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1. Introduction

The 500r+ is a programmable eight zone Radio Alarm System designed specifically for domestic and small business premises.

A basic system comprises a control unit with built in keypad, and associated radio detectors. The control unit houses the system electronics, power supply, battery, and 660 Speech Communicator (if fitted). A numeric keypad and two rows of Light Emitting Diodes (LEDs) allow the user and installer to operate the system. Up to six remote setting devices can also be used to set or unset the system, and act as a Personal Attack alarms.

The control unit can work with the following devices:

- a) **502r Watch/Pendant Panic Alarm.** A small radio transmitter that can be worn as a pendant or round the wrist and used to start a panic alarm.
- b) **520r PIR.** A 15m standard range Passive Infra Red (PIR) movement detector. This detector has a three minute lockout time after detection, in order to lengthen battery life. See "5. Testing" for more details.
- c) **525r Remote Setting Device.** A small radio transmitter that can be used to full set, part set or unset the system. The 525r can also be used as a Panic Alarm.
- d) **536r Universal Transmitter** can be used as a door contact or for connecting hardwired inputs.
- e) **540r Eight Channel Interface Board** can be used to expand the two outputs inside the control unit to eight outputs for connecting to communicators.
- f) **545r Radio Signal Strength Meter** used for surveying potential user sites.
- g) **546r Test Transmitter** used for surveying potential user sites.
- h) **660 Communicator** can be fitted within the control unit, the 660 can be programmed to call up to four telephone numbers in the event of an alarm, and deliver up to four recorded speech messages (refer to the 660 Installation and Programming Guide).
- i) **8440 Digital Communicator** can be fitted within the control unit and programmed to call up to two telephone numbers in the event of an alarm. The 8440 can deliver up to four digital messages (refer to the 8440 Installation Manual).

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

1. Introduction








The radio operating frequency between the control unit receiver and the detectors is 433.92MHz with a bandwidth of 200kHz. The radio section is approved to MPT 1340 and ETSI 300 220.

Before installing a 500r+ system make sure you are fully familiar with the functions of the control unit and the various system plans and detectors described in this manual.







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Controls and Displays

The symbols on the front of the control unit have the following meanings:


-  Power. Glows steadily when mains power is present. Flashes if the control unit is running on battery. Goes dark when all power absent, or the system is in programming mode.
-  Standby. Glows steadily when the system is un-armed. Goes out when the system is armed.
-  Alarm. When a zone triggers an alarm the control unit flashes the zone and Alarm LEDs. If more zones are triggered, the control unit lights the Alarm LED and the corresponding zone LEDs steadily. The LED of the first zone to alarm remains flashing.
-  Tamper. Flashes if the control unit lid is open, or if a detector reports a tamper. Glows steadily for a Bell Tamper.
-  Low Battery.
-  RF Trouble. Used to signal Jamming and Supervision failure, see "Facilities".
-  Personal Attack. Flashes during a personal attack alarm.

The symbols on the keypad have the following meanings:

-  Walk Test. Used to check that the control unit can receive each detector.
-  Learn Sensor. Between the chevrons is a sensor that the control unit uses to learn the identity of each detector during programming.
-  Log. Used to read the last 16 events recorded by the control unit.
-  Arm. In user mode, used to arm the system.
-  Reset. In user mode, used to reset the system after an alarm.
-  Omit. In user mode, used to arm the system while inhibiting some of the detectors. In programming mode, used to set default values for individual commands.

Facilities

Access Codes. The user controls the system by means of a four-digit access code. The user can change their access code at any time. The engineer must use a separate four digit code to start programming. The engineer can change both user and engineer codes when the system is unset. (Note that the user can also set and unset the system using a 525r Remote Setting Device, see page 5.)


Anti-Tamper. Anti tamper switches protect the whole system. If the control unit detects a tamper it gives a tone from the internal sounder and flashes the  LED when un-set, or gives a full alarm when set. If necessary you can program the control unit to give a full alarm if it detects a tamper when un-set.

Entry Route. You can program the control unit to inhibit detectors on the route between the final door and the keypad during the Entry/Exit time.


Entry/Exit Time. You can set the Entry/Exit delay from 10 seconds up to 99 seconds.

Entry/Exit Zones. The control unit treats zone 1 as the Entry/Exit zone. You can also program additional Entry/Exit zones. Activating an Entry/Exit zone when the system is set starts the Entry/Exit timer. The user must enter their access code before the Entry/Exit timer expires (or press OFF on the 525r), otherwise the control unit will raise an alarm.

External Bell/Strobe. The control unit can be connected to a Self Activated Bell (SAB) using standard bell cable. The SAB draws power from the control unit and contains an internal battery that will operate the sounder if intruders cut the supply. The maximum current available from the control unit is 500mA. The trigger for a SAB is negative applied in alarm. Note that you can program the control unit to switch the bell and strobe off together (rather than leave the strobe flashing on its own after the Bell Duration time has expired).

