

Thermometer Product Catalogue



Bimetallic Thermometers | Filled System Thermometers | Digital Thermometers | Digital Process Indicators



Welcome to British Rototherm

With over seventy 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 Brewing, 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 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



Quality First

At the centre of everything we do, Rototherm's high quality and performance is guaranteed by an uncompromising approach to quality. 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.

Rototherm's policy has always been to maintain a consistently high level of quality and reliability throughout its product range and service to customers.

The company has worked energetically towards establishing comprehensive quality controls and has earned a worldwide reputation for product quality.

All calibration standards are traceable to national standards thus allowing the issuing of test or calibration certificates when required.



ISO9001:2000
FM11958



Worldwide Reliability

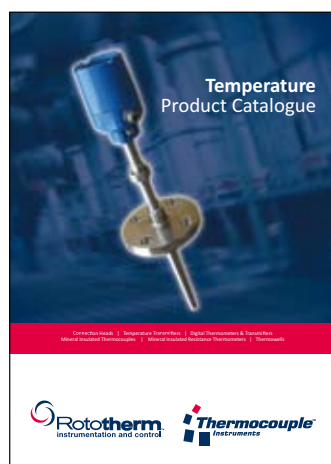
British Rototherm has worked hard to develop a network of distributors and stockists throughout the United Kingdom and the rest of the world who can be relied upon for support, technical advice and service.

Rototherm's main distributors and stockist are located in the following countries:

- Australia
- Abu Dhabi
- Bahrain
- Brunei Darussalam
- Canada
- Chile
- Dubai
- Egypt
- Greece
- Hong Kong
- India
- Indonesia
- Iran
- Ireland
- Italy
- Kenya
- Kuwait
- Malaysia
- The Netherlands
- New Zealand
- Nigeria
- Norway
- Oman
- Pakistan
- Qatar
- Saudi Arabia
- Singapore
- South Africa
- Spain
- Taiwan
- Thailand
- United States of America
- Vietnam

Product Capabilities

This catalogue features just a small part of the British Rototherm range of products. A comprehensive range of catalogues is available featuring our other product groups including Temperature Assemblies, Flow Products and Pressure Gauges. These catalogues can be requested from British Rototherm or downloaded from www.rototherm.co.uk/datasheets.htm



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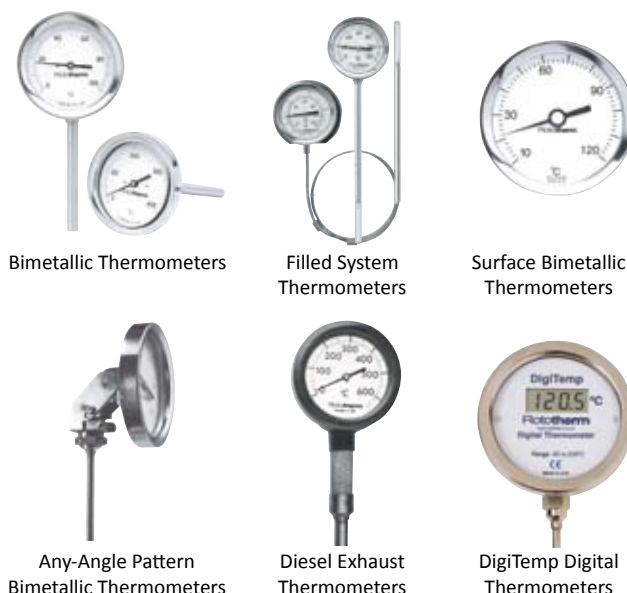
Thermometers Overview

- 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.

In addition to the range of filled system thermometers, Rototherm offers a range of thermometers for accurate and reliable indication of the exhaust gas temperature of diesel engines and generators.

The stem is fitted with a unique anti-resonant section which dampens out vibration of the instrument head, and eliminates the need for oil filling.

DigiTemp Digital Thermometers

The DigiTemp range of digital thermometers employ micro processors enabling extremely low power consumption to be achieved thus offering extend 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 versions allows this product to be standardised in all pharmaceutical and petrochemical industries.

Thermowells

To complement our range of thermometers, Rototherm can offer an extensive range of thermowells to meet the exact requirements of your application.

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

Available with either flanged or screwed process connections, Rototherm thermowells are available fabricated from tube, drilled from barstock or from forgings. Full material certification including original mill and suppliers material certificates can be provided. If required NACE standard MR-01-75 requirements can be met.

Thermometers - features

	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

please refer to product pages in this catalogue for full product specifications

BH2 & BH3 Heavy Duty Bimetallic Thermometers

BH2 Heavy Duty Bimetallic Thermometers

- 63mm, 100mm and 160mm case options
- Stainless steel construction - case and stem
- External zero adjustment
- No contaminants - safe for food and chemical applications
- Can be fitted with electrical contact heads (100mm & 160mm sizes only)
- Available with maximum or minimum value and index pointers

Introduction

The Rototherm range of Heavy Duty Bimetallic Thermometers combines robust construction, making these instruments suitable for the most stringent environmental conditions, together with an accurately manufactured bimetallic coil, which ensures a long dependable life.

Rototherm bimetallic thermometers do not contain harmful fill fluids eliminating any possibility of process contamination.

Applications

- Ovens, Dryers, Storage Tanks
- Food Processing, Dairies, Breweries
- Pharmaceuticals and Petro chemical Industries, Refining

Specifications - BH2 & BH3

Case & Bezel

304 Stainless steel standard. 316 Stainless steel non-standard option. Weatherproof (rated IP 65)

Dial

Non ferrous metal clearly marked to BS3693. Black characters on a white background

Window

Instrument Glass as standard. Options: Toughened glass or acrylic

Stem Material

316 Stainless steel

Stem Diameters

6.0mm, 6.3mm, 8.0mm and 12.7mm

Immersion Length

Minimum immersion depends on temperature range (see table)

Maximum Stem Lengths

6.0mm & 6.3mm x 500mm
8.0mm x 1000mm
12.7mm x 1500mm

Fitting

Plain stem for fitting with compression gland or flange

Accuracy

±1% of span (±2% when fitted with an electrical contact head)

Options

Alternative stem diameters and lengths.
Maximum or minimum value, and index pointers available. Electric contacts available (100mm and 160mm nominal diameter dials only)



Models - BH2

BH2 22	63 mm dial, vertical stem entry
BH2 26	63 mm dial, coaxial stem entry
BH2 29	63 mm dial, flange mounting
BH2 42	100 mm dial, vertical stem entry
BH2 46	100 mm dial, coaxial stem entry
BH2 49	100 mm dial, flange mounting
BH2 62	160 mm dial, vertical stem entry
BH2 66	160 mm dial, coaxial stem entry

Electrical Contact Heads (Model BH2 only)

To provide alarm or control functions, 100 and 160mm nominal dial instruments can be specified with electrical contact heads mounted in a clear plastic hood in place of the standard window. The set point can be adjusted to any position on the scale with a removable key. Single and dual contact systems are available. Electrical contact heads provide a repeatable switching point, but the absolute accuracy tolerance of the instrument is approximately doubled by the contacts.

Contact Rating

Standard contact head assemblies: 250V, switching capacity 10W, 18VA, maximum current 0.7A.

Service

Indoor use, ambient temperature -10/70°C, free from vibration

Application

Thermometers with 12.7 mm stem diameter only

System Operation	Typical Application
A Break on rise	Temperature control
B Make on rise	Over temperature alarm
E Break on rise and make on rise in temperature	Temperature control plus alarm

BH3 Any Angle Pattern Thermometers

- 100mm, 130mm and 160mm case options
- Silicone filling available
- No contaminants - safe for food and chemical applications

The Rototherm range of Any Angle Bimetallic Thermometers allows movement of the adjustable head through 180°, through a full 360° rotation, thus allowing its position to be set for maximum readability after installation.

All welded stainless steel construction of the system/bellows assembly allows full angular adjustment of the case through 360° without the need for pointer adjustment.

The Any Angle Bimetallic Thermometer is available in either 100mm, 130mm or 160mm dial sizes with temperature ranges and stem lengths to suit most industrial applications.



Models - BH3

BH3 45	100 mm dial, any angle pattern
BH3 55	130 mm dial, any angle pattern
BH3 65	160 mm dial, any angle pattern

Standard Temperature Ranges - BH2 & BH3

Temperature Ranges			Sensitive Portion Length		
Single Scale		Dual Scale	Stem Diameter		
Degree C	Degree F	Degree C & F	6.0 mm / 6.35 mm	8.0 mm	12.7 mm
-30 / +60 °C	20 to 140 °F	n/a	65 mm	70 mm	95 mm
-20 / +120 °C	n/a	n/a	45 mm	50 mm	75 mm
0 to 60 °C	n/a	n/a	85 mm	90 mm	100 mm
0 to 100 °C	20 to 220 °F	0 to 100 °C & °F	55 mm	60 mm	80 mm
0 to 120 °C	n/a	n/a	50 mm	55 mm	80 mm
0 to 160 °C	0 to 300 °F	n/a	40 mm	45 mm	65 mm
0 to 200 °C	n/a	n/a	35 mm	40 mm	65 mm
0 to 250 °C**	n/a	n/a	30 mm	35 mm	65 mm
50 to 250 °C	n/a	50 to 250 °C & °F	35 mm	40 mm	65 mm
0 to 300 °C**	n/a	n/a	40 mm	45 mm	60 mm
0 to 400 °C	0 to 800 °F	n/a	30 mm	35 mm	55 mm
0 to 500 °C*	n/a	n/a	30 mm	35 mm	55 mm
100 to 550 °C	200 to 1050 °F	100 to 550 °C & °F	55 mm	55 mm	80 mm

