

## Deleting Telecommands and PAs

You cannot delete a single telecommand or PA transmitter from the RFX. To delete one of these devices you must delete all telecommands and PAs and then make RFX relearn the ones that you wish to keep.

1. Put the RFX in learn mode, if you have not already done so.
2. Press Select until the left hand digit of the display shows a "E".
3. Hold down Delete for four seconds.

After four seconds the RFX gives a short double beep and the display shows "- -". The RFX has deleted ALL telecommands and PA transmitters.

## Displaying the Received Signal Strength

If you want to show the signal strength from a single detector that the RFX has already learned, then:

1. Put the RFX in learn mode, if you have not already done so.
2. Press Select until the display shows the zone number, or PA/telecommand count. Both the green Pass LED and the red Fail LED should be off.
3. Activate the telecommand, PA, or zone detector associated with the number on the display. The green Pass LED glows if the signal is strong enough, the red Fail LED glows if the signal is too weak. The display alternates between the zone number and the signal strength. Signal strength 2 is the minimum acceptable strength for a reliable signal.
4. Press Select again to change the zone number and extinguish the Pass and Fail LEDs. If you want to retest the same zone press Select until the display shows the correct zone number.
5. Repeat steps 2 to 4 to obtain a new reading of the received signal strength.

Note that when the display shows a zone number then RFX will ignore all other zones and PA/telecommands. If the display shows the telecommand count the RFX will detect any PA/telecommand, but ignore all zones.

## Jamming and Supervision Detection

The RFX is capable of detecting certain faults with the radio transmitters and reporting them to the alarm system control unit:

### Jamming

With the jamming response jumper in the enabled position the RFX will report a fault to the control unit if it detects jamming. A jamming signal is any radio noise on the same frequency as the detectors that is strong enough to swamp the signal from the detectors for a minimum of 30 seconds.

### Supervision

With the supervision response jumper in the enabled position the RFX will report a detector as faulty if it does not receive any transmission from that transmitter for more than two hours.

### Detector Low Battery

If a radio detector sends a low battery signal then the RFX reports this to the control panel.

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# RFX08 and RFX16 Installation and Programming Guide

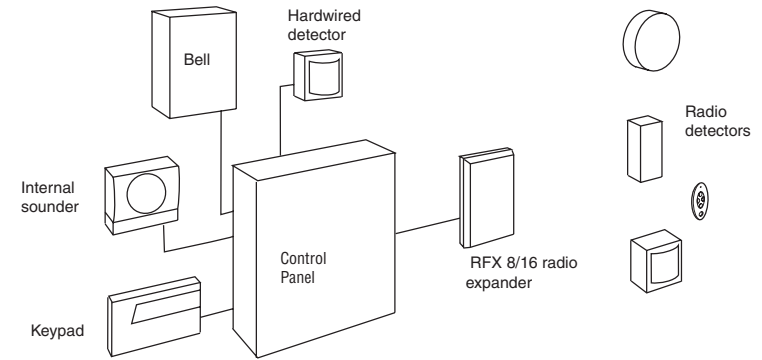


Figure 1

## 1. Introduction

The RFX8 and RFX16 are Class 6 Radio Expanders with internal aerial. The expanders allow you to connect either eight (RFX8) or 16 (RFX16) radio detectors to a 9751, 9752 or 9851 system. In addition each expander also provides for up to eight telecommands or PA transmitters.

The RFX communicates with the control panel using the same wiring as the remote keypads. The radio detectors operate on 868.6625MHz.

