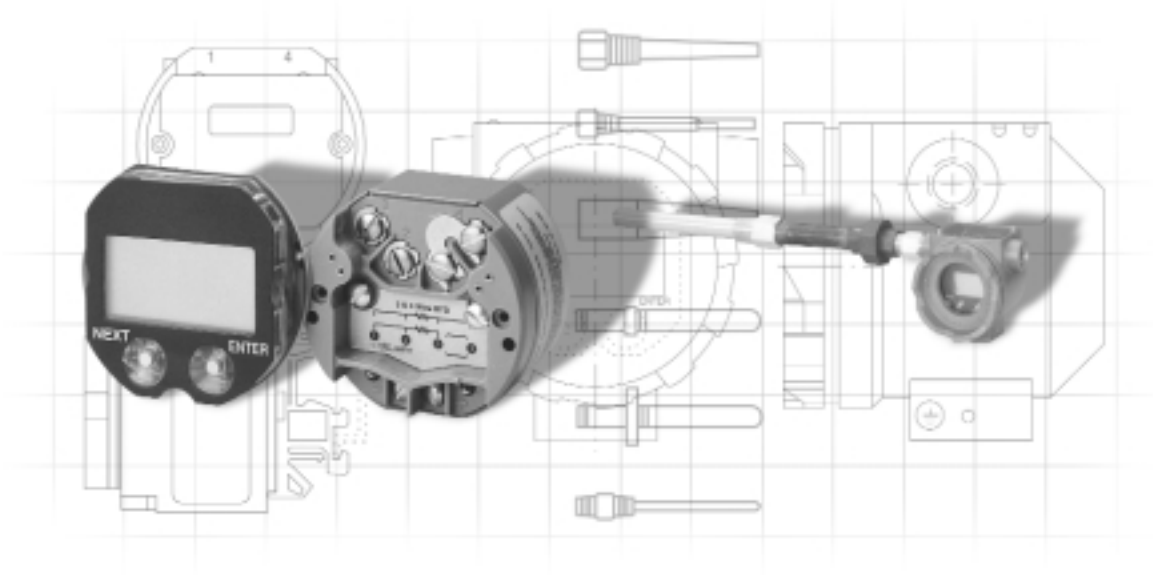
MycroSENSOR TECHNOLOGIES

Precision Measurement and Specialty Sensor Technology



Contact

Infor-
mation

MycroSENSOR Technologies
2362 West Shangri La Road
Phoenix, AZ 85029
U.S.A.

Toll Free: 1.866.369.9086
www.mycrosensor.com
email: info@mycrosensor.com

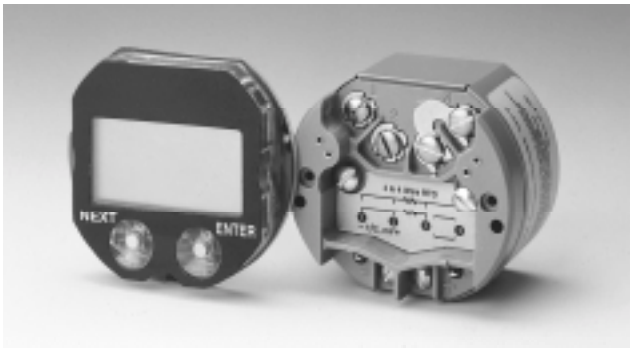
XTC® temperature transmitters incorporate microprocessor-based electronics and advanced temperature measurement circuitry into a small, economical package. Because they share the same electronics module, XTC temperature transmitters feature fully interchangeable components that reduce overall inventory requirements.

With the two distinct models (one suitable for mounting at the point of process control and the other suitable for mounting directly on a thermowell), XTC temperature transmitters accommodate most applications.

MycroSENSOR 343 Smart Temperature Transmitter

FEATURES & BENEFITS

- Microprocessor based two-wire transmitter with automatic cold-junction compensation ensures accurate, reliable performance over a wide operating range
- Single model accepts multiple input types, simplifying specification and reducing spare part requirements
- High accuracy, typically 0.05% of reading, guarantees process control integrity
- HART® communication allows quick, easy configuration, saving valuable time and money
- Input/output isolation supports the use of grounded or ungrounded sensors
- DIN rail and field-mountable versions allow maximum design flexibility



The MycroSENSOR 343 Smart Temperature Transmitter is a member of the XTC family of transmitters. The MycroSENSOR 343 incorporates microprocessor-based electronics and advanced temperature measurement circuitry into a small economical package that accepts a wide range of input types and ranges.

There are two different models of the MycroSENSOR 343. The Model 343D is a DIN rail (to EN 50022) version suitable for mounting in rack-type enclosures. The Model 343F is a field-mountable, explosion-proof version packaged in an aluminum enclosure suitable for mounting directly at the point of process control. The Model 343F is small and lightweight, allowing it to be directly mounted to a thermowell in applications where this is feasible. Both the 343D and 343F use the same electronics module, thereby reducing spare parts inventory.

The 2, 3, and 4-wire RTDs, T/Cs, mV, and ohm sensors can be used as the sensor element. See Table 1 for a complete list of sensor types. The transmitter has break detection circuitry on each input terminal. Upon sensing a break in the primary element leadwire, the transmitter output will fail-safe based upon user-defined units. Thermocouple cold junction compensation is performed automatically using an internal sensor or external two-wire RTD.

