QUALCOMM ®

OmniVision™ and Accessory Installation Guide

80-J4866-1 Rev. A
March 2006

OmniVISION™
Mobile Computing Platform

80-J4866-1 Rev. A

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Safety Definitions

The following Caution and Warning definitions are intended to advise the driver when it is safe to use a display unit.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Safety Advice

The following Safety Advice is provided for drivers, installers, and application developers who use and/or locate all types of display units.

If you are a Driver, do not use a display unit when the vehicle is in motion.

If you are an Installer, do not locate the display unit, including third-party devices, where it obstructs the driver's field of vision, distracts the driver from the driving task, or interferes with the driver's operation of controls or displays. The following label is to be posted in clear view for the driver to see.

If you are a Third-party Device Manufacturer or Application Developer not running QTRACS® interface software, it is your responsibility to provide appropriate warnings regarding the safe use of your device(s) in conjunction with QUALCOMM equipment. Applications should not require the driver to divert his attention from the road while driving a vehicle.

1

How the OmniVision™ System Works

OmniVision™ System Overview

This chapter provides a basic overview of the new OmniVision™ mobile computing platform (OmniVision system) and how its various components interact to send and receive messages.

The OmniVision system is a two-way, mobile satellite communications system that allows dispatchers and drivers to exchange text messages. It also provides vehicle location and performance data.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Why the OmniVision™ System Makes Companies More Efficient

With the OmniVision system, a company can maintain two-way contact with its vehicles and drivers 24 hours a day. The following are just a few of the advantages:

• The dispatcher can send pickup and delivery information directly to the drivers, keeping the vehicles on the road.

• Text-to-speech alerts the driver of an incoming message and its importance, so the driver can choose to immediately listen to the message without pulling off the road.

• The dispatcher knows when each vehicle is expected to arrive at its location, and can pass that information on to the customer.

• The system provides the dispatcher with vehicle location and position history information by tracking the location of each mobile computing platform (MCP) using the latitude and longitude or distance and direction from landmarks (usually large towns and cities).

• Drivers can inform the dispatcher of road conditions or problems they may be experiencing.

• Various optional devices allow the monitoring of driver performance, engine diagnostics, trailer locations, and refrigeration status.

• Various decision support software enables customers to optimize assets and inform shipper and consignees on the status of their loads.

• Over-the-air software upgrades are available, which allow drivers to remain on the road rather than having to stop at the service center.

• Media display unit (MDU) offers enhanced capabilities, such as touchscreen and color graphics.

OmniVision™ System Component Description

The OmniVision system consists of these major components:

Component	Description
Network Management Facility (NMF)	This facility is responsible for processing and managing the message traffic between the dispatch center and the fleet. Within the NMF is the Network Management Computer (NMC), which actually receives and handles the message traffic. The NMF is located at QUALCOMM, Inc., in San Diego, CA.
QUALCOMM Dispatch Software (QTRACS®)	This is the software on the trucking company's dispatcher computer. This is the dispatcher's interface with the OmniVision system. It allows the dispatcher to send and receive messages, request MCP location information, and perform other dispatcher functions. QTRACS/400 and QTRACS/Windows customers communicate with the NMC via dialup using PPTP or a frame relay connection. QTRACS/Web customers communicate via the NMC using RI/Web client over a PPTP connection.
Data Satellite (uses Ku-band signals)	This satellite handles all two-way message traffic between the vehicle and the NMC. Located approximately 22,300 miles over the equator at 103° west longitude (south of Texas).
GPS Positioning Satellites	GPS uses 24 satellites to provide vehicle positioning information.
Mobile Computing Platform (MCP)	The MCP is the driver's interface with the OmniVision system. It allows the driver to send and receive messages. The MCP is mounted in the vehicle.

What Is the GPS System?

Originally created for and used by the military, GPS is a worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations. GPS uses the satellites as reference points to calculate positions accurate to a matter of meters. Essentially, GPS allows every square meter of the planet to have a unique address. Currently, GPS is used in a number of industries, including construction, film, farming, computer, transportation, telecommunication, and wireless industries.

GPS is a standard feature for the OmniVision MCP.

How the OmniVision™ System Uses GPS

Signals received from the GPS constellation of 24 strategically-placed satellites determine and report to the NMC where the MCP is located.

Key:

――――― Forward Message Links

‑ ‑ ‑ ‑ Return Message Links

Data Satellite

GPS Satellites

Company Dispatch

Network Management Facility (NMF)

Mobile Computing Platform (MCP)
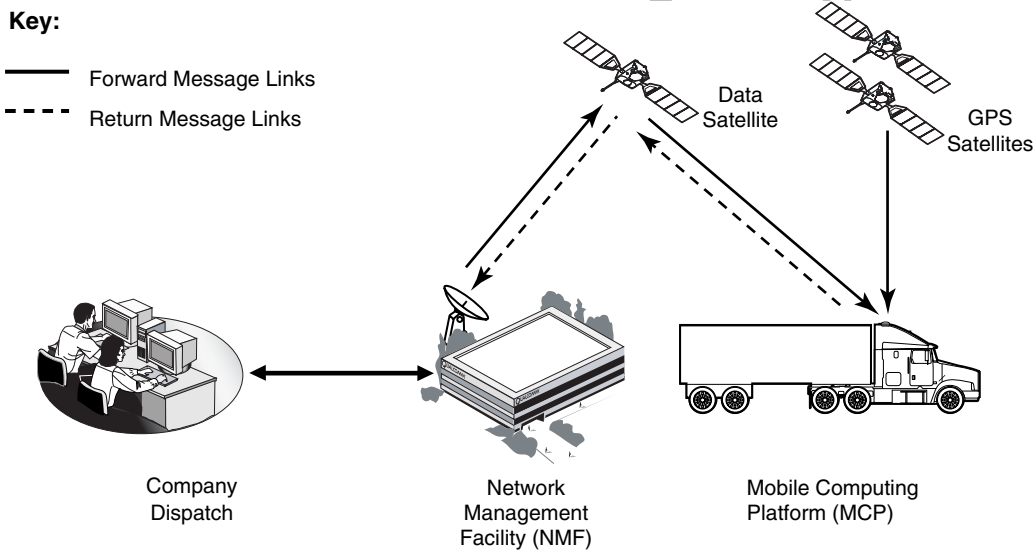
03AAA_249B

The MCP receives positioning data from the GPS receiver which is integrated or "housed" inside the SDM. The location data is then "packaged" for satellite transmission to the customer dispatch center via the Data satellite and the NMC.

The NMF receives position data from an MCP whenever a message is sent to a vehicle and acknowledged, and whenever a driver sends a message to a dispatcher.

The NMC also retrieves position data automatically at regular intervals and makes data available to the dispatcher. The dispatcher can also request a position report at any time.

What Is the MCP?

The MCP is the mobile part of the OmniVision system that is installed in a customer's vehicle. It provides the driver with the ability to exchange messages with the dispatch center. The MCP also sends vehicle location information to the NMF. The MCP consists of the following components:

- Satellite data modem (SDM)—Contains the antenna that communicates with the satellite.

- Mobile application server (MAS)—This is the communication unit which contains the operating circuitry and memory for the MCP.

- Media display unit (MDU)—The new standard display unit for the OmniVision system, which the driver uses to communicate with the dispatcher. It consists of a new keyboard and color TFT LCD display.

- Remote control device (RCD)—Allows the driver to safely listen to incoming messages without having to stop the vehicle and read the message(s) on the display.

Each MCP has its own unique unit address which is the serial number on the MAS. This address is used by the NMC to route messages to the correct vehicle. The unit address for a particular vehicle will change if the MAS in the truck is replaced.

The MCP operator, typically the driver, uses the display unit's display screens for creating, sending, and reading messages, system verification, and troubleshooting.

2
Component Overview

This chapter describes the components you will be installing on the vehicle and provides a basic wiring overview for a mobile computing platform (MCP) system installation.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

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The Equipment You Will Install

The OmniVision™ Masterpack contains the following major components for a basic MCP system installation:

- Satellite data modem (SDM)
- Media display unit (MDU)
- Mobile application server (MAS)
- Battery pack
- Remote control device (RCD)
- Cables

The planning and installation instructions for these components are described in Chapters 4 through 8.

You may also be installing optional equipment. If so, refer to *Accessories* on page 2-12 for information on those accessories.

How the Components and Cables Interconnect

The following illustrations show how the basic MCP components and cables interconnect with the MDU. Six cables connect the three basic MCP components.

SDM

CB or
Stereo Speaker

Display Unit

SDM Cable

Accessory Connections
(e.g., RMWL, Pager,
J1708, RCD, TTS)

Power Connections

Remote
Control Device

Speaker Cable

MAS

Display Cable

(Existing)Truck I/O Cable

(Existing) Power Cable

Scene2A_revised

Remote Control Device (RCD)

Violet
COM5
GND

RCD
Cable

Butt Splice
(2) Places

Blue/Green
RCD

Accessory
Cable
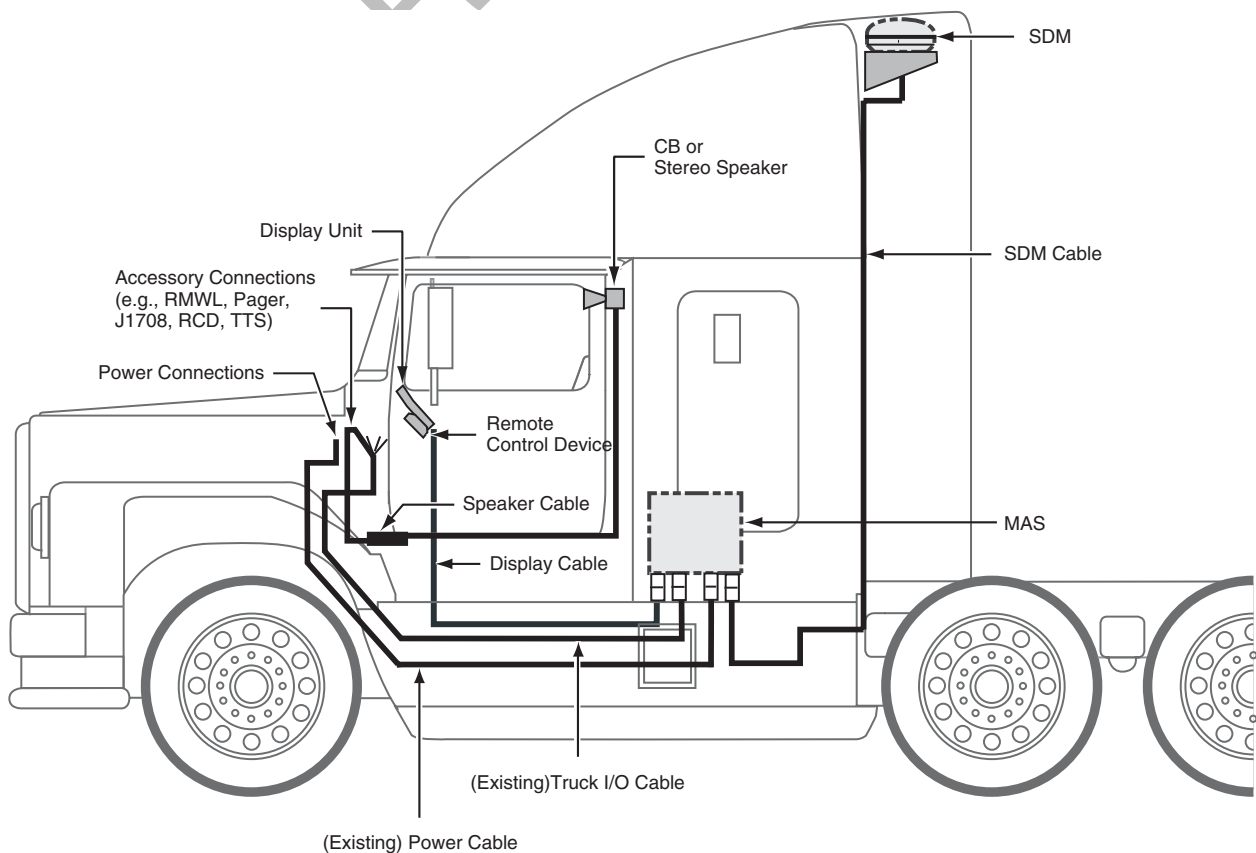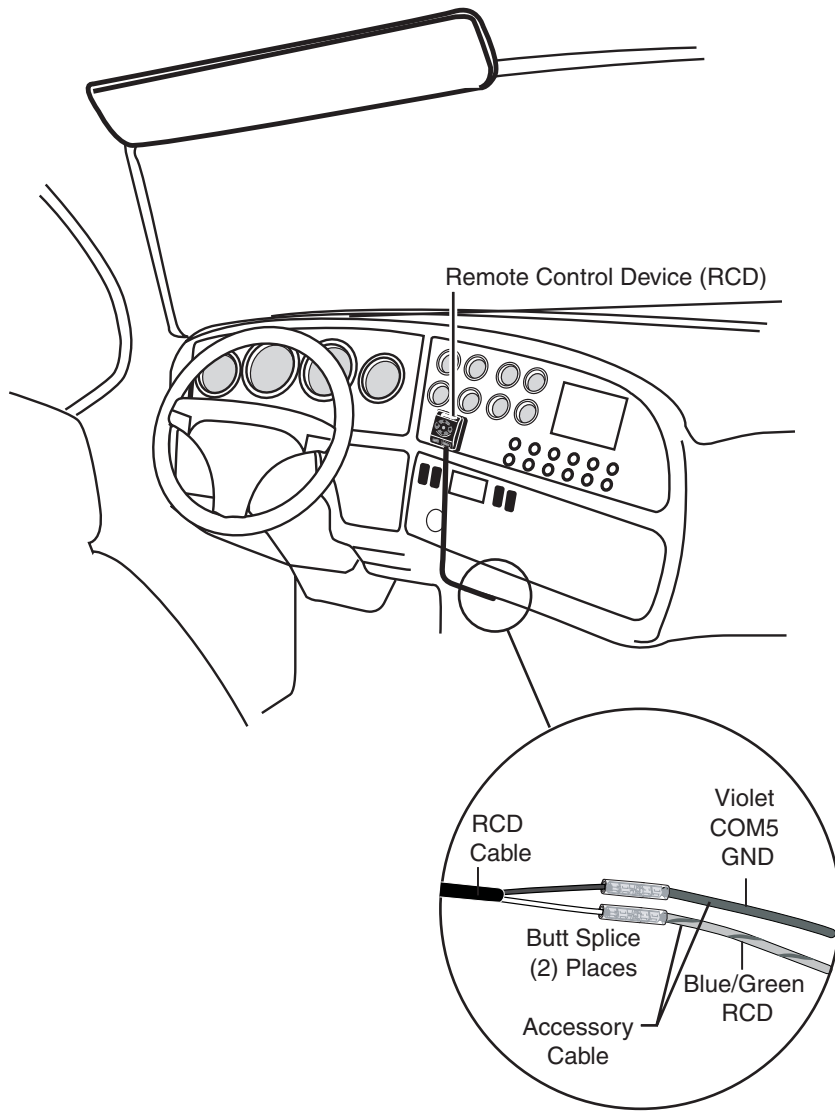
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The Satellite Data Modem (SDM)

> ⚠ **Caution**
>
> *DO NOT remove the SDM radome (top part of the SDM). This will void the warranty. Removing the radome exposes the MCP antenna to moisture.*
>
> *DO NOT paint any portion of the SDM. This will void the warranty. Paint degrades the performance of the MCP.*

The SDM contains the antenna that sends and receives satellite signals. The SDM must be securely and safely attached to the vehicle using an approved mounting device. The unit is usually installed as high as possible, not to exceed 13'6" on the vehicle, so that the antenna has a clear view of the satellites. The unit must be positioned on a level plane when the vehicle is level.

The mount used depends on the type of vehicle on which you are installing the equipment. For a listing of outdoor unit mounts and examples of typical installations, see the *Outdoor Unit Mount Installation Guide*.

The following illustration shows the current version of the SDM. The connector is located on the side of the unit. The SDM fits on existing OmniTRACS® mounts.
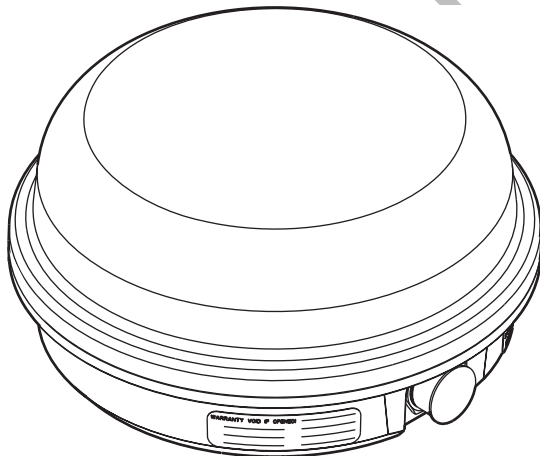
Satellite Data Modem
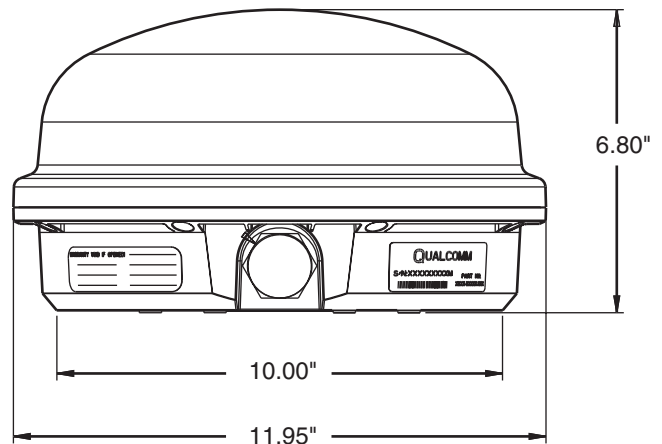
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The Media Display Unit

The media display unit is what the driver uses to exchange messages with the dispatcher. It also allows the driver and Fleet Management Center (FMC) to access the optional Vehicle Information System (VIS). This system provides important information, such as driver and vehicle performance data, diagnostics, trailer connects and disconnects, and trailer refrigeration monitoring.

The MDU is the newest display unit available to be used specifically with the OmniVision system. It provides similar functions to the EDU with the addition of new and enhanced capabilities. The standard features of the MDU include:

- Keyboard—allows the user to distinguish the keys in the dark; provides appropriate keys for navigating, modifying, and terminating data entry; allows the user to navigate the Windows CE applications without using the touchscreen; and allows the user to adjust the volume of the speaker.

- 7" color TFT LCD Display Screen— touchscreen display; provisions for an optional fingerprint sensor; an ambient light sensor which adjusts the display to be readable under all lighting conditions; and different color LEDs for different alerts.

- Holster—features a non-skid service.

- RCD functionality.

When not in use, the MDU rests in a holster usually mounted on the dashboard.

⚠️ **Caution**

The MDU is not watertight. If you accidentally spill liquid on the unit, turn over the unit and dry it off immediately.
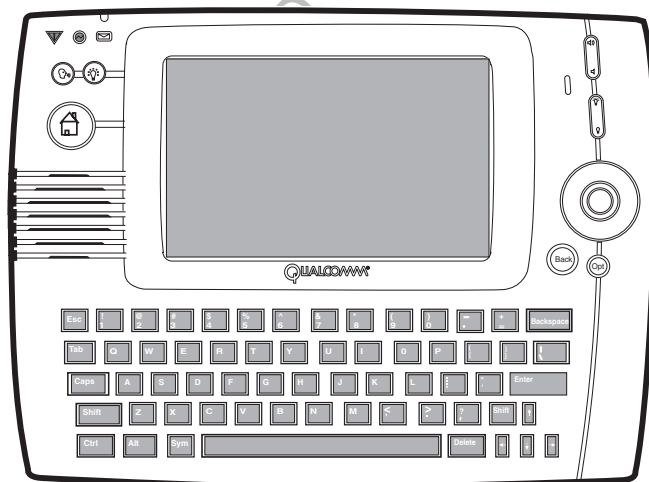
05AAA_215

The Mobile Application Server (MAS)

> **Note**
>
> *The MAS is sometimes called the comm unit or the "black box."*

The MAS contains the operating circuitry, Windows operating system, and memory for the MCP and SD card.

⚠ **Caution**

   The MAS is not watertight. DO NOT get it wet.

The MAS does not typically require operator access. It is always mounted in a mounting tray. The following illustrations show the MAS and the standard mounting tray.

05AAA_043

Standard Mounting Tray

05AAA_221

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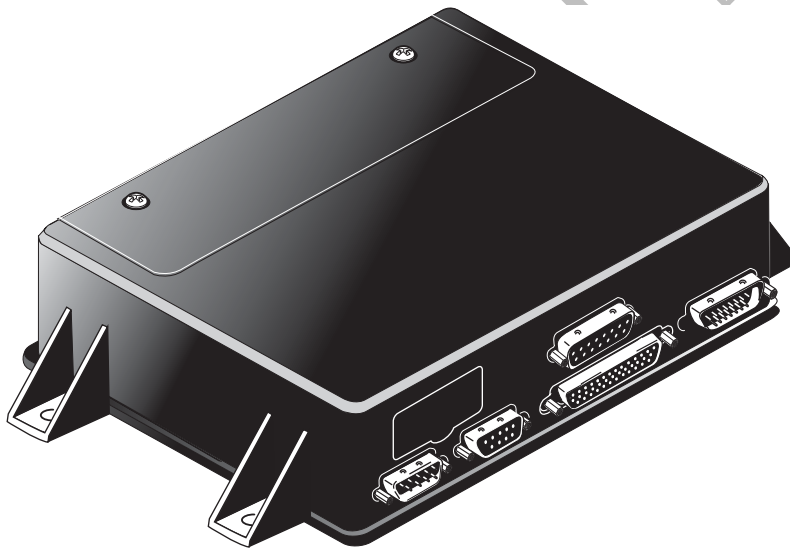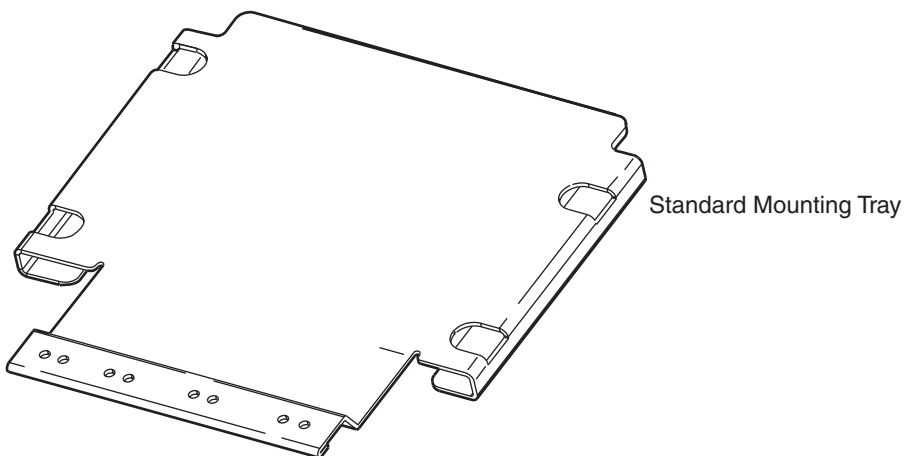
The Remote Control Device (RCD)

The OmniVision system includes an RCD which is used to play text messages. The RCD is connected to the accessory cable and allows the driver to listen to messages safely while driving. If you are using an existing speaker, the normal audio of the speaker will be overridden by the OmniVision system whenever a message is played.
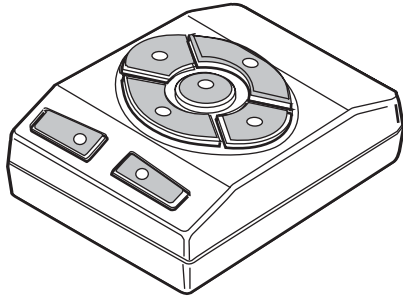
05AAA_219

The Battery Pack

The OmniVision system is supplied with a rechargeable lead-acid battery designed specifically for this product. It is installed into the MAS. The purpose of the battery pack is to safely shut down the MAS in cases where vehicle power is lost.

Note

The MAS will function without the battery pack, however a fully charged battery pack must be used for maximum functionality of the OmniVision system.
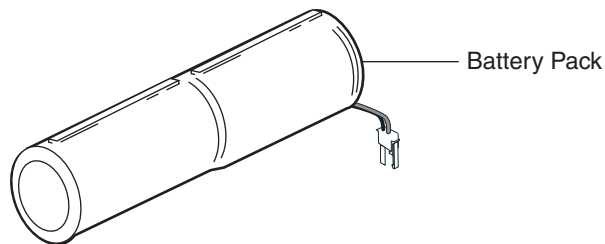
Battery Pack

05AAA_044B

For more specific information about the battery pack, see *Appendix B: Environmental and Power Requirements*.

Cables

The master pack contains six cables (three of which are provided in a cable kit):

- SDM cable
- Display unit cable
- Accessory cable
- Power cable
- Speaker cable
- RCD cable (already connected to RCD assembly)

The standard cable length is 20 feet.

The following illustrations show the six standard cables. Detailed pin and wire callouts for these cables are provided in Chapter 9: Cable Installation.

Satellite Data Modem (SDM) Cable

The SDM cable connects the SDM to the MAS.

