FusionBLADE®

Backward-Looking Advanced Detection Engine

Installation and Operation Guide

Rev. November 2026

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1. Introduction

The **FusionBLADE®** system improves work zone safety by detecting distracted or inattentive drivers approaching a work zone. It installs on a truck or trailer carrying a truck-mounted attenuator (TMA), or on other work zone vehicles and apparatuses. When it detects a potential collision, the system activates warning lights and horns to alert the driver and nearby workers and reduce the risk of impact. The system can also be integrated with wearables such as vests or helmets.

Key Benefits

- Fusion of radar and video for accurate vehicle detection
- Early warning system for distracted drivers and nearby road workers
- Fully configurable alert system with horns and lights
- Integrated connectivity with Omnisight Fleet Commander
- Rugged design suitable for roadside environments

> **Important Notice**
> The FusionBLADE® is an **aid to safety**, not a substitute for proper work zone safety procedures or compliance with state and federal guidelines.

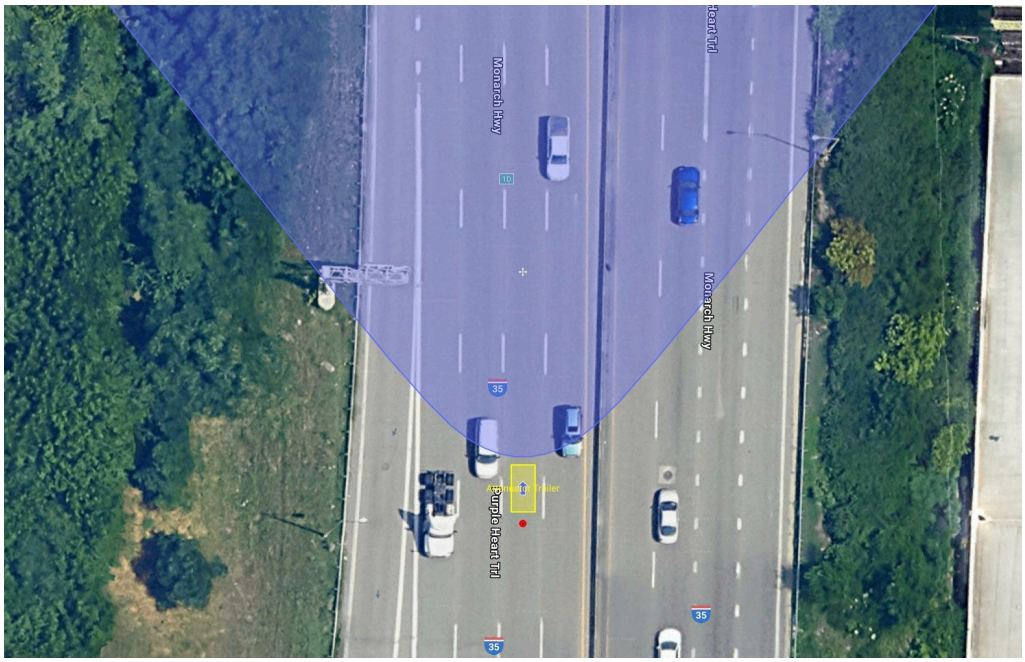


Figure 1. *Field of view of the rear-facing FusionBLADE®*

2. Safety Precautions

Read this section before starting any installation work.

- **Disconnect vehicle power before installation.**
- Only qualified technicians should install the system.
- Mount all components on the truck or trailer, never on the attenuator or crash pad itself.
- Ensure all connections are secure and protected from weather and vibration.
- The FusionSensor® uses **12 V passive PoE only**. Power it only from the FusionBLADE relay box.
- Follow applicable DOT, OSHA, and FCC safety guidelines.

3. How the System Works

1. The FusionSensor® monitors approaching traffic.
2. When an approaching vehicle meets the alert timing configured in **Omnisight Fleet Commander**, the relay box activates the warning devices:
   - Relay 1 → Horn
   - Relay 2 → Lights / beacons
3. The onboard cellular modem reports events, alerts, and system health to Omnisight Fleet Commander.

