

GE
Measurement & Control



RPS/DPS 8100 High Accuracy Pressure Transducers

For Meteorology Applications



GE's Druck RPS/DPS 8100 Pressure Transducer is a highly accurate and stable pressure sensor that is ideal for meteorology applications. Built using GE's new exciting TERPS technology to give 0.01%FS accuracy and 0.01%/year stability, it combines the quality and reliability of Druck's RPS/DPS Series to deliver excellent overall performance and ensure your weather station is the best in the market.



Increasing Importance of Weather Forecasting and the Meteorology Equipment Market

Forecasting weather is becoming increasingly important due to the rise in extreme weather events. Since 1970, there have been over 8,835 weather related disasters. Meteorological science and weather services are constantly improving in order to provide better and longer forecasts as our safety and global trade and transport links depend on accurate predictions.

This drive for improved forecasting and wider weather data coverage is increasing demand in the weather equipment market. The meteorological and weather forecasting system market was estimated to be \$1.43 billion in 2014 and to grow to \$1.8 billion by 2020.

When designing a weather station, one of the most significant instruments a meteorologist will consider is the pressure sensor. As a barometer forms the heart of the weather station, it is important to select the right barometer to enable your weather station to be the best in the market. The World Meteorological Organisation (WMO) and the FAA's Automated Weather Observing Systems for Non-Federal Applications have set the standards which all weather stations should meet. However, some meteorologists still require customised weather systems to help meet their unique needs. The RPS/DPS 8100 exceeds all the requirements set by WMO and FAA and meets the unique needs of meteorologists.



Key Messages:

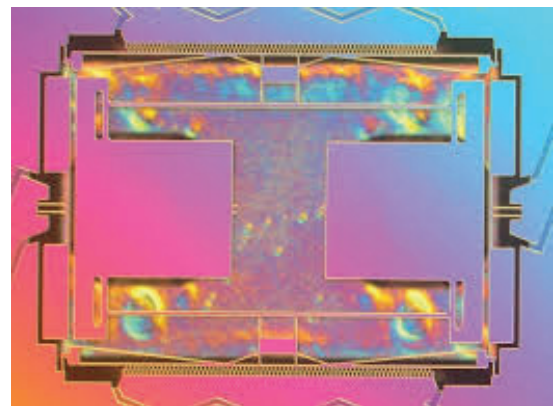
- Increasingly large and competitive meteorology market
- Sensor Standards set by WMO & FAA
- Increasing need for higher accuracy sensors
- The Barometer is one of the most significant instruments within the weather station

RPS/DPS 8100 Specification

GE's Druck RPS/DPS 8100 pressure transducer incorporates the latest TERPS technology. Using a resonant silicon sensor technology platform, it delivers accuracy and stability that are an order of magnitude greater than current pressure measurement technologies. The use of optimised resonator geometry, allows it to operate in even the harshest environments.

RPS/DPS 8100 Product Features & Benefits

- Barometric pressure to an accuracy of +/- 0.1mbar (0.1hPa) over the compensated temperature range.
- High stability, better than ± 100 ppm FS/Year
- Wide temperature range, -40°C to $+85^{\circ}\text{C}$ (-40°F to 185°F)
- Multiple units e.g. mbar, hPa and in Hg
- Configurable pressure ranges e.g. 500-1080 mbar, 750-1150 mbar
- Customisable to your specific OEM requirements
- Multiple output configurations, TTL and Diode, RS-232 and RS-485
- Wide range of pressure & electrical connections
- Designed with brand new TERPS technology



+/-0.1 mbar

Barometric
Ranges

TERPS

-40 to
+ 85°C

$\pm 0.01\%$
ppm FS

Highly Accurate, Stable & Reliable

The World Meteorological Organisation and the FAA have each set out important standards for weather equipment in key applications. However, today many barometers fail to meet the highest standards in real application in the field. Due to the increasingly competitive nature of the industry, it has never been more important to select a barometer that will enable your weather station to be the best in the market and to meet these important standards. The RPS/DPS 8100 will do just that.

