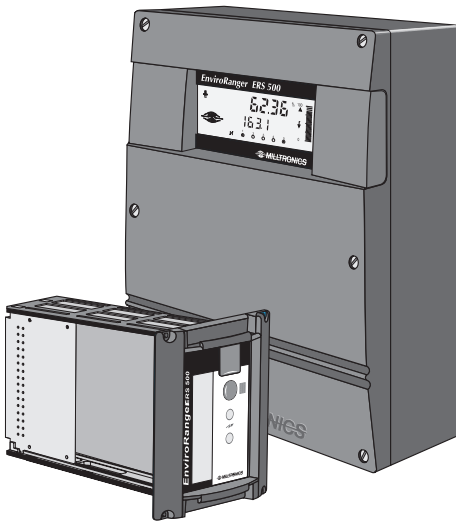


**ENVIORANGER ERS 500
INSTALLATION GUIDE**

Instruction Manual PL-601

January 2001



Safety Guidelines

Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel

This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Warning: This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.

Note: Always use product in accordance with specifications.

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Disclaimer of Liability

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While we have verified the contents of this manual for agreement with the instrumentation described, variations remain possible. Thus we cannot guarantee full agreement. The contents of this manual are regularly reviewed and corrections are included in subsequent editions. We welcome all suggestions for improvement.

Technical data subject to change.

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Specifications

Power

AC version:

- 100-230 Vac \pm 15%, 50 / 60 Hz, 36 VA (17W)¹
- fuse: F3: 2 AG, Slow Blow, 0.375A, 250V

DC version:

- 12-30 Vdc, 20W¹
- fuse: F3: 2 AG, Slow Blow, 3A, 250V

Transmitter fuse:

- F1: Belling Lee, L754, 4000A HRC, ceramic type, 100mA, 250V

Temperature Sensor fuse:

- F2: Belling Lee, L754, 4000A HRC, ceramic type, 50mA, 250V

Environmental - Rack or Panel Mount

Location:

- indoor

Altitude:

- 2000 m max.

Ambient temperature:

- -20 to 50°C (-5 to 122°F)

Relative humidity:

- 80% for temperatures up to 50°C (122°F)

Installation category:

- II

Pollution degree:

- 2

Environmental - Wall Mount

Location:

- indoor / outdoor

Altitude:

- 2000 m max.

Ambient temperature:

- -20 to 50°C (-5 to 122°F)

Relative humidity:

- suitable for outdoors

Installation category:

- II

Pollution degree:

- 4

Range

- 0.3 m (1 ft) to 15 m (50 ft) dependent on transducer

Accuracy

- 0.25% of maximum range or 6 mm (0.24") whichever is greater

¹ Power consumption is listed at maximum. The power consumption is considerably lower if no load is placed on the EnviroRanger's 24V rails which are used to power discrete interlocks on passive devices.

Resolution

- 0.1% of program range² or 2 mm (0.08”), whichever is greater

Memory

- 1024 KB static RAM with battery backup
- 1MB flash EPROM

Programming**Primary:**

- PC running Dolphin Plus software

Secondary:

- hand held programmer

Display

- back lit LCD

Temperature Compensation**Range:**

- -50 to 150°C (-58 to 302°F)

Source:

- integral transducer sensor
- TS-3 temperature sensor
- programmable fixed temperature

Temperature Error**Sensor:**

- 0.09% of range

Fixed:

- 0.17% per °C deviation from programmed value

Outputs**Transducer drive:**

- 315 V peak

Relays³:

- 4 control / 1 alarm relay
- all relays rated 4 A at 250 V ac, non-inductive

Control Relays:

- 4 form “A”, NO relays (number 1-4)

Alarm Relay

Rack or panel mount:

- 1 form “B”, NC relay (number 5)

Wall mount:

- 1 form “C”, NO or NC relay (number 5)

Communication:

- RS-232 running Milltronics Dolphin protocol
- RS-232 running Modbus RTU and ASCII

Optional:

- SmartLinx[®] compatible
- RS-485

2 Program range is defined as the empty distance from the face of the transducer (P006) plus any range extension (P801).

3 All relays are certified only for use with equipment that fails in a state at or under the rated maximums of the relays.

Inputs

mA (analog) (1):

- 0-20 or 4-20 mA, from alternate device, scaleable

Discrete (8):

- 10-50 V dc switching level
 - logical 0 = < 0.5 V dc
 - logical 1 = 10 to 50 V dc
- 3 mA max. draw

Frequency (2)⁴:

- 1-20,000 Hz

Counter (2)⁴:

- 5 msec minimum pulse width

Enclosure

Rack mount:

- DIN 3U/21HP, 4 rail plug in unit
- suitable for standard 3U/84HP (19") sub rack

Panel mount:

- suitable for DIN 43700 72 x 144 standard panel cut-out on 110mm (4.33") centres

Wall mount:

- 224mm W x 285mm H x 102mm D (8.8" W x 11.2" H x 4.0" D)
- Type 4X / NEMA 4X / IP 65
- Polycarbonate

Weight

Rack or Panel mount:

- 1.5 kg (3.3lbs)

Wall mount:

- 2.5 kg (5.5lbs)

Approvals

- See product nameplate

Compatible Transducers

- Echomax series and STH series

Transducers

Base:

- second transducer can only be used for average differential

Option:

- dual point (44 kHz)

4 Discrete inputs 7 and 8 can be configured as frequency inputs, pulse counters, or simple discrete inputs.

About the EnviroRanger ERS 500...

The EnviroRanger is intended for advanced water and wastewater applications. This device can handle virtually all of your pump control and level monitoring needs – often replacing expensive PLCs and integrating into a SCADA system for a fraction of the cost of competitive systems.

The EnviroRanger is programmable.

It can be configured for nearly any water or wastewater application, control up to five pumps, gates, or alarms – and can communicate its status by way of direct serial connection, modem, or industrial communication network.

The EnviroRanger is flexible.

It can take discrete input from pumps or other devices to modify its operation, and can also time events to maximize efficiency or minimize cost.

The EnviroRanger is upgradeable.

Its basic features can be further enhanced with any of the following:

Hardware Upgrades

- I/O Analog Cards
- RAM memory
- Discrete inputs

Software Upgrades

- Dual Point
- Data Logging

About the Installation Guide...

This is the second in the series of four manuals in the ERS library.










Manual	Uses
User Guide (PL-600)	<ul style="list-style-type: none">• Learn how to program the unit• Example applications• Principles of operation
Installation Guide (PL-601)	<ul style="list-style-type: none">• Outline diagrams• Wiring diagrams• Installation requirements
Communications Reference (PL-602)	<ul style="list-style-type: none">• MODBUS register mapping• Modem configuration
Parameter Reference (PL-603)	<ul style="list-style-type: none">• Parameter values• Parameter uses

Note:

The ERS 500 is to be used only in the manner outlined in this Installation Guide or protection provided by the equipment may be impaired.

About Symbols...

The following symbols are used in the EnviroRanger manuals:

Symbol	Meaning
	alternating current
	direct current
	earth (ground) terminal
	protective conductor terminal
	caution (refer to instructions)
	program button on front of instrument
	infra-red communication port on front of instrument
	RJ-11 communications port
	no co-axial cable connections

About Configuring ERS 500 Parameters

The primary method of configuring the EnviroRanger is using Milltronics **Dolphin Plus** software and a serial connection to the device.

Configuring the EnviroRanger using the optional **Hand Programmer** is possible but is not recommended for complex installations.

As a rule of thumb, if your application falls into one of the pre-configured applications outlined in the EnviroRanger User Guide, then use the hand programmer. If your application is more complex than this, then we suggest that you use Dolphin Plus. To purchase a copy of Dolphin Plus, contact your Milltronics representative.

About Power Interruptions...

All operator programming is stored in non-volatile memory, and is unaffected by power interruptions. Reporting functions use volatile RAM with battery backup.

Installation

Notes:

- Installation must only be performed by qualified personnel, and in accordance with local governing regulations.
- This product is susceptible to electrostatic shock. Follow proper grounding procedures



All field wiring must have insulation suitable for at least 250 V.



Hazardous voltage present on transducer terminals during operation.



DC terminals shall be supplied from an SELV source in accordance with IEC 1010-1 Annex H.

- Relay contact terminals are for use with equipment that has no accessible live parts and wiring that has insulation suitable for at least 250 V. The maximum allowable working voltage between adjacent relay contacts shall be 250 V.
- The non-metallic enclosure does not provide grounding between conduit connections. Use grounding type bushings and jumpers.

