

# Temperature Measurement Solutions

Our custom-built manufacturing facility, in Manchester, enables us to provide complete tailor made solutions for all your temperature needs.

Our standard lead time is 2 weeks. However, for your urgent requirements, we are able to offer a **3 day fast track** service.

All components in this catalogue are stocked in Manchester ready to assemble to your specific requirements.



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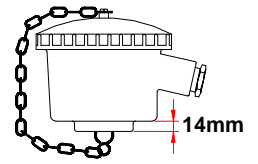
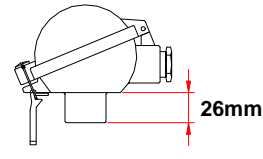
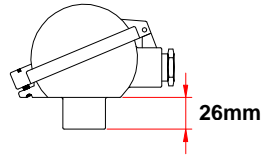
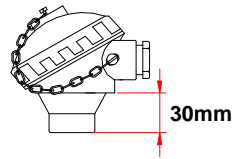
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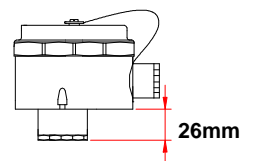
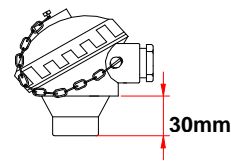
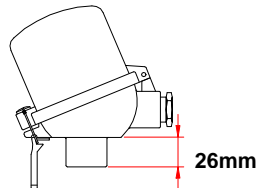
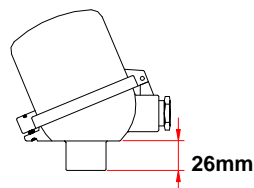
Quality Assurance Documentation

Issue 3

# Connection Heads & Junction Boxes

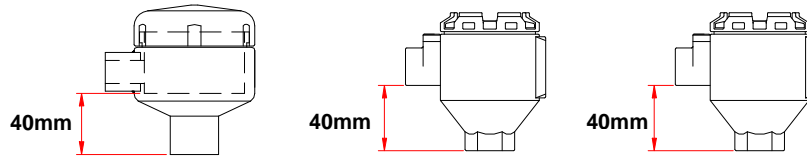


Specification	AL	BSZ	BSS	DMC
<b>Material / Colour</b>	Aluminium / Blue	Aluminium / Silver	Aluminium / Silver	Polyester / Black
<b>IP Rating</b>	67	65	65	65
<b>Lid Type</b>	Screw Top & Retaining Chain	Standard Flip Top	Standard Flip Top	Screw Top & Retaining Chain
<b>Bottom Connection</b>	1/2"BSP	1/2"BSP 1/2"NPT M24 x 1.5	1/2"BSP 1/2"NPT M24 x 1.5	1/2"BSP
<b>Extension Piece Options</b>	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5
<b>Pocket Options</b>	FS4 FF4	FS2 FS4 FF2 FF4	FS2 FS4 FF2 FF4	FS4 FF4
<b>Transmitter Options</b>	WIKA T24 T12 T32 T42 ROSE 144H 248	WIKA T24 T12 T32 T42 ROSE 144H 248 644H	WIKA T24 T12 T32 T42 ROSE 144H 248 644H	WIKA T24 T12 T32 T42 ROSE 144H 248 644H
<b>Electrical Connection</b>	M20 x 1.5mm	M20 x 1.5mm	M20 x 1.5mm	M20 x 1.5mm



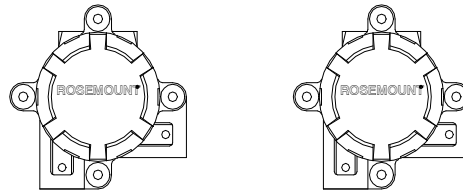
Specification	BSZH	BSSH	BKL	SCH4
<b>Material / Colour</b>	Aluminium / Silver	Aluminium / Silver	Spun Nylon / Black	ABS Plastic / Beige
<b>IP Rating</b>	65	65	67	67
<b>Lid Type</b>	Extended Flip Top	Extended Flip Top	Screw Top & Retaining Chain	Screw Top
<b>Bottom Connection</b>	1/2"BSP 1/2"NPT M24 x 1.5	1/2"BSP 1/2"NPT M24 x 1.5	1/2"BSP	M24 x 1.5
<b>Extension Piece Options</b>	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5	E4
<b>Pocket Options</b>	FS2 FS4 FF2 FF4	FS2 FS4 FF2 FF4	FS4 FF4	FS2 FS4 FF2 FF4
<b>Transmitter Options</b>	WIKA T24 T12 T32 T42 ROSE 144H 248 644H	WIKA T24 T12 T32 T42 ROSE 144H 248 644H	WIKA T24 T12 T32 T42 ROSE 144H 248	WIKA T24 T12 T32 T42 ROSE 144H 248
<b>Electrical Connection</b>	M20 x 1.5mm	M20 x 1.5mm	M20 x 1.5mm	M20 x 1.5mm

