



Temperature Sensors for  
**ELECTRIC VEHICLES,**  
**POWER ELECTRONICS &**  
**AIR CONDITIONERS**



**Sensing Temperature the way you need!**

NTC Thermistor Assemblies , RTD , Temperature Sensors ,  
Cable Harnesses , Thermocouples



# THERMOSEN

## Temperature Sensors

✓ Reliability ✓ Consistency ✓ Affordability ✓ Compliances

Thermosen Technologies Pvt Ltd is an IATF certified manufacturer & exporter of wide range Temperature sensors with in-house capability of custom design & development of NTC Thermistor, RTD sensor assemblies Thermocouples, different type of temperature sensor assemblies and harness. Our Sensors, Assemblies, Wire Harness Solutions are supplied to global OEM's in to Automotive, Home Appliance, HVAC, Power Electronics, Industrial Automation, Medical and Space Industries.



### Vision and Mission

Thermosen have a clear vision to become a global leader in Temperature sensing domain.

Our Mission is to build long term relationship with customer by pursuing business through innovation and advance Technology

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## Thermosen Technologies Pvt Ltd.

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### NTC Thermistors (*non-insulated*) TNT series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 0.25$  to 5%.

**Beta Value:** 3380-4500 with tolerance from  $\pm 0.25$  to 5%

**Operating Temp Range:** -40 to 125°C

**Wire:** Non-insulated Nickel-Plated Copper insulated Leaded wire, from 0.2mm to 0.6mm

**Response Time:** upto 5 Seconds

#### **Applications:**

PCB for power Electronics

Small appliance in consumer Electronics

Industrial equipments

Automotive sector

### NTC Thermistors (*insulated*) TNBTE, TNAE-A series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 0.25$  to 5%.

**Beta Value:** 3380-4500 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** -40 to 105°C, -40 to 125°C, -40 to 150°C

**Wire:** PVC, XLPE, Teflon insulated wire ranging from 20 to 30AWG.

**Response Time:** Upto 5 Seconds

#### **Applications:**

HVAC Applications

Power Electronics

Battery Temperature (BMS)

Heating/Cooling devices



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### NTC LUG Assemblies

TAR, TANR, TANRD, TANRM, TANRH, TANRF, TANRAI,  
TANRAK, TANRAI, TANRAT Series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 1$  to 5%

**Beta Value:** 3380-4500 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** -40 to 105°C, -40 to 125°C, -40 to 150°C, -40 to 250°C

**Wire:** PVC, XLPE, Teflon insulated, Braided, Non-braided wire ranging from 20 to 30AWG.

**Response Time:** Upto 5 Seconds

#### **Applications:**

Consumer Appliances

Battery temperature monitoring

Power Electronics

Automotive Harness

### NTC Moulded Sensor Assemblies:

TNAP Series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 1$  to 5%.

**Beta Value:** 3380-4500 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** -40 to 150°C

**Wire:** PVC, XLPE, Teflon insulated wire ranging from 20 to 30AWG.

**Response Time:** 5-20 Seconds

#### **Applications :**

Refrigeration Appliances

Cold Storage

Cooling Devices



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### NTC Metal Housing Assemblies

TNAM, TANMC Series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 1$  to 5%

**Beta Value:** 3380-4500 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** -40 to 105°C, -40 to 125°C, -40 to 150°C

**Wire:** PVC, XLPE, Teflon insulated wire ranging from 20 to 30AWG.

**Response Time:** Upto 5 Seconds

#### **Applications:**

Automotive Sector

Power Electronics

BMS

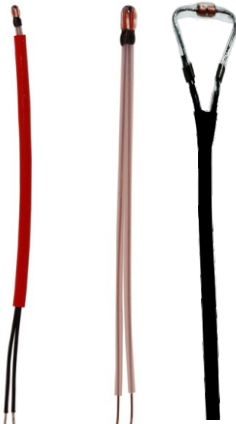
Motor Windings

HVAC

Boiler Appliances

### NTC Radial Glass Thermistor Assemblies:

TNAS Series



#### **Technical Specifications:**

**Resistance:** 3.359K, 5K, 49K with tolerance from  $\pm 1$  to 5%

**Beta Value:** 3497, 4000 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** -30 to 200°C

**Wire:** 0.3mm dumet wire with Teflon Sleeve

**Response Time:** Upto 5 Seconds

#### **Applications:**

BMS

Motor Winding

Boiler Appliances

HVAC Applications



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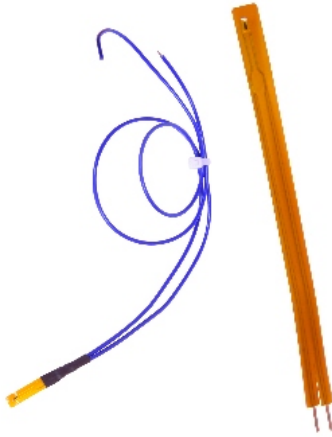


