

# Industrial Thermocouples Protection Head Design

**OMEGA®**

Available as



- ✓ Sheath Materials:  
304SS, 310SS, 316SS,  
321SS, Inconel® or  
Super OMEGA XL
- ✓ Probe Length 300  
mm (12"), 600 mm  
(24") Custom Lengths  
Available, Consult Sales



Probe length  
includes  
approximately  
12.5 mm (½")  
allowance for  
threads.

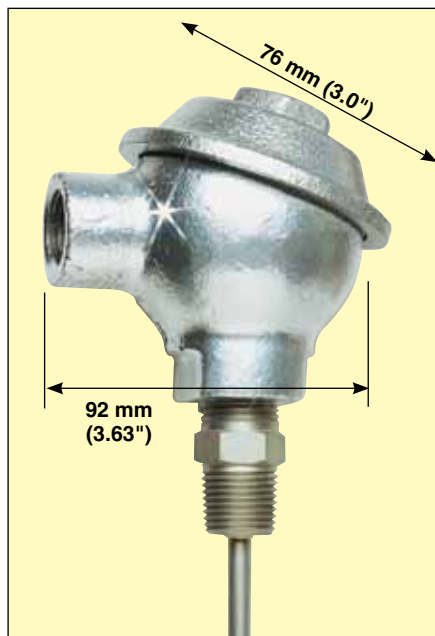
½ NPT  
mounting  
threads

**Note:** All industrial  
heads shown are  
available for  
purchase  
separately.

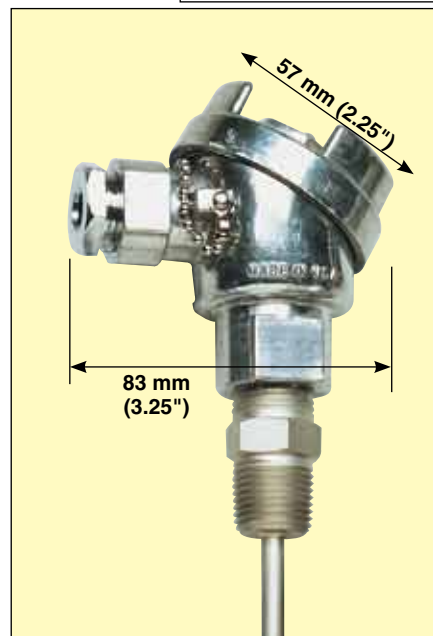
Length

**Available!  
Probes with  
Built-In  
Transmitters!**

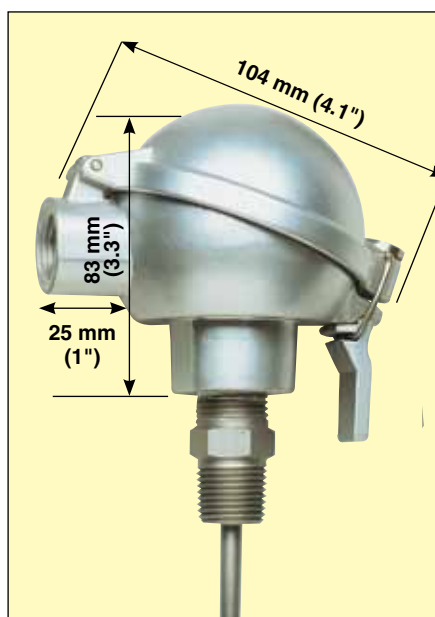
**Complete your application  
with OMEGA's extension wire.**



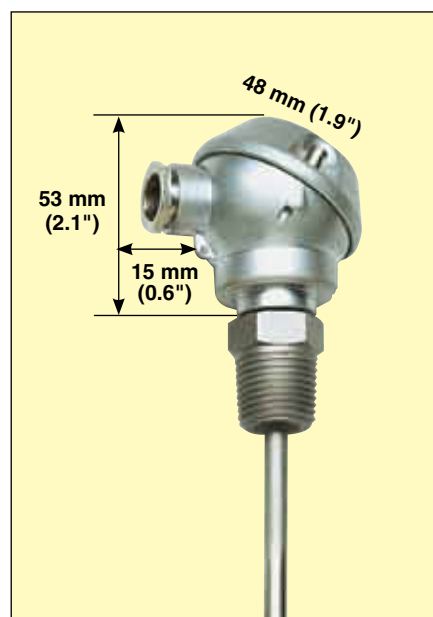
**NB1, Cast Iron**



**NB2, Aluminum**



**NB3, Aluminum with Snap-Lock**



**NB4, Sub-Miniature Aluminum**



**260S Series**

For a complete selection of thermowells in both Standard  
and **Metric** dimensions, please visit us online.

