



## ELSEMA FMR15108 8 Channel 151MHz Receiver with Open Collector Outputs User Manual

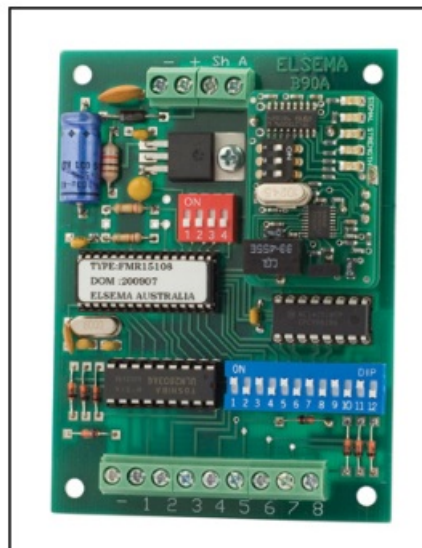
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# ELSEMA

8-Channel 151MHz Receiver with Open Collector Outputs, FMR15108  
FMR15108

8-Channel 151MHz Receiver with Open Collector Outputs



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## Features

- Eight channel receiver with open collector outputs
- The supply voltage can be 12 – 24 Volts AC or DC
- Low current consumption
- Built-in noise or signal strength indicator
- Users can select 8 different frequencies
- Momentary, Latching and Security latching modes are all user selectable
- Easy code setup with dip switch settings
- An optional QM100 bracket is available for easy mounting to cases or walls. C1015 or C1020 case is also available

## Applications

- Pump Control
- Long distance panic button
- On/Off applications in agricultural devices
- Security alarm
- Basic Telemetry eg. Water level indication

## Description

This receiver gives you eight open collector outputs. The output mode can be set to momentary, latching or security latching.





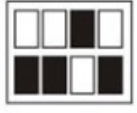

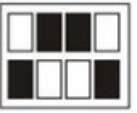
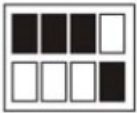

The user can select 8 different narrow-band frequencies and program an unlimited number of transmitters to the receiver. With a narrow band FM 151MHz signal from the transmitter a line of sight operating range of 5000 meters is possible. The receiver uses a crystal oscillator circuit that ensures high-frequency stability allowing optimal performance in the receiving range.

## Different Modes for each Output

Modes are user selectable from the 4-way dip switch, shown below.

## DIP Switch Mode Settings

The output relay will respond in the following manner when receiving the correct signal from a transmitter

	<p>“All ‘All Momentary”’: Relay on, only while the correct signal is received</p>
	<p>“All Latching”’: Outputs alternate at every correct incoming signal</p>
	<p>“Momentary &amp; Latching”’: Outputs 1-4 are momentary &amp; 5-8 are latching</p>
	<p>“Security Latching on”’: Outputs will be on until supply to the receiver is momentarily interrupted</p>
	<p>“Momentary &amp; Latching “: Outputs 1-6 are momentary &amp; 7-8 are latching</p>
	<p>“Momentary &amp; Latching “: Outputs 1-2 are momentary &amp; 3-8 are latching</p>
	<p>“Momentary &amp; Latching “: Outputs 1-3 are momentary &amp; 4-8 are latching</p>
	<p>“Security Latching on”’: Output I is security latching &amp; 2-8 are momentary</p>
	<p>” Security Latching on “: Output 1-7 is latching &amp; 8 is momentary.</p>

**Momentary** – Output is active for as long as the transmitter button is pressed.

This is a standard mode on most automatic gates or garage door openers.

**Latching** – Output remains active until the next press of the transmitter button.

Similar to switching “on” and “off” a light.

**Security Latching** – Output remains active until power to the receiver is removed. Similar to security alarms and fire alarms.

### Customized Software

Custom output modes can be programmed to do special functions. Call Elsa for more details.

### Coding

The 12-way dip switch on the receiver sets the 12-bit unique code for the system. This has to be matched to that on the transmitter. Do not use the factory default code.