* thermometers with ranges above 400 Degree C should not be used for prolonged periods above 425 Deg C ** only available with 8.0mm and 12.7mm stem diameters

Thermowells

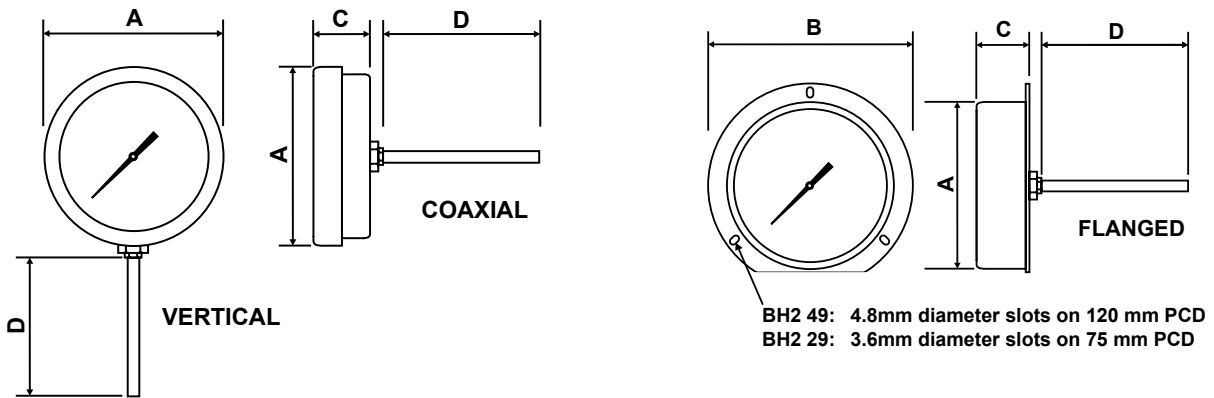
Used predominantly in the power, process, pharmaceutical and petrochemical industries, thermowells are used to protect temperature indicators and sensors from process media and to enable servicing or replacement of indicators without the need to shut down plant.

Available with either flanges or screwed process connections, Rototherm thermowells are available fabricated from tube, drilled from barstock or from forgings. Full material certification including original mill and suppliers material certificates can be provided. If required NACE standard MR-01-75 requirements can be met.



Please see the Rototherm Temperature Brochure for further details on our extensive range of thermowells

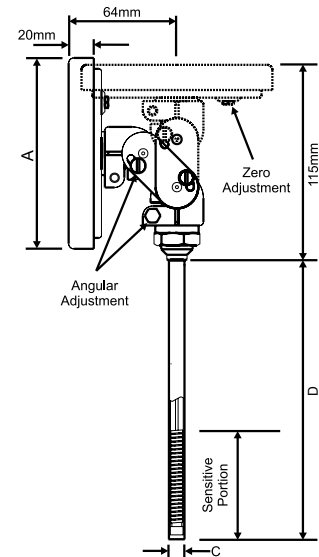
Dimensions - BH2



Dial Size	63 mm			100 mm			160 mm	
Type	Vertical	Coaxial	Flanged	Vertical	Coaxial	Flanged	Vertical	Coaxial
Model	BH222	BH226	BH229	BH242	BH246	BH249	BH262	BH266
Case diameter mm (A)	69	69	69	112	112	112	173	173
Flange diameter mm (B)	-	-	84	-	-	133	-	-
Case Depth mm (C)	43	15	18	47	22	22	50	22
Stem Length mm (D)	To be advised by customer							
Weight (gm)	265	215	265	400	405	575	950	750

Dimensions - BH3

Dial Size	100 mm	130 mm	160 mm
Model	BH345	BH355	BH365
Case diameter mm (A)	112	128	173
Case Depth mm	20	20	20
Stem Diameter mm (C)	6.0mm, 6.3mm, 8.0mm or 12.7mm		
Stem Length mm (D)	To be advised by customer		
Weight (gm)	600	750	800

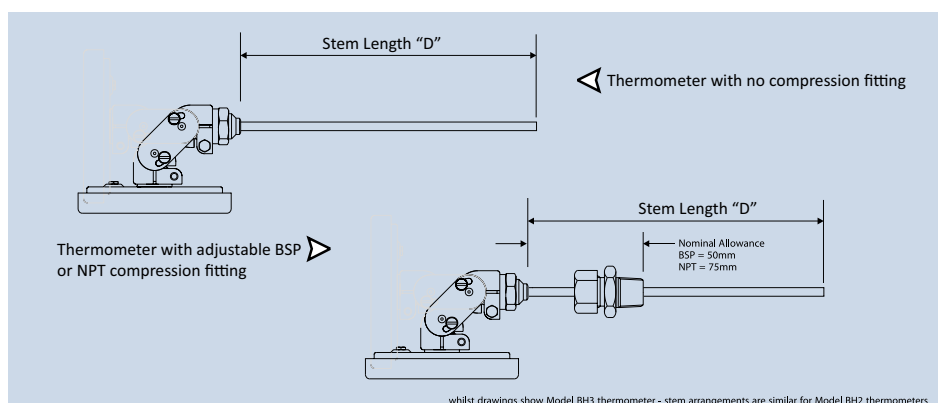


All dimensions are in mm. Drawings are for illustration purposes only and are not to scale

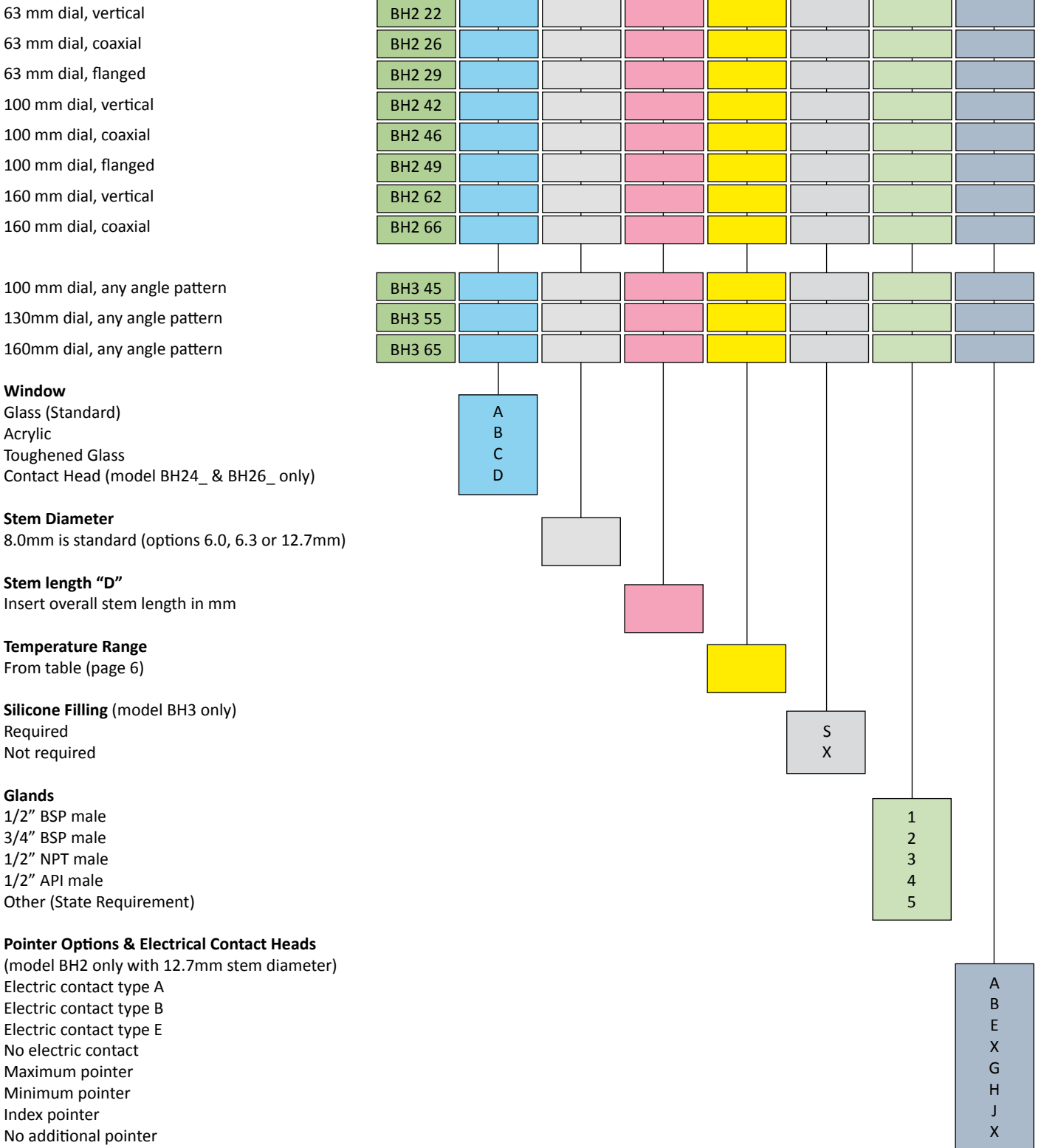
Compression Glands / Fittings

Compression glands tighten on the stem to provide a liquid and gas tight seal. Once fitted the position of the gland can only be altered by cutting off the olive and replacing it with a new one.

Add 50mm for BSP threads (75mm for NPT threads) to desired immersion length to obtain minimum "D" dimension).



