SIEMENS

APPLICATION GUIDE

AG030127

Instrument Configuration Software Reference

Setting up a custom instrument configuration template with EnviroRanger Configuration Tool (ECT) software

Objective:	To develop a custom ECT template to aid rapid configuration of Siemens Milltronics EnviroRanger ERS 500 level controllers, using a PC or notebook computer.
Equipment:	• EnviroRanger ERS 500 • IBM compatible PC, Pentium 100/32M RAM or higher, operating Windows 98/ME/2000/NT/XP • ECT software, version 2.0 or higher

Overview:

The EnviroRanger ERS 500 is a sophisticated SCADA-ready level controller capable of remote water and wastewater industry process automation. The highly flexible nature of the ERS 500 system may necessitate significant user configuration to meet exact process monitoring, control, data logging, and communication needs. While this configuration can be achieved using a Siemens Milltronics hand programmer, these activities can be substantially simplified and accelerated using our EnviroRanger Configuration Tool (ECT) configuration software.

The ECT software package includes a number of standard configuration templates for various ERS 500 applications. To match these standard templates to your application, verify that the wiring of the ERS 500 matches that of the template, as illustrated in the ECT manual. These standard templates, or wiring requirements, may also be programmed as required and saved for future use. See *Customizing a Configuration Template* on page 2.

Should an ERS 500 require reconfiguration, or multiple systems require similar configuration, the saved custom configuration may be altered as required and downloaded any number of times or to any number of similar systems.

This application guide presents the following:

- Procedures:
  - Customizing a Configuration Template
  - Using a Saved Configuration Template
  - Verifying Template Configured Parameters
- Trigger and Report Settings
- Custom Configuration Template Example

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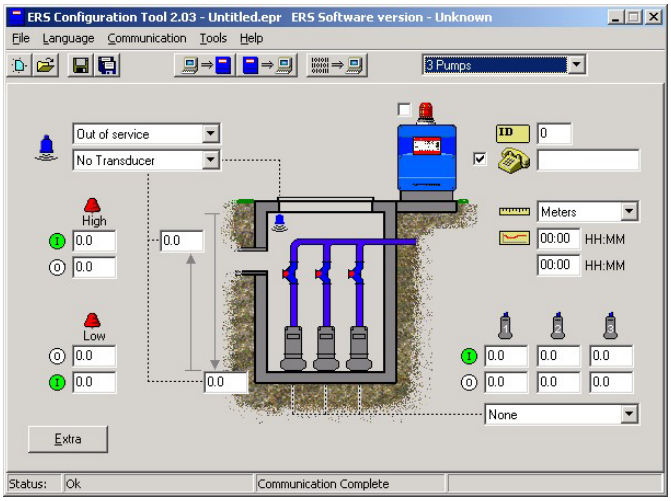
Procedures:

Customizing a Configuration Template

To customize an existing ECT configuration template, follow these steps:



1. Run the ECT application from your PC or notebook.
2. From the drop down dialog box (top right), select the ECT configuration template that most closely matches the application.
3. Using drop downs, adjust the main screen fields.
4. Click **Help** on the menu bar, select **Help Topics**, and then select **Technical Reference** from the left screen.
5. Select the **Connection Diagrams** corresponding with your application and verify the ERS 500 is wired as shown.
6. Verify that the **Modem** and **Trigger**[1] configuration matches application requirements.
7. Close dialog box by clicking the **X** button at top right.
8. If a wiring, modem, trigger, or other configuration alteration is desired, click the **Extra** button and follow these steps:
   - Using the ERS 500 instruction manual, enter the **Extra Parameters** as required to modify the configuration.
   - When complete, click **File**, **Save As**, specify a unique template filename with **.epr** extension, and click **Save**.

Using a Saved Configuration Template

To use a saved configuration template, follow these steps:

1. Run the ECT application from your PC or notebook and open the desired template file.
2. Verify the ERS 500 is wired to suit the template selected.
3. Set the Units field as required. (**NOTE**: Do not alter after ERS 500 download.)
4. Adjust main menu fields and **Extra** parameter values if required.
5. Save the configuration file for that specific application. (Example: *site1.epr*)
6. Download the configuration file to the ERS 500.
7. Verify the ERS 500 performs as required under all operating conditions.

