

IMMERSION

Stainless Steel Immersion, Platinum RTD

The ACI Platinum Immersion Series features a stainless steel probe with Etched Teflon colored lead wires to differentiate the different sensor types. The three-wire “-3W” option should be ordered when using with a 3-Wire temperature transmitter or sensor configuration on your building management system or PLC (Programmable Logic Controller). The purpose of the 3rd wire is to compensate for external lead wire resistance that affects the sensor output. ACI recommends the use of 18 AWG lead wires to reduce the external lead wire resistance when using a Platinum RTD. The sensors in this series are manufactured using ACI’s proven double encapsulation process to eliminate the effects of moisture upon the sensors and to increase thermal response times using our high quality, thermally conductive epoxy. The immersion sensors “-I” include a welded thermowell but can be ordered without the thermowell “-INW” version. The “-INW” includes a standard ½” NPS process thread to be used with an optional machined thermowell or an existing

thermowell application. Optional NEMA/IP rated weather proof enclosures and NIST Certificates are available as referenced on the back of the product data sheet.

Applications: Chilled Water Systems, Hot Water Systems, Boilers, Pumps, Compressors, Chillers, Cooling Towers

The ACI Platinum Immersion Series is covered by ACI’s Five (5) Year Limited Warranty. The warranty can be found in the front of ACI’s Sensors & Transmitters catalog, as well as on ACI’s web site, workaci.com.

Disclaimer: Specification of any thermowell and the materials of construction are the sole responsibility of the designer of the system that incorporates the thermowell. Sole responsibility for ensuring compatibility of the process fluid with the system rests with the end user.

PRODUCT SPECIFICATIONS

Sensor Type Sensor Curve:	Platinum RTD PTC (Positive Temperature Coefficient)
Number Sensing Points:	One
Number Wires:	A/100-2W-I Series and A/1K-2W-I Series: Two (Non-Polarity Sensitive) A/100-3W-I Series and A/1K-3W-I Series: Three (Polarity Sensitive)
Sensor Output @ 0°C (32°F):	A/100-xW-I Series: 100 Ohms nominal A/1K-xW-I Series: 1000 Ohms nominal +/- 0.06% Class A (Tolerance Formula: +/- °C = (0.15°C + (0.002 * t))) where t is the absolute value of Temperature above or below 0°C in °C
Sensor Accuracy 0°C (32°F):	-40°C (-40°F): +/- 0.23°C (+/- 0.414°F) 0°C (32°F): +/- 0.15°C (+/- 0.27°F) 200°C (392°F): +/- 0.55°C (+/- 1.00°F)
Din Standard Temperature Coefficient:	DIN EN 60751 (IEC 751) 3850 ppm / °C
Sensor Stability:	+/- 0.03% after 1000 Hours @ 300°C (572°F)
Response Time (63% Step Change):	8 Seconds nominal
Self-Heating Maximum Operating Current:	100 Ohm RTD: 7 mW/°C (Still Air) 5 mA 1K Ohm RTD: 4 mW/°C (Still Air) 3 mA
Sensor Operating Temperature Range:	-40 to 200°C (-40 to 392°F)
Enclosure Specifications (Temperature, Flammability, NEMA/IP Ratings):	"-GD" Enclosure: Galvanized Steel, -40°C to 121°C (-40°F to 250°F), NEMA 1 (IP10)
	"-PB" Enclosure: ABS Plastic, -30°C to 90°C (-22°F to 194°F), UL94-HB, Plenum Rated
	"-BB" Enclosure: Aluminum, -40°C to 121°C (-40°F to 250°F), Plenum Rated, NEMA 3R
	"-4X" Enclosure: Polystyrene Plastic, -40°C to 70°C (-40°F to 158°F), UL94-V2, NEMA 4X (IP 66)
Storage Temperature Range:	-40 to 85°C (-40 to 185°F)
Operating Humidity Range:	10 to 95% RH, non-condensing
Probe Diameter Thermowell Bore Diameter:	0.250" (6.35mm) 0.260"
Probe Material Thermowell Material:	304 Stainless Steel 304 Series Stainless Steel
Thermowell Instrument Process Thread Size:	½" NPS (National Pipe Straight) Female Thread ½" NPT (National Pipe Tapered) Male Thread
Fitting Material Flammability Rating:	Polyamide 66 (High Performance Nylon 66) UL94-HB
Foam Pad Material Flammability Rating:	Neoprene/EPDM/SBR Polymer UL94-HBF; FMVSS-302; MIL-R-6130C
Fitting Thread Size:	½" NPS (National Pipe Straight) Male Thread
Lead Length Conductor Size:	14" (35.6 cm) 22 AWG (0.65mm)
Lead Wire Insulation Wire Rating:	Etched Teflon (PTFE) Colored Leads Mil Spec 16878/4 Type E
Conductor Material:	Silver Plated Copper
Product Dimensions Product Weight:	See table on back of Product Data sheet
Agency Approvals:	CE, RoHS2, WEEE

