ZENO® WEATHER STATIONS
For Professional Applications

COASTAL
ENVIRONMENTAL SYSTEMS

Monitor Your World

ZENO® System Configurations and Applications for *any* Environment

Single Tower Permanent ZENO® Station

Portable Solar Powered ZENO® Station

Permanent

Permanent systems can range from a simple stand alone tower to a complete nationwide network. Powered by AC mains or solar power, each sensor suite is customized to support any application. Any means of communications can be employed, including RF, Cell network, and TCP/IP–LAN/WAN or satellite.

Cold/Harsh Environments

Coastal has more accumulated experience in cold environments than any other provider. We offer a complete line of weather stations for research, operational monitoring and ice camp weather data collection in harsh environments. These stations can operate to -60º C (without additional heating) and withstand the most powerful storms.

Hot/Harsh Environments

Coastal has provided weather stations to customers in the Middle East for decades. Our stations, designed and tested to +65º C (and higher in some cases), are built to withstand the high heat, blowing sand, freezing nights and salt air that would cripple other systems. High heat combined with high humidity is another serious issue in the region; but Coastal's sealed and airtight systems are unaffected.

HYDRO/Meteorological

Coastal uses the power of the ZENO® datalogger and SDI-12 protocol to seamlessly connect almost all multi-parameter water quality probes. This data, combined with the data from a variety of additional sensors, creates total monitoring platforms such as water level and flood warning.

Portable

Exceptionally lightweight and durable, our portable models can typically be set up in less than one minute. More sophisticated portable units assemble in less than an hour. Whether battery or solar powered, the ZENO® datalogger processes data from most analog, digital and serial "smart" sensors.

Science

Twenty percent of our systems are provided to scientific researchers. Our products are very popular due to the fact Coastal typically delivers custom turn-key systems in the same time other providers may take to deliver their standard product. The flexibility and power of the ZENO® datalogger allow scientists to modify data processing, sensors, and means of communication by configuring menus rather than learning to write code.

Agriculture/Forestry

Coastal provides first-rate agricultural weather stations that monitor soil and crop conditions, evapotranspiration, and provide pest management calculations and other measurements of interest in agricultural applications. Similar weather stations are designed for wildland fire response and management, and can provide information such as fire rating calculations and fuel moisture measurements, etc. Individual sensors are specifically selected for forestry and agricultural applications.

General Purpose/Regulatory

The need for a weather station may be driven by distinctive local conditions, such as a peculiar microclimate or storm activity. Perhaps weather data is vital to a particular task like scientific inquiry, education or emergency management. Sometimes the need is driven by government regulation. Whatever the reason, Coastal fully understands the rules, the regulations and the common sense guidelines governing environmental monitoring and will provide the system best suited to the individual application.

ZENO®
Additional Information

Communication Types

- Direct: RS-232 (100 ft), RS-485 (2000 ft), SDI-12 (2000 ft)
- With adaptor: USB (15 ft), Bluetooth (300 ft), Telephone (landline), Fiber Optic
- Radio: UHF, VHF, Spread Spectrum, Bluetooth
- Cellular: Cell phone, GSM
- Satellite: IRRIDIUM, GOES, ARGOS, INMARSAT, OrbComm, other
- LAN/WAN—IP address

Deployment Types

- Permanent
- Transportable
- Tactical
- Portable
- Backpack

Sensors

(See web site for selection)

Wind Speed & Direction
> Ultrasonic: Range: 0-60 M/S (134 MPH), 0-70 M/S (156 MPH) or 0-75 M/S (168 MPH)
> Mechanical: Range: 0-60 M/S (134 MPH) or 0-100 M/S (222 MPH)

Relative Humidity
> Accuracy: 1% or 3%

Temperature
> Accuracy: 0.1, 0.2 or 0.6 C

Pressure
> Accuracy: =/- 3 hPa, 0.3 hPa, 0.2 hPa or 0.1 hPa

Rain
> Orifice Size: 4, 6 or 8 inch: (200 Cm2)

Solar Radiation
> Global, Total, Duration, Long Wave, Short Wave, Net Radiation, UVA, UVB, Direct, Diffuse, Other

