

Probe Overview & Selection Guide

Quick Selection Guide

How to select a probe:

1. SELECT PROBE SENSOR AND CONNECTION TYPE

THERMOCOUPLE PROBES

MINI CONNECTION, J AND K	4
STANDARD CONNECTION, J AND K	4
DUPLEX (DUAL) CONNECTION, J AND K	4
IP67 M8 THREADED CONNECTION, J AND K	5
IP67 M12 THREADED CONNECTION, J AND K	5

RTD PROBES

IP67 M8 THREADED CONNECTION	6
IP67 M12 THREADED CONNECTION	7
ONE-PIECE WATERTIGHT CONSTRUCTION	8
MOLDED CABLE SS SHANK CONSTRUCTION	8
COMPACT IP67 M12 THREADED CONNECTION	8

2. SELECT PROBE SHANK LENGTH

NOTE: The table below represents an overview of probe lengths. Not all lengths are available in every sensor type and shank diameter. Refer to specific probe sensor/connection sections (list "1", above) for shank length availability.

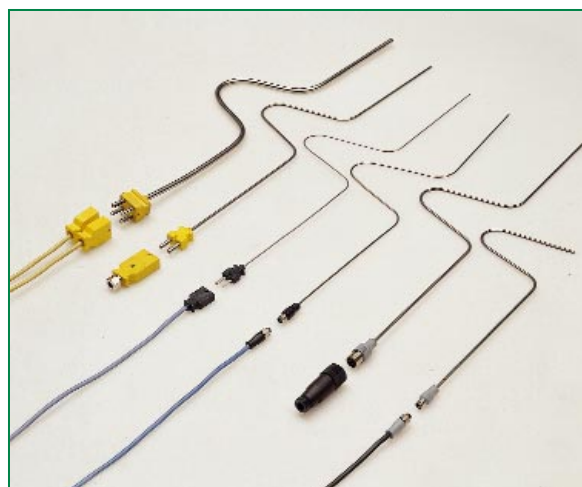
Standard probe lengths		Order code
mm	inches	
100	3.94"	0100
150	5.91"	0150
200	7.87"	0200
250	9.84"	0250
350	13.78"	0350
500	19.69"	0500
750	29.53"	0750
1000	39.37"	1000
1250	49.21"	1250
1500	59.06"	1500

3. SELECT PROBE SHANK DIAMETER

NOTE: The table below represents an overview of probe diameters. Not all diameters are available in every sensor type and shank length. Refer to specific probe sensor/connection sections (list "1", above) for shank diameter availability.

Standard probe diameters		Order code
mm	inches	
0.25	0.01"	25
0.50	0.02"	5
1.00	0.04"	1
1.50	0.06"	15
2.00	0.08"	2
3.00	0.12"	3
3.175	0.125"	317
4.50	0.18"	45
6.00	0.24"	6
6.35	0.250"	635
8.00	0.32"	8
9.07	0.375"	952

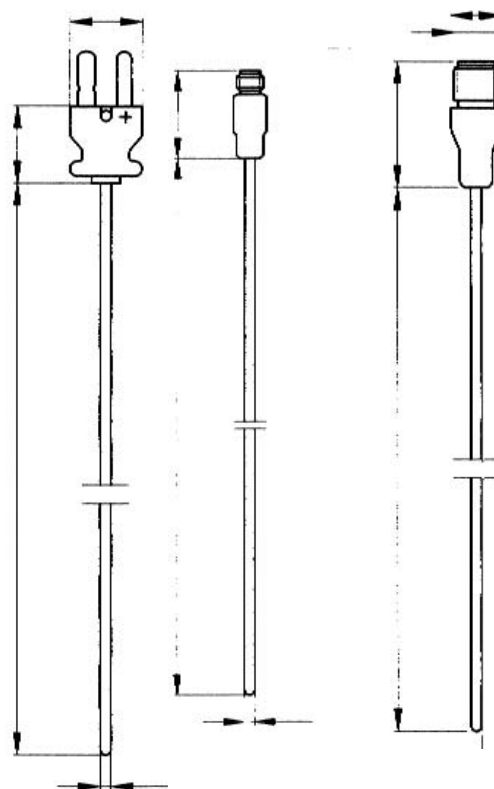
Probe shanks are flexible and will bend to a maximum radius of 3 X the shank diameter



See shank length and diameter tables at left for an overview of available configurations.

