Environmental Sensors

Temperature & Humidity Sensors

Probe-Style Temperature & Combination Sensor

Temperature Sensor (E-STS)
- Applications from -32 to 122°F (0 to 50°C).
- Accurate to within ±0.9°F (±0.5°C).
- High resistance to external influences on the cable due to digital output signal.

Temperature/Humidity Sensor (E-STHSM-E7)
- Applications from -4 to 140°F (-20 to 60°C) and 0 to 90% relative humidity (operating and storage).
- Temperature accuracy:
  - ±0.90°F (±0.50°C) for -4 to 14°F (-20 to -10°C).
  - ±0.72°F (±0.40°C) for 14 to 140°F (-10 to 60°C).
- Humidity accuracy (at 86°F/30°C):
  - 10 to 80% relative humidity, ±3%
  - 80 to 90% relative humidity, ±4%
- Supports dew point measurement

Fan-Aspirated Temperature/Humidity/Dew Point Sensor, Low Self-Heating

Fan-Aspirated Temperature/Humidity Sensor (E-STHS-LSH)
- Applications from -4 to 140°F (-20 to 60°C) and 0 to 90% relative humidity.
- Temperature accuracy:
  - ±0.90°F (±0.50°C) for -4 to 14°F (-20 to -10°C).
  - ±0.72°F (±0.40°C) for 14 to 140°F (-10 to 60°C).
- Humidity accuracy (at 86°F/30°C):
  - 10 to 80% relative humidity, ±3%
  - 80 to 90% relative humidity, ±4%
- Use in freezers where there is intermittent air flow.
- Use in air conditioning where there is little to no air flow.
- Internal fan constantly draws air in over the sensor, providing highly accurate temperature readings.
- Ideal for installations where steep temperature gradients are common, and where there is little to no air flow.
- Supports dew point measurement.

Fan-Aspirated Temperature/Humidity/Dew Point Sensor, Low Self-Heating

Fan-Aspirated Temperature/Humidity/Dew Point Combination Sensor

Fan-Aspirated Temperature/Humidity/Dew Point Sensor (E-STHSB-D)
- Applications from -4 to 140°F (-20 to 60°C) and 0 to 90% relative humidity.
- Temperature accuracy:
  - ±0.90°F (±0.50°C) for -4 to 14°F (-20 to -10°C).
  - ±0.72°F (±0.40°C) for 14 to 140°F (-10 to 60°C).
- Humidity accuracy (at 86°F/30°C):
  - 10 to 80% relative humidity, ±3%
  - 80 to 90% relative humidity, ±4%
- Supports dew point measurement.
- DIN mountable

Low-Cost Precision Temperature/Humidity Sensor

Low-Cost Precision Temperature/Humidity Sensor (E-STHS-PRC)
- Applications from 14 to 140°F (-10 to 60°C) and 10 to 80% relative humidity.
- Accurate to within ±0.2°F (±0.1°C) and ±1.8% relative humidity.
- Supports dew point measurement
Environmental Sensors

Temperature & Humidity Sensors (continued)

Strap-On Pipe Temperature Sensor, Spring-Loaded

- Mount to the outside of an insulated metal pipe (up to 1/4” wall).
- Copper contact transmits surface temperature to thermal sensor.
  - Spring-loaded contact enables minimal removal of pipe insulation.
- NEMA 1 and IP20 rated metal enclosure
- Applications from -40 to 185°F (-40 to 85°C).
- Accurate to within ±1.0°F (±0.5°C).
- Response time: <1 minute for temperature changes of ±2°F.
- Length: 7 feet.
- Includes an RJ45 coupler to extend the sensor up to 1,000 feet using CATx cable (minimum 24AWG).

Pipe Temperature Sensor

- Mount to the outside of a thin walled steel, copper, or aluminum pipe (up to 1/4” wall).
- Copper contact transmits surface temperature to thermal sensor.
- Weatherproof enclosure designed to IP65 specifications.
- Applications from -40° to 185°F (-40° to 85°C).
- Accurate to within ±1.0°F (±0.5°C).
- Response time: <1 minute for temperature changes of ±2°F.
- Length: 7 feet.
- Includes an RJ45 coupler to extend the sensor up to 1,000 feet using CATx cable (minimum 24AWG).