> **Alert timing**
> Alert timing (when the lights and horn activate, and for how long) is set in Omnisight Fleet Commander. Refer to the Fleet Commander guide, and contact Omnisight for recommended default settings for your implementation.

4. Components and Specifications

4.1 What's Included

Component	Type	Notes
FusionSensor® LTE	Standard	Radar and video sensor with onboard cellular modem; ships with CAT6 cable grommet installed
BLADE Relay Box	Standard	Controls horn and light outputs; supplies 12 V passive PoE to the sensor
Mounting Hardware Kit	Recommended	Relay box and sensor mounting hardware used in most installations (see Sections 5.2 and 5.3)
Light Kit	Optional	Strobe light, harness, mount, grommet
Horn System	Optional	Dual trumpet horn



Figure 2. *FusionBLADE system shown with optional components*

4.2 Specifications

Item	Specification
Relay Box Enclosure	Polycarbonate box with weatherproof seals
Input Voltage	12 VDC (connect to a fused vehicle system)
Main Power Input	5 A max
Relay Outputs	2 relay-controlled outputs (horn, lights/beacons), 10 A max each
Sensor Connection	RJ45, CAT6; 12 V passive PoE only
Wiring Connectors	Weatherproof crimp connectors
Certifications	FusionSensor® complies with FCC requirements and NEMA TS2

5. Installation

5.1 Before You Begin

Tools and Materials Required

- Standard automotive tools (wrenches, drill, screwdrivers)
- Wire crimping and stripping tools
- Omnisight Mounting Hardware Kit (contents listed in Sections 5.2 and 5.3)

> **Where to mount**
> Mount the relay box and sensor on the frame or a rigid post of the truck or trailer carrying the TMA. **Do not mount any component on the attenuator or crash pad itself.**
> If you use hardware other than the Omnisight kit, follow the same location and orientation requirements and substitute hardware rated for your vehicle and roadside conditions.

5.2 Step 1: Mount the Relay Box

Kit Contents

- (2) 2" square clamps with bolts and nuts
- (4) 10-32 x ⅜" stainless steel bolts with 3/16" washers
- (2) pieces of slotted aluminum channel

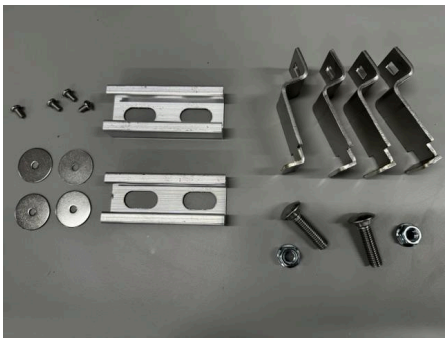


Figure 3. *Relay box mounting hardware*

Procedure

1. Identify a secure location on the **frame of the truck or trailer**, safe from minor collisions.
2. Do **not** mount on the attenuator or crash pad.
3. To protect the internal circuitry from the elements, **mount the relay box with the logo right side up and the Ethernet/cable glands facing downward.**
4. Secure the relay box to the aluminum channel with the 10-32 bolts and 3/16" washers.
5. Mount the 2" square clamps on the channel and clamp the assembly to the vehicle frame or post.

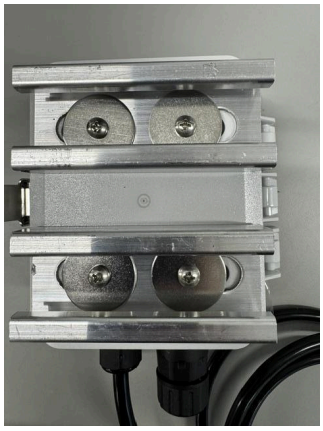


Figure 4. *Relay box secured to aluminum channel with 10-32 bolts and 3/16" washers*



Figure 5. *2" square clamps mounted on channel (shown for instructional purposes)*



