MOTOROLA SOLUTIONS

# MXM600 Installation Manual

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# Legal and Compliance Statements

## Intellectual Property and Regulatory Notices

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Customers or end users in EU and UK countries should contact their local equipment supplier representative or service center for information about the waste collection system in their country.

### Disclaimer

Please note that certain features, facilities, and capabilities described in this document may not be applicable to or licensed for use on a specific system, or may be dependent upon the characteristics of a specific mobile subscriber unit or configuration of certain parameters. Please refer to your Motorola Solutions contact for further information.

# Safety Information

This chapter is an extract of the multilingual safety booklet publication. For the latest safety information, refer to the separate safety booklet delivered with your radio.

**RF Energy Exposure and Product Safety Guide**

⚠ **IMPORTANT:** Before using this radio, read the guide enclosed with your radio which contains important operating instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulations.

# Compliance with RF Exposure Standards

Your Motorola Solutions two-way radio is designed and tested to comply with various national and international standards and guidelines for human exposure to radio frequency electromagnetic energy.

Your Motorola Solutions two-way radio complies with the following RF energy exposure standards and guidelines:

● International Commission on Non-Ionizing Radiation Protection (ICNIRP).

This radio complies with the ICNIRP exposure limits for occupational/controlled RF exposure environments at operating duty factors of up to 50 % talk-50 % listen. The ICNIRP authorizes this radio for occupational use only.

In terms of measuring RF energy for compliance with these exposure guidelines, your radio generates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

# Federal Communication Commission (FCC) Regulations

The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for two-way radios before they can be marketed in the U.S.

When two-way radios are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. The use of a product label directing users to specific user awareness information can facilitate exposure awareness. Your Motorola Solutions two-way radio has Exposure Product Label. Do not remove this RF Exposure Label from the device. Also, your Motorola Solutions user manual, or separate safety booklet includes information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

# RF Energy Exposure Awareness, Control Information, and Operational Instructions for Occupational Use

📝 **NOTE:** This radio is intended for use in occupational or controlled conditions where users have full knowledge of their exposure and can exercise control over their exposure to meet the occupational limits in Federal Communication Commission (FCC) or International Commission on Non-Ionizing Radiation Protection (ICNIRP) and International standards. This radio device is not authorized for general population consumer use.

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. High levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health, and industry work with organizations to develop standards for safe exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection.

All Motorola Solutions two-way radios are designed, manufactured, and tested to ensure that they meet government-established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of two-way radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it.

Refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits:

http://www.fcc.gov/oet/rfsafety/rf-faqs.html

http://www.osha.gov/SLTC/radiofrequencyradiation/index.html

# RF Exposure Compliance and Control Guidelines

Always adhere to the following procedures to control RF exposure to yourself and others and also to comply with the occupational/controlled environment exposure limits.

- Do not remove the RF Exposure Label from the device.

- User awareness instructions should accompany the device when transferred to other users.

- Do not use this device if it does not meet the operational requirements.

## Operating Instructions

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. It is important to transmit 50% of the time or less, because this radio generates measurable RF energy exposure only when transmitting.

- When transmitting, ensure that no people are closer than the minimum recommended lateral distance (Table 1: Minimum Lateral Distance from Vehicle Body on page 13 from the body of the vehicle. The sufficient distance from a properly installed externally mounted antenna (according to installation instructions) ensures that it meets the RF exposure requirements.

Table 1: Minimum Lateral Distance from Vehicle Body

| Minimum Lateral Distance from Vehicle Body |
|---|
| 90 cm (3 ft) |

> NOTE: If you are not sure of the rated power of your radio, contact your Motorola Solutions representative or dealer and supply the radio model number found on the radio model label. If you cannot determine the rated power, ensure 90 cm (3 ft) of separation from the body of the vehicle. The maximum power shown on the Federal Communication Commission (FCC) Grant may be higher than the rated power to allow production variation.

# Approved Accessories

Use only Motorola Solutions-approved supplied or replacement antennas, batteries, and accessories. Use of non-Motorola Solutions-approved antennas, batteries, and accessories may exceed Institute of Electrical and Electronic Engineers (IEEE) or International Commission on Non-Ionizing Radiation Protection (ICNIRP) radio frequency (RF) exposure guidelines.

For a list of Motorola Solutions-approved antennas, batteries, and other accessories, contact your dealer or local Motorola Solutions contact. Your nearest dealer can be found at http://www.motorolasolutions.com.

## Additional Information

For additional information on exposure requirements or other training information, visit http://responsibility.motorolasolutions.com/index.php/downloads/dow07-rfexposureassessmentstand/.

# Intrinsically Safe Radio Information

A radio that has been approved for intrinsic safety has the Intrinsically Safe Approval Label attached to the radio. This label specifies the hazardous Class, Division, or Group along with the part number of the battery that must be used.

The Intrinsically Safe Approval unit refers to a product that has been approved as intrinsically safe by an approval agency such as FM Approvals, CSA, UL, CENELEC, or ATEX. It certifies that a particular product meets the applicable intrinsic safety standards for specific types of hazardous classified locations of the agency.

# Operational Cautions for Intrinsic Safe Equipment

Radios must be shipped from the Motorola Solutions manufacturing facility with the hazardous atmosphere capability and the intrinsic safety approval labeling such as FM, UL, CSA, CENELEC, or ATEX approved. Radios will not be upgraded to this capability and labeled once they have been shipped to the field.

A modification changes the hardware of the unit from its original design configuration. Only the original product manufacturer can modify the hardware.

⚠ WARNING:

- Do not operate radio communications equipment in a hazardous atmosphere unless the radio type is especially qualified such as FM, UL, CSA, CENELEC, or ATEX approved. An explosion or fire may result.

- Do not operate your radio unit that has been approved as an intrinsically safe product in a hazardous atmosphere if your radio has been physically damaged such as cracked housing. An explosion or fire may result.

- Do not replace or charge batteries in a hazardous atmosphere. Contact sparking may occur while installing or removing batteries and cause an explosion or fire.

- Do not replace or change accessories in a hazardous atmosphere. Contact sparking may occur while installing or removing accessories and cause an explosion or fire.

- Turn off your radio before removing or installing a battery or accessory.

- Do not disassemble an intrinsically safe product in any way that exposes the internal circuits of the unit.

- Failure to use an intrinsically safe approved battery or approved accessories for your radio unit may result in the dangerously unsafe condition of an unapproved radio combination being used in a hazardous location.

- Unauthorized or incorrect modification of the intrinsically safe approved product negates the approval rating of the product.

- Incorrect repair or relabeling of any intrinsically safe agency-approved radio could adversely affect the approval rating of the unit.

- Use of your radio that is not intrinsically safe in a hazardous atmosphere could result in serious injury or death.

# Repair

A repair constitutes something done internally to the unit that brings the unit back to the original condition.

Repairs for Motorola Solutions products with intrinsically safe approval are the responsibility of the user. Repairs to a Motorola Solutions FM approved radio product must only be done at a location that has been FM audited under the FM 3605 repairs and service standard. Contact Motorola Solutions for assistance regarding repairs and service of Motorola Solutions intrinsically safe equipment.

Items not considered as repairs are items in which an action is performed on a unit that does not require the outer casing of the unit to be opened in a manner that exposes the internal electrical circuits of the unit.

## Do Not Substitute Options or Accessories

The Motorola Solutions communications equipment certified as intrinsically safe by the approving agency such as FM, UL, CSA, CENELEC, or ATEX is tested as a complete system which consists of the listed agency approved portable, approved battery, and approved accessories or options, or both. This approved portable and battery combination must be strictly observed. There must be no substitution of items, even if the substitute has been previously approved with a different Motorola Solutions communications equipment unit. The approving agency (FM, UL, CSA, CENELEC, or ATEX) lists all the approved configurations.

The Intrinsically Safe Approval Label affixed to the radio refers to the intrinsically safe classification of that radio product, and the approved batteries that can be used with that system.

The manual part number referenced on the Intrinsically Safe Approval Label identifies the approved accessories, options, or both that can be used with that portable radio unit.

Using a non-Motorola Solutions intrinsically safe battery and/or accessory with the Motorola Solutions approved radio unit voids the intrinsically safe approval of that radio unit.

## Electromagnetic Interference or Compatibility

If inadequately shielded, designed, or otherwise configured for electromagnetic compatibility, nearly every electronic device is susceptible to Electromagnetic Interference (EMI).

### Facilities

To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

### Medical Devices

**Pacemakers**
The Advanced Medical Technology Association (AdvaMed) recommends that a minimum separation of 15 cm (6 in.) be maintained between a hand-held wireless radio and a pacemaker. These recommendations are consistent with those of the U.S. Food and Drug Administration. Persons with pacemakers should:

- ALWAYS keep the radio more than 15 cm from their pacemaker when the radio is turned ON.

- Not carry the radio in the breast pocket.

- Use the ear opposite the pacemaker to minimize the potential of interference.

- Turn the radio OFF immediately if you have any reason to suspect that interference is taking place.

**Hearing Aids**
Some digital wireless radios may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.

**Other Medical Devices**
If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining this information.

# Conformance Statement

This product is in conformance with the TETRA (Terrestrial Trunked Radio) standard.

# Use of Communication Devices While Driving

Always obey the laws and regulations on the use of radios in the area where you drive.

- Give full attention to driving and to the road.

- Use hands-free operation, if available.

- Pull off the road and park before making or answering a call if driving conditions or regulations so require.

## Operational Warnings

⚠️ **WARNING:**
**For vehicles with an air bag, refer to the manual of the vehicle manufacturer before installation of electronic equipment to avoid interference with air bag wiring.**

Do not mount or place a radio over an air bag or in the air bag deployment area. Air bags inflate with great force. If your radio is placed in the air bag deployment area and the air bag inflates, your radio propels with great force and cause serious injury to occupants of the vehicle.

**Potentially Explosive Atmospheres (explosive atmospheres refers to hazard classified locations that may contain hazardous gas, vapors, or dusts)**

Turn off your radio before entering any area with a potentially explosive atmosphere, unless it is a radio type especially qualified for use in such areas as "Intrinsically Safe" such as Factory Mutual, CSA, UL, CENELEC, or ATEX approved.

The areas with potentially explosive atmospheres include fueling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles, such as grain, dust, or metal powders. Areas with potentially explosive atmospheres are often but not always posted.

