Manuals+ — User Manuals Simplified.

Ei Electronics Ei413 RadioLINK Panel Module Instructions

Contents

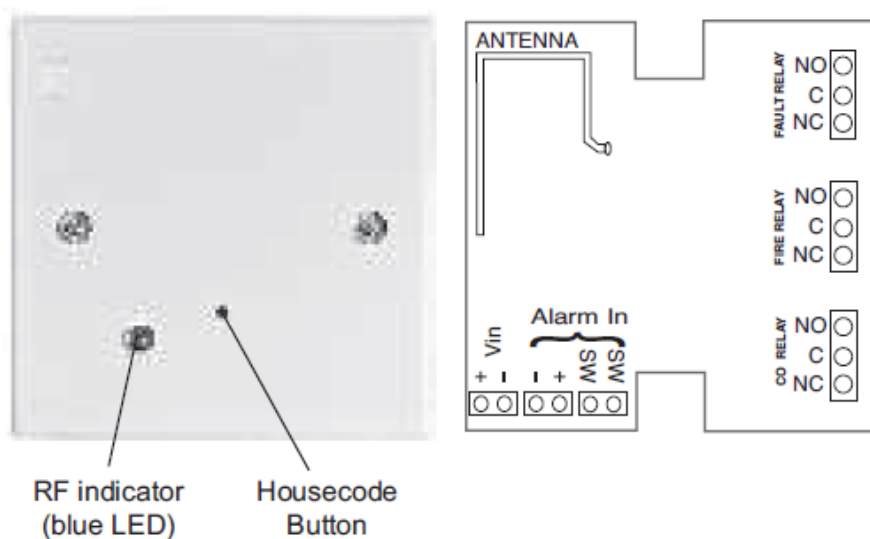**Ei Electronics Ei413 RadioLINK Panel Module**

Instructions

Read and retain carefully for as long as the product is being used. It contains vital information on the operation and installation of your product. This instruction manual should be regarded as part of the product.
If you are just installing this product, this manual must be given to the householder. The manual is to be given to any subsequent user.

Overview

RF indicator   Housecode
(blue LED)   Button

Introduction

The Ei413 RadioLINK Panel Module is a device that switches a relay upon receipt of an alarm or a fault RF signal from a compatible Ei Smoke, Heat or Carbon Monoxide (CO) Alarm. Although it is mainly designed to interface with a suitable security or fire panel system, the electrically isolated contacts can also be used in other applications.
The Ei413 RadioLINK Panel Module is powered by 11 – 30V DC from an external source (panel).
It decodes "Fire", "CO" and "Fault" signals from the RF Alarms and activates the relevant relay. The relays are wired to input terminals on the panel. The wiring will differ depending on the type of panel used (see installation section).

Note: The Ei413 can only receive fault signals (such as sensor degradation, low battery and Alarm removal) from Alarms with which it has a direct RF connection/signal path. The ability of an Alarm to transmit a fault depends on the RF module's capability. For more information on the type of fault that can be reported depending on the RF module used, see table A.

Table A

Fault messages	Ei605MRF	Ei605MTYRF	Ei100MRF	Ei600MRF	Ei3000MRF	Ei200MRF
Low battery	✓	✓	✓	✓	✓	✓
Sensor fault	✓	✓	✓	✓	✓	✓
Alarm removal			✓		✓	✓

Important: The Ei range of domestic alarm systems, both RF and wired interconnect, are suitable for use in standard domestic properties and can be used where BS 5839-6 Grade D systems are required. It is also possible that the Ei system could be used to activate, for example, a remote indicator light outside a dwelling unit within a typical sheltered or HMO complex to provide identification for the origin of the alarm event.

However, do not integrate Ei components with a BS5839-1 system to fulfil a critical component of this system's requirements such as sound pressure level in a property, or to form a necessary component of an evacuation or other life safety procedure. Important: A system containing an Ei413 should be installed and commissioned by a suitably skilled and competent person.