Mini-connector

Multi-pin threaded connectors



Quick Selection Guide

4. SELECT CONNECTOR/ADAPTER

THERMOCOUPLE PROBES
IP67 M12 THERMOCOUPLE CONNECTOR 5

RTD PROBES
IP67 M12 RTD CONNECTOR 7

5. SELECT ADJUSTABLE COMPRESSION FITTINGS

1/8", 1/4", 3/8", 1/2" NPT THREADS 11

6. SELECT CABLE EXTENSIONS

THERMOCOUPLE PROBES
MINI CONNECTION, J AND K 4
STANDARD CONNECTION, J AND K 4
DUPLEX (DUAL) CONNECTION, J AND K 4
IP67 M8 THREADED CONNECTION, J AND K 5
IP67 M12 THREADED CONNECTION, J AND K 5

RTD PROBES
IP67 M8 THREADED CONNECTION 6
IP67 M12 THREADED CONNECTION 7

7. SELECT THERMOWELL OR PROTECTIVE TUBE 11

8. SELECT ACCESSORIES

BAYONET LOCK CAP WITH ADJUSTABLE SPRING 10
WELD-ON SURFACE PAD 10
STRAP-ON PIPE SURFACE 10
WALL-MOUNTING BRACKET 10
CRIMP-ON AIR TEMPERATURE TIP 10
CRIMP-ON WALL FEEDTHROUGH ADAPTER 10
CRIMP-ON TIP DIAMETER ADAPTER 10



Strap-on pipe surface probe adapter

Notes:

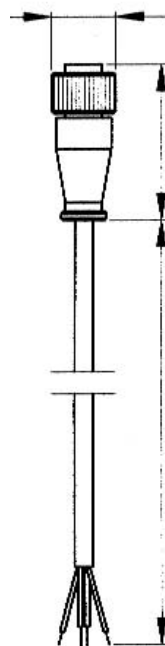
1. All RTD probes are available as NTC Thermistors. Contact the factory with required curve.
2. See Palmer Instruments Catalog Number 1100 for a complete listing of available thermowells and fittings.
3. See Wahl Instruments Catalog Number PW1155 for a complete listing of Heat-Prober™ Hand-Held RTD, thermistor and thermocouple meter/probe systems.
4. See Wahl Instruments Catalog Number PW1143 for a complete listing of DIGI-STEM™ digital industrial process thermometers for J or K thermocouple output.



90° Connector for an IP67 M12 threaded thermocouple probe.



Sliding compression fitting allows direct immersion of probes.



Cable extension with mating socket and plug.
Length options up to 5000 mm

Probe outer protection tubes with compression fittings.



Thermocouple Probes

Thermocouple Probe Specifying and Ordering System, Stocked Models

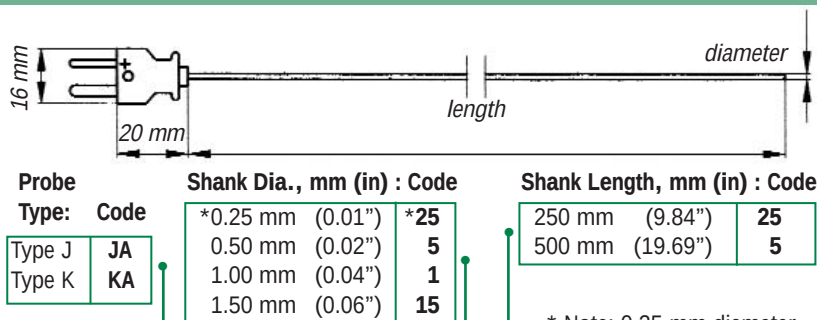
TCO Mini Connector Thermocouple Probes

Small diameter, compact probes for light duty, general purpose use in applications requiring low probe mass, fast temperature response, or minimal heat transfer. Probes are supplied complete with molded-on compensated two-pin male ANSI mini connectors, compatible and interchangeable with any other mini connectors. Perfect for lab and research use.

IEC 584 class 2 (ASTM E 230).

Temp. Limits: 1150°C (2102°F) for type K

600°C (1112°F) for type J



To Order TCO Probes:

TCO 2 I X

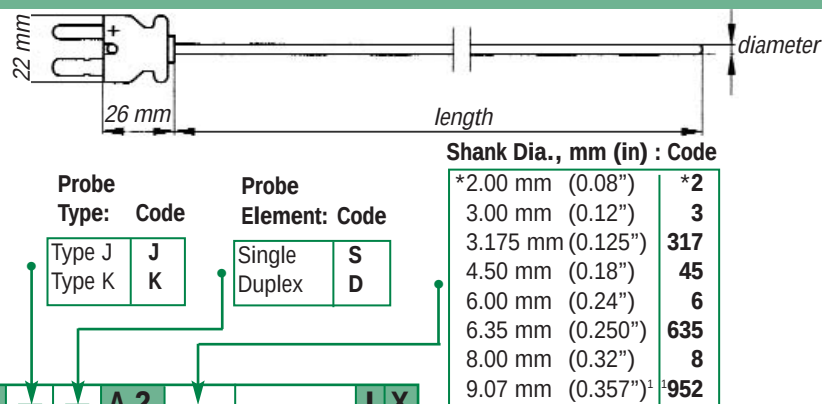
TCM Standard Connector Thermocouple Probes

Rugged standard connection thermocouple probes maintain good speed of response and heat transfer characteristics and are suitable for use in a wide range of general purpose and heavy duty applications. Probes have molded-on standard two-pin ANSI connectors compatible with all standard-sized thermocouple fittings. Four-pin "duplex" probe option provides two thermocouple sensors in a common probe shank for easy signal splitting or a built-in backup system.

IEC 584 class 2 (ASTM E 230).

