

# Long Range Wireless Transmitters

## Ethernet or Internet Connection



### zED Series



Optional



zED-TC-LCD-DC-H2 shown smaller than actual size.



- ✓ Web Server
- ✓ Alarms by Email or Text Message
- ✓ No Special Software Required
- ✓ Long Range—Up to 1 Kilometer
- ✓ NEMA 4 (IP65) Enclosure
- ✓ Low Power Option
- ✓ RoHS 2 Compliant

#### Inputs Available:

- Temperature
- Barometric Pressure
- Humidity
- Dual Thermocouple
- Analog Voltage or Current

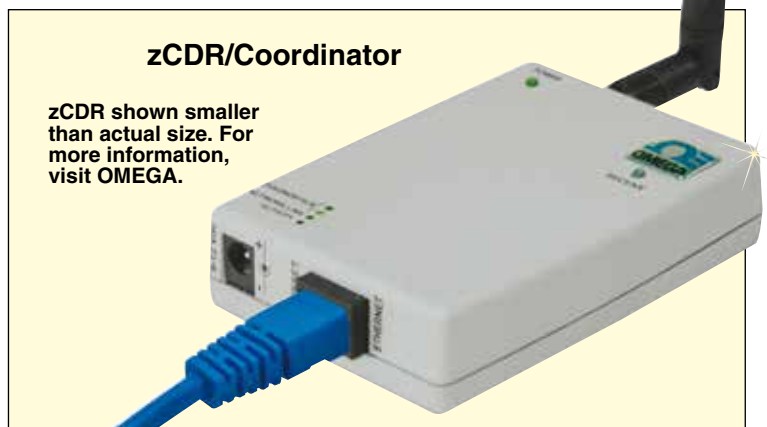
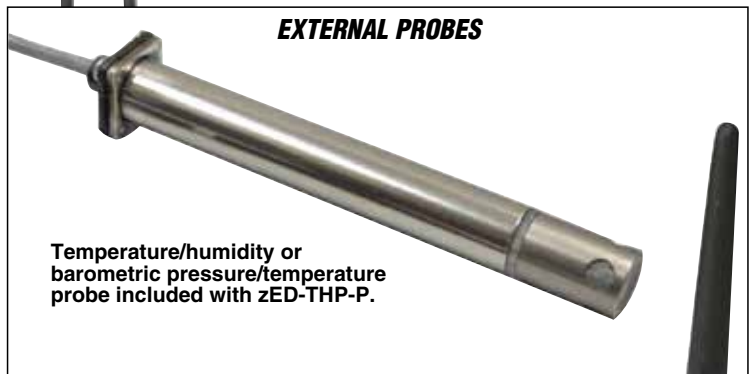
The rugged high-performance, long range OMEGA® zSeries wireless sensor/transmitter system provides Web-based monitoring of Analog Voltage and Current, Temperature, Humidity and Barometric Pressure.

The radio is a long range IEEE 802.15.4 compliant transmitter operating at 2.4 GHz designed to transmit over greater distances and through more obstructions than the standard transmitter.

These wireless sensors transmit 1000 m (3280')—without obstructions or interferences—to a zCDR coordinator. The coordinators connect directly to an Ethernet network and the Internet and serve active Web Pages to display and chart the data.

You can monitor and record analog voltage and current, temperature, relative humidity, and barometric pressure over an Ethernet network or the Internet without any special software—just your Web Browser.

These wireless sensors are designed for demanding industrial applications indoors and harsh outdoor environments. The electronics are protected in a rugged weatherproof polycarbonate NEMA 4 (IP65) rated housing. The rugged industrial sensors are supplied with 3 m (10') of cable.





## Wireless Transmitters

Wireless transmitters are available with external probes appropriate for an almost unlimited variety of industrial and commercial applications.

OMEGA offers a selection of end devices for a variety of applications. The long range end device supports one external sensor. The external sensors are designed for harsh environments such as outdoor weather, in HVAC ducts, in freezers and refrigerators.