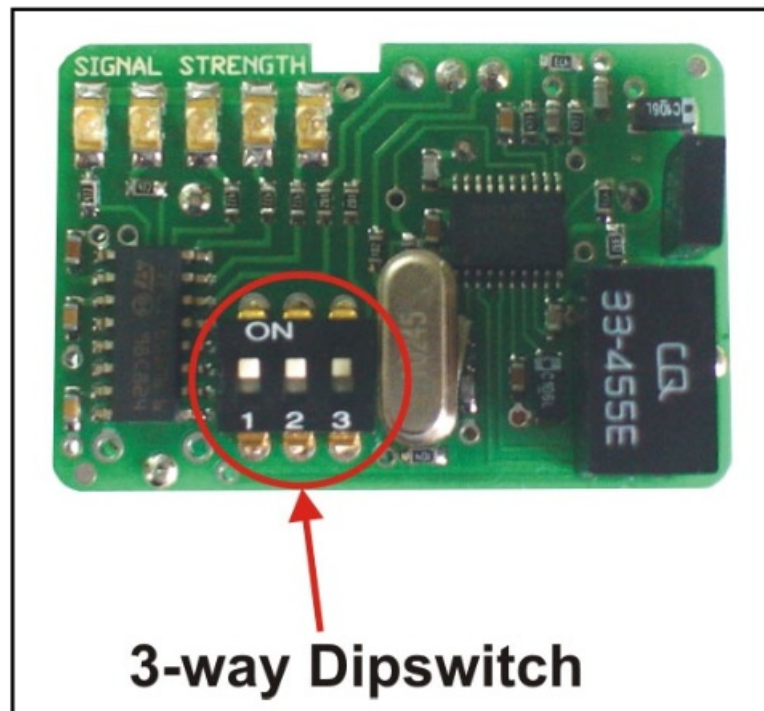
## Signal Strength Indicator

The 151MHz receivers have five blue LEDs on the board. The table below indicates the level of the valid transmitted signal.

5 LED's on	-70dBm	Very Strong signal	Very Reliable operating conditions
4 LED's on	-75dBm	Very Strong signal	Very Reliable operating conditions
3 LED's on	-80dBm	Very Strong signal	Very Reliable operating conditions
2 LED's on	-90dBm	Strong signal	Very Reliable operating conditions
1 LED on	-100dBm	Good signal	Reliable operating conditions

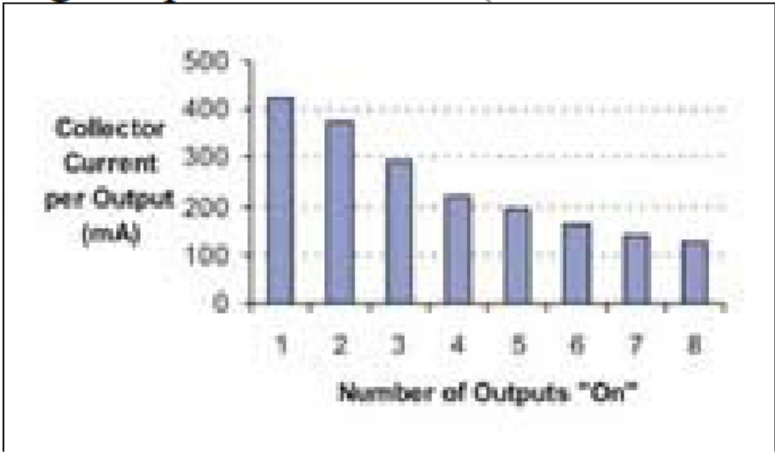
## Noise Strength Indicator

If more than 1 led is "ON" without a valid transmission, this indicates that there is noise on the frequency selected. Change the 3-way dipswitch on the receiver module to select a different frequency. Following is a table with the Dipswitch settings and the corresponding frequencies.