# Connection Heads & Junction Boxes



Specification	BKWSS	ALE	SS
<b>Material / Colour</b>	Stainless Steel / Natural	Epoxy Painted Aluminium / Blue	Stainless Steel / Natural
<b>IP Rating</b>	65	68	68
<b>Lid Type</b>	Screw Top	Screw Top	Screw Top
<b>Bottom Connection</b>	1/2" BSP 1/2" NPT M24 x 1.5	1/2" BSP 1/2" NPT M24 x 1.5	1/2" BSP 1/2" NPT M24 x 1.5
<b>Extension Piece Options</b>	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5	E1 E2 E3 E4 E5
<b>Pocket Options</b>	FS2 FS4 FF2 FF4	FS2 FS4 FF2 FF4	FS2 FS4 FF2 FF4
<b>Transmitter Options</b>	WIKA T24 T12 T32 T42 ROSE 144H 248 644H	ROSE 144H 248 644H	ROSE 144H 248 644H
<b>Electrical Connection</b>	M20 x 1.5mm	M20 x 1.5mm	M20 x 1.5mm

The 644H will not fit the AL, SCH4 & BKL Connection Heads.

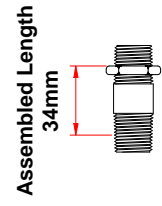
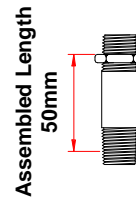
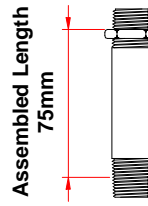
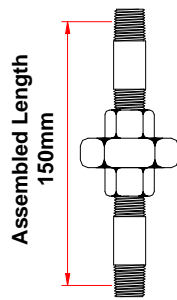


Specification	J5	J6
<b>Material / Colour</b>	Epoxy Painted Aluminium / Blue	Epoxy Painted Aluminium / Blue
<b>IP Rating</b>	65	68
<b>Lid Type</b>	Screw Top	Screw Top
<b>Bottom Connection</b>	M20 x 1.5	1/2" NPT
<b>Extension Piece Options</b>	N/A	E1 E2 E3 E4 E5
<b>Pocket Options</b>	N/A	FS2 FS4 FF2 FF4
<b>Transmitter Options</b>	ROSE 144H 248 644H	ROSE 144H 248 644H
<b>Electrical Connection</b>	M20 x 1.5mm	1/2" NPT

The connection head is the enclosure which houses the temperature sensor's terminal block or temperature transmitter. We are able to offer an extensive range of connection heads and junction boxes from stock.

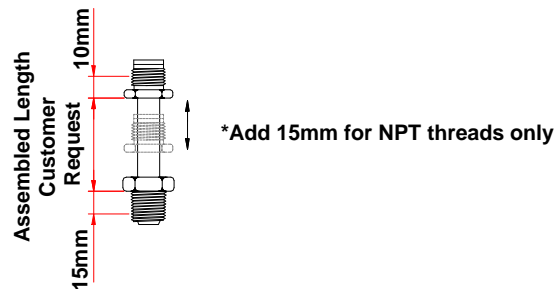
High cap and dual cable entry heads are available for duplex instrument connection. When choosing a connection head, check that the material, lid type, IP rating and Hazardous Area Certification all meet with your requirements.

