection

RS232/485/CANbus/TTL: connecting Vsupply and GND between any combinations of pins on the connector will not damage the unit

USB: Complies with USB 2.0 peripheral specification.

Insulation

RS232/485/CANbus/TTL:
>100 Mohm @ 500 Vdc between all pins and case.

Performance

There are two levels of performance specification:

- Standard
- Improved

Specifications include combined effects of non-linearity, hysteresis, repeatability and temperature errors over the compensated temperature range and calibrated pressure range.

Accuracy code	Precision
A1- Standard	0.02% FS
A2- Improved	0.01% FS

- For barometric ranges with improved accuracy, precision is ±0.1 hPa max.
- For Frequency & Diode output the above accuracies are achievable by using a polynomial curve fit algorithm and coefficient data supplied with sensor.
- Sensors are calibrated against standards traceable to UKAS operating to better than 100 ppm.

Compensated temperature ranges:

There are four compensated temperature ranges available:

- -10 to +50°C
- -40 to +85°C
- -40 to +125°C (TTL, RS485 and CANbus only)
- -55 to +125°C (TTL, RS485 and CANbus only)

Temperature effects

All temperature effects are included in the accuracy statement.

Physical specifications

Long term stability

±0.01% FS/annum max. (±0.005% FS typical)

Note: Unless otherwise specified, specifications are at the reference conditions of 25°C (77°F) ±5°C (±9°F)

Orientation (g) sensitivity

Less than 0.05 mbar/g

Storage temperature range

As compensated temperature range

Operating temperature range

As compensated temperature range
(restricted by some electrical connector options)

Pressure media

Non-condensing dry gases compatible with 316L stainless steel, silicon, silicon dioxide, Fluorosilicon RV adhesive and glass

Ingress protection

See electrical connector section

Vibration

- BS EN 60068-2-6 (2008) sine sweeps 5 Hz to 2 kHz, levels to 20gn
- BS EN 60068-2-64 random 10 Hz to 2kHz to 4gn RMS for 1 hour each axis
- Less than 0.02% FS effect at any time

Shock

- DO-160E 9 (figure 7.2) 20 gn 11 ms terminal saw-tooth profile
- Negligible calibration change

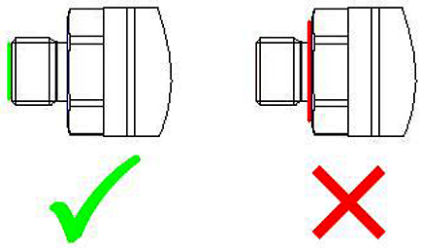
Pressure connector

Pressure connector should be one of:

- G1/4 female
- G1/4 male flat
- G1/4 male 60° internal cone
- G1/8 male 60° internal cone
- 1/4 NPT female
- 1/4 NPT male
- 1/8 NPT male
- M20 x 1.5 male (3mm bore)
- M14 x 1.5 60° internal cone
- M12 x 1 internal cone
- 7/16-20 UNJF male 74° external cone
- G1/2 male
- G1/4 quick connect
- 1/2 NPT male
- G1/4 male flat long
- 7/16-20 UNF female
- Depth cone (G1/4 female)
- 7/16-20 UNF male short flat
- 3/8-24 UNJF
- 1/4 VCR female
- 1/4 VCR male
- M12 B/head with 4 mm barb

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

Please ensure that only the intended sealing face is used when mounting the sensor. Failure to comply with this requirement may affect performance or calibration accuracy. Male threaded pressure connectors must not be sealed or constrained against the face at the base of the thread. The forward cone or flat face should always be used, as indicated below.



Electrical connector

Code no.	Description	Max operating temp. range		IP rating
		°C	°F	
0	No connector	-55 to +125	-67 to +257	-
1	Polyurethane cable	-40 to +85	-40 to +176	65
2	Raychem cable	-55 to +125	-67 to +257	65
3	Polyurethane depth	-40 to +85	-40 to +176	68
4	Hytrel depth	-40 to +85	-40 to +176	68
6	MIL-C-26482	-55 to +125	-67 to +257	*
C	1/2 NPT conduit	-40 to +85	-40 to +176	67
G	M12 X 1, 5-pin	-55 to +125	-67 to +267	*
H	PTFE cable (orange)	-55 to +125	-67 to +267	54
U	USB-C socket	-40 to +85	-40 to +176	-

* Hermetically sealed connectors with a maximum leak rate of 1 x 10-6 cc/s at 1 atmosphere. High IP rated mating connectors are available.