Fault Tone. If the control unit detects mains failure, jamming, a low detector battery, or if a detector fails the supervision test, then the control unit gives a short fault tone (five rapid “beeps”) every minute to attract the users attention. The user can silence the tone by pressing .


Final Door Set. The system sets within seven seconds if all zones are clear and the user closes a door protected by an Entry/Exit zone while the Exit timer is running. The control unit raises an internal alarm if any detector is still active at the end of the Exit time.

Jamming Detection. The control unit flashes the  LED if it detects other radio signals on the frequency used by the detectors. If the signal is on for

1. Introduction




more than 30 seconds continuously while system is set, then the control unit raises a full alarm.


Loading Defaults. You can restore the control unit to its factory default settings by either using a programming command, or by placing a jumper on a connector on the main circuit board. See 'Programming - Restore Factory Default Settings' for more details.


Low Battery Indication. The control unit flashes the  LED if it detects that its own internal battery is low. If a detector reports a low battery then the control unit flashes the Low Batt LED and the appropriate zone LED.

Normal Alarm. A zone that gives an instant alarm if triggered when the system is set.

Outputs. The control unit provides two low current outputs, each supplying 50mA maximum, labelled OP1 and OP2. These can be connected to a 660 speech communicator. OP1 signals Burglar alarms, OP2 signals Panic Alarms. The outputs are positive removed in alarm. Connecting a 540r Eight Channel Expander Board to OP1 and OP2 provides eight separate outputs, see "3. Installation".

Panic Alarm. The user can trigger a PA alarm by pressing the  and  buttons together on the 525r Remote Setting Device. The control unit displays PA alarms on the  LED. If the control unit is connected to a 660 Speech Communicator you can program the system to remain silent during a PA alarm.

Quick Set. The system sets within three seconds if the user presses  on the 525r Remote Setting Device. If a night set zone is open the control unit reverts to the normal exit procedure. The system sets if the user clears the fault during the exit time.

Remote Setting Device. The user can set or un-set the system, or trigger a PA alarm, with the 525r Remote Setting Device. You can program the control unit to learn up to six 525r or 502r's. During the learning process the control unit uses the  LED to show the status of the devices.

The user must trigger an Entry/Exit zone before using the 525r to disarm the system from full set. This prevents a user disarming the system accidentally while carrying the 525r. If the user does not want to trigger an Entry/Exit zone first, then you can program the control unit so that the 525r will disarm the system immediately from full-set. The 525r can always disarm the system from part set.

Setting Options. When full set the control unit responds to all its detectors. When part set the control unit inhibits detectors that the user has omitted. The control unit will not let the user omit Entry/Exit zones.

Sounder. The control unit uses a loudspeaker fitted inside the case to give alarm and entry/exit tones. If necessary you can connect one 9040 external speaker in series by adding a terminal block to the speaker wires.

Supervision. If the control unit does not receive any transmission from a detector within a 3.5 hour period then the control unit lights the ✖ LED steadily. To show which detector may be faulty see “5. Testing”. To switch supervision off/on see “4. Programming”.

System Reset. When delivered from the factory the control unit allows the customer to reset it after an alarm. If necessary you can program the control unit for engineer only reset.

Watch/Pendant Panic Alarm. The user can trigger a PA alarm using the 502r Watch/Pendant. The control unit can learn up to six 502r or 525r's. During the learning process the control unit uses the ⚠ LED to show the status of the devices.

Zones. You can program individual zones as follows:

- a) **Zone 1** always acts as an **Entry/Exit Zone** and cannot be changed. If the user shuts the Entry/Exit door while the Entry/Exit timer is running, then the control unit shortens the Entry/Exit time to seven seconds (provided there are no zones active).
- b) Zones 2 to 8 can be used for either **Normal Alarms**, or additional Entry Exit Zones, or **Entry Routes**. Use programming commands to change zone types. If a detector covers the route a user must take from the entry door to the control unit then you can program the zone as an Entry Route. The control unit inhibits an Entry Route zone if it is triggered during the Entry/Exit time.
- c) **Omit.** The control unit inhibits zones the user has programmed as Omit (⊠). The control unit will not let the user Omit Entry/Exit Zones.

Technical Specification

Zones	8 wirefree, plus PA. PA can use up to six 502r or 525r.
Display	LED.
Keypads	On-board + Remote Set/Unset using 525r (up to 6 per control unit).
Expansion	None.
Compliance	Product is CE tested to EN 50081-1 and EN 50082-1
Radio Section	Operating frequency 433.92 MHz at 200 kHz bandwidth. Radio section CE tested to I-ETS 300 339 (draft standard).

1. Introduction



Log	16 events.
Control unit Siren	Yes (approx. 80db at 1 metre).
Internal Sounder	1 x 9040 16 Ohm loudspeaker (approx. 90db at 1 metre).
Battery	1.9(2.1)Ah lead acid gel type rechargeable.
12V power	Control unit quiescent current 55mA.
Aux DC power	500mA max at 12V in alarm state.
Dimensions	h x w x d = 163 x 257 x 74 mm.
Weight	1.2 kg.
Communicator	50mA max PA and Burg outputs for 660 Speech Communicator or 8440 Digital Communicator
Outputs	Bell and Strobe (negative applied (SAB)) 500mA total output. <u>Positive removed</u> in alarm.
540r Outputs	50mA max. Mains Fail, Low Battery, RF Trouble output, Tamper output, Open/close output (in Full Set only), Burg, Panic Alarm, Fire. <u>Positive applied</u> in alarm.

