



BURNS[®]
ENGINEERING

Temperature Measurement Experts



Quick Connect

RTDs, Cordsets and Transmitter with M12 Connections



Temperature Measurement Experts®

Since 1960, Burns Engineering has been an industry leader in the design and manufacture of temperature sensors to meet a multitude of measurement applications. 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 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.

Quick Connect RTDs

Burns time tested models S01, S03, S20, S40, SNI, SNS, SFM 200A, 200G, 200L, 300A, 300G and 300L are now available with Quick Connect M12 connections for fast, reliable and trouble-free installation. Paired with our M12 transmitter and Series C cordsets they create a robust sensor system with plug and play simplicity. Incorrect wiring and questionable connections are a thing of the past with our Quick Connect designs.



If you don't see something that meets your needs, give us a call and we'll customize for your specific application.

Get a Web Quote:

Visit BurnsEngineering.com to configure your sensor today.

Here's how:

1. Register or sign-in
2. Search for any of the Quick Connect models using the search box (upper right) or click on the Product/Quote tab and select the Quick Connect model of interest.
3. Click on 'configure my part'.
4. Select the parameters to support your application
5. Click "Finish" to send to your Quote Request Cart
6. Update the quantities if necessary
7. Submit Quote Request for Confirmation – We'll be in touch shortly.

Quick Connect Family of Temperature Products



Various Sensor Styles and Process Connections



T12 Transmitter Connects Directly to the Sensor.



T12 Transmitter Showing Sensor Connection



Straight and 90° Molded Cordset Connections



T12 Transmitter Showing Cable Connection



TP12 Programming Kit for Field Adjustability

Specifications

Quick Connect Configurable Models

Series S

Series S sensors are designed to meet strict sanitary requirements and provide performance in a wide variety of applications. Most are 3-A Authorized and ASME-BPE compliant.

Series 200

The Series 200 design consists of a proprietary element constructed with high purity platinum and minimal stress to assure accurate readings and long life expectancy. The high purity materials, durable sheath design and unique construction techniques provide excellent vibration and shock resistance to ensure accuracy in tough applications over a wide temperature range.

Series 300

The Series 300 incorporates a high purity platinum element specifically developed to stringent Burns criteria and fully supported in a 316 stainless steel sheath to provide ultimate vibration resistance, durability, and stability in an RTD. Even under the harshest conditions the Series 300 delivers reliable performance.

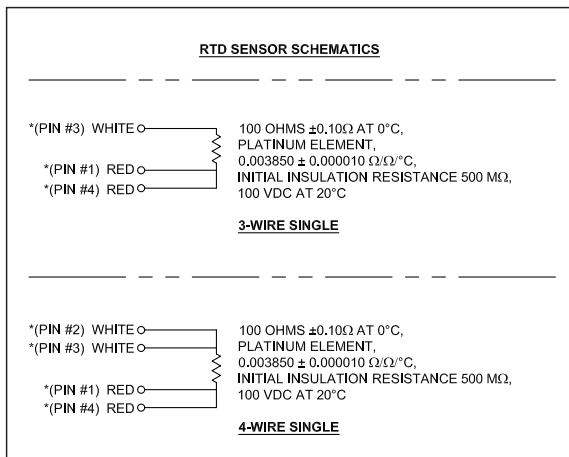
Performance Specification:	Series 200	Series 300	Series S Models
Element Resistance: at 0°C nominal	100 ohms	100 ohms	100 ohms
Temperature Coefficient: nominal	0.00385 ohms/ohm/°C	0.00385 ohms/ohm/°C	0.00385 ohms/ohm/°C
Temperature Range: (Operating range)	-200°C to 500°C	-50°C to 200°C	-50°C to 200°C
Burns Tolerance Class: (% of resistance at 0°C)	Code 10: ±.10% Code 05: ±.05%	Code 10: ±.10%	Code 10: ±.10%
Alpha Tolerance:	0.00385 ± 0.000005 ohms/ohm/°C.	0.00385 ± 0.0000135 ohms/ohm/°C	0.00385 ± 0.0000135 ohms/ohm/°C
Insulation Resistance:	500 megohms @ 500 VDC, 20°C	500 megohms @ 250 VDC	100 megohms @ 100 at 25°C

For additional product details, configurations, options, and performance specifications, see the full catalog:

[Series 200/300 Industrial RTDs](#)

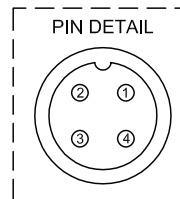
[Series S Sanitary Sensors](#)

Wiring Diagrams:



Quick Connect Sensor:

Pin-out Diagram



Note: * Pin numbers are for M12 Connection option only.

Index

Models: (Note 1)

Series S Sanitary RTD Sensors

- S01, 1/8" Direct Immersion, (pg 5)
- S03, 1/4" Direct Immersion, (pg 6)
- S20, Fast Response Direct Immersion, (pg 7)
- S40, Heavy Duty Direct Immersion, (pg 8)
- SNI, Sanitary Non-Intrusive, (pg 9)
- SNS, Short Style Sanitary Non-Intrusive, (pg 10)
- SFM, Sanitary Flush Mount, (pg 11)

Series 200/300 RTD Sensors

- 200A & 300A, Direct Immersion with Hex Fitting, (pg 12)
- 200G & 300G, Direct Immersion, (pg 13)
- 200L & 300L, Spring Loaded for use in a Thermowell, (pg 14)

In-line RTD Transmitter: T12, (pg 15)

Quick Connect to Sensor and Cordset

Accuracy: $\pm(0.05^{\circ}\text{C} + 0.05\% \text{ of span})$

Matching Capable to Sensor Calibration Data

PC Programmable with TP12 Programming Module

Quick Connect Cord Sets:

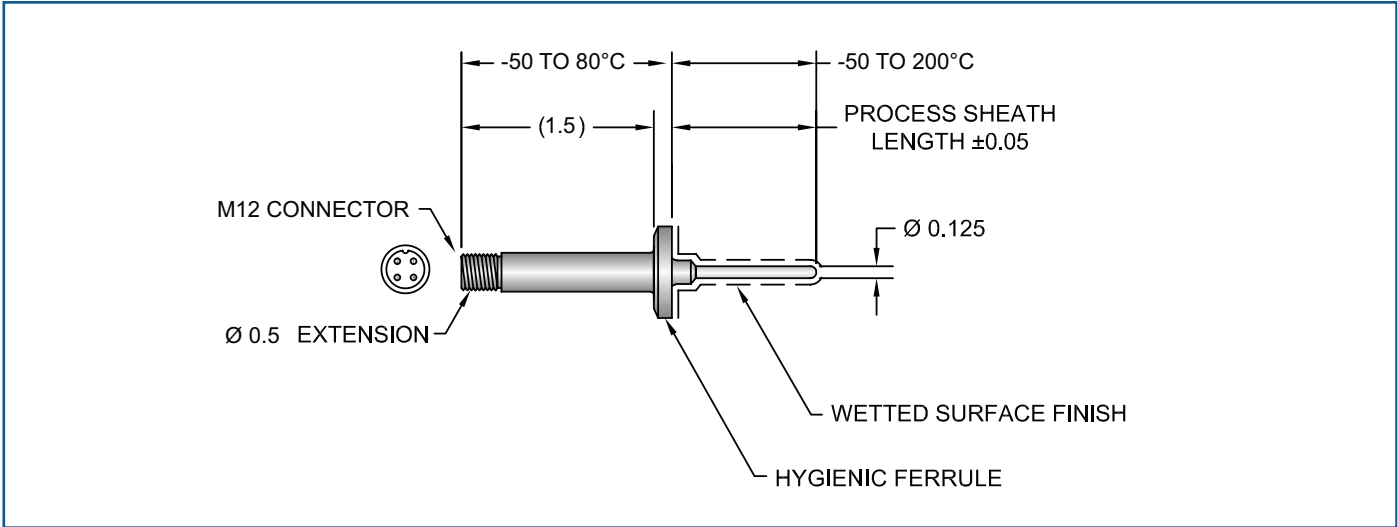
The Series C supports Quick Connect sensors with a variety of cordset configurations to meet your cabling and connector needs. Models include molded and field configurable cordsets as well as M12 male/female and angled connectors to customize your installation.