Order Codes BH2 & BH3 Heavy Duty Bimetallic Thermometers



Example Order Code



Model BH2 46, 100mm dial bimetallic thermometer, co-axial mounting, stem diameter 12.7mm, stem length 300mm, temperature range 0 to 60°C, 1/2" BSP gland, fitted with type A contact head



Model BH3 45, 100mm dial bimetallic thermometer, stem diameter 6.35mm, stem length 400mm, temperature range 0 to 60°C, silicone filled, 1/2" NPT gland, no additional pointer

BL1 & BL2 Light Duty Bimetallic Thermometers

Suitable for use on food processing equipment, the completely sealed stainless steel stem makes Rototherm Light Bimetallic Thermometers the ideal choice. Perspex windows can be supplied in place of glass if required.

Specifications BL1

Case & Bezel

65mm diameter, splashproof, corrosion resistant 304 stainless steel

Dial

63mm diameter, non ferrous metal clearly marked to BS3693
Black characters on a white background

Stem

8mm diameter, stainless steel to BS970:316. Completely sealed for direct immersion into medium

Immersion

Minimum immersion depends on temperature range (see table)

Accuracy

±1% of span

Specifications BL2

A special model for mounting on ovens, sterilisers, cabinets etc. where there is insufficient space for BL1

Case & Bezel

54mm diameter, splashproof, corrosion resistant 304 stainless steel

Dial

50mm diameter, non ferrous metal clearly marked to BS3693
Black characters on a white background

Stem

5mm diameter, stainless steel to BS970:316. Completely sealed for direct immersion into medium

Immersion

Minimum immersion depends on temperature range (see table)

Accuracy

±1% of span

Compression glands for BL103

Tighten onto stem to provide a liquid and gas type seal. Once fitted, the position of the gland can only be altered by cutting off the olive and replacing it with a new one. Allow 40mm of stem above shoulder of gland to enable nut to be tightened.

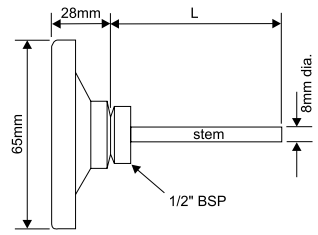
Standard Temperature Ranges - BL1 & BL2

Temperature Range		Minimum Immersion Length
Deg C	Deg F	mm
-30 to +60	-20 to +140	60
10 to 120	50 to 250	55
0 to 160	0 to 300	45
50 to 250	100 to 400	45
0 to 400*	0 to 800	55

*not available on model BL2 01

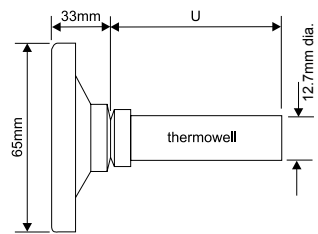
BL101 with 1/2" BSP boss

For direct fitting to pipelines or tanks by integral 1/2" BSP boss. Standard insertion length L = 40, 55 or 75mm. Note that the boss is relieved internally to allow required stem length to be exposed to medium.



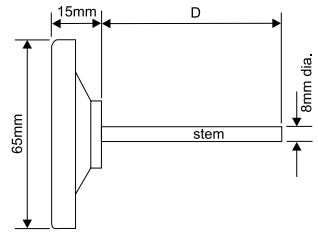
BL102 with thermowell

Complete with thermowell to enable thermometer to be removed without draining the system. Standard thermowell is solid machined stainless steel, 12.7mm diameter with 1/2" BSP fitting.



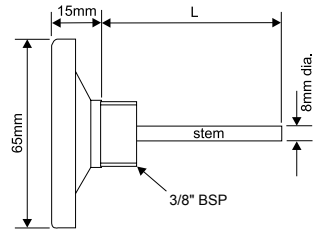
BL103 plain stem

Can be used without fixing in place or with compression gland to seal thermometer at any required immersion in tank, pipeline or thermowell. Standard stem length : 150mm
Option: stem length up to 1000mm



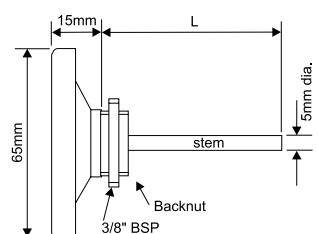
BL104 backnut fitting

Flush fitting with 3/8" BSP boss and backnut and rubber sealing ring for use on ovens, sterilisers etc. Standard stem length : 150mm
Option: stem length up to 1000mm



BL201 50mm dial with boss

Special model for mounting on ovens, cabinets etc. where there is insufficient space for BL1. Flush fitting with 3/8" BSP boss and backnut. Standard stem length : 75mm
Option: stem length up to 200mm



Order Code - BL1 & BL2

63 mm dial, 1/2" BSP boss

63 mm dial, c/w thermowell

Insertion Length "L"

Insert stem length

Temperature Range

From table

63 mm dial, plain stem

63 mm dial, boss & backnut

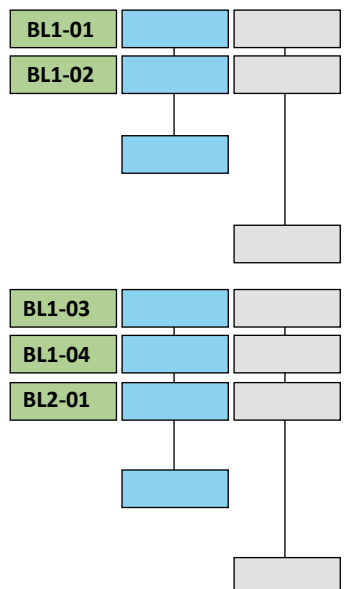
50 mm dial, 3/8" BSP boss

Insertion Length "L"

Insert stem length

Temperature Range

From table



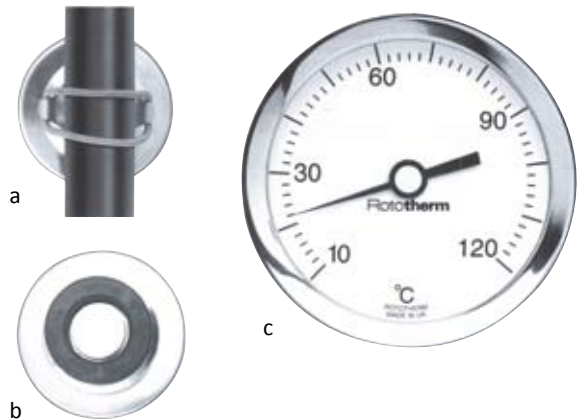
BL3 Surface Temperature Thermometers

A range of surface mounting bimetallic thermometers suitable for testing, balancing and fault-finding on heating systems. They can be attached to a surface by an adjustable spring or magnet to give an immediate indication of temperature without drilling or cutting.

This range of bimetallic thermometers is equally suitable for use on pipelines or flat surfaces such as radiators, platens or hot plates.

Excellent thermal conductivity is provided by the aluminium housing to the bimetallic element, while the stainless steel case and bezel minimises dissipation of heat to the atmosphere.

- a. BL301 illustrating spring fixing
- b. BL302 illustrating ring magnet (on ranges up to 160°C)
- c. BL301 front view



BL3-01 Surface Temperature Thermometer

Attaches to pipes by means of a spring and rotating hook. Without the spring, the instrument can be used on horizontal surfaces.

Specification - BL3-01

Case & Bezel
Stainless steel, 65mm diameter x 13mm depth with aluminium housing 20mm x 7mm and rotating hook to accept fixing springs

Dial
63mm diameter clearly marked to BS3693. Black characters on a white background

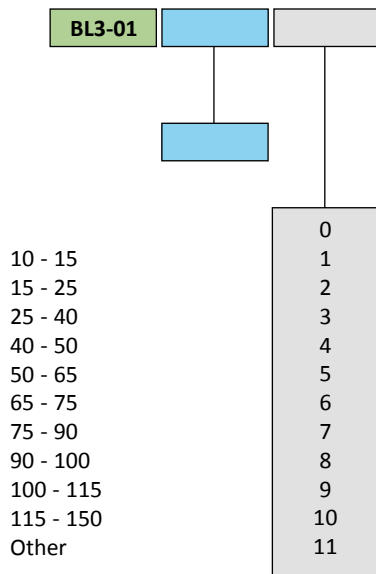
Accuracy
±2% of span

Order Code - BL3-01

63 mm dial, pipe mounting thermometer

Temperature Range
From table

Spring Size
No spring required
Pipe diameter (mm)



BL3-02 Magnetic Fixing Thermometer

A strong permanent magnet enables this compact thermometer to be easily attached to horizontal or vertical surfaces. It is ideal for checking surface temperatures prior to the application of special finishes.

Specification - BL3-02

Case & Bezel
Stainless steel, 65mm diameter x 13mm depth with aluminium housing.

For ranges up to 160 Deg C
40mm diameter ring magnet extends 7mm behind case

For ranges up to 400 Deg C
Ring magnet is replaced by bar magnets for high temperature resistance.

Dial
63mm diameter clearly marked to BS3693. Black characters on a white background

Accuracy
±2% of span

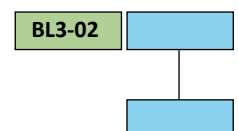
Standard Temperature Ranges - BL3-01 & BL3-02

Temperature Range	
Deg C	Deg F
-30 to +60 °C	-20 to +140 °F
10 to 120 °C	50 to 250 °F
0 to 160 °C	0 to 300 °F
100 to 300 °C	
0 to 400 °C	

Order Code - BL3-02

63 mm dial, magnetic fixing thermometer

Temperature Range
From table



NC & NR Filled System Thermometers

The Rototherm range of filled system thermometers offer tough yet accurate instruments with rigid stems for direct mounting or with flexible capillary for remote reading.

Most models in the range may be specified with electrical contact heads to provide alarm or control functions.

Rototherm non toxic filled system thermometers are designed to give guaranteed reliability over a wide range of ambient temperature conditions and are compensated for ambient temperature changes from -30 to +50°C.

