

IM6001
Hanwell Smart Receiver 2
(SR2)

User Manual

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Document History

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2	23 October 2018	Addition of Appendix 3 and minor amendments.	IR
3	20 February 2019	Addition of information on IEC mains inlet socket and voltage selection switch.	IR
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1 Introduction

This Document details how to install the **Hanwell Smart Receiver 2 (SR2)** Unit.

The SR2 is a Network Enabled Receiver, designed for collecting environmental monitoring data from multiple points within a site. In addition, it can be upgraded to a Transceiver which both receives and re-transmits data.

It uses the standard TCP/IP communications protocol for rapid data handling.

2 Pre-Requisites

Before installing and configuring the SR2, you should have read Document **GD6014 Smart Receiver Installation Pre-requisites** which details the necessary pre-conditions for installation. A copy of this is supplied in Section 3.

If a Radio Survey has not been completed, the SR2 unit should not be permanently mounted to the wall until the radio reception has been tested for the proposed location.

2.1 Inventory

Your SR2 should be supplied with the following, as standard:

- 1 x SR2.
- 1 x 1m straight-through CAT5 cable.
- IEC Power Cord with Locking System; see Figure 3 overleaf.
- 1 x UPS battery (unless an external one is to be used).
- 1 x External Receiver Unit (boxed separately).
- USB-SP2; USB stick containing relevant manuals, including **IM6001** (this document).

If you are missing any of these items, please contact Hanwell Solutions Ltd.; see Section 8.

You will also need the **EMS** application installed on your System.

2.2 SR2 Unit Ratings

Voltage: 115 – 240V Switchable

Frequency: 50 – 60Hz

Current: 180mA @230vAC

Power: 80W



WARNING!

To Avoid Possible Electric Shock or Personal Injury, Follow These Guidelines:

DO NOT operate this Unit without a properly grounded, properly polarised power cord.

DO NOT connect this Unit to a non-grounded, non-polarised outlet.

Caution

The SR2 Unit contains a Lead-Acid UPS battery which should never be left for extended periods in a discharged state, to prevent damage to the battery's cells.