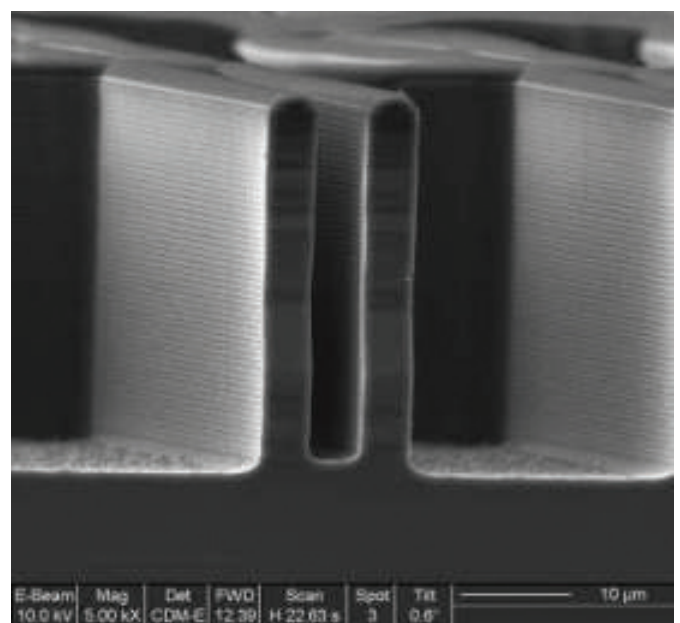
World Meteorological Organisation Requirements:

- **Measuring Range:** 0.5-1.08 bar (500-1080 hPa) both station pressure & mean sea-level pressure
- **Required Target Uncertainty:** 0.1 hPa
- **Reporting Resolution:** 0.1 hPa
- **Sensor Time Constant:** 20 s
- **Output Averaging Time:** 1 min

FAA Automated Weather Observing Systems for Non-Federal Applications

- **High Pressure Altitude Range:** 1068 hPa
- **Low Pressure Altitude Range:** 595 hPa
- **Pressure Range:** +1.5 to -3.0 inHg
- **Accuracy:** 0.6 hPa at all altitudes from -100 to +10,000 feet mean sea level
- **Maximum Error:** 0.6 hPa
- **Resolution:** 0.03 hPa
- **Differential Accuracy:** 0.6 hPa
- **Maximum Drift with Time:** 0.6 hPa

The two tables on the left describe key aspects of the WMO and FAA's standards for weather equipment. These are becoming the core standards that define the performance of a high quality weather station. Today many weather stations don't meet these standards or only meet them in stable, laboratory conditions – not in the field. Customers are constantly demanding better and more accurate weather stations and demanding stations that meet these global standards in the real world. That's why GE has designed our sensor to meet these criteria. Not just in the lab, but in the field and with the stability to maintain these standards year after year.



E-Beam	Mag	Det	FWD	Scan	Spot	Tilt	Scale
10.0 kV	5.00 kX	CDM-E	12.39	H 22.03 s	3	0.6°	10 µm

Trench Etched Silicon

Why Use GE's RPS/DPS 8100 Sensor

With the competitive nature of the market, the increasing number of damaging weather events and the requirements of WMO and FAA, selecting a barometer has become increasingly significant over the past few years.

GE engineers have designed the RPS/DPS 8100 pressure sensor to ensure your weather station is the best in the market. As well as offering unique customization functionality, the RPS/DPS 8100 is one of the very few sensors that incorporate TERPS technology and be capable of achieving 0.01% FS accuracy and 0.01%/year stability. The results are not only accurate in a controlled environment but also accurate in the real operating field. Additionally, each sensor is built to operate in harsh and varied environments ensuring a long life in any environment.

1. Long-Term Stability & Reliability

Incorporating the new and improved TERPS technology ensures each unit retains performance and requires less calibration. A longer life reduces the total cost of ownership in addition to providing more accurate weather forecasts.

2. Supply Chain Accuracy

Working in a fast paced environment, we understand the importance of fast and punctual delivery for OEM customers. GE will work with you to develop an appropriate delivery schedule:

Small Quantity: Fast Delivery

Large Quantity: Punctual Delivery

Customized Sensors: Punctual Delivery

3. Responsive Customer Support

Our Technical Support Staff are happy to assist you in choosing and customizing your RPS/DPS 8100 Sensor, and to ensure it meets your individual needs. In addition to the pre-purchase assistance, GE also provides a responsive after-sale support service.



