

Accuracy in all conditions

Precise meteorology data,
whatever the weather

With extreme weather events on the rise, accurate forecasting is more critical than ever. Druck's barometric pressure sensors deliver precise results in the harshest climates.



Back in 1643, Evangelista Torricelli noticed that when the level dropped in a glass tube filled with Mercury, bad weather was on the way. He had invented the barometer.

Measuring atmospheric pressure has since become vital across many sectors. Different technological solutions offer their own unique advantages for each application.

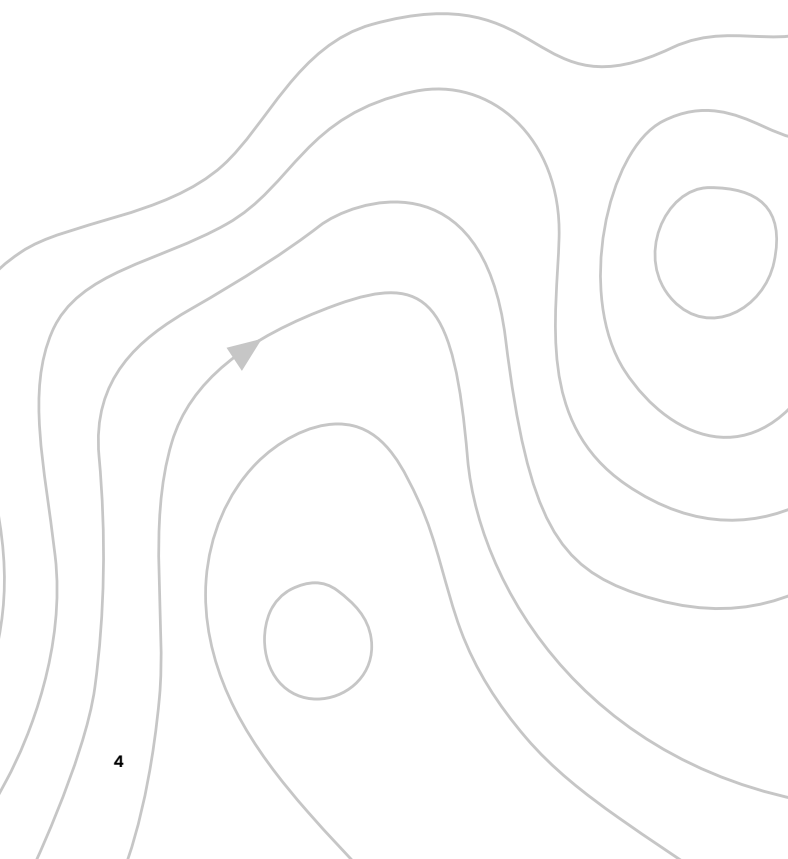
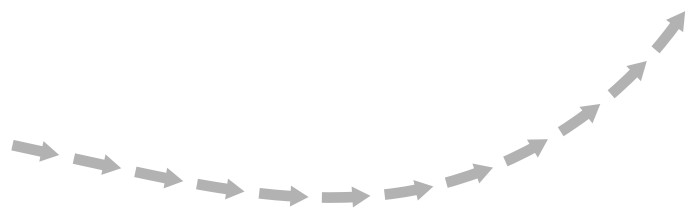


Measuring weather forecasts have become increasingly necessary to help prevent catastrophic damage and loss of life through being able to provide early warnings. Weather forecasts are a vital component in many of the processes around the globe, from farming to sport, there is a need to accurately gauge the weather conditions.



In this brochure, we outline the challenges of some of these scenarios – and reveal how Druck's pressure measurement technology optimises results even in extreme conditions.

Accurate measurement is particularly important in the following three areas:



1

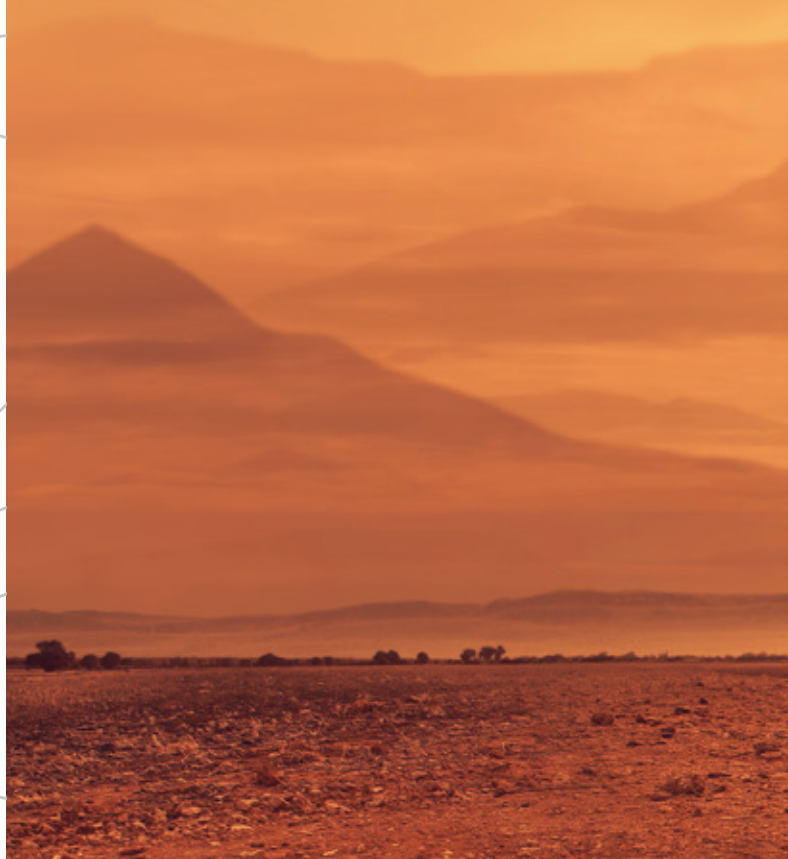
Forecasting the weather

Constant improvements in meteorological science and weather services enable ever more accurate and longer-range forecasts.

Essential for global trade and transport, these are also increasingly vital to mitigate the risks of extreme weather events, with over 10,000 weather-related disasters since 1970.

Weather data collection is a \$2 billion industry. It relies on precise, robust and reliable technology that delivers both quality and quantity of data as efficiently as possible.

Barometric pressure is one of the key variables for weather prediction, and the World Meteorological Organisation (WMO) has set the bar high in terms of the accuracy required.



2

Landing aircraft safely

Aircraft use variations in atmospheric pressure to calculate their altitude, making accurate readings critical.

In recent years, increasingly accurate systems have enabled reduced vertical separation between aircraft, increasing the volume of air traffic that can safely navigate busy airspace.

Landing aircraft use ground pressure readings to calibrate their measurements to the local conditions, which can vary significantly day to day, even hour by hour.

Atmospheric pressure must be measured in location and communicated to the aircraft during approach. However, the accuracy required varies significantly: large international airports, small local airfields and helicopter pads on ships have radically different requirements.



3

Industrial applications

Smart Cities deploy modern technology to enhance decision making and quality of life for its population.

Smart Cities are those which use data and technology to improve almost every aspect of their citizens' lives; from what clothes they wear, to monitoring the impact of climate on its people and moving towards net-zero carbon emissions.

The growth of Smart Cities demands the most up to date technology to perform a range of functions, including accurately predicting the weather. This early and accurate weather forecasting can be used to communicate early warning systems across the population to support flood defences or evacuate civilians.