CAUTION: We strongly recommend you use only ECT to configure all the parameters in the application and then avoid altering values using either the hand programmer or other other software. Parameters not configured using ECT will not be updated within the template upon upload. The **Extra** feature permits the template to incorporate additional parameter values as required by the application.

- If parameters outside of ECT are changed, be sure to update these parameters as required to avoid operating difficulties and then add them to the template using the **Extra** feature.
- If the ERS 500 parameters already defined in the ECT template are subsequently altered via alternate means (hand programmer or other software), upload the revised configuration to ECT and save the new configuration file for future reference.

[1] Refer to the Trigger and Report Settings section of this application guide if a report by exception or data logging is used.

Verifying Template Configured Parameters

When a template configuration download is initiated, ECT generates a text file with following suffix: *. . . transmitted.txt*. (i.e. *examplefiletransmitted.txt*). This text file contains all parameter information written to the ERS 500. The file is saved in the same directory as the template and may be opened with any text editor or word processing application to view the parameters configured and their values.

Trigger and Report Settings

When an ECT template is downloaded to the ERS 500, triggers are configured to activate data logging and reports by exception:

Trigger/Report Description	Parameter Monitored	Trigger Numbers Used Per ECT Configuration Template								
		1 Pump	2 Pumps	3 Pumps	Screen	Gate	OCM Gate	Flume	Weir	Exponential
High Water Alarm	921	1	1	1			1			
Low Water Alarm	921	2	2	2			2			
Pump 1 Fault Alarm	511	4	4	4						
Pump 2 Fault Alarm	511		5	5						
Pump 3 Fault Alarm	511			6						
Pump 1 Efficiency Alarm	512	7	7	7						
Pump 2 Efficiency Alarm	512		8	8						
Pump 3 Efficiency Alarm	512			9						
Pump 1 Fault "A" Alarm	513	10	10	10						
Pump 2 Fault "A" Alarm	513		11	11						
Pump 3 Fault "A" Alarm	513			12						
Time/Interval	009	13	13	13			4	1	1	1

Trigger configuration notes:

- Time/Interval triggers initiate data logging functions.
- All other triggers initiate a report by exception.
- Ensure the template telephone box is checked and a valid reporting station modem phone number is entered.
- If alternate data logging or exception report operation is desired, the **Extra** parameters must be configured accordingly.
- If additional triggers are required, use Trigger numbers 14 - 32 to avoid overwriting ECT template trigger configurations.

NOTE: Pre-configured triggers can also be used for other functions. For example, a trigger that intitiates a *High Water Exception* report, can also activate a trigger based relay to operate emergency alarm/control equipment.

