Sensata
Technologies

EXTREME TEMPERATURE SERIES (M24236/2)

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Extreme Temperature Protection Probe–Type Thermal Switches

Introduction

Klixon® 11041 (M1) extreme temperature probes are designed to provide reliable, consistent performance over a long cycle life in the harshest environments. These probes provide excellent shock and vibration resistance and have a wide operating temperature range or -65°F to +550°F. These characteristics enable protection or indication of extreme high or low temperatures in systems like aircraft hydraulic systems, aircraft refrigeration systems, constant speed drives, food processing equipment, and hydraulic systems for military equipment.

Features

- Hermetically Sealed (probe only)
- Snap-action switching
- Pre-set, non-adjustable calibration
- High resistance to shock and vibration
- Qualified to MIL-PRF-24236/2

PERFORMANCE CHARACTERISTICS

The standard 11041 (M1) utilizes silver contacts. Gold plated contacts can be furnished to assure reliable circuit switching under low wattage conditions. *(See table below.)*

Contact Ratings (Resistive)

Based on standard differential

30 VAC/DC	125 VAC	250 VAC	Life Cycles
5.0 Amperes	2.0 Amperes	1.0 Amperes	100,000
5.5 Amperes	3.0 Amperes	1.5 Amperes	50,000
6.0 Amperes	4.0 Amperes	2.0 Amperes	25,000
6.5 Amperes	5.0 Amperes	2.5 Amperes	10,000
7.0 Amperes	6.0 Amperes	3.0 Amperes	5,000

Gold Contact Ratings (Resistive)

Gold-plated contacts are not suitable for higher loads.

30 VAC/DC	500 mA and below
115 VAC	200 mA and below
230 VAC	100 mA and below

Characteristics

Contact Resistance	0.100 ohms per MIL-STD-202, Method 307 *Contact resistance shown is for the 11041 (M1) thermostat and does not include resistance of wire leads or connector.*
Dielectric Strength	1250 VAC, rms, 60 cycles for 1 minute, terminal to case 1000 VAC, 60 cycles for 1 minute, terminal to terminal with contacts open per MIL-STD-202, Method 301
Salt Spray Resistance	Per MIL-STD-202, Method 101, Condition B, 5% Solution
Ambient Temperature Range	-80°F to 550°F, (-62.2°C to 287.8°C) Maximum ambient exposure while in the closed position is 200°F above contact closing temperature.
Operating Temperature Range	-65°F to 550°F, (-53.9°C to 287.8°C)

Operating Temperature		**Differential**		**Tolerance**	
°F	**°C**	**°F**	**°C**	**±°F**	**±°C**
-65 to - 1	-53.9 to -18.4	30	16.7	12	6.7
0 to 200	-17.8 to 93.3	20	11.1	7	3.9
201 to 300	93.9 to 148.9	30	16.7	10	5.6
301 to 450	149.5 to 223.2	40	22.2	14	7.8
451 to 550	223.8 to 287.8	70	38.9	30	16.7

* Tolerances based on precision factory calibration and test equipment. Customers checking tolerances should allow for differences in test equipment of ±1°F. Temperature settings outside the ranges indicated or to closer tolerances will be considered on special request.

CONFIGURATIONS

Standard 11041 (M1) probe packages are comprised of the following physical features, but many other variants are available. The standard material is stainless steel, but nickel plated brass versions are available.

PLEASE NOTE: The orientation of the connector with respect to the package body is not controlled.

Configuration Options

Custom configurations are available

Probe Body Thread Sizes	Standard lengths are available in ½" increments from 1.5" to 6".
Termination	Standard connector is a Sealtron B8002G-10SL-4P-F (or equivalent)
	Standard wire leads are AWG #18 stranded wire with white or black Teflon* insulation (per MIL-W-22759) (Teflon is a trademark of E. I. Dupont de Namers and Co.)
Other	Other styles are available, as well as custom designs