Figure 6. *Relay box installed on a TMA truck (alternate configuration with longer channel mounted to a wider post)*

5.3 Step 2: Mount the FusionSensor®

Kit Contents

- (2) 2" square clamps with bolts and nuts
- (2) pieces of aluminum channel with ⅜" holes on 1" centers
- (4) case screws (pre-installed on the back of the FusionSensor®)



Figure 7. *FusionSensor® mounting hardware*

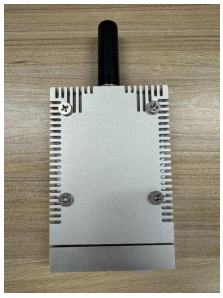


Figure 8. *Case back screws*

Procedure

1. Choose a location centered on the rear of the truck or trailer with a clear, unobstructed view of approaching traffic. Do **not** mount on the attenuator or crash pad.
2. Secure the aluminum channel to the back of the FusionSensor® using the case screws.
3. Mount the 2" square clamps on the channel and clamp the assembly to a rigid vertical post or surface (sign, metal plate, or approved bar mount).
4. Make sure the mount is rigid to prevent vibration and misalignment.

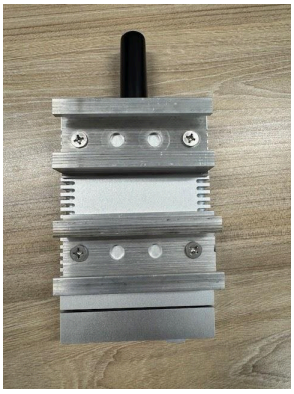


Figure 9. *Aluminum channel secured to back of FusionSensor®*

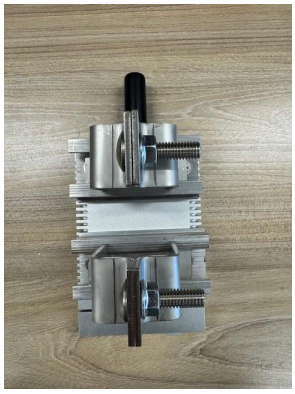


Figure 10. *2" square clamps mounted on channel (shown for instructional purposes)*



Figure 11. *FusionSensor® installed on a TMA truck*

5.4 Step 3: Wiring Connections

Wire colors are printed on the label inside the relay box. See also the wiring diagram in Appendix A.

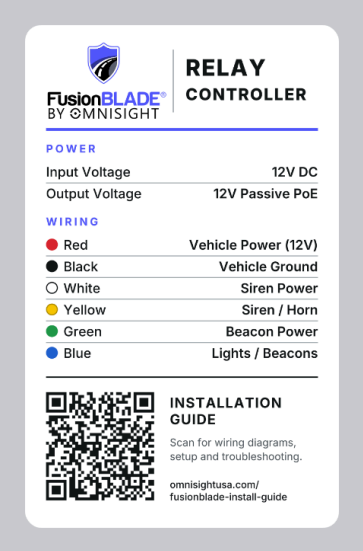


Figure 12. *Wiring label inside the relay box*

Wire	Function	Connect To
Red	Vehicle power (12 V)	Fused +12 V vehicle circuit (5 A max)
Black	Vehicle ground	Vehicle ground
White	Siren power (Relay 1 in)	Fused +12 V feed for horn (10 A max)
Yellow	Siren / horn (Relay 1 out)	Horn positive (+)
Green	Beacon power (Relay 2 in)	Fused +12 V feed for lights (10 A max)
Blue	Lights / beacons (Relay 2 out)	Lights / beacons positive (+)

1. Connect **red** to the vehicle's fused 12 V system and **black** to vehicle ground.
2. Connect the FusionSensor® to the relay box with **CAT6 cable** using RJ45 connectors. The CAT6 cable grommet comes installed on the FusionSensor®; make sure it stays seated to protect the sensor from the elements. If a grommet is lost, contact Omnisight for a replacement.
3. If you purchased the horn, connect **white** to a fused +12 V feed and **yellow** to the horn positive. Connect the horn negative to ground.
4. If you purchased lights, connect **green** to a fused +12 V feed and **blue** to the lights positive. Connect the lights negative to ground.
5. Double-check all connections before applying power.