The transmitter output range can be set in engineering units anywhere within the operating range for the input sensor type. There is no minimum or maximum span limitation.

The MycroSENSOR 343 can install one of two local indicators. The LCD Display is a simple 4-1/2 digit display. The SmartDisplay™ indicates in °C or °F, but also contains a second line of display and integral push-buttons that are used to configure the transmitter.

The MycroSENSOR 343 uses the HART communications protocol. This ensures that it will work with any HART product available today, including the MycroSENSOR 275 HART Communicator, PC-based maintenance software packages, and distributed control systems.

HART also provides multi-dropping capability where up to 15 transmitters can be connected on a single twisted pair conductor. Multi-drop networks minimize cost considerably and are especially useful in tank gauging and temperature measurement.

SPECIFICATIONS

PERFORMANCE SPECIFICATIONS

Digital Input Accuracy
±0.05% of the equivalent millivolt or ohm reading, or the accuracy shown in Table 1, whichever is greater.

Cold Junction Measurement Accuracy
±0.5°C (±0.9°F)

D/A Output Conversion Accuracy
±0.05% of span

Total Accuracy
[(Input Accuracy)^2 + (Cold Junction Accuracy)^2+ (D/A Accuracy)^2]

Ambient Temperature Range
Electronics: -40 to 85°C (-40 to 185°F)
Display: -20 to 70°C (-4 to 158°F)

Stability
Less than 0.05% of reading ±3.6 mA for 12 months

Power Supply Effect
±0.005% of span per volt

EMI/RFI Susceptibility
Less than 0.5% of reading at 10V/m, 20KHz-1000MHz

MECHANICAL SPECIFICATIONS

DIN RAIL (343D)

Housing
Plastic

Electrical Connections
Screw Terminals for 10-26 AWG

Weight
4 oz.

Dimensions
See Installation Drawing

FIELD-MOUNTABLE ENCLOSURE (343F)

Housing
Epoxy coated cast aluminum, IP66/68

Electrical Connections
Quantity of 2 conduit entrances; 1/4" - 1/2" NPT
Screw Terminals for 10-26 AWG

Weight
2.7 lb. (1.2 kg)

Dimensions
See Installation Drawing

FUNCTIONAL SPECIFICATIONS

Update Rate
150 ms

Input/Output Isolation
250 Vac/800 Vdc

Humidity
5 to 100% RH

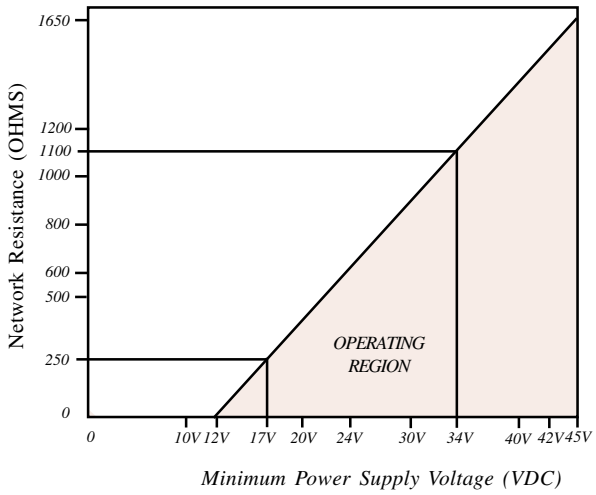
Damping
Adjustable from 0 to 32 seconds

Fail-safe Current
User-selectable between low (3.6mA), high (23mA) or off.

Power Supply
12-42 Vdc

Hazardous Area Classification /Approvals
FM/CSA (pending)
Intrinsically Safe:
Class I, Division 1, Groups A, B, C & D
Class II, Division 1, Groups E, F & G
Class III, Division 1
Explosion Proof:
Class I, Division 1, Groups B, C & D
Class II, Division 1, Groups E, F & G
Class III, Division 1
Non-Incendive:
Class I, Division 2, Groups A, B, C & D

For other approvals please consult MycroSENSOR Technologies.



Specifications are subject to change without notice.

Table 1 Input Sensor Types & Accuracy

SENSOR INPUT	INPUT RANGE °C	INPUT RANGE °F	ACCURACY[1]
RTD - 2,3,4-Wire			
100Ω Pt DIN α = 0.00385	-200 to 850	-328 to 1562	±0.14 °C
100 Pt SAMA α = 0.003902	-200 to 650	-328 to 1202	±0.14 °C
120Ω Ni	-80 to 320	-112 to 608	±0.14 °C
100Ω Ni	-60 to 250	-76 to 482	±0.14 °C
10Ω Cu	-70 to 150	-94 to 302	±0.14 °C
Thermocouples			
Type B NBS	43 to 1800	109 to 3272	±0.8 °C (1.5 °F)
Type C NBS	0 to 2320	32 to 4208	±0.8 °C (1.5 °F)
Type E NBS	-270 to 1000	-454 to 1832	±0.3 °C (0.5 °F)
Type J NBS	-210 to 1200	-346 to 2192	±0.3 °C (0.5 °F)
Type K NBS	-270 to 1372	-454 to 2502	±0.3 °C (0.5 °F)
Type L NBS	-200 to 900	-328 to 1652	±0.3 °C (0.5 °F)
Type N NBS	270 to 1300	518 to 2372	±0.3 °C (0.5 °F)
Type R NBS	50 to 1768	122 to 3214	±0.8 °C (1.5 °F)
Type S NBS	-50 to 1768	-58 to 3214	±0.8 °C (1.5 °F)
Type T NBS	-270 to 400	-454 to 752	±0.3 °C (0.5 °F)
Type U NBS	-200 to 600	-328 to 1112	±0.8 °C (1.5 °F)
Millivolt			
mV	-15 to 115 mV		±0.01 mV
Ohm Input			
ohm	0 to 500Ω	–	0.06Ω

NOTE:

(1) Accuracy includes the effects of linearity, repeatability, hysteresis and ambient temperature.

