

**MILLTRONICS**



# EnviroRanger ERS 500

The All-In-One Solution

# Monitoring and Control in One Package!



The EnviroRanger ERS 500 is a complete solution for remote monitoring and control of water distribution and waste water collection systems. It uses non-contacting ultrasonic technology, patented echo-processing technologies and proven applications software to meet virtually all pump control and level monitoring needs.

## Capabilities

- Monitors level in liquid applications with a range up to 15 m (50 ft.)
- Controls any combination of pumps, gates and alarms
- Logs pump run time and number of pump starts
- Monitors flow in flumes, weirs or open channels
- Integrates pumps and components for effective monitoring and control
- Calculates pumped volume to accuracy within 5%
- Logs the time, date, duration and volume of up to 20 occurrences of combined sewer overflows
- Automatically cleans bar screens
- Tracks data for trend analysis
- Generates scheduled reports and reports on demand or by exception to help you optimize your system's effectiveness

## Cost-Effective Solution

This breakthrough system offers high performance and broad functionality. It's a sophisticated controller but fast and easy to commission. Control algorithms and subroutines are all pre-programmed, so you can easily install and configure the unit without complex programming or ladder logic.



You can make changes quickly and easily in the field. EnviroRanger is a reliable performer that offers lower energy costs, tighter controls, low maintenance and a flexible, modular design. Its high performance-to-cost ratio makes it a cost-effective solution.



## Dolphin Plus Software

Milltronics' Dolphin Plus software lets you configure and run diagnostics on the EnviroRanger using a laptop or standard PC. The rack and panel models have an RJ-11 jack on the face plate and the wall mount has one inside the enclosure for a direct RS-232 computer connection. Dolphin Plus prompts you with the

relevant parameter descriptions and on-line help needed for set-up. You can upload or download the unit's parameters to a disk for programming multiple units. You can change parameters. You can view sonic profiles, capture them and send them by email to Milltronics for technical support or troubleshooting.





# Primary Applications

## Pump Station Control

EnviroRanger controls up to five pumps in both wet well (pump down) and reservoir (pump up) applications using any of these control strategies:

- Fixed duty assist and fixed duty backup
- Alternate duty assist and alternate duty backup
- Service ratio duty assist and service ratio duty backup
- First-on, first-off duty assist

The system continuously monitors levels and provides important site information, including pump status, pump efficiency and total pumped volume.

Optimize your operations with pump control by level rate of change, service ratios to balance pump run times, pump start delays to reduce power surges, pump run-on or valve flushing to clear sediment, scum line reduction and time-of-day setpoints to account for variable energy costs.

EnviroRanger operates an economy pumping regime, switching automatically to normal routines during a storm. It monitors overflow discharge, logging the date, time, duration and volume for regulatory reporting. A vast selection of alarm functions, control algorithms and conditional subroutines are included.



The dual-point option provides true two-point independent level control; for example, a single system can control a sewage lift station and monitor open channel flow.

## Open Channel Flow Monitoring

EnviroRanger provides head, flow, and totalized flow measurement on standard weirs and flumes, or offers 32 breakpoints for non-standard devices.

It records critical data at five-minute intervals for up to 17 days and eight hours, allowing local and remote access to all data through radio modems and direct connection. It has the capacity to dial eight phone numbers for critical reports.

It logs storm occurrences or influent quality from an analytical on-line sampler. An added feature is automatic sampler control based on time or volume.



## Combined Sewer Overflow Monitoring

EnviroRanger logs up to 20 occurrences, with time and date stamp, duration and volume of discharge. The dual-point capability allows you to monitor both wet well and overflow.



## Reservoir Overflow Monitoring

EnviroRanger monitors rain events and rainwater levels, as well as overflow events and flow totals.

## Flood Management

Use EnviroRanger to provide remote monitoring of level in rivers, waterways and throughout a catchment area. It logs rainfall information for historical trending, and reports high levels automatically.

