

Houston Radar SpeedLane™ Quick Start Guide

Version 1.6 Date January 18th 2017



Please read SpeedLane™ [User Manual](#) for a complete description of the installation procedure and setup of this product. This quick start guide is not meant to replace the user manual.

Scan the QR code on the right on your smart phone to download the complete user manual from our website or view a setup training video.



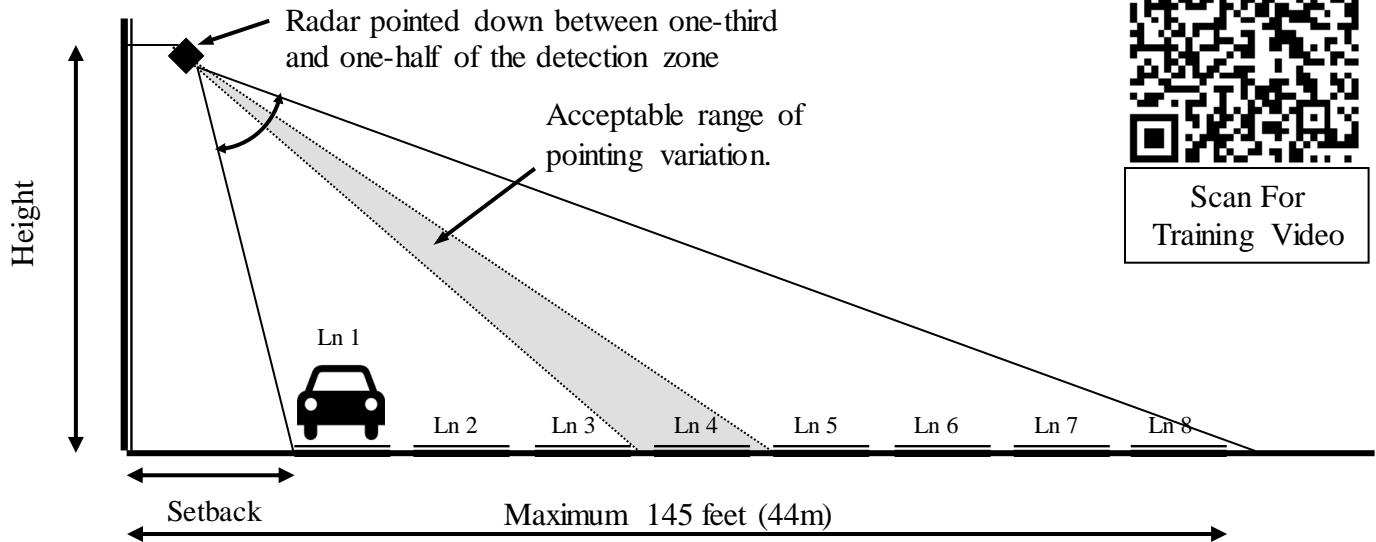
Scan For
User Manual

STEP1: Select appropriate location and mounting height

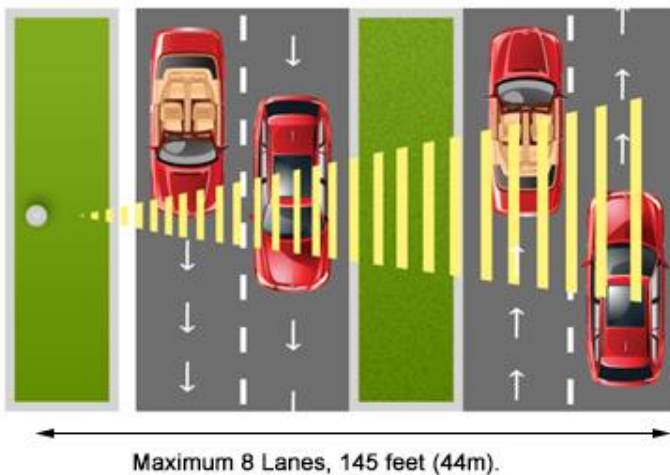
Pick a mounting location where you are able to best satisfy the height and setback guidelines listed in Appendix B.



Scan For
Training Video



[Refer to height and setback tables in Appendix B]



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The SpeedLane can support a maximum of 8 lanes, with each lane moving in any direction. The far edge of the farthest lane should be no more than 145 feet (44m) away.