# Extension Pieces



## Specification **E1** **E2** **E3** **E5**

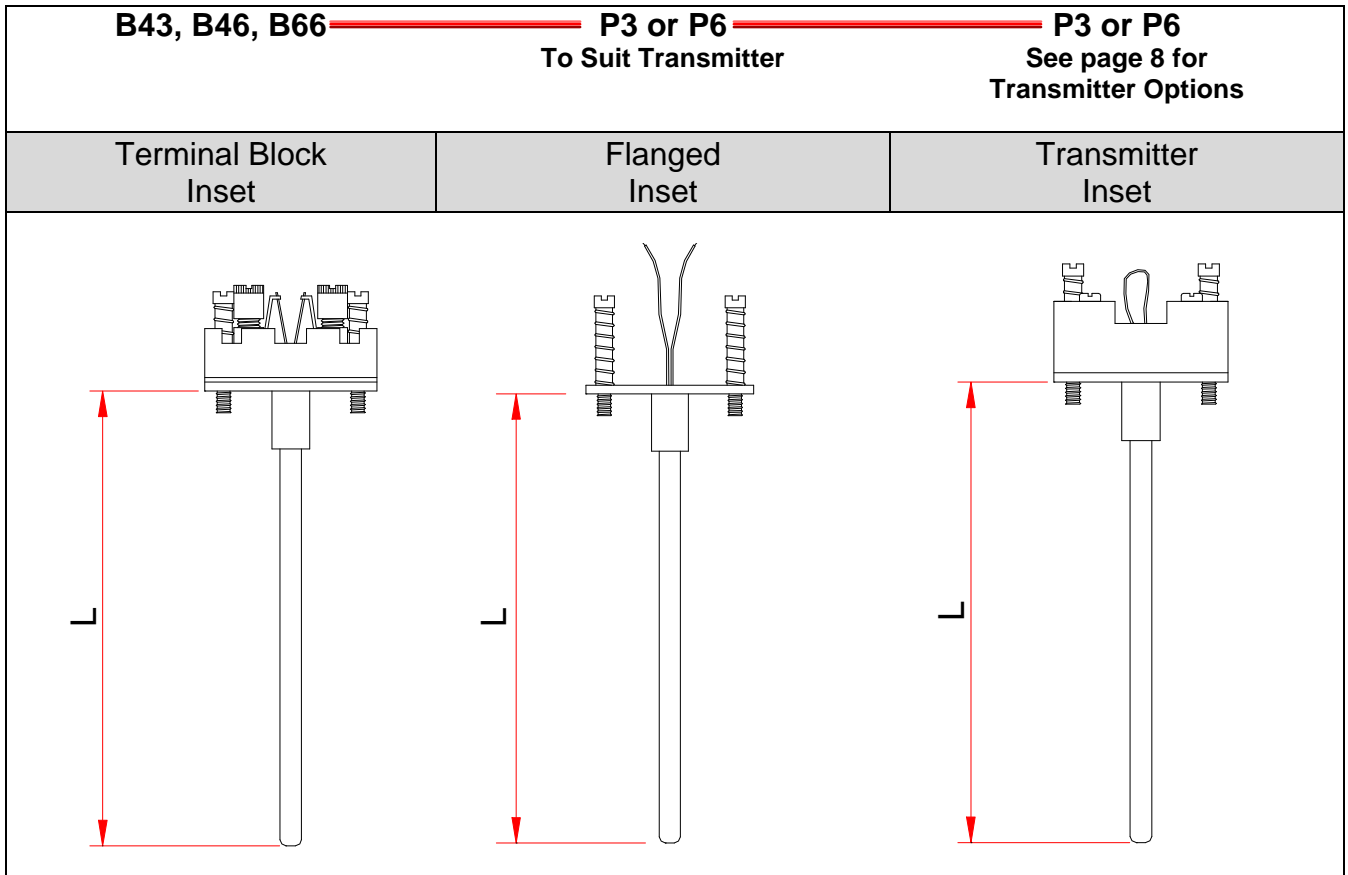
Type	Nipple Union Nipple	Barrel Nipple & Locknut	Barrel Nipple & Locknut	Barrel Nipple & Locknut
Material	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Assembled Length	150mm	75mm	50mm	34mm
Top Conn. Threads	1/2"NPT	1/2"BSP	1/2"BSP	1/2"BSP
Bottom Conn. Threads	1/2"NPT	1/2"NPT	1/2"NPT	1/2"NPT
Connection Head Options	All Types	All Types	All Types	All Types
Delivery – Head Only	Ex-Stock	Ex-Stock	Ex-Stock	Ex-Stock
Delivery – Assembly	2 Weeks	2 Weeks	2 Weeks	2 Weeks



## Specification **E4**

Type	Neck Extension
Material	316 stainless steel
Assembled Length	BKW Standard 50mm
Connection Threads	M24 x 1.5mm x 1/2"NPT M24 x 1.5mm x 1/2"BSP M24 x 1.5mm x 3/4"NPT M24 x 1.5mm x 3/4"BSP 1/2"NPT 1/2"BSP 1/2"NPT 1/2"BSP 3/4"NPT 3/4"BSP
Connection Head Options	All Types
Delivery – Head Only	Ex-Stock
Delivery – Assembly	2 Weeks

The extension piece is the section of the assembly that connects the connection head to the thermowell. All the listed extension pieces are standard sizes and manufactured from 316 stainless steel, however, we are able to manufacture to your exact specification and other materials available on request). When choosing an extension piece, ensure that the assembled length and thread type meet with your requirements.