TEMPERATURE | PLATINUM RTDS | IMMERSION

MAXIMUM VELOCITY VS THERMOWELL INSERTION LENGHT					MACHINED THERMOWELL				
Straight Shank Insertion Length "U"					Stepped Shank Insertion Length "U"				
Material:	Media Type:	1.0" (25.4 mm)	2.5" (63.5 mm)	8.0" (203.2 mm)	4.0" (101.6 mm)	6.0" (152.4 mm)	12.0" (304.8 mm)	18.0" (457.2 mm)	24" (609.6 mm)
304/316 SS	Air/Gas/Steam ¹	349 ft/s (106.3 m/s)	349 ft/s (106.3 m/s)	71.9 ft/s (21.9 m/s)	109 ft/s (33.2 m/s)	73.6 ft/s (22.4 m/s)	19.4 ft/s (5.9m/s)	8.8 ft/s (2.7m/s)	5.2 ft/s (1.6m/s)
304/316 SS	Water	360 ft/s (109.7 m/s)	360 ft/s (109.7 m/s)	71.9 ft/s (21.9 m/s)	82.2 ft/s (25.1 m/s)	26.9 ft/s (8.2 m/s)	11.3 ft/s (3.4m/s)	4.7 ft/s (1.43m/s)	2.5 ft/s (0.8m/s)

Note 1: Values are for Air/Gas/Steam and similar density media based upon Max pressure of 2900 PSI @ 1000°F (537.8°C) | **Note 2:** Values are for Water (No Glycol or other Chemicals factored in) @ 68 °F (20°C) and max pressure of 5700 PSI. (Calculated to ASME PTC 19.3 TW-2016 Code B31.1) | **Note 3:** 6-24" Machined Thermowells meet ASME PTC 19.3 TW-2016 Code B31.1.

MAXIMUM PRESSURE VS TEMPERATURE RATINGS				TWO-PART FABRICATED WELDED THERMOWELL			
Material:	70°F (21.1°C)	200°F (93.3°C)	400°F (204.4°C)	600°F (315.6°C)	800°F (426.7°C)	1000°F (537.8°C)	1200°F (648.9°C)
304/316 SS	982 PSI (67.7 Bar)	820 PSI (56.6 Bar)	675 PSI (46.5 Bar)	604 PSI (41.6 Bar)	550 PSI (37.9 Bar)	510 PSI (35.1 Bar)	290 PSI (20.0 Bar)

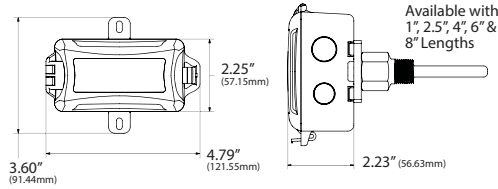
MAXIMUM FLUID VELOCITY RATINGS					TWO-PART FABRICATED WELDED THERMOWELL		
Straight Shank Insertion Length "U"							
Material:	Media Type:	2.5" (63.5 mm)	4.0" (101.6 mm)	6.0" (152.4 mm)			
304/316 SS	Air/Gas/Steam ²	169 ft/s (51.5 m/s)	61 ft/s (18.6 m/s)	20 ft/s (6.1 m/s)			
304/316 SS	Water	88 ft/s (26.8 m/s)	20 ft/s (6.1 m/s)	10 ft/s (3.05 m/s)			

