



Connection Head Supplement

Connection Heads for all Temperature Measurement Applications



Temperature Measurement Experts®

Since 1960 Burns Engineering has been an industry leader in the design and manufacture of temperature sensors. Accuracy, reliability and consistency are hallmarks of the Burns brand. At Burns, we focus on the measurement. We understand the subtleties of temperature measurement, from selection through installation, and how they can impact your processes and ultimately your success. We worry about the details so you don't have to. When you select Burns you're getting more than a sensor, you're getting your own team of Temperature Measurement Experts.

Connection Heads

This supplement describes the various connection heads available for use with Burns temperature sensor assemblies; Series 100/200/300, Series S or Custom. Connection heads are available in a variety of materials including polypropylene, cast iron, stainless steel, and aluminum, and designed for all environments including cleanrooms, hazardous areas, outdoors, confined spaces, and harsh environments.



Several of the heads incorporate digital indicators in loop powered or battery powered configurations. Most can accept DIN B transmitters.

Contact Burns customer service or see one of our product catalogs for connection head use options and additional details.

Table of Contents:

| | |
|-----------------------------------------------------------|---------------|
| #1 Cast Iron and #2 Aluminum: | page 2 |
| #3 Aluminum and #4 Aluminum: | page 3 |
| #5 Aluminum and #6 Plastic: | page 4 |
| #8 Aluminum and #9 Polypropylene: | page 5 |
| #14 Stainless Steel and # 16 Aluminum: | page 6 |
| #19 & #22 Aluminum and #20 & #23 Plastic with Indicators: | page 7 |
| #21 & #24 Stainless Steel w/ Indicator and #25 Aluminum: | page 8 |
| Common Head/Sensor Assemblies: | page 9 and 10 |

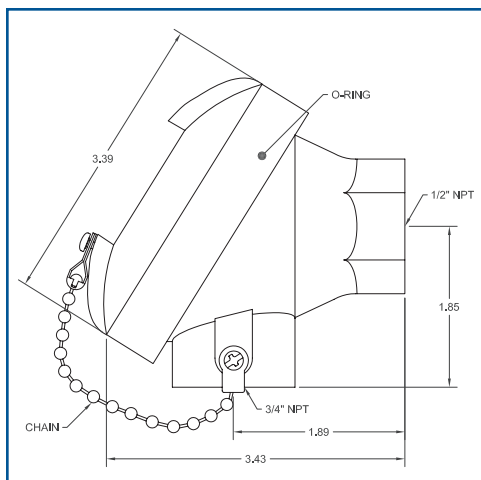
Connection Heads

Descriptions

Burns #1: Cast Iron Head

The #1C cast iron connection head is coated with black heat resistant baked enamel. Also available as #1E which is white epoxy coated. The cover is sealed with a neoprene rubber o-ring and retained with a stainless steel chain. The internal mounting threaded hole pattern supports installation of a terminal block or transmitter. The #1 head is NEMA 4X rated.

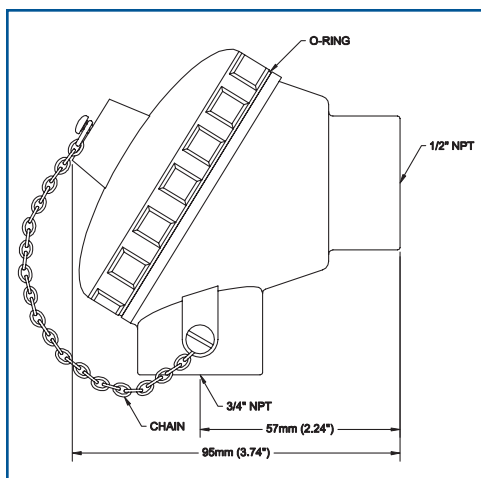
- Code #1EN, configured for No Exposed Threads installation; N.E.T. Solutions™.
- 1/2" NPT sensor connection and 3/4" NPT conduit connection.
- Accepts a 4 or 6 position terminal block.
- Works with: Series 100, 200, 300; Sensor Styles A, B, C, L, and all Series S sensors.



