

Industrial Instrumentation Product Overview



Welcome to British Rototherm

With over seventy five years of experience, the British Rototherm Group continues to be a world leader in the manufacture of industrial instrumentation for measuring, monitoring and controlling Temperature, Pressure, Humidity and Flow.

British Rototherm and Thermocouple Instruments products are manufactured in a modern factory located in the South Wales region of the United Kingdom. Sited on 6 acres of land at Kenfig Industrial Estate, the company operates from a modern 6,030 square metre (65,000 square feet) factory.

British Rototherm is an established manufacturer of custom designed process measurement equipment for a wide range of industries including Petrochemical, Oil and Gas, Chemical, Contract Engineering, Pharmaceutical, Food and Beverage, Defence, Power, Steel and Water.

We pride ourselves on our strength and versatility, expressed by our ability to design and manufacture to your exact requirements. This is really where our in-house expertise excels and can tailor the exact solutions to your needs.

Our strong technical advice and software programmes, designed in-house, help to make your measurements accurate, reliable and easier to attain. Our quality process is crucial to our service and our ISO9001 and ATEX approved assemblies ensure you get quality service not only from the product, but also from the moment you call us.

Our Mission

It is our philosophy that the customer is the absolute priority. We have a duty to maintain this principle, and we believe it will give us the edge over our competitors.

We have a highly trained team of sales engineers who listen to, and understand your needs, to achieve the very best solutions with the minimum of fuss. Our drawing office is extremely experienced and can provide detailed drawings of your requirements prior to manufacture. Customer satisfaction and approval, particularly at these early stages, means everything. From planning, through manufacture, assembly and testing our quality management systems ensures your expectations are exceeded.

Our Group

Over the past 15 years, the Rototherm group has been expanded to include a number of well know companies, each well established as market leaders within their business.

At the centre of each group member is the continued commitment to product quality and the highest levels of customer service.

Thermocouple Instruments

A world leader in the manufacture of temperature assemblies and flow instrumentation. *For more information visit: www.thermocouple.co.uk*

RTD Products

The UK's leading manufacturer of ceramic encapsulated wire wound platinum resistance temperature detectors. *For more information visit: www.rtd-products.co.uk*

Bentley Instruments Co. Ltd.

Ireland's leading provider of solutions in the fields of instrumentation, on-site calibration and service, metal detection, tablet and capsule de-dusting and powder handling. *For more information visit: www.bentley-instruments.com*



www.rototherm.co.uk - an essential source of information for all Rototherm Group products and services as well as online ordering from Rototherm's internet shop



Chart Recorders & Recorder Controllers

- Temperature, Pressure, Flow & Humidity
- Rugged design & construction
- Accurate & reliable measuring systems
- Up to 3 recording pens
- Simple installation & maintenance required
- Fully mechanical versions available
- Choice of mounting options - wall / panel / portable / 2" pipe
- Electrical and pneumatic control options
- Spares and consumables widely available

An extensive range of chart recorders and controllers which includes programmable microprocessor electric-input recorder controllers and a wide range of mechanical recorders for temperature, pressure, humidity and flow with options for electrical or pneumatic control.

Rototherm chart recorders can be used to record and control:

- Temperature
- Pressure
- Humidity
- Flow

Each recorder is supplied with a packet of 100 charts and 1 spare packet of pens for each pen specified. Consumable items and spare parts are readily available from British Rototherm

Clearscan Chart Recorders

The Clearscan range of recorders is suitable for most industrial applications and can be fitted with up to 3 pens for recording temperature, pressure and flow.

Sentinel Micro-processor based chart recorders

The Sentinel range of micro-processor based circular chart recorders is available in 1, 2 and 3 channel versions. Sentinel combines the simplicity and clarity of pen drawn traces together with the versatility of microprocessor control.