Temp. Limits: 1150°C (2102°F) for type K

600°C (1112°F) for type J



TCM A 2 I X

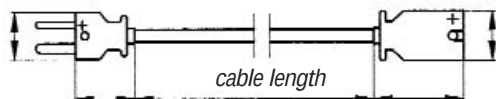


TCM Series Molded-on standard type J probe connector, shown actual size.

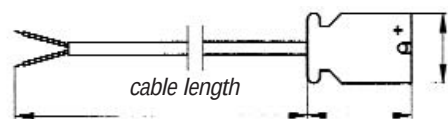
TCO and TCM Series Probe Extension Cables

Choose from Two Extension Cable Types:

Temp. Limit: 120°C (248°F)



1. Socket/Cable/Plug Extension Cable



2. Socket/Cable Only Extension Cable

Cable Length:

1500 mm	1500
3000 mm	3000
5000 mm	5000

Sensor Type:

type J	AV
type K	AA

Connector Type:

standard, single*	E*
mini	G

PCV X X

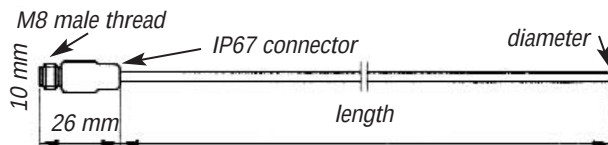
Extension Cable Type:

Connector Type	Cable Configuration	Code
mini	socket/cable only	X
mini	socket/cable/plug	E
standard, single*	socket/cable only	X*
standard, single*	socket/cable/plug	C*

*Note: Two standard single cables of equal length can be used to create an extension cable for duplex probes.

Thermocouple Probe Specifying and Ordering System, Stocked Models

TCS V8 Three-Pin Connector Thermocouple Probes



Thermocouple probes with molded-on compensated connectors and M8 male three-pin threaded fittings. With matching connectors and cables (see table below), TCS V8 systems provide the advantage of an efficient, robust, easily-installed, compact, and watertight threaded connection suitable for severe conditions. IEC 584 class 2 (ASTM E 230). Temperature limits are 1150° C (2102°F) for type K and 600° C (1112°F) for type J.

To Order TCS V8 Probes:



TCS V8 type K thermocouple probe

Probe Type:	Code
Type J	JA
Type K	KA

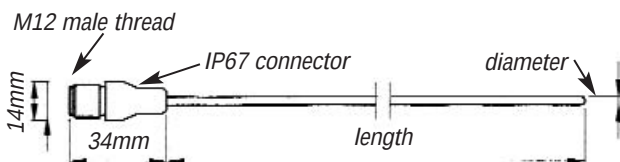
TCSV8 2 I X

Shank Dia., mm (in) : Code		
2 mm	(0.079")	2
3 mm	(0.118")	3
3.175 mm	(0.125")	317

Shank Length, mm (in) : Code

150 mm	(5.91")	0150
200 mm	(7.87")	0200
250 mm	(9.84")	0250

TCSV12 Heavy Duty Four-Pin Connector Thermocouple Probes



TCSV12 probes offer superior strength, vibration resistance, and environmental protection. Molded-on four-pin male connectors attach to compatible connector/extension cable systems, below, with either straight or 90° elbow fittings. Note that TCS V12 probes may be ordered in either single or dual (duplex) sensor configurations without change to dimensions. IEC 584 class 2 (ASTM E 230). Temperature limits are 1150° C (2102°F) for type K and 600° C (1112°F) for type J.

To Order TCS V12 Probes:

Probe Type:	Code
Type J	J
Type K	K

Sensor:	Code
Single	S
Duplex	D

TCSV12 2 I X

Shank Dia., mm (in) : Code		
3 mm	(0.118")	3
3.175 mm	(0.125")	317
4.5 mm	(0.177")	45
6 mm	(0.236")	6
6.35 mm	(0.250")	635

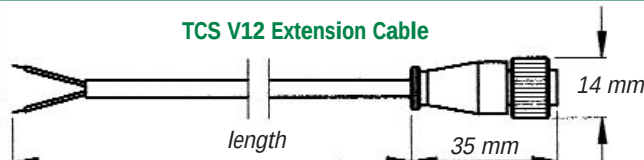
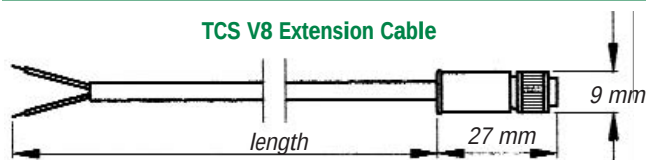
Shank Length, mm (in) : Code

250 mm	(9.84")	0250
500 mm	(19.69")	0500
1000 mm	(39.37")	1000
1500 mm	(59.06")	1500



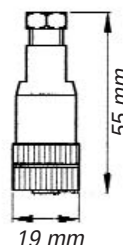
TCS V12 type K thermocouple probe shown with CONV033 90° cable connector.

