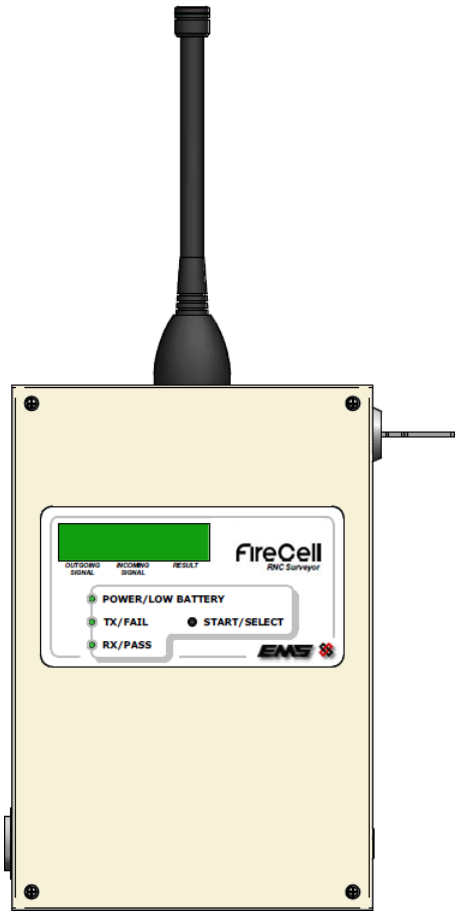

Radio Network Communicator (RNC)

Survey Kit User Guide

TSD218 (Issue 3) 13/06/25 AJM

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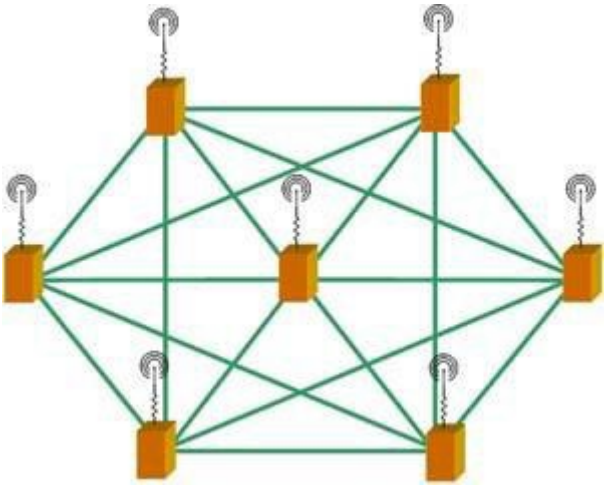
1.0 INTRODUCTION

- Radio Network Communicators (RNCs) are used to enable FireCell Control Panels to communicate wirelessly, thus eliminating the requirement for a cabled link between them. The use of the RNC's provide a wireless network for up to 8 control panels and therefore potentially linking up to 4096 devices. The communication between the RNC's is bi-directional and utilises the 458MHz frequency range.

System Overview

- The RNCs work together in a mesh network to ensure that packets reach every Control Panel successfully. An example mesh network overview is shown below.



Mesh Network Overview

- This manual provides a guide to using the EMS FireCell Radio Network Communicator Survey kit. The survey is an important part of the system design and determines the overall performance of the FireCell Radio Network.
- The survey will create the foot print for the installed system, specifying the final positions for each of the RNCs.