Water Level
> Ultrasonic Sensor, Pressure Sensor, Radar or Bubbler

Visibility
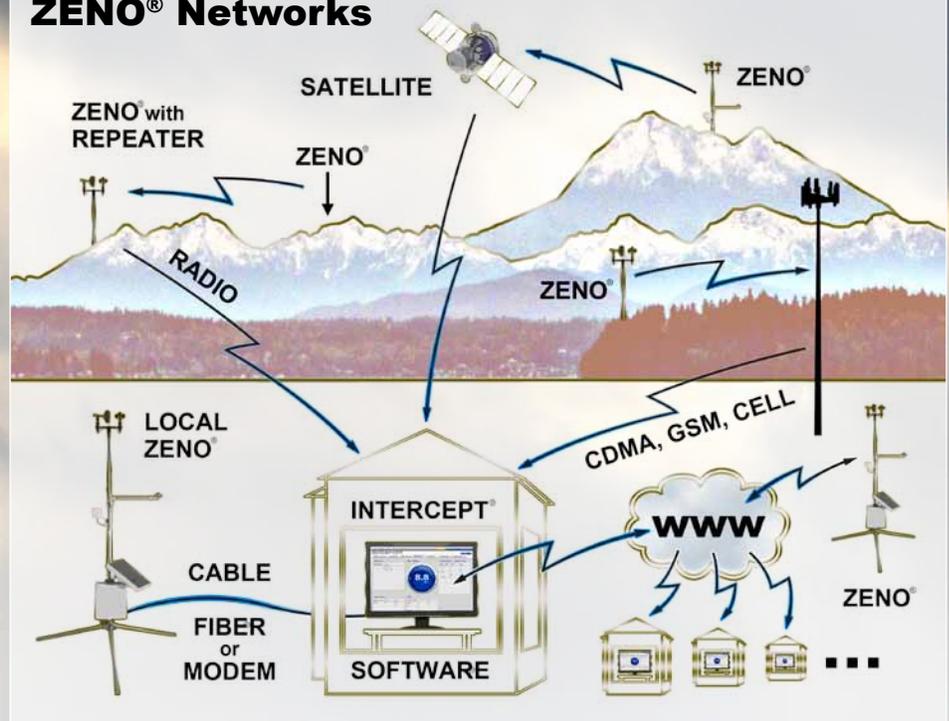Present Weather
Cloud Height
Lightning/Thunderstorm
Water Quality
Other

Sensor Interfaces/Inputs

Universal serial interface: Using only the ZENO® menus, the ZENO® can be configured to communicate with any serial sensor, receive data from the sensor, parse out the data—then apply further processing, alarms, built-in tests, or all of these.

ZENO® Networks

Universal digital interface: Using the ZENO® menus for digital inputs, any digital type may be selected—pulse, count, frequency (all ranges), etc. as well as provide all the power, excitation, warm-up time, offsets and other coefficient parameters required.

Universal analog interface: Using the ZENO® menus for analog inputs, any analog sensor can be connected by setting the scale and range, offset, and slope, as well as provide all the power, excitation, warm-up time, and other coefficient parameters required.

Calculations

Often a value is calculated rather than measured. The calculation uses measurements from other sensors or, more often, combines measurements from several sensors. Examples of available calculations are:

- Averages (block, running, multiple, etc.)
- Standard Deviation
- Minimum/Maximum
- Dew Point
- Altimeter Setting (also many other pressure calculations associated with aviation)
- Present Weather
- Evapotranspiration
- Wind Calculations (vector average, gust, time of gust, scalar speed, u vector, v vector, standard deviation (sigma theta), peak wind, squall, instantaneous, running average)
- Delta T (temperature)
- Wet Bulb Temperature
- Black Bulb Temperature
- Heat Index

Power

AC, DC, Solar, Battery (combinations/back-up)

Mounting

Existing Tower, Permanent Tower (climbable, fold over, counter-balanced), Vehicle Mount, Portable

Special Features (options on various units)

- Auto-Aligning (by electronic compass)
- True Winds on a moving platform (ship, vehicle, buoy)
- Completely sealed electronics for harsh environments
- Custom calculations

ZENO® Special Features

- Universal Interfaces for all sensors
- Configurable connections—no programming required
- Up to 5 serial ports standard—up to 12 with expansion
- Programmable serial ports
- Seven of the digital channels can be used for control outputs
- Keeps track of collected data
- Synchronize time with collection network
- Auto-synchronize time with GPS
- Sends out up to 4 different messages
- Drive local displays of all types
- Use any computer—anywhere—for communications
- Multi-step and conditional alarms
- Works with any type of telemetry

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