THERMOMETRICS
A COMMITMENT TO EXCELLENCE

NTC Type AB6

Thermometrics Thermobeads and GCs (Chip-in-Glass)

Description

NTC Type AB6 thermistor assemblies consist of small GC (chip-in-glass) or Thermobeads that are welded to insulated extension leads. The Thermobeads or GC (chip-in-glass) are hermetically sealed in glass and have fine diameter 0.0007 in to 0.004 in (0.01778 mm to 0.1016 mm) platinum alloy leads. The platinum leads are cut short and welded to insulated extension leads and the joints are covered in one of several insulation types, depending upon the application or environment. The assembly is then ready for insertion into hypodermic needles, catheters or other small housings that require extended leads. Any of the Thermobeads or GC (chip-in-glass) listed in Table I may be used in a NTC Type AB6 assembly. Please consult the data shown for specific electrical or mechanical properties for the thermistor selected.

Applications

Thermobead and GC (chip-in-glass) assemblies are used where the small thermistor must be further connected to longer leads, for insertion into deep wells and cavities, or threading into long tubes. They may also be used, as is, for applications that require fast response measure-ments in confined spaces. With these assemblies, the fast response of the small thermistor is available without sacrificing ease of insertion. The added leads and insulation allow the minute assemblies to be handled in further assembly operations, such as insertion into catheter lumens. The same electrical characteristics that apply to the selected thermistor (resistance value, resistance ratio, stability) are unaltered in the assembly.

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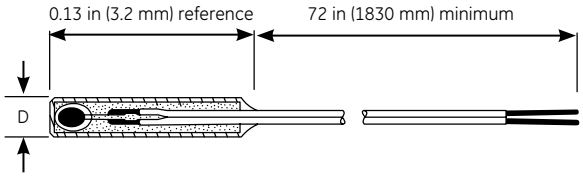
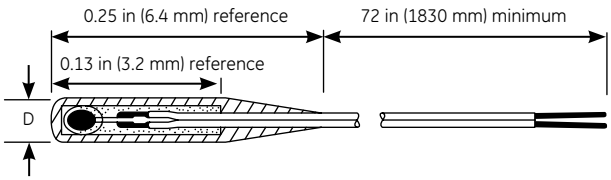
AB6E5
Thermistor is welded to 38 gauge, nickel alloy 200, bifilar, heavy ISONEL insulated extension leads, 6.5 ft (1.98 m) ±0.5 ft (±0.15 m) long. Polyimide sleeve is epoxied over bead and weld joints for strain relief and insulation. Liquid epoxy resin conformal dipcoats are applied for moisture sealing.

For use where assembly will be subjected to limited fluid immersions and where maximum strain relief is also required with minimum outside diameter. Maximum continuous operating temperature is 221°F (105°C).



AB6E8
Thermistor is welded to 38 gauge, nickel alloy 200, bifilar, heavy ISONEL insulated extension leads 6.5 ft (1.98 m) ±0.5 ft (±0.15 m) long. Polyimide sleeve is epoxied over welds and thermistor for strain relief and electrical insulation. Multiple conformal dip coatings of liquid epoxy resin are applied for complete immersibility in conductive fluids.

For use in applications where superior strain relief and full immersion are required. Maximum continuous operating temperature is 221°F (105°C).



Coding

1. Select the appropriate thermistor bead or small probe from one of the thermistor types shown in Table 1. Refer to the appropriate datasheet for electrical and mechanical properties of the thermistor selected and specific ordering information for that thermistor.

2. Select one of the assembly types shown and use the assembly prefix listed for that type followed by the thermistor part number. Example: AB6A8-BR16KA103N

This assembly uses a 0.016 in (0.40 mm) nominal diameter, ruggedized Thermobead (Refer to NTC Type BR Series datasheet) with adjacent cut leads, 10 kΩ ±25% at 77°F (25°C) nominal resistance, welded to standard 6.5 (1.98 m) ±0.5 ft (±0.15 m) long, 38 gauge, nickel alloy 200, bifilar, heavy ISONEL insulated extension leads with epoxy resin web between the welded joints for strain relief.

Special Coding

The assembly types shown represent the most standard selections of the many combinations of thermistors and materials that Thermometrics manufactures. These selected types are suitable for many applications; however, there are always special requirements that need to be satisfied for some applications. A partial listing of alternate materials and options is given on the next page to assist the designer for applications in which the standard units shown are not suitable. If assistance is required in the selection of materials or design of the assembly, please contact our applications engineering department and detail the exact requirements or specifications desired.

Alternate Materials Selection
The alternate materials listed are available for NTC Type AB6 thermistor assembly orders. Other materials may be available to the designer or user upon special order. Please allow additional time for the completion of special assembly orders.

Type A Insulations
A web of insulating material is put over the weld joints for strain relief. Available insulating materials with maximum temperature ratings;

- Vinyl: 140°F (60°C)
- Polyurethane: 221°F (105°C)
- Silicone rubber: 500°F (260°C)
- Epoxies: from 221°F to 500°F (105°C to 260°C), specify maximum temperature required.