**260HL Series**



# New and Improved Protection Heads Industrial Thermocouple Probes



A



**Available!**  
Probes with  
Built-in Transmitters!

## Cast Iron

### NB5

Material: Cast iron

Weight: 1.6 kg (3.5 lb)

Dimensions:

H=95 mm (3.8")

C=86 mm (3.4")



## Deep Base

### NB6

Material: Alloy-Aluminum

Weight: 250 g (8.8 oz)

Dimensions:

H=82 mm (3.2")

C=82 mm (3.2")



## Flip Top NB7

Material: Alloy-Aluminum

Weight: 250 g (8.8 oz)

Dimensions:

H=93 mm (3.7")

C=76 mm (3")

# Industrial Thermocouple Protection Head Probe Assemblies



## Low Profile NB12

**Material:**  
Alloy-Aluminum  
**Weight:** 274 g (9.7 oz)  
**Dimensions:**  
H=87 mm (3.4")  
C=82 mm (3.2")  
IP67 Approval

## Miniature Bakelite NB10

**Material:** Bakelite  
**Weight:** 82 g (2.9 oz)  
**Dimensions:**  
H=68 mm (2.7")  
C=61.5 mm (2.4")  
O-Ring Seal

Available!  
Probes with  
Built-In  
Transmitters!



## Miniature Aluminum NB11

**Material:** Alloy-Aluminum  
**Weight:** 140 g (4.9 oz)  
**Dimensions:**  
H=67 mm (2.6")  
C=62 mm (2.4")  
IP67 Approval



Nylon and  
Glass Fiber.

## NB9

**Material:** Nylon  
& Glass Fiber  
**Weight:**  
144 g (5 oz)  
**Dimensions:**  
H=87 mm (3.4")  
C=82 mm (3.2")

**To Order:**  
Insert the style  
number into the part  
numbers shown in  
the "How To Order"  
table. See ordering  
examples below and  
on next page.

*Ordering Example:*  
NB9-CASS-18G-12,  
a 300 mm (12")  
grounded CASS  
Type K stainless  
steel thermocouple,  
3 mm (1/8") sheath  
diameter probe with  
an NB9 protection  
head.

- ✓ **NB1 Cast-Iron Protection Head with Internal Terminal Block**
- ✓ **NB2 Miniature Aluminum Head with Internal Terminal Block**
- ✓ **NB3 Aluminum Head Features Convenient Snap-Lock Design with Internal Terminal Block**
- ✓ **NB4 Subminiature Aluminum Head with Internal Terminal Block**
- ✓ **½ NPT Mounting Thread**
- ✓ **12" Length Standard†**

### Standard Dimensions

The industrial-style assemblies offer a variety of protection heads to meet the environmental and size requirements of most applications. They are available in J, K, T, E, or N calibrations, with 304 SS, 316 SS, 321 SS, Super OMEGACLAD® XL, or Inconel® sheathing. Standard lengths are 12", including ½" for the pipe thread, with other lengths available. Both the thread on the probe and the extension-wire opening are ½ NPT. The NB2 and NB4 include a compression fitting nut and rubber ferrule for ⅜ to ¼" OD wires or tubing. The internal terminal block is standard on all models.



