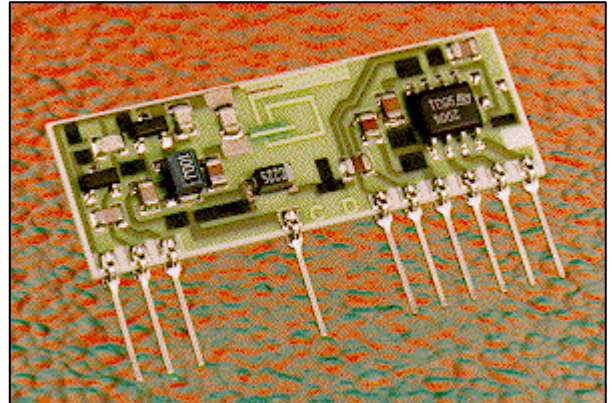




## AM SUPER REGENERATIVE RECEIVERS. AM-HRRN-XXX

- Compact Hybrid Modules.
- Standard Frequencies; 315, 433, 868MHz
- Frequencies Available: 250-450MHz
- Very High Frequency Stability (With No Adjustable Components).
- Receiving Range Up To 50 Metres.
- CMOS/TTL Compatible Output.
- Low Current Consumption;
  - ⇒ HRR3 Typ 2.5mA.
  - ⇒ HRR18 Typ 70uA.
- Single Supply Voltage 3V or 5V.
- Compatible With R.F. Solutions AM Transmitters.
- Patented Laser Trimmed Inductor.
- Compliant To ETSI300-220.
- Requires No Radio Licence To Operate.



### Description

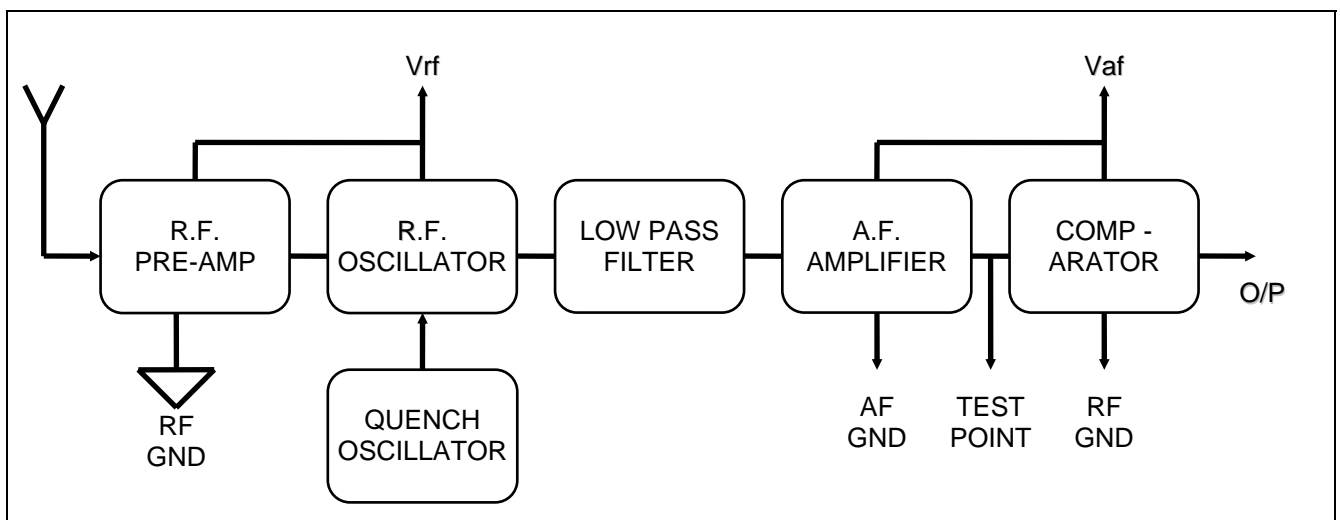
The R.F. Solutions range of AM 'Super Regen' Receiver modules are compact hybrid RF receivers, which can be used to capture undecoded data from any AM Transmitter, such as R.F. Solutions AM-RT4 / 5 range of transmitters. (See AM Transmitter datasheet DS013).

These modules show a very high frequency stability over a wide operating temperature even when subjected to mechanical vibrations or manual handling. A unique laser trimming process which has been patented gives a very accurate on board inductor, removing the need for any adjustable components.

All receivers are compatible, producing a CMOS/TTL output, and require connections to power and antenna only. The HRR6 is a version with Very Low Current consumption which has a typical quiescent current drain of only 0.5mA. In addition the HRR8 operates from a 3Vdc supply.

RF Solutions also offer a range of Super Heterodyne Receivers, for data on these products (please see Datasheet DS017).