TCS V8 and TCS V12 Series Probe Extension Cables and Connectors

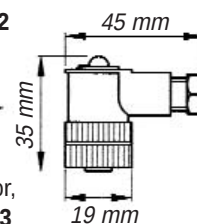


TCS V12 Connectors

For straight connector, order part no. CONV032



For 90° elbow connector, order part no. CONV033



Model Number Configurator:

PCV X X X

Cable Length:	Code
1500 mm (4'11")	1500
3000 mm (9'10")	3000
5000 mm (16'5")	5000

Sensor Type:	Code
type J	AV
type K	AA

Connector Type:

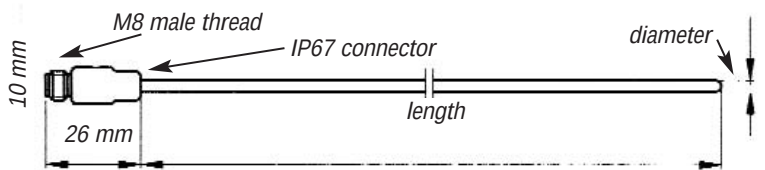
V8 3-pin threaded	A
V12 4-pin threaded	C

Temperature limits:
90° C (194°F) for connector
180° C (356°F) for cable

RTD Probes with Multi-Pin IP67 Threaded Connection

TRS V8 Series Miniaturized RTD Probes

TRS V8 RTD probes utilize molded IP67 three-pin connectors with M8 male threads to maintain a compact profile without sacrifice of durability in severe environments. Probe shanks are formed from bendable 316 stainless steel with magnesium oxide insulation and is permanently marked with the individual probe's calibration correction. IEC 751 for both class A and class B. Temperature limits are 1150° C (2102°F) for type K and 600° C (1112°F) for type J.



To Order TRS V8 Probes:

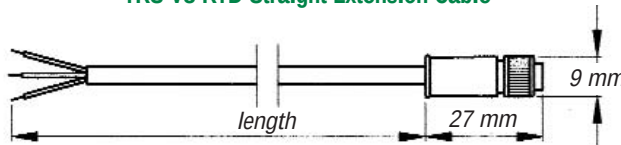
Accuracy Specification (IEC 751)		Shank Dia., mm (in) : Code		Shank Length, mm (in) : Code	
IEC Class "B"	B	2 mm (0.079")	2	100 mm (3.94")	0100
IEC Class "A"	A	3 mm (0.118")	3	150 mm (5.91")	0150
		3.175 mm (0.125")	0317	250 mm (9.84")	0250
				350 mm (13.78")	0350

TRS V8 Series Extension Cables and Connectors

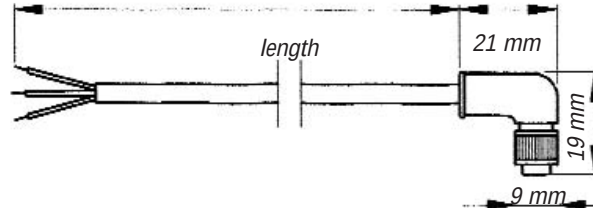


TRS V8 RTD probe shown actual size with PRV straight connector cable extension

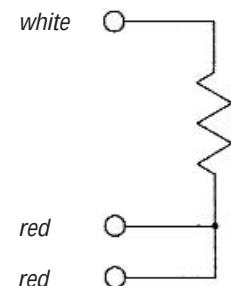
TRS V8 RTD Straight Extension Cable



TRS V8 90° Elbow Extension Cable



TRS V8 RTD Wiring Diagram



Temperature limits: 90° C (194°F) for connector
180° C (356°F) for cable

Model Number Configurator:

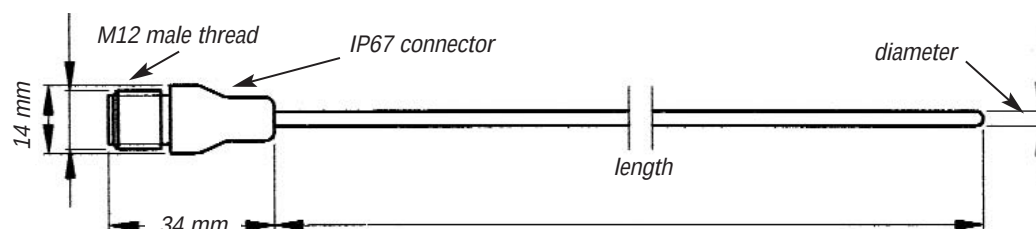
Cable Length:		Cable Fitting:	
1500 mm (4'11")	1500	Straight	A
3000 mm (9'10")	3000	90° Elbow	C
5000 mm (16'5")	5000		

TRS V8 RTD probe individually marked with resistance at 0°C, manufacturing date and traceability code



Italcoppie RTD Probes

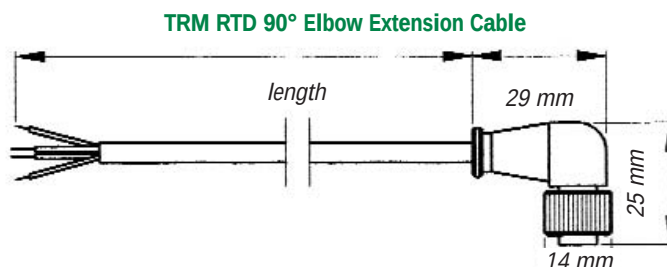
TRM RTD bendable probes in typical use with accessories



