Measurement Solutions
Product Portfolio

Analytical
Blocked chute
Condition Monitoring
Density
Direction Control Valves
Flow
Level
Moisture & Water Content
Pressure
Rupture Discs
Speed
Temperature
Vibration
About us

Measurement Solutions specialises in the application and supply of process measurement sensors, switches, transducers, direction control valves, condition monitoring, analytical and over pressure protection equipment. Measurement Solutions have a commitment to the application of sound engineering principles and to supply quality assured products in our endeavour to provide the most appropriate solution to your process measurement or over pressure application.

Industries Serviced

Bitumen       Marine       Oil & Gas
Cement        Medical     Paper and Pulp
Chemicals     Metals      Pharmaceuticals
Defence       Mining & Minerals Power gen
Food and Beverage OEM          Water & Waste Water

Equipment Summary

Analysers
- Trace Moisture
- Dielectric constant
- Water Cut (% water in Hydrocarbons)

Condition Monitoring
- Vibration
- Speed
- Proximity sensors
- Seismic sensors

Valves, Manifolds & Regulators
- Hydraulic control valves
- Pneumatic & Gas control valves
- Actuated assemblies
- Instrument valves and manifolds

Process Instrumentation
- Density
- Flow
- Interface
- Level
- Pressure
- Speed
- Temperature
- Vibration
- Water in oil

Rupture Discs
- Rupture and Bursting Discs
- Vent Panels / Explosion Panels
- Burst disc indicators
- Quick release systems
- Vacuum protection
- Sanitary assemblies
Introduction to RF Admittance

RF Admittance is one of the most versatile technologies available providing both point and continuous level measurements. It operates on the principles of capacitance, but advances the technology by employing a patented Cote-Shield™ circuitry. This enables Drexelbrook RF Admittance products to ignore the effect of process material coating on the sensing element. RF Admittance is unaffected by temperature, pressure, or density changes in the process material.

This technology works well on a wide range of liquids, slurries and solids applications for industrial and municipal markets. It has demonstrated proven reliability on some of the most severe services and difficult applications. With the proper sensing element, it is an ideal technology for corrosive, agitated, high pressure/temperature, and cryogenic environments. It is a technology that allows you to measure applications where foam and vapors are present and is an excellent choice for interface measurements. RF Admittance products will provide many years of maintenance free, exceptional performance.

What is RF Admittance?

RF admittance is a universal technology because it measures something common to everything in the universe. All things, including vacuum, have an electrical property know as a dielectric constant (k). The other electrical property is conductivity (g), which is the nemesis of capacitance (C) level measurement.

Radio Frequency Admittance is a technology that takes both Dielectric constant and conductivity into account when computing the level. Level measurements are made at a predetermined frequency, usually between 15 and 400 KHz.

\[ C = \frac{kA}{d} \rightarrow C \uparrow = \frac{k\uparrow A}{d} \]

- \( C \) = Capacitance
- \( k \) = Dielectric constant
- \( A \) = Area
- \( d \) = Distance
Cote-Shield™

In a simple capacitance probe type sensing element, when the level rises and material covers the probe, the capacitance within the circuit between the probe and the media (conductive applications) or the probe and the vessel wall (insulating applications) increases. This is due to the dielectric constant (k) of the material, which causes a bridge mis-balance. The signal is demodulated (rectified), amplified and the output is increased. There are drawbacks, however, especially when there is coating of the probe.

Point Level (on/off) Level Measurement

The Drexelbrook RF Admittance device is the next generation. Although similar to the capacitance concept, RF Admittance employs a radio frequency signal and adds the Cote-Shield™ circuitry within the Electronics Unit.

This patented Cote-Shield™ circuitry enables the instrument to ignore the effect of buildup or material coating on the sensing element. The sensing element is mounted in the vessel and provides a change in RF admittance indicating presence or absence of material. The Cote-Shield™ element of the sensor prevents the transmission of RF current through the coating on the sensing element. The only path to ground available for the RF current is through the material being measured.

The result is an accurate measurement inclusive of coating on the probe, making it by far the most versatile technology, good for very wide range conditions from cryogenics to high temperature, from vacuum to 68.9 MPa pressure, and works with all types of materials.
Continuous (Analogue) level measurement

The Cote-Shield technology employed in a Drexelbrook RF Admittance level transmitter works differently to the point level method described above. For an RF admittance transmitter the Cote-Shield properties can be attributed to the built-in oscillator buffer and chopper drive circuits that permit separate measurement of resistance and capacitance. Since the resistance and the capacitance of any coating are of equal magnitude (by physical laws), the error generated by a coating can be measured and subtracted from the total output.

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Drexelbrook – Level & Analytical

Known throughout the world as a leader in Level measurement. Ametek Drexelbrook pioneered and continues to advance RF Admittance and RF Capacitance level instrumentation. Drexelbrook also offer superior Ultrasonic, Time Domain Reflectometry (TDR), Hydrostatic pressure, Radar and Magnetostrictive instrumentation. This comprehensive product offering provides customers with the best level or open flow measurement solutions for any application; from the most basic to the most complex.

RF Admittance Level Transmitter
Patent coating rejection technology

Features:
- Patent Cote-Shield™ ignore coatings
- IECEx approved
- Handle extreme temperature, pressure & vibration
- Two-wire 4-20 mA HART compatible
- No dead zones.
- 25mm to 250 meter spans
- Unaffected by condensate and foam

Applications:
- Liquids, slurry and granular
- Interface
- Corrosives

Water cut and BS&W monitor
Now with density and temperature compensation!