Custom Configuration Template Example

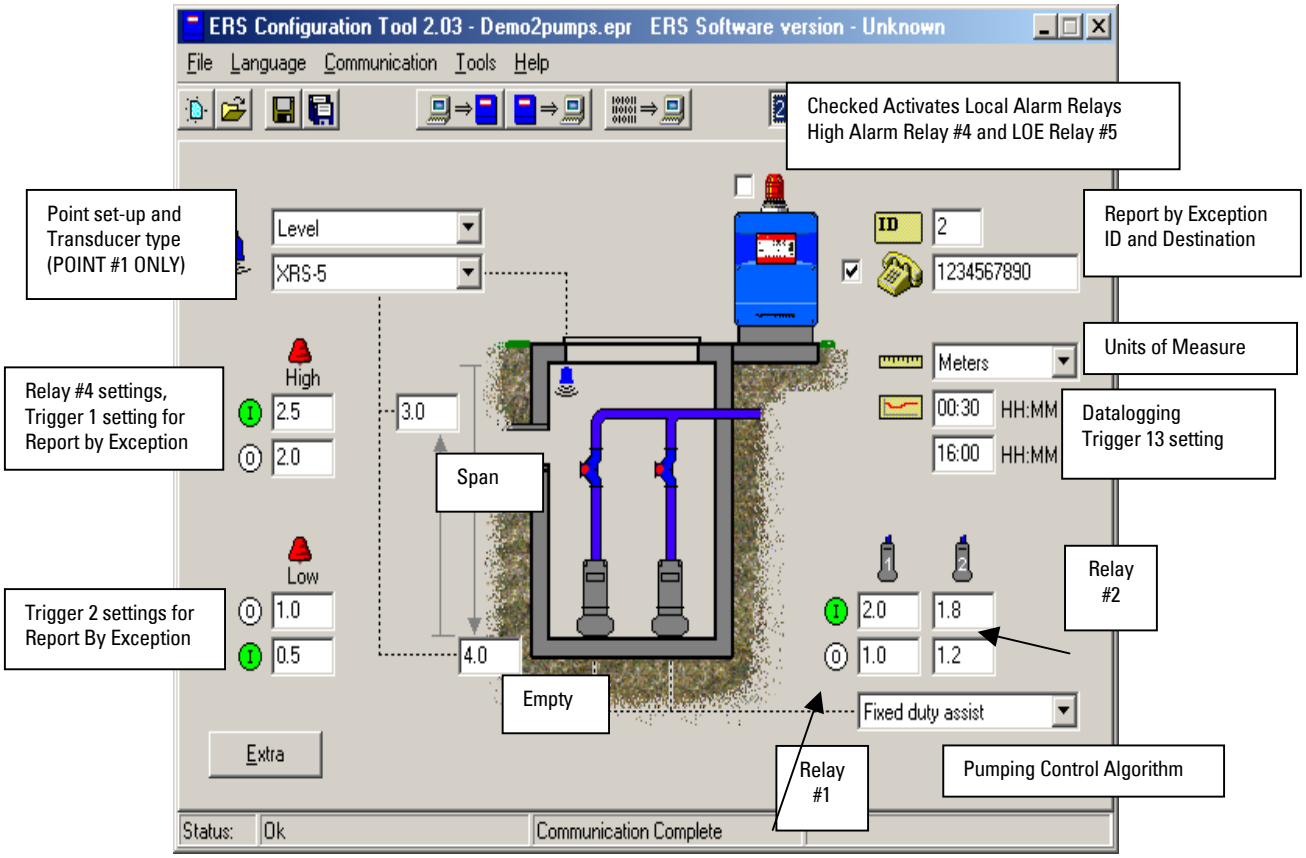
For this example, a number of EnviroRanger ERS 500 systems must be configured to control similar duplex pump stations in a wastewater collection network.

The systems are all wired to common engineering drawings; they will be wired identically and use the same triggers.

To customize an existing ECT configuration template, follow these steps:

It is probable that the templates proposed in ECT will not match the application configuration. For example, the application may have discrete inputs already wired to the ERS 500 that differ from those suggested by the ECT templates, but the user still wants to use ECT to carry the ERS 500 configuration to multiple sites with the exact same wiring, trigger, and alarming configuration.

By reprogramming parameters within the **Extra*** function on the ECT template, ECT can configure multiple sites and provide a simple template for parameters with values that may change from site to site (e.g. Empty/Span). Configuration templates can be saved to a specific name and be re-called later to reconfigure other sites or to recommision the same site in the unlikely event of an ERS 500 failure.



* * All parameter formatting follows the Modbus requirements described in the ERS 500 instruction manual.

This example demonstrates how to re-configure an ECT template required to configure a two pump station with the following settings:

- Two Pumps – alternate duty assist
- Pumped Volume
- Flat level bottom reservoir with a maximum 59.5 units of volume.

Control and Input/Output Requirements		
ITEM	INPUT/OUTPUT	LOGIC
Pump 1 auto/stop/manual	DI 1	Normally Open
Pump 2 auto/stop/manual	DI 2	Normally Open
Pump 1 Fault Condition	DI 4	Normally Open
Pump 2 Fault Condition	DI 5	Normally Open
Site Power/Phase problem	DI 6	Normally Open
Pump Fault Reset Switch	DI 8	Normally Open
Pump 1 Control (Alt duty Assist)	Relay 1	Positive Logic
Pump 2 Control (Alt duty Assist)	Relay 2	Positive Logic
Pump Fault Alarm	Relay 3	Positive Logic
Power/Phase Fault Alarm	Relay 4	Positive Logic
Hi Level Alarm	Relay 5	Positive Logic

To start, select the following:

- **2 Pumps** template
- Units
- Pumped volume for measurement type
- Transducer type
- Pumping algorithm set to Alternate duty assist
- Other values set as required for the site specifics

The following table describes the parameters entered in the EXTRA function to make the application template configure the ERS 500 as required.