Standard Part Numbers and Configurations

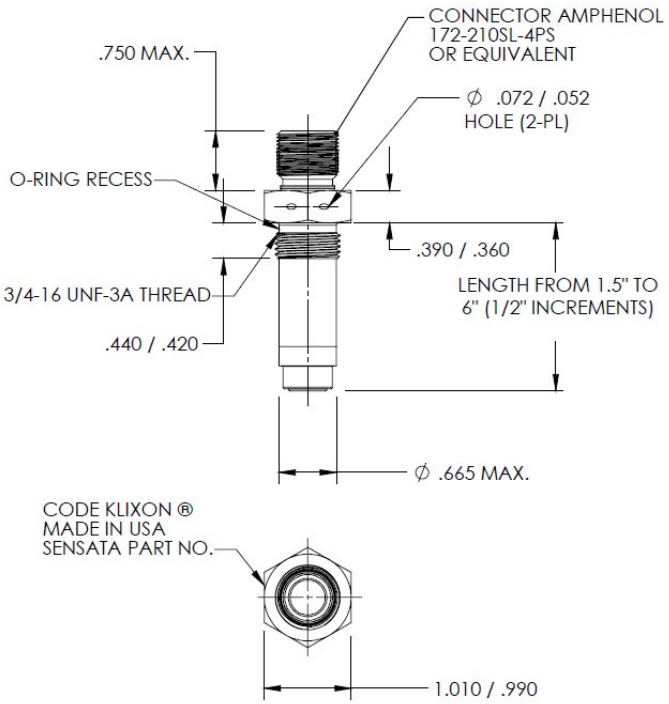
Many other styles are available, including SPDT.

21542	¾" - 16 thread/connector
21543	½" pipe thread/leads
21548	¾" - 16 thread/leads

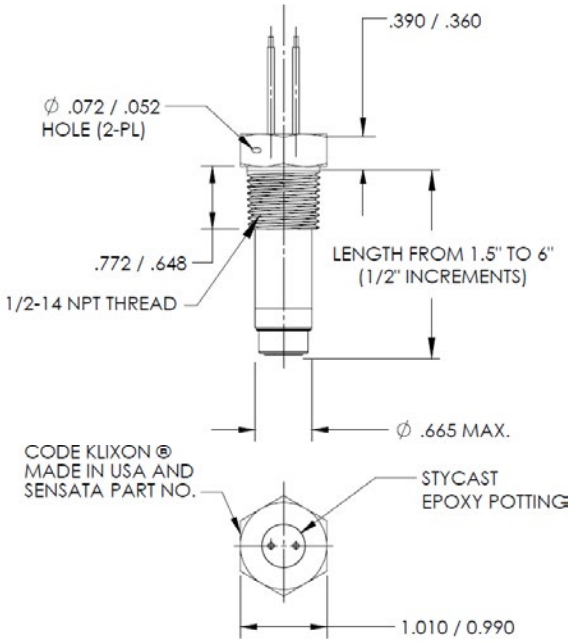
21549	½" pipe thread/connector
28303 (4344 thermostat)	½-14 PTF (SAE Short) Thread/brass body
28509 (4344 thermostat)	M30 x 3.5 thread / spring loaded body