Mounting Considerations

The ideal location to mount the EnviroRanger is as follows:

- Ambient temperature is always within -20 to 50°C (-5 to 122°F)
- EnviroRanger display window is at eye level, unless most interaction is through a SCADA system
- Cable length requirements are minimal
- Mounting surface is free from vibration

Avoid locations where the EnviroRanger is:

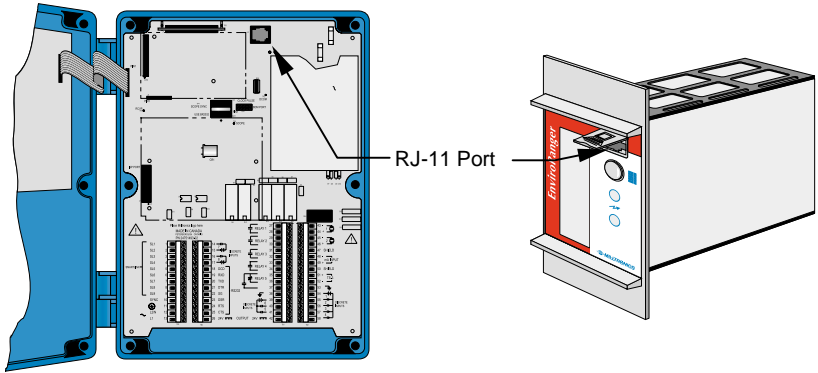
- Exposed to direct sunlight. (Provide a sun shield to avoid direct sunlight).
- Close to high voltage/current runs, contacts, SCR or variable frequency motor speed controllers

Laptop Access

RS-232 Connections

When mounting the EnviroRanger, it is a good idea to provide a place for a laptop computer. When linked to the EnviroRanger's RJ-11 port via an RS-232 connection, the laptop becomes an excellent configuration and diagnosis tool.

This RJ-11 port is located inside the enclosure of the Wall mount version, and on the face of the rack and panel units (see below).



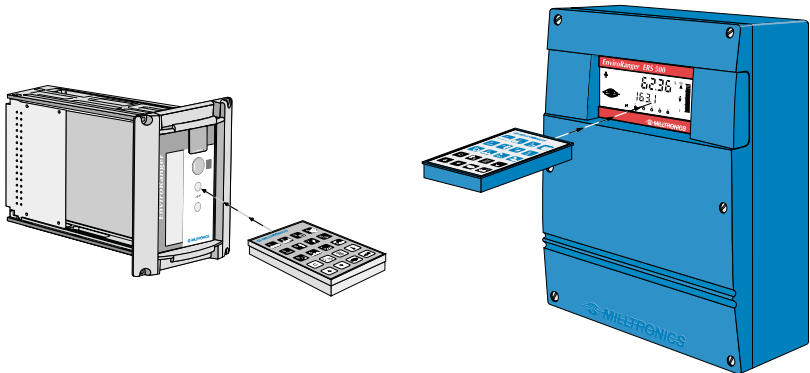
In addition, all EnviroRanger units have RS-232 connections on the terminal board so they can be permanently wired to modems for remote access, or telephone jacks for easy local access. See Optional Card Wiring on page 29 for information on how to wire a permanent communications connection to the EnviroRanger terminal board.

RS-485 Connections

RS-485 ports are available on optional I/O cards. See Optional Card Wiring on page 29 for wiring of the RS 485.

Hand Programmer Access

If a laptop is not used to configure the EnviroRanger then ensure there is enough room in front of the unit to stand with a hand programmer. The hand held programmer is aimed at the receiver as shown below.



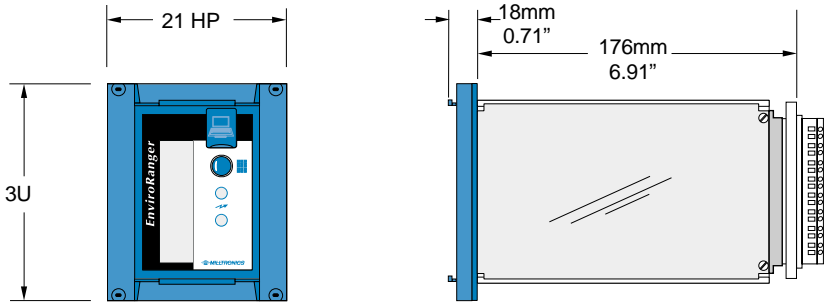
If values from the hand programmer are not accepted, (display does not respond), try repositioning it. For the rack and panel mounted versions, ensure that the program button is pressed and the unit is in program mode.

Mounting

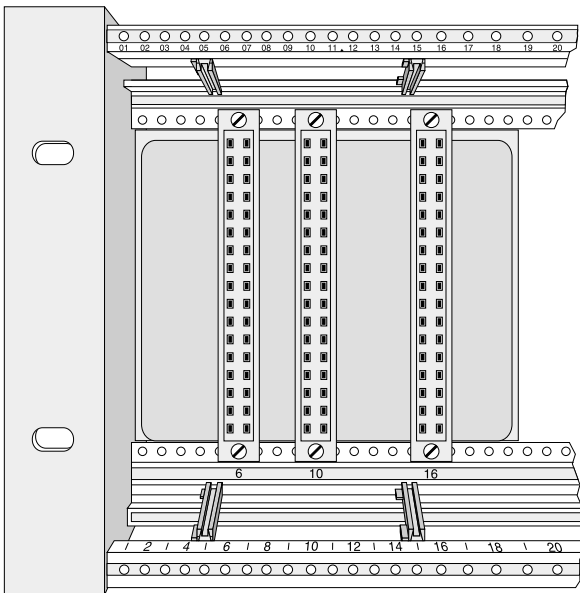
Notes:

- Rack and rails are supplied by the customer.
- Terminal board screws are supplied by the customer.
- Metallic racks must be grounded.

Rack Mount



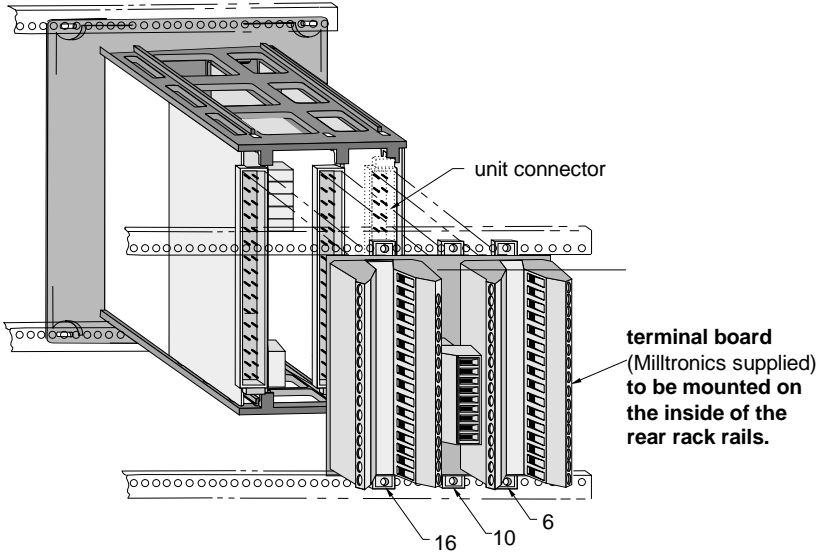
1. Install rails at positions 5 and 15 as in diagram below.



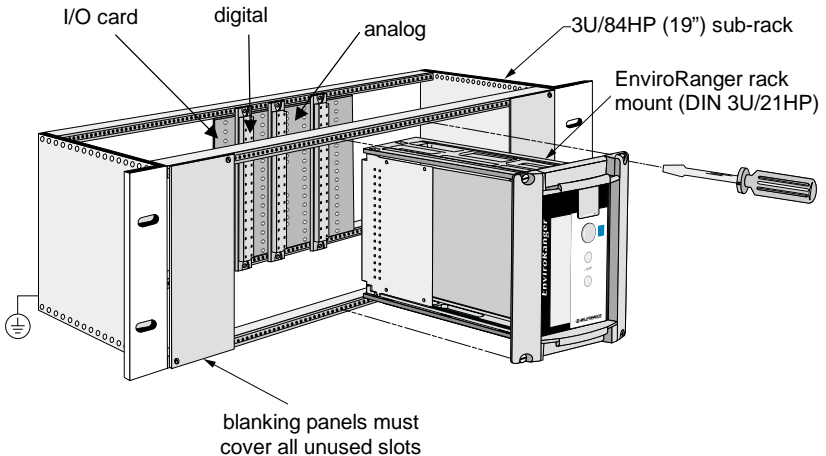
Note:

Positions are in relation to left end of rack. Adjust measurements accordingly if the unit is to be installed elsewhere along the rails.

2. Test the fit of the EnviroRanger to ensure the rails are aligned correctly by sliding the EnviroRanger unit in and then out again.
3. Mount the terminal board **on the inside rails of the rack**, with mounting screws at positions 6, 10, and 16.

