

Vantage[®] *Edge*[®] 2 User Guide

FEATURING
PedTrax[™]
SmartCycle[®]



iteris[®]

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1. INTRODUCTION

A machine vision processor that delivers superior performance in adverse weather conditions

The Vantage Edge2 processor is a key component in the family of Vantage video detection solutions. The module combines state-of-the-art technology with sophisticated algorithms to deliver dependable vehicle detection required for today's complex transportation systems. The Edge2 processor features single, dual or quad video inputs to maximize configuration efficiencies for intersection control, highway monitoring and ramp metering flow control applications.

The processor module is complimented by multiple Input/Output and Extension Modules that provide flexible and expandable solutions to meet the needs of larger and more complex intersection configurations. The Edge2 processor module and its associated expansion modules fit into standard detector racks to simplify installation and setup. All modules are designed as a simple and cost-effective replacement for the inductive loop amplifier module configuration.

Optionally, all processor and output detector cards can be inserted into the Vantage rack system allowing for greater flexibility over individual configurations and for better operational control.

Installation and Configuration

The Edge2 processor and all of its associated modules can be completely configured by using a mouse and video monitor only, eliminating the need for expensive laptops or PDA devices. Configuration is performed through the user-friendly menu system built in to the Edge2 processor.

Virtual zones can be configured for presence, delay, extension, pulse, bike, advanced, count, CSO, LC, demand/passage functions.

Count and Count, Speed, Occupancy (CSO) detection zones provide traffic count, speed, occupancy, and classification data. Data is stored in the processor that can be retrieved manually using the Vantage Remote Access Software (VRAS) or automatically with the VantageLive! service.

All Vantage processor and output modules interface directly with NEMA TS-1 and TS-2, Type 170/2070 ATC controllers and cabinet wiring schema.

Benefits

- *Plug and play operation*
 - *Enables use of existing detector rack thereby extending the life of the controller and cabinet equipment*
- *Simple to use interface*
 - *Reduces training time and improves productivity levels*
- *Ease of set up and minimal lane closure time*
 - *Reduces manpower cost and keeps traffic flowing during equipment installation*
- *Expandable and modular system*
 - *Allows for optimal configuration that helps to reduce cost while preserving room for incremental growth*

Features

- Available in single, dual, or quad, video inputs
- Extension modules in 2, 4, or 32, channel configurations
- Fits into Type 170/2070 input files, NEMA TS-1 and TS-2 detector racks
- Easy to use menu interface
- Need only a mouse and monitor to configure
- Auto senses input voltage (+12 or +24 VDC)
- High intensity LEDs for easier viewing of status conditions
- Up to 24 virtual zones per video input
- Virtual zones can be assigned with Boolean logic for greater control
- Fail-safe outputs for video loss, low contrast and equipment failure
- Non-volatile memory data storage
- Self test on power up
- RS-232 serial port for ease of remote access and maintenance

PedTrax™

Tracking critical pedestrian activity with your Vantage video detection system

Value-Added Data Feeds

There is an increasing need for more data at signalized intersections, including vehicle, bicycle, and pedestrian information. Agencies are wanting a more complete view of the intersection usage, and ensuring that safety is a key component of all future roadway improvements. To support these efforts, Iteris has developed PedTrax, a video detection feature embedded on the latest Iteris hardware platforms.

Integrated within existing equipment

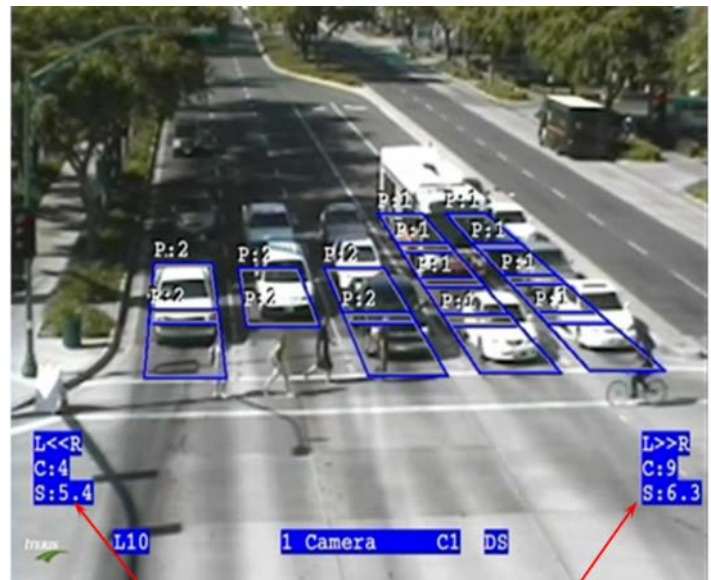
PedTrax provides bi-directional counting and speed tracking of pedestrians within the cross-walk, automatically collecting this information after normal vehicle detection has been implemented. The PedTrax feature is embedded within the Iteris detection algorithms, and there is no need for any additional equipment for this feature to operate. With count and speed data of pedestrians within the crosswalk, combined with the already available vehicle and bicycle counts, agencies now have the data necessary to support enhanced safety initiatives, improve funding applications, and a focused effort on roadway improvements.

Features

- Provides automated bi-directional pedestrian count data
- Provides automated bi-directional pedestrian speed data
- Works on existing new generation Edge and VantageNext platforms
- On-screen data stream and available bin data
- Included with all new Vantage video detection systems
- Field-upgradeable for latest Vantage hardware platforms

Benefits

- Utilizes previously installed non-intrusive sensor systems
- Additional data stream to existing vehicle and bicycle counts
- Pedestrian speed data can help improve signal timing efficiency
- No additional setup required
- Field-proven detection performance from the industry leader



Pedestrians Moving
Right to Left Across
the Intersection
Current Count
Average Speed

Pedestrians Moving
Left to Right Across
the Intersection
Current Count
Average Speed

1.1 Overview

A typical intersection setup will have four cameras, each connected to a Vantage Edge2 processor module in the traffic control cabinet. You use the firmware on the Vantage Edge2 processor module to draw detection zones on the camera's video image. To define a detection zone, you designate the four corners of a zone on the video picture and then setup the various zone properties. You can define up to 24 detection zones per camera view.

The processor module analyzes the camera image to determine when a vehicle is present in a zone. Vehicle detection information is passed to the traffic control equipment for real-time adaptive control. Video can also be sent via by various communication methods to be displayed and monitored at a traffic management center.

This User Guide will walk you through the installation, setup, and startup, of the Edge2 processor Please refer to the Vantage RZ4 Camera manual for full installation and setup instructions for the camera.

If you have questions once you have completed the steps within this guide, refer to [Section 7: Troubleshooting/FAQs](#) or contact product support using the number listed in [Section 13: Product Support](#).

1.2 Tools and Equipment

Iteris Supplied Parts

The following items come supplied with the Edge2 processor:

- Edge2 Processor
- BNC Connector (supplied with camera)
- Video surge suppression
- 6' (1.8meter) coax cable
- Mouse

Customer Supplied Parts

The following items should be supplied by the customer/installer of the system:

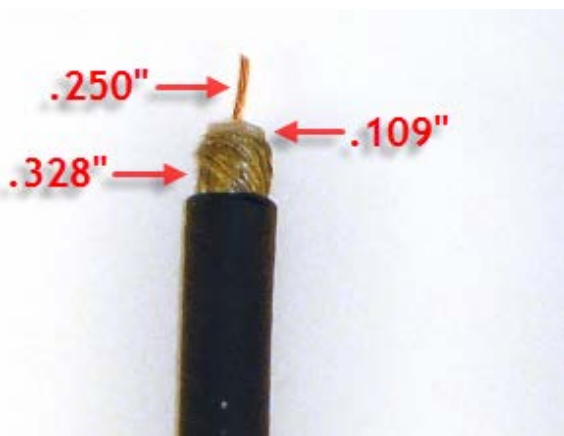
- Coax Cable (Belden 8281)
- green 12 AWG wire (for grounding the video surge suppressor)

Note: Refer to [Section 10: Technical Information](#) for specification of the Coax cable.

Tools Required for Installation

The following tools are required for installation of the Edge2 processor:

- Coax Crimping Tool
 - Ideal Industries 30-483 coax crimping tool and die set.
 - Ferrule .324", Center Pin .068"
- Coax Stripping tool
 - Ideal Industries 45-521 coax stripping tool
 - Brown Cartridge: Shield .328", Dielectric .109"



- Wire Strippers

2. QUICK START

This section is a highly abbreviated outline of the processes involved in drawing a vehicle detection zone. The topics following this quick start section will cover the process in greater detail. It is strongly recommended that the user take the time to read all the sections to become thoroughly familiar with all the system details.

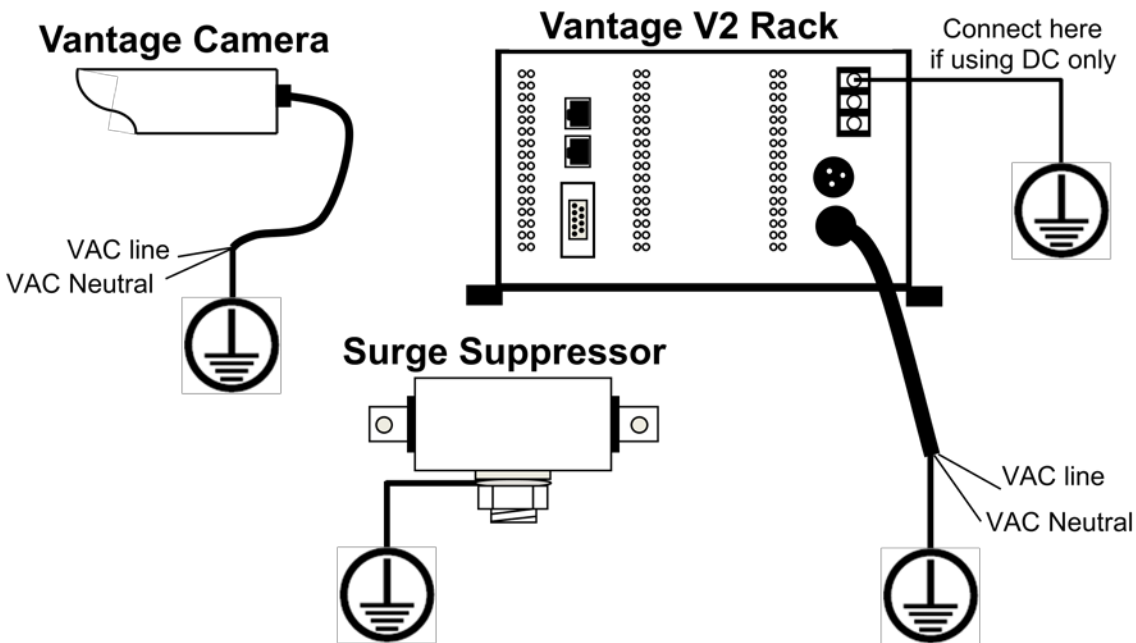


CAUTION! The Vantage equipment must be grounded. Failure to ground the Vantage equipment can cause the Vantage equipment to fail. Test your power outlet, socket and power strip to ensure it is grounded.



CAUTION! The Vantage equipment is sensitive to static, use correct ESD procedures when handling the modules.

Ground It - NOW !



Note: Ground components to a common source to avoid ground loops.

2.1 Installation Process

This checklist can be used as a guideline for some of the necessary considerations that must be remembered whenever installing and turning on an intersection using the Vantage video detection system. This is by no means intended to be a detailed and all inclusive list. All of these areas and topics will be covered in great detail in the following sections of this document.

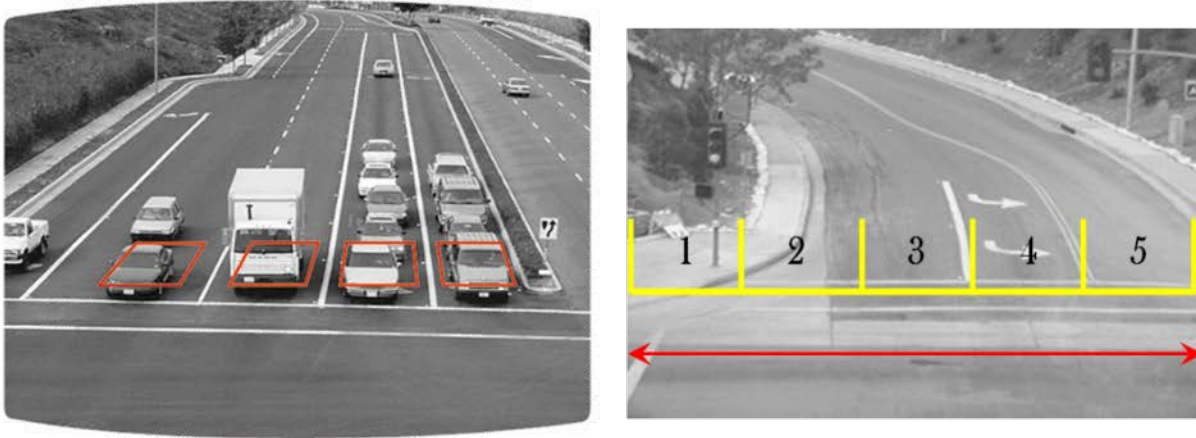
- a. Correct Coax and Power Cable
 - Video coaxial cable = Belden 8281
 - Power cable = 3 conductor, 16awg, stranded wire
- b. Surge Protection – Installed and properly grounded
- c. Camera Installation
 - Mount the camera bracket, attach camera
 - Electrical connections (Power and Video) properly made
 - Sun shield adjusted - Pulled out (Extended)
 - Camera tilted slightly downward
- d. Camera Field of View (FOV)
 - No Horizon in FOV
 - Minimum 4 lane width
 - Stop bar area in lower 1/3 of FOV
 - Car bumpers parallel to bottom of screen
 - Adequate area left for advanced detection

You never want the horizon to be included as part of your camera field of view. If the horizon is visible as part of your field of view on East and West approaches, the camera maybe blinded by the sun at sunrise and sunset. The camera should be rotated so that the bumpers of the vehicles are parallel with the bottom of the screen.



Examples of Poor FOVs

Ideally, the camera should be zoomed in until a minimum of 4 lanes are visible, the horizon should not be included as a part of the field of view. The zones should be drawn within the lane lines and should be the size of a medium vehicle.



Examples of Good FOVs

- e. Processor Installation
- Switches properly set

Plug the Edge2 module into the appropriate slot of the detector rack or input file. Connect the monitor and mouse to the Edge2 processor module. Press and hold the Edge2 processor "Menu" button in for approximately one second and then release it. This will bring up the Edge2 main menu.

- f. Zones
- Size of average vehicle – 12' (3.6m) long from top line to bottom line of zone
 - Vertical markings, curbs and gutters out of zone area
 - Symbol markings contained in zone
 - LC zones properly drawn
 - And/W number same as zone number if not being used

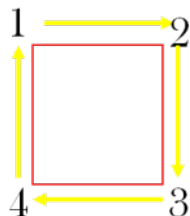
It's Easy – Left click the mouse button when the cursor is over the "Add" menu item, which is the first choice on the left side of the main menu bar. The sub menu will be displayed showing the various zone parameters of the vehicle detection zone that you are about to create. You can change the zone settings by left or right clicking the mouse after moving the cursor up or down to the desired zone parameter. Click the middle mouse button to make a selection and exit out of each zone option item. When you are finished making zone parameter changes, position the mouse cursor over "Exit" and click the left mouse button to exit the "Add" menu.

Some Typical Zone Parameters:

Label 1
 Dir ANY
 Grn/In NONE
 Type PRES
 And/W 1
 Ch/Out PROC: 2
 Exit

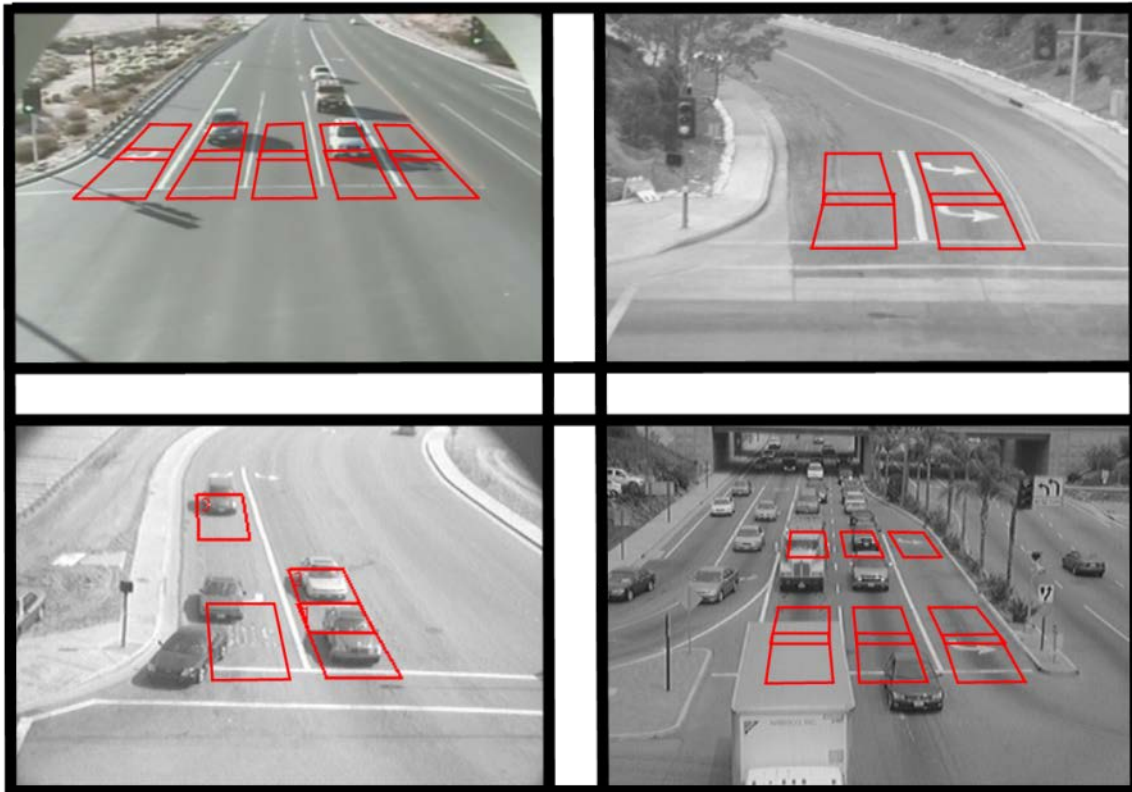
You are now ready to start drawing a vehicle detection zone, place the cursor where you want to anchor the back left corner of the zone. Left click the mouse to anchor the first corner. Now, move the cursor to where you want the right rear corner of the zone, left click the mouse to anchor the corner. Next, move the cursor to where you want to place the right front corner of the zone, left click the mouse to anchor the corner. Finally, move the cursor to where you want to place the left front corner of the zone, left click the mouse to anchor the final corner.

Vehicle detection zones should be drawn the length of a medium size vehicle from back to front bumper, a single zone should not encompass the entire length of the vehicle and the width should be slightly narrower than the lane lines. Multiple or overlapping zones will increase the detection sensitivity. Realize that excessive overlapping may also increase false calls from artifacts in the roadway.



Repeat the process to draw additional zones for all your stop bar traffic, left turns, and advance detection. After your zones are all drawn the way you want them, be sure to left click "Q" (Quit) and save your configuration by left clicking the mouse on Config 1 on the "Save" menu. If you do not save your configuration, it will be lost as soon as you exit the main menu. You may want to save the same configuration to all three configs (1,2,&3) so you will have a backup copy of the configuration if you need it.

LC (fog) zones are located in the top 1/3 of the screen. They are no bigger than ¼" by ¼ ". The LC zones are assigned to channel "0" or "none". They are placed in an area of contrast. We recommend 2 LC zones per approach.



Examples of Good Zones

- g. Programming
 - Labels: Camera, Configuration, Zones
 - Check using Mode (MOD) menu item
 - Channel Assignment and Zone Type
 - Set Mode (MOD) 'Inact/Ch to "NoCall"
 - Set Options if needed
 - Set Clock (Clk) Time and Date information
 - Make sure the test switches are all in the middle position (normal)
- h. Archive snapshots and configurations using VRAS
- i. Observe operation
 - During critical times
 - Morning and evening transition
 - Midday and night time

After saving the configuration, the new zones will go into a three minute "learn mode", during which time they will place constant calls. An "*" will appear next to each zone that is learning. After the three minutes are up, the "*" will disappear, and zones should start to detect vehicles normally.

- j. Document count zones (If used)
- k. Turn OFF menu / Turn Off Monitor

3. INSTALLATION

3.1 Camera Installation

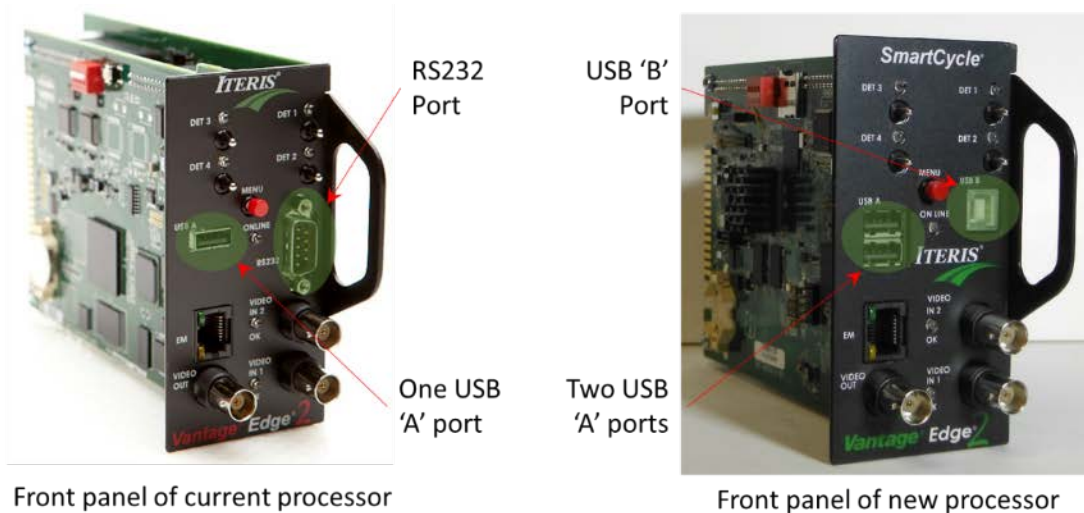
Refer to the RZ4 Camera manual for complete instructions on mounting and wiring the camera.

3.2 Identifying the latest hardware

Iteris recently updated the core processor in the Vantage Edge2. This upgrade is transparent to the user in all but a few minor points.

The latest hardware version of the Edge2 system has a number of changes over the previous version. The latest hardware can be identified by either the version number or by the front panel.

Front Panel



Front panel of current processor

Front panel of new processor

Version Number

The first two digits of the version number indicate the hardware.

xx.yy.zz

06.01.18SP1

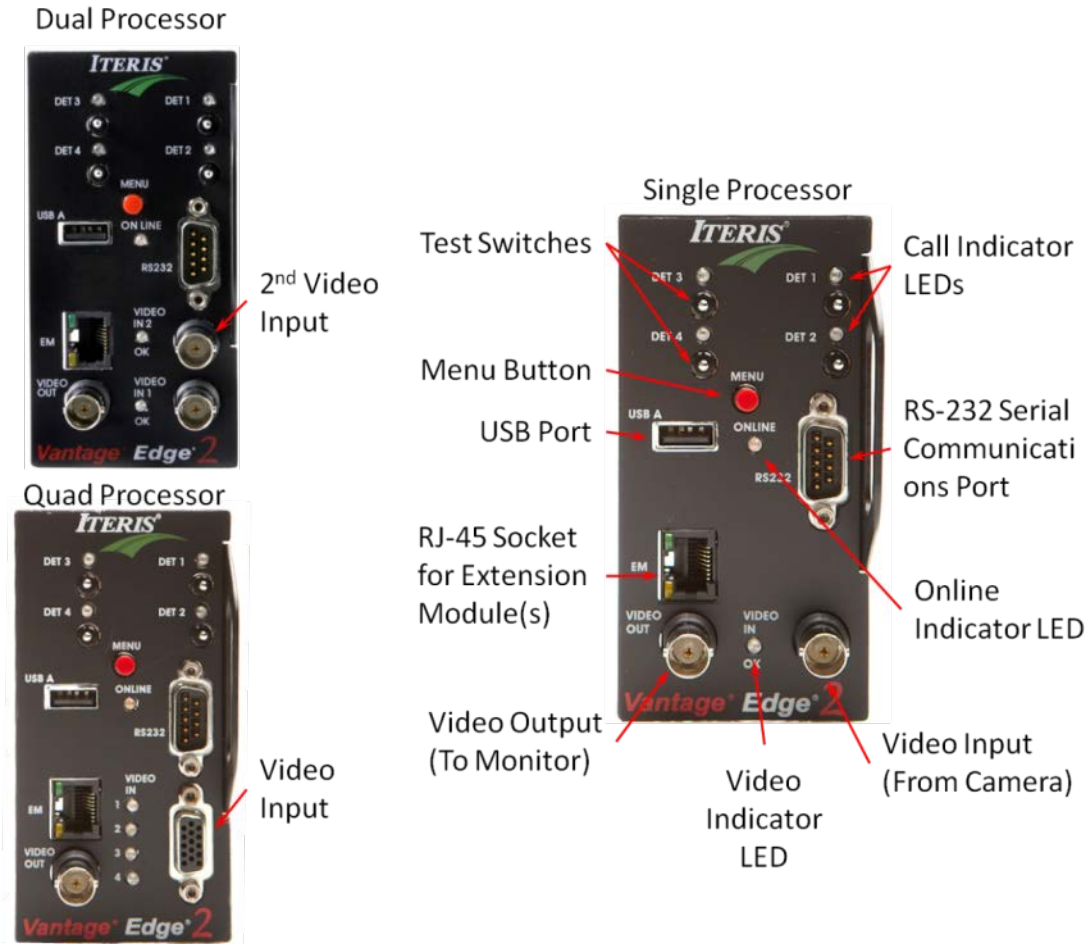
06 – Latest hardware version for Edge single and dual channel processors

01- Intersection

18SP1 – Firmware version

For older hardware models the first number would be 04 for Edge single and dual channel processors and 05 for Edge quad channel processors.

3.3 Edge2 Processor Module Features



Vantage Edge2 Processor Modules

The Edge2 processor module comes in a single, dual, or quad, video input configuration. The Edge2 has one USB port which supports a mouse or powered USB hub. The Edge2 processor module has the capability of providing four detector outputs. Additional outputs can easily be provided using Edge2 extension modules or a Vantage Edge2 I/O module. The Edge2 processor module can accommodate up to 16 additional modules. Edge2 modules are hot swappable.



CAUTION! Always use an ESD wrist strap or other precaution to prevent electrostatic discharge damage to the Edge2 modules.

LED Indicators

ONLINE - this green LED indicator lets the user know that the processor module has power, the microprocessor passed the self check, and the unit has initialized correctly. The LED indicator will flash ON and OFF upon initial power-up and should stay ON solid after a few seconds of operation. If the ONLINE LED continues to flash or does not turn ON solid after one minute, refer to [Section 7: Troubleshooting/FAQ](#).

VIDEO IN OK - this yellow LED indicator lets the user know when a valid video signal is connected to the processor module video input. A valid video signal will cause the LED indicator to stay "ON" solid. If the VIDEO IN OK LED is dark, there is not a valid video signal present.

OUTPUT CHANNEL LEDs and TEST SWITCHES - these four red LEDs correspond to the four output channels on each Edge2 processor module. When an output channel is active (ON), the associated red LED will illuminate. The output channels can be manually activated by using any one of the four test switches. The Test Switch has three positions, Down = Constant Call, Middle = Normal Operation, and Up = Momentary Call.

- Det # 1 output channel LED corresponds to processor menu output "PROC:1"
- Det # 2 output channel LED corresponds to processor menu output "PROC:2"
- Det # 3 output channel LED corresponds to processor menu output "PROC:3"
- Det # 4 output channel LED corresponds to processor menu output "PROC:4"

Buttons

MENU BUTTON - the menu button serves two functions. First, it serves as a means to bring up the Edge2 processor menu when held in for one second and then released.

