

**Mineral Insulated Thermocouples (TC's)**

Series: GTC

Srl.	Products	Model
<b>A</b>	Thermocouple with Head Assemblies shown below	GTC-H
1	Mineral Insulated Thermocouple (Head with Nipple-Union-Nipple) Assembly	GTC-HNUN
2	Mineral Insulated Thermocouple (Head with Nipple-Union) Assembly	GTC-HNU
3	Mineral Insulated Thermocouple (Head with Nipple) Assembly	GTC-HN
4	Mineral Insulated Thermocouple (Head with Fix Connector) Assembly	GTC-HFC
5	Mineral Insulated Thermocouple (Head with Adjustable Connector) Assembly	GTC-HAC
6	Mineral Insulated Thermocouple (Head without Connector) Assembly	GTC-HWC
7	Mineral Insulated Thermocouple (Head without Swivel Nut) Assembly	GTC-HWS
<b>B</b>	Thermocouple Inserts shown below	GTC-I
1	Mineral Insulated Thermocouple Insert (Pot Sealed with Flexible Leads)	GTC-IFL
2	Mineral Insulated Thermocouple Insert (Pot Sealed with Plug & Jack)	GTC-IPJ
3	Mineral Insulated Thermocouple Insert (Pot Sealed with Ceramic Block)	GTC-ICB
4	Mineral Insulated Thermocouple Insert (Pot Sealed with SS base plate & TT)	GTC-ITT
5	Mineral Insulated Thermocouple Insert (Pot Sealed with SS base plate for TT)	GTC-IBP
6	Mineral Insulated Thermocouple Insert (Pot Sealed with Cable Extension)	GTC-ICE
7	Mineral Insulated Thermocouple Insert (Pot Sealed with Cable & Bayonet Cap)	GTC-IBC
8	Mineral Insulated Thermocouple Insert (Sealed with Cable Extension)	GTC-ISC
<b>C</b>	Special Service Thermocouple Assemblies shown below	GTC-S
1	Skin type Mineral Insulated Thermocouple Assembly	GTC-SS
2	Multipoint Mineral Insulated Thermocouple Assembly	GTC-SM
3	Sanitary (Hygiene) Mineral Insulated Thermocouple Assembly	GTC-SH
4	Bearing (Miniature) Thermocouple	GTC-SB
5	Reduced Tip (Quick response) MI Thermocouple Assembly	GTC-SRT
6	Compact Multipoint MI Thermocouple Assembly	GTC-SCM
7	Bed Thermocouple Assembly	GTC-SBT
8	Thermocouple with Shear Valve Assembly	GTC-SSV
9	Thick Wall MI Thermocouple Assembly	GTC-SMI
10	Furnace (High Temperature) Thermocouple Assemblies	GTC-SFT
11	Thermocouple (Special construction)	GTC-X

**Note:** Part of our development programs, product specifications, photos, drawings, dimensions and other information provided in catalogue/website may change without any notice.

## A) Thermocouple with Head Assemblies general specifications

Series: GTC-H

Srl.	Products	Model
1	Mineral Insulated Thermocouple (Head with Nipple-Union-Nipple) Assembly	GTC-HNUN
2	Mineral Insulated Thermocouple (Head with Nipple-Union) Assembly	GTC-HNU
3	Mineral Insulated Thermocouple (Head with Nipple) Assembly	GTC-HN
4	Mineral Insulated Thermocouple (Head with Fix Connector) Assembly	GTC-HFC
5	Mineral Insulated Thermocouple (Head with Adjustable Connector) Assembly	GTC-HAC
6	Mineral Insulated Thermocouple (Head without Connector) Assembly	GTC-HWC
7	Mineral Insulated Thermocouple (Head without Swivel Nut) Assembly	GTC-HWS