## Gate and Rake Control

Used with a gate (penstock), EnviroRanger will maintain a desired flow rate and constant downstream level. The time-step gate control function maintains the level either before or after the gate, depending on transducer placement.

This maintains consistent inflow to a treatment facility or consistent level in a hinterland reservoir.



Used with two transducers, it will monitor the differential level across a screen and activate a rake mechanism to remove blockages. This automatic cleaning keeps the plant inflow constant and is less expensive than manual cleaning.

## Treatment Chemical Monitoring

EnviroRanger monitors treatment chemical inventories to track usage and determine when refills are required. Almost any treatment chemical can be monitored, including ferric chloride, alum, lime or sodium hypochlorite.



## Modular Technology

The standard model features eight digital inputs, an analog input and five relays, along with these software features:

- Comprehensive pump control routines
- Report on exception
- Modbus RTU
- Economy pumping (with failsafe)
- Pumped volume calculation
- Overflow event logging
- Pump interlock and fault reporting/control
- 32 breakpoints for custom flow or volume



Expand your system with these optional, plug-in I/O cards that include RS-485 communications:

- 8 digital inputs
- 4 analog inputs
- 4 analog outputs
- 2 analog inputs and 2 outputs
- 8 digital inputs, 2 analog inputs, 2 analog outputs (available for wall mount version only)

Other options include:

- RAM for data logging
- Second point for true dual-point monitoring
- Modem for telemetry and remote monitoring
- SmartLinx® communications

All this functionality is available in a rack, panel or wall mount version. Units feature a backlit LCD display for clear visibility.

## Open System Connectivity

EnviroRanger integrates seamlessly with any control system (SCADA, DCS or PLC) to provide remote monitoring of all process variables, instrument diagnostics, status and programming parameters. More data at your fingertips means improved monitoring, maintenance scheduling, crew dispatch information and asset management capability.

EnviroRanger has built-in Modbus communications. Just add a modem for telemetry. ERS 500 supports dial-up (telephone network), leased line, and radio modems (including spread spectrum), as well as satellite communications links and direct PC connections.



*Milltronics' SmartLinx® interface modules provide direct digital connection to popular industrial buses, including Profibus DP, DeviceNet or Allen-Bradley Remote I/O protocols. The module simply plugs into a socket built into the EnviroRanger. SmartLinx modules may be ordered with the unit or later as your networking needs change.*



## Milltronics Reliability

Since 1954, Milltronics has built a solid reputation as a world leader in process measurement instruments. Facilities are ISO registered, and Milltronics people share a commitment to quality products and service. Expert technical support is there when you need it.

EnviroRanger features Milltronics' patented Sonic Intelligence® advanced signal-processing technology. It differentiates between true echoes and false echoes generated by acoustical or electrical noise, providing reliable data even in harsh environments.



For maximum reliability, pair EnviroRanger with Milltronics' Echomax® ultrasonic transducers. They are built for harsh environments—impervious to dust, moisture, corrosion, vibration, flooding and temperature extremes. The non-contacting design virtually eliminates the nuisance and expense of cleaning and repairing contacting devices.

