

RAM-34 RX Pre-amplifier System Installation and Operation Manual

(www.hamation.com)



RAM-34 Front and Rear Views

Introduction

The RAM-34 is a complete pre-amplifier system designed primarily for the low bands 160M thru 40M. It has inputs for four receive antennas and internal 3-pole bandpass filters for 160M, 80M and 40M. In addition to the pre-amplifier, it has a step attenuator that together with the amplifier stage provides gains from -20 dB to +20 dB in 5 dB steps. This allows equalizing the signal levels between the antenna inputs. Gain settings are memorized for each antenna on each band. Different types of receive antennas have different signal levels and the gain memories eliminate the need to adjust the receiver or pre-amplifier when switching between the antennas.

The amplifier stage uses a 1 watt RF transistor that is capable of handling strong input signals without any overloading or clipping problems. This is crucial in a low band pre-amplifier where strong local signals may be present.

As with all products in the ShackLAN lineup, the RAM-34 may be fully remotely controlled by software. The RAM-34 is packaged in a rugged anodized aluminum case with laser engraved front and rear panels.

IMPORTANT NOTE: Your radio **MUST** have a separate connection for receive antennas

Features

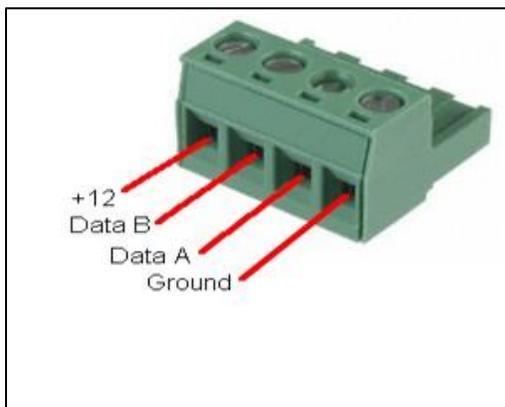
- **4 antenna inputs**
- **Bandpass filters for 160M-80M-40M with over 40 dB adjacent band attenuation**
- **Automatic band selection with ShackLAN equipped band decoders**
- **+20 dB gain amplifier**
- **Step attenuator**
- **Gain adjustable from -20 dB to +20 dB in 5 dB steps**
- **Memorize gain settings for each antenna on each band**
- **Fully remote controllable**
- **1 watt RF transistor for superior strong signal handling**
- **Anodized aluminum case**
- **Laser engraved panels**

RAM-34 RX Installation

Power and network connections

A power connection is only required when operating the RAM-34 stand-alone. Power requirements are +12 to 14 V DC at 100 mA. The Power connector is a standard 2.1 mm jack with the center pin positive. No power connection is required when operating with other ShackLAN devices as power is distributed over the network cables.

All units in the ShackLAN product line use the same connector and pinouts for their network connections. Older units, as well as antenna switches and controllers, network connections are made to a 4-pin removable terminal block using the diagram below. Only a single connection to a power source is required as power is distributed throughout the network. A good, inexpensive source for the network cable is standard CAT-5 network cable. Stranded cable is recommended as solid wire is prone to breaking under the screw connectors. A good source for stranded CAT-5 cable is Monoprice. Connect in parallel three wires for the +12 V DC and three other wires for the Ground connections. Be sure you use one of the twisted pairs for the data connections. Only a single wire is needed for each of the data lines as they carry no current. When using CAT-5 cable, be sure to use the same parallel combinations on each unit in the system.



Newer ShackLAN products use a 6-pin "RJ-12" connector, also known as a modular telephone connector, for interconnecting the ShackLAN units. Connections from the antenna switch controllers to the antenna switch still use the 4-pin screw terminal connector. Many units have a pair of connectors to facilitate "daisy-chaining" of the units. Each unit is supplied with a 36" cable. Be aware that 6-conductor modular telephone cables are rare in your local variety store. Some may have 4 conductors and can be used if necessary but many of these "cheap" cables have only 2-conductors which will not work.

Only one ShackLAN device should be connected to your power supply as power is distributed over the network. For early units with only the green 4-pin connector, connect the power to the +12 V DC and GND pins on only one unit. Later units have a separate power jack and a modular network connector. The power jack on the later units is a standard 2.1 mm connector with center pin positive. Voltage should be between 12 V DC and 14 V DC. Do not exceed 15 V DC as each unit has spike and surge suppression that clamps at 16 volts. Current requirements depend on how many devices are on the network but supply of 1 amp is adequate for most systems. Those with multiple antenna switches should have at least 500 mA for each switch. A 36 inch (91.44 cm) power cable is supplied with each unit. The wire with the white tracer is positive and the solid black wire is ground.

Receiver connection

Connect either of the OUT jacks to the **RX (receive) antenna jack** on your radio. Most radios have a phono (RCA) jack for the **RX antenna**. A standard phono to phono audio cable may be used as the cable impedance is not important in this application. **DO NOT CONNECT TO THE NORMAL TRANSMIT/RECEIVE ANTENNA CONNECTOR.** Transmitting into the unit will cause instant damage which is not covered by the warranty.