- C01, M12 Cordset, Molded, PVC Insulated in 2, 5, and 10 Meter Lengths, (pg 16)
- C02, M12 Cordset Assembly in Custom Lengths, (pg 17)
- C03, M12 Connectors (no cable) in Straight and 90° Styles, (pg 18)

Note 1: Various options are available for these models. Select options during configuration or contact Burns Customer Service for assistance.

S01 with Quick Connect Sanitary Direct Immersion

Ordering Information



All dimensions in inches

Sensor Type		
S01-	Ø 0.125 Direct Immersion (Note 1)	
RTD Accuracy		
10	Standard +/-0.10% of Resistance at 0 Degrees C	
Sensor Element Lead Construction		
A	Three Wire Single	
B	Four Wire Single	
Process Sheath Length (Min. Length = 1.0, Max. Length = 8.5)		
0110	1.1 Inches	
0250	2.5 Inches	
0300	3.0 Inches	
0350	3.5 Inches	
****	Specify Process Sheath in Length	
Connection		
-M12	M12 Connector (Note 2)	
P Process Type		
T	Hygienic Ferrule (Tri-Clamp Style)	
Process Connection Size (Used with Tube Sizes)		
05	1/2"	1/2", 3/4"
12	1 1/2"	1", 1 1/2"
20	2"	2"
25	2 1/2"	2 1/2"
30	3"	3"
40	4"	4"
Wetted Surface Material		
03	316 Stainless Steel	
06	316L Stainless Steel	
Wetted Surface Finish		
M32	32 Ra Mechanical Finish, Max.	
M25	25 Ra Mechanical Finish, Max.	
M20	20 Ra Mechanical Finish, Max.	
M15	15 Ra Mechanical Finish, Max.	
E32	32 Ra Mechanical Finish, Max, with Electropolish	
E25	25 Ra Mechanical Finish, Max, with Electropolish	
E20	20 Ra Mechanical Finish, Max, with Electropolish	
E15	15 Ra Mechanical Finish, Max, with Electropolish	
E10	10 Ra Mechanical Finish, Max, with Electropolish	

Basic Order Codes

Example Part # S01-10A0110-M12T1506M32

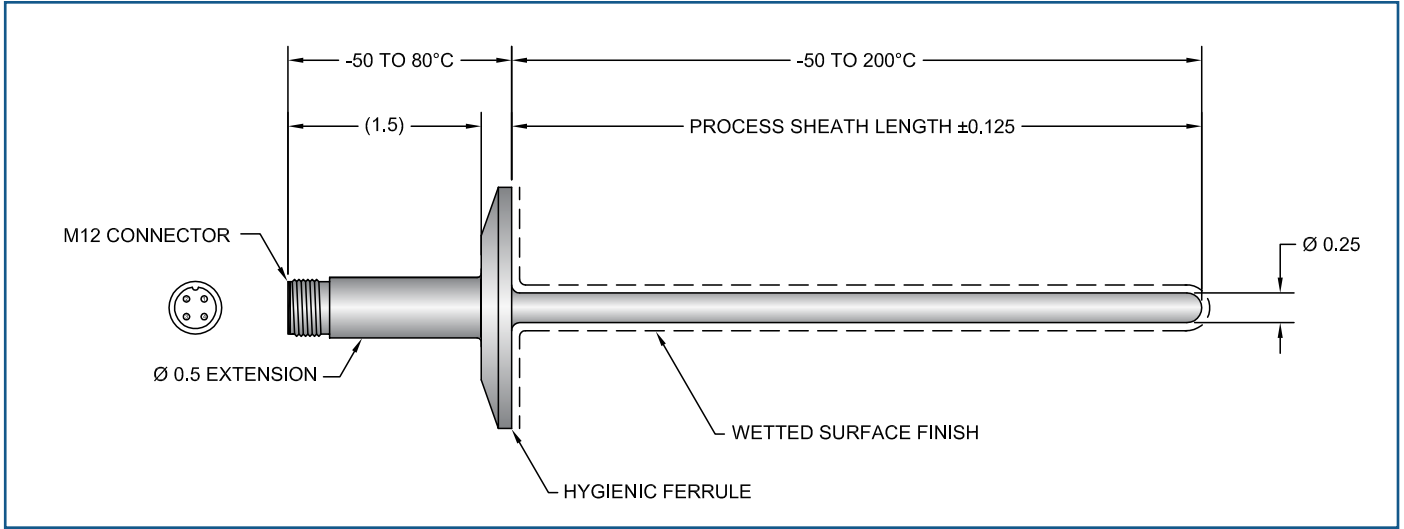
Note 1: See Burns "Series S" catalog for additional product details.

Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03



S03 with Quick Connect Sanitary Direct Immersion

Ordering Information



All dimensions in inches

Sensor Type		
S03-	Ø 0.25 Direct Immersion (Note 1)	
RTD Accuracy		
10	Standard +/-0.10% of Resistance at 0 Degrees C	
05	Precision +/-0.05% of Resistance at 0 Degrees C	
Sensor Element Lead Construction		
A	Three Wire Single	
B	Four Wire Single	
Process Sheath Length (Min. Length = 3.5, Max. Length = 40.0)		
0350	3.5 Inches	
0500	5.0 Inches	
1200	12.0 Inches	
2400	24.0 Inches	
****	Specify Process Sheath in Length	
Connection		
-M12	M12 Connector (Note 2)	
P Process Type		
T	Hygienic Ferrule (Tri-Clamp Style)	
Process Connection Size (Used with Tube Sizes)		
05	1/2"	1/2", 3/4"
12	1 1/2"	1", 1 1/2"
20	2"	2"
25	2 1/2"	2 1/2"
30	3"	3"
40	4"	4"
Wetted Surface Material		
03	316 Stainless Steel	
06	316L Stainless Steel	
Wetted Surface Finish		
M32	32 Ra Mechanical Finish, Max.	
M25	25 Ra Mechanical Finish, Max.	
M20	20 Ra Mechanical Finish, Max.	
M15	15 Ra Mechanical Finish, Max.	
E32	32 Ra Mechanical Finish, Max, with Electropolish	
E25	25 Ra Mechanical Finish, Max, with Electropolish	
E20	20 Ra Mechanical Finish, Max, with Electropolish	
E15	15 Ra Mechanical Finish, Max, with Electropolish	
E10	10 Ra Mechanical Finish, Max, with Electropolish	