Installation

The Ei413 can be installed in or next to the panel. If the panel is in a metal case, then the module should be located on the outside of the panel.

CAUTION!
Before connecting the Ei413 to a fire or security panel please check with the panel manufacturer to determine if an End of Line (EOL) device(s) and/or current limiting resistor is required and how and where they should be fitted. Any clarification required on these components should be directed to the Panel manufacturer.

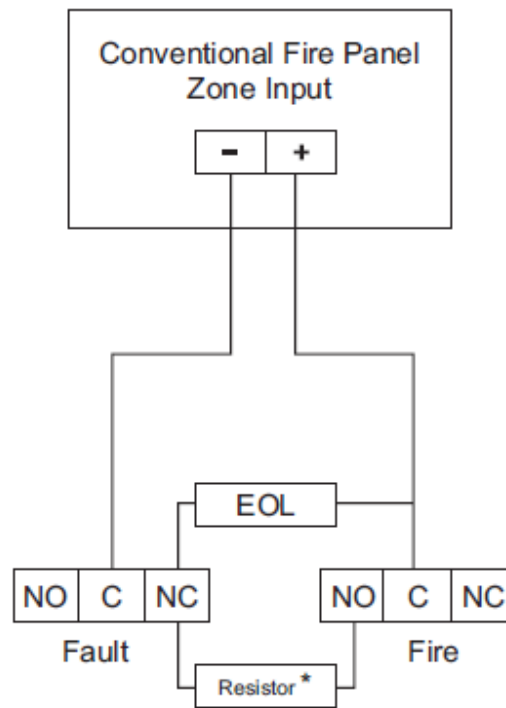A – Connecting an Ei413 with a Fire Panel

Important: For panels which are connected to multiple detection circuits (or zones), each panel input (fire or security) requires its own Ei413. In other words, a single Ei413 panel interface should not be used for connecting multiple zones to the panel. Each zone should be house coded separately.

A.1 Operating principles

Typically, conventional fire panels will monitor both fire and fault conditions. The Ei413 may be configured to communicate both fire and fault conditions to the fire panel using only a two-wire connection to the panel. This circuit is depicted in Figure 1. The circuit consists of two separate switches – one for a fire condition and one for fault condition.
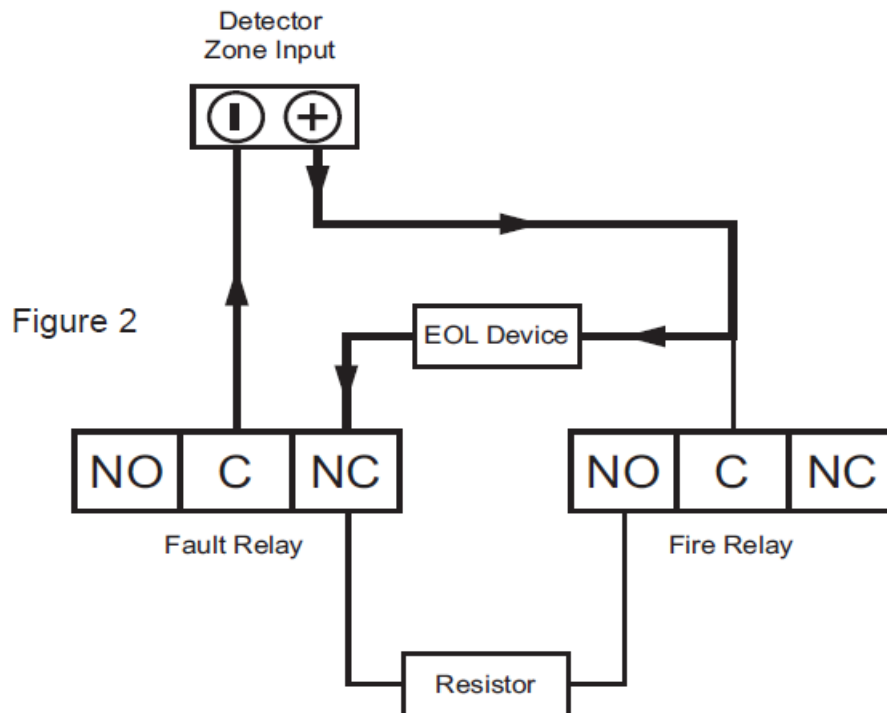
There are three possible switch configurations which depend on the state of the system: standby, fire and fault. The current flow in each of these configurations is depicted in Figure 2, 3 & 4 and is explained below. The current flow in each case is represented by the bold lines with arrowheads.

