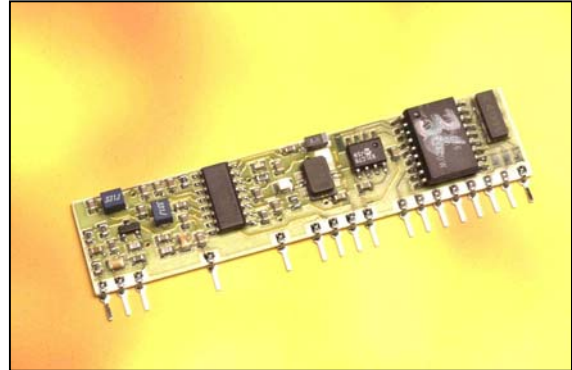




## Features

- Miniature RF Rx/Decoder System.
- Superhet Rx with KeeLoq Decoding
- Advanced Laser Trimmed Hybrid
- Range up to 100 Metres
- Easy Learn Transmitter Feature.
- CMOS/TTL Outputs, Momentary or Latching.
- Direct Led Drive Data Reception
- Single Supply 5V
- Low Power Consumption
- EMC Compliant for use in Europe
- FCC Certified for use in USA



## Applications

- General Remote Control Systems.
- Garage Door Openers.
- Car, Caravan, Motorcycle Alarms
- Remote Switching.
- Remote Gates.
- Paging.

## Description

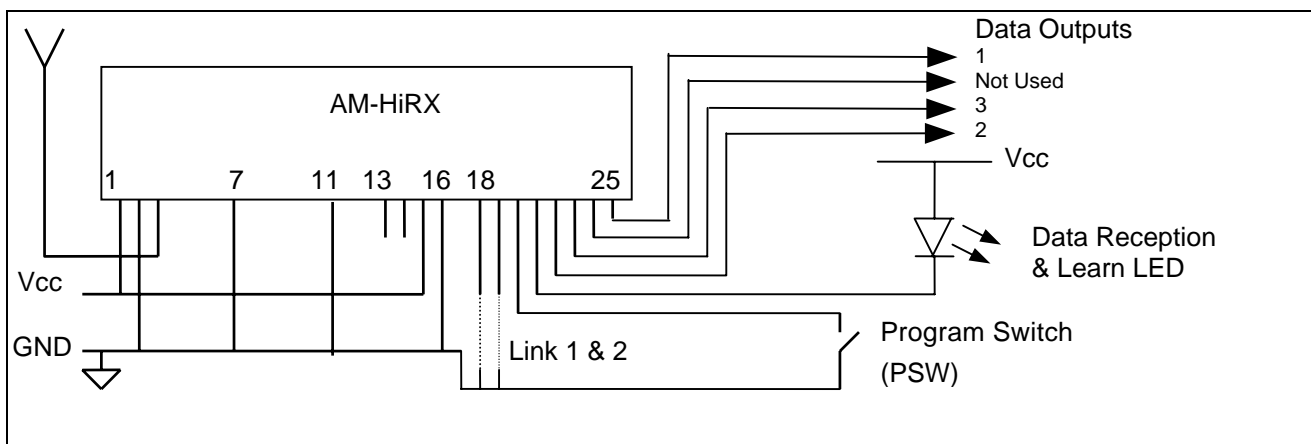
This miniature single in line (SIL) hybrid module is a complete three channel Radio Receiver/Decoder. When used with the AM-110 series pocket keyfobs a complete remote telemetry system is obtained with upto 80metres range.

The module consists of a front end Super-Heterodyne RF receiver with an embedded microcontroller decoding a highly secure KeeLoq protocol signal.

The module has an easy-to-use 'LEARN' facility, and is capable of learning up to 50 unique keyfob encoders.

The module requires a 5V power supply, and provides a data reception direct LED drive and three digital data outputs. The outputs may be programmed for momentary or latching configuration.