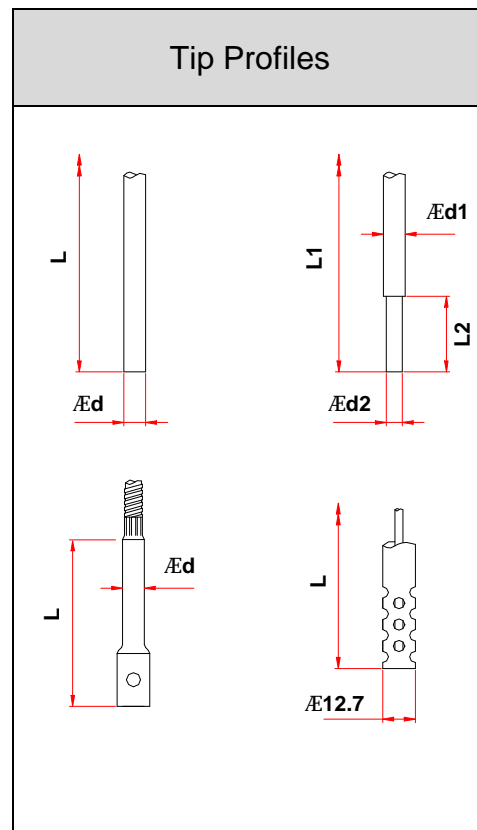
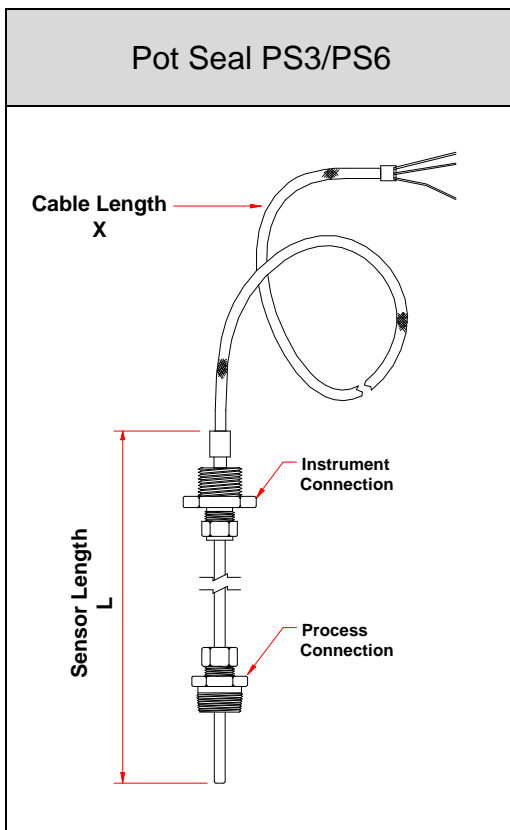
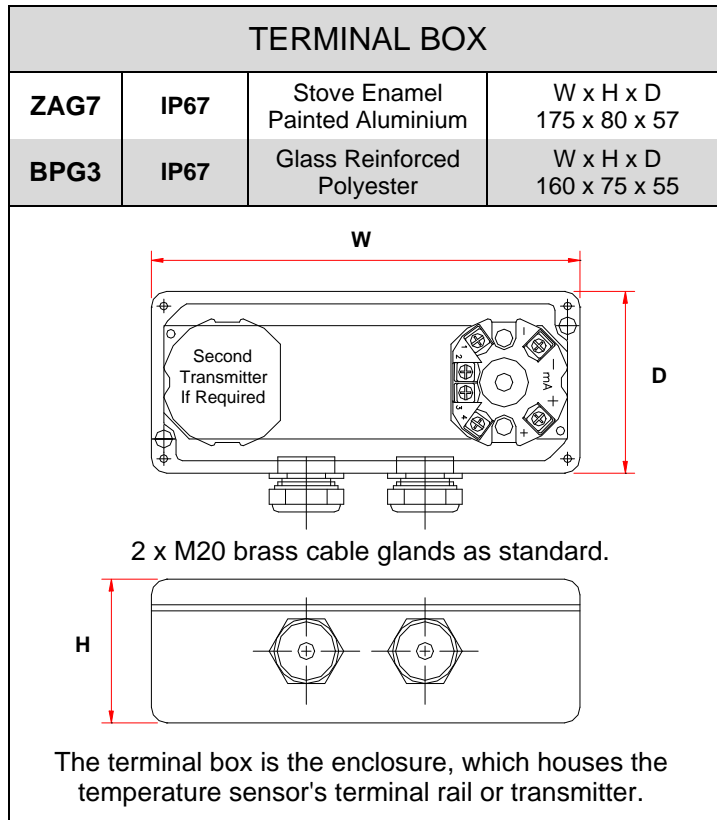


Specification	B43	B46	B66	P3	P6
<b>Termination Type</b>	4 Way Spring Loaded Terminal Block	4 Way Spring Loaded Terminal Block	6 Way Spring Loaded Terminal Block	Spring Loaded Transmitter Plate	Spring Loaded Transmitter Plate
<b>Wiring - Single</b>	PT100 2, 3 or 4 wire TC Type J & K	PT100 2, 3 or 4 wire TC Type J & K	- -	PT100 2, 3 or 4 wire TC Type J & K	PT100 2, 3 or 4 wire TC Type J & K
<b>Wiring - Duplex</b>	- TC Type J & K	PT100 2 wire TC Type J & K	PT100 3 wire	TC Type J & K	PT100 2 or 3 wire TC Type J & K
<b>Stem Diameter</b>	3mm	6mm	6mm	3mm	6mm

See page 7 & 8 for Transmitter options

The temperature sensor is the most important part of any assembly as it measure the temperature of the process medium. When choosing a mineral insulated PT100 or a thermocouple, ensure that the termination type, wiring system, stem diameter and overall inset length meet with your requirements. We have extensive stocks of both PT100 and thermocouple inserts for your urgent requirement

# Temperature Probes & Terminal Boxes



The temperature probe is the most important part of any assembly as it measures the process medium. When choosing a PT100 or thermocouple, ensure that the termination type, wiring system, stem diameter, stem length, instrument and process connection fittings meet with your requirements. Cabling can be supplied to any length and can be reinforced with stainless steel braid or conduit if needed.

When choosing a terminal box please state the number of cable entries required.



**Programmable**  
**T24**

**Programmable**  
**T12**

**HART**  
**T32**

**Fieldbus/Profibus**  
**T53**

**Specification**

	<b>Programmable T24</b>	<b>Programmable T12</b>	<b>HART T32</b>	<b>Fieldbus/Profibus T53</b>
<b>Configuration</b>	Windows Programmable	Windows Programmable	Windows & HART Programmable via 275/375 Communicator	
<b>Explosion Protection</b>	EExia IIC T4/T5/T6 ATEX Approval	EExib IIC T4/T5/T6 ATEX Approval	CSA Class 1 Division 1 Group A,B,C,D	FM Class 1 Division 1 Group A,B,C,D
<b>Approvals</b>	GL (Lloyds) GOST (Russian)			
<b>Input</b>	2 or 3 wire PT100	2, 3 or 4 wire PT100 Thermocouples Mv or ohm input	2, 3 or 4 wire PT100 Thermocouples Mv or ohm input	Profibus P.A. & Fieldbus
<b>Burnout</b>	Programmable Burnouts	Programmable Burnouts	Programmable Burnouts	Profibus P.A. & Fieldbus
<b>Output</b>	4-20mA	4-20mA	4-20mA HART	Profibus P.A. & Fieldbus
<b>Ambient Temperature Limits</b>	-50°C to 85°C T4 -50°C to 75°C T5 -50°C to 60°C T6	-40°C to 85°C T4 -40°C to 75°C T5 -40°C to 60°C T6	-50°C to 85°C T4 -50°C to 75°C T5 -50°C to 60°C T6 *see note	

