ELOG02 AND ELOG03 TELEMETRY UNIT INSTALLATION MANUAL

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Document Version History

Version	Issue Date	Description
A	6 Apr 2009	Initial Release
B	1 May 2012	Various Amendments and updates
C	5 Jul 2012	Added provision for RCI1550 units using RS485 streaming data
D	14 Dec 12	Robway to LSI-Robway changes
E	4 Dec 2014	Minor changes. Add RFU 3.05
F	2 Jul 2015	Minor amendments

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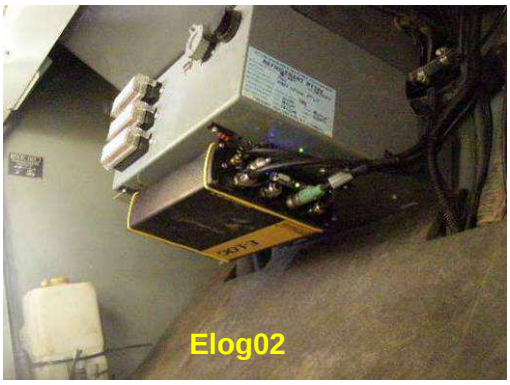
1. ELOG INSTALLATION

Elog installations are unique to individual vehicles so the following are guidelines to installing each component. Typical general assembly (GA) drawings are at the end of this manual and reference should always be made to specific GA drawings supplied with each Elog system.

ELOG UNIT INSTALLATION

- The Elog unit should be mounted in a protected position (Elog02 and Elog03 rated IP65).
- Typical mounting positions include vehicle cabin and engine bay/compartment. The Elog unit does not have to be fitted in a visible position, it may fitted within a panel or compartment or even under a seat.
- At least 100mm clear space should be left at the cable end of the Elog unit to allow cables to be routed to/from the Elog unit.
- Pictures of typical Elog unit installations:



CELLULAR ANTENNA INSTALLATION

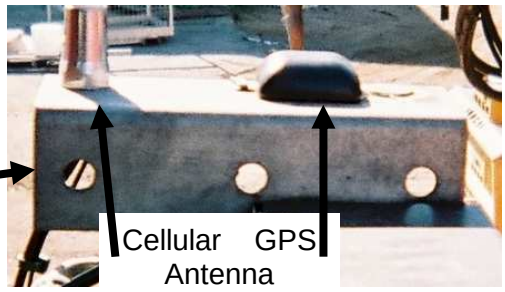
- Refer picture to right.
- This antenna which is 560mm in height is mounted in a 13mm hole and is secured with a star washer and 19mm nut.
- It comes with 5m of cable. Cable length cannot be trimmed due to the connector at one end.
- Antenna installation site need to be in a position near the top of the vehicle where most of the length of the antenna is open to the sky to provide clear consistent reception, much like a car radio antenna.
- It may be mounted on an existing structure (eg vehicle roof) or on the supplied bracket which is then mounted to the side of the vehicle.
- Antenna should be mounted in a position where damage (from crane booms, personnel climbing) is less likely.
- The GPS antenna can be mounted directly next to the cellular antenna.

GPS ANTENNA INSTALLATION

- The GPS antenna which (approximately 40mmW x 40mmD x 15mm H) has a magnetic base and should be positioned at the top of the vehicle where it is open to the sky to ensure clear and consistent reception .

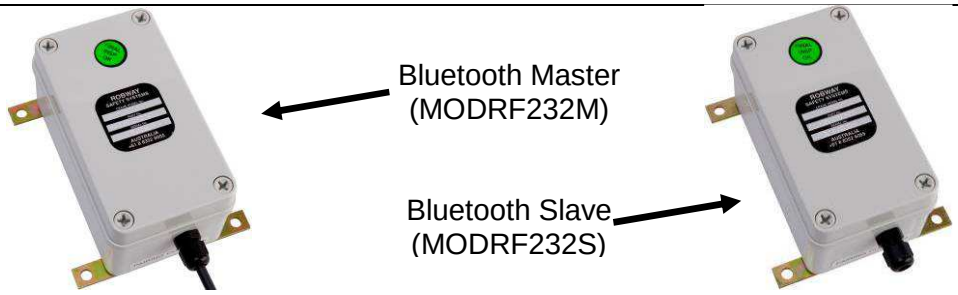
GPS Antennas showing position of red LED

- It has 5m of cable terminated in a 4 way Deutsch plug at the Elog unit (Elog03) or a 5 pin connector which plugs into the Elog02 front panel.
- It may be mounted on an existing structure (eg vehicle roof) or on the supplied bracket which is then mounted to the side of the vehicle.
- Antenna should be mounted in a position where damage (from crane booms, personnel climbing) is less likely.
- The GPS antenna can be mounted directly next to the cellular antenna.
- Even though the GPS antenna has a magnetic base, it is recommended that a drop of silicon or other sealer is applied to the base of the GPS antenna to ensure that this antenna does not move.
- When power is applied to the Elog unit a LED on the GPS unit flashes. The LED initially flashes very fast and when a GPS lock is acquired it flashes at a slower rate.
- Pictures below show example antenna installations:



BLUETOOTH COMPONENT INSTALLATION (IF APPLICABLE)

- Bluetooth master and slave units are typically mounted outside vehicle cabin and outside crane cabin. Master and slave need to be mounted within 10m of each other with line of sight between each pair. Range is only 5m when not directly mounted within line of sight.
- They Bluetooth units may be mounted internally behind a window or non-metallic wall.
- Master is wired directly to the Elog unit.
- Slave is wired directly to the crane safety controller (normally RCI 8522/1550/1502 controller).
- Refer pictures below:



WIRING

Power.
The Elog requires either 12 or 24VDC. The Elog unit may be powered directly from the battery or after the battery isolator switch:

- Connected directly to battery: Isolated power supply (LSI-Robway PN: PS3015VDC) must be used to stop other crane systems drawing power through Elog unit when isolator switched off. If powered directly from the battery the unit will report GPS position 24 hours a day and will always show current vehicle status. The Elog unit, running 24 hours/day will discharge a typical vehicle battery in 4-8 weeks. The isolated power supply may be installed in the vehicle battery compartment and is pictured below:

- Connected after isolator switch: Isolated power supply is not required. If powered after the isolator switch the vehicle battery will not be discharged but will only report GPS position when the isolator is turned on. In addition, vehicle status on the web may be incorrect when isolator has been turned off (when Elog power is removed, and Elog has not had a chance to report then vehicle status may be incorrect).

Elog Earthing Wire

- The green/yellow wire must be connected to a mechanical vehicle earth point. This may be one of the mounting screws of the Elog unit if the screws are screwed into the vehicle chassis.

Digital Inputs

- Elog02: Elog02 digital inputs are active low (relative to vehicle earth) and should be relay isolated. The GA will show how relays are connected for this purpose.
- Elog03: Each digital input (DI) is isolated from all other digital inputs and also from the vehicle. Each digital input must have one positive and one negative connection to operate. DI+ or DI- may be looped or individually tied as follows (also refer to appropriate GA):
  - Positive input polarity: DI- to be connected to vehicle supply negative and DI+ to signal
  - Negative input polarity: DI+ to be connected to vehicle supply positive and DI- to signal.

Alternator/Battery Voltage Input

- Alternator/battery voltage is continuously monitored and battery voltage is shown on the Elog unit web page. The appropriate wire (refer to appropriate GA) should be connected to either the battery or alternator output.

Streaming Data (Crane Data)

Crane parameters (eg SWL, radius, load) are usually fed to the Elog unit when fitted to cranes. This data is referred to as “Streaming Data” as it is continuously fed from the crane safety system whenever the crane is being operated.

- Streaming Data is connected to the Elog either directly from the crane safety system or from the crane safety system through a blue-tooth master/slave pair or other type of data converter. Refer to the appropriate GA for streaming data wiring.
- If a data converter is being used, the data converter should be installed inside the crane cabin. Supplied cables can be shortened by opening the converter and re-terminating the cable.

2. ACTIVATION & INSTALLATION OF THE ELOG SIM CARD.

Note: The following procedure is normally completed at LSI-Robway before the Elog system is shipped.

ELOG SIM CARD APPLICATION SHEET

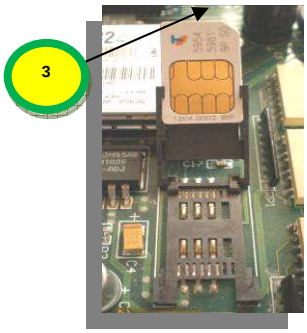
1. Sales to Provide Sim Card along with Elog Sim Card Application Sheet.
2. Elog Sim Card Application sheet to be completed in full (where * appear) this cross references with the Sales order and Elog Module.