> **Caution: 12 V passive PoE only**
>
> The relay box supplies 12 V passive PoE to the FusionSensor®. Do not connect the sensor to a standard PoE switch or injector.

6. Configuration and Setup

1. Power on the system.
2. Locate the **device key** on the FusionSensor® label.
3. Go to **Omnisight Fleet Commander** (omnisightusa.com) and create an account or log in.
4. Enter the device key to register and configure the system.
5. Configure alert timing and behavior and verify connectivity. Refer to the Fleet Commander guide for configuration instructions, and contact Omnisight for recommended defaults.

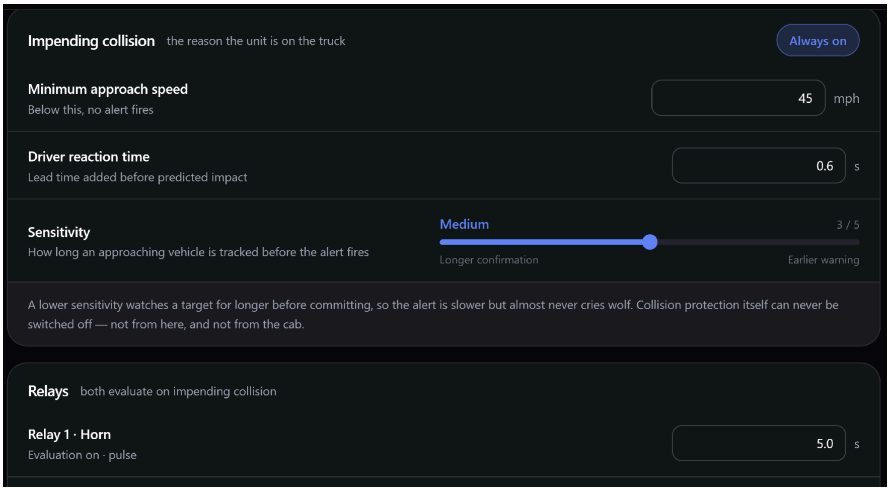


Figure 13. *Relay trigger configuration in Fleet Commander*

7. Operation

Function	Behavior
Normal operation	Lights and horn activate according to the alert timing configured in Omnisight Fleet Commander.
Manual controls	The mobile app can snooze the horn; access it by scanning the cab card.
Event reporting	The onboard cellular modem sends all events, images, and health status to Omnisight Fleet Commander.

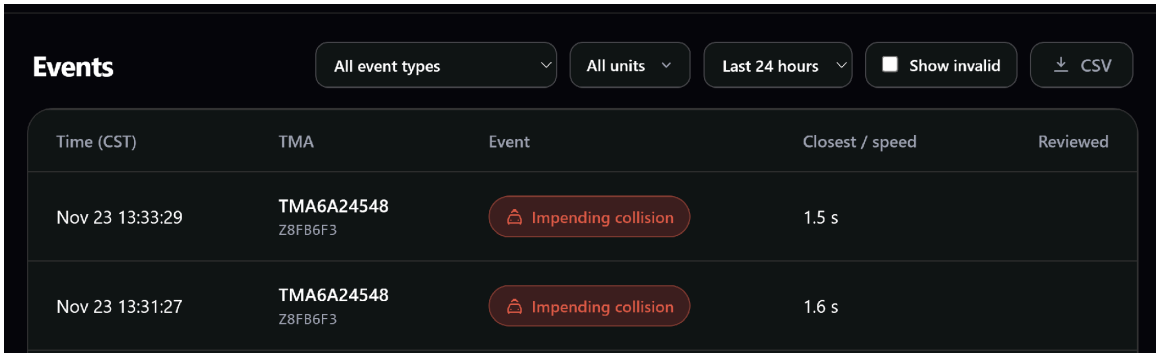


Figure 14. *Near-miss events in Fleet Commander*

8. Maintenance and Troubleshooting

8.1 Routine Checks

- Verify the FusionSensor® is free of dirt, obstruction, or physical damage.
- Using the mobile app, test the system before each work zone activity.
- Confirm lights and horns activate during test events.
- Review system health in Omnisight Fleet Commander regularly.