# Technical Specifications

	Common to all Models	Rack & Panel Mount Models Only	Wall Mount Model Only
Power	<ul style="list-style-type: none"> <li>ac versions: 100-230 Vac <math>\pm</math> 15%, 50 / 60 Hz, 36 VA, (17W)</li> <li>dc versions: 12-30 Vdc, (20W)</li> </ul>		
Environmental	<ul style="list-style-type: none"> <li>altitude: 2000 m max.</li> <li>ambient temperature: -20 to 50°C (-5 to 122°F)</li> <li>installation category: II</li> </ul>	<ul style="list-style-type: none"> <li>location: indoor</li> <li>relative humidity: 80% for temperatures up to 50°C (122°F)</li> <li>pollution degree: 2</li> </ul>	<ul style="list-style-type: none"> <li>location: indoor/outdoor</li> <li>relative humidity: suitable for outdoor (Type 4X/NEMA 4X/IP65 enclosure)</li> <li>pollution degree: 4</li> </ul>
Scan Points	<ul style="list-style-type: none"> <li>1 or 2 points</li> </ul>		
Range	<ul style="list-style-type: none"> <li>0.3 m (1 ft.) to 15 m (50 ft.) dependent on transducer</li> </ul>		
Accuracy	<ul style="list-style-type: none"> <li>0.25% of maximum range or 6 mm (0.24") whichever is greater</li> </ul>		
Resolution	<ul style="list-style-type: none"> <li>0.1% of program range* or 2 mm (0.24") whichever is greater</li> </ul>		
Memory	<ul style="list-style-type: none"> <li>1MB static RAM with battery backup</li> <li>1MB flash EPROM</li> </ul>		
Programming	<ul style="list-style-type: none"> <li>primary: PC running Dolphin Plus software</li> <li>secondary: hand held programmer</li> </ul>		
Display		<ul style="list-style-type: none"> <li>75 x 20 mm (3 X 0.8") multi-field backlit LCD</li> </ul>	<ul style="list-style-type: none"> <li>100 x 40 mm (4 X 1.5") multi-field backlit LCD</li> </ul>
Enclosure		<ul style="list-style-type: none"> <li>Rack Mount: DIN 3U/21HP, 4-rail plug in unit, suitable for standard 3U/84HP (19") sub rack</li> <li>Panel Mount: suitable for DIN 43700 72 x 144 standard panel cut-out on 110 mm (4.33") centers</li> </ul>	<ul style="list-style-type: none"> <li>Type 4X/NEMA 4X/IP 65 polycarbonate</li> </ul>
Temperature Compensation	<ul style="list-style-type: none"> <li>source: integral transducer sensor, TS-3 temperature sensor, programmable fixed temperature</li> </ul>		
Temperature Error	<ul style="list-style-type: none"> <li>sensor: 0.09% of range</li> <li>fixed: 0.17%/°C deviation from programmed value</li> </ul>		
Communication	<ul style="list-style-type: none"> <li>RS-232 running Milltronics Dolphin protocol</li> <li>RS-232 running Modbus RTU and ASCII</li> <li>Optional: SmartLinx compatible, RS-485</li> </ul>		
Transducers	<ul style="list-style-type: none"> <li>Compatible Transducers: Echomax® series and ST-H series</li> </ul>		
Cable	<ul style="list-style-type: none"> <li>Signal to be 2-3 copper conductors, twisted, with foil shield, drain wire, 300V 0.5 to 0.75 mm<sup>2</sup> (22 to 18 AWG)</li> </ul>		
Weight		<ul style="list-style-type: none"> <li>1.5 kg (3.3 lbs.)</li> </ul>	<ul style="list-style-type: none"> <li>2.5 kg (5.5 lbs.)</li> </ul>
Approvals		<ul style="list-style-type: none"> <li>CE, CSA<sub>NRTL/UL</sub> UL Listed</li> </ul>	<ul style="list-style-type: none"> <li>CE, CSA<sub>NRTL/UL</sub> Pending; UL Listed</li> </ul>
Options (All models except where indicated)	<b>Input/Output and RS-485 Cards</b> <ul style="list-style-type: none"> <li>2 Analog Input / 2 Analog Output</li> <li>4 Analog Input</li> <li>4 Analog Output</li> <li>8 Digital Input</li> <li>8 Digital Input / 2 Analog Input</li> <li>2 Analog Output (wall mount only)</li> </ul>	<b>Extended Memory Card</b> <ul style="list-style-type: none"> <li>Data Logging is available by increasing RAM. The extended memory card provides RAM for this function</li> </ul> <b>Dual-Point Performance</b> <ul style="list-style-type: none"> <li>A second point is optional</li> </ul>	<b>Communications</b> <ul style="list-style-type: none"> <li>Profibus-DP</li> <li>Allen-Bradley RIO</li> <li>DeviceNet</li> </ul>

\*Program range is defined as the empty distance to the face of the transducer (P006) plus any range extension (P801). **Specifications are subject to change without notice.**

Your Supplier

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