

SAFE PATH™

WRONG WAY DRIVING TECHNOLOGY

SAFE PATH Is Powered By:



AMSignal.com • 720.348.6925



A TELEDYNE COMPANY
Teledyne.com • 236.638.4673



PELCO PRODUCTS, INC.
PelcoInc.com • 405.340.3434



TRAFFICALM™

TrafficCalm.com • 855.738.2722



AppInfoInc.com • 678.830.2170

To learn more about



Go to SafePathWrongWay.com

Wrong-Way
Detection &
Countermeasures
System



A Systematic Approach to Saving Lives...

What Value does SAFEPATH bring to an Agency?

In response to the increase in accidents & fatalities

caused by wrong-way driving on US freeways, thermal detection technology has been selected by more DOT's and Tollway Authorities than any other technology to date due to its accuracy and proven track record to protect both wrong-way drivers and right of way drivers. An effective wrong-way system goes well beyond an initial detection by responding with real time countermeasures to protect the surrounding public and by providing authorities with quick interception data and methods when seconds count.



MAINLINE DETECTOR
Thermal camera detects wrong-way driver & measures speed

LAW ENFORCEMENT
Intercepts wrong-way driver

TRAFFIC SIGNAL PRE-EMPT
Pre-empt prevents vehicles from entering ramp

RAMP CLOSURE
Prevents vehicles entering freeway

WARNING MESSAGE
Warns oncoming drivers

MAINLINE PTZ
Monitors wrong-way drivers

DETECTOR
Thermal camera detects wrong-way driver

ILLUMINATED FLASHING SIGNS
alert wrong-way driver

WRONG-WAY DRIVER

SAFEPATH Improves Safety by Offering Superior Wrong-Way Protection

Enhanced Agency Benefits

Comprehensive Detection Systems:

- **Full off ramp detection** - Utilizes patented sensor collaboration to stop wrong-way drivers before they enter the freeway.
- **Full mainline detection** - Monitors any wrong-way vehicle on the roadway, enhancing protection for oncoming traffic.

Unparalleled Accuracy and Reliability:

- **Highest Detection Accuracy** - Industry-leading accuracy in detecting wrong-way drivers in all weather and road conditions, with a flawless detection record to date.
- **Lowest False Alarms:** Industry-leading in minimizing false alarms, essential for accurate data provision to Traffic Operations Centers (TOC)/Traffic Management Centers (TMC).

Advanced Countermeasures and Control:

- **Dynamic Message Signs (DMS) Integration** - Access and control DMS to display pre-determined messages to the public.
- **Ramp Meter Control** - Manage ramp meters to prevent oncoming traffic from entering the freeway during an incident.
- **Estimated Time of Arrival (ETA) Alerts** - Provide authorities with ETA to the next ramp/mile marker, based on the wrong-way vehicle's speed.

Extensive Connected Vehicle Integration:

- **Broad CV2-X Compatibility** - Largest integration with connected vehicle technology to date.
- **Citizen Alerts:** Integration with agency-provided phone applications for real-time public notifications.

Public Safety Features

Public Alert Systems:

- **Dynamic Message Signs (DMS) Management** - Control DMS to broadcast important messages to the public in real-time.
- **Ramp Metering** - Adjust ramp meters to control traffic flow in response to emergencies.

Proactive Traffic Management:

- **Real-Time ETA Information** - Offer authorities real-time ETA predictions for emergency response based on wrong-way vehicle speeds.

