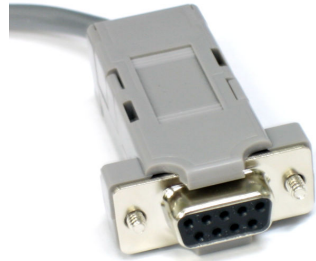


***PakTrakr* ES1R**

Automatic Logging Serial Interface

Installation Guide



- 1) If a current sensor is attached to the PakTrakr Display, remove its 4-pin plug (left side) from the back of the Display.
- 2) Connect the 4-pin plug on the ES1R cable to the 4-pin (left-most) connector on the back of the PakTrakr Display.
- 3) If a current sensor is to be used, connect its 4-pin plug to the 4-pin connector inside the back (cable) end of the ES1R.
- 4) Connect the PC's 9-pin male plug to the ES1R's 9-pin female connector.
- 5) Reset the PakTrakr system by disconnecting the Remote's black lead from the battery 1 negative post, and then re-connect it. This will reset the PakTrakr and enable it to recognize the current sensor if attached.
- 6) Use a terminal program (such as HyperTerminal) on the PC to monitor or capture data from the PakTrakr. Configure the serial port as follows:

Baud Rate: 57600
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None

Note: The ES1R Serial Interface has been tested and works best with USB serial interfaces.

Quick Reference

The ES1R has its own microprocessor and 2MB FLASH RAM for logging serial data from the PakTrakr. The device can be programmed to store all incoming data, or to skip a user-determined number of data strings and store only every "nth" string. Capturing all PakTrakr data would fill the ES1R's FLASH memory in a matter of hours (a 6-battery system outputs a string of 100+ characters each second). But programming the ES1R to log every 60th string (once per minute) or every 600th string (once every ten minutes) or even every 3600th string (once per hour) would allow the ES1R to log data over an extended time period of days, weeks, or even months.

To program the ES1R, connect a PC to the device, launch the HyperTerminal program, and configure the COM port as described above. If there is already data stored in the ES1R's memory, the device will prompt for a command and wait for a response. Alternatively, press the "enter" key at any time to bring up the prompt. To skip 59 lines and capture only every 60th sample, type "s59" followed by the "enter" key. The number entered affects only the logging frequency - the ES1R passes all received data through the serial port for live monitoring on the PC, regardless of the programmed lines to "skip". To download and store logged data, set up HyperTerminal for text capture, then enter a "d" at the command prompt to begin the download. A "?" entered at the prompt will bring up a simple help menu.

Packet Data (one packet per second, in CSV (comma separate values) format):

Each Remote sends its own packet of data, starting with a "B" character, as follows:

B,*b1v, b2v, ... b8v, H, b1h, b2h, ... b8h, E, e1, e2, e3, e4, e5, e6, e7, P, pack, SOC, temp, series*

where *b1v* = battery 1 voltage x 10 (e.g. 125 = 12.5V) (only batteries detected included)

b1h = reserved data

e1 = Low water likely (each bit represents a battery: batt 1=lsb, batt 8=msb)

e2 = Pack Imbalance (bits represent batteries needing individual charge)

e3 = Failing battery

e4 = Maintenance required

e5 = Damaged battery

e6 = Overcharging

e7 = Excessive discharge

pack = Pack Voltage x 10 (e.g. 775 = 77.5V)

SOC = Pack State of Charge (0-100%)

temp = Remote temperature in degrees F

series = 1 if pack is connected in series, 0 if pack is connected in parallel

If there are multiple Remotes attached, each will append its packet to the previous Remote's, creating a single long packet, where data from each Remote begins with a "B" character.

After the Remote(s) data, the PakTrakr Display appends a time-stamp, amps reading (if a current sensor is attached), and a carriage return/line feed to the end of the packet, as follows:

T,*second, minute, hour, day, SOC, amps(x10), CR LF*

Dimensions: 1.5" x 2.0" x 0.6" (not including cables)

Weight: 0.5 ozs

Warranty: One year from date of purchase.

For more information or technical support, please visit our web site at www.paktrakr.com.