**Blasting Caps And Blasting Areas**

To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted: "Turn Off Two-way Radio". Obey all signs and instructions.

For radios installed in vehicles fueled by liquefied petroleum gas, refer to the (U.S.) National Fire Protection Association standard, NFPA 58, for storage, handling, and/or container information. For a copy of the liquefied petroleum standard, NFPA 58, contact the National Fire Protection Association, One Battery Park, Quincy, MA.

# Read Me First

This manual is intended for use by service technicians familiar with similar types of equipment. This manual contains information required for the installation of the equipment described and is current as of the printing date. Changes that occur after the printing date are incorporated as a complete Manual revision or alternatively as additions. The radio platform is available in different software versions and various hardware configurations around the mobile radio. Different configurations are reflected in the product names. This manual separates information between the different products when a difference occurs.

⚠️ **WARNING:** The junction box (GMLN7825_) is only compatible with MXM600.

📝 **NOTE:** Only trained personnel can install the mobile terminal. All installations must take place in accordance with the requirements of the vehicle and antenna manufacturer or supplier.

## Notations Used in This Guide

This guide is designed to give you more visual cues. The following graphic icons are used throughout the user guide.

⚠️ **DANGER:** The signal word DANGER with the associated safety icon implies information that, if disregarded, will result in death or serious injury.

⚠️ **WARNING:** The signal word WARNING with the associated safety icon implies information that, if disregarded, could result in death or serious injury, or serious product damage.

⚠️ **CAUTION:** The signal word CAUTION with the associated safety icon implies information that, if disregarded, could result in minor or moderate injury, or serious product damage.

◇ **IMPORTANT:** IMPORTANT statements contain information that is crucial to the discussion at hand, but is not CAUTION or WARNING. There is no warning level associated with the IMPORTANT statement.

📝 **NOTE:** NOTE contains information more important than the surrounding text, such as exceptions or preconditions. They also refer the reader elsewhere for additional information, remind the reader how to complete an action (when it is not part of the current procedure, for instance), or tell the reader where something is on the screen. There is no warning level associated with a notice.

The following special notations highlight certain information:

**Table 2: Special Notations**

| Example | Description |
|---|---|
| **Menu** key or **PTT** button | Bold words indicate a name of a key, button, or soft menu item. |
| *Entering TMO* tone | Italic words indicate a name of the tone. |
| `Powering Off` | Typewriter words indicate the HMI strings or messages displayed on your radio. |
| **Setup → Tones → All Tones** | Bold words with the arrow between indicate navigation structure in the menu items. |

Chapter 1

# Model Information and Accessories

This section provides information on your radio specifications and accessories.

## 1.1
## Model Descriptions

**Table 3: Radio Model Descriptions**

| Model | Description |
|---|---|
| M1 | The M1 radio model includes the following items:<br>● Dash/Desk Mount with Mobile Terminal, with Dash/Desk Control Head<br>● Speaker<br>● Microphone or handset<br>● Standard user guide<br>● Installation accessories<br>● Optional power supplies |
| M2 | The M2 radio model includes the following items:<br>● Single Remote Mount with Mobile Terminal, with Single Remote Expansion Head (SREH)<br>● One control head<br>● Optional with IP54 or IP67 Ethernet Remote Control Head (RECH) or Telephone Style Control Head (TSCH)<br>● Speaker<br>● Microphone or handset<br>● Remote Mount Ethernet cables<br>● Standard user guide<br>● Installation accessories<br><br>**NOTE:** M2 is suitable for Motorcycle Mount. |
| M3 | The M3 radio model includes the following items:<br>● Dual Remote Mount with Mobile Terminal, with Dual Remote Expansion Head (DREH)<br>● Two Control Heads<br>● Optional with IP54 RECH, IP67 RECH, or TSCH<br>● Speaker<br>● Microphone or handset<br>● Remote Mount Ethernet cables |

| Model | Description |
|---|---|
| | • Standard user guide |
| | • Installation accessories |
| | 📝 **NOTE:** M3 is suitable for Motorcycle Mount. |
| M4 | The M4 radio model includes the following items: |
| | • Databox Mount Configuration, with Expansion Head Options of SREH or DREH or DEH, without Control Head and Remote Mount Cables |
| | • Standard user guide |
| | • Installation accessories |
| | • Power supply |

📝 **NOTE:** No other combinations are permitted.

## 1.2
# Sales Model Nomenclature

**Table 4: Sales Model Nomenclature**

| Position | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Typical Model Number | MD | M | 7 | 9 | T | F | T | 6 | T | Z | 1 | A | N |

**Table 5: Sales Models – Description of Position**

| Position | Description | Value |
|---|---|---|
| 0 | Region | AZ = Asia |
| | | AN = Australia or New Zealand |
| | | MD = Europe |
| 1 | Type of Unit | M = Mobile Product |
| 2 and 3 | Model Series | 79 = MXM600 |
| 4 | Frequency Band | T = 350–470 MHz |
| | | U = 806–870 MHz |
| 5 | Power Level | F = 10.0 W |
| 6 | Physical Packages | T = Standard |
| 7 | Channel Spacing | 6 = 20/25 kHz |
| 8 | Primary Operation | T = TDMA Digital Dual Mode |
| 9 | Primary System Type | Z = TETRA |
| 10 | Feature Level | 1 = Basic (Dash) |
| | | 2 = Limited Package (Databox) |

| Position | Description | Value |
|---|---|---|
| | | 3 = Limited Plus (Serial Legacy Expansion Head and Serial Control Heads) |
| | | 5 = Standard Package (Single Remote) |
| | | 6 = Standard Plus (Dual Remote) |
| 11 | Version | Model Version – for example A, B, and C |
| 12 | Unique Variation | N = Standard Package |
| | | G = BSI Models |

## 1.3
# Mobile Terminal Model Information

Motorola Solutions uses sales model prefixes to denote regional kit differences. AZ, MD or AN can be found in use.

Table 6: Type and Model Numbers for 350–470 MHz

| Type No. | Sales Model No. | Region | Short Description | Model |
|---|---|---|---|---|
| MTC953DE | MDM79TFT6TZ1AN | EMEA | MXM600 Dash/Desk 350–470 MHz MTC953DE | M1 |
| | MDM79TFT6TZ1AG | | MXM600 BSI Dash/Desk 350–470 MHz MTC953DE | M1 |
| | MDM79TFT6TZ5AN | | MXM600 Single Remote 350–470 MHz MTC953DE | M2 |
| | MDM79TFT6TZ5AG | | MXM600 BSI Single Remote 350–470 MHz MTC953DE | M2 |
| | MDM79TFT6TZ6AN | | MXM600 Dual Remote 350–470 MHz MTC953DE | M3 |
| | MDM79TFT6TZ6AG | | MXM600 BSI Dual Remote 350–470 MHz MTC953DE | M3 |
| | MDM79TFT6TZ2AN | | MXM600 Databox 350–470 MHz MTC953DE | M4 |
| | MDM79TFT6TZ2AG | | MXM600 BSI Databox 350–470 MHz MTC953DE | M4 |
| | AZM79TFT6TZ1AN | APAC/ LACR | MXM600 Dash/Desk 350–470 MHz MTC953DE | M1 |
| | AZM79TFT6TZ6AN | | MXM600 Data/Single/Dual REM 350–470 MHz MTC953DE | M2/M 3/M4 |
| | ANM79TFT6TZ1AN | AUS/NZ | MXM600 Dash/Desk 350–470 MHz MTC953DE | M1 |
| | ANM79TFT6TZ5AN | | MXM600 Single Remote 350–470 MHz MTC953DE | M2 |

**Table 7: Type and Model Numbers for 806−870 MHz**

| Type No. | Sales Model No. | Region | Short Description | Model |
|---|---|---|---|---|
| MTC753DE | AZM79UFT6TZ1AN | APAC/ LACR/ EMEA/NA | MXM600 Dash/Desk 806−870 MHZ MTC753DE | M1 |
| | AZM79UFT6TZ6AN | | MXM600 Data/Single/Dual REM 806−870 MHZ MTC753DE | M2/M3/M4 |
| | ANM79UFT6TZ1AN | AUS/NZ | MXM600 Dash/Desk 806−870 MHZ MTC753DE | M1 |
| | ANM79UFT6TZ5AN | | MXM600 Single Remote 806−870 MHZ MTC753DE | M2 |

⚠️ **WARNING:** Single Remote Expansion Head (SREH), Dual Remote Expansion Head (DREH), or Databox Expansion Head (DEH) are only compatible with Ethernet Remote Heads. Do **not** mix Ethernet control heads with non-Ethernet control heads. Ensure the use of appropriate RJ50 Ethernet cables for connecting a SREH, DREH, or DEH with a Telephone Style Control Head (TSCH), IP54 Remote Ethernet Control Head (RECH), IP67 RECH, or for connecting a DREH with another DREH. Incorrect connections can damage the transceiver.

## 1.4
# Model Specifications

Technical information can change without further notice.