The challenges of accurate meteorology

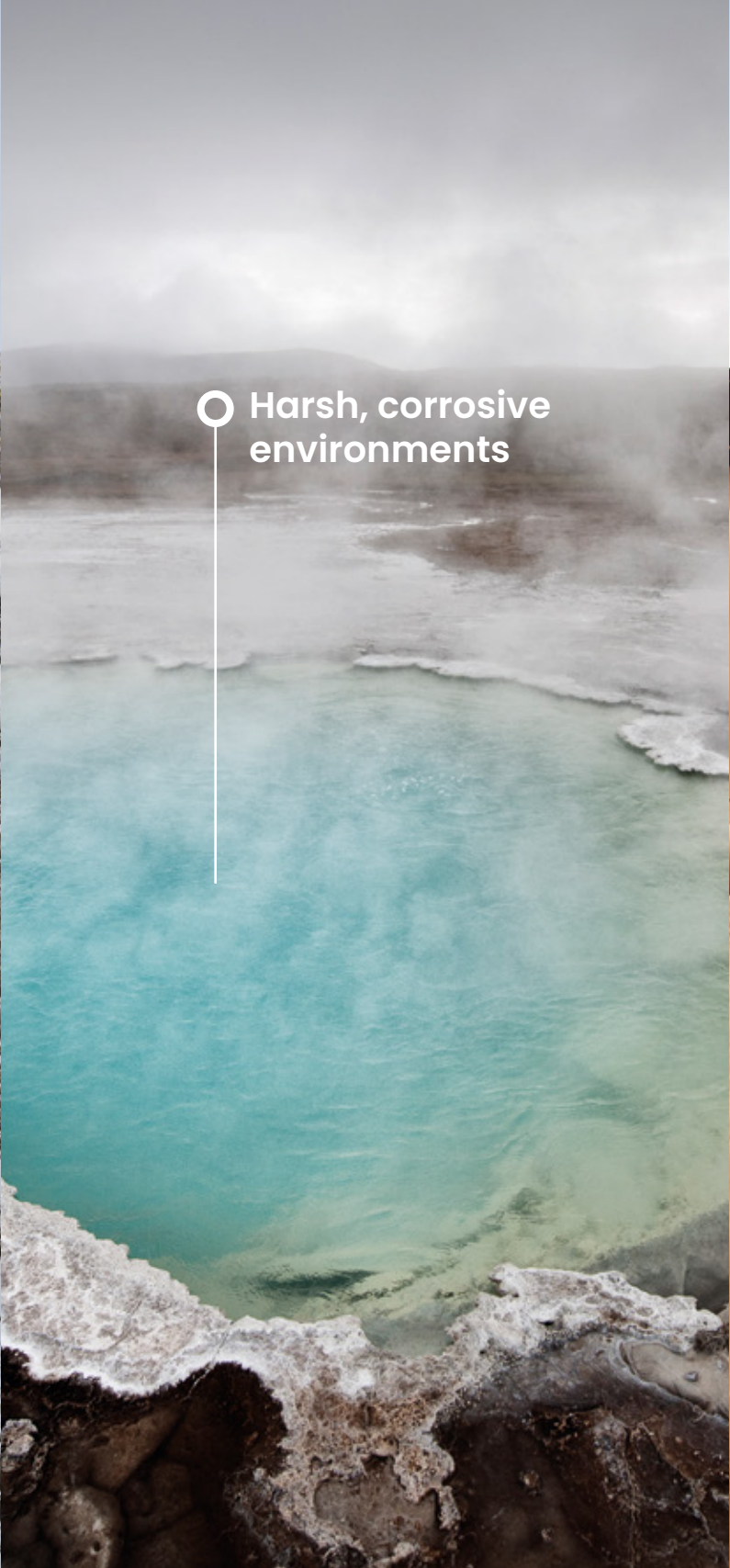
Achieving precise barometric readings in the world's most hostile climates requires world-class technology.



○ Strict accuracy requirements



○ Limited access to power



○ Harsh, corrosive environments



○ Remote, inaccessible locations

○ Extremes of temperature

How we exceed expectations

Druck's high-performance barometers provide accurate data in the most remote and extreme environments on the planet.

Strict accuracy requirements

Precise to within 0.1 hPa, Druck's DPS8100 barometers exceed the world's most demanding requirements in the field. They are powered by TERPS resonant technology, one of the most accurate pressure measurement techniques. For less stringent requirements, Druck's DPS5000 offers a lower cost solution.

Limited access to power

TERPS and Piezo resistive sensors can remain unpowered or on standby in between readings. This minimises power consumption in remote locations, reducing the size and cost of energy sources such as solar panels or storage batteries.

Extremes of temperature

TERPS technology functions accurately in temperatures from -40 to 85°C, ensuring Druck's barometers maintain their unparalleled +/-0.1 hPa accuracy in even the most hostile conditions.

