

## Product Overview

# Pressure Switches

## Reputation for Excellence

We are a leader in the design and manufacture of robust, reliable and competitively priced switch instruments; internationally approved for use in hazardous areas or safety systems for process control, safety alarm and shutdown applications.

An extensive range of certifications are available for various usage with **Explosion Proof** or **Intrinsically Safe protection modes**. We offer products independently Certified for **SIL 2** and **SIL 3** Safety Circuits.



**EAC SIL2**

Our switch instruments are ideally suited for a broad range of applications including:

- ▶ Rotating machinery
- ▶ Pumping sets
- ▶ Fire protection systems
- ▶ Safety shutdown systems
- ▶ Valve actuation
- ▶ Boiler systems
- ▶ Wellhead panels
- ▶ HVAC
- ▶ Nuclear safety applications
- ▶ Hydraulic control systems
- ▶ Process control



**Industrial Series**



**Compact Series**



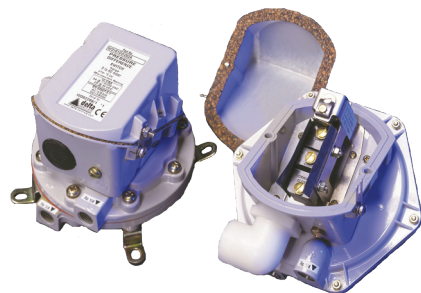
**DP Performance Series**



**VM Pressure Switch**



**Sentry Differential Pressure Switch**



**310/316 Differential Pressure Switch**

Because we utilise innovative design principles with highly reliable sensing elements such as Diaphragms, Pistons, Bellows, Bourdon Tubes and high quality engineering, we have provided over a million different temperature, pressure, differential pressure and flow switches to customers worldwide.

## Reliable - Dependable

Customers can depend upon the technical expertise and applications knowledge of our engineers to understand requirements and be able to recommend cost effective practical switching solutions. We have built a reputation for providing fully documented, specifically customised switches for complex applications in hostile and demanding environments.



**Pressure Switch Performance series**



**Sentry Temperature Switches**

# Pressure Transmitters

Reliable and Accurate solutions

Offering a full range of analogue or SMART HART digital transmitters featuring ATEX, IECEx and SIL 2 Certified. All of which have a full range of accessories available including manifolds and chemical / diaphragm seals. Our instruments are regularly specified by operators world wide because of their compact size, rugged design, high standard specification and reliability.

Our range of Pressure Transmitters includes absolute, differential and gauge designs, with analogue or digital outputs.

High pressure up to 1,000 Bar gauge pressure and best-in-class accuracy means we can satisfy even the most demanding pressure applications over a wide temperature range. These can include static/one side pressure for the Differential pressure transmitters up to 420 Bar.

**HART**  
COMMUNICATION PROTOCOL



**SIL2**



**387 Analogue Transmitter**



**D22/D23 D-Series Analogue /  
HART Transmitters**



**Pressure & Differential  
Pressure Transmitters**



**2HT HART Transmitter**



**Manifold**

# Temperature Solutions

The comprehensive range of quality assured temperature measurement devices that we offer meet the highest recognised standards; EN 60751, ANSI MC 96.1/EN 60584-2 across many industries including oil and gas, storage systems, nuclear power generation, food, and pharmaceutical. Every product is designed and manufactured to offer a combination of maximum performance and minimal maintenance.

Rugged, reliable and accurate, our temperature range includes:

- ▶ Temperature switches
- ▶ Analogue & digital transmitters
- ▶ Gauges & local electronic indicators
- ▶ Thermocouples
- ▶ RTDs
- ▶ Flanged/Threaded thermowells, protection tubes etc
- ▶ Special thermowell construction

## Tailored Solutions

Using our extensive in-house design and engineering facilities, our temperature experts can customise standard products swiftly to meet the individual technical requirements for customers.

## Level Transmitters



### MLT100 Displacer Level Transmitter

This device couples the time-proven buoyancy principle with a 4 - 20mA output to transmit level or contents in a vessel and supports the HART protocol.

### DMSP422, 400 & 500 Ultrasonic Transmitters

The Ultrasonic range offers non-contact and continuous measurement of level in tanks or open channel flow.

