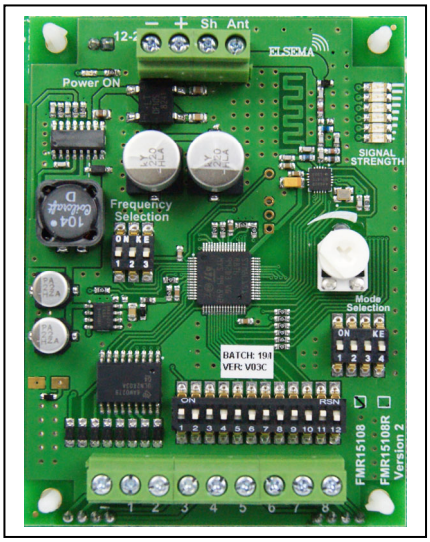
FMR15108

8-Channel 151MHz Receiver with Open Collector Outputs



Features

- Eight channel receiver with open collector outputs
- Supply voltage can be 12 – 24 Volts AC or DC
- Low current consumption
- Built-in noise or signal strength indicator
- User can select 8 different frequencies
- Momentary, Latching and Security latching modes are all user selectable
- Easy code setup with dip switch settings
- Optional QM100 bracket 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

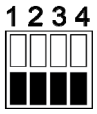
Description

This receiver provides eight open collector outputs, with selectable modes: momentary, latching, delayed OFF or security latching.

Users have the flexibility to choose from 8 distinct narrow band frequencies and can pair an unlimited number of transmitters with this receiver. Leveraging a narrow band FM 151MHz signal from the transmitter, it achieves a line-of-sight operating range up to 5,000 meters. The integrated crystal oscillator circuit guarantees high-frequency stability, ensuring peak performance within the reception 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	
	"All Momentary": Relay on, only while correct signal is received
	"All Latching": Outputs alternate at every correct incoming signal
	"Momentary & Latching": Outputs 1-4 are momentary & 5-8 are latching
	"Security Latching on": Outputs will be on until supply to receiver is momentarily interrupted
	"Momentary & Latching ": Outputs 1-6 are momentary & 7-8 are latching
	"Momentary & Latching ": Outputs 1-2 are momentary & 3-8 are latching
	"Momentary & Latching ": Outputs 1-3 are momentary & 4-8 are latching
	**"Instant OFF "** Same is **"Delayed Off "** except relay will switch "OFF" as soon as the transmitter input is deactivated. (All 8 outputs)
	"Delayed Off": Relay on, but delayed off for 2.5-150 seconds, adjustable by trimpot. (All 8 outputs)
	"Security Latching on": Output 1 is security latching & 2-8 are momentary
	"Security Latching on": Output 1-7 is latching & 8 is momentary.

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

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

Delayed OFF - Once the output is activated, it will stay ON for 2.5-150 seconds (time adjusted by the trimpot)

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

Keeping the receiver ON indefinitely

Set the transmitter to transmit every 10 sec while the input is activated. Use Off-delay on the transmitter. At the receiver end, set the delay of more than 30 sec (more than x3). When the transmitter stops transmitting ***(Input is deactivated)*** the receiver will wait for 30 sec before turning Off. Every 10sec pulse from the transmitter will keep extending the 30sec delay on the receiver so the output stays ON. (If used in **"Instant OFF Mode"**, the transmitter will send an OFF signal to turn off the receiver as soon as the input is deactivated. Transmitter needs to have power supply connected to send the OFF signal).

The times are just examples and can be adjusted. The longer the delay on the receiver, the better it is. It means the receiver should miss multiple signals before turning OFF. This will also mean that when the transmitter stops, the receiver will wait for its delay time before turning off.

Coding

The 12-way dip switch on the receiver sets the 12-bit unique code for the system. Set your own random setting on the receiver and do the same setting on the transmitter (both the transmitter and receiver should have the same setting). **Do not use the factory default code.**

Signal Strength Indicator

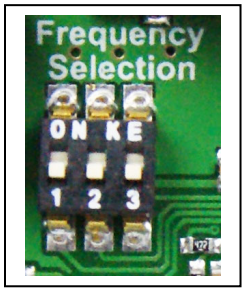
The 151MHz receivers have green signal strength LEDs on the board. The table below indicates the level of the valid transmitted signal.