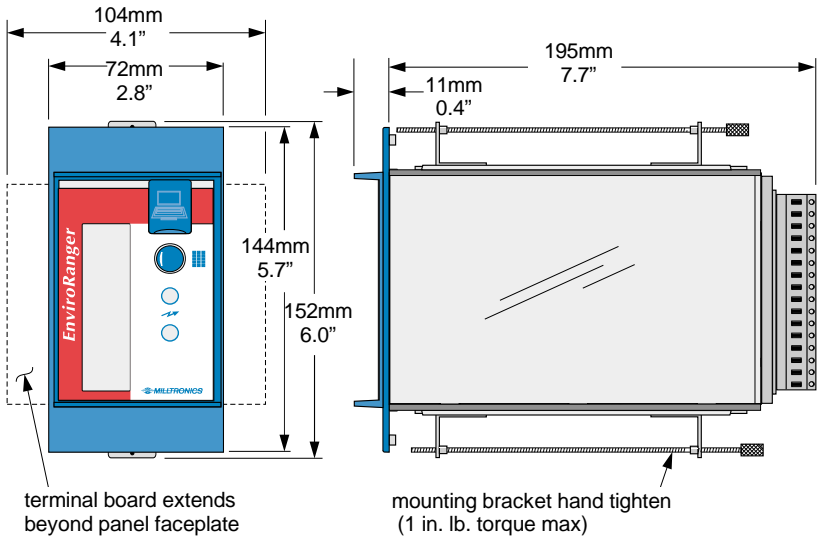


4. Slide the EnviroRanger into the rack and press fit it with the rail mounted terminal board.

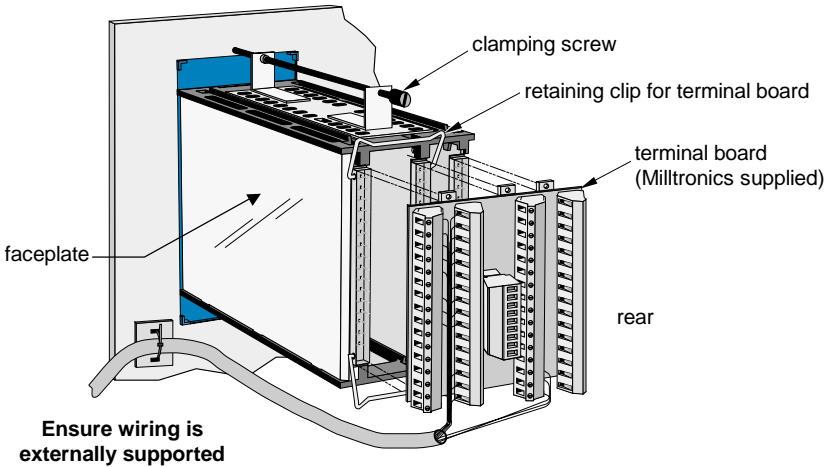


5. Tighten the four mounting screws on the faceplate.
6. Wire the unit from the back according to the Rack or Panel Mount wiring diagrams on page 24 of this manual.

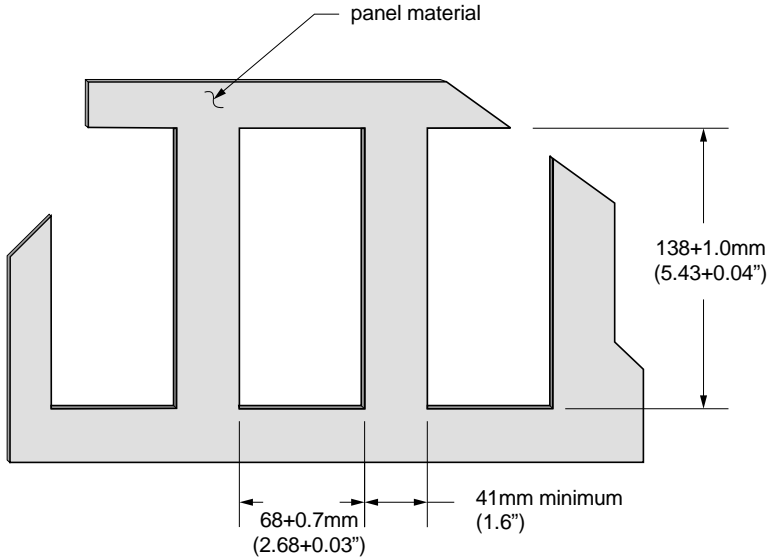
Panel Mount



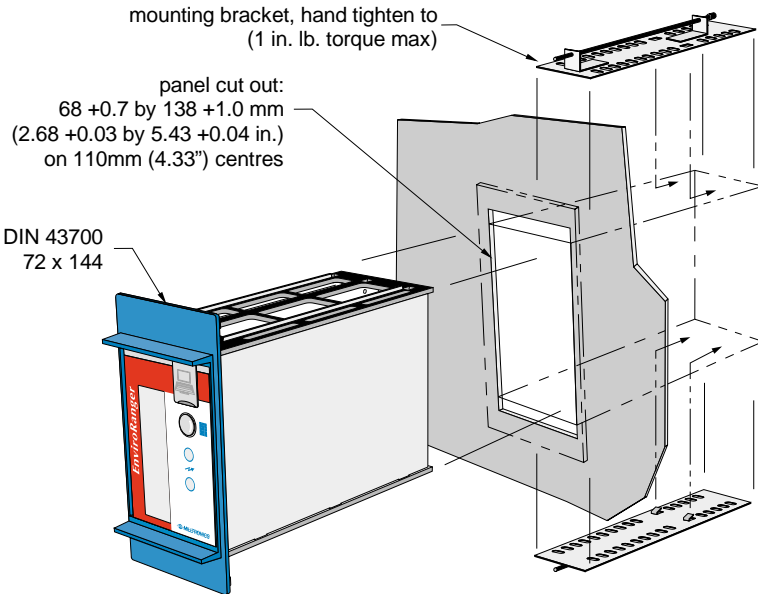
1. Unlatch the retaining clips and remove the terminal board from the unit.



- Slide the EnviroRanger through the panel cut-out.



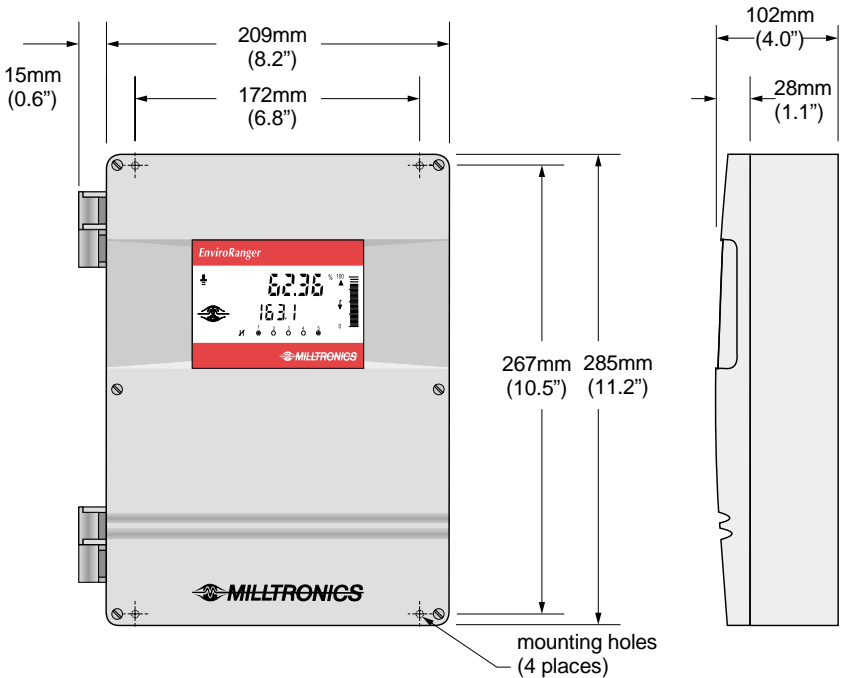
- Assemble mounting brackets to the EnviroRanger chassis by hooking them into the top and bottom (bottom first).
- Tighten the mounting bracket clamping screw (top & bottom).



- Wire terminal board as per the Rack or Panel Mount wiring on page 24.

6. Press fit the terminal board to the EnviroRanger. To ensure that the pressure on the rear of the unit is minimized, provide external support for the wires.

Wall Mount



Notes:

- We recommend mounting the unit on $\frac{3}{4}$ " plywood using #6 screws.
- If another mounting surface is used, it MUST be able to support four times the weight of the unit.

1. Mark and drill holes for the four mounting screws (customer supplied), and mount the enclosure using a long screwdriver.
- If your cable is routed through a conduit:**
2. Unplug the display ribbon cable from the motherboard.
 3. Remove the four mounting screws holding the motherboard to the enclosure.
 4. Be careful not to damage the electronics with static electricity. Remove the motherboard from the enclosure by pulling the board straight out and tilting it with the right side higher to clear the ferrite assembly.
 5. Drill any required cable entry holes.
 6. Attach the conduit to the enclosure using approved Conduit Entrance Hubs.
 7. Reinstall the motherboard with the mounting screws and attach ribbon cable.

If your cable is exposed and enters through the supplied cable glands:

2. Unscrew the glands and attach them loosely to the enclosure.
3. Thread the cables through the glands, ensure the power cable is kept separated from the signal cables.
4. Wire the cables to the terminal blocks.
5. Tighten the glands to form a good seal.
6. If you require more holes than are supplied in the enclosure, follow the previous steps under conduit.

Installing the Battery

The battery (Rayovac BR2032) has a life expectancy of ten years, and is affected by ambient temperature. In the event that the unit loses external and battery power, a capacitor will power the RAM for about 10 minutes.