The RFX can work with the following devices:

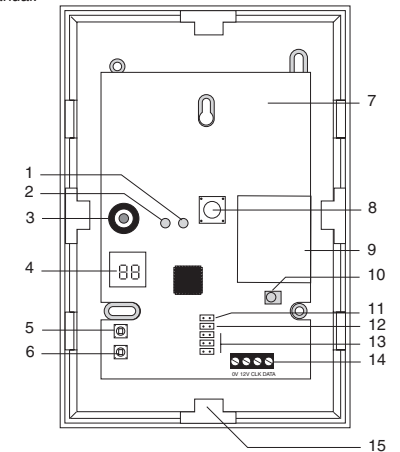
- 710r.** A small two button PA alarm transmitter.
- 714r.** A Passive Infra Red (PIR) movement detector with 15m standard range. This detector has a three minute lockout time after detection, in order to lengthen battery life.
- 720r.** A photoelectric smoke chamber type detector.
- 723r/728r.** A four button Remote Setting Device (also called a "telecommand") that can be used to full set, part set or unset an alarm system. The 728r version provides "rolling codes" for added security.
- 722r/727r.** A four button telecommand that can also be used to start a PA alarm. The 727r version provides "rolling codes" for added security.
- 726r.** A two button radio transmitter that can be used to start a PA alarm.
- 734r.** A universal transmitter that can be used as a door contact or for connecting hardwired inputs.
- 738r.** A shock sensor.
- 739r.** A glass break detector.
- 747r.** A Go/No Go test meter that provides a simple method for surveying potential radio sites.
- 746r.** A test transmitter used with the 747r for surveying potential user sites.

Each radio detector and remote setting device contains a digital identity code that the RFX unit 'learns' during installation. The code is one of over 16 million possibilities. This ensures that the RFX unit will not respond to any other detectors or telecommands apart from the ones it has learned.

In addition the RFX can use "rolling code" encryption for the 727r and 728r.

Figure 2 shows the interior of the RFX unit.

*Note: The RFX is designed to work with the 9751, 9752, 9851 and 9853 control units. Do not attempt to connect the RFX to any other control unit, unless recommended in that control unit manual.*



- |                        |                             |
|------------------------|-----------------------------|
| 1 "Fail" LED           | 2 "Pass" LED                |
| 3 Sounder              | 4 Seven segment display     |
| 5 Select button        | 6 Delete button             |
| 7 Built in aerial      | 8 Tamper switch             |
| 9. Radio section       | 10. Learn sensor            |
| 11. Supervision jumper | 12. Jamming response jumper |
| 13. Address jumpers    | 14. Bus Connectors          |
| 15. Cable Entry        |                             |

Figure 2.



## 2. Technical Specification

Zones	RFX08: 8 wirefree zones. RFX16: 16 wirefree zones Up to 8 telecommands using a separate, hidden, wirefree zone (zone T0).
Display	Two by seven-segment LED. Visible with case open.
Radio Section	Operating frequency 868.6625MHz at 20kHz bandwidth. I-ETS 300 220. CE tested to I-ETS 300 339 (draft standard).
12V power	Expander quiescent current 55mA.
Dimensions	H x W x D = 183 x 128 x 35 mm.
Weight	0.342 kg.
Operating temperature	Tested -10 to +55°C.
Humidity	93% RH.
Grade 2	Grade 2
Environmental	Class II
Radio detector differs	16,777,214 (2 <sup>24</sup> -2).

### Compliance

Product is CE tested to EN 50081-1 and EN 50082-1. This product is suitable for use in systems designed to comply with PD 662:2004 at Grade 2 and environmental Class II. This product is compliant with the requirements of CLC/TIS 50131-2: 2003 at Grade 2 and environmental Class II. For further details and Declarations of Conformity please go to [www.coopersecurity.co.uk](http://www.coopersecurity.co.uk).

### Compatible Equipment

710rEUR-00	Radio PA
714rEUR-00	Radio PIR.
720rEUR-00	Radio Smoke Detector.
722rEUR-00	Radio Remote Setting Device with PA
723rEUR-00	Radio Remote Setting Device.
726rEUR-00	Radio PA.
727rEUR-00	Radio Remote Setting Device with PA (rolling code)
728rEUR-00	Radio Remote Setting Device (rolling code)
734rEUR-nn	Radio Universal Transmitter
738rEUR-00	Radio Shock Sensor
739rEUR-00	Radio Glass Break Detector
746rEUR-00	Test transmitter.
747rEUR-00	Go/No Go Test Meter.