DIMENSIONS

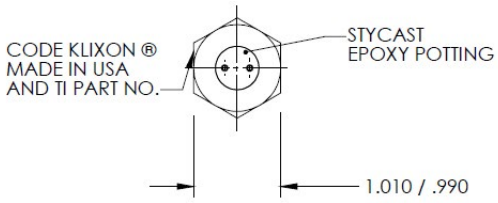
21542



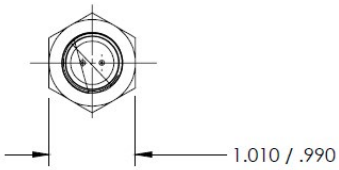
21543

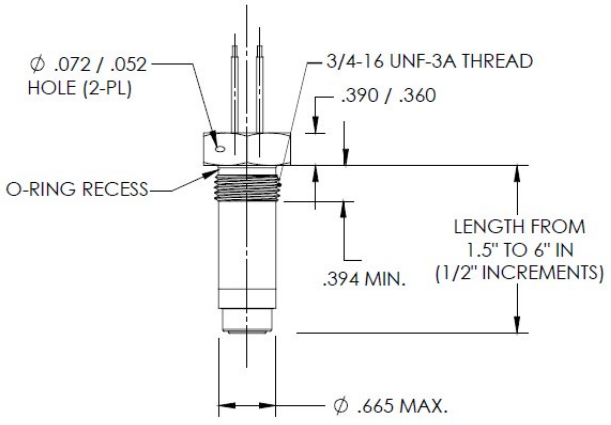


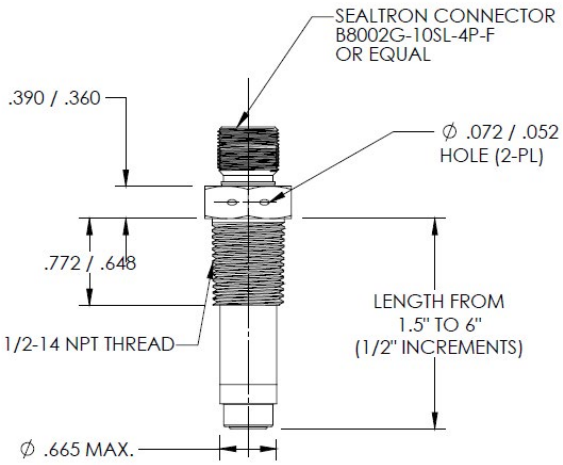
21548



21549

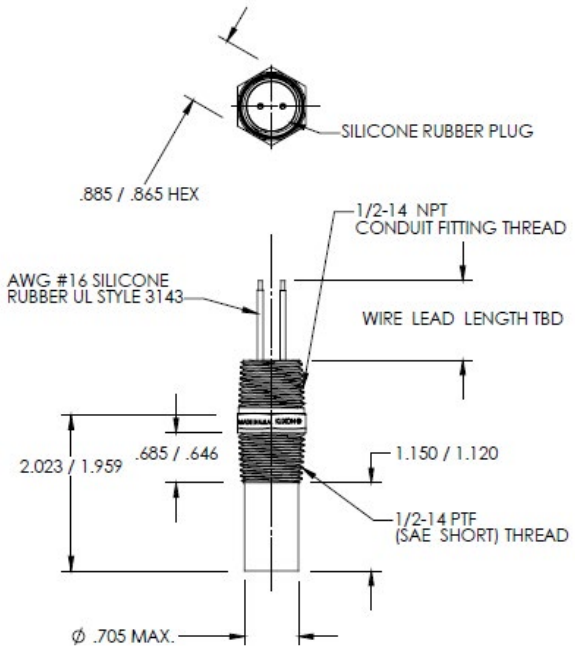




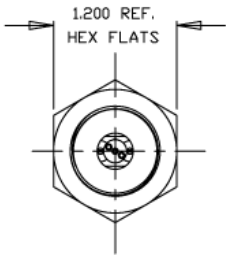


DIMENSIONS (CONTINUED)

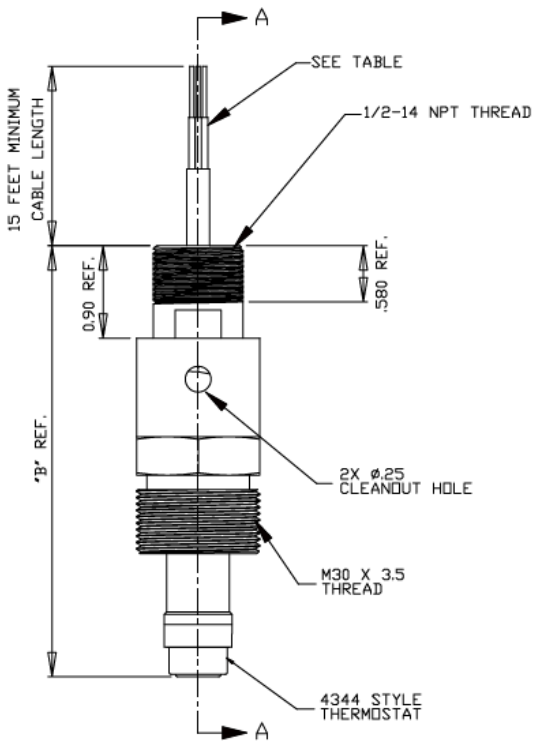
28303



28509



Notes:
1. Basic Thermostat = 4344 Series
2. Material = 303 Series Stainless
3. Housing grounded to ground lead of cable
4. Tube will compress into body a minimum of 1 inch



ORDERING OPTIONS

Example : 21549-06-XXX-03

21549 – 06 – XXX – 03

Basic Package

21542 (or 21544, 21548, 21549)
Basic package describes general physical appearance and basic thermostat incorporated into device

Probe Length

Probe length times 2
(probe length is the length in inches from bottom of the hex to bottom of the device)

Operating Characteristics

Assigned consecutively (Sensata will assign this number at the time your order is taken)

Wire Leads

For wire leads, this is the length of wire in 6 inch increments (for 6" it would be 1, for 12" it would be 2, for 18" it would be 3, etc.).
For connectors, contact Sensata Technologies for this code.

AGENCY APPROVALS & CERTIFICATIONS

UL/Canadian-UL Ratings

For 28303 series only: UL and Canadian-UL (File #E34618)

	Max. Voltage	Max. Current (Non-inductive)	Max. Temp.	Cycles	Notes
UL	120 VAC	2.5 A	450°F	100,000	Break but not make, ungrounded cup
UL	110-300 VAC	720 VA	392°F	10,000	Make and break, ungrounded cup
UL	300 VAC	360 VA	392°F	10,000	Make and break, grounded or ungrounded cup
UL	24-240 VAC	120 VA	393°F	10,000	Make and break, grounded or ungrounded cup
UL-C	120 VAC	2.5 A	450°F	100,000	

WARNINGS

RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

Failure to follow these instructions can result in serious injury, or equipment damage.

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

Failure to follow these instructions will result in death or serious injury.

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Rev:10/05/18

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