**Table 8: General Specifications**

| Parameter | Value | |
|---|---|---|
| ETSI | ETSI 300 394 1 | |
| | MXM600 350−470 MHz | MTC953DE |
| | MXM600 806−870 MHz | MTC753DE |
| Temperature Range for Transceiver | Operating | −30 °C to +60 °C (+70 with limited performance) |
| | Storage | −40 °C to +85 °C |
| Power Supply | Minimum | 10.8 VDC |
| | Nominal | 13.2 VDC |
| | Maximum | 15.6 VDC |
| | Maximum Current | Approximately 5.5 A |
| GNSS Performance | Acquisition Sensitivity | GPS: −145 dBm (guaranteed), −146 dBm (typical) |
| | Tracking Sensitivity | GPS: −163 dBm (guaranteed); −164 dBm (typical) BeiDou: −155 dBm (guaranteed); −156 dBm (typical) Glonass: −157 dBm (guaranteed); −160 dBm (typical) Galileo: −155 dBm (guaranteed); −157 dBm (typical) |
| Bluetooth | | Bluetooth 5.3, Class 1, 90 m range (line-of-sight) |

| Parameter | Value | | |
|---|---|---|---|
| Wi-Fi | 2.4 GHz | | |
| | 5 GHz | | |
| **Control Head Dimension and Weight** | | | |
| Control Head | | Dimension H x W x D (mm) | Weight (g) |
| Dash/Desk Mount | Transceiver and Control Head | 60 x 188 x 200 | 1530 |
| | Control Head | 60 x 188 x 31 | 235 |
| Single Remote | Transceiver, Remote Expansion Head, and Top Cover | 45 x 172 x 186 | 1355 |
| Dual Remote | Transceiver, Remote Expansion Head, and Top Cover | 45 x 172 x 194 | 1415 |
| IP54 Remote Ethernet Control Head (RECH) | | 60 x 188 x 39 | 332 |
| IP67 Remote Ethernet Control Head (RECH) | | 60 x 188 x 39 | 338 |
| Telephone Style Control Head (TSCH) | | 220 x 65 x 75 | 450 (excluding cable) |
| Databox | Transceiver, Expansion Head, and Top Cover | 45 x 172 x 192 | 1450 |
| **Transceiver Dimension** | | | |
| Transceiver | | Dimension H x W x D (mm) | |
| With Top Cover | | 44.5 x 171.4 x 167 | |
| Without Top Cover | | 44.5 x 169.5 x 167 | |

**Table 9: Receiver Specifications**

| Parameter | Value | |
|---|---|---|
| Receiver Type | Direct Conversion | |
| Frequency Range | MTC953DE | 350−470 MHz |
| | MTC753DE | 806−870 MHz |
| Channel Spacing | 25 kHz | |
| Sensitivity (3.5%) BER | Static: −116 dBm (guaranteed); −118 dBm (typical) | |
| | Dynamic: −107 dBm (guaranteed); −110 dBm (typical) | |
| Intermodulation | −47 dBm | |
| Blocking (50−100 kHz) | −40 dBm | |
| Spurious Rejection | −45 dBm | |
| Adjacent Channel Interference Ratio | −45 dBm | |

| Parameter | Value | |
|---|---|---|
| Frequency Stability | Locked to Base | +/− 100 Hz |
| | Unlocked to Base | +/− 1 kHz |
| Audio Rated (@4 Ω) | For External Speaker: | 10 W |
| | Distortion at Rated Audio: | 5% Maximum |

Table 10: Transmitter Specifications

| Parameter | Value | |
|---|---|---|
| Modulation Type | π∕4DQPSK (pi/4DQPSK) | |
| RF Power | Adjustable to Class 2 (10 W) and Class 3 (3 W) only. | |
| Frequency Range | MTC953DE | 350−470 MHz |
| | MTC753DE | 806−870 MHz |
| Frequency Stability | Locked to Base | +/− 100 Hz |
| | Not Locked to Base | +/− 1 kHz |
| Spurious Emissions (Conducted/Radiated) | −36 dBm <= 1 GHz | |
| | −30 dBm > 1 GHz | |
| Adjacent Channel Power Ratio (@ ± 25 kHz) | −60 dBc | |

## 1.5
# MXM600 Accessories-to-Model Chart

**NOTE:** M1, M2, M3, and M4 refer to radio combinations. Refer to .

Table 11: Antennas for 350−470 MHz

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **GMAE4255_** Antenna TETRA Panel Mount 380−430 MHz | x | x | x | x |
| **GMAE4256_** Antenna TETRA MAG MT 380−430 MHz | x | x | x | x |
| **GMAE4258_** Antenna TETRA Covert Strip 380−410 MHz | x | x | x | x |
| **GMAE4259_** Antenna TETRA Covert Strip 410−430 MHz | x | x | x | x |
| **GMAE4262_** Antenna TETRA Wall Mount 380−400 MHz | x | x | x | x |
| **GMAE4263_** Antenna TETRA Wall Mount 410−430 MHz | x | x | x | x |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|:---:|:---:|:---:|:---:|
| **GMAE4266_**<br>Antenna Motorcycle TETRA 380–400 MHz | | x | x | |
| **GMAE4267_**<br>Antenna Motorcycle TETRA 410–430 MHz | | x | x | |
| **AN000459A01**<br>Antenna, Mobile, Bluetooth-Wi-Fi, Magnetic Mount | x | x | x | x |
| **GMAE4270_**<br>Antenna Glass Mount 450–470 MHz | x | x | x | x |
| **GMAE4271_**<br>Antenna Panel or Roof Mount 430–470 MHz | x | x | x | x |
| **GMAE4272_**<br>Antenna Magnetic Mount 430–470 MHz | x | x | x | x |
| **GMAE4273_**<br>Antenna, Stamped Metal, Antenna Covert Glass Strip 450–470 MHz | x | x | x | x |
| **GMAE4275_**<br>Antenna Wall Mount 450–470 MHz | x | x | x | x |
| **GMAE4507_**<br>Antenna Combined TETRA or GPS 380–430 MHz SMA | x | x | x | x |
| **GMAG4253_**<br>Antenna GPS Only Panel Mount SMA | x | x | x | x |
| **GMAG4254_**<br>Antenna GPS Only Magnetic Mount SMA | x | x | x | x |
| **PMAE4115_**<br>Antenna, Mobile, 350–470 MHz, UHF-Bluetooth-Wi-Fi-GNSS, Panel Mount | x | x | x | x |
| **PMAE4116_**<br>Antenna, Mobile, 350–470 MHz, UHF-Bluetooth-Wi-Fi-GNSS, Magnetic Mount | x | x | x | x |

Table 12: Antennas for 806–870 MHz

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|:---:|:---:|:---:|:---:|
| **GMAF4411_**<br>Antenna TETRA Panel Mount 800 MHz | x | x | x | x |
| **GMAF4412_**<br>Antenna TETRA Mag Mount 0 dB 800 MHz | x | x | x | x |
| **GMAF4413_**<br>Antenna TETRA Mag Mount 3 dB 800 MHz | x | x | x | x |
| **GMAF4414_**<br>Antenna TETRA Covert 0 dB 800 MHz | x | x | x | x |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| GMAF4416_<br>    Antenna TETRA Wall Mount 800 MHz | x | x | x | x |
| GMAF4417_<br>    Antenna TETRA Motorcycle 0 dB 800 MHz | x | x | x | x |
| AN000459A01_<br>    Antenna, Mobile, Bluetooth-Wi-Fi, Magnetic Mount | x | x | x | x |
| GMAG4253_<br>    Antenna GPS Only Panel Mount SMA | x | x | x | x |
| GMAG4254_<br>    Antenna GPS Only Magnetic Mount SMA | x | x | x | x |
| PMAF4408_<br>    Antenna, Stamped Metal, Assembly, Antenna, TETRA/GPS<br>    Combo Antenna 806–870 MHz SMA 806–870 MHz | | x | x | |
| PMAF4415_<br>    Antenna, Mobile, 806–870 MHz, BT-Wi-Fi-GNSS, Panel Mount | x | x | x | x |

**Table 13: Cables**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMKN4320_<br>    RJ50 Ethernet Cable, 3 m (IP67 RECH) | | x | x | |
| PMKN4321_<br>    RJ50 Ethernet Cable, 5 m (IP67 RECH) | | x | x | |
| PMKN4322_<br>    RJ50 Ethernet Cable, 7 m (IP67 RECH) | | x | x | |
| PMKN4323_<br>    RJ50 Ethernet Cable, 10 m (IP67 RECH) | | x | x | |
| PMKN4324_<br>    RJ50 Ethernet Cable, 15 m (IP67 RECH) | | x | x | |
| PMKN4325_<br>    RJ50 Ethernet Cable, 40 m (IP67 RECH) | | x | x | |
| PMKN4280_<br>    Remote Ethernet Cable, 0.5 m | | x | x | |
| PMKN4141_<br>    Remote Ethernet Cable, 3 m | | x | x | |
| PMKN4140_<br>    Remote Ethernet Cable, 5 m | | x | x | |
| PMKN4139_<br>    Remote Ethernet Cable, 7 m | | x | x | |
| PMKN4138_<br>    Remote Ethernet Cable, 10 m | | x | x | |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMKN4136_<br>Remote Ethernet Cable, 12 m | | x | x | |
| PMKN4146_<br>Remote Ethernet Cable, 15 m | | x | x | |
| PMKN4135_<br>Remote Ethernet Cable, 40 m | | x | x | |
| PMKN4176_<br>Cable, Transceiver Cross Over Ethernet Cable, 0.5 m | | | x | |
| PMKN4177_<br>Cable, Assembly, Transceiver Cross Over Ethernet Cable, 3 m | | | x | |
| PMKN4178_<br>Cable, Assembly, Transceiver Cross Over Ethernet Cable, 7 m | | | x | |
| PMKN4429_<br>Expansion Cable, 2.3 m (IP67 RECH) | | x | x | |
| PMKN4456_<br>Expansion Cable, 4 m (IP67 RECH) | | x | x | |
| PMKN4134_<br>TSCH Y-Cable | | x | x | |
| PMKN4133_<br>Y-Cable (IP54 RECH) | | x | x | |
| PMKN4333_<br>Y-Cable (IP67 RECH) | | x | x | |
| GMDN3836_<br>Expansion Cable 2 m, 25-Pin, GCAI (Non-PVC) | | x | x | |
| PMKN4120_<br>Ignition Sense Cable | x | x | x | x |

Table 14: Transceiver Rear Connector

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMKN4303_<br>Cable, Assembly, 26-Pin Connector Universal Cable | x | x | x | x |
| PMLN8541_<br>MXM600 Rear Accessory Connector (with Dust Cover) | x | x | x | x |
| PMLN6487_<br>Accessory Connector Kit | | x | x | |
| PMLN5072_<br>Rear Accessory Connector Kit (MTM5000 Accessory) | x | x | x | x |