1.1 Identification of parts

The FireCell Radio Network Communicator Survey Kit (Part Number FC-458-SE2) consists of the following items:

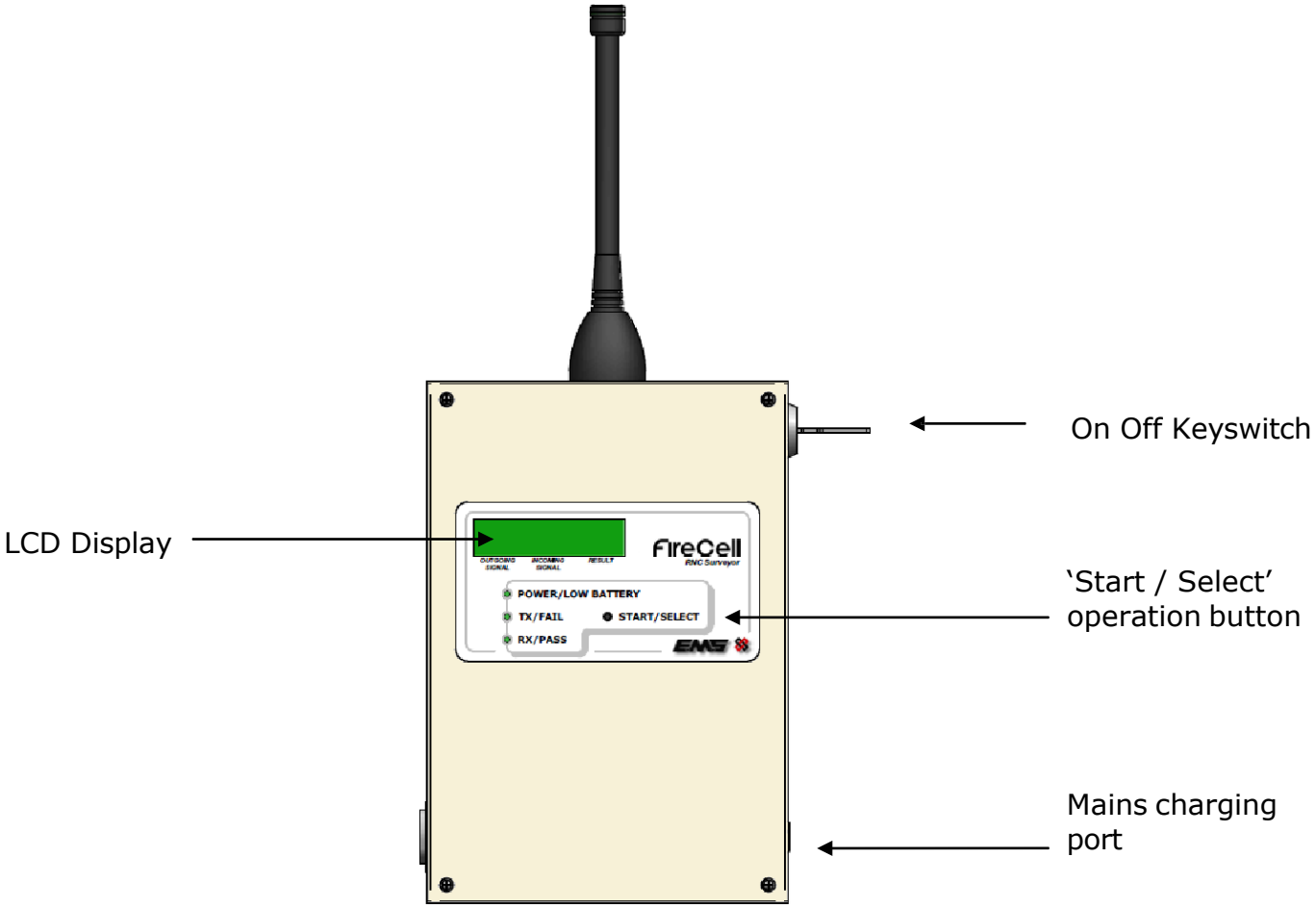
RNC Surveyor devices (2 per kit)

(Part no. FC-500-SE2)

RNC Surveyor mains chargers (2 per kit)

(Part no. FC-501-SE2)