RPO and RTO Series Chart Recorders

The RPO series of pressure circular chart recorders uses the well proven and reliable Rototherm non ferrous or stainless steel pressure system. The RTO range of temperature circular chart recorders uses the well



(from left to right) Model RPO Pressure Recorder, Sentinel Chart Recorder & Clearscan Chart Recorder



RTH Recorders



C105 Recorder



RPO / RTO Recorder

proven and reliable Rototherm stainless steel thermal system. Up to three pens can be fitted with three temperature systems or a combination of temperature and pressure systems.

Clearscan C105 Chart Recorders

Developed from the ex Kent Industrial Measurement and Cambridge range of circular chart recorders, C105 continues to be available and still offers the same reliability and versatility that has been manufactured for the past 30 years.

Chart Recorders - features

| | Maximum number of pens | Chart Diameter | Wall Mounting | Portable Mounting | 2" pipe mounting | Electric chart drive | Mechanical chart drive | All mechanical version | Temperature / Pressure | Temperature / Humidity | Electrical Input | Electrical Control | Pneumatic Control | Flow version | Timber Kiln version | Dairy version |
|-----------------------------------|------------------------|----------------|---------------|-------------------|------------------|----------------------|------------------------|------------------------|------------------------|------------------------|------------------|--------------------|-------------------|--------------|---------------------|---------------|
| Sentinel Microprocessor Recorders | 3 | 9" | ● | ○ | ⊗ | ● | ⊗ | ⊗ | ○ | ○ | ● | ● | ⊗ | ○ | ○ | ○ |
| Clearscan Recorders | 3 | 12" | ● | ○ | ○ | ○ | ● | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ○ | ⊗ | ⊗ |
| C105 Recorders | 2 | 10" | ● | ○ | ○ | ● | ○ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| RPO Pressure Recorders | 3 | 9" | ● | ○ | ○ | ● | ○ | ○ | ○ | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ |
| RTO Temperature Recorders | 3 | 9" | ● | ○ | ○ | ● | ○ | ○ | ○ | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ |
| RTH Series Recorders | 2 | 9" | ● | ○ | ⊗ | ● | ⊗ | ⊗ | ⊗ | ● | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |

● = standard ○ = option ⊗ = not available

please refer to product data sheets and catalogues for full product specifications

Thermometers



- Rugged design & construction
- Accurate & reliable measuring systems
- Analogue and Digital versions available
- Wide choice of measuring ranges
- Electrical control options

Bimetallic Thermometers

Bimetallic thermometers are manufactured in various versions to suit most industrial applications. All bimetallic thermometers are manufactured with stainless steel cases and sensing stems and are used in many industries including food, beverage, dairy, pharmaceutical and petrochemical.

Filled System Thermometers

As well as bimetallic thermometers, Rototherm manufactures a wide range of filled system thermometers. Developed from the original Mercury in Steel thermometers, Rototherm now manufactures these thermometers with a safe, non-toxic filling. Both rigid stem and capillary models are available and these thermometers can be specified with electrical contact heads if required.

DigiTemp Digital Thermometers

The DigiTemp range of digital thermometers employs microprocessors enabling extremely low power consumption to be achieved thus offering extended battery life. Available with either thermocouple or RTD PT1000 sensors, DigiTemp is offered in both rigid stem and remote reading versions. The addition to the range of an ATEX approved intrinsically safe version allows this product to be standardised in all pharmaceutical and petrochemical industries.

