

FMR-05D

27MHz FM Radio Data Receiver

The FMR-05D radio data receiver is used for long distance digital data communications. The small size and low power consumption makes the FMR-05D most suitable for portable applications. The fully screened metal housing makes it less susceptible to interference. Together with its low cost it allows this data receiver to be used in many diverse applications.

Applications include

- Security Systems
- Radio data communications
- Telecommand Systems
- Commercial/industrial telemetry
- Alarms



The FMR-05D receiver and the FMT-2712 can be combined to form a transceiver. This transceiver has a reliable operating range of up to 2100 metres in open field conditions and at speeds of 2400 bps.

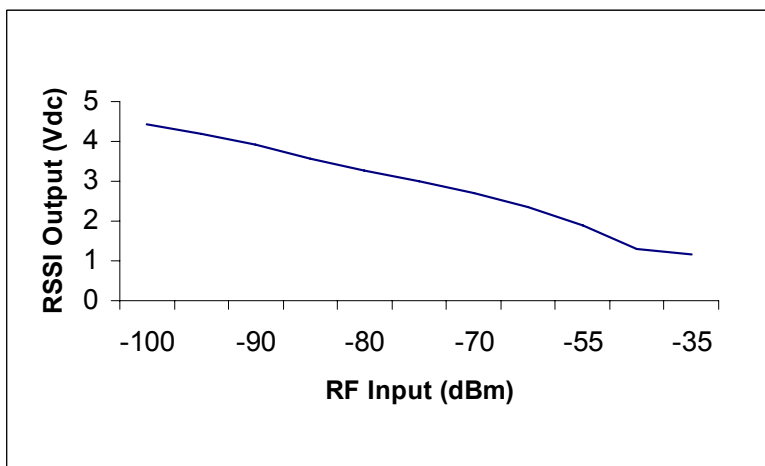
The **+5 Volts** connection is the supply connection.

The **Ground** connection is used for the supply and shield connection if a coaxial cable is used with the antenna. Ground connection for shield connection is next to the antenna pin.

The **Antenna** connection is used for the antenna connection

The **Data** connection output is for the digital data received at 0 to 5 Volts.

The **Signal Strength** connection is a Relative Signal Strength Indicator. See below chart for output levels.

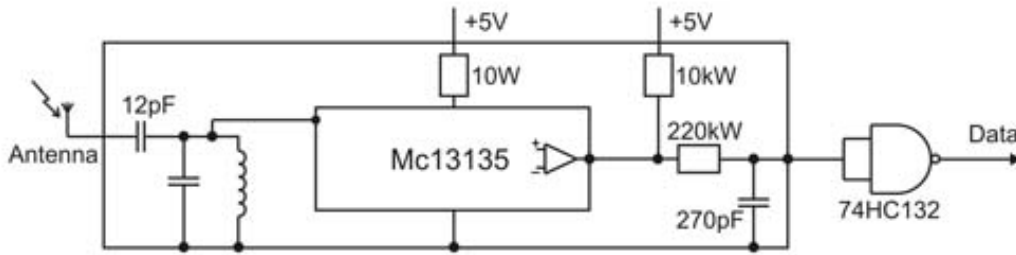


NB: Care should be taken that a data signal of 50% duty cycle is used. See notes on data format.

TECHNICAL DATA

Supply Voltage	4.5 - 5.5 Volts DC
Current Consumption	3.5mA
Receiver Type	Dual Conversion Superheterodyne
Receiving Freq	27.145MHz (Other frequencies available: 27.045, 27.195 & 27.455MHz. NB. 27.455MHz is available for Europe Only)
Type of Crystals Used	10.245 MHz, Fundamental, 20pf, 30ppm. 16.495 MHz, Fundamental, 20pf, 30ppm.
Operating Temperature Range	-5 to 50°C
IF Freq	10.7 MHz and 455KHz
Selectivity	-6dB at ±5kHz -20dB at ±6kHz
Image Rejection	At 26.285MHz better than -60dB
Sensitivity	Better than -107dBm or 1μV
Type of Demodulation	Narrow-band-width Frequency Modulation (FM)
Occupied Band Width	+ - 5.0 KHz
Baud Rate	40 to 3000 bps
Signal Strength Output	4.42 Volts at -100dbm (Indicates a valid signal)
Data Output Level	0-5V See circuit (next page) for output impedance
Frequency Response	20 to 1500 Hz with 50% duty cycle (Other duty will degrade sensitivity)
Dimension	50 X 33 X 16 mm
Weight	22 grams
Usable Transmitter	FMT-2712 Data Transmitter
Antenna	Elsema's ANT27MHz series antennas or piece of approximately 300 mm long wire for short range applications.