S03- [] [] [] [] [] [] [] [] [] []
Basic Order Codes

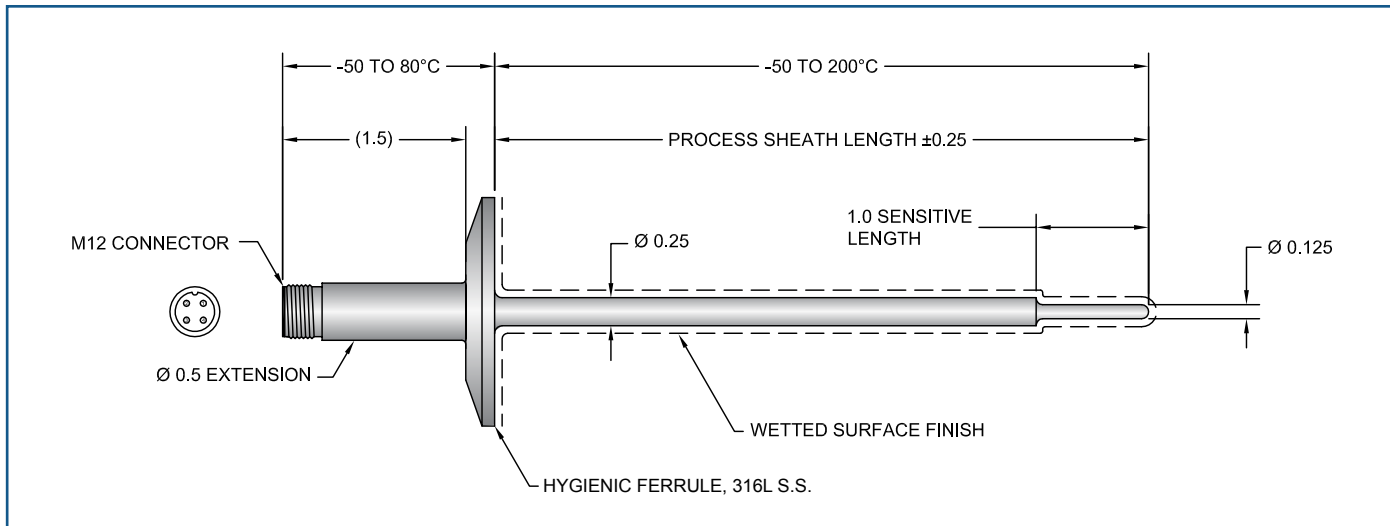
Example Part # S03-05A1200-M12T1506M32

Note 1: See Burns "Series S" catalog for additional product details.
Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03



S20 with Quick Connect Sanitary Fast Response Direct Immersion

Ordering Information



All dimensions in inches

Sensor Type

S20- Ø 0.25 Fast Response Direct Immersion (Note 1)

RTD Accuracy

- 10 Standard +/-0.10% of Resistance at 0 Degrees C
- 05 Precision +/-0.05% of Resistance at 0 Degrees C

Sensor Element Lead Construction

- A Three Wire Single
- B Four Wire Single

Process Sheath Length (Min. Length = 3.0, Max. Length = 24.0)

- 0350 3.5 Inches
- 0500 5.0 Inches
- 1200 12.0 Inches
- 2400 24.0 Inches
- **** Specify Process Sheath in Length

Connection

-M12 M12 Connector (Note 2)

P Process Type

T Hygienic Ferrule (Tri-Clamp Style)

Process Connection Size (Used with Tube Sizes)

05	1/2"	1/2", 3/4"
12	1 1/2"	1", 1 1/2"
20	2"	2"
25	2 1/2"	2 1/2"
30	3"	3"
40	4"	4"

Wetted Surface Material

- 03 316 Stainless Steel
- 06 316L Stainless Steel

Wetted Surface Finish

- M32 32 Ra Mechanical Finish, Max.
- M25 25 Ra Mechanical Finish, Max.
- M20 20 Ra Mechanical Finish, Max.
- M15 15 Ra Mechanical Finish, Max.
- E32 32 Ra Mechanical Finish, Max, with Electropolish
- E25 25 Ra Mechanical Finish, Max, with Electropolish
- E20 20 Ra Mechanical Finish, Max, with Electropolish
- E15 15 Ra Mechanical Finish, Max, with Electropolish
- E10 10 Ra Mechanical Finish, Max, with Electropolish

S20- [] [] [] [] [] [] [] [] [] []

Basic Order Codes

Example Part # S20-05A1200-M12T1506M32

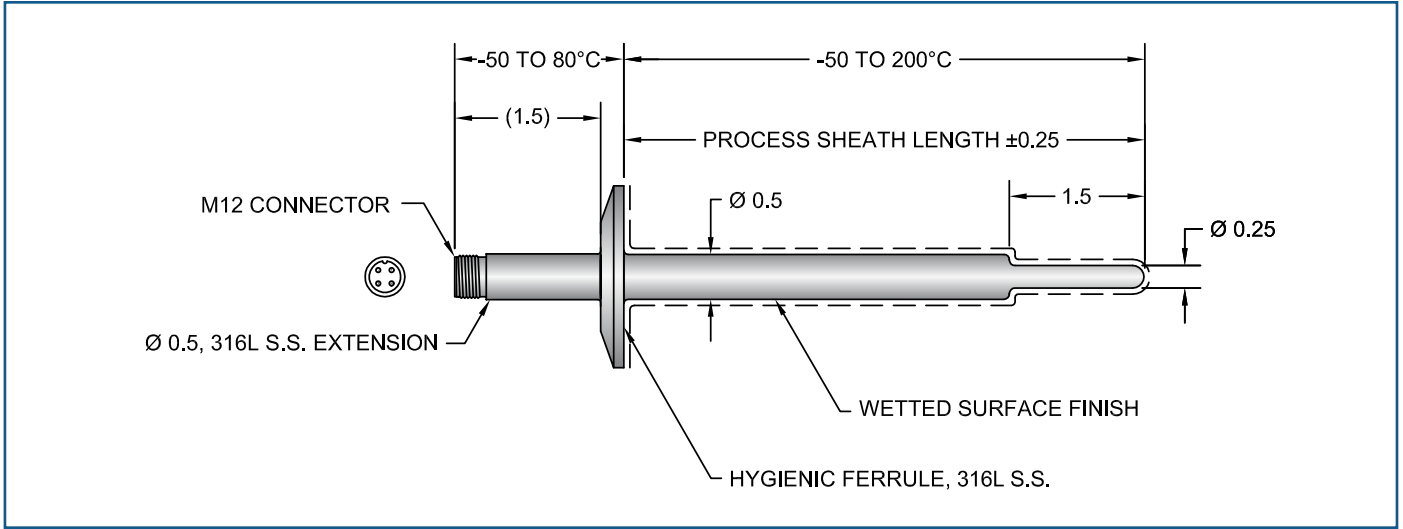


Note 1: See Burns "Series S" catalog for additional product details.

Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03

S40 with Quick Connect Sanitary Heavy Duty Direct Immersion

Ordering Information



All dimensions in inches

Sensor Type

S40- Heavy Duty Direct Immersion (Note 1)

RTD Accuracy

- 10 Standard +/-0.10% of Resistance at 0 Degrees C
- 05 Precision +/-0.05% of Resistance at 0 Degrees C

Sensor Element Lead Construction

- A Three Wire Single
- B Four Wire Single

Process Sheath Length (Min. Length = 4.0, Max. Length = 48.0)

- 0350 3.5 Inches
- 0500 5.0 Inches
- 1200 12.0 Inches
- 2400 24.0 Inches
- **** Specify Process Sheath in Length

Connection

-M12 M12 Connector (Note 2)

P Process Type

T Hygienic Ferrule (Tri-Clamp Style)

Process Connection Size (Used with Tube Sizes)

05	1/2"	1/2", 3/4"
15	1 1/2"	1", 1 1/2"
20	2"	2"
25	2 1/2"	2 1/2"
30	3"	3"
40	4"	4"

Wetted Surface Material

- 03 316 Stainless Steel
- 06 316L Stainless Steel

Wetted Surface Finish

- M32 32 Ra Mechanical Finish, Max.
- M25 25 Ra Mechanical Finish, Max.
- M20 20 Ra Mechanical Finish, Max.
- M15 15 Ra Mechanical Finish, Max.
- E32 32 Ra Mechanical Finish, Max, with Electropolish
- E25 25 Ra Mechanical Finish, Max, with Electropolish
- E20 20 Ra Mechanical Finish, Max, with Electropolish
- E15 15 Ra Mechanical Finish, Max, with Electropolish
- E10 10 Ra Mechanical Finish, Max, with Electropolish

