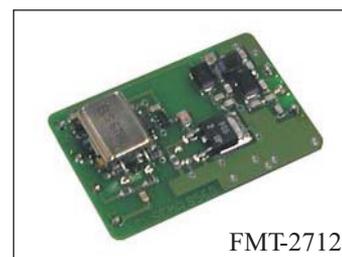# FMT-2712

1 Watt 27MHz Radio Data Module

Features

• Enables sending of digital data up to 3000m
• Digital Data supported: pulse width modulation signals, singals from standard encoder-decoder circuits of the given bandwidth
• Direct FM modulation

FMT-2712

Applications

• Telecommand
• Radio data communications
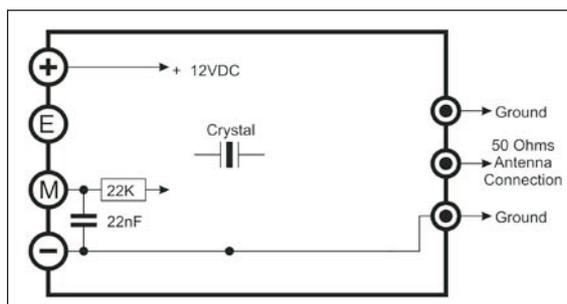• Commercial / industrial telemetry.

Description

The high power data module allows you to send your digital data up to 3000 metres, when used with the Elsema FMR-05D receiver. Digital data such as pulse width modulation signals and signals from standard encoder-decoder circuits of the given bandwidth, can be transmitted by direct FM modulation.

Applications include telecommand, radio data communications and commercial/industrial telemetry.

Technical Data

Supply Voltage	11-13.6V. Absolute Maximum 14VDC
Supply Current	300mA when enabled pin to +5V less than 1uA disabled and "M" terminal to 5V
Enable Voltage / Current	5-13.5VDC, max current 50uA
Operating Frequency	27.145MHz (Other freq. available: 27.045, 27.195 & 27.455MHz. NB. 27.455 freq. is not available for Australia)
Oscillation System	Crystal Controlled, 30ppm at 0-50°C
Operating Temperature Range	0-50°C
Data Input Level	Data should swing close to ground and +5V
Frequency Response	100Hz to 2400Hz
Baud rate	300-2400bps. For a baud rate of 4800bps a 2.2kOhms resister should be used in series with terminal "M". Manchester code is recommended
Recommended Receiver	FMR-05D (Outputs your digital data)
RF Power Output	1W into 50 ohms at 13.6VDC
Antenna	ANT27L with 50 ohms, shielded cable
Type of Emission	Narrow-band-width Frequency Modulation (5K00F1D)
Frequency Deviation	1500Hz non-return to zero
Harmonics	Less than -13dBm (50uW)
Weight	8 grams
Useable Operating Range	Up to 3000m line of sight

Block Diagram

+	12V DC Positive Supply
E	Enable pin. When +5V applied to this pin the transmitter is enabled. 0V disables transmitter
M	Data input (FM-modulation input). Data should swing close to ground & +5V. A data rate of 2400 baud can be transmitted. For a baud rate of 4800 a 2.2k Ohms resistor should be used in series with terminal M.
-	Negative to supply, ground & RF-ground

Data Format

It is important to input the correct data format otherwise the receiver will have a lower sensitivity which will result in a reduced transmission range.

The FMT-2712 data should be set for 50/50 duty cycle, therefore the "data in" should have a 50/50 duty cycle. The 50/50 duty cycle data can be pulse-width modulated to transmit resets, 0's or 1's. See diagram below:

A 50/50-duty cycle will have an average DC signal resulting in a constant reference for the data slicer. Users should use pulse-width modulation to transmit data with logic 1's or 0's.

If a different duty cycle is used, for example 66/33 (Manchester format) the data slicer in the receiver will try to adjust itself to the average DC signal. Since this average DC signal is changing with different data bits this will result in a constantly changing reference for the data slicer, resulting in lower sensitivity. See diagram below :

Only 50/50 duty cycle data is suitable for the FMT-2712 transmitter and FMR-05D receiver.

Dimensions

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