Certifications

- CE marked
- RoHS
- EMC standards:
  - BS EN 61000-6-1: 2007, susceptibility - light industrial
  - BS EN 61000-6-2: 2005, susceptibility - heavy industrial
  - BS EN 61000-6-3: 2007+A1:2011, emissions - light industrial
  - BS EN 61000-6-4: 2007+A1:2011, emissions - heavy industrial
  - BS EN 61326-1: 2013, electrical equipment for - measurement, control and laboratory use - EMC requirements
  - BS EN 61326-2-3:2013 requirements for pressure transducers

Connection details

Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
Flying leads	RED	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	YELLOW	FREQ	RS485 B	Rx	CAN Hi
	GREEN	+VE TEMP	RS485 A	Tx	CAN Lo
	BLUE	GROUND	GROUND	GROUND	SUPPLY -VE
	WHITE/ORANGE	EEPROM	RS485 RT	-	-
	BLACK	-VE TEMP	-	-	CAN 0V

Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
Polyurethane cable	RED	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	YELLOW	FREQ	RS485 B	Rx	CAN Hi
	BLUE	+VE TEMP	RS485 A	Tx	CAN Lo
	WHITE	GROUND	GROUND	GROUND	SUPPLY -VE
	ORANGE	EEPROM	RS485 RT	-	-
	BLACK	-VE TEMP	-	-	CAN 0V

Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
PU & Hytrel Cables (Depth)	RED	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	YELLOW	FREQ	RS485 B	Rx	CAN Hi
	BLUE	+VE TEMP	RS485 A	Tx	CAN Lo
	WHITE	GROUND	GROUND	GROUND	SUPPLY -VE
	ORANGE	EEPROM	RS485 RT	-	-
	BLACK	-VE TEMP	-	-	CAN 0V
	SCREEN	-	-	-	-

Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
Raychem Cable	RED	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	WHITE	FREQ	RS485 B	Rx	CAN Hi
	GREEN	+VE TEMP	RS485 A	Tx	CAN Lo
	BLUE	GROUND	GROUND	GROUND	SUPPLY -VE/CAN 0V
	BLACK	EEPROM	RS485 RT	-	-
	SCREEN	-	-	-	-

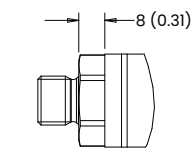
Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
Bayonet (MIL-C-26482)	A	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	B	FREQ	RS485 B	Rx	CAN Hi
	C	+VE TEMP	RS485 A	Tx	CAN Lo
	D	GROUND	GROUND	GROUND	SUPPLY -VE
	E	EEPROM	RS485 RT	-	-
	F	-VE TEMP	-	-	CAN 0V

Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
1/2" NPT Conduit with Plyurethane cable	RED	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	YELLOW	FREQ	RS485 B	Rx	CAN Hi
	BLUE	+VE TEMP	RS485 A	Tx	CAN Lo
	WHITE	GROUND	GROUND	GROUND	SUPPLY -VE
	ORANGE	EEPROM	RS485 RT	-	-
	BLACK	-VE TEMP	-	-	CAN 0V

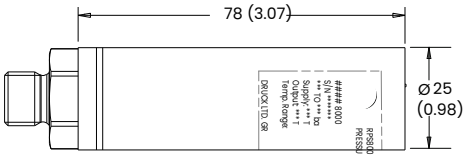
Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
M12 x 1	1	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	-
	2	FREQ	RS485 B	Rx	SUPPLY +VE
	3	GROUND	GROUND	GROUND	CAN Hi
	4	+VE TEMP	RS485 A	Tx	CAN Lo
	5	EEPROM	-	-	SUPPLY -VE/CAN 0V