1.2 Unit Features

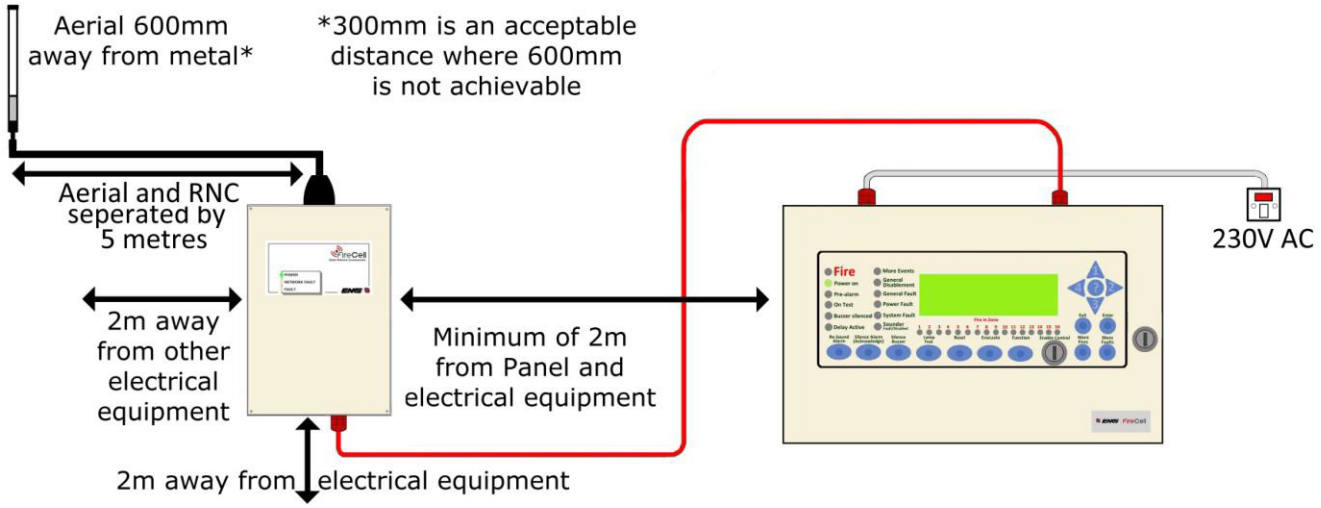


- An LCD display is provided on the RNC Surveyors along with function buttons to allow channel alteration and diagnostics to be carried out at both surveyors.
- The RNC Surveyors are also supplied with mains charging inputs and rechargeable batteries.

2.0 RNC POSITIONING

It is important to ensure that the RNC Surveyor units are positioned as close as possible to their proposed locations. This will provide accurate signal strengths and background levels. The requirements do differ dependant upon the type of Control Panel that is to be utilised on the site. Examples of both types of panel configurations are shown below:-