**Table 15: Control Heads**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|:---:|:---:|:---:|:---:|
| **PMVN4508_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Roman | | x | x | |
| **PMVN4509_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Arabic | | x | x | |
| **PMVN4510_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Cyrillic | | x | x | |
| **PMVN4511_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Taiwanese | | x | x | |
| **PMVN4512_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Chinese | | x | x | |
| **PMVN4513_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Korean | | x | x | |
| **PMVN4514_**<br>IP54 Remote Ethernet Control Head (IP54 RECH) Japanese | | x | x | |
| **PMVN4525_**<br>Telephone Style Control Head (TSCH) Roman | | x | x | |
| **PMVN4530_**<br>Telephone Style Control Head (TSCH) Arabic | | x | x | |
| **PMVN4579_**<br>IP67 Remote Ethernet Control Head (IP67 RECH) Roman | | x | x | |
| **PMVN4580_**<br>IP67 Remote Ethernet Control Head (IP67 RECH) Chinese | | x | x | |
| **PMVN4582_**<br>IP67 Remote Ethernet Control Head (IP67 RECH) Arabic | | x | x | |
| **PMVN4586_**<br>Dash/Desk Control Head Roman | x | | | |
| **PMVN4587_**<br>Dash/Desk Control Head Chinese | x | | | |
| **PMVN4588_**<br>Dash/Desk Control Head Korean | x | | | |
| **PMVN4589_**<br>Dash/Desk Control Head Arabic | x | | | |
| **PMVN4590_**<br>Dash/Desk Control Head Taiwanese | x | | | |
| **PMVN4591_**<br>Dash/Desk Control Head Japanese | x | | | |
| **PMVN4592_**<br>Dash/Desk Control Head Cyrillic | x | | | |

**Table 16: Control Heads Legacy**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **PMVN4386_**<br>Control Head Dash/Desk English | x | | | |
| **PMVN4387_**<br>Control Head Dash/Desk Chinese | x | | | |
| **PMVN4388_**<br>Control Head Dash/Desk Korean | x | | | |
| **PMVN4389_**<br>Control Head Dash/Desk Arabic | x | | | |
| **PMVN4390_**<br>Control Head Dash/Desk Taiwanese | x | | | |
| **PMVN4391_**<br>Control Head Dash/Desk Japanese | x | | | |
| **PMVN4392_**<br>Control Head Dash/Desk Cyrillic | x | | | |
| **PMVN4393_**<br>Control Head Dash/Desk Hebrew | x | | | |
| **PMVN4408_**<br>Ethernet ECH Remote Roman | | x | x | |
| **PMVN4409_**<br>Ethernet ECH Remote Arabic | | x | x | |
| **PMVN4410_**<br>Ethernet ECH Remote Cyrillic | | x | x | |
| **PMVN4411_**<br>Ethernet ECH Remote Hebrew | | x | x | |
| **PMWN4025_**<br>Telephone Style Control Head (TSCH) Roman | | x | x | |
| **PMWN4030_**<br>Telephone Style Control Head (TSCH) Arabic | | x | x | |
| **PMWN4009_**<br>Control Head Dash/Desk English | x | | | |
| **PMWN4010_**<br>Control Head Dash/Desk Chinese | x | | | |
| **PMWN4011_**<br>Control Head Dash/Desk Korean | x | | | |
| **PMWN4012_**<br>Control Head Dash/Desk Arabic | x | | | |
| **PMWN4013_**<br>Control Head Dash/Desk Taiwanese | x | | | |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMWN4014_<br>    Control Head Dash/Desk Cyrillic | x | | | |
| PMWN4015_<br>    Control Head Dash/Desk Hungarian | x | | | |
| PMWN4016_<br>    Control Head Dash/Desk Hebrew | x | | | |
| PMWN4024_<br>    Ethernet ECH Remote Roman | | x | x | |
| PMWN4031_<br>    Telephone Style Control Head (TSCH) Cyrillic | | x | x | |
| PMWN4032_<br>    Telephone Style Control Head (TSCH) Hebrew | | x | x | |
| PMWN4033_<br>    Telephone Style Control Head (TSCH) Chinese | | x | x | |
| PMWN4034_<br>    Telephone Style Control Head (TSCH) Taiwanese | | x | x | |
| PMWN4035_<br>    Telephone Style Control Head (TSCH) Korean | | x | x | |
| PMWN4036_<br>    Ethernet ECH Remote Arabic | | x | x | |
| PMWN4037_<br>    Ethernet ECH Remote Cyrillic | | x | x | |
| PMWN4038_<br>    Ethernet ECH Remote Hebrew | | x | x | |
| PMWN4042_<br>    Control Head Dash/Desk Japanese | x | | | |

Table 17: Expansion Head Kits

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMLN9068_<br>    Single Remote Expansion Head | | x | | x |
| PMLN8597_<br>    Dual Remote Expansion Head | | | x | x |
| PMLN9069_<br>    Databox Expansion Head | | | | x |
| PMLN4904_<br>    Serial Expansion Head (Serial Control Head Compatible) | | | | x |

Table 18: Junction Box

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| GMLN7825_<br>    MXM600 Data Junction Box with Accessory Connector | x | x | x | |
| PMKN4300_<br>    2 m Junction Box Cable to Transceiver (MXM600) | x | x | x | |
| PMKN4301_<br>    4 m Junction Box Cable to Transceiver (MXM600) | x | x | x | |
| PMKN4302_<br>    5 m Junction Box Cable to Transceiver (MXM600) | x | x | x | |

Table 19: Microphones

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMMN4086_<br>    Hearer Speaker Microphone with Jack Vol C, and Emergency Button | x | x | x | |
| PMMN4087_<br>    Audio Accessory-Headset, Visor Mounted Microphone | x | x | x | |
| RMN5054_<br>    Smart Visor Microphone | x | x | x | |
| RMN5107_<br>    Compact Mobile Microphone | x | x | x | |
| RMN5111_<br>    Heavy-Duty Microphone | x | x | x | |
| PMMN4127_<br>    Operational Critical Wireless Remote Speaker Mic WM500 | x | x | x | |
| RMN5106_<br>    Desktop Microphone | x | | | |
| MDHLN7016_<br>    IMPRES Telephone Style Handset Kit | x | x | x | |

Table 20: Mounting (Control Head)

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMLN4912_<br>    Trunnion Kit | | x | x | |
| PMLN5093_<br>    Enhanced Control Head DIN Trunnion | | x | x | |
| PMLN5092_<br>    Bracket, Motorcycle Enhanced Control Head Trunnion, SS | | x | x | |

Table 21: Mounting (Transceiver)

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMLN8620_<br>    Trunnion Standard Kit (MXM600) | x | x | x | x |
| PMLN5094_<br>    DIN Mounting Kit | x | x | x[1] | x |
| RLN4779_<br>    Key Lock Mounting Kit | x | x | x | x |

Table 22: Desktop Mount

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| GLN7318_<br>    Base Tray without Speaker Ariane | x | | | |
| RSN4005_<br>    Desktop Tray with Speaker | x | | | |

Table 23: Power Cables (to Mobile Terminal)

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMKN4289_<br>    Cable, Assembly, DC Power Cable, 1.0 m with 15 A Fuse<br>    (MXM600) | x | x | x | x |
| PMKN4243_<br>    Cable, Assembly, DC Power Cable, 3.1 m with 15 A Fuse<br>    (MXM600) | x | x | x | x |
| PMKN4275_<br>    Cable, Assembly, DC Power Cable, 6.2 m with 15 A Fuse<br>    (MXM600) | x | x | x | x |
| GKN6270_<br>    Cable, Assembly, Power Cable 3 m with 10 A Fuse | x | x | x | x |
| GKN6274_<br>    Cable, Assembly, Power Cable 6 m with 10 A Fuse | x | x | x | x |

Table 24: Power Supplies

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMPN4076_<br>    Wedge Power Supply | x | | | |
| WAPN4005_<br>    12–18 Amp Switched-Mode Isolated Converter | x | x | x | x |

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[1] IP67 RECH requires additional attention during installation, see Inserting the IP67 RECH with the DIN Mount Bracket into the DIN Frame in *MXM600 Installation Manual, MN009998A01*

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **WAPN4008_**<br>    12–18 Amp Switched-Mode Converter | x | x | x | x |
| **PMKN4305_**<br>    DC Power Cable for AC-DC Adapter, 2.4 m (MXM600) | x | | | |
| **PMKN4165_**<br>    DC Power Cable for AC-DC Adapter (MTM5000 Accessory) | x | | | |

**Table 25: Line Cords for Power Supply**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **3085801L01**<br>    Argentina AC Cord | x | | | |
| **3087791G22**<br>    Brazil Connector AC Power | x | | | |
| **NTN7373_**<br>    110 V Charger Line Cord | x | | | |
| **NTN7374_**<br>    220 V Charger Line Cord | x | | | |
| **NTN7375_**<br>    UK 240 V Power Supply | x | | | |

**Table 26: Programming or Data**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **HKN6184_**<br>    Cable, Assembly, USB Programming Cable (Mobile Micro-<br>    phone Port) | x | x | x | |
| **PMKN4104_**<br>    Active Data Cable | x | x | x | x |
| **PMKN4105_**<br>    Programming Cable | x | x | x | x |
| **PMKN4108_**<br>    KVL Cable for Mobile | x | x | x | x |
| **PMKN4110_**<br>    USB Flash Cable (Terminal Rear Port) | x | x | x | x |

**Table 27: Push-To-Talk (PTT) Switches**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **RLN4858_**<br>    Gooseneck PTT | x | x | x | |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| RLN5926_<br>    Push-Button PTT | x | x | x | |

**Table 28: Speakers**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| RSN4002_<br>    Accessory Kit, 13 W External Speaker | x | x | x | |
| RSN4003_<br>    7.5 W, External Speaker | x | x | x | |
| RSN4004_<br>    5 W, External Speaker | x | x | x | |
| AC000240A02<br>    15.6 W, Wideband External Speaker (MXM600) | x | x | x | |
| PMKN4119_<br>    Speaker Extension Cable | x | x | x | |

**Table 29: Telephone Style Control Head Identification**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMLN6335_<br>    Color Code (White) Pack of Five | | x | x | |
| PMLN6336_<br>    Color Code (Green) Pack of Five | | x | x | |
| PMLN6337_<br>    Color Code (Red) Pack of Five | | x | x | |
| PMLN6338_<br>    Color Code (Yellow) Pack of Five | | x | x | |
| PMLN6339_<br>    Color Code (Blue) Pack of Five | | x | x | |

**Table 30: Miscellaneous**

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| 01015001001<br>    Toroids Kit | | x | x | |
| PMLN6488_<br>    Ferrites Pack of Three | | x | x | |
| GMLN5091_<br>    External Alarm Relay | x | x | x | |
| RLN4836_<br>    Emergency Foot Switch | x | x | x | |

