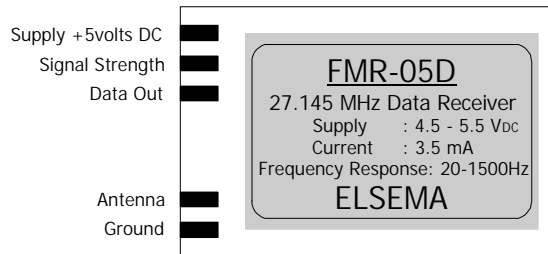


FMR-05D

27 MHz 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 for this data receiver to be used in many diverse applications.



Scale 1 : 1

Applications include

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

The FMR-05D receiver and the FMT-2705 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.

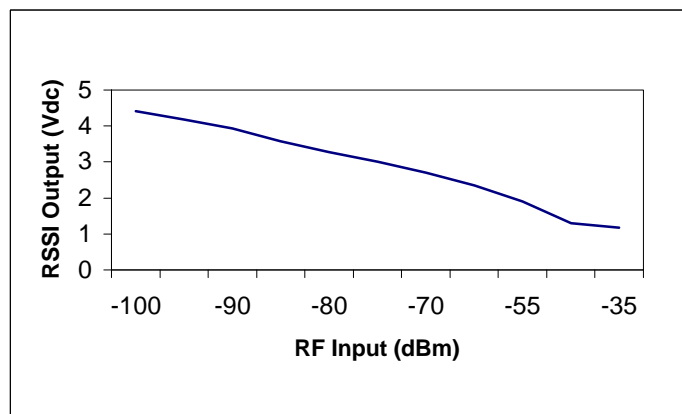
The **+5 Volts** connection is the supply connection.

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.

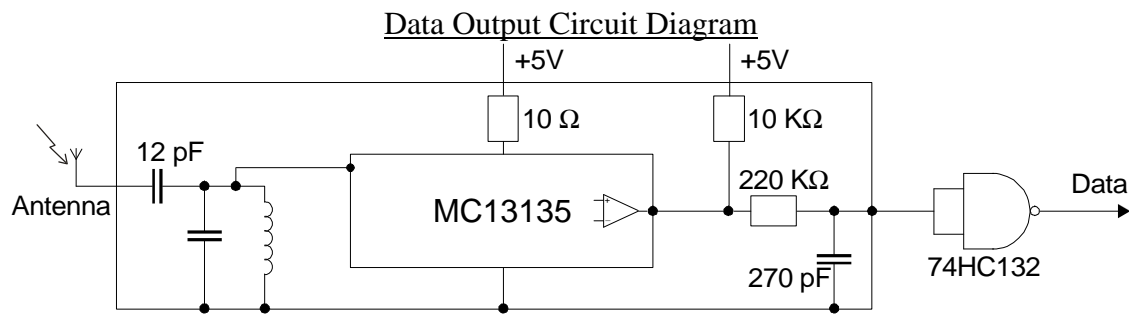
The **Signal Strength** connection is a Relative Signal Strength Indicator. See below chart for output levels.



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

TECHNICAL DATA ON 27MHz FMR-05D

SUPPLY VOLTAGE :	4.5 to 5.5 V DC, absolute maximum 6.5VDC
CURRENT CONSUMPTION	3.5mA
RECEIVER TYPE :	Dual Conversion Superheterodyne
RECEIVING FREQUENCY :	27.145 MHz (Other frequencies available on 27.045, 27.195 and 27.455 MHz. The 27.455 frequency is not available for Australia).
TYPE OF CRYSTALS USED :	10.245 MHz, Fundamental, 20pf, 30ppm. 16.495 MHz, Fundamental, 20pf, 30ppm.
OPERATING TEMPERATURE RANGE :	-5 to + 50°C
1 ST IF FREQUENCY :	10.7 MHz
2 nd IF FREQUENCY :	455 KHz
SELECTIVITY :	-6 dB at + - 5 KHz, -20 dB at +- 6KHz
IMAGE REJECTION :	At 26.285MHz better than -60dB
SENSITIVITY :	-107dBm or 1µV
TYPE OF DEMODULATION :	Narrow-band-width Frequency Modulation (FM).
OCCUPIED BAND WIDTH :	+ - 5.0 KHz
FREQUENCY RESPONSE :	20 to 1500 Hz with 50% duty cycle (Other duty cycles will degrade sensitivity)
BAUD RATE :	40 to 3000 bps with 50% duty cycle
DATA OUTPUT LEVEL :	0 to 5 volts. See below circuit for output impedance.
SIGNAL STRENGTH OUTPUT :	4.42 Volts at -100dbm (Indicates a valid signal)
ANTENNA :	50 ohms, 27 MHz CB-Antenna or piece of approximately 1 metre of wire.
DIMENSIONS :	50 X 33 X 16 mm
WEIGHT :	22 grams
USEABLE TRANSMITTERS :	Elsema FMT-2705.