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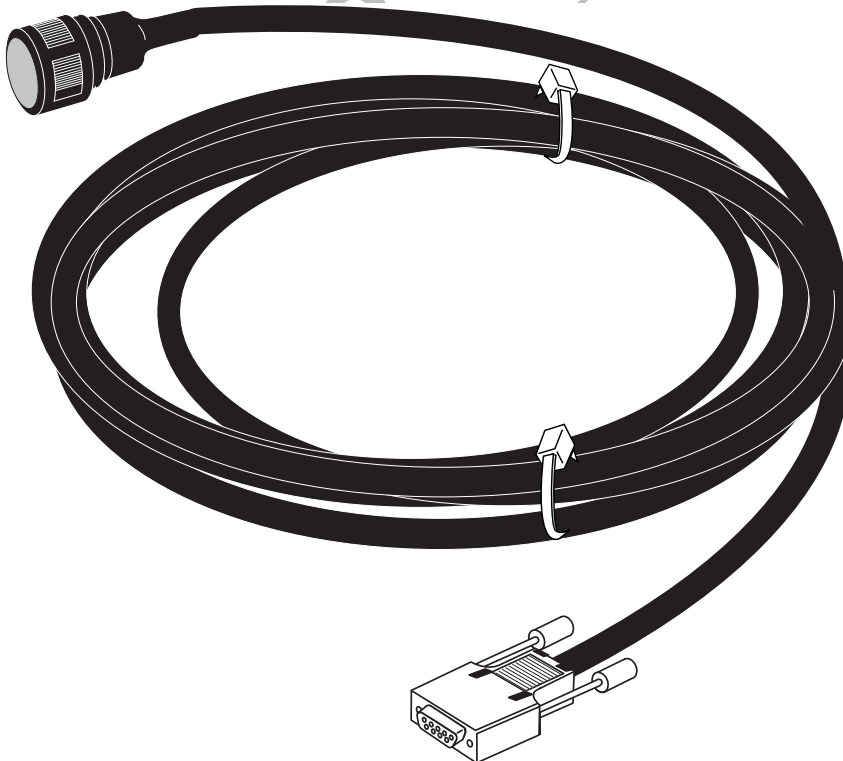
Display Unit Cable

The display unit cable connects the MDU to the MAS. The protective cap helps keep the 8-pin SDL connector from being damaged during the installation. It should be removed just prior to attaching the cable to the MDU and MAS.
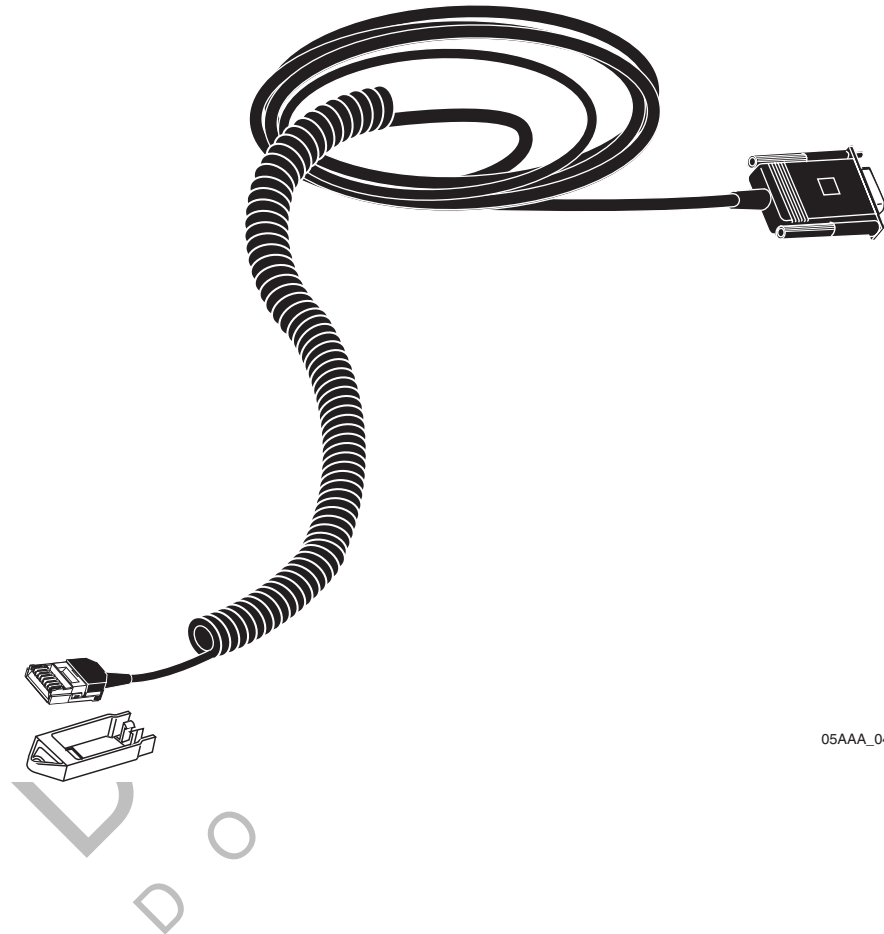
05AAA_042

Accessory Cable

The accessory cable connects accessories and options such as the SensorTRACS®
performance monitoring system and the TrailerTRACS® asset management system to the
MAS. It also connect the RCD and speaker to the MAS.
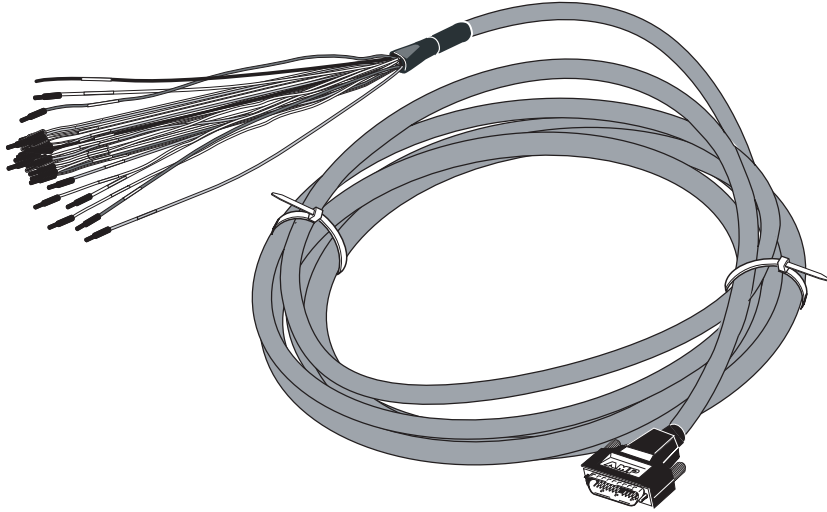
05AAA_038

Power Cable

The power cable connects the 12-volt power source (ignition) and system ground to the MAS.
The cable also contains a wire for connecting optional accessories such as the pager, buzzer,
and remote message waiting light (RMWL).
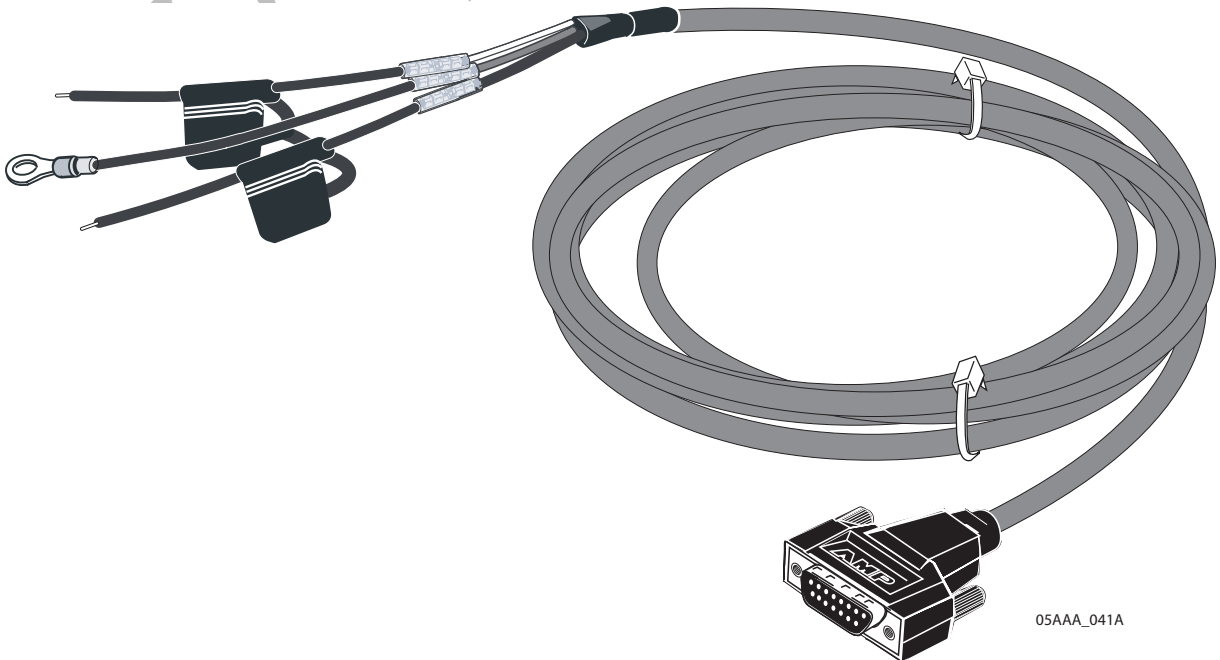
05AAA_041A

Speaker Cable

The speaker integration cable connects the speaker to the MAS.

To
Speaker

To MAS

To
Audio
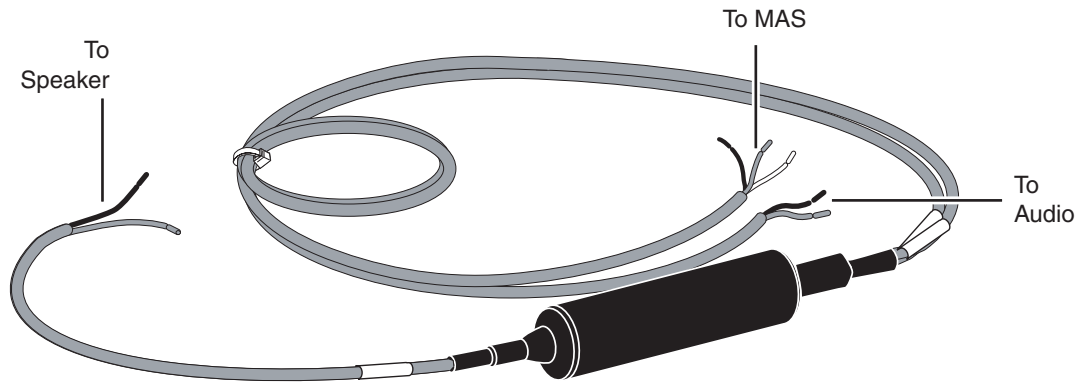
05AAA_232

Remote Control Device (RCD) Cable

The RCD cable connects the RCD to the accessory cable.

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Accessories

You may have to install optional accessories available with the OmniVision system. These accessories provide additional functions to the OmniVision system that enhance its usability. Installation instructions for these accessories are described in the following tabbed chapters.

Accessory	*Chapter*
SensorTRACS	11
TrailerTRACS	12
Pager	13
Buzzer	14
Remote message waiting light	15
Panic button	16
MPG display module	17

3
Wiring Guidelines

Introduction

This chapter describes the QUALCOMM-approved methods for making connections to cables and wires. The instructions in this chapter will help you ensure that cable connections are free from defects and potential problems.

Topics in this chapter include:

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In Canada, call 800-863-9191

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Grounding Guidelines

> ⚠ **Caution**
>
> *When establishing a good chassis ground, avoid areas that may be potentially isolated from ground by a hinge or bad welds. It is extremely important that you create clean, secure, tight, metal-to-metal grounds. If grounding terminals are not available, remove the paint from the surface of the metal connected to the chassis to make the ground. Make sure the wires are not strained or vulnerable to damage.*

Making Electrical Connections

The following sections provide detailed guidelines to properly strip, butt splice, and crimp wires for successful electrical connections.

Wire Stripping

> ⚠ **Caution**
>
> *Vibration can cause nicked wires to fail. Use care in stripping wires. Using wire cutters, knives, or other tools can damage the conductor wire and/or insulation.*

Knowing proper wire stripping techniques is essential for successful and safe electrical connections of all system components.

To properly strip a wire follow these instructions:

1. Using a wire stripper, strip approximately 1/4" off the end of an insulated wire.

Strip approx. 1/4"
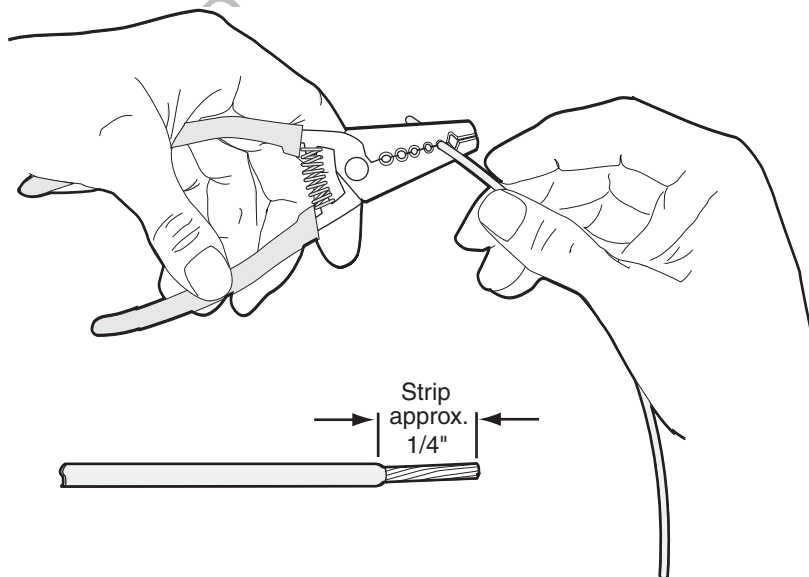
03AAA_270a

2. After stripping the wire, verify the wire is not severed or damaged by the stripping tool. If the wire has been properly stripped, it is ready to be butt spliced.

Butt Splicing

Make sure the size of the butt splice is appropriate for the job. A good butt splice has these characteristics:

- The ends of the bare wires are visible through an inspection window.
- The ends of the wires "butt" up against the stop.
- The wires are not exposed beyond splice shielding.
- Crimping does not sever the wires or insulation.

1. Insert the stripped wire approximately half way into a butt splice, preferably one with an inspection window for verifying the wire is in the correct position.

Push the stripped
wires to the inspection window
of the butt splice

Butt splice

03AAA_272

Inspection window
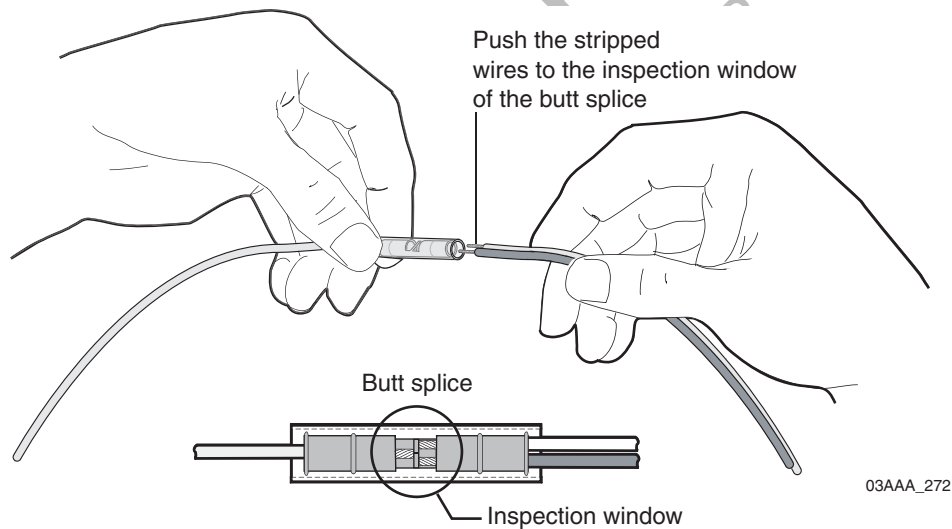
2. Repeat this process for the wire on the opposite end of the butt splice. Once a proper butt splice is confirmed, it is important to properly crimp the butt splice to hold the connection.

Crimping

QUALCOMM recommends Nylon insulated, seamless butt connectors with inspection windows. Heat-shrinkable butt connectors are the most preferable.

When crimping a butt-spliced wire or cable, be sure the butt splice is **not** directly placed on the heavy-duty crimping "tooth" of the tool. Crimping butt splices this way can result in a severed wire and a failed wire connection.

⚠ Caution   **DO NOT crimp on the crimp "tooth."**
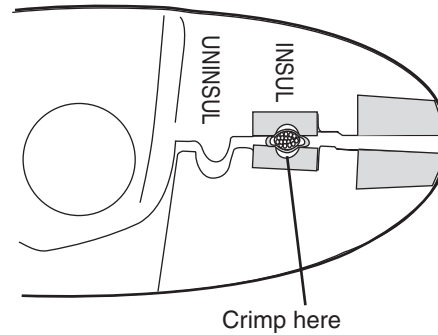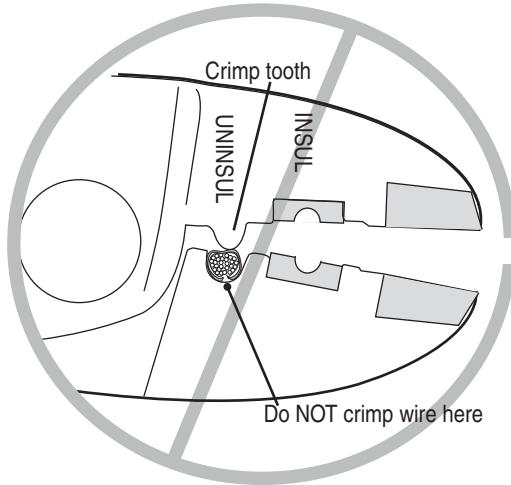
03AAA_90a

1. Using a crimping tool, crimp the butt splice one end at a time. **First**, crimp the inside crimp area where the wire has been stripped. Apply necessary pressure to this inside area. Remember, the wire is stripped!

Note

*The objective is to apply only the necessary pressure to crimp the butt splice closed and hold the wire connections together. **Do not** apply so much pressure as to crush the butt splice and sever the wire or the insulation on the wire.*
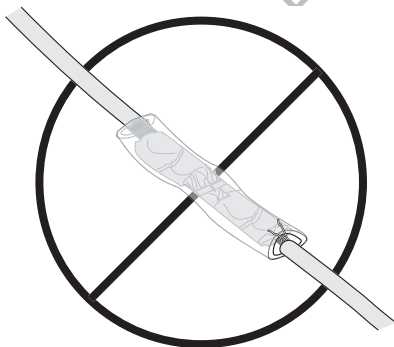
WRONG
Butt splice is visibly crushed,
possibly damaging the wire
and the wire connection.

Some wires are exposed.
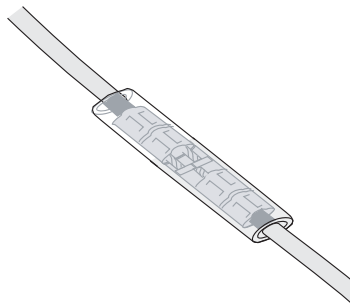
CORRECT
Crimping is done properly,
protecting the wire and
the wire connection.

No exposed wires.

03AAA_277

2. After crimping the inside of both ends of the butt splice on the "insulated" area of the crimping tool, next crimp the outside of both ends of the butt splice.

Crimping Tool

Crimp here

03AAA_271

Crimping locations

Outside crimp (insulated wire) →
Inside crimp (stripped wire) →

← Outside crimp (insulated wire)
← Inside crimp (stripped wire)
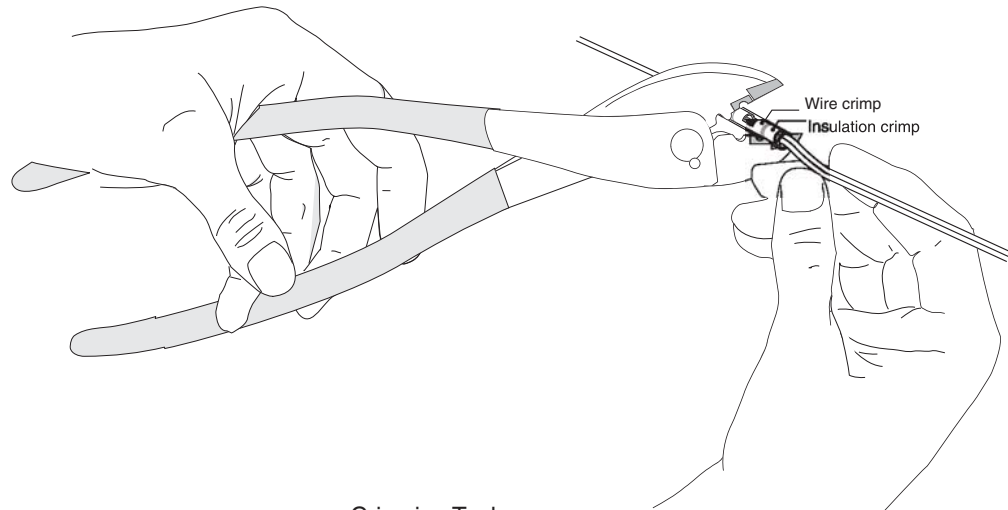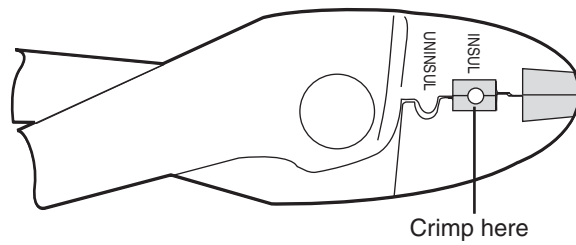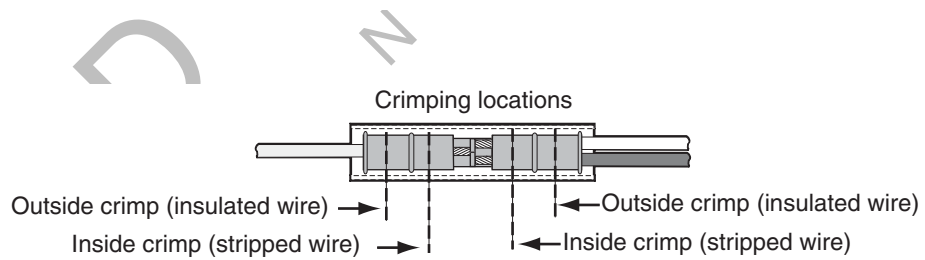
03AAA_273

3. Verify the crimps are good and the wires have not been damaged.

4. Do a pull test. Pull on both ends of the wires to ensure a solid butt-spliced connection exists. The crimped butt splice securely grips the insulated wires.
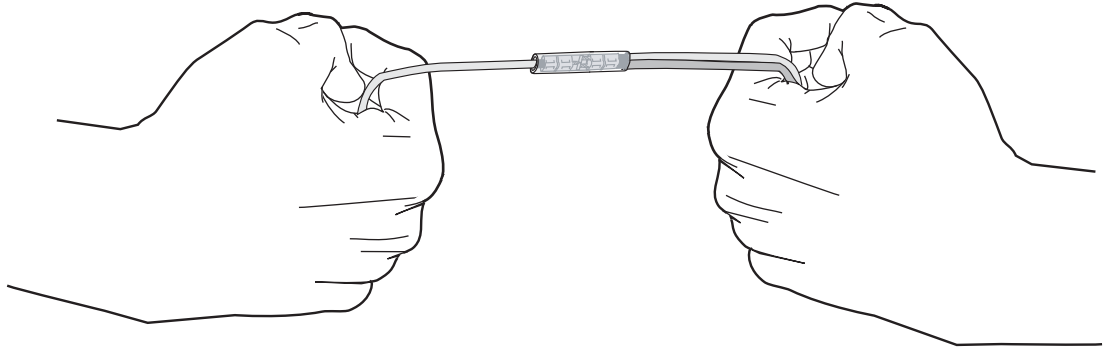
03AAA_282

> ⚠️ **Caution**
>
> *If using heat shrinkable crimps, DO NOT use a heat gun or open flame near combustible materials. Use a heat gun* only *when it is safe and appropriate to do so.* Protect surrounding wiring and other components when using a heat gun.

Completing the Wire Connection

Create extra protection for the wire connection by following these additional steps:

1. Wrap a wire around four fingers of a hand, one full loop, so the wire loop is longer than the butt splice.

2. Cinch tight the loop and center it against the butt splice.

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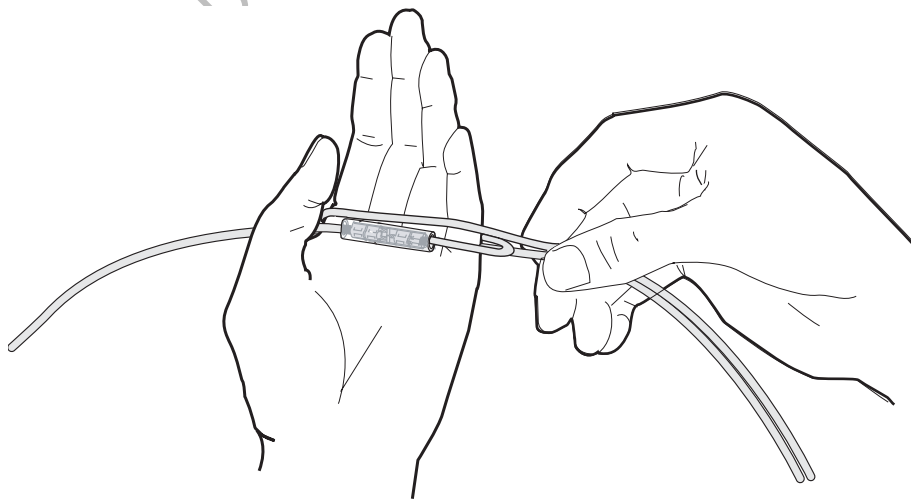
3. Secure the wires together and place tie wraps at the outside ends of the butt splice.