**PFA Coating Available. Consult Sales**

### To Order 12" Lengths

| Alloy/ANSI Color Code                                        | Sheath Dia. (inch) | Grounded Junction                                                                  | Ungrounded Junction                                                                | Exposed Junction                                                                   |
|--------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Iron-Constantan<br>Inconel®<br>Sheath <b>J</b>               | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-ICIN-116G-12<br>NB(*)-ICIN-18G-12<br>NB(*)-ICIN-316G-12<br>NB(*)-ICIN-14G-12 | NB(*)-ICIN-116U-12<br>NB(*)-ICIN-18U-12<br>NB(*)-ICIN-316U-12<br>NB(*)-ICIN-14U-12 | NB(*)-ICIN-116E-12<br>NB(*)-ICIN-18E-12<br>NB(*)-ICIN-316E-12<br>NB(*)-ICIN-14E-12 |
| Iron-Constantan<br>304 SS<br>Sheath <b>J</b>                 | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-ICSS-116G-12<br>NB(*)-ICSS-18G-12<br>NB(*)-ICSS-316G-12<br>NB(*)-ICSS-14G-12 | NB(*)-ICSS-116U-12<br>NB(*)-ICSS-18U-12<br>NB(*)-ICSS-316U-12<br>NB(*)-ICSS-14U-12 | NB(*)-ICSS-116E-12<br>NB(*)-ICSS-18E-12<br>NB(*)-ICSS-316E-12<br>NB(*)-ICSS-14E-12 |
| CHROMEALLOY®- **<br>ALOMEGA®<br>Inconel®<br>Sheath <b>K</b>  | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-CAIN-116G-12<br>NB(*)-CAIN-18G-12<br>NB(*)-CAIN-316G-12<br>NB(*)-CAIN-14G-12 | NB(*)-CAIN-116U-12<br>NB(*)-CAIN-18U-12<br>NB(*)-CAIN-316U-12<br>NB(*)-CAIN-14U-12 | NB(*)-CAIN-116E-12<br>NB(*)-CAIN-18E-12<br>NB(*)-CAIN-316E-12<br>NB(*)-CAIN-14E-12 |
| CHROMEALLOY®- **<br>ALOMEGA®<br>304 SS<br>Sheath <b>K</b>    | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-CASS-116G-12<br>NB(*)-CASS-18G-12<br>NB(*)-CASS-316G-12<br>NB(*)-CASS-14G-12 | NB(*)-CASS-116U-12<br>NB(*)-CASS-18U-12<br>NB(*)-CASS-316U-12<br>NB(*)-CASS-14U-12 | NB(*)-CASS-116E-12<br>NB(*)-CASS-18E-12<br>NB(*)-CASS-316E-12<br>NB(*)-CASS-14E-12 |
| CHROMEALLOY®-<br>Constantan<br>Inconel®<br>Sheath <b>E</b>   | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-CXIN-116G-12<br>NB(*)-CXIN-18G-12<br>NB(*)-CXIN-316G-12<br>NB(*)-CXIN-14G-12 | NB(*)-CXIN-116U-12<br>NB(*)-CXIN-18U-12<br>NB(*)-CXIN-316U-12<br>NB(*)-CXIN-14U-12 | NB(*)-CXIN-116E-12<br>NB(*)-CXIN-18E-12<br>NB(*)-CXIN-316E-12<br>NB(*)-CXIN-14E-12 |
| CHROMEALLOY®-<br>Constantan<br>304 SS<br>Sheath <b>E</b>     | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-CXSS-116G-12<br>NB(*)-CXSS-18G-12<br>NB(*)-CXSS-316G-12<br>NB(*)-CXSS-14G-12 | NB(*)-CXSS-116U-12<br>NB(*)-CXSS-18U-12<br>NB(*)-CXSS-316U-12<br>NB(*)-CXSS-14U-12 | NB(*)-CXSS-116E-12<br>NB(*)-CXSS-18E-12<br>NB(*)-CXSS-316E-12<br>NB(*)-CXSS-14E-12 |
| Copper-Constantan<br>Inconel®<br>Sheath <b>T</b>             | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-CPIN-116G-12<br>NB(*)-CPIN-18G-12<br>NB(*)-CPIN-316G-12<br>NB(*)-CPIN-14G-12 | NB(*)-CPIN-116U-12<br>NB(*)-CPIN-18U-12<br>NB(*)-CPIN-316U-12<br>NB(*)-CPIN-14U-12 | NB(*)-CPIN-116E-12<br>NB(*)-CPIN-18E-12<br>NB(*)-CPIN-316E-12<br>NB(*)-CPIN-14E-12 |
| Copper-Constantan<br>304 SS<br>Sheath <b>T</b>               | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-CPSS-116G-12<br>NB(*)-CPSS-18G-12<br>NB(*)-CPSS-316G-12<br>NB(*)-CPSS-14G-12 | NB(*)-CPSS-116U-12<br>NB(*)-CPSS-18U-12<br>NB(*)-CPSS-316U-12<br>NB(*)-CPSS-14U-12 | NB(*)-CPSS-116E-12<br>NB(*)-CPSS-18E-12<br>NB(*)-CPSS-316E-12<br>NB(*)-CPSS-14E-12 |
| OMEGAALLOY®-<br>NICROSIL-NISIL<br>Inconel<br>Sheath <b>N</b> | ⅛<br>⅙<br>⅜<br>¼   | NB(*)-NNIN-116G-12<br>NB(*)-NNIN-18G-12<br>NB(*)-NNIN-316G-12<br>NB(*)-NNIN-14G-12 | NB(*)-NNIN-116U-12<br>NB(*)-NNIN-18U-12<br>NB(*)-NNIN-316U-12<br>NB(*)-NNIN-14U-12 | NB(*)-NNIN-116E-12<br>NB(*)-NNIN-18E-12<br>NB(*)-NNIN-316E-12<br>NB(*)-NNIN-14E-12 |

**Note:** PFA coating is available, 400°F (204°C) max. † Other lengths available, consult Sales Department.

\* Insert the number "1" through "12" for NB1, NB2, NB3, NB4, NB5, NB6, NB7, NB8, NB9, NB10, NB11 or NB12 heads, respectively.