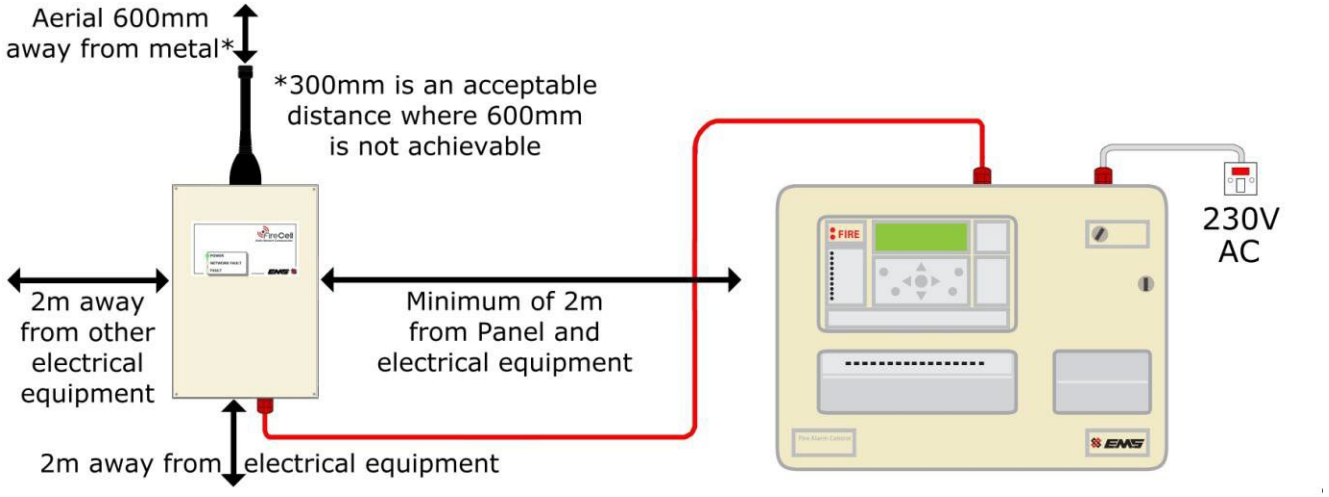
2.1 Syncro AS 1 and 2 Loop Panels



Important Note:-

When fitting an RNC in conjunction with a 1 or 2 Loop Syncro AS Panel, the RNC should be fitted 2 metres from the panel and with a high gain aerial 5 metres away. Therefore care should be taken to ensure that the survey is carried out as close as possible to the proposed location of the RNCs aerial.

2.2 Syncro 4 Loop Panels



Important Note:-

When fitting an RNC in conjunction with a 4 Loop Syncro Panel, the RNC should be fitted 2 metres from the panel. Therefore care should be taken to ensure that the survey is carried out as close as possible to the proposed location of the RNCs aerial.

3.0 RNC SURVEYOR OPERATION

Each site will have a level of background noise that may affect the signals on site. Under EN54-25 (Fire detection and fire alarm systems Components using radio links). The minimum signal headroom's must be checked to ensure reliable communication. This is essential to ensure immunity against site attenuation caused by environmental changes and other electrical equipment.

It is recommended that the survey results along with the background signal are recorded for future reference. The survey kit automatically calculates the required headroom and then displays the results. The results are displayed by showing as a Pass or Fail. The parameters for a pass are 30dB or above and 80% or above success rate.

Example pass display:-

Pressing the Start /Select button again shows the Packet success rate:-

Example fail display:-

Pressing the Start /Select button again shows the Packet success rate:-

The display shows both the incoming and outgoing signal levels from the survey along with the data transfer success rate and confirms whether or not this is deemed as a pass or a failure.

3.1 Monitoring the Background Level at the RNC Surveyor Device

To power the unit turn the key on the right hand side of the RNC Surveyors (previously shown in the 'Unit features' section). This will power the unit. Once powered the background level is automatically checked. The background level at the RNC Surveyors will be displayed on the LCD displays as shown below.

The background levels are shown in –dB, ranging between 0 dB and -120dB. 0dB is the highest amount of possible interference and -120dB is the lowest. A recommended background level will be between -115dB and -120dB. The background levels should be noted in each location for future reference. This can be recorded using the forms at the back of this manual.

3.2 Checking the Signal Level between the RNC Surveyor Devices

Once suitable locations have been identified and both units switched on by turning the key on the right hand side of the RNC Surveyors (previously shown in the 'Unit features' section). Surveying can be carried out. With both RNCs in their proposed locations the test is initiated by pressing and releasing the 'Start / Select' operation button. Once pressed, the screen should change to display:

Followed by a test result. For example:

Pressing the Start /Select button again shows the Packet success rate:-

This shows both incoming and outgoing signal levels and confirms whether or not this is deemed as a pass or a failure.

If a pass result is shown then these results should be recorded.

If subsequent RNC positions are to be checked then the units can be moved to their new locations and the tests re-carried out.

