

---

## EnviroRanger ERS 500 Control Strategy Implementation

### Configuring Alternate Technology Back-up For Pump Control

---

**Objective:** To configure the EnviroRanger ERS 500 to override normal pump control operation based on level measurement and operate pumps based on point level devices.

---

**Equipment:**

- EnviroRanger ERS 500 level controller (software revision 5.01 or greater)
- Infra-red hand programmer (or other instrument configuration method)

---

While every effort was made to verify the following information, no warranty of accuracy or usability is expressed or implied.

### Overview

The EnviroRanger ERS 500 utilizes ultrasonic echo-ranging technology to continuously monitor liquid levels as a basis for fixed frequency pump control. Ultrasonic echo-ranging technology provides a number of reliability advantages over traditional point level detection, resulting from the non-contacting nature of ultrasonic level measurement and powerful self-cleaning tendency of Echomax ultrasonic transducers.

However, unusual conditions may arise that render ultrasonic echo ranging technology inoperative or unreliable. These conditions may be related to the equipment itself, such as a damaged transducer cable, or unusual application conditions, such as the vessel suddenly filling with foam.

This guide details how to configure point level detection device inputs to over-ride normal pump control routines based on the ultrasonic level measurement.

### Pump Control By Discrete Input Parameters

These EnviroRanger ERS 500 parameters are only available in software revision 5.01 and greater. Consult your Siemens Milltronics equipment supplier if you have a previous software revision installed.

**P558 Pump Start By Discrete Input**  
Identifies the discrete input that will activate a pump start when asserted (regardless of level measurement).

Enter the DI number:

- 0 (none) (factory setting)
- 1 to 8 (standard),
- 9-16 (optional I/O card),

**P559 Pump Stop By Discrete Input**  
Identifies the discrete input that will activate a pump start when asserted (regardless of level measurement).

Enter the DI number:

- 0 (none) (factory setting)
- 1 to 8 (standard)
- 9-16 (optional I/O card)

---

## **MILLTRONICS**

## Application Example:

### Duplex Wet Well Pump Control with Point Level Switch Back-up

#### Objective

Under normal conditions, the ERS 500 is to operate two pumps in alternating lead-lag fashion, based on non-contacting ultrasonic level measurement. However, should the level get outside the normal control range for any reason, the normal pump control routine is to be overridden based on high and low level detection switches, until the condition subsides.

#### Setup

1. To configure the ERS 500 for basic wetwell duplex pump control, set the Preset Application parameter for WetWell 1 operation (P100=1).
2. Prepare a point level switch to close a NO contact if the level reaches 85% and connect to ERS 500 discrete input # 1.
3. Prepare a point level switch to close a NO contact if the level reaches 15% and connect to ERS 500 discrete input # 2.
4. To override normal pump controls and turn all pumps on if the high level switch activates, set P558 = 1.
5. To override normal pump controls and turn all pumps off if the low level switch activates, set P559 = 2.

#### Normal Operation

When the level measurement reaches 70% a pump will start and run until the level is reduced to 20%. When the level reaches 70% again, the other pump will start and again reduce the level to 20%. If the level reaches 70% and a pump starts, but the level continues to rise to 80%, the second pump will start, and both pumps will run until the level is reduced to 20%.

#### Backup Operation

If the level rises above the normal control range to the point where the high level switch is activated, both pumps will start and continue running until the normal pump control stop setpoint is reached. If normal measurement and control is not regained during the pump down cycle and the level continues to recede below the normal off setpoint, both pumps are stopped when the low level switch is activated.