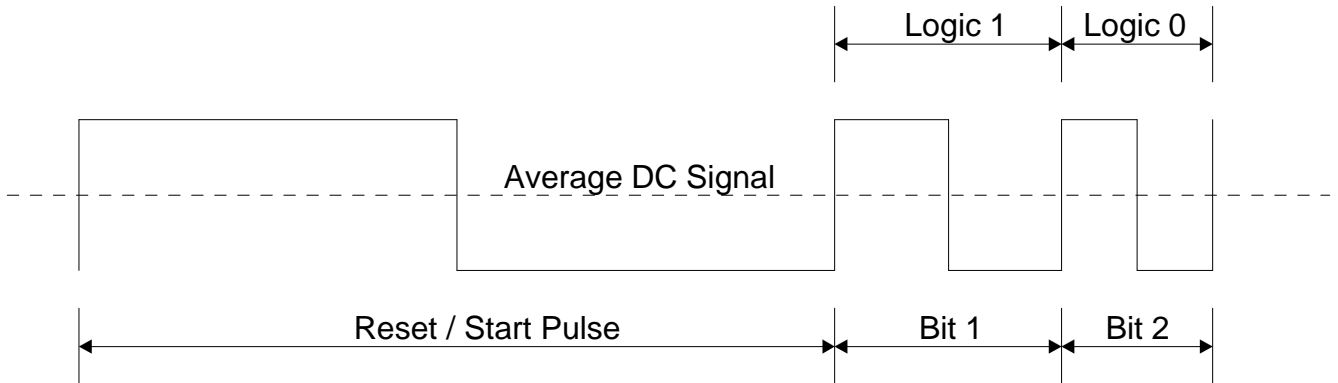


NB: The Data output connection constantly outputs a noise signal between 0 to 5 volts. When sensing the data pin, care should be taken so that the noise signal is not decoded as data. Use the Signal Strength connection to detect a valid data.

FMR-05D DATA FORMAT

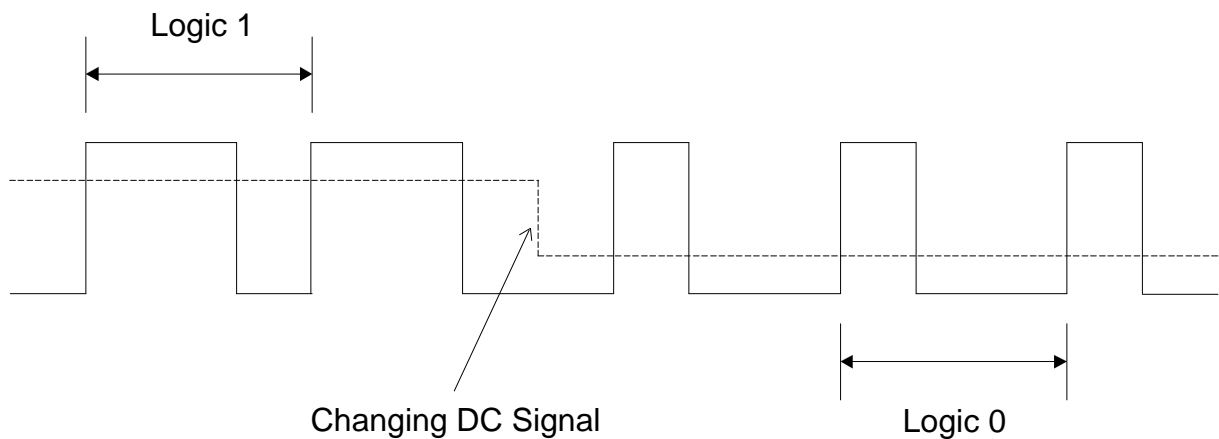
It is important to input the correct data format otherwise the receiver will have a lower sensitivity which will result in a reduced transmission range.

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-2705 transmitter and FMR-05D receiver.