User Information

User Information
Tune-up and user / operational manual information are provided in the following exhibits.

EXHIBIT	DESCRIPTION
D1	Tune-Up Procedure
D2	User / Operational Manual

User / Operational Manual

Operational or User's Manual
The manual should include instruction, installation, operator, or technical manuals with required 'information to the users'. This manual should include a statement that cautions the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The manual shall include RF Hazard warning statements, if applicable.

The end user in the US and Canada receives a booklet entitled "MOTOTRBO™ SLR 5000 Series Repeater Quick Start Guide" (part number MN001440A01-AB, January 2023, as all units are shipped with this document. This booklet is printed in English and French Canadian.

As indicated in the 'Quick Start Guide', more detail can be found in the document "MOTOTRBO™ SLR 5000 Series Repeater Basic Service and Installation Manual" (part number MN001436A01-AJ, April 2020).

Upon request, published basic service and installation manuals will be sent to the commission and/or telecommunication certification body (TCB).

All of the descriptions, block diagrams, and schematics that are included in this filing package are current as of the package submittal date.

MOTOROLA SOLUTIONS

MOTOTRBO™ SLR 5000 Series Repeater Quick Start Guide

January 2023

MN001440A01-AB

Notations Used in This Manual

Note and caution notations are used throughout the text in this publication. These notations are used to emphasize that safety hazards exist, and due care must be taken and observed.

Caution: Indicates a potentially hazardous situation which, if not avoided, might result in equipment damage.

Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

: Indicates areas of the product that pose potential burn hazards.

General Safety and Installation Standards and Guidelines

Warning: For safe installation, operation, service and repair of this equipment, follow the safety precautions and instructions described below, as well as any additional safety information in the Motorola Solutions product service and installation manuals and the Motorola Solutions R56 Standards and Guidelines for Communications Sites manual (which can be obtained by ordering CD-ROM 9880384V83). To obtain copies of these materials, contact Motorola Solutions as directed at the end of this section. After installation, these instructions should be retained and readily available for any person operating or servicing this repeater or working near it.

Failure to follow these safety precautions and instructions could result in serious injury or property damage. The installation process requires preparation and knowledge of the site before the installation begins. Review installation procedures and precautions in the Motorola Solutions R56 manual before performing any site or component installation. Personnel must use safe work practices and good judgment, and always follow applicable safety procedures, such as requirements of the Occupational Safety and Health Administration (OSHA), the National Electrical Code (NEC), and local codes.

The following are additional general safety precautions that must be observed:

- To continue compliance with any applicable regulations and maintain the safety of this equipment, do not install substitute parts or perform any unauthorized modifications.
- All equipment must be serviced by Motorola Solutions trained personnel.
- If troubleshooting the equipment while the power is on, be aware of live circuits which could contain hazardous voltage.
- Do not operate the radio transmitters unless all RF connectors are secure and all connectors are properly terminated.
- All equipment must be properly grounded in accordance with the Motorola Solutions R56 and specified installation instructions for safe operation.
- Slots and openings in the cabinet are provided for ventilation. Do not block or cover openings that protect the devices from overheating.

- Some equipment components can become extremely hot during operation. Turn off all power to the equipment and wait until sufficiently cool before touching.
- Maintain emergency first aid kits at the site.
- Never store combustible materials in or near equipment racks. The combination of combustible material, heat and electrical energy increases the risk of a fire hazard.
- Equipment should be installed in a site that meets the requirements of a “restricted access location,” per (UL60950-1, UL62368 & EN62368), which is defined as follows: “Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.”

- Burn hazard. The metal housing of the product may become extremely hot. Use caution when working around the equipment.
- RF energy burn hazard. Disconnect power in the cabinet to prevent injury before disconnecting and connecting antennas.
- Shock hazard. The outer shields of all Tx and Rx RF cables outer shields must be grounded per the Motorola Solutions R56 manual.
- Shock hazard. DC input voltage should be no higher than 60 VDC. This maximum voltage should include consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment.
- All Tx and Rx RF cables should be connected to a surge protection device according to the Motorola Solutions R56 manual. Do not connect Tx and Rx RF cables directly to an outside antenna.
- **Caution:** Compliance with National and International standards and guidelines for human exposure to Electromagnetic Energy (EME) at Transmitter Antenna sites generally requires that persons who have access to a site should be aware of the potential for exposure to EME and can exercise control of exposure by appropriate means, such as adhering to warning sign instructions. See this installation manual and Appendix A of Motorola Solutions R56.

This product complies with the requirements set forth by the European RED regulations and applicable CENELEC standards concerning human exposure to Electromagnetic Energy (EME) at Transmitter Antenna sites. Appendix F of the *SLR 5000 Series Repeater Basic Service and Installation Manual* includes an EME exposure analysis of a typical system configuration for this product.