The long range end devices run on either AC power, low voltage power, or batteries. The AC version (zED-P, zED-LCD) is powered by a 5 Vdc universal AC power adapter that operates on any voltage worldwide (110 to 240 Vac). Should AC power fail, the unit can operate on a 3.6V ultra-long-life lithium back-up battery (included). A low power option (zED-DC) operates at 10 to 30 Vdc, or 24Vac. The completely wireless End Devices are powered by two C-cell (zED-CCELL) alkaline batteries. These End Devices can operate for weeks, months, or years before changing the batteries. Battery life depends on the type of sensor and other user settings such as the frequency of transmission.

## Alarm and Email

The zSeries wireless sensor system can trigger an alarm if variables go above or below a set point that you determine. Your alarm can be sent by email to a single user or to a group distribution list, including text messages to cell phones and PDAs. The OMEGA "MailNotifier" software is a free and easy program for this application. The meter-controller connects directly to an Ethernet Network or the Internet. Unlike an RS232 or USB device, it does not require a host computer.

## Embedded Web Server

The wireless sensor system is easy to install, simple to operate, and features OMEGA's award-winning iServer technology with an Embedded Web Server that requires no special software.

## Charts and Graphs

The zSeries system serves Active Web Pages to display real time readings and charts of Analog Voltage and Current, Temperature, Humidity, and Barometric Pressure. You can also log data in standard data formats for use in a spreadsheet or data acquisition program such as Excel® or Visual Basic®.

OMEGA offers a free and easy to use program for logging data to Excel. The virtual chart viewed on the web page is a JAVA™ Applet that records a chart over the LAN or Internet in real time. With the OMEGA zSeries system there is no need to invest time and money learning a proprietary software program to log or chart the data. Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month or one year. Temperature and humidity can be charted across the full span [-40 to 125°C (-40 to 257°F), and 0 to 100% RH] or within any narrow range such as [20 to 30°C (68 to 86°F)]. OMEGA offers an OPC Server software that makes it easy to integrate the zSeries wireless

sensor system with many popular Data Acquisition and Automation programs offered by OMEGA, Wonderware, iConics, Intellution, Rockwell Automation, and National Instruments, among others.

## Specifications

### Relative Humidity

**Accuracy/Range (zED-THP-x, zED-BTHP-x):** ±2% for 10 to 90%; ±3% for 5 to 10% and 90 to 95%; ±4% for 0 to 5% and 95 to 100%

**Hysteresis:** ±1% RH

**Non-Linearity:** ±3%

**Repeatability:** ±0.1%

**Resolution:** 0.1%

### Temperature

**Accuracy/Range zED-TP1-x, zED-TP2-x:**  
±0.5°C for 10 to 85°C (±0.9°F for 50 to 185°F);  
±1°C for -40 to 10°C and 85 to 125°C  
(±1.8°F for -40 to 50°F and 185 to 257°F)

**zED-THP-x, zED-THP2-x:**

±0.5°C for 5 to 45°C (±0.9°F for 41 to 113°F);  
up to ±1.5°C for -40 to 5°C and 45 to 124°C  
(up to ±2.7°F for -40 to 41°F and 113 to 255°F)

**ZED-BTHP-x:** ±0.5°C for 5 to 45°C (±0.9°F for 41 to 133°F)  
up to ±1.5°C for -40 to 5°C and 45 to 85°C  
(up to ±2.7°F for -40 to 41°F and 113 to 185°F)

**zED-BTP-x:**

±0.8°C @ 20°C (±1.5°F @ 68°F); ±2°C for  
40 to 85°C (±3.6°F for -40 to 185°F)

**Repeatability:** ±0.1°C for zED-THP-x, zED-BTHP-x

**Resolution:** 0.1°C

### Barometric Pressure

**Accuracy/Range (zED-BTP-x, zED-BTHP-x):** ±2 mbar for 10 mbar to 1100 mbar (1 KPa to 110 KPa)

**Resolution:** 0.1 mbar

### Probe Specifications

**Industrial Probe (zED-BTP-x, -BTHP-x, zED-THP-x):**

SS 316 housing, 137 x Ø16 mm (5 x Ø0.63")

