Truck Mounted VMS (TVMS) Installation Manual



PLEASE READ THIS MANUAL BEFORE INSTALLATION OR OPERATION.
Use in conjunction with the RTL TVMS USER GUIDE

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1. Product Introduction

RTL's Truck Mounted VMS provides clear, high-visibility road user information for static and mobile operations, work zone safety, incident response and event management. The full-matrix, full-colour P8 LED display supports text, symbols, graphics, arrow board displays and speed-triggered radar messaging. This manual provides the installation, electrical, commissioning and operating requirements for the RTL Truck Mounted Variable Message Sign (TVMS). It is written for vehicle body builders, auto electricians, installers, workshop teams and operators.

For operating requirements for the RTL Truck Mounted Variable Message Sign (TVMS), please refer to the User Guide available on the www.rtl.co.nz website.

1. Technical Support & Product Resources

For installation questions, commissioning support, operating assistance or service, contact RTL before proceeding if any requirement is unclear. Phone: 0800 785 744 | Website: rtl.co.nz | Service: services@rtl.co.nz

Technical Support services@rtl.co.nz	**TVMS Product Page** Product specifications & downloads	**Videos & Tutorials** Operating guides & training

2. Product Specifications

Specification	TVMS
Display compliance	EN12966 compliant display
Working temperature	T1 (-15 °C to +60 °C)
Beam width	B7
Luminous intensity	L2
Colour class	C2
Mechanical protection	IP65
Pixel pitch	8 mm
Display	Full-colour SMD LED
Resolution	200 pixels wide x 120 pixels high
Display area	1600 mm wide x 960 mm high
Housing	1600 mm wide x 960 mm high x 226 mm deep
LED module	320 mm wide x 160 mm high
Housing material	Aluminium
Finish	Powder-coated black
Maintenance access	Twin rear door access
Weight	Approx. 85 kg, excluding batteries
Ambient light sensor	Yes
Maximum power consumption	Approx. 600 W
Speed radar	Included
Supply voltage	12 V DC
Communication	Ethernet / network cable
Controller	Windows Touchscreen Tablet

3. Parts supplied

Check against this list before starting.

Base Package (Code: ETSSCSS8):
1x RTL TVMS: 1600 × 960 mm full-colour LED, with ambient light sensor
1x Speed Radar and 3m lead
1x TVMS 6m Power Cable
1x TVMS 15m Ethernet cable
1x Windows Touchscreen tablet
1xTablet VESA mount, vehicle charger and fixings (4x)

Electrical and Batteries Package (Code: ETSSCSS8I):
2x Batteries, 6 V 244 Ah lead-carbon AGM
1x ePower 40 A 12 V AC/DC Mains Charger
1x Redarc 40 A 12 V DC/DC Alternator charger
1x Mains inlet, male 3-pin 10 A 250 V IP66, with enclosure
1x 300 A 12 V Rotary Isolator Switch
4x In-line MIDI (ANS) Fuse Holder
2x 40A MIDI (ANS) Fuses
2x 60A MIDI (ANS) Fuses

4. Items not Included (Installer to supply)

- TVMS Mounting Frame / Structural work
- M10 fasteners to fix TVMS into Frame
- Battery compartment - structure, restraints, ventilation, drainage, lid
- Battery series connections, battery terminals and lugs, cable protection, and vehicle-side wiring
- Grommets, glands, brackets, guards, weatherproof penetrations
- Labels and any certification the vehicle requires

5. Safety & Installation

- Installation must be completed by competent vehicle body building and automotive electrical personnel.
- Isolate all electrical supplies before mechanical or electrical work.
- Support the TVMS correctly during lifting and installation. The sign weighs approximately 85 kg excluding batteries.
- Do not drill into the TVMS housing unless the location and method have been approved by RTL.
- Keep the rear service doors accessible after installation.
- Do not obstruct the ambient light sensor mounted centrally on top of the TVMS.
- Mount the radar centrally above the TVMS with an unobstructed forward view.
- Protect all cables from sharp edges, heat, moving parts, abrasion and water entry.

Confirm the completed installation does not interfere with vehicle lights, registration plate, access equipment or other required safety devices.