Electrical Connection	Connection	Function			
		Frequency & Diode	RS485	RS232	Digital – CANbus
Orange PTFE Cable	RED	SUPPLY +VE	+VE SUPPLY	+VE SUPPLY	SUPPLY +VE
	YELLOW	FREQ	RS485 B	Rx	CAN Hi
	GREEN	+VE TEMP	RS485 A	Tx	CAN Lo
	BLUE	GROUND	GROUND	GROUND	SUPPLY -VE
	BLACK	EEPROM	RS485 RT	-	-
	WHITE	-VE TEMP	-	-	CAN 0V
	SCREEN	Tranducer Body	Tranducer Body	Tranducer Body	Tranducer Body

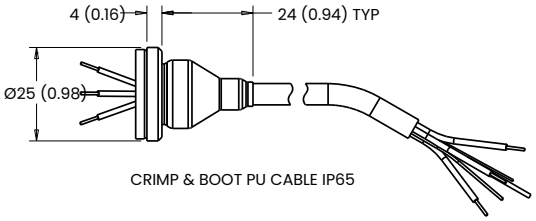
Dimensional drawings



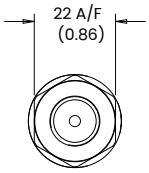
MALE PRESSURE CONNECTION

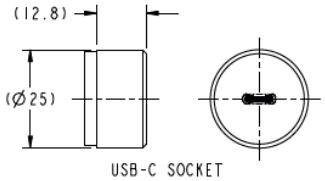


Core construction except electronics options F, G & V

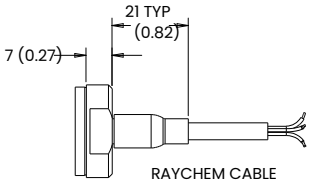


CRIMP & BOOT PU CABLE IP65

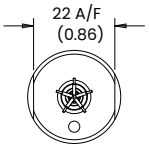


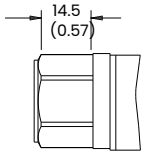


USB-C SOCKET

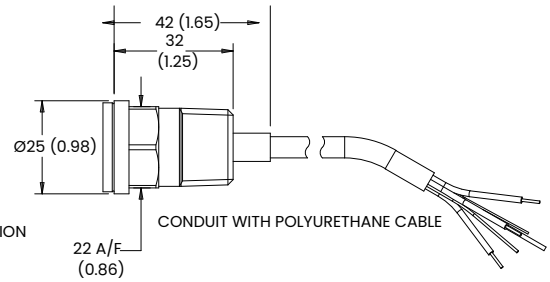


RAYCHEM CABLE

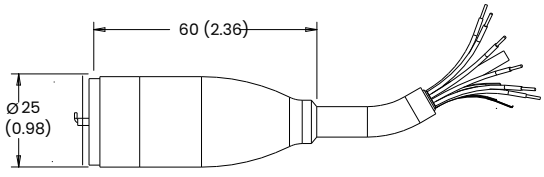




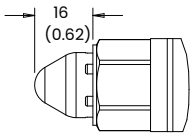
FEMALE PRESSURE CONNECTION



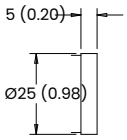
CONDUIT WITH POLYURETHANE CABLE



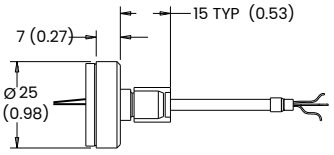
DEPTH CABLE



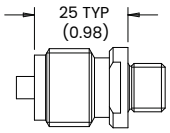
DEPTH CONE
PRESSURE ADAPTOR



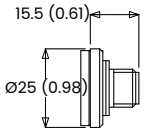
FLYING LEADS



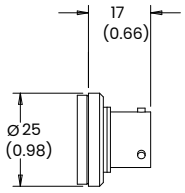
24 AWG 7/0.2 PTFE CABLE



OPTIONAL WELDED
PRESSURE ADAPTOR

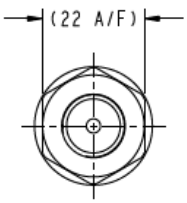


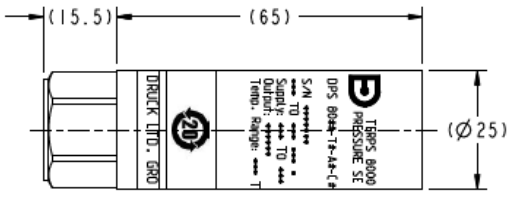
M12x1 5-PIN



BAYONET MIL-C-26482

Core construction electronics options F, G & V





Notes:

1. All dimensions are nominal lengths and are subject to change.
2. All dimensions are in millimeters (inches).
3. Other pressure and electrical connectors may be available. Please contact Baker Hughes.