The second function is for the Edge2 processor's that have multiple video inputs (duals and quads), holding the menu button in for less than one second and then releasing it will switch to the next video source. The system will loop through all video inputs and then return to video input one.

Dual Processor 1→2→1

Quad Processor 1→2→3→4→1

 **Note:** If a video signal is not present on a particular input the Edge2 processor will skip that input.

Jacks and Plugs

BNC VIDEO IN - the input point for video from the camera into the Edge2 processor.

 **Note:** For an Edge2 quad the video input is provided on an octopus cable.

BNC VIDEO OUT - the output point for video from the Edge2 processor to the video monitor.

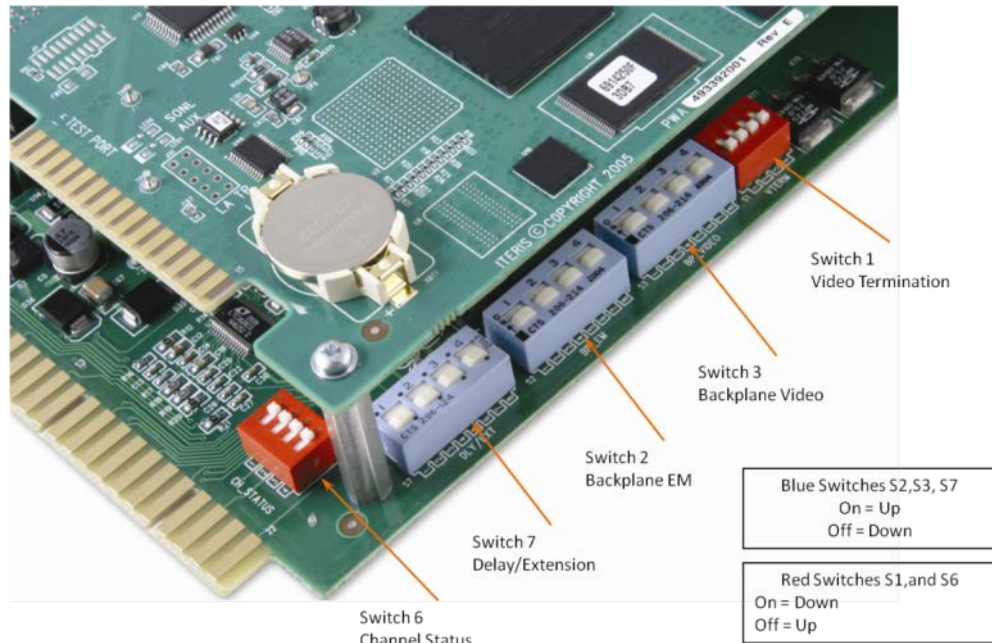
USB "A" Port - the USB port accommodates a USB mouse or powered hub.

RS-232 Port - the RS-232 port is used for communication with the Edge2 processor. Some of the Vantage software packages that utilize the Edge2 RS-232 port are Vantage Remote Access Software (VRAS) and Vantage Software Upgrade (VSU).

RJ-45 EXTENSION MODULE Port - this port is used to chain additional Vantage modules to your Edge2 processor module. There is a green and a yellow LED on the RJ-45 processor extension module jack. The green LED is always "ON", the yellow LED blinks until an Extension Module is connected. The yellow LED only blinks on the last module in the chain

3.4 Configuration Jumper & Switch Settings

Before installing the Edge2 processor in the detector rack there are a number of settings that need to be made. The Edge2 processor utilizes various DIP switches for configuration purposes. These switches are located on the lower board of the module, see figure below.



The Edge2 Processor Module DIP Switches

Video Input

The Edge2 processor can process video received from the backplane through pins D, E, J and K or through the BNC connectors on the front of the module. Video input through the BNC connections is the recommended method for input video. Running video through the backplane has the potential to introduce noise into the video signal.

| Switch S3 | Camera # | Switch Position | Video Termination |
|-----------|----------|---------------------|------------------------|
| 1 | 1 | Up Down(default) | Backplane Front BNC |
| 2 | 2 | Up Down(default) | Backplane Front BNC |
| 3 | 3 | Up Down(default) | Backplane Front BNC |
| 4 | 4 | Up Down(default) | Backplane Front BNC |

Input Impedance Setting

The Edge2 processor has the flexibility that allows it to be used with other video devices. Depending on your application and the termination of other devices, the Edge2 video input impedance switches will need to be set to either "75 ohm" or "High Z".

| Switch S1 | Camera # | Switch Position | Video Termination |
|-----------|----------|----------------------|--------------------------|
| 1 | 1 | Up (default) Down | On - 75Ω Off - High Z |
| 2 | 2 | Up (default) Down | On - 75Ω Off - High Z |
| 3 | 3 | Up (default) Down | On - 75Ω Off - High Z |
| 4 | 4 | Up (default) Down | On - 75Ω Off - High Z |

75 Ohm (Normal)

The 75 Ohm setting is the default setting, and is the correct setting when video is coming directly from the Vantage camera into the Edge2 processor video input.

High Impedance (High Z)

When other devices are "teeing" off the Edge2 processor video input, then the "High Z" impedance setting should be used. Other devices could include a fiber modem, DVR, video tape recorder, or an EdgeConnect module.

Impedance Mismatch

When the impedance settings are improperly set, the video signal can be adversely affected. Wrong settings create an impedance mismatch which can result in extremely washed out video or very dark video. This condition can also adversely affect Vantage Edge2 detection performance. Before suspecting a camera or processor problem, always check the Edge2 processor video input impedance settings.

V2 Rack Backplane Communication

The Edge2 extension modules can be configured to communicate directly through the backplane of the V2 rack, eliminating the need for extension module cables.

| Switch S2 | Switch Position | Video Termination |
|-----------|---------------------|--------------------|
| 1 | Up Down(default) | Backplane Cable |
| 2 | Up Down(default) | Backplane Cable |
| 3 | Up Down(default) | Backplane Cable |
| 4 | Up Down(default) | Backplane Cable |

TS-2 Communication

The Edge2 can be configured to communicate in a TS-2 detector rack.

| Switch S6 | Switch Position | Video Termination |
|-----------|----------------------|--|
| 1 | Up (default) Down | On = Status Bit 1 Enabled Off = Status Bit 1 Disabled |
| 2 | Up (default) Down | On = Status Bit 1 Enabled Off = Status Bit 1 Disabled |
| 3 | Up (default) Down | On = Status Bit 1 Enabled Off = Status Bit 1 Disabled |
| 4 | Up (default) Down | On = Status Bit 1 Enabled Off = Status Bit 1 Disabled |

If all four DIP switches are "ON" (Up), configuration is set for NEMA TS-2 applications. If all four DIP switches are "OFF" (Down), configuration is set for 170 / 332 or NEMA TS-1 applications.

Delay/Extend

The Edge2 processor can be configured to receive Green Inputs to adjust the timing of detection zones or to control if a count zone is active or inactive.

| Switch S7 | Switch Position | Delay/Extend | Input Pins |
|-----------|---------------------|------------------------|-----------------|
| 1 | Up Down(default) | On = Green IN 1 Off | Pin 1 Pin D |
| 2 | Up Down(default) | On = Green IN 2 Off | Pin 2 Pin E |
| 3 | Up Down(default) | On = Green IN 3 Off | Pin 3 Pin J |
| 4 | Up Down(default) | On = Green IN 4 Off | Pin 10 Pin K |

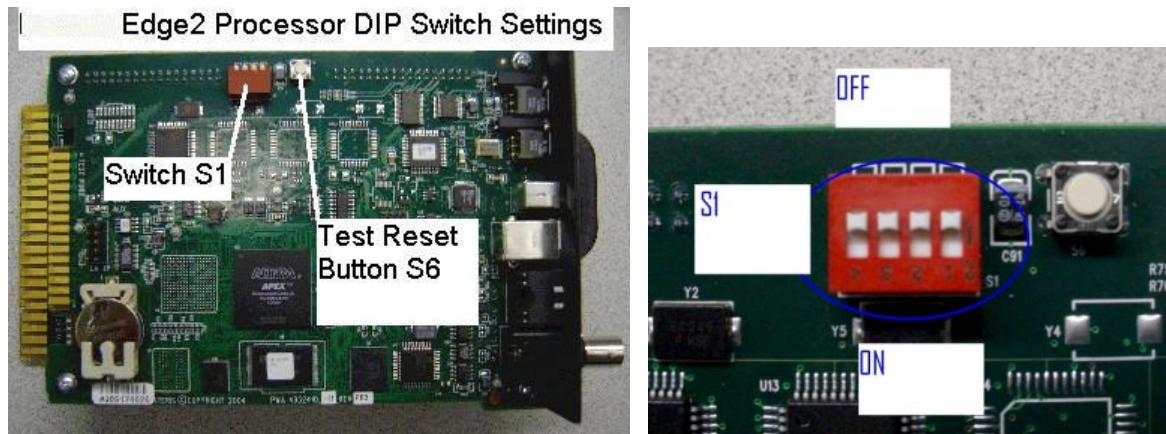
All four DIP switches are "ON" for most applications (TS-1 operation). Some special applications may require a change to these settings. The default position for these four DIP switches is in the "ON" position.

Typical Setup for Different Rack Types

The following table shows the typical Edge2 processor setup when used with different rack types.

| Switch | Function | 170/332 | NEMA TS-1 | NEMA TS-2 | Vantage V2 |
|--------|-------------------|---------|-----------|-----------|------------|
| 1 | Video Termination | OFF | OFF | OFF | OFF |
| 2 | Backplane EM | OFF | OFF | OFF | ON |
| 3 | Backplane Video | OFF | OFF | OFF | OFF |
| 6 | Status Bits | OFF | OFF | ON | OFF |
| 7 | Delay/Ext | OFF | ON | OFF | OFF |

Other Switch Settings References:

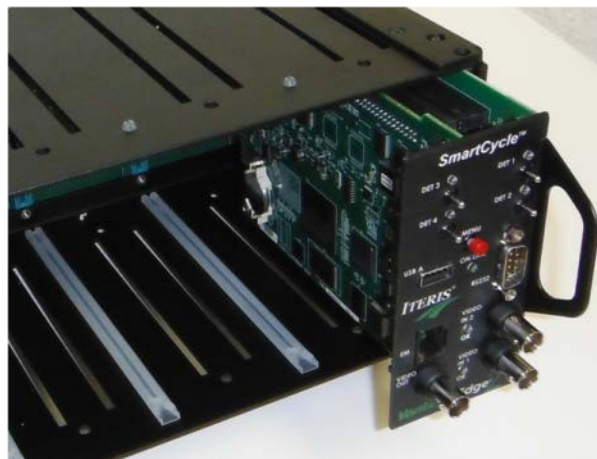


Switch S1 - all DIP switches should be in the OFF or "Up" (Open) position during normal operation.

Button (S6) is a manual reset button used during factory testing.

3.5 Processor Module Installation

- a. Place the traffic signal controller in recall mode or take other steps to ensure calls are being placed during setup.
- b. Plug the Edge2 processor module into the cabinet detector rack

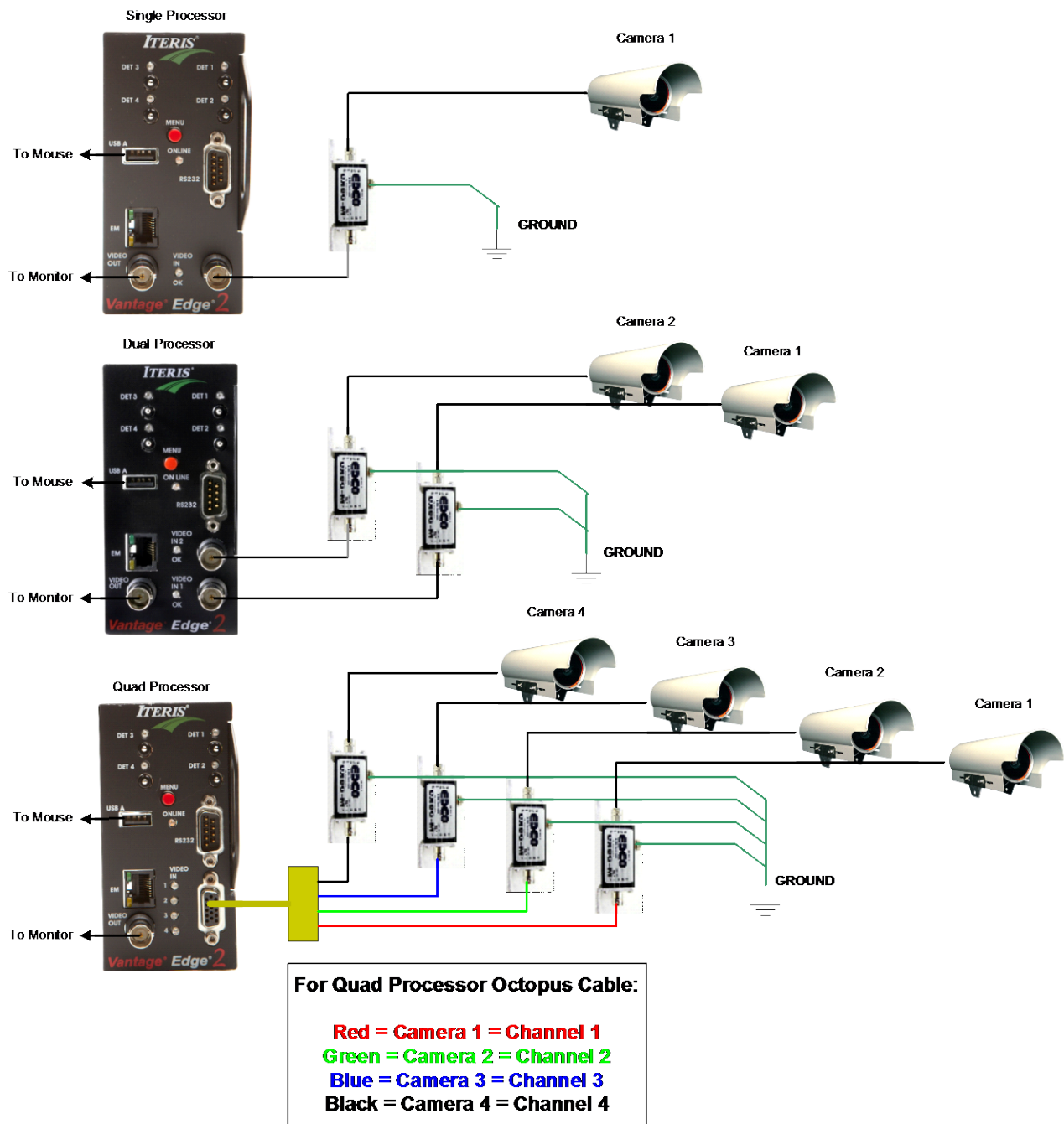


Installing Processor

- c. The Edge2 processor operates on 24 volts DC (332 Type Cabinets and NEMA TS-1 Cabinets) or 12 volts DC (NEMA TS-2 Cabinets). Once power is applied to the processor module, the LED indicators on the front panel should illuminate. The "ONLINE" LED should flash for a few seconds and then stay "ON" solid. Connect the video monitor to the front panel mounted BNC connector labeled "VIDEO OUT". When you connect a video source to the Edge2 processor module video input, the "VIDEO IN OK" LED should illuminate indicating the presence of a video source.

Note: If the "VIDEO IN OK" LED remains OFF, there is not a valid video source connected to the processor video input. Refer to [Section 7: Troubleshooting](#) for further assistance.

- d. Connect the video from the camera to the surge protection device; then from the surge protection device to the Edge2 processor module video input(s).



Edge2 In-cabinet Processor Hook-up

Note: In-cabinet video connections are best done with a Belden 8281F video coaxial cable. The Belden 8281F is a flexible version of the Belden 8281 cable. Do not use Belden 8281F for camera runs outside of the cabinet.

- e. Connect the mouse or other pointing device to the USB port.

- f. Connect any additional Edge2 extension modules to the Edge2 processor module.

Surge Protection

Surge protection must be correctly installed as a crucial part of every Vantage system installation. The surge protector not only protects your Vantage equipment from voltage spikes, but also bleeds off voltages induced on the video coaxial cable. These standing voltages, if they were not neutralized, have the potential to damage the Vantage processor.



The surge protector device that ships with the Vantage equipment is the EDCO CX06-M; which is a good general purpose, multi-strike, in-line surge protection device. The EDCO CX06-M is the surge protection device that has been approved for use with the Vantage video detection equipment. The EDCO surge suppressor is provided with each Vantage processor. The EDCO CX06-M is a readily available, off the shelf, surge protection device.

The specification sheet for the surge protection device is available in [Section 10: Technical Information](#). All surge protection must be approved by Iteris for use with the Vantage video detection systems. Failure to install surge protection, or using non-approved surge protection devices, will void the Vantage equipment warranties.

Important: *The surge protection device must be grounded to operate correctly. Failure to correctly ground the surge protection device may result in damage to the Edge2 modules. A 14 gauge or larger wire run the shortest distance to ground, without severe bends, and to a common chassis ground point, is usually best. See the surge protection device manufacturer's recommendations for more specific information.*

Also, make sure the surge protector is oriented correctly. The "cable" side should come from the Vantage camera, while the "equipment" side should go to the Vantage processor video input. Reversing these surge device connections can result in significantly reduced surge protection and a greater risk of damage to your Vantage equipment.

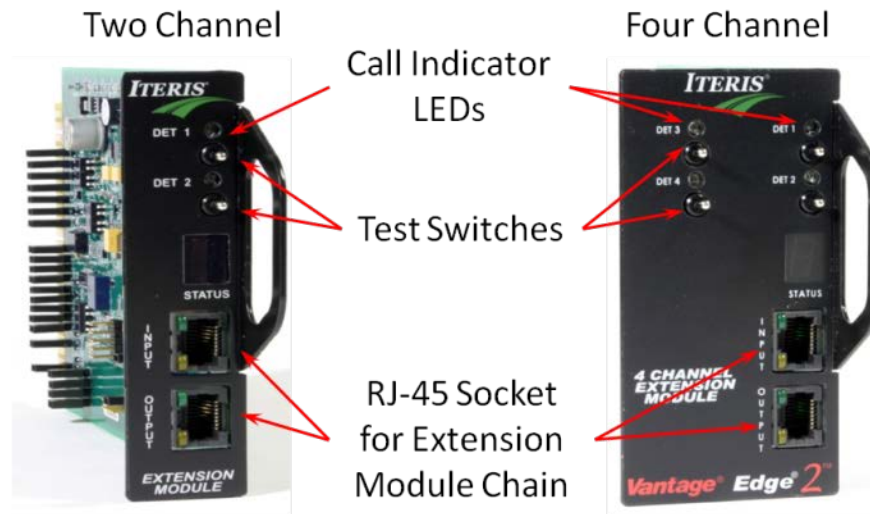
Edge2 Processor Module Output Channel Assignment

There are four output channels available on the Edge2 processor module.

PROC:1, PROC:2, PROC:3, and PROC:4 (or NONE)

The user can assign any one of the four processor output channels to a detection zone. Additional output channels can be provided by using Edge2 extension module or the Edge2 I/O module.

3.6 Edge2 Extension Modules Features



Vantage Edge2 Extension Modules

Vantage Edge2 extension modules can be used to provide additional output capability to Edge2 processor modules. The Edge2 extension modules come in a two and four channel version.



CAUTION! Always use an ESD wrist strap or other precaution to prevent electrostatic discharge damage to the Vantage modules.

The extension modules are connected to the Edge2 processor module using a standard CAT5 cable. The extension module cable plugs into the Edge2 processor module's "Extension Module" RJ - 45 port. The other end plugs into the extension module RJ - 45 "Input" port. Additional Edge2 modules can be chained together going from extension module "Output" port to extension module "Input" port. Each Edge2 processor module can support up to sixteen Edge2 Extension Modules. The Edge2 extension modules automatically increment their address as the chain is expanded. Addresses range from "0" to "F", providing up to 16 unique addresses (0 - 9 and A - F).

Typical extension module output designators

EM-0:1 This is channel one on the first extension module of the Edge2 processor device chain.

EM-0:2 This is channel two on the first extension module of the Edge2 processor device chain.

EM-1:3 This is channel three on the second extension module of the Edge2 processor device chain.

We also know that this extension module is a four channel type because of the use of channel three. A two channel extension module would only have two channels.

Jacks and Plugs

RJ-45 EXTENSION MODULE Port - this port is used to chain additional Vantage modules to your Edge2 processor module. There is a green and a yellow LED on the RJ-45 processor extension module jack. The green LED is always "ON", the yellow LED blinks until an Extension Module is connected.

LED Indicators

OUTPUT CHANNEL LEDs - these two or four red LEDs correspond to the two or four output channels on each Edge2 extension module. When the output channel LED is active (ON), the associated red LED will illuminate.

INPUT / OUTPUT RJ-45 JACK LEDs - there is a green and a yellow LED on the RJ-45 extension module jack. The green LED is always ON, the yellow LED is on solid unless it is the last module in the Edge2 chain. If it is the last module in the Edge2 module chain, the yellow LED blinks. This assumes that all modules in the chain are properly initialized. Uninitialized modules show a " - " in the seven segment numeric display window.

Important: *Proper Extension Module Termination.*

When an Extension module is properly terminated, and recognized as part of the Edge2 processor chain, an address from "0" to "F" will be displayed in the seven segment numeric display. If it is the last module in the chain, the yellow led on the RJ-45 connector should blink and a "." (dot) will appear after the address character. If this is not the case, then try unplugging the Edge2 processor module to make it reinitialize and re-query all the devices on the device chain. If a device on the Edge2 processor chain is not initialized correctly, it will not show up as a valid selection under the Edge2 processor Channel Out (Ch/Out) menu item selection.

SEVEN SEGMENT NUMERIC DISPLAY - this display shows the address of the Edge2 extension module in the Edge2 processor chain. Addresses range from "0" to "F" (0 - 9 and A- F).

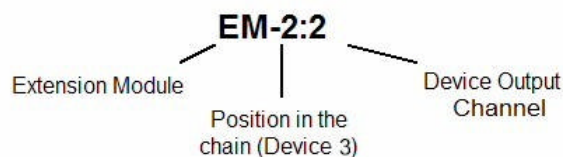
Switches

TEST SWITCHES - these switches allow the output channels to be manually activated by using any one of the two or four test switches. The "Test Switch" has three positions:

Down = Constant Call, Middle = Normal Operation, and Up = Momentary Call.

Edge2 Extension Module Output Channel Assignment

When an extension module is connected to an Edge2 processor additional outputs are available for assignment. The output channel number on the Edge2 processor will display a string similar to the one in the figure below.



In this example the Extension module would most likely be a two channel extension module, it is the third device in the chain, and the output is assigned to the second of the two channels.

3.7 Cabinet Types



CAUTION! Always use an ESD wrist strap or other precaution to prevent electrostatic discharge damage to the Vantage modules.

Carefully plug the Edge2 processor module(s) into the desired slot in the detector rack. If more than four channels of detection are required, plug in additional Edge2 extension modules or I/O modules into the appropriate rack slots. Attach the patch cables between modules, starting from the processor module and then connecting "Output" to "Input" along the device chain. The additional modules will "Auto ID" themselves with an appropriate address ("0-9" and then "A -F"). Up to 16 Edge2 modules can be connected to each Edge2 processor module.

If you are using an I/O Module, as one of the devices in your Edge2 device chain, you will need to properly terminate the external wiring harness. See the Vantage I/O Module User and Installation Guide for detailed information on I/O Modules installation and operation.

NEMA TS-1 Cabinets



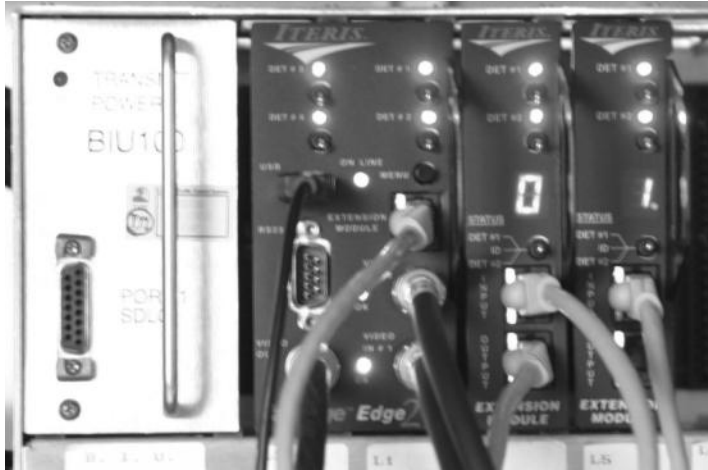
The typical DIP switch settings for the Edge2 processor module in a NEMA TS-1 cabinet are shown below:

- All Video Terminations 75 ohm - DIP switches ON (Up)
- All Backplane Extension Module Comm - DIP switches OFF (Down)
- All Backplane Video - DIP switches OFF (Down)
- All Status Bits - DIP switches OFF (Down)
- All Delay/Extend - DIP switches ON (Up)



Note: See [Section 3.3: Configuration Jumper & Switch Settings](#) for more detailed information on all DIP switch settings.

NEMA TS-2 Cabinets



The typical DIP switch settings for the Edge2 processor module in a Nema TS-2 cabinet are shown in the below:

- All Video Terminations 75 ohm - DIP switches ON (Up)
- All Backplane Extension Module Comm - DIP switches OFF (Down)
- All Backplane Video - DIP switches OFF (Down)
- All Status Bits - DIP switches ON (Up)
- All Delay/Extend - DIP switches OFF (Down)

Note: See [Section 3.3: Configuration Jumper & Switch Settings](#) for more detailed information on all DIP switch settings.

Output Channel Assignments for NEMA TS-1 & TS-2 Cabinets

In a NEMA cabinet, the Edge2 module(s) will place a call in accordance with where it is located in the detector rack (which detector rack slot). The mapping of which phase each detector rack slot will call is determined by the agencies design requirements and should be specified on the intersection cabinet print. The Edge2 processor zone output channel assignment will be selected by the end user through the Edge2 processor module Channel Output (Ch/Out) menu item.

Example: Let's assume the user draws zone #1 on camera one of the Edge2 processor, and assigns zone #1 to output channel "PROC:1". If "PROC:1", due to the position of the Edge2 processor module in the detector rack, places a call on the top channel of slot number two in the NEMA detector rack, and slot number two in the detector rack is wired to call phase two; then zone #1 will place calls to phase two on the controller.

Note: See [Section 10: Detector Rack Configuration](#) for a diagram and more information.

[332 / 170 Type Cabinets](#)



The typical DIP switch settings for the Edge2 processor module in a 332/170 cabinet are shown below:

- All video Terminations 75 ohm (S1) DIP switches ON (UP).
- All backplane Extension module Comm (S2) DIP switches OFF (Down)
- All backplane Video (S3) DIP switches OFF (Down)
- All Status Bits (S6) DIP switches OFF (Down)
- All Delay/Extend (S7) DIP switches OFF (Down)

Note: See [Section 3.3: Configuration Jumper & Switch Settings](#) for more detailed information on all DIP switch settings.

170 / 332 Type cabinet "I" and "J" input files are usually configured in the following standard way:

Example: Referencing the input file diagram, if an Edge2 Processor module was inserted in input file slot "I2 & I3", then all four Edge2 Processor module detection channels would call controller phase two. If a two channel Edge2 Extension module was inserted in input file slot "J1", then both Edge2 Extension module detection channels would call controller phase five. This example is representative of a typical Edge2 Processor and Extension module input file configuration for through movement and associated left turn movement detection.

Note: See [Section 10: Detector Rack Configuration](#) for a diagram and more information.

