T7000

Installation Instructions

Read these instructions carefully before installing this product and keep this manual for future reference.

Part Number – 19221-A.0

DISCLAIMER

THIS IS A DISCLAIMER OF LIABILITY AND DAMAGE RESPONSIBILITY AS REGARDS TO LECTRONIX, INC. RELATING TO YOUR USE OF THE LECTRONIX T7000 SYSTEM. READ IT CAREFULLY. YOU ASSUME TOTAL RESPONSIBILITY AND RISK FOR USING THIS SYSTEM.
Failure to properly focus on the operation of your motor vehicle can result in death, serious injury and property damage. This T7000 device should never be used at a time or in a manner that distracts you from properly focusing on operation of the motor vehicle in which it is installed. Our concern is for your safety. We ask that you fully cooperate with and share that concern.

Always operate the vehicle in a safe manner and in full compliance with speed limits, road safety signs and all other laws and devices which regulate operation of a motor vehicle.
Be and remain aware of driving conditions at all times when using this system while operating a motor vehicle.
Operation of this unit, including its camera, navigation, audio and other features can be distracting to your operation of the motor vehicle. While the system is intended to provide both entertainment and helpful vehicle and navigation information, it is not intended to, nor should you allow it to distract you from properly focusing on operating the motor vehicle in which it is installed. It is up to you to minimize or prevent such distraction.

Learn how to use this system before placing the vehicle in operation. Minimize the amount of time spent viewing the screen of the unit while driving and use voice prompts whenever possible. Do not attempt to adjust settings of the system or resolve any malfunction with it while driving. Instead, pull off the road in a safe and legal manner and then adjust its settings or deal with any malfunction. In the event of malfunction, disable the unit (turn power off or remove power from the system).
In addition to its multiple other functions, your T7000 system is equipped with a navigation function. When navigating, carefully compare information displayed on the unit to all available navigation sources, including information from street signs, visual sightings, and maps. Do not enter destinations, change settings or access any functions requiring prolonged use of the controls of the unit while operating your motor vehicle. For safety, pull off the road before making any adjustments to the system or resolving any navigation discrepancies or questions.

Table of Contents

IMPORTANT SAFETY INFORMATION

Safety Information

Read the operating instructions for the T7000 and all other components of the system carefully before using the system. They contain instructions about how to use the system in a safe and effective manner. FAILURE TO OBSERVE THE INSTRUCTIONS GIVEN IN THIS MANUAL MAY CAUSE INJURY OR DAMAGE AND VOID THE WARRANTY.
This manual uses symbols to show you how to use the product safely and to alert you to potential dangers resulting from improper connections and operations. The meanings of the symbols are explained below. It is important that you fully understand the meanings of the symbols in order to use this manual and the system properly.

Warning **This symbol intends to alert you to the presence of important operation instruction and installation instructions. Failure to heed the instructions may result in severe injury or death.**

Caution This symbol intends to alert you to the presence of important operation instruction and installation instructions. Failure to heed the instructions may result in injury or material damage.

Warnings

Warning **Observe the following warnings when using this unit.**

- **The driver should not operate the system while driving.**
  Operating the system will distract the driver from looking ahead of the vehicle and can cause accidents. Always stop the vehicle in a safe location and use the parking brake before operating the system.

- **Use the proper power supply.**
  This product is designed for operation with a negative grounded 12 V DC battery system. Never operate this product with other battery systems, especially a 24 V DC battery system.

- **Protect the CD Player mechanism.**
  Do not insert any foreign objects into the slot of this unit.

- **Do not disassemble or modify the unit.**
  Do not disassemble, modify the unit or attempt to repair the product yourself. If the product needs repair, consult your dealer or contact technical support (see Appendix B).

- **Do not use the unit when it is not functional.**
  If the unit is not functional (no power, no sound) or in an abnormal state (has foreign objects in it, is exposed to water, is smoking, or smells), turn it off immediately and consult your dealer.

- **Refer installation to qualified personnel.**

IMPORTANT SAFETY INFORMATION

Cautions

Caution

THE CD PLAYER IS A CLASS I LASER PRODUCT.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

DO NOT OPEN COVERS AND DO NOT REPAIR BY YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

Notes on Use: Liquid Crystal Display Panel and Touch Screen.

The T8065 display is a Liquid Crystal Panel, commonly known as an LCD. Over the surface of the LCD is a Touch Screen to allow the user to touch the screen and activate buttons and other controls. There are a number of considerations to keep in mind with any system using an LCD panel. The Touch Screen is also vulnerable to damage if it is not properly used. While both elements can take substantial use, they need to be treated with care. The following guidelines should be followed when using your unit. Refer to the Maintenance section of this manual for cleaning instructions.

- Do not cause impact to the liquid crystal panel/touch screen.
- Do not use a mechanical pointer to touch the screen as it may damage the touch screen. Always use your finger so you can feel how much pressure is being applied to the screen.
- When the temperature is very cold or very hot, the image may appear unclear or may move slowly.
- In order to protect the liquid crystal panel, keep it out of direct sunlight while the unit is not in use.
- Sudden changes in the temperature inside the vehicle such as those which occur immediately after the vehicle's air conditioner or heater has been turned on may cause condensation (droplets of water) to form and, as a result, the panel may not work properly. Do not use the unit while these symptoms are in evidence but leave the unit standing for about an hour, and then resume or start use.

Overview

Installation of a T7000 system is straight forward, consisting of mounting the unit, mounting and routing the GPS and Satellite Radio antennas, mounting and routing the cameras and cables, mounting the microphone and routing the cable, mounting the Tire Pressure antenna and routing the cable and connecting the system to all wiring. If the optional iPOD dock cable is used, a suitable place to mount the dock is required.