**(zED-THP2-x):** SS 316 housing 78 x Ø16 mm (3.1 x Ø0.63")

**Stick Probe (zED-TP1-x):** ABS tubing, 152.4 x Ø6.35 mm (6 x Ø0.25")

**Lug Mounted Probe (zED-TP2-x):** Copper tubing, 53.4 x Ø7.92 mm (2.1 x Ø0.312"); mounting hole Ø4.72 mm (Ø0.186")

**Cable:**

**zED-TP1-x, -TP2-x, zED-THP-x:** 3 m (10') L x Ø2.62 mm (0.103"); -80 to 200°C (-112 to 392°F)

**zED-BTP-x, -BTHP-x:** 3 m (10') L x Ø4.45 mm (0.175"); -55 to 105°C (-67 to 221°F)  $\phi$  = diameter

### Thermocouple Input

**Temperature Accuracy/Range:** Refer to T/C chart, on next page

**Temperature Stability:** 0.08°C/°C

**Temperature Coefficient:** ±25 ppm/°C

**Thermocouple Cold End Tracking:** 0.1°C/°C

**Thermocouple Lead Resistance:** 100 Ω maximum

**Thermocouple Type (ITS 90):** J, K, T, E, R, S, B, C, N, L (DIN J)

**Warm-Up to Rated Accuracy:** 30 minutes

### Analog Input

**Voltage Input:** Differential; bipolar; ±100 mV, ±1V, ±10V

**Input Impedance:** 400 kΩ for voltage

**Current Input:** Differential; bipolar; ±20 mA (5 Ω load)

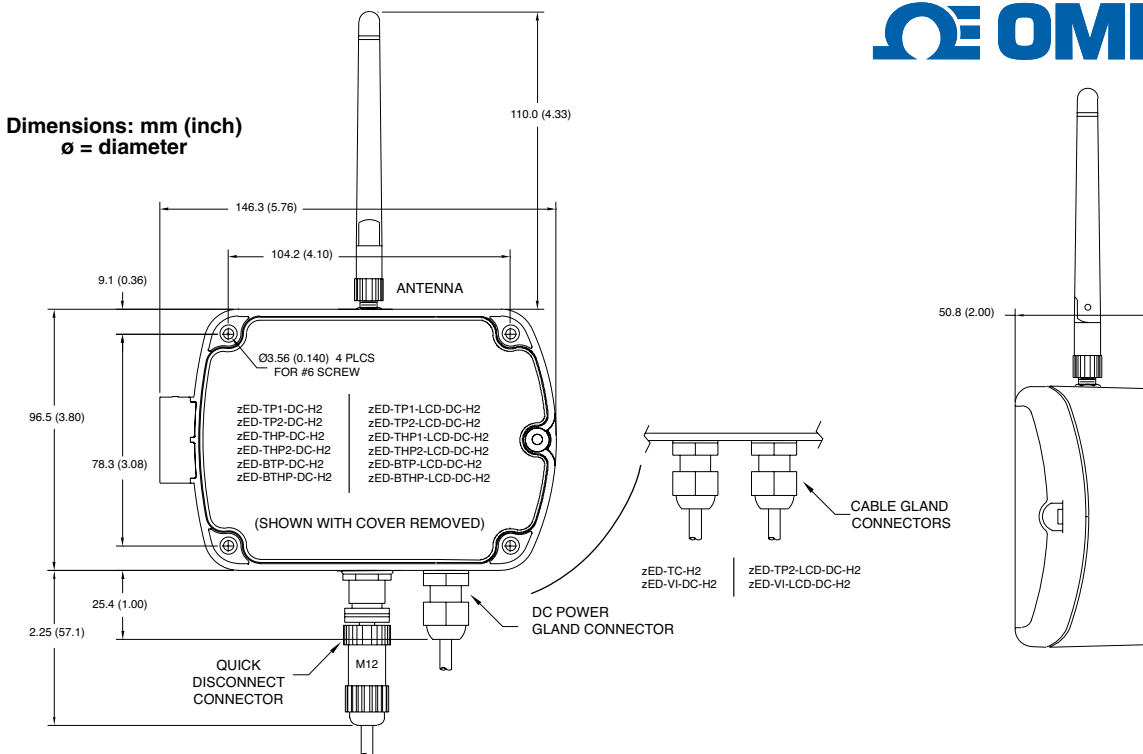
**Accuracy:** ±1% full range @ 25°C

**Reading Rate:** Periodic (1 sample/update) or continuous (20 samples/second)

**A/D Conversion:** Sigma-Delta

**Resolution:** 16-bits

**Temperature Coefficient:** ±50 ppm/°C



**Common Mode Rejection:** 105 dB

**Normal Mode Rejection:** 98 dB

**Warm-Up to Rated Accuracy:** 30 minutes

**Wireless Communication**

**Standard:** IEEE 802.15.4, DSSS

**Frequency:** 2.4 GHz (2400 to 2483.5 MHz), 16 channels

**Network Topology:** Star topology

**Range:** Up to 1000 m (3280') without obstructions or interference

**Power (zED-x-P, zED-x-LCD)**

**Power Input:** 5 Vdc

**Consumption:** 0.8 W maximum

**Safety Qualified AC Power**

**Adaptor (Included):**

**Nominal Output:** 5 Vdc @ 0.6 A

**Input:** 100 to 240 Vac, 50/60 Hz

**Operating Temperature:** 0 to 40°C (32 to 104°F)

**Lithium Back-up Battery:** One 3.6 Vdc (included)

**Lifetime:** Estimate of 2 years with frequency of 1 reading per 2 minutes (7 months