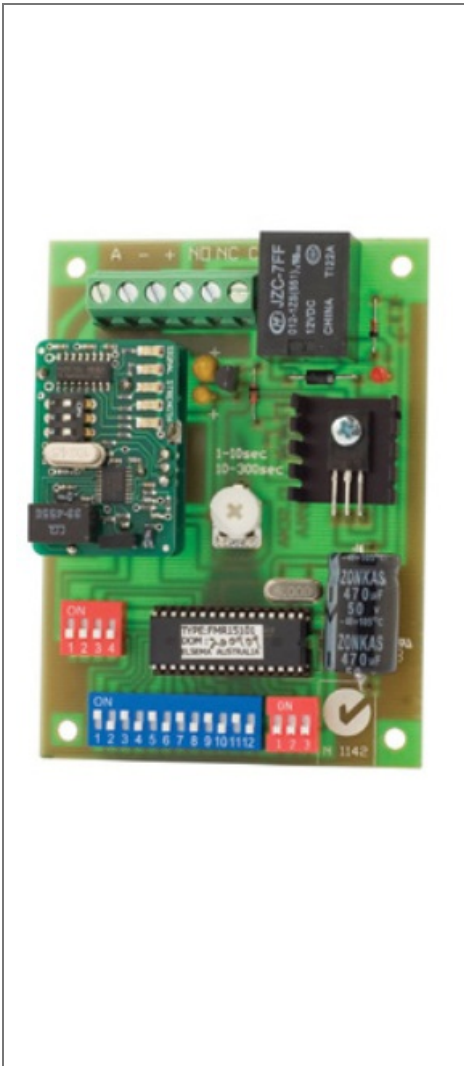
Frequency	1	2	3
151.600 MHz	On	On	On
152.375 MHz	Off	On	On
151.775 MHz	On	Off	On
151.400 MHz	Off	Off	On
151.175MHz r	On	On	Off
151.025 MHz	Off	On	Off
150.900 MHz	On	Off	Off
150.825 MHz	Off	Off	Off

## Technical Data

Supply Voltage	12 — 24 Volts AC or DC. Can use Elsema's AC power pack (12PP-1000) Supply lines should be less than 3 meters long to comply with radio frequency authorities.																		
Current Consumption	22mA Standby at 12VDC, 35mA if all outputs "On"																		
Receiving Freq	151.6MHz (8 selectable frequencies. See table above)																		
Operating Temperature Range	-5 to 50°C																		
Sensitivity	Better than 0.5uV (For output to activate)																		
Type of Demodulation	Narrow-Bandwidth Frequency Modulation (FM)																		
Output	<p>Eight Open Collectors (See chart for Collector Currents)</p>  <p>Chart indicates that eight outputs can be ON simultaneously with each output collector current being 125mA. Outputs can hold 40 Volts in the "Off" state.</p> <table border="1"> <caption>Collector Current per Output (mA) vs Number of Outputs "On"</caption> <thead> <tr> <th>Number of Outputs "On"</th> <th>Collector Current per Output (mA)</th> </tr> </thead> <tbody> <tr><td>1</td><td>425</td></tr> <tr><td>2</td><td>375</td></tr> <tr><td>3</td><td>300</td></tr> <tr><td>4</td><td>225</td></tr> <tr><td>5</td><td>190</td></tr> <tr><td>6</td><td>160</td></tr> <tr><td>7</td><td>140</td></tr> <tr><td>8</td><td>125</td></tr> </tbody> </table>	Number of Outputs "On"	Collector Current per Output (mA)	1	425	2	375	3	300	4	225	5	190	6	160	7	140	8	125
Number of Outputs "On"	Collector Current per Output (mA)																		
1	425																		
2	375																		
3	300																		
4	225																		
5	190																		
6	160																		
7	140																		
8	125																		
Connections	Supply, Antenna & Outputs – Screw-type terminal block																		
Antenna	500, 151MHz Antenna, Elsema ANT151M for maximum performance A piece of approximately 1 meter wire can be used for short-range applications																		
Dimensions	90 X 70 X 15 mm																		
Mounting hole size	3.97 mm or 5/32"																		
Weight	83g																		
Microcontroller	Can be re-programmed to suit your customized needs																		
Useable Transmitters	All FMT 151 series (with the correct setting on the dip switch). See Transmitter data sheet for details.																		
Useable operating range	Up to 5000 meters, depending on installation and type of antenna used. Recommended Antenna is Elsema ANT151M																		