For a different system configuration than the typical configuration, compliance with applicable EME exposure standards (e.g. EN50385, EN50401, IEC/IEEE 62704-2, and US Federal Communication Commission, OET Bulletin 65 (Ed. 97-01), August 1997) can be evaluated following the method illustrated in Appendix E in the *SLR 5000 Series Repeater Basic Service and Installation Manual*, or employing other suitable methods in the current versions of the EN62232 and IEEE C95.3 standards.

Once the occupational and general public compliance boundaries are determined, means to ensure that workers and people are outside the respective boundaries, for instance using appropriate signage or restricted access, should be implemented; if this is not possible or practically achievable for the specific system configuration, the configuration should be modified in order to make it possible. The R56 Standards and Guidelines for Communications Sites manual provides examples of signage that can be used to identify the occupational or general public compliance boundaries.

Refer to product specific manuals for detailed safety and installation instructions. Manuals can be obtained with product orders, downloaded from https://emeaonline.motorolasolutions.com or purchased through the Motorola Solutions Aftermarket & Accessory Department.

MOTOTRBO SLR 5000 Series Repeater Supplemental Safety and Installation Requirements

Caution: The MOTOTRBO SLR 5000 Series Repeater must be installed in a suitable, in-building enclosure. A restricted access location is required when installing this equipment into the end system.

The repeater contains a Class 1 built-in power supply component. It is equipped with an appliance inlet for connecting to an AC input, as well as DC input terminals which meet SELV DC circuit requirements.

When installing the equipment, all requirements of relevant standards and local electrical codes must be fulfilled.

The maximum operating ambient temperature of this equipment is 60°C. The maximum guaranteed operating altitude is 2000 meters above sea level. Operating above this maximum altitude may result in degradation to product specifications and compliances.

The nominal13.6 VDC output from the power supply to the PA is at an energy hazard level (exceeds 240 VA).

When installing into the end system, care must be taken so as not to touch the output wires. When the MOTOTRBO SLR 5000 Series Repeater is used in a DC reverting system, the DC power supply must be located in the same building as the

MOTOTRBO SLR 5000 Series Repeater, and it must meet the requirements of a SELV circuit.

General Installation

Proper installation ensures the best possible performance and reliability of the repeater equipment. Pre-installation planning is required. This includes considering the mounting location of the equipment in relation to input power, antennas, and system interfaces. You must also consider site environment conditions, the particular mounting method (several available), and the required tools and equipment.

If this is the first time installing this type of equipment, it is highly recommended that you refer to "SLR 5000 Series Installation" in the *SLR 5000 Series Basic Service and Installation Manual* for more information.

Pre-Installation Overview

The following information is an overview for installing the SLR 5000 Series Repeater.

List of Supplied Items:

- SLR 5000 Series Repeater
- Cabinet and Rack mounting hardware
- AC line cord
- Quick Start Guide

Note: You can save the SLR 5000 Series Repeater shipping container and its components for possible future shipping needs.

Environmental Conditions at Intended Installation Site

The repeater may be installed in any location suitable for electronic communications equipment, provided that the environmental conditions do not exceed the equipment specifications for temperature, humidity, and air quality.

Operating Temperature Range

-30°C (-22°F) to +60°C (+140°F) – consider cabinet temperature rise.

Humidity

Humidity range: At or below RH of 95%, non-condensing at 50°C (122°F).

Air Quality

For a rack mount, airborne particulates level must not exceed 25 µg/m3. For a cabinet mount, airborne particulates level must not exceed 90 µg/m3.

For more information on ground connection for lightning protection and power requirements, see the *Motorola Solutions Quality Standards Fixed Network Equipment Installation* manual, R56.

Mechanical Installation

- The repeater may be mounted in a rack or cabinet.
- Open frame racks accept multiple repeaters and ancillary equipment; EIA 48.3 cm (19 inch) rack configuration. Recommended clearance front and rear is 91.44 cm (36 in) minimum for servicing access.
- Cabinets must be equipped with ventilation slots or openings in the front (for air entry) and back or side panels (for air to exit). If several repeaters are installed in a single cabinet, be sure ventilation openings surround each repeater to allow for adequate cooling. All cabinets must have at least 15 cm (6 in) of open space between the air vents and any wall or other cabinets to allow for adequate air flow.

Mounting the SLR 5000 Series Repeater in a Rack or Cabinet

When mounting the SLR 5000 Series Repeater into a rack or cabine, use the included mounting hardware. This allows proper installation of the repeater within the center of gravity of a rack or to use in forward mounting the repeater in cabinet installations.

Note: For more information on modular racks and cabinets that are available for purchase, see "SLR 5000 Series Installation" in the *SLR 5000 Series Repeater Basic Service and Installation Manual*.