Accuracy Specification (IEC 751)	Code
IEC Class "B"	B
IEC Class "A"	A
IEC Class "AA"	Z

Shank Dia., mm (in) : Code	
2 mm (0.079")	2
3 mm (0.118")	3
3.175 mm (0.125")	317
4.5 mm (0.180")	45
6 mm (0.240")	6
6.35 mm (0.250")	635

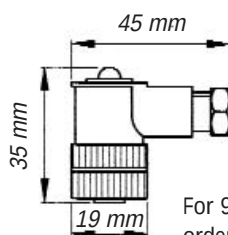
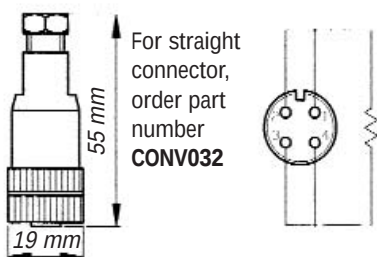
Shank Length, mm (in) : Code		
100 mm	(3.94")	0100
150 mm	(5.91")	0150
250 mm	(9.84")	0250
350 mm	(13.78")	0350
500 mm	(19.68")	0500
750 mm	(2' 5")	0750
1000 mm	(3' 3")	1000



PRV	—	AC	—	X	X	X
-----	---	----	---	---	---	---

Cable Length:	Code
1500 mm (4'11")	1500
3000 mm (9'10")	3000
5000 mm (16'5")	5000

Cable Fitting:	Code
Straight	A
90° Elbow	C

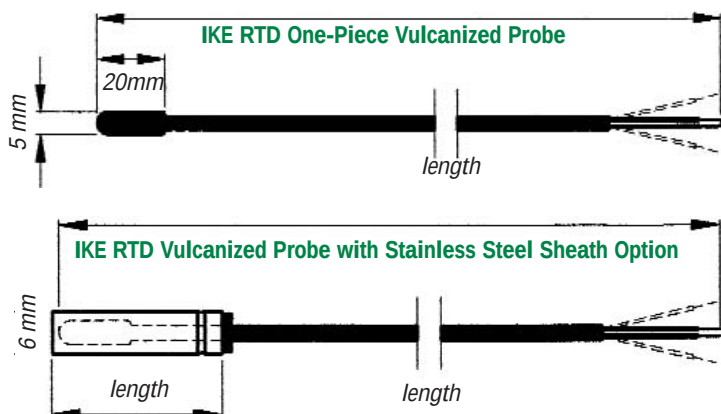


RTD Specialty Probes

Watertight, Corrosion-Resistant RTD Immersion Probes

IKE Type - Watertight, One Piece Molded Transition Cable RTD Probes

IKE Series Pt 100 RTD probes, with one -piece molded transition design, are suitable for long-term use in extreme environments. Moisture, temperature, and corrosion resistant, they serve hostile applications usually fatal to two-piece sensors. IKE probes are available with standard one-piece molded vulcanized sensor/cable or with optional 316 SS sensor sheath that fits over the molded tip. Four internal sensor wires are sheathed in a 3.5 mm diameter thermoplastic outer cable with operational temperature limits of -50°C (-58°F) to 105°C (221°F) . IEC 751 for both class A and class B. Also available as NTC Thermistors.



To Order IKE Probes:

IKE [] [] [] [] [] [] [] [] **X**

Sensing Element: Code

1 Pt 100	P1
1 Pt 1000	P3

No. of Wires: Code

2 wires	E
4 wires	S
*Pt 100 probes only	

Probe Length, mm (in) : Code

1000 mm (3'3")	1000
2000 mm (6'6")	2000
5000 mm* (16'4")	*5000

Stainless Steel Tip Option : Code

Without tip (standard)	XXXX
With 6X50 mm tip option	6X05
With 6X100 mm tip option	6X05

Accuracy Specification (IEC 751)

IEC Class "B"	B
IEC Class "A"*	A*
* Pt 100 4-wire only	

IKE RTD probes for the toughest applications



TRE Series Low Cost RTD Probes



TRE Series Pt 100 RTD probes offer a flexible 316 stainless steel shank attached to a length of molded nylon cable. Sensor temperature limits are -50° to 500°C (-58 to 932°F) TRE RTD's are strong, versatile one-piece probes that provide a low-cost probe option for many applications. Accuracy Class B.