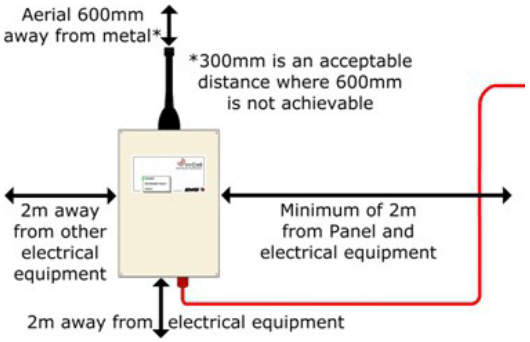
If a fail result is shown then a number of options are available:-

- Move the RNC to a different location and retry test.
- Add a high gain aerial to RNC/RNCs and retry test.
- Move the high gain aerial to a different location and retry test.

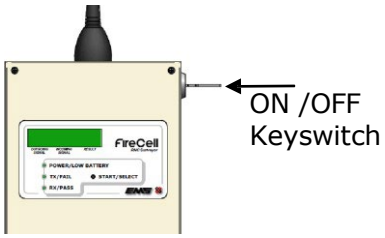
4.0 STEP BY STEP GUIDE TO CARRYING OUT A SURVEY

Step 1 Identify the location of the first RNC. Ensure the RNC positioning details are followed in section 2 of this manual.

Example of RNC - Syncro panel connection



Step 2 Power the RNC by turning the keyswitch on the side of the unit to the ON position.



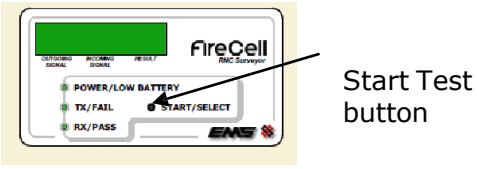
Step 3 Note the background level shown on the display of RNC.

Ready BG: - 116dB

Step 4 Identify the location of the second RNC. Ensure the RNC positioning details are followed in section 2 of this manual.

Repeat steps 1 -3 for second position

Step 5 Press the Start test button on the RNC



Step 6 Display will show

Surveying Link . .

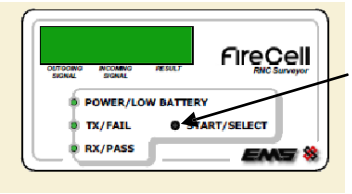
Step 7 Test results will be displayed

Example

50dB 52dB PASS

Step 8 Record test result information on Survey Record Form

Step 9 Press the Start test button on the RNC again



Start Test button

Step 10 Test results will be displayed

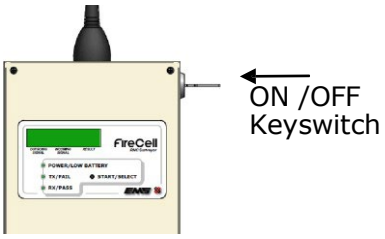
Example

Pkt Success 95%

Step 11 Record test result information on Survey Record Form

Step 12 If further positions are to be surveyed Repeat steps 4 – 11 for each position

Step 13 When all positions have been surveyed downpower the RNC by turning the keyswitch on the side of the unit to the OFF position.



ON /OFF Keyswitch

5.0 SURVEY RECORD FORM

Site………………………………………………………………. Survey date….…………………………………………..……….

Surveyed By….……………………………………………….. Customer Name………………………………………………

Company…………….…………………………………………..

Example 1

RNC/ Panel Number		RNC/ Panel Number	Outgoing Signal dB	Incoming Signal dB	Success Rate %	Background Level dB	Comments
1	→	2	82	85	100%	-119	

Example 2

RNC/ Panel Number		RNC/ Panel Number	Outgoing Signal dB	Incoming Signal dB	Success Rate %	Background Level dB	Comments
1	→	3	87	90	95	-115	

Site Test Results:-

RNC/ Panel Number		RNC/ Panel Number	Outgoing Signal dB	Incoming Signal dB	Success Rate %	Background Level dB	Comments
	→						
	→						
	→						
	→						
	→						
	→						
	→						
	→						

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SCAN ME