High accuracy, inline, monitor for % water in oil. Ideal for custody transfer and LACT where accuracy and reliability are critical. Drexelbrook’s cut monitor offers unmatched cost of ownership and ease of use.

Features
- 0.03% Water accuracy
- 0.0002% Water resolution
- Patent Cote-Shield™ to ignore paraffin build-up
- IECEx approval for Ex d and Ex ia
- 350 msec response time
- Unaffected by changes in salinity
- Two-wire 4-20 HART compatible

Applications
- Automatic Well Testing (AWT)
- Lease Automatic Custody Transfer (LACT)
- Basic Sediment and Water (BS & W)
- Separation Vessels
- Pipeline Slug Detection
- Truck Unloading
- Pump Protection
- Dielectric Analysis
- Machinery Lube Oil Monitoring
- Water in Hydrocarbons
RF Admittance Level Switches
Patent coating rejection technology

A truly universal level switch suitable for solids, granular, slurries and interface measurement. Drexelbrook’s RF Admittance level switches can be configured to perform on the most adverse applications

Features:
- Patent Cote-Shield™ ignore coatings
- Withstand extreme temperature, pressure and vibration
- AUSEx / IECEx approval for Ex d & Ex ia
- Rigid and flexible sensors
- SIL 1 & 2

Applications:
- Liquids, slurry and granular
- Interface
- Corrosives

Ultrasonic level Transmitter

Drexelbrook’s USonic transmitter uses patent SMARTgain™ software to automatically profile vessels for obstructions. Coupling SMARTgain with the fastest response time on the market and Drexelbrook’s renowned durability you’ll find USonic to be head and shoulders above the rest.

Features:
- Patent SMARTgain™ software to auto ignore obstructions and agitator blades.
- IECEx approval for Ex ia IIIC
- Quickest response time
- Superior ± 0.15% accuracy

Applications:
- Water treatment
- Mud pits
- Sumps & diesel Tanks
- Open channel flow
**Drexelbrook – Level & Analytical**

**Blocked Chute Switch**

*Flush mounted with no moving parts*

Drexelbrook’s blocked chute switch builds on the proved RF admittance technology by mounting flush with the chute wall to reliably detect blockages in the presence of fines build-up. The heavy-duty construction has no moving parts to wear out or hand up.

**Features:**
- Cote-Shield™ technology to ignore fines build-up
- Flush mounted sensor
- No receiver required
- Superior impact, wear & vibration resistance.
- No periodic maintenance required.
- AUSEx / IECEx Ex d & Ex ia

**Applications:**
- Mining
- Paper mills
- Large rocks, wood chips & ore
- Powders
- Coal pulverisation
- Other granular applications

Happy to sit in fill stream without false alarm.

Heavy duty construction can take impact and wear.

No effected by fines build-up.

Detection when product is halted in front of sensor

Remote electronics provide immunity to vibration and shock.
TLS - Magnetostrictive
Total level, interface and temperature

The TLS Magnetostrictive devices can provide level, interface, & temperature measurements in one device. No calibration required, easy installation with superior accuracy to 0.01%. An ultra-reliable design ideal for process and custody transfer applications.

Features
- IECEx approval for Ex d and Ex ia
- Sanitary 3A approval
- Level, interface and temperature
- Insertion lengths in excess of 15 meters
- Rigid 316SS or flexible PVDF sensor
- Measures:
  o Total level
  o Product level
  o Interface level
  o Average temperature
  o Product temperature
  o Interface temperature

Applications
- Beer, wine, spirits and beverage production
- Custody transfer and terminal storage
- Pharmaceuticals and Biotech
- Oil and Gas
- Separators

Outputs
- 4-20 mA + HART
- Dual 4-20 mA + HART
- Modbus

Up to 5 Individual temperature sensors

Total level
Product level
Interface
The Impulse™ Guided Wave Radar employs field proven TDR (Time Domain Reflectometry) technology to provide accurate measurement of Total Level, Distance or Volumetric outputs. TDR Technology has been widely used for its inherent ability to remain unaffected by variations in the process materials electrical characteristics.

The DR7000 an FMCW 26 GHz radar and state of the art design. The DR7000 is able to operate over a 2 GHz bandwidth: this ensures sharper resolution and higher accuracy. The DR7000 is a 2-wire device with easy navigation display and touch screen interface, which allows for easy configuration and set up.

Hydrostatic pressure, level transmitters that generate an analogue signal proportional to the head pressure above the installed unit. Drexelbrook’s 316SS or Hastelloy C sensors are durable, reliable and easy to install. Simply lower the unit into a well, tank dam or vessel and start measuring.

The Desalter Interface Transmitter provides an excellent solution for separator vessels with or without electrostatic grids. Drexelbrook’s Desalter level transmitter is unaffected by changes in salinity and density and with no moving parts to hang up. You’ll be able to do away with scheduled maintenance of the traditional methods.

Spill Prevention switch specifically designed for Floating Roof Tanks (Internal and External roofs) with Flexible Sensing Element. Field adjustable insertion lengths and special non-sparking materials combined with the proven RF technology. SIL 1 and SIL 2 options available. Will detect contact with roof or fluid.

Across screen, blocked chute detector is specially designed with Drexelbrook’s patented Cote-Shield technology. This unique Across Screen system reliably detects blockages across the entire span while ignoring any fines build up associated with the process.

The TF-100 Series Point Level Switch is designed for reliable indication of liquids and light slurries. The output can be set to indicate alarm on either high level for spill prevention, or low level for run-dry protection.