Antenna connections

Connect your receive antennas to any of the four Antenna jacks. The order of the antennas is not important but if you have less than four receive antennas to start with #1 and go in sequence.



Rear panel view

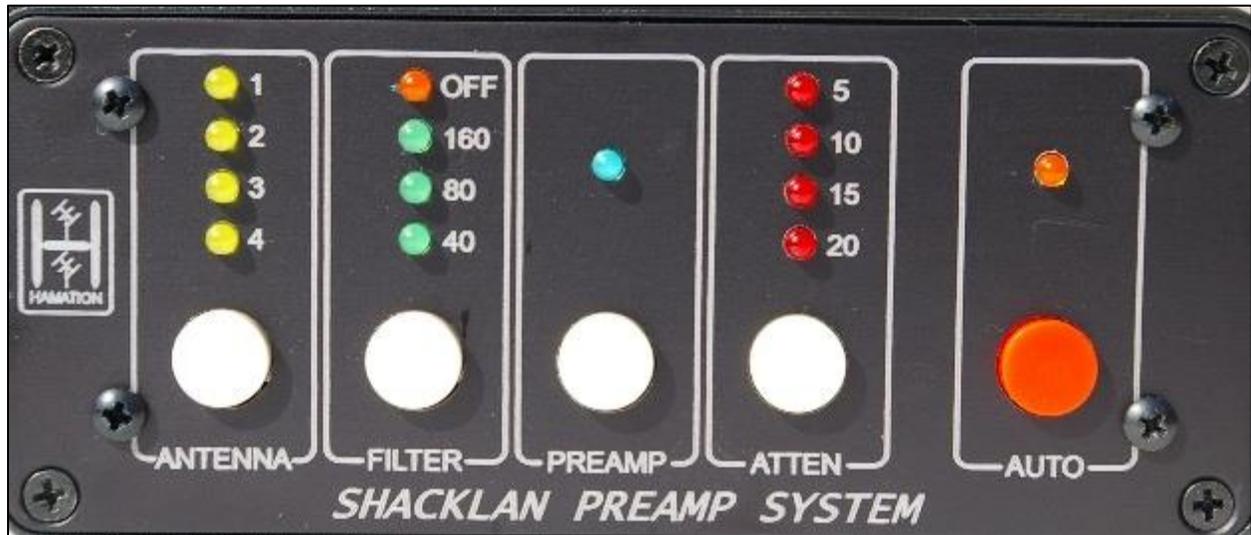
PTT connections (optional)

Connecting the PTT lines is optional. When PTT is active the RAM-34 will disconnect all antennas while transmitting. The PTT input is grounded to activate which is compatible with the majority of radios and amplifiers. The two PTT jacks are connected together and no "Y" cable is required. Connect a cable from one of the PTT jacks to the PTT output (SEND or TX GND) on your radio and connect a cable from the other PTT jack to the PTT input on the amplifier (if used).

Radio number

The ShackLAN system supports up to four RAM-34 Pre-amplifiers. If you want automatic band selection when using a ShackLAN compatible band decoder, such as the Bandmaster series, you must set the RAM-34 radio number to match the radio number of the band decoder. The current radio number is indicated by flashing the corresponding antenna LED 3 times at power on. To set the radio number, first select an antenna 1-4 that corresponds to the radio number. Next press and release the antenna button while holding in the Auto button and then release the Auto button. The antenna LED for the radio number will flash 3 times.

RAM-34 RX Pre-amplifier Operation



Front Panel View

Antenna selection

Antennas are selected by pressing the ANTENNA button until the desired antenna is selected.

Filter selection - Auto function

The internal bandpass filters can be manually selected by pressing the FILTER button until the desired filter is selected. Pressing the Filter button will automatically disable the Auto band function. Enable the Auto band filter selection feature by pressing the AUTO button.

Setting the amplifier gain

The overall gain of the amplifier is set using a combination of the PREAMP and ATTEN buttons. When active the pre-amplifier will provide 20 dB of gain. In combination with the step attenuator overall gain can be set from -20 dB to +20 dB in 5 dB steps. With the PREAMP off the attenuation is indicated by the ATTEN LEDs. With the Preamp on, the gain can be calculated by subtracting the attenuation from 20 dB. This makes it a simple matter to equalize the signal levels from different types of receive antennas.

Presets

The RAM-34 will remember the gain settings for each antenna on each band. To permanently save the presets press and hold the AUTO button for longer than 2 seconds. The Auto LED will flash 3 times indicating all presets have been saved. You may erase all preset data by pressing and holding the Preamp button for longer than 2 seconds. The PREAMP LED will flash 3 times indicating all preset data has been erased.

Insertion Loss (S21) Plots

