

**Ei Professional** **RadioLINK** Model: Ei420  
**Repeater and CO Alarm Interface**  
 FOR USE WITH EI261ENRC, 151TL, 154TL AND 156TLH  
 COMMUNICATES WITH ALL OTHER RADIOLINK DEVICES

**Instruction Manual**

Contains vital information on the product's operation and installation. Read and retain carefully. If you are just installing this product the manual **MUST** be given to the householder.

**1. Introduction**

The Ei420 can be used for two purposes:

(1) It connects the Ei260ENRC Series Carbon Monoxide Alarms with **RadioLINK** Smoke Alarms and accessories. When the CO Alarm detects CO it will trigger all the other **RadioLINK** units and vice versa. It can also be used to connect Ei151TL, 154TL and 156TLH smoke/heat alarms to other **RadioLINK** units.

Note: anytime the CO alarm is mentioned in these instructions it can also be applied to the Ei150 series of smoke/heat alarms.

(2) It can be used as a stand-alone **RadioLINK** Repeater unit in installations that require additional signal coverage but where the installation of an additional alarm may not be suitable. Installing an Ei420 in an intermediate position will shorten and/or provide multiple RF signal paths.

It is powered by 230V AC mains power and has built in rechargeable Lithium cells. It is a stand alone model with its own cover plate.

The Ei420 uses advanced transceiver and signal coding technology to ensure robust and reliable RF signalling.

**2. Installation**

**2.1 RadioLINK Interface to an Ei260ENRC Series CO Alarm**

If purchasing the Ei420 as a **RadioLINK** interface with a CO alarm then it should be mounted close to the alarm. It can be mounted a short distance away as shown in Figure 2 or it can be mounted directly above the alarm as shown in Figure 3.

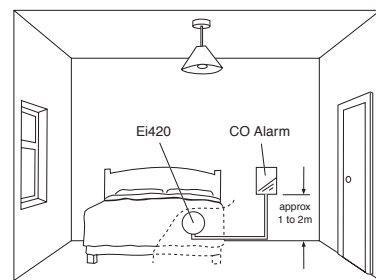


Figure 1

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Choose a suitable mounting position near the mains supply but keep the Ei420 away from metal surfaces or large metal objects (e.g. water cylinder, fuse boards) which can reduce the RF signal range.

**2.2 As a Repeater**

The function of a Repeater is to receive and then re-transmit the RF signals. This shortens signal paths throughout the installation to give improved RF signal reliability. If purchasing the Ei420 for use as a Repeater it should be mounted in an intermediate position where the **RadioLINK** signal needs to be strengthened (for example see figures 1(a) and 1(b)). The Repeater function is not operational until all units have been House Coded (see individual instruction leaflets). The operation of the Repeater can be observed as the Ei420 turns on its red light as a **RadioLINK** message is being repeated. A maximum of 10 **RadioLINK** units (e.g. Ei168RC and Ei420 units) can be set as Repeaters in any one system. If using more than 10 units within a system see Section 8 (Technical Specification).

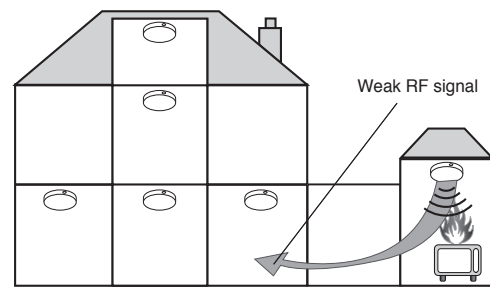


Figure 2a

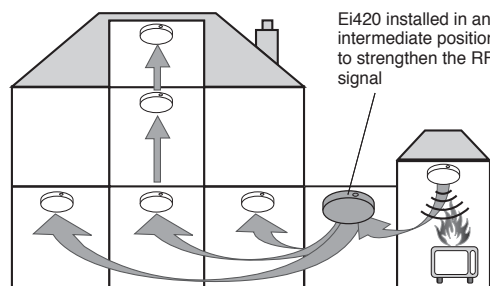


Figure 2b

**2.3 Mounting and Wiring**

**WARNING:** Mains powered modules should be installed by a qualified electrician in accordance with the Requirements for Electrical Installations, BS7671. Failure to install the unit correctly may expose the user to shock or fire hazards. This unit is not waterproof and must not be exposed to dripping or splashing.

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1. Disconnect the AC mains supply from the circuit that is going to be used.

2. Where the incoming wiring is on the surface of the wall/ceiling, the appropriately sized trunking / conduit must be chosen to mate with the unit. There is one suitable surface cabling knockout as shown in Figure 3 (the other two surface entries are not recommended as the wiring may effect the antenna signal). There is one rear entry knockout (see Figure 3.) Unscrew the cover attachment (see Figure 3). Use a sharp knife to remove the material from the knockout, making sure that there is no gap when mated with trunking/conduit.

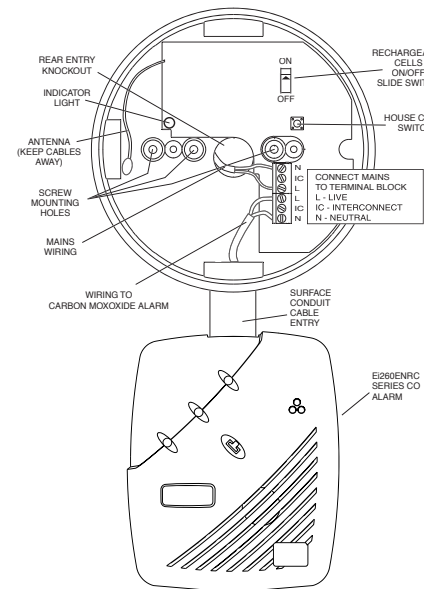


Figure 3a - Connecting an Ei420 to an Ei260ENRC Series CO Alarm

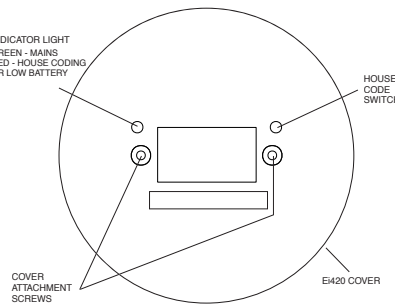


Figure 3b

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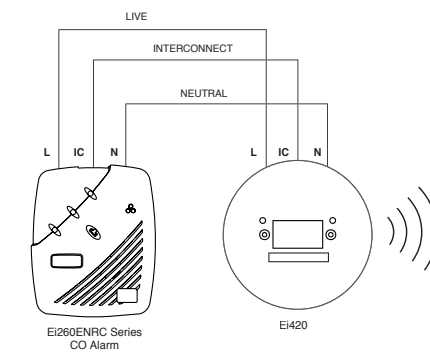


Figure 4a - The Ei420 used as an interface with an Ei260ENRC Series Carbon Monoxide Alarm

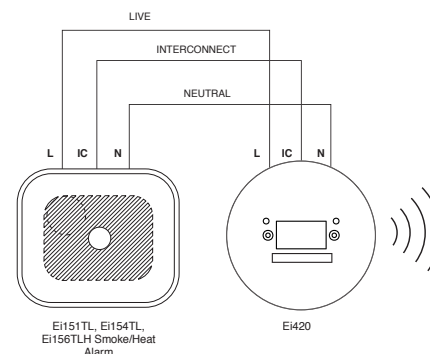


Figure 4b - The Ei420 used as an interface with an Ei150 Series Smoke/Heat Alarm

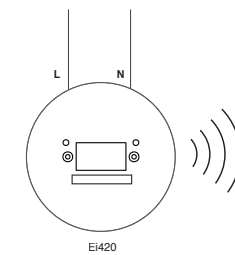


Figure 5 - The Ei420 used as a stand alone RadioLINK Repeater

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3. Screw the Ei420 to the wall or ceiling after first removing the required knockout and bringing the house wires through it (see Figure 3).

4. Connect the house wires to the terminal block as follows: L-Live to wires coloured brown or marked L, N-Neutral to wires coloured blue or marked N IC- Hardwire Interconnect to an Ei Electronics mains powered alarm as shown in Figure 4(a) and Figure 4(b). Note: when the Ei420 is being used as a stand alone repeater, do not connect anything to the Interconnect terminal (see Figure 5.)

NB: The unit must not be earthed so do not connect a green / yellow or copper earth wire to any terminal.

5. Activate the rechargeable cells by carefully and gently sliding the switch to the "on" position (see Figure 3). This switch must be in the "on" position to ensure correct operation.

6. Fit and screw the cover to the Ei420 using the two screws supplied.

7. Connect the mains power to the Ei420 module. Check the green light is on. If the green light changes to red every 10 seconds then switch off the mains power, remove the cover and check that the battery slide switch is in the "on" position (see Figure 3). Replace the cover and turn the mains power back on. If there is still a problem the rechargeable cells may be depleted. Leave the unit on mains power for 2 hours to charge and check that the green light is now on continuously.

8. Press and hold the House Code switch through the hole in the cover using a small screwdriver, (see Figure 3) until the green light changes to red. Immediately release the switch and the light will flash red quickly. The green light will then flash red every 5 seconds (this is a dual colour light so the green light remains on when the red light is off and vice versa). Similarly, put all the other **RadioLINK** units in the property into House Code Mode (see relevant user instructions) within 15 minutes (before the House Code timeout period expires).

9. Check that all the **RadioLINK** units communicate with each other by counting the number of times the light flashes on each unit in turn. The light will flash red on the Ei420. For example, 3 units in the system should result in 3 flashes every 5 seconds, 4 units should result in 4 flashes and so on (if there is a problem see Section 4 on Troubleshooting RF Link).

10. All the units will automatically exit the House Code Mode after 30 minutes. However, we recommend that you manually exit the House Code Mode by pressing and holding the House Code switch on the Ei420 or on an Ei168RC until the House Code light turns on solidly. Immediately release the House Code switch. The light should stop flashing and an "Exit House Code" signal will be sent to all other Ei168RC and Ei420 units in the system. (With other **RadioLINK** units such as the Ei405, Ei407, Ei411 etc., the units can be taken out of House Code Mode by pressing their House Code switch - see their instructions for details). This reduces the risk of accidentally House Coding your alarms with other **RadioLINK** systems.

(Note: To clear House Codes see Section 8 - Technical Specification).

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### 3. Checking and Maintaining

We recommend that your alarm system is checked directly **after installation** and then weekly.

Check that the green mains power indicator is on (if this is off, check circuit breaker, fuses and wiring etc).

#### 3.1 Ei420 connected to an Ei260ENRC Series CO Alarm

Check the **RadioLINK** communications by pressing the test/hush button on the CO alarm for up to 20 seconds. The horn will sound and the indicator light on the Ei420 should change to red continuously for about 3.5 seconds. This indicates that a **RadioLINK** message has been sent. All other **RadioLINK** alarms should now sound. Release the test button. The CO alarm should cease and you should then be able to hear the other alarms sounding in the distance before they also cease. (If any of the other alarms do not sound, see Section 4 - Troubleshooting RF Link)

#### 3.2 Ei420 used as a Repeater

If the Ei420 was installed to strengthen the signal to an alarm (that was previously not receiving a signal), then check the **RadioLINK** communications, by pressing and holding the test/hush button on this alarm for up to 20 seconds. All other **RadioLINK** alarms should now sound. This check should be repeated on all RadioLINK units within the system.

#### 3.3 Checking rechargeable back-up cells

It is important to check that the rechargeable back-up cells in the Ei420 are switched on, charged and capable of powering the unit. We therefore recommend that the rechargeable back-up cells are checked directly after installation and then at least yearly as follows.

- (i) Disconnect the mains power supply from the Ei420
- (ii) Check that the green light is not flashing red once every 10 seconds. (If it is, this indicates that the rechargeable cells are depleted. Remove the cover and check that the rechargeable cell 'on/off' switch is in the 'ON' position - see Figure 3. Re-fit the cover and reconnect the mains. If it is still flashing red, leave it for 2 hours to charge and then re-check. If it continues to flash red every 10 seconds then it may be defective and must be replaced - see Section 6 - "Getting your Ei420 serviced")
- (iii) Now check the operation as outlined in 3.1 and 3.2 above.
- (iv) Re-connect the mains and check the green light comes on

#### End of Life

After 10 years the Ei420 must be replaced (see "Replace By" date on the side of the Ei420).

### 4. Troubleshooting RF Link

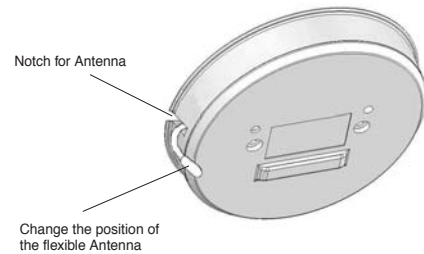
If, when checking the **RadioLINK** interconnection, some of the units do not respond

- (i) **If using the Ei420 as an interface to an Ei260ENRC Series CO Alarm** - Ensure you have held the CO alarm test

button down until the green light on the Ei420 has illuminated red twice, for 3.5 seconds each time (this could take up to 20 seconds).

#### If using the Ei420 as a Repeater

Check all Alarms and accessories respond correctly when button tested. Check that the green light on the Ei420 turns red for a few seconds when RF messages are being relayed.



**Figure 6** - Shows the Antenna moved to the outside of the Ei420 housing

- (ii) Add another Ei420 as a Repeater.
- (iii) Change the position of the flexible antenna (see Figure 6) by moving it outside the housing and changing it to a horizontal or vertical position. To do this, use a sharp knife and carefully add a notch in the side to allow the antenna to be brought out.
- (iv) Re-locate/rotate the units. There are a number of reasons why the **RadioLINK** signals may not reach all the RadioLINK units in your system (see Section 5 - Limitations of Radio Communications). Try rotating the unit or re-locating the unit (e.g. move it away from metal surfaces or wiring) as this can significantly improve signal reception.

Rotating and/or relocating the unit may move it out of the range of existing units even though it may have already been House Coded correctly in the system. It is therefore important to check that all alarms are communicating in their final installed positions. If units are rotated and/or resited, we recommend that all units are returned to the factory settings (press and hold the House Code switch on for about 6 seconds until the relevant light comes on and then flashes slowly). Immediately release the switch and the light should stop flashing. Then House Code all units again in their final positions as indicated above. The **RadioLINK** interconnection should then be re-checked.

Check all Alarms and accessories respond correctly when button tested. Check that the green light on the Ei420 turns red for a few seconds when RF messages are being relayed.

### 5. Limitations of Radio Communications

Ei Electronics radio communication systems are very reliable and are tested to high standards. However, due to their low transmitting power and limited range (required by regulatory bodies) there are some limitations to be considered.

- (i) Radio equipment, such as the Ei420, should be tested regularly - at least weekly. This is to determine whether there are sources of interference preventing communication. The radio paths may be disrupted by moving furniture or renovations, and so regular testing protects against these and other faults.

- (ii) Receivers may be blocked by radio signals occurring on or near their operating frequencies, regardless of the House Coding.

The Ei420 has been tested to EN 300 220-1 V1.3.1 (2000-09) in accordance with the requirements of EN 300 220V1.1.1 (2000-09). These tests are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause such interference, which can be verified by turning the device on and off (remove the mains supply and turn off back up power supply), the user is encouraged to eliminate the interference by one or more of the following:

- (i) Re-orientate or re-locate the unit
- (ii) Increase the distance between the Ei420 and the device being affected.
- (iii) Connect the device being affected to a mains outlet on a circuit different from the one that supplies the Ei420.
- (iv) Consult the supplier or an experienced radio/television technician.

### 6. Getting Your Ei420 Serviced

If your Ei420 fails to work after you have carefully read all the instructions, checked that the unit has been installed correctly, and is receiving AC power (green light on) contact Customer Assistance at the nearest address given at the end of this leaflet. If it needs to be returned for repair or replacement, open the cover and turn off the rechargeable cells slide switch (see Figure 3). Put the unit in a padded box and send it to "Customer Assistance and Information" at the nearest address given on the unit or in this leaflet. State the nature of the fault, where the unit was purchased and the date of purchase.

### 7. Five Year Guarantee

Ei Electronics, guarantees this unit for five years from date of purchase against any defects that are due to faulty materials or workmanship. This guarantee only applies to normal conditions of use and service, and does not include damage resulting from accident, neglect, misuse, unauthorised dismantling, or contamination howsoever caused. This guarantee does not cover costs associated with the removal and/or installation of units. If this unit should become defective within the guarantee period, it must be returned to Aico or Ei Electronics, with proof of purchase, carefully packaged, and

with the problem clearly stated. (see "Getting Your Ei420 Serviced"). We shall at our discretion repair or replace the faulty unit.

### 8. Technical Specification

- A dual-purpose module: (1) It can be used to interface an Ei260ENRC Series Carbon Monoxide (CO) alarms or smoke/heat alarms Ei151TL, Ei154TL, Ei156TLH and communicates with all other **RadioLINK** devices. It must not be wired to any other Ei Alarm products (2) It can be used as a **RadioLINK** Repeater module. The unit will receive **RadioLINK** signals and re-transmit them. This can be useful as it shortens and provides multiple, RF signal paths to strengthen the **RadioLINK** system in difficult installations. Note: the Repeater function only operates after the units are House Coded.

- It is supplied with its own cover.
- Requires 230V AC Mains Power Supply – constant green LED indicates mains power is present.

- Features built-in tamper proof Rechargeable Lithium back-up cells, capable of lasting at least 10 years and powering the unit initially for at least 2 months in the event of mains power failure. The cell manufacturer endorses a minimum 10-year life expectation for the rechargeable cells. The cells are activated by operating the battery switch inside the unit.

- Low back-up warning signal – LED indicator flashes red every 10 seconds to indicate that the lithium cells are depleted or not connected.

- Radio frequency: 868MHz band in accordance with R&TTE Directive 1999/5/EC – this band has been designated for use with security products and only allows a 1% duty cycle, so continuous transmission and interference from external sources is extremely remote, and would be illegal.

- Up to 12 **RadioLINK** units can be used in one system. For larger systems contact our Technical Service Department for guidance.

- Units are in Factory Code when shipped (they will all communicate with each other). They must be 'House Coded' to eliminate the risk of adjacent properties communicating with each other. After house coding they will only communicate with other **RadioLINK** units coded at the same time.

- House Code: operate the 'House Code' switch on all **RadioLINK** units in the system – see the instructions supplied with the other **RadioLINK** units being used. On the Ei420, the green LED on the cover will change to red and flash slowly: this indicates that it will receive the unique serial numbers being sent by all other **RadioLINK** units in 'House Code'. The number of red flashes of the LED indicates the number of units in the system. The Ei420 will return to normal standby mode automatically after 30 minutes. Pressing the 'House Code' switch again will return it to normal standby mode immediately.

- Clearing House Codes: The House Codes memorised can be cleared by pressing and holding the House Code switch on for about 6 seconds. The red light will come on solidly, then flash rapidly. Immediately release the House Code switch. The Ei420 will now be in the default Factory Code.

- To de-activate the Repeater function: The Repeater function of the Ei420 can only be de-activated if it is wired to an Ei260ENRC Series CO alarm. To de-activate, press and hold the test button on the CO alarm until it sounds and the indicator light on the Ei420 illuminates red. Immediately (while the red light is still on) press and hold the House Code switch with a small screwdriver until the red light starts to flash slowly. Immediately release the switch.

The red light will flash slowly a total of four times and then stop. This indicates that the Repeater function has been de-activated on this unit.

- If it is necessary to re-activate the Repeater function, simply follow the same steps for de-activating. The red light will flash slowly a total of sixteen times (instead of four) after the last step is completed.

- The product is CE marked to indicate conformance to BS EN 60065:1998 (Electrical Safety), EN300220-1 V1.3.1 (2000-09) (RF Performance), EN301489 V1.4.1 (2002 08) (EMC) and has been 3rd party tested for electrical safety in accordance with Annex K of BS 5446: Pt.1: 2000.

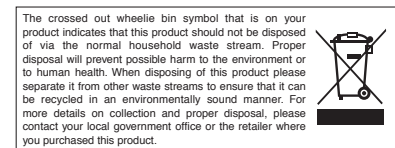
- Can be surface wired with 25mm trunking. It has a flush centre knockout for recess wiring.

- Ambient Temperature Range: 4°C to 40°C. Humidity Range: 0 to 90 % relative humidity.

- Dimensions: 140 diameter x 27mm depth. Weight inclusive of packaging: 220g.

- 5 year guarantee.

- Manufactured in the EU.



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