STEP2: Prepare to install the SpeedLane™

- Ensure you have 0.5" (12mm) wide steel banding straps to attach the SpeedLane to the pole.
- Locate the provided 3/16" Allen key to loosen the clamp brackets enough so that the tube can be easily rotated by hand. This will allow you to make pitch adjustments to align the up/down pointing of the radar as recommended in the mounting chart in Step 1 above. *The clamps are designed to tightly grip the tube without crushing it when tightened all the way down.*



- The SpeedLane has an onboard sighting video camera that will be used for alignment purposes. You must prepare to power up the SpeedLane during installation and connect to it from our PC based StatsAnalyzer software.
 - If you are planning to power the device via 12VDC, locate the 5 pin M12 cable shown below and connect it to the connector on the right side of the radar (side away from camera window). ***Hand tighten*** completely.
 - Alternatively, if you have purchased the Power over Ethernet (PoE) option, you may power the radar via the Ethernet cable. This is the 4 pin M12 connector on the side near the camera window.
 - If you have purchased a SpeedLane with onboard battery, ensure the SpeedLane can be turned on via the push button on the side. Else charge it for at least 4 hours with the provided charger.
- The device may be powered either by pin 1 (+) and pin 5 (ground) on the DB9 connector or via the provided DC jack connector. ***The striped (black/white) wire on the DC jack connector is (+).***



The SpeedLane cannot be powered via the DB9 cable if it has a built in battery. See addendum to this quick start to power on the SpeedLane in this case.

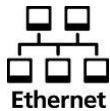


Pin 1 on the DB9 is connected to the DC jack center pin. Do not connect power to both the DB9 pin 1 and to the DC jack else they may conflict with each other.



SpeedLane RS232 Serial and +12VDC power cable.

- Locate a suitable +12VDC nominal (15VDC maximum) power source capable of supplying 2.5 Watts or more (or 0.21 Amps) to power the unit. The nominal power usage of the radar is only 0.8 Watts, but will rise to 2.1 Watts when the camera is in use.
- Install provided Houston Radar StatsAnalyzer software on a Windows laptop or PC. Plug in the DB9 connector to a PC serial port or a USB to RS232 adapter.



- If you have purchased the Ethernet option, we recommend using it for communication with the radar. ***The camera can only be used in video mode over Ethernet. With a serial or Bluetooth connection, you can use camera to take snapshots.***
- Alternatively, it may be more convenient to power the radar temporarily via the serial cable from a power source in the bucket truck, but connect to it wirelessly over Bluetooth from a computer on the ground. This will avoid having to use temporary wiring during the installation process. ***The Bluetooth ID of the radar is printed on a label on the back of the mounting plate. A pairing key is not usually required, but if requested, enter 1234.***

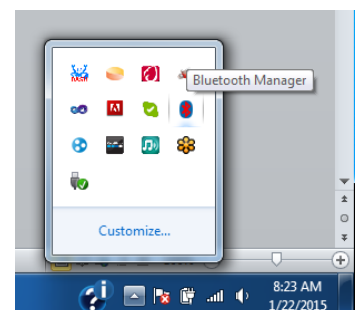
STEP3: Power ON and verify proper connection while still on the ground

Power on the radar and ***wait about 45 seconds*** to allow it to finish booting. Then start up the Houston Radar StatsAnalyzer (or the Houston Radar Configuration tool) software and click on *File->Connect to Radar...*

If you have decided to connect via a local serial port or Bluetooth, select “Auto Detect Port” or the port number for the serial port or Bluetooth connection and then click on “Connect”.



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*If you are connecting via Bluetooth, you must have already paired the computer to the SpeedLane's Bluetooth and had a COM port assigned **before** starting the Houston Radar program. You can do this by **right** clicking on the **Bluetooth manager icon in your Windows status bar** and "Add New Connection". This procedure is required only once per computer/SpeedLane connection.*

If you have decided to connect using Ethernet, pull down the "Connect To Radar On" list and select the "Local Network" option. The SpeedLane and Stats Analyzer supports zero-conf/auto discovery so they will communicate when directly connected.