Thermowells - see page 5

Thermometers - features



Bimetallic Thermometers



Filled System Thermometers



Surface Bimetallic Thermometers



DigiTemp Digital Thermometers

| | Dial Sizes Available (mm) | Case Material | Capillary Version Available | Mechanical Actuation | Available with a Thermowell | Maximum Temperature Range (Deg C) | Electrical Contacts Available |
|---|---------------------------|-----------------|-----------------------------|----------------------|-----------------------------|-----------------------------------|-------------------------------|
| Light Duty Bimetallic Thermometers | 63 | Stainless Steel | ⊗ | ● | ○ | 400 | ⊗ |
| Heavy Duty Bimetallic Thermometers | 63 100 160 | Stainless Steel | ⊗ | ● | ○ | 550 | ○ |
| Any Angle Pattern Bimetallic Thermometers | 100 130 160 | Stainless Steel | ⊗ | ● | ○ | 550 | ⊗ |
| Surface Bimetallic Thermometers | 63 | Stainless Steel | ⊗ | ● | ⊗ | 400 | ⊗ |
| Filled System Thermometers | 100 160 | Stainless Steel | ○ | ● | ○ | 650 | ○ |
| Diesel Exhaust Thermometers | 100 | Polyester Resin | ○ | ● | ○ | 650 | ⊗ |
| DigiTemp Digital Thermometers | 100 | Stainless Steel | ○ | ⊗ | ○ | 800 | ⊗ |

● = standard ○ = option ⊗ = not available

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Digital Indicators

DA5000 Flomaster Digital Anemometer

The DA5000 range of digital anemometers enables fast, reliable and accurate readings of air velocity utilising high quality rotating vane sensors.



Either of the Rototherm 25mm or 70mm sensing heads can be used with the DA5000 without the need for recalibration.

Sentry Digital Process Indicators

The Sentry range of digital process indicators are microprocessor based and are easily configurable from the front panel.



The Sentry range is fitted with a large 4 digit LED display and has a range of alarm options. Sentry has a standard 1/8 DIN panel cut out size of 92 x 45mm.

Pressure Gauges



- Rugged design & construction
- Choice of case styles and mountings
- Analogue and Digital versions available
- Wide choice of measuring ranges
- Electrical control options

With the acquisition of the pressure gauge manufacturer Sydney Smith Dennis (SSD) in 1998, Rototherm's range of pressure gauges dramatically increased to include gauges to suit most industrial applications.

Process Gauges

A wide range of process gauges is offered including stainless steel cased Elite safety pattern gauges and high corrosion resistant DMC cased pressure gauges. Low range capsule gauges are also offered.

Differential Pressure Gauges

Rototherm manufactures a range of high quality, cost effective and reliable differential pressure gauges designed to measure the difference in pressure between two points in a system, such as differential pressure across an orifice plate, and show it on a single dial gauge.

Digital Pressure Gauges

The DigiGauge Digital Pressure Gauge offers high accuracy and a 4 digit display - which enables it to be used as a digital standard test gauge. The DigiGauge has been designed to cover a wide range of test and measurement applications with pressure ranges from vacuum to 400 bar.

DigiGauge is offered with the option of a 4 to 20mA retransmission signal and may be specified with maximum and minimum value display. The addition to the range of intrinsically safe versions allows DigiGauge to be used in hazardous areas

Pressure Transmitters

The Rototherm range of Pressure Transmitters provide a 4 to 20 mA

Pressure Gauges - features



SPG Elite Safety Pattern Pressure



RPG Process Gauges



DMC Cased Safety Pattern Gauges



SPGA Aluminium Cased Safety Pattern Gauges



Gauges fitted with Diaphragm Seal Units



PTX Pressure Transmitters



Turret Style Safety Pattern Gauges



DigiGauge Digital Pressure Gauges



Differential Pressure Gauges

output signal by utilising a diaphragm strain gauge mounted with an amplifier in a stainless steel housing. These reliable instruments are rugged and easy to install.