Industrial Temperature/Humidity Sensor -40 to 185°F (-40 to 85°C)

- Applications from -40 to 185°F (-40 to 85°C) and 0 to 100% non-condensing relative humidity.
- Accuracy:
  - ±0.7°F (± 0.4°C) at 14 to 185°F (-10 to 85°C)
  - ±1.6°F (± 0.9°C) at -40 to 14°F (-40 to -10°C)
- ±3% relative humidity at 0 to 80% non-condensing RH and 86°F (30°C)
- ±4.5% relative humidity at 80 to 100% non-condensing RH and 86°F (30°C)
- Available lengths for attached CAT5e cable: 10/25/50/100 feet.

RTD Temperature Transmitters

100 Ohm Platinum RTD Transmitter

- Available temperature ranges:
  - E-RTDT-140: -20 to 140°F (-28 to 60°C).
  - E-RTDT-240: 30 to 240°F (-1 to 115°C).
- Accurate to within ±0.8°F (±0.45°C).
- Configuration: 2-wire connection
- Sensor Element: 100Ω platinum
- Signal Output: 4-20 mA, loop-powered
- Requires the E-S420MA and an RTD sensor probe to operate with the E-2D/5D/16D.

High-Accuracy Platinum RTD Transmitter, -328°F to 1562°F

- Use to connect 1000 platinum RTD temperature sensors to the E-2D/5D/16D.
- Temperature range: -328 to 1562°F (-200 to 850°C)
- When used with the E-2D/5D/16D, the supported range is -89 to 738°F (-67 to 392°C. Call an NTI product consultant to have the range expanded on the ENVIROMUX system.
- Accurate to within ±0.2°F (±0.1°C)
- If the connected RTD sensor does not support this high of accuracy, the system will revert to the accuracy of the sensor.
Environmental Sensors

**RTD Temperature Sensors**

**All-Purpose 100 Ohm RTD Sensor, -67°F to 221°F**
- Rugged, point-sensitive waterproof sensor with 9” (229 mm) 304 stainless steel probe and brass fitting.
  - Brass fitting with 1/2” NPT male thread.
  - Applications from -67 to 221°F (-55 to 105°C).
  - Accurate to within ±0.27°F (±0.15°C).

**Rugged Encapsulated 100 Ohm RTD Sensor, -30°F to 230°F**
- 0.18” round, 0.50” long housing.
  - Applications from -30°F to 230°F (-34°C to 110°C).
  - Accurate to within ±0.6°F (±0.33°C).
  - 100 Ohm Pt 385 curve.
  - 8 feet, 24 AWG 2-wire leads

**Pipe 100 Ohm RTD Sensor with Adjustable Ring, -58°F to +540°F**
- Monitor temperature on pipe surfaces.
  - Applications from -58 to 540°F (-50 to 280°C).
  - Accuracy:
    - At 32°F (0°C), ±0.54°F (±0.3°C)
    - At 212°F (100°C), ±1.44°F (±0.8°C)

**Liquid & Chemical Detection Sensors**

**Low-Cost Liquid Detection Sensor, Rope-Style**
- Detects any conductive liquid or moisture.
  - Minimum puddle: 0.06” (1.5 mm) diameter.
  - Available water sensor cable (x) lengths: 1/10/50/100/200/400/600 feet.
    - Material: PVC twisted pair with stainless 316 elements
    - Diameter: 0.14” (3.5 mm)
  - Available 2-wire cable (y) lengths: 5/10/20/50/100 feet.

**Liquid Detection Sensor, Plenum Rope-Style**
- Detects any conductive liquid or moisture.
  - Minimum puddle: 0.6” (15 mm) diameter.
  - Detects liquid depth >0.1” (2.5 mm).
  - Available water sensor cable (x) lengths: 1/10/50/100/200/400/600/800/1000 feet.
    - Plenum rating: CL2P (UL)
    - Diameter: 0.25 in (6.35mm)
  - Available 2-wire plenum cable (y) lengths: 5/10/20/50/100 feet.

**Mini Probe 100 Ohm RTD Sensor, -67°F to 240°F**
- 0.19” (4.8 mm) round x 0.50” (13 mm) long stainless steel housing.
  - Applications from -67 to 240°F (-55 to 115°C).
  - Accurate to within ±0.27°F (±0.15°C).
  - 100 Ohm Pt 385 curve.