8.2 Troubleshooting

Symptom	Possible Cause	Solution
Horn not sounding	Loose wiring or blown fuse	Inspect wiring (white, yellow) and fuse
Lights not flashing	Loose wiring or blown fuse	Inspect wiring (green, blue) and fuse
No power to system	Incorrect or missing power connection	Verify 12 V fused connection (red, black)
Fleet Commander not showing events	Cellular connection issue	Check antenna placement and retry connection

9. Support

For assistance, contact Omnisight:

- **Website:** omnisightusa.com
- **Online installation guide:** omnisightusa.com/fusionblade-install-guide
- **Phone:** 843-800-0986
- **Email:** info@omnisightusa.com

Appendix A: Wiring Diagram

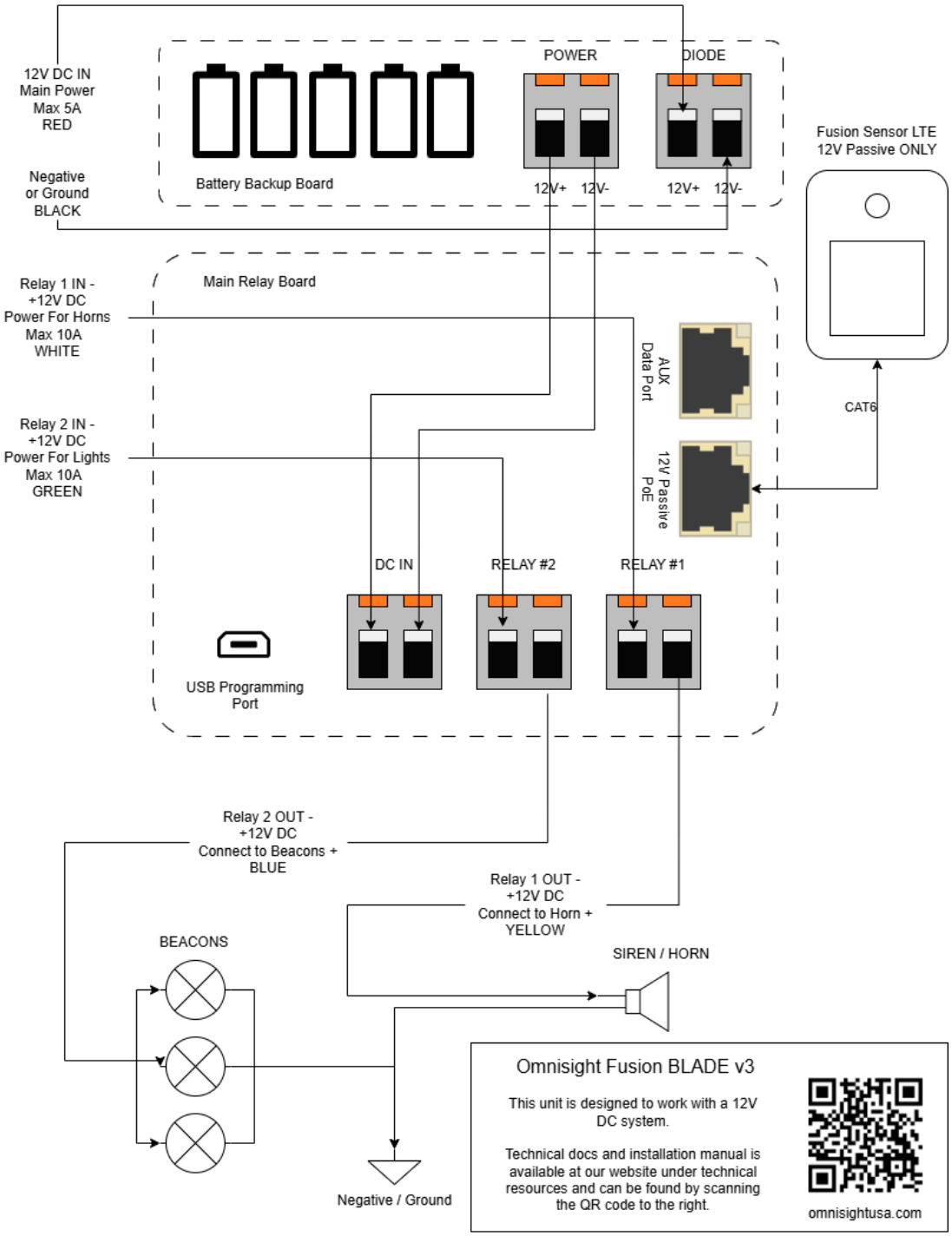


Figure 15. *FusionBLADE wiring diagram*

Appendix B: Installation Photo Gallery













Appendix C: Product Warranty

There are no warranties which extend beyond the description on the face hereof.

Definitions.

"Accessories" shall mean the cables, connectors, and other such accessories sold by Omnisight for use with the Devices.

"Devices" shall mean the products manufactured and sold by Omnisight.

"End User" shall mean only the original end user who directly purchases the Hardware from Omnisight.

"Hardware" shall mean the Accessories and Devices.

"Omnisight" shall mean Omnisight, Inc., a Delaware corporation.

Scope; Non-Consumer Use Only. The Hardware is intended solely for commercial, industrial, governmental, and institutional use by trained personnel and is not a consumer product as defined by 15 U.S.C.A. § 2301 or any other applicable state or federal law. End User represents and warrants that it is acquiring the Hardware for use in business, professional, or governmental operations and not for personal, family, or household purposes.