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

Noise Strength Indicator

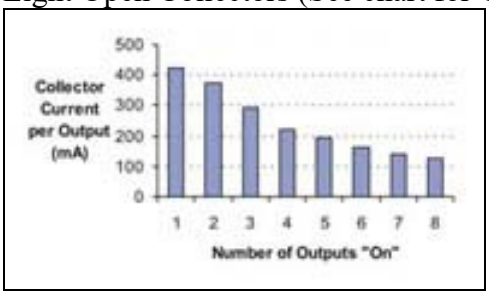
If more than 1 led is "ON" without a valid transmission, this indicates that there is noise on the frequency selected. Change the **3-way dipswitch** on the **receiver module** to select a different frequency.

Following is a table with the Dipswitch settings and the corresponding frequencies.

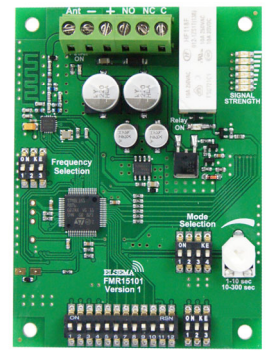
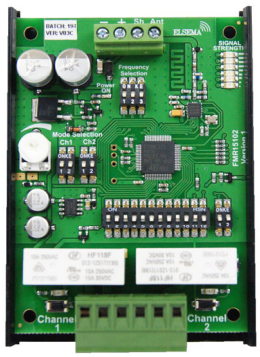
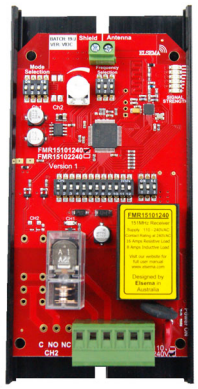
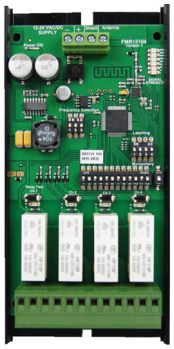
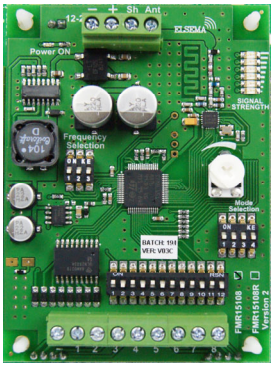
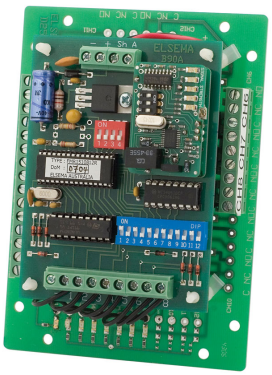
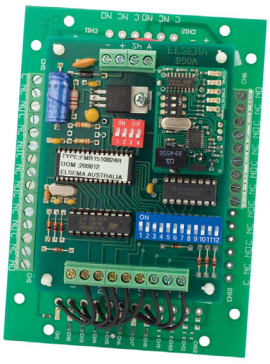


Frequency	1	2	3
151.600 MHz	On	On	On
152.375 MHz	Off	On	On
151.775 MHz	On	Off	On
151.400 MHz	Off	Off	On
151.175MHz	On	On	Off
151.025 MHz	Off	On	Off
150.900 MHz	On	Off	Off
150.825 MHz	Off	Off	Off