NC1 & NC2 Capillary Thermometers

Where display is required some distance from the sensing point, for example on an instrument panel, capillary thermometers should be used. The dial can be located up to 30 metres from the sensing point and isolated from dirt and vibration. The sensing bulb is connected by stainless steel microbore capillary, protected by stainless steel tubing. For severe conditions, flexible armour can extend the entire length of the capillary. Alternative protections can be specified if required.

Specifications - NC1 & NC2 Capillary Thermometers

Case & Bezel

NC1 Diecast aluminium.
Weatherproof IP67

NR2 304 stainless steel.
316 stainless steel option. Weatherproof IP67

Dial

Clearly marked black characters on white background

Window

Glass as standard. Options - acrylic and toughened glass.

Bulb / Stem

316 stainless steel

Capillary

Microbore stainless steel tube with 3mm OD stainless steel protection.

Maximum capillary Length

30 metres (for Gas filled instruments)
12 metres (for Xylene filled instruments)

Temperature Range

See table for standard temperature ranges (page 12)

Accuracy

Class 1.0 ($\pm 1.0\%$ FSD) ($\pm 2\%$ when electrical contact heads are fitted)

Ambient Temperature

Head compensated for variation in ambient temperature from -30 to +50°C.



Models

NC1 General Purpose capillary Thermometers

Tough accurate thermometers housed in a gasket sealed diecast aluminium case with adjustable zero.

NC2 Stainless Steel Cased Thermometers

Reliable, accurate industrial thermometers housed in a stainless steel case with the option of 100mm or 160mm diameter dial

NC1 42	100mm Dial, Surface Mounted Bottom Entry
NC1 46	100mm Dial, Panel Mounted Back Entry
NC2 42	100mm Dial, Surface Mounted Bottom Entry
NC2 46	100mm Dial, Panel Mounted Back Entry
NC2 48	100mm Dial, Bracket Mounted Bottom Entry
NC2 62	160mm Dial, Surface Mounted Bottom Entry
NC2 66	160mm Dial, Dial Panel Mounted Back Entry
NC2 68	160mm Dial, Bracket Mounted Bottom Entry

NR1 General Purpose Thermometers

Tough accurate thermometers housed in a gasket sealed glass filled polyester resin case with adjustable zero. Instruments can be configured as vertical or horizontal mounting.

NR2 Stainless Steel Cased Thermometers

Reliable, accurate industrial thermometers housed in a stainless steel case with the option of 100mm or 160mm diameter dial.

NR1 42	100mm Dial, Bottom Entry
NR1 46	100mm Dial, Lower Back Entry
NR2 42	100mm Dial, Bottom Entry
NR2 46	100mm Dial, Lower Back Entry
NR2 62	160mm Dial, Bottom Entry
NR2 66	160mm Dial, Lower Back Entry

Specifications - NR1 & NR2

Case & Bezel

NR1 Glass filled polyester resin, non toxic, fire retardant, black.
Weatherproof IP67
NR2 304 stainless steel. 316 stainless steel option.
Weatherproof IP67

Dial

Clearly marked black characters on white background

Window

Glass as standard. Options - acrylic and toughened glass.

Stem

316 stainless steel

Temperature Range

See table for standard temperature ranges

Stem Dimensions

12.7mm diameter (other non standard diameters are available on request) Standard stem lengths 200mm, 300mm, 400mm and 500mm. Sensitive length X depends on temperature range and filling medium and is indicated by shallow waisting.

Accuracy

±1.0% FSD (±2% when electrical contact heads are fitted)

Ambient Temperature

Head compensated for variation in ambient temperature from -30 to +50°C.

Movement

Direct acting bourdon tube with bimetallic compensator.
Option silicone damped

Standard Temperature Ranges - NC1, NC2, NR1 & NR2

Temperature Range		Approximate Sensitive Length - Dimension "X"	
		12.7 mm bulb / stem diameter	
Degree C	Degree F	Xylene Non Toxic Filling	Nitrogen Non Toxic Filling
-30 to +70 °C	-20 to 160 °F	30 mm	Not available
0 to 60 °C	30 to 140 °F	40 mm	Not available
0 to 100 °C	30 to 220 °F	30 mm	Not available
0 to 120 °C	30 to 250 °F	30 mm	Not available
0 to 160 °C	30 to 300 °F	25 mm	Not available
0 to 200 °C	50 to 400 °F	25 mm	125 mm
0 to 300 °C	0 to 550 °F	Not available	125 mm
0 to 400 °C	0 to 700 °F	Not available	125 mm

Other non standard ranges may be available - please check with Rototherm sales

Bulb Types - NC1 & NC2

Type 301

This bulb type is used when no compression fitting is required. This bulb may be held in place by a bracket or clip (not supplied by Rototherm) or may be inserted directly into the process.

Type 302

This bulb has a compression gland fitting that slides along the capillary and is tightened into the required position. This bulb type is only available with plain stainless steel capillary (type C1) - armoured capillaries are not available as it is not possible to move the fitting along the armoured capillary. Bulb length cannot be specified.

Type 303

Compression gland fittings tighten on the bulb to provide liquid and gas tight seal. Once fitted the position of the gland fitting can only be altered by cutting off the olive and replacing it with a new one.

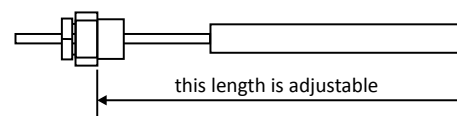
If required this bulb type may be specified with a compression gland fitting - in this instance please confirm the required overall length of the bulb.

Add 50mm for BSP threads (75mm for NPT threads) to desired immersion length to obtain minimum "L" dimension).

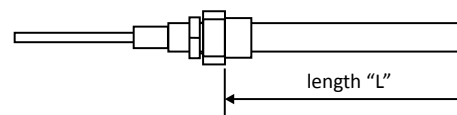
Type 301



Type 302

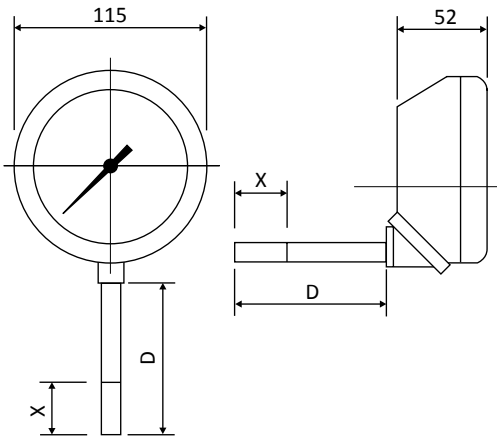


Type 303

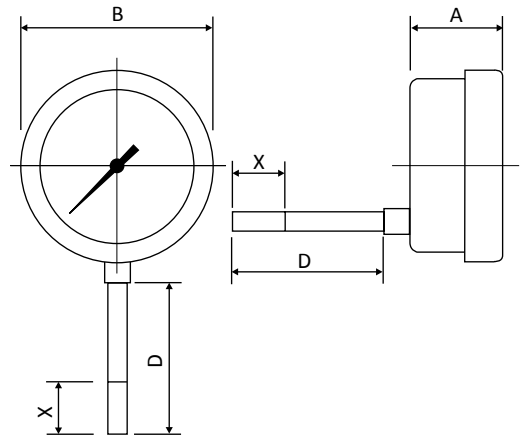


Drawings are for illustration purposes only and are not to scale

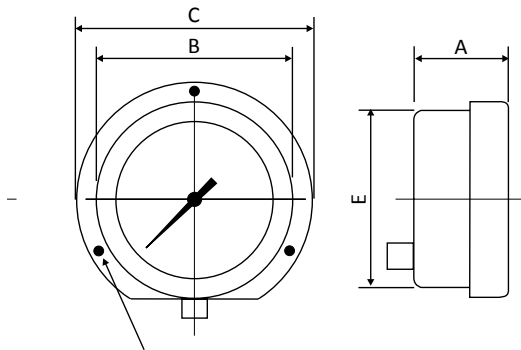
Dimensions - NR1



Dimensions - NR2



Dimensions - NC2



3 holes "K" diameter on p.c.d "L"

All dimensions are in mm. Drawings are for illustration purposes only and are not to scale

Dimensions	Back Flange		Panel Mounting		Bracket Mounting		Direct Mounting	
	100mm	160mm	100mm	160mm	100mm	160mm	100mm	160mm
A	52	52	47	47	47	47	47	47
B	112	171	112	171	112	171	112	171
C	135	196	-	-	-	-	-	-
E	-	-	97	158	-	-	97	158
Panel Cut Out	-	-	100	161	-	-	-	-
Weight	1.2 kg	1.8 kg	1.2 kg	1.8 kg	1.2 kg	1.8 kg	1.2 kg	1.8 kg
K	6	6	-	-	-	-	-	-
L	116	178	-	-	-	-	-	-

All dimensions are in mm

Electrical Contact Heads (Model NC2 & NR2 only)

To provide alarm or control functions, filled system thermometers can be specified with electrical contact heads mounted in a clear plastic hood which replaces the standard window. The set point can be adjusted to any position on the scale with a removable key. Single and dual contacts systems are available.

Electrical contact heads provide a repeatable switching point, but the absolute accuracy tolerance of the instrument is approximately doubled by the contacts.

Contact Rating

Standard contact head assemblies: 250V, switching capacity 10W, 18VA, maximum current 0.7A.

Service

Indoor use, ambient temperature -10/70°C, free from vibration.