\*\* For highest temperature and stability rating, change "SS" or "IN" to "XL" for additional cost.

To order probes with lengths other than 12", change the last 2 digits of the model number from "12" to the desired length in inches, and add the appropriate price per additional foot from the last column.

To order with 310, 316 or 321 SS sheath, change "SS" in model number to "310SS", "316SS" or "321SS", respectively, no additional charge. Consult Sales for lengths between 2 and 12", or for lengths over 24".

**Ordering Examples:** NB1-CASS-14G-12, 12" grounded 304 SS probe, Type K, ¼" sheath diameter.

NB2-ICSS-14U-12, 12" ungrounded 304 SS, Type J, ¼" sheath diameter.



- ✓ **NB1 Cast-Iron Protection Head with Internal Terminal Block**
- ✓ **NB2 Miniature Aluminum Head with Internal Terminal Block**
- ✓ **NB3 Aluminum Head Features Convenient Snap-Lock Design with Internal Terminal Block**
- ✓ **NB4 Subminiature Aluminum Head with Internal Terminal Block**
- ✓ **½" BSPT Mounting Thread**
- ✓ **300 mm Length Standard†**

### Metric Dimensions

The industrial-style assemblies offer a variety of protection heads to meet the environmental and size requirements of most applications. They are available in J, K T, E, or N calibrations, with 304 SS, 310 SS, 316 SS, 321 SS, Super OMEGACLAD® XL, or Inconel® sheathing. Standard lengths are 300 mm, including 12 mm for the pipe thread, with other lengths available. Both the thread on the probe and the extension-wire opening are ½" BSPT. The NB2 and NB4 include a compression fitting nut and rubber ferrule for 3.2 to 6.3 mm OD wires or tubing. The internal terminal block is standard on all models.