\*T32 has an extended range upon application of -40 to +105°C

Comprehensive data sheets are available on request.

ATEX Approved, DIN Rail mounted temperature transmitters are also available.



The temperature transmitter is the electronic converter that produces a 4-20mA measuring signal. When choosing a transmitter, ensure that the temperature span, certification, configuration and input type meet your specification.

# Transmitters

**ROSEMOUNT**



**Programmable  
144H**



**Programmable  
248**



**HART  
644H**

**Specification**

	<b>144H</b>	<b>248</b>	<b>644H</b>
<b>Configuration</b>	Windows Programmable	HART Programmable via 275/375 Communicator	HART Programmable via 275/375 Communicator
<b>Certification</b>	EEx ia ATEX Approval	EEx ia ATEX Approval	EEx ia ATEX Approval
<b>Input</b>	2 or 3 wire RTD	2, 3 or 4 wire RTD, Thermocouple, Mv or ohm input	2, 3 or 4 wire RTD, Thermocouple, Mv or ohm input
<b>Burnout</b>	Programmable Burnouts	Programmable Burnouts	Programmable Burnouts
<b>Output</b>	4-20mA	4-20mA HART	4-20mA HART
<b>Ambient Temperature Limits</b>	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
<b>Digital Meter</b>	N/A	N/A	Optional

Comprehensive data sheets are available on request.

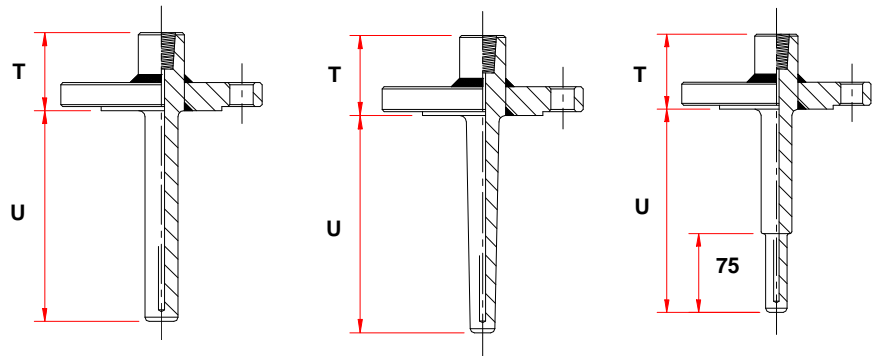
**ROSEMOUNT**



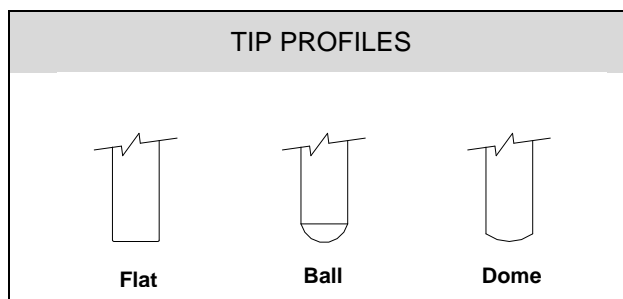
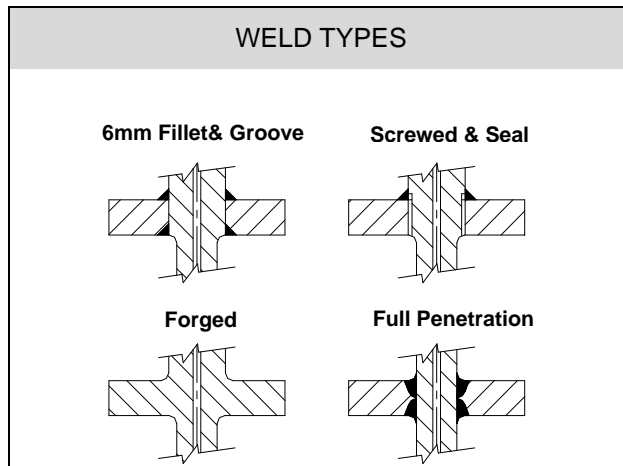
Specification	<b>HART 3144P</b>	<b>Profibus P.A. 3244MVW</b>	<b>Foundation Fieldbus 3244MVF</b>
<b>Configuration</b>	HART Programmable via 275/375 Communicator	Profibus P.A. Loop Programmable	Foundation Fieldbus Loop Programmable via a 375 Hand Held Communicator
<b>Certification</b>	EEx ia ATEX Approval	EEx ia ATEX Approval	EEx ia ATEX Approval
<b>Input</b>	2, 3 or 4 wire RTD, Thermocouple, Mv or ohm input	2, 3 or 4 wire RTD, Thermocouple, Mv or ohm input	2, 3 or 4 wire RTD, Thermocouple, Mv or ohm input
<b>Burnout</b>	Programmable Burnouts	Programmable Burnouts	Programmable Burnouts
<b>Output</b>	4-20mA HART	Profibus P.A.	Foundation Fieldbus
<b>Ambient Temperature Limits</b>	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
<b>Digital Meter</b>	Optional	Optional	Optional

Comprehensive data sheets are available on request.