VeriGAP ultrasonic gap switch provides reliable high or low level measurement in a wide variety of liquids. The VeriGAP requires no calibration and is not affected by changes in electrical properties of the material being measured. VeriGAP also features Auto Verify and Certify test.
Continental – Rupture Discs

Why use Rupture discs?

Rupture Discs function as a pre-designed “weak point” in a pressurized system, and should be the strongest part of your pressure protection system. Continental Rupture Discs utilise innovative, patented designs, the highest quality materials from traceable sources, and ISO 9001 manufacturing procedures performed by skilled craftsmen.

HPX Rupture Discs – True 95% operating ratio

Built on years of research and development, the HPX and SANITRX ® HPX rupture discs are high precision pressure relieving devices that protect personnel, equipment and the environment. The versatility of the HPX product family offers pressure protection for a wide range of applications in many processing industries, including: chemical, oil and gas, food, beverage, pharmaceutical, biotech, pulp and paper, power and more. The HPX product family is the most advanced line of rupture discs available, incorporating proven performance in excess of a quarter million cycles, operating up to 95% of burst pressure, and offered in a wide range of burst pressures, materials and sizes. These features support reduced down time and lower maintenance costs, increasing the productivity of your facility!

Features:

- 90 or 95% operating Ratio
- Manufacturing range of Zero, -5% and -10%
- SAFETY RATIO of 1 to 1 or less. If the rupture disc becomes damaged, it will relieve at or below the burst pressure.
- Design tested for 5 Million+ cycles from full vacuum to 95% of burst rating
- Non-fragmenting, reverse acting, bubble-tight seal
Sanitary HPX
3A Sanitary Rupture Discs. Tested in excess of 5 million cycles!

The SANITRX HPX rupture disc is a semicircular scored reverse acting rupture disc designed specifically for the pharmaceutical, biotech, food, and beverage industries. This rupture disc is available to fit between industry standard sanitary ferrules, NACONNECT® flanges or SANITRX fittings.

SANITRX HPX rupture discs are shipped in sanitary, environmentally friendly, non-toxic packaging.

Burst Disc Indicator – BDI

Universal or Integral B.D.I.® (Burst Disc Indicator) Alarm System The B.D.I. (Burst Disc Indicator) Alarm System is designed for use with Continental rupture discs. The B.D.I. Alarm System signals the system operator when a rupture disc has burst to relieve an overpressure or vacuum condition.
The CAL-VAC / POS-A-SET Rupture Disc Assembly is a highly accurate, double acting pressure relief device designed to protect processing and storage tanks against implosion or overpressure conditions that can occur:

- When too much vacuum is pulled during liquid product withdrawal
- During hot water or steam cleaning of tanks
- From development of an abnormal process condition

Both designs relieve pressure settings starting as low as 1" water column differential. The difference in performance of the CAL-VAC Rupture Disc and the POS-A-SET Rupture Disc is how each one is installed (oriented) in the system.

The CAL-VAC Rupture Disc relieves ultra-low pressure in the vacuum (negative) pressure direction, while the POS-A-SET Rupture Disc relieves ultra-low pressure in the positive pressure direction.
The CLEAN-SWEEP® Holder is designed for systems handling viscous media processes, particularly where product build-up in a piping system may cause excessive overpressure conditions.

This holder is an ideal replacement for rupture discs installed off the leg of a pipe tee where product build-up could affect the proper operation of the rupture disc.

The CLEAN-SWEEP® Holder body is specifically designed for a rupture disc. The rupture disc is mounted directly on the holder body adjacent to the process flow. Compared to other designs, the CLEAN-SWEEP® greatly reduces the possibility of product build-up under the rupture disc and it is available for pressures up to 1440 psig (99.3 barg).

Double Disc Holders

A Double Disc Holder Assembly consists of three holder components: an inlet, a mid-flange and an outlet piece, along with two rupture discs. The first of the two rupture discs is located between the inlet and the mid-flange, and the second rupture disc is between the mid-flange and outlet. This assembly arrangement provides the solution to multiple applications without the need of a more complicated piping arrangement.
HPX®-PT Pre-Torqued Holders

HPX-PT pre-torqued holders incorporate high strength steel socket head cap screws to ensure accurate loading and sealing of the HPX® rupture disc. The HPX-PT holder allows the disc to be correctly fitted in the workshop using precise recommended torque levels, prior to installation of the complete assembly between the flanges in the process system relief stream.

Special Assemblies
Custom designed assemblies and solutions

Whether it’s from the standard product line, or a custom-manufactured rupture disc for a one-of-a-kind application, Continental Disc Corporation has built a reputation for solving the toughest pressure relief problems.

For OEM’s, Defence Industries, Space exploration program, Aircraft and aerospace manufacturers, Chemical and petrochemical industries, Food processing, Electronics industry, Countless more.
MICRO X®, Forward Acting Rupture Disc are scored on the outlet (vent) side of the rupture disc, a smooth disc surface is provided on the inlet (process side) of the rupture disc. The result is an undisturbed inlet surface resistant to corrosion and the accumulation of process media.

Grafsert® impervious Graphite rupture discs are simple, reliable overpressure relief devices designed to protect processing systems, truck tanks, storage tanks, and closed processing vessels from overpressure conditions.

Tite-Seal & Screw Type assemblies are complete rupture disc and holder units designed for use on various "mini systems" such as air-con, refrigeration units, hydraulics, gas cylinders, portable compressed air systems, and laboratory equipment.

Vent Panels are designed to provide instantaneous overpressure protection for pressurized equipment like dust collectors, driers, silos, spreaders, elevators, air scrubbers, sieves, and other various types of dry, bulk handling and storage equipment.