3.8 Field Of View Setup

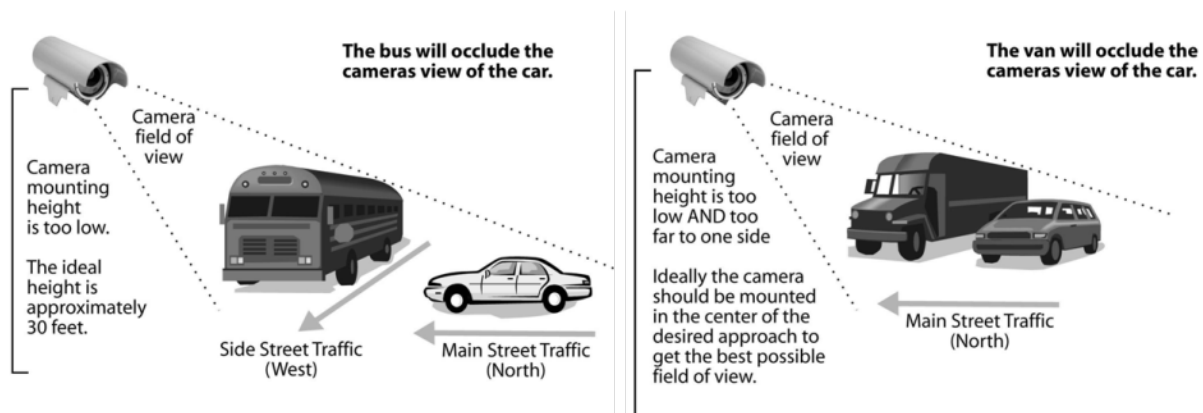
The image provided by the camera is critical to system performance. A good field of view (FOV) will ensure the best possible results from the system.

The following should be kept in mind when adjusting the camera:

- Occlusion
- No Horizon in FOV
- Minimum 4 lane width
- Stop bar area 20% to 60% from bottom of screen
- Car bumpers parallel to bottom of screen
- Adequate area left for advanced detection

Occlusion

A major issue with camera FOV is occlusion. If large vehicles block lanes or smaller vehicles then detection will not be possible.



Horizon

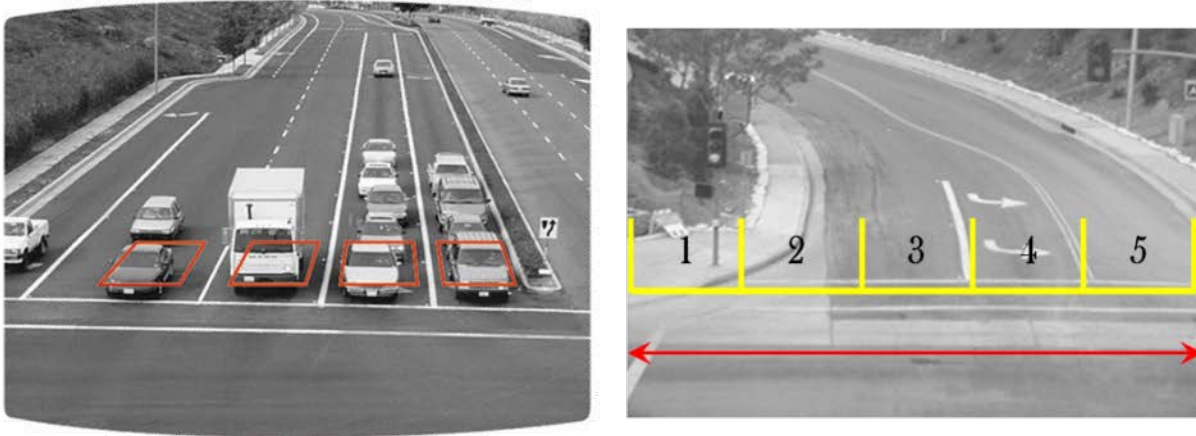
You never want the horizon to be included as part of your camera field of view. If the horizon is visible as part of your field of view on East and West approaches, the camera maybe blinded by the sun at sunrise and sunset. The camera should be rotated so that the bumpers of the vehicles are parallel with the bottom of the screen.



Examples of Poor FOVs

Four Lane Minimum Width

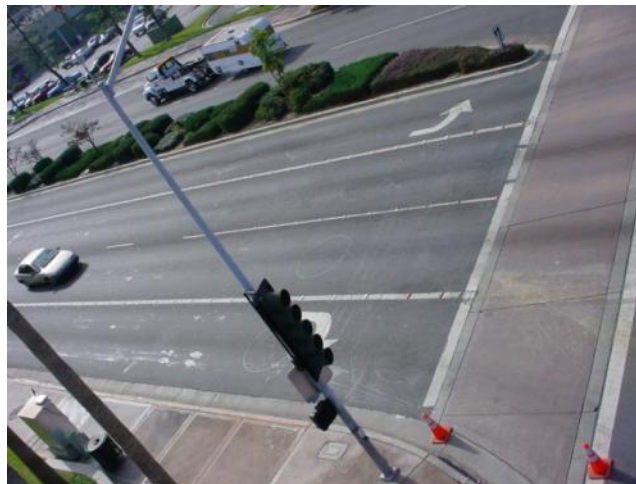
Ideally, the camera should be zoomed in until a minimum of 4 lanes are visible, the horizon should not be included as a part of the field of view. The zones should be drawn within the lane lines and should be the size of a medium vehicle.



Examples of Good FOVs

Physical Camera Adjustment

Centering the Camera – The camera should be mounted so that it is centered, as much as possible, in relation to the field of view (vehicle approach). Extreme side shooting can result in reduced performance and vehicle occlusion. See the section in this manual on "Occlusion" for more information.



Very Poor Mounting - Side Shoot, Camera Not Centered

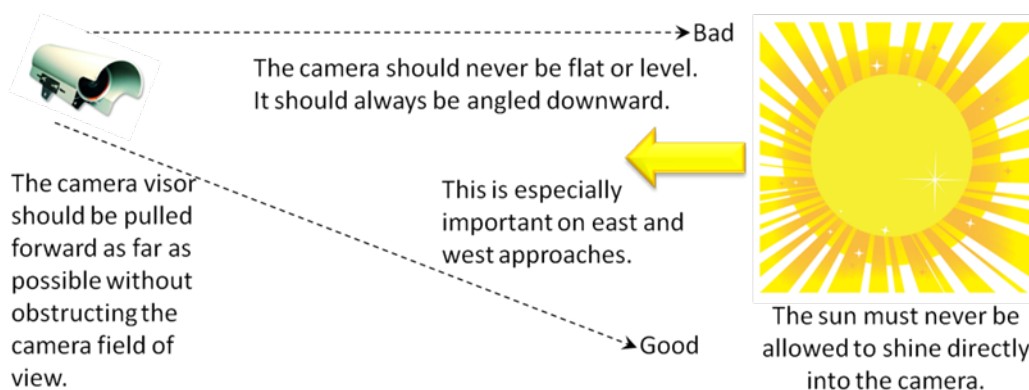
Proper Mounting Height – The camera should be mounted at approximately 30 feet for optimal system performance. For lower mountings, like a mast arm mount, a suitable camera extension bracket should be used to increase the camera mounting height to a more workable elevation. A camera mounting height of 25 feet or more can usually be obtained by using an extension bracket. Low mounting heights can result in reduced system performance and vehicle occlusion.

Important: *How far can the camera typically see out at a mounting height of 30 feet?*

The basic formula for LEVEL ground is for every one foot of height you can see out 10 feet. So, on level ground, at a 30 foot mounting height, you should be able to get accurate detection as far as three hundred feet. This measurement is from the camera mounting location, not from the intersection stop bar area.

Note: *The importance of camera centering versus camera height deserves some further discussion. It must be recognized how important centering the camera is to optimal system performance. In many cases centering the camera is more important than getting an additional five feet of height. For instance, when dealing with a short luminaire arm on a very wide roadway, it might be a better choice to mount the camera on the mast arm with a suitable extension bracket. With the right extension bracket you should be able to achieve a mounting height of about 25 feet. While this is less than the 30 feet you would achieve with a luminaire mounting, the ability to center the camera over the roadway in this example makes the mast arm with a six foot extension bracket the better choice. The luminaire mounting would get the camera up a little higher, but because the luminaire arm is short and the roadway is wide, this would place the camera way off to one side and would adversely impact the field of view. Remember there are two considerations for camera mounting (height and centering) and they both must be carefully evaluated.*

Maintain a Proper Camera Angle – The physical camera adjustments are done by adjusting the camera bracket mounting bolts to set the mechanical camera pan and tilt after the camera bracket has been mounted to the arm or pole. The camera should always be tilted slightly downward and should never be flat or beyond horizontal. When could a camera be in danger of being beyond horizontal? When the camera is aiming uphill on a steep grade. The distance the camera can look out is significantly reduced on approaches with a steep uphill grade.



Pull the visor forward – You should have the camera sun shield (visor) far enough forward to give the camera maximum protection from the sun. By loosening the two hose clamp set screws, the camera body can be moved backward in the clamps, effectively lengthening the sun shield visor. Move the camera body back all the way or until the edges of the sun shield visor are just barely visible in the top left and right corners of the field of view. See the following examples.



Too Much Camera Visor in the FOV



Maximum Acceptable Amount of Visor In the FOV

Rotate the Camera Body – Ideally, for most intersection applications, vehicles should flow from the top of the screen to the bottom of the screen. By loosening the two hose clamp set screws, the camera body can rotate to better square up the FOV image. The car bumpers should also end up being parallel with the bottom of the screen.



The Camera Body Should Be Rotated



Acceptable Camera Alignment

Proper Camera Focus Adjustment – When you are sure that you can obtain the desired FOV, you will need to focus the camera using the LAM. Proper focus is crucial for optimal Vantage system detection performance. A camera that is out of focus can significantly reduce the Vantage systems ability to perform; so it is important to take the time to adjust the focus properly.

4. PROCESSOR CONFIGURATION

[Vantage Video Detection Zone Theory 101](#)

You may have heard the term "complex edges" associated with the Vantage video detection systems. Vantage systems utilize complex edge detection as one of the prominent techniques to effectively detect vehicles. Vehicles tend to have more complex edge content than other undesirable artifacts in the field of view. This edge based algorithm gives Vantage video detection products their exceptional detection stability, even under severe environmental conditions.

For increased opportunity to detect, zones can also be overlapped from front to back or from side to side. This will compensate for vehicles that may not stop exactly at the stop line or a vehicle traversing lanes in the detection area.

Appropriate zone sizing rules should still be carefully observed. The best policy is to use the least number of zones possible to obtain the desired operation and performance. Some people think if one overlapped zone is good, then ten overlapped zones must be better. This is not necessarily the case, because increased opportunity to detect is non-discriminatory. This means that an increased opportunity to detect vehicles may also increase the opportunity to detect undesirable artifacts. It is therefore a wise policy to avoid excessive overlapping, especially over a troublesome area since increased opportunity to detect may lead to false calls under some circumstances.

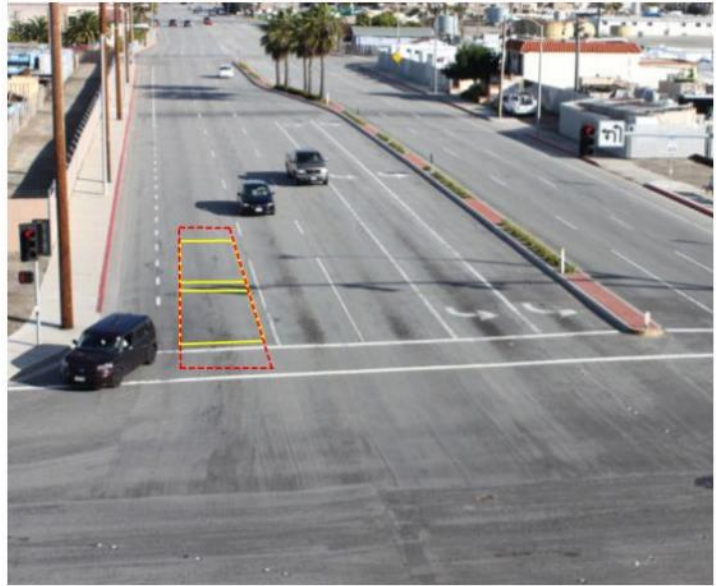
[Lane Structure](#)

Background: Starting with firmware revision xx.01.15SP1 Edge2 processors take advantage of a lane zone structure. The lane zone structure tracks vehicles as they travel through the zones. The lane structure helps to detect vehicles better and reject false calls due to shadows. The lane structure extends in front and behind of the existing zones for greater tracking coverage.

Guidelines for setting up effective lane zones: Two or more zones in the same lane are needed to make a lane structure. A single zone will not be included in a lane structure. The zones need to be assigned an output channel. If a zone's output channel is assigned to none then it will not be included in a lane structure.

Important: *If a second detection zone is not required for intersection control it must still be drawn to create the lane structure. The second zone should have a valid detector output, for example Proc:1 and the zone type should be set to none. This will ensure system performance will be maximized.*

This figure is an example of the Lane Zone Structure. Detection zones are drawn in yellow. The lane zone structure created by the system is shown in red.



Important: In certain intersection control applications only certain lanes may be needed for traffic control, left turn only for example. In these situations a lane structure should be created in the nearest through lane. This though lane will help the algorithm determine the difference between a vehicle and a shadow (from a vehicle in the though lane).it must still be drawn to create the lane structure. Again the zones in the through lane should have a valid detector output, for example Proc:1 and the zone type should be set to none.

This is an example of the Lane Zone Structure when only the left turn detection is required. The zones drawn in yellow are required for intersection control. The zones drawn in blue are to aid performance and should be zone type None and have a valid detector output.



Zones Placement and Size



Problem Zone Example

Pay particular attention to zone detail number five, the zone located on top of the large white truck on the left. Notice that the roof of the truck is what primarily fills the detail number five zone area. The white truck roof has very few edges, and in this simulated situation, the truck call might be dropped if the truck were to stop in this position. What can be done?

Overlapping the front stop bar zones, like the zones shown with detail number three and one in the lane to the right of the truck, would most likely remedy this situation. With two overlapped zones, the front zone area would most likely include the cab part of the truck, not just the truck roof. The truck cab, having an abundance of complex edges in the front grill, windshield, and front bumper, would provide ample complex edge content to properly detect this truck. Drawing detection zones too small can create a new set of additional problems. For instance, extremely small zones that ended up on a car roof or just the middle of the car's hood would have the same adverse consequences.

Remember, when resizing zones or making any other zone adjustments, always be mindful of how these changes might affect edge content, which in turn, has the potential to influence your vehicle detection.

Close attention to zone size and zone placement are also important because, ideally, we like to have at least fifty percent of the vehicle we are trying to detect reside in the detection zone area. Again, this has to do with complex edge content; if we only have one tenth of the vehicle in the detection zone area that may not provide us with enough complex edges to determine that this is a vehicle and not just another undesirable artifact in the detection zone background.

Avoid placing zones on lane lines as any movement of the camera due to wind or other environmental condition may cause false detections.

Zone Types

The "Type" option in the ADD and EDIT menus allows the user to specify the type of detection to be used for a particular zone. Several types of detection are available and are defined below.

PRESENCE (PR) (Default) – places a call while a vehicle is in the zone. When the vehicle exits the zone the call will be dropped.

EXTENSION (EXT) – places a call while a vehicle is in the zone, when the vehicle exits the zone the call is extended for a user selectable length of time. Timing choices range from 1 to 250 in tenths of a second. For example, a value of 50 is equal to five seconds of extension.

DELAY (DLY) – when a vehicle enters the zone area, the call is delayed for a user selectable length of time. Once the delay time has expired the call will be placed. Once the vehicle leaves the zone the call will be dropped. Timing choices range from 1 to 250 in tenths of a second. For example, a value of 50 is equal to five seconds of delay.

PULSE (PUL) – when a vehicle enters the zone, a pulse is output for a user selectable length of time. The vehicle must leave the zone and a new vehicle must enter before a new pulse will be generated. Timing choices range from 1 to 250 in tenths of a second. For example, a value of three is equal to a 0.3 second pulse.

COUNT (CN) – when a vehicle passes through the count zone area, it is counted. The count data for that zone is then stored in an internal processor bin. Bin interval length can be set from the Utility (Utl) menu option. Vantage Remote Access Software (VRAS) or VantageLive! can be used to retrieve the stored count data.

- Channel Output (Ch / Out) is recommended to be set to "NONE".
- Draw the count zone using the same guidelines as you would for a normal detection zone. Counts are stored in 'bins' the interval between bin storage is set in the Utilities Menu.
- There are a maximum of six out of the twenty-four zones that can be assigned as count zones (per camera view).
- Refer to Section 10: Technical Information for more details on Count zones.
- The count data is retrieved from the Edge2 processor by communicating through the USB or RS-232 port using Vantage Remote Access Software (VRAS) or automatically with VantageLive!
- The Bin Interval is set under the Utilities (Utl) menu, Bin Interval (BinIntvl) item

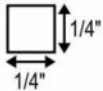
LOW CONTRAST (LC) – these zones are to be placed in areas of high contrast, in the top one third of the field of view (FOV), and the zones must be kept very small - about 1/4" by 1/4" inch. These LC zones provide additional stabilization for the field of view area. At least two of these zones should be drawn in each camera field of view. These zones actually prevent the system from going to Low Contrast mode unnecessarily.

The three LC lines have been replaced by a scene based method. A scanning line dynamically determines the LC status. The "LC ref" function under the utilities menu has been removed since it no longer applies.

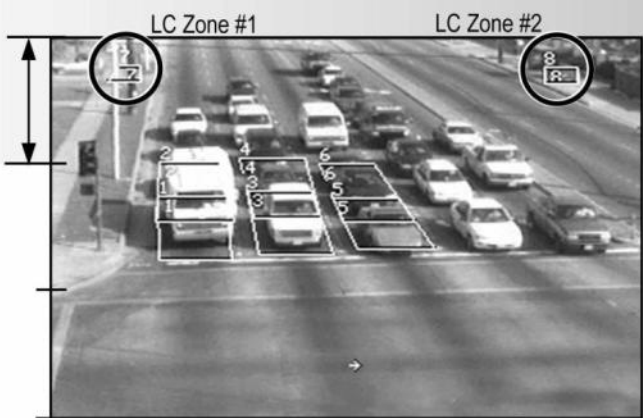
Step 1

Draw two zones in the top 1/3 of the screen

- Size zones 1/4" x 1/4" or smaller



- Draw zones in an area with good contrast



Examples of areas with good contrast:


- White curb & gutter / grass
- White curb & gutter / Black roadway
- White sidewalk / a tree or bush
- White sidewalk / edge of a building, sign or structure

Step 2

Assign all Low Contrast Zones to channel "NONE"

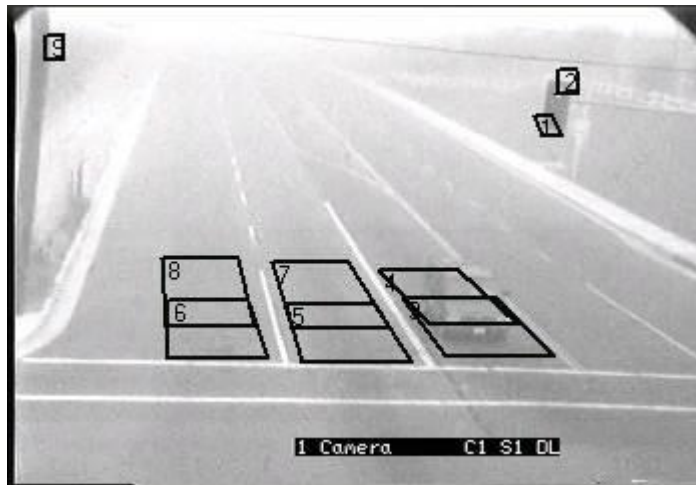
Low Contrast Zones are not the same as advance detection zones and are not used for vehicle detection.

Note: Failure to draw Low Contrast Zones or Drawing Low Contrast Zones incorrectly can result in the Vantage system going into Low Contrast Mode unnecessarily.

 **Note:** Low Contrast zones in reality there are many other low contrast conditions other than fog. Because of this, the decision was made to change the name to "Low Contrast Zones" or just "LC" to better reflect their true operation. From this point forward the term "Low Contrast" zones will be used interchangeably.

Low contrast zones are used to stabilize operation and serve to prevent the system from going into a "Low Contrast" constant call condition unnecessarily. In areas that have snow, sidewalks and curbs may not be the best choice for LC zone placement, since the ground will be covered much of the time during winter months. A sign or edge of a building might be a better choice for LC zone placement in areas that experience extended periods of snow on the ground.

Another important consideration regarding LC zone placement is to make sure the area used for LC zone contrast is not located in the near field of view. The object or region selected for LC zone placement must not only be in the top 1/3 of the field of view, but it also must be physically located and originate in the far region. For example, signal heads or luminaire poles that originate in the near field of view, but also extend into the top 1/3 of the field of view are not a good choice for LC zone placement. There is a possibility, that because of their close proximity to the camera, the contrast will always be such that the system might never see the need go into low contrast mode. The logic behind LC zones is this; if the system can see good contrast in the LC zones located in the far field of view, then the system should have enough contrast to continue to detect vehicles in the stop bar region. Conversely, if the LC zones, located in the far field of view cannot see good contrast, then there may also be significant vehicle detection challenges in the near field of view, so the system reverts to a safe constant call LC mode.



Improper Low Contrast (LC) Zone Placement

In the picture, the Low Contrast zones numbered one and two that are located on top of the signal head and the LC zone number nine on the pole would all be poor choices for LC zone placement. Though these LC zones meet the majority of the necessary criteria for LC zones including, correct size, they are located in the top 1/3rd of the field of view, and they have been placed on an area of contrast; they fail the far field of view test because both the signal head and the pole originate in the near field of view. Low Contrast zone placement should not only be in the top 1/3rd of the FOV, but should also only be placed on objects that originate in the far field of view. Objects in the near field of view will most likely always be clearly visible, even in heavy fog. This improper LC zone setup and placement may result in the system not going into a Low Contrast mode even when the conditions might benefit from this feature.

Note: *It is also worth noting that this FOV is also very poor. It looks like there is probably horizon included as part of the FOV, this should also be corrected.*

"Low Contrast" zones are now an actual zone type. To create a Low Contrast zone, go to the ADD menu item and select zone type "LC". LC zone parameters are automatically constrained, the system will only allow the user to draw them in the top 1/3 of the FOV and will restrict their size to less than 1/4 inch by 1/4 inch. This was done in an effort help the user create effective LC zones that conform to the necessary requirements.

NONE (NO) - when a vehicle enters the zone area a call will not be placed. This type can be useful in conjunction with the GREEN INPUT (Grn/In) function, lane structure and LC and count zones.

Demand and Passage Zones

These two zones types are used in combination they are used in heavily congested traffic lanes only. During heavy traffic when vehicles occupy zones for a long period of time the processor may learn the vehicles as part of the background. Proper usage of demand and passage zones can help to alleviate this situation.

How passage and demand zones work: When traffic is heavily congested the demand zones have a hard time distinguishing the traffic from the background. The demand zones which are congested borrow zone background information from the passage zones which are clear most of the time. The demand zones borrow information from the passage zones to improve algorithm performance.

Note: This feature is active from between 7:00 AM and 8:00 PM. Ensure the processors' clock is set correctly.

How to setup new demand and passage zones: For a heavily congested approach, the demand zone is used just like a presence zone. Draw the demand zone just like you would draw a normal presence zone, starting from behind the stop bar and going back in the lane. Two or three demand zones per congested lane are recommended. The passage zone should be drawn in front of the stop bar area, where vehicles do not occupy the zone all the time. One passage zone per congested lane is recommended. The passage zone has timing associated with it. Leave the timing at the default setting of 3 (Pas:3) and set the channel output to "none".



Demand
Zones

Passage
Zones

COUNT SPEED OCCUPANCY (CSO) – These zones are similar to count zones. They collect extra data splitting the count into small, medium and large vehicles and also estimating average speed and road occupancy per Bin Interval.

Achieving Vehicle Separation & Placement

- Key: The camera is aimed with the intersection in the FOV.

This camera is mounted on the signal mast arm.

- CSO zones are placed in the intersection and not above the stop bar. This will allow vehicles to have a gap between them when passing through the count zone. Only one vehicle should occupy the zone at any one time.

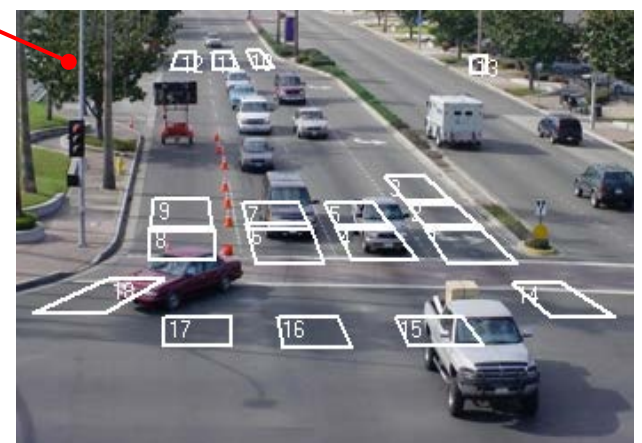
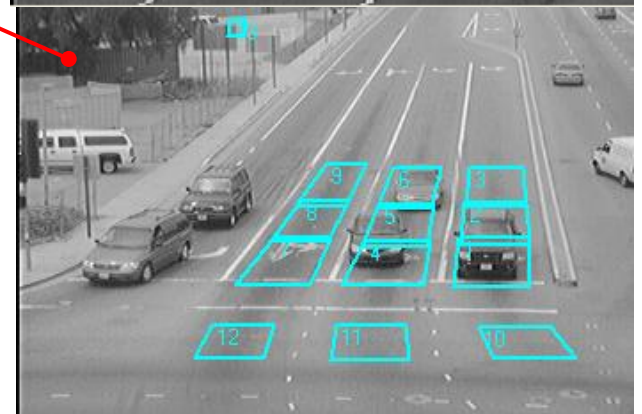
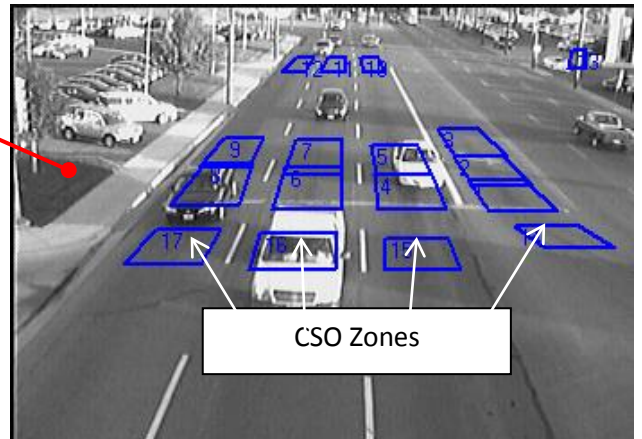
This camera is mounted on a safety light mast arm. This location creates a good FOV for both vehicle detection and counting.

- CSO zones Direction is set to down and is 15 feet from the top of the zone to the bottom of the zone.
- Notice the zones are set in the path the vehicles travel.

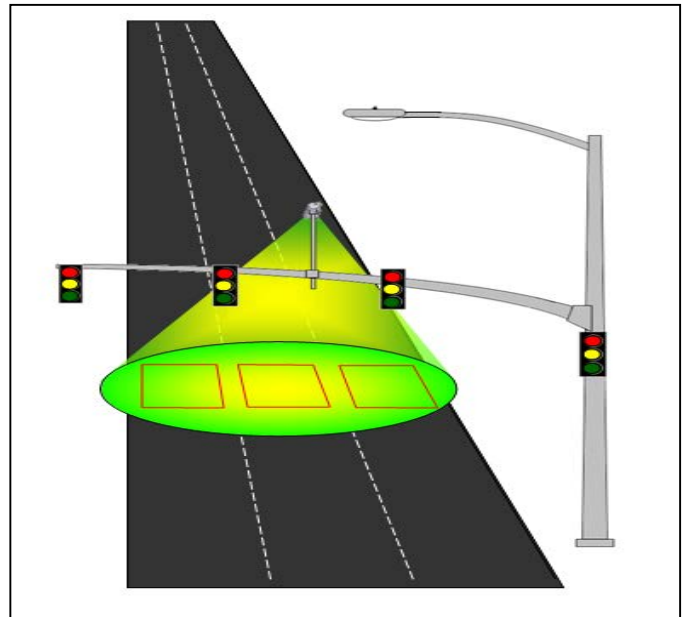
This camera is mounted on the safety light mast arm

- The camera is zoomed out wide enough to place the LT CSO zone where only left turning vehicles will trigger it. It can also accommodate a count zone for the right turn.