# Solid Drilled Thermowells



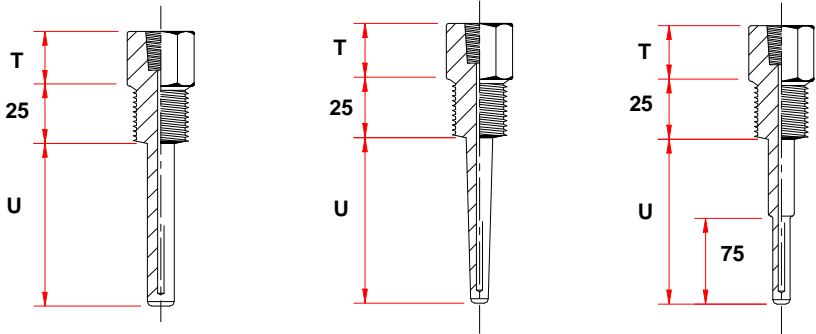
Specification		SF1	SF2	SF3
Process Connection Flange Size	Stem	Parallel	Tapered	Stepped
	Type	Flanged	Flanged	Flanged
	Instrument Connection	Female	Female	Female
	1" 150lb – 2500lb	20mm	20mm – 16mm	20mm - 16mm
	1 1/2" 150lb – 2500lb	25mm	25mm - 20mm	20mm - 16mm
	2" 150lb – 2500lb	25mm	25mm - 20mm	20mm - 16mm
3" 150lb – 2500lb	25mm	25mm - 20mm	20mm - 16mm	



**MATERIAL:** 316 Stainless Steel - Other materials available on request

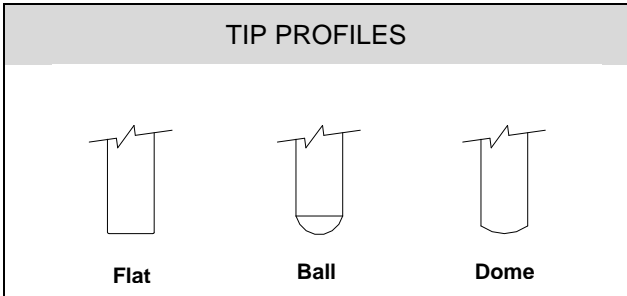
Thermowells are manufactured from solid drilled bar stock complete with either a flanged or screwed process connection. All thermowells are manufactured to within 0.3mm bore concentricity using EN 102.04 3.1b certified material.

# Solid Drilled Thermowells



Specification **SS1** **SS2** **SS3**

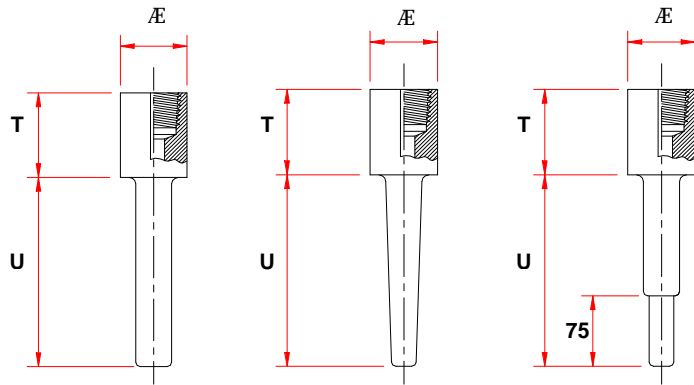
Process Connection Thread Size	Specification	SS1	SS2	SS3
	<b>Stem</b>		Parallel	Tapered
<b>Type</b>		Screwed	Screwed	Screwed
<b>Instrument Connection</b>		Female	Female	Female
<b>1/2" NPT, BSP, BSPT</b>		16mm	16mm – 13mm	16mm – 13mm
<b>3/4" NPT, BSP, BSPT</b>		20mm	20mm – 16mm	20mm – 16mm
<b>1" NPT, BSP, BSPT</b>		25mm	25mm – 20mm	25mm – 16mm
<b>1 1/4" NPT, BSP, BSPT</b>		25mm	25mm – 20mm	25mm – 16mm
<b>1 1/2" NPT, BSP, BSPT</b>		25mm	25mm – 20mm	25mm – 16mm
<b>2" NPT, BSP, BSPT</b>		25mm	25mm – 20mm	25mm – 16mm



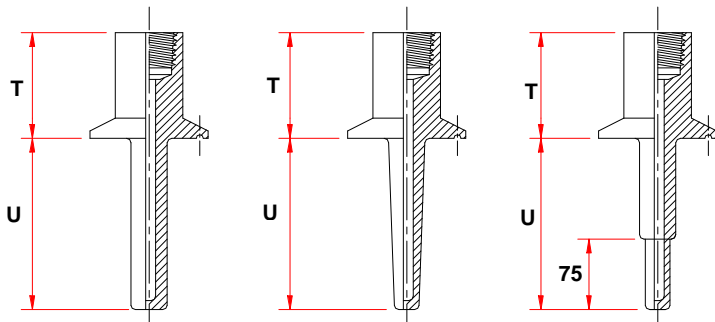
MATERIAL: 316 Stainless Steel - Other materials available on request.