Place tie wraps
at outside ends of
butt splice.
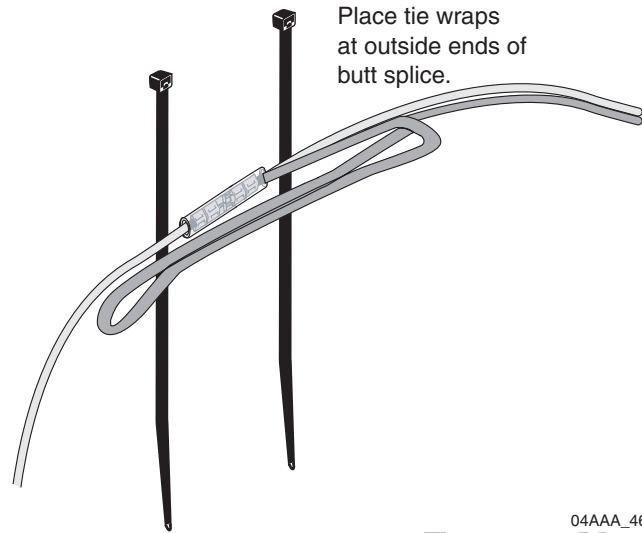
04AAA_46

4. Cinch the tie wraps tight and cut them *flush* to the lock head.

> ⚠️ **Caution**
>
> *Failure to cut the tie wraps flush to the lock head can result in injury.*

Cut tie wrap
flush with lock head.

03AAA_276A
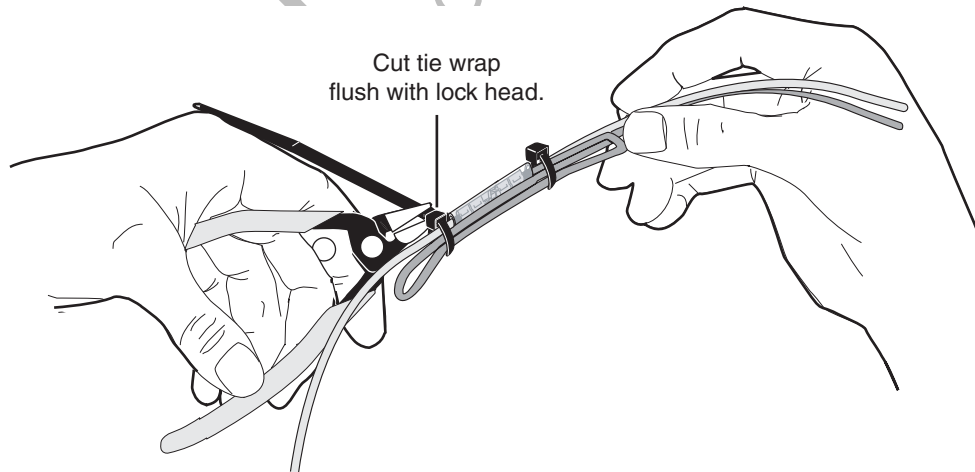
5. Firmly tug on the butt-spliced wire connection to make sure the tie wraps do not pull loose.
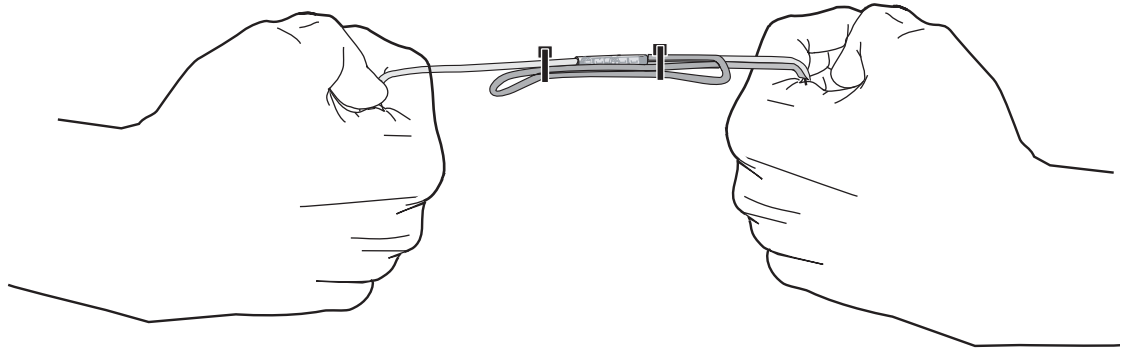
04AAA_48

Ring Terminals

When making electrical connections, crimp ring terminals onto the ends of the wires to ensure good contacts. A properly crimped ring terminal has these characteristics:

- The barrel crimping indent is well-formed and properly positioned.

- The insulated wire's grip impression is well-formed and provides proper support without crushing the insulation.

- The wire does not move independently of the lug. Firmly tug on the ring terminal to ensure it does not pull loose.

- The end of the bare wire protrudes through the crimp barrel approximately 0.03 to 0.125" depending on the lug size and crimp tool.

Wire gripping impression is well formed

Barrel crimping indent is well formed and properly positioned

Bare wire protrudes 0.03 to 0.125 inch

OM/E-0093-97

ALL INFORMATION SUBJECT TO CHANGE
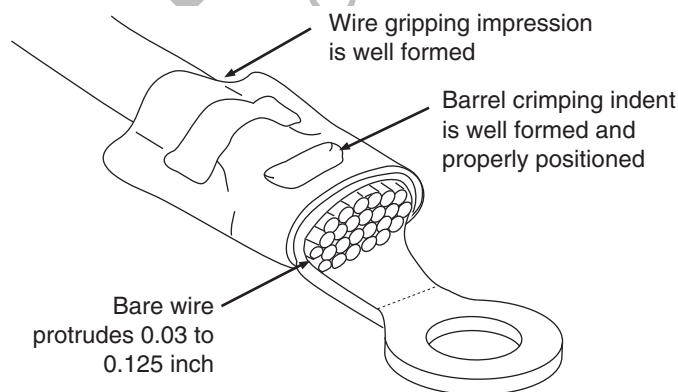
Install the ring terminal on the ground connection using one of the following options:

Screw

Nut

Lock Washer

Flat Washer

Flat Washer

Terminal Connector

Terminal Connector

Star Washer

Ground Stud
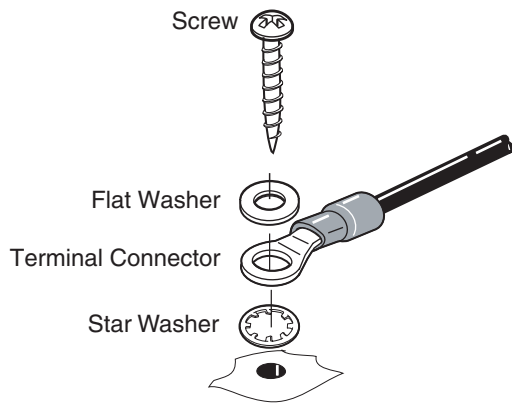
Creating a ground
connection using a screw

-OR-
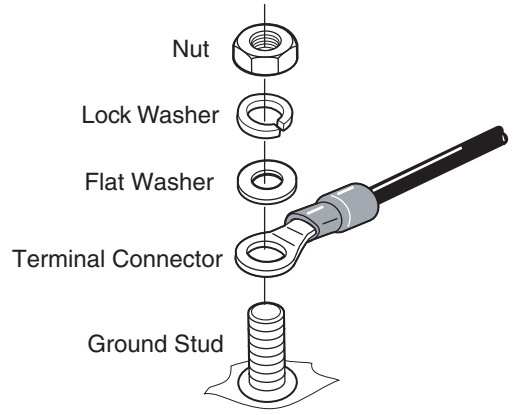
Using existing ground
to create the connection

03AAA_285b

4
Installation Planning

This chapter describes how to plan a basic mobile computing platform (MCP) system installation.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Installation Guidelines

Your installation decisions should take into account safety and security first, followed by reliability and accessibility. Here are a few important rules and guidelines.

Safety

- Use eye protection when using a drill or performing work that poses any hazard to the eyes.
- Use ear protection in a noisy working area.
- Wear appropriate clothing or uniforms (not too loose; no jewelry). Safety shoes (steel-tipped toes and shanks) are recommended.
- Make sure you know beforehand exactly what is behind the area you are about to drill. Is it electrical wires, condenser coils, or heavy gauge steel framing?
- Use hood safety lanyards when the truck hood is open.
- Make sure ladders are in good repair.
- Do not place ladders in awkward or unsafe positions.

Security

- Never install equipment in a manner that will cause damage to the truck or work loose over time.
- Make sure there are no loose components or cables and there are no unsecured components in the cab or outside of the truck.
- Use solid mounting surfaces.
- Do not modify or design your own mounts without first obtaining QUALCOMM approval (applies domestically only).

Note

Use only QUALCOMM-designated mounts for equipment installed in the United States.

Reliability

Note

In the United States, call QWBS Customer Support at 800-541-7490 for answers to technical questions that concern the reliability of the installation.

- Mount satellite data modems (SDMs) in locations that ensure the unit will receive uninterrupted and undegraded satellite signals. For more information, refer to *Line-of-Sight Requirements on page 5-4*.

- Install all components in a location where they will not be abused.

- Do not mount SDMs on headache racks or exhaust stacks.

- Route all cables away from hot or abrasive areas where they might become damaged.

Accessibility

- Choose installation locations with future maintenance in mind so that components can be easily replaced if necessary.

- Choose installation locations where components are not likely to be tampered with or damaged.

Typical Installation Sequence

Every installation is different. Before you begin the installation, you should plan the order in which you will install the MCP components. The sequence will vary depending on the situation, but the following is an installation sequence that works well in many situations:

1. SDM/mount (described briefly in Chapter 5). For detailed instructions, see the *Outdoor Unit Mount Installation Guide*

2. Mobile application server (MAS) mounting tray (described in Chapter 8)

3. Display unit holster (described in Chapter 6)

4. Cables (described in Chapter 9)

5. Display unit (described in Chapter 6)

6. Remote control device (RCD) (described in Chapter 7)

7. Accessories (described in specific chapters)

8. MAS (described in Chapter 8)

After you install the MCP components, you will verify that the system works properly using the instructions in Chapter 10: Basic System Verification.

Typical Installation Locations

The installation location for a component varies depending on the type of vehicle.

The SDM should be mounted securely to the mounting assembly with clear "line-of-sight" to the satellite (explained in Chapter 5).

Note

The driver should not use the display unit while the vehicle is in motion.

The display unit is usually installed in the cab so the driver can easily access it.

• If you are using a media display unit (MDU) without the RCD, it is usually installed in the cab so the driver can easily see the message waiting light from his seat.

• If the display unit is installed in the bunk, you can install a remote message waiting light (RMWL) so that the driver knows when an Important, Sleepy Important, or Emergency message has been received.

The MAS is usually mounted in a dry, protected space such as the side box or bunk area.
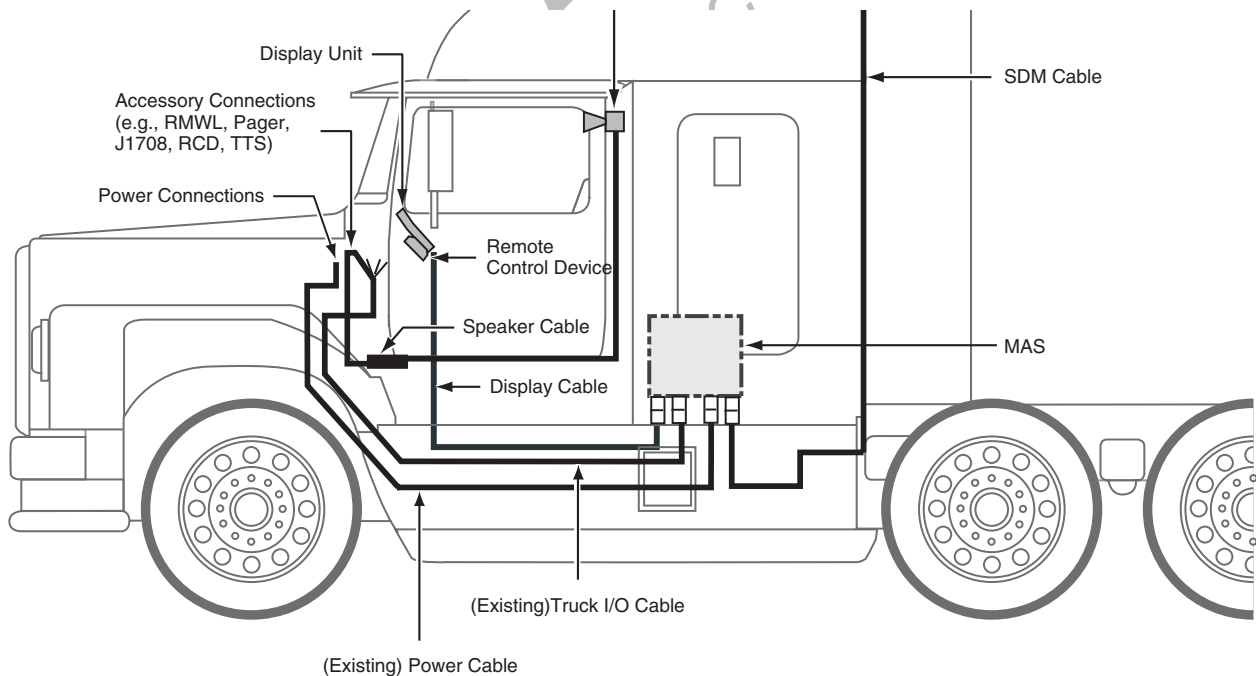
Scene2A_revised

Conventional Vehicle Types

The following section illustrates top-down views of typical installation locations for the MAS, display unit, and cables in the conventional vehicle. Descriptions of the locations and the reasons for selecting them are also provided.

International/Navistar
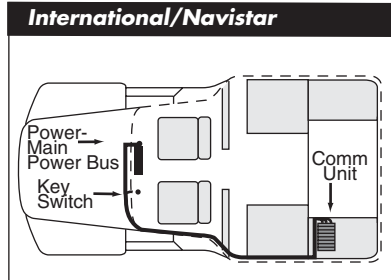
- MAS—Install in the driver side toolbox. Hang from under the bunk.

    - Install so there is always access to the SD card slot.

- Display unit—Install where space allows and according to customer preference.

- Cables—Route externally or internally as appropriate.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Freightliner FLD
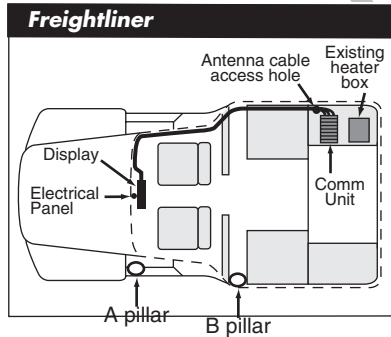
- MAS—Attach to the floor in the small, less-used storage area on the passenger side under the bunk. There is a pre-existing access hole here to the exterior. This compartment may be accessed by lifting up the bunk.

    - Install so there is always access to the SD card slot.

- Display unit—Attach to the electrical access panel behind the gearshift lever where it is accessible.

- Cables—Route externally. Power cable connections are made at the A pillar at the driver-side mirror.

    - Cables exit/enter the sleeper near the MAS.

    - Cables enter/exit the cab low on the passenger side of the firewall, away from the foot area.

- Install so a 1 1/2" hole can be cut for the SDM cable.

Freightliner Century/Columbia
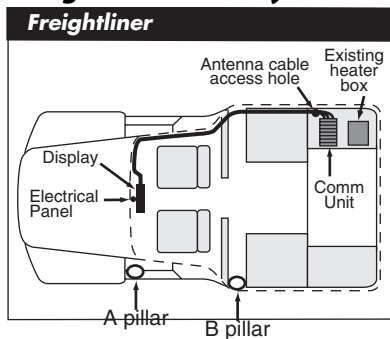
- MAS—Install in the passenger side toolbox. Hang from the bunk.

    - Install so there is always access to the SD card slot.

- Display unit—Install on the face of the connector panel where it will be accessible to both the driver and passenger.

- Cables—Route internally.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Kenworth
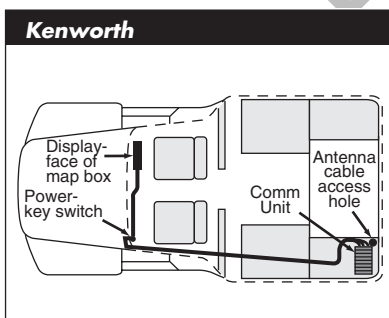
- MAS—Install in the driver side toolbox. Hang from the bunk.

    - Install so there is always access to the SD card slot.

- Display unit—Install on the face of the mapbox where it will be accessible.

- Cables—Route externally. Connect the power cable to the key switch.

    - Cables exit/enter the sleeper floor near the MAS.

    - Cables enter/exit the cab through the firewall high on the driver side. Look for rubber plugs.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Volvo
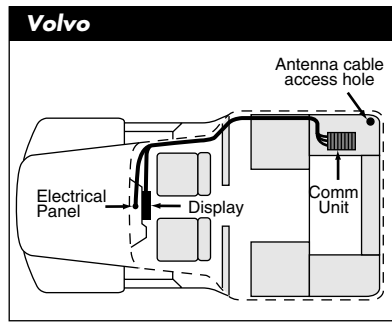
- MAS—Install on the floor in the passenger side toolbox. This is a storage spot that allows for easy internal cable routing.

    - Install so there is always access to the SD card slot.

- Display unit—Install on the engine cover (dog house) where it will be accessible to both the driver and passenger.

- Cables—Route internally (the cableways are less crowded on the passenger side). Connect the power cable to the electrical panel.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Peterbilt
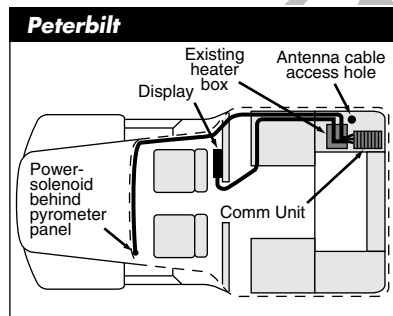
- MAS—Install in the passenger side toolbox. This is a storage area that allows for easy cable routing.

    - Install so there is always access to the SD card slot.

- Display unit—Because of limited space, install behind the passenger seat.

- Cables—Route display unit cables internally or externally. Because of easy access, connect the power cable to the solenoid behind the pyrometer panel.

    - Cables exit/enter the sleeper floor near the MAS.

    - Cables enter/exit the cab through the firewall, high on the passenger side, using the existing cable path. You will need to remove the map box.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Mack
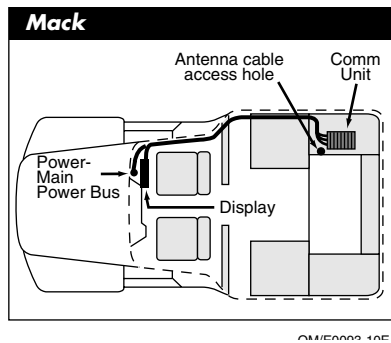
OM/F0003-10E

- MAS—Install in the passenger side toolbox. Hang from the bunk.

    - Install so there is always access to the SD card slot.

- Display unit—Install on the face of the connector panel where it will be accessible to both the driver and passenger.

- Cables—Route externally.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Cabover Engine (All Makes) Vehicle Types

The following section illustrates the top-down view of typical installation locations for the MAS, display unit, and cables in the cabover vehicle. Descriptions of the locations and the reasons for selecting them are also provided.
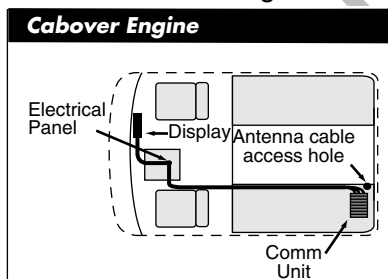
- MAS—Install in the driver side toolbox. Hang from the bunk in a position so that, when the cab is tilted, nothing will fall on the unit. This location allows for direct interior cable routing.

    - Install so there is always access to the SD card slot.

- Display unit— Install on the dash where it will be accessible.

- Cables—Route internally. Because of easy access, connect the power cable to the main bus or keyswitch.

    - Install so a 1 1/2" hole can be cut for the SDM cable.

Day Cab (All Makes) Vehicle Types

The following section illustrates the top-down view of typical installation locations for the MAS, display unit, and cables in the day cab vehicle. Descriptions of the locations and the reasons for selecting them are also provided.
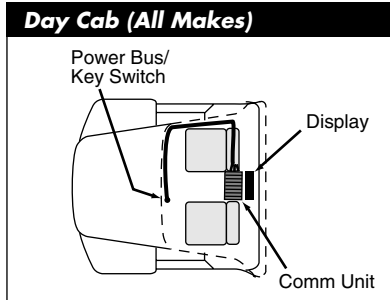
- MAS—Install where space allows.

  - Install so there is always access to the SD card slot.

- Display unit—Install where space allows and according to customer preference.

- Cables—Route internally.

  - Install so a 1 1/2" hole can be cut for the SDM cable.

Straight Truck Vehicle Types

The following section illustrates the top-down view of typical installation locations for the MAS, display unit, and cables in the straight truck vehicle. Descriptions of the locations and the reasons for selecting them are also provided.
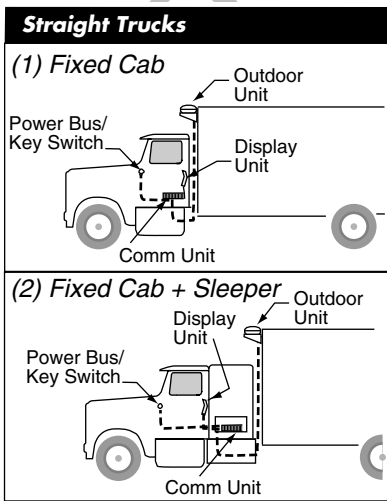
- MAS—Install in cab or sleeper where space allows. Attach to floor or bunk.

  - Install so there is always access to the SD card slot.

- Display unit—Install where space allows and according to customer preference.

- Cables—Route externally or internally as appropriate. Tilt cabs will probably require longer cables as noted below.

- Install so a 1 1/2" hole can be cut for the SDM cable.

Special Cable Ordering Instructions for Tilt Cabs

For tilt cabs (illustrated below), typically at least one cable must be routed through the cab pivot point to allow for the tilt. In most tilt cab vehicles, this routing requires a longer cable instead of the standard cable. When you order the MCP, specify the length of the cable(s) you need.
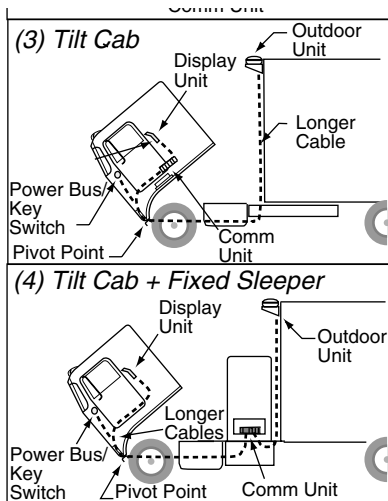
Tools and Supplies

The following tools and supplies are recommended for performing installations. Those marked with a bullet (•) are considered the essential tools and supplies required to perform an installation. Tools other than these may be required to facilitate certain installations and maintenance.

Table 3-1. Tools and Supplies

Wrenches	Misc. Tools
• Standard Combination Wrench Set	• Diagonal Wire Cutters
Adjustable Wrench	• Wire Strippers
• 3/16" Hex (Allen) Wrench	• Butt Splice Crimping Tool
Rachet/Sockets	• Level
• 3/8" Drive Standard Deep Well Socket Set	Vise Grips
1/4" Drive Standard Deep Well Socket Set	• Volt/ohm Meter
1/4" Rachet	Hacksaw
3/8" Rachet	Hammer
3/8" Drive Socket Set	Utility Knife
9/16" Deep Socket	Files (flat, round)
Screwdrivers	Channel Locks
• Phillips #2	Straight Awl
Power Screwdriver (speeds installation time)	Measuring Tape
Slotted	
Torx Bit Set	Misc. Supplies
Drill Bits	• Silicone Sealant
• 3/8" Bit	• Assorted Ring Terminals
• 5/16" Bit	• Red, Blue, & Yellow Butt Splices
5/8" Bit and 3/4" Bit (both are available on 1/4-3/4 step/index drill bit)	• Electrical Tape
• 7/8" Hole Saw	Flash/Drop Light
• 1-1/4" Hole Saw	Power Tools
Air Tools	14" Chop Saw (or tool capable of cutting stock aluminum channel)
• 3/8" Drill	Cordless Drill
3/8" Rachet	

Acceptable Sealants

The following table lists QUALCOMM-approved sealants used to protect MCP components from moisture that can be applied during the installation.

Sealant, Lubricant, or Liquid	Acceptable For	Required For
Silicone sealant	Sealing exterior to interior holes.	Sealing bolt holes for SDM mounting brackets.
Refrigeration tape (supplied)	Sealing exterior to interior holes.	