Harsh, corrosive environments

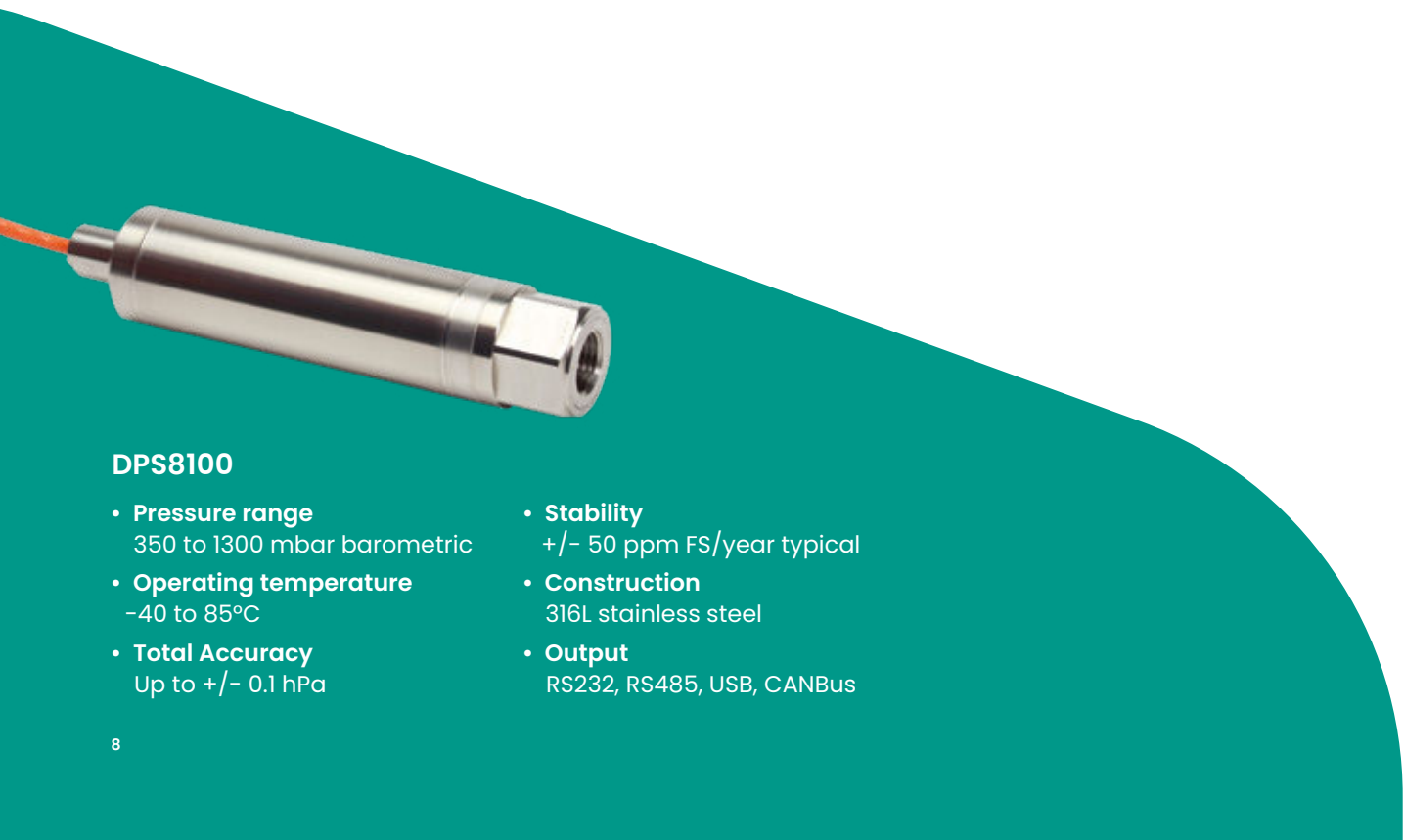
Fully welded 316L stainless steel housings keep Druck barometers sensors protected from corrosion by sea-salt spray and pollution. IP68-rated electrical connections protect Druck barometers from water ingress in fluctuating temperatures and humid conditions.

Remote, inaccessible locations

Based on a single-crystal structure, Druck's silicon pressure sensors change very little over time, allowing long intervals between calibration checking if access is difficult. TERPS technology is particularly stable, in some cases, we have seen figures at just 0.01 hPa per year.