Advanced Vehicle Integration:

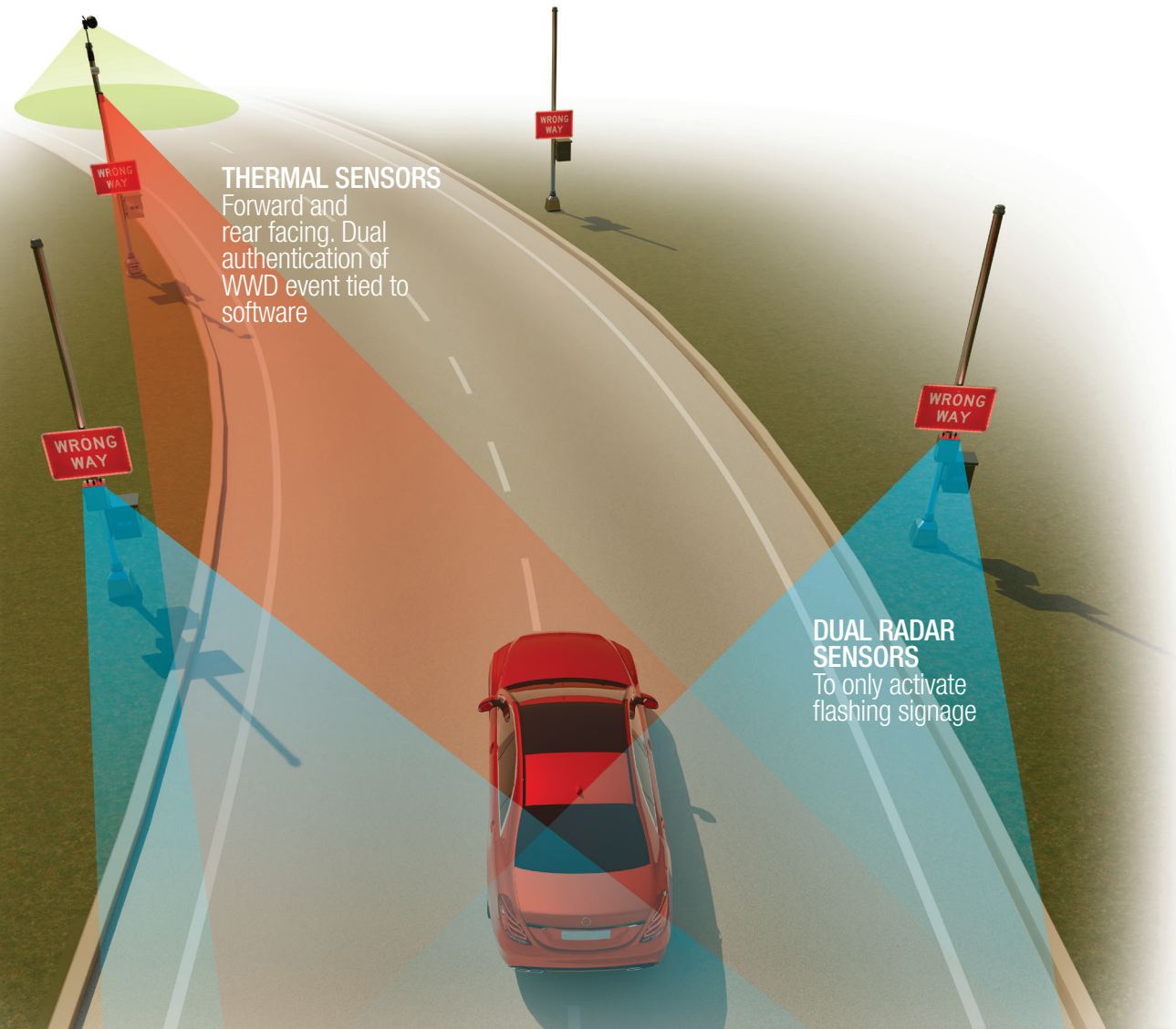
- **Comprehensive CV2-X Integration** - Extensive compatibility with connected vehicle technologies for improved safety measures.
- **Public Notification Systems** - Utilize agency-specific mobile applications to alert the public during wrong-way driving incidents.