6. Mounting the TVMS

- Fabricate the TVMS mounting structure using the latest approved TVMS dimensions and mounting drawings.
- The TVMS weighs approximately 85 kg. Lift and support the TVMS in its final position without loading the rear doors, connectors, radar lead or light sensor.
- Before fitting, check the radar mounting position on the TVMS has enough clearance above and around it. Once installed, confirm the radar has a clear line of sight to the traffic lane. No brackets, cabling, signage, or other equipment should sit in front of or over the radar face.
- The ambient light sensor is located centrally on top of the TVMS and must remain in this position. Ensure this is taken into account when fabricating the framework.
- Ensure the sensor is kept free of any shading or obstruction from brackets, cabling, or adjacent equipment, so that sign brightness is correctly regulated to site lighting conditions.

MOUNTING FASTENERS: The TVMS Enclosure has threaded mounting points but does not supply the vehicle mounting bolts. The vehicle builder is responsible for selecting fasteners and the supporting structure for the completed vehicle installation.

7. Radar installation

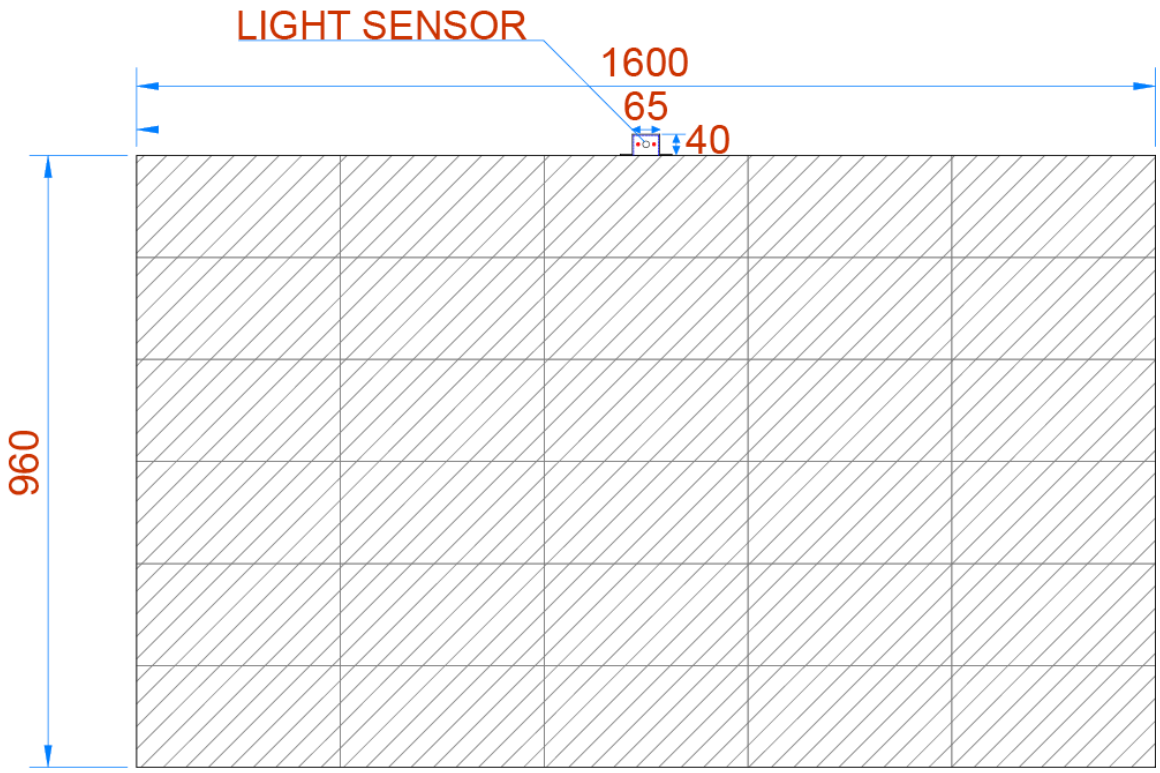
- Mount the radar centrally above the TVMS.
- Keep the radar face unobstructed and aimed in the required detection direction.
- Do not mount the radar behind metalwork, body panels or other equipment that blocks the detection path.
- Route the supplied 3 m radar lead back to the TVMS without tension or sharp bends.
- Secure the lead and provide strain relief at the radar and TVMS connections.