Mounting of the various components will vary depending on the configuration of the truck, metal or fiberglass cab structures and what options are installed. This instruction manual gives general guidelines that can be applied to any installation. For specific truck wiring (wire locations and functions), consult your truck dealer, service manual, service center or manufacturer.

Unit Mounting

A mounting “bucket” is available for the Freightliner Cascadia that allows direct mounting into the dash. To install the T7000 and mounting bucket, follow these steps:

1. Remove the dash trim panel and dash top access panel, exposing the original radio mounting bucket.
2. Remove the original radio.
3. Remove and retain the screws holding the original radio bucket in the dash.
4. Insert the new T7000 bucket into the dash and secure with the screws from the original.
5. Insert the T7000 into the new bucket once all cables have been connected.

Cameras

The T7000 supports up to four cameras on the vehicle and is compatible with the following models:

- Sony CHSV2-01D (left/drivers side)
- Sony CHSV2-01P (right/passenger side)
- Sony VCB-RV2MH (rear)
- Flir™ forward looking infrared camera

Selecting a mounting location

Side Cameras

The optional side camera's need to be mounted on each side of the truck to give the driver a clear view of the area beside the truck. In general, select a mounting location as far forward as possible to allow an unobstructed view of the side of the truck and where they will not interfere with entrance doors, hood opening and other truck features. Common mounting locations include:

- Fender in front of the cab door but behind the wheel well
- Running board beside/below the cab
- Other convenient places on the side of the truck that avoids interference of the driver entering and exiting the truck.

Depending on the available locations and contours of the truck, it may be necessary to mount the camera on a bracket which is attached to the truck instead of directly on the truck. If this is necessary, the bracket should be made from material that will not corrode or discolor. Aluminum is a good choice as it requires no painting, will not rust, and is more easily bent than steel. Insure that whatever material is used, it is thick enough to prevent the camera from vibrating while the vehicle is in motion. Before permanently mounting the camera it is advisable to connect it to the T7000 system and check the view to insure that the viewing area is as desired.

Rear Camera

The optional rear camera should be mounted on the rear of the cab where it will have a clear view of the rear of the tractor including the axles and trailer mount. Consideration should also be given to a location where the camera cable can easily be routed inside the vehicle. Choose a flat surface near the top of the cab. Before permanently mounting the camera it is advisable to connect it to the T7000 system and check the view to insure that the viewing area is as desired.

Flir™ Camera

The Flir™ camera is meant to be mounted on the front of the truck, facing forward giving a view of the road. Suitable locations for the Flir™ would include:

- The top edge of the cab
- Front bumper or grill area
- Front of the hood

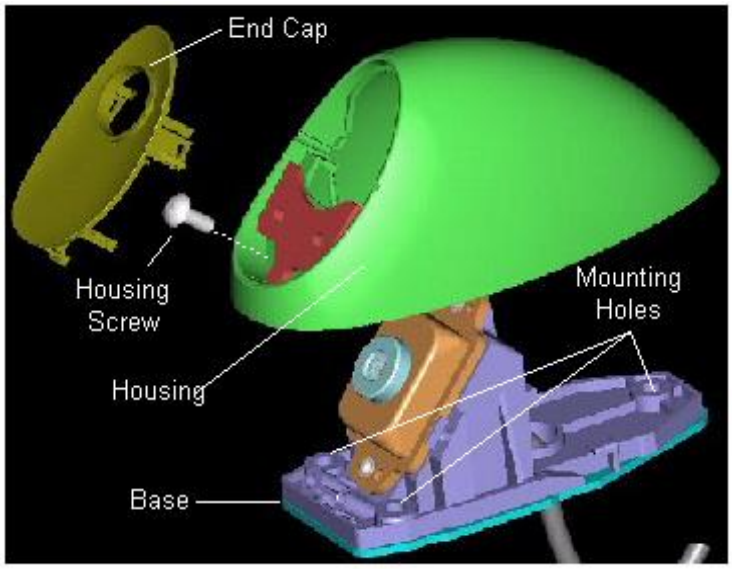
It is advisable to connect the camera to the T7000 before permanent mounting to insure that the view of the camera is as desired.

Mounting Cameras

Direct Mounted Side Cameras

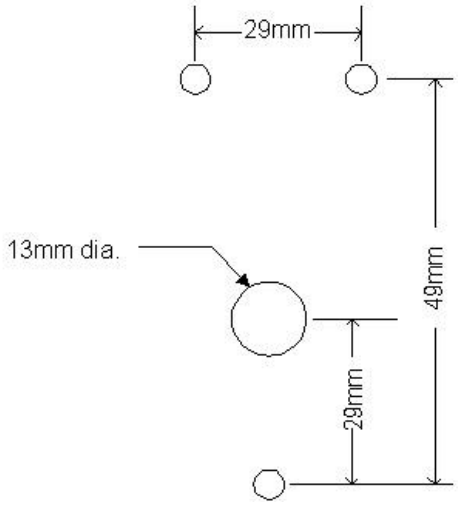
An exploded view of the Sony side camera is shown below. The camera consists of four parts: base, housing, housing screw and end cap. The base attaches to the vehicle via the three mounting screws. The housing is placed over the base, slid into the molded retainer clips and secured with the housing screw. The end cap snaps onto the housing and can be removed as needed.

Exploded View Of Sony Side Camera



To mount the camera, use dimensions from the drawing below to locate the mounting hole locations on the vehicle. Alternatively, place the camera base on the mounting location and mark the hole locations on the vehicle. Mounting screws are not provided with the camera. Select an appropriate screw for the application and drill holes of the appropriate size in each of the mounting hole locations that were marked. Screws used for mounting can be no larger than #10.

Camera Mounting Hole Dimensions



Mounting Cameras (cont.)