S40- [] [] [] [] [] [] [] [] [] []
Basic Order Codes

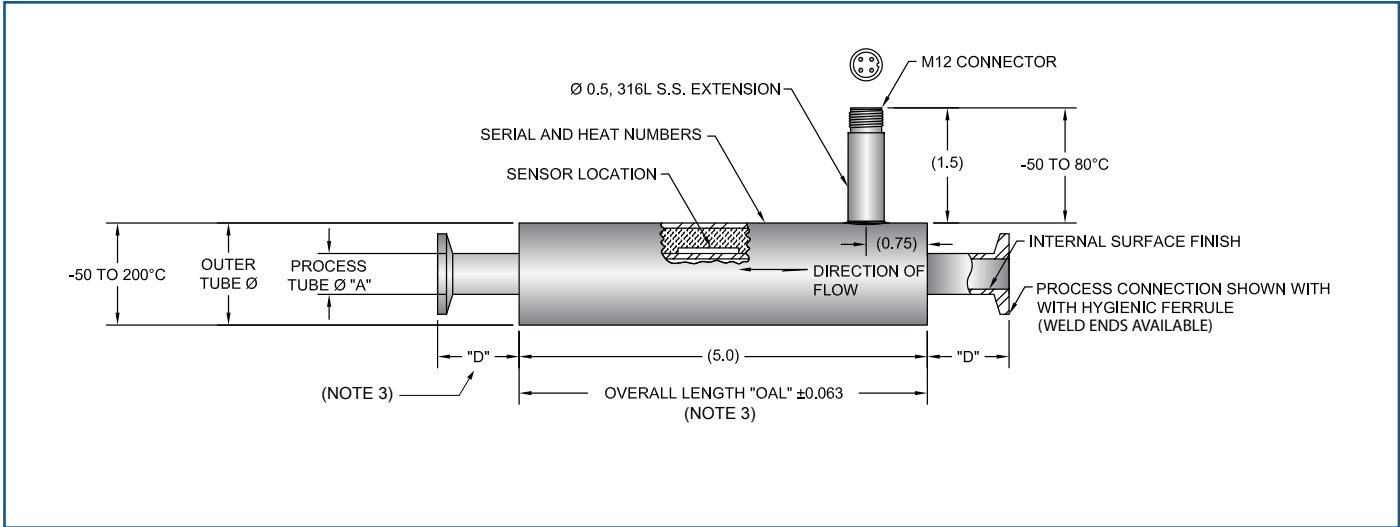
Example Part # S40-05A1200-M12T1506M32



Note 1: See Burns "Series S" catalog for additional product details.

Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03

SNI with Quick Connect Sanitary Non-Intrusive Ordering Information



All dimensions in inches

Sensor Type

SNI Sanitary Non-Intrusive (Note 1)

RTD Accuracy

10	Standard +/-0.10% of Resistance at 0 Degrees C
05	Precision +/-0.05% of Resistance at 0 Degrees C

Sensor Element Lead Construction

A	Three Wire Single
B	Four Wire Single

Connection

-M12 M12 Connector (Note 2)

Process Tube Ø "A"	Wall Thickness	Outer Tube Ø	Process Connection Length "D" for Weld Ends	Overall Length for Weld Ends	
0250	0.250"	0.032"	1.25"	1.75"	8.50"
0500	0.500"	0.065"	1.25"	1.75"	8.50"
0750	0.750"	0.065"	2.0"	1.75"	8.50"
1000	1.000"	0.065"	3.0"	1.75"	8.50"
1250	1.250"	0.065"	3.0"	1.75"	8.50"
1500	1.500"	0.065"	3.0"	1.75"	8.50"
2000	2.000"	0.065"	4.0"	1.75"	8.50"
2500	2.500"	0.065"	4.0"	1.75"	8.50"
3000	3.000"	0.065"	6.0"	2.00"	9.00"
4000	4.000"	0.085"	6.0"	2.13"	9.25"

Process Tube Material

-06	316L Stainless Steel
-20	AL6XN

Internal Finish

A	32 Ra Mechanical Finish
B	10 Ra Electropolish
N	Standard Pipe Finish, Mechanical, Not Available with 3A

External Finish

1	Sand Blasted
2	Bright Mechanical (32 Ra Surface Finish)

Process Connection Fitting (Note 3)

C	Hygienic Ferrule
N	Weld Ends No Process Connection

Process Connection Size "C"	Compatible W/ Tube Sizes	
050	1/2"	0500, 0750
150	1 1/2"	1000, 1500
200	2"	2000
250	2 1/2"	2500
300	3"	3000
400	4"	4000

Weld Ends, No Process Connection, Leave Blank

Process Connection Material

-06	316L S.S.
-20	AL6XN

Weld Ends, Leave Blank



Example Part # SNI-05AM120500-06A2C050-06

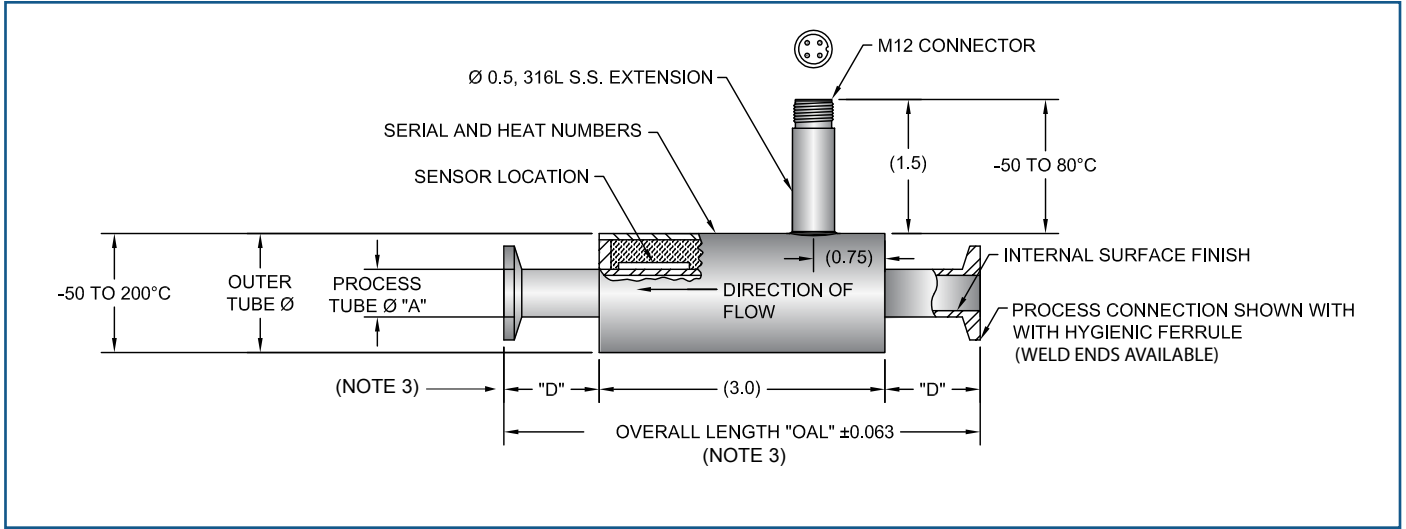
Note 1: See Burns "Series S" catalog for additional product details.
 Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03
 Note 3: For assemblies with hygienic ferrules, the "OAL" length is 8.0 inches and the "D" length is 1.5 inches