Element Type (ET)	: Chromel/Alumel (K), Iron/Constantan (J), Chromel/Constantan (E), Copper/Constantan (T), Nicrosil/Nisil (N), Pt.Pt.Rh-13% (R) / Pt.Pt.Rh-10% (S), Pt.Rh-6%,Pt.Rh-30% (B), Tu.5%/Tu.26%Rh. (C), Tu.3%/Tu.25%Rh. (D), Tu./Tu.26% Rh. (G)
No. of Elements (NE)	: Simplex, Duplex, Triplex
Hot Junction (HJ)	: Ungrounded, Grounded, Exposed
Calibration Range°C (CR)	: Specify
Calibration Accuracy (CA)	: As per IEC-60584 Class-1, As per IEC-60584 Class-2, As per ANSI MC 96.1 Class-1, As per ANSI MC 96.1 Class-2
Sheath Material	: SS304, SS304L, SS310, SS310S, SS316, SS316L, SS316Ti, SS321, SS347, SS(HRS)446, Inconel-600, Inconel-601, Inconel-625, Incoloy-825 are standard and special materials are Microbell, Pyrosil®, Hastalloy®-X, Pt10%Rh and Pt20%Rh, Niobium 1% Zirconium, Tantalum.
Sheath Dia (SD)	: 0.5mm, 1mm, 1.5mm, 2mm, 3mm, 3.2mm, 4.5mm, 4.8mm, 6mm, 6.4mm, 8mm, 9.5mm, 10mm, 10.8mm, 12mm, 12.7mm
Sheath Insertion Length (IL)	: Specify (sheath tip to below process connection)
Sheath Extension Length (EL)	: Specify (process connection bottom to below head)
Sheath Total Length (TL)	: Specify (below head/swivel to sheath tip nut i.e IL+EL)
Head Material (HM)	: Die Cast Aluminium (LM6), SS304, SS316, SS316L, CI, PP, Nylon
Cable Entry (CE)	: One / Two Nos. of ½”NPT(F), ½”BSP(F), ¾”ET(F), M20x1.5(F)
Head Type (HT)	: Weatherproof IP-67 or IP-68, Flameproof IIA/IIB, Flameproof IIC
Head Certificate (HC)	: CMRI, DGMS, PESO(CCOE), FM, UL, CSA, ATEX, IECEx
Cold Junction (CJ)	: SS base plate with <u>spring</u> loaded Ceramic Block & <u>Nickel</u> plated Brass terminals, SS base plate with <u>spring</u> loaded Ceramic Block & <u>Silver</u> plated Brass terminals, SS base plate with <u>spring</u> loaded Ceramic Block & <u>SS</u> terminals, SS base plate with Ceramic Block & <u>Nickel</u> plated Brass terminals, SS base plate with head mounted 2-wire Transmitter, SS base plate with PTFE insulated leads for mount Transmitter at your end.
Process Connection (PC)	: Nipple-Union-Nipple, Nipple-Union, Nipple, Adjustable Connector (Male Thread), Fixed Connector (Male Thread), Fixed Connector (Male Thread at both ends), Swivel Nut / w/o Swivel nut/connector, Spring Loaded Nipple-Union-Nipple, Spring Loaded Nipple, Bayonet Cap with spring, Adjustable elliptical flange with grub screw, Not applicable.
Connection Material (CM)	: Cd. plated CS, SS304, SS316
Connection Length (CL)	: 50mm, 100mm, 150mm
Process Connection (PC)	: Threaded, Not applicable Size : ¼”, 3/8”, ½”, ¾”, 1”, M18x1.5, M20x1.5 Type : NPT, NPSM, BSP, BSPP, BSPT, G, R, Rp / (Male or Female)



