## Contents

### Important Safety Information
- Safety Definitions ................................................................. xiii
- Safety Advice ........................................................................ xiii

### Chapter 1 How the MCP100 Works
- MCP100 Overview ........................................................................ 1-2
- Why MCP100 Makes Companies More Efficient .............................. 1-2
- MCP100 Component Description ................................................... 1-3
- Data Satellite and GPS Network .................................................... 1-4
  - Data Satellite ............................................................................. 1-4
  - What Is the GPS Network? ......................................................... 1-4
- CDMA Wireless Network and PCS ............................................... 1-5
  - How the Terrestrial MCP100 Uses PCS ....................................... 1-5
- MCP100 Mobile Components ...................................................... 1-5

### Chapter 2 Component Overview
- MCP100 Masterpack ....................................................................... 2-2
- Satellite Data Modem (SDM) .......................................................... 2-3
  - Satellite Data Modem (SDM) Cable .............................................. 2-3
- Terrestrial Data Modem (TDM) and Antenna ................................. 2-3
  - TDM Cable ................................................................................. 2-4
- Media Display Unit (MDU) ............................................................ 2-4
  - Display Cable ............................................................................. 2-4
  - Using the MDU ........................................................................... 2-4
- Mobile Application Server (MAS) .................................................. 2-5
  - Accessory Cables for the MCP100—Standard and Full Function 2-6
- Speaker Switch Cable .................................................................... 2-6
- Power Cable ................................................................................. 2-6
- Backup Battery .............................................................................. 2-6
- Remote Control Device (RCD) ....................................................... 2-7
- Optional Accessories for the MCP100 ........................................... 2-7
Table of Contents

Chapter 3  General Wiring and Installation Guidelines

Making Electrical Connections ................................................................. 3-2
Approved Omnitracs Electrical Connectors ............................................. 3-2
Wire Stripping .......................................................................................... 3-2
Butt Splicing ......................................................................................... 3-3
Crimping ................................................................................................ 3-4
Ring Terminals ....................................................................................... 3-10
Proper Grounding .................................................................................... 3-10
General Installation Guidelines ............................................................... 3-11
Routing and Protecting Cables ............................................................... 3-11

Chapter 4  Installation Planning

Installation Guidelines .......................................................................... 4-2
Safety, Reliability, and Accessibility ....................................................... 4-2
Typical Installation Sequence ............................................................... 4-2
Typical Installation Locations for the Terrestrial MCP100 ....................... 4-3
Typical Installation Locations for the Satellite MCP100 ......................... 4-4
Conventional Vehicle Types .................................................................. 4-4
Straight Truck Vehicle Types (All Makes) .............................................. 4-7
Cabover Engine Vehicle Types (All Makes) .......................................... 4-7
Tools and Supplies Recommended for Installations ............................. 4-8
Omnitracs Approved Sealants ............................................................... 4-8

Chapter 5  Mobile Application Server (MAS) Installation

General Installation Guidelines ............................................................... 5-2
Installing the Backup Battery into the MAS ........................................... 5-2
Installing the MAS ................................................................................ 5-3
Selecting a Mounting Location ............................................................. 5-3
Securing the MAS .............................................................................. 5-5
Installing the Power Cable ..................................................................... 5-5
Low Voltage Disconnects (LVDs) ......................................................... 5-5
Power Cable Run ................................................................................ 5-5
Power Cable Routing ......................................................................... 5-5
Power Cable Wire Connections ......................................................... 5-6
Grounding Guidelines ......................................................................... 5-7
Installing the Accessory Cable ............................................................ 5-7
Cable Run .......................................................................................... 5-9
Connecting Cables to the MAS ....................................................... 5-9

Chapter 6  Terrestrial Data Modem (TDM) Installation

General Installation Guidelines ............................................................... 6-2
Installing the TDM ............................................................................... 6-2
Installing the TDM Cable ................................................................. 6-3
Chapter 7 Terrestrial Antenna Installation

General Installation Guidelines .................................................................7-2
Option A—Antenna Installation Using VHB Tape .....................................7-2
Antenna Surface Preparation .................................................................7-2
Option B—Mount Method Installation Using Hardware .......................7-3
Mount Surface Preparation .................................................................7-3
Routing the Terrestrial Antenna Cable ..................................................7-4
Connecting the Antenna Cable to the TDM ............................................7-4

Chapter 8 Satellite Data Modem (SDM) Installation

General Installation Guidelines .................................................................8-2
Selecting a Mount .................................................................................8-2
Orienting the SDM on the Mount ..........................................................8-2
Installing Mounting Bolts ......................................................................8-3
Line-of-Sight Requirements .................................................................8-4
Trailer Swing Area ...............................................................................8-5
Installing the SDM Cable .....................................................................8-5
Connecting the SDM Cable ..................................................................8-5
SDM Cable Run ..................................................................................8-6
SDM Cable Installation ........................................................................8-6
Connecting the SDM Cable to the MAS ................................................8-7

Chapter 9 Media Display Unit (MDU) Installation

General Installation Guidelines .................................................................9-2
Selecting a Mounting Location ...............................................................9-2
Installing the MDU Holster Using Well-nut Fasteners .........................9-3
Installing the MDU Cable .....................................................................9-4
MDU Cable Run ..................................................................................9-4
Connecting the MDU Cable to the MDU ..............................................9-4
Inserting the MDU into the Holster .......................................................9-5
Connecting the MDU Cable to the MAS ................................................9-6
MDU Touchscreen Calibration ...............................................................9-7

Chapter 10 Text-to-Speech (TTS) Installation

General Installation Guidelines ...............................................................10-2
Selecting a Mounting Location ..............................................................10-2
Installing the Remote Control Device (RCD) .......................................10-2
Connecting the RCD to the Accessory Cable .........................................10-2
Selecting a Speaker .............................................................................10-3
Speaker Requirements .........................................................................10-3
Choosing a Speaker ................................................................. 10-3
Option 1—Connecting to an Existing or Shared Speaker .............. 10-4
  Connecting Speaker Switch Cable to Accessory Cable ............... 10-5
Option 2—Connecting to a Dedicated 8-ohm Speaker ....................... 10-6

Chapter 11 Vehicle Data Bus Connections

Vehicle Data Source Overview ......................................................... 11-2
  J1939 Data Bus ........................................................................ 11-2
  J1708/J1587 Data Bus .............................................................. 11-2
  Traditional Sensors ................................................................. 11-2
Vehicle Data Source Selection .......................................................... 11-3
Guidelines for Connecting to the J1939 Data Bus ......................... 11-3
J1939 Pre-installation Check Out ..................................................... 11-4
  Resistance Test (to Verify that J1939 Is Present) ......................... 11-4
  Checking the MCP100 Accessory Cable ................................. 11-5
Option 1—Connecting J1939 Using the Repeater Cable .................. 11-5
  Making the Connection .......................................................... 11-6
Option 2—Connecting J1939 Using the Converter Cable ................ 11-8
  Making the Connection .......................................................... 11-8
Option 3—Connecting Directly to J1939 ....................................... 11-10
  Making the Connection .......................................................... 11-11
Connecting J1708/J1587 .................................................................. 11-12
Verifying Data Source Connectivity ................................................... 11-14

Chapter 12 System Verification

What Is Basic MCP100 System Verification? .............................. 12-2
Performing System Verification ....................................................... 12-2
How to Find the MCP100 Unit Address (UA) ................................. 12-2
MCP100 System Screens .............................................................. 12-3
  System Screen ....................................................................... 12-3
  OVT/CDMA Screens ............................................................. 12-5
  SDM Screens ......................................................................... 12-6
  GPS Screen ........................................................................... 12-7
  Config Screen ....................................................................... 12-7
  Battery Screen ...................................................................... 12-9
  Engineering Screen ............................................................... 12-9
  CER Screen ........................................................................ 12-10
  VDS (Status) Screen ............................................................. 12-11
Flowchart—Basic MCP100 System Verification ............................ 12-13
Basic MCP100 System Verification Procedure ............................... 12-15
Omnitracs MCP100 System Verification Form .................................. 12-20
Chapter 13  Performance Monitoring Verification

Performance Monitoring System Overview ......................................................13-2
Performance Monitoring System Verification .................................................13-2
   Conducting a Road Test ............................................................................13-2
Performance Monitoring System Display Screens ........................................13-4
   Summary Screen ......................................................................................13-4
   Performance Screen ...............................................................................13-5
   Violations Screen ...................................................................................13-6
   Parameters Screen ..................................................................................13-7
   Odometer Screen ....................................................................................13-8
   PTO Screen ............................................................................................13-9
   Installer Screen .......................................................................................13-10
Special Alert Display Notifications ...............................................................13-13
   Warning Notifications ............................................................................13-13
Power Take-off (PTO) Overview ...................................................................13-14
   PTOP (Power Take-off Pump)/PTOC (Power Take-off Compressor) .......13-14
PTO Data Input Verification Procedure .........................................................13-16

Chapter 14  Vehicle Maintenance Installation

Vehicle Maintenance Overview ........................................................................14-2
   Feature Requirements .............................................................................14-2
   Connecting the J1939 Wires ....................................................................14-2
Vehicle Maintenance System Verification .......................................................14-3

Chapter 15  Critical Event Reporting (CER) System Verification

CER Overview ...............................................................................................15-2
   CER System Verification ..........................................................................15-3
   Test System by Manually Reporting an Event .........................................15-6
   Data Link Verification ..............................................................................15-7

Chapter 16  Trailer Tracks System Installation

Trailer Tracks System Overview ....................................................................16-2
   Hardware Requirements ..........................................................................16-2
   Trailer Tracks System Wiring for the Truck ..............................................16-2
   Fuse Kit Installation ...............................................................................16-2
   Trailer Tracks System Verification ..........................................................16-3
   Enabling the Option for the Trailer Tracks System ..................................16-3
   Trailer Connection/Disconnection .............................................................16-4
   Trailer Tracks Diagnostic Screen .............................................................16-5
   Refrigeration Status Screen .....................................................................16-6
Chapter 17 Compact Display Unit (CDU) Installation

CDU Overview ........................................................................................................... 17-2
General Installation Guidelines for Selecting a Mounting Location .............. 17-2
IMPORTANT SAFETY INFORMATION ................................................................. 17-2
Installing the CDU Mount ................................................................. 17-3
Attaching the CDU to the Mounting Bracket .............................................. 17-4
Connecting the CDU Cable to the Accessory Cable ..................................... 17-4

Chapter 18 Navigation Installation

Introduction to Navigation ...................................................................................... 18-2
Installing Navigation .............................................................................................. 18-2

Chapter 19 Buzzer Installation

Buzzer Overview ..................................................................................................... 19-1
Mounting Location ................................................................................................. 19-2
Installation Guidelines ......................................................................................... 19-2
Installation Verification ......................................................................................... 19-2

Chapter 20 Remote Message Waiting Light (RMWL) Installation

RMWL Overview ..................................................................................................... 20-1
Installing the Remote Message Waiting Light .................................................... 20-2
Installation Verification ......................................................................................... 20-2

Chapter 21 Wired Panic Button Installation

Wired Panic Button Overview ................................................................................. 21-1
Installing the Panic Button .................................................................................... 21-2
Installation Verification ......................................................................................... 21-4
Automated Panic Button Test System Dial-in Procedure ................................ 21-4

Chapter 22 Wireless Panic Button Installation

Overview ................................................................................................................... 22-1
Wireless Panic Button Kit ....................................................................................... 22-2
Additional Wireless Panic Button Accessories .................................................. 22-3
Tools and Supplies Needed for Installation ......................................................... 22-3
Using the Remote Transmitter ............................................................................. 22-4
Activating the PANIC Feature ............................................................................. 22-4
Activating the AUX Feature .................................................................................. 22-4
TEST/RESET Feature ......................................................................................... 22-5
Activating the LOCK/UNLOCK Button .............................................................. 22-5
Wireless Panic Button Receiver Installation ...................................................... 22-5
Wireless Panic Button Wiring ............................................................................... 22-5
### Panic Wire Installation
- Voltage Check ................................................................. 22-6
- Antenna Installation ............................................................ 22-8
- Antenna Placement .............................................................. 22-9
- Antenna Cable Routing and Connection ............................... 22-9
- Final Connection ................................................................. 22-10
- Installation Verification for the Wireless Panic Button .......... 22-10
- Wireless Panic Button Battery ............................................. 22-11
- Wireless Panic Button Battery Replacement ........................ 22-12

### Chapter 23 In-Cab Printer Installation
- Wiring Configuration ............................................................ 23-2
- Installation Guidelines ......................................................... 23-2
- Location ............................................................................. 23-2
- Cables .............................................................................. 23-2
- Mounting Bracket ............................................................... 23-2
- Installing the Printer ........................................................... 23-3
- Installation Verification ....................................................... 23-4
- Return Material Authorization (RMA) Process ..................... 23-4
- O’Neil Printer Parts List ....................................................... 23-4

### Chapter 24 In-Cab Scanner Installation
- Installation Guidelines ......................................................... 24-2
- Mounting the Scanner ........................................................ 24-2
- Scanner Mounting Option ................................................... 24-2
- Holster Mounting Option ..................................................... 24-2
- Installing the Scanner ........................................................ 24-2
- Calibrating the Scanner ...................................................... 24-3
- Sending a Scan .................................................................. 24-4
- Cleaning the Scanner ......................................................... 24-5
- Return Material Authorization (RMA) Process ..................... 24-5

### Appendix A Wiring Diagrams and Charts
- Satellite MCP100 Electrical Diagram ................................. A-2
- Terrestrial MCP100 Electrical Diagram ............................... A-3
- MCP100 Wiring Diagram ..................................................... A-4
- Power Cable Pin Callouts .................................................... A-5
- Terrestrial Data Modem (TDM) Cable 25-Pin Connector Callouts A-6
- Satellite Data Modem (SDM) Cable 9-Pin Connector Callouts .. A-7
- Standard Accessory Cable Pin Callouts ............................... A-8
- Full Function Accessory Cable Pin Callouts ........................ A-9
- Media Display Unit (MDU) Connector Pin Callouts ............... A-10
- Six-pin Data Link Connector Pin Callouts ............................ A-11
Appendix G  Feedback Form

Feedback Form .............................................................................................................G-1
Company Information .................................................................................................G-1
Documentation Content .............................................................................................G-2
Documentation Format ...............................................................................................G-3

Glossary
Important Safety Information

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.

![WARNING](image)

**WARNING**

Driver - Do not use while vehicle is in motion.
Use of display unit while driving will cause distraction and loss of vehicle control which may lead to serious injury or death.

If you are a Third-party Device Manufacturer or Application Developer, it is your responsibility to provide appropriate warnings regarding the safe use of your device(s) in conjunction with Omnitracs equipment. Applications should not require the driver to divert his attention from the road while driving a vehicle.
1

How the MCP100 Works

Topics in this chapter provide a basic overview of the MCP 100 Series and how its components interact to send and receive information.

MCP100 Overview ................................................................. 1-2
Why MCP100 Makes Companies More Efficient .......................... 1-2
MCP100 Component Description .............................................. 1-3
Data Satellite and GPS Network .............................................. 1-4
CDMA Wireless Network and PCS ........................................... 1-5
MCP100 Mobile Components .................................................. 1-5

For technical questions, contact Omnitracs 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

This guide combines satellite and terrestrial MCP100 information and installation procedures. Most of the information is applicable to both versions of the MCP100. Where appropriate,

indicates satellite only

indicates terrestrial only
MCP100 Overview

- Provides two-way, mobile information transmission and other value-added services.
- Provides vehicle location and performance data including, hours of service, navigation, inter-state operations, safety and accident prevention, and optimization of fuel management.

Why MCP100 Makes Companies More Efficient

- Companies can maintain two-way contact with their vehicles and drivers 24 hours a day.
- Dispatchers can send pickup and delivery information directly to drivers, keeping vehicles on the road.
- Text-to-speech alerts drivers of incoming messages and their importance, so drivers can choose to immediately listen to messages without pulling off the road.
- Dispatchers know when vehicles are expected to arrive at locations, and can pass that information on to customers.
- Provides dispatchers with vehicle location and position history information by tracking the location of each MCP100 using latitude and longitude or distance and direction from landmarks (usually large towns and cities).
- Drivers can inform the dispatcher of road conditions or problems.
- Optional devices allow monitoring of driver performance, engine diagnostics, trailer locations, and refrigeration status.
- Decision support software enables customers to optimize assets and inform shippers and consignees of load status.
- Over-the-air software upgrades allow drivers to remain on the road rather than having to stop at service centers.
- Omnitracs media display unit (MDU) offers enhanced capabilities, such as touchscreen and color graphics for an easy to understand user interface which reduces training time.
- Hours of service data ensures regulatory compliance.
- On-board navigation application provides truck-specific route mappings.
- Helps with safety and accident prevention.
- Optimizes fuel management.
### MCP100 Component Description

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| Network Operations Center (NOC)                        | • Responsible for processing and managing message traffic between dispatch center and fleet.  
• Within the NOC is the Network Management Computer (NMC), which receives and handles information traffic.  
• Located at Omnitracs, Inc., in San Diego, CA.                                                                                                           |
| Omnitracs Dispatch Software (QTRACS® software)         | • Software on the trucking company’s dispatch computer and dispatcher’s interface with the MCP100.  
• Allows dispatcher to send and receive information, request MCP100 location information, and perform other dispatch functions.  
• QTRACS/400 and QTRACS/Windows customers access the NMC via dialup using PPTP or a frame relay connection.  
• QTRACS/Web customers transmit information via the NMC using RI/Web client over a PPTP connection. |
Data Satellite and GPS Network

**Data Satellite**

- Located approximately 22,300 miles over the equator at 83° west longitude (south of Georgia).
- Uses Ku-band signals to handle all two-way information traffic between the vehicle and the NMC.
- Offers ubiquitous coverage even in remote locations.

**What Is the GPS Network?**

- A worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations.
- Uses satellites as reference points to calculate positions accurate to a matter of meters.
- A standard feature of the MCP100 for positioning.
- MCP100 receives positioning data from the GPS receiver, which is integrated inside the antenna to determine location.
- Position data from the MCP100 is forwarded to dispatch whenever information is sent to a vehicle and acknowledged, and whenever a driver sends information.
- Position data is sent at regular intervals and is made available to dispatch.

---

<table>
<thead>
<tr>
<th>Code Division Multiple Access (CDMA) Wireless Network</th>
<th>• Radio frequency (RF) signals are received from the antenna by the MCP100 via the terrestrial data modem (TDM) from a wireless communication network, which varies depending on geographic location.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Satellite</td>
<td>• Handles all two-way information traffic between the vehicle and the NMC when using a satellite data modem (SDM).</td>
</tr>
<tr>
<td>GPS Positioning Satellites</td>
<td>• Uses 24 satellites to provide vehicle positioning information.</td>
</tr>
<tr>
<td>Mobile Computing Platform (MCP100)</td>
<td>• Driver’s interface with the Omnitracs platform and the component that resides in the vehicle. • Allows the driver to send and receive information.</td>
</tr>
</tbody>
</table>
How the MCP100 Works

**CDMA Wireless Network and PCS**

- Terrestrial MCP100 uses CDMA technology to connect dispatchers and vehicles over the wireless airwaves.
- The Personal Communications Service (PCS) System is a low-powered, higher frequency competitive technology to cellular, ideal for “in-city” trucking and transport.
- Wherever a terrestrial wireless network exists, drivers can send information to and receive information from dispatchers while traveling.

**How the Terrestrial MCP100 Uses PCS**

- MCP100 includes the MAS, which consists primarily of a microprocessor, a wireless modem module (TDM), and data storage.
- The user interface device is the driver’s display terminal that enables the driver to read, write, and send messages.
- Antenna is responsible for relaying information between dispatch and the driver.
- Antenna receives and transmits wireless information to and from the MAS.
- Antenna interfaces with local wireless networks. Information is collected at the PCS gateway and obtained by the Omnitracs NOC where it is distributed to the dispatch center. Dispatchers respond by sending information back to the Omnitracs NOC, where it is relayed to the PCS gateway and broadcast out to the wireless network to be picked up by the vehicle’s antenna.

**MCP100 Mobile Components**

- Mobile part of the Omnitracs platform installed in a customer’s vehicle.
- Provides the driver with the ability to exchange information with the dispatch center.
- Sends vehicle location information to the NOC.
- Each MCP100 has its own unique unit address which is the serial number on the MAS. This address is used by the NMC to route information to the correct vehicle. The unit address for a particular vehicle changes if the MAS in the vehicle is replaced.
- MCP100 operator, typically the driver, uses the display screens for creating, sending, and reading messages; system verification; and troubleshooting.
- Standard components:
  - Satellite data modem (SDM)—Contains the antenna that transmits with the satellite and GPS receiver.
  - Terrestrial Antenna—Transmits information with the PCS and GPS receiver.
  - Terrestrial data modem (TDM)—Connects the antenna to the MAS.
  - Mobile application server (MAS)—Unit which contains the operating circuitry and memory for the MCP100. The “black box” of the platform.
  - Media display unit (MDU)—Standard display unit for the MCP100, which the driver uses to transmit information with the dispatcher. Consists of a keyboard and a color touchscreen LCD display.
  - Remote control device (RCD)—Small keypad that allows the driver to safely listen to incoming messages without having to stop the vehicle and read the message(s) on the display.
Component Overview

Topics in this chapter provide information on the basic components of the MCP100.

- For planning and installation instructions, see Chapters 4–11.
- For optional accessory installation, refer to Optional Accessories for the MCP100 on page 2-7.

MCP100 Masterpack .......................................................... 2-2
Satellite Data Modem (SDM) ............................................. 2-3
Terrestrial Data Modem (TDM) and Antenna ..................... 2-3
Media Display Unit (MDU) .............................................. 2-4
Mobile Application Server (MAS) ................................. 2-5
Backup Battery .............................................................. 2-6
Remote Control Device (RCD) ........................................ 2-7
Optional Accessories for the MCP100 .......................... 2-7

For technical questions, contact Omnitracs 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


**MCP100 Masterpack**

The MCP100 masterpack includes:

- Satellite data modem (SDM)
- Terrestrial Antenna
- Terrestrial data modem (TDM)
- Media display unit (MDU)
- Mobile application server (MAS)
- Backup battery
- Remote control device (RCD)
- Cables

---

**Terrestrial MCP Connection Points**

Typical truck cab - top view

**Satellite MCP Connection Points**

SDM

---

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION
Component Overview

**Satellite Data Modem (SDM)**

The SDM transmits bi-directionally via an antenna to a geostationary satellite. The SDM is lightweight and rugged in design with strengthened antenna housing that offers protection against weather and external elements.

- Height: 6.8 inches
- Diameter: 12 inches
- Weight: 7.0 pounds
- Operating temperature range: -40°C to +70°C (-40°F to +158°F)
- Designed as a VSAT (very small aperture terminal), the SDM incorporates a global positioning system (GPS) antenna (receive only) to collect accurate positioning data.
- Connects with one Ku-band satellite for two-way data transmission. A secondary frequency exists as a backup satellite.
- Robust sealing mechanism for use in all outdoor environments.
- Rugged, lightweight housing with the same bolt pattern as the OmniTRACS® antenna communication unit (ACU) for ease of installation.
- Gyroscopic-based steering algorithm for quick satellite signal reacquisition in the event of a momentary loss of signal.
- Maintains a two-way transmission link between the Network Operations Center (NOC), located in San Diego, CA, and the mobile application server (MAS) located on the vehicle.

**Satellite Data Modem (SDM) Cable**

- Connects the SDM to the MAS.
- Standard length is 20 feet.

**Terrestrial Data Modem (TDM) and Antenna**

A terrestrial data modem that provides CDMA for data transmission and GPS positioning.

- Height: 1.05 inches
- Width: 2.6 inches
- Length: 3.05 inches
- Antenna cable length: 20 feet
- Modem operating temperature range: -20°C to +60°C (-4°F to +140°F)
- Antenna operating temperature range: -40°C to +85°C (-40°F to +185°F)
- Lightweight housing for ease of installation
- Rugged design
**TDM Cable**

- Connects the TDM to the MAS.
- Standard length is two feet.

**Media Display Unit (MDU)**

A color graphical display that integrates touchscreen functionality, extended temperature range, and improved clarity for delivering critical information to drivers.

- Dimensions: 12.8 x 9.0 x 2.4 inches
- Weight: 3.5 pounds
- Screen size: 7-inch diagonal
- Resolution: 480 x 234
- Operating temperature: -30C to +70C (-22F to +158F). Reduced display brightness above +60C (+140F) to reduce internal heat generation.
- Storage temperature: -40C to +85C (-40F to +185F)
- Standard QWERTY keyboard with 4 arrow/navigation keys.
- Three indicator LEDs for alerting drivers of incoming messages, connectivity, and other information.
- Tethered display allows for use anywhere in the cab.
- 16:9 aspect ratio color TFT LCD touchscreen.
- Backlighting allows the driver to distinguish keys in the dark. An ambient light sensor adjusts backlight when it gets dark.
- Touchscreen provides valid Cartesian touch coordinates for the entire active display surface.
- Displays at least 256 unique colors from a palette of 4,096 colors.
- All functions are “driving enabled” or “driving disabled.”

**Display Cable**

- Connects the MDU to the MAS.
- Standard length is 20 feet: 17 feet of straight cable; 3 feet of coiled cable.
- Protective cap helps keep 8-pin SDL connector from being damaged during the installation. Remove just prior to attaching the cable to the MDU.

**Using the MDU**

To navigate the MDU touchscreen: use your fingers, or a standard PDA stylus (not provided by Omnitracs).

**DO NOT use for navigating the MDU touchscreen:** pencils, pens, metal objects, or any other devices which could possibly scratch the touchscreen.
To clean the MDU: use a soft cloth and either plain water, glass cleaner, or mild soap. Do not spray any liquid directly onto the MDU.

**Mobile Application Server (MAS)**

The hardware component that leverages an industry-standard operating system to deliver computing intelligence, processing power, and expansion capability.

- **Dimensions:** 9.7 x 6.5 x 2.4 inches
- **Weight:** 3.8 pounds
- **Extended operating temperature range:** -40°C to +70°C (-40°F to +158°F)
- **Storage temperature range:** -40°C to +85°C (-40°F to +185°F)
- **On-board memory:** 128 MB of FLASH memory and 128 MB RAM with Secure digital slot for expansion.
- **Rugged hardware is compliant to SAE xJ1455 vibration profiles.**
- **Embedded WinCE**
- **400 MHz Intel XScale PXA Processor.**
- **Backup battery for cold crank conditions and graceful shutdowns.**
- **Supports a wide range of port interfaces that allow connections to on-board equipment:**
  - One J1708 bus connects to J1708 bus of older trucks.
  - J1939/CAN bus connects to J1939 bus of newer trucks that can be used to drive some serial tachographs.
  - USB host port allow USB peripherals, such as handheld scanners and storage devices.
  - One RS-232 interface allows connectivity to devices, such as printers, and barcode readers.
  - One secure digital port allows addition of large databases.
- **Supports these other interfaces:**
  - Panic button input allows connection of a panic button for emergency driver signaling.
  - Engine and vehicle speed inputs sense the speed of the engine and the vehicle.
  - Tamper detect line detects tampering with the SDM.
  - Decoy tamper detect line detects tampering with decoy vehicle wiring.
  - Indicator box output drives a warning lamp to alert a driver of overspeed or overrev.
  - Trailer Tracks receiver allows the MAS to determine what trailer is attached to the tractor.
  - Audio output drives a truck’s speakers. Allows for voice navigation and messaging prompts.
Accessory Cables for the MCP100—Standard and Full Function

<table>
<thead>
<tr>
<th>Standard Accessory Cable</th>
<th>Full Function Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Connects accessories and options, such as the Performance Monitoring system, Trailer Tracks, and the RCD and speaker to the MAS for text-to-speech (TTS) play.</td>
<td></td>
</tr>
<tr>
<td>• Standard length is 20 feet.</td>
<td></td>
</tr>
<tr>
<td>• Does not support wiring for the CDU, Axle, RPM, PTOP, or PTOC.</td>
<td>• Supports wiring for the CDU, Axle, RPM, PTOP, and PTOC.</td>
</tr>
</tbody>
</table>

**Speaker Switch Cable**

- Connects a vehicle’s speaker to the accessory cable.
- Cable length is 8 feet.
- Do not need if a dedicated speaker is added to the vehicle for text-to-speech (TTS). TTS allows a driver to safely listen to dispatch messages without pulling off the road.

**Power Cable**

- Connects the +12/24 VDC unswitched power source (battery), the +12/24 VDC switched power (ignition), and the system ground to the MAS.
- Standard length is 20 feet.

**Backup Battery**

- MCP100 requires a rechargeable lead-acid battery installed into the MAS.
- Do not return the backup battery to Omnitracs.
- For more specific information about the backup battery, see Chapter 5.

**Caution**

Warning sign: When vehicle power is lost to the MCP100, the backup battery allows the MAS to shut down gracefully and properly store data. Without a healthy battery installed, there is a high probability of experiencing data loss or corruption.
Remote Control Device (RCD)

An easily accessible in-cab device allowing drivers to easily manage message playback and the text-to-speech (TTS) feature.

- Extended operating temperature range: -30°C to +70°C (-22°F to +158°F).
- Storage temperature range: -40°C to +85°C (-40°F to +185°F).
- Small and easy to mount to the vehicle dash.
- Flexible mounting methods using either very high bond tape (VHB) that sticks the RCD to the dash, or screws.
- Backlight keypad with navigation and other critical function keys.