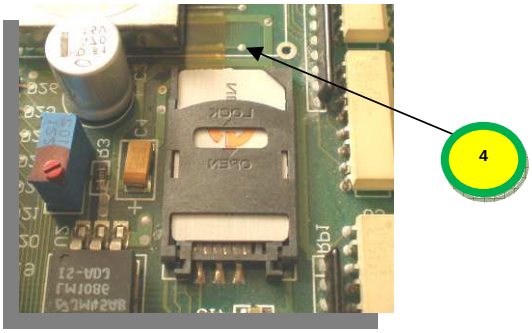
ACTIVATION OF SIM CARD

3. Remove the Sim Card from Sim Card Holder (1) (Do not bend Sim Card).
4. Scratch label on Sim Card holder (2) to reveal pin code.

5. Install the Sim Card into a Mobile phone.
6. Power Mobile Phone.
7. Mobile will request a pin code, enter PIN code from step 4.
8. Wait for mobile phone operating screen to appear.
9. Select Menu.
10. Select settings.
11. Select Security.
12. Select Pin Code Request (it will say it's on).
13. Enter Pin Code from sim holder (refer step 4), then Ok.
14. Change it for **ON** to **OFF** then Ok.
15. Power the phone off then Power the mobile phone onagain, PIN code should not be requested again.
16. Remove Sim Card from mobile phone.
17. Remove power from Elog unit. Remove PCB assembly from Elog unit.

18. Push the Sim Card holder back and lift holder up (3). Slide the Sim Card into the Elog Sim Card holder.Push the Sim holder down then push Sim holder forward to lock (4).



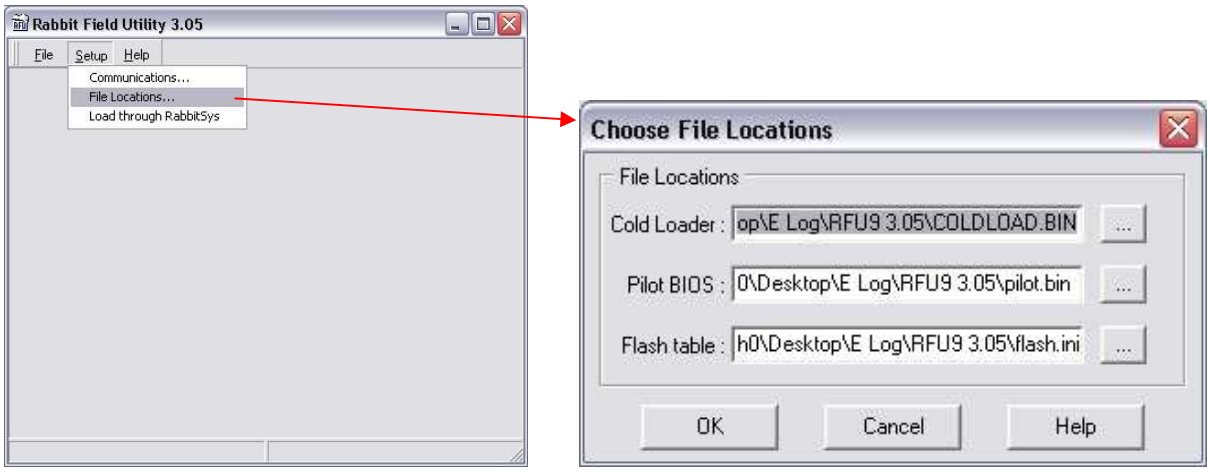


3. SETTING UP THE RFU RABBIT PROGRAM

This procedure is required whenever the RFU rabbit software is initially loaded onto a computer.

Note: Use RFU 2.45 program for all W2 softwares and RFU 3.05 for W5 softwares (contact LSI-Robway (techsupport@lsirobway.com.au) if unsure). Instructions below are for RFU 3.05. If RFU 2.45 is to be used repeat the instructions below for the RFU 2.45 program. This process is only required once for each computer.

1. Ensure that the “RFU9 3.05” folder has been copied onto the C drive of the computer.
2. Open “”RFU.exe”. File locations need to be set. Select Setup > File locations



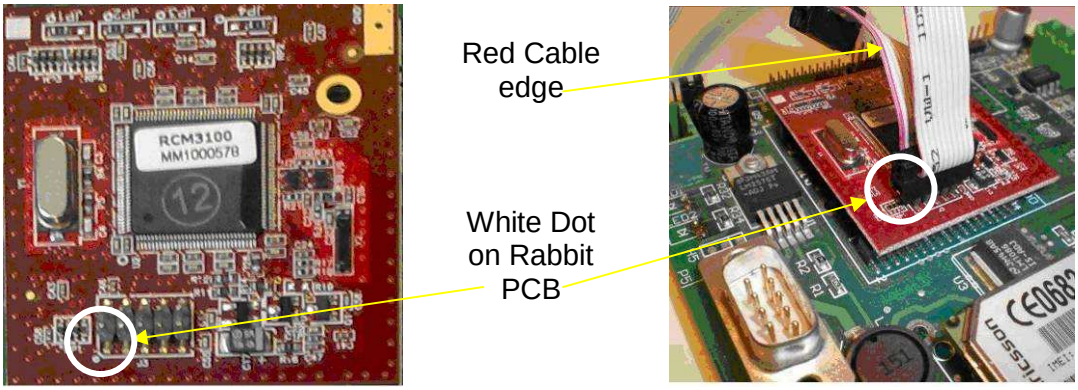
3. Press the button at the end of the “Cold Loader” line and navigate to and open the “RFU9 3.05” folder. Highlight the “COLDLOAD.bin” file and press “open”.
4. Press the button at the end of the “Pilot BIOS” line and navigate to and open the “RFU9 3.05” folder. Highlight the “pilot.bin” file and press “open”.
5. Press the button at the end of the “Flash table” line and navigate to and open the “RFU9 3.05” folder. Highlight the “flsh.ini” file and press “open”.
6. Press OK.
7. Close the RFU program.

4. LOADING ELOG FIRMWARE

CONNECTING THE LAPTOP

1. Ensure power is disconnected from Elog unit.
2. Remove PCB assembly from cover. A Cinch Tool (pictured below) is required to remove the cover from Elog03. For Elog02 remove front panel screws with a #1 philips head screwdriver and slide PCB out.

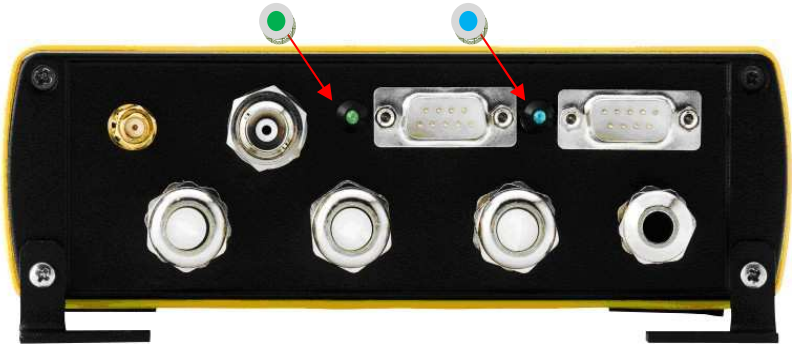
3. Connect the “Rabbit” ribbon cable to the Rabbit processor PCB 10pin Connector ensuring that the program plug is connected with the red edge of the cable next to the white dot located on the Rabbit processor PCB (Rabbit processor PCB same for Elog02 and 03). See pictures below.



4. Connect the “Rabbit” ribbon cable DB9 connector to the computer RS232 socket or RS232/USB converter. (RS232 port must be “COM2”.)

5. Connect power to the Elog unit (refer applicable GA).

6. Two LEDs should be illuminated on the Elog front panel (see pictures below):



ELOG02

Green LED: Constant but possibly dull.
Blue LED: Constant and bright.