MODEL NUMBER

343D **DIN Rail Transmitter**
343F **Field-Mount Transmitter**

Output
A 4-20 mA, Smart Transmitter w/HART Protocol

Local Indicator
N Not Required
1 LCD Display[1]
5 SmartDisplay[2]

Standard Options
N None
Y Special Features (Please Describe)

Mounting Bracket
N Not Required
1 2" Pipe Mount w/SS Hardware[3]
2 Universal Mount w/SS Hardware[3]
3 2" Pipe Mount all SS[3]
5 DIN-Rail Clip[4]

Housing
N Not Required[4]
1 Aluminum 1/2" NPT[3]
2 Aluminum M20 x 1.5[3]

Hazardous Area Approvals
3 FM/CSA & ABS[5] Type Approved

343F A N N 1 1 3 ***Sample Model Number***

NOTES:

(1) No indication of engineering units.

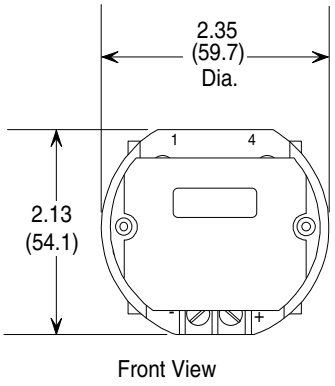
(2) Indicates engineering units & includes pushbuttons for local operation.

(3) Model 343F Only.

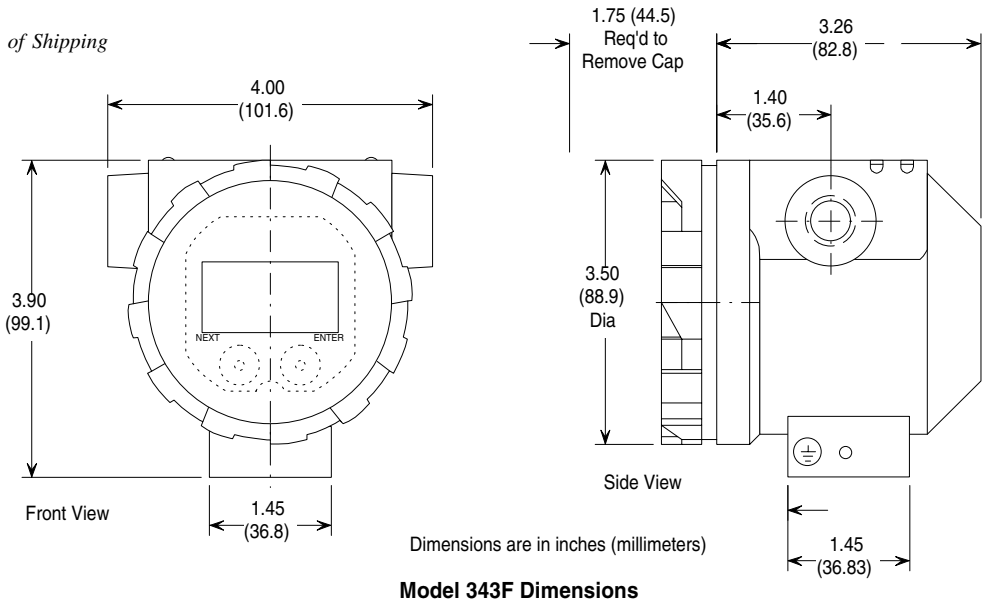
(4) Model 343D Only .

(5) ABS - American Bureau of Shipping

INSTALLATION DRAWINGS



Model 343D Dimensions
(Shown with LCD Display Module)



Model 343F Dimensions

THERMAL ELEMENTS

TEMPERATURE SENSOR DESCRIPTION

Temperature sensors are used in the process industry to measure process fluid as required. Selecting an appropriate temperature sensor assembly involves several factors including process pressure, temperature, corrosiveness, pipe or vessel size, and flow velocity.

MycroSENSOR 344T thermocouple and RTD assemblies consist of four basic components: a connection head, an extension, a sensing element, and a thermowell.

Various connection heads are available to provide protection from weather and corrosion. Explosion proof heads are also available.

The standard extension length is six inches. It is comprised of several components. A spring loaded SS fitting is used to ensure thermal contact between the element and well. A union is used to connect the SS fitting to a 1/2" pipe nipple that threads into a standard bar stock thermowell. If a metal protection tube is used, the nipple is omitted from the extension, reducing its length to three inches. The extension is available in standard iron and steel components or the optional SS components.

All 344T sensing elements are 1/4" in diameter and made from 304 SS. In the case of thermocouples, the measuring junction is ungrounded to ensure electrical isolation from the process and the elements are MGO insulated. Both simplex and duplex elements are available.