Optional Accessories for the MCP100

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Monitoring system</td>
<td>13</td>
</tr>
<tr>
<td>Vehicle Maintenance</td>
<td>14</td>
</tr>
<tr>
<td>Trailer Tracks</td>
<td>16</td>
</tr>
<tr>
<td>Compact display unit</td>
<td>17</td>
</tr>
<tr>
<td>Buzzer</td>
<td>19</td>
</tr>
<tr>
<td>Remote message waiting light</td>
<td>20</td>
</tr>
<tr>
<td>Panic button</td>
<td>21</td>
</tr>
<tr>
<td>Wireless panic button</td>
<td>22</td>
</tr>
<tr>
<td>Printer</td>
<td>23</td>
</tr>
<tr>
<td>Scanner</td>
<td>24</td>
</tr>
</tbody>
</table>
General Wiring and Installation Guidelines

Topics in this chapter provide the Omnitracs-approved general methods for making connections to cables and wires and the proper connectors to use to avoid potential problems.

- Making Electrical Connections .............................................. 3-2
- Proper Grounding ............................................................... 3-10
- General Installation Guidelines ........................................ 3-11
- Routing and Protecting Cables ......................................... 3-11

For technical questions, contact Omnitracs 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
Making Electrical Connections

Approved Omnitracs Electrical Connectors

The only Omnitracs-approved electrical connectors are crimp butt splices and crimp ring terminals. Omnitracs recommends Nylon insulated, seamless butt connectors with inspection windows. Heat-shrinkable butt connectors are preferred. When butt splicing multiple wires on one end of a butt splice and a different number of wires on the other end, step-down butt splices are recommended.

WARNING

Not following proper wiring guidelines and using improper crimps and butt splices may cause intermittent connections and may result in unexpected truck down time or system failure.

Wire Stripping

Caution

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

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

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

2. After stripping the wire, verify that the wire is not severed, nicked, or damaged by the stripping tool. If the wire has been properly stripped, it is ready to be butt spliced. If the wire has been damaged, restrip the wire (see step 1.).
**Butt Splicing**

- Omnitracs recommends Nylon insulated, seamless butt connectors with inspection windows.
- Heat-shrinkable butt connectors are preferred.

**Butt splicing can be done inside and outside the cab or enclosure.** See Butt Splicing Connections Done Inside the Vehicle (Out of the Weather) on page 3-3 and Moisture Protection for Connections Done Outside the Vehicle on page 3-7.

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 or damage the wires or insulation.

**Butt Splicing Connections Done Inside the Vehicle (Out of the Weather)**

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

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

- When crimping a butt-spliced wire or cable, be sure the insulated butt splice is crimped using the insulated position on the crimp tool and not the crimping “tooth” of the tool.
- Crimping butt splices incorrectly can result in a severed wire and a failed wire connection.

**Caution**

> DO NOT crimp on the crimp “tooth.”

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.
**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.

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.
3. Verify that 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.

**WARNING**

*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.*
**Moisture Protection for Connections Done Outside the Vehicle**

1. For crimps done outside the vehicle, when the crimps are verified to be good, use plastic seal tape to wrap the entire connection. Use a minimum of two layers of seal tape to completely wrap the connection.

   - 3M industrial tape (tape sealant, vinyl/rubber mastic) is available in a 10’ roll from Omnitracs (MCN# 800-01788-0168). To find a local or nationwide supplier, visit [http://www.3m.com](http://www.3m.com) (Mastic, Scotch® Vinyl).
Strain Relief With or Without Weather Protection Tape

If there is sufficient wire available for the Four-Finger Wrap Method:

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

2. Pinch the loop tightly and center it against the wrapped butt splice.

3. Secure the wires together and place 4" tie wraps at the outside ends of the butt splice.

4. Cinch the tie wraps tight and cut them flush to the lock head.
5. Firmly tug on the butt-spliced wire connection to make sure the tie wraps do not pull loose.

If there is NOT sufficient wire available for the Four-Finger Wrap Method:

1. Securely tie wrap the butt spliced wires to existing wires or harnesses in the nearby vicinity.

Note

It is good practice to tie wrap the newly installed wires to existing wires approximately every 15”–18”.

Caution

Failure to cut the tie wraps flush to the lock head can result in minor injury.

Cut tie wrap flush with lock head.
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.

Install the ring terminal on the ground connection using one of the following options:

Proper Grounding

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.

WARNING

Not following proper grounding guidelines may cause intermittent connections and may result in unexpected truck downtime or system failure.
General Wiring and Installation Guidelines

General Installation Guidelines

• Determine the most direct and protected route when routing cables to connect the components to each other and to the vehicle. Refer to Chapter 4.
• The standard cable length for the power, display, and accessory cables is 20 feet.
  - If you are working with a tilt cab, a longer cable may be necessary.
• Do not trim cable lengths to fit a specific vehicle.
• Keep protective caps in place or wrap connector with plastic/electrical tape until you’re ready to connect the cable to the component.
• 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:

• Limit the minimum bend diameter:
  - accessory cable to 5.0 inches
  - display cable to 1.5 inches
  - power cable to 2.5 inches
  - antenna cable to 2.5 inches
  - SDM cable to 2.5 inches
• Provide strain relief for all cables
• Use supplied grommets
• Use tie wraps
• Deburr any drilled holes

DO NOT route cables:

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

Bend Diameter
**Special Exterior Routing Guidelines**
- Always use convoluted tubing to protect the cables. Secure the cables to the vehicle with tie wraps at approximately 18” intervals.
- Route away from exhaust pipes and moving parts. If an exhaust pipe or moving part must be crossed, use extra tie wraps and route the cable in such a manner that if the tie 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 kick plates or carpets.
- Avoid high foot traffic areas.
- When reinstalling kick plates or carpets, be careful that screws do not penetrate cables.
- Route cables with any existing vehicle cables.
- Use convoluted tubing and refrigeration/tar tape when cables are routed through interior holes with sharp edges.

**Storing Excess Cabling**
- Secure excess cabling with tie wraps.
- Stow out of sight.

**Service Loops (Drip Loops)**
- Provide for all cables.
- Ensure that service loops do not cause any obstruction.
**Access Holes**

- Use existing holes for cable routing.
- If you drill, drill the smallest hole for the purpose:
  - 1-1/2" hole is recommended for cables with a 9-pin DSUB connector, e.g., SDM cable.
  - 1" hole is needed for the TNC connectors on the antenna cable.
- Finish holes prior to routing cables:
  - Debur holes.
  - Use supplied grommet/convoluted tubing with internal holes.
  - Extend convoluted tubing beyond the hole.

![Diagram](05AAA_80)

**Stress Relief**

- At the MAS, tie-wrap cables to each other to reduce stress on any individual cable.
- Ensure cables have enough slack so connections are not being pulled.
Installation Planning

Topics in this chapter provide guidelines for planning a basic Omnitracs MCP100 installation.

Installation Guidelines ................................................................. 4-2
Typical Installation Sequence ..................................................... 4-2
Typical Installation Locations for the Terrestrial MCP100 ....................... 4-3
Typical Installation Locations for the Satellite MCP100 ........................... 4-4
Tools and Supplies Recommended for Installations .............................. 4-8

For technical questions, contact Omnitracs 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

Safety, Reliability, and Accessibility

- Use eye protection when using a drill/performing work that may be hazardous to the eyes.
- Use ear protection in noisy work areas.
- Wear appropriate clothing/uniforms and safety shoes.
- Make sure you know what is behind the area before you drill.
- Use hood safety lanyards when the vehicle hood is open.
- Make sure ladders are in good working order.
- Place ladders in safe positions.
- Install equipment so it will not cause damage to the vehicle or work loose over time.
- Make sure there are no loose components/cables and no unsecured components.
- Use solid mounting surfaces.
- Do not modify or design your own mounts without first obtaining Omnitracs approval (applies domestically only).
- Mount the terrestrial antenna in locations where the unit will receive uninterrupted and undegraded GPS satellite signals. Refer to Routing the Terrestrial Antenna Cable on page 7-4.
- Mount SDMs in locations where the unit will receive uninterrupted and undegraded GPS satellite signals. Refer to Line-of-Sight Requirements on page 8-4.
- Install all components in locations where they will not be abused.
- Do not mount antennas on headache racks or exhaust stacks.
- Route all cables away from hot or abrasive areas.
- Ensure that electrical connections are solid and the system ground is a clean, secure, metal-to-metal chassis ground.
- Choose installation locations where future maintenance can be easily serviced.
- Choose installation locations where components are safe from tampering and damage.

Typical Installation Sequence

1. Determine component installation locations best-suited for your vehicle.
2. Locate the MAS, see Chapter 5.
3. Install and route cables.
4. Locate and install Antenna, see Chapter 7 or Chapter 8.
5. Locate and install the display unit holster and MDU, see Chapter 9.
6. Locate and Install Remote control device (RCD), see Chapter 10.

7. Accessories.

8. Terrestrial data modem (TDM), see Chapter 6.

9. MAS, see Chapter 5.

10. After you install the MCP100 components, see Chapter 12 to perform system verification.

**Typical Installation Locations for the Terrestrial MCP100**

- Installation location for a component varies depending on the type and make of vehicle.
- Securely mount the antenna to the vehicle’s exterior tractor roof with a clear “view-of-sky” to the GPS satellite (see Chapter 7).
- Install the display unit in the cab where it can be easily accessed by the driver.

**WARNING**

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

- Install the MAS and TDM in a dry, protected space, such as the side box or bunk area.
- Install the RCD within reach of the driver but where it will not interfere with the operation of the vehicle.
Typical Installation Locations for the Satellite MCP100

- Securely mount the SDM to the mounting assembly with a clear “line-of-sight” to the satellite (see Chapter 8).
- Install the display unit in the cab where it can be easily accessed by the driver.

**WARNING**

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

- Install the MAS in a dry, protected space, such as the side box or bunk area.
- Install the RCD within reach of the driver but where it will not interfere with the operation of the vehicle.

**Conventional Vehicle Types**

**International/Navistar**

- MAS—Install on side wall or hang under bunk.
  - Install so there is always SD card slot access.
- MDU—Install on dash where space allows/customer preference.
- Cables—Route externally or internally.
  - Drill a 1-1/2" hole for SDM cable.


**Freightliner FLD**

- MAS—Install on side wall or hang under bunk.
  - Install so there is always SD card slot access.
- MDU—Attach to electrical access panel behind gearshift.
- Cables—Route externally.
  - Cables exit/enter sleeper near MAS.
  - Cables enter/exit cab low on passenger side firewall.
  - Drill a 1-1/2" hole for SDM cable.

**Freightliner Century/Columbia**

- MAS—Install on side wall or hang under bunk.
  - Install so there is always SD card slot access.
- MDU—Install on dash where space allows/customer preference.
- Cables—Route internally.
  - Power is at A pillar on passenger side.
  - Drill a 1-1/2" hole for SDM cable.

**Kenworth T600/W900**

- MAS—Install on side wall or hang under the bunk.
  - Install so there is always SD card slot access.
- MDU—Install on face of mapbox.
- Cables—Route externally.
  - Connect power cable to key switch.
  - Cables exit/enter sleeper floor near MAS.
  - Cables enter/exit cab through firewall high on driver side. Look for rubber plugs.
  - Drill a 1-1/2" hole in floor of side box for SDM cable. A hole already exists in the firewall.

**Kenworth T2000**

- MAS—Install on side wall or hang under the bunk.
  - Install so there is always SD card slot access.
- MDU—Install on passenger side glovebox.
- Cables—Route externally.
  - Connect power cable to key switch.
  - Cables exit/enter sleeper floor near MAS.
- Cables enter/exit cab through firewall high on passenger side. Look for rubber plugs.
- Drill a 1-1/2" hole in floor of side box for SDM cable. A hole already exists in the firewall to route cables to the passenger side fuse panel.

**Volvo**

- MAS—Install on side wall or hang under the bunk.
  - Install so there is always SD card slot access.
- MDU—Install on engine cover/dog house.
- Cables—Route internally.
  - Connect power cable to electrical panel in top center of dash.
  - Drill a 1-1/2" hole in floor of side box for SDM cable.

**Peterbilt 378/379**

- MAS—Install on side wall or hang under the bunk.
  - Install so there is always SD card slot access.
- MDU—Install behind passenger seat.
- Cables—Route display cables internally or externally.
  - Connect power cable to solenoid behind pyrometer panel.
  - Cables exit/enter the sleeper floor near MAS.
  - Cables enter/exit cab through firewall, high on passenger side. Use existing cable path. Remove map box.
  - Drill a 1-1/2" hole in floor of side box for SDM cable.

**Peterbilt 387**

- MAS—Install on side wall or hang under the bunk.
  - Install so there is always SD card slot access.
- MDU—Install on face of connector panel.
- Cables—Route externally.
  - Drill a 1-1/2" hole in floor of side box for SDM cable.
**Mack**
- MAS—Install on side wall or hang under the bunk.
  - Install so there is always SD card slot access.
- MDU—Install on face of connector panel.
- Cables—Route externally.
  - Drill a 1-1/2" hole in floor of side box for SDM cable.

**Straight Truck Vehicle Types (All Makes)**
- MAS—Install on side wall or hang under bunk.
  - Install so there is always SD card slot access.
- MDU—Install where space allows/customer preference.
- Cables—Route externally or internally.
  - Tilt cabs may require longer cables.
  - Drill a 1-1/2" hole in floor of side box for SDM cable.

**Cabover Engine Vehicle Types (All Makes)**
- MAS—Install on side wall or hang under bunk.
  - Install so there is always SD card slot access.
- MDU—Install on dash.
- Cables—Route internally.
  - Connect power cable to main bus or keyswitch.
  - Drill a 1-1/2" hole in floor of side box for SDM cable.

**Special Cable Ordering Instructions for Tilt Cabs**
- Typically, the SDM 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 than the standard cable.
- When ordering the MCP100, specify the length of the cable(s) you need.
### Tools and Supplies Recommended for Installations

<table>
<thead>
<tr>
<th>Essential Tools</th>
<th>Miscellaneous Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Standard Combination Wrench Set</td>
<td>Measuring Tape</td>
</tr>
<tr>
<td>• Diagonal Wire Cutters</td>
<td>Rachet/Sockets</td>
</tr>
<tr>
<td>• Wire Strippers</td>
<td>Adjustable Wrench</td>
</tr>
<tr>
<td>• 3/8&quot; Drive Standard Deep Well Socket Set with ratchet</td>
<td>Level</td>
</tr>
<tr>
<td>• Butt Splice Crimping Tool</td>
<td>Debur Tool</td>
</tr>
<tr>
<td>• Screwdrivers: Phillips #2 and Slotted</td>
<td>Flush Cutters</td>
</tr>
<tr>
<td>• Torx Drivers: #10, #20, #25</td>
<td>Hacksaw</td>
</tr>
<tr>
<td>• Volt/ohm Meter</td>
<td>Hammer</td>
</tr>
<tr>
<td>• 1/4&quot; Drill Bit and assorted size bits</td>
<td>Utility Knife</td>
</tr>
<tr>
<td>• 1-1/2&quot; Hole Saw</td>
<td>Files (flat, round)</td>
</tr>
<tr>
<td>• 3/8&quot; Cordless Drill (this will speed up installation time)</td>
<td>Channel Locks</td>
</tr>
<tr>
<td>• Radio Removal Tool &quot;U&quot;</td>
<td>Straight Awl</td>
</tr>
<tr>
<td></td>
<td>1/4&quot; Drive Standard Deep Well Socket Set with ratchet</td>
</tr>
</tbody>
</table>

**Miscellaneous Supplies**

- Silicone Sealant or Refrigeration/Tar Tape
- Assorted Ring Terminals
- Assorted Butt Splices
- Electrical Tape

Items marked with a bullet (•) are considered necessary, must-have tools and supplies required to perform an installation. Additional tools may be required to facilitate certain installations and for maintenance.

### Omnitracs Approved Sealants

<table>
<thead>
<tr>
<th>Sealant, Lubricant, or Liquid</th>
<th>Acceptable For</th>
<th>Required For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigeration/tar tape (supplied)</td>
<td>Sealing exterior to interior holes.</td>
<td>Sealing 1-1/2&quot; hole for SDM cable.</td>
</tr>
<tr>
<td>Silicone sealant</td>
<td>Sealing exterior to interior holes.</td>
<td>Sealing bolt holes for SDM mounting brackets.</td>
</tr>
</tbody>
</table>
Topics in this chapter provide general guidelines and instructions for installing the MAS and connecting the cables to the MAS.

General Installation Guidelines ................................................................. 5-2
Installing the Backup Battery into the MAS ............................................ 5-2
Installing the MAS .................................................................................... 5-3
Installing the Power Cable ........................................................................ 5-5
Grounding Guidelines .............................................................................. 5-7
Installing the Accessory Cable ................................................................. 5-7

For technical questions, contact Omnitracs 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
General Installation Guidelines

1. Install the backup battery into the MAS.
2. Install the MAS into the mounting surface.
3. Connect the accessory and power cables to the MAS.

Installing the Backup Battery into the MAS

Install the backup battery before installing the MAS.

1. Open the battery door on the MAS using a Torx #10 driver.
2. Hold the backup battery in a vertical position with the connector facing down.
3. Insert the backup battery connector into the keyed mating connector in the MAS.
4. Rotate the backup battery into a horizontal position and place in the MAS.

5. Close door and tighten the T10 Torx screws using a hand tool. Do not overtighten the screws.

Installing the MAS

Selecting a Mounting Location

Caution

The MAS is not watertight. DO NOT get it wet. Do not locate the MAS where it could come into contact with liquids or solvents.

Adequate Clearance

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

- Sides and back of unit—1”.
- Top of unit—1”.
- Top of unit—3” to open the battery door and access the battery.
- Front of unit—6” to allow for proper cable bend diameter exiting the unit.
Location and Orientation

- When possible, do not install the MAS on the floor of the vehicle.
- Preferably, install the MAS on the vertical side wall with cable exiting to the side.
- If possible, install the MAS in a storage compartment.
- Choose a location that provides easy access to the SD card slot and visibility to LEDs located inside the SD card slot.
- Choose a location where the MAS will not come into contact with liquids or solvents.
- 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 MAS that is structurally sound. The surface must support the full weight of the MAS under all circumstances.
- Choose a location that provides for the various cable lengths.
- 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.
- 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.
Securing the MAS

- Tighten the four self-drilling screws into the mounting surface with a Torx #25 driver.

Installing the Power Cable

Low Voltage Disconnects (LVDs)

An LVD is circuitry in some trucks that remove “non-critical” loads, such as TVs, radios, and microwaves from the truck battery when operating these items without the vehicle running. This ensures that there will be enough battery power left to start and run the vehicle.

Do not wire the MCP100 through any LVD device as this will affect the normal operation of the system. When the LVD is engaged:
- MCP100 will not transmit or receive messages
- Panic button will not operate
- Tamper detection will not work
- Vehicle position will be lost
- Backup battery life will be significantly reduced

Power Cable Run

- Run direction—Route the power cable from the MAS to the power connection points.
- Routing location—Route internally or externally. If routed externally, use the supplied convoluted tubing.
- Cable dressing—Store and secure excess cable.

Power Cable Routing

1. Select one of the following electrical power interface locations on the vehicle:
   - Key switch
   - Fuse panel
   - Bus bar
   - Circuit breakers
2. If needed, 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.
4. Re-install the fuses onto the appropriate wires.
5. Power on the MAS when ready. Powering up the MAS should be the last step of the installation.
Power Cable Wire Connections

- Vehicle battery supplies power to the MAS.
- The three required connections that you must make at the fuse end of the power cable:
  - Chassis ground - labeled “BAT RTN”
  - +12/24 VDC Battery (Main) (unswitched) - labeled “BAT+”
  - +12/24 VDC Ignition (switched) - labeled “IGNITION”
- Never wire the constant BAT+ connection or the IGNITION connection to the Accessory position. See Appendix A for detailed pin and wire callouts.

1. Connect the black BAT RTN wires to a good grounding surface on the vehicle chassis or one that is connected to the chassis. Refer to Grounding Guidelines on page 5-7 for more information.

2. Connect the yellow BAT+ wire to an unswitched (Main) +12/24 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 +12/24 VDC to the MCP and must not be connected to the accessory bus or any other switched bus.

3. Connect the white IGNITION wire to the switched (ignition) +12/24 VDC power source, such as the ignition side of the ignition (key) switch or the ignition side of the fuse block.
   - +12/24 VDC should be present on the IGNITION wire only when the ignition switch is in the ON position, not in the OFF or Accessory position.
Grounding Guidelines

- Create clean, secure, tight, metal-to-metal grounds.
- If grounding terminals are not available, remove the paint from the surface of the firewall or other metal connected to the chassis to make the ground.
- Remove the paint from the metal and tighten the bolt for a good metal-to-metal ground connection.

Installing the Accessory Cable

- Connects the MCP100 to the RCD for text-to-speech, the J1708/1587 data link, and other vehicle inputs and optional system devices.
- Provides necessary wiring for optional system features, such as display screen disabling, the Performance Monitoring system, Trailer Tracks asset management, buzzer, RMWL, panic button and other security devices.
- Two accessory cables available:
  - standard accessory cable
  - full function accessory cable
  - standard length of either cable is 20 feet
  - See Appendix A for detailed wiring diagrams.
**Standard Omnitracs MCP100 Accessory Cable**

- Connects accessories and options, and the RCD and speaker to the MAS for text-to-speech (TTS) play.
- Does not support wiring for the CDU, Axle, RPM, PTOP, or PTOC.

**Full Function Omnitracs MCP100 Accessory Cable**

- Connects accessories and options, and the RCD and speaker to the MAS for text-to-speech (TTS) play.
- Supports wiring for the CDU, Axle, RPM, PTOP, and PTOC.
**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 most access holes.)
- **Routing location**—Route internally or externally. Use existing cable runs.
- **Cable dressing**—Stow and secure any loose wires. Use convoluted tubing for cables run externally.
- **Installation instructions** for optional accessories which use the accessory cable are provided in later chapters of this guide.
- Before connecting the accessory cable to the MCP100, 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.

**Connecting Cables to the MAS**

1. Inspect all connectors for bent pins.
2. Only hand-tighten the thumb screws on the connector.
3. Align the connector so it is straight before sliding into position.
4. Connect the accessory cable into the I/O slot.
5. Connect the power cable into the PWR slot.
6 Terrestrial Data Modem (TDM) Installation

Topics in this chapter provide general guidelines and instructions for installing the TDM.

*General Installation Guidelines* ................................................. 6-2
*Installing the TDM* ................................................................. 6-2
*Installing the TDM Cable* ...................................................... 6-3
*Connecting the TDM Cable to the MAS* ................................. 6-3

For technical questions, contact Omnitracs 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*

The TDM is only used with the terrestrial MCP100.
General Installation Guidelines

1. Install the TDM.
2. Connect the TDM cable to the TDM.
3. Connect the TDM Cable to the MAS.

Installing the TDM

1. Install the TDM on top of the MAS where indicated by the pre-installed dual-lock tape (a Velcro™-type tape). As long as the TDM is firmly adhered to the MAS, you can orient the TDM in any direction.

2. Both the TDM and MAS have pre-installed dual-lock tape. Apply suitable pressure when sticking the two pieces of tape together, ensuring that the interlocking fibers of the tape are completely mated to secure the TDM in place.

Caution

The TDM is not watertight. DO NOT get it wet. Do not locate the TDM where it could come into contact with liquids or solvents.
Installing the TDM Cable

- Connects TDM to MAS.

TDM Cable Installation

1. Plug the 9-pin DSUB connector into the SDM slot of the MAS.
2. Plug the 25-pin connector into the TDM.

Connecting the TDM Cable to the MAS

1. Inspect the connector for bent pins.
2. Only hand-tighten the thumb screws on the connector.
3. Align the connector so it is straight before sliding into position.
4. Connect the TDM cable into the (satellite data modem) SDM slot.
Topics in this chapter provide general guidelines and instructions for installing the terrestrial antenna.

- **General Installation Guidelines** ........................................ 7-2
- **Option A—Antenna Installation Using VHB Tape** .................. 7-2
- **Option B—Mount Method Installation Using Hardware** .......... 7-3
- **Routing the Terrestrial Antenna Cable** ............................... 7-4
- **Connecting the Antenna Cable to the TDM** ....................... 7-4

**For technical questions, contact Omnitracs 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**

_The flat antenna is only used with the terrestrial MCP100._
General Installation Guidelines

1. Orient the antenna on the exterior of the vehicle roof.
2. Connect and route the cable.
3. Connect the antenna cable to the TDM.

The antenna can be installed using tape or screws.

- If you are using a VHB tape, see Option A—Antenna Installation Using VHB Tape on page 7-2.
- If you are using self-drilling screws, see Option B—Mount Method Installation Using Hardware on page 7-3.

Option A—Antenna Installation Using VHB Tape

- Attaches to the backside of the vehicle roof without drilling.

Caution

Do not use VHB tape on chrome surfaces.

Antenna Surface Preparation

1. Pick a location toward the back of the vehicle roof.
2. Ensure that the vehicle mounting surface is flat.
3. Verify that the cable routing will adequately reach the bottom of the TDM where the connection is required.
4. Use alcohol pad to ensure that the vehicle mounting surface is free of dirt and wax.
5. Apply the tape primer evenly across the vehicle mounting surface. Wait five minutes before installing the antenna bracket.

6. Remove the backing from the VHB tape. Position the vertical bracket assembly up to the mounting surface. Apply even pressure until fully adhered to the mounting surface.

7. Connect and route the cables according to the cable routing instructions on page 7-4.

Option B—Mount Method Installation Using Hardware

- Attaches to the backside of the vehicle roof by using self-drilling screws.

Mount Surface Preparation

1. Use alcohol pad to ensure that the vehicle mounting surface is free of dirt and wax.

2. Using a razor knife, cut the adhesive tape from the four vertical bracket mounting holes.

3. Using the vertical bracket as a template, hold it against the mounting surface and mark the mounting holes.

4. Mount the bracket over the holes.

5. Tighten the four self-drilling screws into the mounting surface with a Torx #25 driver.
Routing the Terrestrial Antenna Cable

The antenna cable connects the antenna to the TDM.

- Run direction—Start at the antenna and run the cable down to the TDM.
- Run location—Route the cable internally or externally.
- Cable connectors—Make sure the rubber boots are completely forward so the connectors are totally covered.

Connecting the Antenna Cable to the TDM

1. Inspect the TNC connectors for damaged or bent pins.
2. Connect the TNC connectors to the terrestrial data modem (TDM).
8

Satellite Data Modem (SDM) Installation

Topics in this chapter provide guidelines for installing the MCP100 SDM.

- General Installation Guidelines .................................................... 8-2
- Orienting the SDM on the Mount .................................................. 8-2
- Installing Mounting Bolts ............................................................. 8-3
- Line-of-Sight Requirements ........................................................... 8-4
- Trailer Swing Area ......................................................................... 8-5
- Installing the SDM Cable .............................................................. 8-5
- Connecting the SDM Cable to the MAS ......................................... 8-7

For technical questions, contact Omnitracs 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
General Installation Guidelines

1. Orient the SDM on the mount.
2. Connect the SDM.
3. Route the SDM cable.
4. Connect the SDM cable to the MAS.

Selecting a Mount

See the Outdoor Unit Mount Installation Guide for a complete list of Omnitracs mounts for specific vehicle types and complete instructions for installing the SDM on the mount.

- Use only Omnitracs-designated mounts for equipment installed in the United States.
- Provide adequate clearance from any nearby structures, such as airdams and exhaust stacks.
- Position the mount 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. Omnitracs reserves the right to charge for replacement or repair of damaged or malfunctioning SDMs which Omnitracs 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 MCP100 and void the unit warranty. The SDM mount may be painted.
- DO NOT open the SDM. Removing the radome will void the warranty unless you have obtained authorization and instructions from Omnitracs. Removing the radome exposes the MCP100 antenna to moisture.
- DO NOT overtighten bolts or connectors.

Orienting the SDM on the Mount

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

Vehicles with Airdams

- Under a full airdam, orient the SDM so the SDM cable exits toward the front of the vehicle.
- This orientation 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**

- On a vehicle without an airdam and/or the mount is on the rear of the cab, orient the SDM so the SDM cable connection faces toward the **side** of the vehicle. See page 3-11 for cable routing examples.
- This orientation prevents wind-driven rain from pounding the connector, while preventing trailer swing from hitting the connector.
- Install the SDM so that it does not exceed the Federal D.O.T. mandated maximum legal height of 13’ 6”.

**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. 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 72 **inch/pounds**.

---

**Caution**

To avoid over-torquing, **never** use power tools to tighten mounting hardware.
Line-of-Sight Requirements

- SDM requires an unobstructed line-of-sight view to the satellite in order to clearly send and receive signals.

- 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 the 12° angle and the maximum allowable height of objects located at various distances from the SDM centerline.

- An obstruction height of 2.5 feet for every 12 feet away from the SDM centerline is acceptable. Use this same formula to verify that a trailer hooked up to the vehicle does not extend above the 12° angle.

- Satellite signal can normally pass through thin layers of glass, fiberglass, and plastic. Thick layers or obstructions above the 12° angle may block the satellite signal and cause “blind spots.” Keep blind spots to a 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
  - Metal air dams, metal wings, metal side skirts, air conditioning units, and exhaust stacks.

- When mounting an SDM, make sure that the mounting surface is strong enough to support the weight of the SDM and mount.