### Block Diagram





# AM SUPER REGENERATIVE RECEIVERS. AM-HRRN-XXX

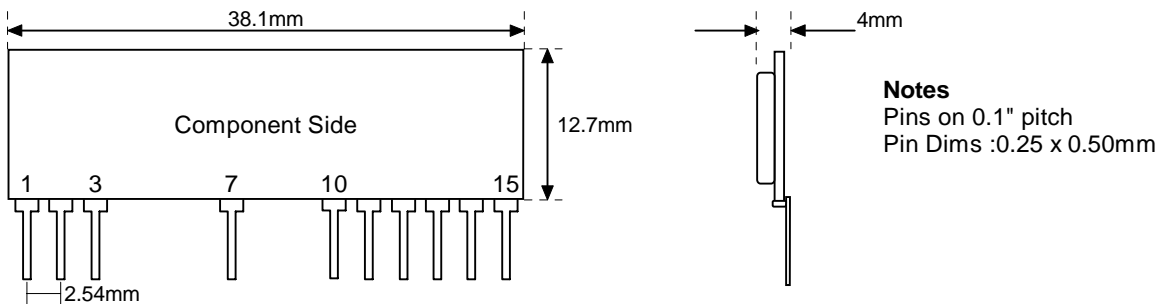
## Products From 250-450MHz

The following modules are available from stock as 315, 418, 433MHz, although any frequency between 250-450MHz is available.

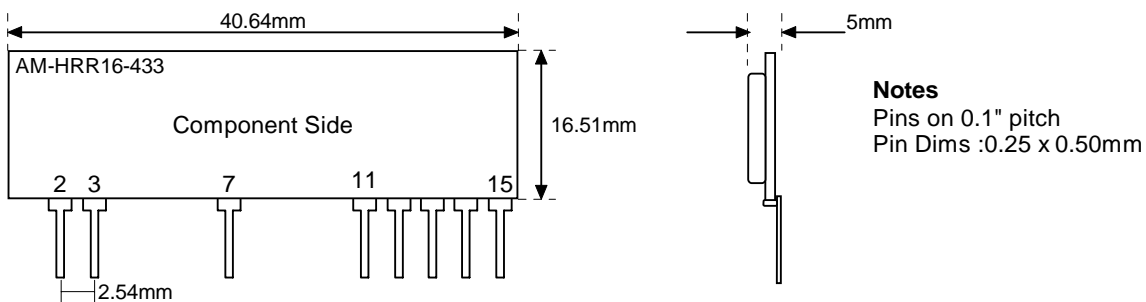
Part Number	315	433	Description
AM-HRR3-XXX	✓	✓	Standard Receiver
AM-HRR6-XXX	✓	✓	Low Power version (0.5mA)
AM-HRR8-XXX	✓	✓	Low Voltage (3V), Low Power (0.5mA)
AM-HRR10-XXX	✓	✓	Rx with passive front end Filter
AM-HRR11-XXX		✓	Low Power version (0.3mA)
AM-HRR16-XXX	✓	✓	SIL AM Receiver Module with SAW filter
AM-HRR16-XXX-S	✓	✓	SIL AM Receiver Module with Metal Shield & SAW filter
AM-HRR18-XXX		✓	Low Voltage (3V), and Very Low Power (70uA)

## Mechanical Details

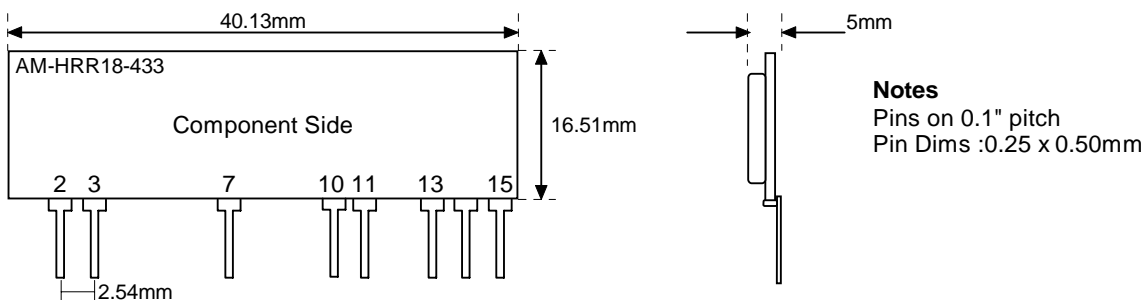
### Dimensions for AM-HRR3, AM-HRR6, AM-HRR8, AM-HRR10, AM-HRR11:



### Dimensions for AM-HRR16-XXX & AM-HRR16-XXX-S:



### Dimensions for AM-HRR18-XXX:





# AM SUPER REGENERATIVE RECEIVERS. AM-HRRN-XXX

## Pin Description

Pin No	Pin Name	Notes
1	RF +Vcc	
2, 7	RF GND	
3	DATA IN (Ant)	
10, 12, 15	AF +VCC	Can be ignored on versions without pin 10
11	AF GND	
13	TEST POINT	
14	DATA OUT	

## Electrical Characteristics (Applies to all variants below)

Ambient temperature = 25° Celsius.