No Express Warranties; "AS IS" Sale. Except for any express written limited warranty provided herein, the Hardware is provided "AS IS," "WITH ALL FAULTS," and "AS AVAILABLE." No description, affirmation of fact or promise, sample, model, drawing, or diagram shall create any warranty or form part of the basis of the bargain unless expressly set forth in a separate written warranty signed by an authorized officer of Omnisight.

Limited Warranty. Omnisight warrants the Hardware conform substantially to Omnisight's product specifications and are free from defects in materials and workmanship for two (2) years from shipment to the End User. Omnisight warrants the Accessories are free from defects in materials and workmanship for three (3) months from shipment to the End User. This Limited Warranty extends only to the End User. In the event the End User determines, or a reasonable basis exist to determine, that a Limited Warranty issue has arisen, then End User must provide written notice to Omnisight at the earlier of ten (10) days following End User's knowledge of such Limited Warranty issue or ten (10) days following expiration of the applicable warranty period. The failure of End User to timely provide Omnisight with written notice shall waive the warranty. The sole and exclusive remedy of a timely Limited Warranty claim by End User is, at Omnisight's exclusive right and option to the extent permitted by law, at no charge to End User to either: (1) repair or replace the Hardware with functionally equivalent new, previously opened, or refurbished parts and replacements; or (2) replace the Hardware with a replacement new or refurbished product that has substantially similar features; or (3) refund the net price paid to Omnisight for the original Hardware. The repaired or replacement Hardware is warranted for the remaining warranty term of the original Hardware. The obligations hereunder are conditioned upon the return of defective Hardware in accordance with the Omnisight RMA policy. The replacement Hardware becomes the property of the End User and the original Hardware becomes the property of Omnisight.