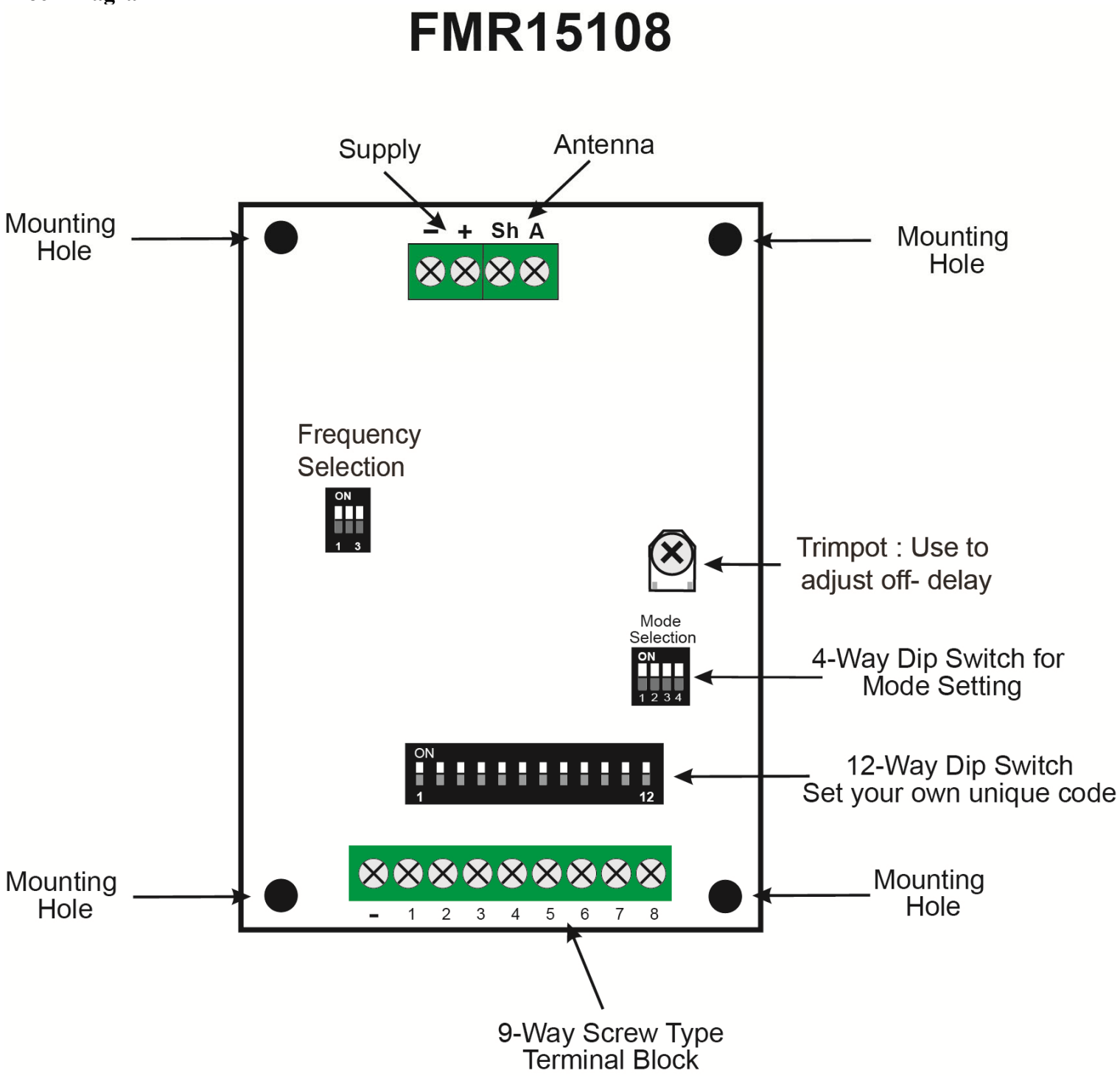
Technical Data

Supply Voltage	12 – 24 Volts AC or DC. Can use Elsema's AC power pack (12PP-1000) Supply lines should be less than 3 metres 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) 161MHz for New Zealand 154MHz for United States of America and Canada
Operating Temperature Range	-5 to 50°C
Output	Eight Open Collectors (See chart for Collector Currents)  Chart indicates that eight outputs can be ON simultaneously with each output collector current being 125mA. Outputs can hold 40 Volts in "Off" state.
Antenna	50Ω, 151MHz Antenna, Elsema ANT151M for maximum performance A piece of approximately 1metre wire can be used for short range applications
Dimensions	90 X 70 X 15 mm
Mounting hole size	3.97 mm or 5/32"
Useable Transmitters	All FMT151 series (with correct setting on the dip switch). See Transmitter datasheet for details.
Useable operating range	Up to 5000 metres, depending on installation and type of antenna used. Recommended Antenna is Elsema ANT151M