Compatible Equipment

502rEUR-50	Watch/Pendant PA.
509rEUR-50	Smoke Detector
520rEUR-50	15 metre passive infra red movement detector.
525rEUR-00	Remote Set/Unset (Full and Part Set) unit plus PA facility.
536rEUR-50	Universal/door contact transmitter.
540rEUR-00	8 Channel Interface Board.
545rEUR-00	Radio Signal Strength Meter.
546rEUR-00	Test Transmitter.
8440	4-Channel Digital Communicator.
660	4 channel wire in speech communicator.
09040UK-00	16 Ohm loudspeaker/sounder.

2. System Planning

Installation Precautions

Make sure that all windows and doors are secure, and do not need repair, **before** installing the system. Insecure doors and windows can cause false alarms. Make sure there are no pets or movement (for example flapping curtains) which could trigger any movement detectors. Where possible fit locks to the ground and upper floor windows. This makes an intruder spend more time gaining entry than they would like to. By taking these precautions you can make the alarm system simpler and more effective.



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 control unit can receive the radio signal from the detectors. If you cannot do the tests during a survey, carry them out before installation.

Procedure 1 (for Simple Installation)

1. Place the control unit in its planned position.
2. Power up the control unit.
3. Program the control unit to learn a detector.
4. Place the control unit in Walk Test (see "5. Testing").
5. Test reception by triggering the detector at each planned detector location.

Procedure 2 (Using Signal Strength Meter)

You will need a 545r Radio Signal Strength Meter and a 546r Test Transmitter.

1. Switch the test transmitter on and place it at the proposed site for the control unit. The transmitter sends a pulsed signal, 10 seconds ON and 5 seconds OFF.
2. Switch the test meter into Track mode and walk around the premises.
3. Check that the signal strength is between 5 and 9 at each proposed location for detectors.
4. Move to a different location to improve the signal strength if it is between 1 and 4. Make sure the new location is suitable for the detector.
5. Change the location of the test transmitter if the signal strength is not greater than 4 for any transmitter. Make sure that the user agrees to the new location for the control unit.

2. System Planning

6. Note down the signal strength for each detector location and keep a record in the control unit and in the installation file.

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

Locating the Control Unit/Radio Receiver

DO site the control unit:

- a) In a convenient location to connect to the mains supply.
- b) Within the protected area.

Make sure the user can reach and see the control unit easily in order to turn it on and off. Make sure the user can reach the final door within the chosen entry/exit time, and hear the exit sounder. Finally, ensure that there is a clear space around the control unit to allow it to receive a good quality radio signal.

Do NOT site the control unit:

- a) Outside the area covered by the alarm system.
- b) Near ground level.
- c) Close to or on large metal structures, for example: water tanks, cars, fridges and freezers.
- d) Closer than one metre to mains wiring and metal water or gas pipes.
- e) Inside steel enclosures.
- f) Next to high voltage electrical equipment, or electronic equipment, particularly computers, photocopiers or other radios.

Locating the External Sounder

Fit the external sounder unit as high as possible to make sure an intruder cannot interfere with it. Make sure the unit can be seen and heard easily. Do not place the unit facing heavy traffic or a railway line, which will drown the sound of the sounder. Both external and internal sounders are hardwired to the control unit. Make sure the wiring for the external bell/strobe unit goes through the wall directly behind its case, do not run surface wiring.

3. Installation

Figures 1 and 2 show the layout of the control unit inside the case and the connectors available.

Note: See page 18 for instructions on using the NVM Reset pins.

Fitting the Control Unit

1. Choose a location where the user can operate the control unit easily.
2. Remove the lid screw and open the lid to the left. Note the slotted central key hole located inside the top of the back.
3. Hold the control unit in place and mark the position of the central key hole.
4. Take the control unit down and drill the centre fixing hole.

CAUTION: Do not drill holes with the control unit in place. You will damage the electronics.

5. Fit the control unit in place using the central key hole and mark the remaining fixing holes.
6. Take the control unit down and drill the the remaining fixing holes.
7. Secure the control unit to the wall using suitable fixings (for example 30mm x No. 10).

Wiring to the Mains

The control unit's mains supply should come from a permanently connected, un-switched, fused spur unit fitted with a 1A fuse. All electrical connections should be carried out by a qualified electrician and must comply with the current IEE Wiring Regulations: 16 Edition, Appendix 5 - Standard Circuit Arrangement.

1. Lead the mains cable behind the case and in through the mains cable cut-out, just above the battery (see Figure 1).
2. Connect the mains cable as shown in Figure 3.