- The installation must also withstand very strong shock forces exerted by the vehicle 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.
- When positioning the SDM on the mount, protect the SDM connector by turning the antenna so it faces the side and NOT the back of the trailer.
- 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.

![Diagram of SDM installation](image)

**Installing the SDM Cable**

- Connects SDM to MAS.

**Connecting the SDM Cable**

1. Install the SDM cable on the SDM connector and hand-tighten.

---

**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. The SDM cable is keyed to avoid an incorrect cable with a similar connector type from being attached.
• The SDM connector is weather-resistant; do not weather-proof the SDM connector.

Caution
Do not use refrigeration/tar tape on the SDM connector.

SDM Cable Run

• Run direction—Start at the SDM mount and run the cable down to the MAS.
• Routing location—Route the cable externally.

SDM Cable Installation

1. Start at the SDM and run the cables down the back of the sleeper/cab and under the body toward the MAS.
   • Route the cable using existing brackets as tie points.
2. Drill an access hole through the bottom of the cab so it enters where the MAS is installed. See Access Holes on page 3-13.

3. Store and coil excess cable near the MAS.

---

**Caution**

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

---

**Caution**

⚠️ Loose cables can cause damage to paint and wear to the fiberglass. Ensure that the cables are secured to the vehicle with tie wraps at approximately 18" intervals.

---

**Connecting the SDM Cable to the MAS**

1. Inspect the connector for bent pins.

2. Only hand-tighten the thumb screws on the connector.

3. Align the connector so it is straight before sliding into position.

4. Connect the SDM cable into the SDM slot.
Media Display Unit (MDU) Installation

Topics in this chapter provide guidelines and instructions for installing the MDU:

- General Installation Guidelines ................................................................. 9-2
- Installing the MDU Holster Using Well-nut Fasteners .......................... 9-3
- Installing the MDU Cable ....................................................................... 9-4
- Connecting the MDU Cable to the MDU .............................................. 9-4
- Inserting the MDU into the Holster ......................................................... 9-5
- Connecting the MDU Cable to the MAS ............................................... 9-6

For technical questions, contact Omnitracs 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
General Installation Guidelines

1. Install the MDU holster and MDU.
2. Route and connect the cable to the MDU.
3. Connect the MDU cable to the MAS.

Selecting a Mounting 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.

DO NOT locate the MDU where it:
• obstructs the driver's field of vision
• distracts the driver from the driving task
• interferes with the driver's operation of controls or displays
• obstructs the area swept by the windshield wipers
• blocks the deployment of an airbag

DO locate the MDU where:
• it can be safely installed on a secured bracket that is robust enough to minimize any vibration and sustain the weight of the MDU. Permanently affix the MDU to the:
  - front dash area
  - top of dash area
• the mounting surface is strong enough to support the mounting hardware
• the mounting surface is flat
• it is in the driver's line-of-sight, easy to touch, but does not block the view of the road or mirrors
• the surrounding area is clear of dash controls and gauges
• the display cable is long enough to reach the mating connector on the accessory cable
• it is not mounted in constant, direct sunlight
• it does not limit a passenger's leg room or block access to any other compartments
• it does not interfere with anyone entering or exiting the vehicle cab

it is not likely to impact the driver or passenger in case of an accident or collision.
Additional information for selecting an installation location:

- Nothing should be installed on the windshield that obstructs the area swept by the windshield wipers or obstructs the driver's sight to the road and highway signs and signals. (FMCSA document 49 CFR 393)
- No devices should be mounted more than 6 inches below the upper edge of the windshield, or extend more than 4.5 inches above the bottom of the windshield. (FMCSA document 498 CFR 393)
- Before installing the device, be aware of and follow all state laws and driving codes. California Driving Code Section 26708(a)(1) states: No person shall drive any motor vehicle with any object or material placed, displayed, installed, affixed, or applied upon the windshield or side or rear windows.
- Consider the owner's preference in selecting the installation location and whether there is a team or a single driver.

**Installing the MDU Holster Using Well-nut Fasteners**

1. Mount on any rigid surface between .035 and .232 inches thick and able to support the weight of the MDU (3.20 lbs.).
2. Use your display holster as a template to mark the four mounting holes.
3. Drill four .375 (3/8") holes in the positions marked in **step 2**.
4. Place the well-nut inserts all the way into each .375 hole until the flanges fit firmly against the mounting surface.
5. Place the holster correctly over the mounting holes.
6. Pass the 10-32 machine screws through the holster and mounting holes and tighten until snug.

**Installing the MDU Cable**

- Connects MDU to MAS.

**MDU Cable Run**

- Run direction—In most vehicles, the display unit is mounted in the dash area. Route the cable from the MDU to the MAS with the coiled end of the cable at the MDU and the uncoiled end routed to the MAS. If drilling is necessary, 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. In this case, route the cable internally to this area.

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

**Connecting the MDU Cable to the MDU**

1. If the cable is not yet routed, refer to page 3-11 for routing procedures.

---

**Caution**

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

2. Use a #10 Torx driver to remove the MDU’s back housing.

3. Remove the protective cap on the connector.
   - Inspect the connectors for damage and bent pins.

4. Plug in connector.
Media Display Unit (MDU) Installation

Inserting the MDU into the Holster

1. Push bottom of display into lower holster tabs.
2. Push top of display into upper holster tabs.

- Make sure the rubber grommet fits in the grooves of the MDU.
- Make sure the flat side of the grommet is facing up.

5. Install and tighten the cable strain tie wraps on the back of the MDU.

6. Route the display cable through the right or left channel on the back of the MDU.

7. Reinstall the back housing.

8. Install the rubber plug on the opposite side from where the cable has been run.

9. Secure the cable with tie wrap.

Inserting the MDU into the Holster

1. Push bottom of display into lower holster tabs.

2. Push top of display into upper holster tabs.
Connecting the MDU Cable to the MAS

1. Inspect the connector for bent pins.
2. Only hand-tighten the thumb screws on the connector.
3. Align the connector so it is straight before sliding into position.
4. Connect the MDU cable into the DSPL slot.
MDU Touchscreen Calibration

If you are tapping any of the icons on the touchscreen and the screen is not responding quickly, the touchscreen may not be calibrated properly. To recalibrate the MDU touchscreen settings, from the Home screen:

- Tap the **Settings** icon.
- Tap the **Displays** tab.
- Tap the **Advanced** tab.
- Tap the **Touch Screen** button.
- When the four targets display, carefully tap each of the **targets (•)** in the center.
- Press **Enter** when prompted. Calibration is complete.
Topics in this chapter provide guidelines for installing the remote control device (RCD) and speaker switch cable for the MCP100 text-to-speech (TTS) feature.

- General Installation Guidelines ........................................... 10-2
- Installing the Remote Control Device (RCD) .......................... 10-2
- Selecting a Speaker .......................................................... 10-3
- Option 1—Connecting to an Existing or Shared Speaker ................. 10-4
- Option 2—Connecting to a Dedicated 8-ohm Speaker .................. 10-6

For technical questions, contact Omnitracs 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
General Installation Guidelines

1. Install the RCD.
2. Route and connect RCD cable.
3. Route and connect RCD cable to speaker.

Selecting a Mounting Location

- Mount the RCD on the dash panel of the vehicle.
- RCD must be easily accessible to the driver while seated in the driver’s seat, but cannot interfere in any way with the operation of the vehicle.
- Check Important Safety Information on page xiii when choosing a location.

Installing the Remote Control Device (RCD)

1. Determine a suitable location.
   - VHB (very high bond) tape permanently bonds the device to the dash panel.
2. Remove the dash panels to expose the backside of the dash. Check that the area is free of cable, wires, and/or hoses.
3. Drill a 1/4” hole in the dash panel and debur the hole.
   - OPTIONAL: If routing the cable over the dash, use tie wraps to secure the cable.
4. Route cable through the hole and behind the dash panel.
5. Use the alcohol wipe provided to clean the mounting surface of any dirt, oil, or grime.
   - OPTIONAL: There are two nutserts on the back of the RCD that can be used instead of/in addition to the VHB tape. If you use the nutserts, you will need 4-40 x 0.375-0.412 screws. These screws are not supplied by Omnitracs.
6. Remove the paper backing from the VHB tape and firmly press the RCD onto the mounting surface. Let it stand for a few minutes to allow surfaces to fully bond.
7. Finish routing the RCD cable to where the accessory cable ends.

Connecting the RCD to the Accessory Cable

1. Butt splice the yellow wire on the RCD cable to the blue/green RCD wire on the accessory cable.
2. Butt splice the black wire on the RCD cable to the violet COM5 GND wire on the accessory cable.
Selecting a Speaker

Speaker Requirements

There are two basic speaker requirements for TTS:

- Only one speaker should be connected to the MCP100 for text-to-speech play, otherwise the volume will be very low.
- An 8-ohm speaker, such as a standard CB speaker or standard truck audio speaker, should be used for text-to-speech play.
- 6-ohm and 4-ohm speakers may work but should be tested first to confirm operation on a known good MCP100 system.

Choosing a Speaker

Text-to-speech works with either an existing speaker (typically, the driver’s side door speaker) that is part of the vehicle’s audio system, or a speaker that can be added.

- If you are using a vehicle’s audio system 8-ohm speaker, see Option 1—Connecting to an Existing or Shared Speaker on page 10-4.
- If you are adding a dedicated speaker for TTS, see Option 2—Connecting to a Dedicated 8-ohm Speaker on page 10-6.
Option 1—Connecting to an Existing or Shared Speaker

1. Test the audio system prior to installation.

2. Remove audio/radio.

3. Locate the speaker wires to be used for message playback. Refer to Radio Connector Pin Callouts on page A-13.

4. Find a good location on the speaker wires where they can be cut and where there will be enough room to work on either side of the cut.

5. Cut the speaker wires.

6. Butt splice the yellow SPKR OUT+ wire on the speaker switch cable to the positive (+) wire that leads from the speaker.

7. Butt splice the black SPKR OUT- wire on the speaker switch cable to the negative (-) wire that leads from the speaker.

8. Butt splice the orange VEH AUDIO IN + wire on the speaker switch cable to the positive (+) speaker wire that leads from the audio.
9. Butt splice the black VEH AUDIO IN - wire on the speaker switch cable to the negative (-) speaker wire that leads from the audio.

10. Tie wrap loose cabling and reconnect/replace the radio.

**Connecting Speaker Switch Cable to Accessory Cable**

1. Butt splice the yellow MAS SPKR + wire on the speaker switch cable to the blue/yellow SPKR + wire on the accessory cable.

2. Butt splice the black MAS SPKR - wire on the speaker switch cable to the blue/violet SPKR - wire on the accessory cable.

3. Butt splice the green GND wire on the speaker switch cable to the violet/orange COM5 GND on the accessory cable.
Option 2—Connecting to a Dedicated 8-ohm Speaker

Connect the dedicated speaker for text-to-speech play directly to the accessory cable:

1. Butt splice the blue/yellow SPKR + wire on the accessory cable to the positive (+) wire that leads from the speaker.

2. Butt splice the blue/violet SPKR - wire on the accessory cable to the negative (-) wire that leads from the speaker.

Note
The speaker switch cable is not used if you are adding an external, dedicated speaker.
11

Vehicle Data Bus Connections

Topics in this chapter provide the procedures for performing J1939, J1708/J1587, and traditional sensors (standard speed and RPM) installations.

- Vehicle Data Source Overview ........................................... 11-2
- Vehicle Data Source Selection ............................................. 11-3
- Guidelines for Connecting to the J1939 Data Bus .................. 11-3
- J1939 Pre-installation Check Out ....................................... 11-4
- Option 1—Connecting J1939 Using the Repeater Cable ............ 11-5
- Option 2—Connecting J1939 Using the Converter Cable .......... 11-10
- Option 3—Connecting Directly to J1939 ............................. 11-10
- Connecting J1708 /J1587 ..................................................... 11-12
- Verifying Data Source Connectivity .................................... 11-14

For technical questions, contact Omnitracs 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
**Vehicle Data Source Overview**

The Omnitracs mobile computing platform can use the J1708/J1587 and J1939 data buses, as well as traditional sensors to monitor critical vehicle data:

- Traditional sensors are used on most pre-1992 trucks.
- J1708/J1587 data bus is used on most 1992–2009 trucks.
- J1939 will be the only data bus used on most trucks built after 2010.

These data inputs can be monitored on the vehicle data services (VDS) screens. The vehicle data source makes this data available to specific applications on the MCP100.

**J1939 Data Bus**

Omnitracs applications only support 2007 and newer trucks with ECMs that support the SAE J1939-71, Rev. Nov 2006 standard.

- High speed (250 Kb/sec) data bus.
- Uses a two-wire differential serial bus, which is a network backbone running throughout the vehicle with several stubs connecting each ECM to the backbone.

**J1708/J1587 Data Bus**

- Low speed (9.6 Kb/sec), bi-directional data bus.
- Uses a two-wire differential serial bus, which runs throughout the vehicle.

**Traditional Sensors**

- Use traditional sensors if the truck does not have the J1708/J1587 or J1939 data bus. For information on connecting traditional sensors, contact Omnitracs Customer Support.
Vehicle Data Source Selection

When making data source connections, there are two possible data buses available: the J1708/J1587 low-speed data bus and the J1939 high-speed data bus. The truck year, make, and model, as well as the Omnitracs applications used determine which data bus to use.

If you do not know which data source to use, contact your Omnitracs representative for assistance.

Guidelines for Connecting to the J1939 Data Bus

- Choose Option 1, Option 2, or Option 3 depending on which accessory cable is used.
- DO NOT extend factory wires.
- Maximum stub length is 10 feet.
- Minimum stub spacing is 4 inches.
- Never have more than one ECM device on the same stub.

Termination Resistors at Ends of the Main Backbone
Each 120 Ohms 5% 1/4W

Reads 60 ohms when measured in parallel from CAN_HIGH to CAN_LOW

4 in Min  4 in Min  10 ft. Max

Never have more than one ECM on the same stub
J1939 Pre-installation Check Out

Prior to beginning any installation, start the vehicle and verify that the vehicle is in good working order, has no faults, and no check engine lights display.

**Resistance Test (to Verify that J1939 Is Present)**

1. Turn ignition OFF.

2. Verify that J1939 is present on vehicle. Locate the 9-pin diagnostic (Deutsch) connector.
   
   **Note**
   
   If you have a 6-pin connector, you have J1708/J1587 only. See Connecting J1708 / J1587 on page 11-12.

3. Using an ohmmeter, place the positive lead on pin C and the negative lead on pin D of the diagnostic connector. Verify that the resistance is 55–65 ohms.
   
   • If the resistance is not 55–65 ohms, there is a problem with your J1939 data bus. Fix the problem.

   **Note**
   
   On some vehicles, open doors and/or cabin lights on may cause CAN/J1939 bus activity which may interfere with diagnostic connector resistance measurements.

   • Pin C CAN High (tractor bus) yellow
   • Pin D CAN Low (tractor bus) green
**Checking the MCP100 Accessory Cable**

1. Locate the end of the installed MCP100 accessory cable to determine which option applies.

2. Locate the CAN connector on the accessory cable.

3. If it is a 6-pin Molex connector, go to **Option 1—Connecting J1939 Using the Repeater Cable** on page 11-5.

4. If it is a 4-pin Molex connector, go to **Option 2—Connecting J1939 Using the Converter Cable** on page 11-8.

5. If there is no Molex connector present, go to **Option 3—Connecting Directly to J1939** on page 11-10.

**Option 1—Connecting J1939 Using the Repeater Cable**

Use the repeater cable when the distance between the MAS and J1939 bus connection point exceeds 10 feet. Also use option 1 for any after market installations.

Connect the MCP100 accessory cable to the CAN repeater. A CAN repeater cable is required for this procedure (see Appendix A for detailed pin and wire callouts of the CAN repeater cable).
In order for the MCP100 to receive J1939 data, the MAS CAN/J1939 wires must be connected to the truck’s J1939 CAN bus in the vehicle.

Follow all SAE guidelines when connecting to the vehicle's J1939 data bus.

**Making the Connection**

1. Locate the J1939 bus wires.
   - The J1939 wires are a twisted pair
   - CAN high (J1939+) (yellow)
   - CAN low (J1939-) (green)

2. Determine a suitable J1939 location point. In many vehicles you can connect behind the truck diagnostic connector. Be aware that only one electronic device should be connected to the J1939 stub at the back of the diagnostic connector at a time. If another device is already present you will need to splice directly into the vehicle’s backbone. When slicing directly to the J1939 backbone bus, you will need to Ohm out (0 Ohms) CAN + and CAN - wires to Pin C (CAN high) and Pin D (CAN low) on the diagnostic connector. Contact Omnitracs Customer Support for assistance if needed.

3. Splice the yellow CAN high J1939+ wire from the repeater cable to the yellow CAN high J1939+ wire from the truck’s J1939 bus. (Refer to the illustration on page 11-5.)

4. Splice the green CAN low J1939- wire from the repeater cable to the green CAN low J1939- wire from the truck’s J1939 bus. (Refer to the illustration on page 11-5.)

5. Measure the J1939 bus resistance at the diagnostic connector. It should read 60 ohms.

6. Locate the CAN 6-pin Molex connector on the MCP100 accessory cable.
7. Connect the CAN repeater cable to the CAN 6-pin Molex plug on the MCP100 accessory cable.

8. Start the vehicle and verify that the truck is in good working order and displays no dash faults.

9. Verify that the J1939 data is being passed to the MAS from the data bus by monitoring the VDS screen on the MAS. (Refer to Verifying Data Source Connectivity on page 11-14.)

10. Stow and secure any loose wires, making sure to keep the wires clear of sharp edges and away from panels and moving parts.
Option 2—Connecting J1939 Using the Converter Cable

Use the converter cable when the distance between the MAS and J1939 bus connection point exceeds 10 feet. Connect the MCP100 accessory cable to the CAN converter. A CAN converter cable is required for this procedure (see Appendix A for detailed pin and wire callouts of the CAN converter cable).

In order for the MCP100 to receive J1939 data, the MAS CAN/J1939 wires must be connected to the truck’s J1939 CAN bus in the vehicle.

Follow all SAE guidelines when connecting to the vehicle’s J1939 data bus.

Making the Connection

1. Locate the J1939 bus wires.
   - The J1939 wires are a twisted pair
   - CAN high (J1939+) (yellow)
   - CAN low (J1939-) (green)

2. Determine a suitable J1939 location point. In many vehicles you can connect behind the truck diagnostic connector. Be aware that only one electronic device should be connected to the J1939 stub at the back of the diagnostic connector at a time. If another device is already present you will need to splice directly into the vehicle’s backbone. When slicing directly to the J1939 backbone bus, you will need to Ohm out (0 Ohms) CAN + and CAN - wires to Pin C (CAN high) and Pin D (CAN low) on the diagnostic connector. Contact Omnitracs Customer Support for assistance if needed.
3. Splice the yellow CAN high J1939+ wire from the converter cable to the yellow CAN high J1939+ wire from the truck’s J1939 bus. (Refer to the illustration on page 11-5.)

4. Splice the green CAN low J1939- wire from the converter cable to the green CAN low J1939- wire from the truck’s J1939 bus. (Refer to the illustration on page 11-5.)

5. Measure the J1939 bus resistance at the diagnostic connector. It should read 60 ohms.

6. Locate the CAN 4-pin Molex connector on the MCP100 accessory cable.

7. Connect the CAN converter cable to the CAN 4-pin Molex plug on the MCP100 accessory cable.

8. Start the vehicle and verify that the truck is in good working order and displays no dash faults.

9. Verify that the J1939 data is being passed to the MAS from the data bus by monitoring the VDS screen on the MAS. (Refer to Verifying Data Source Connectivity on page 11-14.)

10. Stow and secure any loose wires, making sure to keep the wires clear of sharp edges and away from panels and moving parts.
**Option 3—Connecting Directly to J1939**

Use the direct connection method (no repeater cable) when the distance between the MAS and J1939 bus connection point does not exceed 10 feet. Typically, this option can be used if a special OEM accessory cable is supplied that has a distance of less than 10 feet.

Connect the MCP100 accessory cable to the OEM-supplied stub connector.

In order for the MCP100 to receive J1939 data, the MAS CAN/J1939 wires must be connected to the truck’s J1939 CAN bus in the vehicle.

Follow all SAE guidelines when connecting to the J1939 data source.
Making the Connection

1. Locate the J1939 CAN wires on the MCP100 accessory cable. These are usually located either in the truck’s B pillar or in the center of the dash.

2. Connect J1939 CAN wires to truck’s J1939 stub.

3. If a stub does not exist, splice directly into the J1939 backbone. Locate a connector point and Ohm out (0 Ohms) CAN + and CAN - wires to Pin C (CAN high) and Pin D (CAN low) on the diagnostic connector.

4. Measure the J1939 bus resistance at the diagnostic connector. It should read 60 ohms.

5. Start the vehicle and verify that the truck is in good working order and displays no dash faults.

6. Verify that the J1939 data is being passed to the MAS from the data bus by monitoring the VDS screen on the MAS. (Refer to Verifying Data Source Connectivity on page 11-14.)

7. Stow and secure any loose wires, making sure to keep the wires clear of sharp edges and away from panels and moving parts.
Connecting J1708/J1587

1. Start the vehicle and verify that the truck is in good working order and displays no dash faults.

2. Verify that the engine ignition switch is OFF.

3. Locate the engine data diagnostic connector.

   - The data source wires to the engine data diagnostic connector are a twisted pair that should remain twisted after the installation is complete.
   - Consult the manufacturer’s wiring diagrams to identify the wires (some are marked DATA+ and DATA- or D/L+ and D/L-, and some are marked with numbers or colors).
   - Note which wire is plus (+) and which is minus (-).
   - To avoid confusion, cut and splice the positive wires first and then the negative wires. Because there usually is not much slack in the engine data diagnostic connector wires, be careful in cutting and splicing to them.

4. Splice the brown J1708+ wire from the accessory cable to the DATA+ (pin F) wire of the engine diagnostic connector. Reconnect the wires.
5. Splice the red J1708- wire from the accessory cable to the DATA- (pin G) wire of the engine diagnostic connector.

6. Start the vehicle and verify that the truck is in good working order and displays no dash faults.

7. Go to Verifying Data Source Connectivity on page 11-14.

8. Stow and secure any loose wires, making sure to keep the wires clear of sharp edges and away from panels and moving parts such as throttle and brake linkage.
   • Dress any bare-ended wires to prevent a short.
   • Maintain wire twists as close to the splice as possible.
Verifying Data Source Connectivity

1. Turn ignition ON.

2. Verifying Data Bus Connectivity

Check the VDS (Status) screen and verify that the MAS is enabled for J1939 or J1708.

- The light indicator will be green when a data source is enabled to receive data from that source.
- Data source must be active to increment data.

If you have any questions, contact Omnitracs Customer Support.

Note

Tap the Green Light/Red Light icon located along the bottom of the screen to display the VDS Summary screen and note the data source and LED status.

- **Black**: Not Configured/No Data
- **Green**: Active Data
- **Red**: Stale Data.

If data is not being passed, check connections and verify configurations.
3. **Verify Data Source**

   a. **VDS must be configured to J1939. Verify data is present.**

   Verify the following data fields are showing green and incrementing to confirm that J1939 data is present:

   - Speed RPM
   - Distance LTD Fuel LTD
   - Engine Time LTD

   **Note**

   Tap the VDS Details icon located along the bottom of the screen to display the VDS Details screen and note the data source.

   b. **VDS must be configured to J1587/J1708. Verify data is present.**

   Verify the J1587/J1708 data fields are showing green and incrementing to confirm that J1587/J1708 data is present.

   **Note**

   Tap the VDS Details icon located along the bottom of the screen to display the VDS Details screen and note the data source.
Topics in this chapter provide information and procedures for performing a basic system verification:

What Is Basic MCP100 System Verification? ............................................. 12-2
MCP100 System Screens ................................................................. 12-3
Flowchart—Basic MCP100 System Verification ................................. 12-13
Basic MCP100 System Verification Procedure ................................. 12-15
Omnitracs MCP100 System Verification Form .................................. 12-20

For technical questions, contact Omnitracs 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

For verifying the Performance Monitoring system, the Trailer Tracks system, and other accessories, see the appropriate chapter in this manual.

Note

GPS is required for both satellite and terrestrial networks.
What Is Basic MCP100 System Verification?

It is a functional system check that should be performed after installation or service to verify that the MCP100 is operating properly.

Performing System Verification

Shortly after you power up the MCP100, the Driver Warning screen displays. Scroll through the icons.

Tap the System icon to access the Display screens on the following pages.

System verification information has been stored on screens/tabs under the System icon.

How to Find the MCP100 Unit Address (UA)

Before calling Omnitracs Customer Support for assistance, write down the serial number of the MAS.

1. Scroll down to the System icon.
2. Tap the **System** tab.

**MCP100 System Screens**

**System Screen**

Tap the **System** tab to access system information about the MCP100.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Address</td>
<td>• Also called the UNIT SERIAL NUMBER.</td>
</tr>
<tr>
<td></td>
<td>• Shows the mobile unit (MCP100) ID, e.g., 105000xxx.</td>
</tr>
<tr>
<td></td>
<td>• Tells the dispatcher the correct address for sending messages to the vehicle.</td>
</tr>
<tr>
<td></td>
<td>• If the MCP100 is replaced, this field will display a different address.</td>
</tr>
</tbody>
</table>
## System Screen

### System Verification

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Connection          | • Indicates whether the link within the terrestrial data modem (TDM) is transmitting properly.  
• Indicates whether the link within the satellite data modem (SDM) is transmitting properly. |
| System Status       | Indicates the MCP100’s operational status:  
• Good is displayed if the MCP100 is operating properly.  
• A numerical error code (e.g., 10000) is displayed if the MCP100 detects a problem.  
• Refer to the appropriate section in the *MCP100 Diagnostic Guide* for troubleshooting procedures.  
• Quiet is displayed within seconds after you turn the ignition OFF. |
| Ignition            | • Ignition Off is displayed within seconds after you turn the ignition OFF.  |
| Database State      | Indicates the MCP100’s database status:  
• SyncComplete is displayed if customer and mobile unit information has been received by the MCP100 and is up-to-date. This is the desired state.  
• Out of Sync is displayed if the mobile unit information has not been received by the MCP100 and is waiting to be updated. |
| Last DB Sync        | Indicates the date of the most recent SyncComplete status for the MCP100.  |
| Vehicle Info Msgs   | Indicates the total number of messages the MCP100 has received from the electronic control module (ECM) since the ignition was turned ON.  |
| Unread Messages     | • Indicates the number of messages the MCP100 has received but that have not been read.  
• This number increases as the MCP100 receives new messages, and decreases as they are read. |
| Usr Msgs Pending    | Indicates the number of text messages the MCP100 has in the queue to be sent.  |
| All Msgs Pending    | Indicates the total number of all messages the MCP100 is currently sending.  |
| MDU Firmware        | Indicates the software version currently installed on the media display unit (MDU).  |
| MAS Firmware        | Indicates the software version currently installed on the mobile application server (MAS), e.g., 10.22.13.  |
| MAS WIN OS          | Indicates the Windows operating system currently installed on the MAS.  |
**OVT/CDMA Screens**

Tap the **OVT/CDMA** tab to access antenna information about the MCP100, such as signal strength.

There are five OVT/CDMA screens, which you navigate by tapping the screen and then using the arrow keys to move from screen to screen.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| RSSI       | • Received Signal Strength Indication—The strength of a wireless communication network signal being received by the antenna during forward link acquisition to the wireless network provider.  
            • RSSI should be less than 100.                                                                                                           |
| Registered | • MCP100 terrestrial system checks network coverage every 3 minutes.  
            • If the unit is within the RegisteredHomeNetwork, it is in home network coverage.  
            • If the unit is RegisteredRoaming, it is either roaming to find the home network or roaming to find another network. |
| Network Type| IS2000A.                                                                                                                                     |
| SID        | System Identification Number—The number that allows the unit to quickly register on the cellular network.                                 |
| NID        | Network Identification Number.                                                                                                               |
Tap the **SDM** tab to access antenna information about the MCP100, such as signal strength.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>The serial number of the SDM.</td>
</tr>
<tr>
<td>FL C/No</td>
<td>Signal strength received from the data satellite (the forward signal). Typically, values should be greater than 50.</td>
</tr>
<tr>
<td>RL C/No</td>
<td>Signal strength received from the MCP100 (the return signal). Typically, values should be greater than 33.</td>
</tr>
<tr>
<td>Software Version</td>
<td>Indicates the firmware version currently installed on the SDM.</td>
</tr>
<tr>
<td>Group Addresses</td>
<td>Shows the group ID to which the MCP100 is assigned. Also shows the number of other groups, which the MCP100 is a member. Numbers are defined and used by the dispatcher to address the fleet or groups of MCP100s.</td>
</tr>
<tr>
<td>PHY State</td>
<td>Indicates the physical state of the antenna.</td>
</tr>
<tr>
<td>Hardware Version</td>
<td>Indicates the SDM hardware version.</td>
</tr>
</tbody>
</table>
**GPS Screen**

Tap the **GPS** tab whenever you want to see basic GPS information.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| Last update | • The time of the last GPS update.  
• This value should update every second. |
| Latitude | The last received latitude value. |
| Longitude | The last received longitude value. |
| Mode | Indicates the MCP100’s GPS status:  
• **3-D** is displayed if the receiver is able to view three or more GPS satellites. Under normal performance, a 3-D mode will be displayed.  
• **2-D** is displayed if the receiver is able to calculate a position, but has a limited view to the GPS satellites.  
• **NO FIX** is displayed when the GPS satellites cannot be viewed. |
| Ground Speed | Speed calculated by GPS through a change in vehicle location. |

**Config Screen**

Tap the **Config** tab whenever you want to see the basic configuration of the unit.