SAFEPATH

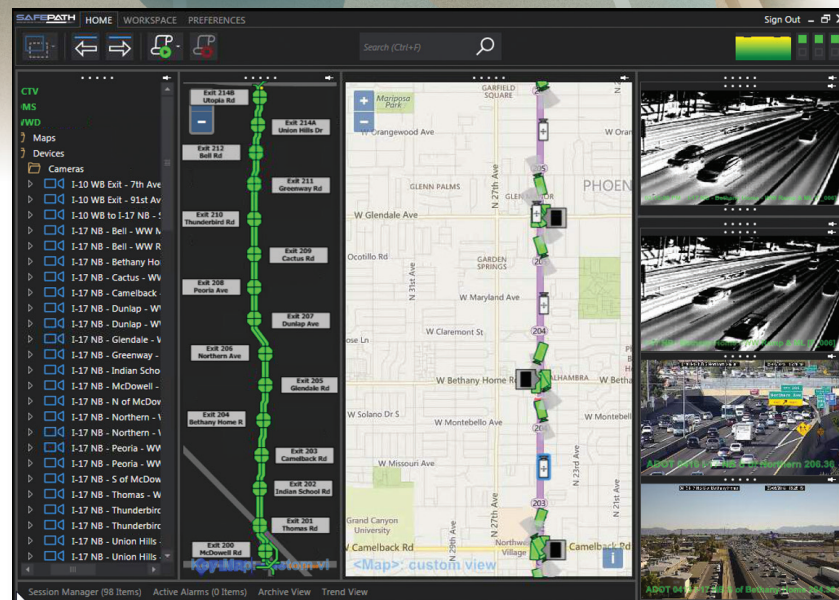
The Future of Wrong-Way Detection is Here

SAFEPath

WRONG WAY DRIVING TECHNOLOGY



Alerting drivers faster can potentially save lives. Our SafePath™ system is designed to deliver instantaneous real-time data that activates warning signage and alerts authorities simultaneously.



SAFEPath Off Ramp Hardware:

FLIR
A TELEDYNE COMPANY
Thermal Cameras



General Overview:

The Teledyne TrafiSense cameras are the most accurate wrong way and queue detection sensors on the market today. All together, Teledyne's TrafiSense cameras represent over 80% of the wrong way market in North America due to the accuracy of the algorithms within each camera to filter non wrong way events. TrafiSense AI is trusted by over 20+ DOT's across North America to keep their roads safe.

Quantity:

One Teledyne TrafiSense 690 and one TrafiSense 632 are needed for a complete system.

- **690** – Alert Camera up to 200 ft.
- **632** – Confirmation Camera up to 500 ft.

Specifications:

Functionalities	Conditional presence detection by class Traffic Data Collection incl. conditional Turning Movement Counts Queue Length Monitoring Wrong Way Driver Detection PSH (Position, Speed and Heading) over API – optional license
Services	FLIR VSO data - optional Acyclica license
Preset Applications	20 zones are available for the following applications: <ul style="list-style-type: none"> ■ Wrong Way Driver Detection ■ Counting Group ■ Queue Occupancy ■ Custom Detection Applications
Configuration	Local/remote web GUI via PoE
Imaging & Optical	
Type	Focal Plane Array (FPA) Uncooled VOx microbolometer Long wave Infrared (7 – 14 μm)
Resolution	VGA (640 x 480)
Frame Rate	30 fps
Compression	H.265, H.264, MJPEG
Streaming Video	RTSP
Product Types	
	Part No. Field of View Detection Distance
TrafiSense AI POE-690	10-7760 90°H x 69°V 0 - 200 ft
TrafiSense AI POE-632	10-7766 32°H x 26°V 80 - 500 ft
Mechanical	
Material	Aluminum housing w/ integrated polycarbonate sunshield
Dimensions (incl. mounting bracket)	Vertically mounted: 9.8 in x 6.3 in x 4.7 in Horizontally mounted: 16.2 in x 7.1 in x 4.7 in
Electrical	
Input power	24-42 VAC / 24-48 VDC
Power consumption	Avg 6.5 W / Peak 10.5W
Communication	
Output contacts	Hard wired: 2 N/C onboard
PoE	PoE mode A for configuration, video streaming and data communication
Environmental	
Shock & Vibration	NEMA TS2 specs
Materials	All weatherproof UV resistant
IP Rating	IP 67
Temperature Range	-29°F to +165°F
Regulatory	
FCC / EU Directives	FCC part 15 class A, EMC 2014/30/EU RoHS 2011/65/EU, LVD 2014/35/EU