Products in the Range

			
FMR15101 1-Channel	**FMR15102** 2-Channel	**FMR15101240** **1- Channel 240VAC Supply**	**FMR15102240** **2- Channel 240VAC Supply**
			
FMR15104 4-Channel	**FMR15104240** **4- Channel 240VAC Supply**	**FMR15108** 8-Channel	**FMR1510812R** 8-Channel, 12V Supply
			
FMR1510824R 8-Channel, 24V Supply			

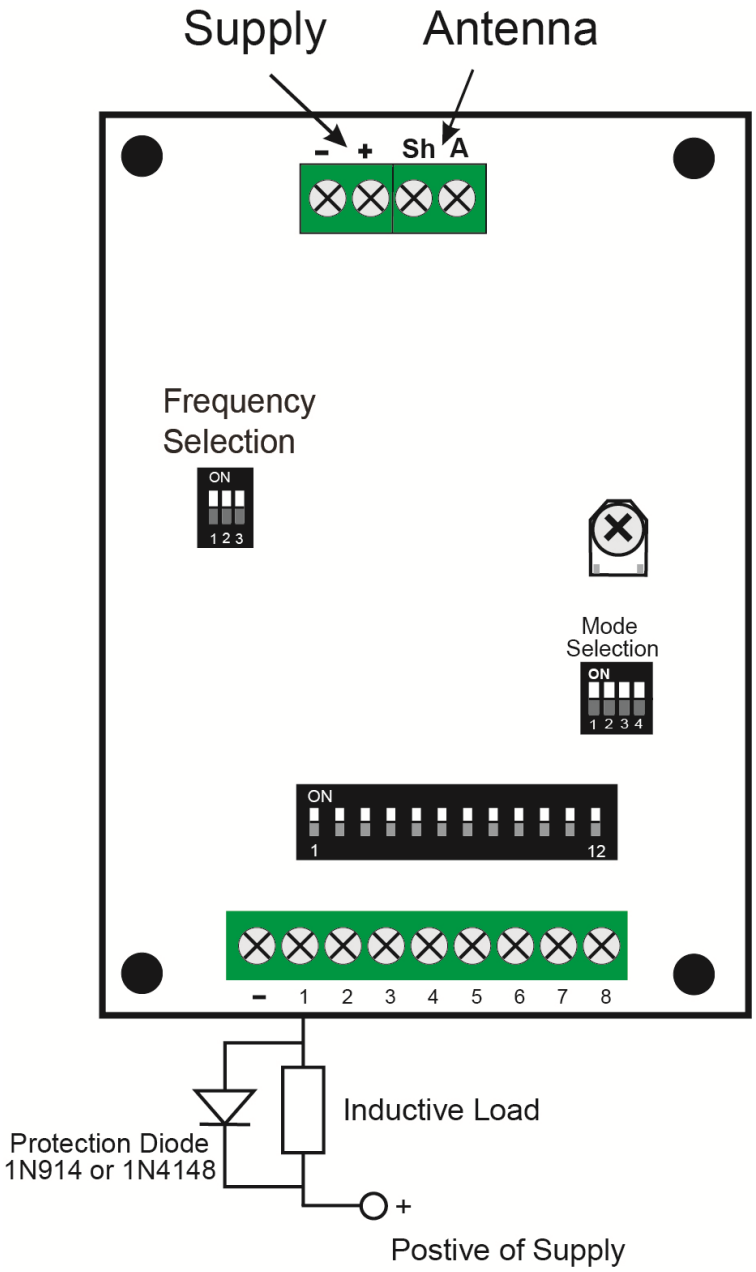
Block Diagram



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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