2.3 SR2 Receiver Unit – External Appearance

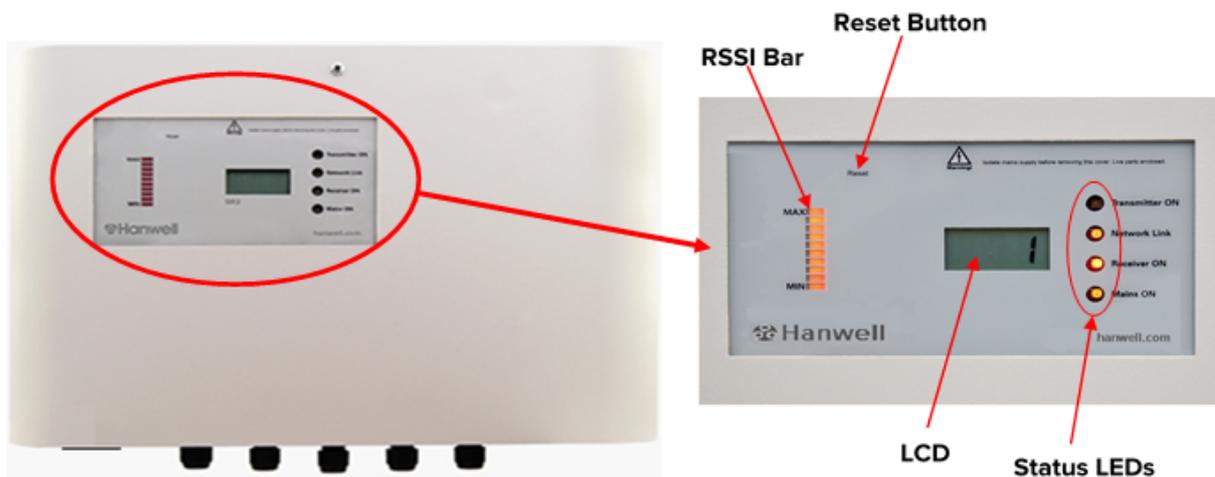


Figure 1 - SR2 Unit Control Panel

IEC Power Socket with Inline Fuse

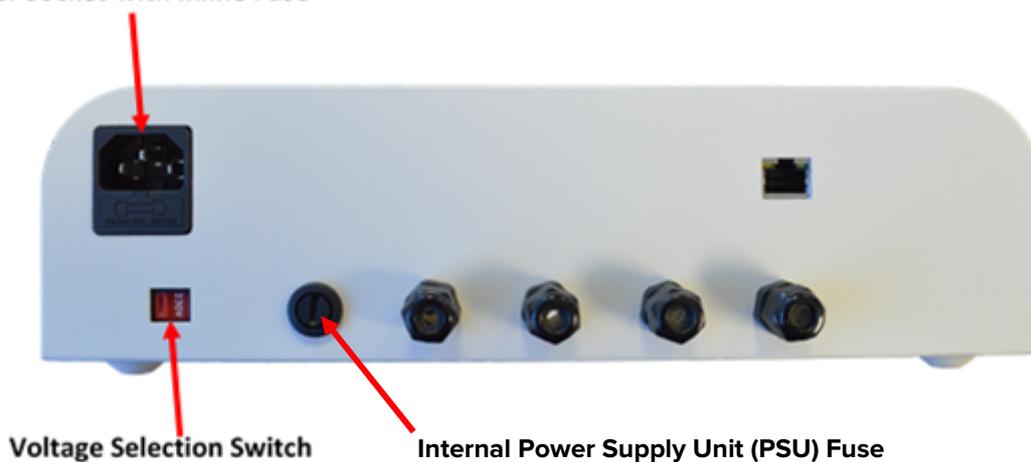


Figure 2 - Underside of Unit

Locking Mechanism*



***Note: The SR2 MUST NOT be powered via a standard IEC Power Cord without a locking mechanism.**

Figure 3 - IEC Power Cord with Locking Mechanism

3 Copy of Document GD6014

Hanwell Document **GD6014 – Hanwell EMS Pre-Requisites** should have been supplied when the SR2 was ordered, so that the pre-requisites could be completed in advance. The contents of it are reproduced here in case the original has been lost.

This Section lists the pre-requisites – physical and virtual – needed to install and configure an SR2 for operation on a network. The required information can, in most cases, be obtained from your IT Department.

Note: The network information must be available prior to the commissioning of the System.

3.1 Physical Pre-requisites

The following pre-requisites assume that a final location for the SR2(s) has been identified following a Radio Survey. If this is not the case, then the following should be factored in when deciding the SR2's final location.

There should be:

- A 24-hour mains power outlet within 1.5m of the planned location.
- An enabled 10/100 Base T LAN socket at the planned location.

Note: If this is greater than 1m from the planned location, a suitable straight through CAT5 lead is required. This can, in most cases, be supplied by your IT department.

- A suitable wall structure on which the SR2 can be mounted so that the antenna is vertical.

The planned location should NOT:

- Be in an area subjected to high temperature or humidity levels.
- Have any metallic objects within 0.3 metres of the antenna in any direction; **this includes any structures hidden within walls, pillars etc.**

3.1.1 Virtual Pre-requisites

Each SR2 requires a unique Static IP address, which should be assigned by you IT Department.

This IP address should be accessible from the PC on which the software will run.

IP Address For example: 192.168.1.100	---.---.---.---
Subnet For example: 255.255.255.0	---.---.---.---
Gateway For example: 192.168.1.1	---.---.---.---

If the IT Department requires a MAC address in order to assign an IP address, contact Hanwell Solutions Ltd. to request it; see Section 8.

The MAC address is also listed on a label on the 'daughter' PCB inside the SR2's case, in the format xx:xx:xx:xx:xx:xx.

4 Installing the SR2

There are four steps to installing an SR2:

1. Wall-mounting the SR2. See Section 4.1.
2. Connecting the Receiver Unit. See Section 4.2.
3. Connecting the Power and Network connections to the SR2. See Section 4.3.

Caution:

DO NOT power up the SR2 until these steps have been completed!

4. Configuring the SR2 in the EMS software. Refer to the Online EMS User Guide for details on this:

<http://www.help.emsprocloud.com/index.html?configuring-the-smart-receiver.html>

- In addition, you can also change the Default Hardware Settings of the SR2 (see Section 5) or connect Local Sensors (see Section 5.2).

4.1 Wall-mounting the SR2

The SR2 has a keyhole and four screw holes in its rear plate. These should be used for wall-mounting the Unit.

Note: We recommend the radio reception at the chosen location is thoroughly tested before final wall-mounting!