To Order TRE Probes:

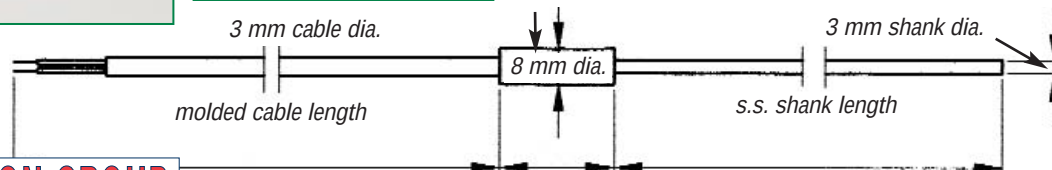
TRE P1 B E 3 [] [] [] **A** [] **AA 1**

Shank Length, mm (in) : Code

100 mm (3.94")	0100
150 mm (5.91")	0150
250 mm (9.84")	0250

Cable Length: Code

1000 mm (3' 3")	1000
2000 mm (6' 6")	2000



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Compact and Rugged RTD Probes Complete with 1/8" NPT Fitting

Italcoppie
RTD Probes

TRC Series RTD Probes



TRC Series RTD probe in typical installation

TRC Series Pt 100 RTD probes are extremely rugged and compact. Typical uses include many pipeline and supply pipe applications. The molded-on IP67 four-pin connector with M12 male threads provides quick, positive connection to extension cables. Probe shanks and fittings are made of 316 stainless steel for long, corrosion-resistant life. Temperature range is -50/120°C (-58/248°F). As with all Italcoppie RTD probes, each TRC probe is individually marked with resistance at 0°C, manufacturing date and a traceability code. IEC 751 for both class A and class B. Also available as NTC thermistor.

To Order TRC Probes:

TRC P1 **X**

Accuracy Specification
(IEC 751)

Code

IEC Class "B"

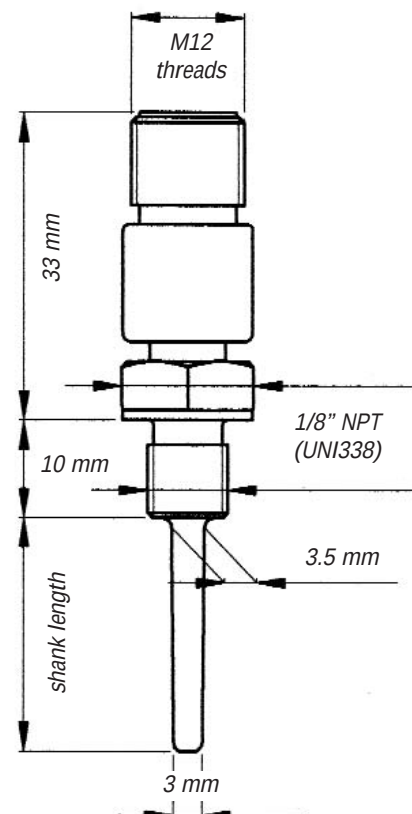
B

IEC Class "A"

A

Shank Length, mm (in) : Code

13 mm	(0.512")	5
24 mm	(0.945")	6

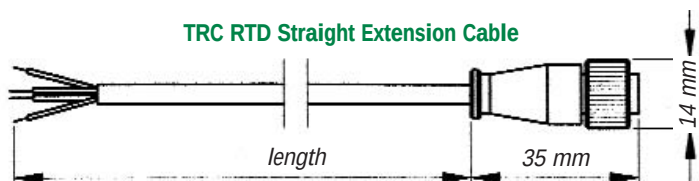


TRC Series RTD probe
shown with matching
connector

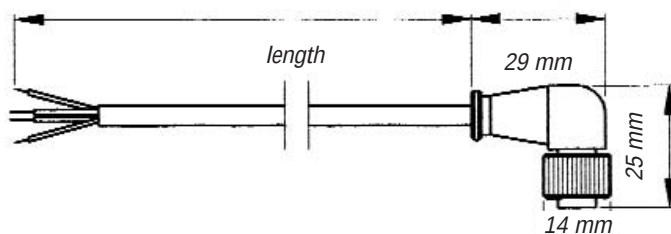
TRC Series Extension Cables and Connectors

Temperature limits: 90° C (194°F) for connector
180° C (356°F) for cable

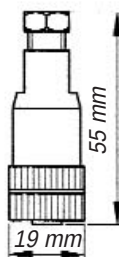
TRC RTD Straight Extension Cable



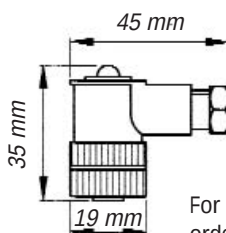
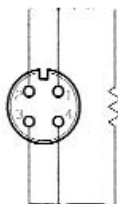
TRC RTD 90° Elbow Extension Cable



TRC Connectors



For straight
connector,
order part
number
CONV032



For 90° elbow connector,
order part no. **CONV033**

Model Number
Configurator:

PRV **AC** **X** **X** **X**

Cable Length:

1500 mm	(4'11")	1500
3000 mm	(9'10")	3000
5000 mm	(16'5")	5000

Code

Cable Fitting:

Code

Straight

A

90° Elbow

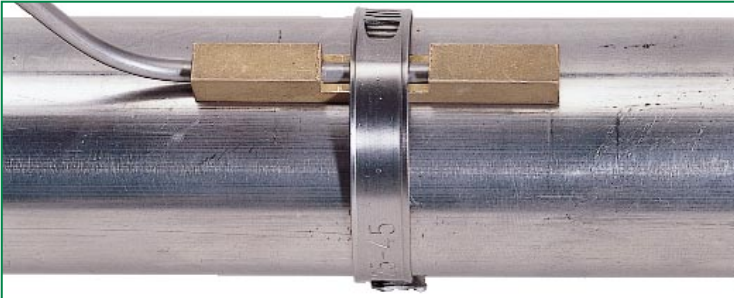
C

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Probe Accessories

Probe and connector accessories pictured below are available for most Italcoppie probes. Contact the factory for ordering information, availability, and complete product specifications.