### MSP900SH HART Ultrasonic Transmitters

Like their counterparts, these transmitters can be used for liquid levels, their IP68 rating makes them ideal for enclosed wet wells and sumps.



**D72 Smart HART  
Temperature Transmitter**



**Thermowells**



**Temperature Switch**



**DMSP900SH  
Ultrasonic Transmitter**



**DMSP422, 400 & 500  
Ultrasonic Transmitter**



**MLT100 Displacer  
Level Transmitter**

# Mechanical Level Switches

## Horizontal and Vertical HART Displacer Level Switch

Our float and displacer level switches have earned a reputation for continued robustness and reliability within aggressive environments. They are trusted globally for long-term functionality within a wide range of pressures and temperatures.

### Design features:

- ▶ Magnetically coupled float and switch, no glands or linkages to cause leaks
- ▶ Snap action switching, for clean make or break switching
- ▶ Option of a hermetically sealed switch mechanism to eliminate the potential of freezing or corrosion of contacts

An extensive range of certifications are available, including:



Horizontal Magnetic Float Switch



Vertical Float / Displacer Switch

# Electronic Level Switches

## Vibrating Fork Level Switches

The Vibrating Fork Level Switch is a technology for single-point level switching functions for liquids and solids.

It's forks are kept in vibration by the electronic circuits. As the medium reaches and covers the forks, the vibration will be dampened. The damping of the vibration is detected by the electronics which activate to switch the output relay.

## Ultrasonic Level Switch

With no moving parts the Ultrasonic 003 sensor is a highly reliable level switch. A one-piece enclosure with an integral PCB, the 003 is factory sealed and supplied with a flying lead for customer connection.



Vibrating Fork Level Switch



Ultrasonic Level Switch

# Sludge & Slurry Measurements

## Ultrasonic Gap Sensors

Our range of Ultrasonic Gap Sensors are widely used to identify immiscible liquids and indicate the interface, enabling detection and monitoring of suspended solids in numerous applications.

## MCU200 & Gap Sensor Switches

### Interface Detection

The techniques of ultrasonic attenuation and ultrasonic refraction can detect an interface between two immiscible liquids, such as oil and water.

### Sludge Measurement

Solids suspended in a liquid will scatter ultrasonic beams, causing attenuation. This principle can be used to detect sludge blankets in Clarifiers and Municipal water primary and secondary settlement tanks. Sensors and controllers can be used for pump control, or high sludge level alarm.

## MSM400 and ATEX Gap Sensor Transmitters

Many years of practical experience have shown that measurement of ultrasonic attenuation in a slurry is directly proportional to the percentage of suspended solids.

The MSM400 system uses this principle to produce a continuous digital display of the suspended solids measurement contained in, or flowing from a clarifier or settlement tank during de-sludging.

## Solids Level Detection Switches

Both the rotating paddle switch and the vibrating rod level switch can be used with powders or bulk solids to provide high or low level alarms.

### Rotating Paddle Level Switch (PLS)

A motor drives a paddle to rotate slowly. The paddle stops when a solid medium is present. When the solids level falls, the paddle turns and the output signal changes state.

### Vibrating Rod Level Switch (VLS)

The rod is driven to vibrate continuously. When surrounded by a powder or solid medium, the frequency of vibration changes and once detected this causes a relay to switch.

### Vibrating Fork Level Switch

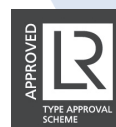
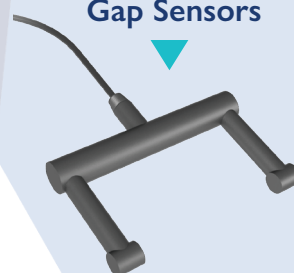
Please refer to the previous page for more information about this technology.



MCU200



Gap Sensors



Roatating Paddle Level Switch



Vibrating Fork Level Switch



Vibrating Rod Level Switch

# Steam Boiler Water & Steam Level Detection

## Hydrastep 2468 SIL 2 Capable Steam Drum Level Measurement for Water Tube Boilers

With diagnostics to detect all fault conditions and over 6,000 installations globally, our Hydrastep steam drum level measurement for water tube boilers ensures that no single fault will defeat the system.