The flash memory is updated every hour. Therefore, up to an hour of data logging can be lost if all of the following conditions happen:

- the external power fails
- the battery is not supplying power
- the time it takes to restore power to the EnviroRanger is greater than the time the capacitor can supply power.

Notes:

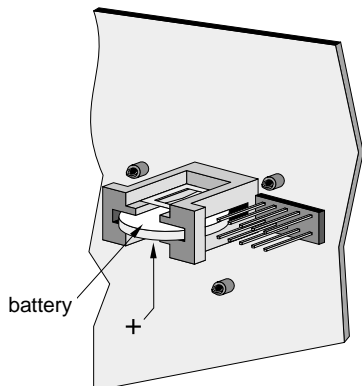
- Do not install the memory backup battery until the EnviroRanger is installed, as it begins operation immediately.
- The unit is supplied with one battery. Insert the battery into the holder as shown in the following diagrams before using the EnviroRanger.



Disconnect power before installing or replacing the battery.

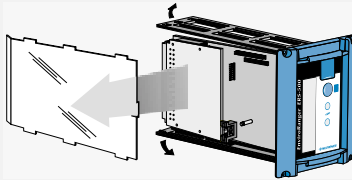
Wall Mount

1. Open the enclosure lid.
2. Slide the battery into the holder being careful to align the + and - terminals (sides) correctly.
3. Close and secure the enclosure lid.

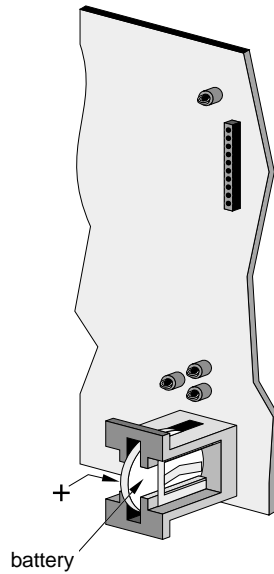


Rack or Panel Mount

1. Remove the plastic side shield.



2. Slide the battery into the holder being careful to align the + and – terminals (sides) correctly.
3. Replace the plastic side shield.



Installing Optional Cards

The following optional cards can be ordered from Milltronics:

SmartLinx module

Used to enhance the existing EnviroRanger Communications System.

Expansion Memory Card

Used in conjunction with the EnviroRanger's Optional Data Logging Feature.

Analog Input / Output cards:

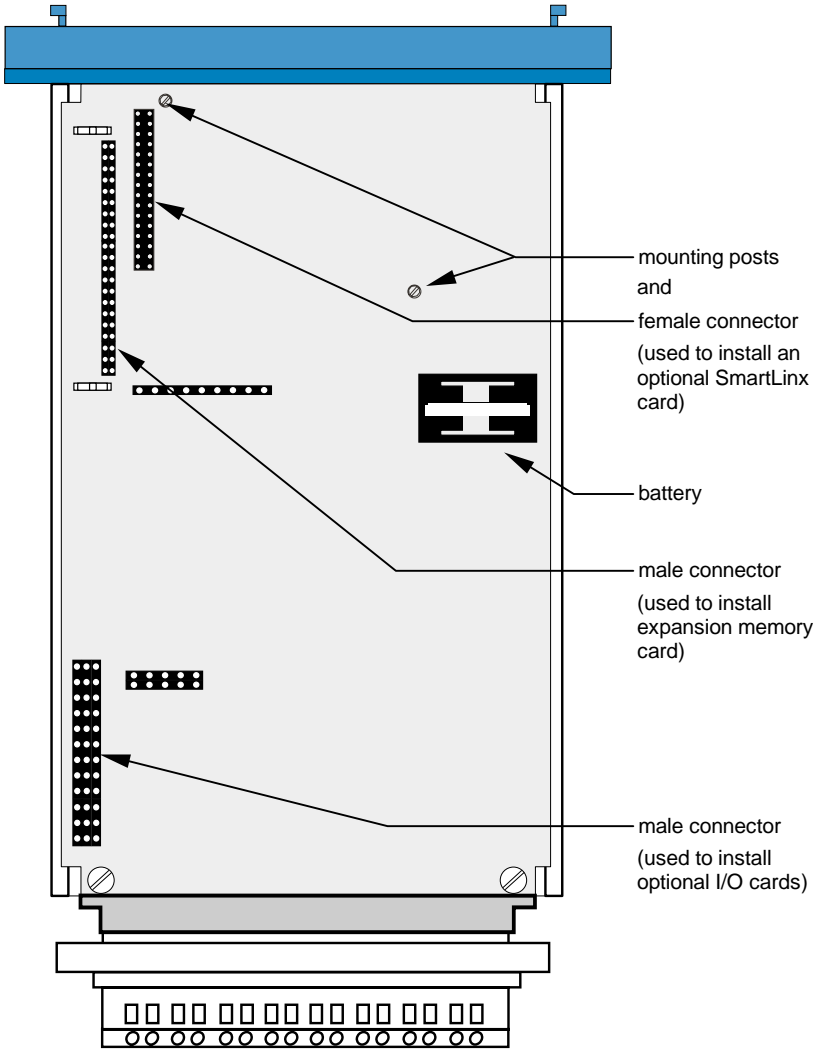
- **mA Output Card**
This card has 4 mA Outputs.
- **mA Input /Output Card**
This card has 2 mA inputs, and 2 mA outputs.
- **mA Input card**
This card has 4 mA Inputs.
- **Discrete Input card**
This card has 8 discrete inputs.
- **Discrete Input, mA Input / Output Card (Wall Mount unit only)**
This card has 8 discrete inputs, 2 mA inputs, and 2 mA outputs.

Warning:



Before installing cards, ensure that power is off.

Installing Optional Cards in Rack or Panel Units



Installation

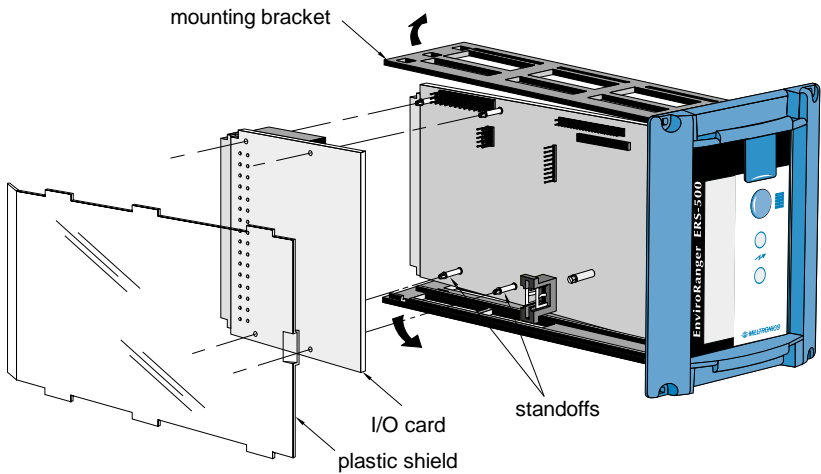
wire the communications cable to the SmartLinx terminal block (65 – 73)

SmartLinx Modules

1. Align SmartLinx card with the two mounting posts, and press-fit with the female connector.
2. Use the screws supplied with the SmartLinx module to attach it to the mounting posts.
3. Wire the SmartLinx card in according to SmartLinx Manual.

Analog Input /Output Cards

1. Remove the plastic shield.
2. Pry the top and bottom mounting brackets away from the unit as shown below.

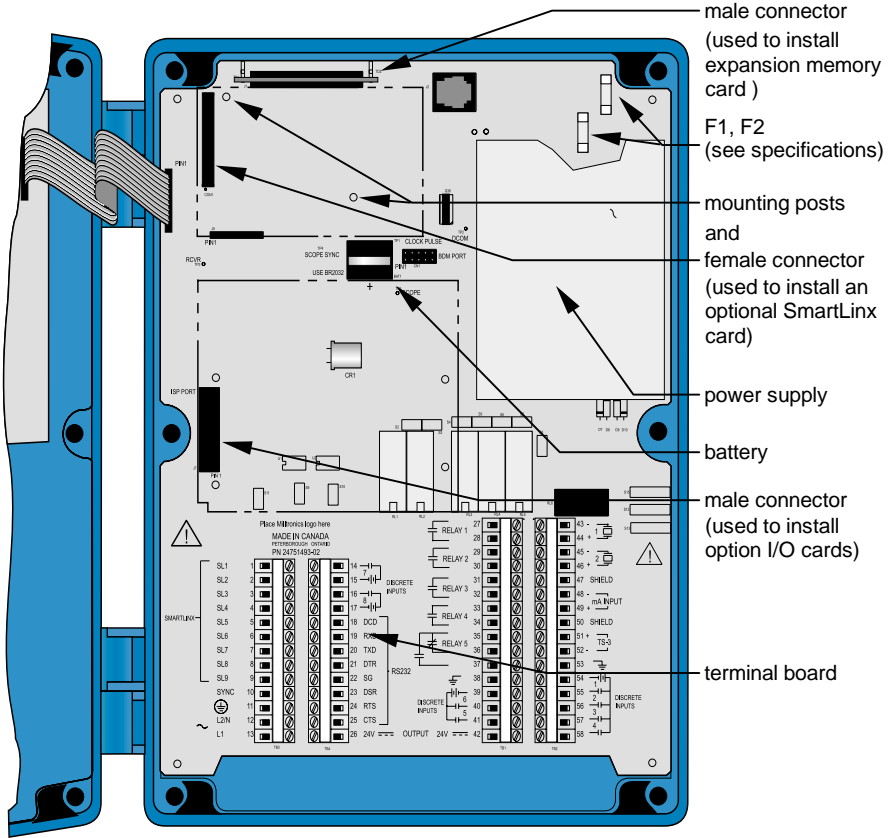


3. Align the I/O card with the 36 pin male connector and the four standoffs.
4. Press fit the I/O card until it 'snaps' into place.
5. Replace the mounting brackets and the plastic shield.
6. Slide the EnviroRanger back into place.
7. Wire the cards as shown in the Optional Card Wiring table on page 29.