<table>
<thead>
<tr>
<th>System</th>
<th>0V/0C/0A</th>
<th>GPS</th>
<th>Config</th>
<th>Battery</th>
<th>Engineering</th>
<th>CER</th>
<th>&lt;</th>
<th>&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powerdown</td>
<td>60 min</td>
<td>Panic</td>
<td>Disabled</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wakeup</td>
<td>60 min</td>
<td>Panic Vel.</td>
<td>Disabled</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total time</td>
<td>180 min</td>
<td>Stealth</td>
<td>Disabled</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Remaining</td>
<td>5 min</td>
<td>Panic Config</td>
<td>Disabled</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motion Screen blanking</td>
<td>Disabled</td>
<td>Tamper Detect</td>
<td>Disabled</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ign On MPRs</td>
<td>False</td>
<td>DOD/EST MPRs</td>
<td>False</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ign MPRs</td>
<td>False</td>
<td>MPRs Filter</td>
<td>False</td>
<td>2-wire</td>
<td>Disabled</td>
<td>Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Powerdown              | • Number of minutes after ignition is turned OFF when the MCP100 will go into sleep mode.  
|                        | • Configured by dispatch.                                                   |
| Wakeup                 | • The frequency the MCP100 wakes up from sleep mode to check for dispatch messages.  
|                        | • Configured by dispatch.                                                   |
| Total Time             | • Number of minutes the MCP100 draws power from the vehicle battery with the ignition OFF.  
|                        | • Configured by dispatch.                                                   |
| Time Remaining         | Number of minutes before the MCP100 goes into sleep mode.                   |
| Motion/screen Blanking | • Indicates if the display screen will be active when motion is detected (shown as Disabled or BlankEntireScreen).  
|                        | • Configured by dispatch.                                                   |
| Ign ON MIPRs           | Indicates if a mobile-initiated position report will be sent when ignition is turned ON. |
| BOT/EOT MIPRs          | Indicates if beginning of trip and end of trip mobile-initiated position reports will be sent. |
| MIPR Freq              | Indicates the frequency (HH:MM:SS) of mobile-initiated position reports.     |
| Panic                  | Indicates whether the panic button notification feature is enabled.         |
| Panic Voice            | Indicates if an audio message will be played (TTS) when a panic button press is detected. |
| Stealth                | Indicates whether panic notifications will show in the messaging Outbox.     |
| Panic Config           | Indicates how hardware needs to be connected for panic button presses to be detected. |
| Tamper Detect          | Indicates if the MCP100 is enabled or disabled for tamper detection.        |
**Battery Screen**

Tap the **Battery** tab whenever you want to see the state of the backup battery.

![Battery Screen](image)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup Battery</td>
<td>Indicates the backup battery is detected.</td>
</tr>
<tr>
<td>Results of last test</td>
<td>Indicates the voltage of the backup battery when last tested.</td>
</tr>
<tr>
<td>Next scheduled auto test</td>
<td>The date the next automatic test will be performed.</td>
</tr>
<tr>
<td>Test Battery</td>
<td>Used to perform a manual battery test.</td>
</tr>
</tbody>
</table>

**Engineering Screen**

This screen is for engineering purposes only.
CER Screen

Tap the CER tab to access the screen that captures and reports critical event information, such as hard braking, vehicle speed, location, stability control (VDC), and panic button events, to the customer before and after the event occurs.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CER Enabled/disabled</td>
<td>If enabled, the MCP100 captures CER events.</td>
</tr>
<tr>
<td>Speech Enabled/disabled</td>
<td>If enabled, what is printed in the alert pop-ups is spoken.</td>
</tr>
<tr>
<td>Hard Braking Minimum Speed</td>
<td>Speed at which mobile unit detects hard brake events.</td>
</tr>
<tr>
<td>Hard Braking Deceleration Rate</td>
<td>The rate of deceleration that triggers a hard brake event (Default = 9 MPH/SEC).</td>
</tr>
<tr>
<td>VDC Enabled/disabled</td>
<td>Stability control is enabled/disabled.</td>
</tr>
<tr>
<td>VDC Minimum Speed</td>
<td>Minimum speed at which mobile unit detects VDC notifications.</td>
</tr>
<tr>
<td>VDC On Threshold</td>
<td>Number of ATC (PID hex value is 97) “on” notifications that must be seen in a row before a VDC event is considered to be in progress.</td>
</tr>
<tr>
<td>VDC Off Threshold</td>
<td>Number of ATC (PID hex value is 97) “off” notifications that must be seen in a row before a VDC event is considered to have ended.</td>
</tr>
</tbody>
</table>
| VDC Bits Tracked           | Setting that determines which bits the mobile unit tracks to monitor stability control events:  
                              • Brake bits only  
                              • Engine bits only  
                              • Brake or Engine bits (Default)  
                              • Brake and Engine bits |
**VDS (Status) Screen**

- Access vehicle data services (VDS) information, by using the scroll bar and tapping the **VDS (Status)** tab.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1587</td>
<td>If vehicle is configured to receive data, the light is green if the vehicle is receiving data from the J1587 data source.</td>
</tr>
<tr>
<td>J1939</td>
<td>If vehicle is configured to receive data, the light is green if the vehicle is receiving data from the J1939 data source.</td>
</tr>
<tr>
<td>Trad</td>
<td>The PTO, which is always active (the light is always green).</td>
</tr>
</tbody>
</table>
| RCV   | • These are the packets of data being received on the data bus.  
        • Value should be constantly increasing. |
<p>| Xmt   | Packets of data being received on the data bus as requested (transmitted) packets. |
| Msg   | Packets of data being received on the data bus that are of longer length than the normal data packet size. |
| Brake | Brake light is green if the parking brake is engaged. |
| Ignition | Ignition light is green if the ignition is ON. |
| Panic | Panic light is green if PANIC is enabled. |
| CPU   | Shows MAS usage. |
| Memory | Amount of memory used. |</p>
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Speed of the vehicle.</td>
</tr>
<tr>
<td>Rpm</td>
<td>RPM of the vehicle.</td>
</tr>
<tr>
<td>Temp</td>
<td>Oil temperature.</td>
</tr>
<tr>
<td>Accel</td>
<td>Acceleration (throttle position) percentage.</td>
</tr>
<tr>
<td>Fuel</td>
<td>Life-to-date (LTD) fuel.</td>
</tr>
</tbody>
</table>
Flowchart—Basic MCP100 System Verification

Step 1: Turn ignition ON

Step 2: Move unit to acquire network signal

Step 3: Does MDU light up & display characters? Do backlight, volume, and brightness work?
- No: See Chapter 5 in the Omnitracs MCP Diagnostic Guide
- Yes: Go to Step 4

Step 4: Check NO SIGNAL light
- SAIL ON after 10 minutes: See Chapter 6 in the Omnitracs MCP Diagnostic Guide
- Still Flashing after 10 minutes: Call Omnitracs Customer Support

Step 5: Display System screen. Does Status display numerical code or Good?
- Status: ###: See appropriate chapter in the Omnitracs MCP Diagnostic Guide
- Status: GOOD: Go to Step 6

Step 6: Check Database State. Is database out of sync or sync complete?
- Out of Sync: See Chapter 12 in the Omnitracs MCP Diagnostic Guide
- Sync Complete: Go to Step 7

Step 7: Check signal strength. Is signal strength okay?
- FOR SATELLITE Low C/no values: See Chap 8 for satellite or Chap 9 for terrestrial in the Omnitracs MCP Diagnostic Guide
- FOR TERRESTRIAL RSSI >105: Go to Step 8

Step 8: Display GPS screen. Is Mode 3-D or 2-D / Last Update incrementing?
- Mode: No Fix Not incrementing: See Chapter 10 in the Omnitracs MCP Diagnostic Guide
- Mode: 3-D or 2-D Incrementing: Go to Step 9

Step 9: Display Battery screen. Touch the Test Battery button. Are test results good?
- Battery: Bad: See Chapter 17 in the Omnitracs MCP Diagnostic Guide
- Battery: Good: Go to Step 10

Step 10: Display System screen. Display numerical code or Good?
- Status: GOOD: Done
- Status: ###: See appropriate chapter in the Omnitracs MCP Diagnostic Guide
Flowchart—Basic MCP100 System Verification

1. Display Message screen. Send test message to dispatcher

2. Was message acknowledged by dispatcher?
   - No: See Chapter 7 in the Omnitracs MCP Diagnostic Guide
   - Yes: Go to Step 12

3. Have dispatcher send test message to MCP

4. Was test message received at MCP?
   - No: See Chapter 7 in the Omnitracs MCP Diagnostic Guide
   - Yes: Go to Step 14

5. Can you play message with RCD?
   - No: See Chapter 15 in the Omnitracs MCP Diagnostic Guide
   - Yes: Go to Step 15

6. Turn ignition OFF

7. Does MDU stay on with ignition OFF?
   - No: See Chapter 11 in the Omnitracs MCP Diagnostic Guide
   - Yes: Go to Step 17

8. Does Status change to Ignition Off within 10 minutes?
   - No: See Chapter 12 in the Omnitracs MCP Diagnostic Guide
   - Yes: Verification complete

System OK

For verification procedures for optional accessories, see the appropriate chapter.
**Basic MCP100 System Verification Procedure**

<table>
<thead>
<tr>
<th>Turn the ignition ON</th>
<th>The steps in this procedure match the steps on the flowcharts on the previous pages. The steps are not always sequential—you may be instructed to skip steps.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Turn the vehicle ignition ON; the engine does not have to be running.</td>
<td></td>
</tr>
<tr>
<td><strong>2.</strong> Make sure the vehicle is in a good location.</td>
<td></td>
</tr>
<tr>
<td>If you are using the terrestrial MCP100, the vehicle should be in a location where the antenna is able to acquire a wireless communication network signal. Additionally, a clear view of the sky is needed for GPS when the unit is brought on the air for the first time, or after any reset.</td>
<td></td>
</tr>
<tr>
<td>If you are using the satellite MCP100, the SDM should have a clear view of the satellite which is located above the equator, roughly south of Georgia.</td>
<td></td>
</tr>
</tbody>
</table>
3. Check the display unit and verify that the screen lights up and displays characters; and that the backlight, brightness, and volume controls work correctly.

The **BACKLIGHT** key turns the display unit backlight **ON** and **OFF**.

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

The **VOLUME CONTROL** key adjusts the volume of the MDU speaker. Press the top of this key to increase the volume or the bottom of the key to decrease the volume.

- If the screen displays characters, and the controls work correctly, go to step 4.
- If the screen is dark, or the controls do not work correctly, perform the diagnostic procedure in Chapter 5 in the *MCP100 Diagnostic Guide*.

4. Check the display unit NO SIGNAL light. When the MCP100 acquires the PCS network/satellite signal, the NO SIGNAL light goes out.

- If the NO SIGNAL light goes out, go to step 5.
- If the NO SIGNAL light continues to flash after 10 minutes, call Omnitracs Customer Support:
  
  US: 800-541-7490
  Canada: 800-863-9191

- If the NO SIGNAL light stays on after 10 minutes, perform the diagnostic procedure in Chapter 6 in the *MCP100 Diagnostic Guide*.

If the MCP100 was just installed, it may take as long as 5 minutes for the MCP100 to acquire the PCS network/satellite signal.
5. Go to the Home screen and tap the **System** icon. Tap the **System** tab.

Check the System Status field and verify that the Status is Good.

- If the Status is Good, go to step 6.
- If the Status is a numerical value, go to the appropriate diagnostic procedure for that value in the *MCP100 Diagnostic Guide*.

6. Check the Database State field and verify that it is SyncComplete. This may take up to 10 minutes.

- If the Database State is SyncComplete, go to step 8.
- If the Database State is Out of Sync, perform the diagnostic procedure in Chapter 13 in the *MCP100 Diagnostic Guide*.

7. Check the signal strength.

   Tap the SDM tab. The FL C/No value should be greater than 50; the RL C/No value should be greater than 33.

   - If the C/No values are in a high range, go to 2.step 8.
   - If the C/No values are in a low range, perform the diagnostic procedure in Chapter 8 in the *MCP100 Diagnostic Guide*.

   Tap the OVT/CDMA tab. Check the RSSI value on the screen. The *desired* RSSI value should be less than 105.

   - If the RSSI value is less than 105, go to 2.step 8.
   - If the RSSI value is greater than 105, perform the diagnostic procedure in Chapter 9 in the *MCP100 Diagnostic Guide*. 
8. Tap the **GPS** tab.

Check that the Mode is 3-D or 2-D and that the LAST UPDATE field is incrementing every second.

- If the Mode is 3-D or 2-D and the LAST UPDATE field is incrementing, go to step 9.
- If the Mode is No Fix, and the LAST UPDATE field is not incrementing, perform the diagnostic procedure in Chapter 10 in the *MCP100 Diagnostic Guide*.

9. Tap the **Battery** tab. Tap the **Test Battery** button.

**Note**

*It may take a few minutes to perform this test.*

After the field updates, check that the last test results are Good.

- If the results of last test are Good, go to step 10.
- If the results of last test are Bad, perform the diagnostic procedure in Chapter 17 in the *MCP100 Diagnostic Guide*.

10. Send a test message to the dispatcher. Go to the Home screen and tap the **Messages** icon.

- Tap the **Create Msg** tab.
- Tap the **Free Form** button.
- Type the message text including the truck number.
- Tap the **SEND** button.
- Tap **Yes** to send the message.
11. Tap the **Outbox** tab to display the message that was just sent. Orange arrows indicate the message is in transit; a green “✓” (check mark) indicates the message has been acknowledged.
   - If the message is acknowledged, go to step 12.
   - If the message is not acknowledged, perform the diagnostic procedure in Chapter 7 in the *MCP100 Diagnostic Guide*.

12. Have the dispatcher send a test message to the MCP100. If the dispatcher is not available, call Omnitracs Customer Support (800-541-7490) to have the message sent.

   If the Remote Message Waiting Light or Message Waiting Buzzer feature is installed, you can also test them at this time by having an Important or Sleepy Important message sent.

13. After a few minutes, the unit should chirp, the Message Waiting Light should come on, and a voice notification will tell you the message has been received. Tap the **Inbox** tab to display the dispatcher’s message.
   - If the MCP100 received the message, go to step 14.
   - If the MCP100 did not receive the message, perform the diagnostic procedure in Chapter 7 in the *MCP100 Diagnostic Guide*. 
14. Verify that the message can be played with the RCD by pressing the RCD Home key once and the center key twice.
   - If the message can be played with the RCD, go to step 15.
   - If the message cannot be played with the RCD, perform the diagnostic procedure in Chapter 15 in the MCP100 Diagnostic Guide.

15. Turn the vehicle ignition OFF.

16. Make sure the display unit stays on with the ignition OFF.
   - If the display unit stays on, go to step 17.
   - If the display unit does not stay on, perform the diagnostic procedure in Chapter 11 in the MCP100 Diagnostic Guide.

17. Tap the System icon. Tap the System tab and verify that the STATUS field changes from Good to Ignition Off within 10 minutes.
   - If the Status changes to Ignition Off within 10 minutes, System Verification is complete.
   - If the Status does not change to Ignition Off within 10 minutes, perform the diagnostic procedure in Chapter 12 in the MCP100 Diagnostic Guide.

For verifying the Performance Monitoring system, the Trailer Tracks system, and other accessories, see the appropriate chapter in this manual.

**Omnitracs MCP100 System Verification Form**

You can make copies of the System Verification Form on the following page and record important information you may want to keep concerning the vehicle and the MCP100.
# System Verification

## Omtrac MCP100 System Verification Form

<table>
<thead>
<tr>
<th>Installer(s):</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Unit S/N:</td>
<td>TDM S/N:</td>
</tr>
</tbody>
</table>

## Vehicle Information

<table>
<thead>
<tr>
<th>Driver:</th>
<th>Truck #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make:</td>
<td>Model:</td>
</tr>
<tr>
<td>Engine Type:</td>
<td></td>
</tr>
</tbody>
</table>

## Accessories Installed

- [ ] Buzzer
- [ ] Panic Button
- [ ] RMWL
- [ ] Trailer Tracks
- [ ] Other

## MCP100—System Icon/System Tab

<table>
<thead>
<tr>
<th>Unit Address:</th>
<th>Connection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status with ignition ON:</td>
<td>System Status with ignition OFF:</td>
</tr>
<tr>
<td>Is Database State “SyncComplete”?</td>
<td>With ignition ON, is “Vehicle Info Msgs” rapidly incrementing several times per second?</td>
</tr>
<tr>
<td>MAS Firmware:</td>
<td></td>
</tr>
</tbody>
</table>

## MCP100—System Icon/OVT/CDMA Tab

<table>
<thead>
<tr>
<th>RSSI:</th>
<th>What is the “Registered” status (circle):</th>
</tr>
</thead>
<tbody>
<tr>
<td>RegisteredHomeNetwork</td>
<td>RegisteredRoaming</td>
</tr>
<tr>
<td>Network Type: IS_2000A?</td>
<td>Other Network Type:</td>
</tr>
<tr>
<td>SID:</td>
<td>Channel:</td>
</tr>
</tbody>
</table>

## MCP100—System Icon/SDM Tab

<table>
<thead>
<tr>
<th>FL C/No:</th>
<th>RL C/No</th>
</tr>
</thead>
</table>

## MCP100—System Icon/GPS Tab

<table>
<thead>
<tr>
<th>Is GPS “Last update” status updating every second?</th>
<th>With ignition ON, is “J1708 Rx MSGs” rapidly incrementing several times per second?</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA MISSING</td>
<td></td>
</tr>
</tbody>
</table>

## MCP100—System Icon/Battery Tab

<table>
<thead>
<tr>
<th>Press “Test Battery Now” button. Are “Results of the last test” Good?</th>
<th>Is Backup Battery detected?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Connections (circle):</td>
<td></td>
</tr>
<tr>
<td>J1708</td>
<td>J1939</td>
</tr>
</tbody>
</table>

## Message Verification

- [ ] Successfully Sent
- [ ] Successfully Received

## Text-to-Speech Verification

- [ ] Message successfully played

## Installation Notes:
Performance Monitoring Verification

Topics in this chapter provide the procedures for performing performance monitoring system installations.

Performance Monitoring System Overview .................................................. 13-2
Performance Monitoring System Verification .............................................. 13-2
Performance Monitoring System Display Screens ................................. 13-4
Special Alert Display Notifications ............................................................ 13-13
Power Take-off (PTO) Overview ................................................................. 13-14
PTO Data Input Verification Procedure ...................................................... 13-16

For technical questions, contact Omnitracs 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
Performance Monitoring System Overview

The Performance Monitoring system is an optional MCP100 application that records vehicle and driver performance data. The data is then retrieved from the MCP100 by the host computer either manually or automatically at preset intervals.

The hardware installation on the vehicle consists of:

1. Connecting the MCP100 to the data link or the standard speed and RPM sensors.
2. Sending Performance Monitoring parameters from the host computer.
3. Performing system verification.

Performance Monitoring System Verification

Conducting a Road Test

First verify that Performance Monitoring parameters have been sent to the unit and received. Use the Parameters tab and verify the Tag field is not “0.”

Have a passenger accompany you on the road test to review the results on the media display unit (MDU).

1. Start the engine.
2. Tap the SensorTRACS (Performance Monitoring) icon and tap the Performance tab to access the Performance screen.
3. Road test the vehicle over a distance of at least one mile.
• Note the beginning mileage on the vehicle’s odometer.
• Have a passenger compare the speed information on the MDU to the speedometer’s readout.

4. Drive the vehicle at various speeds during the road test.
   • Compare the speedometer readout with the value displayed on the MDU in the SPD field and verify that they are the same.

5. When you’re finished, check the change in distance (MI field) on the MDU to verify that it corresponds with the distance of the road test, as indicated by the vehicle’s odometer.

6. If Life-to-Date distance on the Odometer screen does not match the truck’s odometer, it could be
   • the vehicle’s ECM was replaced
   • the ECU needs programming
   • there is a mismatch between the J1587 and J1939 data links
Performance Monitoring System Display Screens

**Summary Screen**

Data associated with the active driver since the last Performance Monitoring system data extract.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Active driver name. If no driver is currently logged on as the active driver, “UNIDENTIFIED” is displayed.</td>
</tr>
<tr>
<td>Logged in since</td>
<td>Number of minutes current driver has been logged in.</td>
</tr>
<tr>
<td>Eng Time</td>
<td>Engine time in minutes and seconds.</td>
</tr>
<tr>
<td>PTO</td>
<td>Indicates if PTO configuration is using Pump or Compressor.</td>
</tr>
<tr>
<td>Trip State</td>
<td>Current trip state. Possible values are: WARMING IDLE; WARM IDLE; PRE-INTERTRIP IDLE; PRE-TRIP RUN; PRE-TRIP IDLE; TRIP RUN; TRIP IDLE; COOL IDLE; POST-INTERTRIP IDLE; ENGINE STOP; PTO COMP; PTO PUMP; PTO ENGN.</td>
</tr>
<tr>
<td>MI</td>
<td>Total distance since beginning of trip detected.</td>
</tr>
<tr>
<td>Over RPM</td>
<td>Computed over RPM percentage.</td>
</tr>
<tr>
<td>Over IDLE</td>
<td>Over idle percentage.</td>
</tr>
<tr>
<td>Over Speed</td>
<td>Computed overspeed percentage.</td>
</tr>
<tr>
<td>Fuel</td>
<td>Total fuel consumed for trip.</td>
</tr>
<tr>
<td>MPG</td>
<td>Computed fuel mileage in miles/gallon (or km/gal).</td>
</tr>
</tbody>
</table>
Performance Screen

Data associated with the active driver since the last Performance Monitoring system data extract.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Active driver name. If no driver is currently logged on as the active driver, “UNIDENTIFIED” is displayed.</td>
</tr>
<tr>
<td>Logged in since</td>
<td>Number of minutes current driver has been logged in.</td>
</tr>
<tr>
<td>PTO</td>
<td>Indicates if PTO is Enabled or Disabled</td>
</tr>
<tr>
<td>Trip</td>
<td>Current trip number.</td>
</tr>
<tr>
<td>Eng Time</td>
<td>Total elapsed time the engine has been running.</td>
</tr>
<tr>
<td>Drive Time</td>
<td>Driving (road) time.</td>
</tr>
<tr>
<td>Trip State</td>
<td>Current trip state.</td>
</tr>
<tr>
<td>MI</td>
<td>Total miles accumulated.</td>
</tr>
<tr>
<td>Speed</td>
<td>Current vehicle speed.</td>
</tr>
<tr>
<td>RPM</td>
<td>Current engine RPM.</td>
</tr>
</tbody>
</table>
Violations Screen

Data associated with the active driver since the last Performance Monitoring system data extract.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over RPM</td>
<td>Displays while RPM time is accumulating.</td>
</tr>
<tr>
<td>(&gt;1800)</td>
<td>Accumulates by one each time vehicle exceeds RPM threshold for longer than one minute.</td>
</tr>
<tr>
<td>(Max)</td>
<td>Longest single period of time spent over RPM threshold.</td>
</tr>
<tr>
<td>Over Speed</td>
<td>Displays while overspeed time is accumulating.</td>
</tr>
<tr>
<td>(&gt;50)</td>
<td>Accumulates by one each time vehicle exceeds speed threshold for longer than one minute.</td>
</tr>
<tr>
<td>(Max)</td>
<td>Longest single period of time spent over speed threshold.</td>
</tr>
<tr>
<td>Ex. Speed (&gt;66)</td>
<td>Displays while excessive speed time is accumulating.</td>
</tr>
<tr>
<td>Warm Up &lt;10</td>
<td>Minimum amount of idle time engine is allowed to warm up.</td>
</tr>
<tr>
<td>Cool &lt;10</td>
<td>Minimum amount of idle time engine is allowed to cool down.</td>
</tr>
<tr>
<td>I/T Idle Time</td>
<td>Displays every 60 seconds for up to five times while intertrip idle time is accumulating.</td>
</tr>
</tbody>
</table>
### Parameters Screen

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Active driver name. If no driver is currently logged on as the active driver, “UNIDENTIFIED” is displayed.</td>
</tr>
<tr>
<td>Logged in since</td>
<td>Number of minutes the active driver has been logged in.</td>
</tr>
<tr>
<td>Beep</td>
<td>Unidentified driver beep period in minutes.</td>
</tr>
<tr>
<td>BOT</td>
<td>Distance vehicle must travel before the MCP100 declares the Beginning of Trip and starts Trip_Run recording.</td>
</tr>
<tr>
<td>EOT</td>
<td>End of Trip time threshold in minutes.</td>
</tr>
<tr>
<td>SPD Cal</td>
<td>Speed calibration parameter.</td>
</tr>
<tr>
<td>RPM Cal</td>
<td>RPM calibration parameter.</td>
</tr>
<tr>
<td>Park Fuel</td>
<td>Current value of the amount of fuel used while parked.</td>
</tr>
<tr>
<td>Idle Fuel</td>
<td>Current value of the idle fuel.</td>
</tr>
<tr>
<td>Coast OOG</td>
<td>Coasting out-of-gear time (displayed in minutes and seconds).</td>
</tr>
<tr>
<td>Gear</td>
<td>Current gear ratio based on the current speed and RPM.</td>
</tr>
<tr>
<td>IGN</td>
<td>Ignition violation time followed by : the ignition violations count.</td>
</tr>
<tr>
<td>Tag</td>
<td>Parameter version indicator.</td>
</tr>
<tr>
<td>AutoExt</td>
<td>Dispatch-configured extract frequency (in days).</td>
</tr>
<tr>
<td>Extract</td>
<td>Unit extract frequency.</td>
</tr>
</tbody>
</table>
## Odometer Screen

### Performance Monitoring Verification

### Odometer Screen

![Odometer Screen Diagram]

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Active driver name. If no driver is currently logged on as the active driver, “UNDENTIFIED” is displayed.</td>
</tr>
<tr>
<td>Logged in since</td>
<td>Number of minutes current driver has been logged in.</td>
</tr>
<tr>
<td>Life to Date Distance</td>
<td>Total distance the vehicle has traveled in its lifetime if data is provided by the ECM, otherwise it is Life To Date Performance Monitoring system miles only.</td>
</tr>
<tr>
<td>Source</td>
<td>Indicates that the signal source for the vehicle’s distance is the standard speed sensor (AXLE) or the J1708/1587 data link (J1708).</td>
</tr>
<tr>
<td>Axle Sensor Calibration</td>
<td>Speed or distance calibration value. Number should be the same as the SPD CAL value displayed on the Performance Monitoring Parameters screen.</td>
</tr>
<tr>
<td>RPM Sensor Calibration</td>
<td>Speed or distance calibration value. Number should be the same as the RPM CAL value displayed on the Performance Monitoring Parameters screen.</td>
</tr>
</tbody>
</table>
# PTO Screen

## Performance Monitoring Verification

### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Active driver name. If no driver is logged on as the active driver, “UNIDENTIFIED” is displayed.</td>
</tr>
<tr>
<td>Logged in since</td>
<td>Number of minutes current driver has been logged in.</td>
</tr>
<tr>
<td>PTO</td>
<td>Current state of the PTO (enabled or disabled).</td>
</tr>
<tr>
<td>Delay</td>
<td>Dispatch-configured time-to-start for PTO time.</td>
</tr>
<tr>
<td>PTO Fuel</td>
<td>PTO fuel data in gallons.</td>
</tr>
<tr>
<td>PTO Time</td>
<td>Total time logged as PTO data. (Displayed in minutes and seconds until the elapsed time exceeds 1 hour; then it is displayed in hours and minutes.)</td>
</tr>
<tr>
<td>Inputs: Pump</td>
<td>Displays “Y” if the PTOP input is active.</td>
</tr>
<tr>
<td>Inputs: Compressor</td>
<td>Displays “Y” if the PTOC input is active.</td>
</tr>
<tr>
<td>Inputs: Engine</td>
<td>Displays “Y” if the PTOE input is active.</td>
</tr>
</tbody>
</table>

**Note**

If the PTO is DISABLED or if the VEHICLE IS IN MOTION (<20 MPH), the INPUTS will always read “N.” If both the PTOP and PTOC inputs are active, then only the PTOP input will read “Y.”