Thermowells prevent the thermal sensing element from being damaged by the process conditions (corrosive, high velocity flows, etc.). Materials of construction include 304 SS, Hastelloy-C276 and Monel, with 316SS being the standard. Process connections are available as threaded, flanged, weld-in, or sanitary.

TEMPERATURE SENSOR SPECIFICATIONS

Accuracy
Table 6 shows the standard calibration tolerance for these elements. High tolerance sensors are also available. Consult your local MycroSENSOR representative for more information.

Temperature Limits[1]
900ºF for all sensors

Dimensions
See installation drawings (Page155)

Electrical Connection
With Connection Head
Epoxy Coated, Cast Aluminum NEMA 4X (standard)
(1) 3/4" NPT Electrical Conduit Entrance
(1/2" NPT optional)
Without Connection Head
9" Teflon Insulated Leadwires with Spade Lugs

Process Connections
Threaded, Flanged, Weld-In and Sanitary Versions Available

Process Wetted Parts
Various Materials Available

TABLE 6 Thermal Element Calibration Tolerance

Sensor Type	Sensor Range ºF	Sensor Range (ºC)	Calibration Tolerance[2] ºF	Calibration Tolerance[2] (ºC)	Materials Of Construction
J	32 to 1400	(0 to 760)	± 4.0ºF	(2.22)	Iron, Constantan
K	32 to 2300	(0 to 1260)	± 4.0ºF	(2.22)	Chromel, Alumel
T	32 to 700	(0 to 682)	± 1.8ºF	(1.00)	Copper, Constantan
E	32 to 1600	(0 to 871)	± 3.0ºF	(1.67)	Chromel, Constantan
R	32 to 2700	(0 to 1482)	± 2.7ºF	(1.50)	10% Platinum/Rhodium, Platinum
S	32 to 2300	(0 to 1482)	± 2.7ºF	(1.50)	13% Platinum/Rhodium, Platinum
N	32 to 2300	(0 to 1260)	± 4.0ºF	(2.22)	Nicrosil, Nisil
B	1600 to 3100	(871 to 1704)	± 3.0ºF	(1.67)	30% Pt/Rhodium, Pt/Rhodium
RTD	-58 to 932	(-50 to 500)	± 0.1 Ohms @ 32ºF		100 Ohms Pt, Alpha = 0.00385 Ohms/ºC

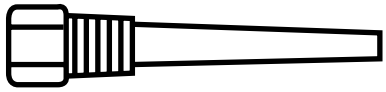
NOTES:

(1) The temperature sensor limits are a combined function of the element type, sheath material and leadwire temperature rating.

(2) All elements are standard tolerance elements. High tolerance elements available upon request. Consult MycroSENSOR for more information.

TEMPERATURE SENSORS

MycroSENSOR 344T1 Threaded Bar Stock Thermowell Assembly



This is the most popular thermowell assembly. Tapered and straight wells are designed to provide maximum operating life, while faster response times are provided by stepdown wells. 3/4" & 1" NPT process connections are available in various materials.

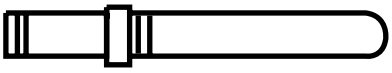
MycroSENSOR 344T2 Flanged Bar Stock Thermowell Assembly

Similar to a threaded bar stock assembly, the MycroSENSOR 344T2 offers straight, tapered, and stepdown well construction with a flanged process connection. Flange sizes from 1" through 4" are available in various materials.

MycroSENSOR 344T3 Socket or Weld-In Thermowell Assembly

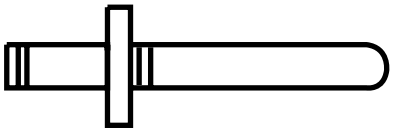
This assembly is often used in high temperature, high pressure service, such as steam measurement. The well is welded into the process forming a leakproof connection. Thermowells are available in 1.05", 1.315", and 1.5" OD for welding into the process.

MycroSENSOR 344T4 Threaded Pipe Thermowell Assembly



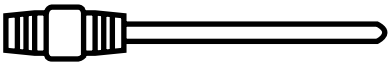
These thermowells are also known as metal protection tubes. In a low pressure, low velocity process environment, this lower cost alternative to bar stock assemblies is attractive. The process connection is a threaded bushing welded to the pipe at the desired location. Process connections are available from 1/2" to 1-1/2" NPT. Schedule 40 pipe is standard.

MycroSENSOR 344T5 Flanged Pipe Thermowell Assembly



These thermowells are also known as metal protection tubes. The MycroSENSOR 344T5 is similar to a threaded pipe well assembly, but it has a flanged connection. Flange sizes from 1" through 4" are available. Schedule 40 pipe is standard.

MycroSENSOR 344T6 Industrial Assembly



This cost-effective sensor is used where a thermowell is not required. A secure, leakproof connection is formed by welding the element to a double-ended bushing. This bushing provides a 1/2" NPT process connection and must be attached to a connection head.

MycroSENSOR 344T7 Sanitary Thermowell Assembly

A polished sanitary fitting is used in industries where products for human consumption are manufactured, such as food, dairy, and pharmaceutical. These fittings meet 3A sanitary standards. Each sanitary assembly is supplied with all 316SS fittings and an FDA approved white polypropylene connection head.