Thermowells are manufactured from solid drilled bar stock complete with either a flanged or screwed process connection. All thermowells are manufactured to within 0.3mm bore concentricity using EN 102.04 3.1b certified material.

# Hygienic Thermowells



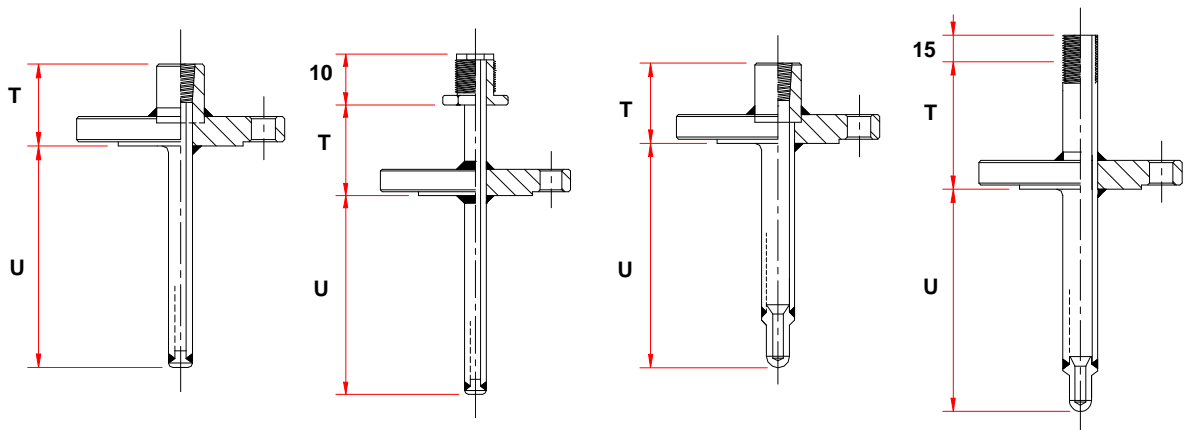
Specification	WI1	WI2	WI3
<b>Stem</b>	Parallel	Taper	Stepped
<b>Type</b>	Weld In	Weld In	Weld In
<b>Instrument Connection</b>	Female	Female	Female
<b>3/4" (26.67mm) Socket dia.</b>	16mm	16 – 13mm	16 – 13mm
<b>1" (33.4mm) Socket dia.</b>	20mm	20 – 16mm	20 – 16mm



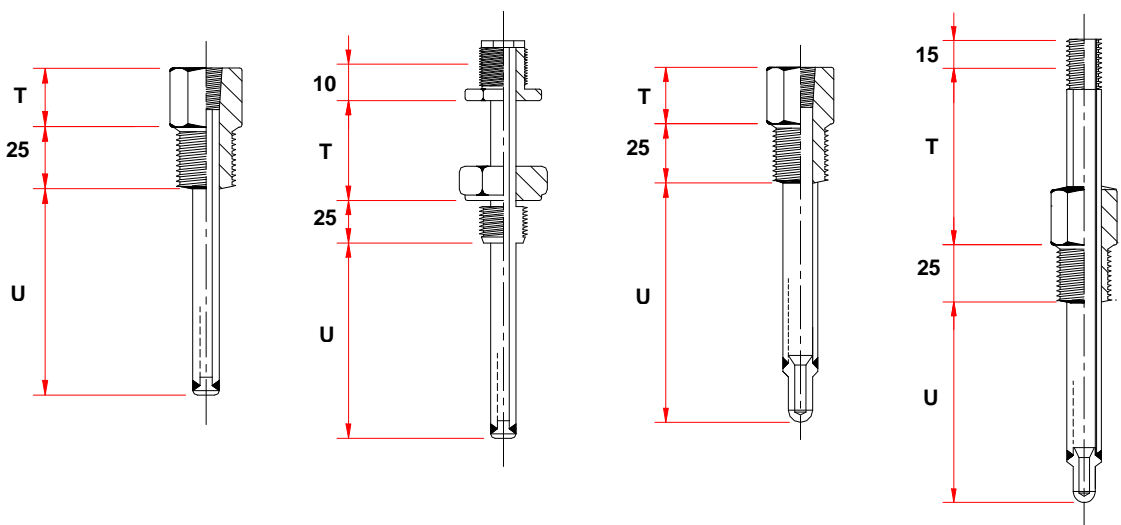
Specification	HF1	HF2	HF3
<b>Stem</b>	Parallel	Taper	Stepped
<b>Type</b>	Hygenic Flange	Hygenic Flange	Hygenic Flange
<b>Instrument Connection</b>	Female	Female	Female
<b>1" Triclamp Flange</b>	16mm	16 – 13mm	16 – 13mm
<b>1.5" Triclamp Flange</b>	16mm	16 – 13mm	16 – 13mm
<b>2" Triclamp Flange</b>	16mm	16 – 13mm	16 – 13mm

Thermowells are manufactured from solid drilled bar stock complete with either a flanged or screwed process connection. All thermowells are manufactured to within 0.3mm bore concentricity using EN 102.04 3.1b certified material.