Continental Disc Corp’s Union Holder is designed to provide flexibility of use in tight piping configurations. These precisely built holders combine remarkable ease of installation with high pressure ratings.

Full Bolted Holders do not need companion flanges. The proper seat configuration is machined directly into the flange. Full bolted holders are available in 30° light or heavy lip seat configurations, dependent upon size.
Aplisens is one of the leading manufacturers of high quality process instrumentation. The company was founded in 1992 with a main factory and headquarters located in Warsaw concentrating on electronic pressure and differential pressure measurement technology. The basic philosophy has always been: high quality, high flexibility and competent support to customers.

Today Aplisens offers a wide range of products:

- Differential pressure transmitters
- Hydrostatic level probes
- Level transmitters
- Temperature instruments
- Diaphragm seals
- Instrument, manifold and needle valves
- Digital indicators and panel meters
- Power supplies, isolators & separators
- Gauges

The constant development, high-tech production and ISO 9001 management system are the best warranty of quality.

### Pressure Transmitters

- 4-20 mA HART or Profibus PA
- Aluminium or 316SS Housing
- 0.075% accuracy
- IECEx Approval
- SIL 1 & 2 certificates
- MID Certificate
- Marine/Shipbuilding approval
- Ranges from 0.02 mbar to 1000 bar
- 5-year warranty

### Differential Pressure Transmitters

- 4-20 mA HART or Profibus PA
- Aluminium or 316SS Housing
- 0.075% accuracy
- IECEx Approval
- SIL 1 & 2 certificates
- MID Certificate
- Marine/Shipbuilding approval
- 5-year warranty
Aplisens – Pressure, level, Flow +

Hydrostatic (Submersible) Level
- IECEx Approval
- 4-20 mA HART, 4-20 mA, 0-10 VDC, MODBUS & more
- 316SS, Titanium or Hastelloy C wetted
- Teflon shielded cabling for corrosives
- Ranges from 0.5 to 500 mH2O
- SIL 1 Certificate
- Marine/Shipbuilding approvals

Hydrostatic Level – Rigid sensor
- IECEx Approval
- 4-20 mA HART or 4-20 mA
- 316SS
- Ranges from 0.2 to 3 mH2O
- Marine/Shipbuilding approvals

Hydrostatic Level – Flexible sensor
- 4-20 mA HART
- Wetted: 316SS, Titanium, Hast C, PTFE, PU
- Ranges from 0.5 to 20 mH2O
- Flexible for easy handling
- IECEx approval
- Multiple mounting options

DP Flow meter
- 4-20 mA HART
- Profibus PA
- IECEx Approval
- Diaphragm and high temp seal options
- SIL 1 & 2 certificates
- MID Certificate
- Marine/Shipbuilding approval
- 5-year Warranty
Magnetic Flow Meter
- Flow of liquids with conductivity down to 5 μS/cm
- Programmable
- DN10 to DN1000
- Easy to read LED display
- Alarm outputs
- Remote configurations
- Corrosive resistant materials

Temperature Transmitters
- 4-20 mA HART
- IECEx Ex d & Ex ia
- 0.075% Accuracy
- MID Certificate
- Single or dual probes configurations
- RTD or Thermocouple element

RTD & Thermocouple assemblies
- RTD and thermocouple types
- Metal and ceramic sensors
- Aluminium or 316S Terminal heads

Head and Rail mount Transmitters
- Programmable
- Head mounted or DIN Rail configuration
- RTD or Thermocouple
- 4-20 mA HART

Density Meter
- Ranges of 0 to 1 g/cm3 or 0 to 2 g/cm3
- Ideal for oil and hydrocarbon monitoring
- Working pressures up to 4 MPa
Diaphragm Seals
- Threaded
- Flanged
- Flush faced
- Wafer
- Sanitary
- High temp
- Remote
- Custom

Manifold Valves
- 2, 3 & 5 valve manifolds
- Ideal for gauge and differential pressure instruments
- Can be supplied pre-fitted to instruments

Mounting Accessories
- Wall, bracket and pipe mounts.
- Adjustable
- Universal design.

Siphons & Cooling Extensions
- Cooling extensions for high temperatures and steam service
- Combination diaphragm seal and cooling extension for optimum isolation.
Aplisens – Pressure, level, Flow +

Aplisens DP Flow elements
- High accuracy in wide measuring
  - Ranges. 0.5 to 1.5%
- Applicable to measure flow of neutral
  - and aggressive mediums
- Easy calibration

Information needed for orifice calculation:
- Require correction from pressure and temperature?
- Line diameter DN?
- Material of pipe?
- Outside diameter of pipe or wall thickness?
- Nominal pressure?
- Nominal temperature?
- Maximum and minimum flow rate?

Flanged with straight sections
Flanged and weld neck
Micro Orifice for small diameters & flow rates
With correction from pressure & temperature
Pitot Tubes

- Gasses, liquids and steam
- Pipe diameters: 40 to 2500 mm
- Low installation costs
- Short up/down straight pipe run requirements.
- Low permanent pressure loss
- Cost effective
- Maintenance free
- Bi-directional flow measurement
- Handles irregular flow with averaging ports

The Pitot tube based flow Sensor measures the flow in pipes and ducts by using the differential pressure principle based on the basics of Bernoulli.

A rectangular design of the PRP sensor profile is divided diagonally into two symmetrically constructed chambers with sensing holes (dp-tappings). The chamber facing to the upstream generate a higher pressure (p+) and the chamber in the downstream a lower pressure (p-).