TRAFFICALM™

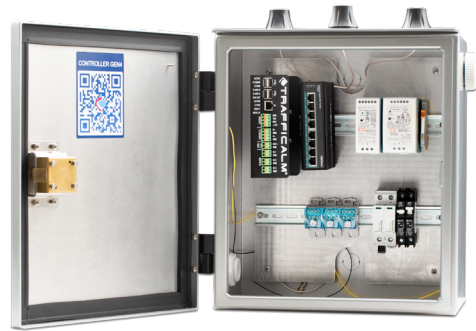
Cabinet & Associated Cabinet Hardware

General Overview:

The intelligent Wrong Way Controller is the core of the TrafficCalm® Wrong Way Warning + Notification System and is the “brain” of the system. The controller takes inputs from multiple vehicle sensors and applies our patented collaborative algorithms for the fastest and most accurate wrong-way detection in the industry, virtually eliminating false alarms.

The Wrong Way Controller is able to manage multiple detection, warning, and notification zones. The controller also sends wireless commands through a mesh net radio communications system to activate collaborators and flashing warning signs.

One to three cameras can be added to the controller to monitor wrong way traffic. The system records the pre- and post-event videos and will send text and email notifications with a clip of the videos of the wrong-way event.



Specifications:

Physical Descriptions

Built-in U-Bolt Bracket System for 4.5" round poles
NEMA 4R Aluminum Enclosure
Controller electronics industrial grade, din-rail mounted controller components ruggedized for vibration resistance
Stainless fasteners used for corrosion resistance
Dimensions: 19.125 h x 10.500 d x 16.500 w

Input/Output

Inputs: 1 per Controller, accept dry contact closure. Optional input devices include loop detectors
Outputs: 2 per Controller or Collaborator, 12W max requirement. Output devices include: Sign Rings, Rectangular Rapid Flashing Beacons (RRFBs), and Round Beacons
Radar Port: Accepts input from TrafficCalm® Smart Radar Sensor
Light sensor for configurable auto-dimming feature based on ambient light conditions
12-21 VDC input from AC or Solar supplies

Performance

Wireless activation within 100 mS
Wireless device to device radio range of 1000'/305m
-40° F to +140° F (-40°C to +60° C) operating range; varies with battery type used
Surge protected dual power supplies: 100W/48V and 60W/12V rated
Server to Server API available

Modem Highlights

4G LTE with 3G/2G fallback
50Mbps Upload
Dual SMA dipole antennas
580MHz Processor, 128MB Ram
FCC Part 15 Class C and RoHS certifications

Fiber Switch

4 (or greater) port managed layer 2 switch
POE+ Capability supplies accessories, including camera(s)
Environmentally hardened, Din Rail Mounted
Remotely rebootable

Warranty and Service

5 year limited warranty, 1 year on batteries
Unlimited tech support from US based factory technicians

Part Number	Description	Weight	Ethernet/Fiber	AC/Solar	Modem Type
M75-WWCTL-F48E	Wrong Way controller with 4g modem delivers textual notifications via api, email, text message, and bluesentry interface. Can be solar operated off of an 280Ah/300W solar kit providing 7 days of autonomy. Does not accommodate cameras without upgrade	27.8 lbs.	Does not apply	Solar Compatible	4G LTE Cellular
M75-WWCTL-C000	Wrong Way controller with 4g modem delivers video-enriched notifications via api, email, text message, and bluesentry interface. 100-240VAC line power required. Accommodates up to two POE IP Cameras.	29.5 lbs.	POE+4+Port Unmanaged Ethernet Switch	AC	4G LTE Cellular
M75-WWCTL-C48E	F48E Wrong Way controller with integrated fiber modem delivers video-enriched notifications via api, email, text message, and bluesentry interface. 100-240VAC line power required. Accommodates up to two POE IP Cameras.	29.8 lbs.	Managed Fiber optic switch with fiber injector	AC	Fiber