Once the radar is found:

1. Check the **clock** and ensure it is correct. It is set to US Central Time from the factory. **Make sure your PC clock is accurate** and then click the "Sync Radar Clock to Computer" button to set the radar clock
2. Click the SpeedLane Setup tab and select either the "Maximum Range" or "Minimum Setback" operating mode. We recommend using the "Minimum Setback" mode if your last lane is within 90 feet (27m) of the installation location regardless of your setback. Otherwise use "Maximum Range" mode to reach lanes out to 150 feet (45m).
3. Click "**Save Changes**" button. Reconnect if prompted.

You are now ready to strap the SpeedLane to the pole and complete setup. At this point power down the radar and proceed to the next step.

Step 4: Adjustments and setup of SpeedLane™ on the pole



The SpeedLane has an onboard sighting camera and gyroscope that will be used for alignment purposes. These will make the setup process significantly easier and ensure properly alignment of the radar.

If you are mounting the SpeedLane to a pole, attach the pole mounting bracket to the mounting plate of the radar as shown below:



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The bracket is designed to provide level adjustment to compensate for a sideways leaning pole. If this is required, loosen the bolts slightly before strapping to the pole to allow level adjustment while viewing the video/snapshots from the on-board camera and gyroscope level readings in wizard. After adjusting, tighten all bolts completely.

Follow the steps below to get the SpeedLane aligned so that the view of the road looks correct and traffic is reliably detected. *A little extra effort at this stage to properly align the radar will pay off in terms of trouble free performance of the radar.*

1. Loosely strap SpeedLane to pole at the appropriate height per installation tables
2. Connect the cables and **power on** the radar. Secure the service loops of the cables via strain relief clamps provided on the bracket. **Do not rely on the connectors to support the entire weight of the cable.**
3. Connect to the radar and click on the “**Installation Wizard**” tab. Follow the prompts on the screen. *We highly recommend watching the installation training video in advance which shows all the steps of wiring the SpeedLane and using the Installation Wizard.*

Here are a few points to keep in mind during the lane setup:

- ✓ Ensure you get at least 3 or more filled signal strength bars on most targets for proper detection.
- ✓ Define one lane for each lane on the road. Do not attempt to define one lane for multiple lanes on the road.
- ✓ Do not leave a gap between defined lanes if there is no gap on the road. Typically you would only have gap between the lanes if there is a median, shoulder or some other part of the road with no traffic.
- ✓ Do not try to overlap lanes (the software will prevent you from doing this).
- ✓ Setup the lane direction to match the direction of travel on the road.
- ✓ Click “Finish” on the last page of the Installation Wizard.

Step 5: Setup your external router/modem/Tetryon Server connection if required

If you wish to retrieve data remotely, refer to Appendix C for more details on the setup.



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We are here to help and can guide you remotely to ensure a proper alignment. We highly recommend that you setup a telephone appointment with us and plan to temporarily bring a cellular data modem with an Ethernet port to the site. We will then connect remotely via the Internet and view the SpeedLane camera and radar detections to ensure a proper setup. This method can be invaluable to ensure that the device is setup correctly. There is no additional charge for this support.

Questions? Call us at 1-888-602-3111 and select “Tech Support” option or email us at contact@houston-radar.com

We are also happy to review the photo from the SpeedLane camera to ensure the device is aimed correctly. Feel free to email us a photograph.



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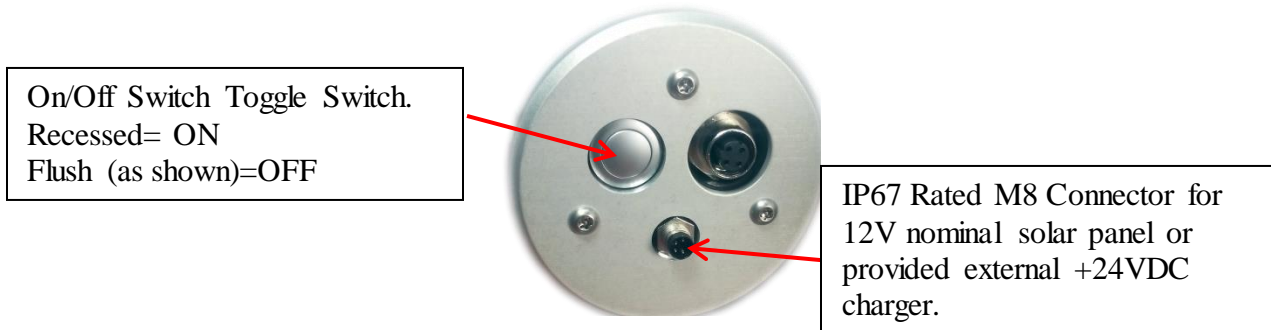
Appendix A