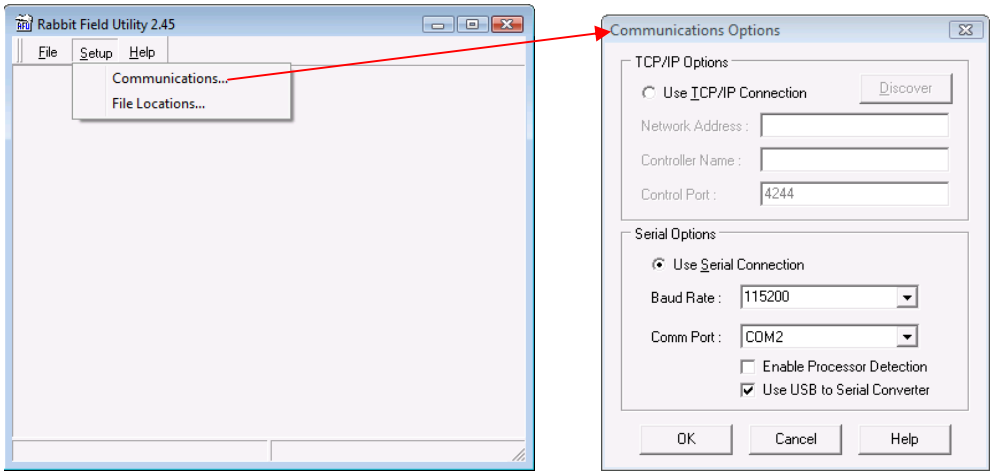
ELOG03

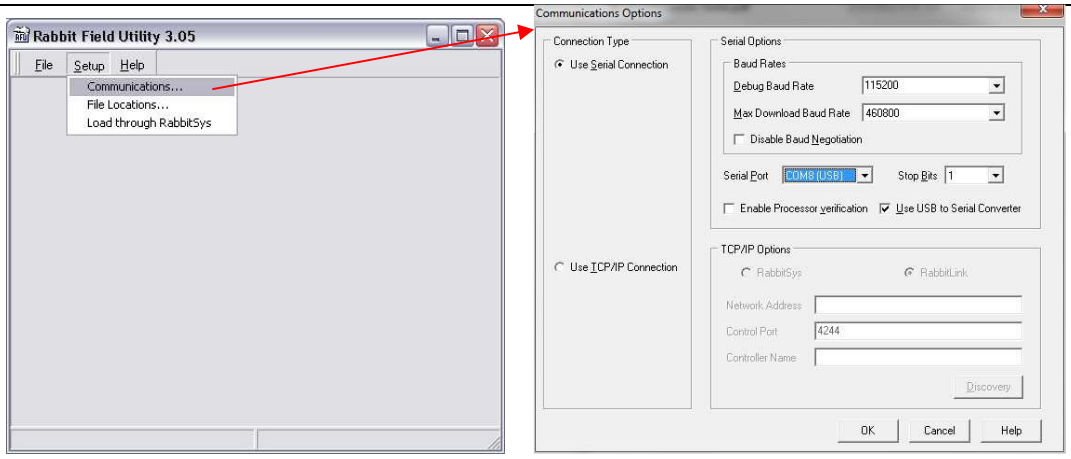
Yellow LED: Constant and bright
Green LED: Constant but may be dull.

LOADING FIRMWARE

Ensure that the “RFU9 2.45 or 3.05” software has been copied and set-up per “ Section 4 - SETTING UP THE RFU RABBIT PROGRAM”.

8. Open “”RFU.exe” (from RFU9 2.45 or 3.05 folder as appropriate).
9. To ensure that communication is setup correctly, check that the comms port being used is set to 2.
10. Select “Setup” then “Communications”, the following screen appears

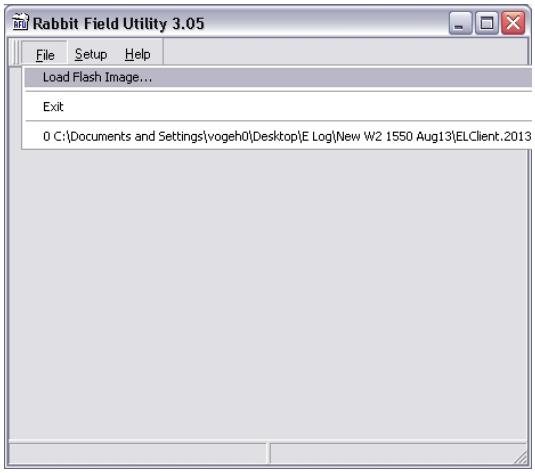


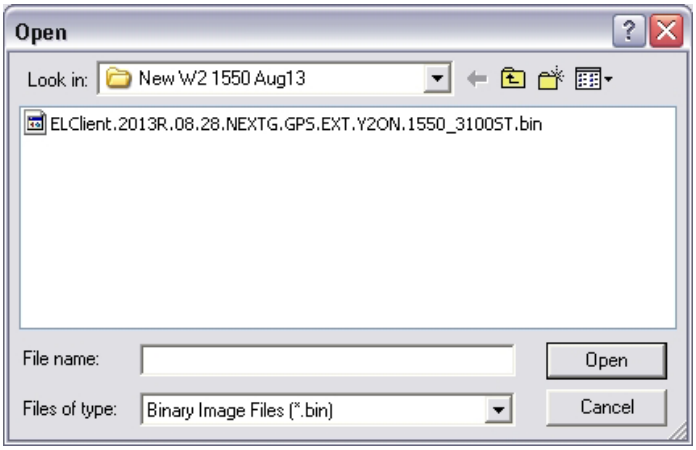


11. Select “Use Serial Connection”
12. Ensure the options are set to the following
    - Baud Rate/Debug Baud Rate: 115200
    - Max Download Baud Rate “460800” (RFU 3.05 only)
    - Un-check “Disable Baud Negotiation” (RFU 3.05 only)
    - Select “Serial Port” “2” (or other USB port if applicable)
    - “Stop Bits” to “1” (RFU 3.05 only)
    - Un-tick “Enable Processor Verification”
    - Tick “Use USB to Serial Convertor” if being used.
    - Click OK and this screen will close.

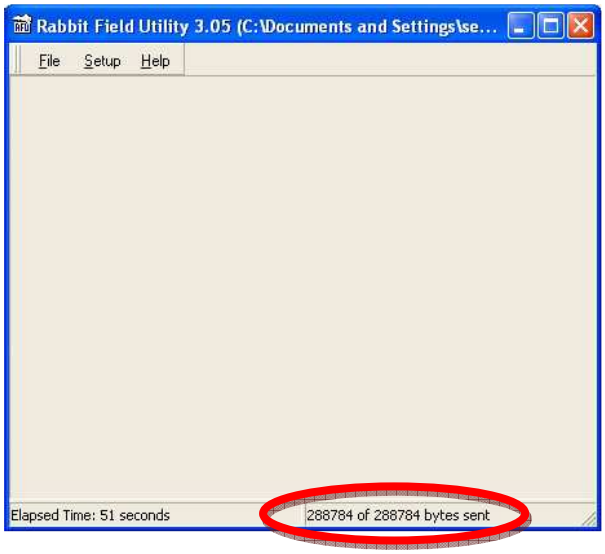
LOADING THE FLASH IMAGE

11. Select “File” then “Load Flash Image”





12. Navigate to the appropriate .bin file and highlight.
13. Click “Open”
14. The Flash image is now being loaded and will take a few minutes.
15. When the image has been loaded check that the number of bytes loaded match the total number to be loaded.



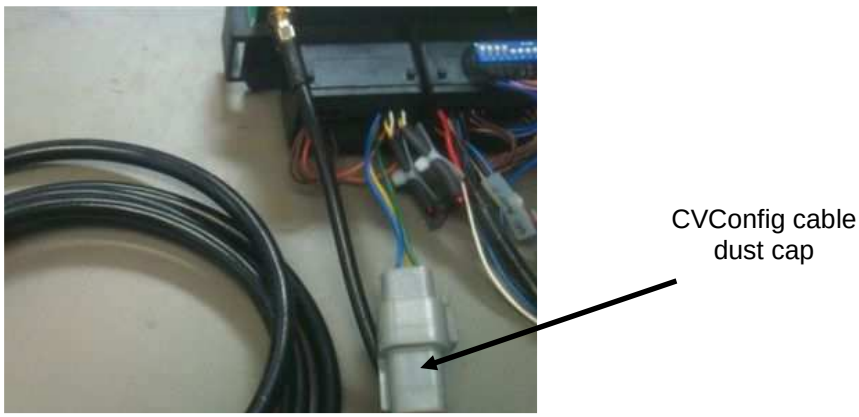
16. Close RFU. Remove power from the Elog unit.
17. Disconnect the “Rabbit” ribbon cable from Elog unit and from the computer.