Type B Insulations
A polyimide sleeve is epoxied over the weld joints for improved strain relief and electrical insulation. The bead may be covered for maximum strain relief or exposed for faster response. Epoxies are generally used to fill the polyimide sleeve and have temperature ratings from 221°F to 500°F (105°C to 260°C).

Type C Insulations
Multiple conformal dip coats over the thermistor and welds are used in order to provide fully immersible assemblies. Any of the Type A insulating materials may be used for the conformal dip coatings depending upon the application or environment.

Type D Insulations
A thermoplastic tubing is heat sealed over the bead or probe thermistor. A small amount of insulating material is applied over the weld joints for electrical isolation. The assembly is not fully immersible over the back end of the tubing. Available heat sealed tubing materials with maximum temperature ratings:

- Polyethylene: 176°F (80°C)
- Mylar: 257°F (125°C)

Special Coding (cont.)

Type E Insulations
A polyimide sleeve is epoxied over the weld joints (as in the Type B insulations) and then multiple conformal dip coatings are applied (as in the Type C insulations) for fully immersible assemblies. The same insulating material options are available.

Insulated Extension Leads
The standard insulated extension lead sub assembly has 38 gauge 0.004 in (0.10 mm) diameter, nickel alloy 200, bifilar, heavy ISONEL insulation over conductors and a length of 6.5 (1.98 m) ±1/2 ft (±0.15 m). Other options, including any specified by the customer, are available upon special order.

Wire Gauges
#38 GA 0.004 in (0.10 mm), #40GA 0.0031 in (0.079 mm)

Conductors
Nickel alloy 200

Insulation
- Heavy ISONEL: for use to 356°F (180°C), excellent abrasion resistance, our standard coating.
- Polyurethane: for use to 221°F (105°C), easily stripped, excellent solderability.
- Polyimide: for use to 446°F (230°C), excellent thermal and dielectric properties, (not recommended for water and certain other conductive fluids)

Construction
- Bifilar: Parallel conductors, our standard
- Single: Individually insulated lead-wires
- Twisted Pair: 0.1 in (2.54 mm) lay typical

Length
6.5 ft (1.98 m) ±0.5 ft (±0.15 m) is standard, specify other lengths as desired. All lengths over one foot are supplied on a plastic bobbin with the wires wrapped so that the thermistor end is removed last.

Table 1: Standard Sizes of NTC Type AB6 Thermistor Assemblies

Thermistor Type	Maximum Thermistor Diameter in (mm)	Maximum Diameter of Assembly							
		A8	B2	B4	C8	D2	E3	E5	E8
BR11	0.012 (0.30)	0.014 (0.35)	0.018 (0.45)	0.014 (0.35)	0.022 (0.55)	0.034 (0.86)	0.020 (0.50)	0.022 (0.55)	0.024 (0.60)
BR14	0.016 (0.40)	0.016 (0.40)	0.021 (0.53)	0.016 (0.40)	0.024 (0.60)	0.036 (0.91)	0.022 (0.55)	0.025 (0.63)	0.027 (0.68)
BR16	0.017 (0.43)	0.017 (0.43)	0.022 (0.55)	0.017 (0.43)	0.025 (0.63)	0.037 (0.93)	0.023 (0.58)	0.026 (0.66)	0.028 (0.71)
BR23	0.025 (0.63)	0.025 (0.63)	0.032 (0.81)	0.025 (0.63)	0.033 (0.83)	0.045 (1.14)	0.031 (0.78)	0.036 (0.91)	0.038 (0.96)
BR32	0.033 (0.83)	0.033 (0.83)	0.040 (1.01)	0.033 (0.83)	0.041 (1.04)	0.053 (1.34)	0.039 (0.99)	0.044 (1.11)	0.046 (1.16)
BR42	0.046 (1.16)	0.046 (1.16)	0.053 (1.34)	0.046 (1.16)	0.054 (1.37)	0.066 (1.67)	0.052 (1.32)	0.057 (1.44)	0.059 (1.49)
BR55	0.060 (1.52)	0.060 (1.52)	0.070 (1.77)	0.060 (1.52)	0.068 (1.72)	0.080 (2.03)	0.066 (1.67)	0.074 (1.87)	0.076 (1.93)
GC 11	0.012 (0.30)	0.014 (0.35)	0.018 (0.45)	0.014 (0.35)	0.022 (0.55)	0.034 (0.86)	0.020 (0.50)	0.022 (0.55)	0.024 (0.50)
GC 14	0.016 (0.40)	0.016 (0.40)	0.021 (0.53)	0.016 (0.40)	0.024 (0.60)	0.036 (0.93)	0.022 (0.55)	0.026 (0.63)	0.027 (0.68)
GC 16	0.017 (0.43)	0.017 (0.43)	0.022 (0.55)	0.017 (0.43)	0.025 (0.63)	0.037 (0.93)	0.023 (0.58)	0.026 (0.66)	0.028 (0.71)
GC 32	0.033 (0.83)	0.033 (0.83)	0.040 (1.01)	0.033 (0.83)	0.041 (1.04)	0.053 (1.34)	0.039 (0.99)	0.044 (1.11)	0.046 (1.16)

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AAS-920-254B-04/2014