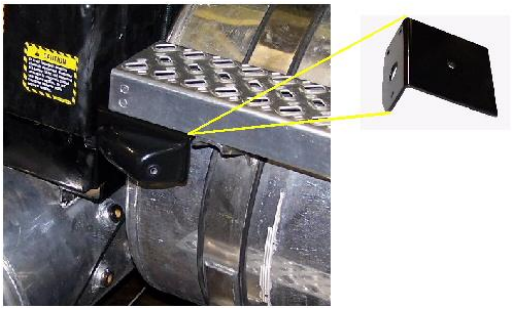
For the camera cable, drill a 13mm (or ½" minimum) hole to give enough clearance for the connector to slip through. Use a rubber grommet to protect the cable. Split a grommet and slip it over the camera cable then into the hole of the mounting surface. Once the camera base is mounted, seal the camera cable hole with silicon caulking to prevent water and road dirt from coming into the camera housing. The caulk should be applied to the top side of the base and completely fill the hole in the base where the cable passes through.

Fender Mounted Camera Example

Bracket Mounted Side Cameras

If a bracket is needed to mount the side camera, fabricate an appropriate bracket for the application and attach the camera to it as detailed above. The pictures below show examples of bracket mounted camera applications.

Bracket Mounted Camera Examples



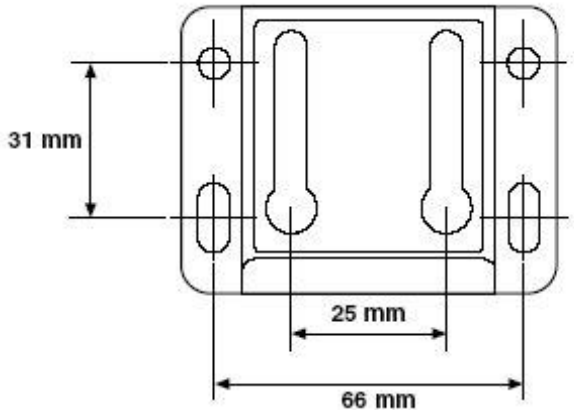
Camera Mounting (cont.)

Rear Camera

The rear camera consists of the camera body, mounting bracket and mounting hardware. To install the camera, use the following procedure.

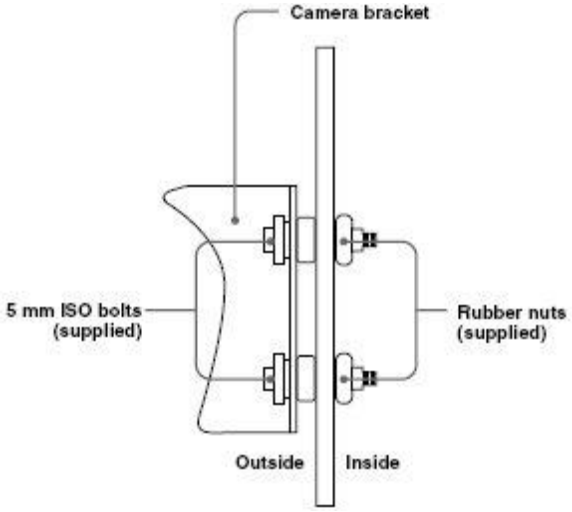
Mark mounting hole locations. Use the dimensions from the drawing below to locate the mounting hole locations on the vehicle. Alternatively, place the mounting bracket on the mounting location and mark the hole locations on the vehicle.

Rear Camera Mounting Hole Dimensions



Drill the mounting holes. Once the holes are marked, drill four 10mm holes to accept the rubber mounting nuts. Push the rubber mounting nuts into the holes, place the bracket and secure the bracket to the rubber mounting nuts with the four supplied hex head bolts and washers. Torque the bolts to 5-6kg/cm which will cause the rubber nuts to expand behind the mounting surface and hold the camera bracket securely to the vehicle.

Camera Bracket Mounted

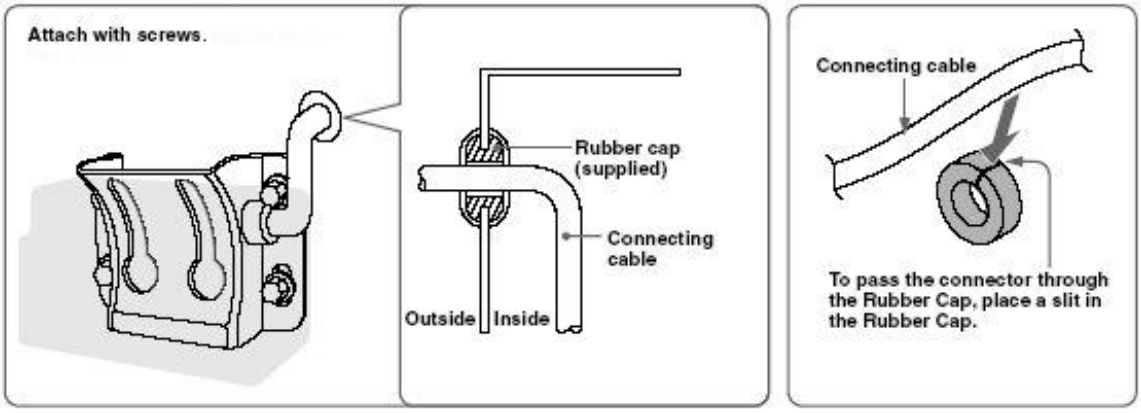


Camera Mounting (cont.)

Install the camera cable. Select a location for the cable to pass through the wall of the vehicle and drill a 20mm (25/32”) hole.