System Operation	Typical Application
A Break on rise	Temperature control
B Make on rise	Over temperature alarm
C 2 Contacts to break on rise in temperature	Temperature control plus alarm or 2 step pressure control
D 2 Contacts to make on rise in temperature	Alarm and trip
E Break on rise and make on rise in temperature	Temperature control plus alarm

Order Codes Capillary Filled System Thermometers

NC1 Diecast Aluminium Case

- 100 mm dial, bottom entry
- 100 mm dial, back entry
- 160 mm dial, bottom entry
- 160 mm dial, back entry

NC1 42							
NC1 46							
NC1 62							
NC1 66							

NC2 Stainless steel Case

- 100 mm dial, back flange, bottom entry
- 100 mm dial, panel clamp, rear entry
- 100 mm dial, bracket mounting, bottom entry
- 160 mm dial, back flange, bottom entry
- 160 mm dial, panel clamp, rear entry
- 160 mm dial, bracket mounting, bottom entry

NC2 42							
NC2 46							
NC2 48							
NC2 62							
NC2 66							
NC2 68							

Window

- Glass (Standard)
- Acrylic

A	B
---	---

Bulb Type

- Type 301
- Type 302
- Type 303

1	2	3
---	---	---

Capillary Protection

- Stainless steel tube, 3.0 mm diameter
- Stainless steel flexible armour, 6.3 mm diameter
- Stainless steel flexible armour over stainless steel, 6.3 mm diameter
- Other (state requirement)

C1	C3	C4	XX
----	----	----	----

Capillary Length

Insert length in metres (3 metres is standard)

--

Temperature Range

Insert temperature range and units from table

--

Compression Gland Fitting (type 302 & 303 bulbs only)

- Not required
- 1/2" BSP male, stainless steel
- 3/4" BSP male, stainless steel
- 1/2" NPT male, stainless steel
- Other (State Requirement)

D	E	F	G	XX
---	---	---	---	----

Pointer Options & Electrical Contact Heads

- Electric contact type A (NC2 models only)
- Electric contact type B (NC2 models only)
- Electric contact type C (NC2 models only)
- Electric contact type D (NC2 models only)
- Electric contact type E (NC2 models only)
- Maximum pointer
- Minimum pointer
- Index pointer
- No electric contact or additional pointer

A	B	C	D	E	F	G	H	X
---	---	---	---	---	---	---	---	---

Example Order Code - Capillary Thermometer

NC2 46	A	3	C1	03	0 to 60°C	B	X
--------	---	---	----	----	-----------	---	---

Model NC2 46, 100mm capillary thermometer, panel clamp mounting, glass window. Type 303 bulb with 3 metres of type C1 stainless steel capillary. Temperature range 0 to 60°C, 1/2" BSP male stainless steel gland. No additional pointer or options.

Order Codes Rigid Stem Filled System Thermometers

NR1 Glass Filled Polyester Resin Case

- 100 mm dial, bottom entry
- 100 mm dial, back entry
- 160 mm dial, bottom entry
- 160 mm dial, back entry

NR2 Stainless steel Case

- 100 mm dial, bottom entry
- 100 mm dial, back entry
- 160 mm dial, bottom entry
- 160 mm dial, back entry

Window

- Glass (Standard)
- Acrylic

Stem length

Insert stem length "D" in mm

Temperature Range

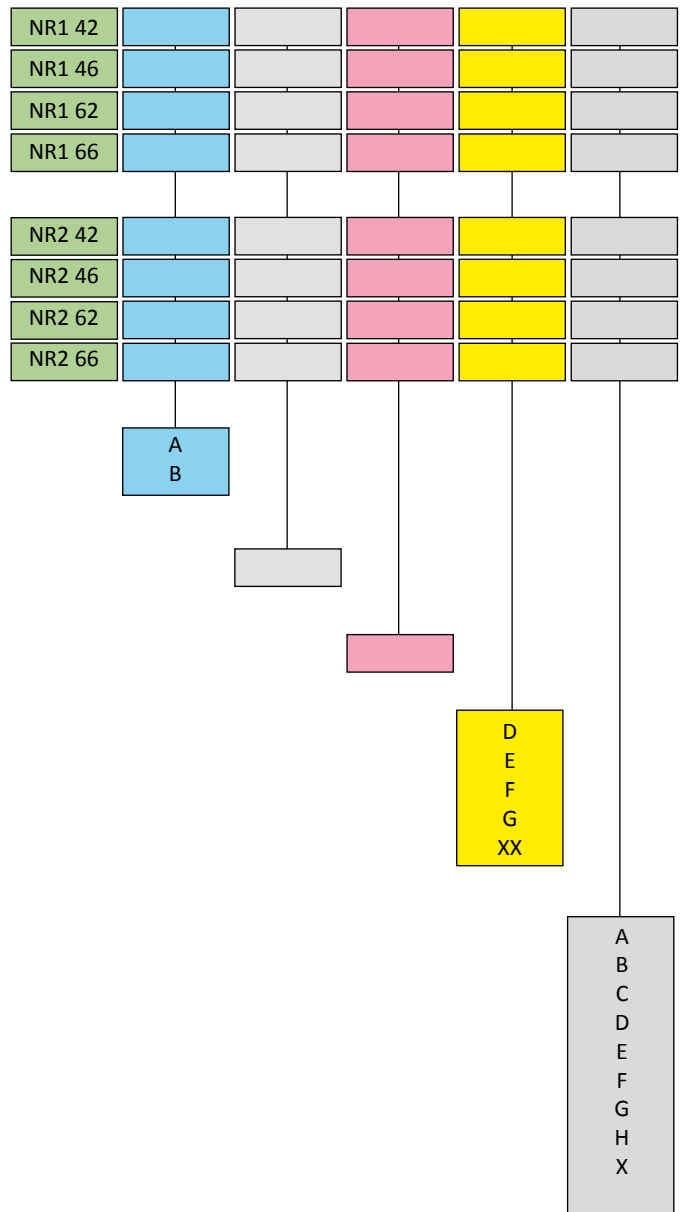
Insert temperature range and units from table

Compression Gland Fitting (type 302 & 303 bulbs only)

- Not required
- 1/2" BSP male, stainless steel
- 3/4" BSP male, stainless steel
- 1/2" NPT male, stainless steel
- Other (State Requirement)

Pointer Options & Electrical Contact Heads

- Electric contact type A (NR2 models only)
- Electric contact type B (NR2 models only)
- Electric contact type C (NR2 models only)
- Electric contact type D (NR2 models only)
- Electric contact type E (NR2 models only)
- Maximum pointer
- Minimum pointer
- Index pointer
- No electric contact or additional pointer



Example Order Code - Rigid Stem Thermometer



Model NR2 42, rigid stem thermometer 100mm dial bottom entry, glass window. Stem length 150 mm. Temperature range 0 to 60°C, 1/2" BSP male stainless steel gland. Single electric contact - type A, make on rise in temperature.

Thermowells

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

Available with either flanges or screwed process connections, Rototherm thermowells are available fabricated from tube, drilled from barstock or from forgings. Full material certification including original mill and suppliers material certificates can be provided. If required NACE standard MR-01-75 requirements can be met.



Please see the Rototherm Temperature Brochure for further details on our extensive range of thermowells

NC3 & NR3 Diesel Exhaust Thermometers

The Rototherm range of diesel exhaust thermometers provide an accurate and reliable indication of the exhaust gas temperature of diesel engines and generators.

The stem is fitted with a unique anti-resonant section which dampens out vibration of the instrument head, and eliminates the need for oil filling.

The use of the capillary type enables all the dials to be located on a single panel to provide immediate visual comparison of the performance of each cylinder.



Specifications - NC3 & NR3

Case & Bezel

NC3 Diecast aluminium, finished black, suitable for flush or panel mounting.

NR3 Glass-filled polyester resin, non-toxic, fire retardant, finished black

Dial

100mm diameter (nominal) marked with black characters on white background.

Window

Standard Instrument glass

Bulb Material / Dimensions (NC3)

Mild Steel.
12.7mm diameter. 292mm length with 1/2" BSP gland.
Sensitive portion, 110mm approx. indicated by shallow waisting.

Bulb Material / Stem Dimensions (NR3)

Mild Steel.
12.7mm or 15.9mm diameter. with 12.7mm bulb and antiresonant head section. Minimum immersion, 100mm

Capillary (NC3)

Microbore steel tube, with 6.3mm diameter flexible stainless steel armour 3 metres long as standard. Other lengths available in increments of 1 metre to a maximum of 30 metres.

