



THE SENSOR BOX™

THE SENSOR
BOX™

**A MODULAR
TEMPERATURE SENSOR ASSEMBLY SYSTEM
FOR THE MAINTENANCE PROFESSIONAL**



BENEFITS:

- Improved process uptime
- Reduced expediting
- Fewer emergency orders
- Lower inventory



APPLIED SENSOR TECHNOLOGIES
A DIVISION OF UNITED ELECTRIC CONTROLS



OVERVIEW

If this sounds familiar . . .

- 3:00 PM on a Friday afternoon, and you've just discovered a temperature sensor has failed on an important process.
- The Safety Engineer wants the process shut down, but you're under pressure to keep production moving.
- Of course, you don't have the exact replacement in the stockroom. You're going to spend the rest of the afternoon in "Panic Mode," calling every sensor supplier you can think of, begging for the best delivery at a premium. Not very pretty . . .

Then the SENSOR BOX™ was developed to help improve your life.

FEATURES

The SENSOR BOX™, a rugged toolbox containing all of the parts and tools to build the sensor you need in a rush, is:

- **Flexible** - adaptable to most process plants.
- **Comprehensive** - It can include a variety of sensor types and hardware.
- **Self-contained** - Everything you need to build the right product is at your fingertips.
- **Industrial** - The toolbox and tools are rugged, designed for hard duty.
- **Easy to use** - Complete instructions are included.



APPLICATIONS

Maintenance or instrument technicians can now build a new temperature sensor assembly, install it and the plant can be back up and running in minutes rather than days! The SENSOR BOX™ is designed for any industrial plant where temperature sensors are an important part of the operation, and downtime is a problem.

By using the SENSOR BOX™, you can:

- Greatly reduce expediting and emergency orders
- Reduce your inventory
- Improve equipment uptime
- **Be a hero!**