Mount and install the camera. Screw the two supplied hex washer-head bolts into the camera body approximately 3 turns. Place the camera onto the bracket so that the camera mounting screws pass through the large holes in the ends of the camera adjusting slots. Lightly tighten the two camera mounting screws to temporarily hold the camera in place. Using a knife or other suitable cutter, split the supplied rubber grommet (rubber cap) and slip it over the camera cable. Insert the end of the camera cable through the drilled hole in the vehicle. Work the rubber grommet into the drilled hole until it is fully seated. Slide the remainder of the camera cable through the hole/grommet. Use silicon caulk to seal the camera bracket mounting holes and the camera cable grommet. Once the T7000 is installed and connected to the camera, move the camera up and down in the slots until the desired view is obtained. Torque the two camera mounting screws to approximately 40kg/cm to securely hold the camera in position.

Finishing installation



Camera Cable Routing

In general, the camera extension cables can be routed in the most expedient manner for the application. Side camera cables can be routed via the engine compartment and through the firewall to gain access to the inside of the cab. Another option is to route the cable up the door frame underneath the weather stripping. Insure that the cable is out of the way and protected from the clearance between the door and the frame so it will not be pinched. Tuck the cable into the weather stripping to conceal and hold the cable.

The rear camera extension cable will most likely be run through the headliner of the cab and down a cab frame post beneath the trim. Remove trim as necessary and re-secure after the cable has been installed. Another option is to run the cable down to the floor then to the front of the cab. If this is done, be sure the cable is in a location where it will not be stepped on as this will damage the cable over time.

Where cables pass through walls or trim, protection such as rubber grommets should be used to protect the cable from being cut or chafed. Use the same methodology as for the rear camera cable above when routing it through the cab wall. Where cables go around edges, be sure to protect from chafing and cutting. Cables should not be excessively pulled or stretched when installing.

GPS and Satellite Antenna

Determining the Mounting Location

The GPS and Satellite antennas can generally be mounted close to each other and the cables run together into the cab. Both antennas are magnetic mount. Because of this method of mounting and the requirement of having ferrous metal underneath each antenna for reception, the best location is for them to be placed on a ferrous metal surface. The top of the cab is an ideal location as it gives an unobstructed view of the sky for good reception of signals. If the cab is non-metallic or non-ferrous, then a steel backing plate will need to be placed under the antennas to enable them to receive signals. If a steel backing plate is used, it should be a minimum of 3” x 3” square for **each** antenna. If both antennas are to be placed on the same plate, the minimum would be 6” x 6”. Affix the plate to the top of the truck and place the antennas on it. The plate may be bare, coated or painted.

If the top of the cab is unsuitable for mounting, some other locations to consider are:

- On an angle bracket bolted to the back of the cab or wind diverter
- On an angle bracket on top of a side view mirror
- Inside the cab in the headliner (if the roof is non-metallic)
- The area in front of the windshield next to the hood opening if there is enough room

Antenna cable routing

The cables may be run through an existing hole in the top of the cab if one is available. Cab mounted running lights often provide a convenient place to gain access to the interior of the cab. slight modification of a light may be necessary to allow the cables access. Once inside, run the cable in the headliner or trim over to a side post and then down.

GPS Antenna Mounting Example

If there is no immediate access from the top of the cab, a small hole should be made. Be sure to use a rubber grommet for protection of the cable from sharp edges. Use silicon caulk to seal the hole against water intrusion.

Microphone mounting

The microphone supplied with the T7000 is of the directional type. When considering a mounting location, keep in mind that the microphone must be pointed in the direction of the person using the microphone to insure the voice is heard and other vehicle noise is blocked out.

Choosing a mounting location

The microphone should generally mounted in front of the driver. Two excellent locations are near the sun visor on the headliner and on top of the dash in front of the driver. Use an appropriate mounting method to hold the microphone in place. Velcro works well for many applications. There may be other mounting locations that would work well in various vehicles. In any case, choose a location that allows the microphone to be directed at the person speaking.

Microphone Cable Routing

The microphone cable can be routed under the trim or inside the headliner of the cab in almost all cases. Run the cable over to a side post and down underneath the trim.

TPMS antenna mounting

The TPMS (Tire Pressure Monitoring System) that is optional with the T7000, requires the installation of an antenna underneath the truck.

Selecting a Mounting Location

The TPMS antenna should be mounted approximately midway between the front and rear axles. A frame crossmember makes a suitable location. Use an existing hole if possible or drill a hole for the antenna mount. Insure that there is sufficient space for the antenna whip at the selected location.

Mounting the TPMS Antenna

There are two requirements for antenna mounting:

- The antenna must point toward the rear of the truck
- The antenna mounting boss must be well grounded to the mounting location. Paint should be removed from the mounting hole so that the antenna mounting boss contacts bare metal.

To mount the antenna, drill or utilize an existing ½" (13mm) hole. Remove any coating or paint from the metal around the mounting hole. An auxiliary bracket may be used if a hole in the crossmember is not possible. Refer to the pictures below for possible mounting locations and methods.

In-frame mounting

Auxiliary bracket mounting

TPMS antenna mounting (cont.)

Routing the TPMS antenna cable

The TPMS cable should be routed under the truck and into the front of the cab in the most expedient manner. Be sure to secure the cable to the truck at close intervals to provide proper support. The typical method of cable routing is under the truck, into the engine compartment and through the firewall into the cab. Be sure to route the cable away from moving parts as well as extreme heat sources such as exhaust systems. Be sure to use rubber grommets when passing through the truck cab to avoid cable damage.

iPod Dock

The T7000 supports a connection to the iPod dock. Choose a suitable location on or around the dash for the iPod dock that is convenient to the driver and provides a suitable mounting surface. Route the cable for the dock in/through the dash so the connector can be plugged into the rear of the T7000.