Electrical Characteristics	Min	Typ	Max	Dimension
Storage Temperature Range	-30		+85	°C
Operating Temperature Range	-25		+80	°C
Tuning Tolerance		+/- 0.2	+/- 0.5	MHz
Working Frequency Range	200		450	MHz
Level of Emitted Spectrum		-65	-60	dBm
Output Voltage @ 1mA sink		0.6		V
Data Output Current (AM-HRR3-XXX @3.6V)			10	mA

## Characteristics for AM-HRR3-xxx, AM-HRR6-xxx & AM-HRR8-xxx

Electrical Characteristics	AM-HRR3-xxx			AM-HRR6-xxx			AM-HRR8-xxx			Units
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Supply Voltage	4.5	5	5.5	4.5	5	5.5	2.7	3	3.3	V
Supply Current		2.5	3		0.5			0.5		mA
Time from Power on to Valid Output Signal		1200			150			150		mS
R.F Sensitivity 100% AM	-100	-105			-95			-90		dBm
-3dB Bandwidth		+/- 2	+/- 3		+/- 2	+/- 3		+/- 2	+/- 3	MHz
Data Rate	50		2000	50		2000	50		2000	Hz
High Level Output Voltage	4.5			4.5			4.5			V

## Characteristics for AM-HRR10-xxx and AM-HRR11-xxx

Electrical Characteristics	AM-HRR10-xxx			AM-HRR11-xxx			Units
	Min	Typ	Max	Min	Typ	Max	
Supply Voltage	4.5	5	5.5	4.5	5	5.5	V
Supply Current		1.7			0.3		mA
Time from Power on to Valid Output Signal		150			100	150	mS
R.F Sensitivity 100% AM		-102			-95		dBm
-3dB Bandwidth		+/- 1.5	+/- 2		+/- 2	+/- 3	MHz
Data Rate	50		2000			2000	Hz
High Level Output Voltage	4.5				3.6		V
Low Level Output Voltage			0.5			0.6	V

## Characteristics for AM-HRR16-xxx/s and AM-HRR18-xxx

Electrical Characteristics	AM-HRR16-xxx			AM-HRR18-xxx			Units
	Min	Typ	Max	Min	Typ	Max	
Supply Voltage	4.5	5	5.5	2.75	3	3.25	V
Supply Current		4			0.07		mA
Time from Power on to Valid Output Signal					2,000		mS
R.F Sensitivity 100% AM	-98	+/-250	+/-300		-94		dBm
-3dB Bandwidth		-102			0.6		MHz
Data Rate	3600	4800	9600		2,000	3,000	Hz
High Level Output Voltage	4.5			4.5			V
Low Level Output Voltage			0.5			0.5	V



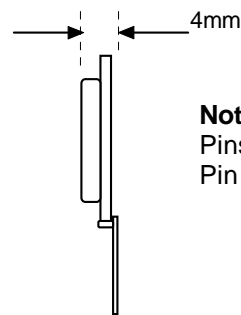
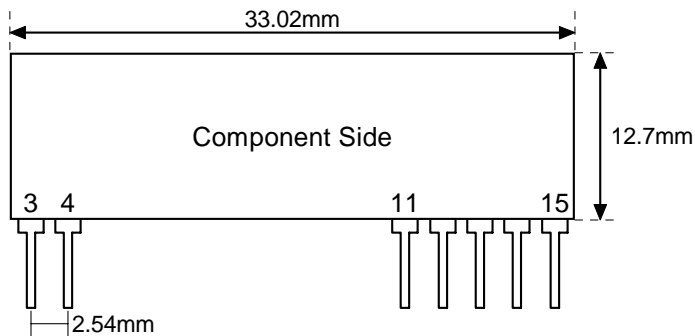
# AM SUPER REGENERATIVE RECEIVERS. AM-HRRN-XXX

## 868MHz Products

The following modules are available from stock as 868MHz

Part Number	868	Description
AM-HRR13-868	√	Low Power Receiver (0.5mA)