8. Light sensor

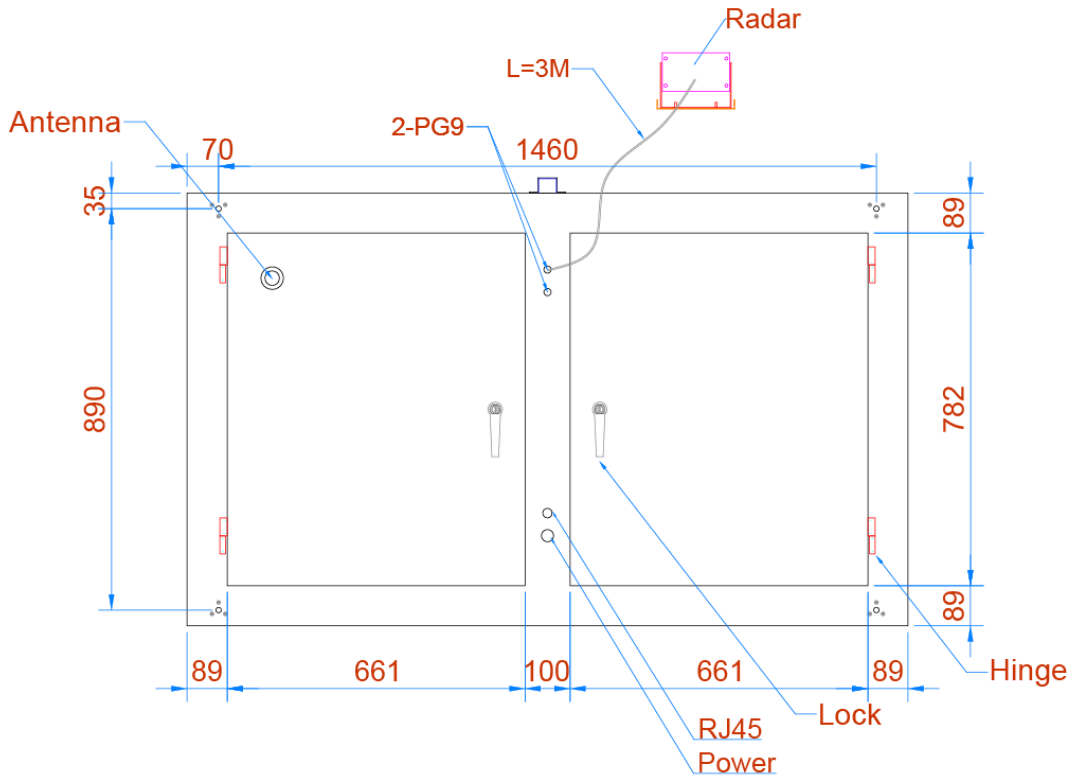
The ambient light sensor is fixed centrally on top of the TVMS. Do not cover, shade, paint over or relocate the sensor. Automatic brightness control depends on the sensor receiving representative ambient light.

9. Dimensions & Mounting Drawings

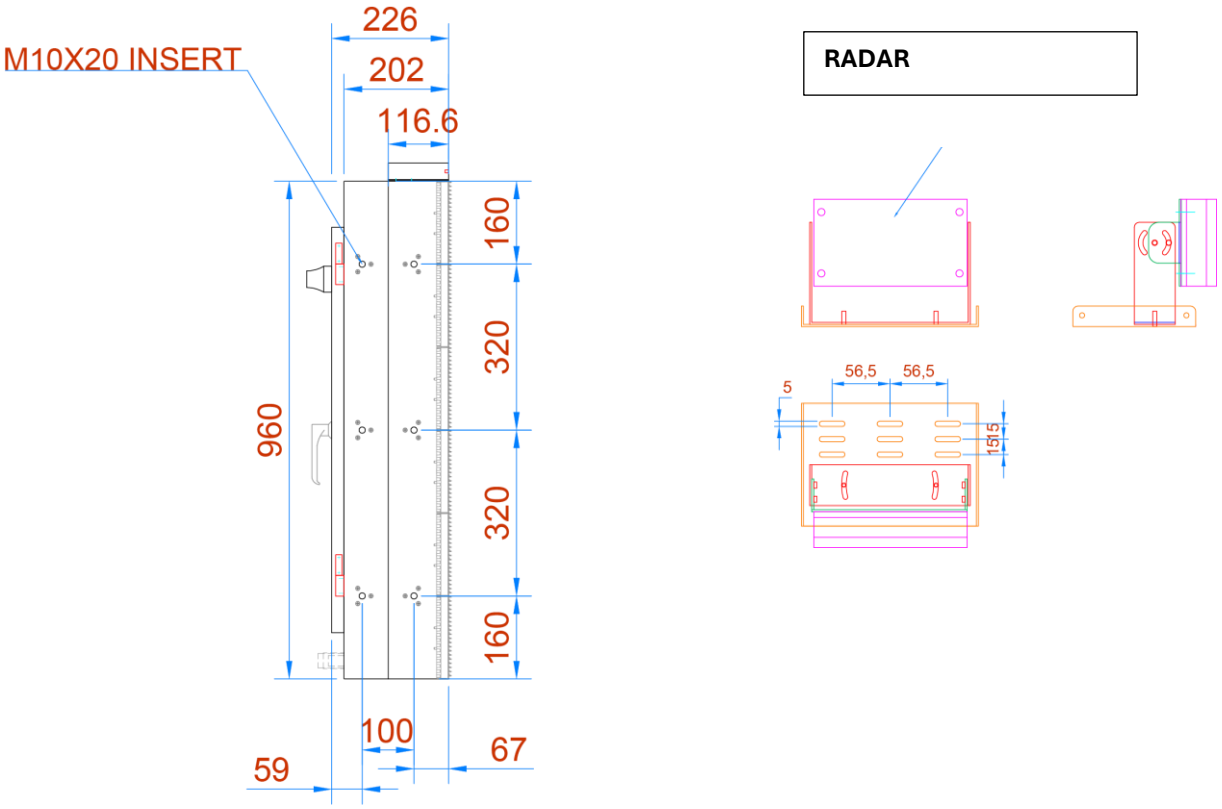
All dimensions are in millimetres unless stated otherwise. Confirm the latest drawing before fabrication. Images not to scale.