Several dp-tappings along the sensor profile provide a steady averaging of the flow velocity. This facilitates exact metering even with irregular flow profiles. Each chamber is connected to the corresponding side of a differential pressure transmitter. The value of the differential pressure is proportional to flow. With increasing flow, the dp increases. A differential transmitter converts the dp into an electrical signal (i.e. 4-20mA) that is transmitted to the process control system.
Barksdale is subsidiary of Crane Co, Stamford CT, and was founded in 1949. Primary manufacturing is based in Los Angeles, CA, with another manufacturing facility in Reichelsheim, Germany. Barksdale are an ISO 9001 registered manufacturer of controls for industrial applications, specialising in the control and measurement of fluids and gases.

Barksdale specialise in control valves, pressure, temperature, level and flow products for the mining, oil/gas, marine.

**Shear-Seal Control Valves**

What makes *Shear-Seal*® so special? This special design controls the media through internal galleries in the sealing components rather than across the critical sealing faces. This means that metallic particles and other contaminants commonly found in fluid power systems have little opportunity to damage the valve. The continual sliding motion between the *Shear-Seal*® faces and the rotor along with the combination of spring and pressure loading, allows automatic adjustment of the seals as they wear in. The lapping action between the valves sealing elements mend minor sealing surface defects with each movement of the handle. The result is a valve that doesn’t wear out – but wears in.

**Shear-Seal® Valve Advantages**

- Metal to Metal Seal
- Handles Contaminants Better Than Other Valves
- Fluid Flows Through the pressure seal and not across the Sealing Surface
- Self-Lapping
- High flow rate & velocity
- Minimal pressure drop
- Available with Interflow

**Interflow**

Barksdale’s Interflow system is designed to reduce hydraulic shock caused when a valve is shifted from one position to another. During a position change, an Interflow valve allows a small amount of fluid to pass through a narrow clearing between the body and rotor and back to the return port. The small amount of bypassed fluid acts as a cushion to dampen hydraulic shock.

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Small amount of flow, during throttle, cushions hydraulic shock.
Control Valves
Manual & Remote Actuated

Features
- Original Shear-Seal® technology
- Zero Leakage
- Self-lapping (Wear in, not out)
- Fluid flows through and not over the sealing surface
- Longer life
- Handle contaminants better than other valves
- High flow and velocity rates
- Low pressure drop
- Lowest cost of ownership
- IECEx approved position indicators.

Applications:
- Oil & Gas
- Medical gas
- Shipbuilding
- Defence
- Refining
- Hydraulics
- Pneumatics

Regulators

Features:
- Original Shear-Seal® technology
- Self-adjusting
- High flow and velocity capacity
- Fail-safe motor control options
- Self-venting
- API Compliant variants
- BOP Closing
- Tolerates contaminated media

Applications
- Hydraulics
- Offshore drilling controls
- Pressure sensitive applications
Compact and modern design

The new 3000 series of solid state instruments are characterised with a panel height of 99 mm and diameter of 40 mm which enables compact installation of many switches. Its angled top design is aesthetically pleasing and a real functional highlight.

Rotatable 320° display & electrical connection

It as simple as that: due to rotatable 320° display and electrical connection, the mounting and installation will be a walk in the park.

Perfect readability

The 4-digit 14-segment LED display ensures a perfect readability independent of the positioning: even in case of mounting upside down the indication can be viewed correctly as the software allows inversion of the display.

High protection with IP65/IP67 & EMI protection

Harsh environmental circumstances, with dust or water being present are not a problem for the generation 3000. Continued functionality will be achieved by a sophisticated housing seal and a keypad integrated within the plastic housing.

The high EMI protection of the generation 3000 allows installation in environments where high power walkie – talkies are in use e.g. in the steel and power industries.
Differential Pressure Switches for Monitoring Filter Efficiency

Filtration systems require constant monitoring to maintain an optimal level of system performance. The most widely used method of checking filter condition is to measure pressure drop across the filter. As the filters do their job and accumulate dust and dirt, there is a reduction in flow that causes a greater differential pressure across the filter that is detected by a differential pressure switch. The DPD1T differential pressure switches open/close an alarm circuit, thus alerting the operator that the filter has reached the tolerable limit of its effective life span, preventing potential system failure or shut-down condition.

The DPD1T offers superior accuracy (+/- 0.5%) in a robust package, making it an ideal solution to your industrial pressure control needs. This switch is ideal for applications requiring water-tight, NEMA 4 housings, a covered terminal strip and tamper-proof external adjustment. With adjustable pressure ranges up to 10 bar, the DPD1T is suitable for use in either positive pressure or vacuum applications and is available in single circuit or dual-circuit models.

Differential Pressure Switches

Economical
Low cost with high reliability and dependable performance

Calibrated dial
High performance switches with a graduated adjustment dials for reference.

Internal Terminal strip
An internal terminal strip is provided to land your field wiring directly on the instrument
Barksdale - Instruments & Valves

**Measurement Solutions**

**Pressure Switches**

- **Compact**
  Versatile and flexible options suited to most applications

- **Diaphragm**
  High accuracy and capable of measuring down to .013 kPag or 0.06” Hg

- **Bourdon Tube**
  High pressure applications and zero leakage. Perfect for gas.

- **Piston**
  Suited to hydraulic and lubricating media. Excellent for high repetitions.

**Electronic Pressure Switches**

- **Switches**
  A compact, lightweight, long-lasting and reliable alternative to mechanical devices.

- **Indicating Switch**
  Accuracy and versatility though onboard display, programmable functions.

- **Transmitters**
  Options to suit just about any application. mA and voltage outputs combined with field proven reliability. IECEx approval.

**Temperature**

- **Mechanical Switches**
  Compact, industrial & OEM options with ambient compensation for remote devices. IECEx approval.