Installation Planning Worksheet

Use a copy of the appropriate Installation Planning Worksheet (a reduced sample is shown below) to plan your installations. The worksheet will help you point out installation locations for others who might be working with you. Full-size reproducible copies of the worksheet are on the next several pages.
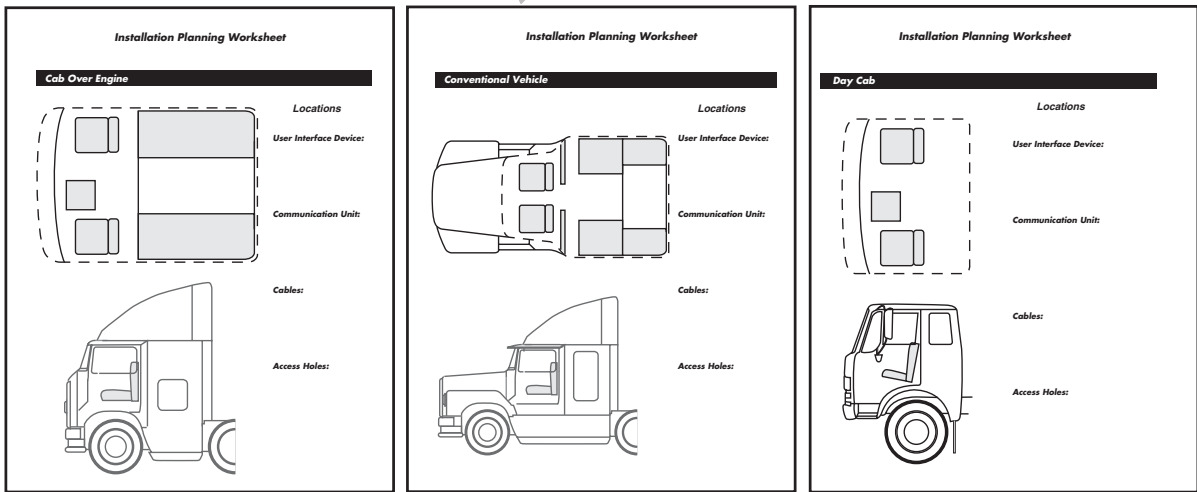
04AAA_35

Installation Planning Worksheet

Cab Over Engine
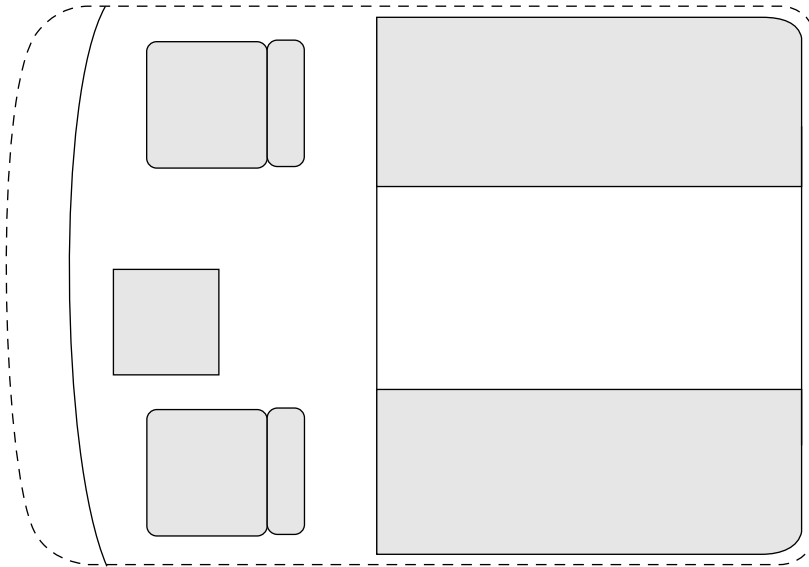
Locations

User Interface Device:

Communication Unit:
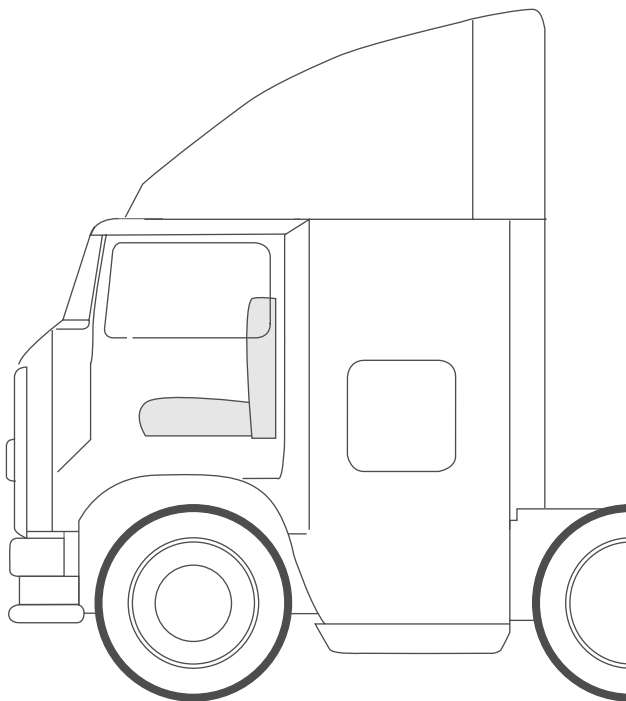
Cables:

Access Holes:

OM/E0093-151

Installation Planning Worksheet

Conventional Vehicle
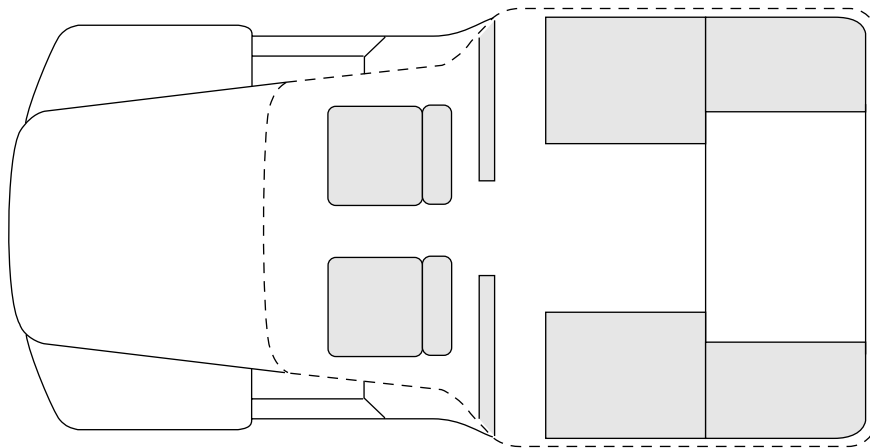
Locations

User Interface Device:

Communication Unit:
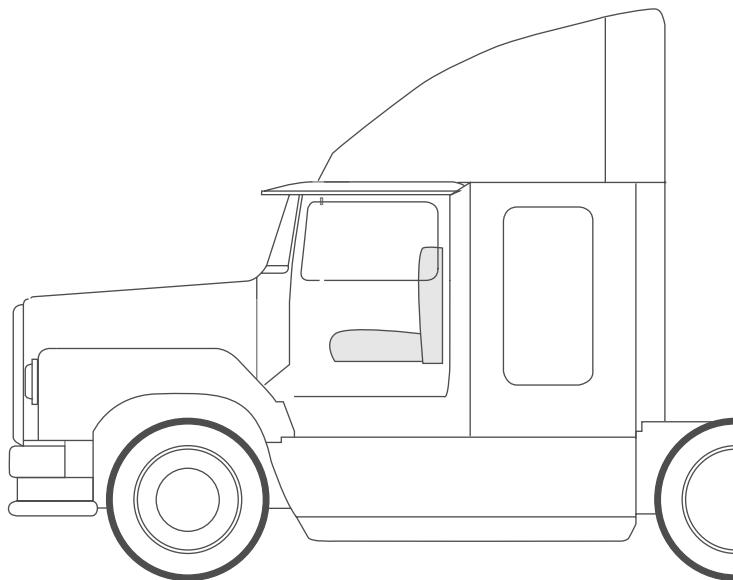
Cables:

Access Holes:

OM/E0093-152

Installation Planning Worksheet

Cab Over Engine
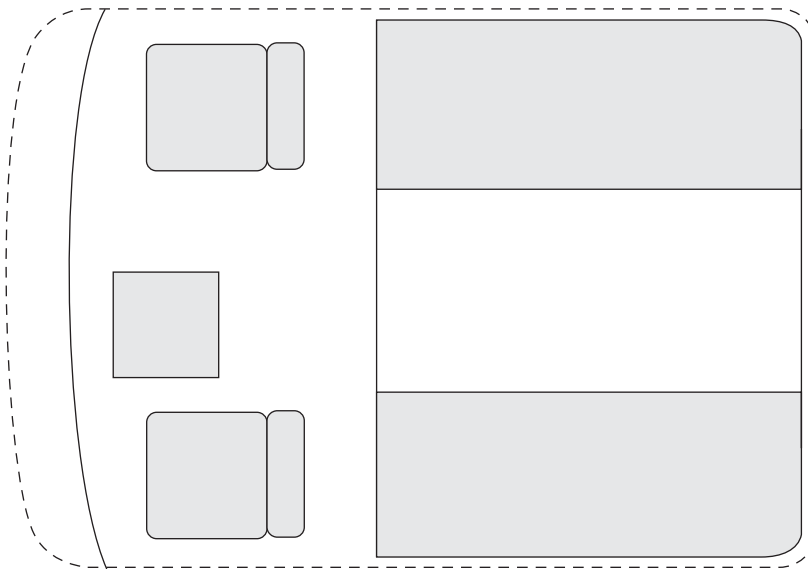
Locations

User Interface Device:

Communication Unit:
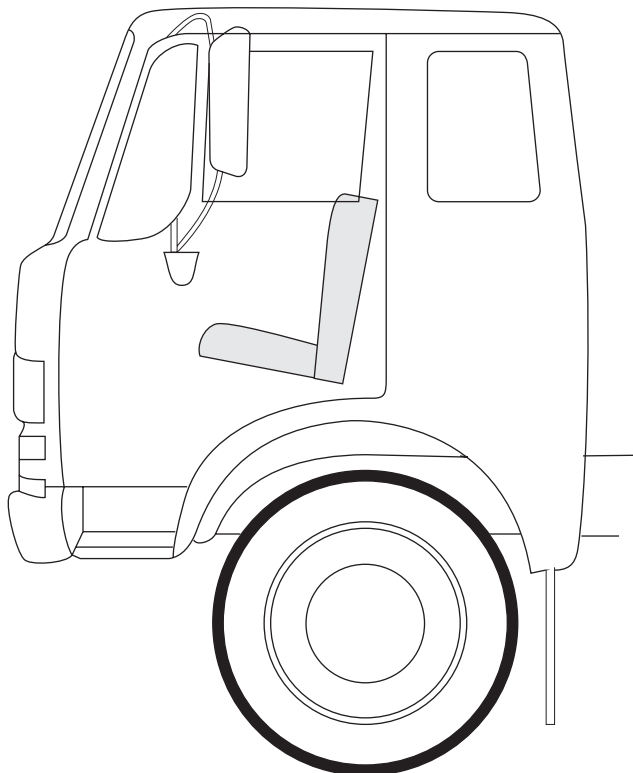
Cables:

Access Holes:

OM/E0093-153

5
Satellite Data Modem (SDM) Installation

This chapter gives general guidelines for installing the satellite data modem (SDM) component of the OmniVision™ mobile computing platform (MCP) system.

Complete instructions for installing the SDM for specific vehicle types are located in the *Outdoor Unit Mount Installation Guide*.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

ALL INFORMATION SUBJECT TO CHANGE

Installing the SDM involves three basic steps:

- Orienting the SDM on the mount
- Installing the mounting bolts
- Connecting the cables

Orienting the SDM on the Mount

Install the SDM so that it is level when the vehicle is level.

Vehicles with Airdams

1. Under a full airdam, orient the SDM so that the SDM cable exits toward the **front** of the vehicle.

Note

This orientation under an airdam reduces the likelihood of water entering the SDM through the connector port, especially when the vehicle is cleaned with high-pressure water.

Vehicles Without Airdams

1. On a vehicle without an airdam, orient the SDM so that the SDM cable connection faces toward the **rear** of the vehicle.

Note

This orientation on vehicles without an airdam prevents wind-driven rain from pounding the connectors.

2. Install the SDM so that it does not exceed the Federal D.O.T. mandated maximum legal height of 13 feet 6 inches.

Installing Mounting Bolts

1. Mount the SDM to the mounting bracket using the bolts and washers supplied with the SDM mounting hardware (or exact substitutions). Normally, bolts longer than 3/4" should not be used. However, if longer bolts are needed, such as when the SDM is being attached to a fiberglass shelf with a plywood base, use 1/4-20 UNC grade 8 or better.

2. Tighten the SDM mounting bolts to the recommended torque of 60 **inch**/pounds (not foot/pounds).

> ⚠ **Caution**
>
> *To avoid over-torquing, **never** use power tools to tighten mounting hardware.*

Connecting the SDM Cable

To install the SDM cable on the SDM cable connector, hand-tighten the connector.

⚠️ **Caution**

If the cable does not easily connect to the SDM cable connector, check the part number of the cable to make sure you are using the SDM cable.

WARNING

The SDM connector is already weather-resistant; do not attempt to weather-proof the SDM connector.

General Installation Guidelines

Provide adequate clearance from any nearby structures such as airdams and exhaust stacks.

When you install an exposed SDM mount, position it on the driver's side, if possible, where tree branches and other hazards will less likely contact the SDM.

DO NOT install SDMs on headache racks or exhaust pipes.

⚠️ **Caution**

Headache racks are mounted to the vehicle frame and there is no shock cushioning. An SDM mounted on a headache rack risks damage. QUALCOMM reserves the right to charge for replacement or repair of damaged or malfunctioning SDMs which QUALCOMM determines to have failed as a result of installation on the headache rack.

DO NOT paint the SDM. Painting the SDM will degrade the performance of the MCP and void the unit warranty. The SDM *mount* may be painted, however.

DO NOT open the SDM. Removing the radome will void the warranty unless you have obtained authorization and instructions from QUALCOMM. Removing the radome exposes the MCP antenna to moisture.

DO NOT use power tools to tighten the SDM mount bolts. However, pneumatic tools can be used.

Line-of-Sight Requirements

The SDM requires an unobstructed line-of-sight view to the satellite in order to clearly send and receive signals. The SDM must be able to send and receive the signals at a 12° angle above the horizontal plane of the unit. There must be an unobstructed view of the satellite at all angles above 12°.

The following illustration shows this 12° angle as well as the maximum allowable height of objects located at various distances from the SDM centerline. This height is measured up from the horizontal plane of the SDM.

OM/E-0093-42
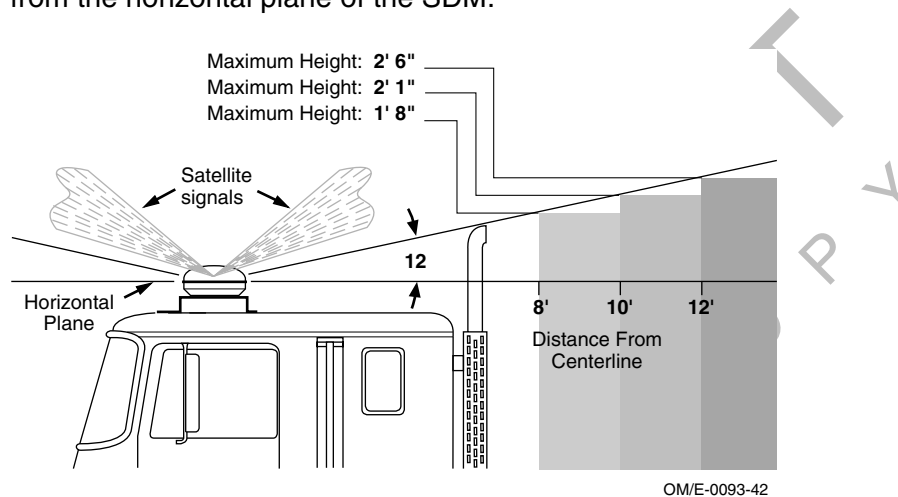
An obstruction height of 2.5 inches for every 12 inches away from the SDM centerline is acceptable. The MCP may not operate properly if there are obstructions above this height. Use this same formula to verify that a trailer hooked up to the vehicle does not extend above the 12° angle.

Normally, the satellite signal can pass through thin layers of glass, fiberglass, and plastic. Thick layers or obstructions above the 12° angle may block the satellite signal.

The components listed below can block or severely reduce the signal from the satellite. These obstructions can cause "blind spots." It may not be possible to completely eliminate blind spots but they must be kept to an absolute minimum:

- Multiple layers of fiberglass, glass, or plastic
- Areas with numerous bends in the fiber glass
- Metal and wood bracing
- Metallic paints and lead-based paints
- Company logos that contain metallic materials

Common obstructions on vehicles include metal airdams, metal wings, metal side skirts, air conditioning units, and exhaust stacks.

When mounting an SDM, make sure the mounting surface is strong enough to support the weight of the SDM and mount (~6 pounds total weight). The installation must also withstand very strong shock forces exerted by the truck when it is moving.

Trailer Swing Area

DO NOT position the mount in the rear center of the vehicle. The corner of the trailer could hit the SDM when the vehicle turns sharply.

Make sure that when the "fifth wheel" of a vehicle is fully forward, the trailer clears the SDM when executing sharp turns or going up ramps.
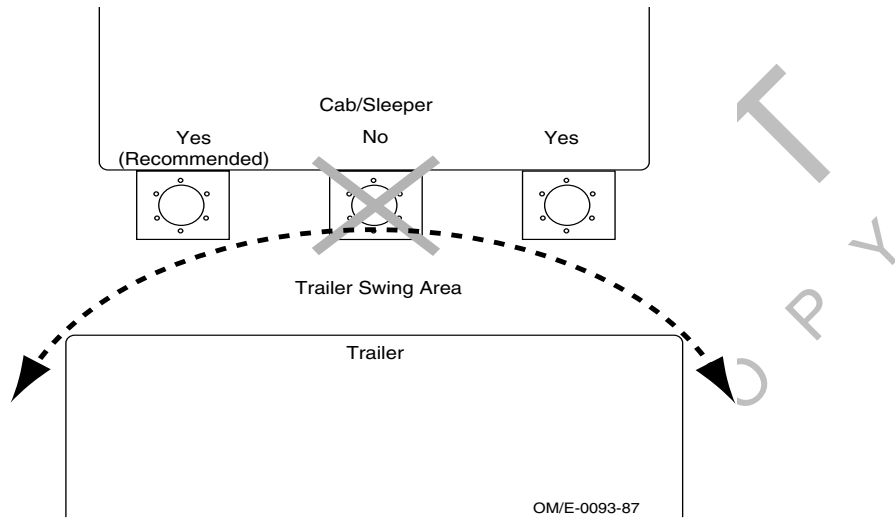
If the vehicle will be hauling refrigerated trailers, make sure that the refrigeration unit still clears the SDM when the driver turns sharply or drives up ramps.

ALL INFORMATION SUBJECT TO CHANGE

6
Display Unit Installation

This chapter provides guidelines and instructions for installing the mobile computing platform (MCP) media display unit (MDU).

For each device, installation involves mounting the holster, routing the cable in the device, and securing the cable.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Selecting a Location

IMPORTANT SAFETY INFORMATION

Do not locate the display unit where it obstructs the driver's field of vision, distracts the driver from the driving task, or interferes with the driver's operation of controls or displays.

⚠ **WARNING**

Driver - Do not use while vehicle is in motion.

Use while driving will cause distraction and loss of vehicle control which may lead to serious injury or death.

Each display unit is equipped with a holster that holds and protects the device when it is not in use. The holster can be installed inside the cab in a number of locations, including the following:

• Map box door

• Engine cover ("dog house")

• Behind the passenger's seat

• In the sleeper compartment

Note

If the display unit is mounted where the driver cannot see the message waiting light, a remote message waiting light can be installed on the dashboard. Refer to Chapter 15: Remote Message Waiting Light Installation for more information.

Select an installation location where:

• The driver can easily see the message waiting light from his seat.

• The mounting surface is flat.

• The device will not be positioned high in the cab.

• The device will not be stored in constant, direct sunlight.

• The device will not limit a passenger's leg room or block access to the wiring panel or any other compartments.

• The device will not fall out of the holster when the vehicle is in motion.

⚠ **Caution**

The display unit is not to be used by the driver while the vehicle is in motion.

Consider the owner's preference in selecting the installation location and whether there is a team or a single driver.

Make sure there is enough clearance to lift the unit out of the holster easily.

Before you install the device on a map box or glove compartment door, measure to make sure the driver can open the compartment after the device is installed.

The following illustration shows a typical location for the MDU in a cabover vehicle. In the example, the cable is routed to the right of the device so that the driver can easily pull the device toward the driver's seat.

Tie wrap
the cable for
strain relief

Media Display Unit (MDU)
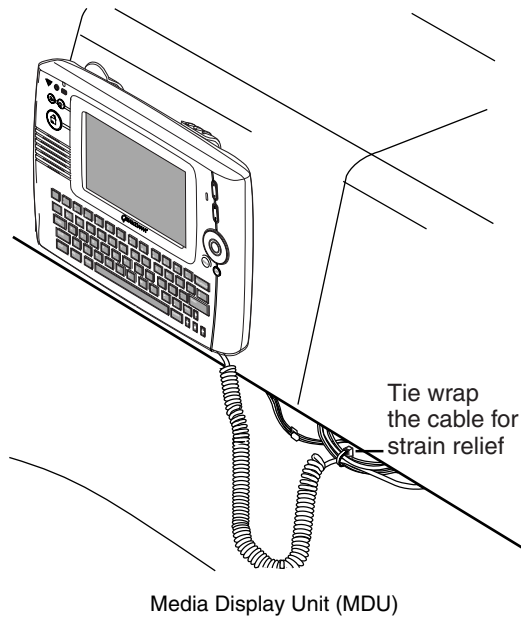
02AAA_210B

Installing the MDU Holster

Follow these steps to install the holster for the MDU.

1. If you are replacing the DU or EDU with the MDU, disconnect the DU or EDU and remove the existing holster.

Note

QUALCOMM recommends that you use the backing plate to strengthen the mounting surface.

2. Decide if you need to use the holster backing plate.

The holster comes with an optional backing plate that can be mounted on the back side of the mounting surface. If the mounting surface is not strong enough to support the weight of the MDU (~3 lbs.), use the backing plate.

12.8"

2.0"

9.0"
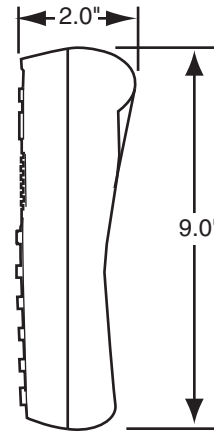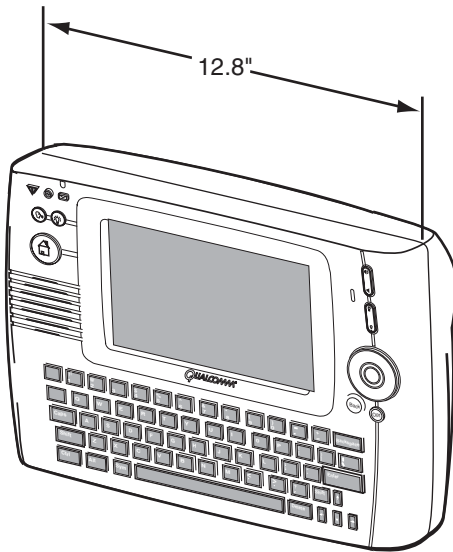
Media Display Unit
Weight 3.00 lbs.

9.0"

Display Holster

12.5"

50-27758-1
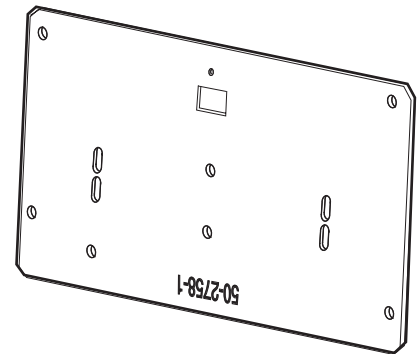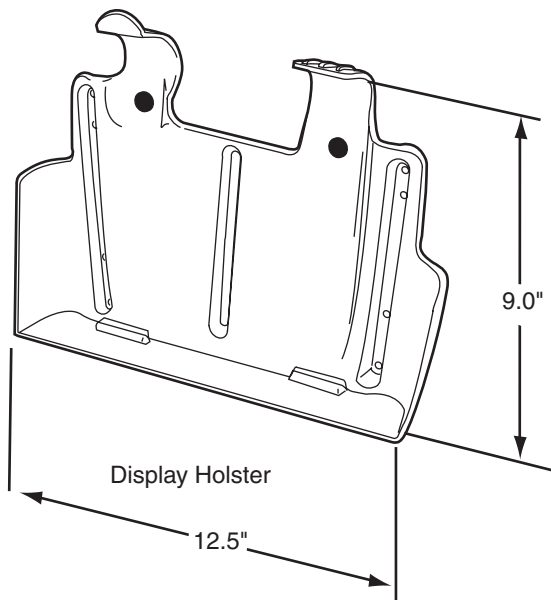
Backing Plate
(Optional)

05AAA_231

If you do not use the backing plate:

a. Verify that there is nothing behind the mounting surface that might be damaged by the screws.

b. Make sure that the surface to which you install the holster can withstand frequent insertion and extraction of the MDU to and from the holster.

c.   Use sufficient nuts, bolts, and lock washers to support the holster. You can also use self-tapping screws if necessary. Be careful not to damage the holster or mounting surface by over-tightening them.

Note

If you use self-tapping screws, check the screws periodically to make sure that they haven't come loose from the frequent MDU use by the driver.

If you use the backing plate:

a.   Verify that the rear of the mounting surface is accessible, and that there is enough space for the backing plate.

b.   Using the holster as a guide, carefully drill the five 1/8" holes in the mounting surface. Use the following illustration to identify the holes.
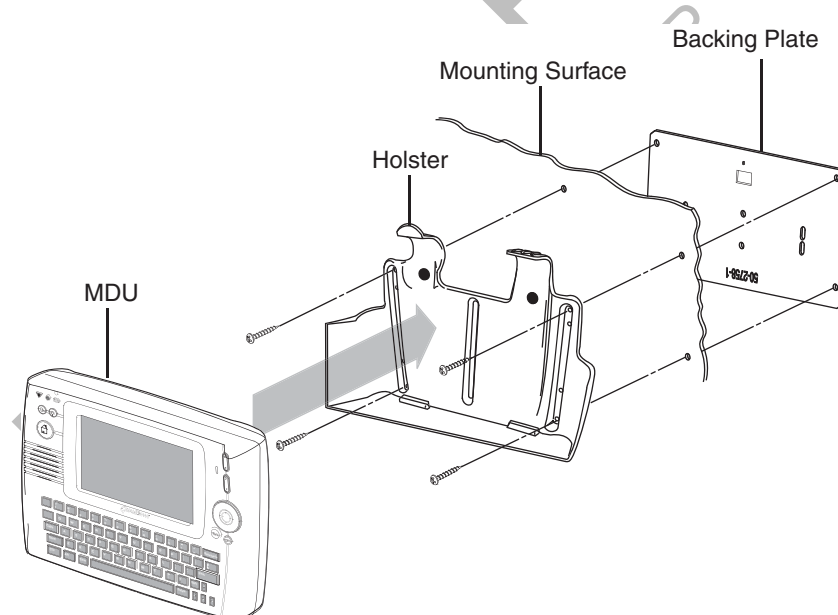
05AAA_228

c.   Place the backing plate behind the mounting surface, and insert the screws through the holster and into the plate.

d.   Tighten the screws. Be careful not to damage the holster, mounting surface, or backing plate by over-tightening them.