Table 31: Serial Expansion Head Compatible Control Heads and Accessories

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| PMVN4379_<br>Motorcycle Control Head English | | | | x |
| PMVN4380_<br>Motorcycle Control Head Chinese | | | | x |
| PMVN4381_<br>Motorcycle Control Head Korean | | | | x |
| PMVN4382_<br>Motorcycle Control Head Arabic | | | | x |
| PMVN4383_<br>Motorcycle Control Head Taiwanese | | | | x |
| PMVN4385_<br>Motorcycle Control Head Cyrillic | | | | x |
| PMVN4394_<br>Remote Control Head English | | | | x |
| PMVN4395_<br>Remote Control Head Chinese | | | | x |
| PMVN4396_<br>Remote Control Head Korean | | | | x |
| PMVN4397_<br>Remote Control Head Arabic | | | | x |
| PMVN4398_<br>Remote Control Head Taiwanese | | | | x |
| PMVN4399_<br>Remote Control Head Japanese | | | | x |
| PMVN4400_<br>Remote Control Head Cyrillic | | | | x |
| PMVN4425_<br>Remote Control Head Hebrew | | | | x |
| PMWN4002_<br>Motorcycle Control Head English | | | | x |
| PMWN4003_<br>Motorcycle Control Head Chinese | | | | x |
| PMWN4004_<br>Motorcycle Control Head Korean | | | | x |
| PMWN4005_<br>Motorcycle Control Head Arabic | | | | x |
| PMWN4006_<br>Motorcycle Control Head Taiwanese | | | | x |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **PMWN4007_**<br>Motorcycle Control Head Cyrillic | | | | x |
| **PMWN4008_**<br>Motorcycle Control Head Hungarian | | | | x |
| **PMWN4017_**<br>Remote Control Head English | | | | x |
| **PMWN4018_**<br>Remote Control Head Chinese | | | | x |
| **PMWN4019_**<br>Remote Control Head Korean | | | | x |
| **PMWN4020_**<br>Remote Control Head Arabic | | | | x |
| **PMWN4021_**<br>Remote Control Head Taiwanese | | | | x |
| **PMWN4022_**<br>Remote Control Head Cyrillic | | | | x |
| **PMWN4023_**<br>Remote Control Head Hungarian | | | | x |
| **PMWN4044_**<br>Motorcycle Control Head Japanese | | | | x |
| **PMWN4046_**<br>Remote Control Head Hebrew | | | | x |
| **PMWN4043_**<br>Remote Control Head Japanese | | | | x |
| **PMKN4030_**<br>Next Generation Control Head (NGCH) Motorcycle TELCO Cable, 2.3 m | | | | x |
| **RKN4077_**<br>Remote Mount Cable, 3 m | | | | x |
| **RKN4078_**<br>Remote Mount Cable, 5 m | | | | x |
| **RKN4079_**<br>Remote Mount Cable, 7 m | | | | x |
| **PMKN4020_**<br>Cable, Assembly, Remote Mount Cable - 10 m | | | | x |
| **PMKN4029_**<br>Cable, Assembly, Expansion Cable, 25-Pin, GCAI, USB | | | | x |

| Part Number and Description | M1 | M2 | M3 | M4 |
|---|---|---|---|---|
| **PMKN4056_**<br>    Cable, Assembly, GCAI Accessory Expansion Cable 4 m | | | | x |

**NOTE:**

Complex installations requiring extended cable runs and Remote Mount Control Heads with Audio Accessories such as the Telephone Style Handset (HLN7016_) can benefit from careful routing of cables, and in some cases additional Electro Magnetic Compatibility (EMC) reduction techniques such as using Ferrite or Toroid accessories. Suitable examples of Ferrite or Toroid accessories are as follows:

● Ferrite Clamps, Part Numbers PMLN6488A (pack of three 91012044001), 91012044002, and 91012044003.

● Toroid, Part Number 01015001001.

## Chapter 2

# Vehicle Preparation

This section provides guidelines on preparing your vehicle for radio installation.

## 2.1
## General Guidelines for Radio Installation

Install this product in a vehicle according to the vehicle manufacturer guidelines, and the instructions detailed in this manual. Use only the Motorola Solutions parts specified in this manual.

Failure to do so could result in noncompliance to the Automotive Directive (72/245/EEC, as amended by 95/54/EC). For products fitted to two and three wheeled vehicles, Directive 97/24/EC applies.

This radio is designed and certified for terrestrial use only.

An accessory connector at the rear of your radio enables you to attach different accessories (see Accessory Connection Plan on page 105).

A mobile microphone port at the front control head panel provides the connection for various types of microphones.

Install your radio in a vehicle, using one of the following methods:

● Using the direct mounting trunnion and power cables supplied with a standard radio package.

● Remote mounted in the car radio cut-out (using the required DIN mounting kit PMLN5094), per ISO7736.

● Single Remote Expansion Head.

● Dual Remote Expansion Head.

Mount your radio horizontally near the driver seat for ease of view, access, and operating the controls, microphone (location of the microphone clip), and other accessories. Before installation, consider the following factors:

● Ensure that the location for your radio installation is not exposed to dirt and moisture.

● Verify that the space around the mobile unit is sufficient for air flow and installation.

● Check that there is enough routing space for the power cable connector and the antenna coaxial cable.

● To minimize pinching, crushing, and overheating of wires and cables, plan the best place to run connections.

● In a vehicle with an airbag, ensure that the mounting location of your radio, or radio accessory, is not in the deployment path of the air bag.

### Power Supply Requirements

Your radio uses a standard 12 V power supply connection. In vehicles with 24 V power supply, a DC/DC converter is required. Use only DC/DC converter vendors, who provide a certification for vehicle installation and meet your radio power supply specification. Motorola Solutions recommends a suitable range of DC/DC converters available from Alfatronix LTD UK. Some models are also available through Motorola Solutions Service Organization. For more information, check with your account manager.

If it is not possible to add a DC/DC converter, keep the supply voltage of your radio at a level of 10.8 V or above regardless of vehicle battery condition.

When planning the installation, be aware that the maximum current consumption is 5.5 A during PTT and up to 33 mA (non-Ethernet) or 90 mA (Ethernet) when your radio is switched off. For power supply specification, see Model Specifications on page 21.

For low supply voltage, consider the following factors:

- If the supply voltage measured on the power supply terminal of your radio drops below 10.8 V for more than 500 ms, the display shows `Battery Low`.

- If the supply voltage measured on the power supply terminal of your radio drops below 9.7 V for more than 500 ms, the display shows `Battery Empty` and turns off.

- For vehicles with heavy electrical loads such as ambulances or fire trucks, add a backup battery supply separated from the electrical installation.

- If your radio turns off due to low supply voltage conditions, it remains in boot loader mode. When the supply voltage rises enough, your radio consumes over 500 mA of power supply. This condition can drain a weak or old battery that is left overnight or for a longer time in low temperatures. Recharge the battery using an external charger. To trigger the power-up sequence, the ignition pin voltage must go below 3.1 V and rise again above 9.7 V.

## 2.2
# Disconnecting Your Radio Power Supply

**Procedure:**

1. Before uninstalling your radio, perform the following:
   a. Turn off your radio.
   b. Wait for a minimum of four seconds after your radio switch is released.
   c. Disconnect the 13.2 V main power supply.
2. Alternatively, turn off the main power supply without turning off your radio.

## 2.3
# Installing DC Power Cable

⚠️ **CAUTION:** Your radio must be operated only in negative ground electrical systems. Operating your radio on a positive ground system causes the cable fuse to short-circuit. Check the vehicle ground polarity before you begin the installation.

**Prerequisites:**
Determine a routing plan, keeping in mind where to mount your radio as well as the following factors:

- Whenever possible, avoid routing the cable above the catalytic converter.

- Make sure that the power cable never rests on sharp edges.

- Use grommets whenever a cable has to pass through a hole in a metal panel.

⚠️ **CAUTION:** Improper handling of the power cable can cause shorting to the ground. Ensure that during radio installation the power cable fuse is removed. Ensure that your power cable is not placed in parallel with the antenna. Interference can cause your radio to hang.

**Procedure:**

1. Locate an existing hole with the grommet in the vehicle fire wall, or use a 9.5 mm (3/8 in.) bit to drill an access hole in the fire wall.

   ⚠️ **CAUTION:** Be careful not to damage existing wires.

2. To protect the power cable, install a grommet with a 5 mm (3/16 in.) inside diameter into the hole.

3. From inside the vehicle, feed the red and black leads (without the lugs attached) through the access hole and into the engine compartment.

**Figure 1: Power Cabling Routing to the Engine Compartment**
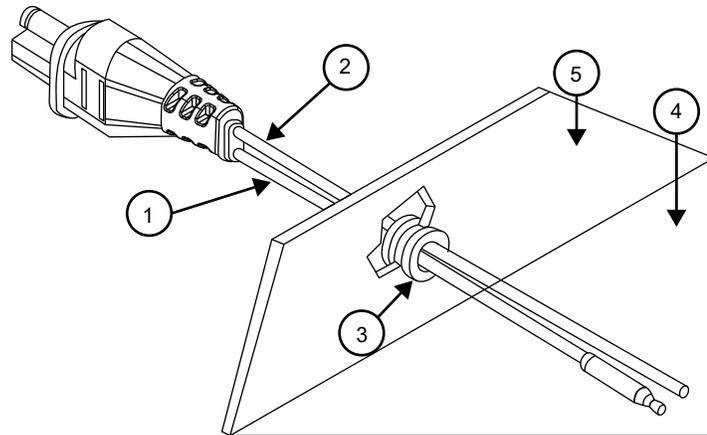


**Table 32: Associated Components**

| Annotation | Description |
| --- | --- |
| 1 | Red lead |
| 2 | Black lead |
| 3 | Grommet |
| 4 | Engine Compartment |
| 5 | Firewall |

4. Connect the black lead of the DC power cable to the nearest vehicle chassis ground point (using the provided ring lug, if required). Shorten the black lead to remove any excess cable.

> **NOTE:** Locate a good vehicle ground point. The vehicle frame provides the best ground. Optimum radio performance can only be achieved with a low-resistance ground connection. Verify that the connections between the battery negative terminal, vehicle chassis, and engine block have low resistance.