## 3. Installation

### Overview

Installing the RFX comprises the following steps:

1. Carry out a radio site survey and find the best position for the expander unit.
2. Run a cable from the position of the RFX to the alarm system control unit or a remote keypad (whichever is nearer).
3. Fit the RFX case back.
4. Connect the RFX to the alarm system control unit.
5. Make the RFX learn the wirefree detectors used for the installation.

All the transmitters designed to work with the RFX have an approximate maximum range of between 100m to 200m in free space. You must take care when siting these devices. In some circumstances you may experience a reduction in signal strength to the receiver. This reduction is called **attenuation** and can be caused by a wide variety of natural and man-made hazards.

The most common form of attenuation is that caused by buildings. Some building materials are more attenuating than others. Metallic surfaces of the right size can stop all radio

signals by reflecting them away from the receiver. (This also means that sometimes the same surfaces can increase the signal strength by reflecting more signal towards the receiver.) Wooden surfaces are almost transparent to radio signals. Brick and stone have attenuations somewhere between metal and wood. Always carry out a site survey before starting installation (see below).

All the transmitters, apart from the 722r/723r/727r/728r telecommands and 710r/726r PAs, report every 30 minutes to the RFX. If any transmitter fails to report within two hours then the control unit generates an alarm at the keypads and at the Alarm Receiving Centre (ARC). Do not remove any radio detector from its area without first deleting its zone number from the control unit.

### Radio Site Survey

With a wirefree system we recommend that you carry out radio tests as part of a site survey to ensure that the RFX can receive a good radio signal from the detectors. If you cannot do the tests during a survey, carry them out before installation.

You will need a 747rEUR Go/No Go test meter and a 746rEUR test transmitter.

1. Operate the switch on the back of the test transmitter to turn the transmitter on. Place the transmitter at the proposed site for the RFX. The transmitter sends out a test message every 3.5 seconds. *Note: the transmitter shuts itself down after 30 minutes. To restart, switch the transmitter off and on again.*
2. Switch the Go/No Go test meter on and walk around the premises.
3. Hold the test meter at each proposed location for detectors. The test meter will show a green "Go" LED if the signal strength is adequate. (You must hold the meter in position for at least 10 seconds.)
4. Move to a different location to improve the signal strength if the meter shows a red "No Go" LED. Make sure the new location is suitable for the detector.
5. Change the location of the test transmitter if you cannot find a proposed detector location with a suitable signal strength. Make sure that the user agrees to the new location for the RFX.

*Note: Do not assume that radio works from every location.*

#### DO site the RFX:

- a) In a convenient location to connect to the control unit or a remote keypad.
- b) Within the protected area.

Ensure that there is a clear space around the RFX to allow it to receive a good quality radio signal.

#### DO NOT site the RFX:

- a) Outside the area covered by the alarm system.
  - b) Next to the alarm system control unit.
- Do NOT site the RFX or detectors:**
- a) Close to or on large metal structures, for example: metal doors or frames, water tanks, cars, fridges and freezers.
  - b) Closer than one metre to mains wiring and metal water or gas pipes.
  - c) Inside steel enclosures.
  - d) Next to high voltage electrical equipment, or electronic equipment, particularly computers, photocopiers or other radios.
  - e) Near ground level.
  - f) Mounted horizontally. The internal aerials must be vertical (although you can mount the units upside down).

### Fitting the RFX

The following instructions assume that you have carried out a radio site survey, found the best position for the RFX, and run the necessary cabling.

1. Remove the RFX unit from its packing.
2. Remove the case lid by undoing the two screws and gently pressing in the lugs at side of the case and easing the two halves apart.
3. The upper part of the case back provides a central keyway. Mark and drill a hole for the keyway. Temporarily fix the case back to the wall. Now mark the position of two more fixing holes, remove the case back and continue to drill the holes.
4. Refit the case back to the wall using not less than 30mm x No 8 Dome or Pan-head screws.