Note: Each of the FOV has at least half of the departing lane in them; this will allow the LT cso zone to be placed correctly



- Key: The camera in this illustration is mounted on the signal mast arm centered over the three lanes of departing traffic.
 - The CSO zone has to be be programmed down for it to collect data. When installing a camera to view departing traffic the camera must be rotated 180 degrees so that the vehicles enter the zone from the top to the bottom.
 - The camera should be aimed at a downward angle close to 45 degrees if possible.
-
- This is what it looks like when the camera is turned 180 degrees. (upside down)



BIKE – Some intersections have dedicated bike lanes. Some intersections are marked with shared line pavement markings (or “sharrows”) where both vehicles and bikes share the same lane. Some intersections have vehicle lanes only. To detect all possible bicyclists bike zones should be drawn wherever a bicyclist may ride in the camera field of view (dedicated, shared or vehicle lanes).

All Bike zones can now be programmed as extension type. The extension places a call while the bike is in the zone, when the bike exits the zone the call is extended for a user selectable length of time. Timing choices range from 0 to 250 in tenths of a second. For example, a value of 50 is equal to five seconds of extension.

Note: *Setting the time to zero disables the extension and the zone will operate like a standard bike presence zone, ie, the output will only be active while the bike is in the zone.*

Bike zones can have dual functionality providing both presence/extension calls and counting bicycles. Up to six Bike zones can be assigned as count zones. Setting the attribute 'Bike Count' to 'On' enables bike counting in that zone. Refer to [Section 4.3: Add Menu, Attributes](#) for more details on setting bike counting.

Note: Once six bike zones have been assigned to count then this option in the Attribute menu will be switched off.

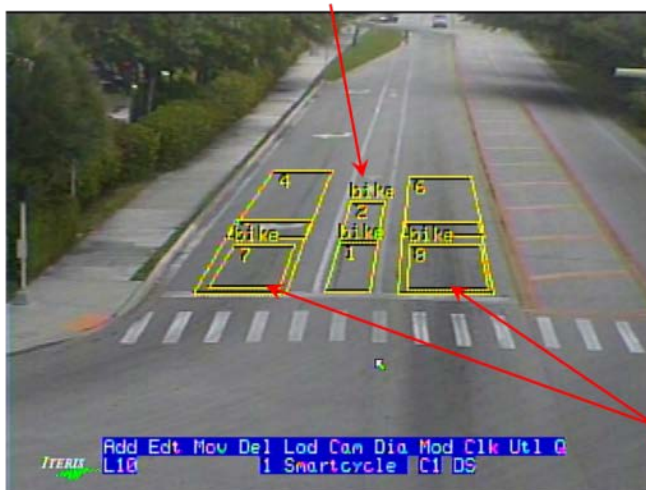
Dedicated Bike Lane Zones

Draw two zones in the bike lane, one at the stop bar and one directly behind it. The zones may touch, but it is not necessary to overlap them. The zone should be about the length of a bicyclist. Refer to the figure below. Be careful not to draw the zones on the lane lines as this may increase the possibility of false calls.

Vehicle Lane Zones

If you need to detect bicyclists in vehicle lanes first draw the regular vehicle detection zone. Please follow all the recommendations for zone drawing outlined in this manual. Once the vehicle zone is drawn, place a bike zone inside this zone. Refer to the figure below.

Bike Zones drawn in the bike only lane



Bike Zones drawn in vehicle lanes. The bike zones are inside the vehicle zone.

Example for Bike Zones drawn in both bike lanes and vehicle lanes

Bike Detection operation

During operation the zones will activate as traffic passes through. For a Bike Zone, the label "Bike" will be displayed in the center of the zone when a bike passes through. For a Vehicle Zone, the outline of the zone will be displayed when any vehicle or bicycle is detected. If a Bike Zone is drawn inside a Vehicle Zone as described in the above section, both the zone outline and the label "Bike" will be displayed. See the screenshots below for examples of each of these instances.



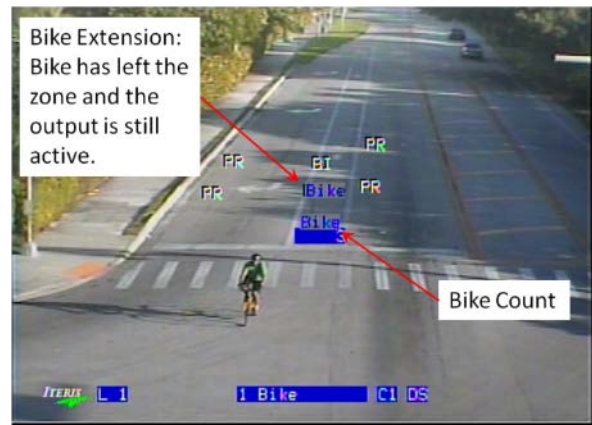
Bicycle detection active in the bike lane



Vehicle only detection active



Bicycle detection active in the vehicle lane

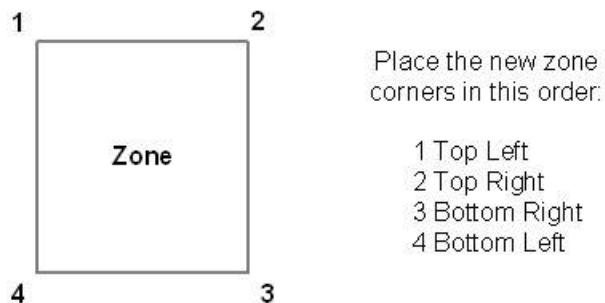


Bicycle extension timer and counts active

ADVANCED (ADV) – The purpose of this zone is to accurately model how an advanced zone behaves. As the zone detects a vehicle it will output a 300ms pulse. If the zone continues to be occupied, the system will then count down the duty cycle timer. Once the duty cycle timer has timed out a second pulse will be output. This cycle will continue until the system drops the detection call. The second is a duty cycle adjustable from 300mS to 3000mS.

- ✔ **Note:** *TIMING* – The Extend, Delay, Pulse and Advanced zones all have user programmable timing. To set the timing for these zone types, either click both left and right mouse buttons simultaneously, or push the middle mouse button. The third mouse button may be the mouse wheel on some types of Vantage compatible mice. When this is done, the timing parameter of the zone type is highlighted. Now, by left or right clicking the mouse buttons, you will scroll through a set of timing values in tenths of a second from 1 to 250. When the desired timing value is reached, either click both left and right mouse buttons simultaneously or click the middle mouse button to set your timing choice.

4.1 Drawing Zones



The first step in drawing a Vantage detection zone is to press and hold the menu button for two or more seconds and then release it; this brings up the main menu bar. Remember, pressing the menu button for less than one second, on a two or four video input Edge2 processor module, will switch camera views. Next, move the mouse cursor to the "Add" option and left click the mouse to select it. The last step is to set the various zone parameters and then select "Exit" to start drawing the detection zone.

At this point a "Place Corner" prompt is seen on the screen and the cursor is visible and can be freely moved around on the screen. The corners of the zone that you are about to draw must be anchored in place by clicking the left mouse button. Place the cursor where you want the back top left corner of the new zone to be located and left click the mouse to anchor it in place, then place the cursor where you want the top right back corner of the new zone and repeat this same process. You will be placing each detection zone corner in a clockwise pattern. The next corner to place and anchor in place will be the bottom right corner and the last corner to place will be the bottom left corner. Having placed and anchored all four corners, the processor will complete the outline of the detection zone. With a little practice, this process is very easy and becomes quite natural. In the following section you will also learn how to edit and easily modify zones that you have already drawn.

After one zone is drawn you may add multiple zones by middle clicking. New zones will be added until they get too small or reach the top of the screen. This feature is called autozone. It is recommended that you start drawing zones at the stop bar and work your way up with the autozone feature. Autozones have a 20% overlap. If more or less overlap is needed first place one corner with a left click then use the autozone. The first placed corner sets the reference for the overlap.

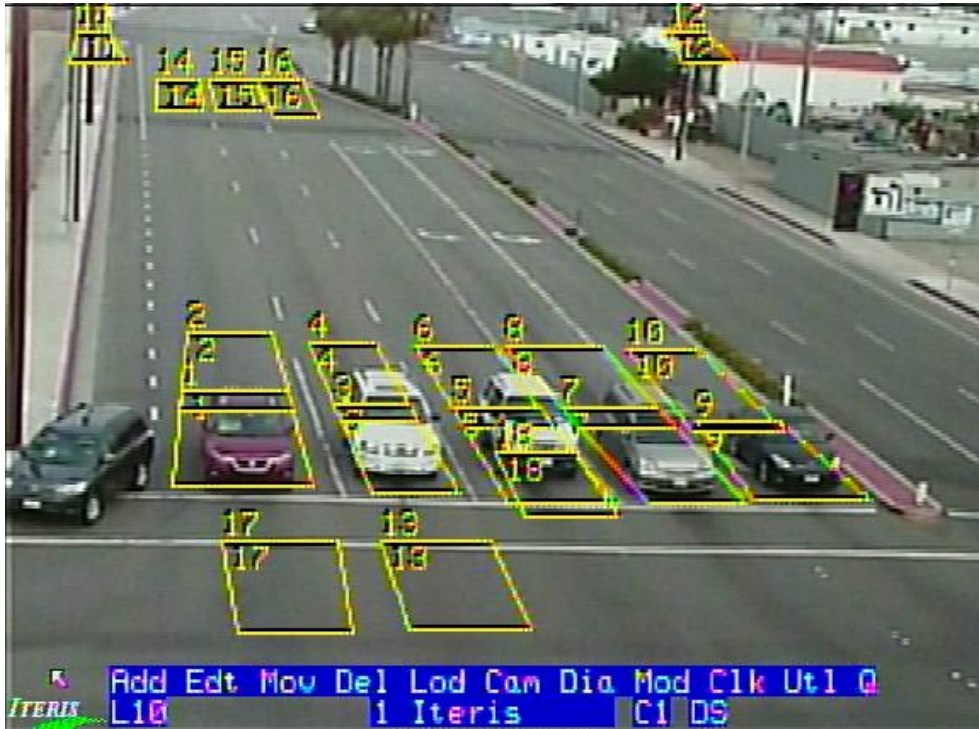
If you have an existing zone and you wish to create new zones with those same properties, you may by following this procedure. First select the zone with the properties you want to clone, by left clicking in the inside of that zone. The selected zone's outline will change from yellow to white. Then select "ADD" from the menu bar. The newly created zone will have the properties of the existing zone.

Note: *The zone properties, And/W, occlusion rejection, desensitize and zone label are not copied.*

4.2 Edge2 Main Menu

The following sections cover each item on the Vantage Edge2 processor main menu. To bring up the Vantage Edge2 main menu bar, push the Menu button for more two or more seconds and then release it. The Edge2 processor main Menu bar will appear on the screen.

- ✓ **Note:** The Vantage Edge2 processor menu may change as additional features and functions are added to the system. Please check with your authorized Iteris Dealer or the Vantage Product Support Team for updates to this manual.



Menu Screen on Edge2 Processor

- ✓ **Note:** The user is presented with an on screen keyboard whenever any text editing field is available. The fields that can be edited with the onscreen keyboard are zone label, camera label, config label, camera cycle and unit id. Use the mouse's middle click button to bring up the onscreen keyboard. To get out of the onscreen keyboard left click the "Ent" key or middle click. The on screen keyboard allows or restricts characters as needed for the field to be edited. For example spaces are not allowed in the unit id field. When the onscreen keyboard is active, using the right click button or "Esc" key will cancel any changes.



4.3 Add Menu

This menu option allows the user to add new detection zones. The user will select the desired zone parameters and then create the new detection zone by placing each of the detection zone corners. For instructions on how to draw zones, see the "Drawing Zones" section of this document. You can define up to 24 detection zones on each Edge2 processor module camera view.



Detail - The zone detail number is a processor generated reference number sequence from 1 through 24 for camera one, 25 through 48 for camera number two on a dual and quad processor, 49 through 72 for camera number three and 73 through 96 for camera number four on a quad processor. See "Zone Identifiers" and the "Detail" menu section for additional information.

Label - The zone label, a user customizable zone identifier. Zone labels can be up to six characters in length. To edit the zone label, move the cursor to the "Label" item and click the right mouse button. The label value will become highlighted, and now, pressing the left or right mouse button will scroll through a series of available ASCII characters. Physically moving the mouse to the right will move the cursor to the next character position. Physically moving the mouse to the left will move the cursor to the left. When you are finished customizing the label characters, either press both left and right mouse buttons simultaneously, or press the mouse wheel button to set your label. The default value for the zone label is normally the same as the zone detail number.

Direction (Dir) - The zone direction option can be set to "ANY" or "DOWN".

ANY (Default) - This setting has the potential to detect vehicles from any direction.

DOWN - This setting enables "Wrong Way Vehicle Rejection". This function helps reject vehicles entering the zone from directions other than down. The function primarily rejects vehicles traveling "up", but can still be used in left turn lanes, for some degree of relief from side street cars, that may stray into the front left turn detection zones while making a left turn. It is best to use "ANY" unless zone directionality is really required.

To change the zone direction parameter, move the mouse cursor to the "DIR" and left or right click the mouse buttons until you have your desired zone direction choice. Move the cursor to another menu item to set your selection.

Green Input (Grn/In) - This function allows the Edge2 processor to utilize the NEMA TS-1 detector rack "delay inhibit" or green phase input lines from the controller, if they are available (332 cabinet input files do not

normally come wired with this capability). Using this feature the user can program a detection zone to respond differently depending on the delay inhibit line status. For example, a zone could be programmed to Extend on Green and Delay on Red (not green).

To enable this feature left click on the "Grn/In" menu item. The menu options will expand to include options for: Green (Grn), and Not Green (NGrn). "Grn/In" refers to the Edge2 processor delay inhibit input channel. The choices are PROC:1 through PROC:4 and extension modules could also be a choice if they are being used. Most NEMA TS-1 detector racks are only wired for two delay inhibit pins per slot (pins 1 and 2). Choosing PROC:1 would correspond with delay inhibit pin 1 and PROC:2 would correspond with delay inhibit pin 2. Choosing PROC:3 , PROC:4, or EM:03, or EM:04 would most likely have no effect, since they correlate with pin 3 and pin 10 respectively. There is normally no delay inhibit logic wired to these pins.

Left or right click the mouse to toggle through the input selections and select a channel to associate with the delay inhibit line. Green (Grn) is where you tell the processor what detector type to use when the phase is green, select an appropriate detector type. Physically move the mouse down to move to the next option. Not Green (NGrn) is where you tell the Edge2 processor what detector type to use when the phase is red or yellow(not green). You are defining how you want the detector channel to function during green and not green logic states. Using the left or right mouse buttons select a zone detection type for both green and non green states. See the next section for a more detailed explanation of zone type and processor output channels. The default value for Grn/In is NONE. If you do not intend to use this feature or if the detector rack does not support this functionality, the value of NONE should be used.

Detector Type (Type) - This setting allows you to select the type of detection zone to create. There are several different zone types available.

| Detection Zone Type | Function |
|---------------------|---|
| PRESENCE | Places a call as long as vehicle is in the zone. |
| EXTEND | Extend the vehicle call for a programmable length of time. |
| DELAY | Delay the vehicle call for a programmable length of time. |
| PULSE | Produces a pulse output for a user programmable rate of time (pulse width). |
| COUNT | Count vehicles that pass through the zone and store the data. |
| Low Contrast (LC) | Create an LC zone for low contrast stabilization. |
| Demand | Demand zone for high traffic congestion. |
| Passage | Passage zone for high traffic congestion. |
| CSO | Count, Speed, Occupancy zone. |
| Bike | Bicycle differentiation zone. |
| Advanced | Advanced loop simulator. |

To select or change the zone type, move the mouse cursor to "Type" and left or right click the mouse buttons until the desired zone type is displayed. Move the cursor to a different zone parameter item in the menu to set your zone type choice.

Attributes

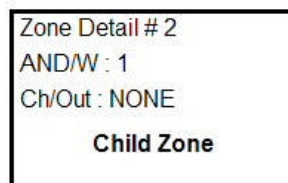
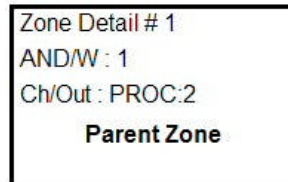


Attribute Menu With and Without Bike Count Attribute

And With (AND/W) - This function allows the user to "AND" zones together for special operation. Zones that are AND'ed together will only place a vehicle call when there is a vehicle placing a call in both of the zones simultaneously. If there is a vehicle in only one of the zones, a call will not be placed. If normal operation is desired, be sure that the value of AND/W is set to the same number as the zone detail number; this is the default setting.



CAUTION! The accidental setting of this parameter to a random value can result in unpredictable and undesirable operation. Be sure you understand the AND/W function before attempting to use it. If you do not intend to use AND/W operation, be sure that the AND/W value is set to the same value as the zone detail number.



Correct AND/W Setup Example

In the above example please notice that the And/W value number of the child zone is set to the detail number of the parent zone. Also notice that the channel output (Ch/Out) of the child zone is set to NONE. It is also of interest to notice that the parent zone is set up like any other zone, all the changes were made to the child zone. The child zone will now place a call on the output channel of the parent zone (PROC:2 in this example) when a vehicle is present on both zones at the same time.

To change the AND/W parameter, move the mouse cursor to AND/W and click either the left or right mouse button to increment the AND/W values. When the desired value is selected, simply move the mouse cursor to another zone parameter in the menu to set the value. The AND/W value is set to the same value as the

zone detail number by default, which effectively "OR's" the channel outputs. If you do not intend to use the AND/W function, be sure that the AND/W value is set to the same value as the zone detail number.

Occlusion Rejection – This feature is recommended to be used when you want to minimize the effects of tall trucks or tree shadows causing false calls in the left turn lanes.

Desensitize – If a zone is desensitized it will no longer participate in the dynamic three-stage algorithm most of the time. If the camera is in LC then the desensitized zone will go into S3 mode. Care should be exercised when turning on the desensitized option because it could lead to missed calls.

Pedestrian Rejection – As the name implies helps a zone reject pedestrian movement. Zones programmed with Pedestrian rejection are less likely to false call due to pedestrian movement.

Bike Night S2 – Because of lighting conditions bicycles are harder to detect at night. Turning this attribute on may help with missed calls in poor lighting conditions as it increases the sensitivity of the zone. The proper solution is to improve the lighting at the intersection.

Bike Virtual Zone – If the camera is not mounted directly above the bike lane the Bike zone drawn may not be rectangular but a parallelogram. Due to the position of the camera, the body of the bicycle rider may appear out of the zone, and the call may be missed. This attribute will extend the zone in an attempt to capture the rider. See figure below.



Bike Zones drawn in red. The bicyclist is only halfway in the zone due to camera positioning.

Virtual Bike Zone drawn in blue. Extends automatically by the system to capture the bicyclist.

Bike Count – Bike zones can have dual functionality providing both presence/extension calls and counting bicycles. Up to six Bike zones can be assigned as count zones. Setting this attribute to 'On' enables bike counting in that zone.

Note: Once six bike zones have been assigned to count then this option in the Attribute menu will be switched off. See figure at start of this section.

Channel Out (Ch/Out) - This function allows the user to assign an output channel to the zone. The output channel will place a call to the controller depending upon the position of the Edge2 processor in the detector rack. Where you physically plug the Edge2 processor or extension module into the detector rack, is where it will place the vehicle calls. Multiple zones can be assigned to a single processor or extension module output channel.

Typical Channel Designators:

- Edge2 Processor
 - PROC: 1, PROC:2, PROC:3, PROC:4, NONE
- Extension Modules
 - Two Channel
 - EM-0:1, EM-0:2
 - Four Channel
 - EM-1:1, EM-1:2, EM1:3, EM-1:4
- I/O Module
 - IO-2:1 Through IO-2:32

Note: For more information on output channels, see the [Section 3.5: Edge2 Extension Modules](#) or [Section 10: Output Channel Assignment](#).

Exit - Click on this option to exit out of the Add menu and return to the main Edge2 menu bar.

4.4 Edit Menu

The "Edit" option on the Vantage Edge2 menu brings up all the zone parameters for a specified zone. Click on "Edit" from the Vantage Edge2 menu bar, a screen prompt appears saying, "Select Zone". Move the cursor somewhere inside of the zone that you want to view or to change the zone detail parameters, and left click the mouse button. The same screen that you saw when you originally created the zone will appear in the lower left corner of the screen.



Now, you will be able to view or edit all the parameters for the selected zone. This option gives the user a convenient way to view existing zone parameters or to make changes to zone settings quickly and easily at any time. Move the mouse cursor to the desired option in the Detail menu and make the desired changes. When you are finished click the Exit option to return to the Vantage Edge2 main menu bar.

☑ *Note:* In order for your changes to be saved, you must still go to the Quit (Q) option on the Vantage Edge2 main menu bar and save your changes to a configuration. If you fail to perform this step your zone changes will not be saved.

☑ *Note:* For a detailed description of each of the parameters in the detail menu, refer to the Add Option section.

4.5 Move Menu

The Move function has 3 modes.

- Move a single zone or part of a single zone(default setting)
- Move multiple zones
- Move all zones

To move a single zone – Left click on “Mov”. Select a zone to move by left clicking in the middle of that zone. The zone outline will turn white when it has been selected. Now a user may move the whole zone, move one side, or move a corner. To move the whole zone left click in the center of the selected zone and move the zone to the desired location then left click to place it.

To move the side of a single zone – Select the zone by left clicking in the middle of the zone. Move the cursor to the side of the zone and left click, move the side and left click to place it.

To move the corner of a single zone – Select the zone by left clicking in the middle of the zone. Move the cursor to the corner of the zone and left click, move the corner and left click to place it.

To move multiple zones - Left click on “Mov”. Left click on “Multi”. Select the zones you wish to move by left clicking on them. Next middle click, then move the mouse to position the zones. Left click to place the zones in their new position.

To move all zones - Left click on “Mov”. Left click on “All”. Move the mouse and then left click to place the zones in their new position.

Exit – Click on this option to exit out of the Add menu and return to the main Edge2 menu bar.

4.6 Delete Menu

This menu selection allows for the deletion of existing zones.

Zone – This deletes individual zones. Move the cursor over the zone to be deleted and click the left mouse button.

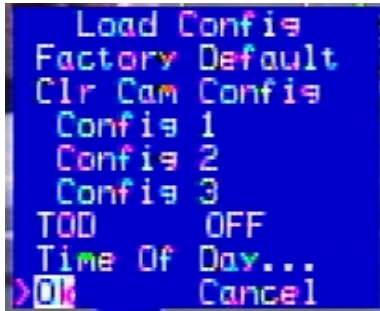
All – This deletes all the zones on the selected view. You will be asked “Delete all zones for this camera? Yes/No” Move the cursor over “yes” and click the left mouse button. To cancel this action without deleting move the cursor over “no” and click the left mouse button.

Restore – Restores the last delete action. Restores a single zone or all the zones deleted.

Exit – Click on this option to exit out of the Delete menu and return to the main Edge2 menu bar.

4.7 Load Menu

The "Load" option (Lod) allows the user to load previously saved configurations.



To Load Factory Defaults – Left click “Lod” and left click on “Factory Default”. A warning message will appear, “Reset system to factory default? Yes No”. Left click on “Yes”. This will clear all zones, unit id, camera labels, alarms, TOD schedules, options, com port parameters and restore them to factory default settings. Please note that the inactive channel defaults to call.

To Clear a Camera’s Configuration – Left click “Lod” and left click on “Clr Cam Config”. A warning message will appear, “Reset this camera config and del all zones? Yes No”. Left click on “Yes”. This will clear all of this camera’s zones, options, camera alarms and camera label.

- Config 1 - Selecting this configuration will load it, and make it the current configuration.
- Config 2 - Selecting this configuration will load it, and make it the current configuration.
- Config 3 - Selecting this configuration will load it, and make it the current configuration.

Move the cursor to the configuration that you want to load and run as the current configuration. Left click the mouse button to make your selection, the configuration will be loaded. Next, you must go to the Quit (Q) menu and save to that same configuration to complete the load process.

Note: You can also save one configuration to another from this menu option. For instance, if you load configuration two, you could go to the Quit (Q) menu and save it to configuration one (or three). This would overwrite anything previously saved in configuration one and give you another copy of configuration two in configuration one.

Time of Day – The Edge2 processor can be set to automatically switch between saved configurations at certain times during the week. To enable this function set to on.

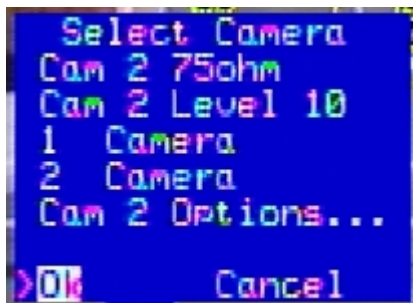
Time of Day Table – The TOD table allows the user to select a different configuration at the start of each hour for each day of the week.



Exit – Click on this option to exit out of the Load menu and return to the main Edge2 menu bar.

4.8 Camera Menu

The "Camera" menu allows the user to change various camera specific settings on the Edge2 processor.



Input Impedance – The input video termination can be set from this menu. The options are 75 ohm or HI-Z to the camera menu. The video termination dip switches on the Edge2 processor should be set to HI-Z or off for the software programming to work. If the dip switch is set to terminated (75 ohms) then the firmware will not be able to change it to un-terminated (HI-Z). HI-Z should be set on the video input when the video from the camera is tee'd off to go to a second device, for example the EdgeConnect.

Sensitivity Level – This setting helps the system process video information depending on which type of camera is being used. For our Wide Dynamic Range cameras (RZ4-A WDR, Vector, SmartSpan) the level should be set to 1. For our regular cameras (RZ4-C, RZ4-A, RZ4-M) the level should be set to 10.

Camera Switching – To change camera views, left click the Camera (Cam) option on the VantageEdge2 main menu bar. Next, left click on the desired camera view and the screen will change to the newly selected camera.

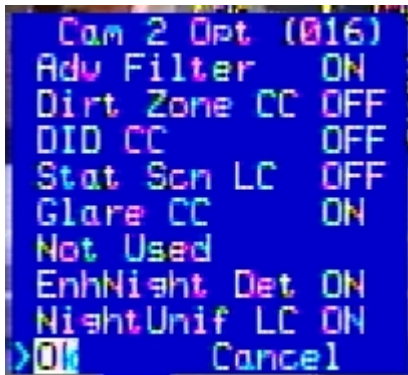
If the Edge2 processor is not a multiple video input model, and you attempt to switch to camera two, the video will revert back to camera one by default.

Also, if no video is present on one camera, of an Edge2 dual or quad video input processor, the selection will default to the next channel that has a valid video signal.

Note: Camera switching can also be accomplished by pushing in the Menu button for under one second and then releasing it.

Camera Label Customization – The saved "Camera Label" is user customizable. The default designation is: "1 Camera, 2 Camera, 3 Camera, 4 Camera, however, this can easily be changed. Camera names can be up to 10 characters in length. To edit a camera name, move the cursor to the camera name that you want to change. Click the right mouse button and the first character of the name will be highlighted. Now, by pressing the left or right mouse button, scroll through a series of available ASCII characters. Moving the mouse to the right will move the cursor to the next character position. Moving the mouse to the left will move the cursor to the left. When you are finished customizing the camera name characters, either press both left and right mouse buttons simultaneously, or press the mouse wheel button to save your changes and to exit out of the editing mode.

Options – There are a number of options that can be set for specific installation situations.



CAUTION! Randomly setting different option numbers is not recommended and could result in improper operation and unexpected consequences. If you are unsure what a particular option number does, then do not enable it. It is best to leave this set at its factory default, unless instructed by Vantage Product Support staff to do otherwise. If you have further questions about this function please contact your Vantage Product Support Team for more information.

Option 1: Top View

Default Setting is: Off

Explanation: This option should be used with a near field of view. A near field of view is when less than two car lengths can be seen in each lane. The near field of view sees the tops of the vehicles.

When to use this option: Only when the camera is pointed down at a steep angle and only two car lengths can be seen in the FOV.