1. Use the holes in the rear of the Unit as a drilling template to mark the position of the required screw holes.
2. Place the SR2 on the wall and screw into place.

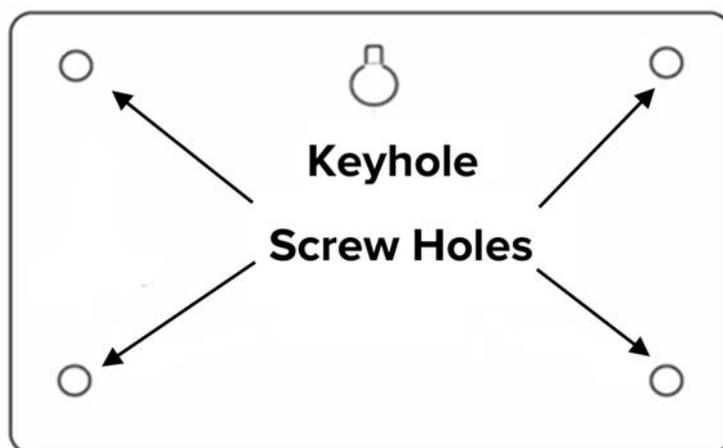


Figure 4 - Rear of Unit

4.2 Connecting the Receiver Unit

The Receiver Unit will come supplied with 3m of cable pre-wired to it. This should be wired to connector **JP14** in the **SR2**. See Figure 5 below.

3. Open the **SR2**.
4. Feed the Receiver Unit cable through one of the glands in the base of the **SR2**.
5. Connect the Receiver Unit's cable to **JP14** as outlined in:

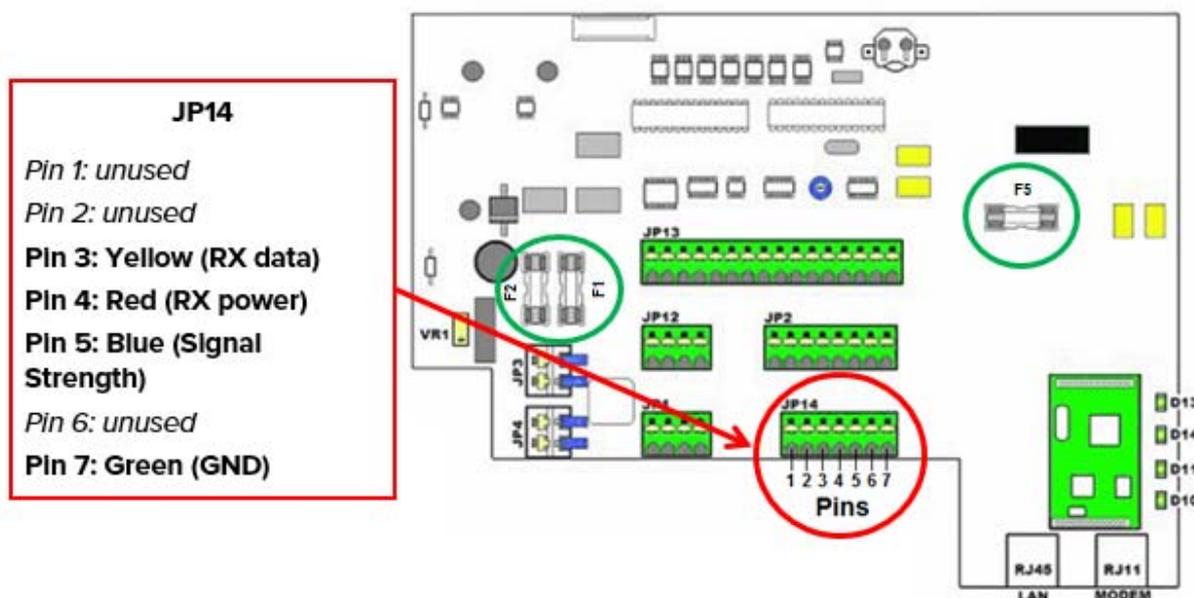


Figure 5

Caution:

Incorrect Wiring can Seriously Damage the SR2.

Always Double Check the Wiring Before Connecting Power!

6. Close the **SR2**.
7. Screw the aerial onto the Receiver Unit.

4.3 Connecting the Power and Network



WARNING!