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor Revs</td>
<td>Current value of PTOC revolutions.</td>
</tr>
<tr>
<td>Pump Revs</td>
<td>Current value of PTOP (pump output shaft) revolutions.</td>
</tr>
<tr>
<td>Eng/1708 Revs</td>
<td>Current value of PTOE (engine crankshaft) revolutions.</td>
</tr>
</tbody>
</table>
## Installer Screen

![SensorTRACS](image)

### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Active driver name. If no driver is logged on as the active driver, “UNIDENTIFIED” is displayed.</td>
</tr>
<tr>
<td>Logged in since</td>
<td>Number of minutes current driver has been logged in.</td>
</tr>
<tr>
<td>J1708 Rx MSGS</td>
<td>Number of J1708 messages received from the engine controller with the engine running. If this number is not steadily incrementing several times per second when the engine is running, the J1708/1587 data link is not correctly connected to the MCP100.</td>
</tr>
<tr>
<td>PTAG</td>
<td>Parameter version tag.</td>
</tr>
<tr>
<td>Data Missing</td>
<td>Any data that is missing from the J1708/1587 data link. Field values are described on page 13-11.</td>
</tr>
<tr>
<td>Active Faults</td>
<td>Performance Monitoring faults that are currently active. Field values are described in the table on page 13-12.</td>
</tr>
<tr>
<td>J1708 Enabled or J1708 Disabled</td>
<td>The MCP100 is looking at the J1708/1587 data link for the Performance Monitoring data. The MCP100 is looking at standard and RPM sensors or J1708/1587 hybrid speed sensor for the Performance Monitoring data.</td>
</tr>
<tr>
<td>Field Value</td>
<td>Meaning</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>0</td>
<td>Missing Road Speed (MPH)</td>
</tr>
<tr>
<td>1</td>
<td>Missing Engine Speed (RPM)</td>
</tr>
<tr>
<td>2</td>
<td>Missing Total Distance</td>
</tr>
<tr>
<td>3</td>
<td>Missing Total Engine Hours</td>
</tr>
<tr>
<td>4</td>
<td>Missing Total Fuel</td>
</tr>
<tr>
<td>5</td>
<td>Missing Throttle Position</td>
</tr>
<tr>
<td>6</td>
<td>Missing Ambient Temperature</td>
</tr>
<tr>
<td>7</td>
<td>Missing Parking Brake Status</td>
</tr>
<tr>
<td>8</td>
<td>Missing PTO Status</td>
</tr>
<tr>
<td>9</td>
<td>Automatic Traction Control (ATC)</td>
</tr>
</tbody>
</table>
# Performance Monitoring Faults and Descriptions

<table>
<thead>
<tr>
<th>Display Shows</th>
<th>Associated Fault</th>
<th>Description/Symptom</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Power (MCP100)</td>
<td>Power detected OFF for more than the wake-up time.</td>
<td>Main power was lost, causing the MCP to stay asleep longer than its wake-up interval.</td>
</tr>
<tr>
<td>1</td>
<td>RPM Zero (MCP100)</td>
<td>RPM zero when speed is non-zero.</td>
<td>- RPM sensor or connection problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- J1708 selection parameter set wrong.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- In rare cases, no idle can be caused by faulty axle sensor input (e.g., wires reversed) causing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a positive reading for speed while the vehicle is stationary.</td>
</tr>
<tr>
<td>2</td>
<td>Bad Ignition (MCP100)</td>
<td>Ignition OFF and speed or RPM non-zero.</td>
<td>Problem with MCP100’s ignition line wiring or fuse.</td>
</tr>
<tr>
<td>3</td>
<td>RPM Sensor (MCP100)</td>
<td>Engine posted PID (194) and PID (190).</td>
<td>RPM sensor or connection problem to the engine, detected by the engine’s diagnostics.</td>
</tr>
<tr>
<td>4</td>
<td>Speed Sensor (MCP100)</td>
<td>Engine posted PID (194) and PID (84).</td>
<td>Speed sensor or connection problem to engine, detected by the engine’s diagnostics.</td>
</tr>
<tr>
<td>9</td>
<td>LTD Mismatch (MCP100)</td>
<td>LTD mismatch with stored MCP100 data.</td>
<td>- Engine run with main power disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Engine run with data link disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Engine run with ignition line disconnected.</td>
</tr>
<tr>
<td>A</td>
<td>Bad Speed (MCP100)</td>
<td>More than 2 hrs IGN = ON with Spd = 0, RPM greater than 1300.</td>
<td>- Speed sensor or connection problem—MCP100.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Speed sensor or connection problem—engine.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Engine speed sensor parameter not enabled.</td>
</tr>
<tr>
<td>B</td>
<td>0 Spd and RPM (MCP100)</td>
<td>More than 2 hrs with IGN = ON with Spd = 0, RPM = 0.</td>
<td>- Disconnect of entire accessory cable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- J1708 selection parameter set wrong.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Data link connection problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Driver using ignition position for accessory operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- MCP100 ignition line wired to accessory position.</td>
</tr>
<tr>
<td>D</td>
<td>MCP100 Speed (MCP)</td>
<td>Speed signal constant for more than 5 minutes.</td>
<td>A pulse generator may have been connected to either the MCP100 or the engine.</td>
</tr>
<tr>
<td>E</td>
<td>Hard Braking Event</td>
<td>Speed is suddenly decreased by more than 9 MPH/second (speed must be above 20 MPH</td>
<td>Driver is braking too quickly (hard braked).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>for this fault to occur.</td>
<td></td>
</tr>
</tbody>
</table>
Special Alert Display Notifications

Certain notifications can be configured to show when the MCP100 needs to warn or remind the driver of certain pending conditions.

Warning Notifications

Warning notifications are accompanied by an audible chirping beep sound from the display unit speaker.

COASTING OUT OF GEAR. Displays while coasting-out-of-gear time is accumulating.

EXCESSIVE OVERSPEED. Displays while excessive speed time is accumulating.

OVERSPEED. Displays while overspeed time is accumulating.

OVERRPM. Displays while over RPM time is accumulating.

INTERTRIP IDLE IN 60 SECONDS. Displays only once 60 seconds before intertrip idle accumulation begins.

INTERTRIP IDLE. Displays every 60 seconds for up to five times while intertrip idle time is accumulating.
**Power Take-off (PTO) Overview**

This option provides customers with the ability to log the time the vehicle engine is used for non-transportation purposes, such as when it is powering auxiliary devices.

In order to log PTO time, one of the two PTO wires must be connected to the pump or compressor input. Also, a unit must be configured to record PTO. Configuration values are sent through Performance Monitoring (SensorTRACS) parameters.

Typically, there are two types of switching methods, those switched to +12 VDC and those switched to ground.

**PTOP (Power Take-off Pump)/PTOC (Power Take-off Compressor)**

Use your multi-meter to determine which type of circuit you are connecting to by engaging the PTOP/PTOC and measuring for voltage.

**A. Switched +12VDC Circuits**

Connect to PTOP or PTOC Wires (Accessory Cable)  
To PTO indicator light on dash

Indicator Light

Ground

PTO Air line  
To air switch on dash to engage PTO device pump or compressor

PTO ON/ OFF Switch  
+12 VDC Ign switched

04AAA_217AQMCPP
B. Switched to Ground Circuits

If you only have a switched circuit that is low activated to the ground to detect PTO time, a relay must be used, as shown in the configuration below.
PTO Data Input Verification Procedure

1. Turn the vehicle ignition ON.

2. Turn the PTO device ON.

3. Navigate to the PTO screen.
   - Tap the SensorTRACS (Performance Monitoring) icon.

   **Note**
   If Performance Monitoring is grayed out, Performance Monitoring system is not enabled. Call your company dispatch to have this application enabled.

   - Tap the PTO tab.

4. Verify that PTO is ENABLED and the INPUTS field displays a Y according to what is active.
   - For PTO Information screen field values, see PTO Screen on page 13-9.

5. To verify PTO time is being recorded, check that the PTO TIME field is incrementing. Is this field incrementing?

   **Note**
   In order for the PTO time to be recorded, RPM must be >0, speed <20mph, and the PTO time delay must be reached.

   - If yes, PTO verification is complete.
   - If no, check the wire connections, see Power Take-off (PTO) Overview on page 13-14. Go to step 6.

6. Turn off PTO device. PTO time should now stop incrementing.
14

Vehicle Maintenance Installation

Topics in this chapter provide a basic overview of the vehicle maintenance service as a vehicle diagnostics tool that alerts the driver and the fleet of active vehicle diagnostics’ conditions.

Vehicle Maintenance Overview ................................................................. 14-2
Connecting the J1939 Wires ................................................................. 14-2
Vehicle Maintenance System Verification .............................................. 14-3

For technical questions, contact Omnitracs 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
Vehicle Maintenance Overview

Vehicle maintenance is a vehicle diagnostics tool that alerts the driver and the fleet of active vehicle diagnostics’ conditions. When a configured engine condition becomes active, the driver is alerted via the Vehicle Maintenance icon by displaying in orange the number of active conditions. An e-mail notification is also sent to a pre-subscribed list notifying fleet personnel of the active condition.

Feature Requirements

Connection to the J1939 datalink is required. The vehicle maintenance service only supports conditions from the J1939 datalink.

The following conditions are monitored at this time:

<table>
<thead>
<tr>
<th>Description</th>
<th>Source</th>
<th>PGN</th>
<th>SPN</th>
<th>FMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine power supply voltage (low)</td>
<td>0</td>
<td>65226</td>
<td>627</td>
<td>004</td>
</tr>
<tr>
<td>Auxiliary water pump pressure (high)</td>
<td>0</td>
<td>65226</td>
<td>073</td>
<td>003</td>
</tr>
<tr>
<td>Auxiliary water pump pressure (low)</td>
<td>0</td>
<td>65226</td>
<td>073</td>
<td>001</td>
</tr>
<tr>
<td>Fuel delivery pressure (high)</td>
<td>0</td>
<td>65226</td>
<td>094</td>
<td>003</td>
</tr>
<tr>
<td>Engine oil pressure (high)</td>
<td>0</td>
<td>65226</td>
<td>100</td>
<td>003</td>
</tr>
<tr>
<td>Engine oil pressure (low)</td>
<td>0</td>
<td>65226</td>
<td>100</td>
<td>001</td>
</tr>
<tr>
<td>Engine coolant temperature (high)</td>
<td>0</td>
<td>65226</td>
<td>110</td>
<td>000</td>
</tr>
<tr>
<td>Engine coolant temperature (low)</td>
<td>0</td>
<td>65226</td>
<td>110</td>
<td>004</td>
</tr>
<tr>
<td>Engine coolant level (high)</td>
<td>0</td>
<td>65226</td>
<td>111</td>
<td>003</td>
</tr>
<tr>
<td>Engine coolant level (low)</td>
<td>0</td>
<td>65226</td>
<td>111</td>
<td>001</td>
</tr>
<tr>
<td>Engine fuel temperature (high)</td>
<td>0</td>
<td>65226</td>
<td>174</td>
<td>003</td>
</tr>
<tr>
<td>Engine oil temperature (high)</td>
<td>0</td>
<td>65226</td>
<td>175</td>
<td>003</td>
</tr>
<tr>
<td>Engine oil temperature (above normal)</td>
<td>0</td>
<td>65226</td>
<td>175</td>
<td>000</td>
</tr>
<tr>
<td>Brake ABS valve (high)</td>
<td>11</td>
<td>65226</td>
<td>795</td>
<td>003</td>
</tr>
<tr>
<td>Brake ABS valve (low)</td>
<td>11</td>
<td>65226</td>
<td>798</td>
<td>004</td>
</tr>
</tbody>
</table>

Note

For aftermarket installations, the MCP100 J1939 conversion cable is needed. E-mail notification must be setup by the CSR.

Connecting the J1939 Wires

See Chapter 11 in this guide for detailed information.
Vehicle Maintenance System Verification

Refer to the following MDU screens to verify vehicle maintenance:

1. Go to the Vehicle Data Service (VDS) status screen. Tap the Home key and scroll down to the System icon. Tap the System icon and tap the VDS tab.

Various screen fields are described below.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCV</td>
<td>These are the packets of data being received on the data bus.</td>
</tr>
<tr>
<td>XMT</td>
<td>These are the packets of data being received on the data bus as requested (transmitted) packets.</td>
</tr>
<tr>
<td>MSG</td>
<td>These are the packets of data being received on the data bus that are of longer length than the normal data packet size.</td>
</tr>
</tbody>
</table>

With the ignition ON, verify the following on the VDS (Status) screen:

- The J1939 light is green. This confirms that the J1939 is enabled for the unit. The Rcv value should be constantly increasing.
  - If the J1939 light is red, there is an error.
  - If the J1939 light is black, the unit is not enabled for J1939.
- The Brake light is green if the parking brake is engaged.
- The Ignition light is green during this test.
2. Tap the **Home** icon and scroll down to the **Vehicle Maintenance** icon.

![Vehicle Maintenance Icon](image1)

**Note**

*If the Vehicle Maintenance icon is not highlighted blue, the service is not enabled for the unit and must be turned on via the Customer Portal.*

3. Simulate an engine condition. The number of conditions you create should appear in orange on the Vehicle Maintenance icon.

![Vehicle Maintenance Icon (3 Conditions)](image2)

4. Tap the **Vehicle Maintenance** icon and select the **Conditions** tab to view the current Active and Inactive Conditions.

![Vehicle Maintenance Conditions](image3)

- Conditions with red dots are active conditions.
- Conditions with black dots are inactive conditions.
- The simulated condition should have a red dot.
- Conditions must be active 40 seconds before they are reported on the MDU.
- 40 seconds after a condition becomes inactive the dot for that condition turns gray.
- 40 minutes after the condition has been inactive, it is removed from the list.
5. Select the **Monitor List** tab to view the complete list of monitored Conditions.

6. Verify that e-mail notification goes out upon detection of condition. If you do not receive e-mail notification, contact Omnitracs Customer Support at (800) 541-7490.
This chapter contains information regarding Critical Event Reporting (CER) requirements, installation, and system verification. The topics include:

- CER Overview ................................................................. 15-2
- CER System Verification ............................................... 15-3

For technical questions, contact Omnitracs 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
**CER Overview**

CER captures and reports critical event information such as:

- hard braking events
- stability control events (VDC)
- lane departure warning (LDW) events
- panic button events
- manually triggered events

The CER feature records a set of predefined data for the five minute period before a critical event occurs and the two minute period after a critical event is triggered. The event information is sent from the mobile unit over the air where it is made available to the customer for analysis via a web application.

Text-to-speech (TTS) can be enabled so CER events can be audibly conveyed to the driver. Performance Monitoring is not required for CER. The “hard brake” feature in Performance Monitoring does not have to be enabled for the hard brake CER trigger to operate.

For the CER feature to function, the datalink wires must be connected. Please refer to Chapter 11: Vehicle Data Bus Connections.

Some CER features are dependent on connection to both J1708/J1587 and J1939 data links and rely on the vehicle’s ECM to supply needed information. Perform Datalink system verification per chapter 12.
CER System Verification

1. To access CER information, go to the **Home** screen and tap **System**.

2. From the **System** screen, tap the **CER** tab then tap **General**.

   If the CER Enabled field shows False, the CER service for the unit must be enabled from the Customer Portal.

<table>
<thead>
<tr>
<th>General</th>
<th>Roll Stability</th>
<th>Lane Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>CER Enabled: True</td>
<td>Speech Enabled: False</td>
<td></td>
</tr>
<tr>
<td>Hard Braking Trigger</td>
<td>Optional Triggers Enabled</td>
<td></td>
</tr>
<tr>
<td>Min Speed: 20 mph</td>
<td>Roll Stability Enabled: True</td>
<td></td>
</tr>
<tr>
<td>Decel Rate: 9 mph/s</td>
<td>Lane Departure Enabled: True</td>
<td></td>
</tr>
</tbody>
</table>

**General Screen field definitions**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CER Enabled</td>
<td>True or False. If true, the MCP100 captures CER events.</td>
</tr>
<tr>
<td>Hard Braking Min Speed</td>
<td>The minimum speed at which mobile unit will start to detect hard brake events.</td>
</tr>
<tr>
<td>Hard Braking Decel Rate</td>
<td>The rate of deceleration that triggers a hard brake event (Default = 9 MPH/SEC).</td>
</tr>
<tr>
<td>Speech Enabled</td>
<td>True or False. If true, the text in the alert pop-ups are spoken.</td>
</tr>
<tr>
<td>Stability Control Enabled</td>
<td>True or False. If true, stability control is enabled.</td>
</tr>
<tr>
<td>Lane Departure Enabled</td>
<td>True or False. If true, lane departure warning is enabled.</td>
</tr>
</tbody>
</table>
**Stability Control**

For stability control critical event reporting to work, the vehicle must be equipped and configured with a stability control system.

To see if Stability Control is enabled and configured properly, tap the **Roll Stability** tab.

### Stability Control Screen field definitions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trigger Enabled</td>
<td>True or False. If true, stability control events are configured to be recorded. If false, VDC is Not Seen.</td>
</tr>
<tr>
<td>VDC Data</td>
<td>Available or Not Seen. If stability control information is provided by the anti-lock brake system (ABS), it shows Available. If it is not provided, shows Not Seen. If stability control is enabled and the truck has ABS, but it shows Not Seen, contact your administrator to apply the correct configurations.</td>
</tr>
<tr>
<td>Min Speed</td>
<td>Minimum speed at which mobile unit detects events.</td>
</tr>
<tr>
<td>On Threshold</td>
<td>Number of messages from the ABS indicating brake or engine being modulated in a row before an event is considered to be in progress.</td>
</tr>
<tr>
<td>Off Threshold</td>
<td>Number of messages from the ABS indicating brake or engine not being modulated in a row before an event is considered to be no longer in progress.</td>
</tr>
</tbody>
</table>
| Bits Tracked           | Indicates which bits the mobile unit tracks to monitor stability control events mentioned above:  
  • Brake only  
  • Engine only  
  • Brake or Engine (Default)  
  • Brake and Engine |
**Lane Departure**

For LDW to function, the vehicle must be equipped with an LDW system such as an Iteris box. Also verify that the mobile unit is installed on the correct bus. To access LDW information, tap the **Lane Departure** tab.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trigger Enabled</td>
<td>True or False. If true, LDW is being recorded.</td>
</tr>
<tr>
<td>Bus</td>
<td>J1587 or J1939. Should be J1939 unless a converter box is installed for using J1587</td>
</tr>
<tr>
<td>LDW Data</td>
<td>Available or Not Seen. If LDW data information is provided, it shows available. If it is not provided, shows Not Seen. If LDW is enabled and the truck has an LDW system, but it shows Not Seen, contact your administrator to apply the correct configurations</td>
</tr>
<tr>
<td>Min Speed</td>
<td>Minimum speed at which mobile unit detects events.</td>
</tr>
<tr>
<td>On Threshold</td>
<td>Number of messages from LDW that indicate a departure that must be seen in a row before an event is considered to be in progress.</td>
</tr>
<tr>
<td>Off Threshold</td>
<td>Number of messages from LDW that do not indicate a departure that must be seen in a row before an event is considered to be not in progress.</td>
</tr>
<tr>
<td>Events Count</td>
<td>[Events Count] LDW events within [Events Time (min)] that will result in notifications by CER.</td>
</tr>
</tbody>
</table>
Test System by Manually Reporting an Event

1. With the MCP100 powered on, create a CER event:
   • From the Home screen, press the Shift and t keys on the MDU.
   • The screen below should appear alerting you that a CER event has just been triggered. The CER notification is sent to the NOC.

2. Verify that the CER web application receives the CER event notification and the data surrounding the event is present. If the notification is not received at the CER web application then the NOC account could be set up incorrectly. Call Omnitracs Customer Support at 800-541-7490.
Data Link Verification

1. To access vehicle data services (VDS) information, go to the System screen and tap the VDS (Status) tab. You may need to scroll to see the VDS (Status) tab.

VDS field definitions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCV</td>
<td>These are the packets of data being received on the data bus.</td>
</tr>
<tr>
<td>XMT</td>
<td>These are the packets of data being sent on the data bus as requested (transmitted) packets.</td>
</tr>
<tr>
<td>MSG</td>
<td>These are the packets of data being received on the data bus that are of longer length than the normal data packet size.</td>
</tr>
</tbody>
</table>

2. With the ignition turned ON, verify the following:
   - Check that the J1587 light is green. This indicates you are receiving data on the J1708 data link wires. This value should be a constantly increasing number when the ignition is ON. If the number is rapidly increasing, you are receiving J1708 messages. If the number is not rapidly increasing, you are not receiving J1708 messages, and you need to recheck the installation.
   - If the J1587 light is red, there is an error.
   - If the J1587 light is dark, you are not enabled for J1587 data.

3. To check what data is missing, tap the data icon. Then tap the filter icon and choose J1587.
16

Trailer Tracks System Installation

Topics in this chapter provide how to install Trailer Tracks system hardware on tractors and trailers and how to verify that the system is working properly.

Trailer Tracks System Overview .................................................. 16-2
Trailer Tracks System Wiring for the Truck ...................................... 16-2
Trailer Tracks System Verification .................................................... 16-3

For technical questions, contact Omnitracs 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

Only tethered units report reefer information to the mobile.
**Trailer Tracks System Overview**

- Monitors trailer connects and disconnects and passes the information on to dispatch via the wireless communication network with the date, time, and location.
- Monitors the refrigeration unit of a trailer.

**Hardware Requirements**

- The MCP100 accessory cable must be installed (see Chapter 5) on the mobile application server (MAS).

![Wiring Diagram](image)

**Trailer Tracks System Wiring for the Truck**

**Fuse Kit Installation**

Fuse kits are needed for all Trailer Tracks system installations.

1. Locate the blue AUX wire in the 7-way trailer harness. With ignition turned ON, determine if +12/24 VDC is present on this wire.
   - If +12/24 VDC is present, proceed to step 2.
• If +12/24 VDC is not present, first verify that the main aux fuse is not blown. If no circuit exists, then connect ignition-switched +12/24 VDC from the fuse panel to the trailer auxiliary line. The trailer auxiliary wire must be protected by a 30-amp fuse or a circuit breaker. Proceed to step 2.

2. Locate the trailer auxiliary wire connection point, usually where the trailer auxiliary wire enters the truck cab.

3. Install the 5-amp fuse on the accessory cable’s blue TTRACS wire.

4. Butt splice the protected end of 5-amp fuse to trailer auxiliary wire connection point.

**Caution**

*Filters:* Filtering of the 7-way AUX wire to stop the vehicle’s ABS PLC signal (SAE 2497) from getting into the vehicle electrical system, will also filter the Trailer Tracks system signal. The Trailer Tracks wire should be connected so it does not go through the PLC filter.

*ABS Interoperability:* The Trailer Tracks system product has been tested by Omnitracs for interoperability with the SAE standard PLC4Trucks ABS signal. These tests resulted in no adverse impact on the ABS warning function. Furthermore, Omnitracs is not aware of any interoperability issues in actual operation on vehicles in the marketplace.

**Trailer Tracks System Verification**

**Enabling the Option for the Trailer Tracks System**

• If the TrailerTRACS (Trailer Tracks) icon is grayed out, Trailer Tracks is not enabled.

• Call your company dispatch to have the correct operational profile selected so this application is enabled.
Trailer Connection/Disconnection

Connection

1. Connect an MCP100-equipped tractor to the trailer, connect the tractor/7-way pigtail.
2. Tap the TrailerTRACS (Trailer Tracks) icon.

If a trailer is not currently connected, the status is None Connected.

After the trailer is connected and the TrailerTRACS unit sends its ID to the MCP100, the trailer ID is updated on the display.

Disconnection

1. Remove 7-way pigtail.
2. Leave ignition ON.
3. Wait for disconnect message (approximately five minutes).

A disconnect message is sent when the tractor’s ignition is on and there has been no signal from the Trailer Tracks unit for a preset time period. This usually occurs within five minutes.
**Trailer Tracks Diagnostic Screen**

1. Tap the **TrailerTRACS** (Trailer Tracks) icon.

2. Tap the **Trailers** tab to display the TRAILER ID screen.

3. When a trailer is connected, the Trailer Tracks Diagnostic screen displays.

A Trailer Tracks ID number displays, as well as other numerical information.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Line</td>
<td>Number of seconds since the ignition was turned ON.</td>
</tr>
<tr>
<td>Trailer Diag</td>
<td></td>
</tr>
<tr>
<td>Second Line</td>
<td>Trailer Tracks ID number.</td>
</tr>
<tr>
<td>First Number</td>
<td></td>
</tr>
<tr>
<td>Second Line</td>
<td>Number of ID packets from the TrailerTRACS unit since the ignition was turned ON.</td>
</tr>
<tr>
<td>Second Number</td>
<td></td>
</tr>
<tr>
<td>Second Line</td>
<td>Number of seconds since the last ID packet was received from the TrailerTRACS unit by the MCP100.</td>
</tr>
</tbody>
</table>
Refrigeration Status Screen

This feature is only available on tethered products. The reefer information on non-tethered is only transmitted directly to the Trailer Tracks website.

1. Tap the **TrailerTRACS** (Trailer Tracks) icon.

2. If a refrigeration unit is detected, a snowflake appears above the transmitter ID box. Tap the **Transmitter** box.

3. Refrigeration Status screen appears. To send the information to dispatch, tap the **Send** button.
### Field Description

<table>
<thead>
<tr>
<th><strong>Field</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer ID</td>
<td>The trailer’s TrailerTRACS unit ID.</td>
</tr>
</tbody>
</table>
| Refrigerator Stat # | Number of refrigeration status messages sent from the refrigeration unit to the MCP100. When this number is incrementing regularly, your data is being sent from the refrigeration unit. The number is followed by a code that identifies the refrigeration unit’s manufacturer:  
  - T—Thermo King  
  - C—Carrier |
| Mode            | Refrigeration unit’s operating mode.                                                                                                             |
| SET PT          | Trailer’s set point. Shown in Celsius (C) or Fahrenheit (F).                                                                                   |
| RTN             | Temperature of air coming out of the trailer register.                                                                                        |
| SUP             | Temperature of air going into the trailer.                                                                                                      |
Topics in this chapter provide guidelines and instructions for installing the CDU.

- **CDU Overview** .......................... 17-2
- **General Installation Guidelines for Selecting a Mounting Location** .............. 17-2
- **Installing the CDU Mount** ............. 17-3
- **Attaching the CDU to the Mounting Bracket** .................................. 17-4
- **Connecting the CDU Cable to the Accessory Cable** ......................... 17-4

**For technical questions, contact Omnitracs 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
**CDU Overview**

The CDU is a user interface device that can be used to display an Omnitracs-provided navigation application. A driver can request a map to a specific destination and it will display on the device. The CDU’s display area is large enough to easily refer to the map while driving. It is meant to be installed in a fixed position on the dash or instrument panel area.

**General Installation Guidelines for Selecting a Mounting Location**

**IMPORTANT SAFETY INFORMATION**

DO NOT locate the CDU where:

- it obstructs the driver’s field of vision
- it distracts the driver from the driving task
- it interferes with the driver’s operation of controls or displays
- it obstructs the area swept by the windshield wipers
- it blocks the deployment of an airbag

DO locate the CDU where:

- it can be safely installed on a secured bracket that is robust enough to minimize any vibration and sustain the weight of the CDU. Permanently affix the CDU to:
  - the front dash area
  - the top of the dash
  - the driver-side overhead ceiling or console
- the mounting surface is strong enough to support the mounting hardware
- the mounting surface is flat
- it is in the driver’s line-of-sight, but does not block the view of the road or mirrors
- the surrounding area is clear of dash controls and gauges
- the CDU cable is long enough to reach the mating connector on the accessory cable
- it is not mounted in constant, direct sunlight
- it does not limit a passenger’s leg room or block access to any other compartments
- it does not interfere with anyone entering or exiting the vehicle cab
- it is not likely to impact the driver or passenger in case of an accident or collision
Additional information for selecting an installation location:

- Nothing should be installed on the windshield that obstructs the area swept by the windshield wipers or obstructs the driver’s sight to the road and highway signs and signals. (FMCSA document 49 CFR 393)
- No devices should be mounted more than 6 inches below the upper edge of the windshield, or extend more than 4.5 inches above the bottom of the windshield. (FMCSA document 49 CFR 393)
- Before installing the device, be aware of and follow all state laws and driving codes. California Driving Code Section 26708(a)(1) states: No person shall drive any motor vehicle with any object or material placed, displayed, installed, affixed, or applied upon the windshield or side or rear windows.
- 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.
- Consider the owner’s preference in selecting the installation location and whether there is a team or a single driver.

**Installing the CDU Mount**

Omnitracs recommends using RAM Mounting Systems (National Products, Inc./www.ram-mount.com) mounting hardware with the CDU. If another type of mounting hardware is used, it is the installer’s responsibility to ensure that the mounting bracket is robust enough to support the weight of the CDU (~2 lbs) without damaging the mounting surface.

If the mounting surface is not strong enough to support the weight of the CDU, use a backing plate to strengthen the area.

1. Verify that there is nothing behind the mounting surface that might be damaged by drilling holes.

2. Drill holes for the mounting bracket and, if needed, drill a 7/8" hole as a pass through for the CDU connector.

3. Attach the CDU bracket to the mounting surface.
4. If applicable, follow installation instructions from the third-party bracket mount manufacturer.

**Attaching the CDU to the Mounting Bracket**

1. Feed the CDU cable through the 7/8" hole in the dash to the location of the accessory cable.

2. Use a grommet in the 7/8" hole to protect the CDU cable.

3. Attach the CDU to the mounting bracket using (4) 8-32 size screws.

4. Use tie wraps to secure the CDU cable.

**Connecting the CDU Cable to the Accessory Cable**

1. Route the CDU cable to the accessory cable.

2. Remove any protective caps and connect the cables together.

3. Wrap electrical tape around the connection to secure the connection.

4. Use tie wraps to secure any excess cable.
Topics in this chapter provide guidelines and instructions for installing the Omnitracs navigation application.

Introduction to Navigation .................................................. 18-2
Installing Navigation ......................................................... 18-2

For technical questions, contact Omnitracs 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
Introduction to Navigation

The Omnitracs on-board navigation application, Maptui NaviGo, provides interactive maps, dynamic routes, and turn-by-turn spoken instructions to drivers. When an updated map becomes available, swap the existing map data card for a new one. Either the MDU or the CDU can be used as the user interface to operate the application.