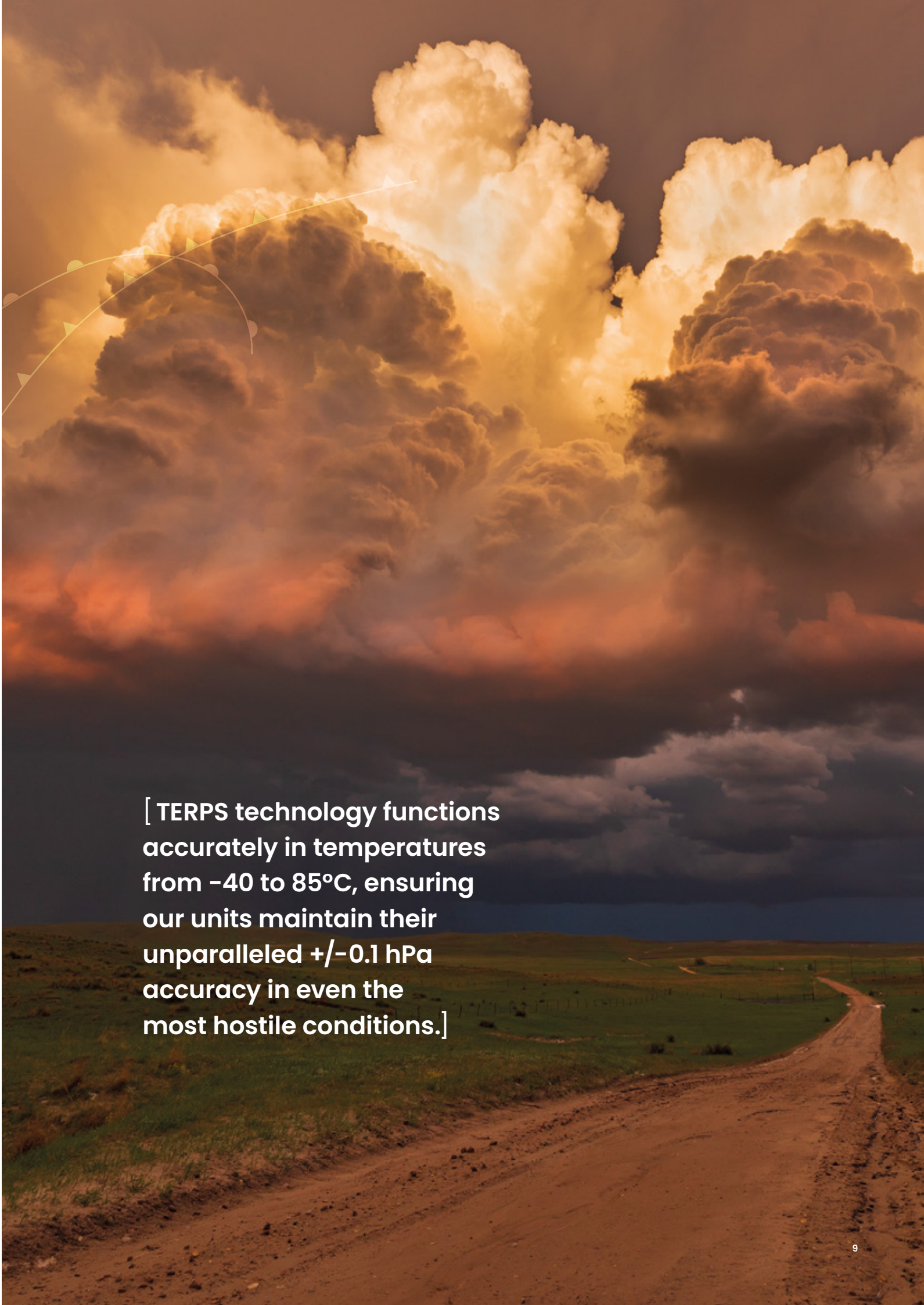
Reliability

Druck sensors have exceptional reliability due to our world-class silicon manufacturer design, this provides our customers with exceptional value due to reduced maintenance costs.



DPS8100

- **Pressure range**
350 to 1300 mbar barometric
- **Operating temperature**
-40 to 85°C
- **Total Accuracy**
Up to +/- 0.1 hPa
- **Stability**
+/- 50 ppm FS/year typical
- **Construction**
316L stainless steel
- **Output**
RS232, RS485, USB, CANBus



[TERPS technology functions accurately in temperatures from -40 to 85°C, ensuring our units maintain their unparalleled +/-0.1 hPa accuracy in even the most hostile conditions.]

The unique demands of airports

Accurate ground pressure readings are critical for pilots, wherever they land.

○ Diverse business needs



○ Varied local requirements



○ Multiple measuring points



○ Maintenance cost concerns



How we exceed expectations

From international hubs to remote crop fields, oil rigs to urban helipads, Druck barometers keep the world's airports moving.