Temperature Ranges

0/650°C, 0/1200°F or dual scale

Accuracy

±1% FSD

Order Codes - NC3 & NR3

Capillary Thermometer	NC3 42				
Rigid Stem, bottom entry	NR3 42				
Rigid Stem, back entry	NR3 46				

Stem Diameter (NR3)

12.7mm
15.9mm

12.7
15.9

Stem Length (NR3)

300, 400 or 500 mm

Capillary Length (NC3)

3 metres is standard

Temperature Range

0 to 650 Deg C
0 to 1200 Deg F
0 to 650 Deg C & F

C
F
D

Models

Capillary Diesel Exhaust Thermometer

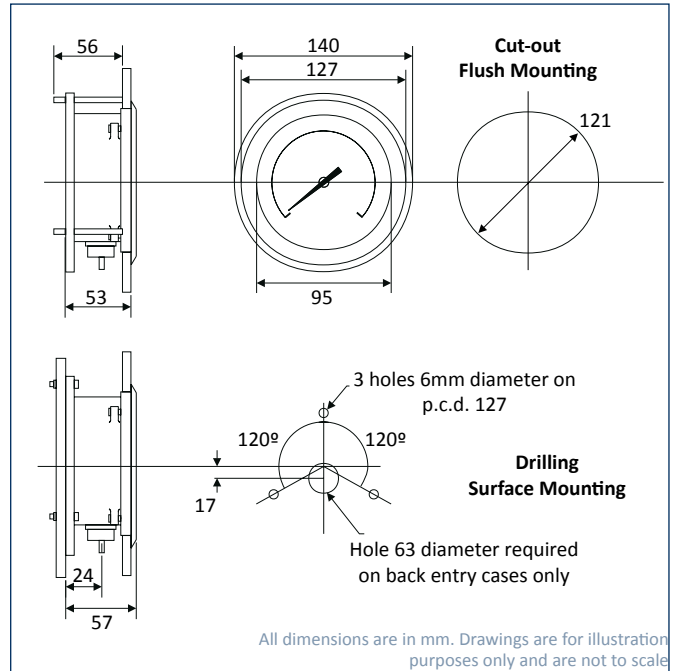
NC3 42 100mm Dial, Surface Mounted Bottom Entry

Rigid Stem Diesel Exhaust Thermometer

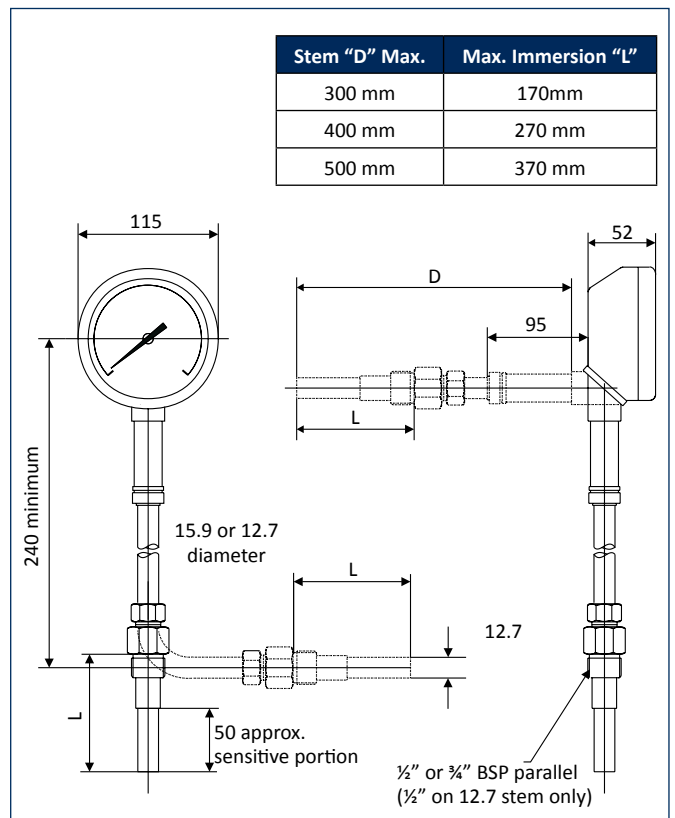
NR3 42 100mm Dial, Bottom Entry

NR3 46 100mm Dial, Back Entry

Dimensions - NC3 Capillary Thermometers



Dimensions - NR3 Rigid Stem Thermometers



DigiTemp Digital Thermometers & Transmitters



DT1 General Purpose Digital Thermometers

The Rotothem DT1 is a micro processor based, battery operated, continuous reading, type K thermocouple input digital thermometer. Two basic versions are available, both have clear four digit LCD displays with 12.7mm high characters and 1°C/°F resolution. 4/20mA signal re-transmission and MAX / MIN temperature logging can also be incorporated.

The DT1-1 is a 316 stainless steel rigid stem temperature indicator. The stem can be either 12.7mm or 6.35mm diameter with a reduced tip for fast response. The stem length and fitting, if required, can be user specified. The DT1-1 can be mounted directly on to a pipe line or vessel where direct, local temperature indication is required.

The DT1-2 is a remote reading instrument, designed for mounting on a panel, either with a three hole front flange or a back flange for surface mounting. The indicator is connected to the sensor by a 3mm diameter stainless steel mineral insulated cable which can be fitted with a compression fitting if required.

DT2 Digital Thermometers

Using common construction to the DT1, the DT2 is a high accuracy, high resolution digital temperature indicator. The DT2 uses a precision three wire thin film PT1000 resistance element as a sensor and can be supplied in both rigid stem and remote reading variants. In common with the DT1 series the DT2 can be supplied with 4/20mA signal re-transmission and MAX / MIN temperature logging.

The DT2 -1 is a rigid stem, direct mounted instrument for local indication, stem configurations are common with the DT1-1. A special derivative of this product is the DT2-3, this is fitted with a 12.7mm stem with a reduced tip and a captive 3/4" or 1" BSP hygienic fitting - primary application are Dairy, Brewing and Food Industries.

The DT2-2 enables the measuring instrument to be mounted remotely from the sensor and is available in two variants with differing cable protection systems and sensor housings.

The standard instrument has a PTFE protected cable and a 6mm diameter, 50mm long stainless steel sensor housing. A cable gland can be supplied loose on the cable to enable a sealed connection to be made to tanks, pipes etc. Where cable protection is required 6mm diameter stainless steel armoured cable is available, the stainless steel sensor housing is 12.7mm diameter with a reduced tip, a standard compression fitting can be supplied either loose or captive on the housing.

ATEX Approved Intrinsically Safe Versions

The addition to the range of an intrinsically safe version allows this product to be standardised in all Pharmaceutical and Petro Chemical industries.

Both Thermocouple (DT1X) and RTD (DT2X) sensor instruments are offered.



ATEX Category

 II 1G EEx ia IIC T4 (-20°C ≤ Ta ≤ +60°C)



DT2-1 Rigid Stem Version

DT2-2 Cable Version

DigiTemp Tx Transmitter

Any non intrinsically safe DigiTemp variant can be supplied as a two wire 4/20mA indicating temperature transmitter. Operating from a two wire DC power supply, the DigiTemp Tx can be configured during set up to re-transmit a 4/20mA signal across either the full, or part of the instruments measurement range. DigiTemp Tx is supplied with a 2 metre long connecting cable. Retransmission range must be advised at the time of ordering.



DT1Tx fitted with 4 to 20mA retransmission

DigiTemp Tx Specification

Loop Supply
12 to 32V DC

Connection
3 pole miniature M8 connector sealed to IP 68

Protection
Reverse loop polarity protected.

Adjustments
Multi-turn potentiometers for zero and span. Separate pairs of potentiometers for trimming of local indication and loop current.

General Specifications

Case
100mm (4”) diameter 304 stainless steel, back or bottom entry.
Ingress protection IP67 / NEMA 4X

Window **Display**
Acrylic 4 digit LCD with 12.7mm (1/2”) high characters.

Display Units
°C or °F. User selectable.

Protection
Protected against reverse battery polarity.

Batteries
2 x 1.5V Alkaline Manganese AA cells

Battery Life
2 years, continuous operation.

CE Marking
All DigiTemps are fully CE compliant

Specifications - DT1
Temperature Range
-100°C to 800°C : 1°C Resolution
-150°F to 1500°F : 1°F Resolution

Sensor
Type K (Nickel-Chromium / Nickel-Aluminium) Thermocouple

Accuracy
+/- 1°C +/- 1 Digit

Display Update
0.5 seconds (not Tx version)

Temperature Stability
Zero: +/- 0.05°C per °C ambient temperature change from 20°C
Span: +/- 0.01% of reading per °C ambient temperature change from 20°C

Operating Temperature
-10 to 70°C (14 to 160°F)

Cold Junction Compensation
Automatic: Error included in basic accuracy statement.

Linearisation
+/- 1°C / °F

Specifications - DT2
Temperature Range
-50 to 200°C : 0.1°C resolution
-60 to 400°F : 0.1°F resolution

Sensor
Three wire Pt1000 platinum resistance thermometer.

Accuracy
+/- 0.2°C +/- 1 digit

Temperature Stability
Zero : +/- 0.005°C per °C ambient temperature change.
Span: +/- 0.003 % of reading per °C ambient temperature change.

Linearisation
< +/- 0.05°C

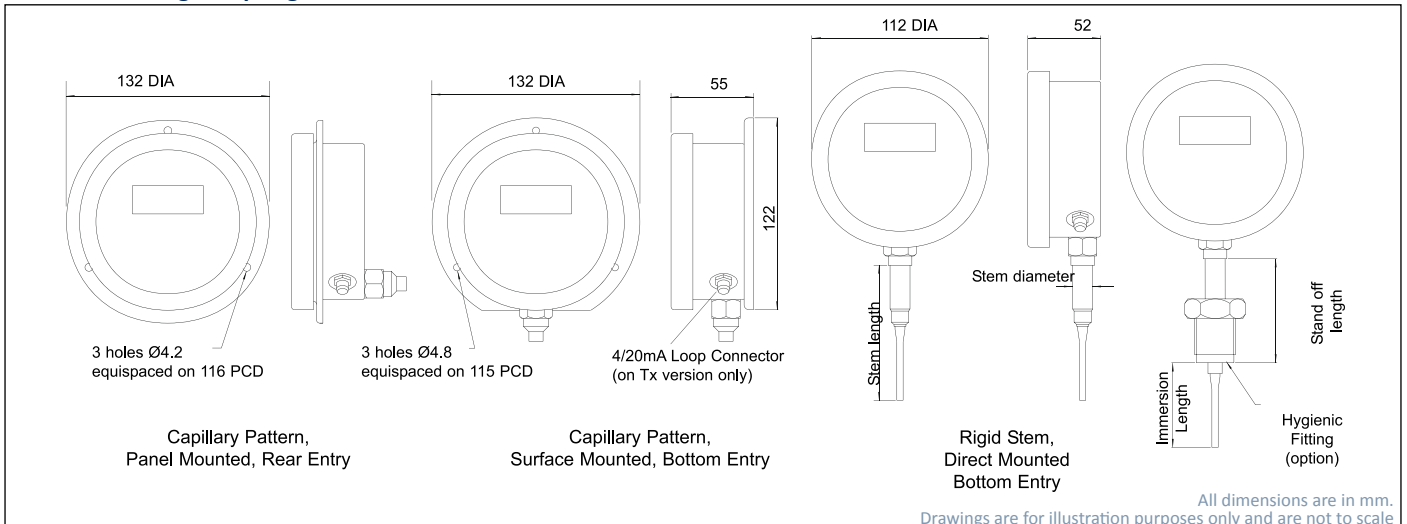
Resolution
0.1°C

DigiGauge Digital Pressure Gauge
To complement the DigiTemp range, the next generation of DigiGauge digital pressure gauges and transmitters is now available. The DigiGauge offers high accuracy and a 4 digit display and includes a host of new features, including:

- High accuracy - ±0.2% f.s
- Temperature Compensation fitted as standard
- 4 to 20mA transmitter option
- Intrinsically Safe versions
- Max & Min pressure logging
- Easy user recalibration
- Wide selection of pressure ranges



Dimensions - DigiTemp Digital Thermometers



Order Codes DigiTemp Digital Thermometers

Thermocouple Sensors

DigiTemp Digital Thermometer, standard version

DigiTemp Digital Thermometer, ATEX version

RTD Sensor

DigiTemp Digital Thermometer, standard version

DigiTemp Digital Thermometer, ATEX version

Stem Type

Rigid Stem
Cable

Stem / Cable Entry

Bottom
Back

Mounting

Direct
Surface via 3 hole back flange
Panel via 3 hole front flange

Stem Length (rigid stem models only)

100mm
200 mm
Other - insert length required in mm
Cable type

Stem Diameter (rigid stem models only)

6.35 mm
12.7 mm

Cable Type

Stainless Steel Mineral Insulated Cable
Stainless Steel Armoured Cable
PTFE Covered Cable
Rigid Stem

Cable Length Insert length in metres

1 metre is standard
Other

Compression Gland Fitting

1/2" BSP male, stainless steel
1/2" NPT male, stainless steel
Other (State Requirement)
Not required

Options

4 to 20 mA Retransmission* (not available on ATEX versions)

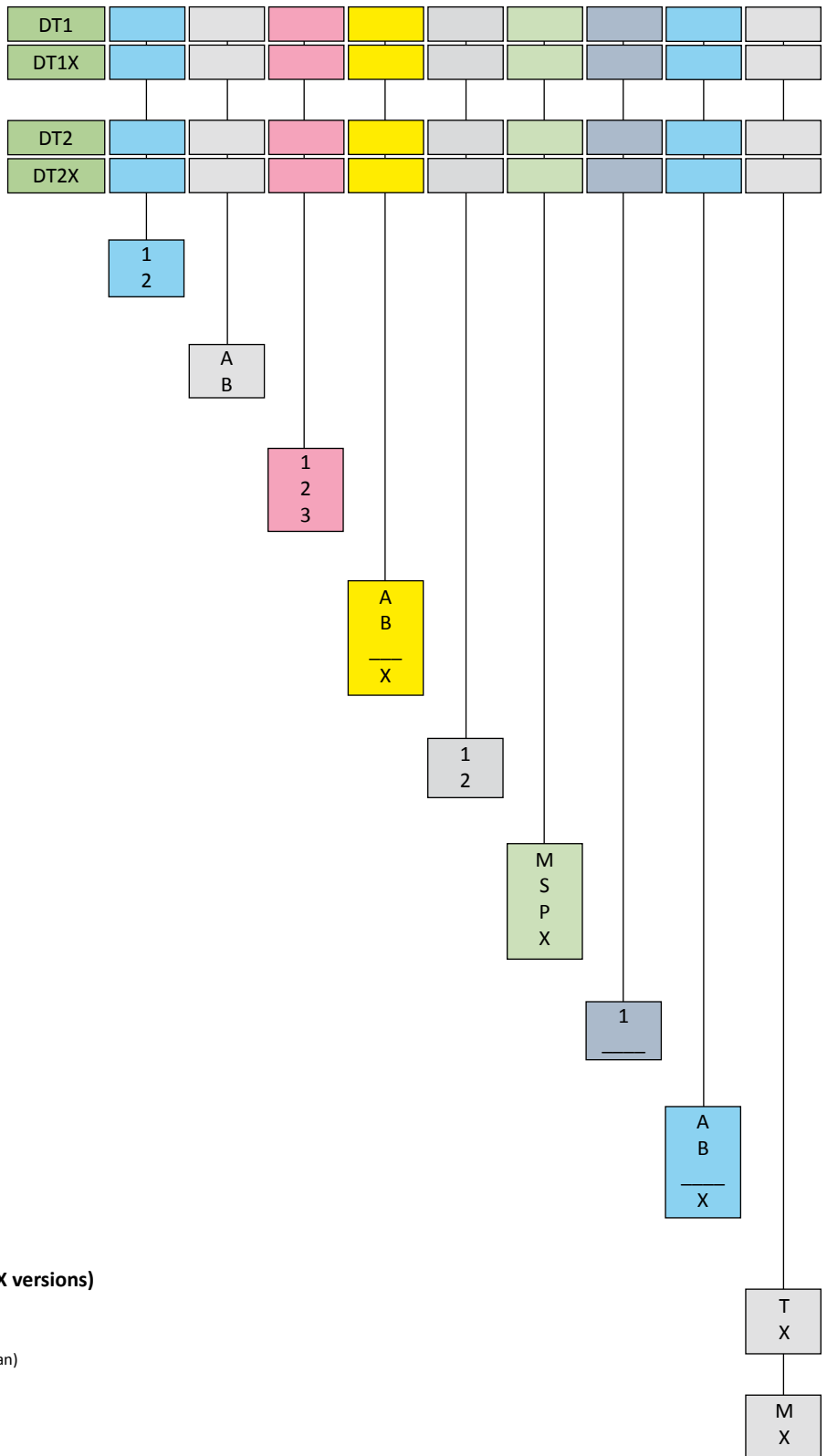
Required
Not Required

*please state retransmission range required (minimum 10% of span)

Maximum & Minimum Temperature Readings

Required
Not Required

Example Order Codes



DT1	2	A	2	X	M	1	X	T	M
-----	---	---	---	---	---	---	---	---	---

DigiTemp Digital Thermometer, Thermocouple sensor, cable type, surface mounting, 1 metre of mineral insulated cable, no fitting required, with 4 to 20 mA retransmission and maximum and minimum temperature logging

DT2	1	A	1	300	2	X	A	X	X
-----	---	---	---	-----	---	---	---	---	---

DigiTemp Digital Thermometer, RTD sensor, rigid stem type, bottom direct mounting, 300 mm stem length, 12.7 mm stem diameter, 1/2" BSP compression fitting, no options required

Sentry Digital Process Indicator

Sentry Process Indicators are microprocessor based and are easily configurable from the front panel. Available with a variety of options, the Sentry range of Process Indicators are available with large 4 digit LED displays and a range of alarm options. Sentry has a standard 1/8 DIN panel cut out size of 92 x 45 mm.

Features

Universal Input

For Thermocouple, RTD, 20mA, 10V and 100mV signals.

Universal Power Input

Wide ranging 90 to 265 VAC input allows world-wide installation.

Alarm Relay

One alarm relay is fitted as standard with an option for a second.

Front Panel Buttons

Front panel buttons can be fitted to allow fast and easy access to the alarm set-points or when the Tare, Zero or Max/Min functions are to be used.

Specifications

Display

Type: 14.2mm high brightness red LED
Range: 4 digit (-1999 to 9999)
Update rate: 2 per second

A/D Converter

Type: Dual slope integrating with auto zero
Conversion rate: 100ms
Common mode rejection: >150dB
Series mode rejection: >70dB (50 & 60Hz)

Thermocouple Inputs

CJC accuracy: Better than 1°C after 30 minutes
Open circuit sensor detection: Upscale
Engineering units: °C or °F
Measurement resolution: 1 or 0.1°C/°F

Thermocouple	Accuracy Including Linearisation		
	Range (°C)	Worst Case	Typical @ 25°C
Type J Fe/NiCu	-210 to 1200°C	±1.0°C	±0.5°C
Type K NiCh/Ni/Al	-270 to 1372°C	±1.0°C	±0.5°C
Type T Cu/CuNi	-270 to 400°C	±1.0°C	±0.5°C
Type N Nicrosil-Nisil	-200 to 1300°C	±1.0°C	±0.5°C
Type S Pt10%-Rh Pt	-50 to 1767°C	±2.0°C	±1.2°C
Type R Pt13%-Rh Pt	-50 to 1767°C	±2.0°C	±1.2°C

Resistance Thermometers

Configuration: 3 wire
Excitation current: 0.25mA (nominal)
Engineering units: °C or °F
Measurement resolution: 1 or 0.1 °C or °F

RTD Type	Accuracy Including Linearisation		
	Range (°C)	Worst Case	Typical @ 25°C
Pt100 (alpha = 385)	-200 to 850°C	±0.8°C	±0.5°C
Pt100 (alpha = 392)	-200 to 457°C	±0.8°C	±0.5°C



Rugged Enclosure

The enclosure uses flame retardant (VO) materials and the front panel conforms to IP65.