Data Output Circuit Diagram

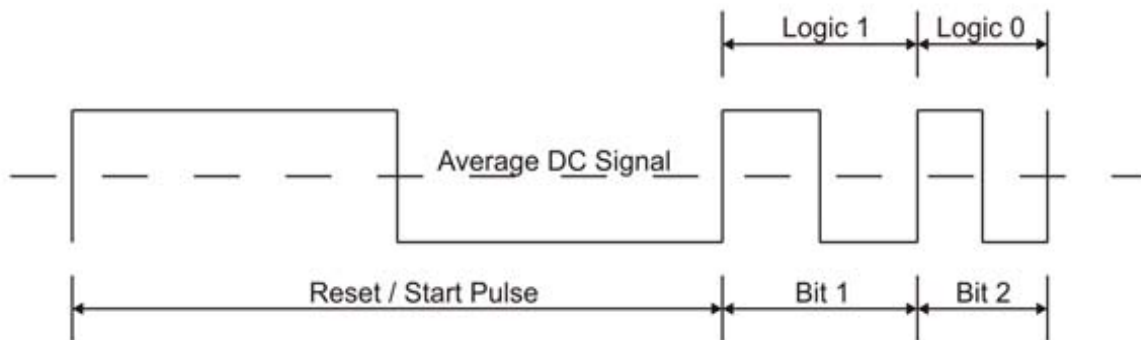


NB: The Data output connection constantly outputs a noise signal between 0 to 5 volts. When sensing the data pin, care should be taken so that the noise signal is not decoded as data. Use the Signal Strength connection to detect a valid data.

FMR-05D DATA FORMAT

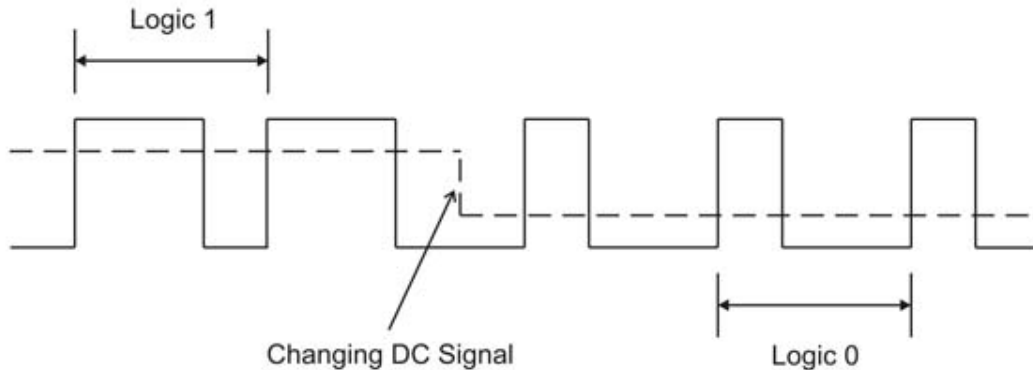
It is important to input the correct data format otherwise the receiver will have a lower sensitivity which will result in a reduced transmission range.

The FMR-05D receiver data slicer is set for 50/50-duty cycle, therefore the “data output” 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.

Manufactured by

Elsema Pty Ltd
3/10 Hume Rd, Smithfield
NSW 2164
Ph: 02 9609 4668
Fax: 02 9725 2663
Website: <http://www.elsema.com>