SNS with Quick Connect

Sanitary Non-Intrusive - Short

Ordering Information



All dimensions in inches

Sensor Type																																																								
SNS	Sanitary Non-Intrusive Short (Note 1)																																																							
RDY Accuracy																																																								
10	Standard +/-0.10% of Resistance at 0 Degrees C																																																							
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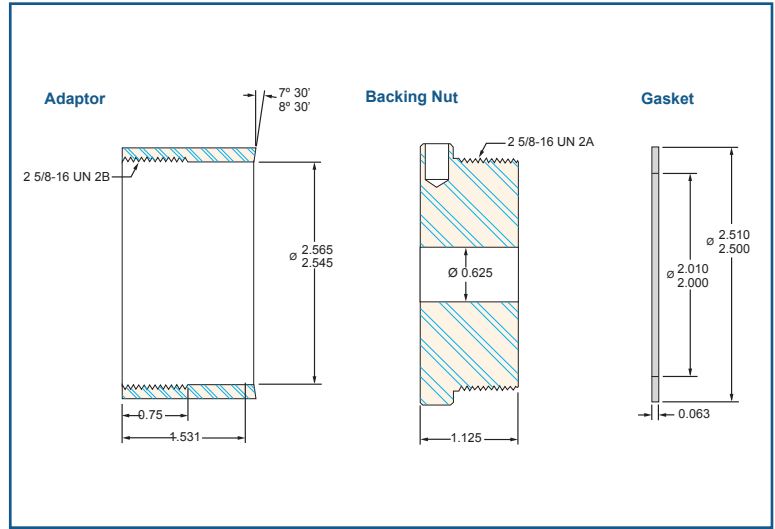
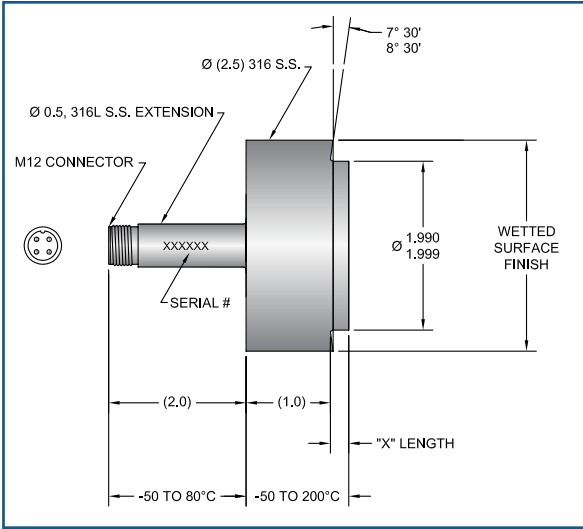
Basic Order Codes



Example Part # SNS-05AM120500-06A2C050-06

Note 1: See Burns "Series S" catalog for additional product details.
 Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03
 Note 3: For assemblies with hygienic ferrules, the "OAL" length is 5.0 inches and the "D" length is 1.5 inches

SFM with Quick Connect Sanitary Flush Mount Ordering Information



All dimensions in inches

Sensor Type	
SFM	Flush Mount, Ø 2.5 (Note 1)
RTD Accuracy	
10	Standard +/-0.10% of Resistance at 0 Degrees C
05	Precision +/-0.05% of Resistance at 0 Degrees C
Sensor Element Lead Construction	
A	Three Wire Single
B	Four Wire Single
"X" Length	
0218	0.218 Inches
0399	0.399 Inches
0486	0.486 Inches
****	Specify "X" Length in Inches
Connection	
-M12	M12 Connection (Note 2)
Wetted Surface Finish	
M32	32 Ra Mechanical Finish, Max.
M20	20 Ra Mechanical Finish, Max
Adaptor (All adaptor surfaces are non-wetted)	
1	304 Stainless Steel, 2 1/2" Schedule 40 pipe, 2 5/8-16 UN 2B
2	316L Stainless Steel, 2 1/2" Schedule 40 pipe, 2 5/8-16 UN 2B
N	None
Backing Nut (All nut surfaces are non-wetted)	
1	Backing Nut, 303 Stainless Steel. 2 5/8-16 UN 2A
N	None
Gasket (Includes certificate of conformance)	
2	Teflon® Gasket, FDA 21 CFR, Paragraph 177,1550
3	Inertex® SQ-S, USP Class VI
N	None

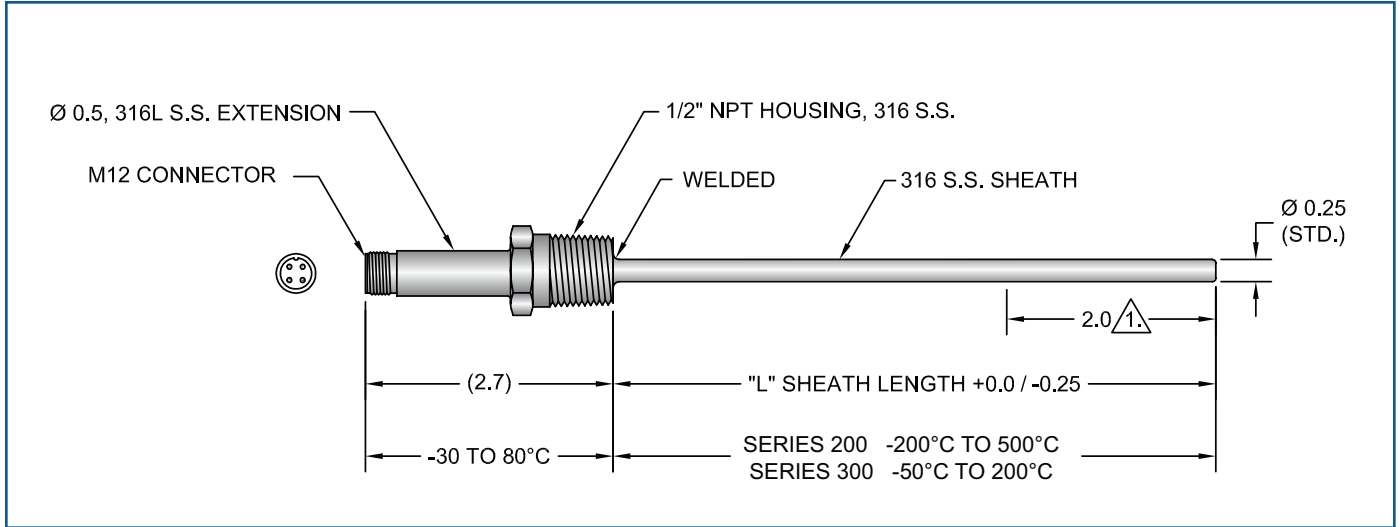
Example Part # SFM-10A0218-M12M32112

Note 1: See Burns "Series S" catalog for additional product details.
 Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03



200A & 300A with Quick Connect 'A' Style Direct Immersion

Ordering Information



All dimensions in inches

200 300	Series 200 Series 300	Sensor Style	
		A Direct Immersion (Note 1)	
		RTD Accuracy	Sheath Material
		10 Standard +/- 0.10% of Resistance at 0 Degrees C	316 SS
		05 Precision +/- 0.05% of Resistance at 0 Degrees C (not available with the Series 300 model)	316 SS
		RTD Element Lead Configuration	
		A Three Wire Single	
		B Four Wire Single	
		Connection	
		-M12	M12 Connection (Note 2)
		'L' Sheath Length	
		035	3.5 Inch (minimum)
		055	5.5 Inch
		085	8.5 Inch
		115	11.5 Inch
		175	17.5 Inch
		LLL	Specify 'L' Length in Inches for 'L' ≤ 99.9" (LLLL for 'L' > 99.9". ex: 150"=1500)
		Basic Order Codes	

Example Part # 200A10AM12085 or 300A10BM12115

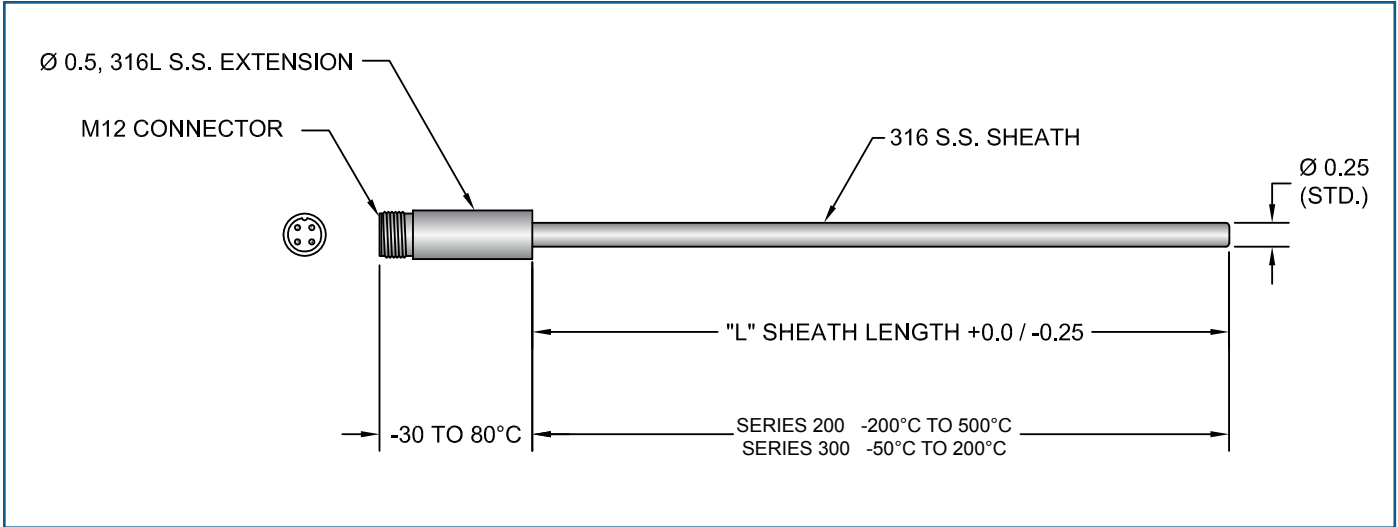
Note 1: See Burns "Series 200 & 300" catalog for additional product details.

Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03



200G & 300G with Quick Connect 'G' Style Direct Immersion

Ordering Information



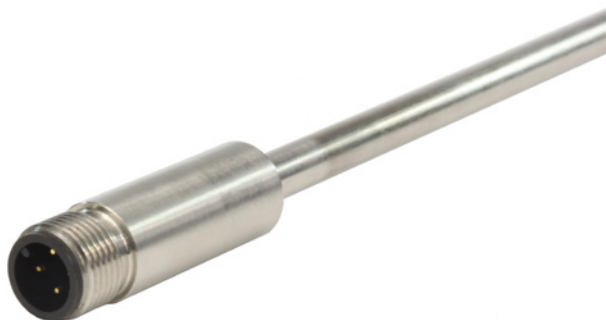
All dimensions in inches

200	Series 200
300	Series 300
Sensor Style	
G	Capsule Style (Note 1)
RTD Accuracy	
10	Standard +/- 0.10% of Resistance at 0 Degrees C
05	Precision +/- 0.05% of Resistance at 0 Degrees C (not available with the Series 300 model)
RTD Element Lead Configuration	
A	Three Wire Single
B	Four Wire Single
'L' Sheath Length	
035	3.5 Inch (minimum)
055	5.5 Inch
085	8.5 Inch
115	11.5 Inch
175	17.5 Inch
LLL	Specify 'L' Length in Inches for 'L' ≤ 99.9" (LLLL for 'L' > 99.9". ex: 150"=1500)
Connection	
-M12	M12 Connection (Note 2)
Basic Order Codes	

Example Part #200G10A085M12 or 300G10B175M12

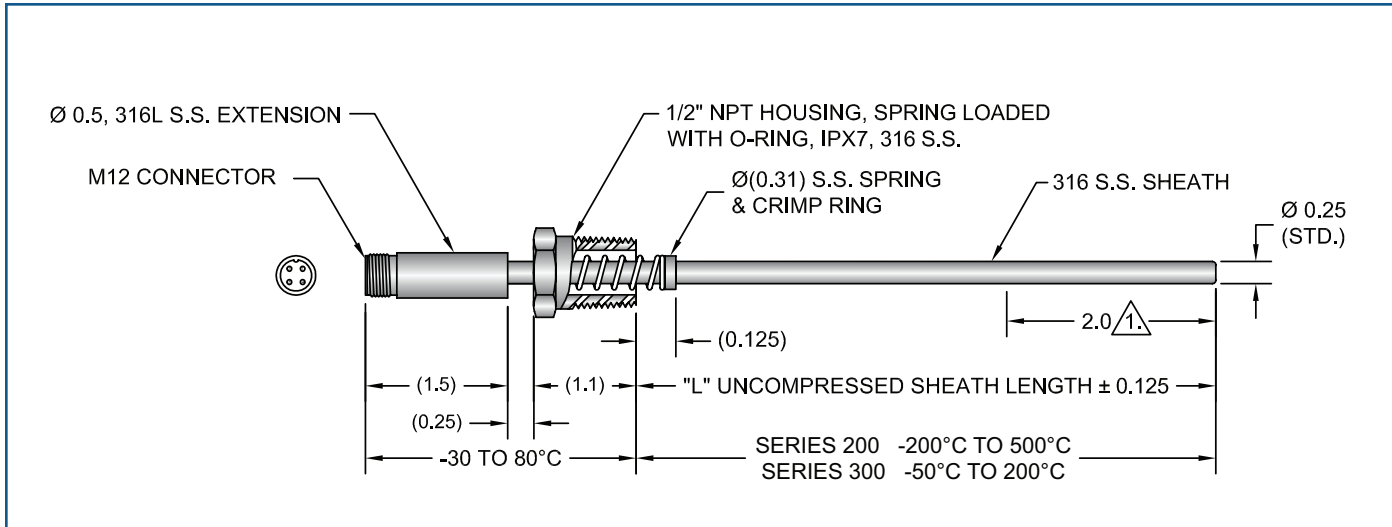
Note 1: See Burns "Series 200 & 300" catalog for additional product details.

Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03



200L & 300L with Quick Connect 'L' Style Spring Loaded Hex Fitting

Ordering Information



All dimensions in inches

200	Series 200	
300	Series 300	
Sensor Style		
L Spring Loaded, Hex Fitting (Note 1)		
RTD Accuracy		
10	Standard +/- 0.10% of resistance at 0 degrees C	
05	Precision +/- 0.05% of resistance at 0 degrees C (not currently available with the Series 300 model)	
RTD Element Lead Configuration		
A	Three Wire Single	
B	Four Wire Single	
Connection		
-M12	M12 Connection (Note 2)	
Extension Type (See Illustrations)		
1C	Galvanized Coupling Nipple	3 inches
2C	304 SS Coupling Nipple	3 inches
3C	316 SS Coupling Nipple	3 inches
1D	Galvanized Union Nipple	3 inches
2D	304 SS Union Nipple	3 inches
3D	316 SS Union Nipple	3 inches
N	No Extension	0 inches
'L' Uncompressed Sheath Length		
035	3.5 inch (minimum)	
050	45.0 inch	
120	12.0 inch	
240	24.0 inch	
***	Specify 'L' Immersion Length in Inches for < 99.9" (LLLL for > 99.9")	
Basic Order Codes		

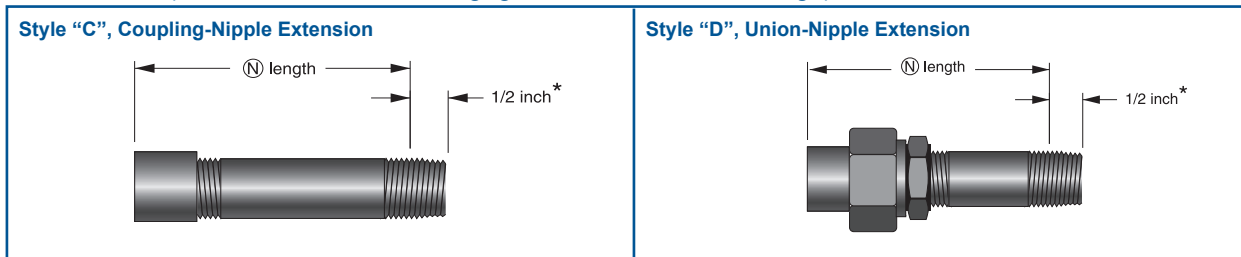


Example Part # 200L05A-M122C070 or 300L10B-M121D105

Note 1: See Burns "Series 200 & 300" catalog for additional product details.