Option 2: Inactive zone constant call

Default Setting is: Off

Explanation: This special constant calling per lane is only active if more than one zone is defined per lane. The processor identifies the first zone in each lane. If these zones do not report any activity within a given time period and there is low contrast within the zone then they place a call. The zone inactivity maybe caused by fog, dirt or ice build up on the cameras lens. When this special constant call mode is active an ampersand (@) will be displayed next to the affected zones.

When to use this option: The option should be set to On at intersections that expect to experience snow, ice and fog. This option should be used at intersections that have a reasonable amount traffic volume. This option should not be used on side street approaches because it may make them recall. This option works best if the front zones in each lane are over the stop-bar or road marks like the left and straight arrows.

Option 4: DID operation

Default setting is: Off

Explanation: The DID option is off by default in this release. When turned On the DID option helps detect the buildup of dirt and ice on the front glass of the camera. When dirt and ice appear at the top part of the image a “T” will appear in the camera label. When dirt and ice appear everywhere on the image a “W” will appear in the camera label. When “T” and “W” appear together the Edge2 processor will place constant calls on all used channels for a camera view. The constant call will persist until the condition clears up. The DID option only works during the day time. Only when the DID option is On will “T” and/or “W” appear in the camera label.

When to use this option: The DID should be turned On at intersections that expect to experience snow, ice and fog. The DID may help ensure that calls are placed when the camera view is obstructed by dirt, ice and fog. When the DID is Off “T” and “W” will not be displayed and constant calls will not be placed due to dirt or ice.

Option 8: LC mode for uniform scenes

Default setting is: Off

Explanation: When a camera view has no detections and no motion and the scene is uniform the processor holds off going into LC if this option is Off.

When to use this option: If a camera view is looking at a fairly low contrast, uniform scene and you want it to go into LC mode then turn this option On. Use this option if you believe that a camera view has the possibility to be blocked by snow build up.

Option 16: Glare

Default setting is: On

Explanation: When the glare mode option is set to On the processor analyzes each zone for glare, if a zone becomes saturated with glare, then the output channel associated with that zone will place a constant call. This algorithm allows the zones that are most affected by glare, to place a constant call until the glare condition dissipates to allow normal detection again.

When to use this option: Use the glare option when having difficulty detecting vehicles in glare. Zones must be completely saturated before glare mode will trigger. It can take up to three minutes to enter glare mode or exit glare mode after the proper conditions have been met.

Option 32: Night Filter

Default setting is: On

Explanation: With NightFilter set to ON the processor will filter out false calls due to reflections and headlight glare. It is recommended to run night filter so that there are not too many false calls at night, especially when the ground is wet. If vehicles are not being detected at night then this option can be turned off. This means that there will be no filtering of night time detections. All the detections will be allowed to pass through.

When to use this option: It recommended to always turn this option on unless instructed by Iteris personnel.

Option 64: Night Filter Automatic Mode

Default setting is: On

Explanation: Based on nighttime conditions, the processor will run the night filter when the algorithm believes it is beneficial to do so and will not run the night filter when conditions are less than ideal (which means no filtering and all the detections will pass through). It is recommended to run NightFilter in the Auto mode because when conditions are bad detection filtering stops.

Note: *NightFiltAuto can only operate when NightFilter is ON. When NightFilter is OFF, no matter what the choice for NightFiltAuto is, there will be no night filtering at all.*

When to use this option: It recommended to always turn this option on unless instructed by Iteris personnel.

Option 128: Disables fast LC at night.

Default setting is: On

Explanation: This option prevents LC (fog) at night. When a night time field of view contains a uniform background grayscale value, the processor may go into LC mode.

When to use this option: This option is normally not needed, since a properly set system clock usually remedies most night time LC problems. However, some low light intersections contain uniform contrast and can still cause LC mode at night. This option will prevent the processor from going into LC (Low Contrast) mode due to low light uniform contrast conditions. This option should be used very carefully, since a negative consequence of enabling this option is that if a camera fails with a valid sync pulse, but no video, the processor may not place constant calls for that camera.

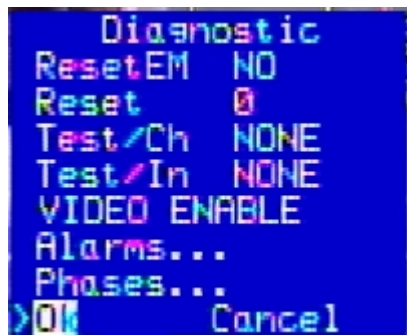
Summary of Option Settings for 04.01.18SP1

| Option | Name | Description | Default |
|--------|---------------|--|---------|
| 1 | Top View* | For near field of view applications | OFF |
| 2 | Dirt Zone CC | Inactive zone constant call | OFF |
| 4 | DID CC | DID operation | OFF |
| 8 | Stat Scn LC | LC mode for uniform scenes | OFF |
| 16 | Glare CC | Glare | ON |
| 32 | NightFilter* | Reduce false calls at night | ON |
| 64 | NghtFiltAuto* | Allows algorithm to decide whether to use the Night Fliter | ON |
| 128 | NightUnif LC | Disable Fast LC at night | ON |

*new options with their default (recommended) settings

4.9 Diagnostic Menu

The "Diagnostic" option menu includes the following functions and system information.



Reset Extension Module (ResetEM) - This function will reset any inline extension modules in the Edge2 processor chain. A reset may be useful to initialize or reinitialize modules on an Edge2 processor chain. To reset the inline extension modules, move the cursor to the ResetEM option and left or right click the mouse until the "YES" choice is displayed. Exit, then go to the Quit (Q) menu, then save to the currently loaded configuration and the extension module chain will be reset.

Reset Zone (Reset) - This option is rarely used. This option allows the user to force a single zone, referenced by that zones detail number, to re-learn. Experience has shown that forcing the zone to re-learn, without making zone size or placement adjustments, rarely solves operational challenges.

To reset a detection zone, enter the detail number by right or left clicking the mouse buttons. When the desired zone number has been selected, exit and then Quit (Q) and save to the currently loaded configuration. The selected zone will go into Learn Mode , placing a temporary call on the zones associated output channel.

Test Channel Output (Test / Ch) - This option allows you to test the output channels. Select an output channel to test, by left or right clicking the mouse until you arrive at the desired output channel. Next, exit the menu and go to the Edge2 main menu bar and select the Quit (Q) menu, save to the currently loaded configuration. Observe the LED indicator for the output channel that was selected. It should start to blink "on" and "off" at an interval of one second on, one second off. Just as this function was manually enabled, it must also be disabled. To turn the test channel function off, go back to the Diagnostic (Diag) menu and set the Test Channel (Test / Ch) to "NONE". Then Quit and Save as you did before and the output channel should resume normal operation. If you should forget to turn this function off, we have implemented a feature that will turn it off automatically after one hour. Also, be aware of the fact that while the test function is active, it overrides normal output channel detection operation.

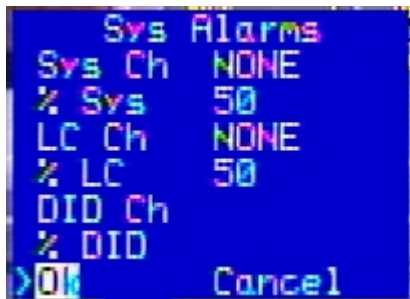
Test Channel Input (Test / In) - This option is for testing inputs on the Vantage Edge2 I/O Module. If an I/O Module is not a part of the Edge2 processor chain, then this selection will remain "NONE". If an I/O Module is included in the Edge2 processor chain, then select one of the eight I/O Module input channels. For example, you might choose "IO-0:2"; then you should exit the Diagnostic menu, and then Quit and Save to the currently loaded configuration from the Edge2 main menu bar. The number two input channel on the I/O Module should start to blink "on" and "off" at an interval of about five to six seconds. Just as this function was manually enabled, it must also be disabled. To turn the test channel function off, go back to the

Diagnostic (Diag) menu and set the Test Channel (Test / In) to "NONE". Then Quit and Save as you did before and the input channel should resume normal operation. If you should forget to turn this function off, we have implemented a feature that will turn it off automatically after one hour. Also, be aware of the fact that while the test function is active, it over-rides normal input channel operation.

Edge2 Processor Video Status Flags:

- VIDEO ENABLE - This is a status flag indicating that the Edge2 processor frame grabber is working properly.
- SYNC - This is a flag indicating that the Edge2 processor has video sync.

System Alarms



The Vantage Edge2 processor provides the opportunity to trigger numerous auxiliary external output channels during special conditions. This allows the user the flexibility to monitor these conditions or have them trigger other actions in the traffic controller, such as alarms, max2, or different TOD timings.

The following auxiliary outputs are available:

System Channel – The system channel allows the other alarms channels (LC and DID) to be combined into one channel by using the system channel. For example: programming LC ch –Sys, DID ch – Sys and Sys ch – Proc:1, if a camera goes into LC or DID or S3, Proc:1 will place a call

% System – This is the percentage of cameras on a processor that have to exhibit the problem for the alarm to be enabled. It is default to 100% for single processors. IT can be set to 50 or 100% for dual processors. And can be set to 25, 50, 75 or 100% for quad processors.

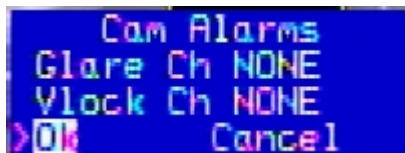
Low Contrast Output Channel (LC Out) - This option gives the user the ability to tie an external output channel to Low Contrast (LC) or "S3" mode. This means that whenever the system goes into Low Contrast mode the assigned channel will place a call. If "NONE" is selected this feature is disabled. If you choose to tie an output channel to Low Contrast mode, the output channel must not already be assigned as a vehicle detection channel; in other words you must assign a dedicated channel for this special LC output.

% LC – This is the percentage of cameras on a processor that have to exhibit the problem for the alarm to be enabled. It is default to 100% for single processors. It can be set to 50 or 100% for dual processors. And can be set to 25, 50, 75 or 100% for quad processors.

DID Channel – This option gives the user the ability to tie an external output channel to DID mode. This means whenever the system detects Dirt or Ice on the camera lens the assigned channel will place a call.

% DID – This is the percentage of cameras on a processor that have to exhibit the problem for the alarm to be enabled. It is default to 100% for single processors. It can be set to 50 or 100% for dual processors. And can be set to 25, 50, 75 or 100% for quad processors.

Camera Alarms



Glare Channel Output (Glarech) - This function allows the user to select an unused output channel to place a constant call whenever the Edge2 processor is in "Glare Mode".

- ✓ *Note: This is not a global function parameter; in other words, on an Edge2-2 with two video inputs this function must be set on a per camera view basis. Also, remember not to share any of the same output channels between camera views. If you use PROC:1 on Camera 1, do not use Proc:1 for Camera 2 also on the same Edge2-2 processor unit.*

Video Lock Channel Output (Vlockch) - This function allows the user to select an unused output channel to place a constant call whenever the Edge2 processor losses video lock (sync.). Again, this is not a global function parameter and must be set on a per camera view basis. (See the "Remember" item in the previous topic (Glare Channel Output) for additional information.

Phases

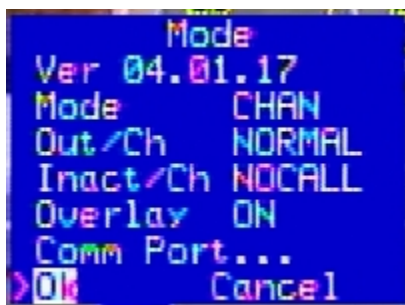
Display – This function turns the phase display on or off. It is set to off by default.

Phase Assignment – This function allows you to assign each phase on the display to a particular input. Select the phase number then select a valid input.

Exit – Select Exit to exit the Diagnostic menu.

4.10 Mode Menu

The "Mode" option menu includes the following functions and system information.



- ✓ *Note: When calling in with technical questions about your Edge2 processor, many times you will be asked what firmware version your Edge2 processor is running. This information is found in the "Mode" menu.*

Version - This parameter is the Vantage Edge2 firmware version.

For example: "04.01.17".

- 04 This tells us that it is an Edge2 processor (single or dual input). For the quad Edge2 processor this would be 05.
- 01 This tells us that we are running standard intersection detection.
- 17 This is the actual processor firmware version. Many times it is shortened in conversation to just x.17.

Mode - This option determines the zone reference that will be used to identify the detection zones. The choices are: CHAN, TYPE, INPSTS, OFF, LABEL, NUMBER, or AND/W. By default, this parameter is set to "CHAN", which stands for channel. This is the most commonly used zone reference.

Zone Identifiers

CHAN - Channel refers to the output channel associated with the detection zone. For more information see the section on Channel Output.

TYPE - Type refers to the zone type: Presence (PR), Pulse (PS), Extension (EX), Delay (DL), Count (CN), None (NO), Advanced (AD), Bike (BI), Demand (DE), Passage (PA), CSO (CS) or Low Contrast (LC). For more information see the section on Zone Type.

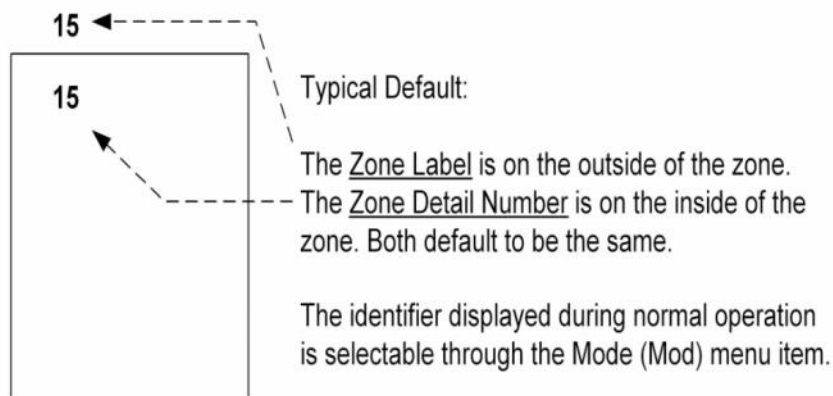
INPSTS – Inputs refers to the phase input that is assign to the zone.

OFF - This selection turns off all visible zone references.

LABEL - Label refers to the detection zone label. For more information see the section on Zone Labels.

NUMBER - Number refers to the detection zone detail number. For more information see the section on zone Detail Numbers.

AND/W - And With refers to the detail number of a parent zone that a child detection zone might be referenced to, if this type of operation is enabled. For more information see the section on zone And With operation.



Zone Label and Zone Detail Number



Example Showing Reference by Zone Type

The zones in the picture are being referenced by "Zone Type".

| | |
|---------------|--------------------|
| AD = Advanced | PR = Presence Zone |
| DL = Delay | EX = Extension |
| BI = Bike | CS = Count |

Output Channel (Out / Ch) - This parameter determines how the output channels will function. This is a global setting.

NORMAL - This is the default setting and is most commonly used during normal operation. The "NORMAL" setting will allow the output channels to function in a "normal" mode. When cars are present in the detection zone the output channel associated with that zone will place a call to the traffic controller.

MAXCALL - The "MAXCALL" setting places constant calls on all output channels.

Inactive Channel (Inact / Ch) - This setting determines how inactive (unused) channels will function. This is a global setting.

NOCALL - This is the default setting and is most commonly used during normal operation. The "NOCALL" setting will cause all unused channels not to place any calls.

CALL - If this setting is selected, then all unused channels will place constant calls.

Note: *Output Channel and Inactive Channel are two settings that cause new users problems when they are set to other than the default settings. If you are getting constant calls on output channels, even after the learn mode, check the Output Channel setting and make sure it is set to "NORMAL". If unused channels are mysteriously placing constant calls, check the Inactive Channel setting and make sure that it is set to "NOCALL".*

Overlay – This parameter turns the overlay either "ON" or "OFF". The default setting is "ON" which is used during normal Vantage operation. The overlay includes all the zone indicators and camera label information. When the overlay is "OFF", none of this information will be displayed on the screen. The overlay can be restored by pushing the MENU button or by setting the Overlay parameter to "ON" instead of "OFF".

RS-232 Port Communication Parameters:

Baud - Baud rate. The default is 38400, this is the most commonly used baud rate setting for Vantage applications. Other settings are available, however, it is recommended that the setting be set to the default value unless you have been instructed to do otherwise.

Parity - The default is NONE, this is the most commonly used parity setting for Vantage applications. Other settings are available, however, it is recommended that the setting be set to the default value unless you have been instructed to do otherwise.

Flow Control (FlowCtrl) - The default setting is "Hardware" (HRDWRE), which is the most commonly used setting for Vantage applications. Other settings are available, however, it is recommended that the setting be set to the default value unless you have been instructed to do otherwise.

Note: The default RS-232 port settings must be used during the Vantage Software Upgrade (VSU) process.

Note: Remember, before any parameter becomes active, you must quit and Save your changes to the current configuration. If you do not quit and save to a configuration after making changes, the parameter changes will not be saved and will not be active.

Exit – Select Exit to exit the Mode option menu.

4.11 Clock Menu

The system "Clock" option menu includes the following functions:



Note: It is important to set your Vantage Edge2 processor to the correct time and date, because the system makes use of this readily available information. It is also essential for getting proper and accurate time stamps if you decide to collect any count data.

Month - Left or right click your mouse after selecting the "Month" parameter to set the correct month.

Day - Left or right click your mouse after selecting the "Day" parameter to set the correct day.

Year - Left or right click your mouse after selecting the "Year" parameter to set the correct year.

Hour - Left or right click your mouse after selecting the "Hour" parameter to set the correct hour.

Minute - Left or right click your mouse after selecting the "Minute" parameter to set the correct minute.

Daylight Savings Time (Day/Save) - Left or right click your mouse after selecting the "Day/Save" parameter to choose whether or not to implement daylight savings time. "Off" or "Comply" are the two available choices.

Exit - This option will take you out of the "Clock" menu and take you back to the main menu bar.

4.12 Utility Menu

The Utility option menu includes the following functions:



Camera Cycle – This timing value is used by the system to cycle the cameras. The processor’s video output will toggle between camera 1 and camera 2 on a dual processor and loop through cameras 1, 2, 3, 4 on a quad processor based on the programmed interval. The timing may be set anywhere from zero to 59 hours 59 minutes 59 seconds. When connected to an AccessNM, or EdgeConnect this function is disabled. This feature is useful when you want to record or remotely view the output of a dual video processor.

Counter – When the counter is on you will see the counts for CSO or count type zones displayed on the screen.

Bin Interval – A Bin Interval needs to be set to tell the system how often the counts should be stored. You can select a bin interval of either: 10 or 20 seconds or 1, 5, 15, 30, or 60 minutes. For example, if you select five minutes, that means that every five minutes count data for all count zones will be time-stamped and binned. The Edge2 processor will store this count information in flash memory.

Bin Last - This function, when turned "On", displays the last count bin data for the count zone selected in the "Bin Zone" parameter. A valid count zone must be specified for the "Bin Zone" parameter in order for this function to work. This feature allows you to display on screen the count zone data for any one of the count zones. The data automatically updates at the top of the Bin Interval. A sample of the data string is shown below:



Count String = Zone Detail Number, Time, Count, Video Status

Bin Zone - This parameter tells the "Bin Last" function, when activated (On), which bin last zone count data to display.

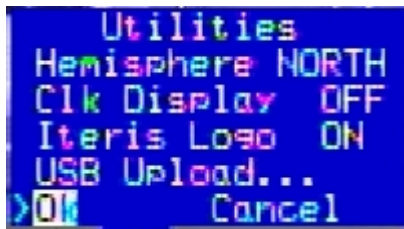
Bin Reset - This function allows the user to reset (clear) the data bin.



CAUTION! All count data will be cleared from memory when this function is turned "On". Unlike most functions, where you must Exit the menu and Quit and Save or select No Save first to activate the function; Bin Reset clears the bin data as soon as you select "On". The parameter will then return to "Off" and the data bin has now been completely cleared.

Unit ID - This function has two uses. First, it displays the current Unit ID of the Edge2 processor unit. Secondly, it allows the user to set the User ID of the Edge2 processor unit to any four alphanumeric character string consisting of numbers or characters. The primary reason to change Unit ID is for multi-drop applications; if you are not using multi-drop, it is strongly recommended that you leave your Unit ID set to factory default which is "0000".

[More](#)



Hemisphere – The internal Real Time Clock is used by the algorithm to estimate when day/night and night/day transitions occur throughout the year. This setting informs the system which hemisphere the system is operating in. This is important as the seasons are reversed from Northern to Southern hemisphere. The default setting is North.

Clock Display – Turns the Real Time Clock display on or off.

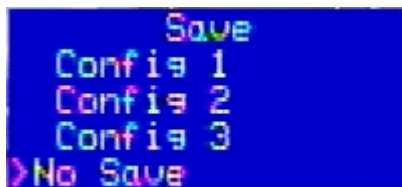
Iteris Logo – This gives you the option to turn the Iteris Logo display on or off. The default is set to on.

USB Upload – It is possible to upgrade the system firmware with a USB thumb drive attached to the USB port. See [Section 8.2: USB Upgrade](#) for detailed instructions on this function.

Exit - This function exits the Utility option menu and returns the user back to the main menu bar.

4.13 Quit Menu

The Quit menu allows you to exit the configuration process once all changes have been made.



Save to:

- Config 1
- Config 2
- Config 3
- No Save

The "Quit" menu item gives the user the option to "Save" up to three different configurations (Config 1 - 3). Simply click on the configuration number that you want to save the current configuration to. You can save the same configuration to multiple memory locations. If you do not want to save your changes, select "No Save" and you will exit the "Quit" menu without saving any information.

Either "Saving to a configuration" or selecting "No Save" will serve to activate functions that require activation like the "Test Channel" (Test / Ch) function found as one of the functions in the "Diagnostics" (Dia) menu.

Configuration Name Customization

The saved "Configuration Name" is also user customizable. The default designation is: "Config 1, Config 2, and Config 3", however, this can easily be changed using the On Screen Keyboard. Configuration names can be up to 10 characters in length.

4.14 VRAS Setup

Iteris provides a PC based application called Vantage Remote Access Software (VRAS) which can be used to perform all the configuration functions described above. This can either be in real time connected to an Edge2 processor or ahead of time saving the configuration to the PC's hard drive for upload to an Edge2 at a later date. Complete details of operation of VRAS can be found in the manual that accompanies the software.

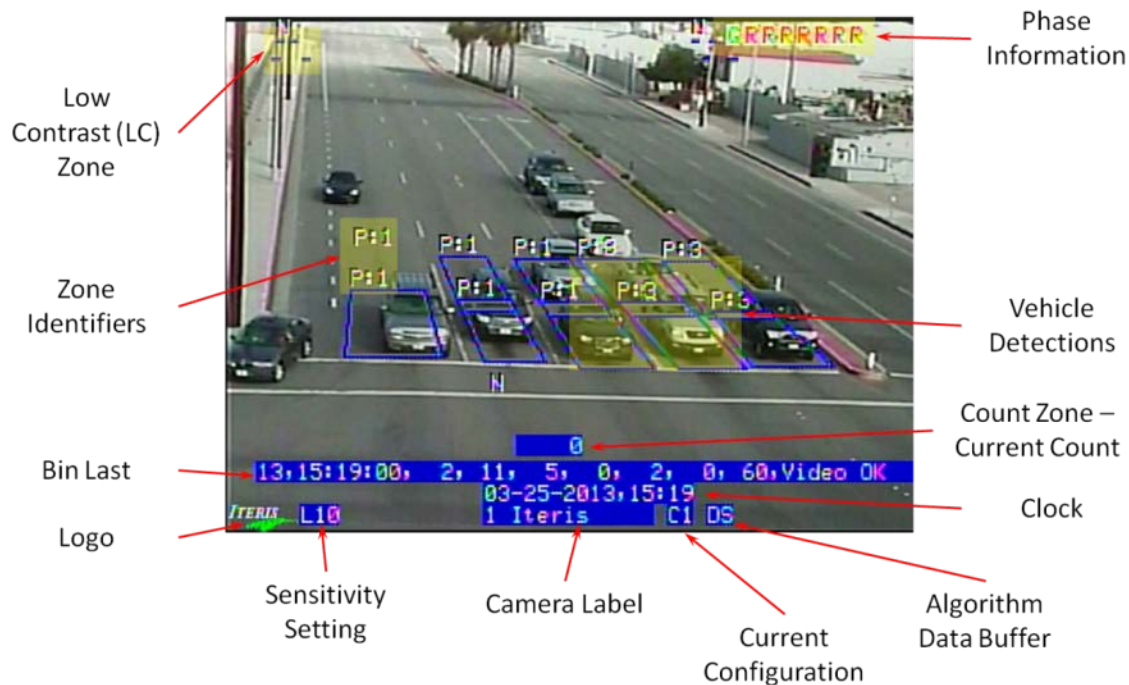
DATA LOG DIAGNOSTIC LOG

The system contains a diagnostic log of all major events that occurred to the Edge2 processor. These events include power resets, constant calls, alarm calls, etc. The log can be accessed through VRAS and can be a useful tool when troubleshooting detection or system performance issues.

5. OPERATION

5.1 Run Time Display

✓ *Note: The following section is somewhat firmware dependent and may change in future firmware versions. Always refer to the current Vantage firmware release notes for the latest information on Vantage firmware features and operation. The following information is a high level look at the Vantage firmware.*



Zones Lighting with Detection

During operation when a vehicle is detected the outline of the zone will light up.

Constant Call

If the algorithm determines that a zone is not detecting it will go into failsafe mode. The output associated with the zone will be turned on and a “@” symbol will be displayed above the zone. The system continues to monitor conditions and if detection quality improves the system will exit this mode.

If the system determines that the whole image is a problem due to percentages from other cameras being in LC or DID all detection outputs will be turned on. The system displays “GCC” on screen to indicate that the system is in constant call due. GCC stands for Global Constant Call. This feature is helpful when camera 1 has constant calls but is not in DID or LC and displays “GCC”. Then the user can deduce that camera 2 is in DID or LC causing constant calls on camera 1.

Phase Information

If Phase Information is enabled the information will be displayed in the top left of the screen. For TS-2 applications Red, Yellow and Green information will be displayed. For other applications only the Green information will be displayed.

Camera Label

The camera label indicates which camera is currently being viewed, along with other important system information.

Camera Label Elements:

1 Camera - This part of the camera label tells the user that we are looking at camera one. "2 Camera" would signify camera two.

C3 - This part of the camera label tells us that configuration three is the current active configuration. "C1" would indicate configuration one, "C2" would indicate configuration two.


Algorithm Data Buffers

The buffers collect specific information about the intersection and allow the Vantage system to operate in a more intelligent manner. Typically, an even greater level of system operational stability is achieved after both buffers have been filled. If power is disrupted to the Edge2 Processor module all the buffers will be reset.

- DS – Day Short, processor in Day time mode and powered up for 0 to 2 days.
- NS – Night Short, processor in Night time mode and powered up for 0 to 2 days.
- D – Day, processor in Day time mode and powered up for more than 2 days.
- N – Night, processor in Night time mode and powered up for more than 2 days.

5.2 Three Stage System Operation

The following information is a high level look at the Vantage Three Stage System. This section is designed to give the user further insight into their Vantage Edge2 processor operation.

 **Note:** *The following section is somewhat firmware dependent and may change in future firmware versions. Always refer to the current Vantage firmware release notes for the latest information on Vantage firmware features and operation.*

System operation is broken down into three stages. Each stage is by zone, different zones can be in different stages depending on the road conditions for the zone. For example, some zones may be experiencing glare or shadows when others are not.

Stage 1 (S1) - This stage indicates that the system is in normal operation. Detection should be occurring normally, contrast and field of view image quality is good.

Stage 2 (S2) - This stage indicates a degradation of contrast and or field of view image quality. These conditions usually accompany a decrease in detection strength (weak detections). These conditions trigger

the algorithm for increased sensitivity to ensure good detection. This increased sensitivity mode is known as "Hypersensitive" mode.

Stage 3 (S3) - This stage indicates a possible challenging detection condition. Rather than take a chance of detecting poorly, the zone(s) have gone to a failsafe or constant call mode. The system will display a '@' above any zone in S3 mode.