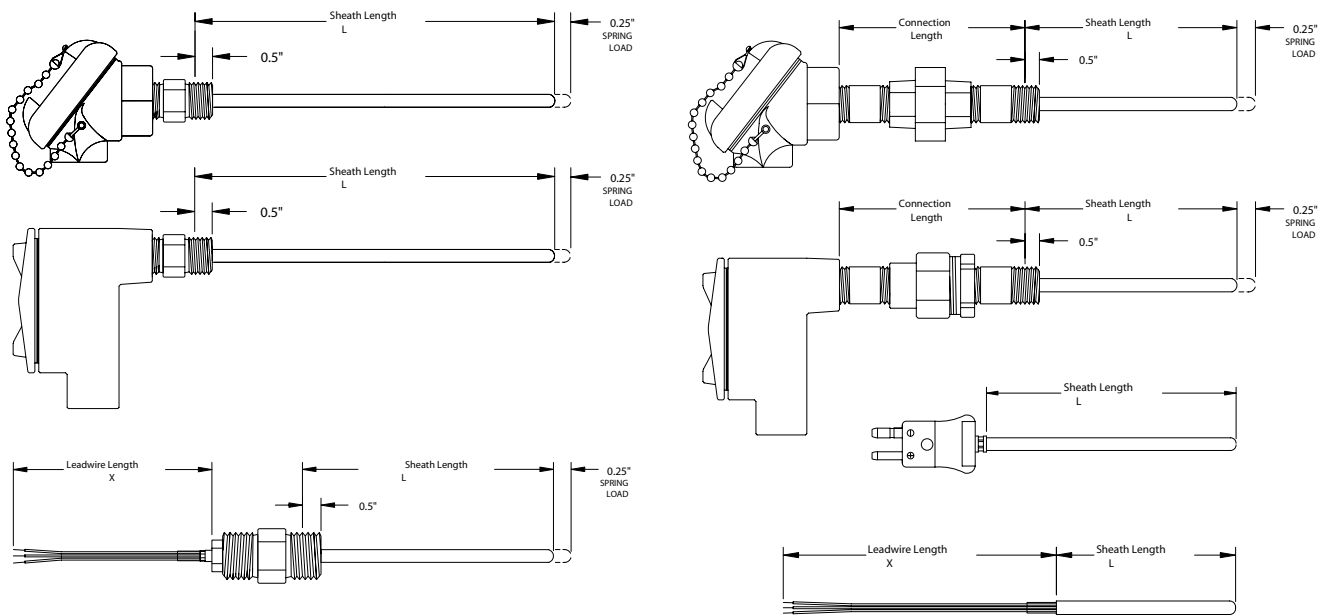
TECHNOLOGY

One of the challenges in maintaining industrial temperature sensors is the variety. It is difficult for the typical process plant to stock every sensor configuration they might need to replace. Until now.

The SENSOR BOX™ can be your solution to expediting, high inventory and expensive downtime. It is a modular system, consisting of:

- Sensor elements (we call them "pods") - the sensor itself, with leadwires
- Housings - the sensor sheath for protection
- Hardware - components for spring-loading, heads, unions, etc.
- Tools - crimper, tubing cutter and other tools for building assemblies.

By combining common parts, a relatively small amount of stock can translate into the variety you need – quickly, and without expediting. What can you build with the basic kit, and a few options? Here are some of the assemblies:



How do you build one?

It's easy as 1-2-3!

1. Determine the dimensions and type of sensor you need
2. Open your SENSOR BOX™ and take out the parts and tools you'll need
3. Measure, cut, crimp and assemble. Install it!



HOW TO ORDER

The basic SENSOR BOX™ (part number EK1000) comes complete with toolbox, tools and the parts shown on page 6. In addition, please select 6 sensor “pods” from the list below to complete your kit.

Part Number	Sensor Description
RT1260	100Ω platinum RTD, 3-wire, Teflon® insulation, max. temp. 500°F
RT1254	100Ω platinum RTD, 3-wire, fiberglass insulation, max. temp. 900°F
MI1113_U	Thermocouple with ungrounded junction, fiberglass leads. See note below. Specify calibration (J, K, E, T). Example: MI1113KU.
MI1113_G	Thermocouple with grounded junction, fiberglass leads. See note below. Specify calibration (J, K, E, T). Example: MI1113KG.
MI1113TF_U	Thermocouple with ungrounded junction, Teflon® leads. See note below. Specify calibration (J, K, E, T). Example: MI1113TFJU.
MI1113TF_G	Thermocouple with grounded junction, Teflon® leads. See note below. Specify calibration (J, K, E, T). Example: MI1113TFJG.

Ordering Example: EK1000 with (3) RT1260, (2) MI1113JG and (1) MI1113KG pods

Optional Parts Available

In addition to the basic EK1000 SENSOR BOX™, there are many additional parts to help customize the system to your specific needs. Some of these are noted below (many others are also available - consult your Master Distributor for availability and ordering instructions).

Dual Sensor Pods

Part Number	Description
MI1113_-_U	Dual thermocouple, ungrounded junction, fiberglass leads. Specify calibrations (J, K, E, T) Example: MI1113KKU.
MI1113_-_G	Dual thermocouple, grounded junction, fiberglass leads. Specify calibrations (J, K, E, T) Example: MI1113KKG.
MI1113TF_-_U	Dual thermocouple, ungrounded junction, Teflon® leads. Specify calibrations (J, K, E, T) Example: MI1113TFKKU.
MI1113TF_-_G	Dual thermocouple, grounded junction, Teflon® leads. Specify calibrations (J, K, E, T) Example: MI1113TFKKG.

Sensor Housings

Part Number	Description
HS2512	316 stainless steel, 0.250" OD x 12" long
HS2536	316 stainless steel, 0.250" OD x 36" long
HS2548	316 stainless steel, 0.250" OD x 48" long

Teflon® is a registered trademark of E.I. Du Pont De Nemours and Company

Note: Pods with fiberglass leads are rated to 900°F; those with Teflon leads are rated to 500°F. For higher temp., consult UE.