Note 2: Currently available with 3-wire and 4-wire only. For mating cordsets see models C01, C02, and C03

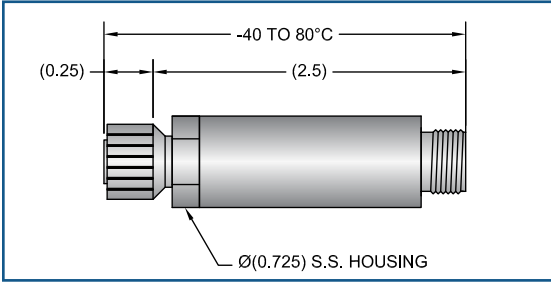
Extension (*1/2" is normal thread engagement for 1/2" NPT fittings)



Transmitter and Programming Kit for Quick Connect Sensors

Ordering Information

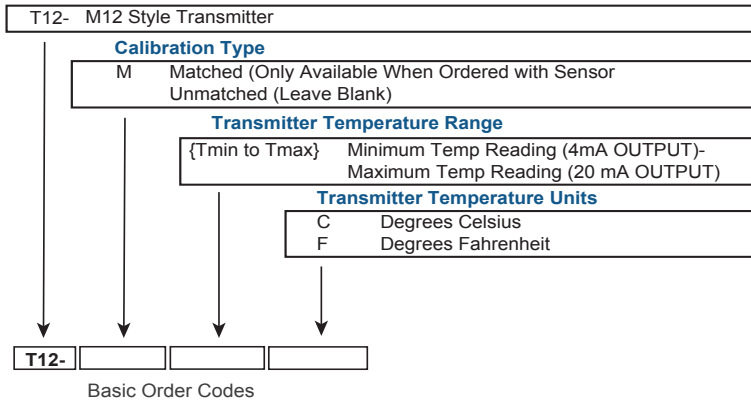
T12 Transmitter



All dimensions in inches

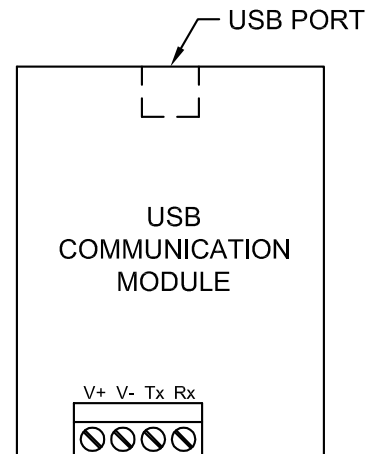
General Specification

Operating Temperature Range:	-40°C to 80°C
Input Range:	-200°C to 500°C
Accuracy:	±(0.05°C + 0.05% of span)
Open Circuit Detection:	Upscale >24mA, Downscale <2.5mA
Warm up Time:	30 Seconds to full accuracy
Environmental Rating:	NEMA 6P, IP67; M12 Connected
Communications Interface:	PC Programmable with TP12



Example Part # T12 {-50 to 85} F

TP12 Programming Module: (Order item # TP12 separately)



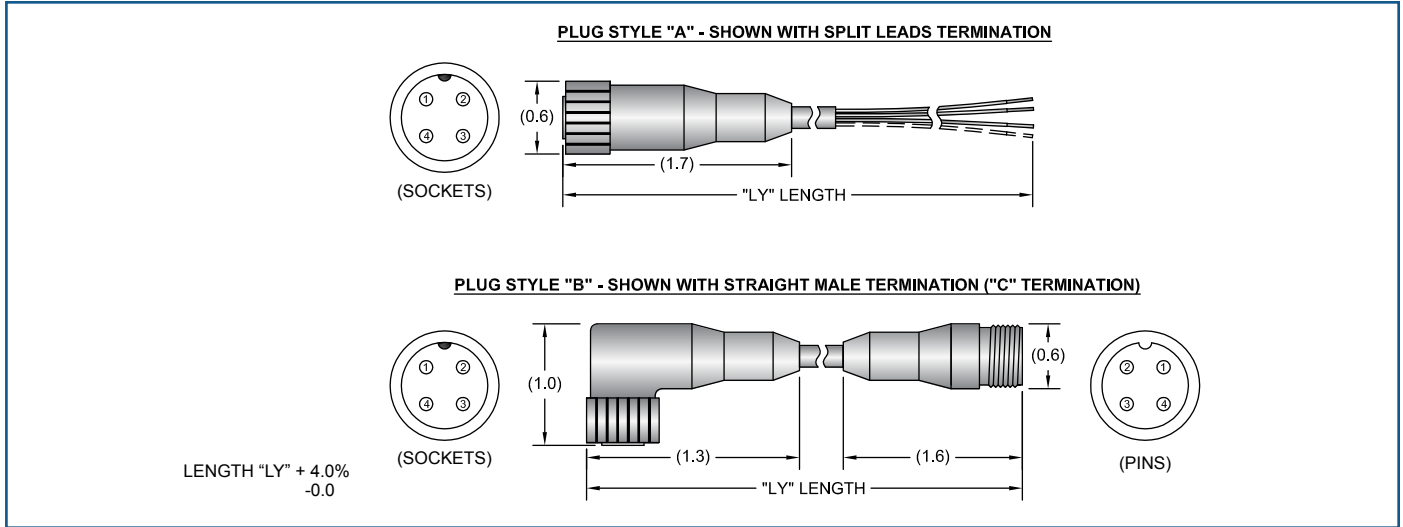
Programming Kit Contains:

- Programming Module
- USB Cable
- Software CD
- Storage Box

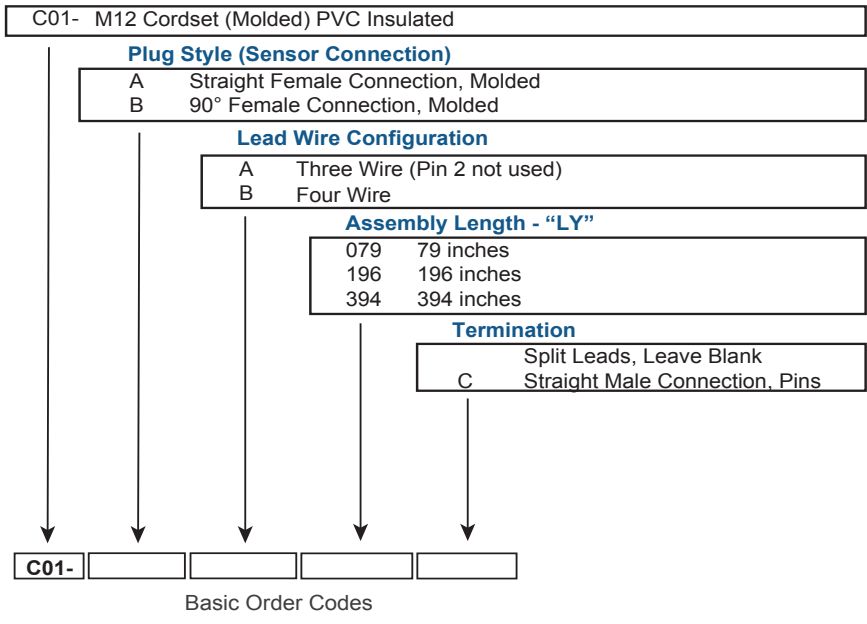
Requires M12 Cable Assembly for Connection to Transmitter.
See Cordsets for four wire Assemblies.
The TP12 will be required if adjustment in the field is necessary.