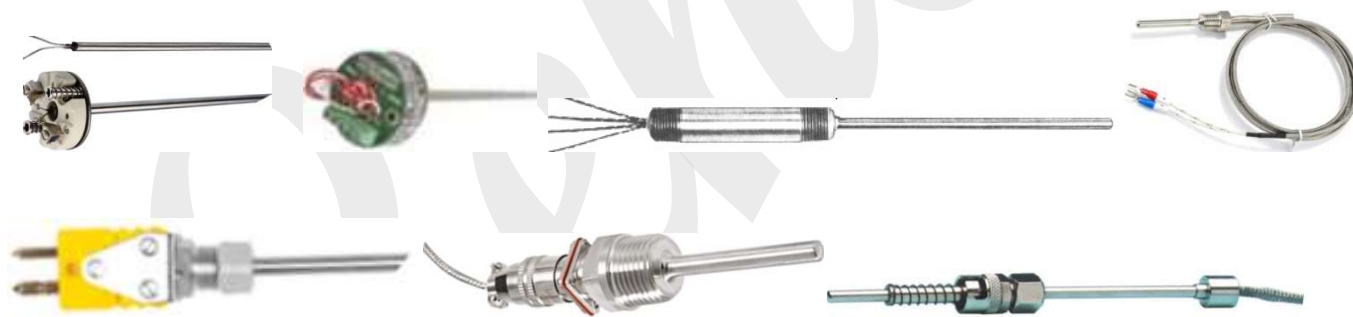
**B) Thermocouple Inserts general specifications**

Series: GTC-I

Srl.	Products	Model
1	Mineral Insulated Thermocouple Insert (Pot Sealed with Flexible Leads)	GTC-IFL
2	Mineral Insulated Thermocouple Insert (Pot Sealed with Plug & Jack)	GTC-IPJ
3	Mineral Insulated Thermocouple Insert (Pot Sealed with Ceramic Block)	GTC-ICB
4	Mineral Insulated Thermocouple Insert (Pot Sealed with SS base plate & TT)	GTC-ITT
5	Mineral Insulated Thermocouple Insert (Pot Sealed with SS base plate for TT)	GTC-IBP
6	Mineral Insulated Thermocouple Insert (Pot Sealed with Cable Extension)	GTC-ICE
7	Mineral Insulated Thermocouple Insert (Pot Sealed with Cable & Bayonet Cap)	GTC-IBC
8	Mineral Insulated Thermocouple Insert (Sealed with Cable Extension)	GTC-ISC

Element Type (ET)	: Chromel/Alumel (K), Iron/Constantan (J), Chromel/Constantan (E), Copper/Constantan (T), Nicrosil/Nisil (N), Pt.Pt.Rh-13% (R) / Pt.Pt.Rh-10% (S), Pt.Rh-6%,Pt.Rh-30% (B), Tu.5%/Tu.26%Rh. (C), Tu.3%/Tu.25%Rh. (D), Tu./Tu.26% Rh. (G)
No. of Elements (NE)	: Simplex, Duplex, Triplex
Hot Junction (HJ)	: Ungrounded, Grounded, Exposed
Calibration Range°C (CR)	: Specify
Calibration Accuracy (CA)	: As per IEC-60584 Class-1, As per IEC-60584 Class-2, As per ANSI MC 96.1 Class-1, As per ANSI MC 96.1 Class-2
Sheath Material	: SS304, SS304L, SS310, SS310S, SS316, SS316L, SS316Ti, SS321, SS347, SS(HRS)446, Inconel-600, Inconel-601, Inconel-625, Incoloy-825 are standard and special materials are Microbell, Pyrosil®, Hastalloy®-X, Pt10%Rh and Pt20%Rh, Niobium 1% Zirconium, Tantalum.
Sheath Dia (SD)	: 0.5mm, 1mm, 1.5mm, 2mm, 3mm, 3.2mm, 4.5mm, 4.8mm, 6mm, 6.4mm, 8mm, 9.5mm, 10mm, 10.8mm, 12mm, 12.7mm
Sheath Insertion Length (IL)	: Specify (sheath tip to below process connection)
Sheath Extension Length (EL)	: Specify (below seal pot to process connection bottom)
Sheath Total Length (TL)	: Specify (below seal pot to sheath tip i.e IL+EL)