Expansion Memory

1. Align the optional Expansion Memory to the male connector.
2. Push-fit the Expansion Memory Card into place.

Installing Optional Cards in Wall mount Units



Installation

SmartLinx Module

1. Align card with the 2 mounting posts, and press-fit with the female connector.
2. Use the screws supplied with the card to attach it to the mounting posts.
3. Wire the SmartLinx card in according to SmartLinx Manual.

Analog Input /Output Cards

1. Align the I/O card with the 36 pin male connector and the four standoffs.
2. Use the screws supplied with the card to attach it to the mounting posts.
3. Wire the I/O Card as shown in the Optional Card Wiring table on page 29.

Expansion Memory

1. Align the optional Expansion Memory to the male connector.
2. Push-fit the Expansion Memory Card into place.

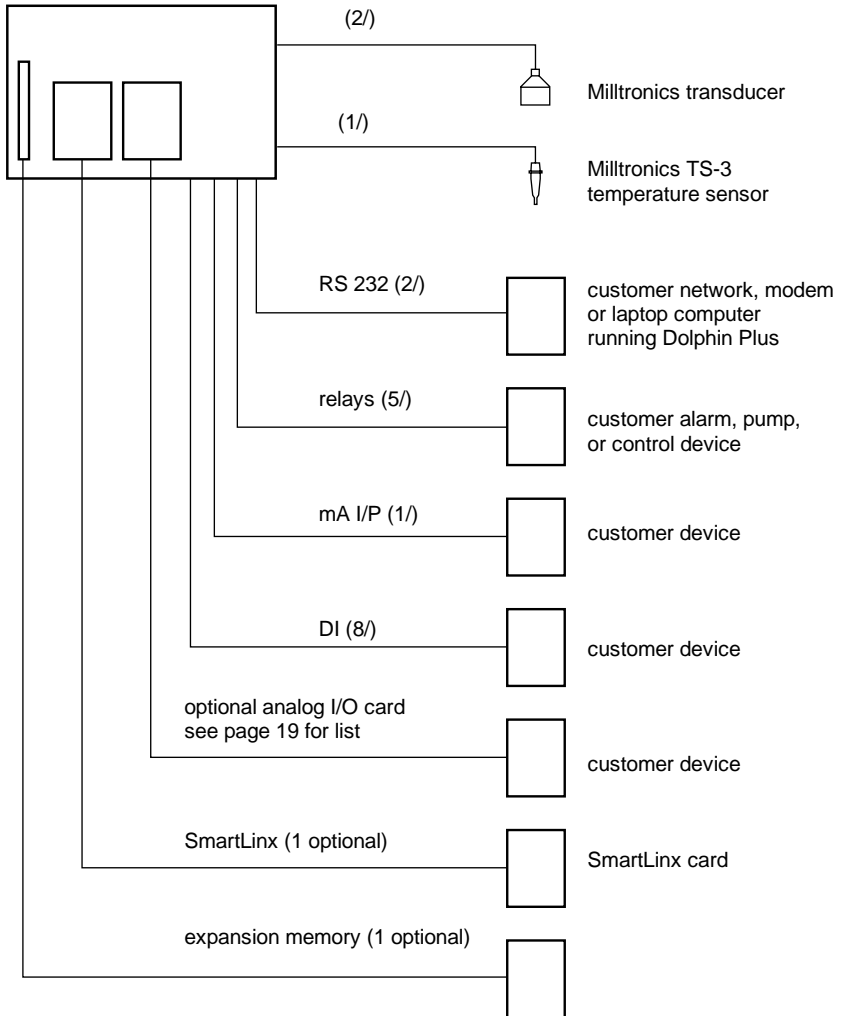
Wiring

Verify all system components were installed in accordance with instructions.

Connect all cable shields to the EnviroRanger shield connections. Avoid differential ground potentials by not connecting cable shields to ground (earth) elsewhere.

Exposed conductors on shielded cables should be kept as short as possible to reduce noise on the line caused by stray transmission and noise pickup.

System Diagram



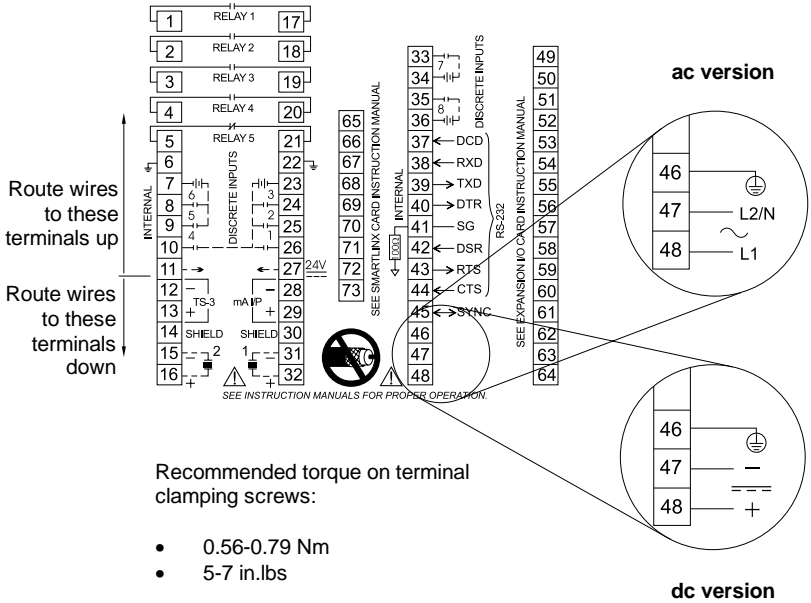
Wiring

Terminal Board

The terminal board on the EnviroRanger allows all inputs and outputs to be connected simultaneously.

Rack or Panel Mount

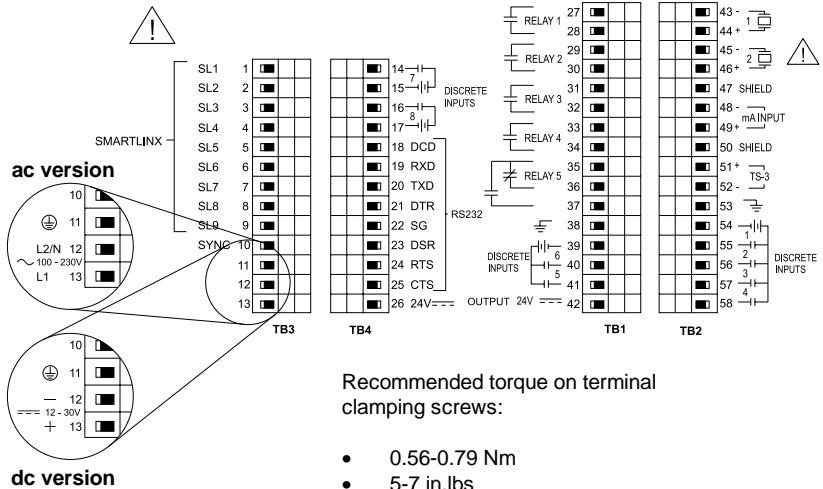
This diagram is found on the side shield of the EnviroRanger.



Recommended torque on terminal clamping screws:

- 0.56-0.79 Nm
- 5-7 in.lbs

Wall Mount




Recommended torque on terminal clamping screws:

- 0.56-0.79 Nm
- 5-7 in.lbs

Cables

The EnviroRanger uses a transceiver that requires a shielded two-wire connection to the transducer.

Connection	Cable Type
mA input sync temperature sensor discrete input dc input Transducer	2-3 copper conductors, twisted, with foil shield, drain wire, 300V 0.5-0.75 mm ² (22 - 18 AWG)
	Do not use a coaxial transducer cable extension with the EnviroRanger because of electrical noise.
Relay output ac input	Relay to be copper conductors per local requirements to meet 250V 5A contact rating.