**Figure 2: Power Cable Assembly**
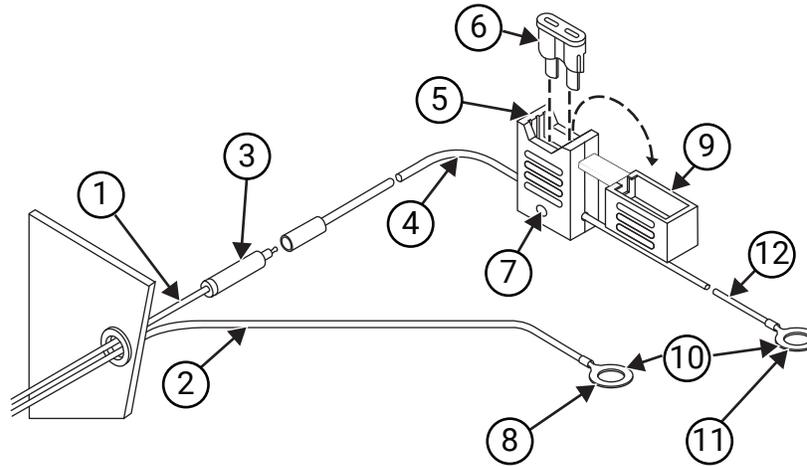


1FL08302470

**Table 33: Associated Components**

| Number | Description |
|---|---|
| 1 | Red lead |
| 2 | Black lead (min. 2.5 mm) |
| 3 | Adapter |
| 4 | Red lead (min. 2.5 mm) |
| 5 | Fuse holder |
| 6 | Fuse (15A) |
| 7 | Mounting hole |
| 8 | To battery (-) or chassis |
| 9 | Cover |
| 10 | Ring lugs |
| 11 | To battery (+) |
| 12 | Red lead (min. 2.5 mm) |

5. Place the fuse holder close to the battery and ensure that the fuse holder is not near any hot engine component. Mount the fuse holder using the mounting hole and dress the wires as required.

6. Insert the stripped end of the red lead of the fuse holder into the ring lug hole and crimp it. Connect the fuse holder red adapter lead plug to the mating receptacle on the red lead of the power cable.

7. Connect the red lead ring lug from the fuse holder to the positive (+) battery terminal. Ensure that the adapter cable is connected to the main power cable red lead.

8. Carefully check that all connections are proper. Insert the fuse into the fuse holder and close the cover.

**Postrequisites:** See DC Power Cables on page 41 for power cables available for this radio.

## DC Power Cables

**Table 34: DC Power Cables**

| Number | Description | Rating |
|--------|-------------|--------|
| PMKN4289 | Power Cable to Battery with fuse 15 A | 12 V Power Cable to Battery, Length: 1.0 m |
| PMKN4243_ | Power Cable to Battery with fuse 15 A | 12 V Power Cable to Battery, Length: 3.1 m |
| PMKN4275_ | Power Cable to Battery with fuse 15 A | 12 V Power Cable to Battery, Length: 6.2 m |
| 6580283E06 | Fuse 15 A for Power Cable | |
| 6580283E02 | Fuse 4 A for Ignition Sense Cable | |
| CP000122A01 | Fuse 2 A for Y-Cable | |
| 6580283E03 | Fuse 5 A for Y-Cable | |

⚠ **CAUTION:** In cases of blown fuses, replace only with fuses of identical value. Never insert ones of different values.

📝 **NOTE:** For more information on ignition cables, see Installing Ignition Sense Cable on page 41. The Ignition Sense Cable allows your radio to be turned on and off by the vehicle ignition switch.

2.4
# Installing Ignition Sense Cable

The Ignition Sense Cable (PMKN4120_) allows the terminal to be turned on and off by the vehicle ignition switch.

⚠ **CAUTION:** In cases of blown fuses, replace only with fuses of identical value. Never insert ones of different values. Ensure that the fuse is removed during cable installation.

**Procedure:**

1. Plug the lead of the ignition sense cable that has a terminal crimped on it into #25 socket of the accessory plug.

2. Route and secure the cable with the attached tie wrap.

3. Connect the other lead of the accessory cable to the ignition switch of the vehicle.

4. Insert the fuse into the fuse holder and close the cover.
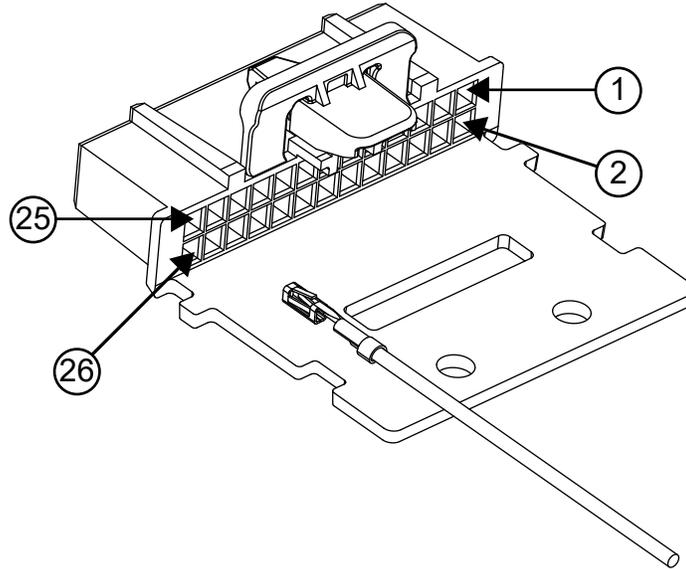
**Figure 3: 26-pin Accessory Connector (PMLN8541_)**



**Table 35: Associated Components**

| Label | Description |
|---|---|
| 1 | Socket number one |
| 2 | Socket number two |
| 25 | Socket number 25 |
| 26 | Socket number 26 |

⚠ **CAUTION:** If the ignition line is not used, it must be grounded. Interference can cause your radio to hang.

📝 **NOTE:**
The terminal accepts a 12 V or 24 V input for the Ignition Sense line. For 24 V installations, convert the main supply from 24 V to 12 V. For more information, see General Guidelines for Radio Installation on page 37. Motorola Solutions recommends a suitable range of DC/DC converters available from Alfatronix LTD UK. Some models are also available through Motorola Solutions Service Organization. For further information, refer to your Account Manager.

The ignition sense cable kit contains a thin cable and a fuse holder.

## 2.4.1
# Ignition Sense Cables

**Table 36: Ignition Sense Cables**

| Part Number | Description | Rating |
|---|---|---|
| PMKN4120_ | Ignition Sense Cable with fuse 4 A | Ignition Sense Cable, Length: 3 m |
| 6580283E02 | Fuse 4 A for Ignition Sense Cable | |

**Chapter 3**

# Radio Installation

This section provides installation setup for your radio.

> **NOTE:** Ensure that the power supply is off when assembling the control head or expansion head to the transceiver. Turn on the power supply after you have finished assembling the control head or expansion head to the transceiver.

## 3.1
# MXM600 Dashboard Installation

This section explains the Dashboard Installation for M1.

### 3.1.1
## Installing Your Radio in an Automotive DIN Slot Dashboard

**Procedure:**

1. Open the cut-out (DIN Slot) in the dashboard of your radio.
2. Remove the top plastic cover from your radio.
3. Insert the mounting frame into the cut-out and retain it by bending back the relevant fixing tabs, using all six where possible, to hold it in place.

   > **NOTE:**
   > The tabs are easily bent back by twisting a large flat-bladed screwdriver into the slot behind the tabs.
   >
   > For a more secure installation, secure the top and rear of the frame with screws.
   >
   > The demount tool can be used as an aid to mounting as well as demounting.
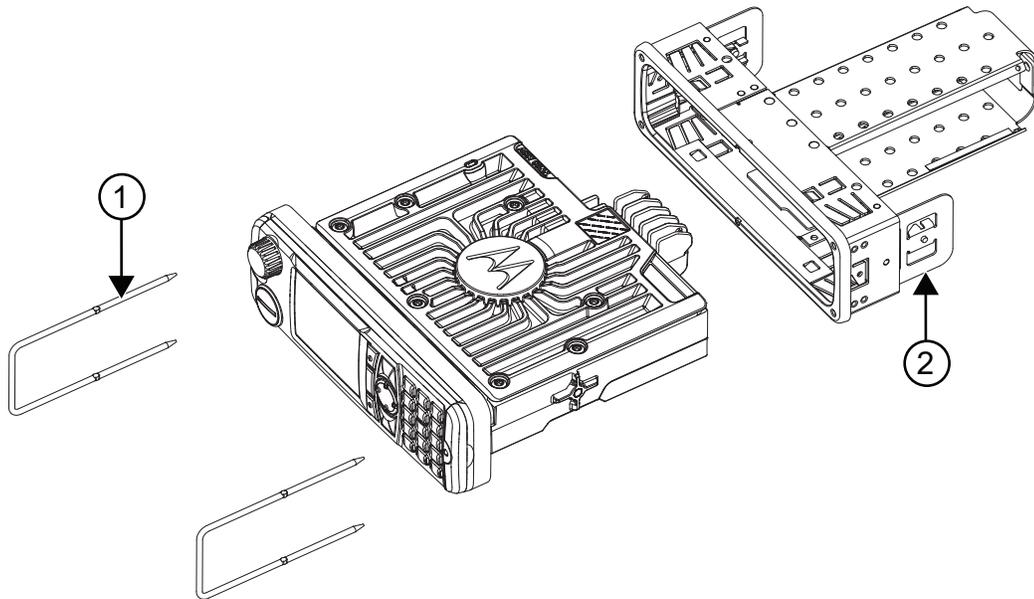
### 3.1.2
## Mounting Your Radio in the Frame

**Procedure:**

1. Connect the electrical connections to your radio for power, antenna, and accessories.
2. Plug in all the connectors and push your radio with the Control Head, firmly onto the mounting frame until the two springs snap into place.

   > **NOTE:** Check the fixing tabs for tightness each time your radio is removed. The tabs are easily tightened by twisting a large flat-bladed screwdriver in the slot behind the tabs. The frame is not designed for daily mounting and demounting.

**Figure 4: Radio with Mount Kit**



**Table 37: Radio with Mount Kit Annotations**

| Label | Description |
|-------|-------------|
| 1 | Demount Tool (8166514A01) – includes in DIN Mount Kit |
| 2 | DIN Mount Kit (PMLN5094_) – includes Demount Tool |

### 3.1.3
# Removing Your Radio from the DIN Frame

**Procedure:**

1. Remove both rubber side caps from the Dash Mount Control Head.
2. Insert the demount tools into the two openings.
3. Push the demount tools through the openings in the frame.
4. Slide out your radio.