with -TC option, 8 months with -VI)

**Power (zED-x-DC)**

**Power Input:** 10 to 30 Vdc, or 24 Vac ±10%

**Consumption:** 1.5 W maximum

**Isolation Dielectric per 60 Seconds:** 1000 Vdc

**Power (zED-x-CCELL)**

**Alkaline Battery:** Two C-cell 1.5 Vdc (included)

**Lifetime:** Estimate of 5 years with frequency of 1 reading per 2 minutes



**Environmental**

**Operating Temperature:**

**zED-x-P; zED-x-DC-H2:** -20 to 70°C (-4 to 158°F), 90% RH non-condensing

**zED-x-CCELL:** -18 to 55°C (-0.4 to 131°F), 90% RH non-condensing

**zED-x-LCD-x:** -10 to 60°C (14 to 140°F), 90% RH non-condensing

**Packaging**

**Enclosure Material:** Polycarbonate

**Enclosure Protection:** NEMA 4 (IP65)

**Enclosure Dimensions:** 135.9 L x 82 W x 39 mm D (5.35 x 3.23 x 1.56")

**General**

**Agency Approval:** FCC Part 15C; EMC; 2004/108/EC, LVD 2006/95/EC, RTT&E 1999/5/EC, SRRC

**Software:** iConnect (configuration software for the Ethernet interface), iLog (Excel-based software for automatic data logging), and Mail Notifier (email alarm notification software)

Thermocouple Chart			
	Input Type	Range	Accuracy
J	Iron - Constantan	-210 to 760°C (-346 to 1400°F)	0.4°C (0.7°F)
K	CHROMEGA® - ALOMEGA®	-270 to -160°C/-160 to 1372°C (-454 to -256°F/-256 to 2502°F)	1.0°C/0.4°C (1.8°F/0.7°F)
T	Copper - Constantan	-270 to -190°C/-190 to 400°C (-454 to -310°F/-310 to 752°F)	1.0°C/0.4°C (1.8°F/0.7°F)
E	CHROMEGA® - Constantan	-270 to -220°C/-220 to 1000°C (-454 to -364°F/-364 to 1832°F)	1.0°C/0.4°C (1.8°F/0.7°F)
R	Pt/13%Rh-Pt	-50 to 40°C/40 to 1768°C (-58 to 104°F/104 to 3214°F)	1.0°C/0.5°C (1.8°F/0.9°F)
S	Pt/10%Rh-Pt	-50 to 100°C/100 to 1768°C (-58 to 212°F/212 to 3214°F)	1.0°C/0.5°C (1.8°F/0.9°F)
B	Pt/30%Rh-Pt/6%Rh	100 to 640°C/640 to 1820°C (212 to 1184°F/1184 to 3308°F)	1.0°C/0.5°C (1.8°F/0.9°F)
C	W/5%Re-W/26%Re	0 to 2320°C (32 to 4208°F)	0.4°C (0.7°F)
N	Nicrosil - Nilil	-250 to -100°C/-100 to 1300°C (-418 to -148°F/-148 to 2372°F)	1.0°C/0.4°C (1.8°F/0.7°F)
L	J DIN	-200 to 900°C (-328 to 1652°F)	0.4°C (0.7°F)