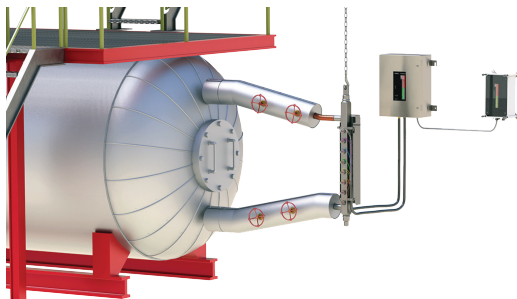
Failure to detect low water levels in steam-raising plants can have costly and potentially disastrous consequences. Reliable water level detection is vital to prevent damage to plants and personnel.

- ▶ Fault tolerant & fail-safe design
- ▶ Alarms or trips for low / high water conditions will not trip the boiler on a false alarm
- ▶ Electrodes available for up to 560 °C (1,040 °F) and 300 Bar (4,350 PSI)
- ▶ High clarity local & remote displays for control room
- ▶ 4-20 mA output proportional to water/steam interface level

## Independently Validated Assessment

An independent report by Factory Mutual Research concluded that the statistical probability of Hydrastep missing a trip condition is less than 1 in 300 million and that nuisance trips will be less than 1 in 10 million.

- ASME approved design
- Hydrastep start-up, commissioning, maintenance services available



'Typical' Hydrastep 2468

## Steam & Water Detection

### Hydratect 2462, Capable Steam & Water Detection System

The electronic alternative to conventional water level switches, our Hydratect 2462 detects the unwanted presence of steam or water in safety critical applications.

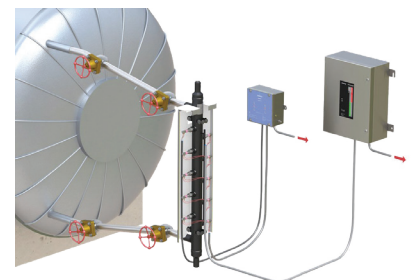
- ▶ High reliability system for water detection in steam lines
- ▶ Typical applications include: high and low-level alarms and trips on steam drums, feed heaters, de-aerators, condensate pots & turbine water induction prevention system (TWIP) on steam lines
- ▶ Electrodes for use up to 560 °C (1,040 °F) and 300 Bar (4,350 PSI)
- ▶ Relay outputs in varying options, for status and fault alarms

This Hydratect electronic water and steam detection system is used in a wide variety of applications wherever the detection of water or steam is vital for safe and efficient plant operation.

By using a combination of error detection, triple redundancy, and a fail-safe design, we achieve the highest standards of reliability.



High and Low alarms  
& trips for  
steam/water level



**SIL2**

# Boiler Controls

## Low Pressure Steam Boiler Level Controls

This range of boiler water level controls for shell boilers, up to 32 Bar saturated steam, can be either chamber mounted or directly mounted onto the boiler shell.

- ▶ 13, 21 & 32 Bar pressure ranges
- ▶ First low level alarm
- ▶ Second low level alarm
- ▶ High level alarm
- ▶ Pump on/off control
- ▶ Modulating feed water control

## Feedwater Controls & Blowdown Valves

Associated feedwater control & blowdown valves complement our float level controls.



Boiler Controls

# On Site Services

## Field Service Division

Our field support division offers engineering design, supply, installation, commissioning, calibration and on-going servicing of both our products and other manufactures products.

With the experience and capabilities to provide a complete turnkey solution, the normal complexities with multi-discipline projects and maintenance works can be kept to a minimum - and long-term operational requirements are correctly maintained.

For more information about our services please visit our website and contact the office most local to you, or email us; [service@delta-mobrey.com](mailto:service@delta-mobrey.com) to discuss your requirements.