TRAFFICALM™

Signs



General Overview:

Designed to LED enhance any existing or new R5-1a WRONG WAY road signage. Engineered to provide ease of installation, unmistakable visibility under any conditions, and intuitive driver calming beyond that of just reflective sheeting.

TrafficCalm® is unmatched in its dedication to advancing road safety. Our Flashing Sign Systems provide clear and proven modernized traffic signs that remain fully compliant with the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD).

The Wrong Way Flashing LED Ring is typically a critical component when utilizing TrafficCalm® Wrong Way Detection and Warning Systems that are triggered by collaborative multi-radar detection but can also operate 24/7 or per a schedule. The Flashing Sign Systems are AC or solar powered, have hassle-free installation, a retrofit design for existing signage, and wireless communication features.

Specifications:

Illumination

LEDs configured around perimeter of sign, within border (fully MUTCD compliant design)

LED Pitch (Red): .1.9"/4.8 cm (on centers)
LED Pitch (White): .35"/.90 cm (on centers)

Available in Red or White LEDs with 30° viewing angle

Cluster Pitch (Red) 1.9"/4.8 cm (on center)
Cluster Pitch (White) 6.0"/15.2 cm (on center)

LED rated lifetime of 100,000 hours

Compatibility

Integrates with all TrafficCalm® Controllers and Collaborators and can be push button, speed (radar), time clock, or sensor activated

Wrong way flashing LED rings are typically activated with TrafficCalm® Wrong Way Detection and Warning System

Construction

14 gauge 5052 aluminum construction

Individually lensed LEDs recessed behind faceplate

Ring Depth: 0.4"/10 MM to minimize impact on natural sign appearance

No mounting or wiring exposed on reverse of sign.

All Wiring is UL 2464 rated

Environmental

NEMA 4X Enclosure

Potted electronics (hermetically sealed)

-40° F to +140° F operating range (-40° C to +60° C)

Details

Physical description,

Available sizes: 36" X 24" (91.4 cm x 61 cm), 42 x 30" 106.7 cm x 76.2 cm) and 48" x 36", 121.9 cm x 91.4 cm

Mounting: all LED hardware is mounted within the border of the sign. Mounted either with adhesive backing, or with included self-tapping screws. Rivets may be utilized to improve tamper resistance.

MUTCD compliant LED placement and usage

10ft/3 m single cable extension to reach Controller or Collaborator.

This item can ship as a kit that can be mounted to a new or existing sign OR a complete system with sign,

Warranty and service.

5-year limited warranty.

Unlimited tech support from US based factory technicians.

Part Number	MUTCD Sign Size	Ring Length (A)	Ring Height (B)	Ring Width (C)	LED Offset (D)	LED Count	# of LEDs per Cluster	Light Output (mcd)	Power (Amps)	LED (Color)
M75-R3624-WR03	36"x 24"	36"/91cm	24"/61cm	.625"/1.6cm	1.9"/4.8cm	48	1	324,000	.288	Red
M75-R4230-WR03	42"x 30"	42"/106cm	30"/76cm	.625"/1.6cm	1.9"/4.8cm	60	1	405,000	.360	Red
M75-R4836-WR03	48"x 36"	36"/91cm	36"/91cm	.625"/1.6cm	1.9"/4.8cm	72	1	486,000	.432	Red
M75-R4836-WR03	48"x 36"	36"/91cm	36"/91cm	.625"/1.6cm	6.0"/15.2cm	96	3	892,800	.576	Red

SAFE PATH Mainline Hardware



General Overview:

One Teledyne Trafisense 632 is recommended every 1-1/2 mile across the mainline of freeways for continuous monitoring and tracking of wrong way drivers. Understanding where the driver is at all times is critical to a command/control system to properly notify the public.