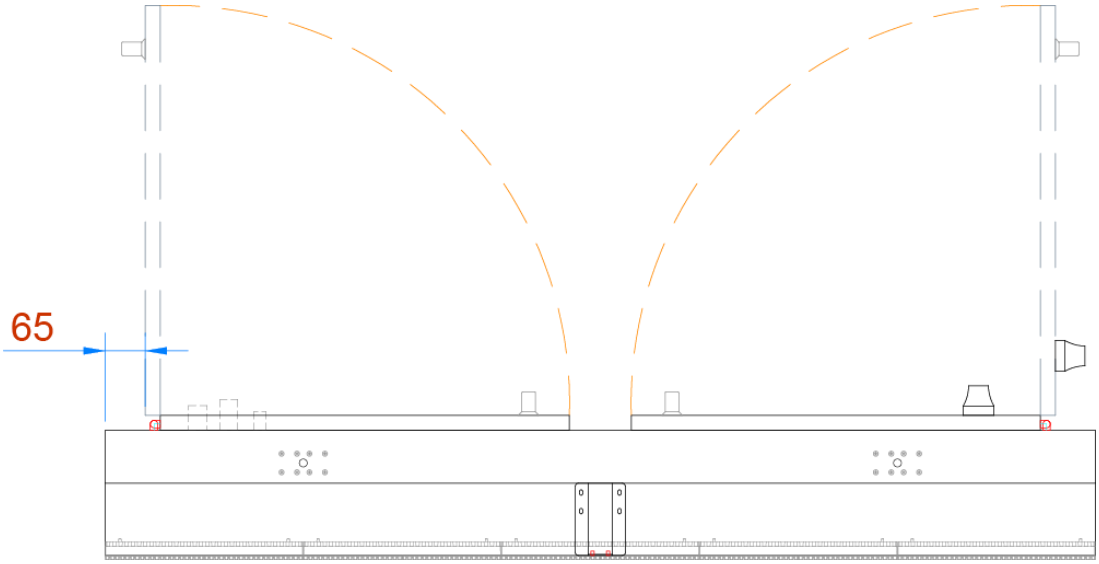
Front elevation - 1600 mm wide x 960 mm high. Ambient light sensor centred on top.



Rear elevation - twin service doors, antenna, power and RJ45 connections, radar lead and hinges.