C01: M12 Cordset (Molded) PVC Insulated

Ordering Information



All dimensions in inches



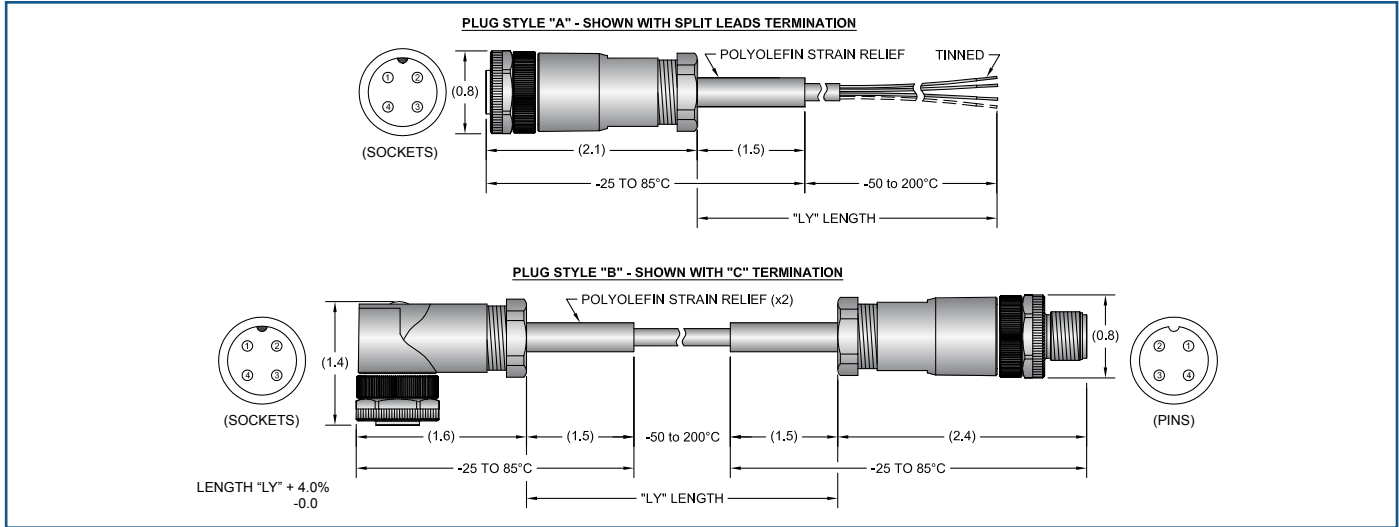
Example Part # C01-AB394

C01 Cordset (Molded) Specification	
Temperature Range:	-40°C to 105°C
Cable Jacket:	PVC
Wire Insulation:	PVC
Wire Size:	22 AWG
Lead Wire Color Codes: (Style "A")	
Brown:	Pin 1
White:	Pin 2
Blue:	Pin 3
Black:	Pin 4

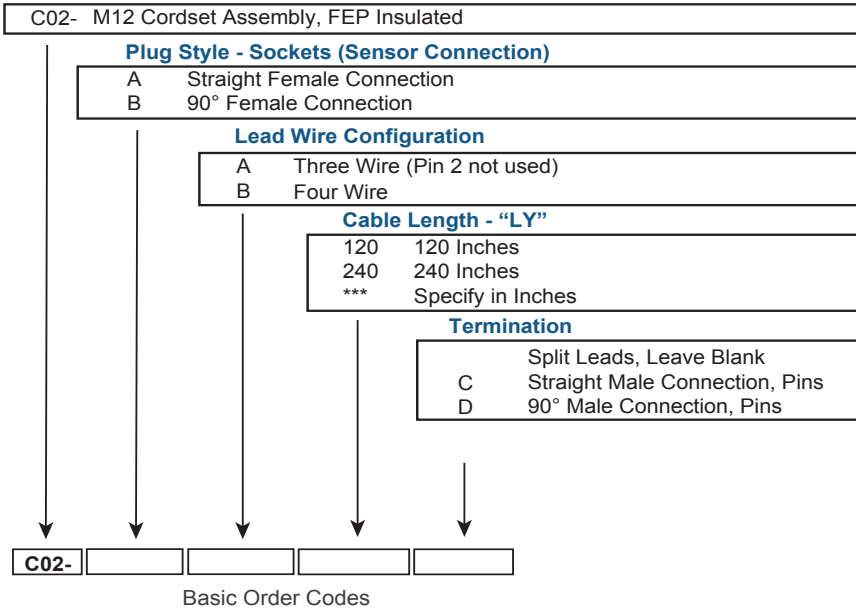


C02: M12 Cordset Assembly, FEP Insulated

Ordering Information



All dimensions in inches



Example Part # C02-AB120

C02 Cordset Assembly Specification

Temperature Range:
 Connectors: -25°C to 85°C
 Cable: -50°C to 200°C

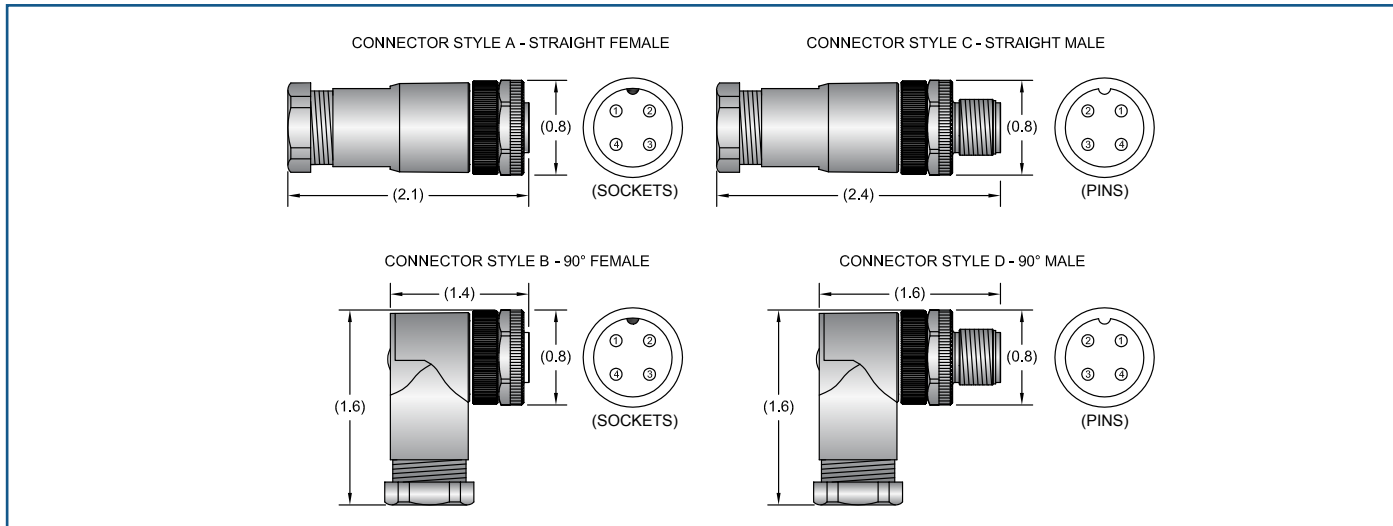
Cable Jacket: FEP (White)
 Wire Insulation: PTFE
 Wire Size: 22 AWG

Lead Wire Color Codes: (Style "A")

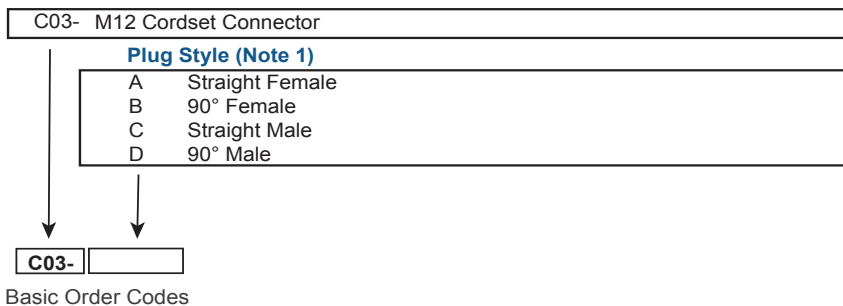
White:	Pin 1
White:	Pin 2
Red:	Pin 3
Red:	Pin 4



Ordering Information



All dimensions in inches



Example Part # C03-A

C03 Cordset Connectors Specification	
Temperature Range:	
Connectors:	-25°C to 85°C
Fitting Material:	NYLON
Contact Material:	Gold Plated Brass
Cable Size:	4 wire, 22 AWG Conductor Max.
Cable Grip Range:	0.157" to 0.236" OD



Note 1: A Female connector is required to connect to the sensor and/or transmitter.

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