Ordering information

(1) Select model code

Main product variant

RPS Resonant Pressure Sensor - Frequency and diode output **(Note 1)**

DPS Digital Pressure Sensor - Digital output **(Note 1)**

Product series

8 RPS/DPS 8100 series

Diameter, material and isolation

1 25mm stainless steel silicon exposed

Electrical connector

0 No electrical connector (Flying leads)
1 Polyurethane cable
2 Raychem cable
3 Polyurethane cable (Depth)
4 Hytrel cable (Depth)
6 MIL-C-26482 (6-pin shell size 10)
C 1/2" NPT conduit with polyurethane cable
G M12x1, 5-pin
H PTFE cable
U USB-C socket **(Note 3)**

Electronics option (Note 5)

1 Frequency and diode
F RS485
G RS232
C CANbus
V USB 2.0 **(Note 4)**

Compensated temperature range

TA -10 to +50 °C
TB -40 to +85 °C
TC -40 to +125 °C **(Note 2)**
TD -55 to +125 °C **(Note 2)**

Accuracy

A1 Standard: 0.02%
A2 Improved: 0.01%

Calibration

CC Full thermal calibration

Hazardous area approval

H0 None

Pressure connector

PA: G1/4 female
PB: G1/4 male flat
PC: G1/4 male 60 degree internal cone
PD: G1/8 male 60 degree internal cone
PE: 1/4 NPT female
PF: 1/4 NPT male
PG: 1/8 NPT male
PH: M20x1.5 male (3mm bore)
PJ : M14x1.5 60° internal cone
PK: M12x1 internal cone
PL: 7/16-20 UNJF male 74 degree external cone
PN: G1/2 male
PQ: G1/4 quick connect
PR: 1/2 NPT male
PT: G1/4 male flat long
PV: PV: 7/16-20 UNJF female
PW: Depth cone (G1/4 female)
PX: 7/16-20 UNF male short flat
PY: PY: 3/8-24 UNJF
RA: 1/4 VCR female
RF: 1/4 VCR male
P12: M12 B/head with 4mm Barb

RPS 8 1 4 1 - TA - A2 - CC - H0 - PA **[Typical model code]**

Note 1: RPS variants require Electronics Option Code '1'. DPS variants require electronics option code 'F', 'G', 'C' or 'V'.
Note 2: Not available for RS232 or USB electronics options.
Note 3: Only available with USB electronics option.
Note 4: Only available with USB-C socket connector.
Note 5: Maximum cable length: (1) Frequency & Diode - 10 m, (F) RS485 - 1000 m, (G) RS232 - 10 m, (C) CANbus - 1000 m. Integer values only, e.g. 1m (3 ft) cable. Minimum cable length is 1m (3 ft) if cable is supplied.

Ordering information (cont.)

2) State pressure range and units (e.g., 0 to 1.6 bar, 0 to 20 psi):

Unit options are:

Symbol	Description
bar	bar
mbar	millibar
psi	pounds/sq. inch
Pa	Pascal
hPa	hectoPascal
kPa	kiloPascal
MPa	megaPascal
mmH_2O	mm water
cmH_2O	cm water
mH_2O	metres water
inH_2O	inches water
ftH_2O	feet water
mmHg	mm mercury
inHg	inches mercury
kgf/cm^2	kg force/sq. cm
atm	atmosphere
Torr	torr

3) State cable lengths and units (e.g., 1 m cable, 3 ft cable) (only required on certain electrical connectors):

Note 5: Maximum cable length: (1) Frequency & Diode - 10 m, (F) RS485 - 1000 m, (G) RS232 - 10 m, (C) CANbus - 1000 m. Integer values only, e.g. 1m (3 ft) cable. Minimum cable length is 1m (3 ft) if cable is supplied.

Typical order examples:

RPS 8111-TA-A1-CC-H0-PA, 3.5 bara, 5 m cable

DPS 816F-TB-A2-CC-H0-PL, 750-1150 mbar

920-565K
BHCS38666A (10/2025)