Transducers

Warning:

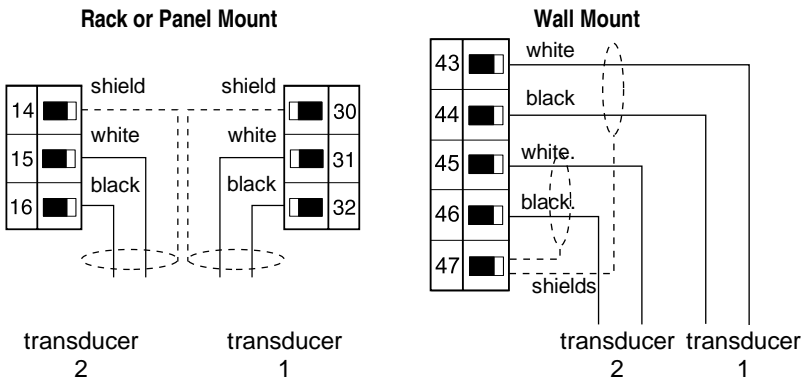


Hazardous voltage present on transducer terminals during operation.

Run the transducer cable in a grounded metal conduit, separate from other wiring, (except TS-3 temperature sensor wiring, if applicable).

Notes:

- Do not use coaxial cable because of electrical noise.
- Do not connect the shield and white transducer wires.
- Older transducer manuals will recommend these practices. Disregard that information.



Wiring

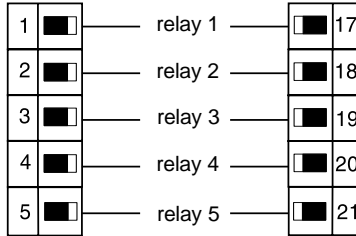
Relays

Relay contacts are shown in the de-energized position. In the software used in EnviroRanger, all relays are handled identically and can be configured as positive or negative logic using P118.

Rack or Panel Mount

Relay ratings:

- 4 Form "A", NO relays (1-4)
- 1 Form "B", NC relay (5)
- 4 A at 250 V ac, non-inductive

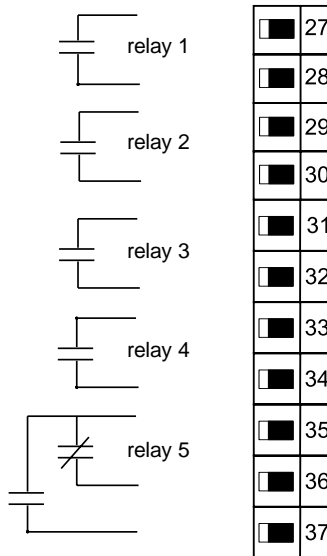


Power Failure	
Relays 1 to 4 are normally open and will fail in the open state.	
Relay 5 is normally closed and will fail in the closed state.	

Wall Mount

Relay ratings:

- 4 Form "A", NO relays (1-4)
- 1 Form "C", NO or NC relay (5)
- 4 A at 250 V ac, non-inductive



Power Failure	
Relays 1 to 4 are normally open and will fail in the open state.	
Relay 5 can be wired either normally open or normally closed and will fail in its unenergized state.	

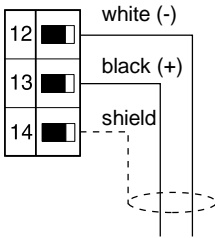
Temperature Sensor

All Milltronics Echomax and ST-H transducers have an internal temperature sensor. For optimum accuracy, use a separate TS-3 temperature sensor if:

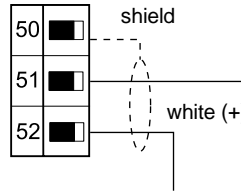
- the transducer is exposed to direct sunlight (or other radiant heat source)
- the transducer face and monitored surface temperature differs
- faster response to temperature changes is required.

Accurate temperature readings are critical to accurate level measurements because the speed of sound changes as a function of the air temperature.

Rack or Panel Mount



Wall Mount

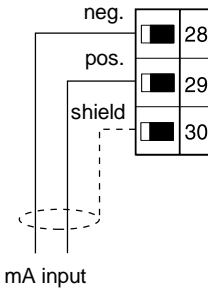


Use a TS-3 temperature sensor only. Do not jumper unused TS-3 terminals.

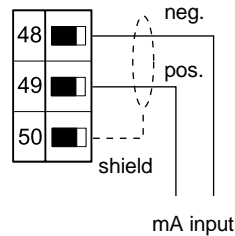
mA Input

For more information on this feature consult the Transducer (P004) and mA Input Parameters (P250, P251, and P252) in the EnviroRanger Parameter Reference.

Rack or Panel Mount



Wall Mount



Level System Synchronization

When multiple ultrasonic level monitors are to be used, ensure the transducer cable(s) are run in separate grounded metal conduits. Otherwise, synchronize the level monitors so that no unit can transmit while another is waiting for echo reception.

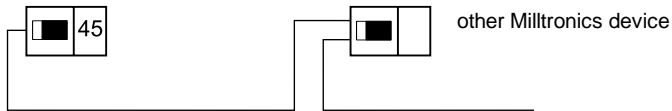
To synchronize with another EnviroRanger, or other Milltronics instruments:

- Mount the level monitors together in one cabinet
- Use a common power (mains) supply and ground (earth) for all units
- Interconnect the SYNC terminals of all level monitors.

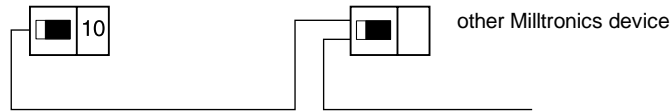
To synchronize with other Milltronics ultrasonic level monitors:

- contact Milltronics or your local distributor.

Rack or Panel Mount



Wall Mount



Power

Important!

Before applying power to the EnviroRanger for the first time, ensure any connected alarm/control equipment is disabled until satisfactory system operation and performance is verified.

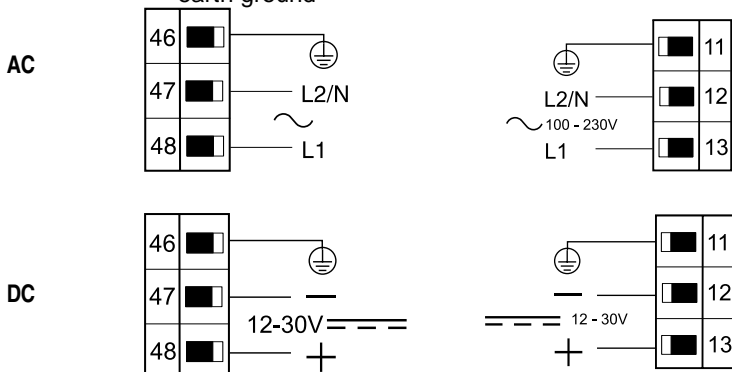
Notes for AC Power connections:

- The equipment must be protected by a 15 A fuse or circuit breaker in the building installation.
- A circuit breaker or switch in the building installation, marked as the disconnect switch, must be in close proximity to the equipment and within easy reach of the operator.

Rack and Panel Mount

Wall Mount

connect terminal 46 to a reliable earth ground



Optional Card Wiring

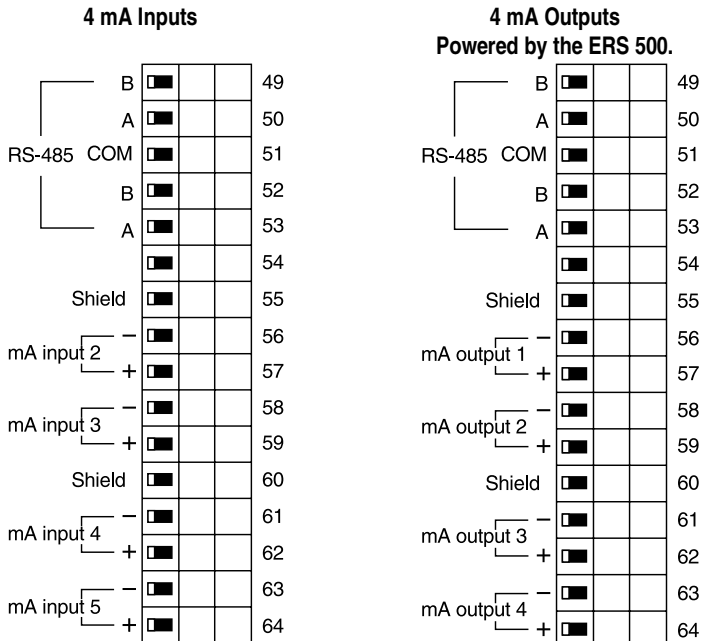
Wall mount	Rack & Panel	mA I/P 4AI	mA O/P 4AO	mA I/O 2AI/2AO	Discrete I/P 8 per card	Discrete I/P, 2 AI/2AO
101	49	A	A	A	A	
102	50	B	B	B	B	
103	51	COM	COM	COM	COM	
104	52	A	A	A	A	
105	53	B	B	B	B	
106	54	SPARE	SPARE	SPARE	COM 9-12	Available only with Wall mount unit.
107	55	SHLD	SHLD	SHLD	9+	
108	56	IN 2-	OUT 1-	OUT 1-	10+	See page 31 for Wiring
109	57	IN 2+	OUT 1+	OUT 1+	11+	
110	58	IN 3-	OUT 2-	OUT 2-	12+	
111	59	IN 3+	OUT 2+	OUT 2+	SPARE	
112	60	SHLD	SHLD	SHLD	COM 13-16	
113	61	IN 4-	OUT 3-	IN 2-	13+	
114	62	IN 4+	OUT 3+	IN 2+	14+	
115	63	IN 5-	OUT 4-	IN 3-	15+	
116	64	IN5+	OUT 4+	IN 3+	16+	

For Wall mount wiring...