The CDU is a user interface device that can be used to display an Omnitracs-provided navigation application. A driver can request a map to a specific destination and it will display on the device. The CDU’s display area is large enough to easily refer to the map while driving. It is meant to be installed in a fixed position on the dash or instrument panel area.

If you will be using the MDU as the only user interface, the navigation service works as a voice only feature giving turn-by-turn spoken instructions while the vehicle is in motion. Screen blanking should be enabled. For specifics regarding connecting the MDU, refer to Chapter 9.

The CDU is a user interface device that can be used to display an Omnitracs-provided navigation application. A driver can request a map to a specific destination and it will display on the device. The CDU’s display area is large enough to easily refer to the map while driving. It is meant to be installed in a fixed position on the dash or instrument panel area.

Minimum Omnitracs software versions needed to support navigation:
- MAS firmware: 10.23.09
- MDU firmware: 0243
- MAS WIN OS:2.01.05 (if CDU is used)
- Map Data: 9.1 or higher

Installing Navigation

1. Install the user interface device (CDU or MDU):
   - If installing the CDU, go to CDU Overview on page 17-2.
   - If installing the MDU, go to Media Display Unit (MDU) Installation on page 9-1.

2. Insert the Maptuit NaviGo secure digital (SD) card into the SD card slot on the mobile application server (MAS). The card must remain inserted in the MAS for the Maptuit NaviGo application to operate.

3. Enable the Maptuit NaviGo service and Driver Login for the Omnitracs unit from the Customer Portal. The Maptuit NaviGo service is enabled if the Navigation icon on the Home screen of the MDU or CDU is not grayed out.

4. To start the Maptuit NaviGo service, first login using the Driver Login icon and then tap the Navigation icon. The six buttons within the Navigation screens show in color after the driver has successfully logged in.
Buzzer Overview

The message waiting buzzer is an audible alarm triggered by incoming Important, Sleepy Important, or Emergency messages (the message priority is assigned by the dispatcher). It is activated by the message waiting light circuit provided with each MCP100. It can be substituted for, or used with, the remote message waiting light (RMWL). Because the buzzer is very loud, an optional toggle switch can be installed to allow the driver to disable the buzzer.

Topics in this chapter include:

*Mounting Location* ................................................................. 19-2
*Installation Guidelines* ............................................................ 19-2
*Installation Verification* ......................................................... 19-2

For technical questions, contact Omnitracs 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
**Mounting Location**

- The typical mounting location for the buzzer is behind the dash.
- The toggle switch, when used, can be mounted on the dash.

**Installation Guidelines**

1. Connect one end of the buzzer power wire to either terminal on the buzzer.

2. To use the optional toggle switch, connect the toggle switch in line with the buzzer power wire.

3. Connect the green MSG ALERT wire on the MCP100 accessory cable to the other terminal on the buzzer.

   This wire connects the buzzer to ground when activated by the MAS. It is activated when an Important or Emergency message is received by the MCP100.

**Installation Verification**

1. Have the dispatcher, or Omnitracs Customer Support, 800-541-7490, send an Important or Sleepy Important message.

2. If the optional toggle switch is installed, turn it OFF and ON and verify that the buzzer turns OFF and ON when it is activated.

3. With the buzzer activated, read the message sent by the dispatcher and verify that the buzzer stops sounding.
20
Remote Message Waiting Light (RMWL) Installation

RMWL Overview

The RMWL can be used when the display unit is located where the driver cannot see the message waiting light. The RMWL illuminates whenever an Important, Sleepy Important, or Emergency message is received by the MCP100.

Topics in this chapter include:

Installing the Remote Message Waiting Light ........................................ 20-2
Installation Verification ................................................................. 20-2

For technical questions, contact Omnitracs 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
Installing the Remote Message Waiting Light

Caution

Be sure to clear the area behind the dash before drilling.

1. Select a suitable location for the RMWL. Make sure that there is approximately 2-1/2" of clearance directly behind the mounting surface where the light will be inserted.

2. Carefully drill a 3/4" diameter hole in the mounting surface.

3. Pull the RMWL bulb assembly straight out of the housing assembly. Remove the nut and washer from the housing assembly.

4. Insert the RMWL housing assembly into the hole in the mounting surface and re-install the washer and nut. Tighten the nut until the housing assembly is secured flush against the vehicle dash and re-install the bulb assembly.

5. Connect the power wire to a +12/+24 VDC unswitched source, such as the BAT+ wire on the MCP100 power cable.
   - The power wire can be identified by the in-line fuse holder.

6. Connect the RMWL’s ground wire to the accessory cable’s green MSG ALERT wire using a butt splice.

If the RMWL bulb burns out, use a GE53 replacement bulb. The light is protected by a 2-amp in-line fuse.

Installation Verification

1. Have the dispatcher, or Omnitracs Customer Support, 800-541-7490, send an Important or Sleepy Important message.

2. Verify that the light comes ON.

3. Verify that the light goes OFF when the message is read on the display unit.

4. Refer to the MCP100 Diagnostic Guide for troubleshooting procedures.
Wired Panic Button Overview

The wired panic button meets all Defense Transportation Tracking System (DTTS) requirements and can be used for vehicles hauling U.S. Department of Defense loads or hazardous materials.

It can be configured at the NMC to function as a non-DTTS panic button. When this configuration is used, the panic button sends an alert to the NMC and an Emergency message to the dispatcher, but DTTS is not notified.

For information on installing the wireless panic button, see the Wireless Panic Button Installation and User Guide (80-J6059-1).

Topics in this chapter include:

- Installing the Panic Button ............................................ 21-2
- Installation Verification .................................................. 21-4

For technical questions, contact Omnitracs 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
Installing the Panic Button

1. Install the accessory cable according to the guidelines in Chapter 5.

2. Remove the pre-installed ring terminal and replace with the supplied butt connector.

3. Select a suitable location for the panic button.

**Caution**

⚠️ Check behind the dash to ensure that the area is clear of obstructions before drilling.

4. Drill a 5/8" hole in the vehicle dash.

**Caution**

⚠️ Always deburr holes before routing the cables.

5. Insert the button assembly into the dash and secure it in place using the lock washer and nut provided.

**WARNING**

⚠️ When routing the cable, avoid any moving parts or sharp edges.

6. Route the cable to where you make the accessory cable connections on the MCP100.
7. Locate and separate the blue/red PANIC_LOW and blue/black PANIC_HIGH wires from the other accessory wires on the accessory cable.

**Caution**

Always use the appropriate crimping tool for insulated terminals.

8. Connect the blue/red PANIC_LOW and blue/black PANIC_HIGH wires to the two wires of the PANIC button.

**Caution**

Be sure to cover all wires with convoluted tubing and secure them away from sharp or moving parts.

9. Once you have completed all connections, cover all wires with convoluted tubing, secure all loose or unsecured wires with wire ties, and stow away cabling.
Installation Verification

Automated Panic Button Test System Dial-in Procedure

Before you begin, you need the following:

• The MCP100 serial numbers you are testing.
• Your customer ID.
• Your authorization ID.

If you don’t have this information, contact Omnitracs Customer Support at 800-541-7490 before dialing in to test the procedure.

2. When prompted, press the 0 key for AUTOMATED SERVICES.
3. Press the 7 key for PANIC TESTING.
4. When prompted, enter your customer ID and press the # key.
5. Confirm or re-enter your customer ID.
6. When prompted, enter your authorization ID and press the # key.
7. Confirm or re-enter your authorization ID.
8. If more than one location has been set up for your company, you will hear a list of locations. Press the number key that corresponds with your current location and press the # key.
9. When prompted, enter the MCP100 serial number and press the # key.
10. When the serial number is accepted, the number is read back and you receive a confirmation number.
11. Press the 2 key to enter another MCP100 number or hang up to end the call.

If this process is unsuccessful, hang up and call Omnitracs Customer Support at 800-541-7490 to speak with a representative.

12. You can now press the panic button. You will have an hour to perform the test.

When the test is complete, Omnitracs sends a fax and/or an e-mail to your designated contact confirming the MCP100s you tested and the number of times you pressed the panic button for each MCP100 during the test.
Overview

This chapter discusses the remote transmitter and instructions for installing the wireless panic button (WPB). The WPB works by sending an over-the-air notification using the MCP100. The WPB is approved for use for Defense Transportation Tracking System (DTTS) carriers.

The WPB is designed to operate within 100 feet of the vehicle with clear line-of-sight (no obstructions) between the WPB antenna (on the front windshield) and the remote transmitter (key fob).

Caution

Although the WPB may be effective at ranges in excess of 100 feet, local atmospheric conditions will diminish the unit's consistent success as the distance from the antenna increases beyond 100 feet.

For technical questions, contact Omnitracs 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
Wireless Panic Button Kit

The WPB kit contains:

- Receiver (1)
- Transmitters (2)

Make sure that the sliding guard on each transmitter is snapped over the front, so that the red PANIC button cannot accidentally be pushed. The PANIC button should show through the opening in the guard when properly installed.

- Remote antenna
- Antenna cable
- Power harness cable with 18-pin connector (45-J6053-8)
- Relay harness assembly (45-J6061-1A)
- Tie wraps (5), butt splices (4), ring terminals (3)
- 3-pin connector housing (1)
- 5-pin connector housing (1)
Additional Wireless Panic Button Accessories

The following kit is also available:

- Kit, Wireless Panic Spare XMTR Upgrade. Needed to replace lost or damaged transmitters.

Tools and Supplies Needed for Installation

The following tools are recommended for installing the WPB:

- crimping tool (for insulated crimp terminals)
- wire stripper(s)/cutters
- screw driver(s)
- volt/ohm meter
- alcohol swabs

Caution
Do not use a voltage test light, as damage to the WPB receiver or the vehicle may occur.

Caution
Do not use Scotchloks™ or Scotchlok™-type connectors. Scotchloks™ are not approved for any accessory electrical connections. Use butt splices or ring terminals only.
Using the Remote Transmitter

Note

Customers should train all WPB users to properly use the WPB and ensure that he/she understands what a panic notification as registered on the DIU100 looks like. A user should experience sending three or four panic notifications during installation or training.

The following sections provide information for using the WPB remote transmitter.

Activating the PANIC Feature

To activate the panic feature, press the PANIC button. To ensure reception of the transmitter signal, hold the PANIC button down firmly for at least 1 second. Activating the panic feature will send an over-the-air panic notification to the dispatch center. The panic feature will remain activated as long as the PANIC button is pressed. The PANIC button is recessed within the plastic cover to prevent false panics. If the button has accidentally been pressed, notify your dispatcher immediately.

Activating the AUX Feature

The AUX button is not immediately functional, but is available for performing additional functions as set up during installation. Contact an Omnitracs customer service representative before wiring this feature. To activate the AUX feature (if functional), press and release the AUX button.
TEST/RESET Feature

The TEST/RESET button is used to terminate the AUX function after the AUX button has been pushed. When the TEST/RESET button is pressed alone, a self-test on the receiver portion is activated, performing a local transmitter/receiver system test.

Activating the LOCK/UNLOCK Button

At this time, the LOCK/UNLOCK button is not used. It may be used for future applications. Contact your Omnitracs customer service representative before wiring this feature.

Wireless Panic Button Receiver Installation

Note

Before beginning installation, inspect all wiring of the existing MCP100 unit and the wired panic button (if installed).

The receiver should be mounted under the dash in a location that can easily be mounted with tie wraps, preferably near the fuse panel or near the entrance of the MCP100 power cable.

The WPB receiver harness should be wired and checked for proper voltages (see Voltage Check on page 22-8) before connecting it to the receiver.

Caution

CB radios that have been modified to increase power beyond the legal limits, including the use of linear amplifiers (power boosters), may interfere with proper operation of the WPB. (Code of Federal Regulations (CFR), Title 47, Part 95, Subpart E, Section 95.667, “CB Transmitter Power”.)

Wireless Panic Button Wiring

The following sections provide wiring information for the WPB.

Grounding

1. Locate the chassis ground on the truck.

2. Attach the black (GROUND) wire of the WPB power harness to the chassis ground, making sure it is the same potential as the battery ground of the truck.

Power

3. Locate the input power in the fuse panel (preferably, this is the same location as the power input to the MCP100).
4. Securely fasten the red (POWER) wire of the WPB power harness to this power location using a butt splice.

**Panic Wire Installation**

1. Securely fasten the red (BAT+) wire from the relay harness to the red (POWER) wire from the WPB power harness using a butt splice.

2. Securely attach the white with red stripe (PANIC) wire from the WPB power harness to the white (PANIC) from the relay harness using a butt splice.

3. Securely attach the blue/red (PANIC_LOW) wire from the MCP100’s accessory cable to the brown (AUX1 RTS) wire on the relay harness using a butt splice.

4. Securely attach the blue/black (PANIC_HIGH) wire from the MCP100’s accessory cable to the black (AUX1 CTS) wire from the relay harness using a butt splice.

5. Securely fasten down the relay using a tie wrap.
Wireless Panic Button Installation

Wireless Panic Button Receiver

Antenna Cable

To +12 Volt Power

Orange Red

Red

Black

Blue/Black (PANIC_HIGH)

Brown (AUX1 RTS)

Black

White

White with Red Stripe (PANIC)

Brown Parking Lights (Not Used)

4-Pin Connector (Not Used)

AUX (Not Used)

Wireless Panic Button Receiver

Antenna Cable

Mobile Application Server (MAS)

MCP Power Cable

44-Pin MCP Accessory Connector

Wired Panic Button

15-Amp Fuse

Black

Orange Red

Red Red

MCP100

Relay Harness (45-J6061-1A)

Blue/red (PANIC_LOW)

Blue/Black (AUX1 CTS)

03AAA_112A
Voltage Check

Caution

Do not use a voltage test light, as damage to the WPB receiver or vehicle may occur.

1. Now that you have connected the WPB power harness, using a voltmeter, check the voltages on the four wires at the end of the 18-pin connector.
   • The red wire should read battery voltage.
   • The black wire should read ground.
   • The white with red stripe wire should read approximately 3.8V.

2. Once this is verified, properly fasten the wires in place using tie wraps.

3. Ensure that no wires are dangling or that none of the wires were cut in the installation process.

Antenna Installation

The following section provides information on installing the WPB antenna.

Federal requirements mandate that the antenna be mounted not more than 6 inches below the upper edge of the windshield; outside the area swept by the windshield wipers; and outside the driver’s line of sight to the road and highway signs and signals.
Antenna Placement

The antenna should be placed as high as possible, away from metal obstructions. For sleeper cabs with airdams, place the antenna as high as possible in a vertical position.

Antenna Cable Routing and Connection

1. Route the antenna cable up through the dash to the approximate area where the antenna will be mounted.

2. The antenna should be mounted so that it does not obstruct the view of the driver. If it is necessary to mount the antenna on the windshield, it should not be more than 6 inches down from the top edge of the windshield on the passenger side.

3. Thoroughly clean the antenna mount area with alcohol before mounting the antenna to the windshield.

4. Use the adhesive-backed tape on the back of the antenna to secure it to the windshield.

5. Plug the antenna cable into the antenna.

6. Secure the remaining wire with tie wraps under the dash.
**Final Connection**

1. Snap the supplied 3-pin and 5-pin connector housings onto the respective connectors of the WPB receiver to protect the exposed pins.

2. Connect the antenna cable to the receiver.

3. Connect the WPB power harness to the receiver.

4. When the WPB power harness is connected, there should be a clicking sound indicating that the WPB relays have activated.

5. Test that the unit is working. (See information below).

**Installation Verification for the Wireless Panic Button**

From the Home screen, touch the **Settings** icon. Touch the **Settings** tab. Verify that PANIC is Enabled and PANIC CONFIG is set to 2-wire.

Follow these steps to verify that the panic button has been installed correctly.

**Automated Panic Button Test System Dial-in Procedure**

Before you begin, you need the following:

- The MCP100 serial numbers you are testing.
- Your customer ID.
- Your authorization ID.

If you don’t have this information, contact Customer Support at 800-541-7490 before dialing in to test the procedure.


2. When prompted, press the **0** key for AUTOMATED SERVICES.

3. Press the **7** key for PANIC TESTING.

4. When prompted, enter your customer ID and press the **#** key.

5. Confirm or re-enter your customer ID.

6. When prompted, enter your authorization ID and press the **#** key.

7. Confirm or re-enter your authorization ID.

8. If more than one location has been set up for your company, you will hear a list of locations. Press the **number** key that corresponds with your current location and press the **#** key.

9. When prompted, enter the MCP100 serial number and press the **#** key.
10. When the serial number is accepted, the number is read back and you receive a confirmation number.

11. Press the 2 key to enter another MCP100 number or hang up to end the call.

   If this process is unsuccessful, hang up and call Omnitracs Customer Support at 800-541-7490 to speak with a representative.

12. You can now press the panic button. You will have an hour to perform the test.

   When the test is complete, Omnitracs sends a fax and/or an e-mail to your designated contact confirming the MCP100s you tested and the number of times you pressed the panic button for each MCP100 during the test.

   When the notification has been successfully transmitted, the display will show the panic notification in your Outbox with a check mark indicating the panic notification has been successfully transmitted, as shown below.

   If the panic button is configured for audio notification, when the notification has been successfully transmitted you will first hear, “A panic message has been queued” and then you will hear, “A panic message has been sent.”

**Wireless Panic Button Battery**

**Note**

Omnitracs recommends testing the remote transmitter weekly to ensure battery operation. To test for battery operation, push any button _except_ the red PANIC button, to light the red LED in the upper left corner. If the LED does not light, replace the battery immediately. (See Wireless Panic Button Battery Replacement on page 22-12 for information on replacing the WPB battery.)

**Caution**

Due to battery temperature limitations (50° C/122° F), do not leave the transmitter exposed to direct sunlight. If the battery dies, replace it immediately with a new A23, 12V alkaline battery.
**Wireless Panic Button Battery Replacement**

Follow these steps to properly replace the WPB transmitter battery.

1. Pry open the transmitter at the seam to separate the two halves of the transmitter unit. **Be careful not to lose the chain.**

2. Remove the dead battery and dispose of it properly.

3. Replace the dead battery with a new (customer provided) A23, 12V alkaline battery. Follow the polarity shown embossed on the plastic housing.

4. Snap the housing back together **making sure that the chain is properly in place.**

**Note**

*Proper disposal of defective or dead alkaline batteries is the responsibility of the WPB owner. Please dispose of defective or dead batteries at a local alkaline battery recycling center.*
5. Ensure that the unit is operating by pushing any button **except** the red **PANIC** button to light the red LED in the upper left corner.
23

In-Cab Printer Installation

The in-cab printer is a product of O’Neil Product Development, Inc.

Wiring Configuration ................................................................. 23-2
Installation Guidelines ........................................................... 23-2
Mounting Bracket ................................................................. 23-2
Installing the Printer ............................................................... 23-3
Installation Verification ......................................................... 23-4
Return Material Authorization (RMA) Process ......................... 23-4
O’Neil Printer Parts List ........................................................... 23-4

For general questions and technical support, contact O’Neil Product Development, Inc.:

• In the United States and Canada, call 800-796-6345
• Outside these areas, call 949-458-0500

To enable the printer function only, contact Omnitracs 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
**Wiring Configuration**

The printer can be connected to the MCP100 in the vehicle using the standard or full function accessory cable.

**Installation Guidelines**

**Location**

Install the printer in the cab of the vehicle in a location that is convenient and safe. This can be on a vertical or horizontal surface. The printer cannot obscure the driver’s view of the road.

**Cables**

Keep away from sharp metal edges to avoid damage to cables. Connect the printer to the vehicle and the MCP100 using the printer power cable and the printer data cable.

**Printer Power Cable**

The power cable connects to the chassis ground wire and the ignition source.

![Printer Power Cable](image1)

**Printer Data Cable**

The data cable connects the printer to the MCP100 standard/full function accessory cable and provides the path for data from the MCP100 to the printer.

![Data Cable](image2)

**Mounting Bracket**

A swivel mounting bracket is provided for installing the printer to a flat surface. This mounting bracket works in a variety of locations in a variety of vehicles.

You may also order an optional velcro mount.
Installing the Printer

1. Select the printer location:
   • Select a location that is convenient and safe.
   • This can be a vertical or horizontal surface.
   • Printer cannot obstruct the driver’s view of the road.

2. Install the bracket:
   • Use the hardware provided.
   • You may also use the optional velcro mount.

3. Install the printer in the bracket.

4. Install the printer power cable:
   a. Run the printer power cable from the printer to the MCP100 power cable connections.
   b. Connect the printer GND wire to CHASSIS_GND.
   c. Connect the printer IGN wire to ignition source on the vehicle.

5. Install the printer data cable:
   a. Run the printer interface cable from the printer to the MCP100 accessory cable connections.
   b. Connect data cable GND wire to violet MCP100 accessory cable COM5_GND wire.
   c. Connect data cable RXD wire to violet/red MCP100 accessory cable COM5_TX485+ wire.
   d. Connect data cable TXD wire to violet/orange MCP100 accessory cable COM5_RX485- wire.

6. Connect the cables to the printer.
Installation Verification

Verify that print function is enabled.

1. From the MDU Inbox, display a message.

2. Press O or CTRL-P.
   • If the Confirmation to print pop-up screen displays, print a message.
   • If the Confirmation to print pop-up screen does not display, call Omnitracs Customer Support at 800-541-7490 to have the print function enabled.

Return Material Authorization (RMA) Process

1. Request an RMA from O’Neil Printers.

2. O’Neil arranges shipment of a replacement component to you.

3. Return the failed component to the address specified by O’Neil.

O’Neil Printer Parts List

<table>
<thead>
<tr>
<th>Part</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>O’Neil Printer Kit</td>
<td>230206-000</td>
</tr>
<tr>
<td>contains: printer, power and data cables, and swivel mounting bracket.</td>
<td></td>
</tr>
<tr>
<td>O’Neil Printer</td>
<td>200247-103</td>
</tr>
<tr>
<td>Power Cable</td>
<td>210292-001</td>
</tr>
<tr>
<td>Data Cable</td>
<td>210291-001</td>
</tr>
<tr>
<td>Mounting Bracket, swivel</td>
<td>210216-000</td>
</tr>
<tr>
<td>Optional Velcro Mount</td>
<td>220264-000</td>
</tr>
</tbody>
</table>

Order parts directly from O’Neil Product Development, Inc.:
• Call: 800-796-6345 (U.S. and Canada) or 949-458-0500.
• Email: info@oneilprinters.com
• Website: www.oneilprinters.com
The in-cab scanner is a product of BCS Solutions.

Installation Guidelines .......................................................... 24-2
Mounting the Scanner ........................................................... 24-2
Installing the Scanner ......................................................... 24-2
Calibrating the Scanner ....................................................... 24-3
Sending a Scan .................................................................. 24-4
Cleaning the Scanner ........................................................... 24-5
Return Material Authorization (RMA) Process ....................... 24-5

For technical support, contact BCS Solutions:
• In the United States and Canada, call 800-555-5555

For initial support only, contact Omnitracs 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

Install the scanner in the cab of the vehicle in a location that is convenient and safe. This can be on a vertical or horizontal surface. The scanner cannot obscure the driver's view of the road.

Mounting the Scanner

The scanner can be mounted in one of two ways.

Scanner Mounting Option

1. Cut the dual-lock tape into four 2.5" sections.
2. Clean the scanner bottom with an alcohol pad, remove protective film and apply two dual-lock pieces to the bottom ends of the scanner.
3. Clean the vehicle’s mounting surface with an alcohol pad.
4. Remove protective film and apply two dual-lock pieces to the desired mounting surface.

Holster Mounting Option

1. Select holster location.
2. Clean the location with an alcohol pad and let dry.
3. Carefully remove film from four VHB adhesive locations on holster.
4. Position holster onto desired location and firmly press each corner to ensure contact with the surface.
5. Self-drilling screws can be installed for more support.

Installing the Scanner

1. Remove the metal cover from the MAS USB/SER connector.
2. Connect the 15-pin DSUB cable end of the scanner to the MAS. Determine where to locate the scanner. If installing the holster, use four VHB adhesive pads (self-tapping screws optional). If mounting the scanner only, use dual-lock tape.

3. Go to Scanner Mounting Option on page 24-2 or Holster Mounting Option on page 24-2 for mounting options.

4. Route and store the scanner cable where it will not be damaged and is out of harm’s way and will not obstruct the driver or hinder truck performance. Keep the cable away from sharp metal edges to avoid damage.

   Note

   It may be necessary to route cable under the wells and truck interior molding.

**Calibrating the Scanner**

1. From the Scanning Home screen, tap the **Options** tab.

2. Insert the black and white calibration page or plain white paper into the slot.
3. Tap the **Calibrate** button. Wait a few minutes for the calibration to complete.

4. Tap the **Scan** tab to return to the scanning home screen.

---

**Sending a Scan**

1. On the Home screen, tap the **Scanner** icon.

2. Insert the paper, face down.
   - It will go in about 1/2".
   - If it’s not 8-1/2" wide, line it up with the right edge.

   **Note**

   The small tooth in the slot must be covered.

3. Tap the **Scan Page** button.

   **Note**

   If the preview box is checked, a preview page appears. Tap the **Accept** button.

4. After the page goes through, insert another page and tap the **Add Page** button, or if you are finished, tap the **Done** button.
5. Identify what you’re sending and tap the **Send** button.

6. When asked to confirm, tap the **Yes** button.

### Cleaning the Scanner

1. Tap the **Options** tab.
2. Insert the cleaning paper.
3. Tap the **Clean** button. Wait a few minutes while the scanner draws through the cleaning paper and cleans the scanner.

### Return Material Authorization (RMA) Process

1. Request an RMA from BCS Solutions.
2. BCS Solutions arranges shipment of a replacement component to you.
3. Return the failed component to the address specified by BCS Solutions.
Topics in this appendix provide wiring diagrams and pin description charts for the MCP100 and accessories.