Note 2: Values are for Air/Gas/Steam and similar density media

TEMPERATURE | PLATINUM RTDS | IMMERSION

DIMENSIONAL DRAWINGS, WEIGHTS

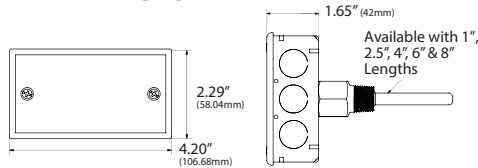
Plastic Box Enclosure [PB]



Plastic Box Enclosure [PB] Weights

ACI Model #	1.0"	2.5"	4.0"	6.0"	8.0"
A/xx-INW-yy-PB	0.20 lbs. (0.091 kg)	0.24 lbs. (0.109 kg)	0.28 lbs. (0.127 kg)	0.32 lbs. (0.145 kg)	0.36 lbs. (0.163 kg)
A/xx-I-yy-PB	N/A	0.24 lbs. (0.109 kg)	0.60 lbs. (0.272 kg)	0.64 lbs. (0.290 kg)	N/A
A/xx-IM-yy-PB	0.40 lbs. (0.182 kg)	0.58 lbs. (0.263 kg)	0.74 lbs. (0.336 kg)	0.92 lbs. (0.417 kg)	1.15 lbs. (0.522 kg)

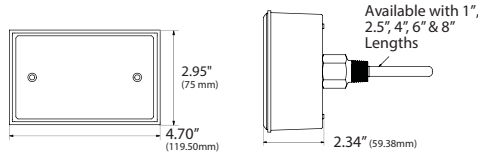
Galvanized Enclosure [GD]



Galvanized Enclosure [GD] Weights

ACI Model #	1.0"	2.5"	4.0"	6.0"	8.0"
A/xx-INW-yy-GD	0.62 lbs. (0.281 kg)	0.66 lbs. (0.299 kg)	0.70 lbs. (0.318 kg)	0.74 lbs. (0.336 kg)	0.78 lbs. (0.354 kg)
A/xx-I-yy-GD	N/A	0.88 lbs. (0.399 kg)	1.00 lbs. (0.454 kg)	1.04 lbs. (0.472 kg)	N/A
A/xx-IM-yy-GD	0.81 lbs. (0.367 kg)	1.00 lbs. (0.454 kg)	1.16 lbs. (0.526 kg)	1.32 lbs. (0.599 kg)	1.55 lbs. (0.703 kg)

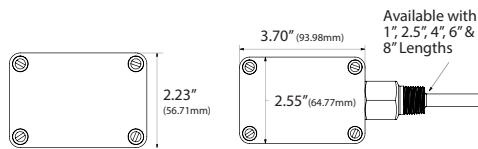
Bell Box Enclosure [BB]



Bell Box Enclosure [BB] Weights

ACI Model #	1.0"	2.5"	4.0"	6.0"	8.0"
A/xx-INW-yy-BB	0.64 lbs. (0.290 kg)	0.68 lbs. (0.308 kg)	0.70 lbs. (0.318 kg)	0.74 lbs. (0.336 kg)	0.80 lbs. (0.363 kg)
A/xx-I-yy-BB	N/A	1.02 lbs. (0.463 kg)	1.00 lbs. (0.454 kg)	1.04 lbs. (0.472 kg)	N/A
A/xx-IM-yy-BB	0.83 lbs. (0.376 kg)	1.02 lbs. (0.463 kg)	1.16 lbs. (0.526 kg)	1.32 lbs. (0.599 kg)	1.59 lbs. (0.721 kg)

NEMA 4X Enclosure [4X]