Terminal Heads and Terminal Blocks

Part Number	Description
AC1054	Terminal head, aluminum, meets NEMA 4 req's., w/ terminal block. 750°F max.
AC1086	Terminal head, epoxied aluminum, meets NEMA 4X, w/ terminal block. 750°F max.
AC1093	Terminal head, cast iron, meets NEMA 4 req's., w/ terminal block. 750°F max.
AC1095	Terminal head, aluminum, designed to hold transmitter. No terminal block. 300°F max.
AC1084	Terminal head, Class I, Div. 1, Groups C&D, aluminum. 350°F max.
AC1085	Terminal block, ceramic, 4-post
AC1085-6	Terminal block, ceramic, 6-post
AC1085X-6	Terminal block, phenolic, for explosion-proof head

Hardware

Part Number	Description
NC1001	1" long carbon steel nipple, 1/2" NPT
NC1002	2" long carbon steel nipple, 1/2" NPT
NC1003	3" long carbon steel nipple, 1/2" NPT
NC1004	4" long carbon steel nipple, 1/2" NPT
NC1006	6" long carbon steel nipple, 1/2" NPT
NS1001	1" long stainless steel nipple, 1/2" NPT
NS1002	2" long stainless steel nipple, 1/2" NPT
NS1003	3" long stainless steel nipple, 1/2" NPT
NS1006	6" long stainless steel nipple, 1/2" NPT
UC1011	1/2" NPT union, carbon steel, for NEMA 4 applications
US1011	1/2" NPT union, stainless steel, for NEMA 4 applications
HF1091	1/2" NPT union, for explosion-proof applications
AC1090	Spring-loading kit for explosion-proof terminal head
HF1061	Spring-loaded hex fitting
CF1061	Compression fitting, 1/2" NPT x 0.250" OD, 316 stainless

Plugs and Jacks

Part Number	Description
P1062_	Thermocouple plug (J,K,E,T)
J1062_	Thermocouple jack (J,K,E,T)
P1064	RTD plug, 3-pin
J1064	RTD jack, 3-pin
WC	Wire clamp for plug/jack
B1250	Brass crimp insert for plug

Transmitters

Part Number	Description
XM1012	T/C input, non-isolated
XM1002	RTD input, non-isolated
XM1021	Universal-isolated (T/C or RTD)