5.3 Learn Mode

Learn Mode is the mode that the Vantage Edge2 processor uses while it is learning the zone background and your field of view. During the "Learn Mode" the Edge2 processor places constant calls on the channels associated with the zones that have changed. These zone changes would include: when zones are first created, when zone size is changed, and when zones are physically moved. Learn Mode can also occur on power-up or after power outages. Receiving and loading new configurations also results in learn mode.

Iteris was one of the pioneers of DZR (Dynamic Zone Reconfiguration). This means that when you make a change to a zone, only the channel associated with that individual zone enters into a learn mode.

When a zone is in "Learn Mode", there will be an " * " next to the zone that is learning. The learn time on the Edge2 processors is three minutes.



Note: Notice the zone identifiers in the picture are referenced by "Zone Type" and not "Zone Number". This option is set in the Edge2 Processor "Mode" menu under Mode. CN = Count Zone, PR = Presence Zone, etc. For more information see the section on the Mode Option Menu.

5.4 System Failsafe Modes

The Vantage Edge2 is designed to operate under the challenging conditions that are encountered in the traffic and intersection environment.

However, if failures do occur, or when severe conditions might require it, the Edge2 design incorporates methods to default to a failsafe mode of operation.

Glare Mode

Glare Mode was designed to help in situations where roadway glare, during certain times of the day, may interfere or inhibit the ability to accurately detect vehicles.

"Glare Mode" must be enabled through the "Option" parameter in the "Diagnostic" (Dia) menu. Glare Mode is turned off by default from the factory and must be enabled by the user before it will become active. See the firmware version release notes for specific information on how to enable this feature by setting the correct option number.

When the option is enabled, Glare Mode places a constant call for zones that are saturated by glare. When approximately 75% of a particular zone is covered (saturated) by glare, the output channel associated with that zone will place a constant call to the controller. After a zone is saturated by glare, it takes about three minutes for the processor to generate a constant call condition. It also takes about three minutes to come out of the constant call condition, once the zone is no longer saturated by glare. The zone will revert to normal operation once the glare condition has diminished enough to resume normal operation again.

When the system is in "Glare" mode an indicator is visible in the left portion of the camera label.

GLR 1 Camera C3 S1 DS

Low Contrast Mode

Low Contrast (LC) mode is a failsafe mode that the Edge2 processor will default to during low contrast conditions that could adversely affect the system's ability to adequately detect vehicles. Low Contrast (LC) operates independently of the three stage detection system (S1 - S3). When a camera view is in LC mode, all channels associated with that camera view will place constant vehicle calls. The corners of all the zones will also be illuminated.

Low contrast conditions would include fog and could also include certain contrast limiting conditions like snow and rain. These are just a few of the more common triggers for LC mode.

When an Edge2 processor camera view is in LC mode, there is an indicator of "LC" shown in the camera label.

LC 1 Camera C1 S1

Low Contrast Mode With Multiple Cameras

If one of the cameras, on a two video input Edge2 Processor enters into Low Contrast (LC) mode, the other camera will also enter into a failsafe LC mode and will also place constant calls on all assigned output channels. Realize that the other camera in Failsafe mode will not show "LC" in the camera label.

Other Conditions

Loss of Video - If video and video sync. is lost, the associated camera and all of its assigned zones will place constant vehicle calls.

Loss of Power - If power is lost to the Vantage Edge2 processor unit, it will place constant vehicle calls on all channels.

6. PEDTRAX

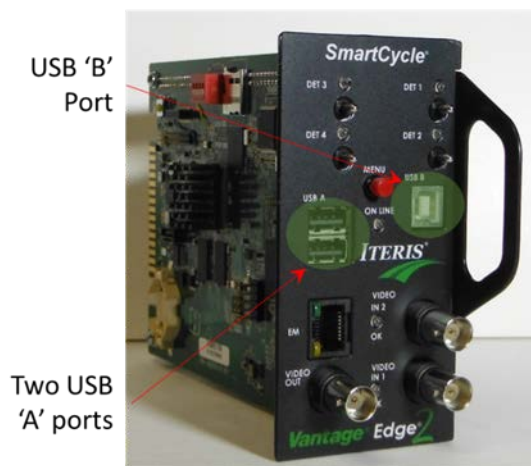
PedTrax provides bi-directional counting and speed tracking of pedestrians within the cross-walk, automatically collecting this information after normal vehicle detection has been implemented. The PedTrax feature is embedded within the Iteris detection algorithms, and there is no need for any additional equipment for this feature to operate. With count and speed data of pedestrians within the crosswalk, combined with the already available vehicle and bicycle counts, agencies now have the data necessary to support enhanced safety initiatives, improve funding applications, and a focused effort on roadway improvements.

6.1 System Setup

Processor Requirements

Hardware

To run PedTrax you must have the latest Vantage Edge hardware platform (06).



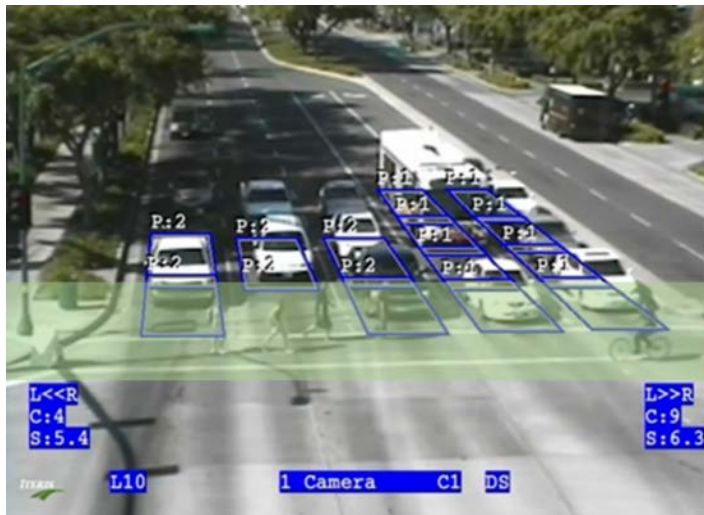
Identifying the 06 Hardware Platform

Firmware

PedTrax is available in firmware version 06.01.20 or later. If you are not running this version of firmware you can get the latest version from the Iteris Resource Center. See [Section 13: Product Support](#) for more information on the Resource Center.

6.2 Processor Configuration

Once the vehicle detection zones are drawn the processor automatically generates the Pedestrian Crossing area based on the detection zones drawn closest to the Stop Bar.



Pedestrian Zone Generated by System based on Detection Zones

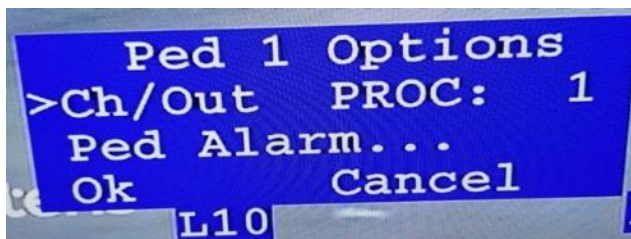
- ✓ *Note: The system expects that detection zones are drawn close to the Stop Bar.*
- ✓ *Note: The system ignores Count and CSO zones in calculating this area if there are no outputs associated with these zones.*

6.3 Pedestrian Output

Pedestrian detected outputs are available in firmware version 06.01.20SP5 and newer. This output will trigger when a pedestrian is in the crosswalk. To program the output go to:

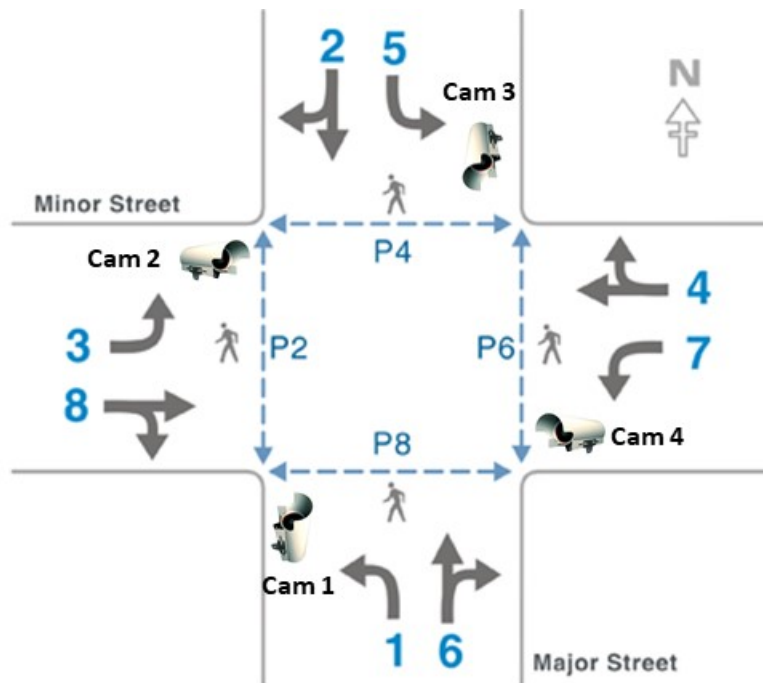
Cam >> Ped Options >> Ch/Out

And select a validate output channel.



6.4 Pedestrian Crossing Against Don't Walk Signal

Pedestrian alarms are available in firmware version 06.01.20SP5 and newer. This alarms will trigger when a pedestrian is in the crosswalk and a conflicting phase is green. The conflicting phases will vary based on the intersection phasing. The diagram below represents a typical 8 vehicle phase, 4 pedestrian phase intersection.



- Camera 1 sees Vehicle phases 2, 5 and Pedestrian phase P4
- Camera 2 sees Vehicle phases 4, 7 and Pedestrian phase P6
- Camera 3 sees Vehicle phases 1, 6 and Pedestrian phase P8
- Camera 4 sees Vehicle phases 3, 8 and Pedestrian phase P2

- For Camera 1, Pedestrian phase P4 conflicts with Vehicles phases 2, 3, 5 and 6.
- For Camera 2, Pedestrian phase P6 conflicts with Vehicles phases 4, 5, 7 and 8.
- For Camera 3, Pedestrian phase P8 conflicts with Vehicles phases 1, 2, 6 and 7.
- For Camera 4, Pedestrian phase P2 conflicts with Vehicles phases 1, 3, 4 and 8.

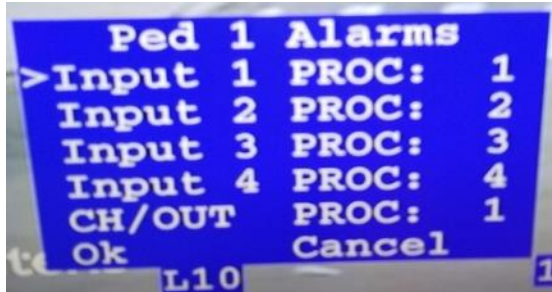
Programming the Ped alarms and conflicting phases

To program the ped alarms and conflicting phases on the processor navigate to:

Cam > Ped Options....> Ped alarm...

Camera 1 Example:

Proc: 4 is the ped alarm channel and TS2:2, TS2:3, TS2:5, TS2:6 are the conflicting phases



6.5 Run Time Operation

On Screen Display



The On Screen Display is based on the current Bin. At the end of the Bin Interval the data is stored in the system and the display is reset.

The On Screen Display may be disabled through the menu.

Go to:

Utl > More... > PedTrax

Use the right mouse button to turn the display On or Off.

7. TROUBLESHOOTING - FAQ

Symptom A: Processor has no video display on monitor.

Is the video in LED on solid?

- Yes – Check the coax flex cable that goes from the processors video out to the monitor. Check the monitors operation. Does the monitor have power? Try a different monitor. If the video cable and the monitor are good then the fault lies with the processor. Send the processor in for repair.
- No – Take the video from the camera and connect it to the monitor.

Is there video now?

- Yes – Check to make sure the video in jumpers are in place on the processor. If this does not fix the problem there is probably a problem with the Edge2 processor and it will need to be sent in for repair.
- No – Bypass the surge protector.

Is there video on the monitor now?

- Yes – The surge suppressor has failed. Replace the surge protection.
- No – Check the coax cable and connectors.

Symptom B: Edge2 Processors' online LED is blinking constantly.

- i. The processors online LED will blink for a couple seconds during startup. This is normal. For a continuous blinking see the steps below.
- ii. Power cycle the processor to see if blinking goes away.
- iii. Check the red dip switch on the top board. All of the switches should be off or open.
- iv. Make sure the reset line of the detector rack is not grounded (pin C).
- v. The menu button maybe stuck in the depressed position.
- vi. If the blinking persists there is a problem with the processor and it needs to be sent in for repair.

Symptom C: Edge2 Processor has an output channel that is locked on.

- i. Check the front panel switches. If the switch is in the down position it will place a constant call. The middle position is normal operation.
- ii. Is there "GLR" (glare) or "LC" (low contrast) in the camera label? Glare or LC can cause a zones' output channel to lock on.
- iii. Reset a zone that is associated with the stuck on channel.
- iv. Delete all of the zones associated with that channel and redraw them.
- v. Is the zone that is stuck on programmed as the LC output channel? If the processor is in LC mode the LC out channel will be on for as long as the processor is in LC mode.
- vi. If none of these suggestions work the processor may have a shorted channel and needs to be sent in for repair.

Symptom D: Edge2 Processor is locked up with constant calls no menu button response.

- i. Unplug the USB mouse. Leave mouse disconnected when not in use.
- ii. Power cycle unit and go to the utilities menu and do a bin reset and log reset.
- iii. Upgrade processor to latest firmware version.
- iv. If these steps fail to remedy the situation the processor maybe bad and needs to be sent in for repair.

Symptom E: Processor has constant calls.

- i. Under the MOD menu is out/ch set for “maxcall”? If it is, set the output channel to “normal”.
- ii. Does the processor have a good video source? If the video in LED is on then the processor is seeing sync from the camera. If the video in LED is off then the video signal is missing or bad and the processor will output constant calls.
- iii. Does 1 or more cameras labels display “LC” or low contrast mode? Then the constant calls are appearing because the processor is in low contrast mode. This is normal behavior if the camera cannot see because of fog. If LC is coming on when it should not, try drawing LC zones over areas of contrast. Try cleaning and focusing the camera lens. If the LC problem persists that camera may need to be sent in for repair. If LC at night time is a problem due to lack of lighting it maybe turned off by setting option 128.
- iv. Does the monitor camera label display “TW” dirt and ice detection? Then the constant calls are appearing because the processor is in DID mode. DID is a fail safe condition caused by dirt and ice disrupting the cameras view. If TW is coming on when it should not, try cleaning and focusing the camera lens. If the TW problem persists that camera may need to be sent in for repair. DID maybe turned off in versions 01.13 and higher by setting option 4.
- v. Does the monitor camera label display “S3” stage 3? Then the constant calls are appearing because the processor is in “S3” stage 3 detection. If the strength of detections degrades enough the processor will go from S1 to S2 to S3. If S3 is coming on when it should not, try cleaning and focusing the camera lens. Try drawing the zones where the vehicles travel. If the S3 problem persists that camera may need to be sent in for repair.
- vi. Does the camera label display “GCC” or global constant call? In an Edge2-2 one camera maybe in LC causing the other camera to constant call.

Symptom F: Extension module has constant calls.

- i. Does the extension module have a dash (-) in its display? If so the extension module needs to be reset to get an address (0,1,2,3...).Make sure cat 5 cable is connected and power cycle the extension module.
- ii. Does the extension have a cat5 cable connected from the processor RJ45 out to the extensions modules RJ45 input port? Connect the cat5 cable. Push in the cat5 cable until it clicks.
- iii. The cat5 cable maybe bad. Try another cat5 cable between the processor and the extension module.
- iv. Check to make sure the processor does not have jumpers or dip switches set for back plane communications. Remove jumpers 24-31 on older Edge2’s and all 4 dip switches on S2 BP_EM should be OFF on the newer 2 USB Edge2’s.
- v. Are the test switches in the down position? If yes then move them to middle position.
- vi. If these steps fail to remedy the situation the extension module maybe bad and needs to be sent in for repair.

Symptom G: No VRAS or VSU RS232 communication with processor.

- i. Make sure you are using the correct serial file transfer cable Belkin part # F3B207-06. The pin out of this cable is in the Edge2 manual. Try a different serial file transfer cable.
- ii. Make sure you know what com ports exist in your computer. If you are not sure what com port number(s) your computer has go to “My computer” right click and select “properties”. Under the system properties select the “hardware” tab. Under the hardware tab, select “device manager”. Click on the + sign next to Ports. There should be a list of all the serial ports here with their assigned com port numbers.
- iii. Make sure the program you are using VSU or VRAS has the same communication parameters as the processor does. The communication parameters for the processor are found under the MOD menu. VSU needs 38400 baud, parity none and flow control hardware to connect.
- iv. Has someone changed the Unit ID from the factory default 0000? VRAS will not connect if the Unit ID of the processor is different than the Unit Id of the VRAS address book. You can verify or program the unit ID in the Utility menu of the processor.
- v. The computer may have a bad com port. Try to connect with a different computer.
- vi. The USB to serial port adapter maybe bad or not compatible. Try another USB to serial converter.
- vii. If these steps fail to remedy the situation the processor may have a bad com port and needs to be sent in for repair.

Symptom H: Menu comes up but no mouse movement.

- i. Make sure the mouse connector is properly seated into the processor. Unplug mouse and plug it in again.
- ii. On the classic Edge, Plus, One and PS2 Edge2 processors only the logitech mouse that shipped with the processor will work.
- iii. On the Edge2's with USB ports most Microsoft and Logitech pointing devices will work, but Belkins will not work.
- iv. Try swapping the mouse out with a spare.
- v. Disconnect the mouse. Power cycle the processor. Reconnect the mouse.
- vi. If these steps fail to remedy the situation the processor maybe bad and needs to be sent in for repair.

Symptom I: Edge2 processor places constant calls in TS2 rack.

- i. Check the channel status jumpers or dip switch settings on the Edge2 processor. For TS2 operation all of the channel status jumpers need to be installed (JP4,JP5,JP6 and JP7). For the 2 USB Edge2's the red dip switch S6 need to be ON or closed.
- ii. If this steps fails to remedy the situation the processor maybe bad and needs to be sent in for repair.

Symptom J: Edge2 places constant calls on unused channels.

- i. The processor may place constant calls on all channels for 3 minutes when first powered up until a quit and save is done.
- ii. Check to make sure under the MOD menu that “inactive channel” is set to “no call”. If inactive channel is set to call then all unused channels will be on.
- iii. If these step fail to remedy the situation the processor maybe bad and needs to be sent in for repair.

Symptom K: One channel constantly blinks on and off every second.

- i. Make sure the Test/Ch under the DIA menu is programmed for none. If a test/Ch is programmed it will turn on for 1 second and the turn off for 1 second continuously. The test channel will time out after 1 hour.

Symptom L: Plus placing constant calls on the TS2 controller.

- i. Make sure SDLC cable is firmly attached to the Plus and the controller.
- ii. Make sure the correct SDLC address is selected either 08:09 or 10:11. The SDLC address is programmed in the MOD menu.
- iii. Remove the back panel of the Plus and cut the green ground wire.
- iv. During a VRAS snapshot the Plus places constant calls to the controller.
- v. Try a different SDLC cable.
- vi. If these step fail to remedy the situation the processor maybe bad and needs to be sent in for repair.

Symptom M: The overlay shows the corners of the zones blinking on and off but the processors outputs do not match.

- i. Make sure you are not using the same output channel on 2 or more camera views. Each output channel should be used for only 1 camera view. Having the same channel on multiple cameras can cause erratic channel output behavior.
- ii. Make sure that the Glare out, LC out and Video Lock channels are not assigned to the same channels being used by zones.

Symptom N: The video on the monitor looks too bright.

- i. Adjust the brightness and contrast controls on the monitor.
- ii. Check the video termination jumpers or dip switches on the processor. If the processor video inputs are set to HiZ then the picture will look bright.
- iii. If these steps fail to remedy the situation the camera maybe bad and needs to be sent in for repair.

Symptom O: The video on the monitor looks dark.

- i. Adjust the brightness and contrast controls on the monitor.
- ii. Check the BNC connectors at both ends of the coax cable. A poor connection can result in high resistance and a dark picture.
- iii. Check the video termination jumpers or dip switches on the processor. If the video from the camera is teed off to multiple devices, then the video signal will be degraded.
- iv. If these steps fail to remedy the situation the camera maybe bad and needs to be sent in for repair.

Symptom P: When I connect 1 video I get multiple video ok LED's coming on.

- i. Check the video termination jumpers or dip switches. If the processor video inputs are set to HiZ then video may bleed over to adjacent channels.

Symptom Q: I cannot zoom and focus my RZ4C camera with the LAM.

- i. The RZ4 color cameras require the new LAM's for field of view adjustments. The new LAM is backwardly compatible with the RZ3 black and white cameras.
- ii. For proper operation of the new LAM, make sure to connect the LAM to the camera first and then connect power to the LAM second.
- iii. With the older LAM and the RZ3 and RZ4 B/W cameras make sure the 9 volt battery is good inside of the LAM.
- iv. In extremely cold weather apply power to the camera and let it warm up for a while before using the LAM to adjust the field of view.
- v. Connect the LAM to a different camera and see if you can zoom and focus.
- vi. If these steps fail to remedy the situation the LAM maybe bad and needs to be sent in for repair.

Symptom R: After a power cycle my processor the time resets to 01-01-2000 and bin data is lost.

- i. The battery is dead or missing and needs to be replaced. The part number for the battery is CR2032.

Symptom S: I can connect to my processor with VSU but it cannot identify my processors firmware version.

- i. Reinstall the newest VSU from the dealer web page for your particular processor. If you are installing multiple VSU's do the oldest first and the newest last. If you follow this procedure you will have the most up to date history file.
- ii. Each time you run VSU it installs firmware for a particular processor. It is important to pick the correct VSU version for you processor.
 - a. 03.01.13 is used on Edge2 with 1 USB or PS2 mouse port.
 - b. 04.01.13 is used on the Edge2 processor with 2 USB ports.
 - c. 05.01.13 is used on the Edge2-4 processor.


Some people run into problems when they install the VSU for 03.01.13 and they try to connect to a 04.01.xx processor.

Symptom T: The green inputs on my Edge2 with 2 USBs do not work.

- i. Check the position of the DELAY/EXTEND dip switches. If the switches are in the up position then the green inputs come in on pins 1, 2, 3 and 10. If they are in the default down position they come in on pins D, E, J, and K.

Symptom U: Bike Missed Calls

Bike Night Sensitivity – Because of lighting conditions bicycles are harder to detect at night. Turning this attribute on may help with missed calls in poor lighting conditions as it increases the sensitivity of the zone. The proper solution is to improve the lighting at the intersection.

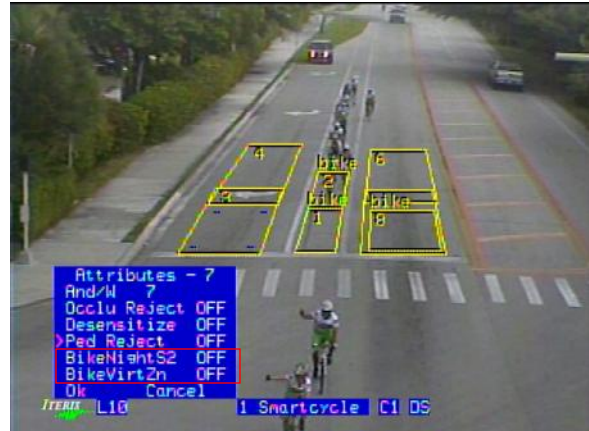
 **Note:** This attribute only works on zones at the stop bar. If you have a zone away from the stop bar, then turning on this attribute will have no effect on performance.

Bike Virtual Zone – If the camera is not mounted directly above the bike lane the Bike zone drawn may not be rectangular but a parallelogram. Due to the position of the camera, the body of the bicycle rider may appear out of the zone, and the call may be missed. This attribute will extend the zone in an attempt to capture the rider. See figure below.



Bike Zones drawn in red. The bicyclist is only halfway in the zone due to camera positioning.

Virtual Bike Zone drawn in blue. Extends automatically by the system to capture the bicyclist.



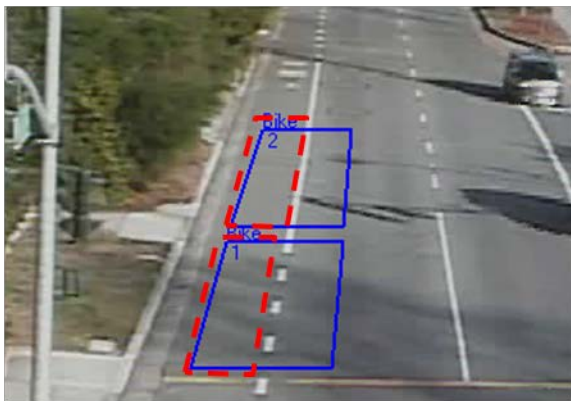
On Screen Menu displaying Bike Zone Attributes

Bike Virtual Zone

Note: The two attributes for Bike zones, both are set to off by default.

Symptom V: Bike False Calls

There may be occasions when false calls occur in the bike zone at the stop bar closest to the sidewalk caused by right turn vehicles. To help overcome this, extend the bike zone half way into the next vehicle lane. Making this adjustment will help the algorithm determine if an object is a vehicle or a bicycle. See figure below.



The red dotted rectangle represents a typical bike zone deployment. The blue rectangle represents the corrected measure taken.

Extending Bike Zones into the Vehicle Lanes to overcome false calls

Symptom W: No Spare Inputs on Controller for Bicycle Green Min Time

If the controller you are interfacing to does not have extra inputs for extending the minimum green time you can use the following method.

- i. Program a spare phase in the controller with the bike minimum green timing.
- ii. Program the Bike Zone to output to this phase.
- iii. Overlap the new phase with the existing phase.
- iv. When a vehicle only is present the standard minimum green time will activate through the normal phase.
- v. When a bicycle is present the extended minimum green time will activate through the additional phase.

Symptom X: Motorcycles and Multiple Bikes

Due to the size and shape of motorcycles the system may occasionally find it difficult to determine if the object is a bicycle or a car and may classify it as a bicycle.

If multiple bicycles appear in a bike zone at the same time the system may occasionally classify them as a vehicle and not produce a detection output.

8. Vantage Software Upgrade (VSU)

8.1 PC Upgrades for 04/05 Hardware Platform

The Vantage Software Upgrade Program upgrades the firmware on Vantage video detection devices. The Vantage Software Upgrade Program together with Vantage firmware files allows the end user to upgrade processors. This document describes how to install and use the Vantage Software Upgrade Program.

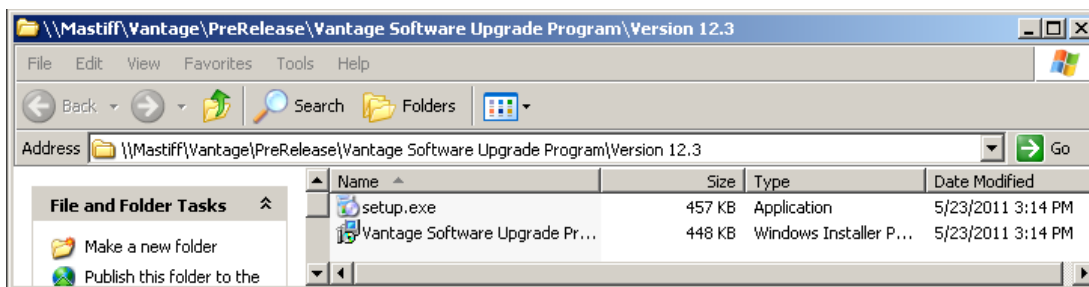
Minimum PC Requirements

- Pentium 400 MHz or better, 512 MB of RAM, mouse, RS232 port and 10 Megs of hard disk space.
- The VSU program needs Microsoft Net Framework 3.5 or higher to be installed prior to VSU being installed.
- The VSU program is compatible with Windows XP, Vista and Windows 7.

Vantage Software Upgrade Program Installation Procedure

Before upgrading firmware in the Edge2 processor the Vantage Software Upgrade Tool must be installed on your PC.

- Download the VSU program file from the Iteris Resource web page.
- Unzip the file.
- Double click on “setup.exe” to install the 12.3 VSU base program on the computer.
- Follow the onscreen prompts to complete the installation of the software.