### Connecting the RFX

The diagram below shows the connections for the RFX to the alarm system control unit.

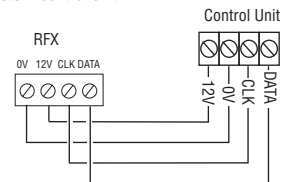


Figure 3.

Make sure that the alarm system control unit is powered down before connecting the RFX.

*Note: use the cable entry at the bottom of the case. Do not feed cable through the top of the case since this will interfere with the aerial.*

### Addressing

When you fit a RFX expander you must allocate the expander to a specific range of zone numbers. Select the zone numbers by fitting a jumper link to one pair of the set of pins marked "Address", as shown below.

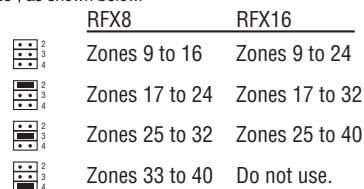


Figure 4.

#### Notes:

1. Fit a jumper in position 2 if the control panel is providing zones 1 to 16. (Command 21 determines the number of zones available from the control panel.)
2. Do not allocate two expanders to the same zone number range.

### Putting the RFX into Learn Mode.

To make the RFX learn transmitters you must connect the unit to a 12VDC supply. Take the supply from the alarm system control unit by connecting as shown above. Alternatively, you can power the RFX temporarily by connecting a 12V battery to the 12V and 0V connectors shown above. Once the RFX has learned the detectors it will retain the information if you remove power.

When you apply power for the first time the display shows "88" for a few seconds. You hear a short double beep.

### Entering and Leaving Learn Mode

To enter learn mode while power is present simply remove the RFX case lid and press Select. The display shows the major and minor numbers of the RFX software and then "--". RFX is now in learn mode.

To leave learn mode refit the RFX case lid.

*Note: You MUST leave learn mode before removing power from the RFX.*

### Learning Transmitters

To make the RFX learn any transmitter:

1. If you have not already done so, put the RFX in learn mode.
2. Make sure the activity LED on the transmitter is pointing at the Learn sensor on the RFX and no more than 100 mm away.
3. Activate the transmitter. (If necessary, activate the tamper on detectors.) Make sure the light from the activity LED shines on the RFX Learn sensor. The RFX gives a short beep and a signal strength reading if it successfully learns the transmitter. For PAs and telecommands the display shows the total telecommands learned, for example "t 2", alternating with a digit that represents the signal strength. For detectors the display shows the zone number on the right, alternating with the signal strength on the left.

*Note: The RFX gives a single low tone if it cannot learn the detector .*

4. Repeat steps 2 and 3 for all the other transmitters you wish the RFX to learn. Remember that the RFX can learn a total of eight telecommands or PA transmitters.

### To Learn Detectors to Specific Zones

If you want to learn a detector to a specific zone, then:

1. Put the RFX in learn mode, if you have not already done so.
2. Press Select until the display shows the zone number that you want. If the display is steady then the RFX has already learned a detector for that zone. If the display is flashing then the zone is free.
3. Make sure the activity LED of the detector is pointing at the Learn sensor on the RFX and no more than 100mm away.
4. Activate the detector. (If necessary, activate the tamper.) Make sure the light from the activity LED shines on the RFX Learn sensor. The RFX gives a short beep and a signal strength reading if it successfully learns the detector. The display shows the zone number on the right, alternating with the signal strength on the left.

*Note: The RFX gives a single low tone if it cannot learn the detector .*

5. Repeat steps 2 to 4 for all the other detectors you wish the RFX to learn.

### Deleting Detectors

If you want to delete a single detector that the RFX has already learned:

1. Put the RFX in learn mode, if you have not already done so.
2. Press Select repeatedly until the display shows the zone number of the transmitter.
3. Press and hold Delete continuously for four seconds. After four seconds the RFX gives a short double beep and the display shows "--". The RFX has deleted the detector.