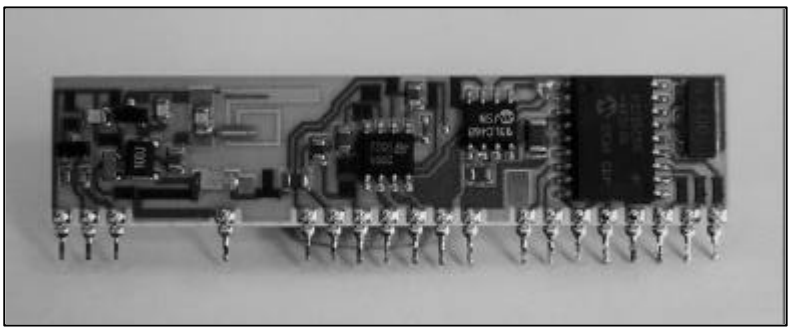
RF RECEIVER DECODER HYBRID. AM-HIRX-XXX

FEATURES



- MINIATURE RF Rx/DECODER SYSTEM.
- ADVANCED LASER TRIMMED HYBRID
- RANGE UP TO 45 METRES
- EASY LEARN TRANSMITTER FEATURE.
- CMOS/TTL OUTPUTS, MOMENTARY OR LATCHING.
- DIRECT LED DRIVE DATA RECEPTION
- SINGLE SUPPLY 5V
- LOW POWER CONSUMPTION
- AVAILABLE AS 418 OR 433MHz
- COMPLIANT TO ETSI300-339
- REQUIRES NO RADIO LICENCE

APPLICATIONS

- GENERAL REMOTE CONTROL SYSTEMS.
- GARAGE DOOR OPENERS.
- CAR, CARAVAN, MOTORCYCLE ALARMS
- REMOTE SWITCHING.
- REMOTE GATES.
- PAGING.

DESCRIPTION

This miniature SIL hybrid module is a complete three channel RF Receiver/Decoder which can be used to generate a complete remote telemetry system.

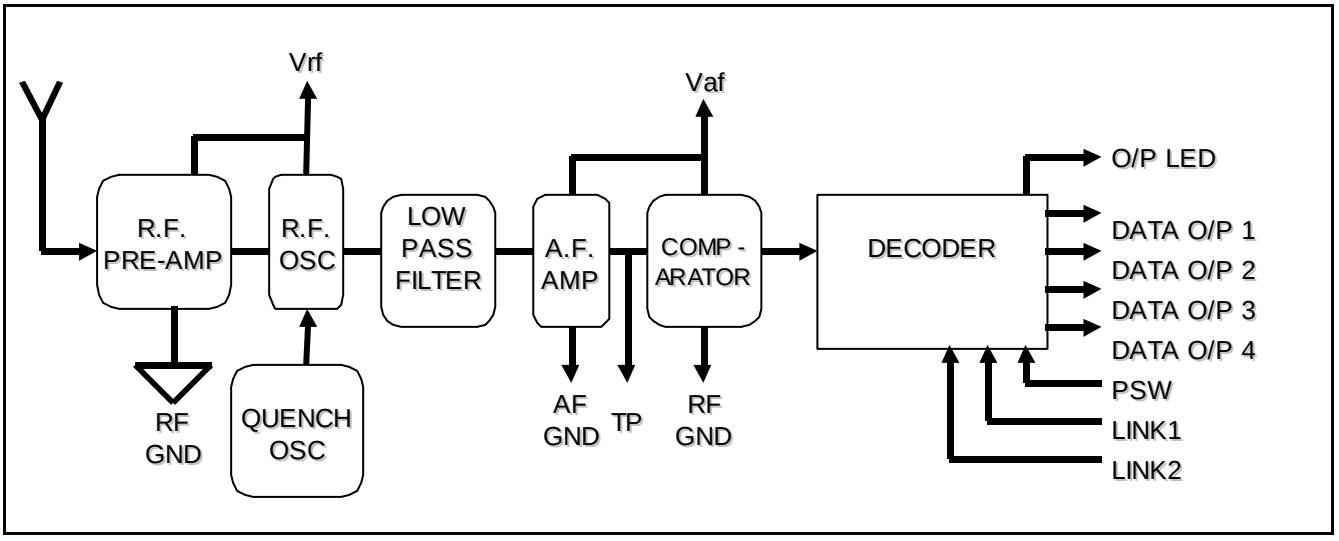
The module consists of a front end Super-regenerative receiver with an embedded controller providing all decoding functions.

The module shows a very high frequency stability thanks to a unique laser trimming process which has been patented to give a very accurate on board inductor removing the need for any moving components.