Clear Display

The flat, slightly recessed 4 digit display together with high brightness LEDs ensures maximum visibility in difficult lighting conditions

Sensor Excitation Supplies

24V (Nom) Two wire transmission supply (35 mA)
10V regulated bridge supply (35 mA)

Safety and EMC

Safety: EN61010
Susceptibility: EN50082-2
Emissions: EN50081-1

Voltage & Current Inputs

Ranges: ±20mA, ±100mV, ±10V DC.
Scaling: Any portion of the display range (decimal point in any position)
Accuracy: ±0.1% (worst case), 0.05% typical @ 25°C ambient
Drift with temperature: <200ppm/ °C
Impedance (Ohms): <5(mA), >100M(mV), >1M(Volt)

Analogue Output (Option)

Output: 4 to 20mA
Maximum output: 22mA
Temperature drift: <200ppm
Accuracy: 0.4% of span (worst case)
0.2% typical @ 25°C ambient
Maximum load: 500 Ohms

Alarm Relays (Relay 2 is optional)

0.2% typical @ 25°C ambient
Maximum load: 500 Ohms
Alarm Relays (Relay 2 is optional)
Relays 1 & 2: Change over contacts
Rating (all relays): 1 Amp @ 250VAC, 5 Amp @ 30VDC

Physical / Mechanical

Front panel: Protection to IP65
Dimensions (mm): 48(H) x 96(W) x 100(D)
Panel cut-out (mm): 45(H) x 93(W)
Weight: 0.4Kg (max), packed weight 0.55Kg

TRP1 Trip Amplifier

- Single Point Trip Amplifier, for use as:
 - > High or Low Alarm
 - > On-Off Controller
- Choice of Inputs
 - > 4-20 mA, 0-20 mA, 10-50 mA
- Power Supply 24VDC or 240 VAC
- Inbuilt 24V DC transmitter power supply
- Isolation Voltage 500V between input and mains supply or output relay contacts
- Hysteresis adjustable from 1% to 5%
- CE - Conformity

The model TRP1 is a single point trip-amplifier, which may be used as a high or low alarm, or as an on-off controller.

The module compares the input signal with a fixed reference, set by the dial on the front panel. When the input signal exceeds the reference, the output relay is operated.

A small amount of hysteresis is provided (approximately 1%) to prevent “chattering” of the relay with small changes of signal. This “dead band” can be changed to approximately 5% by a control mounted on the front panel.

The relay can be programmed to operate when the signal is higher or lower than the set point by means of a pluggable link on the circuit board. The relay normally drops out when the signal is higher than the set-point. Relay contacts are isolated both from the mains and the input circuits.

A red LED mounted on the front panel can be programmed by solder links on the PCB to illuminate either when the relay pulls in, or drops out.

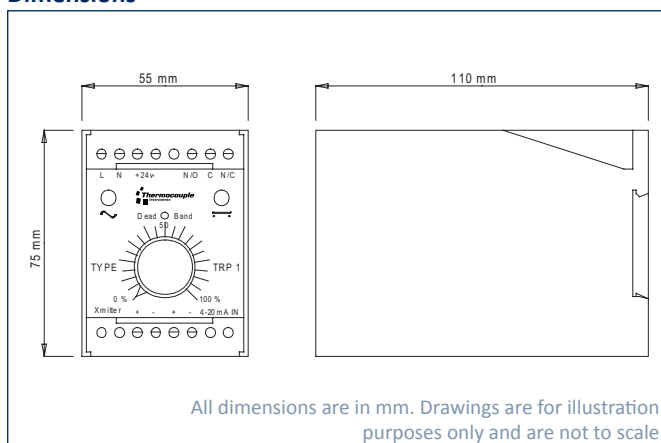
Transmitter Failure Indication

In the event of a transmitter failure, the TRP1 will activate an alarm status and illuminate the red LED when a signal current of less than 3.0 mA is measured.

Access to Circuit Board

Access to the circuit board is gained by gently levering off the top panel on which the control knob is mounted. The PCB is attached to the terminal block, and both can be withdrawn from the case by unclipping the terminal housing and gently pulling upwards.

Dimensions



Specifications

Inputs

- 4-20 mA into 100 ohms
 - 0-20 mA into 100 ohms
 - 10-50 mA into 40 ohms
- For other ranges, please consult sales department

Output

Single pole change over relay with 5A contacts

Hysteresis

Standard setting of $\pm 1\%$ of span, adjustable by front panel mounted trimmer to a maximum of $\pm 5\%$

Relay Mode

The relay normally de-energises when the set point is exceeded. This action can be reversed by moving a plug on the main PCB

Set Point

Adjusted by front panel mounted dial. Scaled 0 – 100%

LED Indicator

The LED normally illuminates when the set-point is exceeded. This action can be reversed by solder links on the main PCB

Operating Temperature Range

-10 to 70°C

Storage Temperature Range

-10 to 70°C

Power Supply

AC 240V $\pm 10\%$ at 50/60 Hz (110 V selectable by solder links)
DC 24 V $\pm 10\%$

Isolation

500 V RMS Min between input and mains supply or output relay contacts

Transmitter Supply

The module supplies 24 VDC to energise a 4-20 mA transmitter

DA5000 Digital Anemometer

The Rototherm DA5000 Digital Anemometer enables fast, reliable and accurate readings of Air Velocity utilising a high quality rotating vane sensor with either a 25mm (1") or 70mm (2.75") diameter.

DA5000 may be used with either of the Rototherm rotating vane sensors, identification of the connected sensor is displayed automatically when the instrument is switched on.

Applications

DA5000 is designed for use in Heating and Ventilating, Air Conditioning and Process Industry applications and for maintenance and commissioning requirements particularly exhaust and fume ventilation assessments.

Specifications

Range

25mm probe: 0.3 - 35 ms⁻¹ (59 - 6891ft min⁻¹)

70mm probe: 0.3 - 40ms⁻¹ (59 - 7875ft min⁻¹)

Accuracy (System)

25mm probe: ±0.5% full scale plus ±0.75% of reading

70mm probe: ±0.25% full scale plus ±0.75% of reading

Display

4 digit liquid crystal, 10mm high character

Resolution

0.1 ms⁻¹ or 1 ft min⁻¹

Operating Temperature

Instrument: 0 to 50°C (32 to 122°F)

Probe

-30 to +80°C (-22 to 176°F)

Power Source

2 x 1.5 volt alkaline AA cells

Battery Life

250 hours approximately. Low battery warning after 225 hours

Dimensions

181 x 77 x 21.5 mm (indicator)

Weight

190g approx. with battery (indicator alone)

Other Features

Automatic probe type identification

Automatic probe characteristic linearization

2 second or 16 second measurement period

Maximum and minimum readings stored in memory



DA5000 Kit



The DA5000 is available as a complete kit with a choice of 25mm or 70mm sensing probe, carry case, extension rods and connecting cable.

Chart Recorders & Recorder Controllers Overview

- 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 / pipe
- Electrical control options
- 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.

RTO Series Temperature Chart Recorders

The filled system range of temperature circular chart recorders uses the well proven and reliable Rototherm stainless steel thermal system.

Up to three pens can be fitted with three temperature systems or a combination of temperature, pressure or flow sensing systems.



Sentinel Recorders



Clearscan Recorders



C105 Recorders



M105 Recorders



RPO / RTO Recorders



RTH Recorders

RPO Series Pressure Chart Recorders

The RPO series of pressure circular chart recorders uses the well proven and reliable Rototherm non ferrous or stainless steel pressure system. Up to three pens can be fitted with three pressure systems or combination of temperature, pressure or flow sensing systems.

Clearscan C105/M105 Pressure & Temperature Chart Recorders

Developed from the ex Kent Industrial Measurement and Cambridge range of circular chart recorders, the round case C105 and rectangular cased M105, continue to be available and still offer 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"	●	○	○	●	○	○	○	⊗	⊗	⊗	⊗	⊗	⊗	⊗
M105 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 pages in this catalogue for full product specifications

Pressure Gauges Overview

- 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 are offered including stainless steel cased Elite safety pattern gauges and high corrosion resistant DMC cased pressure gauges. Low range capsule gauges are also offered.



SPG Elite Safety Pattern Pressure RPG Process Gauges DMC Cased Safety Pattern Gauges

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.

Digital Pressure Gauges

DigiGauge Digital Pressure Gauges offer 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



SPGA Aluminium Cased Safety Pattern Gauges fitted with Diaphragm Seal Units PTX Pressure Transmitters

Pressure Transmitters

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



Turret Style Safety Pattern Gauges DigiGauge Digital Pressure Gauges Differential Pressure Gauges

Pressure Gauges - features

		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	⊗	⊗	○	⊗
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 Overview

The Rototherm / Thermocouple range of temperature assemblies has been designed for all industrial applications and is manufactured in strict accordance with the companies ISO 9001:2000 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 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 Overview

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

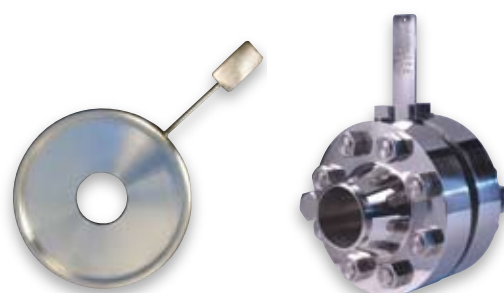
There are two common types of Venturi tube - the Venturi nozzle, and the classical Venturi. Both feature a convergent inlet section and a divergent outlet section. The major advantage of the Venturi over orifice plates and flow nozzles is in the area of pressure recovery. Typically, unrecovered pressure 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.

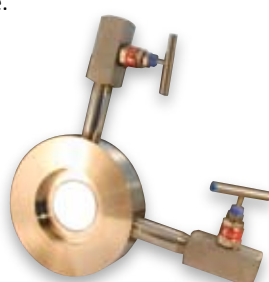
Flow Recorders

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