MycroSENSOR 344T8 Sanitary Assembly

A polished sanitary fitting is used in industries where products for human consumption are manufactured, such as food, dairy, and pharmaceutical. These fittings meet 3A sanitary standards. Each sanitary assembly is supplied with all 316SS fittings and an FDA approved white polypropylene connection head. The MycroSENSOR 344T8 is essentially the MycroSENSOR 344T7 without the thermowell.

MycroSENSOR 344T9 Replacement Assembly

These assemblies are for use as replacement assemblies for MycroSENSOR 344T1-344T5 assemblies when a thermowell already exists in the process. MycroSENSOR 344T9 assemblies may be used as replacements for 344 assemblies, or thermowells supplied by other vendors as long as the thermowell dimensions are known. MycroSENSOR 344T9 assemblies are not designed to be used **without** a thermowell.

MODEL NUMBER

Threaded Bar Stock Thermowell Assembly

344T1 **Threaded Bar Stock Thermowell Assembly**

Extension (Length = 6")

- 4 SS Fitting-CI Union-CS Nipple [1]
- 8 SS Fitting-SS Union-SS Nipple

Head Type

- A Cast Iron
- C Cast Aluminum
- L Polypropylene
- S 316SS
- X Explosion Proof (CI Body, Cast Alum Cap)
- N Not Required (9" Leads with Lugs)

Electrical Conduit Connection

- 1 1/2" NPT
- 2 3/4" NPT
- N None (HEAD TYPE "N" ONLY)

Element Construction[3]

- AS Simplex Thermocouple
- AD Duplex Thermocouple
- RS Single 3-Wire RTD
- RD Dual 6-Wire RTD

Element Calibration

J	Type J	S	Type S
K	Type K	R	Type R
T	Type T	B	Type B
E	Type E	N	Type N
Q	100 Ohm Pt RTD DIN (Alpha=0.00385)		

Threaded Bar Stock Well Assembly

- 1 3/4" NPT, Stepdown
- 2 3/4" NPT, Tapered
- 3 3/4" NPT, Straight
- 4 1" NPT, Stepdown
- 5 1" NPT, Tapered
- 6 1" NPT, Straight

Well Material

10	304SS	17	Monel
12	316SS	18	Hastelloy-C
15	CS	19	Hastelloy-B

Total Well Length "T"[4]

___ Specify in Inches (Typically U+1.75")

Immersion Length "U"

___ Specify in Inches (Minimum 2.5")

344T1 4 C 1 RS Q 1 12 7.75 6
Sample Model Number

See notes on page F-12.

Flanged Bar Stock Thermowell Assembly

344T2 **Flanged Bar Stock Thermowell Assembly**

Extension (Length = 6")

- 4 SS Fitting-CI Union-CS Nipple[1]
- 8 SS Fitting-SS Union-SS Nipple

Head Type

- A Cast Iron
- C Cast Aluminum
- L Polypropylene
- S 316SS
- X Explosion Proof (CI Body, Cast Aluminum Cap)
- N Not Required (9" Leads with Lugs)[2]

Electrical Conduit Connection

- 1 1/2" NPT
- 2 3/4" NPT
- N None (HEAD TYPE "N" ONLY)

Element Construction[3]

- AS Simplex Thermocouple
- AD Duplex Thermocouple
- RS Single 3-Wire RTD
- RD Dual 6-Wire RTD

Element Calibration

J	Type J	S	Type S
K	Type K	R	Type R
T	Type T	B	Type B
E	Type E	N	Type N
Q	100 Ohm Pt RTD DIN (Alpha=0.00385)		

Flanged Bar Stock Well Assembly

- 1 Straight
- 2 Tapered
- 3 Stepdown

Well Material

10	304SS	17	Monel
12	316SS	18	Hastelloy-C
15	CS	19	Hastelloy-B

Flange Size & Rating[5]

A	1" 150#	J	2" 600#
B	1" 300#	K	3" 150#
C	1" 600#	L	3" 300#
D	1 1/2" 150#	N	3" 600#
E	1 1/2" 300#	P	4" 150#
F	1 1/2" 600#	S	4" 300#
G	2" 150#	T	4" 600#
H	2" 300#		

Total Well Length "T"[6]

___ Specify in Inches (Typically U+2.25")

Immersion Length "U"

___ Specify in Inches (Minimum 2.5")

344T2 4 C 1 RS Q 3 12 D 8.25 6
Sample Model Number

Weld-In Bar Stock Thermowell Assembly

344T3 **Socket & Weld-In Bar Stock Thermowell Assemby**
Extension (Length = 6")
4 SS Fitting-CI Union-CS Nipple[1]
8 SS Fitting-SS Union-SS Nipple
Head Type
A Cast Iron
C Cast Aluminum
L Polypropylene
S 316SS
X Explosion Proof (CI Body, Cast Alum Cap)
N Not Required (9" Leads with Lugs)[2]
Electrical Conduit Connection
1 1/2" NPT
2 3/4" NPT
N None (HEAD TYPE "N" ONLY)
Element Construction[3]
AS Simplex Thermocouple
A Duplex Thermocouple
RS Single 3-Wire RTD
RD Dual 6-Wire RTD
Element Calibration
J Type J S Type S
K Type K R Type R
T Type T B Type B
E Type E N Type N
Q 100 Ohm Pt RTD DIN (Alpha=0.00385)
Socket/Weld Bar Stock Well Assembly
1 3/4" Socket
2 1" Socket
3 1.50" Weld-In
4 1.315" Weld-In
Well Material
10 304SS 17 Monel
12 316SS 18 Hastelloy-C
15 CS 19 Hastelloy-B
Total Well Length "T"[7]
___ Specify in Inches (Typically U+1.75")
Immersion Length "U"
___ Specify in Inches (Minimum 2.5")