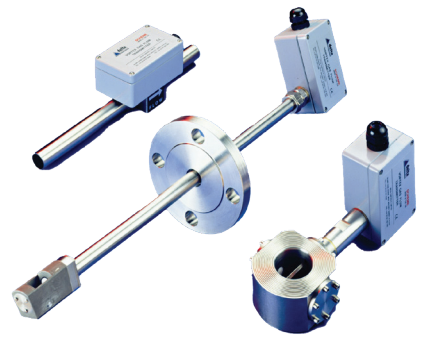


# Flow Measurement

## Vortex Shredding - Accurate - Reliable

The range of vortex shredding flow transmitters feature compact designs with no moving parts, offering high accuracy with exceptional reliability and repeatability. Our flow transmitters offer a compact, high accuracy and cost effective flow measurement solution.

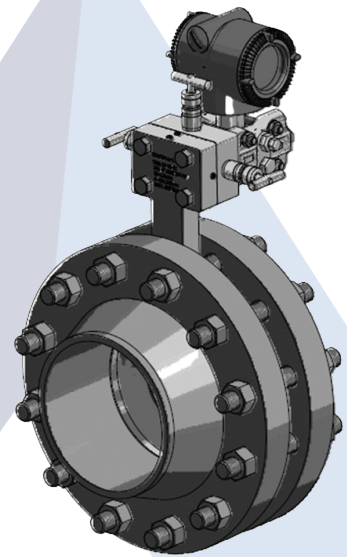
In the Automotive industry, these flow transmitters are specified for engine test beds facilities by engine manufacturers and lubricating oil developers. More accurate than traditional measuring methods such as rotameters, our flow transmitters offer a compact, high accuracy and cost effective solution. Also, these flow meters are EMPHASIS approved (the nuclear industry SMART Device Approval) and are available for all HVAC and gas flow applications.



**Vortex Flow Meter**

## Orifice Flanges

The calibrated orifice flange is one of the most simple and economic methods for the flow measurement of liquids and gases. We can supply a wide range of different types of primary elements, from the basic simple orifice plate to the complete measuring system. With our D-SERIES digital SMART Hart differential pressure, pressure and temperature transmitters, having a base accuracy of 0.075%, we can provide an accurate and complete compensated gas flow measurement system.



**Orifice Plate**

## Meter Run

- ▶ Meter Run manufactured according to AGA-ASME, UNI, DIN, BS
- ▶ Standard material 316 Stainless Steel, however exotic materials available (Monel, Hastelloy, etc.)
- ▶ Flow calculation sheet supplied as standard
- ▶ Wide range of applications at medium & high pressures and temperatures

## Venturi Tubes

- ▶ Used when low pressure drops are required
- ▶ Manufactured in sizes from 2" to 48" according to A.S.M.E and ISA

## Pitot tubes for very low pressure applications

- ▶ Manufactured according to AGA-ASME
- ▶ Various materials available, from the standard material 316 Stainless Steel to meet high temperature requirements on flue gas



**131 Flow Switch – Performance Series**

# Instrument Gauges

Utilising our considerable experience of providing high quality instrumentation solutions to the worldwide process industry, we offer a comprehensive range of instrumental gauges.

These gauges are provided to the usual high specification and quality that process plant operators, engineering contractors and OEM customers demand and expect from us.

For Safe or Hazardous areas, we produce a wide range of all stainless steel local indicators as well as associated accessories.



1/2 G Dc

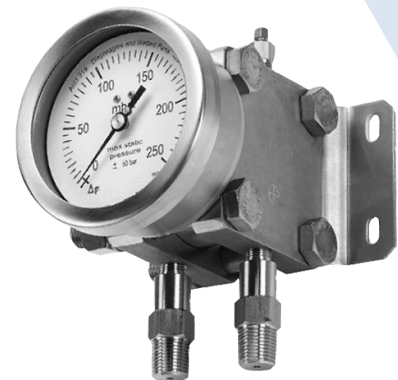
- ▶ Full compatibility to NACE standards
- ▶ Bourdon tube gauges Open or Solid Front for medium and high pressure up to 1,000 Bar as standard
- ▶ Capsule and Diaphragm types for low and medium pressure
- ▶ Differential pressure gauges
- ▶ Bimetal and Gas expansion temperature gauges up to 600 °C as standard
- ▶ All thermowells can be manufactured using ASME PTC 19.3 stress calculation in an extensive range of exotic materials
- ▶ Chemical / Diaphragm seals for Chemical, Pharmaceutical, Oil & Gas, Petrochem and Food industry applications
- ▶ A full range of accessories are available - electric contacts, over-range protectors, snubbers, pigtail siphons, thermowells