On-board battery Option for Solar Power, UPS or Portable Applications

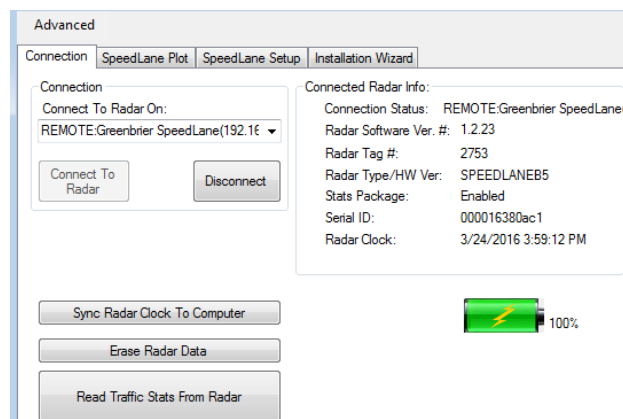
If you have purchased a SpeedLane with the Uninterruptable Power Supply (UPS) built-in battery option or a solar power package, the device has an on-board high performance LiFePO4 rechargeable battery and a high performance maximum power point technology (MPPT) charger.

In this configuration, the SpeedLane is not setup for external 12VDC power on the 5 pin M12 connector as described in the quick start guide (unless you have purchased the external battery augment option).

It has an additional IP67 rated 4 pin M8 connector as shown below. Only 2 pins of this connector are utilized for connection to an external solar panel or external DC charger. The other two pins should not be connected as they may be utilized for other features in the future.



Two sets of M8 cables are provided. One has bare leads on it, marked + and – for connection to an external 12V (nominal) solar panel. The other is for charging via external 24VDC power. Real time battery charge level and charging status is available when you connect via the Houston Radar Stats Analyzer. Click on the icon for a real time charge/discharge history plot.



