MOONRAKER

# ATLAS

## 10M MINI MOBILE TRANSCEIVER

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**Instruction Manual**

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# INSTALLATION

## Contents

Unpack and inspect your Atlas 10M for missing or damaged components. Your Atlas 10M includes the following items:

| Quantity | Description |
|---|---|
| 1 | Atlas 10M Transceiver |
| 1 | Stock Microphone |
| 1 | DC Power Cord with Inline Fuse |
| 1 | Mounting Bracket with Hardware |
| 1 | Microphone Hanger with Hardware Set |
| 1 | Operating Manual |
| 1 | Warranty Registration Form |

## Microphone Hanger

The microphone hanger comes with mounting screws and may be attached to any convenient location.

## Mounting

When attaching the Atlas 10M mounting bracket to the vehicle, choose a location that will provide easy access to all front panel controls and air circulation to the rear panel. When selecting a mounting location, make sure that there is ample space behind the unit for the cables. Do not pinch, or bend sharply, the power or antenna cables. Do not install the MAGNUM 1 in any compartment that restricts airflow and do not install in a location that interferes with the safe operation of the vehicle.

Attach the mounting bracket to the vehicle first then mount the Atlas 10M to the bracket. If the rear panel is not accessible you may want to attach the power and antenna cable prior to mounting.



## Electrical Connections

The Atlas 10M is designed to work on any 12 - 13.8 volt DC, negative ground, source. The condition of a vehicle's electrical system can affect operation. A low battery, worn generator/alternator, or poor voltage regulator will seriously impair the performance of the transceiver. Any of the above conditions may result in increased receiver noise or reduced transmitter RF output. Make sure that all of these components of your vehicle's electrical system are in good condition prior to installing the transceiver.

**CAUTION!**
**Voltages exceeding 16 VDC may permanently damage the radio. Measure voltage at battery terminals, with vehicle running, prior to installation!**

Before making any electrical connections make sure the volume (VOL) control is in the "OFF" position. Connect the positive (+) red wire of the DC power cord to a positive 13.8 volt source at the vehicle fuse block. If connecting to the fuse block, it is recommended that a switched power source is used so that the power to the transceiver is disconnected when the vehicle is off. This will eliminate the possibility of the transceiver draining the vehicle's battery.

Connect the negative (-) black wire to a metal part of the vehicle's frame, or chassis ground. Make sure that this is a good ground connection.

The Atlas 10M power cord may also be connected directly to the bat tery. Connecting directly to the battery has several benefits, the first of which is to maximize RF output. Secondly, the battery is a very large capacitor and will help eliminate certain types of ambient and vehicle noise. If connecting directly to the vehicle's battery, additional power cable may be required. On runs of 8 feet or less use 12-gauge stranded wire. Use 10-gauge wire on longer runs.

## Antenna Connection

The transceiver will operate using any standard 50-ohm groundplane, vertical, mobile whip, long wire or similar antenna. The antenna

should be rated at 30 watts PEP minimum. A standard SO-239 type antenna connector is located on the rear panel of the Atlas 10M. Connection is made using a PL-259 and high-grade coaxial cable (RG213, RG58A/U or Mini RG-8 is recommended).

A ground-plane antenna provides greater coverage and is recommended for fixed station-to-mobile operation. For point-to-point fixed station operation, a directional beam antenna operates at greater distances even under adverse conditions. A non-directional antenna should be used for mobile installations; a vertical whip antenna is generally recommended. A base-loaded whip antenna typically provides reliable communications. For greater range and more reliable operation, a full quarter wave whip may be used. Either of these antennas uses the metal vehicle body as a ground plane.

Once the antenna is mounted on the vehicle, route the coaxial cable so that it is not next to any power cables or vehicle cables. Connect the PL-259 to the antenna connector on the rear panel of the MAGNUM 1. Make sure that the cable does not interfere with the safe operation of the vehicle.

## VSWR

Before use, it is important to determine the antenna system's VSWR (voltage standing wave ratio). You will need a high quality SWR bridge (meter) to accurately tune your antenna system. First, make sure the SWR bridge is in good working order and is calibrated. To ensure your radio is performing properly the VSWR should never exceed 1.5 to 1.

Never transmit if the VSWR exceeds 1.8:1. This will stress the output stage and could destroy the RF transistors; Damage caused by operation with excessive VSWR is not covered under warranty. 5 Measure the VSWR at the center of the operating band. Tune the antenna (according to the antenna manufacturer's tuning instructions) so that the VSWR is as close to 1 to 1 at the center of the operating band. Next, measure the VSWR at the lowest and highest frequency of the transceiver. If the antenna has a wide enough frequency range and band-pass, the VSWR readings should be below 1.5 to 1 across



the entire operating band. If at the lower or upper end of the transceiver operating frequency, the VSWR measures more than 1.5 to 1, it is recommended that the antenna be re-tuned before operating on those frequencies.