**Pressure Gauge**



**Bimetal Temperature Gauge – GB Series**



**Differential Pressure Gauge**



**Chemical Seals**  
**Various sizes / constructions**

# Focus on Industries

For over a century, we have been at the forefront of manufacturing process instrumentation that excels in the most challenging and safety-critical environments. Starting with the global Oil and Gas industry and the UK Civil Nuclear sector, we have accumulated invaluable expertise that now extends across both established and emerging markets. With an understanding of the need for reliability in every process, we offer a complete range of instrumentation providing unmatched dependability and giving you the confidence to optimise and safeguard your operations.

## ► Food & Beverage

Process instrumentation is vital to the food and beverage industry; by providing real-time monitoring, control, and insights, process instrumentation enhances quality, safety, and efficiency. Our range of instruments can help with the compliance of food safety and minimise product recalls.

## ► Hydrogen

Hydrogen is one of the most versatile energy sources, it supports energy derived from other Green sources such as wind or solar. It's ability to be moved from the production site to the user site, ensures it can fill any energy gap. We offer a range of instruments specifically to handle possible embrittlement.

## ► Marine

The Marine Market is exceptionally diverse, therefore we have a range of sensors, switches and transmitters to ensure the smooth running of the engineering systems or living quarters of marine vessels. All of which work within defined and acceptable parameters.

## ► Nuclear

We're an I&C supplier to the nuclear power industry, providing customers with nuclear safety instrumentation & control solutions for nearly 70 years. These improvements enhance the safety, reliability & performance of the stations while reducing operational costs.

## ► Oil & Gas

We've been working within the Oil and Gas Industry for over 5 decades and can assist with the smooth running of these sites, with both onshore and offshore applications. Our instrument specialists can help provide the support, advice, and fast response that you need.

## ► Petrochemical

Petrochemicals are used in all sorts of daily products such as plastics, fertilisers, clothing, digital devices, medical equipment, tyres and more. We provide a range of products and support, from delivering a small but essential O ring to a more complex Hydrastep system and everything in-between.

## ► Power

Generating the necessary energy involves utilising multiple sources & effectively managing this requires processes to be carefully controlled with specialised instruments that deliver reliable service. We produce a broad range of products designed to control & safely measure these processes.

## ► Renewable Energy

Alternative energy processes are now producing reasonable levels of energy with a reduced environmental impact. We manufacture a wide range of products for measuring and reporting changes in temperature, pressure, level and flow for the renewable energy industry.

## ► Water & Wastewater

Wastewater treatment plants are essential for ensuring that water is free from contaminants. The need and importance of handling water and its usage differently is paramount. We produce a range of products to assist water treatment plants ensure they deliver essential water at the essential quality.



With a proud history spanning over 100 years, we are a recognised global specialist in the design and manufacture of quality process instrumentation for the measurement and control of fluid and gases in all industrial plants and equipment.

### **Trusted Quality. Reliable Dependence**

Quality and reliability have always formed the cornerstone of our success, we are recognised by industry with international approvals covering every aspect of our manufacturing, test and product portfolio.

Certifications span all areas of hazardous and regulated environments, and include: ATEX, ICEx, EXd, EXia, NEMA, SIL, IS, PED, NEC 500 and 505, with new certifications being gained.

### **Proven Value**

Performance and value are the reasons why so many customers return and continue to place their trust in us and our products. With continual investment in innovative manufacturing solutions, customers can be confident we can deliver the highest value solutions, without ever compromising on quality.

### **Bespoke Solutions**

We're proud to be able to provide custom engineered solutions to meet your exact requirements.

The complexity of special engineering can vary from a simple change in process connection, or to a completely redesigned product to meet specific operational /performance criteria; available as one-offs through to large volume requirements.

### **Global Presence**

To ensure our customers have immediate and continuous access to our staff and support, we have several strategically placed offices around the globe. For more information, please visit the Contact Us page on our website -

[www.delta-mobrey.com](http://www.delta-mobrey.com)



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