Burns #2: Aluminum Head

The #2A aluminum head is coated with a gray low gloss metallic polyester paint. Also available as #2E which is cream white epoxy coated. Internal threaded holes are provided for terminal block or transmitter mounting. The assembly includes oil-resistant o-ring and stainless steel chain. Both coated heads are rated NEMA 4X.

- Code #2EN, configured for No Exposed Threads installation; N.E.T. Solutions™.
- 1/2" NPT sensor connection and 3/4" NPT conduit connection.
- Accepts a 4 or 6 position terminal block.
- Works with: Series 100, 200, 300; Sensor Styles A, B, C, L, and all Series S sensors.



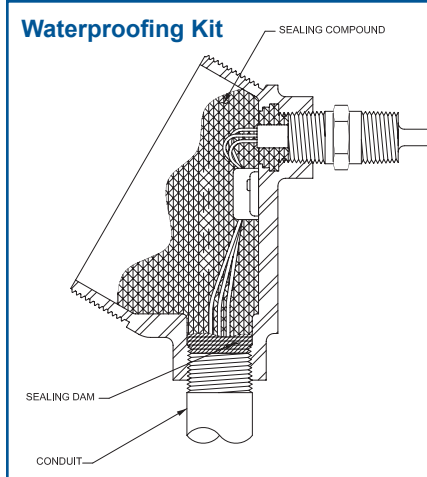
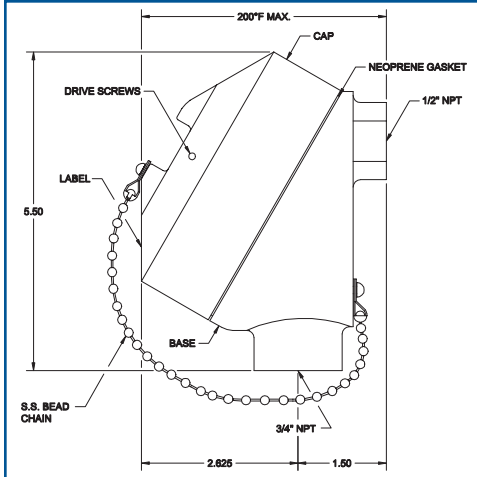
Connection Heads

Descriptions

Burns #3: Aluminum Head

The #3A aluminum head includes an internal waterproofing kit for extreme moisture environments. The product ships with complete instructions and materials needed to field install the waterproofing feature. Also available in white epoxy coated which provides a clean look and additional corrosion resistance. NEMA 4X rated.

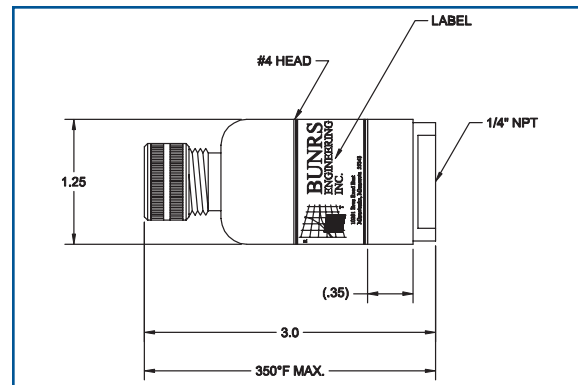
- 1/2" NPT sensor connection and 3/4" NPT conduit connection.
- Includes a 6 position terminal block.
- Works with: Series 100, 200, 300; Sensor Styles A, B, K, and L.



Burns #4: Aluminum Canister Style Head

The #4A aluminum canister head is compact for tight locations. The cord grip built into the canister provides a sealed cable transition.

- 1/4" NPT sensor connection and cord grip wire exit.
- Includes a 4 position terminal block.
- Contact Burns Customer Service for sensor options.
- Accepts RTD: 3 or 4 wire single. Thermocouple: single or dual.



Connection Heads

Descriptions

Burns #5: Aluminum Head

The #5 explosion proof head is available in unfinished aluminum (#5A) or white Epoxy coated (#5E). This Burns custom designed connection head incorporates both a threaded sensor connection as well as a unique bayonet locking sensor engagement feature that enable the sensor to be removed from the installed assembly without disconnecting any of the components between the head and thermowell. Only a screwdriver is necessary to remove the sensor for calibration or replacement. The assembly includes a neoprene gasket and stainless steel chain. NEMA 4X rated.