The values in this table refer to the Terminal Block on the plug-in card.

Rack and Panel Mount

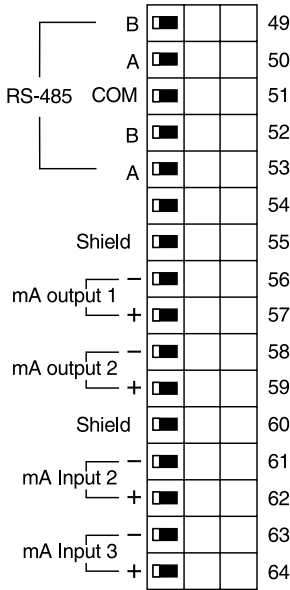
Input or Output Option Cards (Rack or Panel Mount)



Wiring

Input and Output Option Card (Rack or Panel Mount)

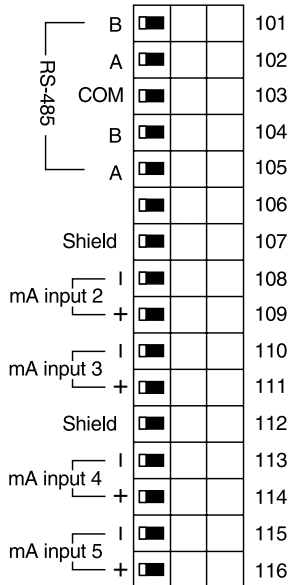
2 mA Inputs / 2 mA Outputs Powered by other sources.



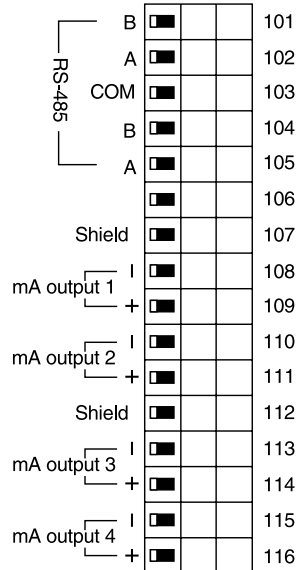
Wall mount

Input or Output Option Cards (Wall mount)

4 mA Input

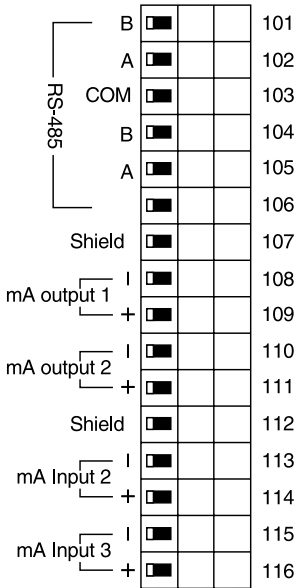


4 mA Output Powered by the ERS-500



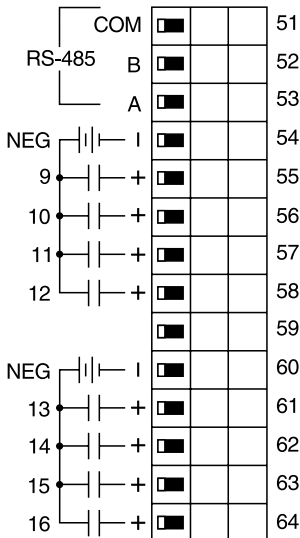
Input and Output Option Card (Wall mount)

2 mA Inputs / 2 mA Outputs Powered by other sources.

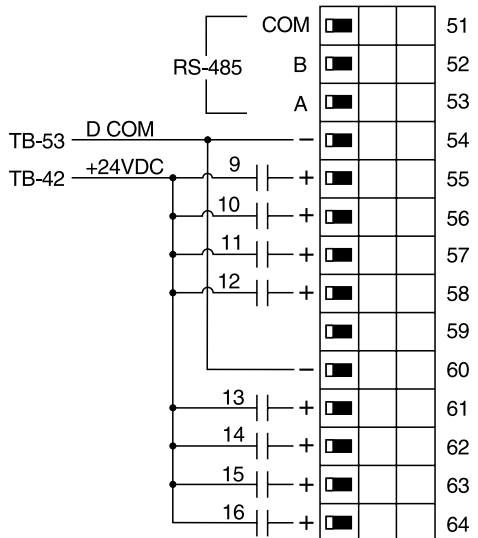


Discrete Input, mA Input /Output Option Card (Wall mount)

Discrete Inputs Powered by other sources

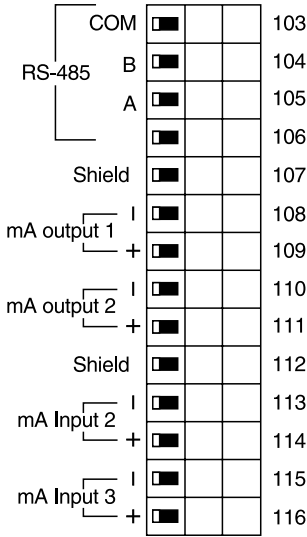


Discrete Inputs Powered by the ERS 500



Wiring

**2 mA Inputs / 2 mA Outputs
Powered by other sources.**

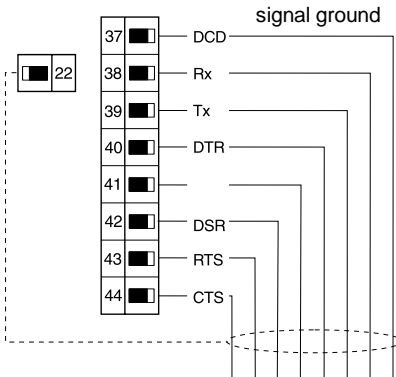


Digital Communications

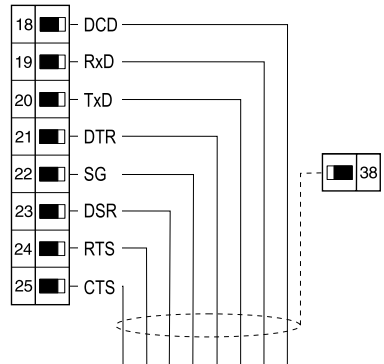
Wiring the EnviroRanger for communications allows it to be integrated into a full SCADA system, an industrial LAN, or directly connected to a computer that is running Dolphin Plus.

RS-232 Serial Connection

Rack and Panel Mount



Wall Mount



Do not ground cable shield to signal ground, instead, ground the cable shield to terminal 22.

When wiring serial communications to a Dolphin Plus Unit, you need to only connect the Rx, Tx and signal ground lines. See the Dolphin Plus manual for more detailed wiring information.

See the EnviroRanger Communications Reference for more details on wiring for Modbus-based SCADA systems.

Discrete Inputs

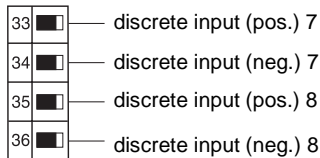
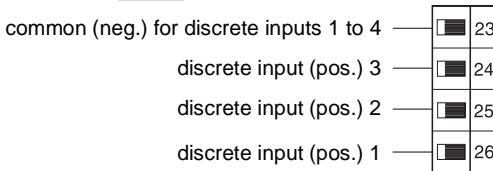
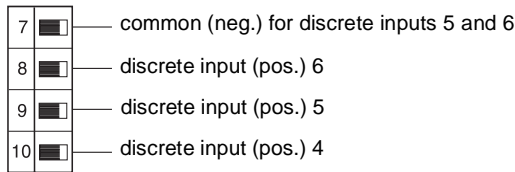
Discrete inputs are used to trigger or alter the way EnviroRanger controls devices such as pumps and alarms. These inputs accept a dc current between 10 and 50 V as the signal triggered by an external device such as a pump, float, or other alarm.

These external devices are either self-powered or passive. The self-powered device supplies its' own dc voltage. The passive device uses power supplied by the EnviroRanger.

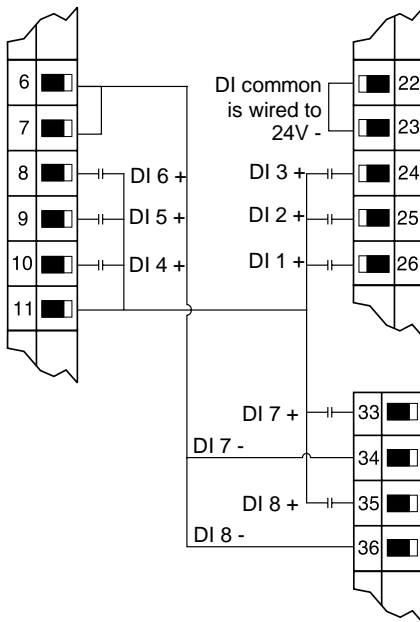
Rack and Panel Mount

Discrete inputs have a positive and negative terminal.