# Long Range Wireless Transmitters



**A complete wireless system requires at least: 1 end device (zED-x, zED-x-P, zED-x-LCD, zED-x-DC, or zED-x-CCELL) and 1 coordinator (zCDR)**

<b>To Order</b>	
<b>Model No.</b>	<b>Description</b>
<b>Wireless End Device</b>	
<b>zED-TP1-P-H2</b>	Temperature sensor with stick probe, AC powered
<b>zED-THP-P-H2</b>	Temperature and humidity sensor, AC powered
<b>zED-TC-P-H2</b>	Dual thermocouple input, AC powered
<b>zED-TP2-LCD-H2</b>	Temperature sensor with lug mount probe, AC powered, LCD display
<b>zED-THP-LCD-H2</b>	Temperature and humidity sensor, AC powered, LCD display
<b>zED-TC-LCD-H2</b>	Dual thermocouple input, AC powered, LCD display
<b>zED-VI-LCD-H2</b>	Analog input, AC powered, LCD display
<b>zED-THP-CCELL-H2</b>	Temperature and humidity sensor, battery powered, horizontal case
<b>zED-THP2-CCELL-H2</b>	Short probe with temp and humidity sensor, battery powered, horizontal case
<b>zED-BTP-CCELL-H2</b>	Barometric pressure and temp sensor, battery powered, horizontal case
<b>zED-BTHP-CCELL-H2</b>	Barometric pressure, temp and humidity sensor, battery powered, horizontal case
<b>zED-TC-CCELL-H2</b>	Dual thermocouple input, battery powered, horizontal case
<b>zED-THP-LCD-CCELL-H2</b>	Temperature and humidity sensor, battery powered, LCD display, horizontal case
<b>zED-THP2-LCD-CCELL-H2</b>	Short probe with temp and humidity sensor, battery powered, LCD display, horizontal case
<b>zED-TC-LCD-CCELL-H2</b>	Dual thermocouple input, battery powered, LCD display, horizontal case
<b>zED-THP-DC-H2</b>	Temperature and humidity sensor, low voltage powered, horizontal case
<b>zED-TC-DC-H2</b>	Dual thermocouple input, low voltage powered, horizontal case
<b>zED-THP-LCD-DC-H2</b>	Temperature and humidity sensor, low voltage powered, LCD display, horizontal case
<b>zED-TC-LCD-DC-H2</b>	Dual thermocouple input, low voltage powered, LCD display, horizontal case
<b>zED-VI-LCD-DC-H2</b>	Analog input, low voltage powered, LCD display, horizontal case
<b>Wireless Coordinators (Receivers)</b>	
<b>zCDR</b>	Coordinator, which can support up to 32 end devices (any zED type except zED-VI)
<b>zCDR-VI</b>	Coordinator, which can support up to 32 analog input only end devices
<b>Calibration</b>	
<b>Calibration</b>	<b>Description</b>
<b>CAL-3-HU</b>	NIST traceable calibration certificate; three humidity points: 25%, 50%, 75%, 1 temperature point of 25°C (for new units)
<b>CAL-3-HU-P-T</b>	NIST traceable calibration certificate; three humidity, barometric pressure, and temperature points (for new units)
<b>CAL-3-P</b>	NIST traceable calibration certificate; three barometric pressure points, and temperature 25°C (for new units)
<b>CT485B-CAL-KIT</b>	Calibration kit, 33% and 75% RH standards

**Note:** Because of transmission frequency regulations, these products may only be used in the US, Canada, Europe, and China. 2 type K thermocouples with 1 m of 24 AWG PFA insulated wire with stripped lead termination included with -TC models.

For the meter/controllers, other output options are available, please contact our Sales Department.

Comes complete with software, 2 C-cell batteries, or AC power adaptor, and operator's manual.

**Ordering Examples:** Two **zED-TP2-P-H2** long range end devices with external temperature sensor in lug mounting probe housing and 3 m (10') cable, and **zCDR**, coordinator.

**CAL-3-HU**, NIST traceable calibration certificate for new unit.