Quantity:

One Teledyne Trafisense 632 is recommended every 1-1/2 mile across the mainline.



Poles, Bases & Mounting Solutions

General Overview:

SafePath™ offers two types of pole options when an agency is not providing themselves.

Quantity:

Typical off ramp system consists of 4 poles and bases, as well as applicable mounting solutions. 1 detection pole and 3 warning poles spaced strategically by our engineering professionals based on ramp geometry specific to your project needs.

Specification Options:

Part	Material	Wind Speed	Safety Factor
PB-5000-20 Pole	6061-T6 Alum	90 MPH	3.9
PB-5334 Base	319 Alum	90 MPH	4.6
PB-5102-14 Pole	6061-T6 Alum	90 MPH	1.2
PB-5336 Base	356-T6 Alum	90 MPH	1.4



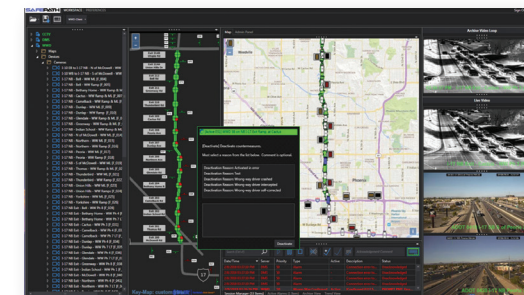
SAFE PATH Central Software



General Overview:

SafePath™ is our central alerting and command/control software for wrong way detection systems and queue detection systems. The Central SafePath Software is recommended to be loaded onto an agency provided server. SafePath also has the option to be hosted in a cloud environment if preferred.

The SafePath ITS wrong-way detection system is the first to go beyond detection; it automates countermeasures to protect oncoming traffic. Countermeasures warn the traveling public of the potential hazard, and assist authorities to quickly intercept the driver traveling in the wrong direction.



Minimum Hardware Requirements

CPU	See below by application
Installed Memory	16GB (32GB recommended)
Hard Drive	500GB SSD
Video Card	See below by application
Operating System	See below by application
Mouse	Scroll wheel required, USB optical mouse recommended
Ports	1GBPS network card, 3 USB
Monitor	1280x1024 (HD recommended)
Expansion Slots	PCI expansion slots required for video cards (typically PCIe x16) Typically no expansion slots required on server PC

By Application

SafePath Workstation

Platform	Physical machine (tower, rack, laptop, etc.)
CPU	Intel Core i7 or Xeon Silver processor (or better)
Operating System	Windows 10 or 11
Video Card	NVIDIA Quadro P2200 (or better), NVIDIA cards recommended specifically for hardware accelerated decoding capabilities in SafePath™

SafePath Server

Platform	Physical server or Virtual Machine (VM)
CPU	Intel Core i7 or Xeon Silver processor (or better)
Video Card	On board video card
Operating System	Microsoft Windows Server 2019 or 2022
Additional Storage	Only required for NVR functionality. Multiple HDDs in RAID5 recommended to achieve usable storage requirements for desired video retention.

SAFE PATH



Connected Vehicle

SafePath - Cellular & Direct-to-Vehicle Alerts:

General Overview:

Today Applied Information holds the patent and integration rights to many connected vehicle options to warn right of way drivers about potential upcoming wrong way drivers. Through their integration with Waze, Stellantis vehicles (Dodge, Jeep, Chrysler, Alpha Romeo, Fiat, etc...) and direct to agency provided citizen phone application, Applied Information can notify your surrounding public in real time (sub250ms) of the potential dangers ahead.

Quantity:

■ 1ea



SAFE PATH

WRONG WAY DRIVING TECHNOLOGY

The SafePath™ system has been successfully installed in a wide range of locations where accuracy and rapid response time are *crucial*.