Limited Warranty Exclusions. This Limited Warranty does not apply and is void with respect to (a) cosmetic damage, (b) Hardware that has been improperly installed or maintained, (c) costs of any installation or uninstallation, (d) any product not manufactured or supplied by Omnisight, (e) failures or defects caused by misuse, abuse, accidents, electrical surges, lightning, physical damage, abnormal operation, improper handling and storage, neglect, exposure to fire, fluids, biological waste, hazardous materials, chemicals, excessive moisture or dampness exceeding the published IP rating, extreme changes in climate or temperature, spills of food or liquids, or alterations, (f) complications, damage or issues arising from the End User network (e.g., connectivity, power outage, power brown-outs, coverage or other signal reception problems), (g) floods, (h) acts of God, (i) riots, (j) Hardware from which warranty stickers, electronic serial numbers and/or serial labels have been removed, altered or rendered illegible, (k) Hardware operated outside published maximum ratings, (l) performance of Hardware in combination with other items not manufactured, approved or supplied by Omnisight, (m) any Hardware which has been opened, repaired, modified or altered by anyone other than Omnisight or a Omnisight authorized service center, (n) engraving, (o) normal wear and tear, or (p) other circumstances beyond the reasonable control of Omnisight.

Disclaimer of All Other Warranties. EXCEPT FOR THIS EXPRESS LIMITED WARRANTY, ALL EXPRESS, IMPLIED AND STATUTORY TERMS, CONDITIONS, REPRESENTATIONS, AND WARRANTIES (INCLUDING, WITHOUT LIMITATION, ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY OR FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT) ARE HEREBY EXCLUDED TO THE EXTENT ALLOWED BY APPLICABLE LAW. THIS LIMITED WARRANTY IS PROVIDED ON THE BASIS THAT THE END USER IS PURCHASING THE HARDWARE FOR THE PURPOSES OF NON-CONSUMER USE, AND NOT FOR HOUSEHOLD OR CONSUMER USE. OMNISIGHT'S RESELLERS HAVE

NO AUTHORITY TO MAKE ANY REPRESENTATIONS OR COMMITMENTS ON BEHALF OF OMNISIGHT OR TO MODIFY, IN ANY RESPECT, THIS LIMITED WARRANTY, ANY OF ITS PROVISIONS OR ANY RIGHTS HEREUNDER. IF ANY CONDITION OR WARRANTY IMPLIED BY LAW IN RELATION TO THE SALE OR SUPPLY OF GOODS WHICH CANNOT LAWFULLY BE EXCLUDED, RESTRICTED OR MODIFIED OR CANNOT BE EXCLUDED, RESTRICTED OR MODIFIED EXCEPT TO A LIMITED EXTENT IS BREACHED THEN, TO THE EXTENT PERMITTED BY LAW, END USER'S REMEDY IN RESPECT OF SUCH CONDITION OR WARRANTY IS LIMITED, AT OMNISIGHT'S OPTION, TO THE SOLE AND EXCLUSIVE REMEDY STATED IN THE LIMITED WARRANTY CLAUSE ABOVE.

Damages Exclusions and Limitations. WITHOUT PREJUDICE TO ANY OF THE FOREGOING, TO THE FULL EXTENT PERMITTED BY LAW, OMNISIGHT WILL NOT BE LIABLE FOR ANY OF THE FOLLOWING AMOUNTS ARISING OUT OF OR ALLEGED TO ARISE OUT OF THE HARDWARE OR THIS LIMITED WARRANTY: (A) LOST PROFITS, LOST REVENUE, LOST INTEREST, LOST GOODWILL, LOSS OR CORRUPTION OF DATA OR ANY LOSS OF OR INTERRUPTION TO BUSINESS; (B) COSTS OF PROCUREMENT OF SUBSTITUTE PRODUCTS OR SERVICES; (C) SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR EXEMPLARY DAMAGES; OR (D) ANY AMOUNT EXCEEDING THE AMOUNT ACTUALLY PAID OR PAYABLE FOR THE HARDWARE SUBJECT TO A CLAIM (COLLECTIVELY, "DAMAGES"). THE FOREGOING EXCLUSIONS AND LIMITATIONS SHALL APPLY TO ALL DAMAGES (I) HOWEVER CAUSED OR ALLEGED TO BE CAUSED, (II) EVEN IF OMNISIGHT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, (III) WHETHER GROUNDED IN WARRANTY, NEGLIGENCE, TORT, STRICT LIABILITY, BREACH OF CONTRACT, CIVIL LIABILITY OR OTHER CAUSE OF ACTION OR CLAIM, (IV) REGARDLESS OF WHETHER CLAIMED IN THE FORM OF AN ALLEGATION, DEMAND, SUIT, ACTION OR OTHER PROCEEDING, AND (V) NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. NOTHING HEREIN SHALL BE CONSTRUED TO LIMIT OR EXCLUDE ANY LIABILITY THAT CANNOT BE LIMITED OR EXCLUDED BY LAW. IF ANY PART OF THIS CLAUSE IS FOUND TO BE UNENFORCEABLE BY ANY COURT OR COMPETENT AUTHORITY OR WOULD BE FOUND TO BE UNENFORCEABLE IF IT WERE INTERPRETED OR CONSTRUED IN A PARTICULAR WAY, THEN, THE RELEVANT WORDING SHOULD BE INTERPRETED OR CONSTRUED SO AS TO AVOID SUCH A FINDING AND THAT, IN THE EVENT OF SUCH A FINDING, THE REMAINDER OF THE PROVISION IN QUESTION SHALL BE INTERPRETED OR CONSTRUED TO GIVE IT FULL EFFECT.