Varied local requirements

Druck barometers cater to a range of accuracy needs and are precise to within 0.1 hPa to meet the demands of the world's busiest and most treacherous landing sites.

Multiple measuring points

Druck barometers function independently, so in cases where local regulations require multiple measuring points, accurate data will still be collected even if one barometer is damaged.

Maintenance cost concerns

When servicing or replacement is required, Druck's high-performance barometers can be swapped in situ without the need for local calibration.

Diverse business needs

From fully hermetic barometers that function in the most extreme of outdoor conditions to barometers with exposed circuits that embed into an existing electronics housing, Druck technology interfaces seamlessly and accurately with any system. Outputs include I₂C, RS232, RS485 and SDI-12, as well as analogue electrical signals.

Druck's flexible, modular approach to manufacturing minimises lead times for supplying equipment, and enables a quick response to cater to fast-changing business needs.

[Druck's flexible, modular approach to manufacturing minimises lead times for supplying equipment.]



PACE1000

Utilises Druck's new unique range of piezo-resistive and Resonant Pressure Sensor technology Barometric reference option

- Choice of precision up to 0.001% FS
- Long term stability up to 0.001% FS per annum
- Data Logging as standard with on screen replay
- Selectable numeric or graphic display
- Aeronautical option
- Airfield Task as standard with barometric option: Display QFE, QFF or QNH in pressure units or as altitude in feet or meters


Druck's ADTS contains a barometer that is used at the start of test to read atmospheric pressure that day at a given location – the test set then uses this as the 'ground' measurement to allow the aircraft to safely be returned to 'ground' pressure at the end of a test or in event of a failure during the test. We don't just use a theoretical measurement as it varies based on the altitude and weather conditions at the location and on the day the test set is being used.

Druck has over 20 years' experience in the field of calibrating aircrafts' airspeed and altitude systems. Our current products (the ADTS 500 and 405 ranges) have TERPS® (Trench Etched Resonant Pressure Sensor) technology at their core, which delivers market leading levels of performance and unprecedented metrological characteristics including accuracy, long term stability, precision, performance over temperature, not sensitive to media used for calibration.



The future of smart cities

Smart Cities demand the most up to date technology to perform a range of functions.



○ Early warning system

A photograph of a modern city skyline with several tall, glass-fronted buildings. The buildings are reflected in the calm water in the foreground. A white line connects the text 'Early warning system' to a small white circle on the left side of the image.



○ Environmental consideration

A photograph of a city skyline at night. The buildings are illuminated with warm lights, and their reflections are visible in the water in the foreground. A white line connects the text 'Environmental consideration' to a small white circle on the left side of the image.



○ Automation and accuracy

A photograph of a city skyline with a mix of modern and older buildings. The buildings are reflected in the water in the foreground. A white line connects the text 'Automation and accuracy' to a small white circle on the left side of the image.



○ Weather defences

A photograph of a city skyline with a mix of modern and older buildings. The buildings are reflected in the water in the foreground. A white line connects the text 'Weather defences' to a small white circle on the left side of the image.

How we exceed expectations

Druck's technology can be utilised in Smart Cities in a suite of instrumentation for measuring temperature, oxygen levels and barometric pressure.

Early warning systems

The use of Druck technology in Smart City applications allows customers to better predict the weather, which is vital in relation to early weather warning systems and ensuring flood defences are reinforced.

Environmental consideration

Druck's sensors also enable the prompt establishment of precise emissions hot spot locations and enable early interventions to minimise the environmental impact. Furthermore, the sensors employed for these applications inform future decision-making concerning emissions reduction strategy implementation.

Weather defences

Customised pressure sensors are also deployed by Water Resources management teams for the remote water level data monitoring systems of rivers, lakes and dams and to improve flood defence strategies.

Automation and accuracy

Druck's customised high accuracy, high reliability, waterproof sensors were developed to accurately measure water pressure with the data subsequently used to calculate water depth. These measurements can prove vital for enabling effective early warning flood defences. Automating the customer's water monitoring systems will also enable them to save resources and direct them to other areas of their operations.

[Druck's sensors enable the prompt establishment of precise emissions hot spot locations.]