### To Order 300 mm Lengths

| Alloy/ANSI Color Code                                        | Sheath Dia. (mm)         | Grounded Junction                                                                        | Ungrounded Junction                                                                      | Exposed Junction                                                                         |
|--------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Iron-Constantan<br>Inconel®<br>Sheath <b>J</b>               | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-ICIN-M15G-300<br>NB(*)-ICIN-M30G-300<br>NB(*)-ICIN-M45G-300<br>NB(*)-ICIN-M60G-300 | NB(*)-ICIN-M15U-300<br>NB(*)-ICIN-M30U-300<br>NB(*)-ICIN-M45U-300<br>NB(*)-ICIN-M60U-300 | NB(*)-ICIN-M15E-300<br>NB(*)-ICIN-M30E-300<br>NB(*)-ICIN-M45E-300<br>NB(*)-ICIN-M60E-300 |
| Iron-Constantan<br>304 SS<br>Sheath <b>J</b>                 | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-ICSS-M15G-300<br>NB(*)-ICSS-M30G-300<br>NB(*)-ICSS-M45G-300<br>NB(*)-ICSS-M60G-300 | NB(*)-ICSS-M15U-300<br>NB(*)-ICSS-M30U-300<br>NB(*)-ICSS-M45U-300<br>NB(*)-ICSS-M60U-300 | NB(*)-ICSS-M15E-300<br>NB(*)-ICSS-M30E-300<br>NB(*)-ICSS-M45E-300<br>NB(*)-ICSS-M60E-300 |
| CHROMEGA®- **<br>ALOMEGA®<br>Inconel®<br>Sheath <b>K</b>     | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-CAIN-M15G-300<br>NB(*)-CAIN-M30G-300<br>NB(*)-CAIN-M45G-300<br>NB(*)-CAIN-M60G-300 | NB(*)-CAIN-M15U-300<br>NB(*)-CAIN-M30U-300<br>NB(*)-CAIN-M45U-300<br>NB(*)-CAIN-M60U-300 | NB(*)-CAIN-M15E-300<br>NB(*)-CAIN-M30E-300<br>NB(*)-CAIN-M45E-300<br>NB(*)-CAIN-M60E-300 |
| CHROMEGA®- **<br>ALOMEGA®<br>304 SS<br>Sheath <b>K</b>       | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-CASS-M15G-300<br>NB(*)-CASS-M30G-300<br>NB(*)-CASS-M45G-300<br>NB(*)-CASS-M60G-300 | NB(*)-CASS-M15U-300<br>NB(*)-CASS-M30U-300<br>NB(*)-CASS-M45U-300<br>NB(*)-CASS-M60U-300 | NB(*)-CASS-M15E-300<br>NB(*)-CASS-M30E-300<br>NB(*)-CASS-M45E-300<br>NB(*)-CASS-M60E-300 |
| CHROMEGA®-<br>Constantan<br>Inconel®<br>Sheath <b>E</b>      | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-CXIN-M15G-300<br>NB(*)-CXIN-M30G-300<br>NB(*)-CXIN-M45G-300<br>NB(*)-CXIN-M60G-300 | NB(*)-CXIN-M15U-300<br>NB(*)-CXIN-M30U-300<br>NB(*)-CXIN-M45U-300<br>NB(*)-CXIN-M60U-300 | NB(*)-CXIN-M15E-300<br>NB(*)-CXIN-M30E-300<br>NB(*)-CXIN-M45E-300<br>NB(*)-CXIN-M60E-300 |
| CHROMEGA®-<br>Constantan<br>304 SS<br>Sheath <b>E</b>        | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-CXSS-M15G-300<br>NB(*)-CXSS-M30G-300<br>NB(*)-CXSS-M45G-300<br>NB(*)-CXSS-M60G-300 | NB(*)-CXSS-M15U-300<br>NB(*)-CXSS-M30U-300<br>NB(*)-CXSS-M45U-300<br>NB(*)-CXSS-M60U-300 | NB(*)-CXSS-M15E-300<br>NB(*)-CXSS-M30E-300<br>NB(*)-CXSS-M45E-300<br>NB(*)-CXSS-M60E-300 |
| Copper-Constantan<br>Inconel®<br>Sheath <b>T</b>             | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-CPIN-M15G-300<br>NB(*)-CPIN-M30G-300<br>NB(*)-CPIN-M45G-300<br>NB(*)-CPIN-M60G-300 | NB(*)-CPIN-M15U-300<br>NB(*)-CPIN-M30U-300<br>NB(*)-CPIN-M45U-300<br>NB(*)-CPIN-M60U-300 | NB(*)-CPIN-M15E-300<br>NB(*)-CPIN-M30E-300<br>NB(*)-CPIN-M45E-300<br>NB(*)-CPIN-M60E-300 |
| Copper-Constantan<br>304 SS<br>Sheath <b>T</b>               | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-CPSS-M15G-300<br>NB(*)-CPSS-M30G-300<br>NB(*)-CPSS-M45G-300<br>NB(*)-CPSS-M60G-300 | NB(*)-CPSS-M15U-300<br>NB(*)-CPSS-M30U-300<br>NB(*)-CPSS-M45U-300<br>NB(*)-CPSS-M60U-300 | NB(*)-CPSS-M15E-300<br>NB(*)-CPSS-M30E-300<br>NB(*)-CPSS-M45E-300<br>NB(*)-CPSS-M60E-300 |
| OMEGAALLOY®-<br>NICROSIL-NISIL<br>Inconel<br>Sheath <b>N</b> | 1.5<br>3.0<br>4.5<br>6.0 | NB(*)-NNIN-M15G-300<br>NB(*)-NNIN-M30G-300<br>NB(*)-NNIN-M45G-300<br>NB(*)-NNIN-M60G-300 | NB(*)-NNIN-M15U-300<br>NB(*)-NNIN-M30U-300<br>NB(*)-NNIN-M45U-300<br>NB(*)-NNIN-M60U-300 | NB(*)-NNIN-M15E-300<br>NB(*)-NNIN-M30E-300<br>NB(*)-NNIN-M45E-300<br>NB(*)-NNIN-M60E-300 |

**Note:** PFA coating is available, 204°C (400°F) max. † Other lengths available, consult Sales Department.

\* Insert the number "1" through "12" for NB1, NB2, NB3, NB4, NB5, NB6, NB7, NB8, NB9, NB10, NB11 or NB12 heads, respectively.

\*\* For highest temperature and stability rating, change "SS" or "IN" to "XL" for additional cost.

To order probes with lengths other than 300 mm, change the last 3 digits of the model number from "300" to the desired length in mm, and add the appropriate price per additional 300 mm from the last column. To order with 310 SS, 316 SS or 321 SS sheath, change "SS" in model number to "310SS", "316SS" or "321SS", respectively, no additional charge. Consult Sales for lengths between 50 and 300 mm or for lengths over 600 mm.

**Ordering Examples:** NB1-ICSS-M60G-300, 300 mm grounded 304 SS probe, Type J, 6.0 mm sheath diameter.

NB2-CASS-M60U-300, 300 mm ungrounded 304 SS, Type K, 6 mm sheath diameter.