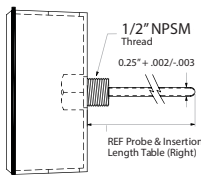


NEMA 4X Enclosure [4X] Weights

ACI Model #	1.0"	2.5"	4.0"	6.0"	8.0"
A/xx-INW-yy-4X	0.28 lbs. (0.127 kg)	0.32 lbs. (0.145 kg)	0.36 lbs. (0.163 kg)	0.40 lbs. (0.181 kg)	0.44 lbs. (0.200 kg)
A/xx-I-yy-4X	N/A	0.64 lbs. (0.290 kg)	0.68 lbs. (0.308 kg)	0.72 lbs. (0.327 kg)	N/A
A/xx-IM-yy-4X	0.48 lbs. (0.218 kg)	0.66 lbs. (0.299 kg)	0.82 lbs. (0.372 kg)	1.00 lbs. (0.454 kg)	1.27 lbs. (0.576 kg)

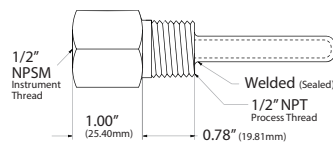
N/A = Not Available | xx = Sensor Type | yy = Insertion Length

PROBE AND INSERTION LENGTH IMMERSION NO WELL



Pictured Above: immersion no well (INW) sensor in Bell Box Enclosure (BB).

Pictured Below: welded two piece thermowell to show connection and depth reference. Thermowell not included with immersion no well (INW).



Probe & Insertion Length

Probe Length	Insertion Length	ACI Part #	Thermowell Part #
3"	2.81" +/- 0.13"	A/xx-INW-1"-yy-zz	A/M1"
4.5"	4.31" +/- 0.13"	A/xx-INW-2.5"-yy-zz	A/2.5" or A/M2.5"
6"	5.81" +/- 0.13"	A/xx-INW-4"-yy-zz	A/4" or A/M4"
8"	7.81" +/- 0.13"	A/xx-INW-6"-yy-zz	A/6" or A/M6"
10"	9.81" +/- 0.13"	A/xx-INW-8"-yy-zz	A/M8"
13"	12.75" +/- 0.13"	A/xx-INW-12"-yy-zz	A/M12"
19"	18.75" +/- 0.13"	A/xx-INW-18"-yy-zz	A/M18"
25"	24.75" +/- 0.13"	A/xx-INW-24"-yy-zz	A/M24"

TEMPERATURE | PLATINUM RTDS | IMMERSION

CUSTOM ORDERING WELDED THERMOWELL		Model # Example: <input type="text" value="A/"/> <input type="text" value="1K"/> <input type="text" value="2W"/> <input type="text" value="I"/> <input type="text" value="1"/> <input type="text" value="GD"/> <input type="text" value="NIST"/>	MODEL#
A. Sensor Series <i>No Selection Required</i>	A/ <input type="text"/>		A/
B. Model Series <i>Select One (1)</i>	100 = 100 Ohm Platinum RTD 1K = 1K Ohm Platinum RTD		
C. Number of Wires <i>Select One (1)</i>	2W = Two Wires 3W = Three Wires		
D. Configuration <i>Select One (1)</i>	I=Immersion with Welded Thermowell		
E. Insertion Length <i>Select One (1)</i>	2.5" = 2.5" Insertion 4" = 4" Insertion 6" = 6" Insertion		
F. Enclosure <i>Select One (1)</i>	GD=Galvanized PB=Plastic BB=Aluminum, NEMA 3R 4X=NEMA 4X		
G. NIST <i>Select One (1)</i>	---- = No NIST Certificate NIST= NIST Certificate (3 Points)		