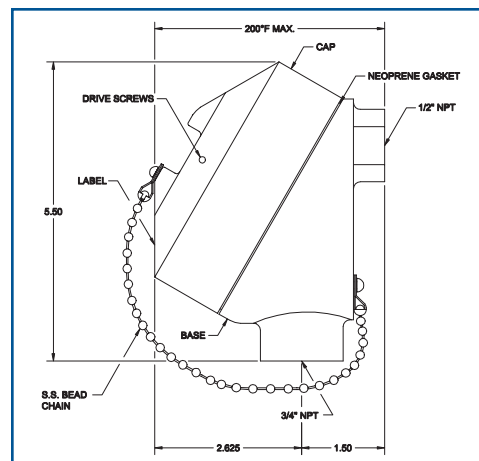
FM Approved for hazardous locations:

Class I Div 1, Groups A, B, C, D

Class II Div 1, Groups E, F, G

Class III Div 1

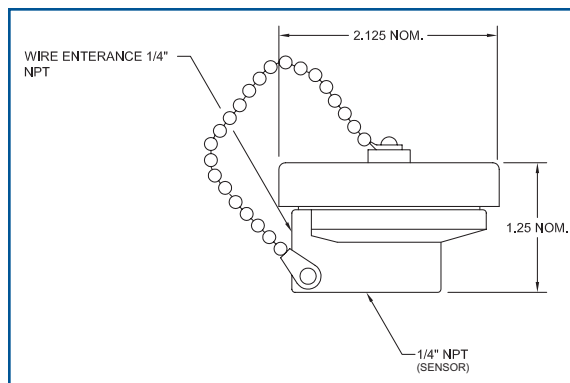
- Code #5EN, configured for No Exposed Threads installation; N.E.T. Solutions™ (#5EN is not FM Approved).
- ½" NPT sensor connection and ¾" NPT conduit connection.
- Includes an internal grounding screw and a 6 position terminal block.
- Accepts any Burns transmitter.
- Works with: Series 100, 200, 300; Sensor Styles A, B, K, and L, and most Series S sensors.



Burns #6: Plastic Head

The #6P miniature plastic head provides an effective wire transition in tight locations. The cap is chained to the base and the gasket provides a weatherproof seal.

- ¼" NPT sensor connection and ¼" NPT wire connection.
- Includes a 4 position terminal block.
- Contact Burns Customer Service for sensor options.
- Accepts RTD: 3 or 4 wire single. Thermocouple: single or dual.



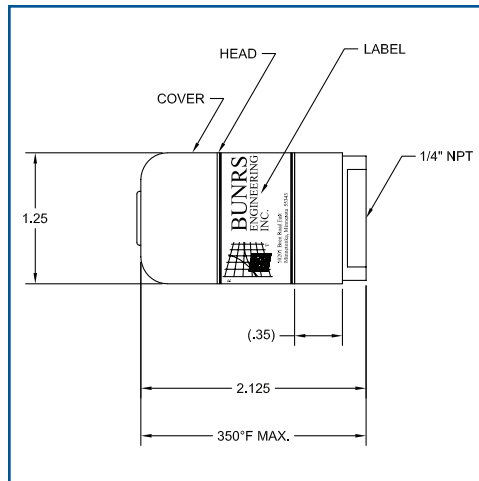
Connection Heads

Descriptions

Burns #8: Aluminum Canister Head

The #8A canister head is similar to the #4A head except with a grommet cable exit.

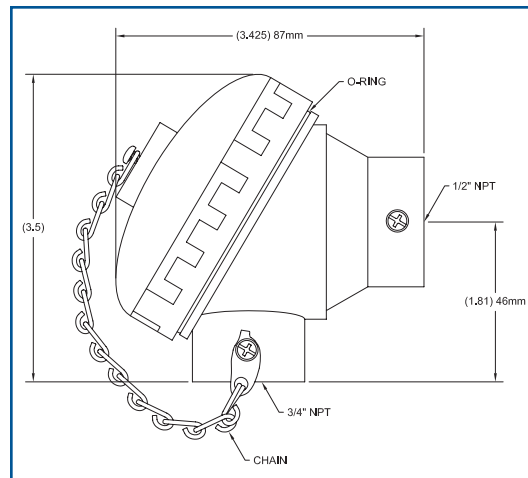
- 1/4" NPT sensor connection and cable grommet wire exit.
- Includes a 2 position terminal block.
- For use with Thermocouples only.
- Contact Burns Customer Service for sensor options.