Connecting The System

Once all devices have been mounted on the truck and before the unit is installed permanently, all connections must be made on the rear panel as follows:

Power/Speakers/J1939/Microphone

The T7000 employs an industry standard “ISO” connector for the power/speaker connections. The Freightliner Cascadia has a similar connector but with some slight variation. Lectronix provides an adapter cable, called a Breakout Cable, that may or may not be installed in the truck from the factory. If the breakout cable is installed in the truck, the free end of that cable will plug into the Vehicle Power/SPKR/IO connector on the rear of the T7000 (see appendix D for the location of this connector). The breakout cable is shown in the picture below.

J1939 ISO Breakout Cable (part# 19214-A.0)

If the breakout cable is not installed in the truck, plug the radio connector in the truck harness into the connector on the breakout cable then connect the opposite end to the T7000 as described above. Plug the J1939 connector on the breakout cable into the J1939/microphone cable connector on the supplied J1939/microphone/turn signal cable (part# 19205-A.0). Plug the white connector on the J1939/microphone/turn signal cable into the MIC/IO connector on the back of the T7000 (see appendix D for the location of this connector). Plug the Bluetooth microphone plug into the small round connector of the J1939/microphone/turn signal cable. The pigtail wires of the J1939/microphone/turn signal cable should be connected to the active turn signal wires in the instrument panel so that the T7000 knows when turn signals have been activated. See “Turn and Reverse Signals” below for further information

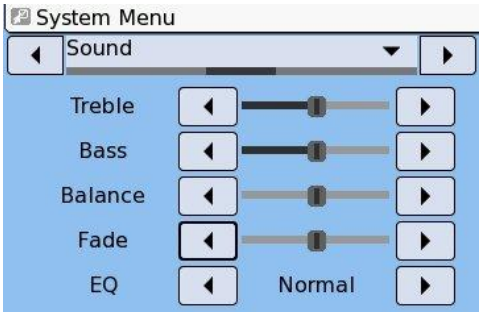
Connecting The System (cont.)

Testing for Proper Connection of Power and Speakers

To test that the T7000 has been properly connected, perform the following steps:

1. Turn the ignition switch of the truck to “on”. It is not necessary to start the engine. Wait for the T7000 to power on. Since the unit has not been on recently, this will take approximately 1 to 1½ minutes. When the **Continue Button** appears at the bottom of the screen, touch it to continue.
2. Push the **Audio button** on the front of the unit to display the Audio menu.
3. If the truck radio antenna is connected to the unit, touch the **Radio icon** to select the radio. Tune to a local station using the on-screen controls. If the antenna is not connected, insert a CD or USB memory stick with music on it and select the appropriate function from the menu. Play music using the on-screen controls.
4. Turn the volume control so that audio is heard.
5. Push the **System Menu button** on the front of the unit to display the System Menu. Use the **Left or Right Arrow buttons** at the top of the screen to select to the Sound menu.
6. Using the **Left and Right Arrows** for the Balance slider, move the balance all the way left then right, listening to insure that the sound comes from the proper speaker(s). Return the slider to the center position.
7. Using the **Left and Right Arrows** for the Fade slider, move the fade all the way left then right, listening to insure that the sound comes from the proper speaker(s). When the slider is to the left, sound should only be heard from the rear speakers. When the slider is to the right, sound should only be heard from the front speakers. Return the slider to the center position.
8. If the sound does not come from the proper speakers, recheck wiring, correct and test again.

Sound screen in System Menu

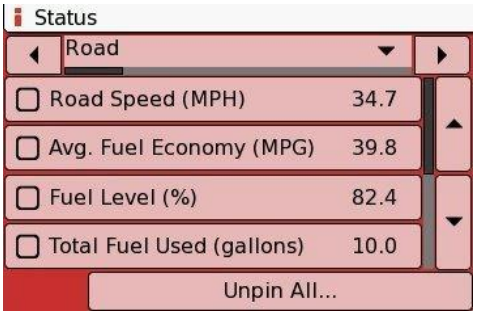


Testing For Proper J1939 Operation

To test the J1939 connection, perform the following steps:

1. Turn the ignition switch in the truck to “on”. It is not necessary to start the engine.
2. Wait for the T7000 to power on.
   - If the unit has not been on recently, this will take approximately 1 to 1½ minutes. When the **Continue Button** appears at the bottom of the screen, touch it to continue.
3. Push the **INFO button** on the front of the T7000 until the INFO menu is displayed.
4. Touch the **Status icon** on the screen.
5. When the Status screen is displayed and the J1939 interface is connected properly, various parameters should be shown. If there are no parameters shown, the J1939 interface is not connected properly. Turn the ignition switch off and swap the connection of the green and yellow wires. Start with step 1 and verify proper operation of the J1939 data interface.

Typical INFO Screen with Active J1939
(actual data will vary)



Connecting The System (cont.)

Cameras

If the installation includes cameras, plug the cables into the rear of the unit. The connectors used on the camera cables are special locking connectors and require the correct method of insertion and removal.

- To insert a camera cable, grip the cable on the soft rubber strain relief **behind** the hard plastic shell. Push the connector into the proper camera connector on the unit until a small click is heard. The cable is now properly seated and locked.
- To remove a camera cable, grip the hard plastic shell of the cable connector and pull away from the unit.

Turn and Reverse Signals

If the installation includes cameras, the T7000 provides for automatic switching of camera views based on turn signal use as well as use of reverse gear in the truck. There are three wires in the provided harness that are meant to connect to the turn signal wires as well as the reverse signal wire in the truck.

Locate the turn and reverse signal wires in the truck wiring harness. Consult with the truck manufacturer or service manual/wiring diagram to locate these wires. Once the wires have been located, splice the appropriate T7000 wire harness wires to the identified truck wires.