- **Electronic Switches**
  Greater accuracy and control with programmable features and a built in display/keypad.

- **Transmitters**
  PT100 temperature transmitters with 4-20 mA or voltage outputs.
**Level**

**Single Point**
Horizontal and vertical mount options with many materials to choose from.

**Multipoint**
Up to 6 set points in a single unit with an optional temperature measurement.

**Transmitters**
Shipbuilding approvals and flush mounted to handle harsh, corrosive and highly viscous media.

**Level Site**
Visual indication of level. Bright Makrolon® or safety glass indication rail is easy to see at distance.

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**Flow**

**Flow Switch**
Simple SPST or SPDT contact for detection of flow. Viscosity compensated up to 600 cSt.

**Indicating Flow Switch**
Simple SPST or SPDT contact for detection of flow. Viscosity compensated up to 600 cSt.

**Electronic**
Solid-state measurement with transistor and analogue output. Local LED display and keypad for calibration.
In 1992 the industry expectation for commercial vehicle air suspension height control valves was limited. Available HCV designs were based on seals that wore rapidly, requiring frequent replacement. As the seals failed, height control performance deteriorated and air consumption increased. Valve replacement and downtime costs were rising with trucking demand.

Barksdale Controls identified the need for a solution and developed a series of height control valves based on its patented Shear-Seal® technology. Today Barksdale supplies Original Equipment valves to some of the most prestigious commercial vehicle manufacturers in the world. Our success continues to be driven by our ability to combine high value customized solutions with best in class customer support.

Barksdale invented the Shear-Seal® principle, and since 1949 has used the technology in our valves with great success in demanding applications such as steel and paper mills, oil exploration and processing, and defence. Utilization of Shear-Seal® technology in air suspension height control valve applications yielded breakthrough improvements in durability and performance. The Shear-Seal® principle is based on the sliding of two precisely machined metal sealing surfaces across each other, creating a zero-leak* seal. Contaminants cannot score the seals because flow is through the Shear-Seal® rather than across the sealing surface. Precision engineering and manufacturing combine for unmatched performance and reliability.

Bringing zero-leakage, long life Shear-Seal® technology to commercial vehicle ride control applications changed the industry and made Barksdale Controls the leader in suspension control technology.

Severe Service Height Control Valves

Barksdale’s focus on customer needs led us to develop a height control valve specifically for severe operating conditions. These applications include high levels of dust in air, rough or unsealed roads, mining, temperature extremes, and long duty cycles. The Severe Service HCV teams up proven Shear-Seal® design with case hardened stainless steel components. The result is remarkable durability in some of the harshest environments imaginable, all in a package that slashes operating costs. We further enhanced the value by offering the Severe Service HCV in cab, standard chassis, and integral dump configurations. A direct bolt in Severe Service HCV is available for any existing Barksdale application.
Air Suspension Valves

Standard Valve
- Shear-Seal® Technology for Zero Leak
- Lapped rotor and long-wear pressure seals
- Tapered flow curve for lower air consumption
- Precise dead band for accurate suspension height
- Multiple flow rates available
- Compact design for difficult installations
- Valve can be customized to meet unique OEM needs

Cab Suspension Valve
- Shear-Seal® Technology for Zero Leak
- Lapped rotor and long-wear pressure seals
- Standard push to connect tube fittings
- Tapered flow curve for lower air consumption
- Precise dead band for accurate suspension height
- Multiple flow rates available
- Valve can be customized to meet unique OEM needs

Suspension Valve with Integral Dump
- Shear-Seal® Technology for Zero Leak
- Lapped rotor and long-wear pressure seals
- Dump valve integrated into suspension valve
  - Eliminates extra dump control valves
  - High flow fast dump of air bags
  - Simplifies air plumbing and saves installation time
- Tapered flow curve for lower air consumption
- Precise dead band for accurate suspension height
- Multiple flow rates available
- Valve can be customized to meet unique OEM needs

Linear Cab Levelling Valve
- Compact and cost effective
- Combined valve and link design
- Poppet design
- Engineered plastic construction
- Reduced installation cost
- Press onto mounting studs
- Push to connect fittings in SAE and metric
- Fixed length / no adjustment required

Fixed Link Adjustable Link Multi-Hole Link
To ensure accurate response between the height control valve and the truck’s suspension, Barksdale provides custom linkages. The various available link lengths allow the Barksdale Height Control Valve to be utilized in numerous configurations and to be a direct replacement for many height control valve manufacturers.

Pressure Protection Valve
- Compact size for easy installation
- Light weight
- Direct tank mounting
- SAE and metric ports available
- Female output
- Available with two outlet ports
- Factory calibrated
Dynalco – Speed Condition Monitoring

Dynalco was started in 1968, with three products and a goal of producing engineered solutions for the oil and gas industries. In the 47 years since, Dynalco has become a worldwide industry leader, recognized for its high-quality instruments and controls used in the oil & gas, chemical, power generation, marine and construction industries.

Magnetic Pick ups
- Ultra reliable
- Largest range of pickups
- Sensitivity choices to suit all ranges of speed
- Explosion proof and intrinsically safe options

Hall Effect Pickups
- Provide a digital output down to zero-speed
- Allow for wider airgap
- Detects ferrous or magnetic targets
- Compatible with most PLC Input cards

Speed Switches/Transmitters
- Over and under speed alarms
- Digital and analogue processing options
- DIN rail or panel mount
- Local display
- Analogue outputs
- msec response times

Universal Monitors
- Up to 6 channels
- Accepts many different signals types
- Capable of custom calculations and differential measurements.
- Alarms and analogue outputs

Scanner/Monitor
- Monitor up to 24 channels or speed, pressure, temperature and other parameters
- Microprocessor controller
- Large display of parameters and alarm state.