To Avoid Possible Electric Shock or Personal Injury, Follow These Guidelines:

DO NOT operate this Unit without a properly grounded, properly polarised power cord.

DO NOT connect this Unit to a non-grounded, non-polarised outlet.

1. Unscrew the front panel (top screw) and lower the front.
2. Check that fuses **F1**, **F2** and **F5** are fitted (circled in green in Figure 5 above).
3. Check that the **coin cell** is fitted (with the positive side topmost).
4. Remove the **UPS battery** from the Unit's packaging and fit it into the SR2 Unit.
5. Connect the **UPS battery** to the leads.

Caution:

Double-Check the Polarity!

6. Close the front panel and screw it into place.
7. Select the correct local Mains voltage using the Voltage Selection switch on the underside of the Unit (115 or 240 Volts); see Figure 2 above.
Note: The SR2 Unit is supplied set to 240 Volts.
8. Slide back the locking mechanism on the top of the plug to release the friction lock (see Figure 3 on page 5) and insert the IEC Power Cord Plug into the IEC Socket on the underside of Unit.
Note: You must also slide back the locking mechanism on the top of the plug to release the friction lock when removing the IEC Power Cord.
9. Release the locking mechanism and pull down on the IEC Power Cable Plug to check that it is locked in place and cannot become detached.
10. Connect the mains power and switch on.
11. Confirm that the **Mains** LED comes on.
12. Confirm that the **Receiver** LED comes on.
13. Connect the LAN cable from the LAN socket on the **SR2** to the enabled Ethernet socket.
14. Confirm that the **Network Link** LED comes on.

Caution!

The UPS Backup Battery Float Charge has been adjusted to provide 1.5v to the battery. If the battery is changed to another type or manufacturer, then the Float Charge **MUST** be changed to suit the new battery.

Failure to do so may cause irreparable damage.

4.4 Configuring the SR2 Receiver's Network Settings

Configuration is normally done on the network but, in some instances, it may be necessary to connect to the **Smart Receiver(s)** directly.

- Before the **Smart Receiver(s)** can be configured, fixed IP addresses should be assigned to each unit by the Network Manager.
 - For information on setting up an SR2 with an IP address for use with EMS or Synergy, please refer to Appendix 2 of this document.
- You should also know the **Subnet** and **Gateway** addresses.
- The Smart Receiver should be connected to the network using a straight-through network lead (supplied).

Refer to the Section - Configuring the Smart Receiver on a Network of the EMS Online User Guide: <http://www.help.emsprocloud.com/index.html?configuring-the-smart-receiver.html> for details on how to assign an IP address to an SR2.

- The SR2 is now ready to use.

Sections 5 and 6 of this Document contain optional additional settings and connections.

5 Advanced SR2 Configuration

The SR2 is sent out set to its Default Hardware Configuration.

These Default settings can be changed via a set of 8 DIP switches on the back of the display PCB.

Note: Switches 5 - 8 inclusive are not used and should be set to OFF.

5.1 Fall Back Operation

Defines the SR2's behaviour in the event of a network or mains power failure.

Set with DIP Switch 1:

ON (Default)	<ul style="list-style-type: none"> In the event of mains power failure, the SR2 will switch to Power-Fail mode. The Receiver will only be powered up for 5 minutes in every 10 to prolong the life of the on-board battery. In the event of no network Comms for 75 minutes, the SR2 will switch to Comms – Fail mode. <p>In either case the SR2 will log the first signal received from each sensor in a 10 minute period.</p> <ul style="list-style-type: none"> This will greatly increase the time before which wraparound starts to overwrite older data.
OFF	In the event of a Comms or mains power failure, the SR2 continues to log all data received while power is available. If Comms is not restored when the memory becomes full, older data will start to be overwritten.

5.2 On-Board Sensors

The SR2 has 8 inputs for local probes, the equivalent of 4 x RL2000 Sensors with pre-defined ID Numbers.

Set with DIP Switch 2:

ON	The inputs are read
OFF	(Default) The inputs are not read

See Section 6.3 for details of the On-Board Sensor connections.

5.3 Alarm Relay Operation

The SR2 has an on-board 12V relay which can be connected to a buzzer or beacon. The relay is normally held closed. It opens in the event of any alarm on the assigned Grids.