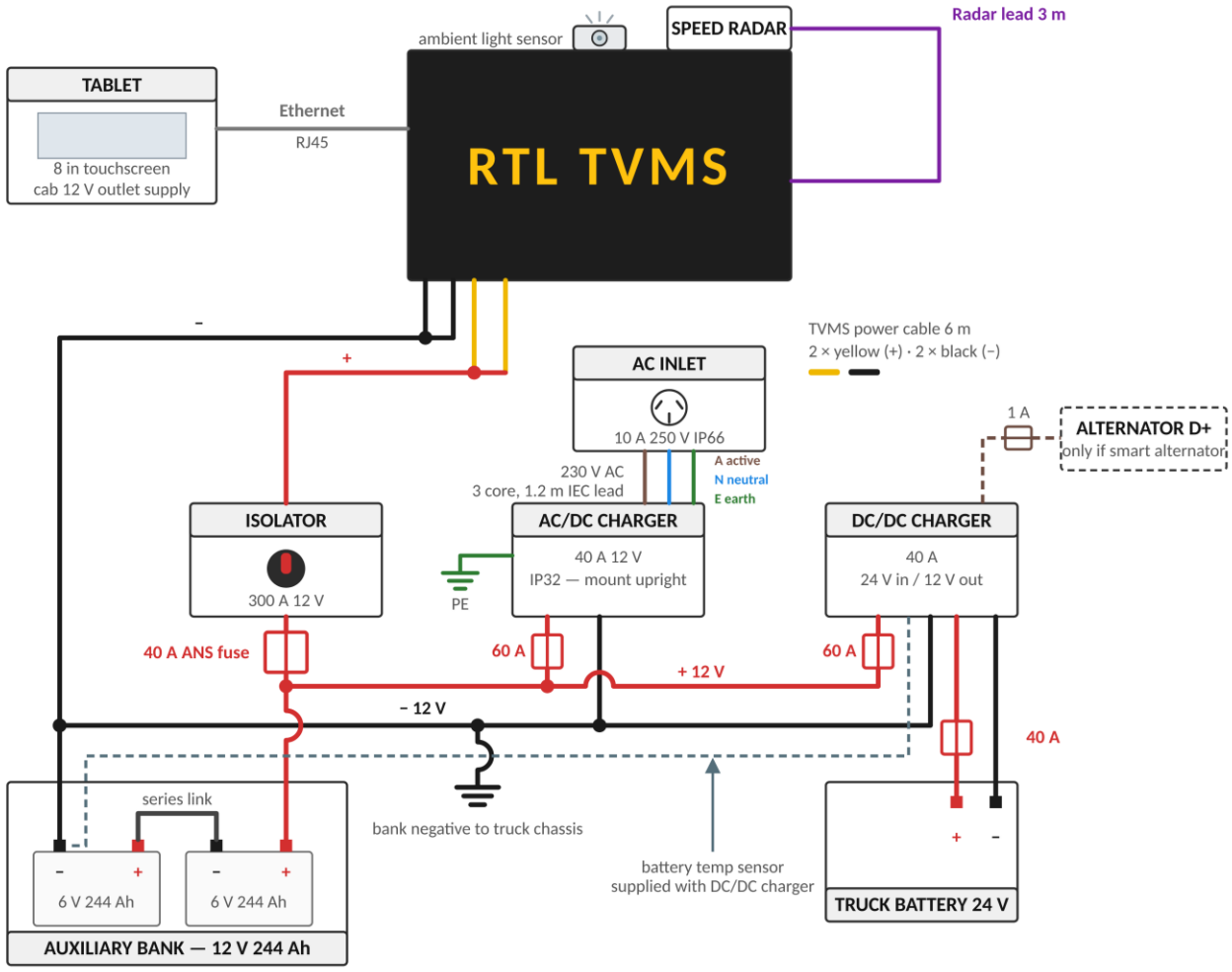


Side elevation - 226 mm overall depth and M10 x 20 threaded inserts.



Top view - rear service doors open. Allow sufficient clearance for maintenance access.

10. Electrical Wiring Diagram



11. Battery Compartment Selection & Installation

A dedicated compartment is required to house the 2x TVMS 6V batteries, the AC/DC charger and the DC/DC charger. Mount the Battery compartment outside the cab, as close to the TVMS as practical. Keep it clear of exhaust heat, moving parts and road debris, with easy service access and no obstruction to the TVMS.

- Fit IP65 cable glands to all cable entries and seal any drilled holes.
- Fit an IP65 breather vent to release heat and battery gas.
- Restrain both batteries so they cannot move.
- Connect the batteries in series for 12 V.
- Check polarity and confirm approximately 12 V across the bank.
- Protect all batteries, the AC/DC charger and the DC/DC charger and cables from heat, vibration, rubbing and sharp edges.

Important: The chargers are not water resistant. The compartment must remain IP65 minimum and must not overheat. The AC/DC charger shuts down above 60°C.

12. Electrical Wiring & Tablet Connection

All wiring must be completed in accordance with the approved TVMS wiring diagram. Keep all fuses removed until all wiring has been completed and thoroughly checked.