## Products in the Range





FMR15101  
1-Channel



FMR15102  
2-Channel



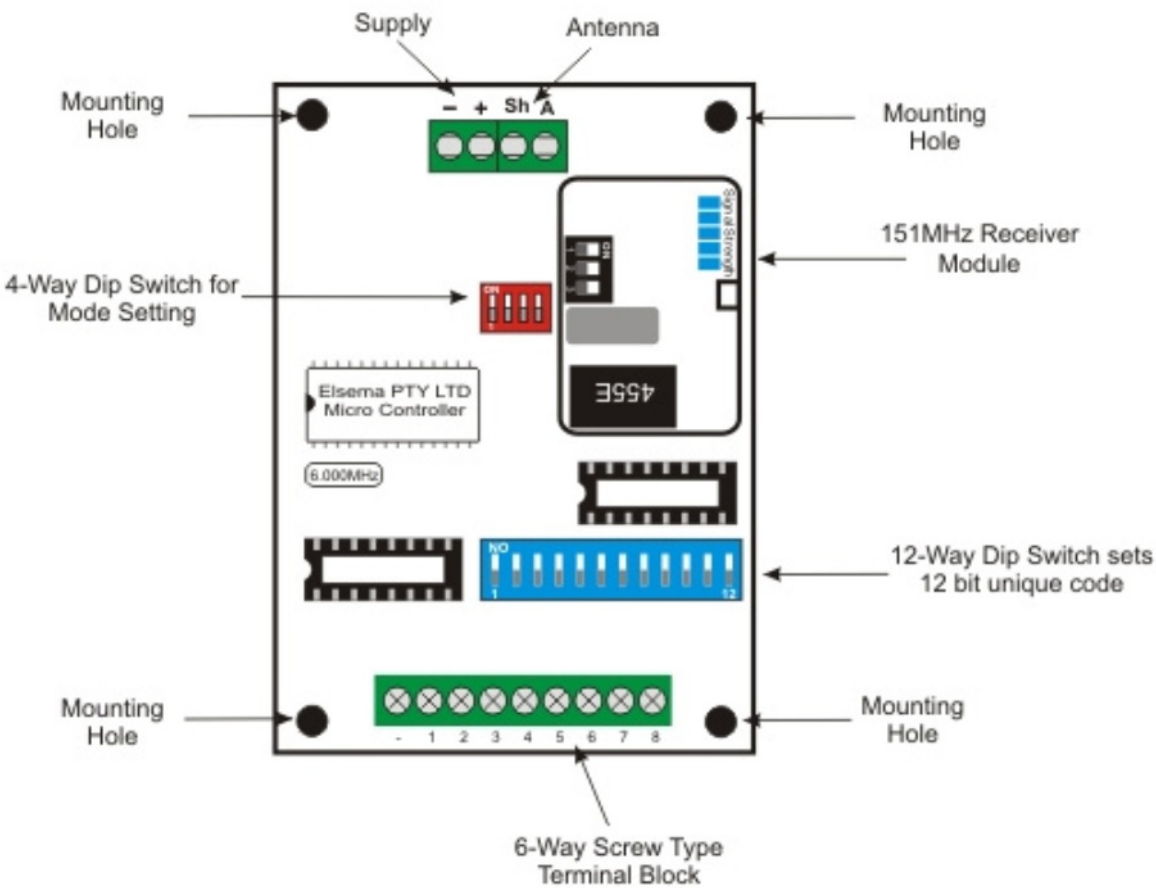
FMR15101  
1- Channel 240V



FMR15104 4-Channel	FMR15108 8-Channel	FMR15108 8-Channel, 12V
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Block Diagram