Conventional Fire Panel Zone Input

```
┌──────────────────────────┐
│  Conventional Fire Panel │
│       Zone Input         │
│                          │
│         ┌───┬───┐        │
│         │ - │ + │        │
│         └───┴───┘        │
└──────────────────────────┘
```

Figure 1

Ei413 Relay Module
Circuit for Conventional
Fire Panel

```
              ┌──────┐
              │ EOL  │
              └──────┘

┌────┬───┬────┐      ┌────┬───┬────┐
│ NO │ C │ NC │      │ NO │ C │ NC │
└────┴───┴────┘      └────┴───┴────┘
    Fault                  Fire
          ┌──────────┐
          │ Resistor*│
          └──────────┘
```

*Resistor: The purpose of this resistor is to help distinguish between standby mode and a fire condition, by altering the current flow in the circuit. The panel is designed to detect changes in the current flow and activate a fire condition.

Standby Condition

Detector
Zone Input

```
         ┌───┬───┐
         │ Ⓘ │ ⊕ │
         └───┴───┘
```

Figure 2

```
                    ┌───────────┐
                    │ EOL Device│
                    └───────────┘

┌────┬───┬────┐            ┌────┬───┬────┐
│ NO │ C │ NC │            │ NO │ C │ NC │
└────┴───┴────┘            └────┴───┴────┘
  Fault Relay                Fire Relay

              ┌──────────┐
              │ Resistor │
              └──────────┘
```

In standby mode, both relays are set to the NC position by default. The current path flows via the EOL device and the NC-C terminals of the fault relay. In this state, the panel generates neither a fire or a fault condition.

Fire Condition

Detector
Zone Input

Figure 3

EOL Device

NO	C	NC
Fault Relay

NO	C	NC
Fire Relay
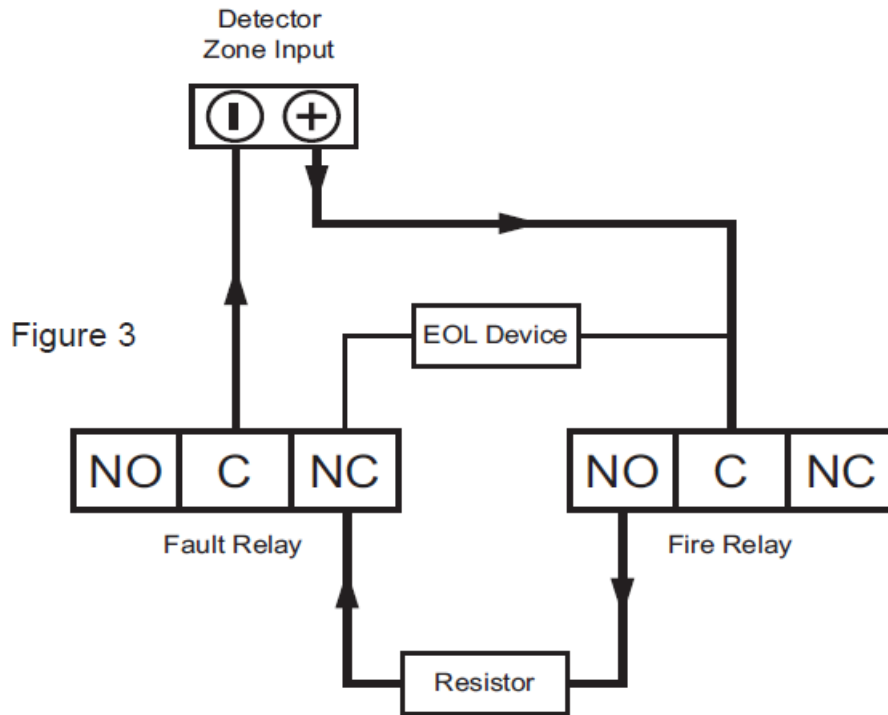
Resistor

When a fire is detected, the fire relay will be activated. The current now flows via the C-NO terminals of the fire relay, the current limiting resistor and the NC-C terminals of the fault relay. The EOL device is in parallel with the resistor. This will cause a current change in the circuit which will be detected by the panel as a fire condition.

Fault Condition

Detector
Zone Input

Figure 4

EOL Device

NO	C	NC
Fault Relay

NO	C	NC
Fire Relay

Resistor
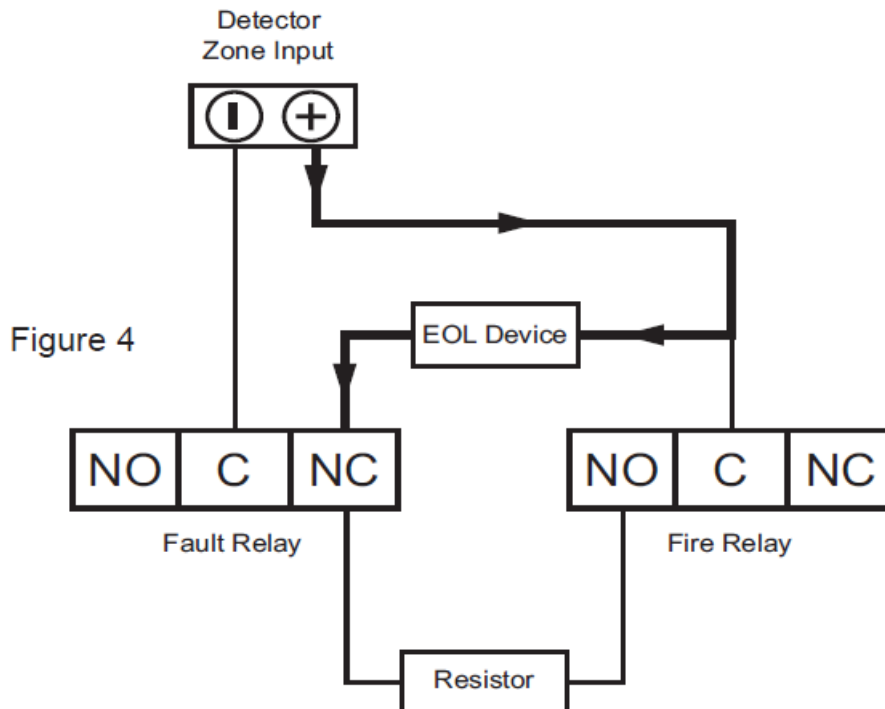
A fault condition is generated when the Ei413 receives a RadioLINK fault signal from the Ei Electronic RadioLINK alarms. When the Ei413 receives a fault signal the C-NO terminals of the fault relay are connected. This effectively breaks the circuit – the panel will see an open circuit and will indicate a fault condition. NOTE: A fire event will override a fault condition.

CAUTION!

In this application, the Fire and Fault relays are being configured to allow the fire panel to indicate a fire or fault condition. The wiring details and end of line (EOL) termination details will vary for different fire panels so it is imperative that you check the panel manufacturer's installation manual before proceeding.

A.2 Installation

1. Place the current limiting resistor between the NC terminal of the Fault Relay and the NO terminal of the Fire relay as shown in Figure 5. Check with the fire panel manufacturer for the value of the resistor to be used.
2. Locate the auxiliary power output in the panel and wire it to the Vin connector on the Ei413 panel module.
3. Check that the polarity of the auxiliary power supply has been wired correctly.
4. Wire the Fault Relay common (C) terminal and the Fire Relay common (C) terminal to a detector circuit in the panel.
5. Wire the EOL device to the NC terminal of the Fault relay and the C terminal of the Fire relay as shown in Figure 5.
6. Power up the fire panel and the Ei413 panel module and follow the manufacturer's instructions to set up the fire panel system.
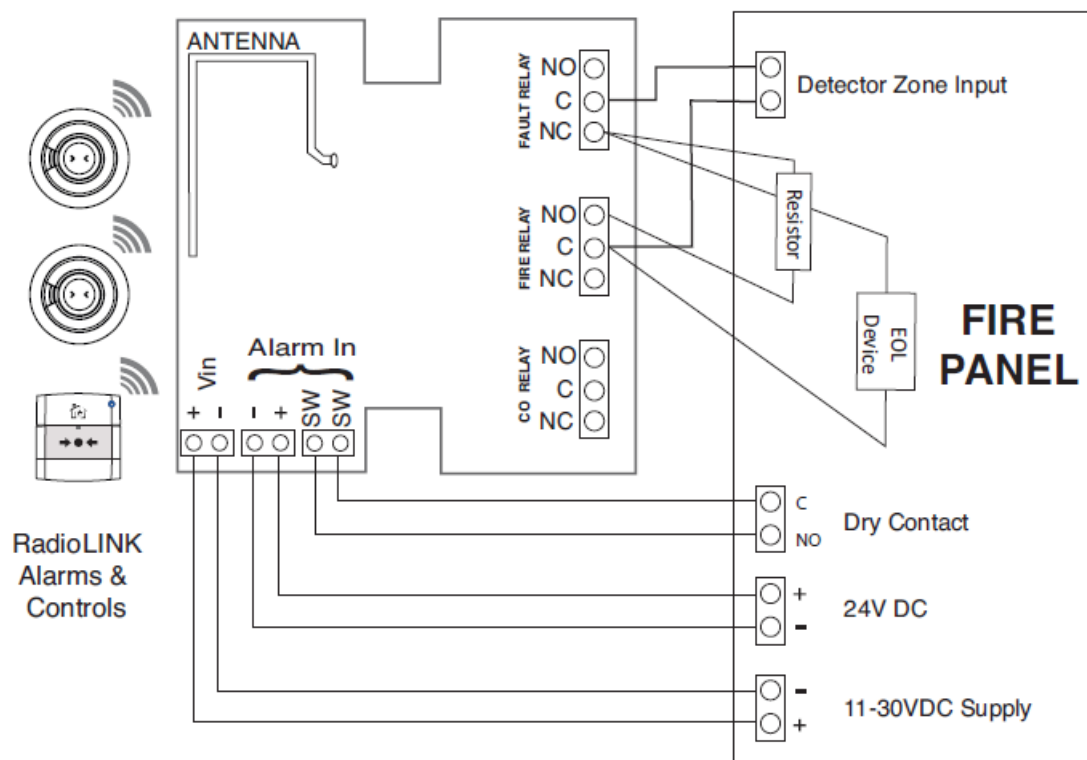

Figure 5

A.3 Resetting the fire panel after a fire or fault
Fire:
Once the fire event has cleared, the alarms stopped sounding and the Ei413 has reset, it is possible to reset the panel to standby mode as per the manufacturer's instructions.

Fault:
When a fault is detected the Alarm will transmit an RF fault signal. The Ei413 will switch the fault relay upon receipt of this signal causing the panel to display a fault condition.
The fault relay will reset after 5 hours if no further fault messages are received. This means that the panel will

indicate a fault for at least the next 5 hours unless the fault condition is reset.

Note: Fault messages are normally transmitted every minute until the fault has been rectified.
To reset a fault condition on the fire panel after the Alarm fault has been fixed, press the test button on one of the Alarms in the relevant zone allowing sufficient time for the RF test signal to transmit and trigger the fire relay of the Ei413. This will override the fault condition and the fire panel will now indicate a fire. Then reset the panel to standby mode as per the manufacturer's instructions.

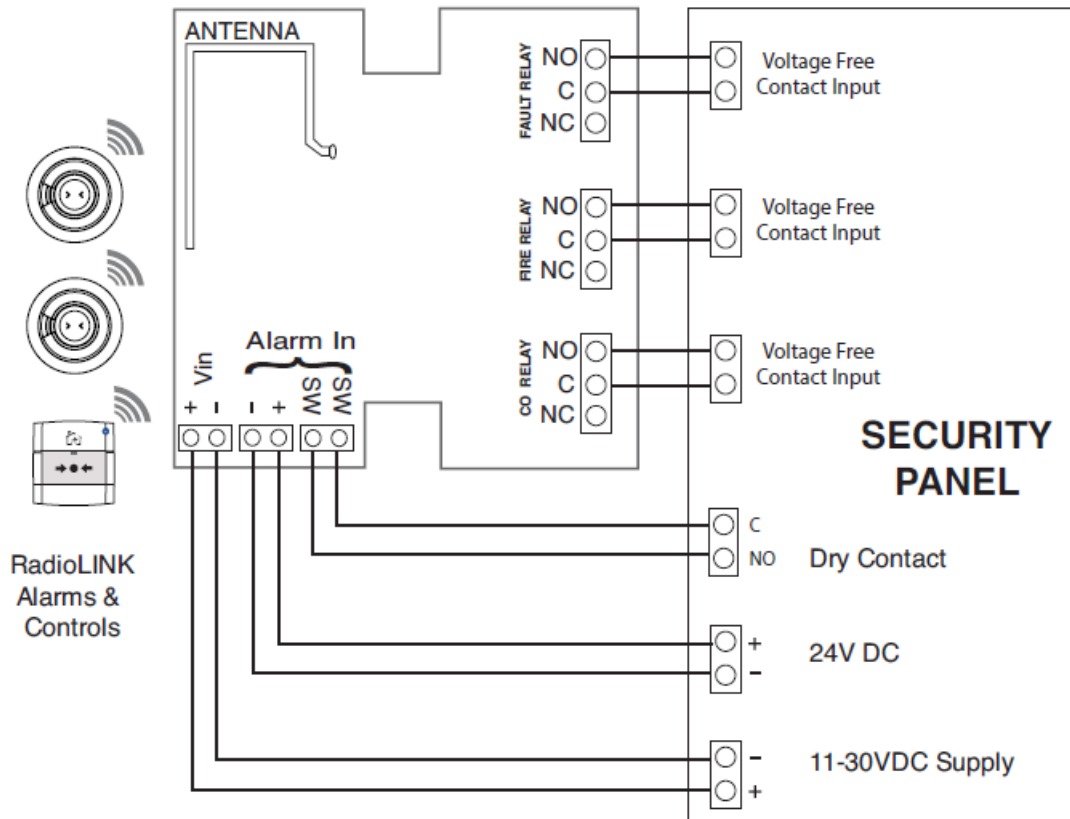## B – Connecting an Ei413 with a Security Panel or another device

Figure 6

*If an EOL device is required, please refer to the panel manufacturer for where it should be fitted as this can vary.

1. Wire each of the Ei413's relay you wish to use to a corresponding contact input in the panel.
2. Locate the auxiliary power output in the panel and wire it to the Vin connector on the Ei413, being careful to ensure the polarity of the auxiliary power supply has been wired correctly.
3. The input voltage signal is optional and can be triggered by either a 12-24V DC power supply or alternatively by a dry contact signal. When activated, the input signal will sound all the RF Smoke/CO Alarms until the signal stops.
4. Power up the security panel and house code the Ei413 to the other RF devices (see House coding section).

Note: When a fault is detected the Alarm will transmit an RF fault signal. The Ei413 will switch the fault relay upon receipt of this signal causing the panel to display a fault condition.
The fault relay will reset after 5 hours if no further fault messages are received. This means that the panel will indicate a fault for at least the next 5 hours unless the fault condition is reset.

Note: Fault messages are normally transmitted every minute until the fault has been rectified.
To reset a fault condition after the Alarm fault has been fixed, press the test button on one of the Alarms allowing enough time for the RF test signal to transmit and trigger the fire relay of the Ei413. This will override the fault condition and reset the Ei413. Then reset the panel to standby mode as per the manufacturer's instructions.

House Coding

Once wired to the panel, it is essential to House Code the Ei413 to all the other Ei Electronics RF Alarms and devices in the system to ensure they will not communicate with nearby systems. Failure to house code the system may also result in a system malfunction.

1. Press and hold the House Code button until the RF indicator lights up blue, then release.
2. House code all other RF Alarms and devices in the system. Consult the instruction manuals on how to house code the Alarms and devices. It is essential that each individual Alarm/device is put into House Code mode in its final location.
3. Check the number of flashes on the Ei413 and on every other device. They should correspond to the total number of devices in your system. A system with 3 Smoke Alarms and 1 Ei413 will result in 4 flashes. It may take up to 10 minutes before all 4 flashes are seen.
   The flash pattern will repeat every 5 to 10 seconds while the Ei413 remains in house code mode.
   If it fails to flash the correct number of times, then consult the "Troubleshooting the RF connection" section of this instruction manual.
   To complete the commissioning, the RF system must exit House Code mode.
4. The Ei413 will automatically exit House code mode after 15 minutes. Other devices may take up to 30 minutes. Once coded, the system will not communicate with any other RF Alarms and devices outside of the house coded group.
   To manually exit House Code mode, press the House Code button on the Ei413 until the RF indicator lights up blue, then release. This will send a signal to all the other RF Alarms and devices to exit House Code mode. After a short period, the blue light will turn off and the system will return to standby mode. Depending on the number of RF Alarms and devices in the system this period could vary from 5 to 20 seconds.
   Note: Not all devices are able to receive the Exit House Code mode signal from another device. If some devices continue to flash blue, please consult their instruction manual to manually exit house code mode. Check that the RF indicators have stopped flashing on all devices.
5. To check the system, press the Test button for up to 60 seconds on each Alarm.
   Ensure that the device connected to the relay contacts operates as expected.

Testing

We recommend regular testing of your RF system (at least monthly).
Frequent testing of the system is advised to ensure its continued and safe operation.
Guidelines and best practices for testing are as follows:

1. After the system is installed.
2. Once monthly thereafter.
3. After a prolonged absence from the dwelling (e.g. after a holiday period).
4. After repair or servicing of any of the systems elements or electrical works being carried out.

With regards to the Ei413, check that the relay switches and that the associated device operates when the system is in alarm (e.g. due to a Smoke Alarm test button being pressed).

Troubleshooting the RF connection

If when Testing, the Ei413 does not respond, then:

- Ensure you have held the Test button of the Alarm until the RF indicator has flashed twice (this can take up to 20 seconds).
- Reset the house code. Sometimes to resolve an RF communication issue, it may be necessary to reset and house code all RF Alarms and devices in the system again. To reset the Ei413, press and hold the House Code button. The RF indicator will light up blue, remain blue and then after 7 seconds approx. will start flashing blue. At this point release the House Code button. The Ei413 is now reset. To reset the other devices in the system, consult the appropriate instruction manuals. Once all devices are reset, repeat the House Coding procedure. (see House Coding section).
- Relocate the Ei413 and/or rotate/relocate the Alarms. There are several reasons why RF signals may not reach all the devices in your system. Try rotating or relocating Alarms as this can significantly improve signal reception.

Rotating and/or relocating the Alarms may move them out of the range of existing devices even though they 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 Alarms are rotated/relocated, we recommend that all devices in the system are returned to the factory settings. Then House Code all devices again. The RF interconnection should then be checked again.

Getting your Product Serviced

If, within the guarantee period, your device fails to work after you have carefully read all the instructions and checked that the device has been installed correctly, then contact us. If you are advised to return your product, follow the instructions given and place the device in a padded box with the proof of purchase, your contact details and a note stating the nature of the fault.

Guarantee

Ei Electronics guarantees this device for five years from the date of purchase against any defects that are due to faulty materials or workmanship. If this device should become defective within the guarantee period, we shall at our discretion repair or replace the faulty unit.
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 excludes incidental and consequential damage.
Do not interfere with this device or attempt to tamper with it. This will invalidate the guarantee but more importantly may expose the user to shock or fire hazards.
This guarantee does not apply to any product that has been modified in any way by a third party or has been fitted with a third party element.
This guarantee is in addition to your statutory rights as a consumer.

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:

- Receivers may be blocked by radio signals occurring on or near their operating frequencies, regardless of the House Coding.
- RF systems should be tested regularly, at least monthly. This is to determine whether there are sources of

interference preventing communication, that the radio paths have not been disrupted by moving furniture or renovations, and if so, to give a warning of these and other faults.

Technical Specification

- Supply Voltage: 11-30V DC
- Relay contacts rating: 30V, 1A
- Relay contacts: NO/NC
- Fire Relay: NO contact closes when an alarm or test message is received from a house coded Smoke/Heat Alarm or another device
- Fault Relay: NO contact closes when a low battery or fault message is received from a house coded Alarm or another device
- CO Relay: NO contact closes when an alarm or test message is received from a house coded
- CO Alarm. Hardwire input: Volt free contact or 12-24V DC
- RF Frequency: 868.499 MHz band (1% Duty Cycle)
- RF Power: -1dBm
- RF Range: > 100 Metres in free air1
- RF Protocol: RadioLINK
- System size: Up to 12 RF devices
- Receiver category: Cat 2
- Visual indicator: Blue RF transmission LED
- Temperature Range: -10°C to 40°C2
- Humidity Range: 15% to 95% Relative Humidity2

1. Obstructions of any sort will result in a reduction in range from the free space specification. The range may vary depending on installation.
2. Temperature and Humidity conditions are for normal operation and storage. Units will function outside these ranges as required by the specific Product Standards. However, extended exposure to conditions outside these ranges may affect product life. For advice on prolonged operation outside these ranges consult the manufacturer.

Hereby, Ei Electronics declares that this Ei413 RadioLINK Panel Module is in compliance with the essential requirements and other relevant provisions of Directive
2014/53/EU. The Declaration of Conformity may be consulted at **www.eielectronics.com/compliance**

Hereby, Ei Electronics declares that this Ei413 RadioLINK Panel Module is in compliance with the essential requirements of the Radio Equipment Regulations 2017. The Declaration of Conformity may be consulted at **www.eielectronics.com/compliance**

The crossed out wheelie bin symbol that is on your product indicates that this product should not be disposed of via the normal household waste stream. Proper disposal will prevent possible harm to the environment or to human health. When disposing of this product please separate it from other waste streams to ensure that it can be recycled in an environmentally sound manner. For more details on collection and proper disposal, please contact your local government office or the retailer where you purchased this product.

Documents / Resources

Ei Electronics Ei413 RadioLINK Panel Module [pdf] Instructions
Ei413, RadioLINK Panel Module, Panel Module, RadioLINK Module, Module, Ei413 Module

References

- **Aico | The European Market Leader in Home Life Safety**
- **Company - EI Electronics**
- **Compliance - EI Electronics**