See Figure 1: 1a: Rack Installation on page 4 and Figure 2: 1b: Rack Installation on page 4 for an illustration of the mounting hardware configured for a rack installation.

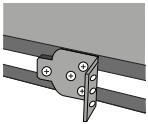

Figure 1: 1a: Rack Installation

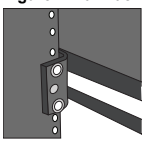

Figure 2: 1b: Rack Installation

See Figure 3: 2a: Mounting Hardware on page 4 and Figure 4: 2b: Mounting Hardware on page 4 for an illustration of the mounting hardware configured for a cabinet installation.

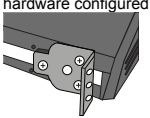

Figure 3: 2a: Mounting Hardware

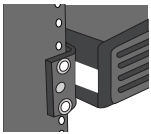

Figure 4: 2b: Mounting Hardware

Power Input Requirements

After the repeater equipment has been mechanically installed, electrical connections must be made. This involves making the following connections to:

- When applicable, AC input power cabling: 100–240 Volts (47–63Hz) at 4 A maximum.

  Caution: Do not apply AC power to the repeater at this time. Ensure that the circuit breaker associated with the AC outlet is turned off. The AC socket-outlet must be installed near the equipment and must be easily accessible.
- When applicable, DC input power cabling: 11–14.4 VDC at 17 A maximum.

  Warning: Ensure that the appropriate voltage is connected with a nominal 13.6VDC (11–14.4 VDC).

  Caution: The base station/repeater is to be connected to a battery supply that is in accordance with the applicable electrical codes for the end use country; for example, the National Electric Code ANSI/NFPA No.70 for the U.S.

Grounding

Connect a bonding wire from the repeaters ground screw to the site ground point. The size of the bonding wire used for this connection must be 8 AWG minimum.

Caution: For complete information regarding lightning protection, see the *Motorola Solutions Quality Standards Fixed Network Equipment Installation* manual, R56.
Follow all applicable electrical codes for the end use country and locality.

Cable Connections

- Connect RF coaxial cables to transmit (N-Type Female) and receive (BNC Female) antenna connectors.
- System cable connections are made through the Aux and/or Ethernet connectors.

Connectors

The following figure illustrates the position of the external connectors located on the back panel of the repeater. The following table identifies the connector types as well as the primary function of a connector.

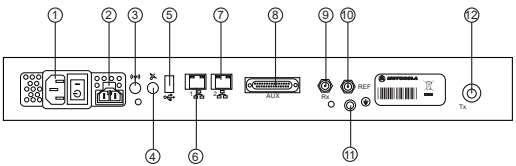

Figure 5: SLR 5000 Series Repeater Rear Panel Locations

Table 1: Connector Type and Primary Function

NO	Connector	Function(s)
1	C14 (IEC60320)	AC Power Inlet and Repeater Power Switch
2	Molex 42818-0212	DC Power Inlet and DC Charger Outlet
3	Option Dependent	Future Option 1
4	Option Dependent	Future Option 2
5	Type A Socket	USB
6	RJ-45 – Jack	Ethernet 1
7	RJ-45 – Jack	Ethernet 2
8	DB25 – Female	Rx Audio, Tx Audio, PTT, COR,Accessory Power, 1 PPS, and GPIO
9	BNC – Female	Receiver RF
10	BNC – Female	Frequency Reference Input
11	T30 TORX Screw	Bonding ground connection
12	N-Type – Female	Transmitter RF

Note: NO 3, 4, and 5 are not present after January 2023.

Post-Installation Checklist

Applying Power

After the SLR 5000 Series Repeater has been mechanically installed and all electrical connections have been made, you may now apply and check the repeater for proper operation.

Front Panel LEDs

After turning on the repeater power, the seven LEDs on the repeater front panel light for approximately one second to indicate that they are functional and go off for one second. Then, they indicate the operational status of the repeater.

Verifying Proper Operation

Operation of the repeater can be verified by:

- Observing the state of the seven LEDs located on the front panel, and
- Exercising radio operation.

Caution: Some repeater components can become extremely hot during operation. Turn off all power to the repeater and wait until sufficiently cool before touching the repeater.

Archiving: Copying the Repeater Codeplug Data to a Computer

To customize the repeater parameters (e.g., operating frequency, PL, codes, etc.), proceed to the Customer Programming Software (CPS) configuration procedures. You can back up the codeplug data of the SLR 5000 Series Repeater by using the CPS application.

The SLR 5000 Series Repeater connector to facilitate the CPS configuration is a USB Type-B host connection located on the front of the repeater.

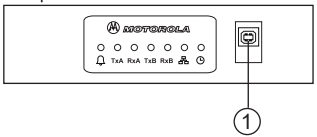

Figure 6: Front Panel

1 – USB service port