Appendix B Recommended Installation Tables

| | SpeedLane Installation Table (in feet) | | | | SpeedLane Installation Table (in meters) | | | |
|----------------------|--|-------------------------|---------------------|---------------------|--|------------------------|--------------------|--------------------|
| | Offset from 1 st lane | Recommended Height (ft) | Minimum Height (ft) | Maximum Height (ft) | Offset from 1 st lane | Recommended Height (m) | Minimum Height (m) | Maximum Height (m) |
| | 7' | 17' | 8' | 19' | 2m | 5m | 2m | 6m |
| | 8' | 17' | 8' | 20' | 2m | 5m | 2m | 6m |
| | 9' | 17' | 8' | 21' | 3m | 5m | 2m | 6m |
| | 10' | 17' | 9' | 22' | 3m | 5m | 3m | 7m |
| | 11' | 17' | 9' | 23' | 3m | 5m | 3m | 7m |
| | 12' | 17' | 10' | 24' | 4m | 5m | 3m | 7m |
| | 13' | 17' | 11' | 25' | 4m | 5m | 3m | 8m |
| | 14' | 18' | 11' | 26' | 4m | 5m | 3m | 8m |
| | 15' | 20' | 12' | 26' | 5m | 6m | 4m | 8m |
| | 16' | 20' | 12' | 27' | 5m | 6m | 4m | 8m |
| | 17' | 21' | 13' | 28' | 5m | 6m | 4m | 9m |
| | 18' | 22' | 14' | 29' | 5m | 7m | 4m | 9m |
| | 19' | 22' | 14' | 30' | 6m | 7m | 4m | 9m |
| | 20' | 23' | 15' | 30' | 6m | 7m | 5m | 9m |
| | 21' | 23' | 15' | 31' | 6m | 7m | 5m | 9m |
| | 22' | 23' | 16' | 31' | 7m | 7m | 5m | 9m |
| | 23' | 25' | 16' | 32' | 7m | 8m | 5m | 10m |
| Recommended Mounting | 24' | 25' | 16' | 33' | 7m | 8m | 5m | 10m |
| | 25' | 26' | 17' | 33' | 8m | 8m | 5m | 10m |
| | 26' | 26' | 17' | 34' | 8m | 8m | 5m | 10m |
| | 27' | 27' | 18' | 35' | 8m | 8m | 5m | 11m |
| | 28' | 27' | 18' | 35' | 9m | 8m | 5m | 11m |
| | 29' | 27' | 18' | 36' | 9m | 8m | 5m | 11m |
| | 30' | 29' | 19' | 37' | 9m | 9m | 6m | 11m |
| | 31' | 29' | 19' | 37' | 9m | 9m | 6m | 11m |
| | 32' | 29' | 19' | 38' | 9m | 9m | 6m | 11m |
| | 33' | 30' | 19' | 39' | 10m | 9m | 6m | 12m |
| | 34' | 30' | 19' | 39' | 10m | 9m | 6m | 12m |
| | 35' | 30' | 20' | 40' | 11m | 9m | 6m | 12m |
| | 36' | 30' | 20' | 41' | 11m | 9m | 6m | 12m |
| | 37' | 30' | 20' | 41' | 11m | 9m | 6m | 12m |
| | 38' | 31' | 21' | 42' | 12m | 9m | 6m | 13m |
| | 39' | 31' | 21' | 43' | 12m | 9m | 6m | 13m |
| | 40' | 33' | 22' | 43' | 12m | 10m | 7m | 13m |
| | 41' | 33' | 22' | 44' | 12m | 10m | 7m | 13m |
| | 42' | 34' | 22' | 44' | 13m | 10m | 7m | 13m |
| | 43' | 34' | 22' | 45' | 13m | 10m | 7m | 14m |
| | 44' | 35' | 23' | 46' | 13m | 11m | 7m | 14m |
| | 45' | 35' | 23' | 46' | 14m | 11m | 7m | 14m |



Appendix C

Retrieving Data Remotely from the SpeedLane

There are two ways to access the SpeedLane data remotely:

1. Call directly in to the radar via the Stats Analyzer software
2. Setup the SpeedLane to call out to our Tetryon™ cloud server and access the data on the server via a browser from any computer connected to the Internet

Both options can be used with either your own external modem or the optional built-in 3G GSM modem.

1. Call in to the SpeedLane from your Windows computer

External Modem with
Ethernet to SpeedLane

When using external modem, you need to forward incoming network connections to allow the remote computer to connect into the SpeedLane. You also require a static IP address in the modem so you can connect to it directly.

If the SpeedLane is connected via **Ethernet** to the router/modem:

- 1.1. Assign an unused private static IP address to the SpeedLane via the *SpeedLane Setup->Ethernet tab*.
- 1.2. On the external modem, select any available external port number you wish to use (e.g. 5000). In the external **modem configuration** forward all TCP/IP traffic for this external port number to the SpeedLane IP address at port 23.
- 1.3. If you wish to use the video streaming feature, you also need to forward all TCP/IP traffic for external port 8080 to the SpeedLane IP address at port 8080.

If the SpeedLane is connected via serial port to the external modem:

External Modem with
Serial to SpeedLane

- 1.4. On the external modem, select any available external port number you wish to use (e.g. 5000). In the external **modem configuration** forward all TCP/IP traffic for this external port number to the local serial port on the external modem connected to the SpeedLane.
- 1.5. Ensure you do not have any “terminal editing” settings enabled on this serial port and you are using it in “raw” mode without any character translation.
- 1.6. Setup the modem serial port with the following parameters: 115200 baud, 8bits, 1 stop, no parity and no handshaking. The DB9 port on the radar cable is wired as a DCD so it will require a null modem/crossover to connect to your modem.



What options are installed in the SpeedLane?
Check the label on the back.



