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RM 23-216

RM KL203 - All Mode 20-30MHz (100W) Linear Amplifier User Manual

Brand: RM | Model: KL203 (Model 23-216)

1. Introduction and Overview

The RM KL203 is a robust linear amplifier designed for radio communication, providing significant power output across various modes. It delivers a substantial 100 watts output within the 20-30MHz frequency range, supporting AM, FM, SSB, and CW modes. A key safety feature of this amplifier is its handy polarity inversion protection, safeguarding the unit from incorrect power connections. The amplifier's power stage utilizes four MOSFET transistors for efficient and reliable performance.

Image 1.1: The RM KL203 Linear Amplifier. This image shows the compact black amplifier unit, featuring prominent heat sink fins on top, two toggle switches on the front panel labeled 'ON/OFF' and 'SSB/AM', and a red indicator light next to the 'KL 203' model designation.

2. Key Features

- **Frequency Range:** 20-30 MHz
- **Power Supply:** 12-14 Vcc
- **Input Energy/Current:** 10 A
- **Input Power:** 0.5-10 W
- **Maximum Output Power:** 100 W
- **Operating Modes:** AM, FM, SSB, CW
- **Fuse:** 12 A
- **Dimensions (L x W x H):** 109 x 125 x 35 mm
- **Weight:** 325g
- **Protection:** Polarity inversion protection
- **Transistors:** 4 x MOSFET

3. Setup

Proper setup is crucial for the safe and effective operation of your RM KL203 amplifier. Please follow these guidelines carefully:

1. **Power Connection:** Connect the amplifier to a stable 12-14 Vcc power supply capable of delivering at least 10 Amperes. Ensure correct polarity; although the unit has polarity inversion protection, consistent correct connection is recommended.
2. **Input Connection (Transceiver):** Connect the output of your transceiver (radio) to the input port of the KL203 amplifier. Use appropriate coaxial cables and connectors.
3. **Output Connection (Antenna):** Connect the output port of the KL203 amplifier to your antenna system. Ensure your antenna is properly tuned for the 20-30 MHz frequency range.
4. **SWR Check:** Before applying power, always check your antenna's Standing Wave Ratio (SWR). An SWR of 1.5:1 or lower is ideal. **Do not operate the amplifier if the SWR is above 1.5:1, as this can cause significant damage to the unit.**
5. **Ventilation:** Place the amplifier in a location with adequate ventilation. The heat sink fins require airflow to dissipate heat effectively. Avoid enclosing the unit in confined spaces.

Important Safety Note: Never exceed the maximum recommended input power of 10 Watts. Over-driving the amplifier can lead to permanent damage and will void the manufacturer's warranty.

4. Operating Instructions

Once the amplifier is properly set up, follow these steps for operation:

1. **Power On:** Locate the 'ON/OFF' switch on the front panel and switch it to the 'ON' position. The red indicator light should illuminate.
2. **Select Mode:** Use the 'SSB/AM' switch to select the desired operating mode (AM, FM, SSB, CW). For FM operation, it is advisable not to run the amplifier at its maximum input power for extended periods to prevent overheating.
3. **Input Power Adjustment:** Ensure your transceiver's output power is set within the amplifier's specified input range of 0.5-10 Watts. For optimal performance and longevity, it is recommended to use an input power that achieves the desired output without over-driving the unit. For example, 4-5 watts input for 40-50

watts output on FM, or up to 10 watts input for approximately 100+ watts output on SSB.

4. **Transmission:** Begin transmitting as you normally would with your transceiver. The amplifier will automatically boost the signal.
5. **Monitoring:** Continuously monitor your SWR and the amplifier's temperature during operation. If the unit becomes excessively hot, reduce input power or cease transmission to allow it to cool down.
6. **Power Off:** When finished, switch the 'ON/OFF' switch to the 'OFF' position.

5. Maintenance

The RM KL203 amplifier is designed for durability, but regular maintenance practices will ensure its long-term performance:

- **Cleaning:** Keep the amplifier clean and free from dust. Use a soft, dry cloth to wipe down the exterior. Ensure the heat sink fins are clear of obstructions and dust buildup, which can impede heat dissipation.
- **Ventilation:** Always ensure the amplifier has adequate airflow. Do not block the heat sink fins or place the unit in an enclosed space without proper ventilation. Consider adding an external cooling fan if operating in high ambient temperatures or at sustained high power levels.
- **Connection Checks:** Periodically inspect all cable connections (power, input, output) to ensure they are secure and free from corrosion or damage.
- **Storage:** When not in use for extended periods, store the amplifier in a cool, dry place, away from direct sunlight and extreme temperatures.

6. Troubleshooting

If you encounter issues with your RM KL203 amplifier, consider the following common troubleshooting steps:

- **No Power/Indicator Light Off:**
  - Check the power supply connection and ensure it is providing 12-14 Vcc.
  - Verify the power supply is capable of delivering at least 10 Amperes.
  - Check the inline fuse (12 A). Replace if blown.
  - Ensure the 'ON/OFF' switch is in the 'ON' position.
- **Low Output Power:**
  - Verify the input power from your transceiver is within the 0.5-10 W range.
  - Check the SWR of your antenna system. High SWR will significantly reduce output power and can damage the amplifier.
  - Ensure all coaxial cable connections are secure and undamaged.
  - Confirm the correct operating mode is selected.
- **Amplifier Overheating:**
  - Reduce the input power from your transceiver.
  - Ensure adequate ventilation around the amplifier. Clear any obstructions from the heat sink fins.
  - Consider using an external cooling fan, especially during prolonged operation or high power output.
  - Check SWR; high SWR causes the amplifier to work harder and generate more heat.
- **No Output Signal:**

- Check all connections between the transceiver, amplifier, and antenna.
- Ensure the amplifier is powered on and the indicator light is illuminated.
- Verify the transceiver is transmitting correctly.

Critical Warning: The manufacturer, RM Italy, does not repair amplifiers that have been damaged due to being over-driven (exceeding input power limits) under warranty. Repair charges for such damage are typically very expensive. If you are unsure about proper operation or suspect damage, please contact your seller or a qualified technician for assistance.

7. Specifications

Parameter	Value
Model Number	KL203 (23-216)
Brand	RM
Frequency Range	20-30 MHz
Power Supply	12-14 Vcc
Input Energy/Current	10 A
Input Power	0.5-10 W
Maximum Output Power	100 W
Operating Modes	AM, FM, SSB, CW
Fuse	12 A
Dimensions (L x W x H)	109 x 125 x 35 mm
Weight	325g
Manufacturer	RM
Country of Origin	Italy
Date First Available	23 August 2016

8. Warranty and Support

RM products are manufactured to high standards. For warranty information and support, please note the following:

- **Warranty Coverage:** The manufacturer, RM Italy, explicitly states that they do not repair amplifiers that have been damaged due to being over-driven (exceeding the specified input power limits) under warranty. Such repairs, if possible, would incur significant charges.
- **Contacting Support:** If you have questions regarding the operation, setup, or potential issues with your RM KL203 amplifier, it is recommended to contact the retailer or seller from whom you purchased the product.

They can provide initial assistance and guide you on further steps if necessary.

- **Professional Assistance:** For complex technical issues or repairs not covered by warranty, seek assistance from a qualified electronics technician experienced with radio frequency equipment.