- Cold Junction (CJ) : SS base plate with spring loaded Ceramic Block & Nickel plated Brass terminals, SS base plate with spring loaded Ceramic Block & Silver plated Brass terminals, SS base plate with spring loaded Ceramic Block & SS terminals, SS base plate with Ceramic Block & Nickel plated Brass terminals, SS base plate with head mounted 2-wire Transmitter, SS base plate with PTFE insulated leads for mount Transmitter at your end, Miniature Plug & Jack, Standard Plug & Jack, Plug-in-Connector (round) Male & Female, Pot sealed with Flexible Leads, Pot sealed with Cable extension, Pot Sealed with Cable & Bayonet Cap, Sealed with Cable extension, Sealed with Flexible Leads
- Cable Insulation (CI) : PTFE insulated flexible leads, PVC insulated flexible leads, PTFE-PTFE insulated Cable, PTFE-PTFE-SS braided Cable, PTFE-PTFE-SS braided overall SS flex hose-conduit, PTFE-PTFE-SS braided overall heat shrink tube, PTFE-FG insulated Cable / PTFE-FG-SS braided Cable, PTFE-FG-SS braided overall SS flex hose-conduit
- Cable/Leads Length (CL) : Specify Leads length (MM), Cable length (Mtrs.)
- Cable/Leads Length (CL) : Specify Leads length (MM), Cable length (Mtrs.)
- Process Connection (PC) : Adjustable Connector (Male Thread), Fixed Connector (Male Thread at top end), Fixed Connector (Male Thread at bottom ends), Spring Loaded Nipple-Union-Nipple, Spring Loaded Nipple, Bayonet Cap with spring, Adjustable elliptical flange with grub screw, Not applicable.
- Connection Material (CM) : Cd. plated CS, SS304, SS316
- Connection Length (CL) : 50mm, 100mm, 150mm
- Process Connection (PC) : Threaded, Not applicable  
 Size : 1/4", 3/8", 1/2", 3/4", 1", M18x1.5, M20x1.5  
 Type : NPT, NPSM, BSP, BSPP, BSPT, G, R, Rp / (Male or Female)