Note

If you installed the holster on the map box door or glove compartment door, make sure that the compartment can still be opened.

3. Remove any protruding sharp ends of the holster mounting screws that might cut into wiring or other objects behind the mounting surface.

ALL INFORMATION SUBJECT TO CHANGE

Inspecting the Display Unit Cable

1. Remove the protective cap on the connector only when you are ready to connect the display unit cable to the MAS and MDU.
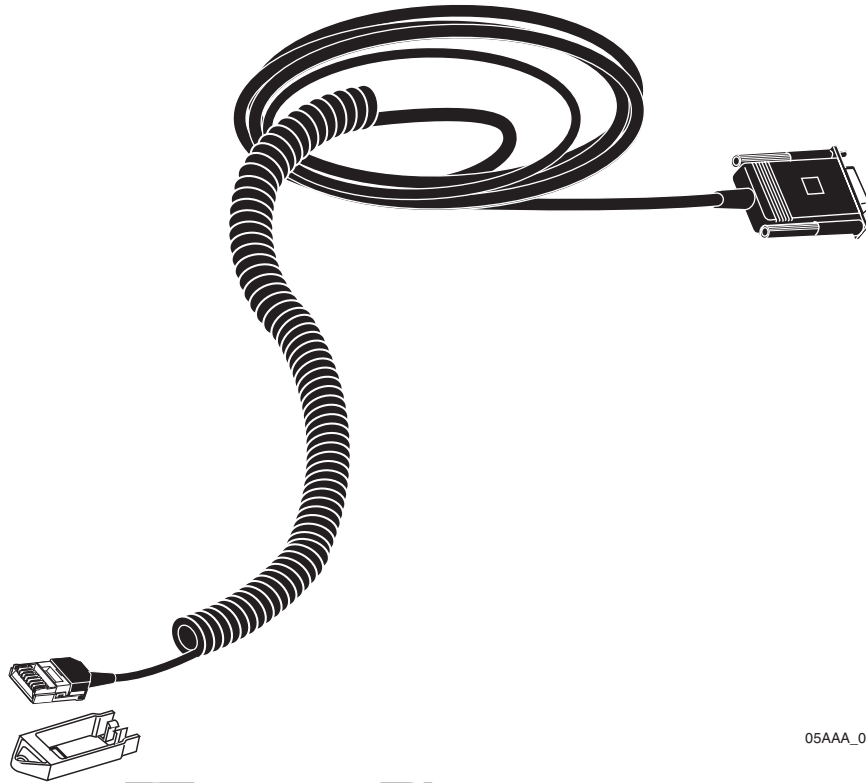
05AAA_042

2. Inspect the display unit cable connectors to make sure they are not damaged and the pins are not bent. Do not attempt to straighten bent pins. This further weakens the pins and results in cable failure.

The following illustration shows good (straight) cable connector pins and damaged (bent) cable connector pins.

Straight
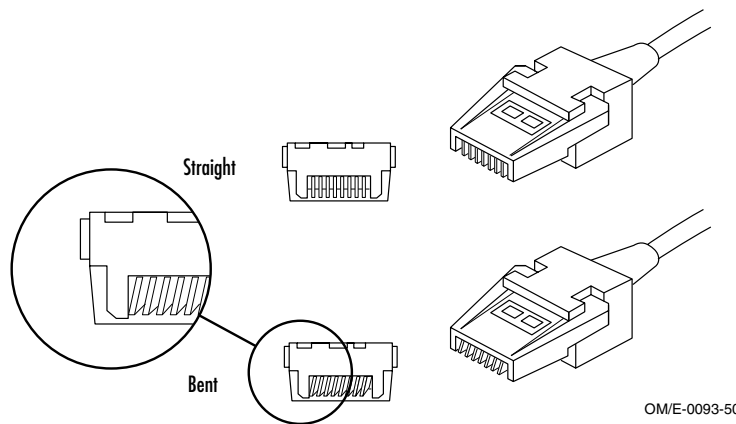
Bent

OM/E-0093-50

Return a display unit cable with bent pins according to the Return Material Authorization Material (RMA) procedure in Appendix C.

Connecting the Display Unit Cable to the MDU

Follow these steps to connect the MDU cable to the MDU.

Caution

Do not step on or drop any objects on the display unit cable connectors.
Do not let the connectors lie on the ground unprotected.

---

1. Route the display unit cable through the appropriate channel on the back of the MDU or follow the instructions located under the access door of the MDU (see the following illustration). The cable can be routed so that it emerges from the right or left side of the MDU. Usually, it is routed to the right side so that the MDU can be pulled to the driver's side without interference from the loose, coiled cable.
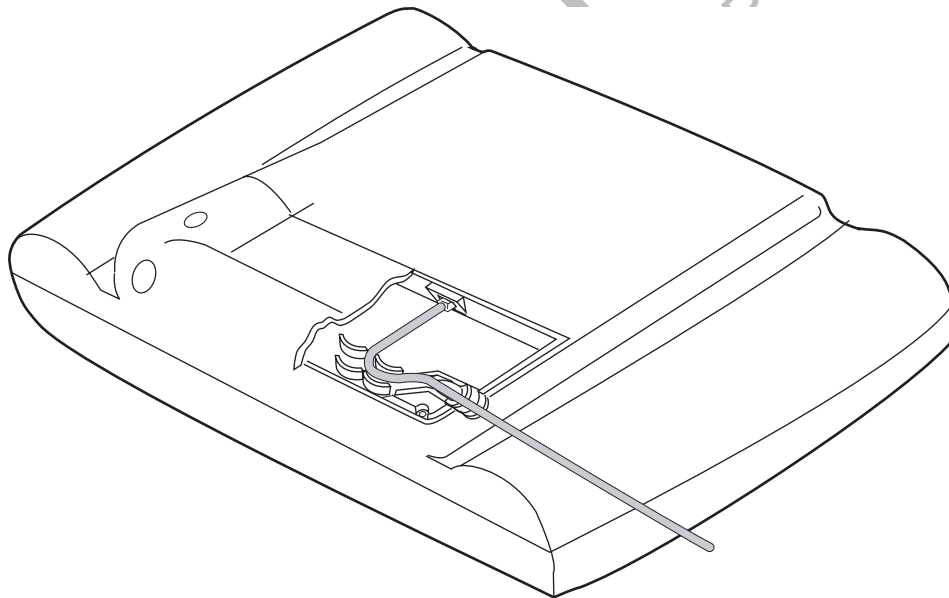
05AAA_233

2. Make sure the rubber grommet fits in the grooves of the MDU and that the flat side of the grommet on the display unit cable is facing up.

3. Install and tighten the cable strain relief clips on the back of the MDU, making sure they securely hold the cable. This prevents the cable connector from being pulled loose from the MDU.

Inserting the MDU into the Holster

The following illustration shows how the MDU is inserted into the holster.

Tab

Holster

Tab

Tab

Tab

Holster

Push top
of display into
upper holster tab

Tab

Push bottom
of display into
lower holster tabs

05AAA_224

ALL INFORMATION SUBJECT TO CHANGE
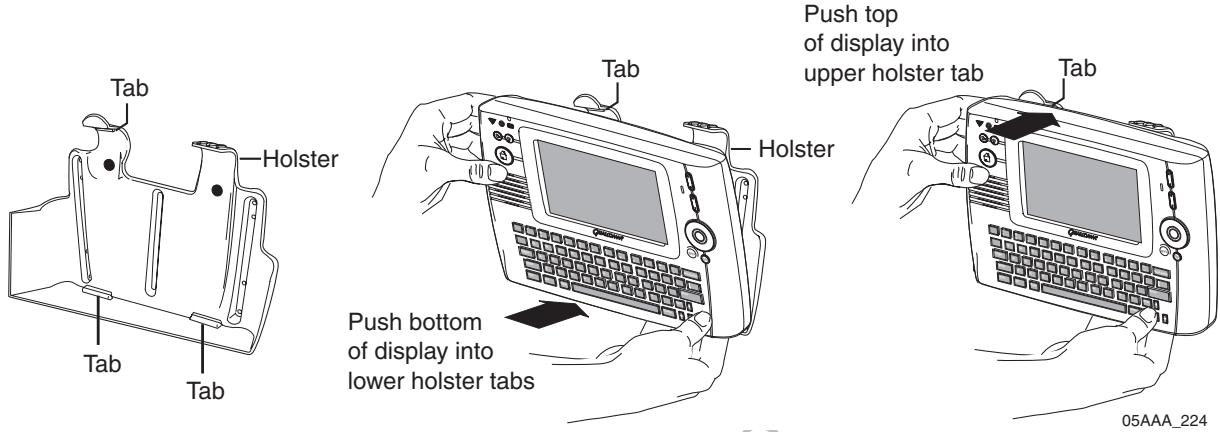
7
Remote Control Device (RCD) Installation

This chapter contains the complete guidelines for installing the components used with OmniVision's text to speech solution.

The remote control device (RCD) allows the driver to safely listen to incoming messages without having to stop the vehicle and read the message(s) on the display. It can connect to an existing speaker in the vehicle or to a speaker that have been added.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Selecting a Location for the Remote Control Device (RCD)

The RCD is designed to be mounted on the dash panel of the vehicle, so it is easily accessible to the driver at all times, but doesn't interfere in any way with the operation of the vehicle.
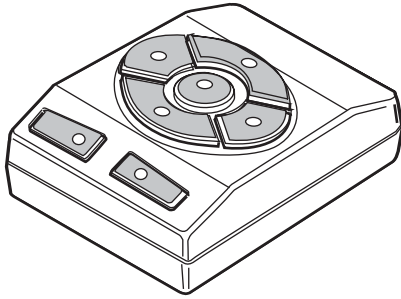
05AAA_219
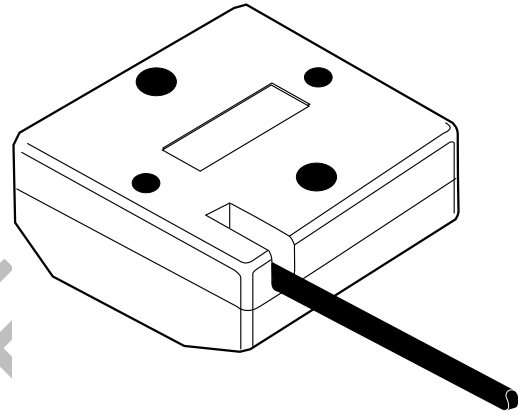
05AAA_234A

Be sure to check Important Safety Information on page -xi when choosing a location.

Remote Control Device

RCD Cable
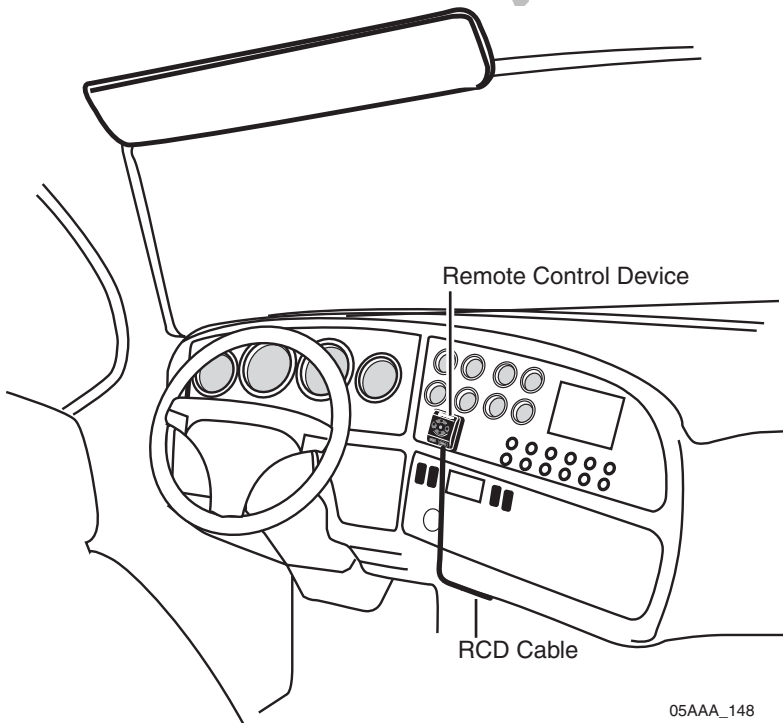
05AAA_148

Installing the Remote Control Device (RCD)

1. Prepare the mounting surface for installation.

Use the alcohol wipes provided to clean the mounting surface of any dirt or grime.

2. Adhere the 3 strips of VHB tape provided to the back of the RCD.

3. Affix the RCD to the dash panel.

Be sure you have chosen a suitable location for the RCD, as the VHB (very high bond) tape *permanently* bonds the device to the dash panel.

Connecting to the Accessory Cable

Once the accessory cable is installed and connected to the RCD as described in Chapter 9, butt splice the RCD wires to the accessory cable wires as follows:

- butt splice one RCD wire to the blue/green RCD wire on the accessory cable,

- butt splice one RCD wire connects to the violet COM5 GND wire on the accessory cable. The COM5 GND wire is also used for the speaker cable ground.

05AAA_219A

DRAFT
DO NOT COPY

8

Mobile Application Server (MAS) Installation

This chapter provides general guidelines and instructions for installing the mounting tray and MAS. It also provides instructions on how to connect the cables to the MAS.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

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In Canada, call 800-863-9191

The MAS is installed in these steps

- Installing the mounting tray
- Installing the battery pack into the MAS
- Installing the MAS into the mounting tray
- Connecting the cables to the MAS

Selecting a Mounting Location

If possible, install the MAS and mounting tray in the storage compartment beneath the sleeper bunk. Typical installation locations for different vehicle types are shown in Chapter 4: Installation Planning. Also choose a location that provides easy access to the SD card slot at all times.

Adequate Clearance

The minimum requirements for adequate clearance around the MAS for ventilation, cooling, and easy access are:

- Sides and back of unit—1 inch.
- Top of unit—1 inch.
- Top of unit—3 inches to open the battery door and access the battery.
- Front of unit—6 inches to allow for proper cable bend radius exiting the unit.
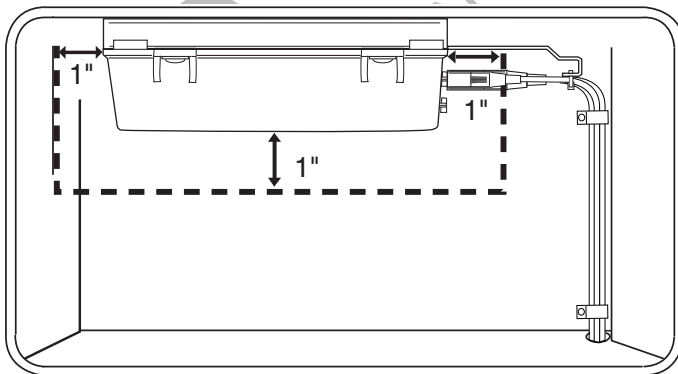
05AAA_237

Location and Orientation

- Choose a location where the MAS will not come into contact with liquids or solvents.

- Choose a location that provides easy access to the SD card slot.

- Choose a location where tire chains or other tools will not likely be stowed on top of the unit or cables. Do not mount the unit near items that may fall on it or bump cable connections.

- Choose a location for the mounting tray that is structurally sound. The surface must support the full weight of the MAS under all circumstances.

- In cabover vehicles, install the MAS in the rear of the storage compartment. In this location, tools or tire chains will not fall on top of the unit when the cab is tilted up.

- Install the MAS so that the connector panel is facing a wall or other fixed area. This protects cable connections from accidental damage and will discourages tampering. Be sure to provide enough room for cable bends or the removal of cables for servicing (4" to 6" is recommended).

- Install the MAS so that the unit, cables, and any accessories can be serviced in the future.

Installing the Mounting Tray

The mounting tray allows for easy removal and reinstallation of the MAS. Additionally, using the mounting tray prevents the need to re-drill holes in the mounting surface.

1. Select a location for the MAS mounting tray according to the guidelines described in the previous section.

2. After you select the location, remove the mattress, luggage, or other objects from the back side of the mounting surface.

3. Pre-position the mounting tray to verify that there is adequate clearance for the installation before you drill any holes.

4. Position the mounting tray so that you can access the adjustable mounting screws when you are ready to install the MAS. (This will also make it easier to remove the MAS later on, if necessary.)

5. Use self-drilling screws to attach the mounting tray to the selected mounting surface.

Note

Before installing the MAS in the cab, the battery pack should be installed into the MAS (see Installing the Battery Pack into the Mobile Application Server (MAS) on page 8-4).

Standard Mounting Tray
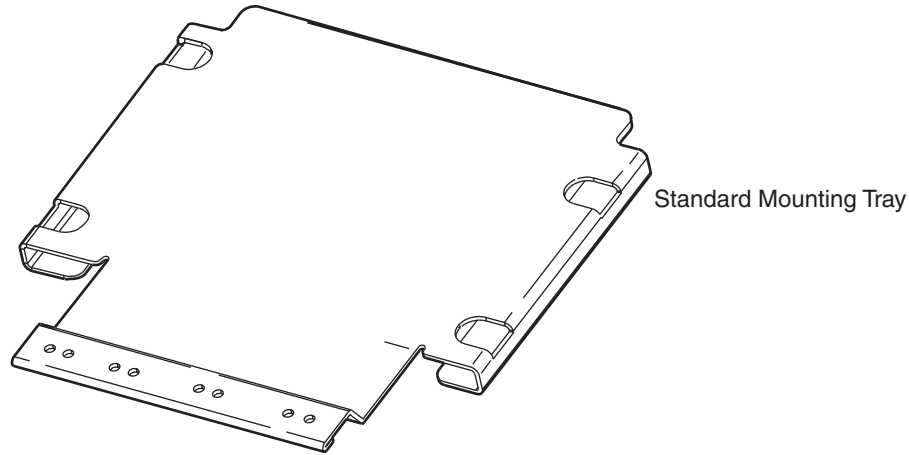
05AAA_221

Installing the Battery Pack into the Mobile Application Server (MAS)

To install the battery pack into the MAS, follow these steps:

1. Hold the battery pack in a vertical position with the connector facing down.

2. Insert the battery pack connector into the slot of the MAS until it clicks into place.
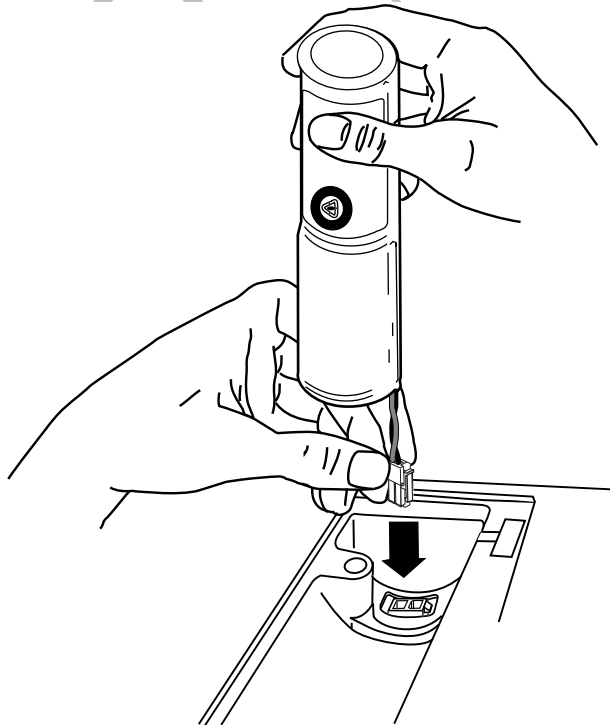
05AAA_45

3. Rotate the battery pack into a horizontal position and place in the MAS.

Torx # 10 Screw
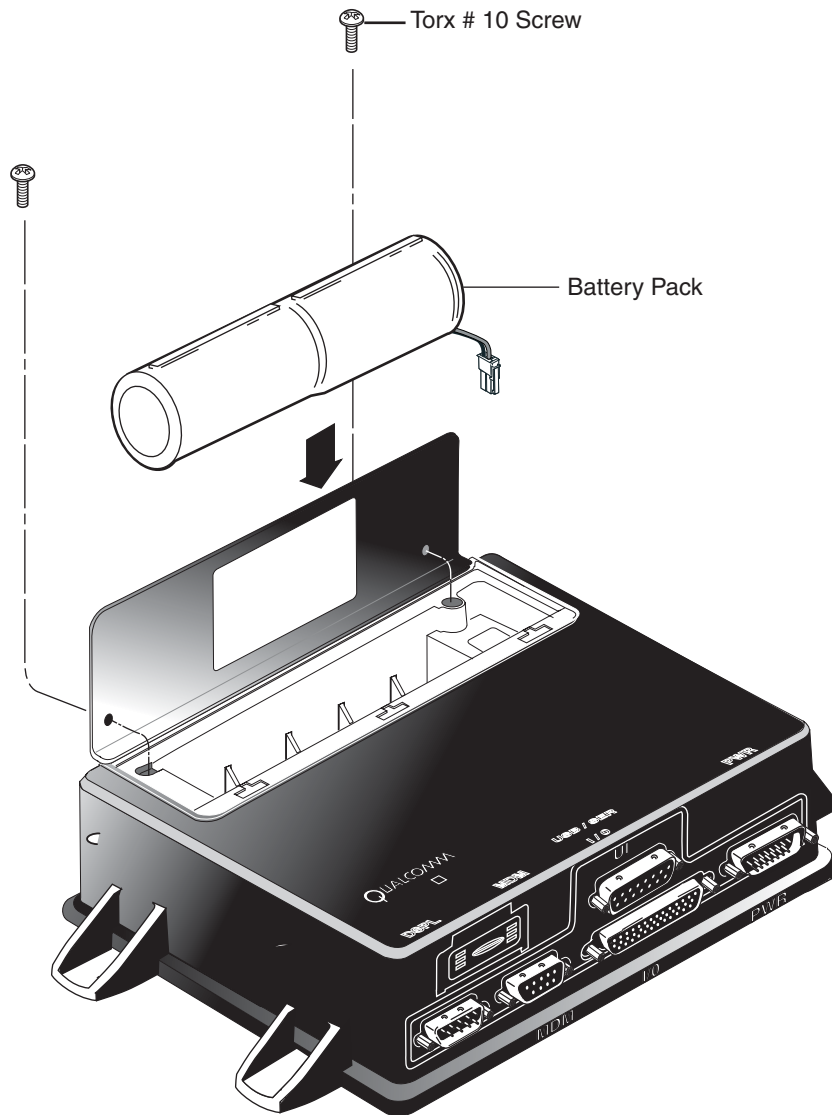
Battery Pack

05AAA_44A

4.   Affix the battery pack cover using the T10 Torx screws provided.
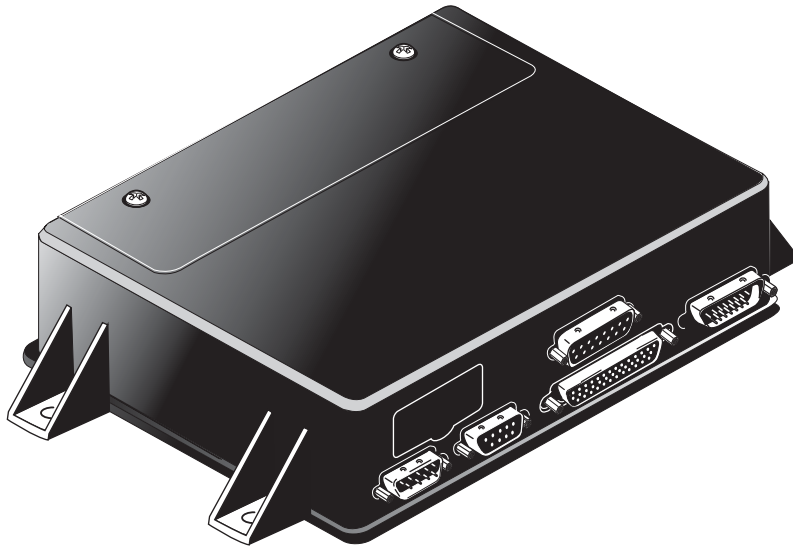
05AAA_043

Installing the Mobile Application Server (MAS)

To install the MAS into the mounting tray, follow these steps:

> ⚠ **Caution**
> *Do not use a pneumatic tool to tighten these screws. This can damage the screws or mounting tabs.*

1. Tighten the four mounting screws into the threads of the mounting tray with a Phillips screwdriver. This secures the MAS in place.