**Figure 5: Radio with Demount Tools**
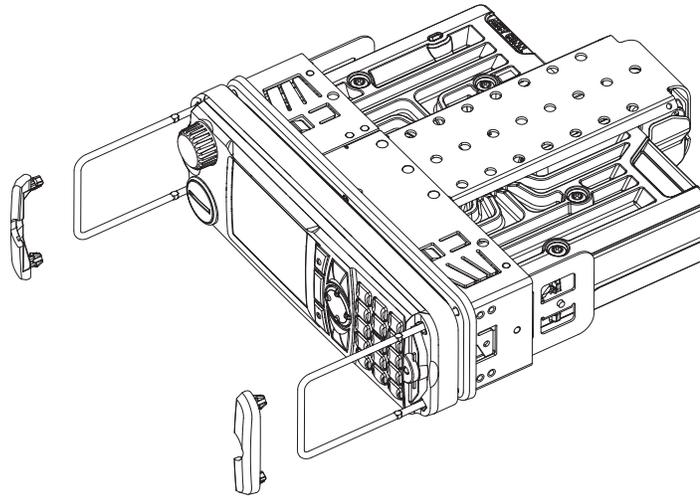


## 3.2
# MXM600 Desktop Installation

This section explains the Desktop Installation for the M1 model.

The Desktop Station option provides the terminal with the desk microphone, power supply with tray, or desktop tray (optional with or without a speaker), and external loudspeaker.

⚠ CAUTION: If an outdoor antenna is used, a proper grounded Lightning Protector with Quarter-Wave Shorting Stub must be inserted between the outdoor antenna and the transceiver antenna input. The line voltage power supply must have a proper ground connection (see IEC61312-1). The installation must meet the requirements of any applicable local codes and regulations.

### 3.2.1
# Planning Desktop Installation

Only trained personnel can plan the desktop installation to ensure that the installation fulfills the regulatory requirements, such as Electro Magnetic Compatibility (EMC) and International Electrotechnical Commission (IEC).

**Procedure:**

1. Inspect the location before drilling a hole or running a wire.

2. Determine a way and a place to mount the antenna, terminal, and accessories.

3. Plan wire and cable run to provide maximum protection from pinching, crushing, and overheating.

### 3.2.2
# Setting Up Desktop Installation

**Prerequisites:**

- Ensure that line voltage power is available but the unit is not turned on.

- Ensure sufficient air flow around the terminal for adequate cooling.

**Procedure:**

1. Choose a flat surface when using one of the following:

   - Desktop tray without speaker and external loudspeaker.

   - Desktop tray with speaker.

   - Power supply tray and external loudspeaker.

   - Transceiver and desktop microphone with loudspeaker.

2. Ensure that the mounting surface is able to adequately support the weight of the terminal and tray.

3. In an outdoor antenna, choose a location for the terminal as close as possible to the antenna cable inlet of the building.

4. Ensure that the installation of the surge protector is in accordance with the manufacturer specifications and safety hints.

5. Ensure that the line power supply is grounded properly.

**Figure 6: Typical Desktop Mounting**
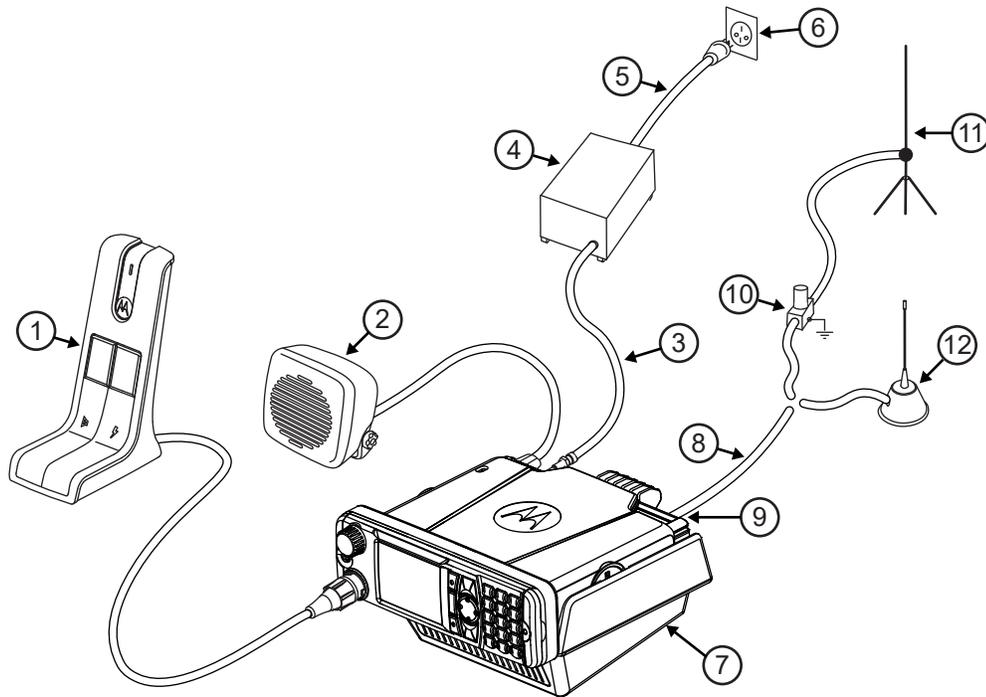


**Table 38: Associated Components**

| Label | Description | Part Number |
| --- | --- | --- |
| 1 | Desk Microphone | RMN5106_ |
| 2 | External Speaker | RSN4002_, RSN4003_, RSN4004_, or AC000240A02 |

| Label | Description | Part Number |
|---|---|---|
| 3 | DC Power Cable | PMKN4305_(to be used with PMPN4076_) |
| 4 | AC-DC Power Adapter | PMPN4076_ |
| 5 | Line Cord with Ground | – |
| 6 | Wall Outlet | – |
| 7 | Desktray, Desktray with inbuilt Loud-speaker, or Power Supply tray | GLN7318_, or RSN4005_ |
| 8 | Antenna Cable | |
| 9 | Antenna Connector BNC | – |
| 10, 11, 12 | Typical Antennas: Lighting Protector with Quarter-Wave Shorting Stub, Outdoor Antenna, Indoor Antenna | – |

## 3.3
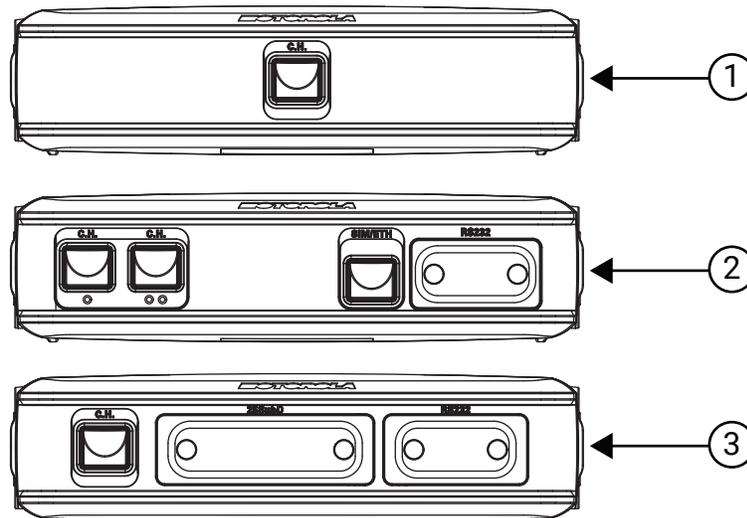# MXM600 Remote Mount Installation

**NOTE:**

Ensure that the battery terminals are removed or the transceiver is turned off during the whole installation.

The following are for Remote Installation:

● IP54 Remote Ethernet Control Head (RECH)

● IP67 Remote Ethernet Control Head (RECH)

● Telephone Style Control Head (TSCH)

### MXM600 Expansion Heads
**Figure 7: Expansion Heads**

Table 39: Expansion Heads Description

| Number | Description |
|--------|-------------|
| 1 | Single Remote Expansion Head |
| 2 | Dual Remote Expansion Head |
| 3 | Databox Expansion Head |

> **NOTE:** Ensure that the dust covers of the Ethernet Connector, DSUB Connector, and RJ50 Connector fit properly when not in use.

## Single Remote Expansion Head (SREH) and Databox Expansion Head (DEH) Installation

This section explains the Single Remote Mount installation - M2 and Databox Expansion Head - M4.

The Single Remote Mount and Databox Mount options provide the terminal with the option of an IP54 or IP67 Remote Mount Control Head (RECH), or Telephone Style Control Head (TSCH).