DIP Switch 3 sets which alarms the relay opens on

ON	<p>Network Fail Alarm: The relays will go off in the event of all alarms on the assigned Zones in the software or a network communications failure (no network communications for 60 minutes). When the network communications are restored, the relays will be reset.</p>
OFF (Default)	<p>Normal Operation: The alarm relays respond to all alarms on the assigned Zones in the software only.</p>

5.4 Sensor Groups

EMS has the capability to group sensors of the same type together into **Sensor Groups**.

Sensor Groups are also used to control **SR2 Alarm Relays** and associated **MS1000 Control Interface** outputs via the **Local Alarms** settings.

For details on creating, editing and managing Sensor Groups, refer to the Sensor Groups section of the EMS Online User Guide:

<http://www.help.emsprocloud.com/index.html?sensor-topics.html>

See Section 6.1 for the Alarm Relay connections.

5.5 Transmitter Preamble

This setting only applies to the SR2 Transceiver builds.

Set with DIP Switch 4.

ON	Preamble set for FF/F1 transmission.
OFF	Preamble set for SF transmission.

The setting for your type of module will be indicated on the inner panel of the unit.

6 Additional Connections

The SR2 can be connected to other Hanwell or 3rd Party devices. These are connected using the spring-loaded input sockets **JP2**, **JP12** and **JP13**. See

6.1 Alarm Relays

The **SR2** has three on-board relay outputs that can be used to send alarm notification to a beacon or via an auto-dialer (or other 3rd party device).

These are connected via JP2 (See Appendix 1 – SR2 Connection Data), as follows:

Pin	Connection	Description
1	Relay 1 N/O	This relay closes and a nominal 12V appears on Pin 1 in the event of any alarm on the assigned Grids. It is fused via F1.
2	Relay Common	<ul style="list-style-type: none"> This suitable for driving alarm beacons. See Section 5.3 for additional options.
3	Relay Common	This is a Changeover Relay responding to alarms in the software.
4	Relay 2 NC	<ul style="list-style-type: none"> When no alarms exist, Pins 3 + 5 are connected.
5	Relay NO	<ul style="list-style-type: none"> When an alarm exists, Pins 3 + 4 are connected.
6	Relay 2 Common	This is a changeover relay indicating the mains power state of the SR2.
7	Relay NC	<ul style="list-style-type: none"> When power is present Pins 6 + 8 are connected.
8	Relay NO	<ul style="list-style-type: none"> When power fails Pins 6 + 7 are connected.

6.2 MS1000 Control Panel

The SR2 can be connected to a **Hanwell MS1000 Control Interface**. See the Online User Guide:

<http://www.help.emsprocloud.com/index.html?bms-control.html>

The MS1000 Unit should be connected to JP12 (See **Appendix 1 – SR2 Connection Data**) as follows:

Pin	Connection
1	12V OUT
2	TX +
3	TX -
4	GND

6.3 On Board Sensors

The SR2 has 8 inputs for local probes, the equivalent of 4 x RL2000 Sensors with pre-defined ID numbers.

The probes should be connected to JP13 (See Appendix 1 – SR2 Connection Data), as follows:

Radio Sensor Type	EMS ID No.	Channel	Probe Connections
RL2000 Dual Thermistor	200	Thermistor A	Pin 1: positive Pin 2: GND
		Thermistor B	Pin 3: positive Pin 4: GND
RL2000 RH/Thermistor	201	RH	Pin 5: +5V Pin 6: signal Pin 8:GND
		Thermistor	Pin 7: positive Pin8: GND
RL2000 Linear	202	Linear 4 to 20mA	Pin 9: positive Pin 10: negative
		Linear 4 to 20mA	Pin 11: positive Pin 12: negative
RL2000	203	Digital	Pin 13: positive Pin 14: negative
		Digital	Pin 15: positive Pin 16: negative

Note on Thermistor Sensors:

Ensure the **30k9 Load Resistance** is selected in the **Calibration** section of the **Sensor properties** in the EMS software.

Notes on Accuracy:

Due to the nature of the connections, the onboard Thermistor channels have an accuracy of +/- 0.5⁰C and the Humidity channel has an accuracy of +/-3%.

For greater accuracy, you should use RL4000 or RL5000 radio sensors (+/- 0.2⁰C and +/-% as standard).

Note on Stability:

If the Thermistor or RH channels produce unstable results, fit a 10µF tantalum electrolytic capacitor across the relevant terminals.