Self Drilling Screws

Mounting Surface
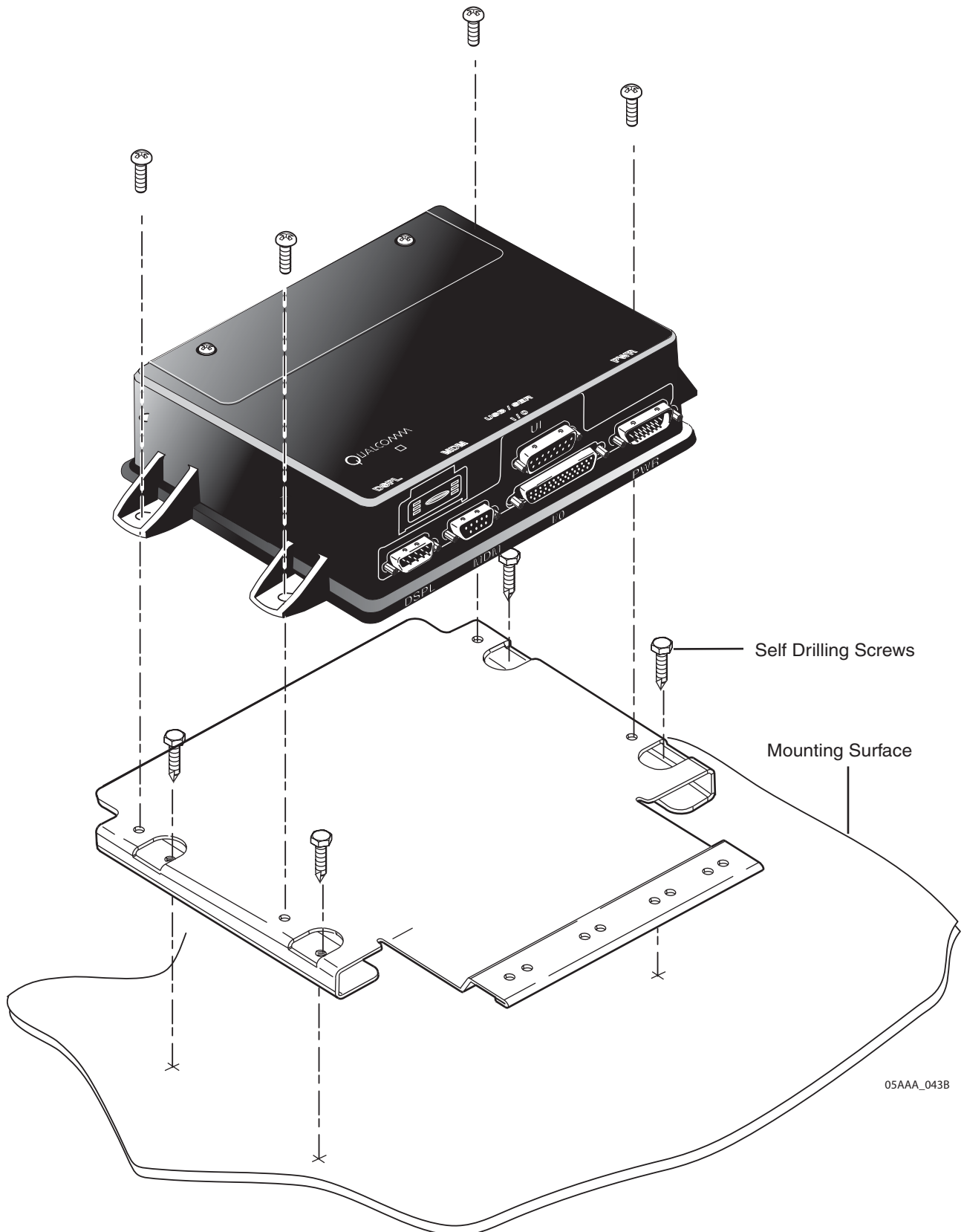
05AAA_043B

Connecting Cables to the Mobile Application Server (MAS)

Inspect all connectors for bent pins or other damage before connecting them to the MAS.

> ⚠️ **Caution**
>
> *Always connect the power connector to the MAS last.*

Install the connectors as described on the following pages.

> ⚠️ **Caution**
>
> *Each of the cable connectors should fit easily into its labelled position. If a cable connector does not easily fit, turn over the cable connector and reconnect.*

Connecting the Display Unit Connector to the Mobile Application Server (MAS)

Plug the MDU connector into the DSPL slot.

Display Unit Cable

Display Unit Connector
(pin side)

Pin	Signal	Wire Color
1	Ground	Gray
2	TX+	Violet
3	TX-	Blue
4	+5 VDC	Green
5	+5 VDC	Yellow
6	RX+	Orange
7	RX-	Red
8	Ground	Black

To Display Unit
(MDU/EDU)
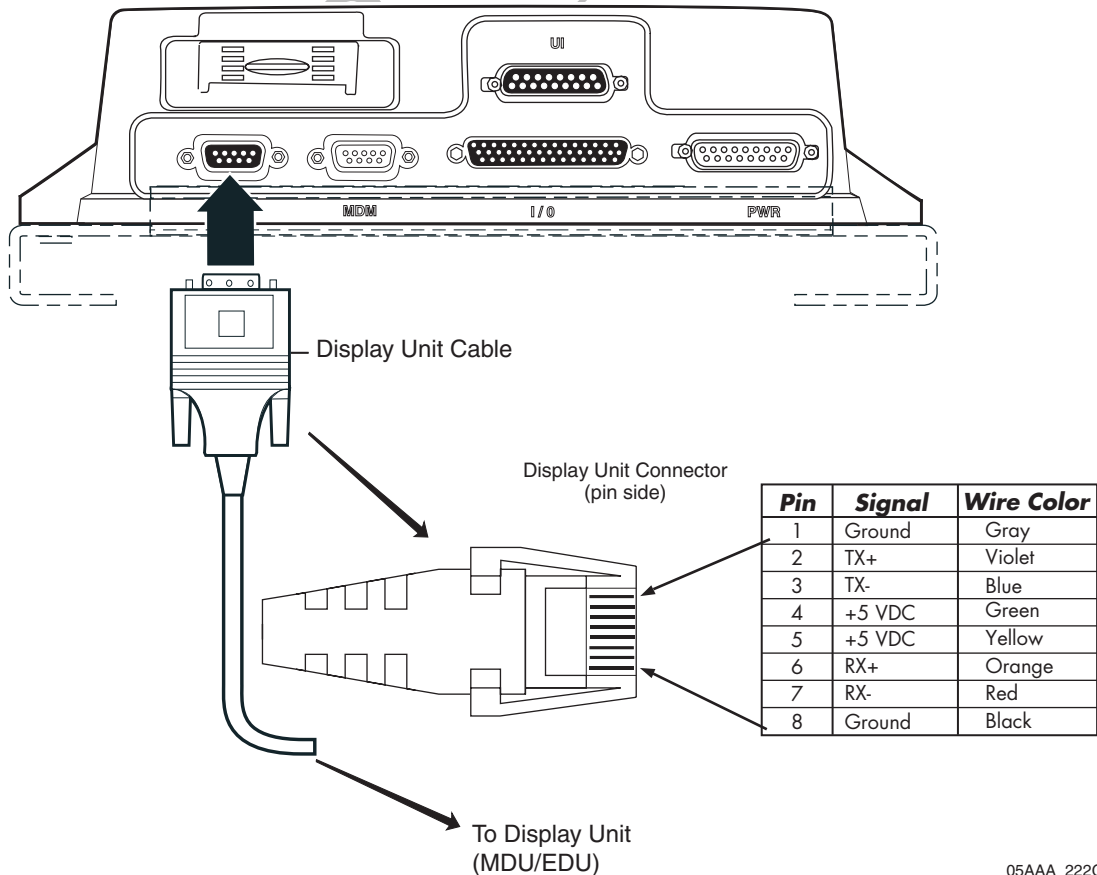
05AAA_222G

Connecting the SDM Cable Connector

Note

Only hand-tighten the thumb screws on the connector.

1. Thread the SDM connector onto the SDM terminal on the MAS.

SDM Cable
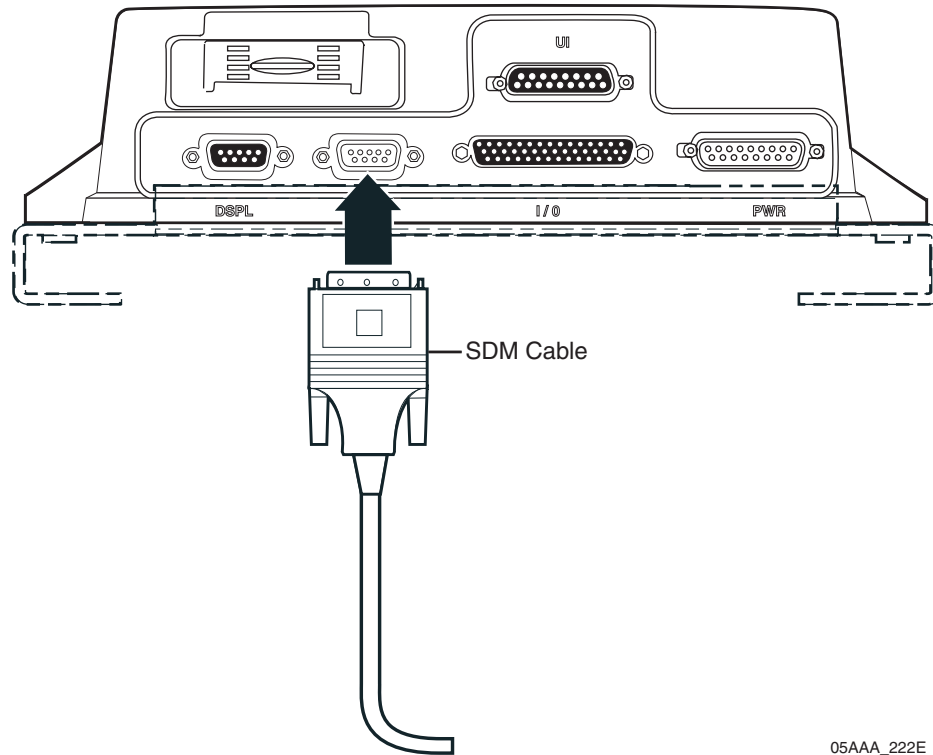
05AAA_222E

Connecting the Accessory Cable Connector

1. Insert the accessory cable connector into the MAS and screw in the side fasteners (thumb screws) until they securely hold the connector in place.

Note

Be careful to avoid damage to the connector: Align the connector so it is straight before sliding into position.

45 I/O pin Accessory Cable
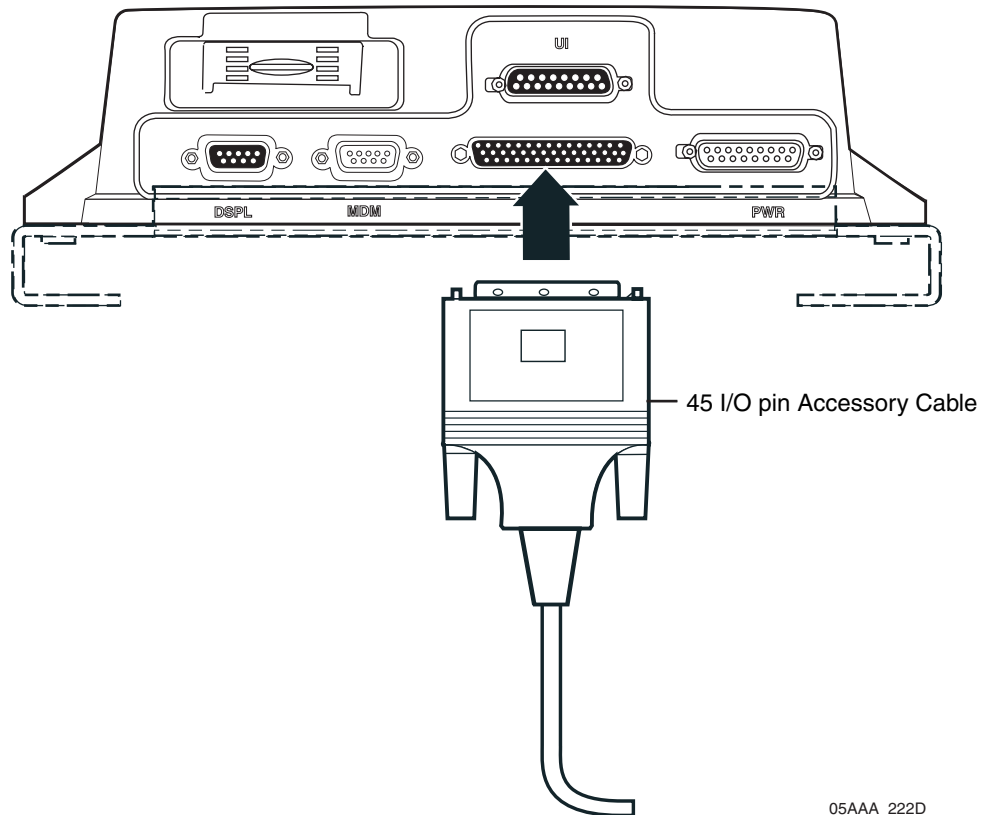
05AAA_222D

2. After you have installed all other connectors, plug the power connector into the PWR slot.

Note

Plug in the power connector last.

Mounting Surface

Power Cable
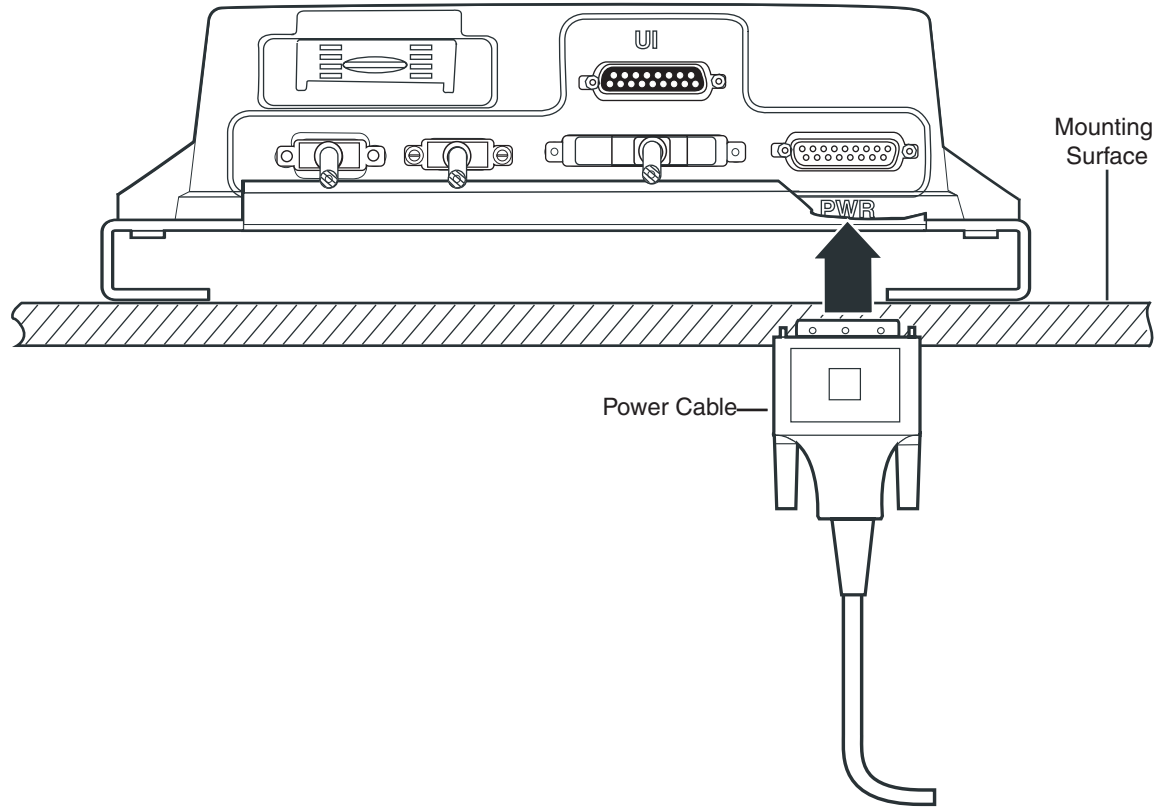
05AAA_222C

Checking All Mobile Application Server (MAS) Cable Connections

Check to make sure all cable connections are securely tightened. Check that all cables have service loops and that they are free from interference.

Connectors should emerge straight out from the MAS and not be pulled to the side or weighted down by any items.

Cables should be tie-wrapped to the slots provided on the MAS mounting plate to help prevent damage and lessen the likelihood of tampering.

The following illustration shows all cables connected to the MAS.

05AAA_222A
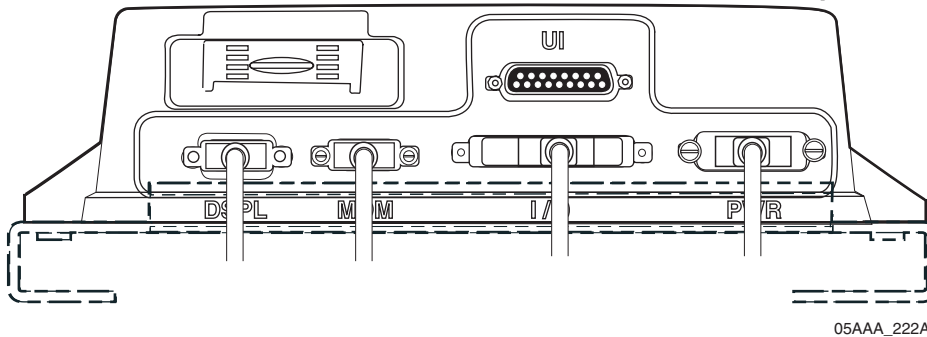
Securing Cables

After installing all MCP components, provide a professional, finished layout with cables securely fastened out of the way and out of sight, if possible.

Secure any excess cabling with cable ties and stow it in the storage compartment or out of sight behind wall panels, or under the mounting tray.

05AAA_43D

9
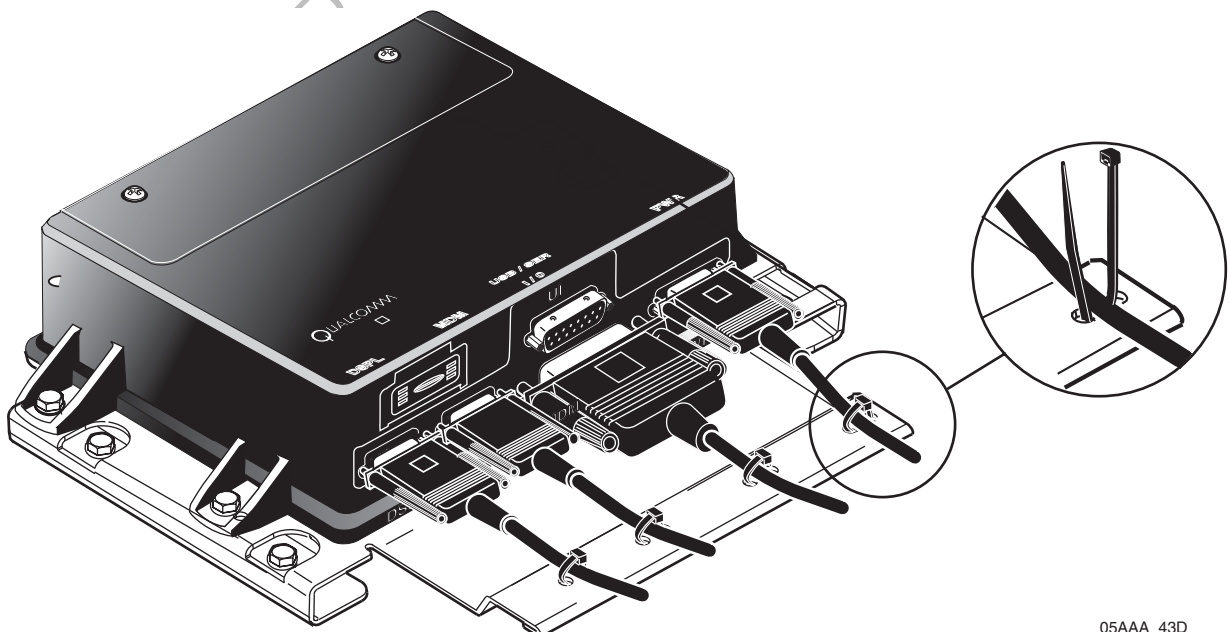
Cable Installation

This chapter describes how to install the cables for a basic mobile computing platform (MCP) system installation.

Because vehicles differ widely, cables can be installed in many different ways. This chapter provides guidelines for most installations.

If you planned your installation using the information provided in Chapter 4, you already know where you will be installing the SDM, MAS, and display unit components. You need to determine the most direct and protected route you can follow in routing cables to connect these components to each other and to the vehicle.

The instructions in this chapter will help you ensure that the installation is free from defects and potential problems.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

Topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

<div align="center">

In the United States, call 800-541-7490
In Canada, call 800-863-9191

</div>

Understanding Cable Basics

The standard cable length is 20 feet. If you are working with a tilt cab, a longer cable may be necessary in order to route it through the cab hinge point.

Do not trim cable lengths to fit a specific vehicle. The equipment may be used on a different vehicle in the future.

If a cable has protective caps covering the connectors, leave those caps in place until you're ready to connect the cable to the appropriate components.

Before you insert the display unit cable connector through a hole, make sure the end is protected with the supplied protective cap. If the cap is not available, wrap the end with plastic and electrical tape.

Use only wire strippers for stripping wires.

Use only the appropriate insulated crimping tool for crimping insulated connectors.

Use existing holes for cable routing whenever possible.

Routing and Protecting Cables

PROTECT THE ENTIRE LENGTH of cabling with convoluted tubing when routing the cable.

To protect cables:

- Limit the minimum bend radius of the SDM cable to 3 inches
- Provide strain relief for all cables
- Use supplied grommets, whenever possible
- Use tie wraps so cables are secure and do not chafe
- Debur any drilled holes to eliminate sharp edges

DO NOT route cables in the following locations:

- Near audio system amplifiers
- Near exhaust pipes and other sources of heat
- Over sharp edges
- Over moving parts
- Near the brake, clutch, or accelerator pedals, and linkage
- Near foot traffic areas
- Near the windshield wiper mechanism
- Near CB radio wires (especially the display unit cable)

Special Exterior Routing Guidelines

- When routing outside of the vehicle, always use convoluted tubing to protect the cables.

- Route away from exhaust pipes and moving parts. If an exhaust pipe or moving part must be crossed, use extra cable wraps and route the cable in such a manner that if the wrap fails, the cable will be caught or rest on a safe part (not hot or moving).

- Seal all external holes for cables with refrigeration/tar tape or silicone sealant to keep moisture out.

- Route cables with any existing vehicle cables.

Special Interior Routing Guidelines

- Route cables under carpets when possible, but avoid high foot traffic areas of the carpet where the cable may be damaged by wear.

- When reinstalling carpets or kick plates, be careful that screws do not penetrate cables.

- Route cables with any existing vehicle cables.

- Use convoluted tubing and refrigeration tape when cables are routed through interior holes with sharp edges.

Storing Excess Cabling

Secure any excess cabling with cable wraps in the storage compartment or stow it out of sight behind wall panels.

Service Loops (Drip Loops)

Provide service loops (drip loops) for all cables. This provides enough slack for future servicing and also allows any moisture to drip off the cable. Ensure that service loops will not cause any obstruction.

Side View   **Rear View**
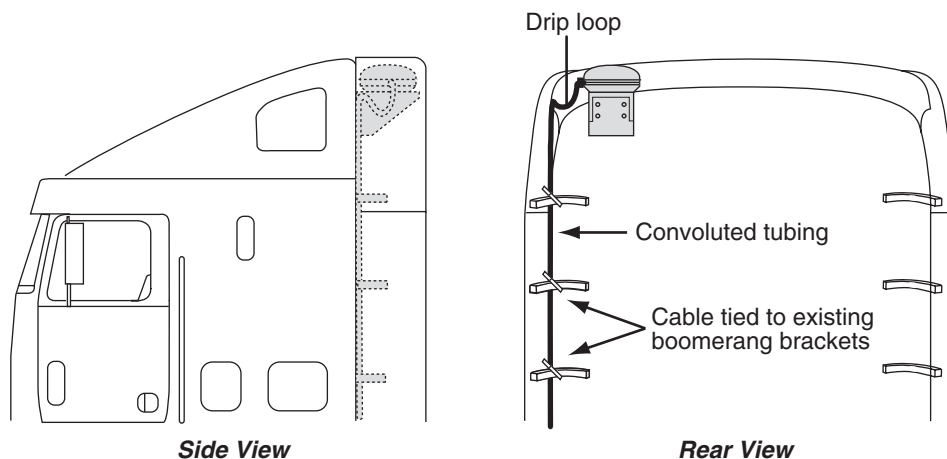
05AAA_223B

Note

The minimum bend diameter of the SDM cable is 6 inches where it is connected to the antenna. Ensure that you provide strain relief for all cables.

Using Convoluted Tubing

Before routing, protect all externally routed cables with the supplied convoluted protective tubing. Also use the tubing for any internally route cables exposed to the outside environment or possible abrasion.

Access Holes

Use existing holes for cable routing whenever possible.

If you drill, drill the smallest hole for the purpose:

• A 1-1/2 inch hole is recommended for cables with a 9-pin DSUB connector.

Finish holes as follows prior to routing cables:

• Deburr holes if necessary.

• Use supplied grommet or convoluted tubing with internal holes. Convoluted tubing should extend beyond the hole to protect the cable from friction.

• Use silicone sealant or refrigeration tape to seal all holes leading to the exterior.

The following illustration shows an example of convoluted tubing around cables which have been routed through the firewall from the engine compartment.
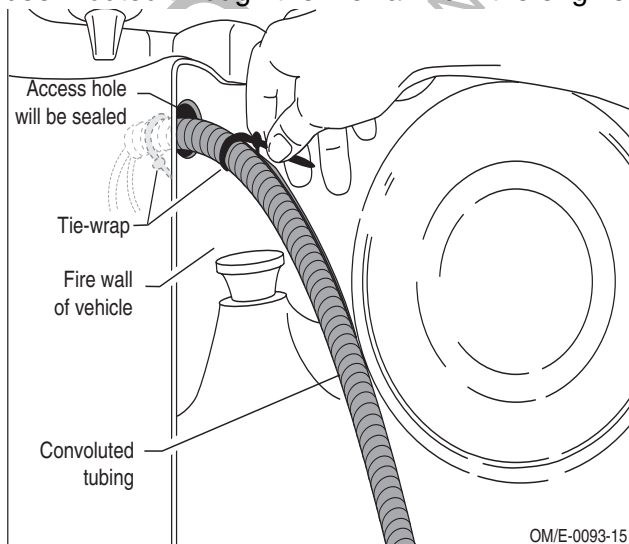
Note

Cable wrapping decreases movement in the cable and prevents damage caused by friction.