Strap-on pipe probe for surface temperature measurement. Uses a standard mounting clamp to secure probes for maximum contact and heat transfer.



Threaded fitting with bayonet lock cap. Maintains maximum contact for efficient heat transfer.



Crimp-on probe tip for air measurement.



Nickle-plated brass crimp-on probe tip adapters for fitting existing mounting apertures of from 3 to 8mm (0.118" to 0.315") in diameter. Fits probes with 2 or 3 mm (0.079" or 0.118") shank diameter.



Weld-on surface probe attachment. 316 Stainless steel tab can be welded to surface to be measured. Accepts 3 or 4.5 mm (0.118" or 0.177") shank diameter probes.



Crimp-on wall feed-through nut for probe shanks.

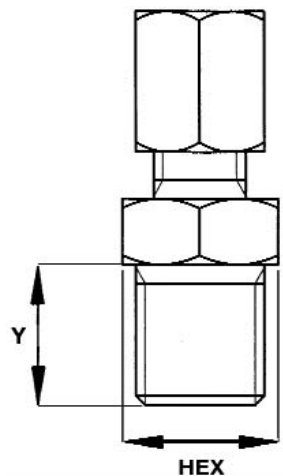


Wall mounting bracket, supplied complete with probe locking nut, for use with TRM or TRC Series probes. Allows probe use for air or room temperature applications.

Compression Fittings & Protection Tubes

Sliding Compression Fittings for Direct Immersion Probe Mount

CF Series sliding compression fittings facilitate the use of probes either with or without thermowells. The 316 stainless steel fittings are offered in a variety of process connection sizes and for most probe diameters.



To Order CF Fittings: **CF** [] [] [] [] []

Type of Sealing:

Type of Sealing:	Code
S.S. ferrule	M
PTFE sealant gland	P

Process

Connection:

Process Connection:	Code
1/8" NPT	AC
1/4" NPT	AF
3/8" NPT	AI
1/2" NPT	AN

Probe

Diameter, mm (in.):

Code

1.5 mm	.059"	15
2 mm	.079"	2
3 mm	.118"	3
3.175 mm	.125"	317
4.5 mm	.177"	45
6 mm	.236"	6
6.35 mm	.250"	635
8 mm	.315"	8
9.52 mm	.375"	952

Thread

Size

Dim. "Y"

Hex

1/8"	10 mm	12
1/4"	15 mm	17
3/8"	15 mm	17
1/2"	20 mm	22



TWCF 316 Stainless Steel Protecting Tubes with Compression Fitting

TWCF Series protection tubes used in conjunction with compression seals allow quick replacement of thermometer probes without shutting down production processes. 316 Stainless steel tubes ensure corrosion resistant, long lasting service in demanding applications.

To Order TWCF Protecting Tubes:

Tube Diameter
O.D. X I.D.:

5 X 3.5 mm	0.197" X 0.118"	OL
9 X 7 mm	0.354" X 0.276"	OH
13.7 X 7.6 mm	0.539" X 0.299"	OI

Immersion

Length, mm (in.):

Code

50 mm	1.97"	050
100 mm	3.94"	100
150 mm	5.91"	150
200 mm	7.87"	200
300 mm	11.81"	300
400 mm	15.75"	400

Process

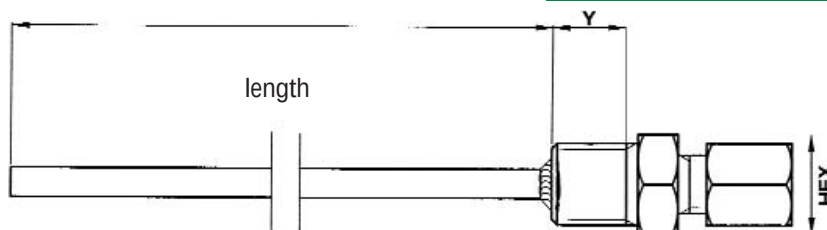
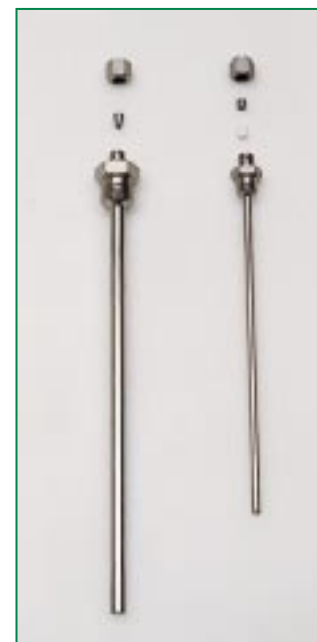
Connection:

Process Connection:	Code
1/8" NPT	AC
1/4" NPT	AF
3/8" NPT	AI
1/2" NPT	AN

Type of Sealing:

Code

Type of Sealing:	Code
S.S. ferrule	M
PTFE sealant gland	P



For Probe Dia., mm (in) : Code

3 mm	(0.118")	30
3.175 mm	(0.125")	32
4.5 mm	(0.177")	45
6 mm	(0.236")	60
6.35 mm	(0.250")	63

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THE ONE SOURCE FOR THE BEST INSTRUMENTATION

EVO Series Temperature Transmitters & Switches

EASY !