# Fabricated Pockets



Specification	FF1	FF2	FF3	FF4
Stem	Parallel	Parallel	Stepped	Stepped
Type	Flanged	Flanged	Flanged	Flanged
Instrument Connection	Female	Male	Female	Male
STD Outside Dia.	11mm	11mm	15mm –10mm 21.3mm –13mm	15mm –10mm 21.3mm –13mm
STD Bore Dia.	7mm	7mm	6.2mm	6.2mm

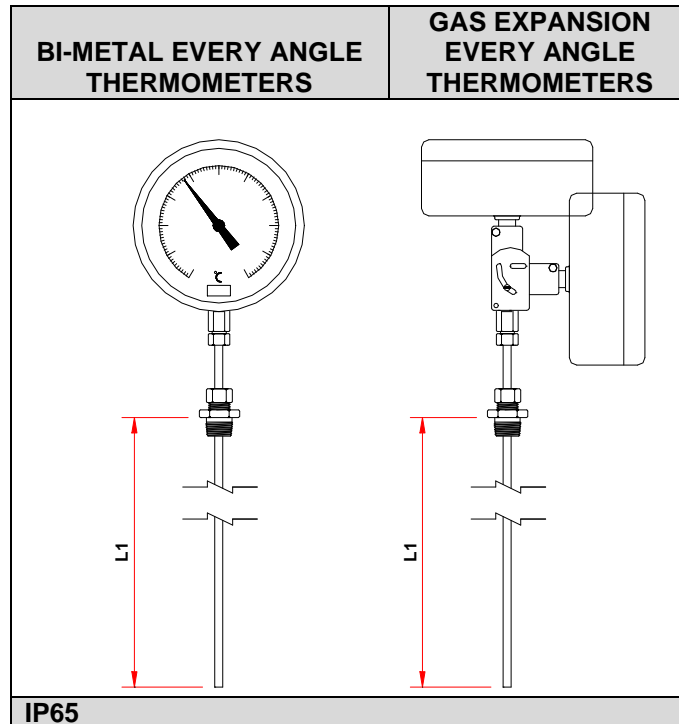


Specification	FS1	FS2	FS3	FS4
Stem	Parallel	Parallel	Stepped	Stepped
Type	Screwed	Screwed	Screwed	Screwed
Instrument Connection	Female	Male	Female	Male
STD Outside Dia.	11mm	11mm	15mm –10mm 21.3mm –13mm	15mm –10mm 21.3mm –13mm
STD Bore Dia.	7mm	7mm	6.2mm	6.2mm

MATERIAL : 316 Stainless Steel - Other materials available on request.

Pockets are fabricated from either tube or piping depending on customer request which is then plugged at one end. Flanged or screwed process connections are available. All pockets are manufactured using EN 102.04 3.1b certified material.


# Thermometers



<b>Case Diameter</b>	4" 5" 6"
<b>Bulb Diameter</b>	6mm 8mm 10mm 12mm
<b>Bulb Length</b>	Please state in mm
<b>Temperature Range</b>	Please state in °C or °F
<b>Process Connection</b>	Please state size

Other options available on request.

A wide range of B-metal thermometers for local & remote indication are available. When choosing a thermometer, please state the type required and ensure that the range, the stem diameter and the stem length all meet with your requirements.

CONNECTION HEADS	
1.	Certificate of Conformity (stating IP Rating)
TEMPERATURE SENSORS	
1.	Calibration of RTD and TC Probe (Range -20°C to 650°C.)
2.	Calibration of Mechanical Thermometers
3.	Temperature Transmitter Simulator Calibration Certificate
4.	Certificate of Conformity
5.	Installation and Maintenance Manual
TRANSMITTERS	
1.	Electronic Simulation Calibration Certificate
2.	Certificate of Conformity
3.	EEx ia IIC T4/T5/T6 ATEX Certificate
4.	EEx nL IIC ATEX Certificate
THERMOWELLS & POCKETS	
1.	Mill and Material Certificate EN 102.04 3.lb
2.	Internal & External Hydrostatic Pressure Test Procedures
3.	Internal & External Hydrostatic Pressure Test Certificate
4.	Dye Penetrant Procedures
5.	Dye Penetrant Test Certificate
6.	Ultrasonic Concentricity Certificate (states tip concentricity to within 0.3mm).
7.	Wake Frequency Calculations to ASME PTC 19.3
8.	Welding Procedures
9.	Welder Quality Records
10.	Surface Finish Certificate
11.	X-Ray Certificate 2 shots @ 90°C over final 100mm of tip
12.	Heat Treatment NACE MR 01-75 (latest revision)
13.	A4 G.A. Drawing
	
<p style="text-align: center;"><b>QUALITY ASSURANCE PROCEDURES</b>            BKW INSTRUMENTS LIMITED is a British Standards Institute            assessed company producing goods and services fully in            accordance with the requirements of  <b>BS EN ISO 9001:2000</b></p>	

## NOTES