DPS5000

- **Pressure range**
450 to 1100 mbar barometric
- **Operating temperature**
-40 to 60°C
- **Total Accuracy**
Up to +/- 0.6 hPa
- **Stability**
0.05% FS/year typical
- **Construction**
316L stainless steel
- **Output**
I²C
- **Certifications**
Hazardous area

ADROIT6200

- **Pressure range**
350 to 1300 mbar barometric
- **Operating temperature**
-40 to 125°C
- **Total Accuracy**
Up to +/- 2 hPa
- **Stability**
0.05% FS/year typical
- **Construction**
316L stainless steel
- **Output**
Voltage or 4-20 mA



Our products



DPS8100 (TERPS)

- **Pressure range**
350 to 1300 mbar barometric
- **Operating temperature**
-40 to 85°C
- **Total Accuracy**
Up to +/- 0.1 hPa
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0.005% FS/year typical
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316L stainless steel
- **Output**
RS232, RS485, USB, CANBus



DPS5000

- **Pressure range**
450 to 1100 mbar barometric
- **Operating temperature**
-40 to 60°C
- **Total Accuracy**
Up to +/- 0.6 hPa
- **Stability**
0.05% FS/year typical
- **Construction**
316L stainless steel
- **Output**
I²C, Other outputs available
- **Certifications**
Hazardous area



ADROIT6200

- **Pressure range**
350 to 1300 mbar barometric
- **Operating temperature**
-40 to 125°C
- **Total Accuracy**
Up to +/- 2 hPa
- **Stability**
0.05% FS/year typical
- **Construction**
316L stainless steel
- **Output**
Voltage or 4-20 mA

Product selection guide

Please use the guide below to help you locate the ideal product for your application needs.

Challenges in meteorology

| Features | DPS8100 | DPS5000 | ADROIT6200 |
|--|---------|---------|------------|
| High accuracy | ✓ | + | + |
| Low power consumption | + | ✓ | + |
| Harsh environments operations | ✓ | ✓ | ✓ |
| Extremes of temperature | + | + | ✓ |
| Low maintenance costs | ✓ | + | + |
| Configurable to meet varied applications | ✓ | * | ✓ |
| OEM volume production capable | + | ✓ | ✓ |

- ✓ Specially designed
- + Options available
- * Exposed version of DPS5000 is ideal for citizen use

To download the full product datasheets visit us at: www.druck.com



PACE CM3

Druck's pressure control system combines the fastest pressure controllers with the most accurate control module - CM3. Due to the implementation of Druck established TERPS® (Trench Etched Resonant Pressure Sensor) technology at its core, our PACE CM3 delivers unprecedented metrological characteristics and resultant levels of performance.



4Sight2 calibration management software

With sensors and assets across multiple locations across the globe it can be difficult to maintain asset information and to ensure all assets are compliant and within calibration.

Druck 4Sight2 is designed to make this challenge as simple and effective as possible. By maintaining your database of assets and automated notification of calibration requirements it's easy to plan calibration and to ensure all assets are within spec.

Calibration procedures can be sent and received to portable calibrators to create a paperless calibration process that reduces errors.

The database is fully auditable and secure giving you instant access to calibration certificates and asset information at any time.



DPI 705E Pressure Indicator

Our new DPI 705E digital pressure and temperature indicator provides high accuracy pressure and temperature readings. Now with plug and play sensors, a single instrument can fit any remote sensor to swap pressure ranges in seconds.

- 48 pressure ranges from ±25 mbar (±1.69 psi) through to 1,400bar (20,000 psi)
- Total 1 year uncertainty up to 0.05% full scale (FS)
- Integral calibration record with calibration due count-down display
- Rugged, handheld design with backlit high-contrast display
- Leak test, tare, max/min and filter
- Optional remote plug and play pressure and RTD temperature sensor
- Safe and Hazardous area versions available

We are a global technology company that designs, develops and manufactures the highest quality, most accurate and reliable customized pressure sensing devices and instruments, software and services. We leverage innovation, continuous improvement and unprecedented quality, to enable our Customers to successfully operate, produce systems, monitor and/or control mission-critical assets in tough environments across the world's most challenging applications.

We delight customers with tailored solutions that address their challenges; embodying our deep domain knowledge of customers' applications, the most innovative and high performance connected pressure sensing devices, instruments, software and services; produced with the highest standards of safety, quality and delivery.

We are Druck. We provide peace of mind in the toughest environments.



Contact us

For more information please contact your local Druck representative, or visit:

druck.com