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### NTC Film Thermistor Assemblies: TNA-F Series



#### **Technical Specifications:**

**Resistance:** 10K with tolerance 1%

**Beta Value:** 3435K with Tolerance 1%

**Operating Temp Range:** -30 to 120°C

**Wire:** 22 AWG UL1569 Wire

**Response Time:** Upto 5 Seconds

#### **Applications:**

BMS

Motor Winding

Boiler Appliances

HVAC Applications

### NTC Special Housing assemblies: TNAC/TNAS Series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 1$  to 5%

**Beta Value:** 3380-4500 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** -40 to 105°C, -40 to 125°C, -40 to 150°C, -40 to 200°C

**Wire:** PVC, PFA, XLPE, Teflon insulated wire ranging from 20 to 30AWG.

**Response Time:** 5-20 seconds.

#### **Applications:**

Temperature sensing in Batteries

Induction Cooktops

Washing Machines

Industrial Appliances



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### IC Sensor Assembly: TDA-M Series



#### **Technical Specifications:**

**Resistance:** 1k, 2k, 2.25k, 3k, 4.7k, 5k, 10k, 12k, 15k, 20k, 30k, 47k, 50k, 95k, 100k, 150k, 200k with tolerance from  $\pm 1$  to 5%.

**Beta Value:** 3380-4500 with tolerance from  $\pm 1$  to 5%

**Operating Temp Range:** - 40 to 105°C, -40 to 125°C, -40 to 150°C

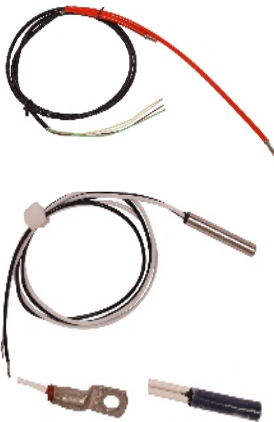
**Wire:** PVC, XLPE, Teflon insulated wire ranging from 20AWG to 30 AWG.

**Response Time:** 20 Seconds

#### **Applications:**

Power Electronics  
Industrial Appliances

### RTD Sensor assemblies: TRAM Series



#### **Technical Specifications:**

**Resistance:** 100 and 1000 Ohm with tolerance from  $\pm 1$  to 10%

**Temperature Coefficient:** 3850 ppm/K

**Grade:** Class A/Class B

**Operating Temp Range:** -40 to 300°C

**Wire:** PVC, XLPE, Teflon insulated wire ranging from 20 to 30AWG.

**Response Time:** 8 Seconds

#### **Applications:**

Automotive Sector  
Power Electronics  
BMS  
Motor Windings  
Consumer Electronics



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## Product Reliability Testing Service

At Thermosen, we have inhouse lab setup to conduct different environmental, electrical and mechanical test. We can offer different tests including: Thermal cycle, Thermal Shock, humidity, cold storage, high temperature storage, Vibration, Salt spray etc. Our test services helps our clients for NPD initiatives, validating components & regulatory compliance

We can also offer end to end test consultancy to meet product compliance standards like- UL, AIS, MIL or space grade qualification.

## Trading Products

Thermosen also offers products to meet the kitting requirement including:

- RTD Transmitters (PT100/PT1000) with 4-20mA or Voltage output. Also available with USB Interface
- Humidity sensor SS probe and PCB Module
- Slot RTD: Simplex/Duplex/Triplex with custom dimensions using Platinum/Copper wire wound. Available from PT50 to PT1000
- DISC NTC: Temperature compensating NTC, a cost effective solution to protect electronic boards from over current. Available in standards 5D15, 5D25, 10D9, 10D15, 20D9 and more
- Sensors: Applications demanding measurement & control using sensor/transducer for Level, Pressure, Proximity, Speed, Temperature etc with Resistive/ capacitive or IR working principle.