- Satellite MCP100 Electrical Diagram ......................................... A-2
- Terrestrial MCP100 Electrical Diagram ....................................... A-3
- MCP100 Wiring Diagram ............................................................... A-4
- Power Cable Pin Callouts ............................................................. A-5
- Terrestrial Data Modem (TDM) Cable 25-Pin Connector Callouts .... A-6
- Satellite Data Modem (SDM) Cable 9-Pin Connector Callouts ......... A-7
- Standard Accessory Cable Pin Callouts ......................................... A-8
- Full Function Accessory Cable Pin Callouts ................................. A-9
- Media Display Unit (MDU) Connector Pin Callouts ................... A-10
- Six-pin Data Link Connector Pin Callouts .................................... A-11
- Nine-pin Data Link Connector Pin Callouts ................................ A-12
- Radio Connector Pin Callouts ...................................................... A-13
- CAN Converter Cable ................................................................. A-14

For technical questions, contact Omnitracs 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
**Terrestrial MCP100 Electrical Diagram**

- **MDU**
  - Display
  - Display Cable
- **MAS**
  - Power Cable
  - +9 VDC to +32 VDC Vehicle Battery
- **Ignition Switch**
- **Chassis Gnd**
- **Terrestrial Data Modem**
- **Terrestrial Antenna**

- **CDU**
- **RCD**
- **Speaker Switch**
- **Object Switch**
  - Panic Switch
  - Panic High
  - Panic Low
  - Speed Sensor
  - RPM Sensor
- **Relay Harness**
- **Wireless Panic Signal**
- **Pump Compressor**
- **PWR**
  - 2 AMP
  - Message Waiting Light
- **Accessory Cable**
- **Can Converter Cable**
- **7-Way AUX**
- **Mounted on Trailer**
- **J1708+**
- **J1708-**
- **Com5 TX/485+**
- **Com5 RX/485-**
- **TTRACS XMTR**
- **PWR**
  - 10 AMP
  - 3 AMP
  - 5 AMP
  - 30 AMP
- **PTOP**
- **PTOC**
- **Axle 1**
- **Axle 2**
- **MSG Alert**
- **Power Cable**
- **Vehicle Battery**

---

80-J4866-2 Rev. C  MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION A-3
**Power Cable Pin Callouts**

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>(BAT RTN)</td>
<td>BLACK</td>
</tr>
<tr>
<td>15</td>
<td>(BAT RTN)</td>
<td>BLACK</td>
</tr>
<tr>
<td>7</td>
<td>(TAMPER)</td>
<td>BLACK</td>
</tr>
<tr>
<td>14</td>
<td>(BAT RTN)</td>
<td>BLACK</td>
</tr>
<tr>
<td>6</td>
<td>(ID)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>(IGNITION)</td>
<td>WHITE</td>
</tr>
<tr>
<td>8</td>
<td>12 VDC</td>
<td>YELLOW</td>
</tr>
<tr>
<td>9</td>
<td>12 VDC</td>
<td>YELLOW</td>
</tr>
<tr>
<td>1</td>
<td>12 VDC</td>
<td>YELLOW</td>
</tr>
<tr>
<td>15</td>
<td>12 VDC</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>12 VDC</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>12 VDC</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>12 VDC</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Switched 12VDC</td>
<td></td>
</tr>
</tbody>
</table>

06AAA_199A
Terrestrial Data Modem (TDM) Cable 25-Pin Connector Callouts

<table>
<thead>
<tr>
<th>P1</th>
<th>SIGNAL</th>
<th>P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>PWR</td>
<td>8</td>
</tr>
<tr>
<td>25</td>
<td>PWR</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>LOOP/RTN</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>RTN</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>TAMPER</td>
<td>7</td>
</tr>
<tr>
<td>17</td>
<td>RTC_BACKUP</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>MDM_TX+/COM1_TX+</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>MDM_TX+/COM1_TX-</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>MDM_RX+/COM1_RX+</td>
<td>3</td>
</tr>
</tbody>
</table>

To TDM

To MAS
Satellite Data Modem (SDM) Cable 9-Pin Connector Callouts

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L</td>
<td>Drain</td>
</tr>
<tr>
<td>2</td>
<td>V</td>
<td>RX-</td>
</tr>
<tr>
<td>3</td>
<td>N</td>
<td>RX+</td>
</tr>
<tr>
<td>4</td>
<td>T</td>
<td>TX-</td>
</tr>
<tr>
<td>5</td>
<td>R</td>
<td>TX+</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>RTN</td>
</tr>
<tr>
<td>7</td>
<td>B</td>
<td>TAMPER</td>
</tr>
<tr>
<td>8</td>
<td>C</td>
<td>PWR 9.9-11.5VDC</td>
</tr>
<tr>
<td>9</td>
<td>P2</td>
<td>PWR 9.9-11.5VDC</td>
</tr>
</tbody>
</table>

P1 and P2 are the 9-pin connectors for the Satellite Data Modem (SDM) cable.
Standard Accessory Cable Pin Callouts
**Full Function Accessory Cable Pin Callouts**

- BLU/GRAY: DT (PIN 29)
- BLU/GRN: RCD (PIN 2)
- BLU/RED: PANIC LOW (PIN 28)
- BLU/BLK: PANIC HIGH (PIN 30)
- YEL/BLU: DIGIN 2 (PIN 8)
- YEL/BRN: DIGIN 3 (PIN 24)
- GRN: MSG ALERT (PIN 39)
- GRN/WHT: LSD1 (PIN 4)
- GRN/BLU: LSD2 (PIN 20)
- GRN/YEL: LSD3 (PIN 5)
- WHT/RED: PTOC (PIN 26)
- WHT/BLK: PTOC (PIN 21)
- GRN/BRN: LSD4 (PIN 21)
- GRN/RED: LSD5 (PIN 22)
- GRN/ORN: LSD6 (PIN 22)
- ORN: AXLE 1 (PIN 31)
- ORN/WHT: AXLE 2 (PIN 32)
- GRY/WHT: RPM 1 (PIN 33)
- GRY/WHT: RPM 2 (PIN 34)
- BRN: J1708 + (PIN 36)
- BRN: J1708 - (PIN 37)
- RED: TTRACS (PIN 38)
- BLU: COM5_RX_485 (PIN 41)
- VIO/ORN: COM5_TX_485+ (PIN 40)
- VIO: COM5 GND (PIN 42)
- CAN1
- CDU
- BLU/YEL: SPKR + (PIN 14)
- BLU/VIO: SPKR - (PIN 15)
Media Display Unit (MDU) Connector Pin Callouts

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RX+</td>
<td>Gray</td>
</tr>
<tr>
<td>6</td>
<td>Ground</td>
<td>Green</td>
</tr>
<tr>
<td>2</td>
<td>RX-</td>
<td>Black</td>
</tr>
<tr>
<td>3</td>
<td>TX-</td>
<td>Blue</td>
</tr>
<tr>
<td>8</td>
<td>+9VDC</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>TX+</td>
<td>Yellow</td>
</tr>
<tr>
<td>9</td>
<td>+9VDC</td>
<td>Violet</td>
</tr>
<tr>
<td>5</td>
<td>Ground</td>
<td>Red</td>
</tr>
</tbody>
</table>

To MAS

To MDU

<table>
<thead>
<tr>
<th>COLOR</th>
<th>SIGNAL</th>
<th>PIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Ground</td>
<td>1</td>
</tr>
<tr>
<td>Black</td>
<td>RX-</td>
<td>2</td>
</tr>
<tr>
<td>Gray</td>
<td>RX+</td>
<td>3</td>
</tr>
<tr>
<td>Orange</td>
<td>+9 VDC</td>
<td>4</td>
</tr>
<tr>
<td>Violet</td>
<td>+9 VDC</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>TX-</td>
<td>6</td>
</tr>
<tr>
<td>Yellow</td>
<td>TX+</td>
<td>7</td>
</tr>
<tr>
<td>Green</td>
<td>Ground</td>
<td>8</td>
</tr>
</tbody>
</table>

06AAA_132A
**Six-pin Data Link Connector Pin Callouts**

<table>
<thead>
<tr>
<th>SIGNAL</th>
<th>PIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1708/J1587 DATA LINK+</td>
<td>A</td>
</tr>
<tr>
<td>J1708/J1587 DATA LINK-</td>
<td>B</td>
</tr>
<tr>
<td>+12VDC</td>
<td>C</td>
</tr>
<tr>
<td>PLUG P/N:23507136</td>
<td>D</td>
</tr>
<tr>
<td>BATTERY GROUND</td>
<td>E</td>
</tr>
<tr>
<td>PLUG P/N:23507136</td>
<td>F</td>
</tr>
</tbody>
</table>
### Nine-pin Data Link Connector Pin Callouts

<table>
<thead>
<tr>
<th>SIGNAL</th>
<th>PIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>BATTERY GROUND</td>
<td>A</td>
</tr>
<tr>
<td>+12VDC</td>
<td>B</td>
</tr>
<tr>
<td>J1939 DATA LINK+</td>
<td>C</td>
</tr>
<tr>
<td>J1939 DATA LINK-</td>
<td>D</td>
</tr>
<tr>
<td>J1939 SHIELD</td>
<td>E</td>
</tr>
<tr>
<td>J1708/J1587 DATA LINK+</td>
<td>F</td>
</tr>
<tr>
<td>J1708/J1587 DATA LINK-</td>
<td>G</td>
</tr>
<tr>
<td>PLUG</td>
<td>H</td>
</tr>
<tr>
<td>PLUG</td>
<td>J</td>
</tr>
</tbody>
</table>
Radio Connector Pin Callouts

Common Radio and Harness

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>PIN</th>
<th>SIGNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>N/C</td>
<td>B1</td>
<td>RR + SPEAKER</td>
</tr>
<tr>
<td>A2</td>
<td>N/C</td>
<td>B2</td>
<td>RR - SPEAKER</td>
</tr>
<tr>
<td>A3</td>
<td>PARK LIGHTS</td>
<td>B3</td>
<td>RF + SPEAKER</td>
</tr>
<tr>
<td>A4</td>
<td>IGN CONTACT</td>
<td>B4</td>
<td>RF - SPEAKER</td>
</tr>
<tr>
<td>A5</td>
<td>PWR ANT OUTPUT</td>
<td>B5</td>
<td>LF + SPEAKER</td>
</tr>
<tr>
<td>A6</td>
<td>PWM/ANALOG DIM</td>
<td>B6</td>
<td>LF - SPEAKER</td>
</tr>
<tr>
<td>A7</td>
<td>BATTERY - MAIN</td>
<td>B7</td>
<td>LR + SPEAKER</td>
</tr>
<tr>
<td>A8</td>
<td>GROUND</td>
<td>B8</td>
<td>LR - SPEAKER</td>
</tr>
</tbody>
</table>

Notches

Front Drivers Side Speaker Wire (B5)

Front Drivers Side Speaker Wire (B6)

Note: Connector tabs on this side
**CAN Converter Cable**

- **PIN 1**
  - **SIGNAL**: CAN A (TX)
  - **COLOR**: BLACK / ORANGE 24
- **PIN 2**
  - **SIGNAL**: CAN B (TX)
  - **COLOR**: BLACK / BLUE 24
- **PIN 3**
  - **SIGNAL**: CAN A (RX)
  - **COLOR**: ORANGE / BLACK 24
- **PIN 4**
  - **SIGNAL**: CAN D (PWR)
  - **COLOR**: BLACK / RED 22
- **PIN 5**
  - **SIGNAL**: CAN C (GND)
  - **COLOR**: BLACK 22

**Repeater Cable**

- **PIN 1**
  - **SIGNAL**: CAN_H
  - **COLOR**: YELLOW
- **PIN 2**
  - **SIGNAL**: CAN_L
  - **COLOR**: GREEN
Topics in this appendix provide environmental and power requirements for the MCP100 and accessories.

MCP100 Environmental and Power Requirements ............................................. B-2

For technical questions, contact Omnitracs 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
**MCP100 Environmental and Power Requirements**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-30° C to 70° C (-22° F to 158° F)</td>
</tr>
<tr>
<td>Vibration/Shock</td>
<td>Mobile application server (MAS) does not have a shock tray.</td>
</tr>
<tr>
<td></td>
<td>Neither the antenna nor satellite data modem (SDM) should be mounted to any</td>
</tr>
<tr>
<td></td>
<td>member/support directly connected to the chassis, such as a headache rack.</td>
</tr>
<tr>
<td>Humidity</td>
<td>SDM</td>
</tr>
<tr>
<td></td>
<td>Weatherproof.</td>
</tr>
<tr>
<td></td>
<td>TDM</td>
</tr>
<tr>
<td></td>
<td>Not watertight. DO NOT get wet.</td>
</tr>
<tr>
<td></td>
<td>MAS</td>
</tr>
<tr>
<td></td>
<td>Not watertight. DO NOT get wet.</td>
</tr>
<tr>
<td></td>
<td>Media display unit (MDU)</td>
</tr>
<tr>
<td></td>
<td>Not watertight. Turn over immediately if liquids are spilled on it.</td>
</tr>
<tr>
<td></td>
<td>Compact display unit (CDU)</td>
</tr>
<tr>
<td></td>
<td>Not watertight. Turn over immediately if liquids are spilled on it.</td>
</tr>
<tr>
<td>Power</td>
<td>+9 to +32 Volts DC</td>
</tr>
<tr>
<td>Operating at +12V using CDU,</td>
<td>MCP100 draws a maximum of 1.8 amps from the battery (24 W).</td>
</tr>
<tr>
<td>RCD, and speaker switch</td>
<td></td>
</tr>
<tr>
<td>cable only—no accessories.</td>
<td></td>
</tr>
<tr>
<td>Operating at +12V without</td>
<td>MCP100 draws a maximum of 1.5 amps.</td>
</tr>
<tr>
<td>using CDU.</td>
<td></td>
</tr>
<tr>
<td>Asleep using CDU, RCD, and</td>
<td>MCP100 draws 60–70 mA.</td>
</tr>
<tr>
<td>speaker switch cable only—no</td>
<td></td>
</tr>
<tr>
<td>accessories.</td>
<td></td>
</tr>
<tr>
<td>Asleep without using CDU.</td>
<td>MCP100 draws 60–70 mA.</td>
</tr>
<tr>
<td>Operating at +12V using CDU,</td>
<td>MCP100 draws a maximum of 1.6 amps from the battery (12 W).</td>
</tr>
<tr>
<td>RCD, and speaker switch</td>
<td></td>
</tr>
<tr>
<td>cable only—no accessories.</td>
<td></td>
</tr>
<tr>
<td>Operating at +12V without</td>
<td>MCP100 draws a maximum of 1.12 amps.</td>
</tr>
<tr>
<td>using CDU.</td>
<td></td>
</tr>
<tr>
<td>Asleep using CDU, RCD, and</td>
<td>MCP100 draws 110 mA.</td>
</tr>
<tr>
<td>speaker switch cable only—no</td>
<td></td>
</tr>
<tr>
<td>accessories.</td>
<td></td>
</tr>
<tr>
<td>Asleep without using CDU.</td>
<td>MCP100 draws 110 mA.</td>
</tr>
</tbody>
</table>
Topics in this appendix provide the Omnitracs standard Return Material Authorization (RMA) procedure and policies for use in the United States only. It applies to current Omnitracs products that need to be returned for replacement. For information on the GlobalTRACS® RMA procedure, refer to GlobalTRACS® Standard RMA Procedure, 80-J5638-1.

The Return Material Authorization Process...................................................... C-1
How to Obtain an RMA Number................................................................. C-2
RMA Policies.................................................................................................. C-4

This document does not cover equipment problem diagnosis. For technical assistance, please refer to the current diagnostic or installation guide. Listings of manuals and ordering information may be obtained at our website at www.myqualcomm.com.

The Return Material Authorization Process

RMAs are used whenever equipment must be returned. They authorize, schedule, and track the return, repair or replacement, and shipment of equipment.

The RMA process involves three separate events:

• You request an RMA number.
• Omnitracs arranges shipment of a replacement component to you.
• You return a failed component to the address specified by Omnitracs.

The RMA process is started when you request an RMA number. The RMA number is a reference number that is used to track the status of each part as it moves through the RMA process. After you are issued the RMA number, a replacement part will be shipped to you. You are responsible for returning the defective equipment to the address specified by Omnitracs within 14 days.
How to Obtain an RMA Number

There are two ways to obtain an RMA number:

• Visit our website at www.myqualcomm.com and then log into the Customer Portal. See Creating an RMA On-line on page C-4. Access for customers only.

• Call Omnitracs Customer Support at (800) 541-7490 and request an RMA number.

Our website provides customers with forms and the option for RMAs on-line. If you call Omnitracs Customer Support between 6:00 a.m. and 5:00 p.m. Pacific Time, Monday through Friday, you can be issued an RMA number over the phone.

Required Information

Before the RMA number can be issued, you need to provide Omnitracs with the following information.

Date. The date that you are sending the form to Omnitracs.

Customer Name and Contact. The name of the company that is requesting the RMA and the name of the person making the RMA request.

“Ship to:” Address. The complete address where the replacement component is to be shipped, plus the name of the person to whose attention the package should be addressed.

Delivery Priority. All replacements are typically shipped via ground service within two business days. If you require expedited delivery, you will need to include your shipper account number (this is your FedEx or UPS account number) when requesting the RMA. The cost of expedited shipping will be billed to your account number directly. If express delivery is critical, please call 1-800-541-7490, Option 4 to confirm inventory availability.

Return Code. The code that best describes the reason you are returning the unit. Frequently used codes include:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD</td>
<td>Customer Damage</td>
<td>Any damage that occurred due to improper or negligent use of the equipment by the customer. Customer damage may be caused by an accident, incorrect installation, mishandling, or intentional abuse. A purchase order number is required in order to process a customer damage RMA.</td>
</tr>
<tr>
<td>DOA</td>
<td>Dead on Arrival</td>
<td>A component is considered DOA if it fails to function when taken out of the box at installation.</td>
</tr>
<tr>
<td>FF</td>
<td>Field Failure</td>
<td>A working unit that has failed in the field after installation.</td>
</tr>
<tr>
<td>OE</td>
<td>Order Error</td>
<td>Receipt of wrong parts or of parts not ordered.</td>
</tr>
<tr>
<td>SE</td>
<td>Shipping Error</td>
<td>The correct part was ordered but the wrong part was received.</td>
</tr>
<tr>
<td>UP</td>
<td>Upgrade</td>
<td>The return of a working unit for an upgraded model. Upgrades can be made to software or hardware. Use of this return code requires a contractual amendment and a purchase order number.</td>
</tr>
</tbody>
</table>
**Truck or Vehicle Number.** The number of the truck, tractor, or item on which the component was installed.

**Unit ID (System Serial Number).** The identification number of the mobile system which is required to verify correct ownership of the system. To find the number, press the Down Arrow key on the display screen and look for the Unit Serial Number, or read the serial number on the main communication unit. This number is also used to determine warranty status of the unit.

**Part Number (Product ID/MCN).** Due to the multiple variations of Omnitracs equipment, the part number—Material Control Number (MCN)—must be provided to ensure that the correct replacement part is shipped. Be sure to verify the part number by looking at the actual part being returned, not by checking a pre-defined parts list. If the unit is an MVPc, use the model number.

**Failed Serial Number.** A serial number (S/N) is required for each serialized component on an RMA. The major serialized components include:

- MCT Communication Unit, IMCT Antenna Communication Unit, TruckMAIL Mobile Messaging Terminal, OmniExpress® Terrestrial Communication Unit, T2™ Unit, Omnitracs MAS, MAS200
- Outdoor Unit, Omnitracs SDM, WIB200
- MVPc unit, DU/EDU, Omnitracs MDU, DIU200
- Some PC components

The serial number decal is affixed to the component chassis. (Always include the leading zeros in a serial number.)

**Replacement Serial Number.** The serial number (S/N) of the unit that was installed to replace the failed part listed on the RMA. (Always include leading zeros in a serial number.)

**Purchase Order.** A purchase order (P.O.) number may be required when an item is customer damaged or when you are requesting an upgrade. Companies may also require a P.O. when products have an RMA at an authorized Omnitracs Service Center.

**Failure Description.** A complete description of the problem associated with the failed component. Please be specific. Omnitracs needs as much information as possible to effectively duplicate the failure, diagnose the problem, and repair the failed unit. It is better to give too much information than not enough information. Descriptions such as “Unit not operating” or “Not working” do not provide enough information.

**Work Order (WO) Number (for Service Centers only).** This number only applies if the repair is being performed at an authorized Omnitracs Service Center. If the repair is done at a service center, the shipped replacement unit will be sent to the service center instead of to the customer.
Creating an RMA On-line

Depending on the program you are using, you may create an RMA on-line. You can cancel the RMA at anytime during the procedure. You can also see a list of tips in various parts of the website. This is for customers only.

2. Enter your name and password then click Log in.
3. Click the Returns and Warranties tab.
4. Click Create an RMA.
5. Follow the instructions provided on this website.

RMA Policies

What to Return/Not Return

Normally, all failed equipment must be returned for repair or replacement. The following major system components need to be returned:

- MCT Communication Unit (Comm Unit)
- IMCT Antenna Communication Unit (ACU)
- TruckMAIL Mobile Messaging Terminal (MMT)
- OmniExpress Terrestrial Communication Unit (TCU)
- Omnitracs Mobile Application Server (MAS)
- Mobile Application Server 200 (MAS200)
- Outdoor Unit (ODU)
- Omnitracs Satellite Data Modem (SDM)
- Wireless Interface Box 200 (WIB200)
- MVPc unit
- Display Unit/Enhanced Display Unit (DU/EDU)
- Omnitracs Media Display Unit (MDU)
- Display Interface Unit (DIU200)
- T2 Unit
- 7-Way tool
- Major PC components
- Any Dead on Arrival (DOA) component
There are a few exceptions to this policy. You are not required to return the following components unless they are Dead on Arrival.

- All cables
- Pager System Components (receiver, transmitter, and antenna)
- Panic Button
- Remote Message Waiting Light (RMWL)
- Buzzer/Switch Kit
- Antennas (i.e., GPS, cellular, or Loran)
- Dual Signal Multiplier
- MPG Display
- Tethered Transmitter
- T2 external battery—DO NOT return to Omnitracs unless specifically requested by an Omnitracs representative. Proper disposal of defective or dead lead-acid batteries is the responsibility of the T2 owner/customer. Please dispose of defective or dead batteries at a local lead-acid battery recycling center.
- Omnitracs Remote Control Device (RCD)
- Omnitracs MAS/MAS200 battery—DO NOT return to Omnitracs unless specifically requested by an Omnitracs representative. Proper disposal of defective or dead lead-acid batteries is the responsibility of the Omnitracs MCP owner/customer. Please dispose of defective or dead batteries at a local lead-acid battery recycling center.

Any components that are found to be Dead on Arrival (DOA) within 90 days of shipment, including cables and antennas, must be returned to Omnitracs for failure analysis. If available, please provide the Lot Date Code for the defective component when you request the RMA. If possible, return the defective component in its original packaging.

Where to Return Equipment

Please return equipment to Omnitracs at the following address. Make sure that the RMA number is marked clearly on the outside of the box.

Omnitracs - RMA Receiving
C/O Baja Freight Forwarders, Inc.
8662 Siempre Viva Road
San Diego, CA 92154

RMA #: __________________
(800) 541-7490

To prevent damage during shipment and handling, carefully package all equipment being returned. If the original shipping container and packing material are available, please use them to return the equipment.
“Past Due” Equipment

Omnitracs standard policy is to “advance replace” equipment when the RMA number is issued. This means that a replacement component will be shipped before the defective component is received at Omnitracs. Customers are responsible for returning the failed equipment to Omnitracs within fourteen (14) days after receiving the RMA number.

If the failed items are not received within this time period, Omnitracs may invoice the customer for the higher of the current price or the applicable spare part price for the component. In addition, customers with “past due” equipment will be notified that Omnitracs will discontinue its “advance replace” RMA policy and future RMAs will be considered “no advance replace.” This means that a replacement component will not be shipped until the defective component is received at Omnitracs. When all the past due components are received by Omnitracs or paid in full, Omnitracs may resume advance replacement of failed equipment. Certain upgrade programs may be structured as no advance replace.

Customer-Damaged Equipment

Customer-damaged items are those which have been damaged as a result of improper or negligent use of the equipment. This can include accidental damage, incorrect installation, mishandling, or intentional abuse. Customer-damaged equipment must be identified at the time the RMA is requested.

If an RMA item cannot be repaired, it will be declared “scrap.” The “scrap” determination will be made if the cost of repairing the item exceeds the cost of replacing it.

Types of damage that usually result in major system components being scrapped are crushed components; internal corrosion of components; fire damage to components; and cracked housing of components.

Caution

Never open the Communication Unit; MAS; MAS200; or ODU, ACU, SDM, and WIB200 antennas. Breaking the seal on these components voids their warranties, causing them to be treated as customer-damaged items.

(Exceptions to this include opening the Antenna radome for maintenance; opening the Communication Unit for EPROM upgrades; and opening the MAS and MAS200 to test or replace the battery.)

Missing, Lost, Stolen, or Destroyed Equipment

It is not necessary to obtain an RMA number for missing, lost, stolen, or destroyed equipment since nothing will be returned to Omnitracs. Replacements for missing, lost, stolen, or destroyed equipment should be ordered through Sales Administration as spare parts. P.O. numbers are required for all spare parts orders.

If the missing, lost, stolen, or destroyed equipment includes an MCT Communication Unit, IMCT Antenna Communication Unit, TruckMAIL Mobile Messaging Terminal, OmniExpress
Terrestrial Communication Unit, or Omnitracs Mobile Application Server, or Mobile Application Server 200 and a replacement is not required, you should submit a “Fleet Size Reduction Request Form.” This form is shown on the next page.

For Service Centers only: If equipment is missing at the time of installation, indicate this when you request equipment and you will be issued a Sale number instead of an RMA number.

**Permanent Fleet Size Reduction Request Form**

This form (shown on the following page) should be used to permanently decrease the size of your Omnitracs fleet in the event that a Comm. Unit is permanently lost, stolen, or destroyed. Submitting this form will ensure that your base message charges and extended maintenance billing (if applicable) are adjusted appropriately.
Permanent Fleet Size Reduction Request Form

To: Customer Support Administration
Facsimile: (858) 658-1598

From: __________________________________________ (Print Customer Name)

Phone number: __________________ Fax number: __________________

This form should be used only if you would like to PERMANENTLY** decrease your delivered fleet size. Your delivered fleet size is determined based on the number of complete systems, i.e., MCT, IMCT, TruckMAIL, OmniExpress, or MCP100, or MCP200 (collectively referred to as “Unit”), purchased and automatically increases incrementally with the purchase of each new Unit. The shipment of spare components, such as the shipment of an IMCT Antenna Communication Unit or a MCT Communication Unit (collectively referred to as “Hardware Messaging Units”), will not increase your delivered fleet size value. Your delivered fleet size value is used to calculate base message charges and extended maintenance charges (if applicable). If a customer does not notify Omnitracs by completing and signing this “Permanent Fleet Size Reduction Request Form,” these charges per Unit will continue. You may reduce your fleet size if one of the following occurs:

A Hardware Messaging Unit (i.e., an MCT Communication Unit, an IMCT Antenna Communication Unit, a TruckMAIL Mobil Messaging Terminal, an OmniExpress Terrestrial Communication Unit, or an Omnitracs Mobile Application Server, or a Mobile Application Server 200) is destroyed, stolen, or lost and you elect not to replace it via an RMA or a sales order for a spare Hardware Messaging Unit. In this situation, the salvageable components are put into spares stock.

A Unit (i.e., a complete system) is destroyed, stolen, or lost, and you elect to purchase a replacement Unit via a sales order, since the shipment of a Unit will automatically increase your delivered fleet size value.

A Component of a Unit (other than the Hardware Messaging Unit, i.e., Outdoor Unit, or MVPC) is destroyed, stolen, or lost and you want to accurately reflect the components currently existing in your fleet for warranty and/or extended maintenance purposes.

** NOTE: ONCE A FLEET SIZE REDUCTION REQUEST FORM IS SIGNED BY CUSTOMER AND RECEIVED BY Omnitracs, THE COMPONENT(S) SET FORTH WILL BE PERMANENTLY REMOVED FROM THE OMNITRACS NETWORK MANAGEMENT FACILITY COMPUTER AND WILL NOT BE RECREATED.

To PERMANENTLY decrease your fleet size, fill in the lower part of this worksheet and fax copies to Customer Support Administration using the above fax number. Omnitracs will contact you upon completion.

Customer: ___________________________________ Truck Number: ____________

Communication Unit Serial Number (IMCT ID): ____________________________

Equipment was ___stolen ___lost ___destroyed ___other (please check one).
An MCP100 is normally upgraded with software by sending it over-the-air using satellite transmissions. However, there may be occasions when upgrades are necessary using secure digital (SD) cards, for example, when there is an operating system (OS) upgrade and when upgrades need to be performed very quickly.

Topics in this appendix provide specific instructions for checking the software versions installed on the MCP100 and upgrading the MCP100 using SD cards.

Checking the Software Versions Installed ........................................... D-2
SD Card Instructions ................................................................. D-3
Upgrading Only the MAS Software ............................................. D-3
Upgrading the MAS Operating System and MAS Software .......... D-5
Upgrading the SDM Software ...................................................... D-5
Upgrading the MDU Software ..................................................... D-6

For technical questions, contact Omnitracs 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
Checking the Software Versions Installed

Shortly after you power up the MCP100, the user interface screen displays.

1. Scroll down to the **System** icon and tap the icon.

2. Tap the **System** tab to access system information about the MCP100.
   - MAS, MAS Win OS, SDM, and MDU firmware version numbers are listed here.

3. Tap the **SDM** tab to access the SDM version.
**SD Card Instructions**

- Most brands of SD card work with the MCP100.
  - Use a 1 GB SD card to load software.
- The SD card must **always** be inserted into the SD card slot in the MAS with label side down/metal strips facing up.
- Organize files on the SD card so the MAS can read them.
  - Software is available on the Customer Portal, or you can check with an Omnitracs representative for more information on where to get the software and how the files need to be organized.

![SD Card Insertion Diagram]

**Upgrading Only the MAS Software**

MAS should be powered ON, ignition ON.

1. Insert MAS SW SD card into slot on MAS with label side down/metal strips facing up.
   - Soon after the MAS SW card is installed, the MDU screen will display, “Verifying component: xxx of XXY.”
   - Approximately one minute after the SD card is inserted, the process writes data to memory and reboots itself.
   - Once the unit comes back up after the reboot, the MDU screen shows “Upgrading components: xxx of XXY.” This takes about five minutes.
2. After the upgrade process finishes and the MDU screen shows the application icons or the driver warning screen, remove the SD card and confirm the upgrade is complete by checking the MAS software version on the System Information screen.

### Upgrading the MAS Operating System and MAS Software

**Note**

*If the MAS OS is upgraded, the MAS SW will also need to be upgraded. Before starting an upgrade, ensure you have SD cards for the MAS operating system and the MAS software.*

1. You **must** disconnect power for 10 minutes or until all LEDs go out.
2. Insert the SD card labelled, MAS Operating System, with label side down/metal strips facing up.
3. Ensure the MAS internal battery is installed and connected.
4. Apply external power by connecting the power cable to the MAS. Vehicle ignition should be ON.
5. Normal upgrade indicators are:
   - LED to the left of the SD card slot blinks green (downloading).
   - LED to the right of the SD card slot is solid red.
   - No MDU screens are typically available for this step.
6. Keep MAS OS SD card in slot until the right LED goes to solid green. When the right LED is solid green, the OS upgrade is complete. This should take about 3–5 minutes.

**Do not** remove MAS OS SD card until right LED displays solid green

7. Remove MAS OS SD card and quickly replace with MAS SW SD card, with label side down/metal strips facing up.

8. After approximately one minute, normal upgrade indicators are:
   - LED to the left of the SD card slot is blinking green.
   - MDU screen shows, PLEASE WAIT, LOADING.

9. Keep the MAS SW SD card in the slot until the MDU screen shows the application icons or the driver warning screen. When either of these appears, the upgrade is complete. Verify the software version on the System screen. This should take 10–15 minutes.

10. Remove the SD card and verify the S/W versions on the System screen.

   **Note**

   *The S/W versions will not necessarily match those shown on the screen below.*

   ![System screen](image.png)

   The upgrade is now complete.

**Upgrading the SDM Software**

1. Ensure the SDM is connected to the MAS.
2. Turn vehicle ignition to ON.

3. Insert SDM SW SD card into slot on MAS with label side down/metal strips facing up.

4. Wait approximately six minutes and then check the SDM software level.

5. Once the SDM software version has updated, remove the SD card.

   The upgrade is now complete.

**Upgrading the MDU Software**

1. Ensure the ignition is ON.

2. Insert SD card into slot on MAS with label side down (metal strips facing up).

3. Approximately 30 seconds later, TTS advises:
   - “Setup card is supported. Please remove card and stand by.”

4. Approximately 30 seconds later, TTS advises:
   - “Starting to display software update, this will take 5–10 minutes. Please do not turn off ignition.”