**Duct 100 Ohm RTD Sensor, -67°F to 240°F**
- Rugged, waterproof sensor with 9” (229 mm) 304 stainless steel probe with 4” (102 mm) electrical strap and a nylon fitting.
  - Nylon fitting with 1/2” NPT female thread.
  - Applications from -67 to 240°F (-55 to 115°C).
  - Accurate to within ±0.27°F (±0.15°C).
  - 100 Ohm Pt 385 curve.

**ENVIROMUX®**

**Duct 100 Ohm RTD Sensor, -67°F to 240°F**
- Rugged, waterproof sensor with 9” (229 mm) 304 stainless steel probe with 4” (102 mm) electrical strap and a nylon fitting.
  - Nylon fitting with 1/2” NPT female thread.
  - Applications from -67 to 240°F (-55 to 115°C).
  - Accurate to within ±0.27°F (±0.15°C).
  - 100 Ohm Pt 385 curve.

**Low-Cost Liquid Detection Sensor, Rope-Style**
- Detects any conductive liquid or moisture.
  - Minimum puddle: 0.06” (1.5 mm) diameter.
  - Available water sensor cable (x) lengths: 1/10/50/100/200/400/600 feet.
    - Material: PVC twisted pair with stainless 316 elements
    - Diameter: 0.14” (3.5 mm)
  - Available 2-wire cable (y) lengths: 5/10/20/50/100 feet.

**Liquid Detection Sensor, Plenum Rope-Style**
- Detects any conductive liquid or moisture.
  - Minimum puddle: 0.6” (15 mm) diameter.
  - Detects liquid depth >0.1” (2.5 mm).
  - Available water sensor cable (x) lengths: 1/10/50/100/200/400/600/800/1000 feet.
    - Plenum rating: CL2P (UL)
    - Diameter: 0.25 in (6.35mm)
  - Available 2-wire plenum cable (y) lengths: 5/10/20/50/100 feet.
Environmental Sensors

Liquid & Chemical Detection Sensors

Chemical Detection Sensor
- For detecting the presence of chemical liquid.
  - Reliably senses acids, bases, and other conductive liquids.
- Detects liquid depth >0.1” (2.5 mm).
- Minimum puddle: 0.6” (15 mm) diameter.
- Available chemical sensor cable (x) lengths: 1/10/50/100 feet.
- Available 2-wire cable (y) lengths: 5/10/20/50/100 feet.

Legacy Chemical Detection Sensor
- For detecting the presence of chemical liquid.
  - Reliably senses acids, bases, and other conductive liquids.
- Detects liquid depth >0.1” (2.5 mm).
- Minimum puddle: 0.6” (15 mm) diameter.
- Voltage and current:
  - Open Circuit: 5VDC max @ 1µA.
  - Closed circuit: <300mV @ 10.7mA.

Spot Liquid Detector with Built-In Visual & Audible Alarm
- Use to detect conductive fluids in confined areas.
- Water level detection range: 0.03 to 0.53” (0.79 to 13 mm).
- Audible alarm signal: 85 dB at 1 foot distance.
- Red LED for visual alarm signal.
- Cable length: 4.9 ft (1.5 m).

Outdoor Oil Leak Detection Sensor
- Use to detect oil or non-conductive liquids in outdoor locations or in areas that are susceptible to leaks.
- The sensor includes two liquid detectors; one looking for conductive liquids (e.g. water), and the other looking for non-conductive liquids (e.g. fuel oil, diesel fuel).
- Normally-open alarm contact.
- IP 65 rated.
- Cable length: 9.84 ft (3m).

Under Carpet Leak Detector
- Use to detect conductive fluids and moisture under carpets.
- Available 2-wire plenum cable lengths: 10/25/50/100/200/400/600/1000 feet.

Legacy Liquid Detection Rope Sensor
- For detecting water presence and warning of flooding.
- Detects liquid depth >0.1” (2.5 mm).
- Minimum puddle: 0.6” (15 mm) diameter.
- 100% waterproof electronics.
- Detects any liquid or moisture, except deionized water.