344T3 4 C 1 RS Q 1 12 7.75 6
Sample Model Number

Threaded Pipe Thermowell Assembly

344T4 **Threaded Pipe Well Thermowell Assemby**
(Metal Protection Tubes)
Extension (Length = 3")
3 SS Fitting-CI Union[1]
6 SS Fitting-SS Union
Head Type
A Cast Iron
C Cast Aluminum
L Polypropylene
S 316SS
X Explosion Proof (CI Body, Cast Alum Cap)
N Not Required (9" Leads with Lugs)[2]
Electrical Conduit Connection
1 1/2" NPT
2 3/4" NPT
N None (HEAD TYPE "N" ONLY)
Element Construction[3]
AS Simplex Thermocouple
AD Duplex Thermocouple
RS Single 3-Wire RTD
RD Dual 6-Wire RTD
Element Calibration
J Type J S Type S
K Type K R Type R
T Type T B Type B
E Type E N Type N
Q 100 Ohm Pt RTD DIN (Alpha=0.00385)
Threaded Pipewell Assembly[8]
A 1/2" NPT, 1/4" IPS
B 3/4" NPT, 1/4" IPS
C 1" NPT, 1/4" IPS
D 3/4" NPT, 1/2" IPS
E 1" NPT, 1/2" IPS
F 1 1/4" NPT, 1/2" IPS
G 1" NPT, 3/4" IPS
H 1 1/4" NPT, 3/4" IPS
I 1 1/2" NPT, 3/4" IPS
J 1 1/4" NPT, 3/4" IPS
K 1 1/2" NPT
Well Material
10 304SS 17 Monel
12 316SS 18 Hastelloy-C
15 CS 19 Hastelloy-B
Total Well Length "T"
___ Specify in Inches (Typically U+1.75")
Immersion Length "U"
___ Specify in Inches (Minimum 2.5")

344T4 3 1 RS Q A 15 8.25 6
Sample Model Number

See notes on page F-12.

Flanged Pipe Thermowell Assembly

344T5 **Flanged Pipe Well Thermowell Assembly**
(Metal Protection Tubes)
Extension (Length = 3")
3 SS Fitting-CI Union[1]
6 SS Fitting-SS Union
Head Type
A Cast Iron
C Cast Aluminum
L Polypropylene
S 316SS
X Explosion Proof (CI Body, Cast Alum Cap)
N Not Required (9" Leads with Lugs)[2]
Electrical Conduit Connection
1 1/2" NPT
2 3/4" NPT
N None (HEAD TYPE "N" ONLY)
Element Construction[3]
S Simplex Thermocouple
AD Duplex Thermocouple
RS Single 3-Wire RTD
RD Dual 6-Wire RTD
Element Calibration
J Type J S Type S
K Type K R Type R
T Type T B Type B
E Type E N T N
Q 100 Ohm Pt RTD DIN (Alpha=0.00385)
Flanged Pipe Well Assembly[8]
A 1/4" IPS C 3/4" IPS
B 1/2" IPS D 1" IPS
Well Material
10 304SS 17 Monel
12 316SS 18 Hastelloy-C
15 CS 19 Hastelloy-B
Flange Size & Rating[5]
A 1" 150# J 2" 600#
B 1" 300# K 3" 150#
C 1" 600# L 3" 300#
D 1 1/2" 150# N 3" 600#
E 1 1/2" 300# P 4" 150#
F 1 1/2" 600# S 4" 300#
G 2" 150# T 4" 600#
H 2" 300#
Total Well Length "T"[6]
___ Specify in Inches
(Typically U+2.25")
Immersion Length "U"
___ Specify in Inches
(Minimum 2.5")

344T5 3 C 1 RS Q A 15 D 8.25 6
Sample Model Number

See notes on page F-12.

Industrial Assembly

344T6 **Industrial Assembly**
Extension
N No Extension
Head Type
A Cast Iron
C Cast Aluminum
L Polypropylene
S 316SS
X Explosion Proof (CI Body, Cast
N Not Required (9" Leads with Lugs)[2]
Electrical Conduit Connection
1 1/2" NPT
2 3/4" NPT
N None (HEAD TYPE "N" ONLY)
Element Construction[3]
AS Simplex Thermocouple
AD Duplex Thermocouple
RS Single 3-Wire RTD
RD Dual 6-Wire RTD
Element Calibration
J Type J S Type S
K Type K R Type R
T Type T B Type B
E Type E N Type
Q 100 Ohm Pt RTD DIN
(Alpha=0.00385)
Element Size[9]
1 1/8" O.D.
2 3/16" O.D.
3 1/4" O.D.
Sheath Material
10 304SS
12 316SS
Immersion Length "U"[10]
___ Specify in Inches
(Minimum 2.5")

344T6 4 C 1 RS Q 3 12 6
Sample Model Number

Sanitary Thermowell Assembly

344T7 **Sanitary Well Thermowell Assembly**
Extension (Length = 3")
1 SS Nipple
Head Type
F FDA Approved White Polypropylene
Electrical Conduit Connection
1
2 3/4" NPT
Element Construction[3]
AS Simplex Thermocouple
RS Single 3-Wire RTD
Element Calibration
J Type J
K Type K
T Type T
E Type E
Q 100 Ohm Pt RTD DIN (Alpha=0.00385)
Sanitary Cap Size[11]
A 1"
B 1 1/2"
C 2"
D 2 1/2"
E 3"
F 4"
Y Other, please specify
Immersion Length "U"
___ Specify in Inches (Minimum 2.5")

344T7 1 F 1 RS Q B 4
Sample Model Number

See notes on page F-12.