TERPS Technology

The RPS/DPS 8100 incorporates TERPS technology. TERPS -Trench Etched Resonant Pressure Sensors - is a new silicon sensing technology that delivers unprecedented levels of accuracy and stability. TERPS uses a resonating silicon pressure sensor, which exploits the naturally occurring perfect elasticity of the single crystalline structure. With no imperfections, performance is radically enhanced with the RPS/DPS 8100.

- **Incredible Resonance Performance**

At $\pm 0.01\%$ FS (100ppm) precision and stability, TERPS delivers ten times better performance than standard silicon sensors.

- **Low Cost, High Performance**

More resilient than quartz, TERPS provides quartz accuracy and stability at a fraction of the cost.

- **Ideal For Challenging or Remote Environments**

The use of glass-to-metal seals allows the sensor to be packaged for applications in challenging environments.

- **Product Flexibility at Short Lead Times**


TERPS can be produced with a wide range of variable features including outputs, electrical connectors and pressure ranges.

Other Applications:

- Oil & Gas
- Oceanography
- Aerospace
- Hydrology
- Power Generation
- Industrial
- Military

TERPS Inside

The TERPS element delivers 10x accuracy & stability



TERPS is housed in a traditional sensor package for reliable operation in rugged & harsh environments

Flexible design & innovative resonating silicon pressure technology combined in a sensor

Customize to suit your specific needs

The RPS/DPS 8100 Series offers a truly unique solution for high accuracy and high stability pressure measurement requirements. In addition to providing the performance packaging improvements available with TERPS, the RPS/DPS 8100 product line takes advantage of the best practices to offer a wide range of pressure and electrical connections to enable a level of customization for your specific requirements.

[1] Select Model Number

Main Product Variant

RPS Resonant Pressure Sensor – Frequency & Diode Output [Note 1]

DPS Digital Pressure Sensor – Digital Output [Note 1]

Product Series

8 RPS/DPS 8000 Series

Diameter, Material & Isolation

1 25MM Stainless Steel Silicon Exposed

Electrical Connector

- 0 No Electrical Connector
- 1 Polyurethane Cable
- 2 Raychem Cable
- 3 Polyurethane Cable (Depth)
- 4 Hytrel Cable (Depth)
- 6 ML-C-26482 (6-pin Shell Size 10)
- C 1/2* NPT Conduit with Polyurethane Cable
- G M12x15-Pin
- H PTFE Cable (Orange)