Parameter	Format	Index	Sec.	Value	Why
050	0	1	0	1	Set volume geometry to flat level bottom
051	1	1	0	595	Max volume for pump reservoir set to 59.5
110	0	5	0	1	Trigger reference for relay 5 = trigger 1 (high level)
111	0	3	0	70*	Relay 3 function set to pump fault (P111=11)
111	0	4	0	71*	Relay 4 function set to power fault (P111=12)
111	0	5	0	67*	Relay 5 function set to trigger based (P111=66)
122	0	1	0	50	Pump 1 service ratio set to 50%
122	0	2	0	50	Pump 2 service ratio set to 50%
270	0	4	0	2	Set DI #4 to normally open

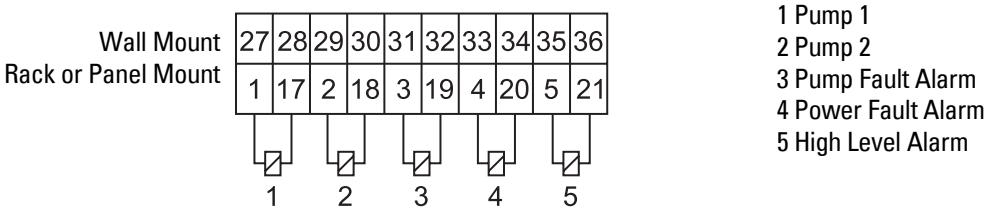
* **CAUTION**: P111 Modbus values are not mapped to the same values as the displayed settings for P111. The Modbus relay function codes are charted in the ERS 500 instruction manual under the *Data Types* section.

Parameter	Format	Index	Sec.	Value	Why
270	0	7	0	2	Set DI #7 to normally open
500	0	1	0	1	Pump 1 auto allocation set to DI #1
500	0	2	0	2	Pump 2 auto allocation set to DI #2
502	0	1	0	6	Power failure allocation set to DI #6
503	0	1	0	0	No Pump 1 running feedback
503	0	2	0	0	No Pump 2 running feedback
505	0	1	0	4	Pump 1 fault A on DI #4
505	0	2	0	5	Pump 2 fault A on DI #5
509	0	1	0	8	Pump 1 reset switch on DI #8
509	0	2	0	8	Pump 2 reset switch on DI #8

All parameter formatting follows the Modbus requirements described in the ERS 500 instruction manual.

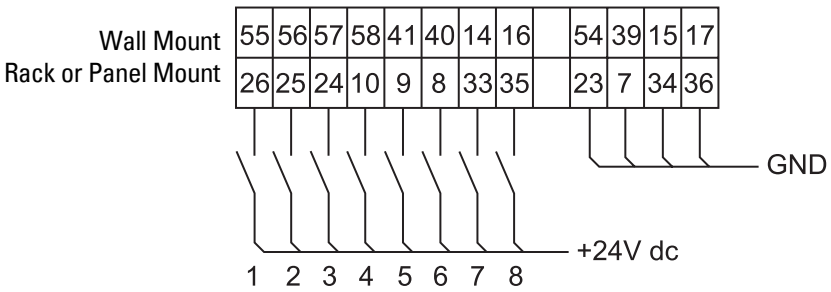
Resulting Wiring Requirements for the Altered Template

Output



1 Pump 1
2 Pump 2
3 Pump Fault Alarm
4 Power Fault Alarm
5 High Level Alarm

Input



1 Pump 1auto/stop/manual
2 Pump 2 auto/stop/manual
3 Not used
4 Pump 1 fault
5 Pump 2 fault
6 Power fault
7 Not used
8 Pump fault reset switch

Result:

The new template has the following benefits:

- Can be recalled at anytime and be saved under a name specifically designated for the site just configured.
- Defines preferred ERS 500 configuration for a two pump station.
- Can be used to configure other sites with a simple adjustment of template values (e.g. Empty/Span). Simply initiate the download command to send the configuration to all ERS 500s.