If you are experiencing unusual VSWR readings check for the following possible problems:

1. Make sure that the antenna is installed properly and grounded.
2. Check all coaxial cable and connectors for defects and poor routing.
3. If testing a vehicle installation, make sure that all vehicle doors are closed when testing.
4. Do not test near or around large metal objects or buildings.

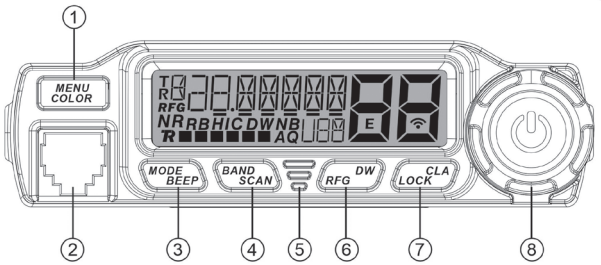
## Ignition Noise

In certain vehicle installations, electrical noise or interference may be present in the receive audio of the transceiver. Typically the vehicle's ignition system or more specifically the alternator generates this noise. The Atlas 10M is equipped with a noise blanker circuit that is designed to reduce, and in many instances eliminate, this electrical noise.

In extreme cases, the noise blanker may not eliminate all the electrical noise. In such cases, an alternator / ignition noise filter can be used. The XLF Series by RF Limited is designed for use with the Atlas 10M and is an effective way to eliminate alternator and ignition noise problems. Contact RF Limited or your local dealer for information.

## GETTING STARTED

### Panel Description




a .**MENU/COLOR:** short press the button, the radio enter menu function, short press again quit menu mode, press and hold the button for 2 seconds to change the LCD backlight color

b .**Connector:** Microphone/firmware update port

c .**MODE/BEEP:** short press the button to switch modes between PA/AM/FM/USB/LSB, press and hold the button for 2 seconds to switch Beep function on/off

d .**BAND/SCAN:** short press the button to select bands, press 2 seconds to active scan function, press and hold the button again for 2 seconds to quit scan mode

e .**TX/RX indicator light:** Red LED lighting during PTT pressed, Greed LED lighting during open the speaker

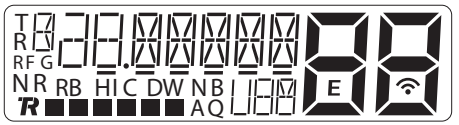
f .**DW/RFG:** short press the button the LCD “DW” ICON start to blink, then press microphone UP/DN button to select other CHANNEL, then short press DW button again, the radio enters Dual Watch mode between 2 CHANNELS, short press DW button again quit DW mode, press and hold the button for 2 seconds to switch RFG function on/off

g .**CLA/LOCK:** short press the button, the radio enter CLARIFIER mode, now push the knob(8) to select clarifier step, rotate the knob(8) to tune frequency, briefly press the button to exit Clarifier mode, press and hold the button for 2 seconds, all buttons and knob are locked, press and hold the button again for 2 seconds to un-lock butons and knob.

h .**Knob:** Rotate knob directly to change speaker volume, short push the knob enter SQ/ASQ level adjust mode, then rotate the knob to select SQ/ASQ levels.



### LCD Display Overview



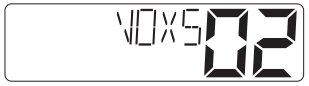

| | | | |
|---|---|---|---|
| T R | shows Clarifier status | *HIC* | shows Hi-cut function status |
| | shows Band status | *DW* | shows Dual watch function status |
| | shows Channel numbers | *NB* | shows Noise Blanker function status |
| *RFG* | shows RFG fucntion status | *AQ* | shows ASQ status |
| *NR* | shows Noise Reduction status | | shows AM/FM/USB/ LSB modes |
| *RB* | shows Roger Beep function status | | shows wireless microphone connect status |

## MENU SETTINGS

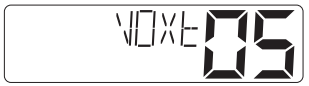
AI Noise Reduction setting, Press the knob, then rotate it to select Noise Reduction on/off, default:off

AI Noise Reduction Level, Press the knob, then rotate it to select the desired level from 1 to 15, default:06

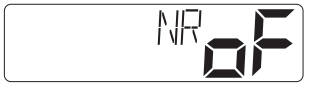
AI VOX setting, Press the knob, then rotate it to select AI VOX on/off, default:off




AI VOX Sensitivity level setting, Press the knob, then rotate it to select levels from 1 to 9, default: 02




AI VOX time level setting, Press the knob, then rotate it to select levels from 1 to 9, default:05



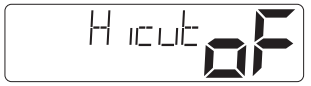

DSP type Noise Reduction setting, Press the knob, then rotate it to select Noise Reduction on/off, default:off

DSP type Noise Reduction level setting, Press the knob, then rotate it to select Noise Reduction level from 1 to 9, default:04

Clarifier mode setting, Press the knob, then rotate it to select 3 modes of Clarifier: RX only, TX only, TX and RX both, default: TX and RX both