Spot Liquid Detector, Point Leak Detection Sensor
- Features gold-plated probes and microchip technology for dependable detection of conductive liquids.
- Adjustable detection level.
  - Probe height adjustable 0” to 1.5” (0 to 38mm)

Compact-Size Spot Liquid Detector, Point Leak Detection Sensor
- Use to detect fluids in confined areas.
- One generic relay output
- Adjustable detection level.
  - Probe height adjustable 0” to 0.75” (0 to 19mm)
- Cable length: 14 feet

IP68 Submersible Spot Liquid Detector
- Use to detect conductive fluids in confined areas.
- Water level detection range: 0.03 to 0.53” (0.79 to 13 mm).
- DPDT alarm contacts.
- Red LED for visual alarm signal.
- Current consumption: 30mA typical, 85mA maximum @ 12VDC.

Tape-Style Liquid Detector
- Uses a self-adhesive sensor tape with copper fiber electrodes and a durable netted cover for dependable detection of conductive liquids.
- Continuous tape integrity self-check.
- Floor or under-pipe mounting.
- Minimum puddle: 0.125” (3 mm) diameter.
- Available tape sensor lengths: 10/25/50/100 feet.
## Environmental Sensors

### Liquid & Chemical Detection Sensors (continued)

#### Plastic Vertical Liquid Level Float Switch

- Vertically mounted float switch – install in the top or bottom of the tank.
- Magnets within the float actuate a highly reliable and repeatable hermetically sealed reed switch as the float rises and lowers with liquid level.
- Single-pole single-throw (SPST) circuitry.
- IP68-rated water and dust protection.
- Max pressure: 72.5 psi (0.5 MPa)

![E-LLS-PF](image)

#### Ultrasonic Level Transmitter

- Compact sensor with 2” (51 mm) dead band and beam width optimized for small tanks 49” (1,245 mm) or less.
- Provides two-wire 4-20 mA analog output.
- Includes Fob USB interface tool for configuring the transmitter.
- Requires the E-S420MA-24V to operate with E-2D/5D/16D.

![E-ULT](image)

#### Intrinsicly Safe Ultrasonic Level Transmitter, 25’ Range

- Calculates distance, level, flow, and volume in linear and non-linear tanks.
- Suitable for use in hazardous areas - Class 1 Division 1, intrinsically safe rating.
- Operating Range:
  - 1 to 25 ft for liquids
  - 1 to 10 ft. for solids
- Provides two-wire 4-20 mA analog output.
- IP65 rated housing

![E-ULT25IS](image)

#### Smoke Detection Sensor

#### Smoke Detection Sensor – 120VAC Wire-In with Battery Backup

- Ionization smoke detector.
- Applications from 40°F to 100°F (4°C to 38°C).
- Front loading battery door.
- One button design for easy testing and HUSH mode activation control.
- Voltage supply: 120VAC.
- Audio alarm: 85dB at 10ft.
- Links with up to 24 devices.
- Use compatible relay (E-RLY-SDS120V) for connection to the ENVIROMUX system.
- Contact ratings: 10A at 120VAC, 5A at 30VDC.

![E-SDS-120V](image)

#### Low-Cost Smoke Detection Sensor – CE Approved

- Photoelectric smoke detector.
- Smoke sensitivity: 0.5 dB/m ±0.1 dB/m.
- Applications from 14 to 122°F (-10 to 50°C).
- Operating temperature: 14 to 122°F (-10 to 50°C).

![E-SDS-CELC](image)

#### Smoke Detector with Built-In Fixed-Temperature 135°F (57°C) Heat Sensor – UL Approved, TAA Compliant

- Photoelectric smoke detector.
- Smoke sensitivity: 0.98-2.4%/ft.
- Built-in 135°F (57°C) thermal heat sensor.
- Voltage supply: 8-35VDC.

![E-SDS-TAA](image)
Environmental Sensors

### Gas Detector/Sensors

#### Gas Detector – Methane, Butane, Propane

- Use to detect leaks of combustible gas (methane, propane, butane, acetylene, etc.)
- Continuous air monitoring.
- Audible alarm signal: 94 dB at 1 foot.
- Relay specifications: level selectable, normally open or normally closed, 250V AC, max 5A.

![E-GD-MBP](image)

#### Carbon Dioxide Sensor, CO2

- Measures CO2 in a range of 0 to 2,000 ppm.
- 0 to 5 VDC output.
- Continuous automatic air pressure compensation.
- Requires the E-S5VDC sensor converter to operate.