- This operation is polarity sensitive, so the capacitors should be fitted as follows:

EMS Sensor Type	Channel	Capacitor Connections
RL2000 Dual Thermistor	Thermistor A	Pin 1: Positive Pin 2: Negative
	Thermistor B	Pin 3: Positive Pin 4: Negative
RL2000 RH/Thermistor	RH	Pin 6: Positive Pin 8: Negative
	Thermistor	Pin 7: Positive Pin 8: Negative

7 Maintenance

7.1 Uninterruptable Power Supply (UPS) Battery

The Lead Acid UPS Battery should be replaced every 2 years.

Hanwell Solutions recommends that the same make and model of battery should be used if possible. If this is not possible, the battery float voltage should be adjusted to meet the battery manufacturer's recommended voltage.

To Adjust the Battery Float Voltage:

1. Fit the new battery and allow to charge for several hours.
2. Measure the voltage across the battery terminals.
3. Adjust variable resistor VR-1 (See **Appendix 1 – SR2 Connection Data**) until the measured voltage meets the manufacturer's recommended voltage.

7.2 Coin Cell Battery

The coin cell ensures uninterrupted power to the clock chip.

It should be changed every 5 years.

7.3 Fuse Specifications

Mains	1 Amp anti-surge 6.3mm x 25mm
F1	1 Amp anti-surge 20mm
F2	5 Amp anti surge 20mm
F5	1 Amp anti-surge 20mm
F Internal	2 Amp anti-surge 20mm

8 Contact Hanwell Solutions

UK Customers:

Hanwell Solutions Limited
Pendle House
Jubilee Road
Letchworth
Hertfordshire
SG6 1SP

Tel: 01462 688070

Email: sales@hanwell.com

Web: www.hanwell.com

For Technical Support:

Tel: 01462 688 078

Email: support@hanwell.com

EU & Overseas Customers:

Please contact your local Hanwell Distributor.