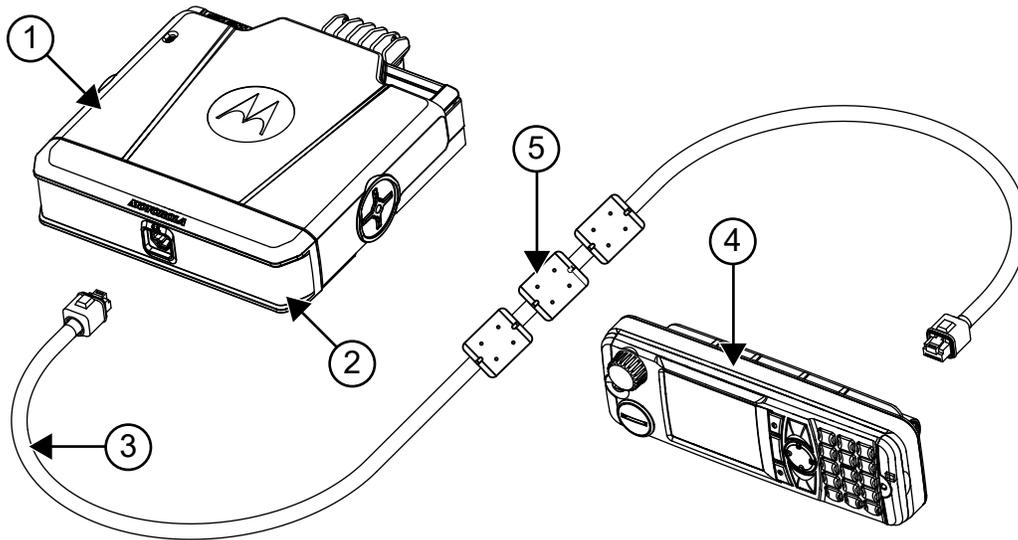Figure 8: Remote Mount Installation with IP54 RECH or IP67 RECH and SREH
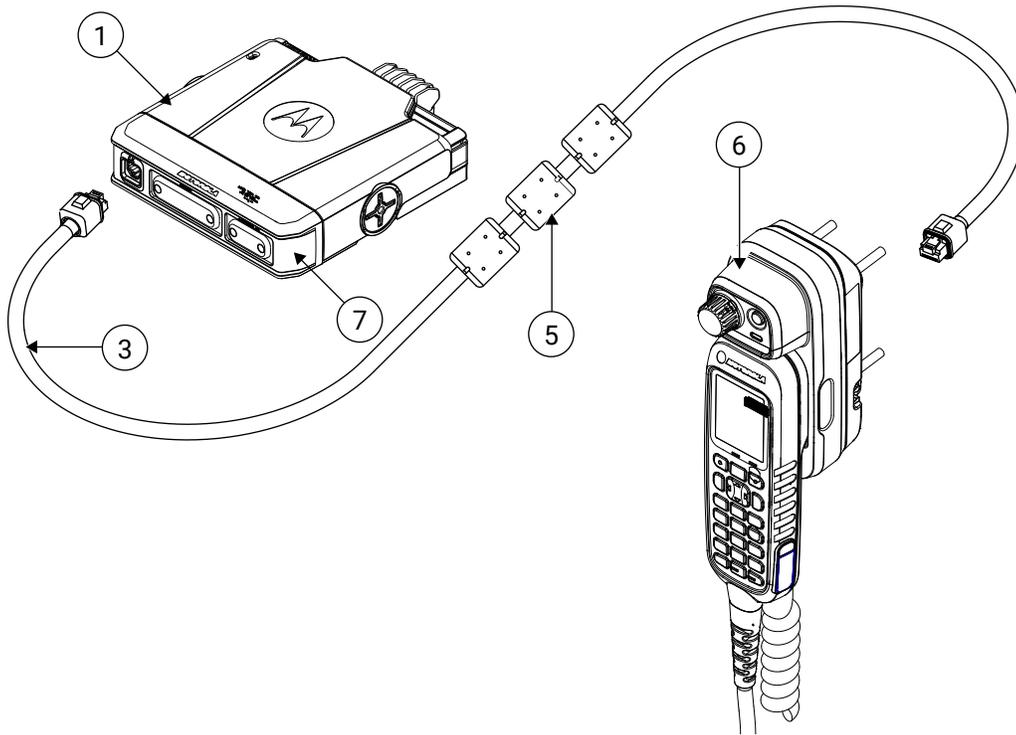
**Figure 9: Remote Mount Installation with TSCH and DEH**



**Table 40: Configurations – Graphics Description**

| Number | Description |
|---|---|
| 1 | Transceiver |
| 2 | Single Remote Expansion Head (SREH) |
| 3 | Remote RJ50 Ethernet Cable or IP67 RECH RJ50 Ethernet Cable |
| 4 | IP54 or IP67 Remote Ethernet Control Head (RECH) |
| 5 | Ferrite Clamps – 91012044001 |
| 6 | Telephone Style Control Head (TSCH) |
| 7 | Databox Expansion Head (DEH) |

**Table 41: Associated Components for Remote Mount**

| Item | Description | Part Number |
|---|---|---|
| 1 | Remote Ethernet Cable | See Table 13: Cables on page 25. |
| 2 | IP67 RECH Ethernet Cable | See Table 13: Cables on page 25. |

| Item | Description | Part Number |
|------|-------------|-------------|
| 3 | Expansion Heads | See Table 17: Expansion Head Kits on page 29. |

> **NOTE:**
> Pay attention to the effects of Electro Magnetic Compatibility (EMC) in vehicle installations. Also, over long cable requires additional protection. Motorola Solutions has suitable suppression kits such as Part Number 01015001001 Toroid EMC Suppression Kit.
>
> Wind the Remote Mount Cable ten times around each toroid.
>
> Place each toroid 30.0±2.5 cm respectively from the expansion head and the control head.
>
> Winding at both ends reduces the effective cable length by approximately 0.8 m.
>
> Fix the toroids firmly to a stable surface once the Remote Mount Cable is connected.

## Dual Remote Expansion Head (DREH) Installation

This section explains the Dual Remote Mount installation - M3.

The Dual Remote Mount option provides the terminal with the option of an IP54 RECH, IP67 RECH, or TSCH.

The following are the possible configurations:

- Remote Mount installation with IP54 RECH
- Remote Mount installation with IP67 RECH
- Remote Mount installation with TSCH
- Dual Control Head with two IP54 RECH
- Dual Control Head with two IP67 RECH
- Dual Control Head with two TSCH
- Dual Control Head with a combination of IP54 RECH and TSCH
- Dual Control Head with a combination of IP67 RECH and TSCH
- Dual Control Head with a combination of IP54 RECH and IP67 RECH
- Multi-Radio Control Installation with TSCH
- Multi-Radio Control installation with IP54 RECH
- Multi-Radio Control installation with IP67 RECH

> **IMPORTANT:**
> - The Ethernet cables shown in the following illustrations require three ferrite clamps (part number: 91012044001), with two turns of wire around them. Manually install the first ferrite clamp approximately 60 cm away from the control head, and with a minimum spacing of 3 cm between the next two ferrite clamps.
> - Connect the control head to Port 1 of the Dual Remote Expansion Head.

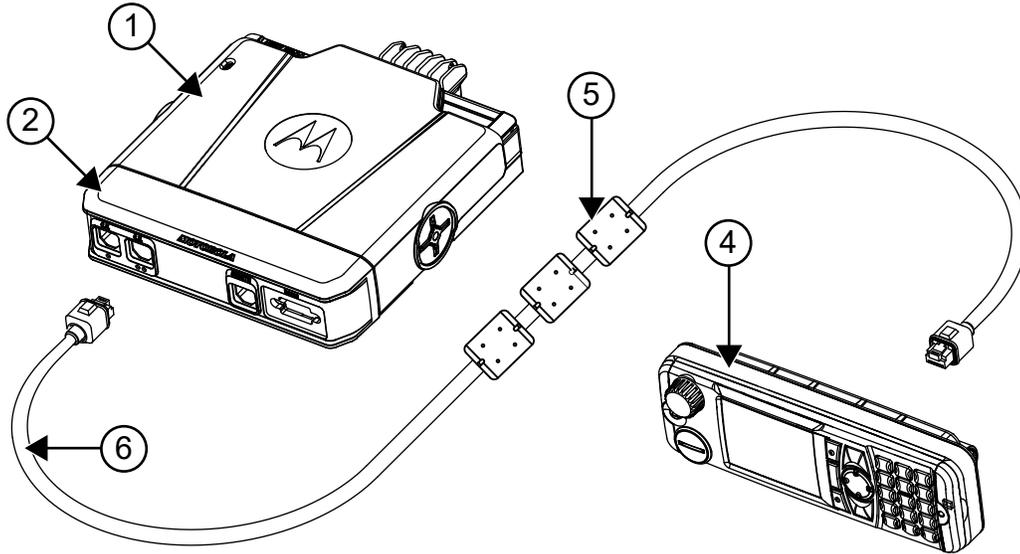**Figure 10: Remote Mount Installation with IP54 or IP67 RECH**



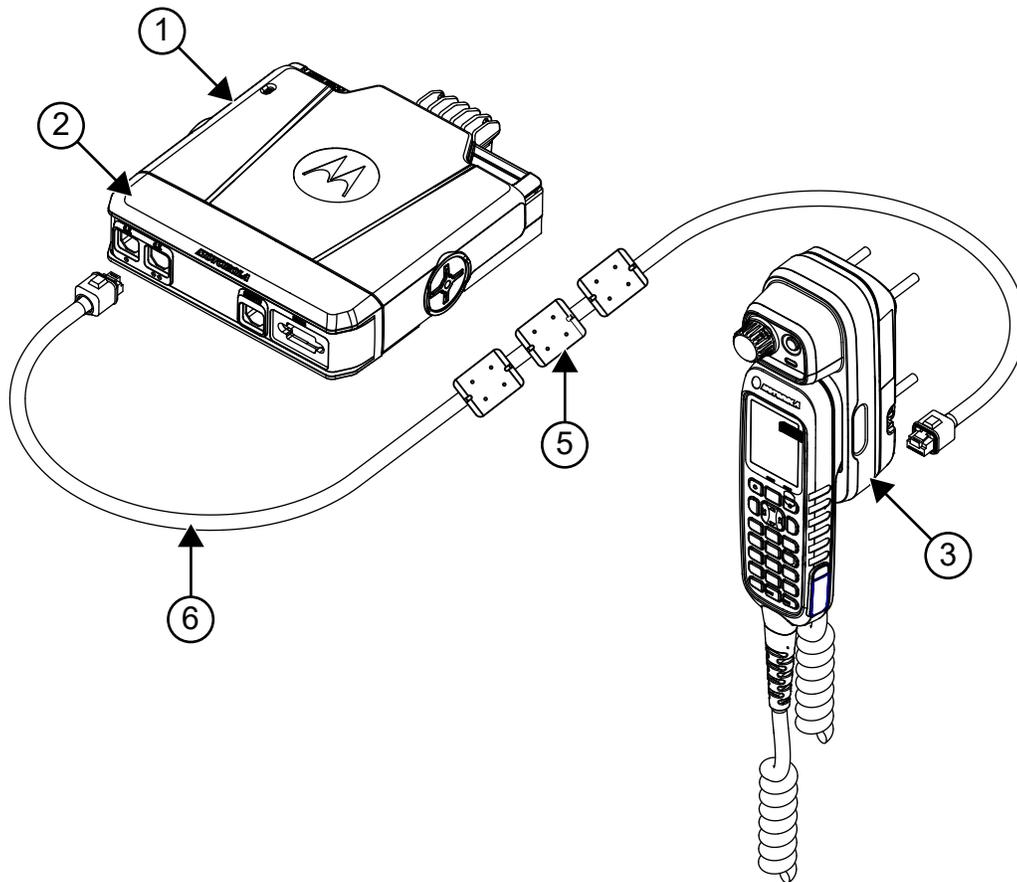**Figure 11: Remote Mount Installation with TSCH**

**Figure 12: Dual Control Head with Two RECH (IP54 or IP67)**