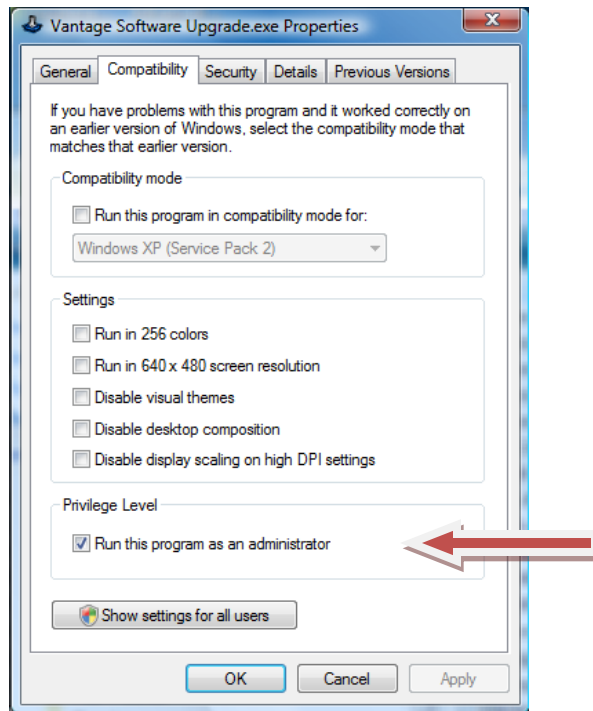


Vantage Software Upgrade Program 12.3 installation files

Vantage Software Upgrade Program Procedure

Note: When using Windows Vista or 7 the Vantage Software Upgrade Program must be run in the Administrator mode.

To run program as an administrator right click the VSU icon and select properties. Under the Privilege Level check the “Run this program as an administrator” checkbox. If the Vantage Software Base Program is not run in the administrator mode then the configuration files will not be saved. The configuration files will be erased.

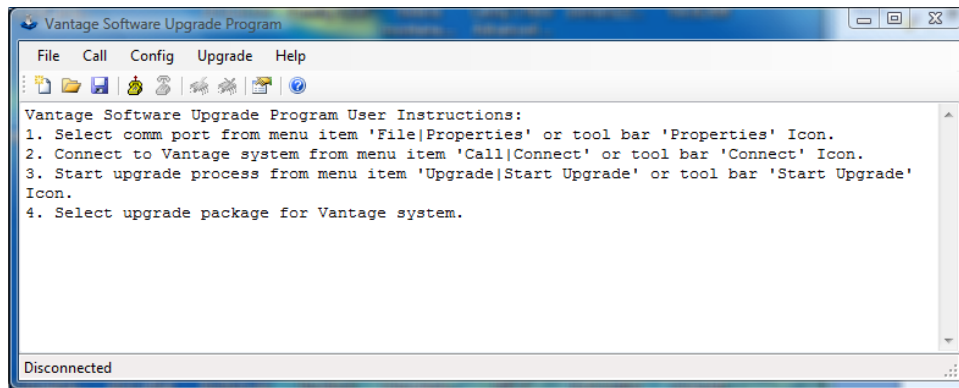


Setting up Administrator Privileges


- a. Launch the Vantage Software Upgrade Program. The Upgrade program is found in the C:\Program Files\Iteris, Inc\Vantage Software Upgrade Program directory. The program will display a splash screen for a few seconds and then show the beginning form.

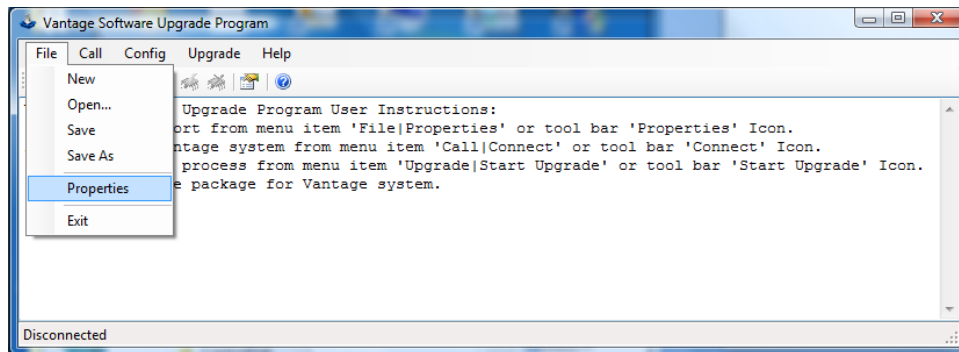


Vantage Software Upgrade Program Splash Screen

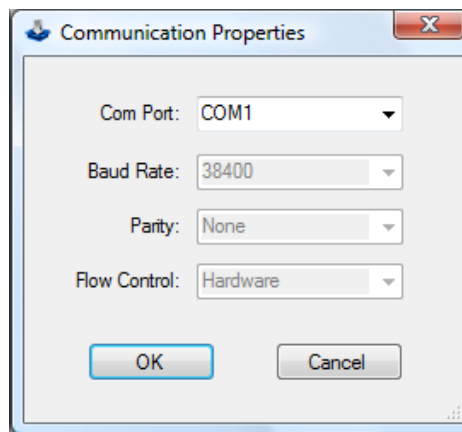



Vantage Software Upgrade Program beginning form

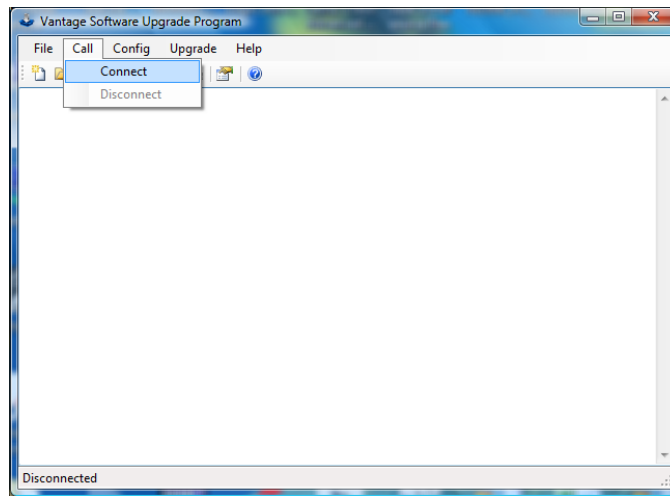
- b. Setup comm. port parameters. Under the “file” menu select “properties” or click on the  icon.




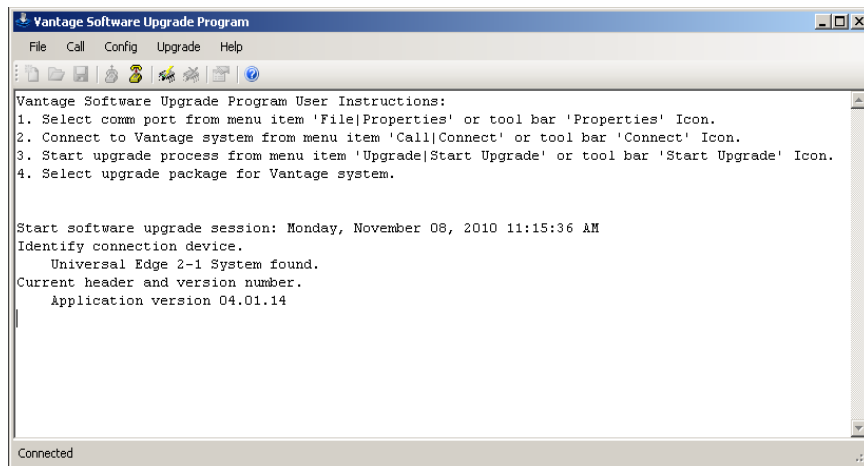
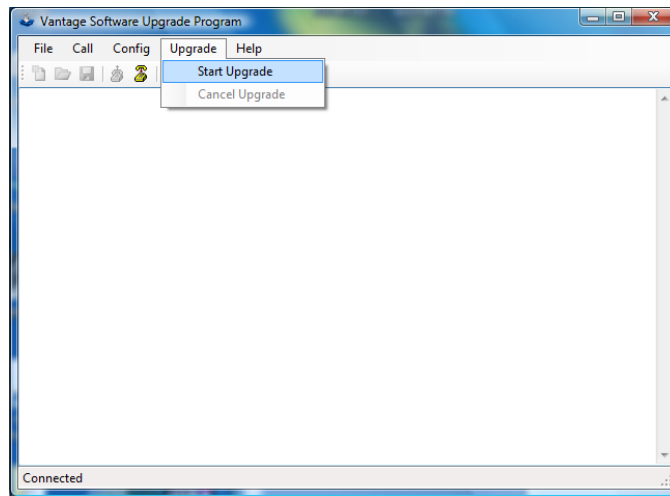
Communication Properties



- c. Select the serial communications port you wish to use and click on “OK”.
- d. Connect serial file transfer cable (null modem cable) from the computers DB9 RS232 port to the Vantage processor’s DB9 RS232 port. Belkin sells this cable and the part number is F3B207-10.
- e. Make sure that the target Vantage processor is set to 38400 baud, hardware flow control and parity none. This information is under the “Mod” menu in the processor.
- f. Under the “Call” menu select “Connect” or click on the  icon.



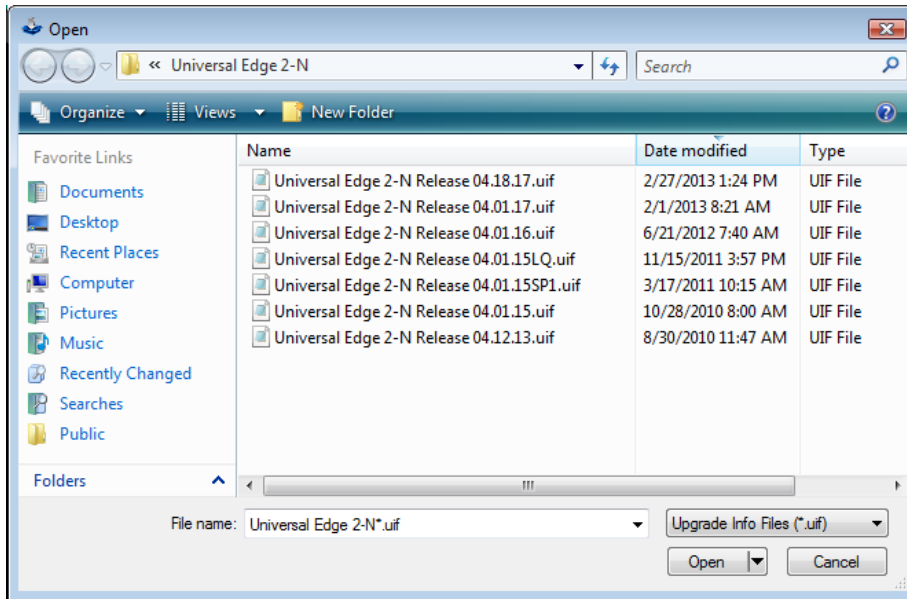
g. To start the upgrade, click on “Upgrade” and then “Start Upgrade” or click the  icon.



VSU process is started and processor is identified. Edge2-1 processor running 04.01.14.

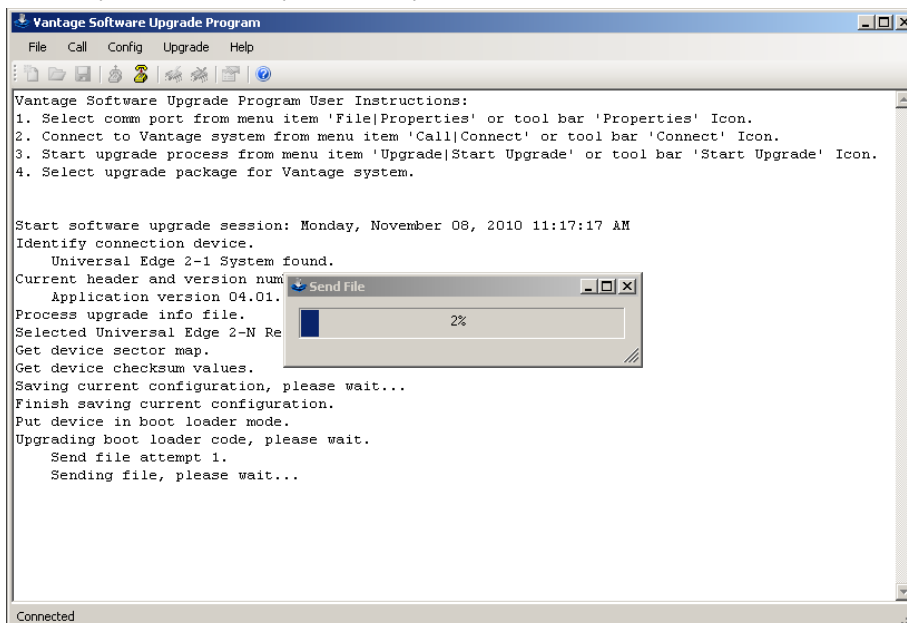
h. Select a firmware file for upgrade. Firmware choices for upgrade are listed below. Select a file and click on “Open”.

✔ **Note:** If no firmware choices exist at this point, firmware files must be installed.



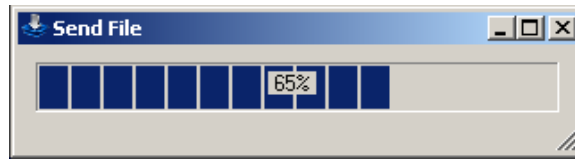
Firmware Upgrade Choices

- i. Now the VSU process begins. The VSU program automatically saves the current configuration to a file named “VSUUpgrade.vcf”. This file is located in the VSU directory “C:\Program Files\Iteris, Inc\Vantage Software Upgrade Program\”. Vantage Software Upgrade Program begins to send a file to the processor. This process may take several minutes.

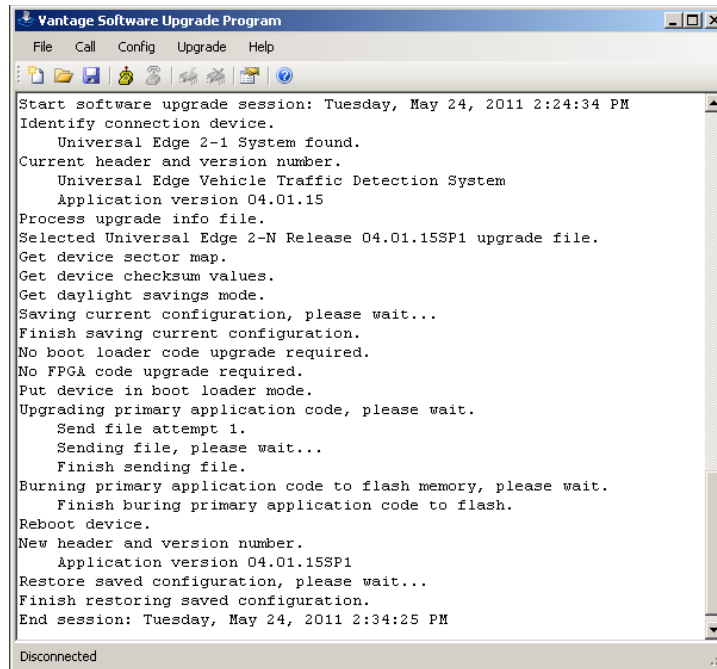


Vantage Software Upgrade progress bar

- j. The progress bar shows what percentage of the file has been sent.



- k. You may see one, two or three progress bars appear during the VSU process. The firmware on the Edge2 processor has three parts to it, boot loader, FPGA and application. Depending on what version of firmware you start with you may need all three areas to be upgraded. After the files are sent they are burned to flash.

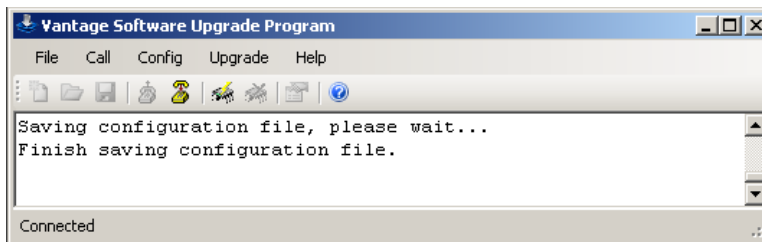


Finished Upgrade session

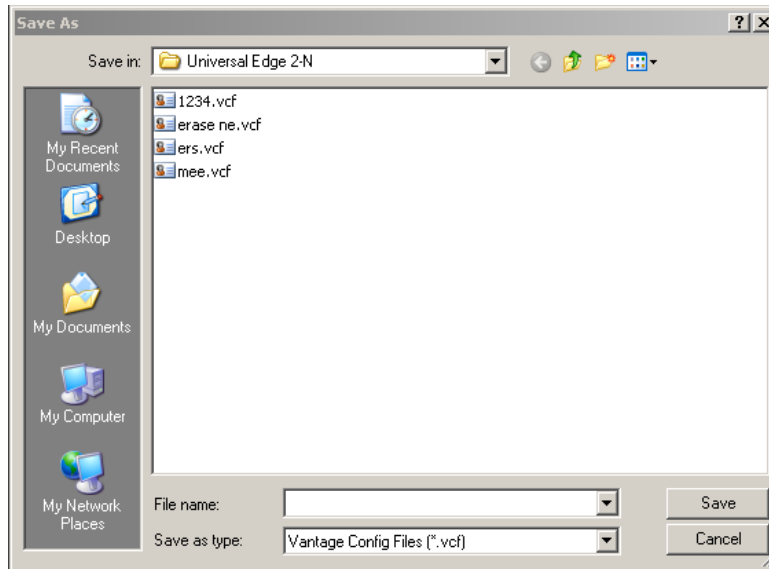
- l. After the upgrade the Vantage Software Upgrade Program automatically restores your original configuration. This completes the Vantage Software Upgrade process.

Sending and saving configuration files

Under the config menu there are two choices “send config” or “save config”. To save a configuration select “save config”. Choose a name and click on “save”. The config file is stored in the “C:\program files\Iteris Inc\Vantage software upgrade program” directory. These saved configuration files are compatible with VRAS.



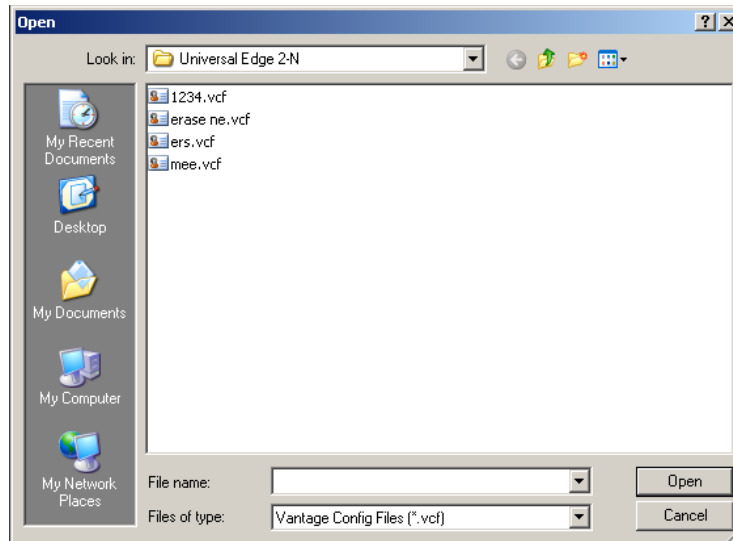
Save config message



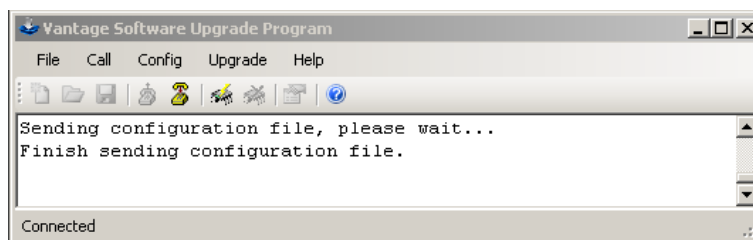
Save Config dialog box

To send a config file to the processor:

Under the “Config” menu choose “Send config”. Choose a file and click on “Open”.



Send File Dialog box



Sending config message

Some Helpful Software Upgrade Tips

Always make sure you are using the correct file transfer cable as described earlier in this section. If the wrong cable is used, you will not be able to connect to the Edge2 processor and transfer data effectively.

Make sure the correct comm. settings are set in the Edge2 Processor module before attempting to upgrade firmware using the VSU program. The Edge2 Processor comm settings under the "Mode" menu should be:

| | |
|----------|--------|
| Baud | 38400 |
| Parity | NONE |
| FlowCtrl | HRDWRE |

It is a good habit to save your zone configuration on your computer before upgrading firmware, so if something should happen you can easily restore the original zone configuration.

8.2 USB Upgrades for Hardware Version 06

From time to time Iteris will provide firmware upgrades. These can be got from the Iteris Resource Center or your local Iteris Representative. The upgrade file will be labeled similar to:

'06.01.18SP1.tar.gz'

Note: This file needs to be placed in a folder on the thumb drive.

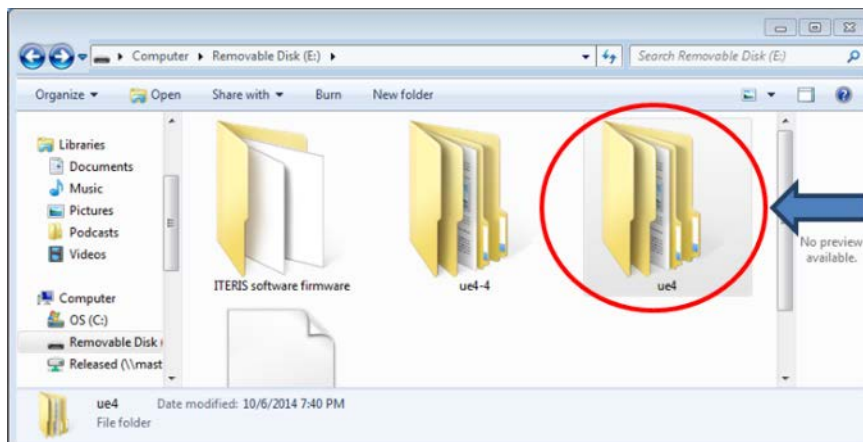
Minimum PC Requirements

- Iteris approved USB thumb drive.
- Pentium 400 MHz or better, 512 MB of RAM, mouse, RS232 port and 10 Megs of hard disk space.
-

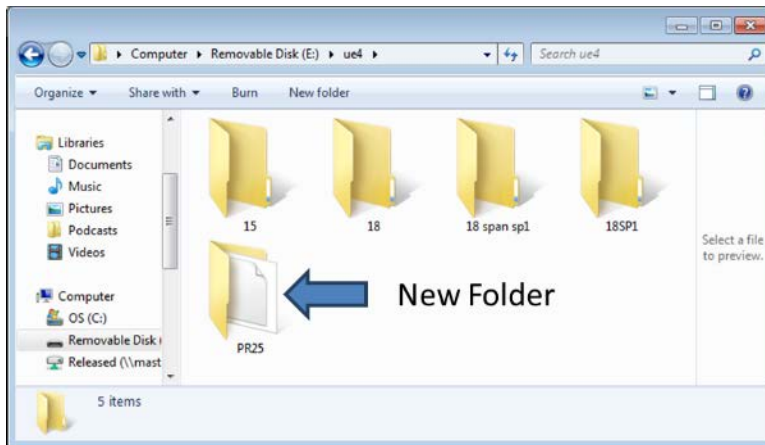
Vantage Software Upgrade Program Installation Procedure

Iteris will provide you with an upgrade file. It will be named similar to "er06.01.18SP1.tar.gz.". This file is placed in a folder named "PR25" and that folder is placed in the "ue4" folder.

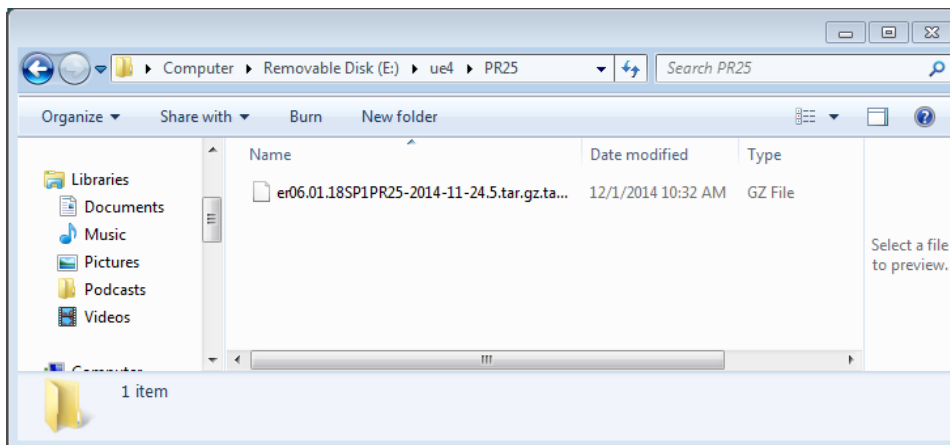
Root directory of the USB thumb drive



- a. Open the “ue4” folder and create a new folder inside called “PR25”. Note: The original Edge2 folders can coexist with the Edge2 upgrade folders.

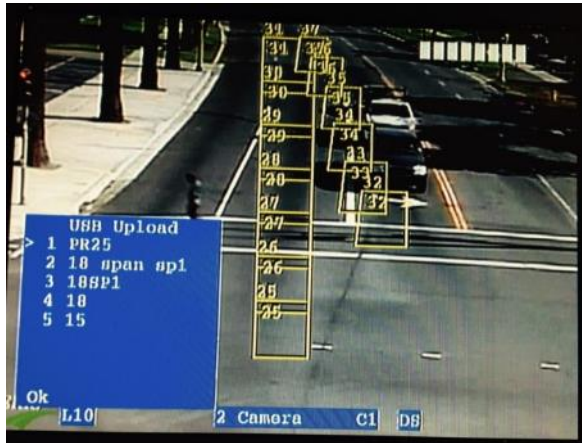


- b. Move the upgrade file (****.tar.gz) into the PR25 folder.



- c. USB slot on the Edge replacement. It does not matter what USB slot upper or lower you place the mouse or thumb drive, it will work both ways.
- d. Press the menu button to bring up the menu. Select “Utl” > “more” > “USB upload”. Select PR25.

USB Upload Menu



- e. Edge will respond with Upload PR25 software package? Select Yes.

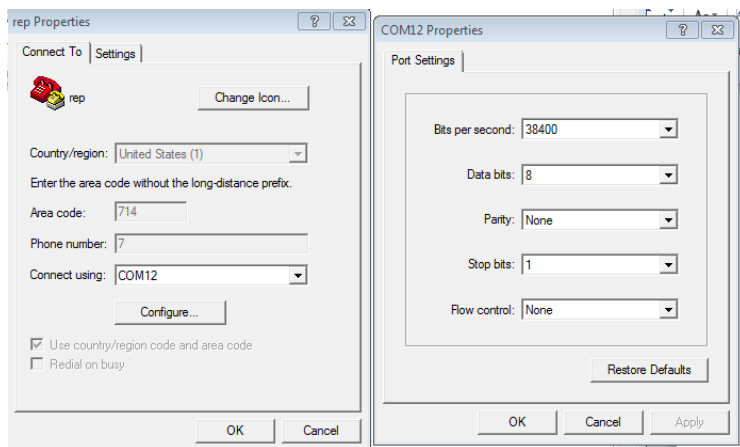
Upload Message



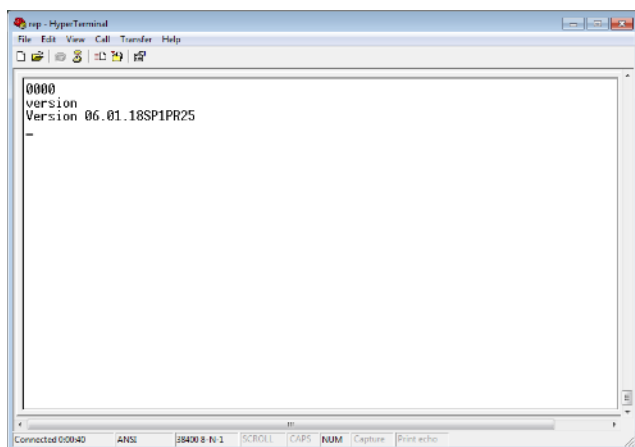
The processor will reboot almost immediately. Once the processor restarts the new version will be running.