### AM-HRR13-868



#### Notes

Pins on 0.1" pitch  
Pin Dims :0.25 x 0.50mm

### Pin Description

Pin No	Pin Name
3	DATA IN (Ant)
4	GND
11	AF GND
12	NC
13	TEST POINT
14	DATA OUT
15	AF +VCC

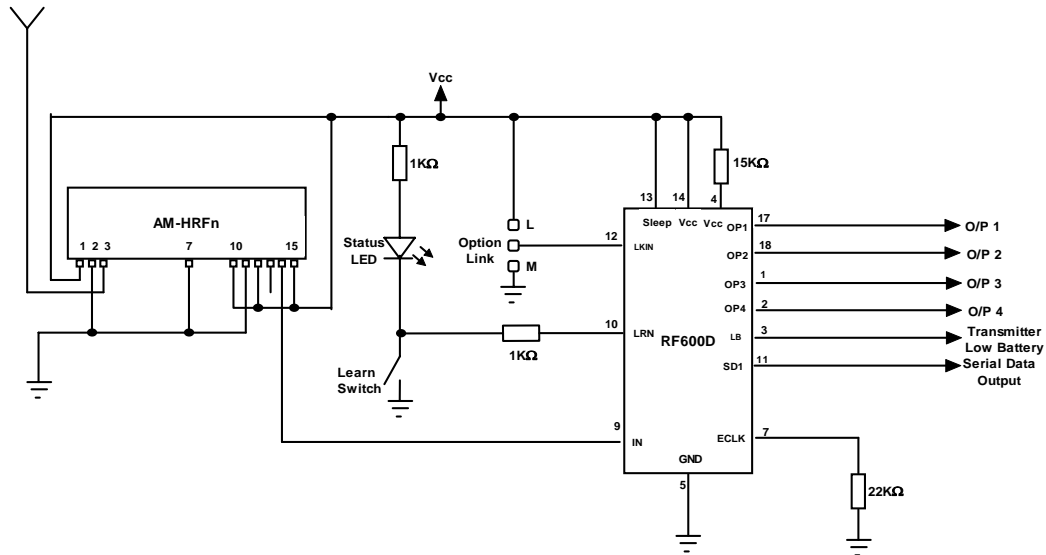
### AM-HRR13-868 Electrical Characteristics

Ambient temperature = 25° Celsius.

ELECTRICAL CHARACTERISTICS	MIN	TYPICAL	MAX	DIMENSION
Storage Temperature Range	-30		+85	°C
Operating Temperature Range	-25		+85	°C
Operating Frequency		868.350		MHz
Tuning Tolerance		±0.2	±0.5	MHz
Supply Voltage	4.5	5	5.5	V
Supply Current		0.5		mA
Data Rate	50		4800	bits/Sec
Time from Power on to Valid Output Signal		100		mSecs
R.F Sensitivity 100% AM		-90		dBm
-3dB Bandwidth		+/- 2		MHz
Conducted Spurious Emissions			-60	dBm
High Level Output Voltage	3.5			V
Low Level Output Voltage			0.25	V

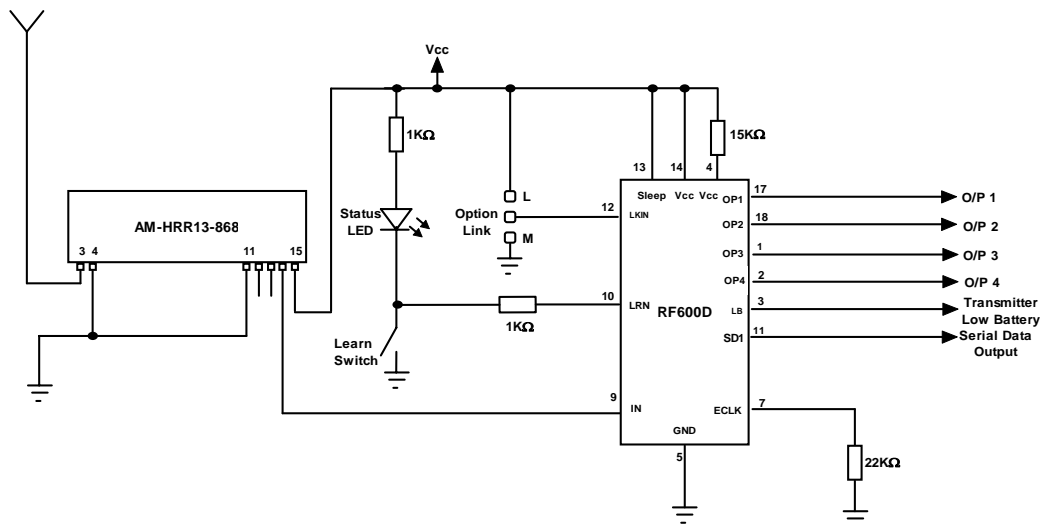
## Application Circuits

### Products From 250-450MHz



NOTE: For versions without PIN 10 all other connections are the same.

### 868MHz Products



For further information on this circuit please see datasheet DS600

Should you require further assistance, 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.

Web Site <http://www.rfsolutions.co.uk> Email [sales@rfsolutions.co.uk](mailto:sales@rfsolutions.co.uk)

RF Solutions is a member of the Low Power Radio Association.