Burns #9: Polypropylene Head

The #9P white polypropylene head is mineral reinforced for strength and accepts a terminal block or transmitter. The cover is chained to the base with stainless steel chain and includes a neoprene rubber o-ring. Maximum service temperature is limited to 200°F (93°C).

- Code #9PN, can be configured for No Exposed Threads installation; N.E.T. Solutions™.
- 1/2" NPT sensor connection and 3/4" NPT conduit connection.
- Works with: Series 100, 200, 300; Sensor Styles A, B, C, L, and all Series S sensors.



Connection Heads

Descriptions

Burns #14: Stainless Steel Head

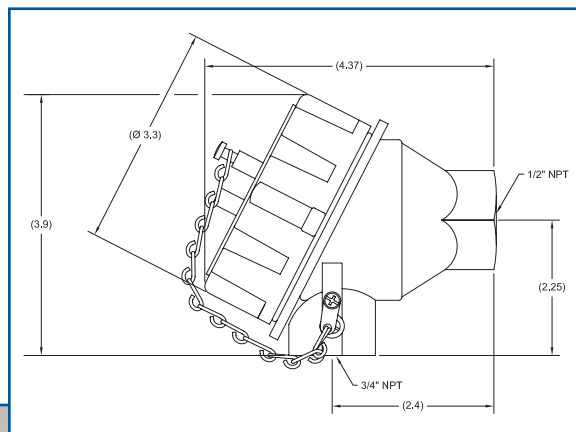
The #14S head in classic bright 316 stainless steel provides a durable and clean installation, and carries an explosion proof rating. Sealing gasket and stainless steel chain between the cover and the body are included. NEMA 4X rated. FM approved for hazardous locations:

Class I Div 1, Groups A, B, C, D

Class II Div 1, Groups E, F, G

Class III Div 1

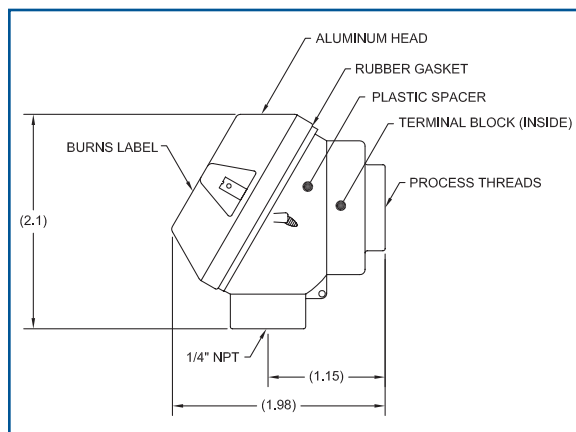
- Code #14SN, configured for No Exposed Threads installation; N.E.T. Solutions™ (#14SN is not FM Approved).
- ½" NPT sensor connection and ¾" NPT conduit connection.
- Includes both internal and external grounding screws.
- Works with: Series 100, 200, 300; Sensor Styles A, B, C, L, and all Series S sensors.



Burns #16: Aluminum Head

The #16A miniature head is aluminum and coated with high temperature cured metallic enamel. This head accepts a terminal block or T16 transmitter and is NEMA 4 rated.

- Code #16AN, configured for No Exposed Threads installation; N.E.T. Solutions™.
- ¼" NPT or 3/8-24 UNF sensor connection.
- ¼" NPT conduit connection.
- Includes a 4 position terminal block.
- Works with: Most Series S sensors.
- Accepts RTD: 3 or 4 wire single. Thermocouple: single or dual.
- Contact Burns Customer Service for applications.



Connection Heads

Descriptions

Burns #19 & #22: Aluminum Indicator Heads

This aluminum head includes a digital indicator (4 digit) and is rated as explosion proof. The #19A is a loop powered LED indicator. The temperature signal is provided via a Burns T51 or T55 transmitter. The #22A is a battery powered LCD display that connects directly to the sensor wires. NEMA 4X rated.