Tachometers/Hour meters
- Speed indication and control
- Reliably and accurately Keep tabs on machine hours with non-volatile memory.
- Can be pick up powered for remote areas or application convenience.
DYNA-GEN
Flywheel Generator System

Designed to provide dependable power for engines in remote locations where utility power is either not available or too expensive to provide.

Dyna-Gen is a flywheel generator system designed to provide dependable power for engines installed in remote locations where utility power is either not available or too expensive to provide. More reliable than belt-driven alternators, the system has no bearings or belts to wear out. The flywheel mounted generator is capable of producing regulated 12 VDC power required by the engine skid and accessories. This would include the ignition, AFR controller, monitoring / shutdown devices in addition to charging the battery.

Catalyst Monitor

Our Catalyst Monitor meets the RICE NESHAP Continuous Parameter Monitoring requirements. It is a low cost solution that comes pre-configured and is quick and easy to install and get running. CSA approved.

The Catalyst Monitor is a purpose built product that provides you with a low cost plug and play solution for monitoring your catalyst. It monitors catalyst input temperature and calculates and stores the 4-hour rolling average per RICE NESHAP requirements; alarming when out of compliance. It also monitors the pressure drop across the catalyst, engine speed and run hours. It also has on board data logging that can be accessed via a Modbus connection or a USB interface.

AF-900PC Air/Fuel Ratio Controller

The AF900PC Air/Fuel Ratio Controller uses an advanced microprocessor controller to precisely maintain the air/fuel ratio of naturally aspirated and turbocharged carbureted gaseous fueled engines without the use of pneumatic converters.

Heated O2 sensor ensure that the engine’s air/fuel ratio control is being controlled right from start up.

It has a large alpha-numeric backlit display for easy readability and on-board data logging is included and easily downloadable for long-term data storage.
Metrix is the preferred supplier of industrial condition monitoring systems to many of the world’s leading manufacturers and users of cooling towers, gas turbines, reciprocating compressors, and other rotating and reciprocating machinery. With headquarters in Houston, Texas, we operate in more than 40 countries via factory-direct sales and service professionals, along with a strategic network of instrumentation partners.

Metrix vibration monitoring products include machinery protection systems, proximity probes, sensors and transmitters, signal conditioners, transducers, high temperature vibration sensors, mechanical switches, electronic switches, programmable electronic switches, impact transmitters, vibration monitors, portable shakers and vibration meters.

**DPS – Digital Proximity System**

“One driver for all applications”

The world’s first digital proximity probe system. Fully programmable. Fully digital. Fully API 670-compliant. Now, a single programmable device can be configured to work with nearly any probe/cable/target-material combination, and supports probes from a variety of manufacturers including Metrix and Bently Nevada.

**Features:**
- Field Calibration
- One driver for all applications
- Interchangeable with other manufactures
- Vibration, thrust and speed measurements
- IECEx approved

**Metrix Proximity Probes & Cable**

Probes available in 5mm, 8mm and 11 mm, and are designed to offer full API 670-compliant performance characteristics when used with a matching Metrix transducer or transmitter. Cables come in many lengths and both Probes and Cables are fully interchangeable with Bently Nevada 3300 and 3300 XL, 7200 & NSv.

- IECEx approval
- Many lengths armoured and un armoured.
- Forward and reverse mounts
- High pressure
- High temperature
- Coax, triax and armoured cable options
# Metrix Vibration

## Vibration Transmitters

 Highly accurate vibration transmitter with wide frequency response for seismic applications. IECEx approval.

## Vibration Switches

 Available in electronic and mechanical with relay, analogue and solid state output. IECEx approvals for hazardous areas.

## Vibration Sensors

 Acceleration or velocity sensors for high temp and hazardous areas with IECEx approval.

## Shaker Tables

 Portable vibration shakers are designed to be used in the field or shop to verify the performance of vibration transducers, connectors, cabling, instruments or permanently installed condition monitoring systems. NIST traceable calibration reference.

The impact measurement was originally developed as a reliable means of protecting reciprocating compressors. Mechanical conditions such as loose rod nuts, loose bolts, excessive slipper clearance, worn pins and liquid in the process are routinely detected on recips using the impact measurement.

The IT681X Impact Transmitter outputs a current level based on the registered number of events above a user set threshold level that occurred within a configurable time window. Metrix calls this a measurement of “impact severity.” An output of 4mA indicates no events occurred over the threshold level within the time window. An output of 6mA indicates 2 events, 8mA indicates 4 events, etc., up to 20mA for 16 events.
MCM – Moisture in gas monitoring

MCM supply a comprehensive range of Hygrometers and associated Dew point services for moisture measurement in gas.

Moisture Control & Measurement Ltd (MCM) are the globally recognised leaders in gas moisture analysis. We are proud to manufacture and supply trace moisture analysers that are the preferred choice of industry experts for a wide variety of applications around the world.

MCM’s unique temperature controlled silicon sensor and “Push Purge” function enables users a no fuss solutions to reliable moisture measurement.

The Temperature Controlled Silicon Sensor

Temperature Control – a Prerequisite of Good Hygrometry

The necessity for Temperature Control in hygrometry is determined by the Laws of Physics, which dictate that all hygroscopic materials will lose or gain moisture in relation to their temperature. This is clearly observed, for example, when condensation collects on a cold surface, and is then subsequently removed when the temperature of the same surface is raised above the temperature at which the dew forms.