A list of distributors is available at: www.hanwell.com/global-distributors

Appendix 1 – SR2 Connection Data

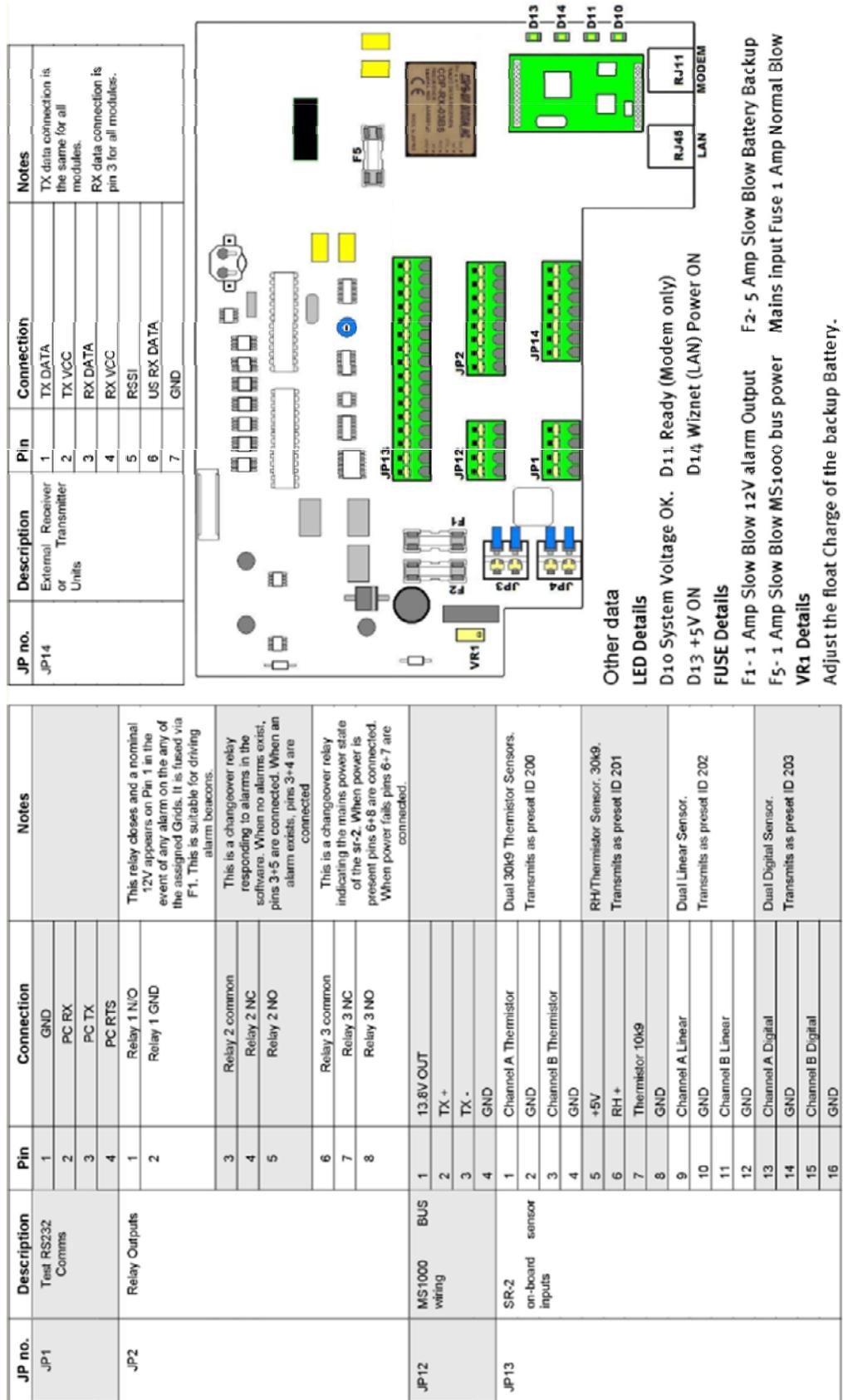


Figure 6

Appendix 2 - Setting up an SR2 with an IP Address for use with EMS or Synergy

Wiznet PCBs installed in SR2s



Figure 7

SR2 Serial Numbers starting 0415 or earlier



Figure 8

SR2 Serial Numbers starting later than 0415

To set up an SR2 for use with EMS or Synergy:

1. Download the Wiznet Configuration Utility from:

www.supportftp.Hanwell.com/Utilities/SRNetworkConfig.zip

Note: The PC you download the Utility to must be on the same LAN as the SR2 being setup.

2. Run the Utility.

3. Click  on the **Configuration Tool** toolbar to populate the **Board List**.

4. Highlight the Mac address from board list on the left. See Figure 9 below.

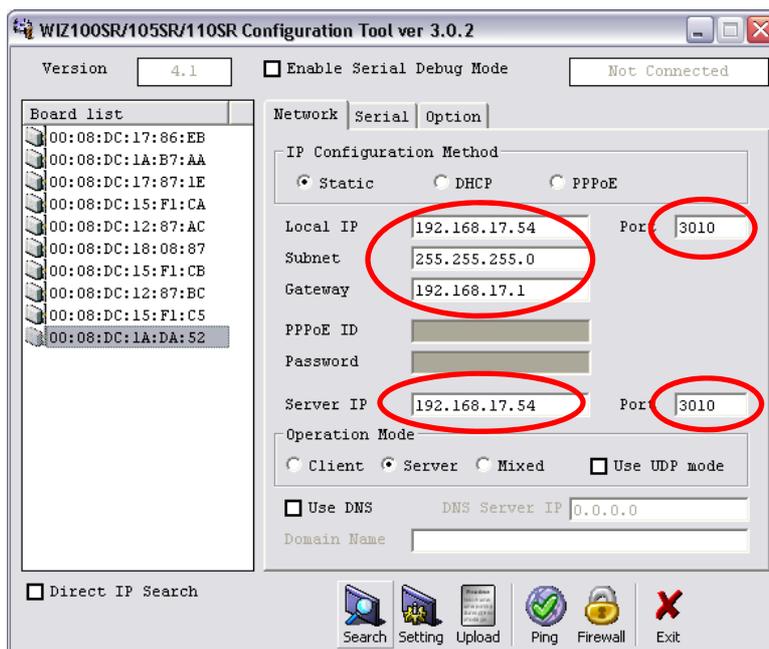


Figure 9

5. Clear the **Enable Serial Debug Mode** tick box.
6. Enter values into the highlighted fields on the **Network** tab as shown in Figure 9 above.
7. Enter values into the highlighted fields on the **Serial** tab as shown in Figure 10 below.