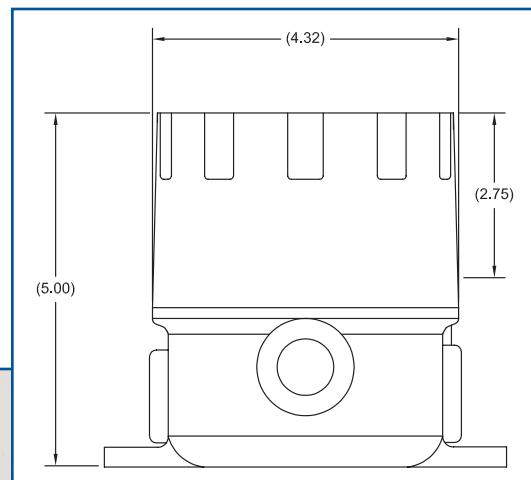
FM approved for hazardous locations:

Class I Div 1, Groups A, B, C, D

Class II Div 1, Groups E, F, G

Class III Div 1

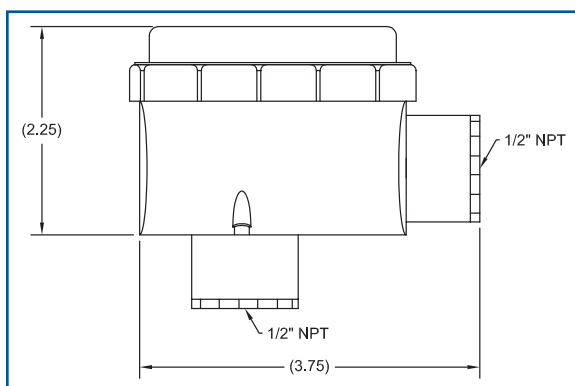
- ½" NPT sensor connection and ½" NPT conduit connection where applicable.
- Includes both internal and external grounding screws.
- Accepts RTD or Thermocouple sensor inputs.
- Works with: Series 100, 200, 300; Sensor Styles A, B, L, and all Series S sensors.



Burns #20 & #23: Plastic Indicator Heads

This polycarbonate head includes a 4 digit indicator and is rated NEMA 4X and IP67. The #20P is a loop powered LED display and requires a Burns T51 or T55 transmitter to provide the temperature signal. The #23P is a battery powered LCD display that connects directly to the sensor wires.

- ½" NPT sensor and conduit connections.
- Accepts RTD or Thermocouple sensor inputs.
- Works with: Series 100, 200, 300; Sensor Styles A, B, L, and all Series S sensors.



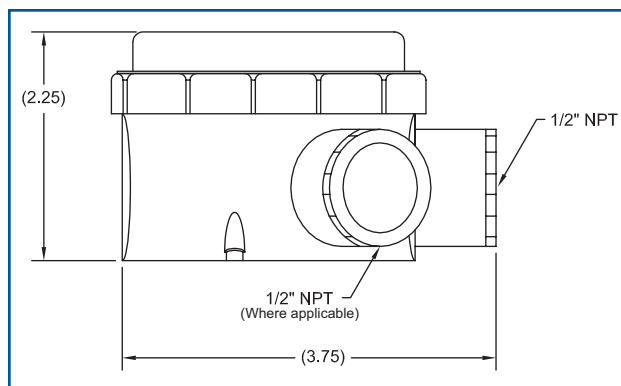
Connection Heads

Descriptions

Burns #21 & #24: Stainless Steel Indicator Heads

This stainless steel head includes a 4 digit temperature indicator and is rated NEMA 4X and IP67. The #21S is a loop powered LED display and requires a Burns T51 or T55 transmitter to provide the temperature signal. The #24S is a battery powered LCD display that connects directly to the sensor wires.

- 1/2" NPT sensor connection and 1/2" NPT conduit connection where applicable.
- Accepts RTD or Thermocouple sensor inputs.
- Works with: Series 100, 200, 300; Sensor Styles A, B, C, L, and all Series S sensors.