Tightening Cable Connectors

Hand tighten all cable connectors. Do not use tools to tighten the connectors.

05AAA_222A
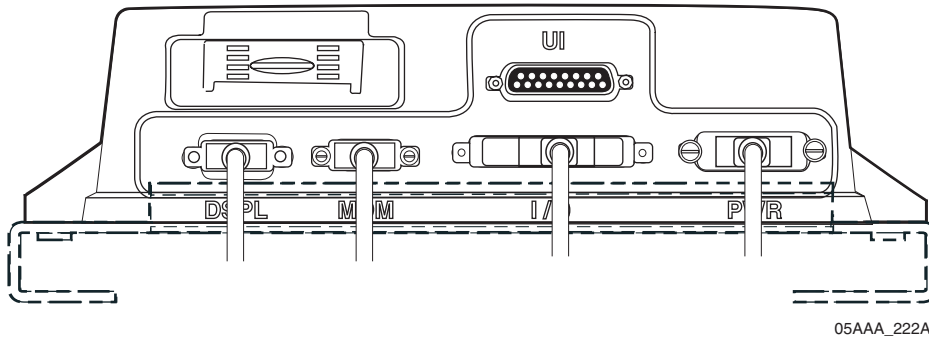
All connectors should attach smoothly. Use proper care when connecting cables. If they bind
or offer excessive resistance, make sure the connectors:

• Are properly aligned

• Have no bent pins or other damage

• Are clean and free of dirt

Installing the Satellite Data Modem (SDM) Cable

The SDM cable connects the SDM to the MAS.

Cable Run

Run direction—Start at the SDM mount and run the cable down to the MAS.

Routing location—Externally.

Cable dressing—Use convoluted tubing and supplied UV resistant cable wraps.

The following illustration shows typical SDM cable routings for three types of vehicles.
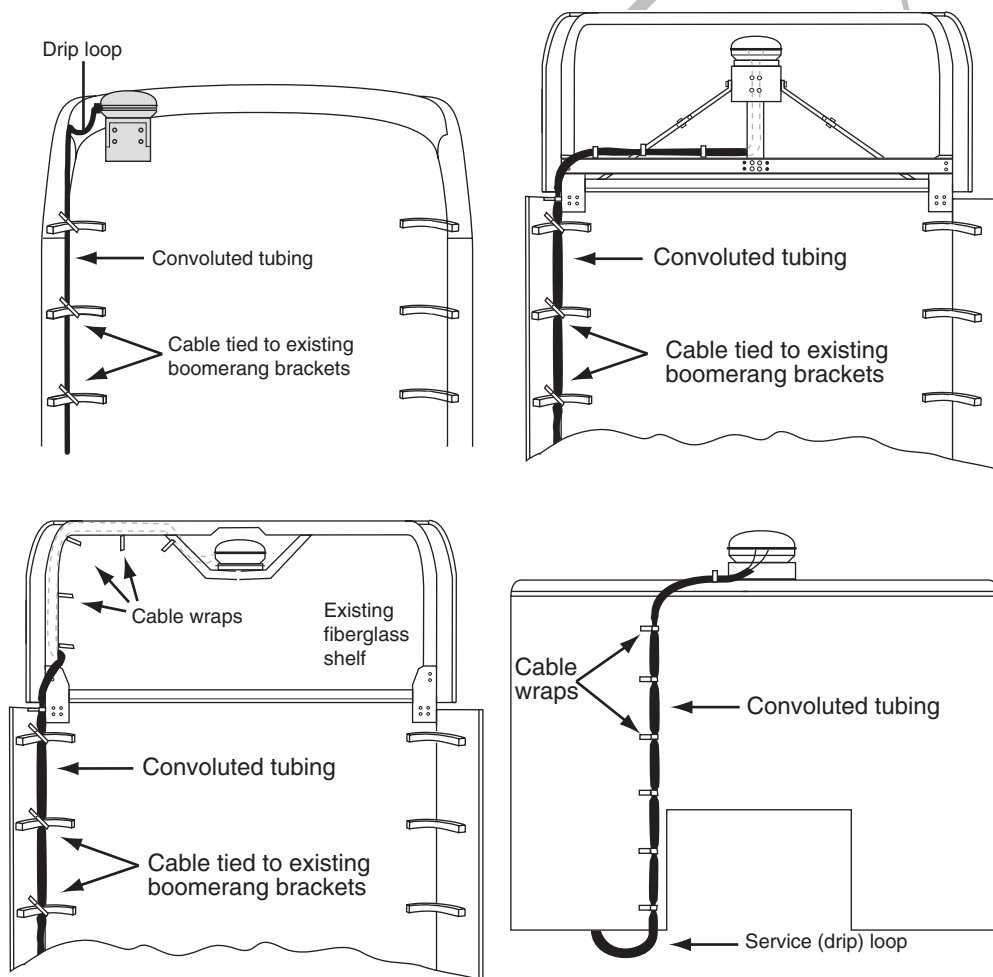
OM/E-0093-26A

Cable Installation

1. Install the convoluted tubing on the cable.

⚠	**Caution**
	Do not tie the cable to the headache racks. Headache racks are mounted to the chassis and move at different rates than the body.

---

2. Starting at the SDM, run the cables down the back of the sleeper/cab and under the body toward the MAS. If possible, route the cable using existing brackets as tie points. Side skirt boomerang brackets work well for this purpose.

⚠	**Caution**
	Loose cables can cause damage to paint and wear to the fiberglass. Ensure that the cables are secured to the body of the truck at approximately 18-inch intervals.

---

3. Drill an access hole through the bottom of the cab to enter the interior of the compartment where the MAS is installed (usually drilled through the bottom, not the side). Drill the smallest hole for the purpose. A 1-1/2 inch hole is recommended for cables with a 9-pin DSUB connector.

4. Store excess cable, neatly coiled, within the confines of the MAS mounting tray.

Cable Connection

To connect the SDM cable to the SDM, follow the steps in *Connecting the SDM Cable* on page 5-3.

If the cable does not easily connect to the SDM cable connector, check the part number of the cable to make sure you are using the SDM cable. The end of the SDM cable is keyed specifically for the SDM.

To connect the SDM cable connector to the appropriate terminal of the MAS, follow the steps in *Connecting Cables to the Mobile Application Server (MAS)* on page 8-8.

Installing the Display Unit Cable

The display unit uses the display unit cable. The display unit cable connects the display unit to the MAS.

Cable Run

Run direction—In most vehicles, the display unit is mounted in the dash area. The cable is routed from the front of the vehicle toward the back to the MAS. Leave the coiled end at the front and route the uncoiled end of the MAS. The 9-pin DSUB connector end of the display cable requires a 1 1/2" hole.

Routing location—Route the cable internally or externally. In a few vehicles, the display unit may be installed in the sleeper. Therefore, you usually route the cable internally to this area.

Cable dressing—For strain relief, the base of the coil should be secured with cable wraps. The strain-relief cable wrap is normally positioned at the point where the cable transitions from a straight cable to a coiled cable.

⚠ **Caution**

Do not let the connectors lie on the ground unprotected.

1. Inspect the connectors to make sure they are not damaged and the pins are not bent. Do not attempt to straighten bent pins. This further weakens the pins and results in cable failure. The following illustration shows good (straight) connector pins and damaged (bent) connector pins on the SDL connector.

Straight
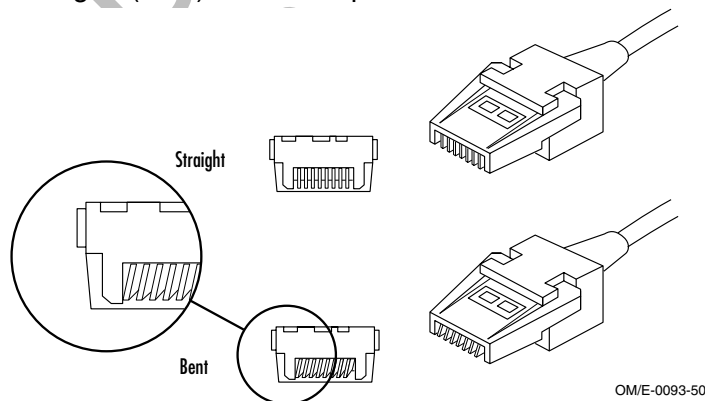
Bent

OM/E-0093-50

Return a cable with bent pins according to the Return Material Authorization (RMA) procedure in Appendix C.

2. A protective cap have been added to the 8-Pin SDL connector on the display unit cable. Use the hole at the end of the protective cap for routing the cable through the vehicle.
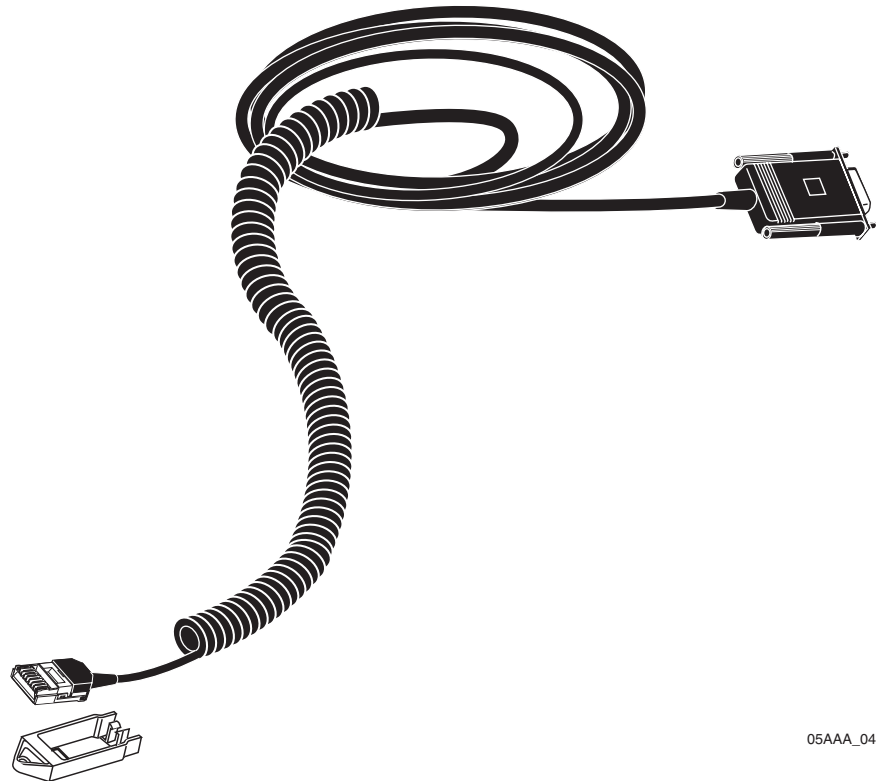
05AAA_042

3. Route the display unit cable, with other cables if possible, from the front of the vehicle toward the back to the MAS. Be careful that you do not damage the connectors when pulling them through holes or under carpeting.

- If the display unit is on the dash, route the cable through the firewall and under the cab to the MAS.

- If the display unit is in the sleeper, route the cable under carpets to the MAS.

4. Provide strain relief to the display unit cable.

5. Neatly coil and store excess cable.

6. Remove the protective cap and examine the connector again for bent pins and other damage as you did in step 1.

⚠ **Caution**

If you insert a damaged connector into the MAS, you may damage the electrical contacts and the MCP can malfunction.

---

7. Plug the display unit cable SDL connector into the appropriate slot of the MAS according to instructions in Chapter 8: Mobile Application Server (MAS) Installation.

8. Plug the display unit cable connector into the appropriate socket of the MDU according to instructions in Chapter 6: Display Unit Installation.

Installing the Power Cable

The power cable connects the MAS to the vehicle's electrical power source.

Cable Run

Run direction—The power cable can be routed from front to back or back to front. The direction depends on whether the access hole is big enough for the connector (1-1/2 inches). If you route the cable internally, route it from the MAS to the dash area.

Routing location—The cable can be routed internally or externally. Use existing cable routes when possible.

Cable dressing—Store and secure excess cable. Do not cut the power cable to fit the vehicle.

Power Cable Routing

Follow these steps to route the power cable:

1. Select one of the following electrical power interface locations on the vehicle:

- Key switch
- Fuse panel
- Bus bar
- Circuit breakers

2. To make the power cable easier to route through holes, temporarily remove the two fuses from the fuse holders on the end of the cable.

3. Route the fuse end of the power cable from the MAS location into the cab of the vehicle. Route the cable with other cables, if possible. Make sure the fuse end reaches the power interface location and that you have enough cable in the cab to work with.

4. After the power cable is in the vehicle cab, re-install the fuses onto the appropriate wires.

Power Cable Wire Connections

The vehicle battery supplies the power to the MAS. There are three required connections that you must make at the fuse end of the power cable:

- +12 VDC Battery (Main) (unswitched)
- +12 VDC Ignition (switched)
- Chassis ground

The following illustration shows the wire colors, pin, signal, and connection. Each wire's purposes is identified with a wrap-around label.

P12			
(BAT+)	1	YEL	18
(BAT+)	2	YEL	18
(BAT+)	9	YEL	18
(BAT RTN)	8	BLK	18
(BAT RTN)	14	BLK	18
(BAT RTN)	15	BLK	18
(BAT RTN)	7		
(IGNITION)	5	WHT	18
(ID)	6		

Pin
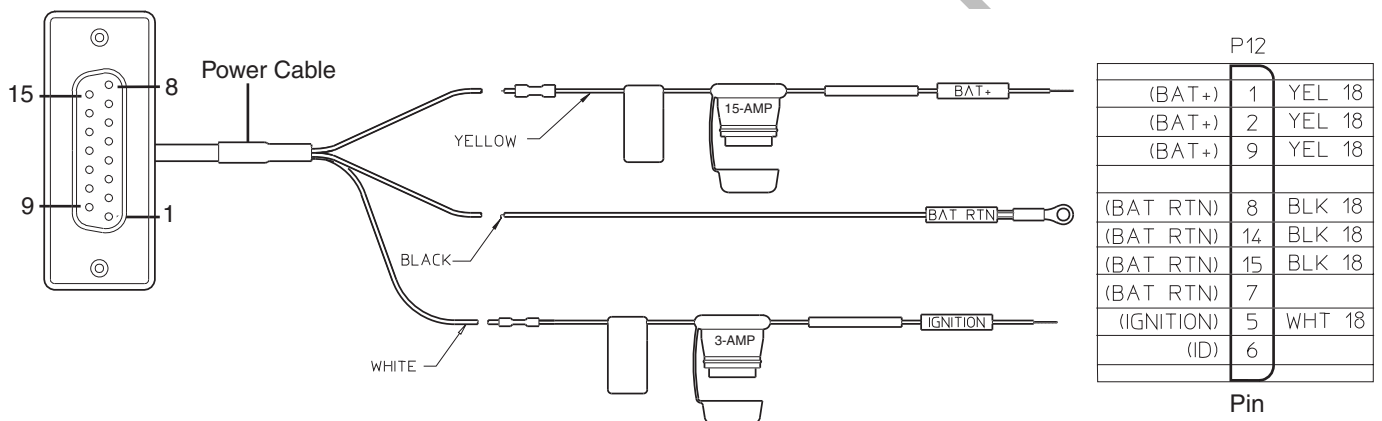
05AAA_225

Follow these steps to connect the power cable wires to the vehicle's wiring system:

Note

Never wire the constant +12 VDC connections or +12 VDC ignition to the accessory position.

1. The yellow BAT+ wire (pins 1, 2, 9) is for the unswitched (Main) +12 VDC connection. Connect this wire to an unswitched +12 VDC power source, such as the hot side of the vehicle main wiring bus, the battery side of the ignition switch, or the battery side of the fuse block (not the load side). This bus provides constant +12 VDC to the MCP and must not be connected to the accessory bus or any other switched bus.

2. The white IGNITION wire (pin 5) is for the switched (ignition) connection. Connect this wire to the switched +12 VDC power source, such as the ignition side of the ignition (key) switch or the ignition side of the fuse block. Do not use accessory power.

Note

+12 VDC should be present on the IGNITION wire only when the ignition switch is in the On position, not in the Accessory position.

3. The black BAT RTN wires (pins 7, 8, 14, 15) should be connected to a good grounding surface on the vehicle chassis or one that is connected to the chassis. Refer to *Grounding Guidelines* on page 3-2 for more information.

Installing the Accessory Cable

The accessory cable is a 45-pin cable that connects the MCP to the J1708 data link and other vehicle inputs and optional system devices. It also provides the necessary wiring for optional system features such as display screen disabling, SensorTRACS®, TrailerTRACS®, pager, RMWL, the panic button, and the RCD for text to speech.

Cable Run

Run direction—Run the loose conductor end of the cable from the MAS to the dash area. (The connector is too large to pass through access holes.)

Routing location—Route internally or externally. Use existing cable runs, if possible.

Cable dressing—Stow and secure any loose wires, making sure to keep the wires clear of any sharp edges and to not interfere with panels or moving parts such as throttle or brake linkage.

Installation instructions for optional accessories which use the accessory cable are provided in chapters of this guide.

Use proper care when connecting cables.

Before connecting the accessory cable to the MCP, inspect the connectors to make sure they are not damaged and the pins are not bent. Do not attempt to straighten bent pins. This further weakens the pins and results in cable failure.

- The following illustration shows the pinouts for the wires of the accessory cable. Please see the detailed wiring diagram in Appendix A.
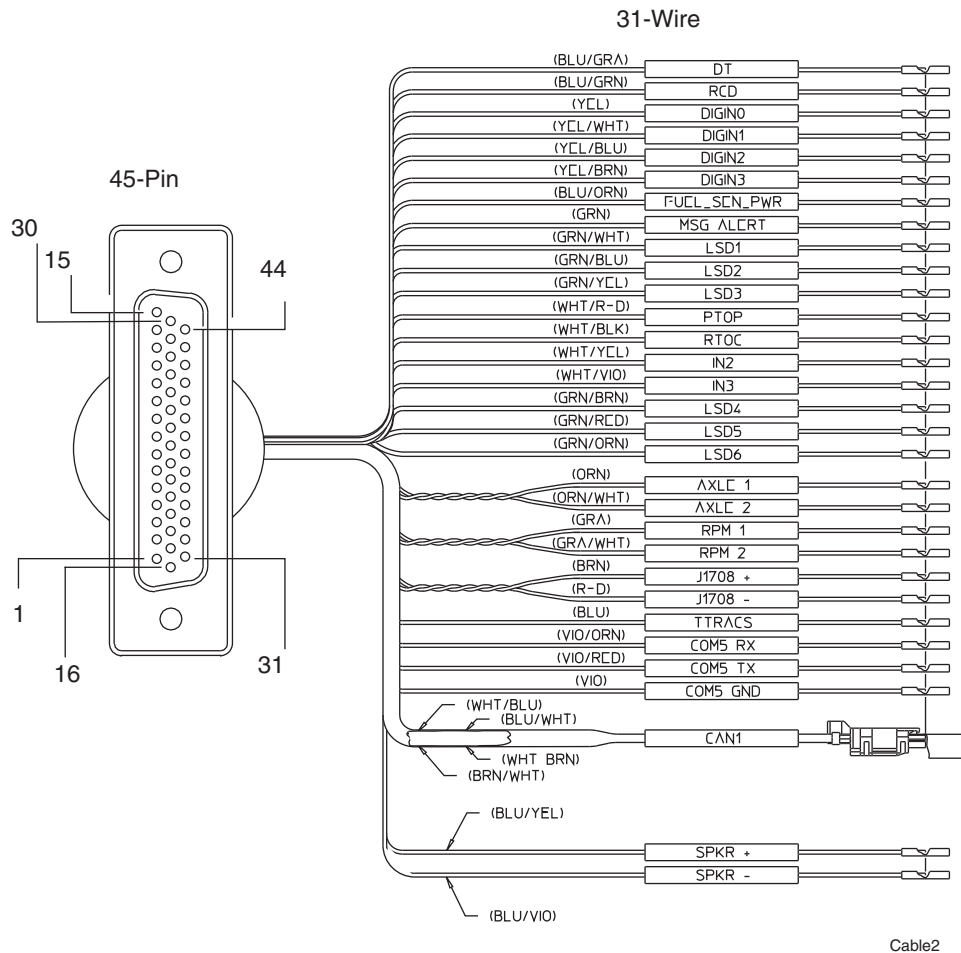
Installing the Remote Control Device (RCD) Cable

The 2 RCD cable wires connect to the accessory cable as follows:

- one wire connects to the blue/green RCD wire on the accessory cable

- one wire connects to the violet COM5 GND wire on the accessory cable

05AAA_219A

For specific information on the RCD cable, see Chapter 7: Remote Control Device (RCD) Installation.

Installing the Speaker Cable

Choosing a Speaker

Text-to-speech works with either an existing speaker or a speaker that has been added.

- If you are using an existing speaker, the normal audio of the speaker will be overridden by the OmniVision system whenever a message is played. This is handled by the built-in relay on the speaker cable.

- If you are adding a speaker in order to have a dedicated speaker for the OmniVision system, the speaker can be directly wired to the accessory cable. In this case, the speaker cable is not used.

Connecting to an Existing Speaker

1. Locate the speaker wires on the speaker, labelled "speaker + and speaker -."

2. Cut the wires in a good location.

3. Butt splice the speaker cable leads, labelled "speaker," to the loose ends leading toward the speaker.

4. Butt splice the speaker cable leads, labelled "audio amp," to the loose ends leading toward the audio.

5. Butt splice 2 of the speaker cable leads, labelled "MAS," to the accessory cable speaker cable leads, labelled "speaker + and speaker -."

6. Butt splice the remaining white speaker cable lead to the comm 3 ground.
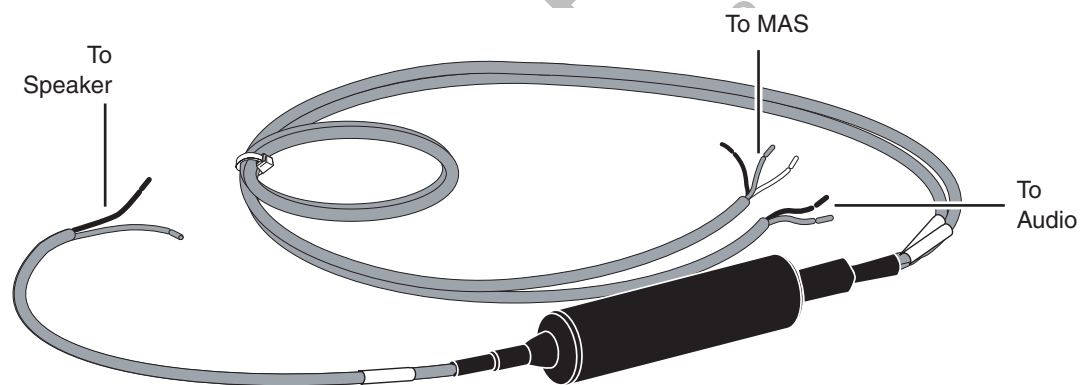
05AAA_232

Connecting to an External Speaker

1. Wire the added speaker directly to the accessory cable leads, labelled "speaker + and speaker -."

ALL INFORMATION SUBJECT TO CHANGE

10

Basic System Verification

Basic system verification is a functional system check that should be performed after installation or service to verify that the mobile computing platform (MCP) is operating properly. It should also be performed upon completion of any of the diagnostic procedures included in the *OmniVision™ MCP and Accessory Diagnostic Guide*. This ensures that the problem is solved and that the MCP is fully functional.

MCNs for components or kits, and DCNs for documents that are referenced in this chapter can be found in *Appendix E: Component and Document Information*.

The topics in this chapter include:

If you have technical questions while reviewing this chapter, please contact QUALCOMM Wireless Business Solutions® (QWBS) Customer Support. Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Note

Several steps of this procedure refer to specific chapters in the OmniVision™ MCP and Accessory Diagnostic Guide *where you will find possible solutions.*

This basic system verification procedure is also provided in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

MCP Display Unit Screens

Before you perform the basic system verification procedure, you may find it helpful to become familiar with the commonly-used MDU screens. These screens are described in the next few pages:

- MCP Status screen

Option Screens:

- MCP Time Zone screen
- MCP Address, Diagnostic, and Information screens
- MCP GPS Information screen
- Software Versions screen
- Volume Control Panel screen
- External MPG Display screen

MCP Status Screen

Shortly after you power up the MCP or whenever you press the **VIEW STATUS** key, the MCP Status screen displays. This screen shows you the status of the system.

The MCP Status screen fields are described on the following page.

```
USE ↑(↓) TO MOVE TO PREV(NEXT)SCREEN


                     VIEW STATUS
_____

OmniTRACS 2                 7/22/05  10:23:21  PST

DRIVER:  UNIDENTIFIED      UNREAD MESSAGES:  0
STATUS:  GOOD             MSGS BEING SENT:  0




PRESS + - TO CHANGE TIME ZONE:  PST

   VIEW        WRITE                            CONTROL
   MSG         MSG                              PANEL
```

Field	*Description*
Date and Time	When the MCP powers on for the first time, the MCP Status screen does not display the date and time. After the MCP first acquires the satellite signal, it displays the current date and time and the currently selected time zone.
DRIVER	If the driver has logged on, this field displays the driver's name or ID. If the driver has not signed on, this field displays UNIDENTIFIED.
STATUS	Indicates the MCP's operational status. This field displays one of the following: • GOOD is displayed if the MCP is operating properly. • A numerical error code (e.g., 10000) is displayed if the MCP detects a problem. Refer to the *OmniVision™ MCP and Accessory Diagnostic Guide* for troubleshooting procedures to follow if an error code displays. • QUIET is displayed within 10 minutes after you turn the ignition off. The amount of time the MCP stays on after the ignition is turned off is set by the dispatcher. The MCP can still send and receive messages in the QUIET mode as long as the NO SIGNAL light is off.
UNREAD MESSAGES	Indicates the number of messages that the MCP has received but that have not been read. This number increases as the MCP receives new messages, and decreases as they are read.
MSGS BEING SENT	Indicates the number of messages that the MCP is currently sending to the dispatcher. This number increases as the driver sends new messages and decreases as the messages are acknowledged by the NMC.