| | | Dial Sizes Available (mm) | Case Material | Wetted Parts | NACE MR-01-75 Option | Glycerine Filling Option | Diaphragm Seal Option | Electrical Contact Option |
|--------|----------------------------------|-----------------------------|---------------|---------------|----------------------|--------------------------|-----------------------|---------------------------|
| SPG | Safety Pattern Pressure Gauge | 100 150 | SS | SS M | ○ | ○ | ○ | ○ |
| RPG | Process Pressure Gauge | 63 100 150 | SS | SS M | ○ | ○ | ○ | ○ |
| RCG | Capsule Pressure Gauge | 100 150 | SS | BB SS | ⊗ | ⊗ | ⊗ | ⊗ |
| DMC | Safety Pattern Pressure Gauge | 100 150 | DMC | SS M | ○ | ⊗ | ○ | ○ |
| SPGA | Safety Pattern Pressure Gauge | 63 100 150 200 250 300 | AL | BB SS M | ○ | ⊗ | ○ | ⊗ |
| TURRET | Safety Pattern Pressure Gauge | 115 | Phen | SS M | ○ | ○ | ○ | ⊗ |
| DG1 | DigiGauge Digital Pressure Gauge | 100 | SS | SS | ⊗ | ⊗ | ○ | ⊗ |
| DPG | Differential Pressure Gauges | 50 63 80 100 112 115 150 | SS | AL BB SS M | ○ | ○ | ○ | ○ |
| TPG | Test Pressure Gauges | 150 200 250 300 | AL SS DMC | BB SS | ⊗ | ⊗ | ⊗ | ⊗ |

○ = option ⊗ = not available AL = Aluminium BB = Non Ferrous DMC = Dough Moulded Compound M = Monel Phen = Phenolic SS = Stainless Steel

please refer to product data sheets and catalogues for full product specifications

Temperature Assemblies

The Rototherm / Thermocouple range of temperature assemblies has been designed for all industrial applications and is manufactured in strict accordance with the companies ISO 9001:2008 Quality System.

The range includes probes suitable for direct insertion into processes without protective thermowells and full assemblies complete with screwed or flanged thermowells and connection heads.

Connection Heads

Our comprehensive range of connection heads provides the best environmental protection for the electrical terminals on terminal blocks or temperature transmitters fitted to resistance thermometers or thermocouple inserts.



Temperature Transmitters

Temperature transmitters are used to convert the primary sensing signal, usually a resistance change for RTD sensors or EMF for thermocouples, into a standard current signal of 4-20mA. We offer a comprehensive range of temperature transmitters suitable for thermocouples or platinum resistance thermometers (RTD), these transmitters may be either head or rack mounted. Temperature ranges may be factory set or user adjusted. (Programmable, intrinsically safe, Hart®, Profibus® and Foundation Fieldbus® communication versions are available).

Mineral Insulated Thermocouples

A Thermocouple consists of two electrical conductors of dissimilar material connected at one end (the hot junction), the two free ends are connected to the measuring instrument via a reference junction (the cold junction). The connection of these two materials provides an electromotive force (emf).

Mineral Insulated Resistance Thermometers

A Resistance Thermometer is a temperature sensor constructed from resistance wire wound into an element. It is used to measure temperature by means of a change in the electrical resistance with a rise or fall in temperature. The most popular wire used in Resistance Thermometers is platinum, although nickel or copper can also be used.

Lagging Extensions

Lagging extensions are available in a wide range of lengths, sizes and fittings. Materials include Carbon Steel and Stainless Steel. They allow the connection head to be positioned away from the heat source, or through insulating lagging. Nipple/Union/Nipple and Breakaway couplings allow rapid disconnection for testing and orientation.

Thermowells

Thermowells are used extensively in the power, process, pharmaceutical and petrochemical industries. They are used to protect temperature indicators and sensors from process media and enable servicing or replacement of sensors without the need to shut down plant.

Rototherm thermowells are precision made to the highest standards of finish in our modern well equipped machine shop and are manufactured to Rototherm's high quality standards approved to BS EN ISO 9001.

Thermowells are available fabricated from tube or drilled from barstock or forgings, full material certification, including original mill and suppliers materials certificates can be provided. If required NACE standard MR-01-75 requirements can be met.

Our custom-design ability puts us ahead of the competition for providing thermowells. As part of an assembly or as a replacement, we can provide thermowells of any size, material and specification. As part of our solution we can also offer stress and wake frequency calculations to ensure you have the correct design for the job.