Burns #25: Aluminum Head with Remote Mount Option

The #25A aluminum head is rated as explosion proof, and via mounting tabs is remote mountable. Internal mounting holes support the use of various terminal blocks or transmitters.

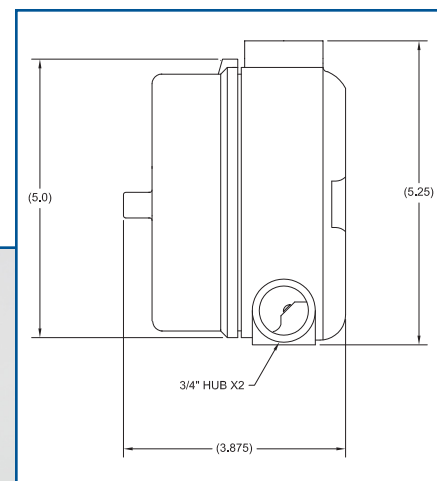
FM Approved for hazardous locations:

Class I Div 1, Groups B, C, D

Class II Div 1, Groups E, F, G

Class III Div 1

- Includes 2 – 3/4" NPT connections.
- Includes an internal grounding screw.
- Works with: Series 100, 200, 300; Sensor Styles A, B, L and most Series S sensors. Contact Burns Customer Service for details.



Connection Heads with Example Sensor Assemblies

The #1C head in black heat resistant baked enamel shown with a coupling and tapered threaded thermowell.

#1C



#2A



#2E



The #2A head shown in gray metallic polyester paint with special tip sensor and with #2E head with cream white epoxy coating and coupling assembly.

The #3A head in bare aluminum shown with a tapered threaded thermowell.

#3A



The #5A in white epoxy coating shown with tapered flanged thermowell.

#5A



#4A



The #4A head incorporating a "B" style Series 200 or 300 RTD.

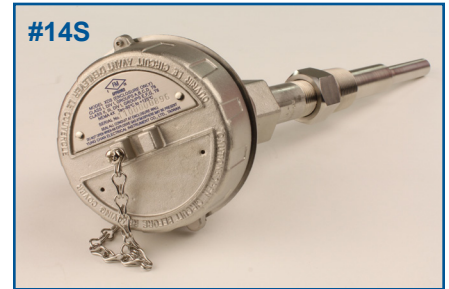
Connection Heads with Example Sensor Assemblies

#9P



The #9P head in a sanitary assembly with sanitary thermowell and sanitary clamp.

#14S



The #14S head explosive environment ready, shown with stepped threaded thermowell.

#16A



The #16A head shown in the N.E.T. Solutions™ configuration with No Exposed Threads for sanitary applications. Also shown incorporating the T16 mini transmitter.



#16A w/T16 transmitter

#19A



The #19A or #22A aluminum head with indicator assembled with tapered flanged thermowell.

#20P



#20P or #23P polycarbonate head shown with S01 mini sanitary sensor.

#25A



#25A aluminum remote mountable head shown with air measurement sensor and perforated protection tube.

Custom solutions designed for your specific needs.

Burns Engineering has a long history of designing and building temperature products to meet the measurement needs of unique and varied applications. The products in this catalog were specifically developed to meet field requirements and allow for configured-to-order flexibility. Not sure what product is right for your application? Our application engineering group is here to help you select, configure, and/or custom design the right product for your specific needs.

Burns Engineering is a leading supplier of temperature measurement solutions for all your process and metrology applications.

Your processes require temperature measurement solutions that you can depend on. We understand that measurement accuracy, reliability and consistency are important to your success.

Your measurement is our mission.

Turn to Burns as your
Temperature Measurement Experts®

What will your solution BE?

Connection Heads



Burns Engineering | 10201 Bren Rd. E. Minnetonka, MN 55343 | email: info@burnsengineering.com
Phone Toll Free: 800-328-3871 | Phone (Local): 952-935-4400 | Fax: 952-935-8782

Product images provided by Sr. Applications Engineer and Photographer Bill Bergquist.

Trademarks contained within this catalog:

Burns Engineering Logo, Temperature Measurement Experts are registered trademarks of Burns Engineering.

Copyright 2012, Burns Engineering, Inc.
Printed in U.S.A., Rev.7/12