NOTE: Mains wiring must be carried out by a registered electrician.

TVMS Power / Isolator and Fuse

- Install the rotary isolator and 40 A MIDI fuse in the TVMS supply circuit. Locate them where they can be accessed for service and isolation. The fuse is circuit protection and must not be bypassed or replaced with a higher rating unless authorised by RTL.
- Run both yellow wires from the TVMS power cable directly to the output of the isolator switch and the black wires to the negative of the battery bank.
- From isolator switch the positive feed needs to go into a 40 A Midi fuse (Leave the fuse out) then directly to the positive terminal of the battery bank

Battery Bank

- Connect the two 6 V batteries in series using the series link, as shown in the diagram.
- Measure across the bank and confirm 12.0 to 13.0 V before continuing.

AC/DC Charger (Mains Charging)

- Mount the IP66 AC inlet on the outside of the vehicle, reachable from the ground and clear of wheel spray. Label it TVMS BATTERY CHARGING.
- Wire the inlet to the AC/DC charger (Active, Neutral, Earth) through a weatherproof gland.
- Bond the charger earth stud to the vehicle chassis.
- Connect the charger output positive and negative to the bank.

DC/DC Charger (Alternator Charging)

- Connect the DC/DC charger input to the truck battery and the output to the bank.
- Connect the ignition sense wire where the vehicle has a smart alternator.

Note: Check all wiring polarities and verify that all connections are correct. insert the fuses one at a time. Once all checks are complete, the system is ready for testing.

Ethernet and Tablet

- Run the 15 m Ethernet cable from the TVMS RJ45 port into the cab, keeping at least 100 mm from 12 V power cables where possible.
- Mount the VESA tablet bracket within the driver's view and reach, clear of the windscreen, controls, airbags and instruments.
- Fit the tablet, connect the Ethernet cable, and plug the tablet charger into the cab 12 V outlet.

13. Troubleshooting

Symptom	Likely cause	Action
Current Display is red	No communication between controller and TVMS	Check TVMS power, isolator, Ethernet cable, IP address and port. Reconnect before changing advanced settings.
Display is black after TURN SYSTEM ON	TVMS not powered, communication fault or display fault	Confirm auxiliary supply and Current Display status. Check fuse and isolator. Contact RTL if power is present but the display remains blank.
Display too bright or too dim	Fixed brightness selected or light sensor obstructed	Select AUTO and confirm the top light sensor is clean and unobstructed.
Radar does not trigger messages	Radar disabled, incorrect thresholds, poor mounting or blocked detection path	Check Enabled, thresholds, central radar mounting and forward view. Carry out a controlled test pass.
Battery does not recover after shift	Insufficient charging time, charger fault or battery condition	Connect mains charger and confirm charging operation. Check AC supply and charger indication. Arrange battery/charger test if repeated.
TVMS shuts down or resets under load	Low battery voltage, poor connection or supply fault	Stop operation, inspect battery state, terminals, fuse, isolator and power cabling. Do not continue cycling the system.
New custom image looks distorted	Incorrect image dimensions or automatic resizing	Rebuild the image to the recommended panel dimensions and reload it.

STOP AND CONTACT RTL: If there is evidence of overheating, damaged battery cables, water entry, burning smell, repeated fuse operation or internal electrical damage, isolate the TVMS and do not return it to service until inspected.

14. Installation Commissioning

Check	Requirement	Complete
Mechanical	TVMS secure at all mounting points; housing square; rear doors open and latch correctly.	☐
Radar	Mounted centrally above TVMS; unobstructed; cable secure.	☐
Light sensor	Unobstructed and exposed to ambient light.	☐
Electrical	12 V auxiliary bank confirmed; polarity correct; 40 A & 60 A Midi Fuses are installed; isolator operates.	☐
Charging	AC/DC charger operates from external inlet; DC/DC charger operates with vehicle charging system.	☐
Power	TVMS powers on without voltage or connection faults.	☐
Network	Ethernet/network cable connected and controller communicates with TVMS.	☐
Display	Full display test completed; no missing modules or abnormal brightness.	☐
Brightness	Automatic brightness selected and response checked.	☐
Radar	Vehicle detection and speed-triggered message function tested.	☐
Controller	Tablet mounted securely; vehicle charger available; software launches correctly.	☐
Handover	Operator shown power isolation, charging, message selection, radar use and shutdown.	☐