To buy, stock, install, maintain, replace, and calibrate
Eliminate wiring mistakes - one way only connection
Hand tighten to secure - no need for tools

FLEXIBLE !

Stems bend for easy installation
No custom built sensors needed
One size sensor can be used throughout your facility - just bend sensor to fit

FAST !

Eliminate wiring and unwiring every time there is a probe change
Minimal down time - stock only one size sensor
Transmitter or switch is mounted directly onto the sensor
Eliminate heads, extension tubes, transmitter block - conduit may not be necessary

TOUGH !

Sensor has densely packed magnesium oxide insulated stainless steel shanks
Superior strength
Vibration resistant
Environmental protection
Molded connectors are compact and watertight

SPECIFIC !

Factory programmed to your specifications
4-20 mA output transmitter
Each probe is individually marked with resistance, manufacturing date, and traceability code
Configure switch and transmitter by PC



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EVO Series Temperature Transmitters & Switches

TRANSMITTER			SWITCH	
	EVO TRA C	EVO TRA I	EVO STOP C	EVO STOP I
Dimensions	1.1" x 2.8" (29mm x 70mm)			
Temperature range	-40°/185°F (-40°/ 85°C)		-13°/176°F (-25°/80°C)	
Humidity	0/100% RH			
Tightness	IP67 hermetically sealed			
Power supply dc	8-35V		15-30V	
Input range, Pt 100	-328°/1562°F (-200°/850°C)	-58°/932°F (-50°/500°C)	-58°/572°F (-50°/300°C)	
Input range, T/C	NA	NA	0°/1100°C (32°/2012°F)	
Accuracy, Pt 100	±0.3°C (or 0.1% of span)		±1°F (±0.5°C)	
Measurement error, T/C	NA	NA	±2°C	
Min bending radius	NA	3 times outer diameter	NA	3 times outer diameter
Power usage	25 to 800mW		NA	NA
Signal/Noise ratio	min 60 dB		NA	NA
Signal dynamics input	19bit		NA	NA
Signal dynamics output	16bit		NA	NA
Temp. coefficient	0.01°C/°C (or 0.01% of span)		NA	NA
EMC immunity influence	±0.5% of span		NA	NA
Effect of supply V variation	0.005% of span/Vdc		NA	NA
Output signal range	4 to 20 mA		PNP (NPN on request)	
Output updating time	135 ms	136 mS	1 s	
Output connection	M12x1 (VDE0627)			
Error detection, programmable	3.5 to 23 mA		NA	NA
Error detection, upscale	23 mA (NAMUR NE43 Up)		NA	NA
Error detection, downscale	3.5 mA (NAMUR NE43 Down)		NA	NA
Standards	EN 50081-1, EN 50081-2		NA	NA
EMC 89/336/EEC emission				
Standard, immunity	EN 50081-1, EN 50081-2		NA	NA
Body Material	AISI 316 SS			
Sheath Material	NA	AISI 316 SS	NA	AISI 316 SS or inconel 600

How To ORDER



EVO TRA I or STOP I
Temperature Transmitter/Switch
with sensor
Priced on Request



EVO Stop C or TRA C
Temperature Switch or
Transmitter

Transmitter Only
order Model No:

EVO TRA C

Transmitter with Sensor
order Model No:

EVO TRA I (mm) (mm)

Diameter mm
enter: 2 (0.079")
3 (0.118")
4 (0.157")
5 (0.197")
6 (0.236")
6.35 (0.25")

Length mm
enter:
100 (3.9")
150 (5.9")
250 (9.8")
350 (13.8")
500 (19.6")
750 (29.5")
1000 (39.3")

Switch Only
order Model No:

EVO STOP C

enter: PNP or NPN
enter: Pt 100 4 wire
or
T/C type K

Switch with Sensor
order Model No:

EVO STOP I (mm) (mm)

enter:
Pt 100 4 wire
or
T/C type K

enter: PNP or NPN

Diameter mm
enter: 2 (0.079"), 3 (0.118")
4 (0.157), 5 (0.197"), 6 (0.236)
6.35 (0.25")

Length mm
enter:
100 (3.9")
150 (5.9")
250 (9.8")
350 (13.8")
500 (19.6")
750 (29.5")
1000 (39.3")

**For complete information on sensors and cabling,
please refer to Catalog No. IC 1101 pages 6-9.**

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