5. SETTING UP AND LOADING CVCONFIG

CONNECTION FOR CV CONFIG

1. **ELOG02:** Connect a “Null Modem” cable (Male DB9 to Female DB9) from the Elog02 DB9 connector between the blue and green LEDs to RS232 port (either on computer or to RS232/USB adapter). Refer to picture below.

2. **ELOG03:** Remove dust cap from Elog03 3 pin CVConfig socket. See picture below.



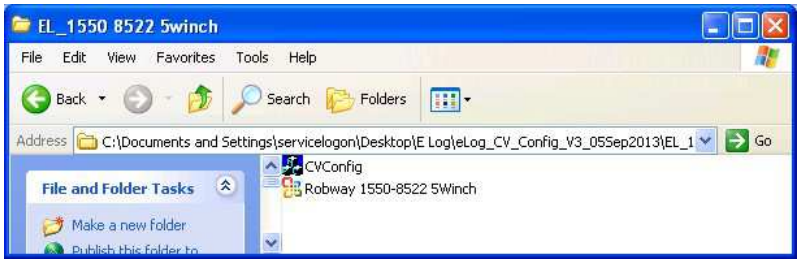
3. Connect CVConfig cable, one end to Elog03 3 pin CVConfig socket, other end to RS232 port (either on computer or to RS232/USB adapter). See picture below.

Elog03 CVConfig Cable

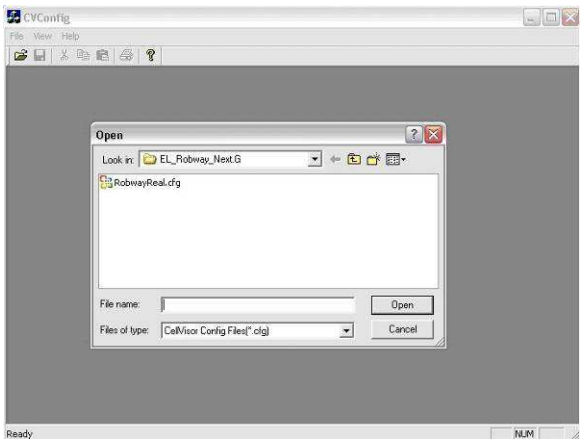
4. Connect power to the Elog unit (as per applicable GA).
5. Both LEDs should both be constantly illuminated on the Elog front panel.

CONFIGURING CVCONFIG

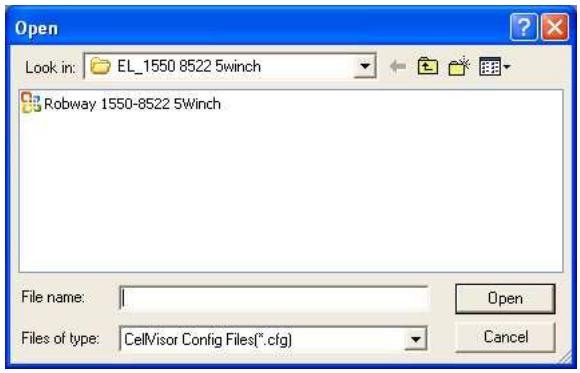
1. Open the appropriate CVConfig file on computer.



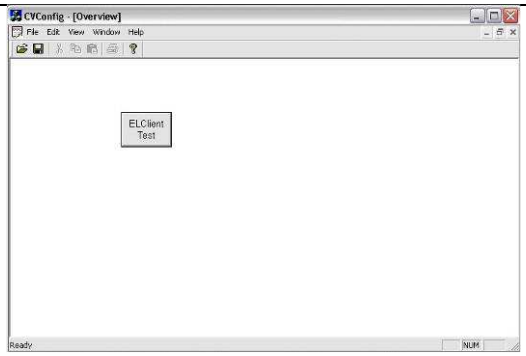
2. The following screen appears:

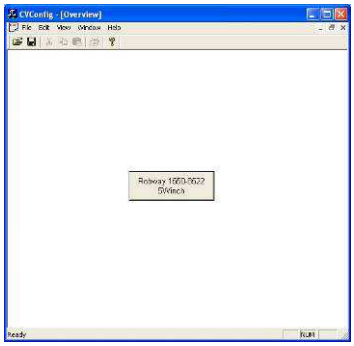


OR

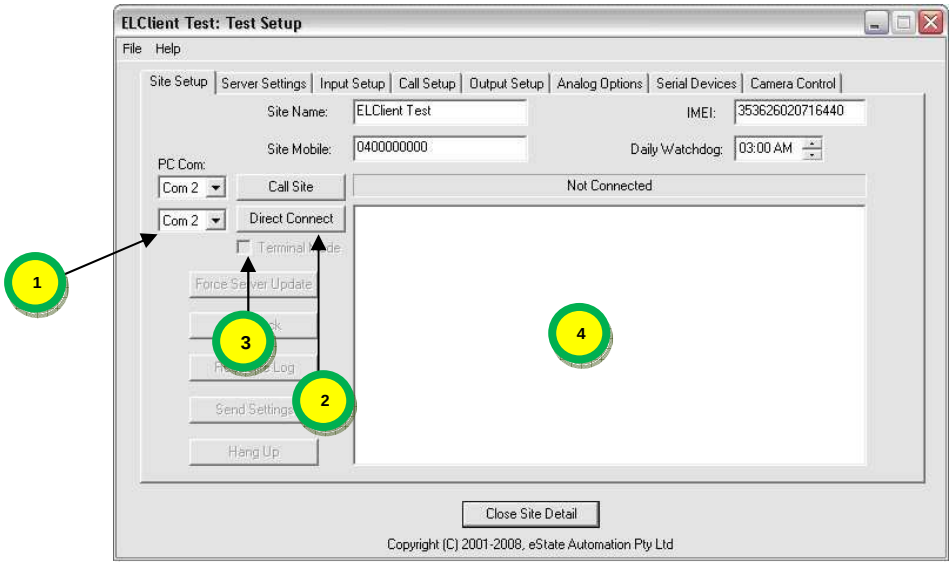


3. Highlight appropriate .cfg file and click “Open”. One of the following screen appears:





4. Click on the “EL Client Test” or “Robway 1550-8522 5 Winch” button and the following screen appears:



5. Referring to the above picture:
   a. Check that the “PC Com” is set to Com 2 (1)
   b. Click the “Direct Connect” button (to establish communication with the Elog unit) (2)
   c. Tick the “Terminal Mode” button (3)
   d. Wait for a data to appear in the main window (4), this data will include the IMEI number of the Elog unit.

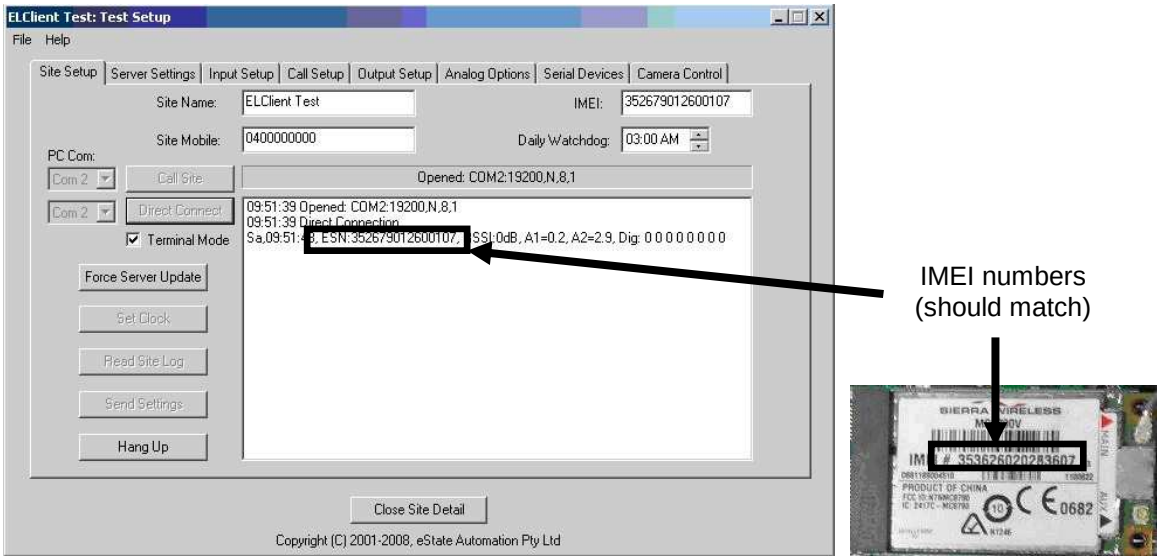
Note: Explanation of this data line:

Example data:

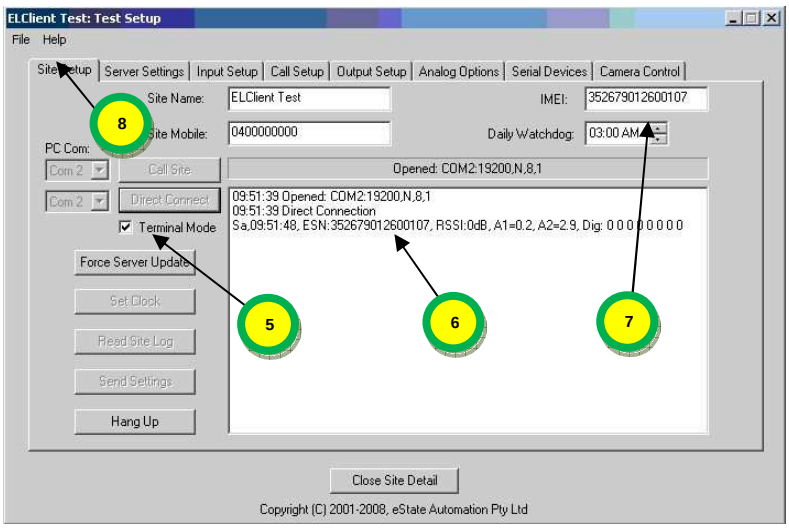
Sa,09:51:48, ESN:352679012600107, RSSI 86dB, A1=7.4, A2=0.0, Dig: 00000000

- Sa,09:51:48 – date and time
- ESN:352679012600107 – IMEI number
- RSSI 86dB – cell signal strength (note that if this ”0dB” then the Elog unit is not communicating with the cell provider (maybe out of range or a problem with the SIM card or cell antenna).
- A1=7.4 – Sample of Analogue input 1 (approx 1/3rd of input voltage). Normally battery voltage.
- A2=0.0 – Sample of Analogue input 2 (approx 1/3rd of input voltage). Not normally used.
- Dig: 00000000 – shows state of each digital input, first digit is digital input number 1, last digit is digital input number 8. “0” denotes digital input is “OFF”, “1” denotes digital input is “ON”. GA shows what each digital input connected to

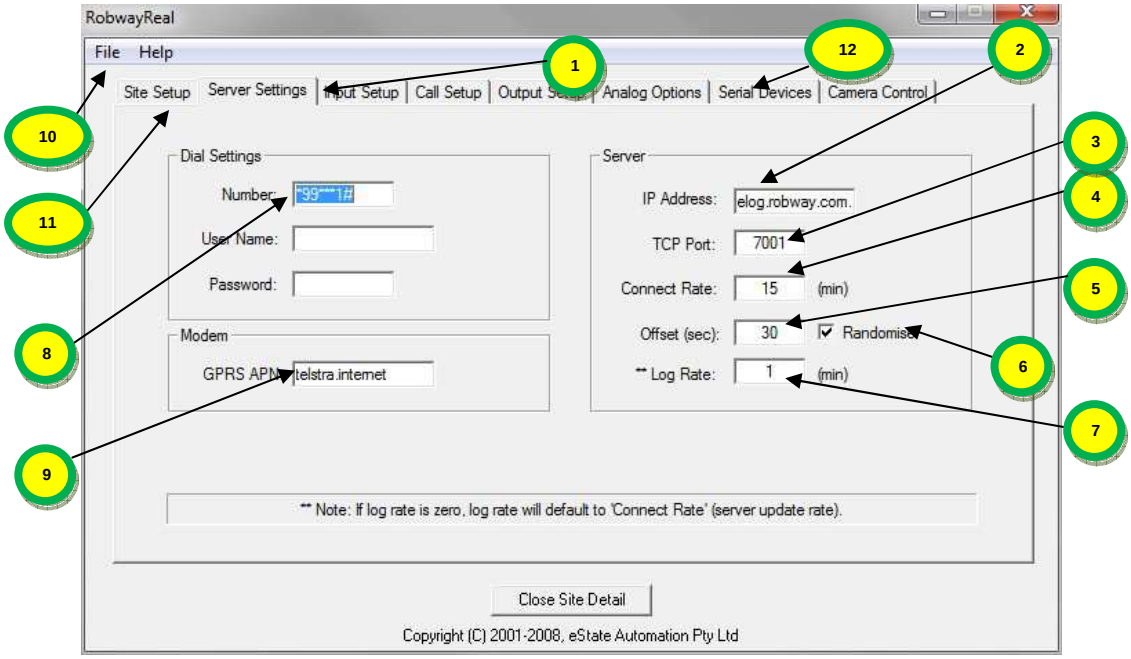
6. Check that the ESN number in the main window matches the number on the IMEI module (see picture below):



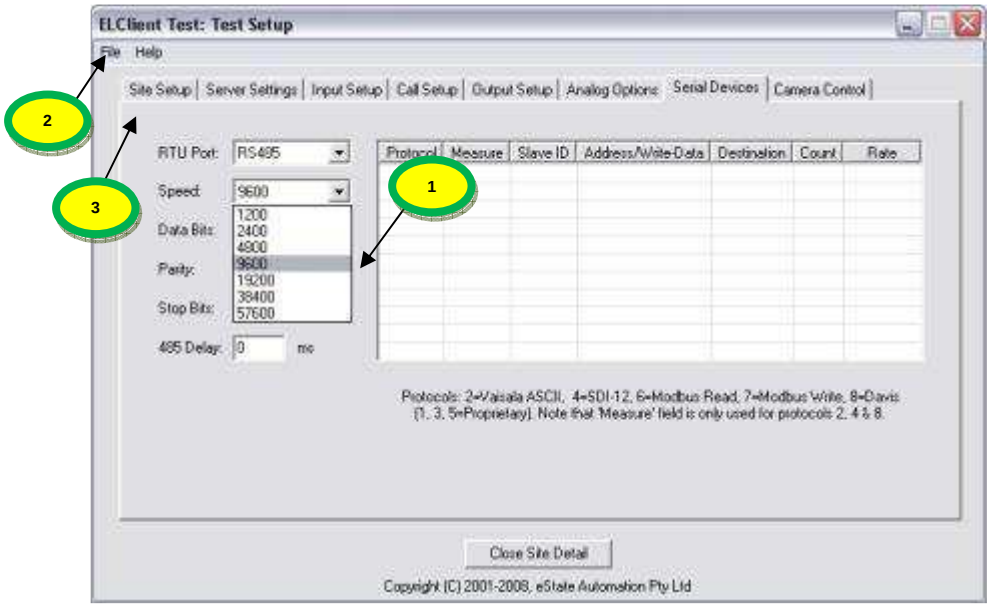
7. Refer to the picture below:
   a. Un-tick the “Terminal Mode” box (5).
   b. If the ESN number on the data line (6) does not match the IMEI number in window (7), type the ESN number from the data line (6) into the “IMEI” window (7).
   c. Click “File” then “Save” to save these settings (saved file will be titled with IMEI number from “IMEI” window (7).



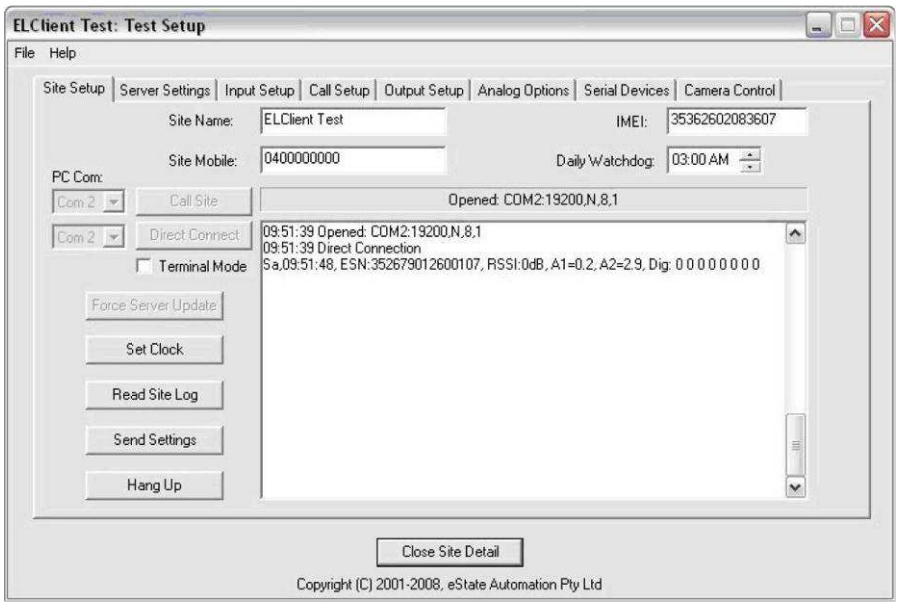
8. Refer to picture below:
   a. Click on “Server Settings” tab (1).
   b. Check and change if necessary:
   c. IP Address (2) elog.robway.com.au
   d. TCP Port (3) 7001
   e. Connect Rate (4) 15 minutes
   f. Offset (5) 30 seconds
   g. Randomize 6) ticked
   h. Log Rate (7) 1 minute
   i. Number (8) *99***1#
   j. Modem (9) telstra.internet
   k. When complete – if any changes are made these must be saved - click “File” then “Save”.