### C) Special Service Thermocouple Assemblies general specifications

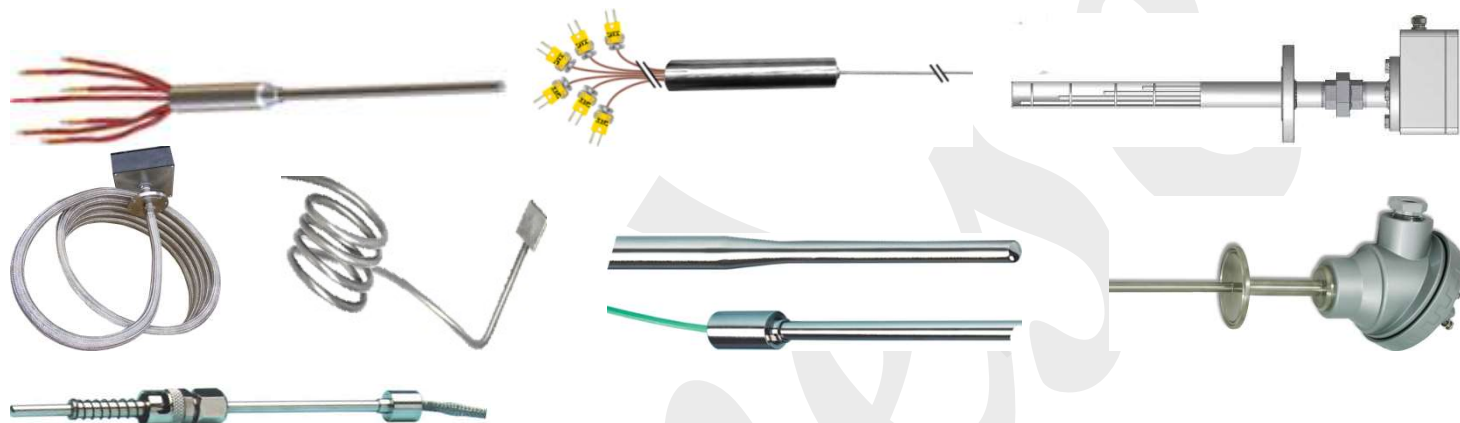
Series: GTC-S

Sri.	Products	Model
1	Skin type Mineral Insulated Thermocouple Assembly	GTC-SS
2	Multipoint Mineral Insulated Thermocouple Assembly	GTC-SM
3	Sanitary (Hygiene) Mineral Insulated Thermocouple Assembly	GTC-SH
4	Bearing (Miniature) Thermocouple	GTC-SB
5	Reduced Tip (Quick response) MI Thermocouple Assembly	GTC-SRT
6	Compact Multipoint MI Thermocouple Assembly	GTC-SCM
7	Bed Thermocouple Assembly	GTC-SBT
8	Thermocouple with Shear Valve Assembly	GTC-SSV
9	Thick Wall MI Thermocouple Assembly	GTC-SMI
10	Furnace (High Temperature) Thermocouple Assemblies	GTC-SFT
11	Thermocouple (Special construction)	GTC-X

**“Special Service Reduced Tip MI Thermocouples”**, available in Stainless Steel or Alloy-600 or Microbell sheathed K, N & other conductor types are available in IEC584- accuracy class-1, class-2, special limits, ½ tolerance.

**“Special service compact Multipoint MI Thermocouple Assemblies”**, available in Sinless Steel or Alloy-600 4.5mm or 6mm or 8mm dia single sheathed with 4 measuring points, others on request. It required limited space and suitable for reactor and down drill well oil exploration temperature measurement.

Available sheath materials are SS304, SS304L, SS310, SS310S, SS316, SS316L, SS316Ti, SS321, SS347, SS(HRS)446, Inconel-600, Inconel-601, Inconel-625, Incoloy-825 are standard and special materials are Microbell, Pyrosil®, Hastalloy®-X, Pt10%Rh and Pt20%Rh, Niobium 1% Zirconium, Tantalum, others on request.



**Add-On optional Items (AO):** SS304/SS316/Ni. plated Brass **Cable Gland** / SS304/SS316/ Aluminium/Brass **Plug** / SS304/SS316 **Tag Plate** / SS **or** MS **Clamp** with Head for 2"Nb Pipe mount / SS **or** MS **Bracket** (L shape) with Head for Surface mount / Nipple-Shear Valve-Nipple Assembly (SS or CS) / Nipple-ShearGate Valve-Nipple Assembly (SS or CS) / Nipple-Union-Nipple with spring loading arrangement / Extension Piece with spring loaded with oil sealed / Extension piece with adjustable connector / Adjustable Elliptical Flange with Grub screws / Ceramic beaded insulation / Ceramic tube insulation / Mill Connector (Specify No. of Pins) / Omega make Plug & Jack / Omega type Plug & Jack / Lemo make Plug-in-Connector / Lemo type Plug-in-Connector / Capri Connector / Spring loading over Pot seal & Cable / Compensating grade (KXA) Cable (specify insulation) / Extension grade (KX) Cable (specify insulation) / Leads with Lugs / Transmitter mounted in Head (specify model), others on request.

**Routine Check/Tests/Reports:**

- T1 - Physical, Visual & Dimensional check
- T2 - Thread Check by thread Gauge.
- T3 - Nitrogen leak test for hot end weld joints
- T4 - Insulation Resistance (IR) (>100 M Ohms @500VDC at 25°C)
- T5 - Calibration at 2 points with certificate
- T6 - Head area classification certificate

**Standard Features (unless specified by customer):** (1) Compact mass of MgO insulation (2) Conductor dia proportionate to sheath dia & No. of conductors (3) Parallel sheath dia (4) Simplex-Ungrounded (5) 2 Point ANSI MC 96.1 Class-2 calibration (6) Cold end pot sealed & provided with PTFE or PVC insulated flexible leads (7) Plastic plugged/protected threads, (8) TT mounting through 2 M4 spring loaded screws at 33mm PCD, (9) Ni. plated Brass terminal screw (10) Terminal screws without spring (11) 41mm OD x 33mm PCD ceramic block, (12) Epoxy coating on Aluminium head (13) Single ½"NPTF cable entry (14) ½"BSPF at head bottom (15) Head with screwed cap & chain (16) Aluminium tag plate with chain, (17) IP-65, T6 head.