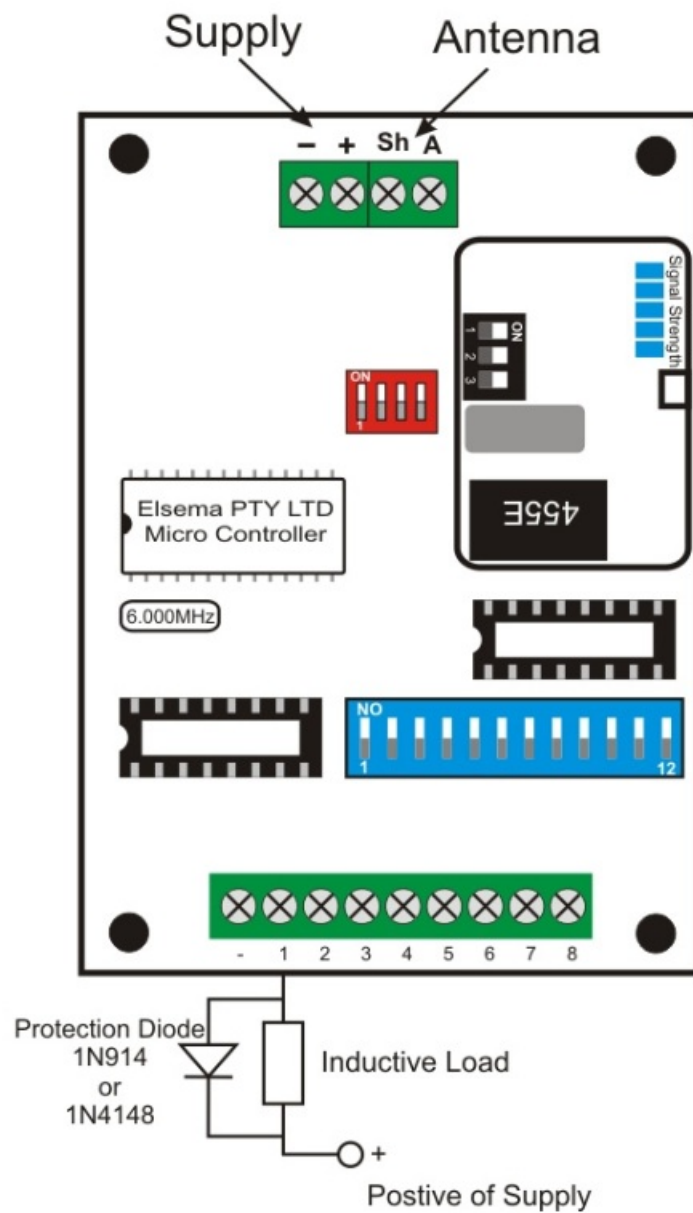
FMR15108



Application Notes



Care should be taken with the solid-state outputs that they are protected from inductive loads. This is done by connecting diodes across your DC inductive load. Inductive loads such as DC relays must be clamped with a diode across the relay coil. If this is not done the spikes generated by the DC relay can lock-up the receiver. When a lock-up occurs you will need to remove the power and re-connect it.





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**Documents / Resources**

	<p><a href="#">ELSEMA FMR15108 8 Channel 151MHz Receiver with Open Collector Outputs</a> [pdf] User Manual</p> <p>FMR15108, 8 Channel 151MHz Receiver with Open Collector Outputs, FMR15108 8 Channel 151MHz Receiver with Open Collector Outputs, 8 Channel 151MHz Receiver, 151MHz Receiver, Receiver</p>
	<p><a href="#">ELSEMA FMR15108 8-Channel 151MHz Receiver with Open Collector Outputs</a> [pdf] Instruction Manual</p> <p>FMR15108 8-Channel 151MHz Receiver with Open Collector Outputs, FMR15108, 8-Channel 151MHz Receiver with Open Collector Outputs, Open Collector Outputs</p>