PARTS IN AN EK1000 SENSOR BOX™

(3) carbon steel unions, 1/2" NPT

(6) carbon steel nipples, 1/2" NPT

(3) terminal blocks, ceramic, with mounting screws

(3) NEMA 4 terminal heads, aluminum, with screw cover and chain

Tools:
Special crimper, Tubing cutter, Screwdriver, Wire stripper, Tape measure

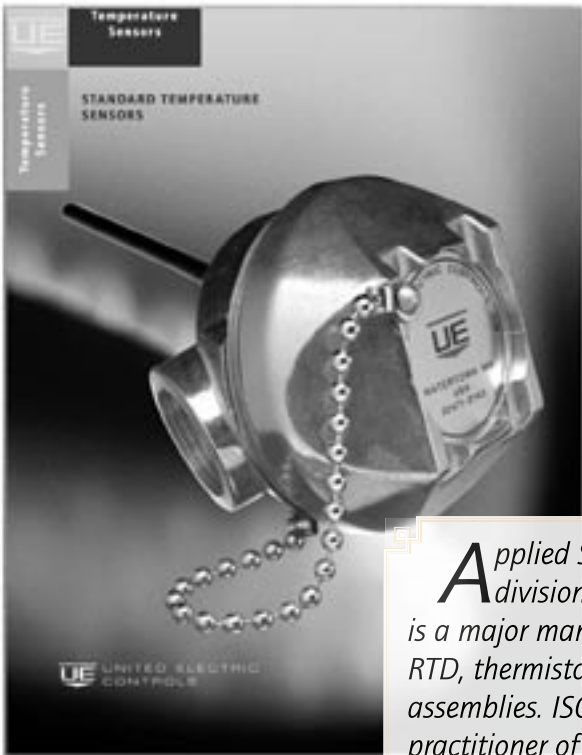
A rugged toolbox to hold it all

(6) spring-loading kits, with bushings

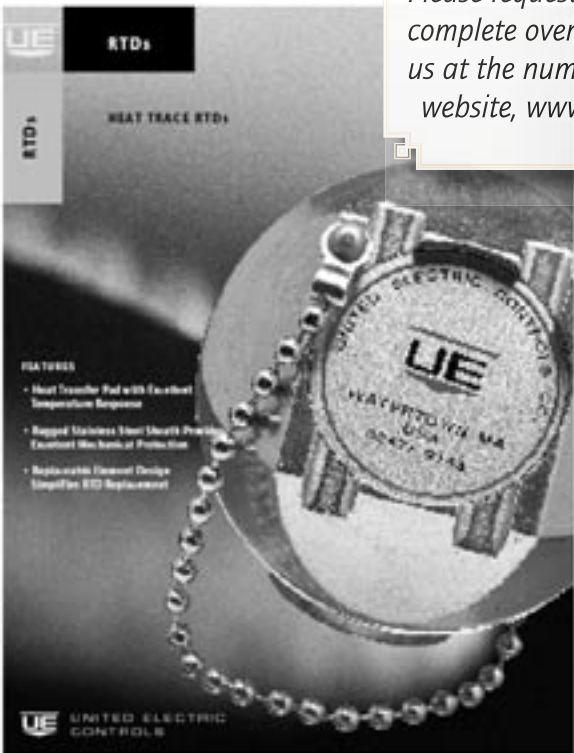
(6) stainless steel sensor housings, 0.250" OD

(6) sensor pods, your choice of J, K, E, or T thermocouples, or 100 ohm RTDs





Applied Sensor Technologies, a division of United Electric Controls, is a major manufacturer of thermocouple, RTD, thermistor and other temperature sensor assemblies. ISO9001 certified and a leading practitioner of JIT and Lean Manufacturing methods, Applied Sensor Technologies has expertise in a wide variety of applications, from low-cost OEM sensors, to gas turbine exhaust, to innovative heat tracing designs. Please request our other catalogs for a more complete overview of our products. Or contact us at the numbers on the back, or visit our website, www.ueonline.com.



RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure and temperature units. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum temperature is acceptable on a limited basis (i.e., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. Orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Monitor operation to observe warning signs of possible damage to unit. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Use only factory authorized replacement parts and procedures.
- Do not mount unit in ambient temperature exceeding published limits.

LIMITED WARRANTY

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period of 18 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF SELLER'S LIABILITY

SELLER'S LIABILITY TO BUYER FOR ANY LOSS OR CLAIM, INCLUDING LIABILITY INCURRED IN CONNECTION WITH (I) BREACH OF ANY WARRANTY WHATSOEVER, EXPRESSED OR IMPLIED, (II) A BREACH OF CONTRACT, (III) A NEGLIGENT ACT OR ACTS (OR NEGLIGENT FAILURE TO ACT) COMMITTED BY SELLER, OR (IV) AN ACT FOR WHICH STRICT LIABILITY WILL BE INPUTTED TO SELLER, IS LIMITED TO THE "LIMITED WARRANTY" OF REPAIR AND/OR REPLACEMENT AS SO STATED IN OUR WARRANTY OF PRODUCT. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF A LIKE GENERAL NATURE, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR PRODUCTION, OR LOSS OR EXPENSES OF ANY NATURE INCURRED BY THE BUYER OR ANY THIRD PARTY.

UE specifications subject to change without notice.

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