Warning: Do not apply mains power at this point.

Battery

A 1.9(2.1)Ah maximum rechargeable battery will fit within the control unit.

Wiring External Bell

Figure 4 shows an example of connections for a typical external bell (see the manufacturers instructions supplied with individual units for further information on wiring diagrams).



3. Installation

Make connections to the control unit and SAB module as follows:

STR	Negative trigger in alarm for strobe light.
BELL	Negative bell trigger.
12V	Positive bell module hold off voltage (Supply).
0V	Negative bell module hold off (Supply).
TR	Negative tamper return from bell module to control unit.

Notes:

1. SAB shown for negative applied.
2. Link tamper return to 0V if no external bell is required.
3. Connect all bell wiring to the control unit with the exception of the bell trigger. The bell/siren will continue to ring from the on-board battery until the final connections are made after initial power-up. See 4. Programming - Initial Power Up .

Fitting a 660 or 8440 Communicator

Figure 5 shows the connection for a 660 Speech Communicator and Figure 6 connection for a 8440 digital communicator.

The output connectors available are:

OP1	Burglar output - positive removed in alarm (+12V, 50mA max).
OP2	PA output - positive removed in alarm (+12V, 50mA max).

Fit the communicators inside the back casing. Locate the communicator toward the top left of the back box.

Note: Do not connect the 12V supply to the communicator until after the initial power up. See Programming .

Eight Channel Interface Board

The Eight Channel Interface Board is designed to expand the programmable outputs OP/1 and OP/2 of the 500r+ into 8 channels.

The output connector terminals provides the following functions:

MON	This is an input for Line Fail from an attached communicator, or Tamper signals from other equipment attached to the interface.
12V	Positive 12Vdc supply for attached equipment (see.'Introduction - Technical Specification for max current)
0V	0V reference.

8	Mains Fail output.
7	Low Battery output.
6	RF Trouble output.
5	Tamper output.
4	Open/close output (in Full Set only).
3	Alarm (Burg) output.
2	Personal Attack output.
1	Fire output.

Note: Outputs 1 to 8 are positive applied.

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Installation

1. Before installation, remove all power from the system.
2. Fit the interface board inside the lid of the control unit.
3. Attach the board to the case using the cross head screws provided.

Wiring

4. Plug the colour coded wiring harness provided into the wiring harness connector on the interface board.
5. Connect the free ends of the wiring harness to the control unit connector as shown in Figure 7.

Connection Example

660 Communicator

Figure 8 shows an example connection to a 660 Speech Communicator. In the example outputs 5, 6, 7, and 8 are not used.

8440 Digital Communicator

Figure 9 shows an example connection to a 8440 Digital Communicator.

Completing Installation

6. When the interface board is installed and connected, close the control unit lid and apply power to the system.
7. Enter programming mode.
8. Key in:
85 1 ↵
This command enables the 500r to use the interface board correctly.
9. Leave programming mode and test that the outputs are working.

4. Programming

Initial Power Up

Note: Before applying power to the control unit ensure that the bell trigger is not connected to any external sounders, or 12V supply connected to the 660 Speech Communicator (if fitted).

1. Close the control unit lid or defeat lid tamper.
2. Apply mains power to the control unit.
3. Key in the default user code (1234) if there is an alarm. Ignore any LEDs that are lit at this stage.
4. Key in the engineer code (default 7890).
The 🔦 LED flashes.
5. Open the control unit lid or release control unit tamper.
The 🔦 LED goes off and the 🔦 LED glows steadily. The control unit gives a double bleep.

You are now in Programming mode.

6. Connect the battery and make any final wired connections (for example to the bell and 660 Speech Communicator).

Learning Detectors (Command 81)


You must make the control unit learn the identity of each detector in the system and link them to zones. To do this:

1. Enter programming mode if you have not done so already.
2. Enter 81 on the keypad.
The 🔦 LED flashes. The LEDs of zones that already have detectors flash. The LEDs of zones with no detectors glow steadily. The control unit uses the 🔦 LED for any remote setting device(s).
3. Enter the number of the zone you want the control unit to learn (use 9 for a 502r or 525r).
The LED of the zone you selected flashes, all the other zone LEDs go out (the 🔦 LED flashes if you selected 9).
4. Point the activity LED of the detector at the Learn sensor on the control unit (marked by » «). Hold the activity LED of the detector close to the sensor. (Not necessary for a 502r or 525r.)
5. Trigger the detector by operating the tamper, or press a button on the 502r or 525r.

The activity LED on the detector flashes, and transmits an identity code to the Learn sensor. The control unit gives a short double beep when it learns the code.

6. Repeat steps 3 to 5 for any other detectors you want the control unit to learn.



Notes:

1. The default factory setting is Zone 1 as the Entry/Exit zone.
2. The control unit will not learn the same detector more than once.
3. The control unit can learn a total of six 502r or 525r s. Each device uses the  zone (9).

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Deleting Detectors (Command 82)

If you wish to change detectors then the control unit cannot learn a new detector for a zone that is already in use. You must delete the existing detector first, as follows:

1. Enter programming mode if you have not already done so.
2. Enter 82 on the keypad.
The  LED flashes. The LEDs of zones that already have detectors glow steadily. The LEDs of zones with no detectors stay off. The control unit uses the  LED for any remote setting device(s).
3. Enter the number of the zone you want to delete (use 9 for 502r and 525r's).



The LED of the zone you selected flashes.

Note: The control unit deletes all 52r and 525r s if you select 9.

4. Press 8 on the keypad.
The LED of the zone you selected goes out and the control unit gives a double bleep.
5. Repeat steps 2 to 4 for any other detectors you want to delete.

Programming Commands

To change the factory default program, use the commands listed in this section as follows:

1. Enter the command number.
The  LED flashes if the current program is the factory default.
 2. Enter one or more digits to give the new program.
 3. Press .
- The control unit will give a double bleep to show it has accepted the

4. Programming

command. If you enter the command incorrectly the control unit gives a single low bleep.

When delivered from the factory, the control unit is programmed with standard defaults for each command. A "√" in the right hand column of the table shows the default.

UK	To change:	Key in:	Followed by:	Default
	Engineering Walk Test	71	(see "Testing")	
	Change User Code	72	New user code (four digits)	1234
	View Log	73	(see "Testing")	
	Test Strobe	74	(see "Testing")	
	Test Siren	75	(see "Testing")	
	Supervision On/Off	76	1 + ← = On (Enabled)	
			⏏ + ← = Off	√
	View supervision failures	77	(see "Testing")	
	Add Detector	81	(see "Learning Detectors")	none
	Delete Detector	82	(see "Deleting Detectors")	
	Burg O/P Follows Bell	84	1 + ← = No	
			⏏ + ← = Yes	√
	Expanded Outputs	85	1 + ← = 8 channels 2 + ← = Reserved	
			⏏ + ← = 2 channels	√
	Entry/Exit Time	86	A number 10 to 99 seconds + ←.	30s
	Bell Duration	87	A number 01 to 20 minutes + ←.	3 mins
	Strobe follows bell	88	1 + ← = Yes.	
			⏏ + ← = Continuous.	√
	Engineer Code	89	New four digit code. Do not use 0 (zero) for the first digit.	7890
	Remote Unset	90	1 + ← = No entry timer required.	
			⏏ + ← = Needs entry timer (see "Remote Setting Device").	√
	Bell Delay	91	A number 01 to 30 minutes + ←.	
			⏏ + ← = nil.	√
	System Reset	92	1 + ← = Engineer only.	
			⏏ + ← = Customer reset.	√
	Entry Route Zone	93	Zone number(s) 2 to 8 + ←	
			⏏ + ← = None.	√
	PA Response	94	1 + ← = Silent.	
			⏏ + ← = Audible.	√
	Omit Allowed	95	1 + ← = No.	
			⏏ + ← = Yes.	√

Additional E/Exit Zones	96	Zone number(s) 2 to 8 +	
		+ = Zone 1 only.	√
Tamper response	97	1 + = Full alarm in user mode.	
		+ = Internal alarm in user mode.	√
Restore Factory Defaults	98	+ +	
Leave Programming	99		

Restoring Factory Default Program (Command 98)

If you want to restore all the programming to the original factory defaults, then:

1. Enter **98**.
The control unit beeps once every second.
2. Press three times.
The control unit gives a double bleep, erases all the programs the user and previous engineers have entered, and restores the original factory defaults.

Note: The control unit will still remember any detectors that it has learned.

Leaving Programming Mode (Command 99)

The control unit will stay in programming mode until you enter a command to return it to user mode, as follows:

1. Close control unit lid.
2. Enter 99
The and LEDs glow steadily. The control unit is now in user mode.

To Re-enter Programming Mode

1. Make sure the control unit is unset.
2. Enter Engineer Code.
The LED flashes.
3. Open the control unit lid.
The control unit gives a double bleep, the LED goes out and the LED glows steadily. The control unit is now in programming mode.

Clearing a Control unit For a New User

To remove all programming, including detectors and Engineer and User codes (perhaps to reuse the control unit with another user) then, while the control unit is unset:

4. Programming

1. Open the lid.
2. Remove the mains supply and disconnect the Battery.
3. Short together the **two middle** CLR pins on the NVM Reset pin block and reconnect battery supply.
The control unit restores all its programming to the factory default settings, and deletes all detectors.
4. Remove the short after two seconds.
5. Restore the mains supply.
6. Close the lid.
7. Enter 1234 and press **↵**.



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Note: To restore all the programming apart from the learnt detectors, repeat steps 1 to 7 above, but at 3. short together the top two LOAD DFLTS pins.

Changing the User Code





You can change the user access code while in programming mode. To do this:

1. Enter programming mode.
2. Enter 7 2.
3. Key in the new user code (four digits) and press **↵**.
4. Leave programming mode.


5. Testing

Testing Detectors

Make sure the system is in programming mode.

1. Enter 71.
The  LED flashes.
2. Press .
All LEDs light for 2 seconds, and then the control unit enters walk test mode.
3. Activate each 502r, 525r (PA button only), and detector. You may also test detector tampers.
When the control unit receives the detector it gives a chime tone and turns the relevant zone LED on for five seconds. The control unit turns on the  and  LEDs when you activate the tampers.

Note: Wait thirty seconds with no movement in front of a PIR before triggering it again.

4. Press  to end the walk test.

PIR Testing and Lockout

In normal use the 520r uses a three minute lockout timer in order to extend battery life. The lockout timer works like this:

- a) The unit detects movement, signals the panel, and starts the lockout timer.
- b) If the unit detects movement while the lockout timer is running, then it restarts the lockout timer but DOES NOT signal the panel.
- c) When the lockout timer expires the unit signals the panel the next time it detects movement.

If you want to test a 520r PIR in normal use you should leave the protected area and wait at least four minutes between activations. To make testing easier the detector changes the lockout period to 2 seconds for the first half hour after you put the batteries in, or after you trigger its tamper.

Note: Make sure the control unit is in programming mode before you open or move any of the detectors. This will avoid setting the tamper alarm off.

Testing Siren and Strobe

Make sure the system is in programming mode.

1. Enter 75.
The control unit activates the siren.

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2. Press **←**.
The control unit silences the bell (the control unit will silence the bell after 30 seconds if you do not press **←**).
3. Enter 74 .
The control unit triggers the strobe.
4. Press **←**.
The control unit switches the strobe off (the control unit will switch the strobe off after 30 seconds if you do not press **←**).

Examining the Log

The control unit keeps a record of the last 16 events. You can examine this record, starting with the most recent event, as follows:

1. Make sure the system is in programming mode.
2. Enter 73 .
The display LEDs show the most recent event.
3. Press **↵** repeatedly.
The display shows an earlier event in the list each time you press **↵**.
The control unit gives a low tone when it reaches the end of the list.
4. Press **←**.
The system goes back to program mode (the control unit will switch itself back to user mode after 30 seconds if you do not press any key).
















Checking Supervision Failures

The control unit keeps a record of all detectors that have failed supervision at any time. You can see this record as follows:



1. Make sure the system is in programming mode.
2. Enter 77 .
The zone LEDs light to show which detector has failed supervision.
3. Check each transmitter shown on the display. For example, check that the batteries are working, and carry out a walk test.
4. When you are satisfied that each detector is working you can clear the record of supervision failures by entering programming mode and keying in:
77 + 8 + ←.

Note: The control unit does not supervise 502r and 525r s.

6. Fault Finding

Symptom	Response
<ul style="list-style-type: none"> • FAULT TONE AND  FLASHES CONTINUOUSLY. 	<ul style="list-style-type: none"> • Mains supply has failed, control unit operating from battery only. • Check mains connection and fuse.
<ul style="list-style-type: none"> • CONTROL UNIT SOUNDS WHEN POWER APPLIED. •  FLASHES, CONTROL UNIT WILL NOT RESET. 	<ul style="list-style-type: none"> • Problem with External sounder anti tamper circuit. • Check connections and ensure switch is fully closed by contact with wall. Ensure cover on External sounder is secure.
<ul style="list-style-type: none"> • FAULT TONE AND ZONE AND  LED ON. 	<ul style="list-style-type: none"> • Low battery in detector indicated - replace battery. (System can still be armed with low battery indication.)
<ul style="list-style-type: none"> • CANNOT LEAVE PROGRAMMING MODE. •  (AND POSSIBLY ZONE) LED ON. 	<ul style="list-style-type: none"> •  on steadily - control unit tamper not closed. •  flashing - External sounder tamper not closed. • Zone LED with  - detector open or not screwed down firmly. • Clear fault. Press  ( will glow steadily), • Key in 99 ( and  glow steadily).
<ul style="list-style-type: none"> • FAULT TONE AND  LED ON STEADILY 	<ul style="list-style-type: none"> • Control unit has not received transmission from detector for last 203 minutes. • Use Command 77 to see which detector is not transmitting.
<ul style="list-style-type: none"> •  LED FLASHING. 	<ul style="list-style-type: none"> • Control unit detecting interference on same frequency as detectors. • Wait till  goes out. If Jamming persists, call Scantronic Technical Support.
<ul style="list-style-type: none"> • PIR DOES NOT DETECT MOVING PERSON (NO RED LIGHT). 	<ul style="list-style-type: none"> • To save power, after each activation the PIR 'sleeps' for three minutes. Any movement during the three minutes will extend the sleep period by another three minutes. See "Testing - PIR Testing and Lockout". • Check detector battery.
<ul style="list-style-type: none"> • PIR DOES NOT APPEAR TO TRANSMIT IMMEDIATELY WHEN DETECTION TAKES PLACE. 	<ul style="list-style-type: none"> • This is normal. The PIR may take up to two seconds (variable) to transmit after detecting a moving person.
<ul style="list-style-type: none"> • WHEN DOOR OPENED,  AND ZONE LEDS FLASH AND INTERNAL ALARM SOUNDS. 	<ul style="list-style-type: none"> • Detector case not properly closed, or not screwed down fully to close tamper switch.
<ul style="list-style-type: none"> • SAB WILL NOT STOP RINGING. 	<ul style="list-style-type: none"> • SAB not receiving power. • Check fuse F1. • Check tamper switch on external sounder. • Ensure cover on External sounder is secure.

First to Alarm Indication

When several alarm events occur before the user can reset the system, the control unit indicates which event occurred first. It does this by flashing LEDs lit by the first event, and lighting LEDs steadily for subsequent events. For example, if the control unit detects a tamper on zone 2 followed by a violation on zone 3, then the  and zone 2 LEDs flash, while the  and zone 3 LEDs glow steadily.

7. 520r Passive Infra Red

The 520r Passive Infra Red (PIR) is an indoor detector designed to work with the 500r+ wire free control panel. The PIR detects movement of body heat. The detector has a fan shaped sensitive area approximately 15 metres in radius.

The case is protected by an internal tamper switch. The back of the case can be modified by removing a cut-out to provide a wall tamper.

Specification

Part No.	520rEUR-50
Power Supply	2 x AA alkaline cells
Battery Life	Approximately 14 months
Temperature Range	-10 to +50 °C

Siting

You can mount the unit either flat against the wall, or in a corner. The area covered by the detector is shown in Figure 10.

DO mount the unit between 1.8 and 2.4 metres high for the best general coverage in an average room.

Do **NOT** mount the unit:

- Facing a fire, boiler or window.
- Over a radiator.
- Near the floor.
- Close to or on large metal structures.
- Closer than one meter to mains wiring and metal water or gas pipes.
- Inside steel enclosures.
- Next to electronic equipment, particularly computers, photocopiers or other radio equipment.
- Closer than 3cm to a ceiling (to allow space for dismounting the unit in the future).

Installation

Open the detector by lifting the flap at the top of the case and removing the screw concealed underneath.

Install two 'AA' size alkaline batteries (not supplied). Do not use rechargeable (Nickel Cadmium) batteries, because they are 1.2V and not 1.5V.

Changing Lenses

1. Remove the PCB and sensor funnel by opening the retaining clips in the front of the case (see Figure 11).
2. Unclip the old lens from the front of the case, and insert the new lens. Make sure the new lens fits under the ledges at the side of the lens window.
3. If necessary, swing down the pet alley mirror (see Figure 12). This deletes all but the top row of the detector zones.

Note: When using the pet alley mirror mount the detector at 2m height in order to maintain correct coverage with the upper detector zones. Pet immunity extends for 10m. Do not use this facility in larger areas.

4. Refit the sensor funnel by hooking the lower end onto the lugs at the bottom of the case and then swivelling the funnel up (see Figure 13).

Learning

See “4. Programming - Learning Detectors (Command 81)”.

Testing.

See “5. Testing - Testing Detectors”.

Mount the back

The 520r is designed for mounting by any of the methods shown in Figure 14. The case back contains a number of possible fixing holes, marked by mouldings in the plastic. Choose two to suit the location you have selected, and drill them out carefully.

1. Hold the back in location and mark and drill 5mm fixing holes in the wall.
2. Secure the back to the wall with 16mm countersunk head screws and wall plugs.
3. Clip the body of the detector to the back.

Fitting a Wall Tamper

If you wish to fit a wall tamper:

1. Cut out the large circle indicated in the back of the case (see Figure 15).
Make sure that you remove enough material so that the head of the tamper switch can pass freely through the back of the case.
2. Mark the position of this circle on the wall at the place where the case back will be fitted.

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3. Drill and plug a hole in the wall at the marked position, and insert a M3 (No 4) screw. Make sure the head of the screw is no more than 2.5 mm from the wall.

Caution: Do not allow the head of the screw to protrude more than 2.5mm from the wall or you may damage the PIR.

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4. Mount the case back so that the head of the screw protrudes through the cut out and engages the tamper switch when the body of the detector is fitted (see Figure 16).

You may have to adjust the height of the screw until it operates the tamper switch. The body of the PIR should fit easily into the case back without force.



Fitting a Corner Wall Tamper

To fit a wall tamper in a corner mounting:

1. Fit the case back as described. Make sure to insert a screw in the top right hand fixing hole in the back of the case.
2. Remove the case back from the wall and remove the cut out for the wall tamper.
3. To find the position of the wall tamper screw, measure 30mm down from the top right hand fixing screw and 27mm from the corner.
4. Drill and plug a hole suitable for a M4 (No 6) x 25mm screw.
5. Insert the screw into the hole and tighten it home until it protrudes no more than 11mm from the wall surface.
6. Refit the case back, making sure that the wall tamper screw head protrudes through the cut out in the case back.
7. Fit the body of the PIR to the case back.

You may have to adjust the height of the screw until it operates the tamper switch. The body of the PIR should fit easily into the case back without force.

8. 525r Remote Setting Device

The user can employ the 525r Remote Setting Device to set, un-set and part set the 500r+ Wirefree Control Unit. In addition, pressing  and  at the same time will cause a Panic Alarm. The 500r+ Wirefree Control Unit can use up to six 525r Remote Setting Devices.

Specification

Part No.	525rEUR-00
Power Supply	Duracell DL 1/3N or CR 1/3N or K58L (Alkaline)
Battery Life	Approximately 14 months.
Temp. Range	-10 to +50 °C

Learning

See “4. Programming - Learning Detectors”.

Changing the Battery

1. Undo the screw holding down the battery compartment cover.
2. Slide back the cover.
3. Replace the battery (make sure the battery polarity is correct).
4. Replace cover and tighten screw (do not overtighten)

Note: The battery can be obtained from normal High Street stockists.

9. 536r Universal Transmitter

The 536r Universal Transmitter is designed to work with the 500r+ Wirefree Control Unit. The transmitter signals the control unit when the associated magnet moves away from the case, and sends a restore signal when the magnet is re-aligned. The case is protected by an internal/back tamper switch (see Figures 18 and 19).

Specification

Part No.	536rEUR-50
Power Supply	Two AAA Alkaline batteries
Battery Life	Approximately 14 months.
Temp. Range	-10 to +50 °C

Siting

Where possible, mount the body of the transmitter close to the top of the non-moving frame of a door or window, and the magnet on the moving part (see Figure 20).

If the frame is not wide enough, mount the magnet on the frame and the body on the moving part.

DO:

Make sure there is less than 10mm between magnet and transmitter body with the door/window closed (see Figure 21).

Make sure the arrow on the magnet aligns with the mark moulded into the side of the case with the door/window closed.

Do **NOT** mount the unit

On the hinged edge of the door.

Near the floor.

Close to or on large metal structures.

Closer than one metre to mains wiring and metal water or gas pipes.

Inside steel enclosures.

Next to electronic equipment, particularly computers, photocopiers or other radio equipment.

Using the Internal Reed

To use the 536r as a simple door contact with no wire-in contacts (internal reed switch only) then you must remove the jumper "CON2". However, if at a later date you wish to connect wire in contacts you must refit the jumper.

Installation

Open the transmitter by undoing the fixing screw on the case cover.

Install two 'AAA' size alkaline batteries (not supplied). Do not use rechargeable (Nickel Cadmium) batteries, because they are 1.2V and not 1.5V.

Learning

See "4. Programming - Learning Detectors".

Testing.

See "5. Testing".

Mount the back

1. Hold the back in the chosen location.
2. Mark two holes through the fixing slots in the back.
4. Secure the back to the surface using two Type 'C' 15mm Domehead screws.
5. Make sure the back is flush against the surface and pushes the tamper bar in far enough to activate the tamper switch.
6. Fit the body of the unit into the back.

Connecting External Door Contacts or N.C. Switches

You can wire external Normally Closed devices (for example the 20mm Quikfit) to the 536r Universal Transmitter. You can connect several contacts in series, but the control unit will treat them all as one zone. Do not use more than 10m total cable length from the 536r to the last external contact.

1. Remove the wire links from the connector.
2. Connect Normally Closed contacts wired as shown in Figure 22.
3. Make sure jumper "CON2" is fitted.
4. Check that each of the contacts activates the detector (see "Testing")

If you remove the external contacts at a later date, make sure you replace the wire links on the Alarm and Tamper connectors and REMOVE jumper "CON2".

10. 502r Watch/Pendant

The 502rEUR-50 Watch/Pendant is designed for use as Panic Alarm for the 500r+ system. The 502r comprises a plastic waterproof case that can either be worn on a strap round the wrist, round the neck as a pendant, or clipped to a pocket. The aerial is inside the case, and the unit is powered by a long life lithium battery.

Operation

To use the 502r press the large orange button. The 502r transmits a signal to the control unit and briefly lights the small red lamp to show that it is working. If you hold the button down, the 502r continuously repeats the signal.

Fitting The Pocket Clip

1. Squeeze the top of the clip to open it.
2. Put the bottom lip of the clip in the lower attachment slot.
3. Push the lugs at the top of the clip over the groove at the top of the 502r.
4. Slide the 502r up the clip until it clicks home.

Fitting the Pendant

1. Fit the bottom of the pendant attachment into the lower attachment slot.
2. Push the lugs at the top of the pendant attachment over the groove at the top of the 502r.
3. Slide the 502r up the pendant attachment until it clicks home.

Fitting the Wrist Strap

Thread the elasticated wrist strap in and out of the attachment slots as shown in the diagram.

Setting Up

Each 502r Watch/Pendant contains a Radio Site Code that it transmits every time you press the orange button. See "4. Programming - Learning Detectors" for instructions on how to make the control unit learn the identity code of the 502r. Note that you do not have to set any switches within the 502r. Each unit is programmed with a unique Site Code in the factory.