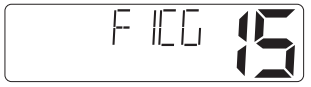
ASQ level setting, Press the knob, then rotate it to select ASQ level from 1 to 9, default:05

ANL function setting, Press the knob, then rotate it to select ANL on/off, default: off



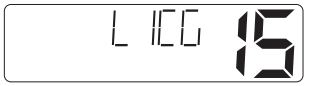

Hi-cut function setting, Press the knob, then rotate it to select levels from off, 1 to 6, default: 02

AM TX MIC GAIN setting, Press the knob, then rotate it to select levels, default: 15



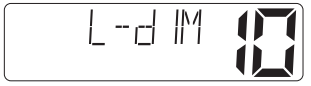

FM TX MIC GAIN setting, Press the knob, then rotate it to select levels, default: 15

USB TX MIC GAIN setting, Press the knob, then rotate it to select levels, default: 15




LSB TX MIC GAIN setting, Press the knob, then rotate it to select levels, default: 15

LCD backlight colors setting, Press the knob, then rotate it to select seven colors, default: cyan

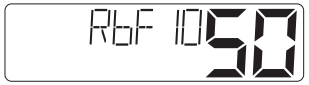



LCD backlight dim setting, Press the knob, then rotate it to select dim levels from off to 10, default: 10

Talk back function setting, Press the knob, then rotate it to select talk back function on/off, deault: off

Scan mode setting, Press the knob, then rotate it to select scan mode: SQ/TIME, default: SQ

Roger Beep function setting, Press the knob, then rotate it to select Roger Beep function on/off, default: on




Roger Beep frequency setting, Press the knob, then rotate it to select frequency from 300Hz to 3000Hz, default: 850Hz

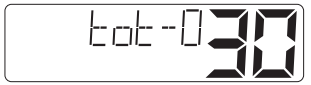
Roger Beep time setting, Press the knob, then rotate it to select Roger Beep time from 50mS to 1000mS, default: 500mS

Beep volume setting, Press the knob, then rotate it to select volume levels from 1 to 9, default: 3

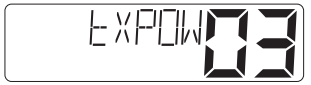
Roger Beep volume setting, Press the knob, then rotate it to select Roger Beep volume from 1 to 9, default: 05

Power-On Tone, Press the knob, then rotate it to select on/off, default: on

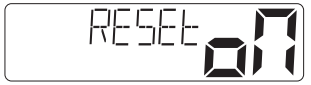
Power-Off Tone, Press the knob, then rotate it to select on/off, default: on




Maximum Transmission Time (TOT) Setting, Press the knob, then rotate it to select TOT time from OFF to 600S, default: off




TX RF OUTPUT POWER setting, default: 3




Resset function setting, Press the knob, then rotate it to select Reset on/off, default: off

# SPECIFICATIONS

## ◆ GENERAL

| | |
|---|---|
| Antenna Impedance | 50 ohms, unbalanced |
| Frequency Control | Digital Phase-Locked Loop (PLL) Synthesizer |
| Frequency Tolerance | ±0.005% |
| Frequency Stability | ±0.001% |
| Operating Temperature | -30°C to +50°C |
| Power Supply | 12–13.8V DC, negative ground |

**Physical Dimensions**

| | |
|---|---|
| Radio Size | 128 × 101 × 25 mm |
| PTT Size | 120 × 60 × 40 mm |
| PTT Cable Length | 700 mm |
| Package Size | 205 × 189 × 45 mm |
| Product Weight (Radio + PTT) | 478 g |
| Package Weight | 605 g |

## ◆ TRANSMITTER

| | |
|---|---|
| Output Power | SSB: 15W, FM: 7W, AM: 7W (Avg), PEP: 16W |
| Frequency Steps | 10 Hz – 1 MHz |
| Spurious Emissions | >50 dB below peak output |
| Carrier Suppression | >55 dB below peak |
| Unwanted Sidebands | >50 dB below peak (1 kHz tone) |
| FM Deviation | ±2 kHz max |
| Audio Response | >30 dB below peak |
| Microphone Impedance | 300–30,000 Hz, ECM, 2.2 kΩ |

## ◆ RECEIVER

| | |
|---|---|
| Circuit Type | Double Conversion Superheterodyne |
| IF Frequencies | 1st: 10.695 MHz (SSB) 2nd: 455 kHz |
| Sensitivity | SSB: 0.25 µV (10 dB S+N/N) AM: 1.0 µV, FM: 0.3 µV (12 dB SINAD) |
| Selectivity | SSB: 2.6 / 3.3 kHz (-6 / -60 dB), AM/FM: 6.0 / 9.0 kHz (-6 / -60dB) |
| Clarifier Range | Continuous (Digital VFO) |
| Adjacent Channel Rejection | >70 dB |
| Image Rejection | >80 dB |
| Audio Frequency Response | 250 – 3000 Hz |
| Audio Output Power | ≥2 W at 10% THD, 8 Ω load |
| Audio Output Impedance | 8 Ω |

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