CUSTOM ORDERING MACHINED THERMOWELL		Model # Example: <input type="text" value="A/"/> <input type="text" value="1K"/> <input type="text" value="2W"/> <input type="text" value="IM"/> <input type="text" value="1"/> <input type="text" value="GD"/> <input type="text" value="NIST"/>	MODEL#
A. Sensor Series <i>No Selection Required</i>	A/ <input type="text"/>		A/
B. Model Series <i>Select One (1)</i>	100 = 100 Ohm Platinum RTD 1K = 1K Ohm Platinum RTD		
C. Number of Wires <i>Select One (1)</i>	2W = Two Wires 3W = Three Wires		
D. Configuration <i>Select One (1)</i>	IM=Immersion with Machined Thermowell		
E. Insertion Length <i>Select One (1)</i>	1" = 1" Insertion 2.5" = 2.5" Insertion 4" = 4" Insertion 6" = 6" Insertion 8" = 8" Insertion		
F. Enclosure <i>Select One (1)</i>	GD=Galvanized PB=Plastic BB=Aluminum, NEMA 3R 4X=NEMA 4X		
G. NIST <i>Select One (1)</i>	---- = No NIST Certificate NIST= NIST Certificate (3 Points)		

Note: Machined Thermowells with lengths of 12", 18" and 24" are available and must be ordered separately | See the Machined Thermowells Data Sheet (Accessories)

CUSTOM ORDERING SENSOR ONLY NO THERMOWELL		Model # Example: <input type="text" value="A/"/> <input type="text" value="1K"/> <input type="text" value="2W"/> <input type="text" value="INW"/> <input type="text" value="1"/> <input type="text" value="GD"/> <input type="text" value="NIST"/>	MODEL#
A. Sensor Series <i>No Selection Required</i>	A/ <input type="text"/>		A/
B. Model Series <i>Select One (1)</i>	100 = 100 Ohm Platinum RTD 1K = 1K Ohm Platinum RTD		
C. Number of Wires <i>Select One (1)</i>	2W = Two Wires 3W = Three Wires		
D. Configuration <i>Select One (1)</i>	INW = Immersion without Thermowell		
E. Insertion Length <i>Select One (1)</i>	1" = 1" Insertion 2.5" = 2.5" Insertion 4" = 4" Insertion 6" = 6" Insertion 8" = 8" Insertion 12" = 12" Insertion 18" = 18" Insertion 24" = 24" Insertion		
F. Enclosure <i>Select One (1)</i>	GD=Galvanized PB=Plastic BB=Aluminum, NEMA 3R 4X=NEMA 4X		
G. NIST <i>Select One (1)</i>	---- = No NIST Certificate NIST= NIST Certificate (3 Points)		

ACCESSORIES ORDERING		Model # Example: <input type="text" value="NSG HEAT TRANSFER PASTRE 2 oz"/>	Or <input type="text" value="102595"/>
Model #	Item #	Description	
NSG Heat Transfer Paste 2 oz.	102595	Thermal Grease, 2 oz. Tube, Silicone Free, -40 to 320°F (-40 to 160°C)	
NSG Heat Transfer Paste 16 oz.	140574	Thermal Grease, 16 oz. Jar, Silicon Free, -40 to 390°F (-40 to 198°C)	
A/2.5"	128349	2.5" (63.5 mm) Insertion, 304 Stainless, Welded, 1/2" NPT Thermowell	
A/4"	128350	4" (101.6 mm) Insertion, 304 Stainless, Welded, 1/2" NPT Thermowell	
A/6"	128351	6" (152.4 mm) Insertion, 304 Stainless, Welded, 1/2" NPT Thermowell	
A/M1"	128337	1" (25.4 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M2.5"	128338	2.5" (63.5 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M4"	128343	4" (101.6 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M6"	128344	6" (152.4 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M8"	138725	8" (203.2 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M12"	128339	12" (304.80 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M18"	128341	18" (457.20 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M24"	128342	24" (609.6 mm) Insertion, 304 Stainless, Machined, 1/2" NPT Thermowell	
A/M2.5" - 316SS	128352	2.5" (63.5 mm) Insertion, 316 Stainless, Machined, 1/2" NPT Thermowell	
A/M4" - 316SS	128353	4" (101.6 mm) Insertion, 316 Stainless, Machined, 1/2" NPT Thermowell	
A/M6" - 316SS	128354	6" (152.4 mm) Insertion, 316 Stainless, Machined, 1/2" NPT Thermowell	