The module has an easy-to-use 'LEARN' facility, and is capable of learning up to 8 (code hopping) or 16 (standard) unique RF Solutions Transmitter / Encoders (see overleaf).

It requires connections to the power supply, and provides four data outputs. The outputs may be programmed for momentary or latching configuration via a link input, a data reception direct LED drive is also provided

BLOCK DIAGRAM



TRANSMITTER / ENCODER PART NUMBERING

The HiRX is directly compatible with one of the following transmitter/ encoder keyfobs.

Part No	Description
AM-TS1-XXX	1 Switch (standard)
AM-TS2-XXX	2 Switch (standard)
AM-TH1-XXX	1 Switch (hopping)
AM-TH2-XXX	2 Switch (hopping)

HYBRID MODULE PART NUMBERING

PART No	DESCRIPTION
AM-HiRS-XXX	AM Decoder - 1-3 Ch, Standard code
AM-HiRH-XXX	AM Decoder - 1-3 Ch, Hopping Code
XXX = 418 OR 433.92MHz	

"STANDARD DATA FORMAT" DESCRIPTION (AM-HiRS)

The transmitter/encoders used in a standard system each have a unique signature code (pre-programmed at manufacture) from one in >16,000,000 combinations. Error checking techniques are also used to ensure data integrity.

These decoders are capable of learning 16 unique transmitter/Encoder signature codes.

"HOPPING DATA FORMAT" DESCRIPTION (AM-HiR)

The transmitter/encoders used in a Code Hopping system each have a random number signature code, as in the standard format, and also transmit a unique signature code each time the switch is pressed. The number of possible codes is >16,000,000 combinations, the same code is never repeated, even if the batteries are changed.. Error checking techniques are also used to ensure data integrity.

These decoders are capable of learning 8 unique transmitter/Encoder signature codes.

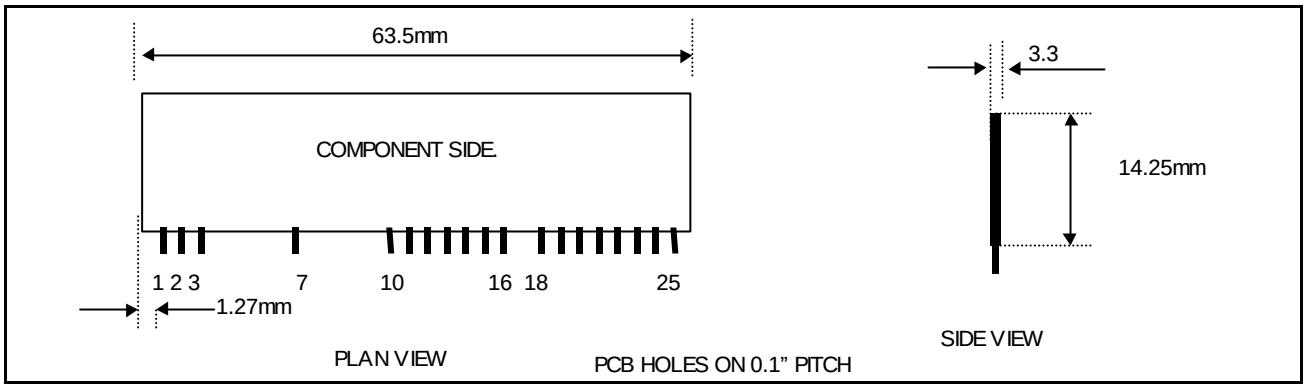
SYNCHRONISATION (Hopping Models only)

This equipment requires the transmitter and receiver to be synchronised. If the transmitter has been pressed more than 50 times outside the range of the receiver, the receiver will loose synchronisation with the transmitter. To re-synchronise:

Press the transmitter key for two seconds within range of the receiver,

Release the key momentarily, and press the key again.