Testing the Turn and Reverse Signals

To test for proper operation of the turn and reverse signal connection, use the following procedure:

1. Turn the ignition switch in the truck to “on”. It is not necessary to start the engine.
2. Wait for the T7000 to power on.
   - If the unit has not been on recently, this will take approximately 1 to 1½ minutes. When the **Continue Button** appears at the bottom of the screen, touch it to continue.
   - If the unit has been on within the last two hours, it will immediately display the last used application screen.
3. Push the **Camera button**  on the front of the unit.
4. Touch the **Settings icon** in the Camera Menu.
5. Both “Auto Reverse Camera” and “Auto Turn Signal Camera” options should have a green check mark in the box to the left. If they do not, touch the item box without the check mark.
6. Push the Camera button to return to the camera menu.
7. Activate the left turn signal on the truck. The T7000 display should switch to the left camera.
8. Activate the right turn signal on the truck. The T7000 display should switch to the right camera. Turn off the right turn signal.
9. Shift the truck into reverse gear. The T7000 display should switch to the rear camera.
10. If the camera views are incorrect, swap camera cables as necessary. If any of the camera views do not work correctly, check the connection of the turn and reverse signals to the truck, correct and retest.

Typical Camera View

Connecting The System (cont.)

GPS and Satellite Radio Antennas

The GPS antenna is a push-on connector. Grip the metal connector on the end of the cable and firmly push it onto the GPS antenna connector on the rear of the unit.

The Satellite antenna is also a push-on connector. Grip the metal connector on the end of the cable and firmly push it onto the antenna connector on the rear of the Satellite receiver.

Testing the Antenna Installation

Note that to test these antenna installations the truck must be outside and have a direct line of sight to the sky. Even tree cover may prevent the Satellite and GPS from working properly.

Satellite antenna.

1. With the unit on (refer to the previous section “Testing for Proper Connection of Power and Speakers” for steps to turn the system on), push the Audio button  on the front of the unit to display the Audio Menu. Select Satellite from the Audio Menu.
2. The signal strength indicator in the upper right of the screen should have most or all bars active.
3. If the satellite receiver has not been subscribed, the default station will be an informational/weather station. Regardless, the station should be heard if the antenna is connected correctly. If the message “Antenna Error” is displayed there is a problem with the antenna or its connection to the receiver.

GPS antenna.

1. With the unit on (refer to the previous section “Testing for Proper Connection of Power and Speakers” for steps to turn the system on), push the **Navigation button**  on the front of the unit. If the Navigation Menu is displayed, touch the **View Map icon** on the screen.
2. The signal strength indicator in the upper right of the screen should have most or all bars active.
3. If the message “Acquiring GPS Signal” is displayed, wait for that message to be taken off the screen. It may take the GPS up to 2 minutes to acquire GPS signals. Once the GPS signal has been acquired, the blue Vehicle Triangle on the map should be shown in the current location of the truck.
4. If the “Acquiring GPS Signal” is displayed for more than 2 minutes, the antenna installation location may be incorrect (not enough metal under it) or the antenna is being shielded by a structure, trees, or other obstruction. Insure that the truck has a clear view of the sky.

Connecting The System (cont.)

Microphone

The microphone cable or extension cable plugs into the microphone connector on the rear of the T7000. Fully insert the plug into the connector.

Testing the Microphone

To test the microphone, it is necessary to pair a cell phone to the system. Refer to the Phone Pairing section of the Users Manual for this procedure. Once a phone is paired, proceed with the following steps:

1. With the unit on (refer to the previous section “Testing for Proper Connection of Power and Speakers” for steps to turn the system on), push the **Microphone button**  located on the front of the T7000. A tone will be heard and the message “Please Talk Now” will be displayed on the screen
2. Speak clearly and say “Call” or “Dial” and the phone number 5-5-5-1-2-1-2. When speaking the number, be sure to say each digit individually. In other words, say “Call 5 5 5 1 2 1 2”, ***not*** “Call 5 5 5 twelve twelve”.
3. After a short period of silence, the T7000 will speak what it believes it heard and ask for confirmation that the number is correct. If the system has responded to your voice input, the microphone is working correctly.

iPOD Dock

Connect the iPOD dock cable to the rear of the T7000, firmly seating the connector into the iPOD designated connector.

Testing the iPOD dock

With the unit on (refer to the previous section “Testing for Proper Connection of Power and Speakers” for steps to turn the system on), connect an iPOD to the dock. The T7000 will automatically recognize the iPOD connection and change screens to the iPOD audio screen. This indicates that the iPOD dock is connected correctly and working properly.

Troubleshooting

If You Suspect Something is Wrong

Check and take steps as described below. If the described suggestions do not solve the problem, contact your dealer. Only qualified personnel should service the product. Always refer diagnostics and repair to professionals. Lectronix, Inc. shall not be liable for any accidents arising out of neglect or attempts to repair the unit.

Warning Do not use the unit if you suspect faulty operation. Never try to repair the unit by yourself.

Common Problems

The following tables provide possible solutions to common system problems.

Problem	Possible Cause	Possible Solution
Unit will not turn on	No power to the unit	Check the wiring, rear connectors on the unit and applicable fuses
	Vehicle ignition switch is off	Turn on vehicle ignition switch
No Sound	Audio is muted	Un-mute the audio. Push and release the volume knob
	The speaker lines are not wired correctly, or there is a break or poor contact.	Check the speaker wiring
	Audio source is blank - (radio station is off the air, CD or USB stick is defective or has no music tracks)	Choose a different audio source with content
	Audio balance or fade is set to speakers that are not connected	Access the Sound sub-menu in the System menu and move the balance or fade controls as needed
Unwanted noise in the audio	The contact of the ground lead is poor.	Make sure that the ground lead is securely connected to an unpainted part of the chassis
Noise is made in step with engine revolutions	Alternator noise comes from the vehicle.	Change the wiring position of the ground lead and/or mount a noise filter on the power supply
The speaker channels are reversed between right and left	The plus and minus terminals at right and left channels of speakers are reversed.	Consult the wiring diagram and correct wiring problems.