#### Applications:

- > IOT
- > Automotive Sector
- > Industrial Appliances
- > Power Electronics



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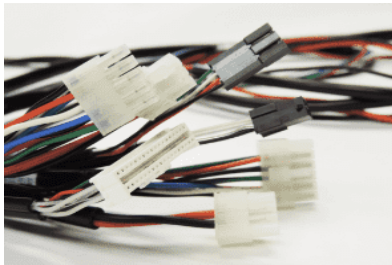
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## WIRE HARNESSING SOLUTIONS

Thermosen offers custom cable and wire harness solutions, designed to organize multi-wire systems in application for Consumer Electronics, Automotive, Instrumentation and Industrial automation. From design to production, we have the right resources, experience, compliance and capacity to serve high volume with precision in shorter lead-time.

Cable and wiring harnesses can be customized in limitless style and material options, including:

- Cables: PVC, PTFE, FR, Shielded, Ribbon, power & data cables
- Connectors: wire to wire, wire to board including multi pin connector and terminals
- Cable ties, Heat-shrink tubes, Variety of Sleeve & Lacing, Custom color Tag/Labels/Barcoding
- Insulation materials of all kinds, Custom shielding, Polypropylene, nylon, and paper fillers
- Wide range of molded components, Lugs, clips, gourmet, custom component



Interested in a Custom Cable Assembly Solution?

Contact our team of experts to learn more about our broad range of custom capabilities.

Speak to an expert  
**+91-80- 41106383**



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# THERMOCOUPLES

Thermocouples are essential temperature sensors used across various industries and applications to measure temperature accurately and reliably.

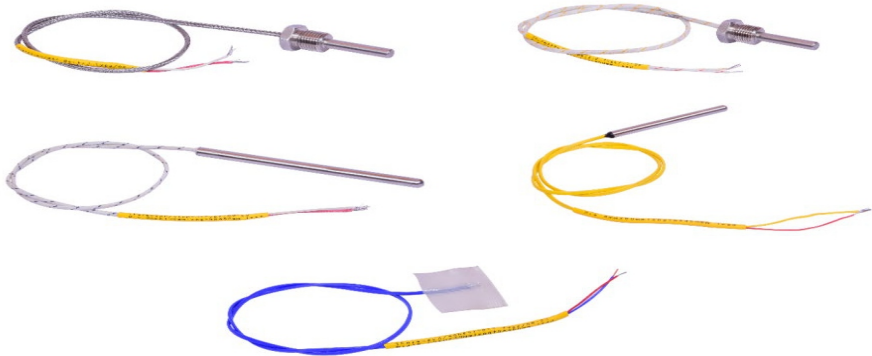
It can be customized with various color codes and the shape can be modified as per the application demand. The applications include Packaging industries, Battery application, Automation, 3D-Printing, Locomotives and Medical applications

### THERMOCOUPLE COLOUR CODES:

Thermocouple Extension Type	ANSI	BS	DIN	NFC	JIS	IEC
JX Iron +						
Constantan <sup>®</sup> -						
KX Chromel <sup>®</sup> +						
Alumel <sup>®</sup> -						
TX Copper +						
Constantan <sup>®</sup> -						
EX Chromel <sup>®</sup> +						
Constantan <sup>®</sup> -						
NX Nichrom <sup>®</sup> +						
Niul <sup>®</sup> -						
SX Copper +						
Alloy II -						

TC Type	ANSI Std	BS Std	DIN Std	JIS Std	IEC Std
J Type	White(+ve) Red(-ve)	Yellow(+ve) Blue(-ve)	Red(+ve) Blue(-ve)	Red(+ve) White(+ve)	Black(+ve) White(-ve)
K Type	Yellow(+ve) Red(-ve)	Brown(+ve) Blue(-ve)	Red(+ve) Green(-ve)	Red(+ve) White(-ve)	Green(+ve) White(-ve)



Technical Data	
<b>Housing Types</b>	Probe type, Washer Type, Rotating bolt type, Bend type, Lug type.
<b>Diameter Tolerance</b>	±0.1mm (Customizable).
<b>Extension Cable length</b>	100mm (Customizable).
<b>Sheath material</b>	SS304, SS316 (500°C rated).
<b>Junction</b>	Grounded / Un-Grounded.



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### PRODUCTION FLOOR

Automated process for sleeve/Wire cutting stripping, using programmable machines to minimize human intervention.

### LINE PRODUCTION

With capacity of 60000 sensors everyday; production line run in 2 shifts to handle sudden spike in adherence to the defined processes.



### Reliability Testing

To ensure quality performance of the products, Reliability tests are conducted on periodic basis for continual improvement.



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## Thermosen Team



### Contact Info



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