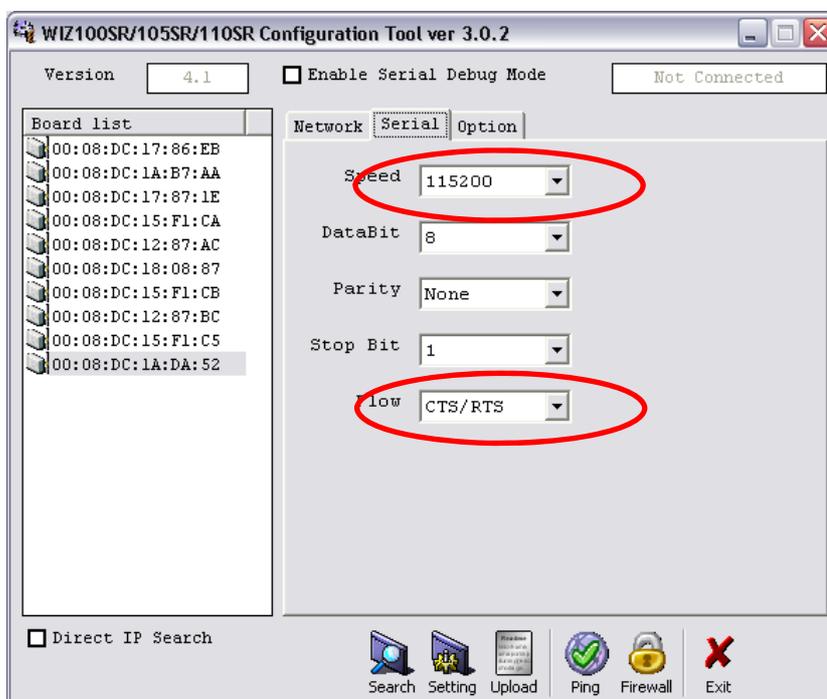


Figure 10

8. Enter values into the highlighted fields on the **Option** tab as shown Figure 11 below.

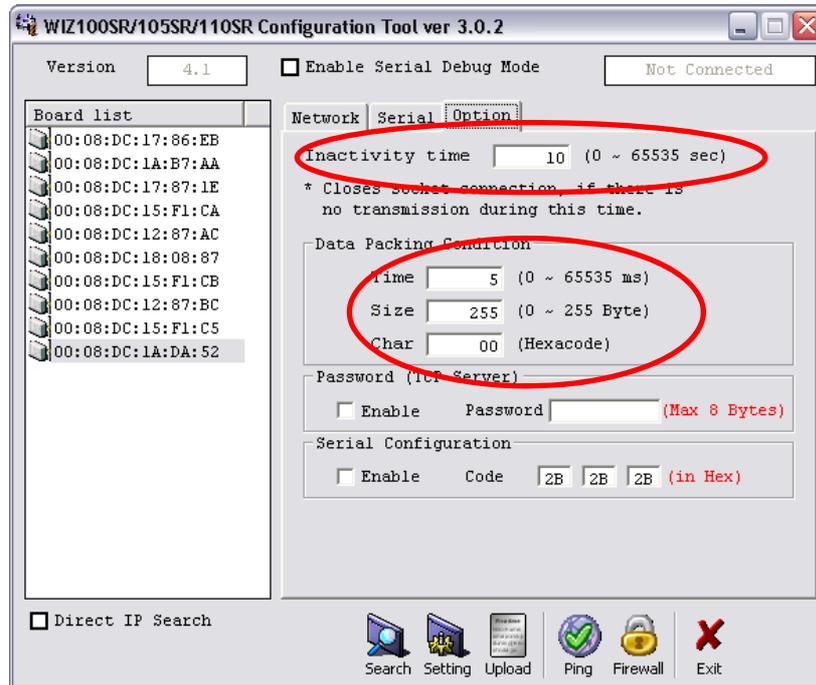


Figure 11

9. Once all the changes have been made, click on  to save.

- The windows shown in Figure 12 below will be displayed as the changes are saved.

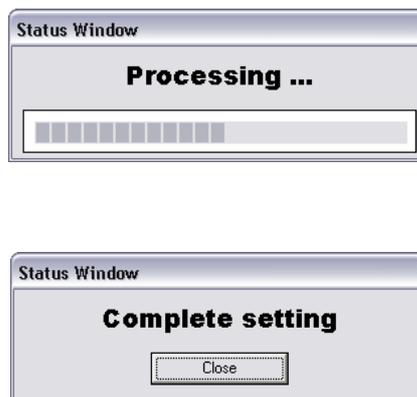


Figure 12