Radio

Problem	Possible Cause	Possible Solution
Poor reception or noise	Antenna installation or wiring of the antenna cable is faulty.	Check whether the antenna mounting position and its wiring are correct.
Scanning for a radio station finds no stations	Too far from radio stations	Some areas of the country do not have strong enough radio stations to be picked up by the scan feature. Tune the radio manually to select a weaker station
Stereo indicator does not appear for FM station	FM station is too weak	If an FM station is weak, the radio may play the station in mono mode

Troubleshooting (cont.)

Satellite Radio

Problem	Possible Cause	Possible Solution
“Antenna error” is displayed	The unit has lost connection to the antenna or the antenna cable has broken	Check the antenna connection on the rear of the unit or replace the antenna
“Radio Disconnected” is displayed	There is no Sirius radio connected to the unit.	Contact your dealer to purchase this option

Cameras

Problem	Possible Cause	Possible Solution
“No video signal” is displayed	No camera connected, broken camera cable, defective camera	Check camera connections on the rear of the unit and in-line at the camera end or replace the cable or camera
Poor image on camera	Camera lens dirty	Clean camera lens. Be sure to follow the manufacturers directions for cleaning.
Rear camera view does not appear when vehicle is shifted into reverse	“Auto reverse” setting is not selected	Select “Auto Reverse” from the camera settings menu
	Reverse signal from vehicle to T7000 is not connected or connected improperly	Verify that reverse signal is connected to the proper wire in the vehicle.
Left or right camera view does not appear when turn signals are used	“Auto turn signal” setting is not selected	Select “Auto turn signal” from the camera settings menu
	Turn signal connections from vehicle to T7000 are not connected or connected improperly	Verify that turn signals are connected to the proper wires in the vehicle.

Navigation

Problem	Possible Cause	Possible Solution
“Acquiring GPS Signal” is displayed	GPS antenna is not connected, GPS antenna cable is broken or the vehicle is under a structure which prevents satellite signals from reaching the antenna	Check antenna connection on the rear of the unit or replace antenna. Move the vehicle out from under a structure

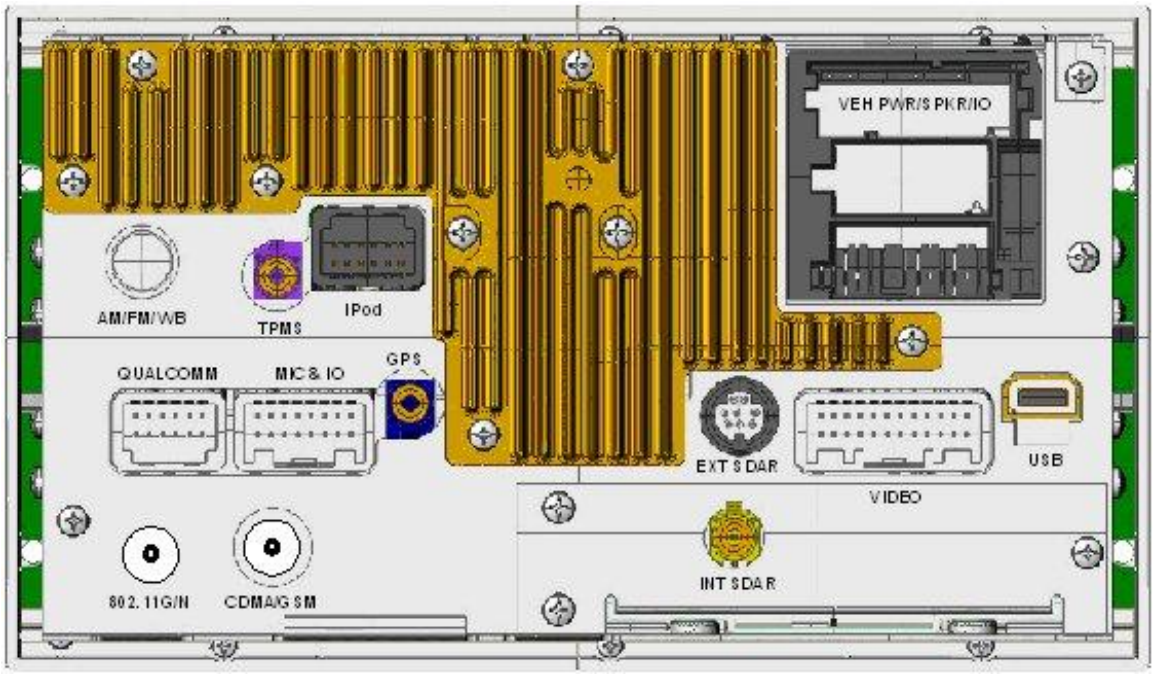
Bluetooth

Problem	Possible Cause	Possible Solution
“Volume too low” message displayed when using hands free number input	Microphone is too far or pointed away from person speaking, not speaking loud enough	Reposition microphone or speak louder
	Microphone is not connected or is defective	Check microphone connections or replace microphone.

Appendix D: T7000 Technical Specifications

The specifications noted herein are subject to change without notice.