Sanitary Assembly

344T8 **SanitaryAssembly**
Extension (Length = 3")
1 SS Nipple
Head Type
F FDA Approved White Polypropylene
Electrical Conduit Connection
1 1/2" NPT
2 3/4" NPT
Element Construction[3]
AS Simplex Thermocouple
RS Single 3-Wire RTD
Element Calibration
J Type J
K Type K
T Type T
E T
Q 100 Ohm Pt RTD DIN (Alpha=0.00385)
Sanitary Capsize[11]
A 1"
B 1 1/2"
C 2"
D 2 1/2"
E 3"
F 4"
Y Other, please specify
Immersion Length "U"
___ Specify in Inches (Minimum 2.5")

344T8 1 F 1 RS Q B 4
Sample Model Number

Replacement Assembly

344T9 **Replacement Assembly**
(For use with existing thermowells)
Extension (Select per existing well)
3 SS Fitting-CS Union (A=3")
4 SS Fitting-CI Union-CS Nipple (A=6")
6 SS Fitting-SS Union (A=3")
SS Fitting-SS Union-SS Nipple (A=6")
Head Type
A Cast Iron
C Cast Aluminum
L Polypropylene
S 316SS
X Explosion Proof (CI Body, Cast Alum Cap)
N Not Required (9" Leads with Lugs)[2]
Electrical Conduit Connection
1 1/2" NPT
2 3/4" NPT
N None (HEAD TYPE "N" ONLY)
Element Construction
AS Simplex Thermocouple
AD Duplex Thermocouple
RS Single 3-Wire RTD
RD Dual 6-Wire RTD
Element Calibration
J Type J S Type S
K Type K R Type R
T Type T B Type B
E Type E N Type N
Q 100 Ohm Pt RTD DIN (Alpha=0.00385)
Well Assembly
N None
Well Material
N None
Total Well Length "T"[12]
___ Specify in Inches
Immersion Length "U"[10]
___ Specify in Inches

344T9 4 C 1 RS Q N N 7.75 6 ***Sample Model Number***

NOTES:

(1) The SS fitting provides spring loading to assure good thermal contact between the element and well.

(2) The extension is designed to be connected directly to a MycroSENSOR 343 Temperature Transmitter.

(3) All elements are 1/4" in diameter with a 304SS sheath. T/C have an ungrounded measuring junction.

(4) The total well length "T" is computed as: T=U+1.75+Lagging Length "F".

(5) Flange material will match that of the well. All flanges are RF unless otherwise specified.

(6) The total well length "T" is computed as: T=U+2.25+Lagging Length "F" (typically 0").

(7) The total well length "T" is computed as: T=U+1.75+Lagging Length "F" (typically 0").

(8) The pipe schedule is 40.

(9) The process connector is a 1/2" NPT fitting brazed to the sheath.

(10) The immersion length equals the total length.

(11) The sanitary cap style is the Triclover/Cherry-Burrell 16AMP. Other styles are available. The thermowell for this assembly is a 1/2" O.D. polished 316 SS well.

(12) The total well length "T" is computed as: T=U+1.75 or 2.25 (depends on well type)+Lagging Length "F" (typically 0").

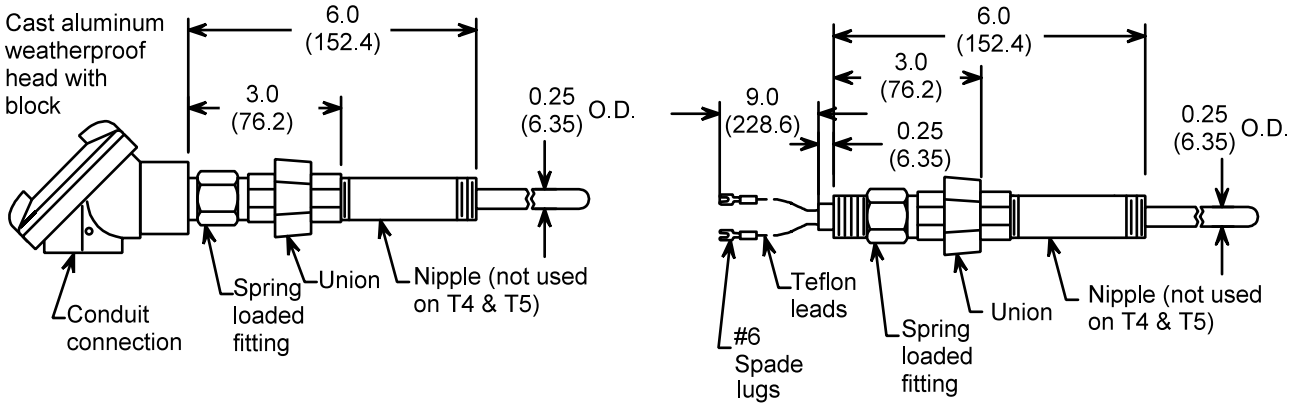


Figure 7 MycroSENSOR 344T Temperature Thermowell Assemblies
(See Page 164 for Thermowells)