5. Approximately 5–12 minutes later, TTS states:
   - “Display software update completed successfully.”

6. Once the upgrade process is complete, you are returned to the last screen you were on before the upgrade began.
Preventive Maintenance Inspection

Topics in this appendix provide steps for inspecting the mobile application server (MAS), the media display unit (MDU), the terrestrial antenna and terrestrial data modem (TDM), the satellite data modem (SDM), and the Trailer Tracks system.

uHow Often Should Inspections Be Performed? ........................................... E-2
Inspecting the Mobile Application Server (MAS) ........................................ E-2
Inspecting the Media Display Unit (MDU) .................................................... E-4
Inspecting the Terrestrial Antenna and TDM, and the Satellite Data Modem (SDM)E-6
Verifying Trailer Tracks System Connections ............................................. E-8
**How Often Should Inspections Be Performed?**

- Omnitracs recommends inspections be performed at least **once every 90 days**.
- During normally scheduled vehicle preventive maintenance inspections.

**Inspecting the Mobile Application Server (MAS)**

1. Make sure the compartment where the MAS is installed has at least 1 inch of air space on each side for cooling and at least 3 inches of space for servicing the backup battery.

2. Make sure there are 4 to 6 inches of air space on the connector side to allow for cable bends and servicing.

3. Make sure tire chains, tools, and other equipment are not stored on top of the MAS.

4. Make sure the mounting hardware holding the MAS in place is tight and does not allow the MAS to vibrate.

   **Caution**

   *Do not use a pneumatic tool as this could damage the hardware. Use extreme caution when working with power tools.*

5. Make sure the MCP100 display unit, TDM, power, and accessory cables coming into the compartment have enough slack and are not pulling on the MAS connectors. Make sure the cables are not being chafed or cut by sharp edges.
6. Make sure the cable connectors have not worked themselves loose from the MAS. Hand tighten any loose connectors.

**Caution**

ONLY hand-tighten or use a small screwdriver on the connectors. DO NOT use a pneumatic tool or pliers to tighten the connectors as this could damage the screws or the MAS mounting tabs. DO NOT over-tighten. DO NOT apply grease to the connectors.

7. Check the left side LED indicator on the MAS. Normally, the left side LED indicator will be blinking blue.

Refer to Chapter 13 in the *MCP100 Diagnostic Guide* for other LED states.

8. Check to make sure the cables are stored securely with tie wraps and are stored out of the way.

9. Check the power connections, such as at the power distribution panel, to ensure they are tight and the wiring is secure.

Check all ground connections to make sure there is a good metal-to-metal contact and the wires are not strained or damaged. Ground wires should be attached to vehicle or sleeper surfaces connected to chassis ground.

**Caution**

*Ground wires should not be connected to the MAS or mounting hardware.*

Make sure there is no corrosion around the ground connection. If there is corrosion, take the connection apart, clean the connector and surface with a wire brush, and reconnect the parts.
Inspecting the Media Display Unit (MDU)

10. Go to the Home screen and tap the System icon. Tap the Battery tab and tap the Test Battery button.

   **Warning**
   
   It may take a few minutes to perform this test.

   Check the Results of last test and verify that the battery is Good.
   
   • If the battery shows a failure, Bad—12000, go to Chapter 16 in the MCP100 Diagnostic Guide.

---

Inspecting the Media Display Unit (MDU)

1. Verify proper MDU operation:
   
   • Turn IGN to the ON position and verify that the status is **Good**.
   
   • Turn the IGN to the OFF position and verify that the status goes to **Ignition Off**.
2. Verify the MDU keys and screen are clean.

Omnitracs recommends that you use a soft cloth and either plain water, glass cleaner, or mild soap to gently clean the surfaces of the MDU as well as the display screen.

**Caution**

The MDU is not watertight. Do not spray any liquid directly on the display screen.

Heavily soiled MDUs should be returned to Omnitracs using the RMA process for proper cleaning.

3. Verify the display screen is readable in any lighting condition.

4. Make sure the display cable has enough slack and is not being rubbed or cut by anything inside the cab.

5. Remove the MDU from the holster and make sure the screws holding the holster in place are secure.
Inspecting the Terrestrial Antenna and TDM, and the Satellite Data Modem (SDM) Preventive Maintenance Inspection

**6.** Inspect the underside of the MDU to make sure the tie wraps are securely tightened and the cable is not damaged.

The illustration to the left is the underside of the MDU showing the tie wraps.

---

**Inspecting the Terrestrial Antenna and TDM, and the Satellite Data Modem (SDM)**

1. Make sure all cables are protected with convoluted tubing and are in good condition.

Make sure cables have no kinks or bends and are not being pulled tightly against metal edges that can rub or cut the cables.

2. Make sure there are adequate service (drip) loops in the cables at the antenna and where they enter the vehicle.

3. Make sure grommets are in place around any holes the cables pass through.

Make sure RTV sealant or refrigeration/tar tape is intact and provides a good seal on any holes that lead to the exterior of the vehicle.

Go to step 4. if you are inspecting a terrestrial unit.

Go to step 7. if you are inspecting a satellite unit.
4. Make sure the antenna is securely attached to the mount. Check the mount hardware to make sure it is secure and does not show any signs of loosening.

5. Check that the antenna cable (TNC) connectors have not worked themselves loose from the TDM and that the TDM is securely attached to the MAS.

6. Check the TDM lights. Normally, the left-side LED will be blinking green and the right-side LED will be off.

Refer to Chapter 9 in the *MCP100 Diagnostic Guide* for other TDM light states.

Go to step 9. to complete the terrestrial antenna and TDM inspection.

7. Make sure the SDM is securely attached to the SDM mount. Check the mount hardware to make sure it is secure and does not show any signs of loosening.

8. Twist SDM to verify that the SDM connector is hand-tightened and secure. The SDM mounting bolts should be tightened to the recommended torque of 72 inch/pounds (not foot/pounds).

*Caution*

*Do not use refrigeration/tar tape or RTV sealant on the SDM connector.*

Go to step 9. to complete the SDM inspection.
Verifying Trailer Tracks System Connections

9. Visually inspect all tie wraps to make sure they are not brittle and do not break. If a tie wrap is damaged or brittle, replace it.

Twist tie wrap between fingers to make sure it doesn’t break.

1. Make sure all 7-way connection points have been cleaned, inspected, and greased.

Omnitracs recommends that you use dielectric grease on the connection points.

2. Check the 7-way coil cord for nicks, cuts, or abrasions. Replace the cord as necessary.
3. Make sure there is voltage (12–24V) on pin 7 at all 7-way connection points (on the tractor and trailer).

Make sure you connect to ground (pin 1) as well when performing this step.

The illustrations at left show the connection at the tractor and at the trailer.
4. Connect a test transmitter to the truck.

5. Turn IGN to ON.

6. Access the Trailer Tracks ID screen by selecting the **Trailer** icon and verifying that the transmitter’s ID displays.

7. **For refrigeration customers**, do the following:
   - Inspect both ends of the refrigeration cable for corrosion and clean if necessary.
   - Turn IGN to ON.

   Verify the refrigeration connection and data transfer by accessing the Refrigeration Status screen.
   - With the refrigeration switch in the ON position, verify the REFRIGERATOR STAT# field is incrementing approximately once a minute. The manufacturer code for the unit should appear at the end of the refrigerator status number: “T” for Thermo King, or “C” for Carrier.
F

Component and Document Information

Topics in this appendix provide document control numbers (DCNs) and material control numbers (MCNs) for the different documents and MCP100 components referred to in this guide.

- MCP100 System Component MCNs Referenced in this Guide .......................... F-2
- MCNs for Sealants and Lubricants Referenced in this Guide ....................... F-6
- MCN for Omnitracs-recommended Torque Wrench Referenced in this Guide .............................. F-6
- BCS Solutions Scanner Parts List ........................................................................ F-6

For technical questions, contact Omnitracs 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
### DCNs for Documents Referenced in this Guide

<table>
<thead>
<tr>
<th>Document Name</th>
<th>DCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit Mount Installation Guide</td>
<td>TL80-6270-1</td>
</tr>
<tr>
<td>MCP100 Diagnostic Guide</td>
<td>80-J4867-2</td>
</tr>
<tr>
<td>How to Use the Wireless Panic Button Remote Transmitter (Visor Card)</td>
<td>80-J6060-1</td>
</tr>
</tbody>
</table>

### MCP100 System Component MCNs Referenced in this Guide

<table>
<thead>
<tr>
<th>System component</th>
<th>Illustration</th>
<th>Latest MCN</th>
<th>Alternate MCNs</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite data modem (SDM)</td>
<td></td>
<td>10-J8278</td>
<td>10-J9490 (SDM2)</td>
<td></td>
</tr>
<tr>
<td>Flat antenna</td>
<td></td>
<td>65-J9635-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical “L” mount for flat antenna</td>
<td></td>
<td>65-J9936-2</td>
<td>50-JB015</td>
<td></td>
</tr>
<tr>
<td>Media display unit (MDU)</td>
<td></td>
<td>CV90-J4820-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media display unit (MDU) holster</td>
<td></td>
<td>10-J8407-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System component</td>
<td>Illustration</td>
<td>Latest MCN</td>
<td>Alternate MCNs</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------</td>
<td>----------------</td>
<td>----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Compact Display Unit (CDU)</td>
<td></td>
<td>CV90-J8899</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile application server (MAS)</td>
<td></td>
<td>10-J9313-x</td>
<td>10-J3015-x</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(terrestrial)</td>
<td>(satellite)</td>
<td></td>
</tr>
<tr>
<td>Backup battery</td>
<td></td>
<td>CV90-J4341-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terrestrial data modem</td>
<td></td>
<td>CA90-J9400-x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote control device (RCD)</td>
<td></td>
<td>CV90-J8640</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terrestrial data modem cable</td>
<td></td>
<td>CV90-J9264-2</td>
<td>CV90-J9264-15</td>
<td></td>
</tr>
<tr>
<td>Media display unit (MDU) cable</td>
<td></td>
<td>CV90-J4880-17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System component</td>
<td>Illustration</td>
<td>Latest MCN</td>
<td>Alternate MCNs</td>
<td>Notes</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Power cable</td>
<td><img src="image" alt="Power cable" /></td>
<td>45-J9992-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessory cable (standard with converter connector)</td>
<td><img src="image" alt="Accessory cable" /></td>
<td>CV90-J9284-20</td>
<td>This cable is the standard cable.</td>
<td></td>
</tr>
<tr>
<td>Accessory cable (full function with converter connector)</td>
<td><img src="image" alt="Accessory cable" /></td>
<td>CV90-J8773-20</td>
<td>This cable is the full function cable.</td>
<td></td>
</tr>
<tr>
<td>Accessory cable (standard with repeater connector)</td>
<td><img src="image" alt="Accessory cable" /></td>
<td>CV90-J9956-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessory cable (full function with repeater connector)</td>
<td><img src="image" alt="Accessory cable" /></td>
<td>CV90-J9953-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaker switch cable</td>
<td><img src="image" alt="Speaker switch cable" /></td>
<td>CV90-J9204-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN converter cable</td>
<td><img src="image" alt="CAN converter cable" /></td>
<td>CV90-J9619-A42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN repeater cable</td>
<td><img src="image" alt="CAN repeater cable" /></td>
<td>CV90-J9954-A42</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>System component</strong></td>
<td><strong>Illustration</strong></td>
<td><strong>Latest MCN</strong></td>
<td><strong>Alternate MCNs</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>--------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>5 amp fuse (for Trailer Tracks)</td>
<td><img src="image1" alt="5 Amp Fuse" /></td>
<td>65-53011-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Message waiting buzzer</td>
<td><img src="image2" alt="Message Waiting Buzzer" /></td>
<td>65-3922-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote message waiting light</td>
<td><img src="image3" alt="Remote Message Waiting Light" /></td>
<td>CV90-6414-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panic button and cable</td>
<td><img src="image4" alt="Panic Button and Cable" /></td>
<td>CV90-J1377-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kit, Wireless Panic Spare XMTR Upgrade</td>
<td><img src="image5" alt="Kit, Wireless Panic Spare XMTR Upgrade" /></td>
<td>no picture available</td>
<td>65-J6070-1</td>
<td></td>
</tr>
<tr>
<td>Trailer Tracks system for reefer</td>
<td><img src="image6" alt="Trailer Tracks System for Reefer" /></td>
<td>10-53481-2</td>
<td>10-52525-6</td>
<td></td>
</tr>
<tr>
<td>Trailer Tracks system for dry van</td>
<td><img src="image7" alt="Trailer Tracks System for Dry Van" /></td>
<td>10-53481-1</td>
<td>10-52525-4</td>
<td></td>
</tr>
<tr>
<td>Protective Film Kit 10 pack, MDU</td>
<td><img src="image8" alt="Protective Film Kit 10 pack, MDU" /></td>
<td>64-J9040-1</td>
<td>Screen protector</td>
<td></td>
</tr>
</tbody>
</table>
**MCNs for Sealants and Lubricants Referenced in this Guide**

<table>
<thead>
<tr>
<th>Sealant</th>
<th>MCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealant, Mastic Butyl Rubber .125&quot; x 2&quot; x 12&quot; Black</td>
<td>755-12528-0003</td>
</tr>
<tr>
<td>Seal, Coax Plastic 1/2&quot; x 3/32&quot; x 10&quot; Strips OEM Pkg</td>
<td>755-01910-0001</td>
</tr>
</tbody>
</table>

**MCN for Omnitracs-recommended Torque Wrench Referenced in this Guide**

<table>
<thead>
<tr>
<th>Tool</th>
<th>MCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque wrench for replacing the radome</td>
<td>800-01730-0017</td>
</tr>
</tbody>
</table>

**BCS Solutions Scanner Parts List**

<table>
<thead>
<tr>
<th>Part</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS Scanner Kit contains: scanner, scanner cable, and holster</td>
<td>65-J9630-1</td>
</tr>
<tr>
<td>BCS Scanner Kit contains: scanner and scanner cable</td>
<td>65-J9630-2</td>
</tr>
<tr>
<td>BSC Scanner</td>
<td>825-53392-0000</td>
</tr>
<tr>
<td>Scanner Cable</td>
<td>45-J9652-16</td>
</tr>
<tr>
<td>Optional Holster</td>
<td>65-J9631-1</td>
</tr>
</tbody>
</table>

Order parts directly from BCS Solutions:
- Call: 800-555-5555.
- Website: www.bcssolutions.com
Feedback Form

Your comments are important to us as we evaluate the best way to provide you with quality documentation. Thank you for taking the time to complete this survey.

After completing this form, please fax a copy to: Omnitracs Information Design and Training (858) 845-6478.

Feedback Form

Company Information

Please provide this information or attach your business card.

Company:
Your Name:
Your title:
Phone:

Your primary job: (check one)
mechanic ❏
shop foreman ❏
service writer ❏

How often do you use an Omnitracs manual?
❏ Daily ❏ Weekly ❏ Monthly
❏ Never ❏ Only when I have questions

If you don’t use an Omnitracs manual on a regular basis, please indicate the reason: (check all that apply)
❏ Prefer calling customer service
❏ Too busy to look in manual
❏ Don’t have a copy
❏ Other ____________________________________________

If you haven’t used an Omnitracs manual, stop here and return the survey.
**Documentation Content**

1. Please indicate your opinion of the information included in the *MCP100 Installation Guide*:
   - [ ] Too detailed
   - [ ] Right amount of information
   - [ ] Not detailed enough

2. How often do you find what you’re looking for in the manual?
   - [ ] Always
   - [ ] Frequently
   - [ ] Sometimes
   - [ ] Rarely
   - [ ] Never

3. What is the reason you cannot find information in the manual?
   - [ ] Information was omitted
   - [ ] Not in the Table of Contents
   - [ ] Not in the Index
   - [ ] Manual is poorly organized
   - [ ] Other ______________________________________________________________

4. Please rate your level of satisfaction with the following areas in the manual:
   (5=Very satisfied  4=Satisfied  3=Neither Satisfied nor Dissatisfied
   2=Dissatisfied  1=Very Dissatisfied)

   - Diagnostic Procedures: 5 4 3 2 1
   - Flowchart Information: 5 4 3 2 1
   - Graphics/pictures: 5 4 3 2 1

5. Please rate your level of satisfaction in how the manual assists your company in each of the following areas:
   (5=very satisfied  4=Satisfied  3=Neither Satisfied nor Dissatisfied
   2=Dissatisfied  1=Very Dissatisfied)

   - Training for new staff: 5 4 3 2 1
   - Step-by-step procedures: 5 4 3 2 1
   - As a reference manual: 5 4 3 2 1
   - Overall usefulness: 5 4 3 2 1

6. Is the writing style in the manual easy to understand:
   - [ ] Yes
   - [ ] No
**Documentation Format**

1. Please indicate how you like the size of the manual:
   - [ ] Manual is too small
   - [ ] Manual is OK as it is
   - [ ] Manual is too large

2. Please rate your level of agreement with the layout of pages in the manual:
   (5=Very satisfied  4=Satisfied   3=Neither Satisfied nor Dissatisfied
   2=Dissatisfied    1=Very Dissatisfied)
   - Pages are uncluttered
   - Steps are easily identified
   - Print is easy to read

3. Would documentation from Omnitracs be more useful to you if it were delivered on-line?
   - [ ] Yes
   - [ ] No

4. How important is it for you to receive a paper copy of the documentation from Omnitracs?
   - [ ] Very important
   - [ ] Important
   - [ ] Not important

5. What would be the best way for you to learn about the Omnitracs MCP100?
   - [ ] Product training manual
   - [ ] Computer-based training
   - [ ] Video tape
   - [ ] Other ______________________________________________________________

6. What do you like best about our manuals?
   _______________________________________________________________________
   _______________________________________________________________________

7. If there is one thing you could change about our manuals, what would it be?
   _______________________________________________________________________
   _______________________________________________________________________

8. Other comments:
   _______________________________________________________________________
   _______________________________________________________________________

We may want to contact you to ask some additional questions about the documentation from Omnitracs. Would you be willing to talk to an Omnitracs representative about these manuals?
   - [ ] Yes, the best time to reach me is ___________
   - [ ] No

Thank you! Your comments are appreciated.
**Glossary**

**44-Pin I/O Accessory Cable.** See Full Function Accessory Cable and Standard Accessory Cable.

**Bad MCP Status.** When an MCP100 fault has been detected, the Status field will display 10000/10001, 12000/12001, 13000/13001, or 22000/22001. See specific Status numbers, or MCP100 Diagnostic Guide for details on status codes.

**Black Box.** See Mobile Application Server.

**Buzzer.** An indicator typically mounted behind the dash that buzzes if a message has been received. See Message Waiting Light, Remote Message Waiting Light.

**Calibration.** Calibration is performed when the MCP100 cannot use the J1708/1587 data link for Performance Monitoring input. After sensor calibrations have been determined, the dispatch computer operator needs to send the calibration numbers to the MCP100. See RPM Calibration and Speed/Distance Calibration.

**CDU.** See Compact Display Unit.

**C/No Value.** Indicates the strength of the data satellite signal being received from or sent to the satellite. FL C/No indicates the forward signal strength; RL C/No indicates the return signal strength.

**Compact Display Unit (CDU).** The user interface device that can be used to display the Omnitracs-provided navigation application for the MCP100 system.

**Configuration Screen.** This screen shows how the MCP100 is configured. The System icon (satellite dish) takes you to this screen; then tap the Config tab.

**Data Satellite.** This satellite handles all transmission of information traffic between the vehicle and the NMC. It uses Ku-band signals and is located approximately 22,300 miles over the equator at 83° west longitude (south of Georgia).

**Display Cable.** The display cable connects the media display unit (MDU) to the mobile application server (MAS).

**FL C/No Value.** Measures the energy going from the satellite to the mobile application server (MAS).
Full Function Accessory Cable. Connects the MCP100 to the J1708/1587 data link, as well as other vehicle inputs and optional system devices. This cable provides the necessary wiring for all optional system features such as display screen disabling, Performance Monitoring system, Trailer Tracks system, panic button, TTS, RCD, Printer, Scanner, CDU, Axle, RPM, and PTOP/PTOC. See Appendix A for details on pinouts.

Global Positioning System (GPS). Provides current vehicle positioning with latitude and longitude updates displayed on the MCP100.

GPS. See Global Positioning System.

GPS Screen. The display unit screen shows the status of the MCP100 satellite positioning. The System icon (satellite dish) takes you to this screen; then tap the GPS tab.

Holster. The container that holds the MDU when it is not in use.

Installation Planning Worksheet. A worksheet on which you can plan your installations.

Installer Screen. MCP100 screen that displays information you will need to check the Performance Monitoring parameters. This screen can be accessed in the Performance Monitoring application at the Installer tab.

J1708/1587 Network. The MCP100 is able to monitor critical vehicle data from this low speed, bi-directional data bus. The data posted to this bus are provided by a single electronic control unit (ECU). See J1939 Network and Traditional Sensors Network.

J1708 Enabled. “J1708 enabled” means that the MCP100 has been set up to look at J1708 data via the J1708/1587 data link. The dispatch computer operator must send a message to the MCP100 that “tells” it to understand input from the J1708/1587 bus and define driving thresholds.

J1939 Network. The MCP100 is able to monitor critical vehicle data from this high speed data bus. The data posted to this bus are provided by multiple electronic control units (ECUs). SAE J1939 message protocol and controller area network (CAN) bus represent the prevalent on-vehicle networking for most construction equipment manufacturers. See J1708/1587 Network and Traditional Sensors Network.

J1939 Enabled. “J1939 enabled” means that the MCP100 has been set up to look at J1939 data via the J1939 data link. The dispatch computer operator must send a message to the MCP100 that “tells” it to understand input from the J1939 bus and define driving thresholds.

Line-of-Sight Requirement. The satellite data modem (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 (southern sky) at all angles above 12°.

MAS. See Mobile Application Server.

Material Control Number (MCN). The Omnitracs part number.

MCN. See Material Control Number.
MCP100. See Mobile Computing Platform.

MCP Serial Number (Unit Address). Located on the connector plate of the mobile application server (MAS). The MCP100 System screen also has this information.

MDU. See Media Display Unit.

Media Display Unit (MDU). The standard display unit for the MCP100. It consists of a keyboard and color TFT LCD display.

Message Waiting Light. An indicator light on the display that illuminates if a message has been received.

Mobile Application Server (MAS). The mobile application server contains the operating circuitry and memory for the MCP100 system. The unit does not require operator access. It is always installed on a mounting tray. The MAS is commonly referred to as the black box.

Mobile Computing Platform (MCP100). A two-way, mobile communication system that allows dispatchers and drivers to send and receive critical information, and also provides vehicle location and performance data. The MCP100 is mounted in the vehicle and consists of the following components:

- Mobile application server (MAS)
- Display unit and its holster
- Terrestrial data modem (TDM) and Terrestrial Antenna or Satellite Data Modem (SDM)
- Cables

Network Management Computer (NMC). Computer at the Network Management Facility that receives and handles the information transmission traffic between the dispatch center and the fleet.

Network Operations Center (NOC). This facility is responsible for processing and managing the information transmission traffic between the dispatch center and the fleet. Within the NOC is the Network Management Computer (NMC), which actually receives and handles the information transmission traffic. In the continental United States, the NOC is located at Omnitracs, Inc., in San Diego, CA.

NMC. See Network Management Computer.

NOC. See Network Operations Center.

NO SIGNAL Light. An indicator light on the display that comes on if the MCP100 has lost contact with the data satellite and is searching for the satellite signal.

Odometer Screen. The MCP100 display unit screen that displays the life-to-date (LTD) value and sensor calibration information. This screen can be accessed in the Performance Monitoring application at the Odometer tab.

Omnitracs Dispatch Software (QTRACS system). The software on the trucking company’s dispatcher computer. This is the dispatcher’s interface with the MCP100. It allows the dispatcher to send and receive messages, request MCP100 location information, and
perform other dispatcher functions. The dispatch computer accesses the NMC via a modem over a commercial or leased telephone line.

**Omnitracs Customer Support.** Call 24-hour Customer Support for information and additional help at any time, including holidays. In the United States, call 800-541-7490; in Canada, call 800-863-9191.

**Optional Accessories.** Any of these may be installed for the MCP100:
- Compact Display Unit (CDU)
- Panic button
- Printer (product of O’Neil Product Development, Inc.)
- Remote message waiting light
- Remote message buzzer
- Scanner (product of BCS Solutions)
- Vehicle information systems (Performance Monitoring system and Trailer Tracks system)

**OVT/CDMA Screens.** These screens show the strength of the wireless communication network signal being received. The System icon (satellite dish) takes you to these screens; then tap the OVT/CDMA tab.

**Panic Button.** Allows the driver to notify the Omnitracs Network Management Computer and the company dispatcher when an emergency situation exists.

**Positioning System.** See Global Positioning System.

**Power Cable.** Connects the vehicle 12/24 volt power source and system ground to the mobile application server.

**Printer.** Provides the driver with a hard copy of the MCP100 forward or return message screen display.

**RCD.** See Remote Control Device.

**Received Signal Strength Indication (RSSI).** The strength of the wireless communication network signal being received by the antenna during forward link acquisition to the wireless network provider. The RSSI should be less than 110.

**Remote Control Device (RCD).** A small device that mounts on the dash of the vehicle. It allows the driver to listen to messages while driving and also to navigate through applications.

**Return Material Authorization (RMA).** An order used to authorize, schedule, and track the return, repair or replacement, and shipment of equipment.

**RL C/No Value.** Measures the energy from the mobile application server (MAS) to the satellite.

**RPM Calibration.** Used to determine the engine RPM when RPM data comes from the RPM sensor instead of the J1708/1587 data link.
RSSI. See Received Signal Strength Indication.

**Satellite Data Modem (SDM).** The SDM contains the antenna that sends and receives satellite signals. The unit is usually installed as high as possible on the vehicle so that the antenna has a clear view of the satellite.

**Satellite Data Modem Cable.** The SDM cable connects the SDM to the mobile application server.

**Scanner.** Provides drivers a way to send documents to their home office for back office processing without having to leave their truck.

**SD Card.** See Secure Digital Card.

**SDM.** See Satellite Data Modem.

**SDM Screens.** These two screens show the various attributes of satellite signal strength. The System icon (satellite dish) takes you to these screens; then tap the SDM tab.

**Secure Digital (SD) Card.** A small card that fits into a slot in the mobile application server and allows the driver to upgrade the MCP100 over-the-air and load applications.

**Performance Monitoring System.** An accessory of the MCP100 that allows companies to collect vehicle trip and performance data.

**Software Version.** See MCP100 System Screen.

**Speed/Distance Calibration.** Used to determine the road speed and/or distance when the speed or distance data comes from the speed sensor instead of the J1708/1587 data link.

**Standard Accessory Cable.** Connects the MCP100 to the J1708/1587 data link, as well as other vehicle inputs and optional system devices. This cable provides the necessary wiring for optional system features such as display screen disabling, Performance Monitoring system, Trailer Tracks system, panic button, TTS, RCD, Printer, and Scanner. It does not support wiring for the CDU, Axle, RPM, PTOP, or PTOC. See Appendix A for details on pinouts.

**Status 10000/10001.** Occurs when the terrestrial data modem (TDM) is not communicating with the mobile application server (MAS).

**Status 12000/12001.** Occurs when the backup battery needs to be replaced.

**Status 13000/13001.** Occurs when there is an internal mobile application server (MAS) problem.

**Status 22000/22001.** Occurs when there are problems with positioning.

**System Parameters Screen.** The screen that displays information you will need to verify the speed and RPM calibrations.
**System Screen.** The Firmware Version screen displays the different software versions (and hardware versions) installed in the MCP100. The System icon (satellite dish) takes you to this screen; then tap the System tab.

**System Verification.** A functional system check that should be performed after installation and periodically to verify that the MCP100 is operating properly.

**TDM.** See Terrestrial Data Modem.

**Terrestrial Antenna.** Transmits information with the PCS receiver for data transmission and the GPS receiver for positioning information.

**Terrestrial Data Modem (TDM).** This is the wireless modem that connects the antenna to the MAS.

**Terrestrial Data Modem Cable.** The TDM cable connects the TDM to the mobile application server.

**Text-to-Speech (TTS).** A feature of the MCP100 that converts text messages or alerts to spoken words which are then played through an audio speaker.

**Total Distance.** The accumulated distance traveled by a vehicle during its operation. The MCP100 collects distance data in one of three ways:

- Modern electronic truck engines provide distance data via the engine controller module (ECM).
- In some older electronic engines, total distance is not available through the ECM and the MCP100 uses input from the speed sensor and the available J1708/1587 data to calculate distance.
- In non-electronic trucks, the speed sensor provides both speed and distance data.

**Traditional Sensors Network.** The MCP100 monitors speed directly via the speed transducer on the transmission and RPM via the transmission fly wheel. See J1708/1587 Network and J1939 Network.

**Traditional Sensors Enabled.** “Traditional sensors enabled” means that the MCP100 has been set up to look at traditional sensors via the traditional sensors data link. The dispatch computer operator must send a message to the MCP100 that “tells” it to understand input from the traditional sensors and define speed and RPM.

**Trailer Tracks System.** An optional MCP100 feature that allows dispatch to monitor trailer connects and disconnects. The Trailer Tracks system can also monitor the refrigeration unit of the trailer.

**TTS.** See Text-to-Speech.

**Unit Address.** See MCP100 Serial Number (Unit Address).

**Vehicle Information Systems (VIS).** See Performance Monitoring system and Trailer Tracks System.