9. Refer to picture above, click on the “Serial Devices” tab (12).
10. See picture below. Click “Speed” (1) and select “9600”. (Note that for an RCI1550 if the streaming data is connected to the RS485 port (eg some Favco Cranes) select “19200”). Click “File” (2) then “Save”.

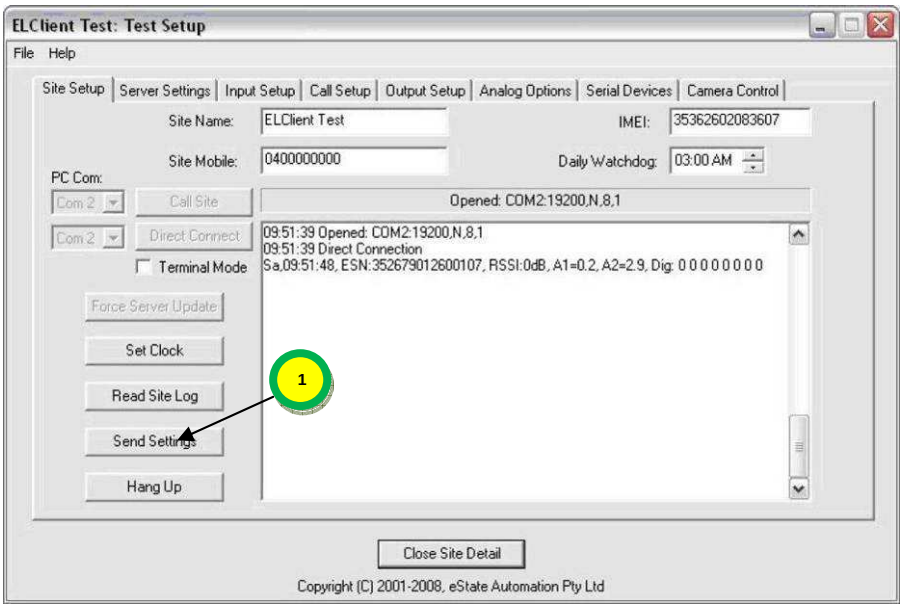


11. Click on the “Site Setup” tab (3 in picture above) to return to screen pictured below.

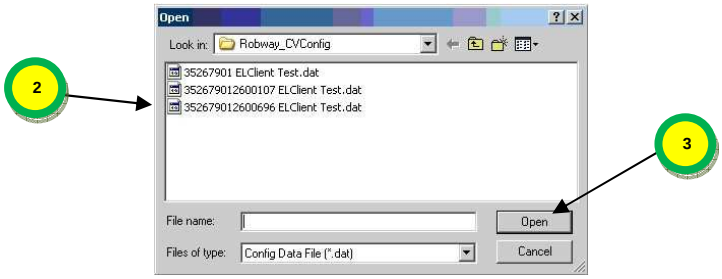


12. CVConfig settings are now correct and ready to be uploaded into the Elog unit.

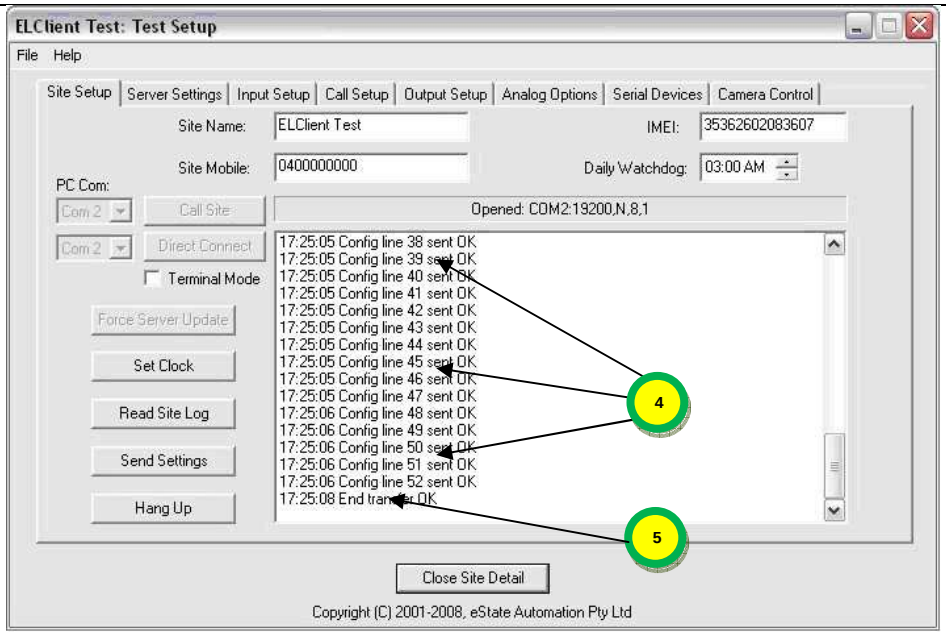
UPLOADING CVCONFIG INTO ELOG UNIT



1. Click the “send settings” button (1). The following screen appears:



2. Highlight the file with the IMEI number corresponding to the IMEI number in this Elog unit (2). Press “Open” (3). This window will close and after a few seconds a number of “Config lines” will start scrolling down the screen (4). Wait for the “End transfer OK” message (5) to appear (this may take a few seconds to appear).
   Note: Carefully watch the config lines as they scroll down the screen. If config lines pause or hesitate before all config lines are loaded, then wait for the “End transfer OK” message and repeat Step 2.
3. If any errors appear or there is any doubt as to whether unit is configured correctly, repeat the above steps.


ELClient Test: Test Setup
File Help
Site Setup
Server Settings
Input Setup
Call Setup
Output Setup
Analog Options
Serial Devices
Camera Control
Site Name:
ELClient Test
IMEI:
35362602083607
Site Mobile:
0400000000
Daily Watchdog:
03:00 AM
PC Com:
Com 2
Call Site
Opened: COM2:19200,N,8,1
Com 2
Direct Connect
Terminal Mode
Force Server Update
Set Clock
Read Site Log
Send Settings
Hang Up
17:25:05 Config line 38 sent OK
17:25:05 Config line 39 sent OK
17:25:05 Config line 40 sent OK
17:25:05 Config line 41 sent OK
17:25:05 Config line 42 sent OK
17:25:05 Config line 43 sent OK
17:25:05 Config line 44 sent OK
17:25:05 Config line 45 sent OK
17:25:05 Config line 46 sent OK
17:25:05 Config line 47 sent OK
17:25:06 Config line 48 sent OK
17:25:06 Config line 49 sent OK
17:25:06 Config line 50 sent OK
17:25:06 Config line 51 sent OK
17:25:06 Config line 52 sent OK
17:25:08 End transfer OK
4
5
Close Site Detail
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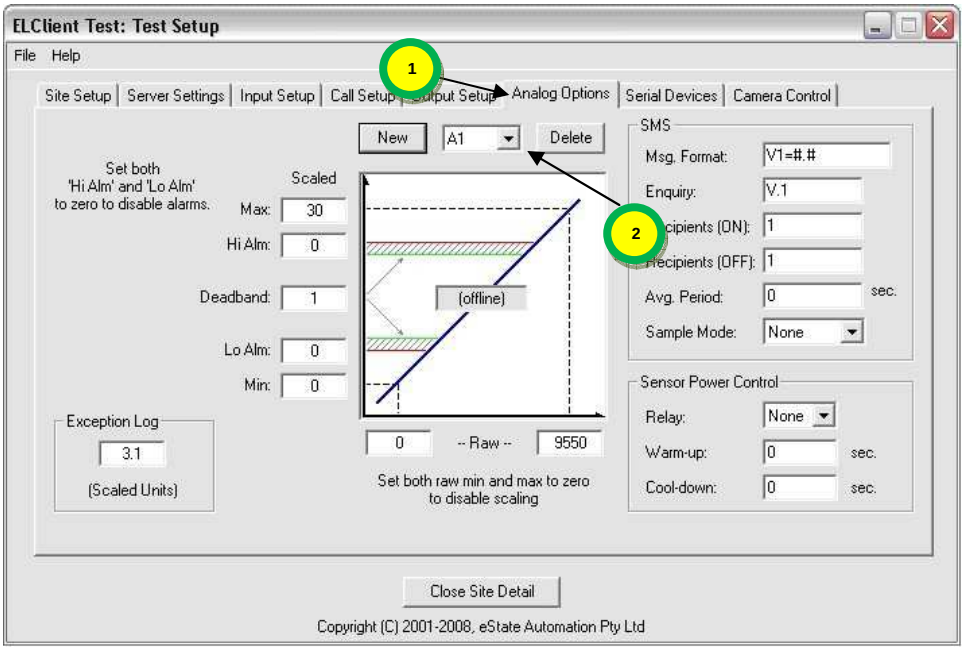
CHECKING ELOG PARAMETERS