Stable Operating Temperature = Stable Readings

This principle applies to any moisture Sensor. Changes in temperature will give rise to a variation in the amount of water the Sensor can hold in a state of equilibrium. This will, in turn, give rise to larger uncertainties associated with any measurement if Temperature Control is not applied. Therefore, if a Sensor is to give a reproducible response to a fixed water concentration, it must operate at a constant temperature. Accordingly, all MCM moisture analysers feature Temperature Control.

Laboratory Performance & Traceability – In the Field

By applying Temperature Control to a thermally stable Silicon Sensor MCM offers a unique advantage over its competitors who do not use Temperature Control, namely stability and traceability of data. This is particularly relevant when operating at temperatures significantly different from the temperature at the point of calibration.

Traceability

Calibrations, traceable to National Standards, are performed in our laboratory with direct moisture injections – no extrapolations or calibration gases are used. The most demanding applications can be satisfied with ISO17025 calibrations, certified with mass traceability to 20 ppb[V]. Mass traceable calibrations are critical to ppm[V] or ppb[V] determinations - NIST does not offer this service.

We offer ongoing service contracts to provide clients with regular recalibrations, thus ensuring traceability of data and compliance with ISO directives.

Measurement Solutions 36
The Push Purge® Feature

An Effective Means Of Verification
When sampling a gas for the first time, or if anomalies occur that cause concern, the ability to verify results is invaluable. MCM makes this possible with the Push Purge® feature. When activated the surface of the Sensor is heated rapidly, burning off superficial moisture any hydrocarbon contamination that may be present. As the temperature of the Sensor increases moisture is displaced and the displayed reading drops accordingly. As the Sensor cools, and equilibrium is re-established, the moisture reading will return to its previous value if surface contamination is negligible, confirming the value of the water vapour present in the sample gas. In addition, Push Purge® provides valuable information on the risk of contamination of the Sensor, the gas condition and the electronic functionality of the hygrometer.

Rapid, Repeatable Measurements by Eliminating Hysteresis
The effects of hysteresis are minimised when using Push Purge® because each measurement is started with the Sensor in a repeatable, dry condition. Equally, the time required for each measurement to stabilise can be vastly reduced by using the Push Purge® Sensor drying function to speed up the equilibrium process. The time it takes for the water vapour equilibrium to be re-established from this dry state will confirm the analyser’s sensitivity to moisture and establish its response time under field conditions.

Invaluable Diagnostics
Any hygrometer that has the ability to confirm its sensitivity or speed of response to changes in moisture levels, without disturbing the sample condition itself, is a valuable tool for any operator in terms of the confidence it provides in the data that is collected. Push Purge® is, therefore, an invaluable diagnostic tool which aids productivity and Quality Control.
MCM – Moisture in gas monitoring

On-Line Analysers

MicroView
The MicroView and On-Line Hygrometer can sample inert and non-reactive gases. It is ideal for applications where fast speed of response and reliable data collection are important, and the ability to provide audit records is of benefit.

MicroView Mini
The brand new MicroView Mini Hygrometer combines MCM’s key performance advantages in an unbeatable entry-level transmitter.

The MicroView Mini is ideal as a stand-alone transmitter, or as the keystone of a more complex system solution.

Portable Analysers

MicroView Portable
MCM’s hazardous on-line hygrometer redefines hazardous area applications with Ex ia IIC T4 Ta = -20°C to +60°C. Suitable for use with inert and hazardous gases including Natural Gas, methane, LNG / LPG, H2, and volatile hydrocarbons (up to C5)

Dry Transport System
Designed for the LNG industry – portable analysis at line pressure, with in-built dry gas protection

MCM’s Dry Transport System (DTS) is an add-on sample system for the MicroView Portable Hygrometer. With an internal dry gas reservoir, use of the DTS is crucial in applications where trace moisture measurement spot-checking is required at elevated sample pressures, and the fastest possible speed of response is necessary.
Self-Validating Systems

The MCM ATEX Auto-Zero System provides high precision, on-line moisture analysis in applications where levels of contamination are greater than normal and routine servicing is impractical.

- Mitigate the effects of contamination.
- Reduces the necessity for operator interface and maintenance - 24 hour uninterrupted operation.
- Extends the mean service interval of the System and reduces maintenance costs.
- Ideal for Natural Gas and Petrochemical applications. For example: Offshore Platforms, FPSOs, Post-Glycol 'Contactor' Monitoring, LNG, Pipeline Drying, Natural Gas Storage & Distribution, Receiving Terminals (Custody Transfer) and LPG Container Transfer.
- Customised Auto-Zero & Span Systems are also available.

Self-Calibrating System

Developed for catalytic reforming applications in the refinery industry, our most comprehensive analyser system comprises dual sensors and an internal, prime-standard moisture generator.

The MCM Continuous Moisture Measuring System (CMMS) provides catalytic reforming applications with the most accurate and reliable means available for on-line monitoring of moisture in recycle gas. Utilising our unique Temperature Controlled Silicon Sensor, the CMMS detects changes as low as 1 ppm[V] and stands up to corrosives, such as chloride, ensuring representative sampling of the recycle gas stream.

Desiccant Dryers
Continuous drying with seamless regeneration

MCM's range of Continuously Operating Desiccant Dryers (CODD) are intended to provide a constant flow of 'dry' Air or N2, certified by NPL to be drier than -75°C Dewpoint.

Incorporating either 2 or 4 columns, dependent on the required flow, these on-line dryers (dehumidifiers) switch between duty and regeneration columns, thus ensuring that the desiccant is always in its best possible condition.
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