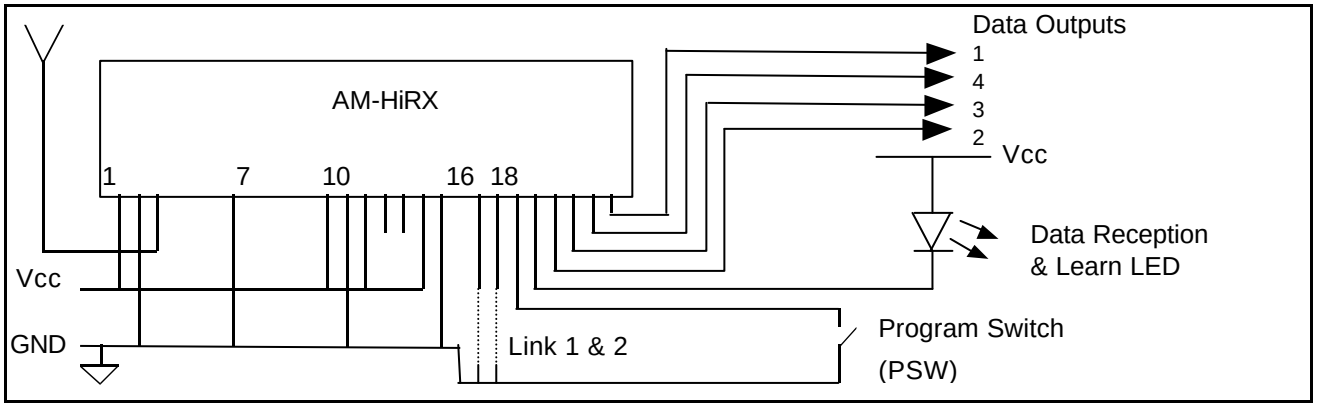
SIGNAL ALLOCATION



PIN DESCRIPTION

Pin No	*Name*	Description
1	***Vcc-RF***	+5V Supply Voltage
2	***GND-RF***	RF Ground
3	***ANT***	Connect Antenna to this input
7	***GND-RF***	RF Ground
10	***Vcc-AF***	+5V Supply Voltage
11	***GND-AF***	AF Ground
12	***Vcc-AF***	+5V Supply Voltage
13	***TP***	Test Point
14	***O/P-AF***	Data output from RF receiver (CMOS/TTL signal)
15	***Vcc-AF***	+5V Supply Voltage
16	***GND-AF***	AF Ground
18	***Link2***	Connect to GND to make Link, may be left O/C if not required
19	***Link1***	Connect to GND to make Link, may be left O/C if not required
20	***PSW***	Programming Switch input, This is used when learning new transmitters.
21	***LED***	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	***O/P2***	Active Low data Output 2 (has a 220Ω series resistor)
23	***O/P3***	Active Low data Output 3 (has a 220Ω series resistor)
24	***O/P4***	Active Low data Output 4 (has a 220Ω series resistor)
25	***O/P1***	Active High data Output 1 (has a 220Ω series resistor)

APPLICATION CIRCUIT



LEARNING A NEW TRANSMITTER

1. Hold down the programming switch (PSW1).
2. Depress the transmitter once, LED on the decoder will flash. (PSW1 is still depressed).
3. Wait for LED to stop flashing.
4. Depress the transmitter again, LED will turn off. (PSW1 is still depressed).
5. Release the programming switch (PSW1).
6. This transmitter will now operate the system.
7. To completely erase the transmitters, press SW five times in succession, LED will remain on for approximately 5 seconds while the transmitter(s) are being erased.

ANTENNA DESIGN

For 99% of applications a 16.5cm piece of wire is quite adequate. The range achieved from the system is dependant 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 is 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 & 4 are digital CMOS/TTL with a series 220 Ω protection resistor.
Note : Output 1 is normally Low, Outpus 2,3, & 4 are normally high.
The outputs are configured by Links 1 & 2

AM DECODER WITH 1 SWITCH AM TRANSMITTER

LINK1	LINK2	O/P 1	O/P 2
OPEN	OPEN	LATCH	LATCH
OPEN	CONNECTED	MOM	MOM
CONNECTED	OPEN	LATCH	MOM
CONNECTED	CONNECTED	MOM	LATCH

AM DECODER WITH A 2 SWITCH AM TRANSMITTER

LINK STATUS		TRANSMITTER SWITCH			
		ANY	RH	LH	BOTH
LINK1	LINK2	O/P 1	O/P 2	O/P 3	O/P 4
OPEN	OPEN	LATCH	LATCH	LATCH	LATCH
OPEN	CONNECTED	MOM	MOM	MOM	MOM
CONNECTED	OPEN	LATCH	MOM	LATCH	LATCH
CONNECTED	CONNECTED	MOM	LATCH	MOM	MOM

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 CHARACTERISTICS	MIN	TYPICAL	MAX	DIMENSION	NOTE
Supply Voltage	4.5	5.0	5.5	V	
Supply Current (quiescent)		4		mA	
Working Frequency	200		450	MHz	Specific Frequency available on request
Tuning Tolerance		+/- 0.2	+/- 0.5	MHz	
-3dB Bandwidth		+/- 2	+/- 3	MHz	
R.F Sensitivity (100% AM)	-100	-105		dBm	
Level of Emitted Spectrum		-65	-60	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			20	mA	
EMC Compliance	Complies to ETS300-339				

For more information or general enquiries, please call;

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