Safety and Compliance; No Guarantee of Regulatory Approval. End User is solely responsible for ensuring that the Hardware, as installed and used, complies with all applicable federal, state, and local laws, regulations, codes, standards, and directives governing traffic safety devices, including without limitation any design, placement, visibility, conspicuity, electrical, communications, cybersecurity, and data-handling requirements. Omnisight makes no representation or warranty that the Hardware, alone or in any specific configuration or location, will satisfy or obtain any governmental or third-party approval, authorization, or certification, or prevent accidents, injuries, or property damage.

Installation, Maintenance, and Instructions. End User must follow all installation, operation, inspection, and maintenance instructions and schedules provided by Omnisight and applicable industry standards. Failure to do so may result in malfunction, reduced service life, safety hazards, or legal noncompliance. End User shall ensure that only qualified personnel install, operate, and service the Hardware.

Component and System Interactions. Performance may depend on site conditions and on interactions with third-party components, software, power, communications, sensors, and environmental factors. Omnisight disclaims responsibility for performance issues or failures caused by third-party products, improper integration, or conditions outside its control.

No Third-Party Beneficiaries. No third party has any rights under this disclaimer, and no third party may rely on any representations or warranties regarding the Hardware.

No Amendments. This Limited Warranty may only be amended as expressly provided by Omnisight and may not be excluded or modified by course of dealing, course of performance, or usage of trade.

Indemnity. To the extent permitted by law, End User shall defend, indemnify, and hold harmless Omnisight and its affiliates, and their respective directors, officers, employees, and agents, from and against all Damages, claims, demands, losses, liabilities, costs, and expenses (including reasonable attorneys' fees) arising out of or related to: (a) End User's selection, installation, integration, operation, or maintenance of the Hardware; (b) use of the Hardware in combination with other products, equipment, software, or systems; (c) modification or misuse of the Hardware; or (d) End User's violation of applicable laws or third-party rights.

No Professional Advice; User Responsibility. End User is solely responsible for selection, configuration, deployment, use, maintenance, and compliance with all applicable laws, regulations, and standards relating to traffic control and safety, including obtaining required approvals, permits, and certifications. Omnisight does not provide engineering, design, or professional services and does not warrant that the Hardware will meet End User's requirements or achieve any particular safety or performance outcome in End User's specific application. Information made available online by Omnisight is for informational purposes only and Omnisight makes no warranty of any kind, express or implied, regarding online information.

Governing Law. This Limited Warranty is governed by the laws of the State of South Carolina. The courts sitting in such jurisdiction shall have exclusive jurisdiction of any disputes arising hereunder. If a version of this Limited Warranty exists in a different language, the English language version shall prevail to the extent of any inconsistency.