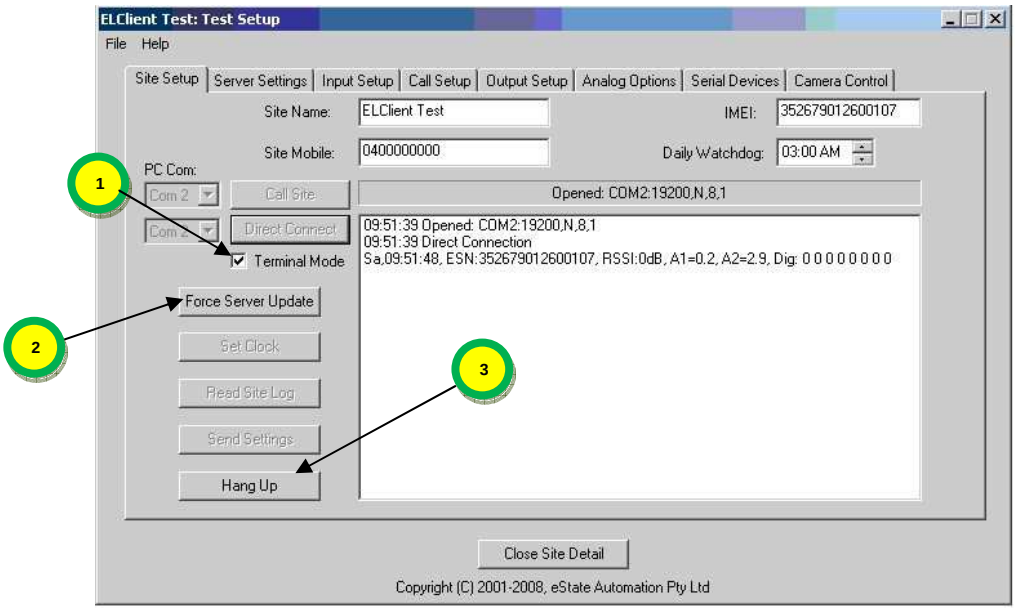
Note: This step is optional.

1. Click on the “Analogue Options” tab (1), the following screen appears.

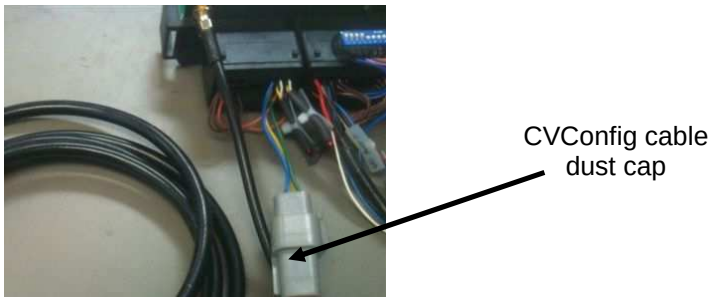


2. Various parameters can now be checked by changing the “A” number using the drop down box (2).

VIEWING ELOG DATA ON THE WEB

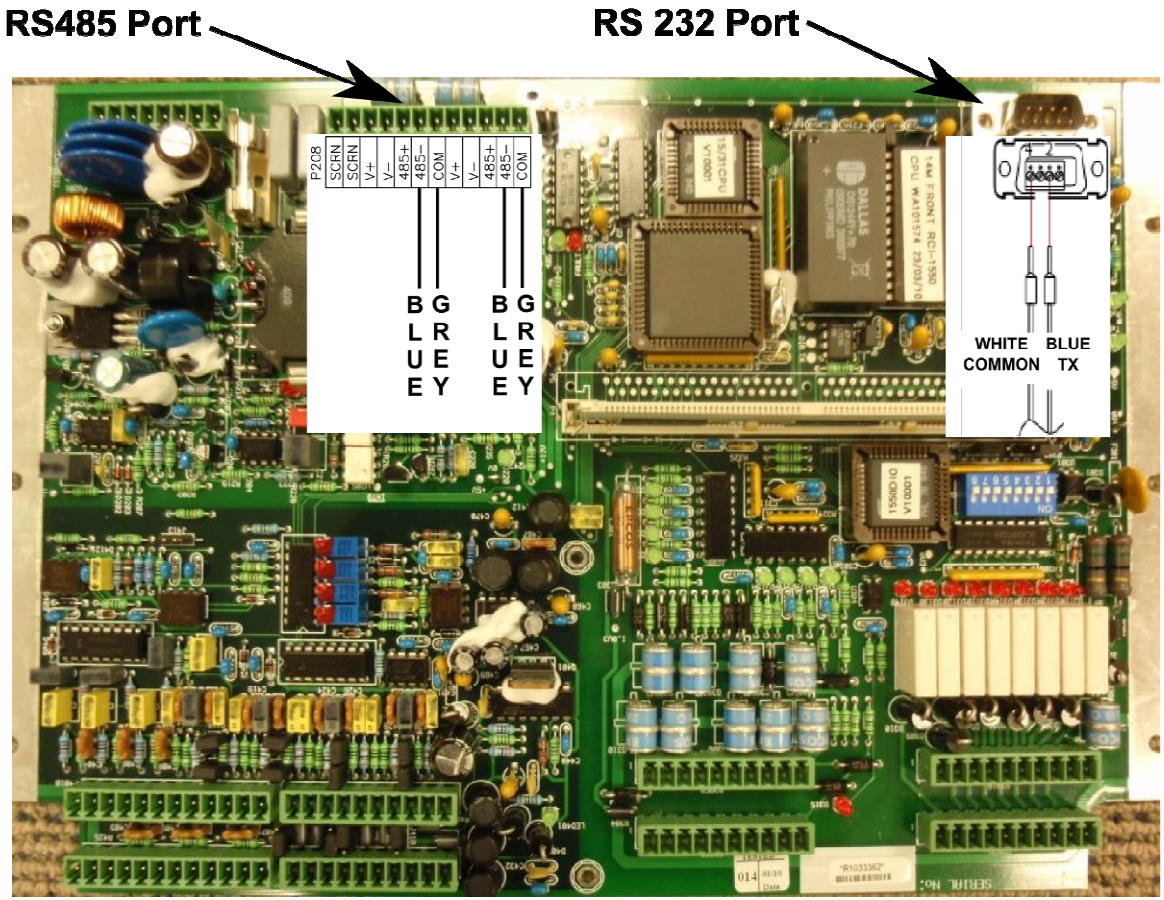


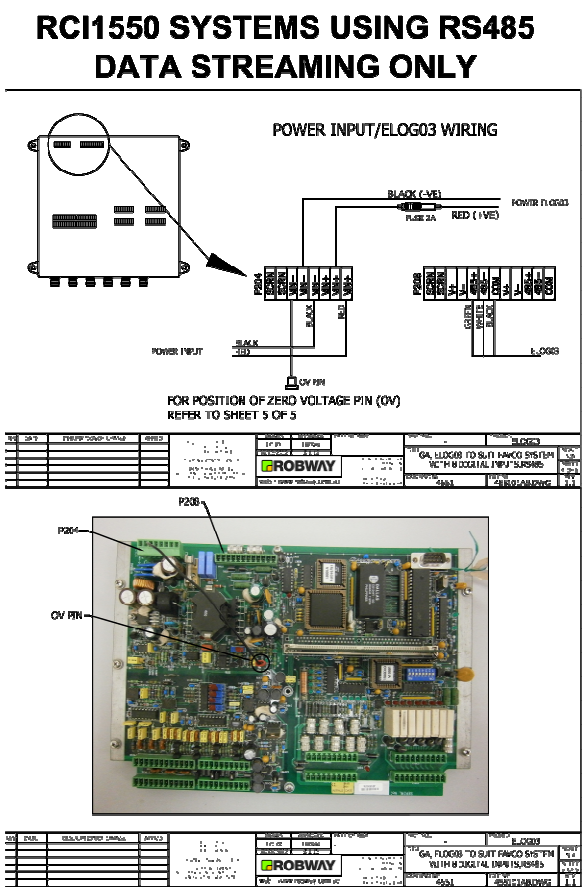
1. Current Elog data from the unit can be sent to the server (to confirm that correct data is being displayed on the web) as follows:
    a. Ensure “Terminal Mode” (1) is ticked.
    b. Press “Force Server Update” (2)
    c. Sending data to the server may take up to 10 minutes.
    d. When completed, data should now be available on the web for this Elog unit.
2. When finished press the “Hang Up” button (3).
3. Close CVConfig and disconnect computer cable from Elog unit. If Elog03 then refit CVConfig cable dust cap. See picture below:



6. TYPICAL GA DRAWINGS

TYPICAL RCI1550 GA

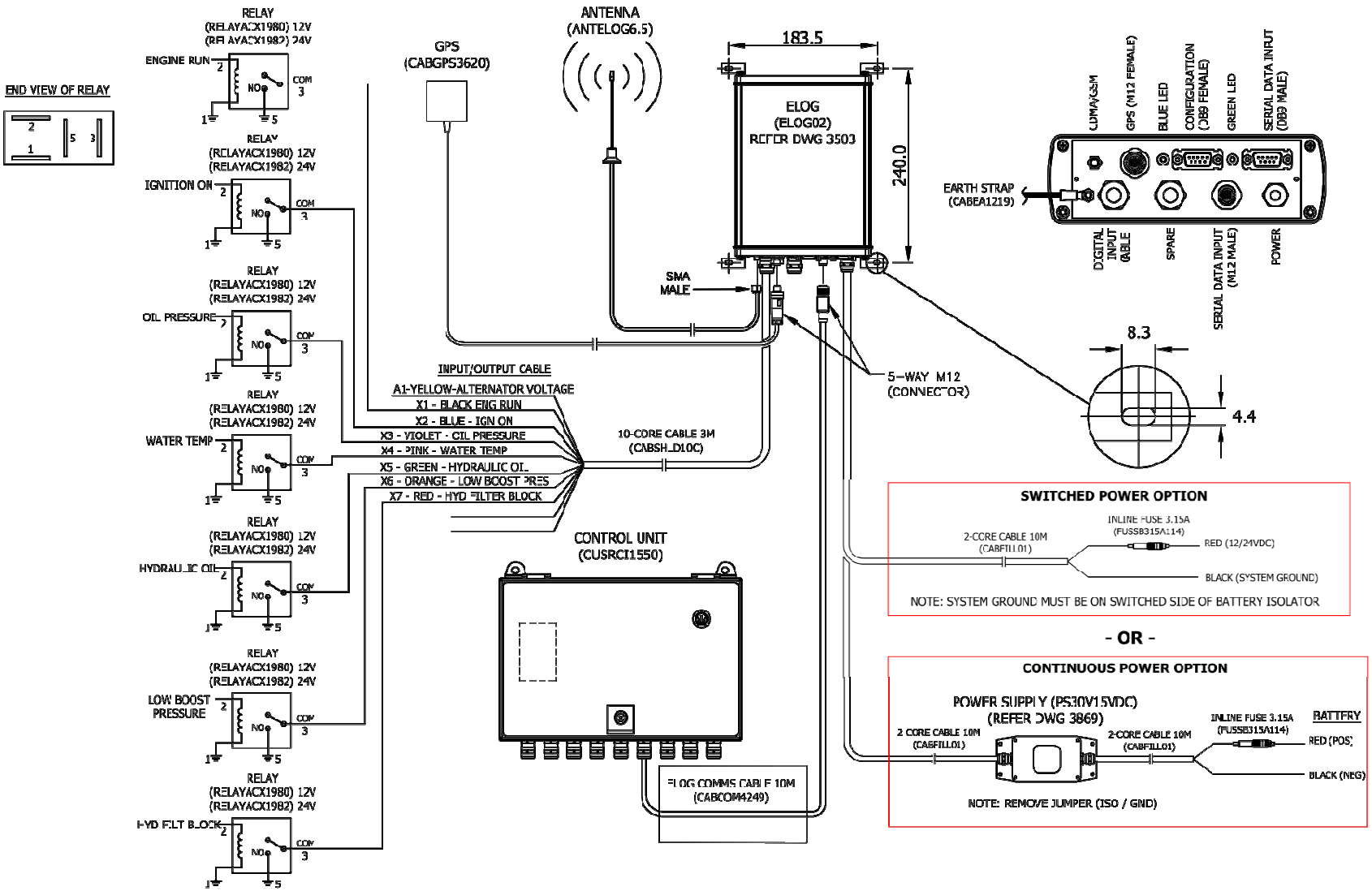




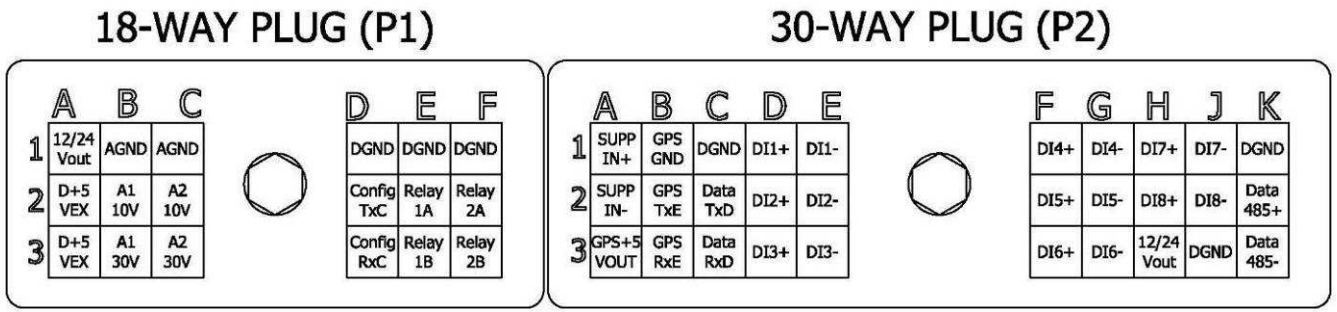
Streaming Data Connections from RCI1550 Controller PCB

(Note that RS232 used for most applications, RS485 used for Favco cranes when RS232 already in use.)

TYPICAL ELOG02 GA DRAWING



ELOG03 PINOUTS



		A	B	C	D	E	F
P1	1	12/24VOUT	AGND	AGND	DGND	DGND	DGND
	2	D+5VEX	A1 10V	A2 10V	Config TXC	Relay 1A	Relay 2A
	3	D+5VEX	A1 30V	A2 30V	Config RXC	Relay 1B	Relay 2B

		A	B	C	D	E	F	G	H	J	K
P2	1	SUPPLY IN+	GPS GND	DGND	DI1+	DI1-	DI4+	DI4-	DI7+	DI7-	DGND
	2	SUPPLY IN-	GPS TXE	Data TXF	DI2+	DI2-	DI5+	DI5-	DI8+	DI8-	Data D 485+
	3	GPS +5 Vout	GPS RXE	Data RXF	DI3+	DI3-	DI6+	DI6-	12/24VOUT	DGND	Data D 485-

Note 1:Above pin-outs are as viewed looking at backside of harness plugs where wires are pushed in.

Note 2:RS232 Port C will be used for both CV config and SAT modem.

Note 3:A typical ELOG may only require the Right connector thus making it possible to have a programming or config cable used with left connector without disturbing the installation. The Left connector filled with blanking plugs is still required to protect pins from weather.

Note 4:Each digital input (DI) is isolated from all other digital inputs and also from the vehicle. Each digital input must have one positive and one negative connection to operate. DI+ or DI- may be looped or individually tied as follows (always refer to the appropriate GA):

- Positive input polarity: DI- to be connected to vehicle supply negative and signal to DI+.
- Negative input polarity: DI+ to be connected to vehicle supply positive and DI- to signal.

TYPICAL ELOG03 GA DRAWINGS