Output Option

- 1 Frequency & diode
- A RS485
- B RS232

Compensated Temperature Range

- TA -10 to +50°C
- TB -40 to +85°C

Accuracy

- A1 – Standard 0.02%
- A2 – Improved 0.01%

Calibration

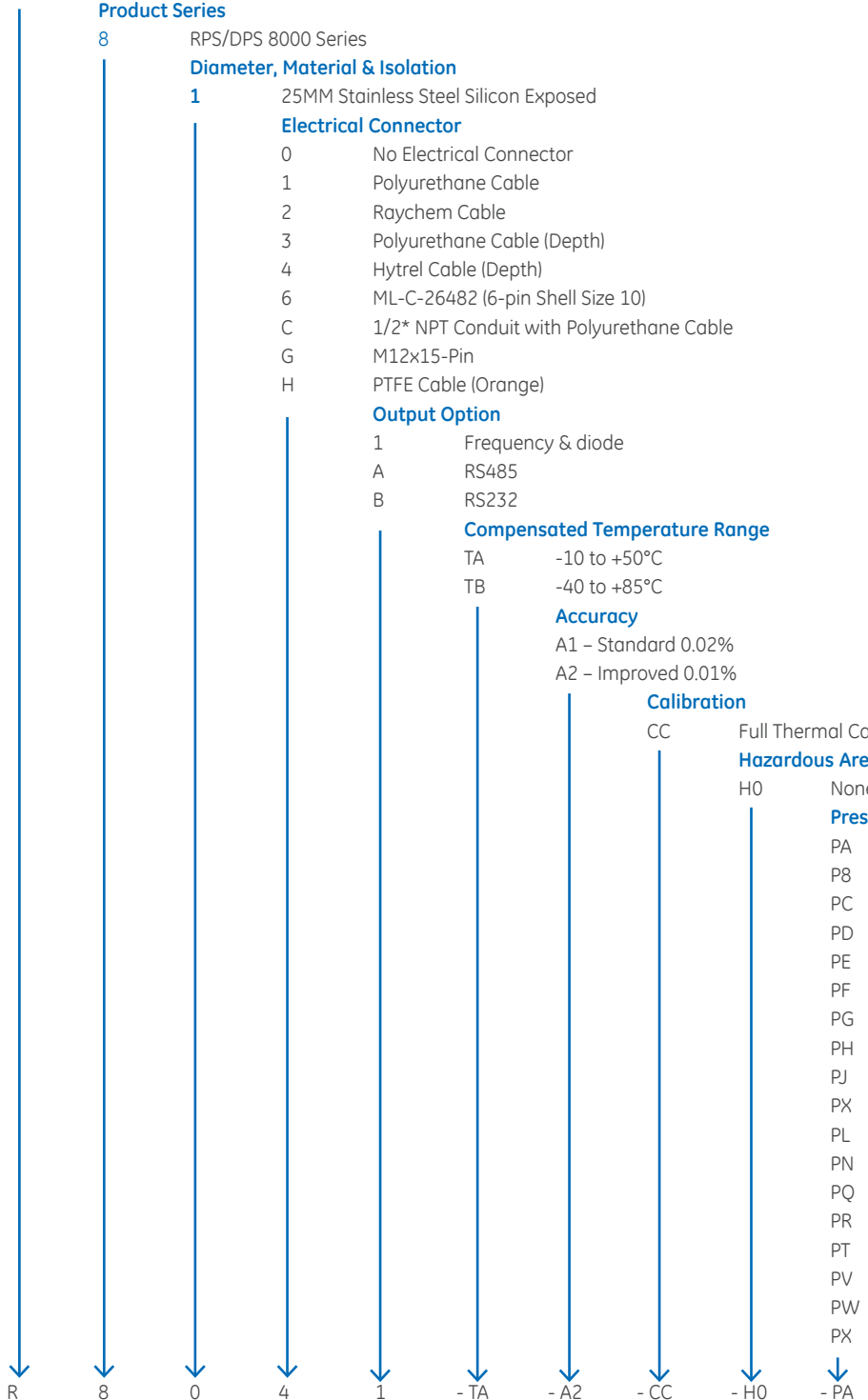
- CC Full Thermal Calibration

Hazardous Area Approval

- H0 None

Pressure Connector

- PA G1/4 Female
- P8 G1/4 Male Flat
- PC G1/4 Male 60 Degree Internal Cone
- PD G1/8 Male 60 degree Cone
- PE 1/4 NPT Female
- PF 1/4 NPT Male
- PG 1/8 NPT Male
- PH M20x1.5
- PJ M14x1.5 60* Internal Cone
- PX M12x1 Internal Cone
- PL 7/16-20 UNJF Mole 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 7/16-20 UNF Female
- PW Depth Cone IG1/4 Female
- PX 7/16-20 UNF Male Flat



Typical Model Number

*Note 1: RPS variants require Output Option Code 1. DPS variants require Output Option Code 'A' or 'B'

For more information, please visit www.gemasurement.com

Other Pressure Products from GE

GE Measurement & Control is a leading innovator in sensor-based measurement, inspection, asset condition monitoring and radiation measurement solutions that deliver accuracy, productivity and safety to customers in a wide range of industries, including Oil & Gas, Power Generation, Aerospace, Transportation & Healthcare.

Pressure Indicators and Controllers



PACE Series

Pressure Indicators and Controllers



Pressure Calibrators



Multifunction Calibrators



Process Industry Test Tools

High Performance & High Accuracy Pressure Sensors

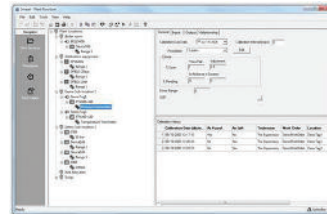


UNIK 5000 Sensor 0.1% accuracy Range



Sector specific pressure sensors e.g. oil and gas & aerospace

Calibration Management Software



Intecal v10 & 4Sight Calibration Management Software



For more information on the RPS/DPS 8100, please visit our website at www.gemeasurement.com

BR-230A