**Special Features on request:** (1) Swaged or Multi-dia sheath (2) Ceramic to Metal Seal at cold end (3) Calibration standard BS, JIS, GOST & others (4) Response time test, seismic/non-seismic vibration tests & others (5) MI Cable material certificate (6) Specify Tr. Model (7) Drawing & Data sheet for approval, (8) Intrinsic Safety (ia) Assembly, (9) UL, CSA, PTB, GOST-R, BIS, Baseefa, CE, NEMA 4X certified Head, (10) Silver plated Brass or SS terminal screws.

**Recommended element type and its range span** subject to conductor size, sheath material and dia are K (0 to +1100°C), T (-185 to +300°C), J (+20 to +700°C), N (0 to +1250°C), E (0 to +800°C), R (0 to +1600°C), S (0 to +1500°C), B (+100 to +1700°C), G (+20 to +2320°C), G/W (up to 2600°C), C/W5 (+50 to +1820°C), D/W3 (+50 to +2100°C)

**Note:-** Specifications other than above offered on request. Refer “optional items list” or “accessories catalogue” for more details, if required

### Accessories for Temperature Elements (RTD's/Thermocouples)

Srl.	Products	Model
1	Weatherproof Head-Single cable entry	GA-HW1
2	Weatherproof Head-Double cable entry	GA-HW2
3	Flameproof IIA IIB Head-Single cable entry	GA-HFB1
4	Flameproof IIC Head-Single cable entry	GA-HFC1
5	Flameproof IIA IIB Head-Double cable entry	GA-HFB2
6	Flameproof IIC Head-Double cable entry	GA-HFC2
7	Flameproof IIA IIB Cable Gland (Double compression)	GA-GDFB
8	Flameproof IIC Cable Gland (Double compression)	GA-GDFC
9	Weatherproof Cable Gland (Double compression)	GA-GDW
10	Weatherproof Cable Gland (Single compression)	GA-GSW
11	Cable entry Plug	GA-CP
12	Swivel Nut	GA-SN
13	Swivel Nut with Ferrule	GA-SNF
14	Seal Pot	GA-SP
15	Terminal Block-Ceramic	GA-TB
16	Head mounted 2-Wire Transmitter	GA-TTM
17	Head mounted Smart Transmitter	GA-TTS
18	Base plate (for Element/TT)	GA-BP
19	Nipple (cylindrical)	GA-NC
20	Nipple (Hex)	GA-NH
21	Nipple (Spring loaded)	GA-NS
22	Union (3 piece)	GA-U3
23	Nipple-Union (4 pieces)	GA-NU4
24	Nipple-Union-Nipple (5 pieces)	GA-NUN5
25	Union (1 piece)	GA-U1
26	Nipple-Union (2 pieces)	GA-NU2
27	Nipple-Union-Nipple (3 pieces)	GA-NUN3
28	Compression Fitting (adjustable)	GA-ACF
29	Bayonet Cap Holder	GA-BCH
30	Bayonet Cap, Spring & Stopper	GA-BCS
31	Omega connector-Big size	GA-OCB
32	Omega miniature connector	GA-OCM
33	Omega type connector	GA-OTCB

34	Omega type miniature connector	GA-OTCM
35	Mill Grade connector	GA-MC
36	LEMO connector	GA-LC
37	Shear Valve	GA-SV
38	Skin Pad-Retractable type	GA-SPR
39	Skin Pad-Knife Edge type	GA-SPK
40	Skin Pad-Plain type	GA-SPP
41	Skin Pad-Washer type	GA-SPW
42	Skin-Pad Shield	GA-SPS
43	Weatherproof IP65 / IP66 / IP67 / IP68	GA-WP
44	Flameproof CMRI, DGMS, PESO(CCOE), FM, UL, CSA, ATEX, IECEx	GA-FP
45	Calibration certificate from NABL lab	GA-C1
46	Calibration certificate from NPL-New Delhi	GA-C2
47	RTD Element (Thin film)	GA-RTT
48	RTD Element (Wire wound)	GA-RTW
49	Thermocouple conductor	GA-TC
50	Ceramic Bead	GA-CB
51	Ceramic Tube	GA-CT
51	Others, please specify	GA-X