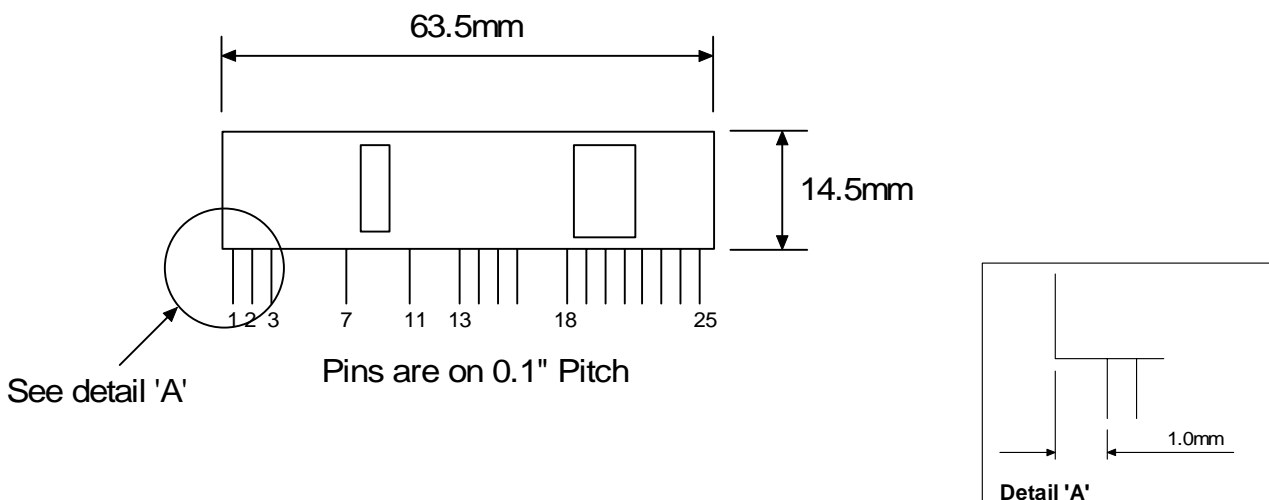
## Application Circuit



## Pin Descriptions

Pin No	Name	Description
1	<b>Vcc-RF</b>	+5V Supply Voltage
2	<b>GND-RF</b>	RF Ground
3	<b>ANT</b>	Connect Antenna to this input
7	<b>GND-RF</b>	RF Ground
11	<b>GND-AF</b>	AF Ground
13	<b>TP</b>	Test Point
14	<b>O/P-AF</b>	Data output from RF receiver (CMOS/TTL signal)
15	<b>Vcc-AF</b>	+5V Supply Voltage
16	<b>GND-AF</b>	AF Ground
18	<b>Link2</b>	Connect to GND to make Link, may be left O/C if not required
19	<b>Link1</b>	Connect to GND to make Link, may be left O/C if not required
20	<b>PSW</b>	Programming Switch input, This is used when learning new transmitters.
21	<b>LED</b>	External LED sink output, can be connected directly to cathode of external LED. Connect Anode of the LED to +5V. Indicates Data reception, and programming status.
22	<b>O/P2</b>	Active High data Output 2 (has a 220Ω series resistor)
23	<b>O/P3</b>	Active High data Output 3 (has a 220Ω series resistor)
24	<b>O/P4</b>	Not Used
25	<b>O/P1</b>	Active High data Output 1 (has a 220Ω series resistor)

## Mechanical Details





### Learning a New Transmitter Encoder

1. Briefly press the programming switch (PSW).
2. Learn LED will illuminate.
3. Depress the transmitter once, Learn LED will extinguish.
4. Depress the transmitter again, Learn LED will flash. (approx 10secs).
5. Wait for Learn LED to stop flashing.
6. This transmitter will now operate the system.

### Erasing The HiRK Memory

1. Press and hold PSW , Learn LED will illuminate for approximately 10 seconds while the HiRK erases its memory.
2. When Learn LED has turned off release PSW
3. Memory is now erased

### Antenna Design

For 99% of applications a 17cm piece of wire is quite adequate. The range achieved from the system is dependent on the choice and position of the antenna. The space around the antenna is as important as the antenna itself. The optimum position is to locate the antenna so that it protrudes directly out the top of the transmitter box. If this is not possible due to other design constraints, try to keep the antenna away from other metal in the system such as transformers, batteries and PCB tracks, especially ground planes. In particular, the 'HOT' end of the antenna should be kept as far away as possible from these.

For further information on Antenna design please see our full product catalogue.

### Data Outputs

Outputs 1,2, & 3 are digital CMOS/TTL (PIC Micro) with a series 220 Ω protection resistor. Outputs are all normally Low, active high.

Link Status		Transmitter Switch		
Link1	Link2	1 O/P 1	2 O/P 2	3 O/P 3
Open	Open	LATCH	LATCH	LATCH
Open	Connected	MOM	MOM	MOM
Connected	Open	MOM	MOM	LATCH
Connected	Connected	LATCH	LATCH	MOM

Transmitter Encoder Switch			
	O/P 1	O/P 2	O/P 3
1 Switch Keyfob	Centre Switch	-	-
2 Switch Keyfob	LH Switch	RH Switch	-
3 Switch Keyfob	LH Switch	RH Switch	Top Switch (Red)





# RF RECEIVER DECODER HYBRID.

# AM-HiRK

## Absolute Maximum Ratings

Supply Voltage (+5Vcc to GND).....-0.3 to + 6 Volts.  
 Storage Temperature.....-30 to +85° Celsius.  
 Operating Temperature..... 0 to +70° Celsius.

## Technical Specification

Ambient temperature = 25° Celsius.

Electrical Specification	Min	Typical	Max	Dimension	Note
Supply Voltage	4.5	5.0	5.5	V	
Supply Current (quiescent)		6		mA	
Receiver Frequency		315.0		MHz	
Receiver Frequency		433.92		MHz	
Working Frequency (custom Frequencies Available)	200		450	MHz	Please contact Sales Dept
Turn on Time		20		mSecs	
-3dB Bandwidth		+/- 400		KHz	
R.F Sensitivity (100% AM)		-106		dBm	
Level of Emitted Spectrum		-70	-70	dBm	
Data output: (any data output)					
Logic Low	0	0.2	0.8	V	I out = 10mA
Logic High	3.5	3.8	5	V	I out = 10mA
Data output: (any data output)					
Logic Low			-25	mA	
Logic High			10	mA	
EMC Compliance	Complies to ETS300-220				

## Part Numbering

PART No	DESCRIPTION	Compatible Transmitter encoder	Range** (metres)
AM-HiRK-315	AM Superhet Rx Decoder	AM-110C1-315 (1 - 3 sw version)	50
AM-HiRK-433	AM Superhet Rx Decoder	AM-110C1-433 (1 - 3 sw version)	100

\*\* Range quoted is optimum in line of sight without interference. In noisy built up areas this can be reduced by over 50%

For more information or general enquiries, please call;

**R. F. Solutions Ltd.,  
 Unit 21, Cliffe Industrial Estate,  
 South Street,  
 Lewes,  
 E Sussex, BN8 6JL. England.**

**Tel +44 (0)1273 898 000. Fax +44 (0)1273 480 661.**

**Email sales@rfsolutions.co.uk  
 http://www.rfsolutions.co.uk**

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