Cast Iron H70 Head Standard Lid



Cast Iron H70 Head Glass Window



Model KNY Connection Head



Model TR48 Temperature Transmitter



Model TR12 Digital Temperature Transmitter



Flow Products

Accurate and reliable flow measurement equipment is essential for all types of industry processes all over the world. Whatever your process requirement for flow measurement, be it water, oil and gas, air, steam, waste water or other fluid, we have the answer, combined with the added flexibility of designing and manufacturing a system to suit your requirements.

Our vast knowledge and experience of providing solutions for organisations worldwide has proven our capability to provide the complete range of flow measurement equipment.

Our custom-designed measurement solutions are typically of the differential pressure type, including orifice plates, Venturi tubes, Pitot tubes and flow nozzles.

Orifice Plates

The most common and widely used differential pressure producers, suitable for a wide range of flow measurement applications in line sizes of 50 mm and above. Choose 'concentric square edged' for general application, 'conical entrance' or 'quarter circle' for low Reynolds number flows, and 'segmental' or 'eccentric' for flows containing light solids and slurries.

Based on proven technology, orifice plates have no moving parts and are suitable for high temperature and pressure applications. Orifice plates are recommended for clean liquids, gases and low velocity steam flows.

Restriction orifice plates can be used as a simple pressure reducing device, or to limit flow rate in a pipeline. They are designed to slip between pipe flanges.

Flow Nozzles

For measurements where high temperatures and velocities are present, the flow nozzle may provide a better solution than an orifice plate. Its construction makes it substantially more rigid in these adverse conditions and flow coefficient data at high Reynolds numbers is better documented than for orifice plates. The inlet is contoured, and may be either radius entrance (ISA1932) or elliptical entrance (ASME long radius). The flow nozzle has about a 65% greater flow capacity than an orifice with the same diameter.

Venturi Tubes

There are two common types of Venturi tube - the Venturi nozzle, and the classical Venturi. Both feature a convergent inlet section and a divergent outlet section. The major advantage of the Venturi over orifice plates and flow nozzles is in the area of pressure recovery. Typically, unrecovered pressure is in the region of 10 - 30% of measured DP as opposed to 40 - 90% for an orifice plate (depending on beta ratio). Although the cost of a Venturi can be comparatively high, where pumping costs are important the initial outlay can be justified.

Differential Pressure Gauges

Rototherm manufactures a range of high quality, cost effective and reliable differential pressure gauges designed to measure the difference in pressure between two points in a system and show it on a single dial gauge such as differential pressure across an orifice plate.

Flow Recorders

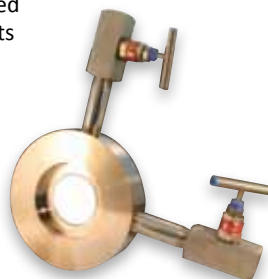
Utilising a high quality differential pressure unit, the Clearscan range of circular chart recorders includes options for measuring temperature and pressure as well as flow.



RTJ Type Orifice Plate



Orifice Flange Assembly



Orifice Carrier & Integral Plate (show with optional isolation valves)



Restriction Orifice Plate



Differential Pressure Gauges

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Suitable for many industrial applications, British Rototherm products are precision built to the highest quality.

Approved by major companies and contractors in the United Kingdom and throughout the world for the supply of instrumentation and associated products, British Rototherm products are specified and installed wherever reliability and long lasting, accurate performance is demanded.

The Rototherm range of instrumentation includes:

- *Mechanical Recorders & Recorder Controllers*
- *Pneumatic Indicators & Recorder Controllers*
- *Thermometers*
- *Digital Thermometers*
- *Digital Process Indicators*
- *Pressure Gauges*
- *Digital Pressure Gauges*
- *Thermowells*
- *Temperature Sensors & Assemblies*
- *Orifice & Restriction Orifice Plates*
- *Digital Anemometers*
- *Recorder Charts, Pens & Spares*

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ISO9001:2008

Your local Rototherm distributor: