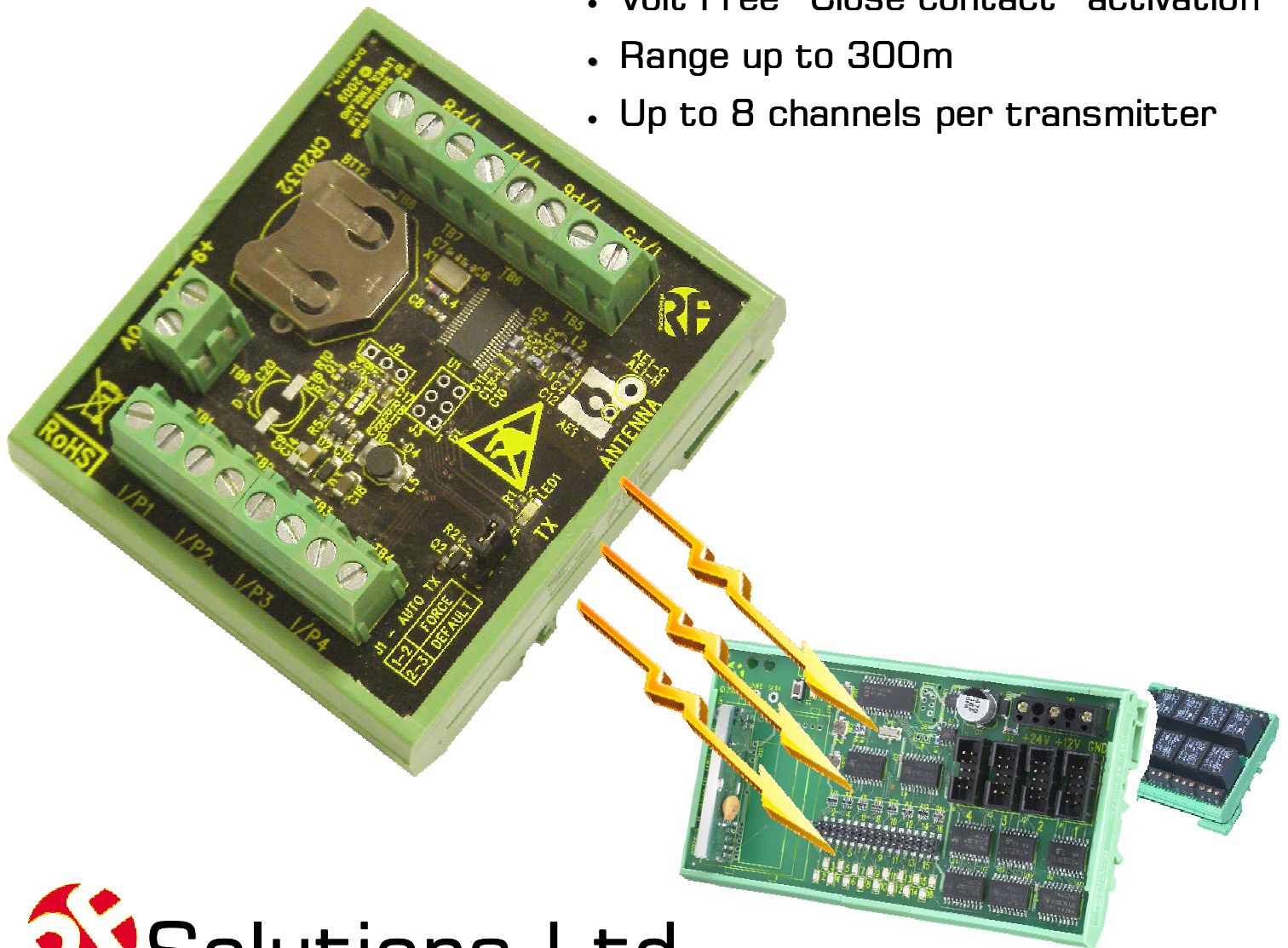




# 200 Series Industrial DIN RAIL

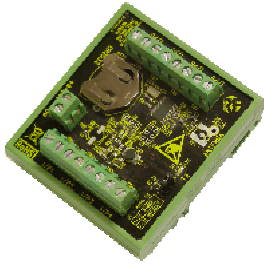
- Industrial machine switching
- Home automation,
- Light switching,
- Flooding lighting,
- Pumps, Hoists,
- Loading Bins
- Conveyors
- DIN Rail Switching systems
- Battery powered transmitter option
- Up to 16 switch lines per receiver
- Contact Ratings Up to 6KW
- Volt Free "Close contact" activation
- Range up to 300m
- Up to 8 channels per transmitter



 Solutions Ltd



# 202 Industrial Series



## Transmitter

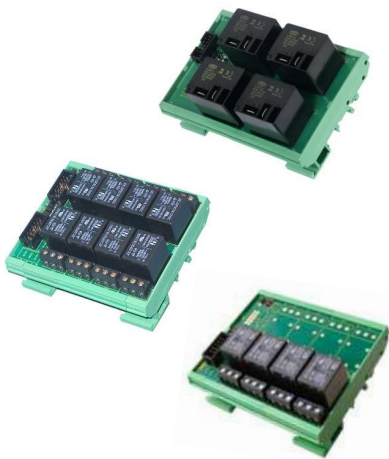
- 8 No volt inputs via screw terminal
- Simply connect a switch, relay or contactor via the screw terminals and close the contact to send a transmission.
- On board battery with up to 3 years life span (back-up life)
- External input for 9-24Vdc if required
- Auto Transmit feature to ensure reliability
- Range up to 300m
- Supplied with bulkhead mounting antenna

## Receiver

- 16 outputs
- The receiver learns up to 48 transmitters
- Momentary output
- Flexible learn procedure allows "one to one", "one to many" and "many to many" switching capability.
- LED indication to show active outputs.
- Supplied with bulkhead mounting antenna



## Relay Modules



- Supplied with connection cables to receiver board
- **230 - 4 Industrial level Relays**
  - 30A at 230V (5000W) per relay
  - Change over contacts: Normally Open and Normally Closed
- **215 - 8 High quality relays**
  - 6A at 230V (1200w) per relay
  - Change over contacts: Normally Open and Normally Closed
- **216 - 4 High quality relays**
  - 6A at 230V (1200w) per relay
  - Change over contacts: Normally Open and Normally Closed

## Ordering

Part Numbers	Description	Range (Metres)	Freq (MHz)
202-433F	Transmitter	300	433.92
210-433F	Receiver	300	433.92
230 / 215 / 230	Relay Boards	N/A	N/A





# 202 Industrial Series

## Installation guide

### Transmitter set-up

#### Power

The 202 range of transmitters come with an on board lithium battery (CR2032) and connection for an external DC source if required.

External power in the range 9—24V DC may be applied via the screw terminal marked DC input (Fig 1.1) For estimated battery life figures see technical specifications page 7.

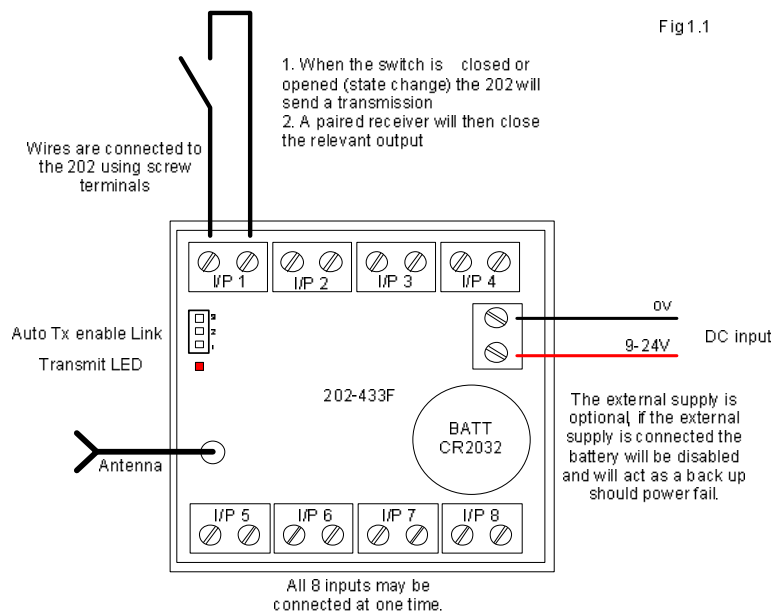
#### Wiring

Installation of the 202 transmitter range is simply a case of connecting the input screw terminals to your chosen switch and if required connecting the power supply

NOTE: Inputs are volt free, DO NOT connect power to the inputs.

#### Antenna Mounting

The 202 comes with a BNC connector.



#### Auto TX Link

The 202 can be set to automatically transmit a “watchdog” signal, The Auto Tx feature sends the status of all inputs to all associated receivers at a random time between 5 and 10seconds. The receiver will drop out its signal fail relay within 20seconds of no communication.

The 202 has three Auto TX options: Off, Default and Forced.

- Off—Remove the jumper link from the pins; the Auto TX is completely disabled.
- Default—Cover pins 2-3 with the jumper link; the auto TX will only function when an external power source is added. If external power fails the 202 will stop the auto Tx but will otherwise operate normally.
- Forced—Cover pins 1-2; the auto TX will transmit at all times irrespective of the power source. (CR2032 battery or external)





# 202 Industrial Series

## Installation guide—continued

### Receiver set-up

#### Power

The 210-433F receiver is powered by 12V or 24V DC, this is connected as shown below.

A regulated power supply capable of delivering at least 1 Amp is required (page).

For power consumption figures see Technical Specifications page

#### Wiring

Installation of the 210 receiver range requires; connecting the power supply as shown below and connecting your chosen relay output board(s).

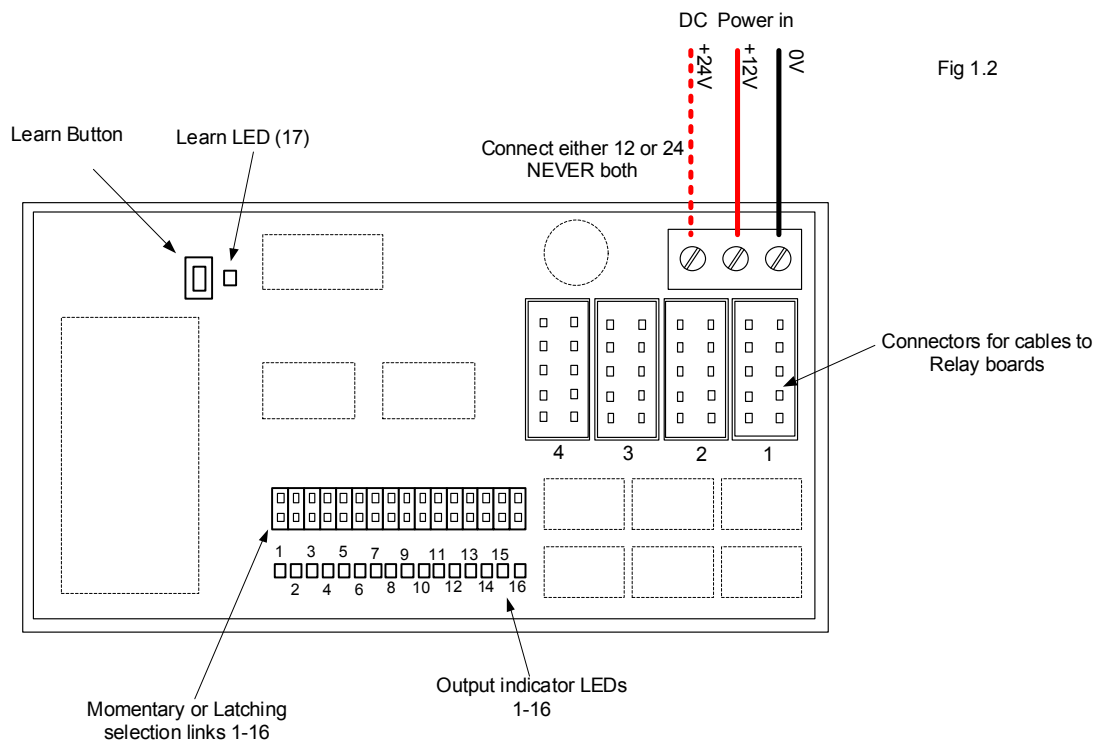


Fig 1.2





# 202 Industrial Series

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## Pairing Process

Decide which input you wish to operate which output and follow the below process, bearing in mind that LEDs on the 210-433F correspond directly to the relay out number on a connected relay board:

1. Power the 210 receiver. On first use it will be in factory default mode—all channel LEDs flashing alternately on/off.
2. Power the 202 transmitter which you want to pair. Send a signal, by closing a switch or contact across any input. Ensure that the 210 receiver comes out of factory default and flashes LED 3 briefly.
3. Once all LEDs are out, press the 210 receiver's learn button once briefly then (all LEDs will flash on then go out leaving only LED1 lit), tap the learn button repeatedly to scroll through the LEDs 1-16, stop at the desired LED number leaving that numbered LED lit.
4. Momentarily close the contact or switch on the 202 transmitter input that you wish to pair to the selected 210 receiver output.
5. The receiver's output LED should flash to confirm that your chosen input is now paired to the output required.
6. Pairing is now complete for one channel, repeat for any other inputs or outputs required.

## Erasing the Receiver Memory

1. To completely erase the 210 receiver memory, press and hold the learn button
2. The learn LED (LED17) should illuminate (Fig 1.2)
3. Hold the learn button for approximately 10seconds
4. When the LED (LED17) extinguishes the memory is erased and the 210 receiver will return to factory default mode.

Note: it is not possible to erase individual transmitters or inputs.

## Auto Tx

When using the 202-433F channel 16 becomes permanently active. It will turn off if an Auto Tx signal from the 202-433F fails to get through or if external power supply fails on the 202-433F Transmitter.

AUTO TX fail on power supply fail can be disabled by switching the AUTO TX jumper link on the 202-433F to the FORCE position.

**NOTE:** The Auto TX Channel does not need to be paired. If another pairing is made on this channel enabling the Auto Tx feature would override it.





# 202 Industrial Series

## Relay Module Set-up

### Power

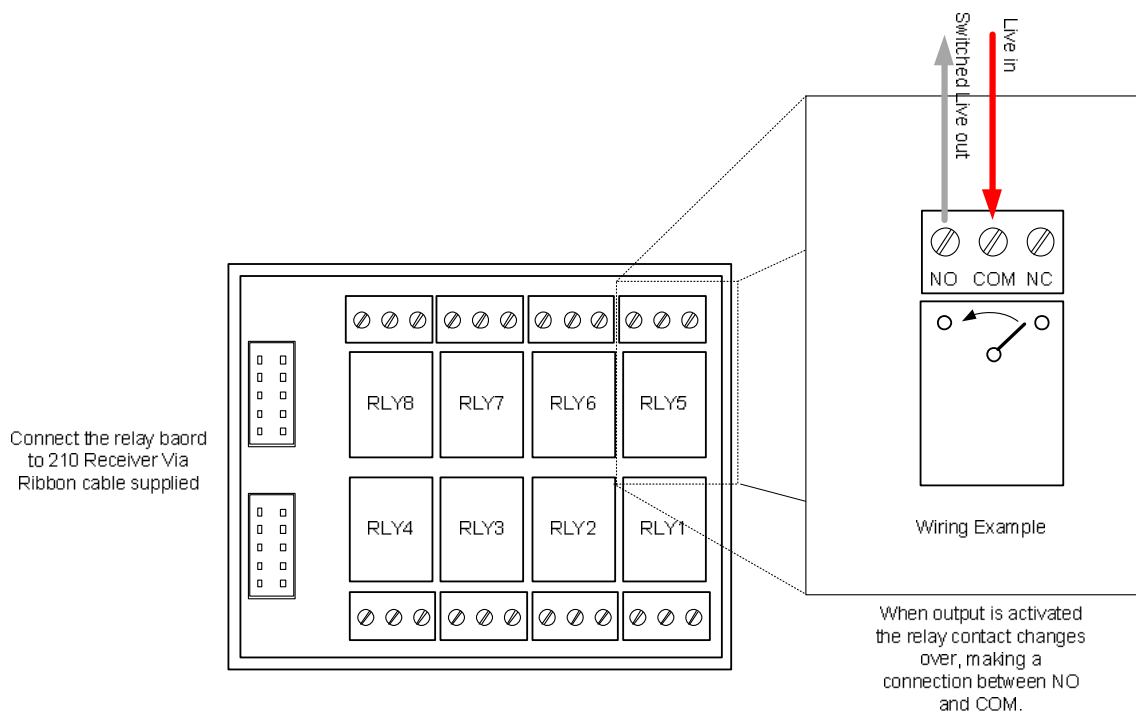
Relay modules are powered by the 210 Receiver and require no external supply.

### Connecting to a 210 receiver

The Relay boards plug into the 210 receiver using the connectors indicated below and on the previous page.

### Wiring

3 different relay modules are available for use with a 210 Receiver, these all work in the same manner; operating a changeover contact the example below shows a 215 relay board.





# 202 Industrial Series

## Technical Specifications

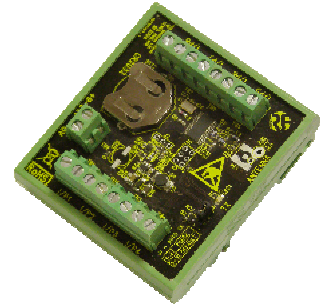
### 202 Transmitters

Part: 202-433F

Dimensions:

Within DIN RAIL Bracket: 75 x 82mm. PCB Only: 75 x 72mm

Temperature Range:



Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage: 9-24V Supply	9	12	24	V
Antenna Output Lead Impedance		50		Ohms
Minimum input activation time to trigger transmission		50		ms
<b>433MHz Version</b>				
Supply Current: Quiescent		~0		mA
Supply Current: Transmitting Data		~15		mA

Storage -10 to +70°C. Operating: 0 to +55°C

### Battery Life - ESTIMATES

Battery life figures have been carefully tested however, they may vary greatly depending on individual installation conditions such as temperature, and other factors.

Part Number / description	Battery Capacity	Battery life (Auto Tx Forced enabled)	Battery Life Auto Tx off 20 switches p/day
202-433F - On Board CR2032	220mAh	8 days	1 Year
<i>202-433F - 9V PP3</i>	<i>900mAh</i>	<i>4 Weeks</i>	<i>Battery shelf life*</i>
<i>202-433F - 12V Lead Acid</i>		<i>~ Estimate ~ 6 Months</i>	<i>Battery shelf life*</i>

\*Shelf life of the battery will expire before it is depleted





# 202 Industrial Series

## Technical Specifications—contd

### 210 Receivers

Part: 210-433F

#### Dimensions:

Within DIN Rail: 138 x 82 mm (PCB: 133 x 72mm)

#### Temperature Range:



Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage: 12V Supply	10	12	16	V
Supply Voltage: 24V Supply	21	24	30	V
Supply Current : Quiescent		25		mA
Time from Tx Switch depressed to 210Rx output			100	mSecs
Time from Tx Switch release to Decoder output			200	mSecs
Switched output Voltage (I out = 1mA)				
Logic Low	0	0.2	0.8	V
Logic High	3.5	3.8	5	V

Current Consumption				
<b>433MHz Version</b>				
Supply Current: Quiescent		10		mA
All relays Active				mA

Storage : -10 to +70o Celsius. Operating: 0 to +55o Celsius.







# 202 Industrial Series

## Technical Specifications– contd

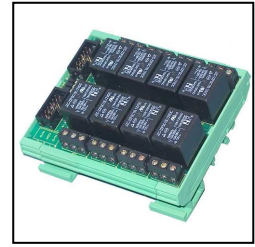
### Relay Modules

#### 215 Relay Output Module

##### Part: 215

8 relay outputs rated at 230Vac ,12A peak and 5A continuous current.

Dimensions: Within DIN Rail: 93 x 82 mm (PCB: 90 x 72mm)



Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage	From 210Rx module			
Relay* output Rating (type KB12) at 230Vac		5	12	A

Storage Temperature: -10 to +70° Celsius. Operating Temperature: 0 to +55° Celsius.

**\*The relay contacts in this unit are for functional use only and must not be used for isolation purposes**

#### 216 Relay Output Module

##### Part: 216

4 relay outputs rated at 230Vac ,12A peak and 5A continuous current.

Dimensions: Within DIN Rail: 93 x 82 mm (PCB: 90 x 72mm)



Storage Temperature: -10 to +70° Celsius. Operating Temperature: 0 to +55° Celsius.

Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage	From 210Rx module			
Relay* output Rating (type KB12) at 230Vac		5	12	A

**\*The relay contacts in this unit are for functional use only and must not be used for isolation purposes**

#### 230 Relay Output Module

##### Part: 230

4 relay (type K7SFA12) outputs rated for up to 30A at 230Vac.

Dimensions: Within DIN Rail: 115 x 82 mm (PCB: 109 x 72mm)



Storage Temperature: -10 to +70° Celsius. Operating Temperature: 0 to +55° Celsius.

Electrical Characteristics	Min	Typical	Max	Units
Supply Voltage	From 210Rx module			
Relay output Rating @ 230Vac*			30	A
@ 12Vdc			20	A

**\*The relay contacts in this unit are for functional use only and must not be used for isolation purposes**





# 202 Industrial Series

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## Antenna and Range

### Connecting an Antenna

#### 210-433F

The 210 Receiver has a 100mm flying lead cable (50ohm) with a panel mount BNC socket provided to mount on an enclosure. This cable may be extended however please note that typically there is a 50% range reduction with every 3metres of coax cable used!

For increasing range performance a +3dB gain antenna is available. This is supplied with wall mounting bracket and 2metres of coax cable, it plugs in directly to the 210 Receiver BNC connector - Part Number MB450-BNC

#### 202-433F

The 202-433F has a bulk head mounting BNC connector for connecting the antenna (supplied). This can also be used to connect an extension cable and remote antenna. It is important to note that typically there is a 50% range reduction with every 3metres of coax cable used!

### Range

The antenna choice and position directly controls the system range. Keep it clear of other metal in the system. The best position by far, is protruding vertically from the top of the product. This is often not desirable for practical reasons and thus a compromise may be needed. Note that the space around the antenna is as important as the antenna itself. All radio systems are dependant on a radio signal being received through airspace.

The range quoted is the optimal in direct line of sight without obstacles and in good atmospheric conditions. Range is affected by many things, for example local environmental conditions, atmospheric conditions, interference from other radio transmitters. For evaluating the local environment please see our RF Meter (DS006)

In very worse case applications the range quoted may be reduced below 30% of the optimal range stated.

### Signal integrity

In systems where many encoders are in close proximity there may be occasions when, due to signal overlay between encoders, it is difficult or impossible to guarantee system integrity. In such circumstances it is the responsibility of the installer to ensure that the system performance is adequate for the purposes of the installation.

### Information availability

All products are supplied with their relevant datasheets. These are also available for download from the website or on request from RF Solutions Ltd.





# 202 Industrial Series

## Compatibility:

**202-433F** can also be used with RF Solutions product:

HORNET-RX, 210-433F, RDF1

**210-433F** can be used with transmitters:

HORNET-TXn, FIREFLY-TXn, 200-433F

**210-433F** can be used with Relay boards:

215, 230, 216


## Other products in this series:

**200-525N** - Long Range Transmitter (1km)

**210-525N** - Long range Receiver (for use with the above)

**200-458F** - Very long range transmitter (6km)

**210-458F** - Very Long range Receiver (for use with the above)

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<b>DO NOT Discard with normal waste, please recycle.</b>
<p><b>ROHS Directive 2002/95/EC</b>  Specifies certain limits for hazardous substances.</p>
<p><b>WEEE Directive 2002/96/EC</b>  Waste Electrical &amp; Electronic Equipment.  This product must be disposed of through a licensed WEEE collection point.  RF Solutions Ltd fulfils its WEEE obligations by membership of an approved compliance scheme.  <u>Environment Agency producer registration number WEE/JB0104WV</u></p>
<p><b>Waste Batteries and Accumulators Directive 2006/66/EC</b>  Where batteries are fitted, before recycling the product, the batteries must be removed and disposed of at a licensed collection point.</p>

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