Rear Panel System Connections

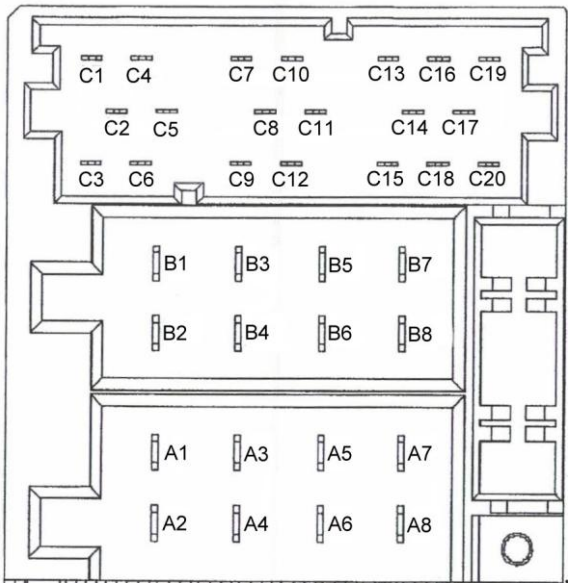


Appendix A: T7000 Connector Definitions

Refer to the following tables for connector pinouts.

Vehicle Power, Audio & I/O (VEH/SPKR/IO)

Vehicle Power/Speaker connector pin locations



Pin Number	Description	I/O
A1	Microphone +	Input
A2	Microphone -	Input
A3	Park	Input
A4	Accessory	Input
A5	Power Antenna	No Connect
A6	Dimming	Input
A7	VIN+ (Battery Power)	
A8	VIN- (Battery Return)	
B1	Speaker Output RR+	Output
B2	Speaker Output RR-	Output
B3	Speaker Output RF+	Output
B4	Speaker Output RF-	Output
B5	Speaker Output LF+	Output
B6	Speaker Output LF-	Output
B7	Speaker Output LR+	Output
B8	Speaker Output LR-	Output
C1	ACC CAN +	I/O
C2	Undefined	No Connect
C3	Undefined	No Connect
C4	Undefined	No Connect
C5	ACC CAN -	I/O

Vehicle Power, Audio & I/O (cont.)

C6	CAN RT	120ohm resistor
C7	Undefined	No Connect
C8	Undefined	No Connect
C9	Undefined	No Connect
C10	Undefined	No Connect
C11	Undefined	No Connect
C12	Undefined	No Connect
C13	Aux Dash /Left	Audio line in left
C14	Aux Dash /Right	Audio line in right
C15	Aux Dash Common	Audio return
C16	Undefined	No Connect
C17	Undefined	No Connect
C18	Undefined	No Connect
C19	Undefined	No Connect
C20	Undefined	No Connect
F1	Battery Power Fuse Pin 1	Passive
F2	Battery Power Fuse Pin 2	Passive

Audio Line In (front)

Pin	Description
Tip	Left
Center	Right
Outer	GND

USB (front)

Pin Number	Description
1	USB3 +5V Power
2	USB3 -
3	USB3 +
4	USB3 GND

USB (rear)

Pin Number	Description
1	USB1 +5V Power
2	USB1 -
3	USB1 +
4	NC
5	USB1 GND

AM/FM Antenna Connector (AM/FM/WB)

Pin	Description
Center	Antenna
Outer Shell	GND

T7000 Connector Definitions (cont.)

TPMS Antenna Connector (TPMS)

Pin Number	Description	I/O
1	Center	Antenna
2-5	Outer Shell	GND

GPS Antenna (GPS)

Pin Number	Description	I/O
1	Center	Antenna
2-5	Outer Shell	GND

Internal Satellite Module (int SDAR)

Pin Number	Description	I/O
1	Center	Antenna
2-5	Outer Shell	GND

External Satellite Module (ext. SDAR)

Pin Number	Description	I/O
1	SDAR Power (+12V)	Output
2	SDAR Enable	Output
3	SDAR Serial Transmit	Input
4	Digital Ground	
5	SDAR Audio Right	Input
6	SDAR Serial Receive	Output
7	SDAR Audio Return	Input
8	SDAR Audio Left	Input
Outer Shell	Earth Ground	

Video (VIDEO)

Pin Number	Description	Pin Number	Description
1	LIN+	13	Video_OUT+
2	LIN-	14	Video_OUT-
3	Earth Ground	15	Camera Input 4 -
4	No Connect	16	Camera Input 4 +
5	Earth Ground	17	Earth Ground
6	Camera 3 Ground	18	Camera Input 3 -
7	Camera 3 Power	19	Camera Input 3 +
8	Camera 2 Ground	20	Camera Input 2 -
9	Camera 2 Power	21	Camera Input 2 +
10	Earth Ground	22	Earth Ground
11	Camera 1 Ground	23	Camera Input 1 -
12	Camera 1 Power	24	Camera Input 1 +

T7000 Connector Definitions (cont.)

Microphone & Vehicle Input/Output (mic & IO)

Pin Number	Description	Pin Number	Description
1	Digital Ground	9	ASWC
2	Reverse	10	Earth Ground
3	Turn Left	11	Do not connect
4	Turn Right	12	Do not connect
5	Microphone Left	13	Do not connect
6	Microphone Return	14	Do not connect
7	Microphone Right	15	Earth Ground
8	Vehicle CAN +	16	Vehicle CAN -

Qualcomm Interface (QUALCOMM)

Pin Number	Description	Pin Number	Description
1	RS422 Transmit - (Option alCodec Out+)	7	Earth Ground
2	RS422 Transmit + (Optional Codec Out-)	8	5V or 9V ID
3	RS422 Receive -	9	RS_232_TXD
4	RS422 Receive +	10	RS_232_RXD
5	MAS Speaker +	11	Qualcomm Audio Input Right (Line Level)
6	MAS Speaker -	12	Digital Ground

iPod Interface (IPOD)

Pin Number	Description	Pin Number	Description
1	Earth Ground	7	Digital Ground
2	iPOD Detect	8	No Connect
3	iPOD ID	9	iPOD Serial Receive
4	iPOD Serial Transmit	10	iPOD Power
5	iPOD Audio Input Right	11	iPOD Audio Input Left
6	iPOD A/V Return	12	iPOD Video Input