Rack Mount Powered by External Device



Wiring Example – Powered by EnviroRanger



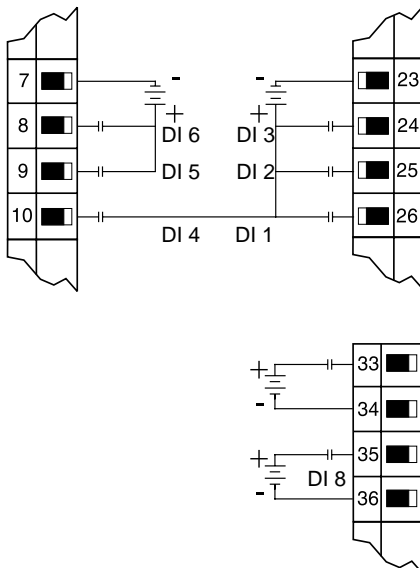
—||— input contacts from external device

Example Wiring

This is an example of all eight discrete inputs wired using the 24Vdc rails on the EnviroRanger.

Use this model of wiring if your external device does not provide power to the discrete inputs.

Wiring Example – Powered by External Source



—||— input contacts from external device

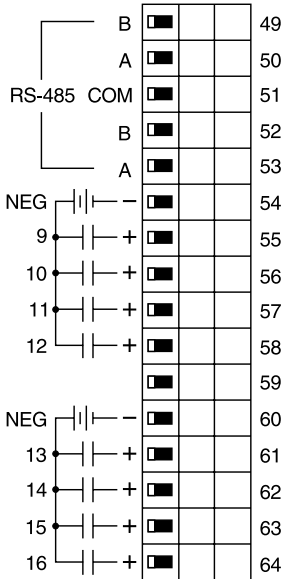
Example Wiring

This is an example of all eight discrete inputs wired using power supplied from an external source.

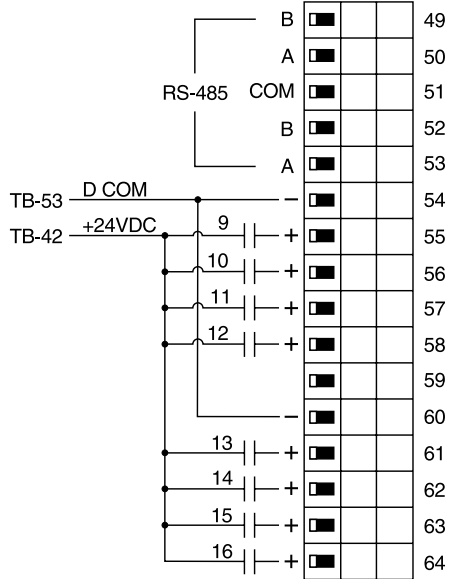
Use this model of wiring if your external device provides its own power to the discrete inputs.

Discrete Input (DI) Option Cards (Rack or Panel Mount)

Powered by other sources.

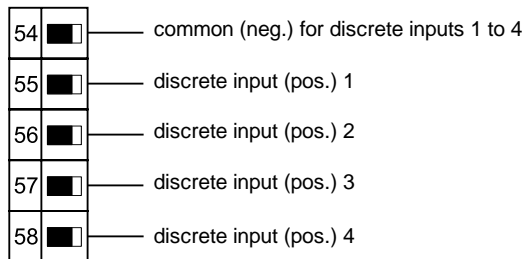
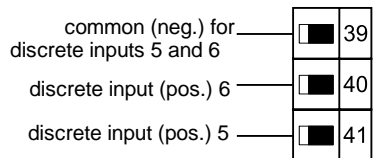
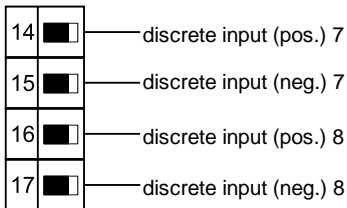


Powered by the ERS 500.

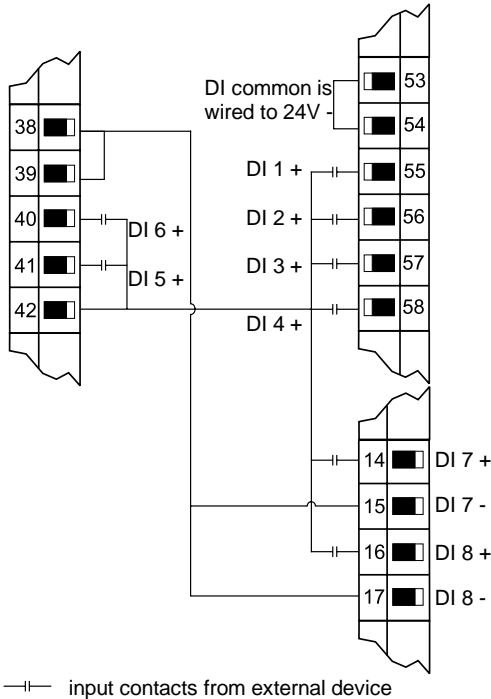


Wall Mount

Discrete inputs have a positive and negative terminal.



Wiring Example – Powered by EnviroRanger

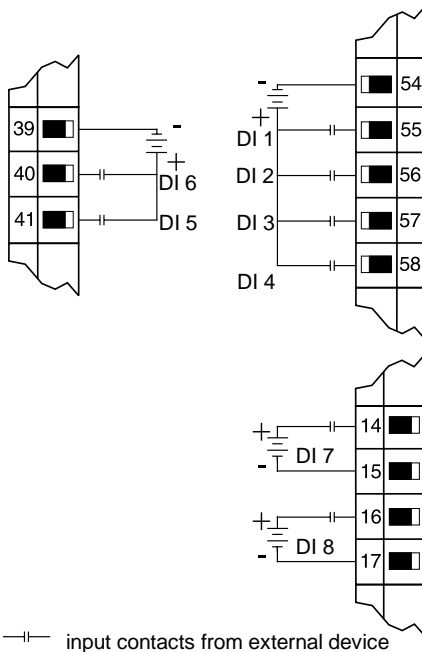


Example Wiring

Shown to the left is an example of all eight discrete inputs wired using the 24Vdc rails on the EnviroRanger.

Use this model of wiring if your external device does not provide power to the discrete inputs.

Wiring Example – Powered by External Device



Example Wiring

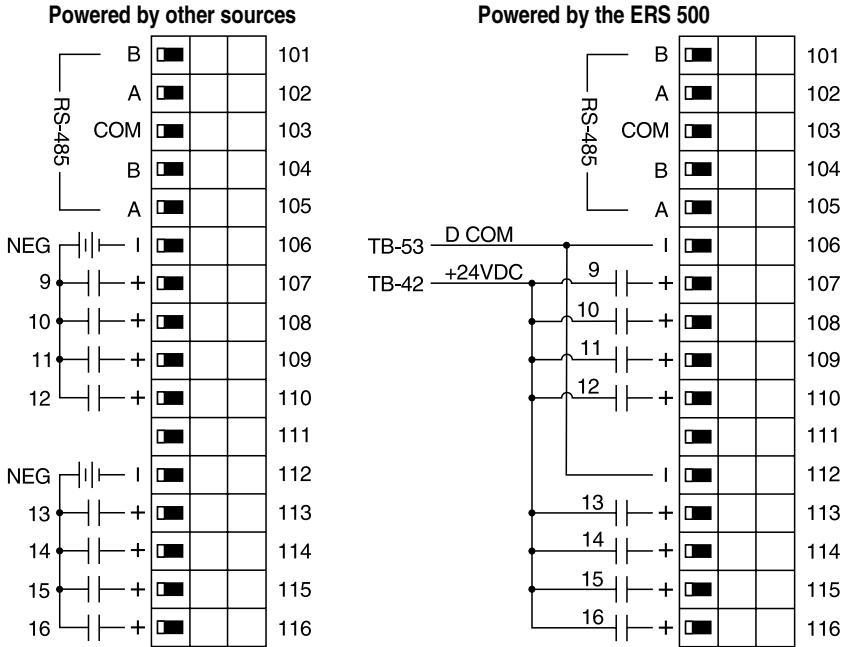
Shown to the left is an example of all eight discrete inputs wired using power supplied from an external source.

Use this model of wiring if your external device provides its own power to the discrete inputs.

Discrete Input Option Card (Wall mount)

Note:

If you are wiring the 8DI / 2AI / 2AO Optional Card, see page 31 instead.



Maintenance

The EnviroRanger requires no maintenance or cleaning, however a program of periodic checks that is dependant upon local conditions is advised.

Some items to consider for a maintenance schedule are as follows:

- Is EnviroRanger situated indoors or outdoors?
- What is the cleanliness of the environment?
- Are heat and humidity controlled?
- What applications the EnviroRanger is being used in.
For example, in a wet well, pumping accuracy is not important but repeatability is.

Battery Replacement

The battery (Rayovac BR2032) has a life expectancy of ten years under normal operating conditions, and should be replaced at that time if usage hasn't exhausted it.

See Installing the Battery on page 18.

Software Upgrades

The software in the EnviroRanger is upgradable in the field using a laptop computer and a Milltronics utility.

Contact your local Milltronics representative for information on the current status of EnviroRanger software.

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