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Setup Internal Modem

- 1.7. When using internal modem you must setup the “APN” and enable the modem in the SpeedLane Setup->Network tab.
- 1.8. Do not enable “Auto Power off” as you will not be able to call the SpeedLane.

Connection SpeedLane Plot SpeedLane Setup Installation Wizard

Detection And Units Vehicle Bins Network Advanced DVR User Login X3/G4 Diagnostics

Ethemet

☐ Static IP Address

IP Address: 0.0.0.0

Netmask: 0.0.0.0

Gateway: 0.0.0.0

DNS: 0.0.0.0

☒ Acquire IP Address via DHCP

Access via Bonjour or Avahi on the local network.

Broadcast hostname: **speedlane-380AC1**

Hostname: speedlane-380AC1

Internal 3G Modem

APN: grid.t-mobile.com

User: 0

Password: 0

☒ Enable ☐ Debug

☐ Auto Power Off

Enable to reduce average power usage.
Call Interval should be set to >1 minute.

Server

Configure to periodically connect to hrserver and push data to it over modem or Ethemet.

Hostname/IP: dev.radar-data.com

Port #: 5125

Call Interval: 5 Minutes

Customer ID: 1

Setup Stats Analyzer Remote Radar Connection

- 1.9. On the remote host computer, setup a “Remote Radar Connection” in the Houston Radar Stats Analyzer program via “File-Setup Remote Radar Connections...”. Use the **external** well known public IP address or hostname of the modem and:
 - 1.9.1. For the external modem, the external port number you selected in the steps above (5000 in example above) or
 - 1.9.2. For the internal modem, port 23.
- 1.10. Ensure you can make a connection from the remote computer to the SpeedLane and can view video if you have connected via Ethernet or internal modem (watch out for data usage when using a limited data plan!)



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2. Call out to our Tetryon server in the cloud

This option does not require a static IP address as the SpeedLane initiates an outgoing connection. Additionally you can opt to automatically power down the internal modem and save considerable power.

You must use either the optional internal modem or be connected to the external modem via Ethernet as the SpeedLane will initiate a TCP/IP connection to the server.

2.1. Configure your Tetryon server address in the SpeedLane Setup->Network tab

If you would like to use our demo server:

2.1.1. Use www.radar-data.com as the Hostname/IP address

2.1.2. Request a customer ID at <http://www.radar-data.com/newaccount>. Once you receive the customer ID, program it in the customer ID field.

You only need one customer ID per company and not one per radar.

2.1.3. Set port # 5125 and select your call interval.



Select a call interval 5+ minutes if you wish to auto power down the modem to save power. Call intervals of 15+ minutes with auto power off result in very modest modem duty cycles and add practically zero additional power to the basic 0.85 Watts of the radar and make the modem “free” from a power standpoint.

Once your account is activated, you will receive an email with further details on how to access the data online. Ask us how you can host the Tetryon server yourself without any license or purchase costs.

The screenshot shows the 'SpeedLane Setup' window with the 'Network' tab selected. The 'Ethernet' section has two radio buttons: 'Static IP Address' (selected) and 'Acquire IP Address via DHCP'. The static IP fields are set to 0.0.0.0 for IP Address, Netmask, Gateway, and DNS. Below these is a box for 'Access via Bonjour or Avahi on the local network' with a broadcast hostname of 'speedlane-380AC1'. The 'Internal 3G Modem' section has fields for APN (grid.t-mobile.com), User (0), and Password (0). There are checkboxes for 'Enable' (checked) and 'Auto Power Off' (checked), with a 'Debug' checkbox. A note states: 'Enable to reduce average power usage. Call Interval should be set to >1 minute.' The 'Server' section is highlighted with a red box and contains fields for Hostname/IP (www.radar-data.com), Port # (5125), Call Interval (5 Minutes), and Customer ID (1), along with a 'Create Account' button. The 'Hostname' field at the bottom is set to 'speedlane-380AC1'.



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The device must be located 20 cm or more from persons. The device must not be co-located with other transmitters.

This device is certified to be used in Canada under "RSS 310".

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Any modification or use other than specified in this manual will strictly void the certification to operate the device.

Product contains no user serviceable parts inside. Do not attempt to open or repair. Doing so will void all warranty.

Specifications may change without notice.



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