Redisplaying the MCP Status Screen

The MCP Status screen displays as long as the driver does not press any of the function keys on the MDU. After the driver presses a function key, press the **VIEW STATUS** key at any time to redisplay the MCP Status screen. No typed information is ever lost by pressing the **VIEW STATUS** key or any other function key.

Option Screens

To monitor the operation of the MCP, use the display unit option screens.

To access the option screens:

1. Press the MDU ▼ or ▲ keys.

2. Press ▼ or ▲ to move from one screen to another.

MCP Time Zone Screen

The MCP Time Zone screen lets you select the time zone that the MCP uses to display the current time and the times at which messages are received and sent. The selected time zone also displays on the View Status screen. The selection that you make affects all times displayed on your MCP, including those for previously sent and received messages. The MCP remembers the time zone that you select even when power is turned off.

To view or select a time zone, follow these steps:

1. Press the **VIEW STATUS** key.

```
USE ↑(↓) TO MOVE TO PREV(NEXT) SCREEN


                    VIEW STATUS
    _____

 OmniTRACS 2              7/22/05  10:23:21  PST

 DRIVER:  UNIDENTIFIED      UNREAD MESSAGES:  0
 STATUS:  GOOD             MSGS BEING SENT:  0




 PRESS + - TO CHANGE TIME ZONE:  PST
  VIEW      WRITE                       CONTROL
  MSG        MSG                         PANEL
```
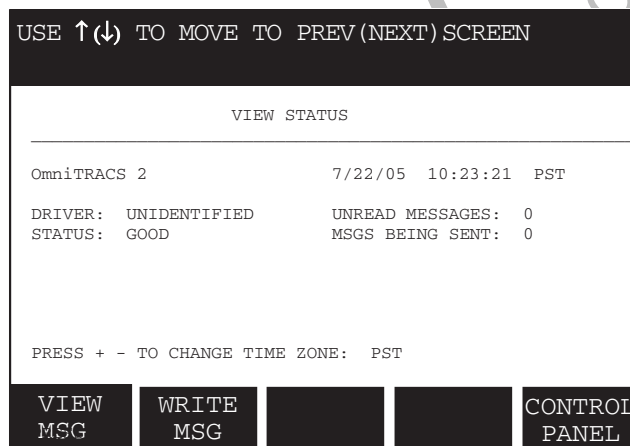
2. To select a different time zone, press the **+** or **-** key. This causes a different time zone to display at the bottom of the screen.

3. Continue pressing the **+** or **-** key until the desired time zone displays.

   If you press the **+** key repeatedly, in the United States, the MCP displays all time zones, one by one, beginning at the current setting. Hubs outside of the United States can determine which time zones are downloaded to their units.

MCP Address, Diagnostic, and Information Screens

The Information screen on the MDU is used to identify the unit and diagnose problems.

To view MCP address and diagnostic information on the MDU, from the View Status screen, press ▼ or ▲ until the MCP Information screen appears.

```
USE ↑(↓) TO MOVE TO PREV(NEXT)SCREEN


                     VIEW STATUS
  _____

  OmniTRACS 2                 7/22/05  10:23:21   PST

  DRIVER:  UNIDENTIFIED      UNREAD MESSAGES:  0
  STATUS:  GOOD             MSGS BEING SENT:   0




  PRESS + - TO CHANGE TIME ZONE:  PST
```
| VIEW MSG | WRITE MSG | | | CONTROL PANEL |
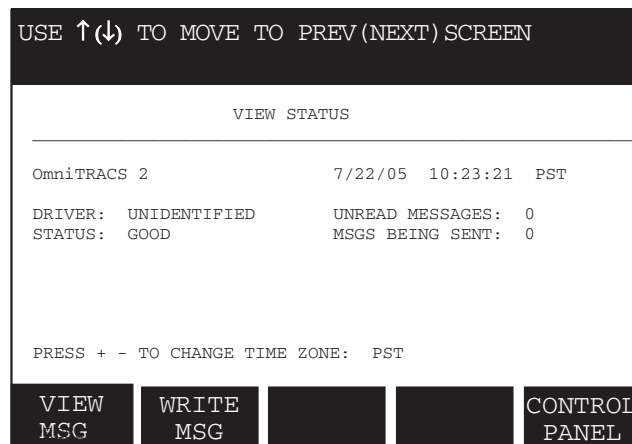
The fields for the MCP Information screen are described as follows:

Field	*Description*
UNIT ADDRESS or UNIT SERIAL NUMBER	Shows the mobile unit (MCP) ID, e.g., 105000xxx. It tells the dispatcher the correct address for sending messages to the truck. If the MCP is replaced, this field will display a different address.
GROUP ADDRESSES	Shows the group ID to which the MCP is assigned. It may also show the number of other groups of which the MCP is a member. These numbers are defined and used by the dispatcher to address the fleet or groups of MCPs.
FC/no	The signal strength received from the data satellite (the forward signal). The desired minimum value is 10dB. Typically, values should be between 45 and 62, depending on geographic location.
RC/no	The signal strength received from the MCP (the return signal). The desired minimum value is 10dB. Typically, values should be between 25 and 45, depending on geographic location.
CDD Data Base State	Customer and mobile unit (MCP) information has been received by the MCP and is up-to-date. The desired value is "sync complete."
OutOfSync	Mobile unit (MCP) information has not been received by the MCP and is waiting to be updated. To correct OutOfSync, move the vehicle in line of sight with the satellites and wait 20–30 minutes for the MCP to be updated.

MAS Battery Volts	The MAS is equipped with a back up battery to avoid losing power to the mobile unit (MCP). The recommended back up battery voltage is 4.527 volts, shown on the MDU screen as 4527 volts.

Software Versions Screen

The Software Versions screen dispalys the three software versions installed on the components of the MCP. The illustration below show the software versons installed on the MAS, MDU, and SDM.

To see the softwre versions for the MAS, MDU, and SDM, from the view Status screen, press ▼ or ▲ until the Software Versions screen displays.

```
USE ↑(↓) TO MOVE TO PREV(NEXT)SCREEN



                    SOFTWARE VERSIONS
_____

TIU VERSION:  10.05.01
EDU VERSION:  2.2
PAPI DLL VERSION:  1.18.3.0
PAPI EXE VERSION:  1.18.2.0
VIOP VERSION:  001.018.00052-FF0001




┌────────┬────────┬────────┬────────┬────────┐
│ VIEW   │ WRITE  │        │        │CONTROL │
│ MSG    │ MSG    │        │        │ PANEL  │
└────────┴────────┴────────┴────────┴────────┘
```
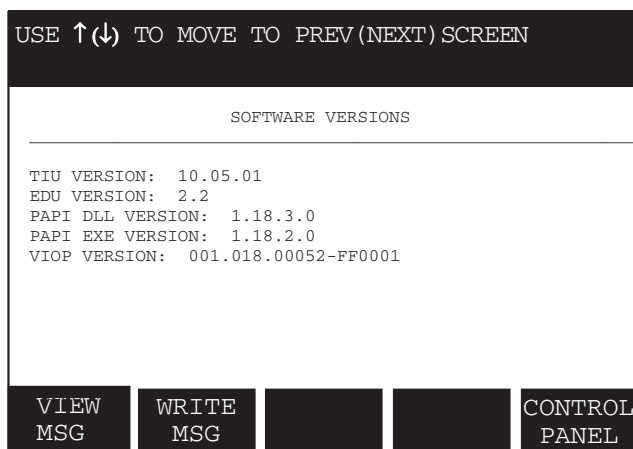
GPS Information Screen

The GPS Information screen shows the status of the internal Global Positioning System (GPS) and current vehicle positioning with latitude and longitude updates.

To view the GPS Information screen, press ▼ or ▲ until the screen displays.

```
USE ↑(↓) TO MOVE TO PREV(NEXT)SCREEN



                    GPS INFORMATION
_____

LAST UPDATE AT:   10:23:21  04:00:00   PST

LATITUDE:  32˚53'48.7"S
LONGITUDE:  117˚13'05.3"W
ALTITUDE:  0006M
MODE:  3-D



┌────────┬────────┬────────┬────────┬────────┐
│ VIEW   │ WRITE  │        │        │CONTROL │
│ MSG    │ MSG    │        │        │ PANEL  │
└────────┴────────┴────────┴────────┴────────┘
```
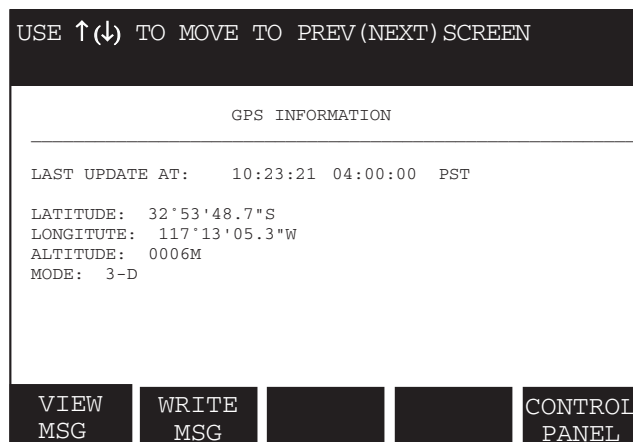
The GPS Positioning Status screen fields are described as follows.

Field	*Description*
CURRENT STATUS	Indicates the current operating status of the positioning system. The following modes are possible: • ACTIVE is displayed when the MCP has detected that a GPS receiver is connected. • NO DATA is displayed if no information has been received since power up. • NO FIX is displayed if the receiver is unable to calculate a position. • GOOD is displayed if the last information received contains valid positioning data.
LAST UPDATE AT	The time of the last valid position. In normal operations when receiving GPS signals, the MCP should update every second.
LAT	The last valid latitude reported. It is displayed in degrees, minutes, and seconds (DDMMSS). It is saved through power cycles.
LON	The last valid longitude reported. It is displayed in degrees, minutes, and seconds (DDMMSS). It is saved through power cycles.
ALT	The last valid altitude reported. It is displayed in meters and is saved through power cycles.
GPS DIAGNOSTIC DATA/ LAST GPS DIAG UPDATE AT	**GPS DIAGNOSTIC DATA:** Displays on the first line of diagnostic data if the unit has *never* received GPS data since it was powered up. Otherwise, **LAST GPS DIAG UPDATE AT:** Displays along with the time-stamp of the data that is displayed on the screen.
MODE	NFX displays if the GPS receiver saw three satellites and was able to compute a 2-dimensional solution.
DOP	Dilution of Precision Values. The values may be displayed for **P**osition, **H**orizontal, or **V**ertical. This is a signal quality value. You want as **low** a DOP as possible. A value of 20 or less indicates a good signal for a 2-D positioning fix.
SV	This indicates the ID numbers of the satellites that are in view. A maximum of four IDs can be displayed. You won't get a position fix if only one or two SV IDs are displayed. If four SVs are displayed and two are not healthy, the position will not be updated and the DOP will probably be a high number.
RX CNT	The number of data sentences (strings of data) received by the unit. Under normal conditions, the field should increment at a rate of 2 to 5 sentences per second.

Field	Description
GGA/GSA	The first number in these fields represents the total number of **good** "sentences" received. The second number represents the total number of sentences received.

Volume Control Panel Screen

The Volume Control Panel screen is used to adjust the volume of the text-to-speech, as shown below.

To adjust the volume of incoming messages and alerts, press the **CONTROL PANEL** key to display the Volume Control Panel screen. Use the **+** key to increase the volume and the **-** key to decrease the volume.

```
              OMNI2 CONTROL PANEL



                 VOLUME CONTROL
    _____




    USE ↑(↓) FOR MORE CONTROLS
```
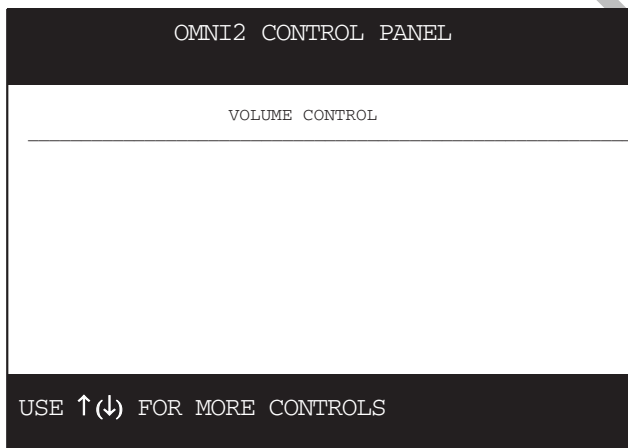
External MPG Display Screen

The External MPG Display screen is used to test the MPG Display (if installed). For additional information, see Chapter 17: MPG Display Installation in this guide.

```
          OMNI2 CONTROL PANEL


                    EXTERNAL MPG DISPLAY
  _____

  Press '1', '2', '3', or '4' to set
  desired contrast level (4 = highest).


  To test external display, press 'T'
  and 'TEST OK' should appear on the
  MPG DISPLAY.



  USE ↑(↓) FOR MORE CONTROLS
```
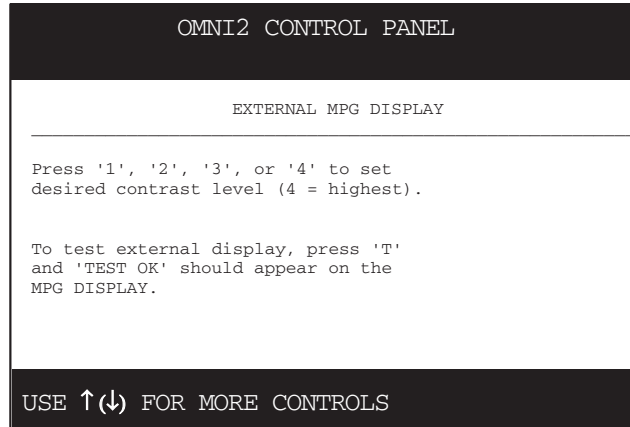
• To test the MPG Display, press the **CONTROL PANEL** key to display the External MPG Display screen and then press ▼ or ▲ until the MPG Display screen appears.

• To test the communication link between the MCP and the MPG Display, type the letter T. This causes the word TEST to appear momentarily on the MPG Display screen.

• You can adjust the contrast using the display screen by typing a number between 1 and 4 and pressing **ENTER**. (Typing 1 will give the least contrast. Typing 4 will give the most contrast.)

ALL INFORMATION SUBJECT TO CHANGE

Flowchart for Basic MCP System Verification

It is important that you read the procedure following the flowchart, as it contains detailed information to verify proper MCP system operation.

Step 1
Turn ignition ON

Step 2
Move unit as needed to see satellite

Step 3
Check if screen lights up, displays characters
— No → See Chapter 7 in this guide
— Yes ↓

Step 4
Check brightness, contrast, and volume controls
— Not OK → Replace MDU
— OK ↓

Step 5
Display MCP Status screen, check status
— Status: #### → See appropriate chapter in this guide
— Status: GOOD ↓

Step 6
Check NO SIGNAL light
— Still on (after 10 minutes) → See Chapter 5 in this guide
— Off (within 10 minutes) ↓

Step 7
Display MCP Diagnostic screen

Step 8
Verify battery back up voltage
— Not OK → See Chapter 16 in this guide
— OK ↓

Step 9
Check FC/no and RC/no values
— Not OK → See Chapter 10 in this guide
— OK ↓

Step 10
Display Positioning screen

Step 11
Check status GPS = GOOD
— No → See Chapter 11 in this guide
— Yes ↓

Step 12
Verify Data Base Sync Complete
→ **Go to Step 13**

From Step 12

Step 13

Send
test message
to dispatcher

Step 14

Check for
message
acknowledgment

No → Contact QWB Customer Support

Yes

Step 15

Verify
message sent
announcement
was played

Yes

Step 16

Verify test
message
received at
dispatch center

No → See Chapter 9 in this guide

Yes

Step 17

Have
dispatcher send
test message
to MCP

Step 18

Verify test
message
received
at MCP

No → See Chapter 9 in this guide

Yes

Step 19

Verfiy message
announcement
was received

No → See Chapter 13 in this guide

Yes

Step 20

Verify can play
message with
RCD

No → See Chapter 13 in this guide

Yes

Step 21

Turn ignition
OFF

Yes

Step 22

Check if
MDU
stays on

No → See Chapter 8 in this guide

Yes

Step 23

Check if STATUS
changes to
QUIET within
10 Minutes

No → See Chapter 12 in this guide

Yes

Verification
complete

→ **System OK**
For verification procedures for optional
accessories, see the appropriate chapter.

MDU Basic System Verification Procedure

1. Turn the vehicle ignition **ON**.
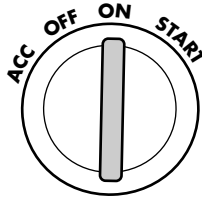
2. Make sure the SDM has a clear view of the satellites. Move the vehicle, if necessary.

The data satellite is located above the equator, roughly south of Texas. The GPS (positioning) satellites are located above the equator, roughly south of Louisiana.

3. Check the display unit and verify that the screen lights up and displays characters.

• If the screen displays characters, go to step 4.

• If the screen is dark, turn the backlight on and adjust contrast according to the next step. If the screen stays dark, perform the diagnostic procedure in Chapter 7 in the *OmniVision™ MCP and Accessory Diagnostic Guide.*

4. Check the backlight, contrast, and volume controls on the display unit and verify that they work correctly.

The **BACKLIGHT** key turns the display unit backlight on and off.

The **CONTRAST** key adjusts the contrast of the display window; press the top of this key to lighten the contrast or the bottom to darken the contrast.

The **VOLUME CONTROL** key adjusts the volume of the beeper. Press the top of this key to make the beeps louder or the bottom to make the beeps softer.

• If the controls work correctly, go to step 5.

• If the controls do not work, replace the display unit and return to step 3.

5. Press the **VIEW STATUS** key to display the MCP Status screen and check the STATUS field.

```
USE ↑(↓) TO MOVE TO PREV(NEXT)SCREEN


                    VIEW STATUS
   _____

   OmniTRACS 2            7/22/05  10:23:21  PST

   DRIVER:  UNIDENTIFIED      UNREAD MESSAGES:  0
   STATUS:  GOOD             MSGS BEING SENT:  0




   PRESS + - TO CHANGE TIME ZONE:  PST

   ┌─────────┬─────────┬────┬────┬─────────┐
   │  VIEW   │  WRITE  │    │    │ CONTROL │
   │  MSG    │  MSG    │    │    │ PANEL   │
   └─────────┴─────────┴────┴────┴─────────┘
```
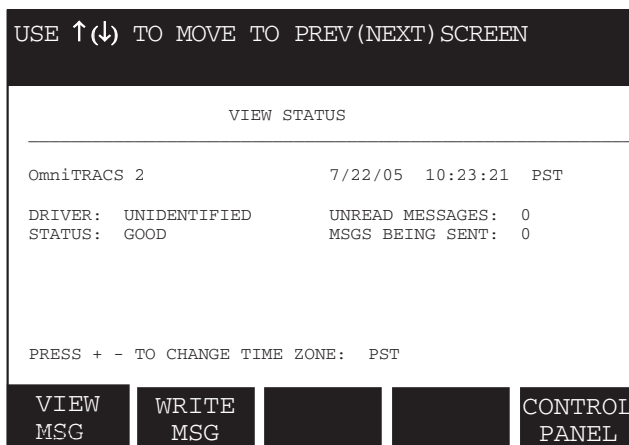
- If the STATUS is GOOD, go to step 6.

- If the STATUS is a numerical value, go to the appropriate diagnostic chapter in the *OmniVision™ MCP and Accessory Diagnostic Guide* for that value.

6. Check the display unite NO SIGNAL light. When the MCP acquires the Data satellite signal, the NO SIGNAL light goes out.

- If the NO SIGNAL light goes out, go to step 7.

- If the NO SIGNAL light stays on or continues to flash, go to Chapter 5 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

Note

If the MCP was just installed, it may take as long as 10 minutes for the MCP to acquire the satellite signal.

7. To view MCP addresses and diagnostic information on the MDU from the View Status screen, press ▼ or ▲ until the MCP Information screen appears.

8. Verify that the back up battery voltage is 4.527 volts, shown as 4527 on the screen.

- If the back up battery voltage is 4.527 volts, go to step 9.

- If the back up battery voltage is not 4.527 volts, go to Chapter 16 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

9. Check that the FC/no is 45–62 and the RC/no is 25–45 for your present location.

- If the C/no values are acceptable for your location, go to step 10.

- If the C/no values are not acceptable for your location, go to Chapter 10 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

10. Press the **OPTION** key and then ▼ three times to display the MCP Positioning screen.

11. Check the POSITIONING STATUS.

Check that the CURRENT STATUS is GOOD.

```
GPS POSITIONING CURRENT STATUS: GOOD
LAST UPDATE AT:  12:32:01  PST
LAT: 32¡53'48.7    LONG: 117¡13'05.3"W
ALT: 0006M    (TYPE "D" FOR DIAGNOSTIC)
```

- If the CURRENT STATUS is GOOD, go to step 12.

- If the CURRENTSTATUS is NO FIX or NO DATA, go to Chapter 12 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

12. Send a test message to the dispatcher, as follows:

  a.   Press the **CREATE MSG** key.

  b.   Press the **ENTER** key.

  c.   Type the message text which should include the tractor number.

  d.   Press the **SEND** key.

  e.   Press **Y** to send the message.

Allow five minutes for the message to be received by the dispatcher.

13. Press the **READ NEXT** key to display the message that was just sent.

An "A" should eventually display on the top line indicating the message has been acknowledged.

"A" shows message has been acknowledged.

```
SND  #34     A       02/10/04  10 : 32 :10   CST
   TR# 476  MCT# 123478
```

- If the message is acknowledged, go to step 15.
- If the message is not acknowledged, call QWBS Customer Support to have the message sent. In the United States call 800-541-7490; in Canada, call 800-863-9191.

14. Verify the "message sent" announcement was played in the vehicle.
  - If the announcement was played, go to step 15.
  - If the announcement did not play, go to the *OmniVision™ MCP and Accessory Diagnostic Guide*.

15. Contact the dispatch center and have the dispatcher verify that the test message has been received.

- If the dispatcher received the message, go to step 16.

- If the dispatcher did not receive the message, go to Chapter 9 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

- If the dispatcher is not available, call QWBS Customer Support and verify with the technician that the MCP is in the correct customer account. In the United States call 800-541-7490; in Canada, call 800-863-9191.

16. Have the dispatcher send a test message to the MCP.

If the pager, remote message waiting light, or message waiting buzzer features are installed, you can also test them at this time by having an Important or Sleepy Important message sent by the dispatcher.

17. After a few minutes, the Message Waiting light should come on and the MDU should beep. Press the **READ NEXT** key to display the dispatcher's message.

- If the MCP received the message, go to step 18.

- If the MCP did not receive the message, go to Chapter 9 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

18. Verify the message announcement was received in the vehicle.

- If the announcement was received, go to step 19.

- If the announcement was not received, go to the *OmniVision™ MCP and Accessory Diagnostic Guide*.

19. Verify RCD can play the message.

- If the RCD can play the message, go to step 20.

- If the RCD is not working, go to the *OmniVision™ MCP and Accessory Diagnostic Guide*.

20. Turn the vehicle ignition **OFF**.

21. Make sure the MDU stays on with the ignition turned **OFF**.

- If the MDU stays on, go to step 22.

- If the MDU does not stay on, go to Chapter 8 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

22. Check the MCP Status screen and verify that the STATUS changes to QUIET within 10 minutes.

```
OmniTRACS          11/10/03  10: 03: 21  CST
- - - - - - - - - - - - - - - - - - - - - - -
                   UNREAD MESSAGES: 1
STATUS:  QUIET     MSGS  BEING  SENT:  0
```

- If the STATUS changes to QUIET within 10 minutes, go to step 23.

- If the STATUS does not change to QUIET within 10 minutes, go to Chapter 13 in the *OmniVision™ MCP and Accessory Diagnostic Guide*.

23. Verify data base sync is complete.

- If data base sync is complete, go to step 24.

- If data base sync is not complete, go to the *OmniVision™ MCP and Accessory Diagnostic Guide*.

24. System verification is complete. For verification procedures for optional accessories, see the appropriate installation chapter in this guide.

System Verification Form

The System Verification Form is provided on the following page. You can make copies of this form and record important information you may want to keep concerning the vehicle and MCP.

System Verification Form

Date: _____ Customer: _____ Location: _____ Installer(s): _____

Vehicle Information

Number:

Make:

Model:

Engine Type:

Power Connections

Turn IGN to OFF position.   Is unit operational?   ☐ Yes

Turn IGN to ON position.   Did unit power cycle?   ☐ Yes

Data Bus Status

Sync Completed?

☐ Yes   ☐ No

Positioning Status

GPS Positioning Status:_____

Mode:_____

Message Verification

☐ Queued   ☐ Transmitted   ☐ Acknowledged

Text to Speech:

☐ Message Played   ☐ Announcement Received
☐ RCD Verified   ☐ Truck Audio OK

System Information

MAS S/N:

MAS F/W:

MDU S/N:

SDM S/N:

Mount Type:

J1708/Sensor Connections

☐ J1708   ☐ AXLE   ☐ RPM

Is J1708 RX MSGS incrementing rapidly?   ☐ Yes

Data Missing_____

Accessories Installed

☐ Axle Sensor   ☐ Buzzer   ☐ MPG

☐ Pager   ☐ Panic Button ☐ RMWL

☐ TrailerTRACS®   ☐ Wireless Panic Button

☐ Other_____

Additional Notes

If you have any questions, contact QWBS Customer Support at 800-541-7490.