TABLE 7 Thermowell Dimensions

Thermal Assembly	Well Type	Process Connection	Q (inches)
344T1	Tapered	3/4" NPT	0.875
		1" NPT	1.0625
	Stepped	3/4" NPT	0.750[1]
		1" NPT	0.875[2]
	Straight	3/4" NPT	0.750[1]
		1" NPT	0.875[2]
344T2	Tapered	Flanged	1.0625
	Stepped	Flanged	0.750
	Straight	Flanged	0.750
344T3	Socket Weld (Stepped)	3/4" Pipe (1.05" OD)	0.750
		1" Pipe (1.315" OD)	0.875
	Weld-In (Tapered)	1.5" OD	1.500
		1.315" OD	1.315
344T4	Threaded Pipe Well	1/2" - 1 1/2" NPT	Schedule 40 Pipe
344T5	Flanged Pipe Well	1/2" NPT	Schedule 40 Pipe
344T7 or 344T8	Sanitary	Consult Moore	
344T9	None	Fits into any thermowell[3]	NA

NOTES:

(1) For U <= 2.5" Q is 0.500".

(2) For U <= 2.5"Q is 0.750".

(3) Not for use with Models 344T6, 344T7, or 344T8.

THERMAL ELEMENTS

TEMPERATURE SENSOR DESCRIPTION

Temperature sensors are used in the process industry to measure process fluid as required. Selecting an appropriate temperature sensor assembly involves several factors, including process pressure, temperature, corrosiveness, pipe or vessel size, and flow velocity.

MycroSENSOR 344T thermocouple and RTD assemblies consist of four basic components: a connection head, an extension, a sensing element, and a thermowell.

Various connection heads are available to provide protection from weather and corrosion. Explosion proof heads are also available.

The standard extension length is six inches. It is comprised of several components. A spring loaded SS fitting is used to ensure thermal contact between the element and well. A union is used to connect the SS fitting to a 1/2" pipe nipple that threads into a standard bar stock thermowell. If a metal protection tube is used, the nipple is omitted from the extension, reducing its length to three inches. The extension is available in standard iron and steel components or the optional SS components.

All 344T sensing elements are 1/4" in diameter and made from 304 SS. In the case of thermocouples, the measuring junction is ungrounded to ensure electrical isolation from the process and the elements are MGO insulated. Both simplex and duplex elements are available.

Thermowells prevent the thermal sensing element from being damaged by the process conditions (corrosive, high velocity flows, etc.). Materials of construction include 304 SS, Hastelloy-C276 and Monel, with 316SS being the standard. Process connections are available as threaded, flanged, weld-in, or sanitary.

TEMPERATURE SENSOR SPECIFICATIONS

Accuracy
Table 6 shows the standard calibration tolerance for these elements. High tolerance sensors are also available. Consult your local MycroSENSOR representative for more information.

Temperature Limits[1]
900ºF for all sensors

Dimensions
See installation drawings (Page F-13)

Electrical Connection
With Connection Head
Epoxy Coated, Cast Aluminum NEMA 4X (standard)
(1) 3/4" NPT Electrical Conduit Entrance
(1/2" NPT optional)
Without Connection Head
9" Teflon Insulated Leadwires with Spade Lugs

Process Connections
Threaded, Flanged, Weld-In and Sanitary Versions Available

Process Wetted Parts
Various Materials Available

TABLE 6 Thermal Element Calibration Tolerance

Sensor Type	Sensor Range ºF	Sensor Range (ºC)	Calibration Tolerance[2] ºF	Calibration Tolerance[2] (ºC)	Materials Of Construction
J	32 to 1400	(0 to 760)	± 4.0ºF	(2.22)	Iron, Constantan
K	32 to 2300	(0 to 1260)	± 4.0ºF	(2.22)	Chromel, Alumel
T	32 to 700	(0 to 682)	± 1.8ºF	(1.00)	Copper, Constantan
E	32 to 1600	(0 to 871)	± 3.0ºF	(1.67)	Chromel, Constantan
R	32 to 2700	(0 to 1482)	± 2.7ºF	(1.50)	10% Platinum/Rhodium, Platinum
S	32 to 2300	(0 to 1482)	± 2.7ºF	(1.50)	13% Platinum/Rhodium, Platinum
N	32 to 2300	(0 to 1260)	± 4.0ºF	(2.22)	Nisil
B	1600 to 3100	(871 to 1704)	± 3.0ºF	(1.67)	30% Pt/Rhodium, 6% Pt/Rhodium
RTD	-58 to 932	(-50 to 500)	± 0.1 Ohms @ 32ºF		100 Ohms Pt, Alpha = 0.00385 Ohms/ºC

NOTES:

(1) The temperature sensor limits are a combined function of the element type, sheath material and leadwire temperature rating.

(2) All elements are standard tolerance elements. High tolerance elements available upon request. Consult MycroSENSOR for more information.