![E-CO2](image)

#### Hydrogen Sulfide Detector

- Use to monitor the presence of Hydrogen Sulfide from failed UPS (uninterrupted power supply) lead acid batteries, in paper mills, refineries, waste disposable facilities, etc.
- Measures H2S in a range of 0 to 50 ppm.
- 5A SPDT fan relay controls exhaust fans, valves, or louvers.
- Alerts are based solely on the measured H2S levels reported by the E-H2S.

![E-H2S](image)

### Air Flow/Velocity Sensors

#### Air Flow Sensor

- Reacts to any condition causing insufficient flow of air.
- Switch contact is closed when air flow is >8.2 ft/s.
- Connection: 2x single strand AWG26, length 18 in.

![E-AFM](image)

#### Air Velocity Sensor

- Reliable sensor for measurement of air velocity.
- Flow range: 0-2000 ft/min (0-10 m/s).
- Accuracy: ±60 ft/min (0.3 m/s) + 4% of measured value.
- Requires the E-S5VDC sensor converter to operate.

![E-AV-K](image)

### Low-Cost Air Velocity Sensor

- Reliable sensor for measurement of air velocity.
- Flow range: 0-9843 ft/min (0-50 m/s).
- Accuracy: ±98 ft/min (±0.5 m/s) from 0 to 2953 ft/min (0 to 15 m/s).
- Length: 7 feet.
- Includes an RJ45 coupler to extend the sensor up to 1,000 feet using CATx cable (minimum 24AWG).

![E-AV-LC-7](image)

### Carbon Monoxide Detector, CO

- Continuous air monitoring.
- Pre-set alarm points alert at:
  - 70 ppm after 60 to 240 minutes
  - 150 ppm after 10 to 50 minutes
  - 400 ppm after 4 to 15 minutes

![E-CMD](image)

### Optical Dust Sensor

- Detects the presence of dust and fine particles using an infrared emitting diode (IRED) and phototransistor.
- Able to distinguish smoke from house dust.
- RJ45 connector.
- Voltage supply: 5VDC
- Current consumption: < 50mA.
- Support CAT5/5e/6 cable to 1,000 ft (305 m).

![E-DUST](image)
## Environmental Sensors

### Weather & Outdoor Sensors

#### IP65 Outdoor Temperature Sensor
- Applications from -40 to 185°F (-40 to 85°C).
- Accurate to within ±0.9°F (±0.5°C).
- Weatherproof enclosure.
- IP65-rated water and dust protection.

#### Barometric Pressure Transmitter
- Use for determining atmospheric air pressure.
- Pressure range: 20.8 to 32 in Hg (10.2 to 15.7 psi)
- Accuracy: ± 0.14 Hg (±0.07 psi)
- Repeatability: ± 0.03 Hg (± 0.014 psi)
- Pressure Hysteresis: ± 0.02 Hg (± 0.01 psi)
- Long-Term Stability: ± .014 Hg/year (±0.007 psi/year)
- Requires the E-S420MA-24V to operate with E-2D/5D/16D.

#### Pressure Sensor Transmitters

##### Pressure Sensor Transmitter, 0 to 500 psi
- Measure the pressure in a multitude of processes from hydraulic oils to chemicals.
- Requires the E-S5VDC sensor converter to operate with E-2D/5D/16D.
- Service: Compatible with gases and liquids
- Wetted Materials: Type 316L SS
- Accuracy: 1.0% FS; 0.5% RSS

##### Intrinsically Safe Pressure Sensor Transmitter
- Monitor pressures in explosive atmospheres with barrier.
- Suitable for use in hazardous areas - Class 1 Division 1, intrinsically safe rating.
- Process Connection: 1’8” BNPT male 316 stainless steel.
- Requires the E-S420MA-24V to operate with E-2D/5D/16D.

### Wind Speed Sensor/Anemometer
- Rugged anemometer
- 3-cup rotor pressed on a stainless steel shaft
- Reed switch and magnet providing one pulse per rotation
- Rotor diameter: 5 inches
- Speed range: ~ 3 mph to 125+ mph (~5 kph to over 200 kph)
- Rugged Delrin body with bronze and Rulon bushings
- Flat aluminum mounting bracket with 2 holes. Designed to be mounted on top of a pole or bracket.
- 100 feet of exterior grade wire
  - Maximum cable length: 1000 ft (305m)
- Intended for outdoor use where icing is not expected.