The version of the Edge 06 platform can be checked with HyperTerminal.

HyperTerminal Communication Settings

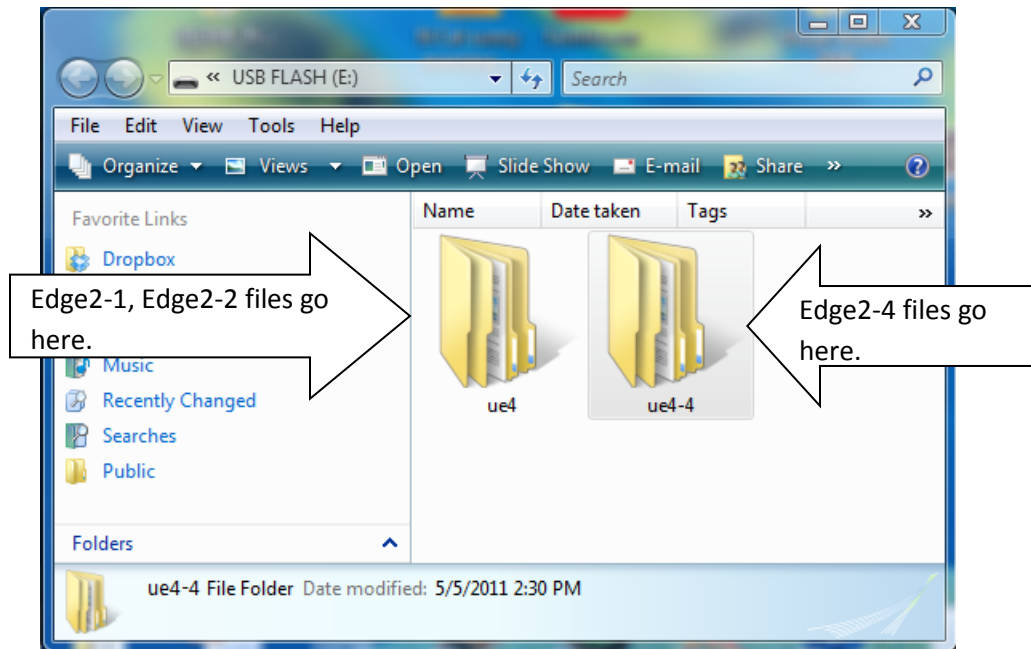


Edge2 Processor Upgrade Version



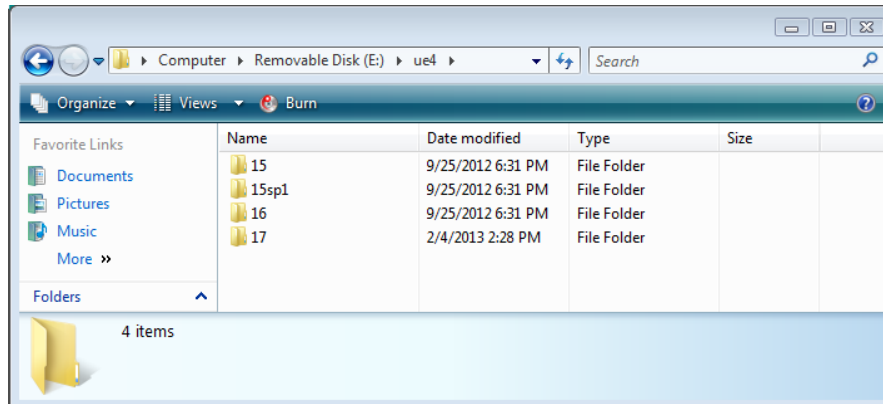
8.3 USB Upgrades for Hardware Version 04/05

Whenever a new release for the Edge processors comes out Iteris releases USB files required for the upgrade. These USB files are different than the Vantage Software Upgrade Program files. On the USB drive there should be two directories ue4 and ue4-4. The ue4 directory contains files for the Edge2 single and dual processors upgrade. The ue4-4 directory contains upgrade files for the Quad processor upgrade. It is important to put the proper upgrade files in the proper directories. 04.01.xx files go into the ue4 folder and 05.01.xx files go into the ue4-4 folder.



USB Flash Drive Directory

Inside of each directory are the firmware versions.



Contents of ue4 Directory

Procedure for Upgrading Processors with USB flash Drive

- a. **Connect equipment to Edge processor for upload**
 - Use a BNC patch cable to attach a monitor to the VIDEO OUT port of the Edge being upgraded.
 - Connect the USB hub to the USB A port on the front of the Edge being upgraded.
 - Connect the USB mouse to a port on the USB hub.
 - Connect the Iteris USB drive to a port on the USB hub.
 - Disconnect the Edge from an Access, eAccess, or EdgeConnect if attached to one.

- b. **Select firmware version and begin upload**
 - Press and hold the Menu button to enter the menus on the Edge.
 - Navigate to the Utilities (Utl) menu. Click on "More.....".

- Select USB Upload.
- Select the firmware version to upload. (15, 15SP1, 16, 17,)
- On the page that comes up, verify that you selected the proper upload version.
- Select Yes.
- When the Edge begins the upload process, “Loading xx.xx.xx” and “Please wait” will be displayed and the mouse will be disabled.
- During the upload process the video may flash several times and the system may reboot twice. The Online LED will flash during the upload process.
- The upload process will take between 2-5 minutes depending on how large your configuration file is.
- When the processor reboots, the splash screen shows new firmware version, the Online LED is on solid, and the overlay text is drawn on the bottom of the screen. When the configuration is restored, the upload process is complete. You should see zones in learn mode.

c. Verify correct version is installed

- Press and hold the Menu button to enter the menus on the Edge.
- Navigate to the Mode (Mod) menu.
- Verify the new firmware version.

9. MAINTENANCE

The Vantage Video Detection System, once correctly installed, requires a minimal amount of maintenance.

Camera Cleaning

Because Vantage video detection is a machine vision based system, one of the big operational concerns is keeping the front camera glass reasonably clean. A regular maintenance program should be implemented to ensure the front camera glass is kept free from dirt and debris. The camera housing glass should be cleaned at least once a year, or more frequently if required, especially under severe environmental conditions. Dirty camera glass is one of the leading contributors to decreased Vantage system performance. The use of a soft cotton cloth (non-abrasive) and water is the recommended method for camera glass cleaning. Avoid leaving streaks on the glass. Avoid anything that might scratch the glass, cloud the glass, or leave an undesirable residue.

Connector and Cable Inspection

Periodically, it is wise to check camera power and video connections. Look for connector corrosion or moisture damage. Replace any defective connectors. Cabinet power and video cable and connections can also be checked for excessive wear or other defects. Repair or replace the defective cable or connectors as needed.

Firmware Upgrades

Approximately once a year, Iteris releases new firmware upgrades for its Vantage products. By using a program called Vantage Software Upgrade (VSU) you can update to the latest firmware into your Vantage product to add new features and the latest performance enhancements. See the section on "Vantage Software Upgrade" (VSU) in this manual for more detailed information.

10. TECHNICAL INFORMATION

Belden Coaxial Cable

| Description | Part No. | UL NEC/ C(UL) CEC Type | Standard Lengths | | Standard Unit Weight | | Conductor (stranding) Diameter Nom. DCR | Nominal Core OD | | Shielding Materials Nom. DCR | Nominal OD | | Nom. Imp. (Ω) | Nom. Vel. of Prop. | Nominal Capacitance | | Nominal Attenuation | | |
|--|----------|------------------------|------------------|-------|----------------------|------|---|-----------------|------|------------------------------|------------|------|---------------|--------------------|---------------------|------|---------------------|------------|---------|
| | | | Ft. | m | Lbs. | kg | | Inch | mm | | Inch | mm | | | pF/Ft. | pF/m | MHz | dB/100 Ft. | dB/100m |
| RG-59/U Type • 20 AWG Solid .031 Bare Copper Conductor • Tinned Copper/Bare Copper Double Braid Shield (98% Coverage) | | | | | | | | | | | | | | | | | | | |
| Polyethylene Insulation • Polyethylene Jacket (Available in Red, Yellow, Green, Light Blue, White, Orange or Black) | | | | | | | | | | | | | | | | | | | |
| 80°C | 8281 | — | 500 [▲] | 152.4 | 37.5 | 17.0 | 20 AWG (solid) | .198 | 5.03 | TC Double Braid | .305 | 7.75 | 75 | 66% | 21.0 | 68.9 | 1 | .3 | 1.0 |
| | | | 1000 | 304.8 | 74.0 | 33.6 | .031 | | | 98% Shield | | | | | | | 3.6 | .5 | 1.6 |
| | | | | | | | BC | | | Coverage | | | | | | | 10.0 | .8 | 2.6 |
| | | | | | | | 9.9W/M | | | 1.1W/M | | | | | | | 71.5 | 2.1 | 6.9 |
| | | | | | | | 32.5W/km | | | 3.6W/km | | | | | | | 135 | 3.0 | 9.8 |
| | | | | | | | | | | | | | | | | | 270 | 4.3 | 14.1 |
| | | | | | | | | | | | | | | | | | 360 | 5.1 | 16.7 |
| | | | | | | | | | | | | | | | | | 540 | 6.3 | 20.7 |
| | | | | | | | | | | | | | | | | | 720 | 7.4 | 24.3 |
| | | | | | | | | | | | | | | | | | 750 | 7.6 | 24.9 |
| | | | | | | | | | | | | | | | | | 1000 | 9.2 | 30.2 |

▲500 ft. put-up not available in White.
Max operating voltage — Non UL 2900V RMS



Extension Module Cable Specification

EIA 568B, 4 Pair, RJ-45, (Ethernet) Network Patch Cable

Cable:

4 Pairs, 24 AWG, stranded, unshielded twisted pairs, 568A category 5E. UL/ETL, Verified ANSI/TIA/EIA.

Plugs:

Molded Type: 8p8c short body, snag free type. Assembled Type: 8p8c long body, 50u gold plated.

Wiring Scheme:

EIA/TIA 568B,(AT&T 258A)

Note: "Straight Through" NOT "Cross Over" type.

Note: "The Edge2 modules use a standard EIA 568A CAT 5E cable to connect the Extension module or Processor module with other modules.

EDCO Surge Protection

The Edco CX06-M, Surge Protective Device (SPD) implements three-stage hybrid technology. The SPD addresses over-voltage transients with a primary Gas Discharge Tube (GDT), and secondary Silicon Avalanche Diode (SAD) component. Over-current protection, e.g. sneak and fault currents, are mitigated with solid-state resettable fuses — PTCs.

The Edco CX06-M SPDs are designed in accordance with NFPA 780 (2004 edition) requirements, with up to 20 kA of surge current capability.



General Technical Specification

| | |
|------------------------|---|
| Operating Voltage: | 5 VDC |
| Clamping Voltage: | 6 VDC |
| Operating Current: | 0.15 A |
| Peak Surge Current: | 20 kA (8 x 20 μs) |
| Frequency Range: | 0 to 20 MHz |
| Insertion Loss: | < 0.1 dB at 20 MHz |
| Response Time: | >.5ns |
| SPD Technology: | GDT, SAD, w/Series PTC |
| Connection Type: | BNC, 50/75 Ohm |
| Operating Temperature: | -40°C to +85°C -40°F to +185°F |
| Dimensions (H x W L): | 1.5" x 1" x 3.25" 38mm x 25mm x 83mm |
| Weight: | 2.3 oz .065 kg |
| Certifications: | UL 497B Listed |

Output Channel Assignments



PROC: 1 = Processor Channel 1
 PROC: 2 = Processor Channel 2
 PROC: 3 = Processor Channel 3
 PROC: 4 = Processor Channel 4

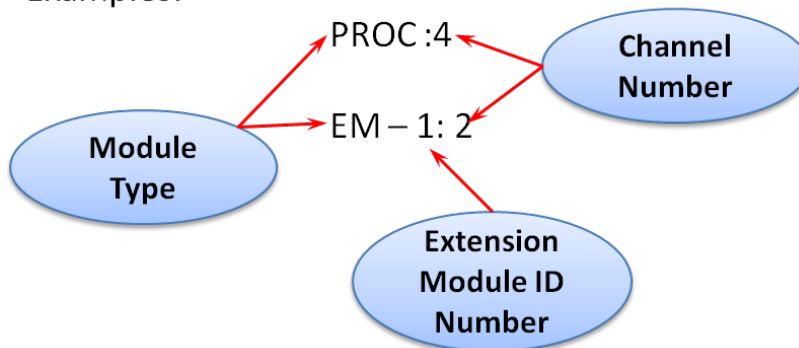


EM-x: 1 = Extension Module x, Channel 1
 EM-x: 2 = Extension Module x, Channel 2

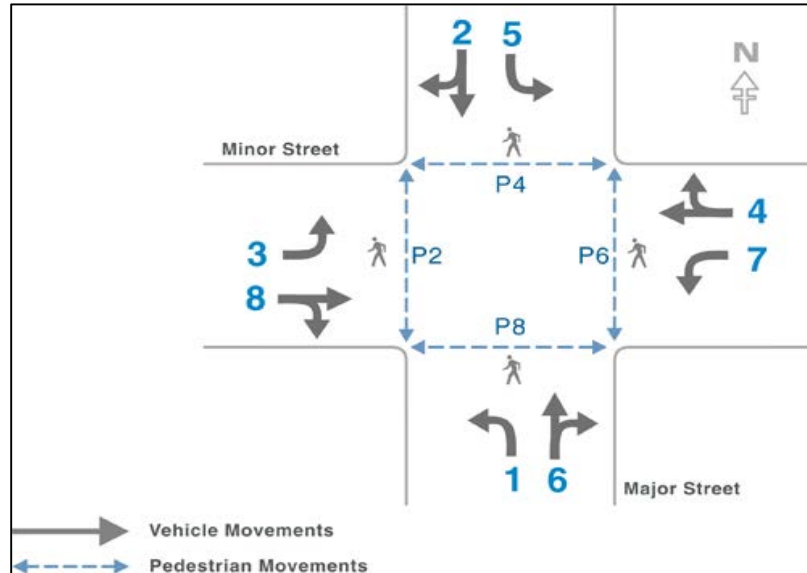


EM-y: 1 = Extension Module y, Channel 1
 EM-y: 2 = Extension Module y, Channel 2
 EM-y: 3 = Extension Module y, Channel 3
 EM-y: 4 = Extension Module y, Channel 4

Examples:

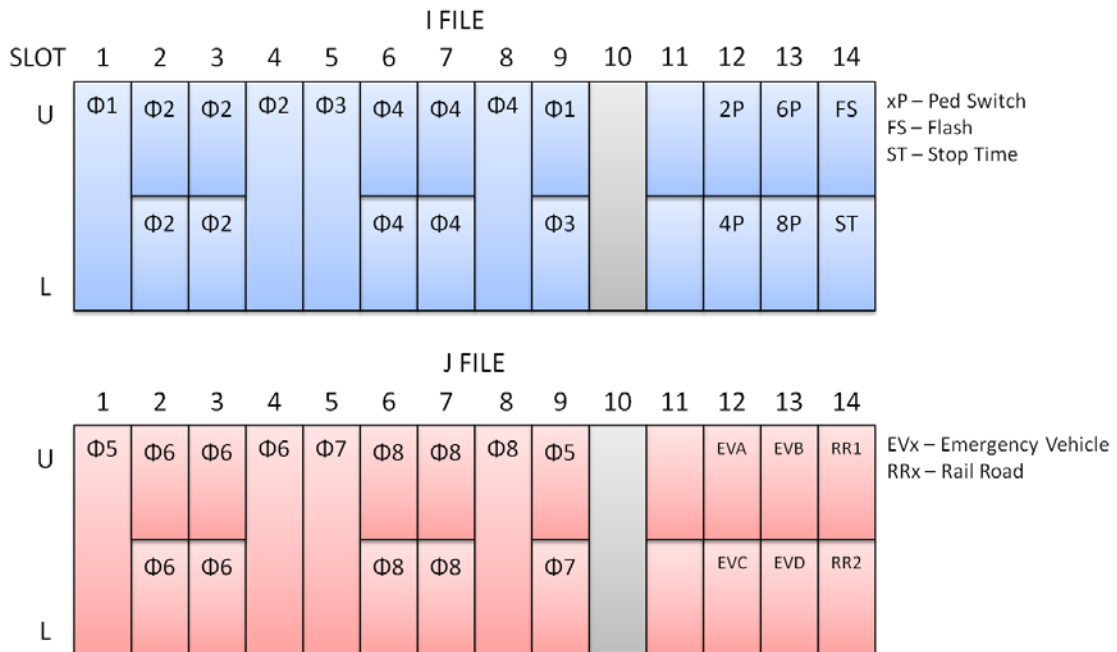


Phase Information



Detector Rack Configurations


332/2070 Type Cabinets



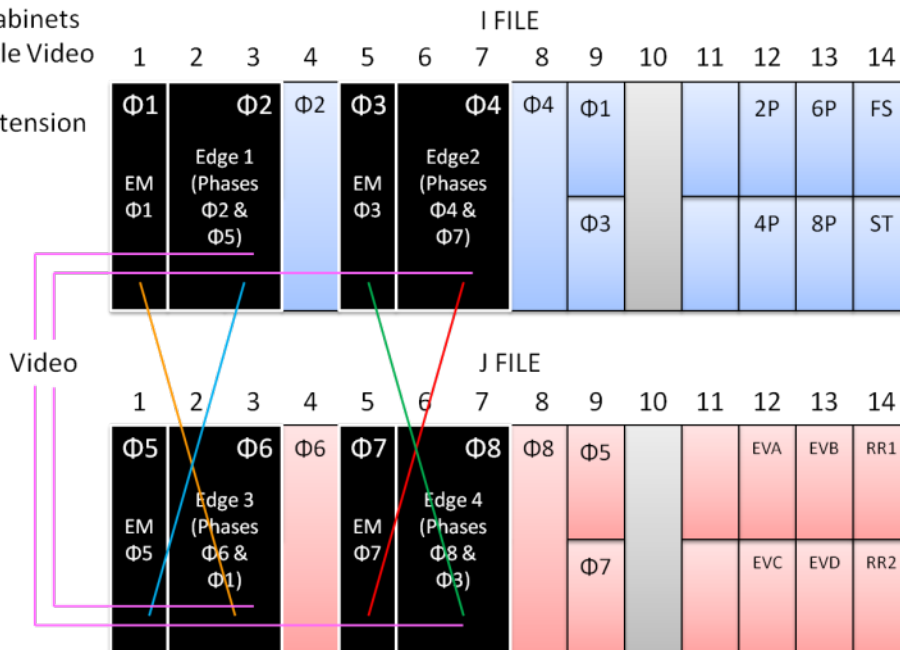
NEMA Type Cabinets

| 08 FILE | | | | | | | | | | 09 FILE | | | | | | | | | |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | DET 1 | DET 2 | DET 3 | DET 4 | P1 | P2 | | DET 5 | DET 6 | DET 7 | DET 8 | | | | | | | | |
| BIU | CH 01 | CH 03 | CH 05 | CH 07 | CH 09 | CH 11 | CH 13 | CH 15 | PE- 5 | PE- 3,4 | BIU | CH 17 | CH 19 | CH 21 | CH 23 | CH 25 | CH 27 | CH 29 | CH 31 |
| | CH 02 | CH 04 | CH 06 | CH 08 | CH 10 | CH 12 | CH 14 | CH 16 | PE- 6 | PE- 5,6 | | CH 18 | CH 20 | CH 22 | CH 24 | CH 26 | CH 28 | CH 30 | CH 32 |

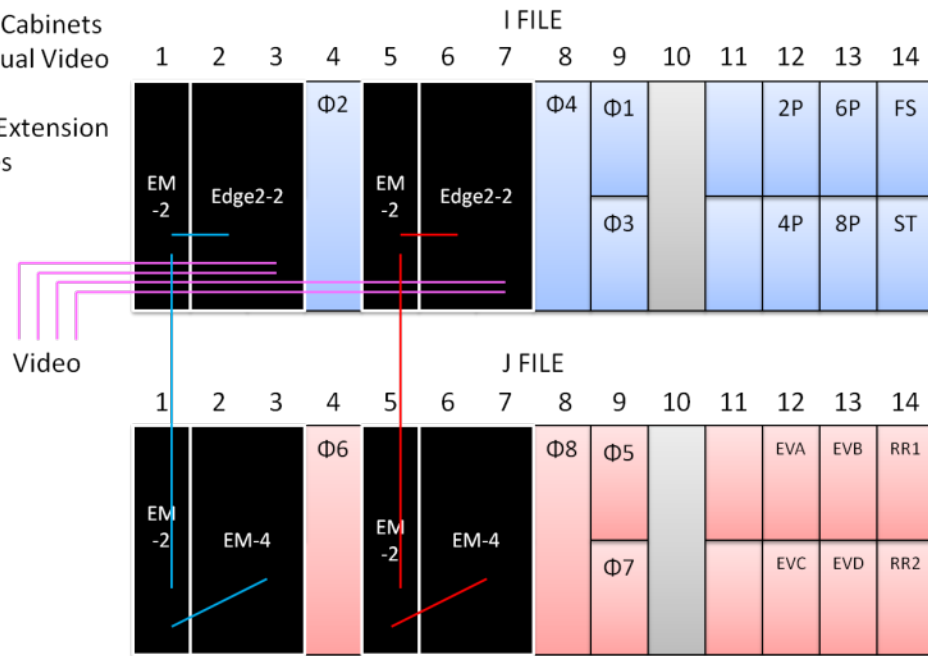
All output channels configurable
 PE – Signal Pre-Emption
 TS-1 uses backplane/hardware
 TS-2 uses SDLC

 **Note:** The following diagrams show typical cabinet configurations the list is not comprehensive and may vary from site to site.

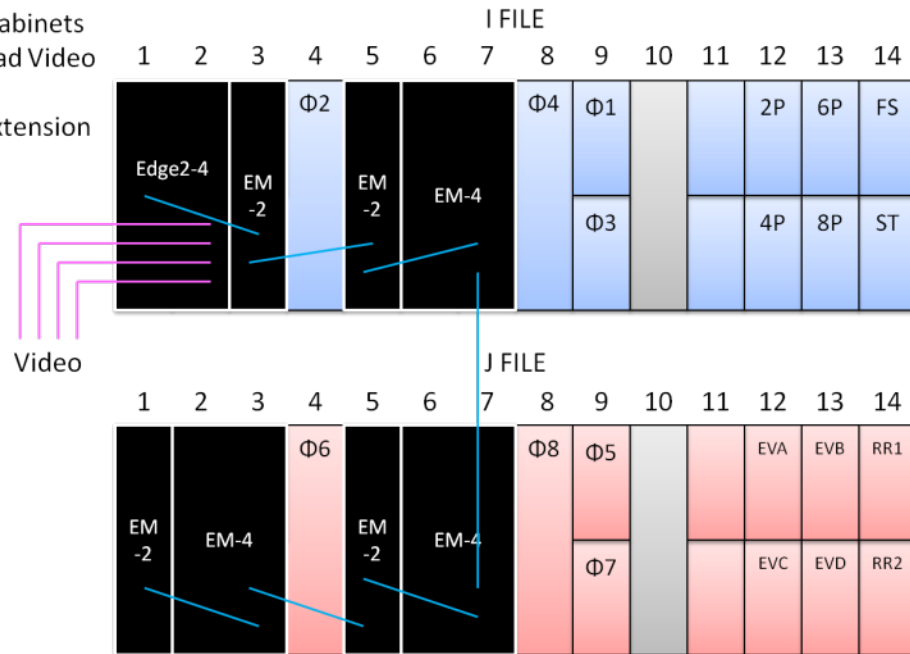
332/2070 Type Cabinets
 Four Edge2-1 (Single Video Input)
 Four 2 Channel Extension Modules

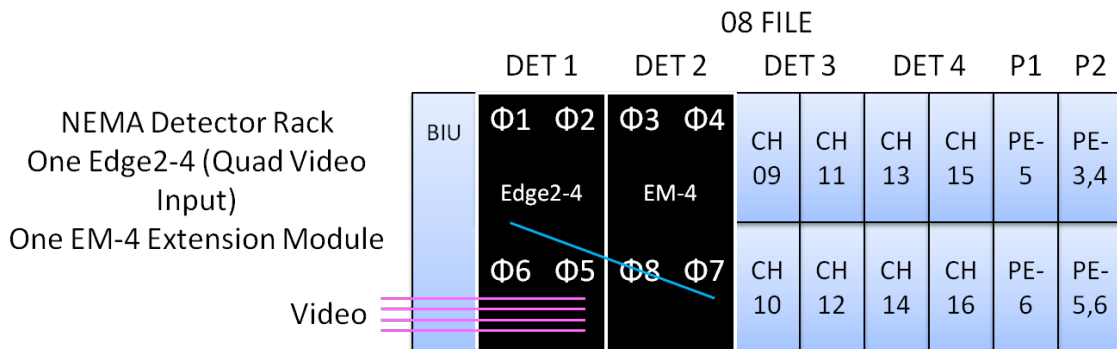
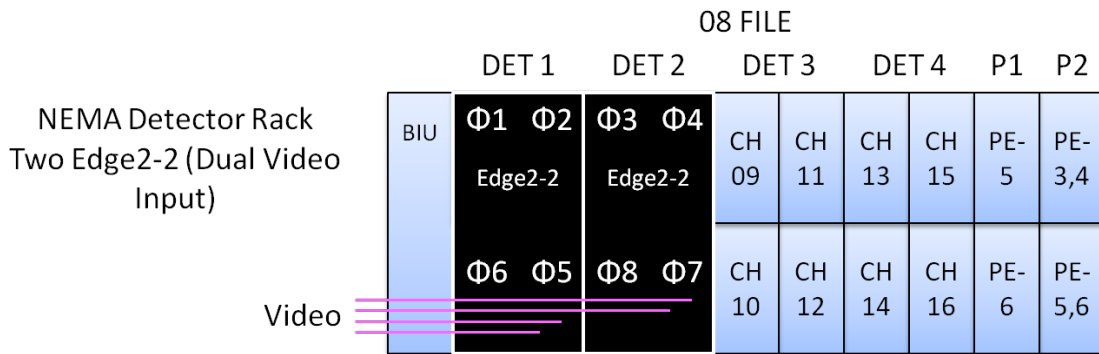
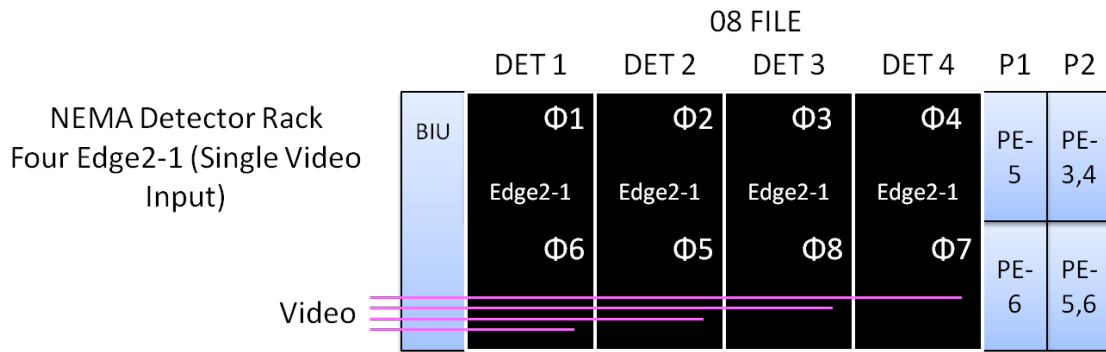


332/2070 Type Cabinets
 Four Edge2-2 (Dual Video
 Input)
 Four 2 Channel Extension
 Modules



332/2070 Type Cabinets
 Four Edge2-4 (Quad Video
 Input)
 Four 2 Channel Extension
 Modules





Vantage Edge2 Modules Specification Sheet

| Edge2-4 Processor | North America | International |
|--------------------------|--|--------------------------|
| Signal Format | NTSC | PAL |
| Video Input | Composite 1V p-p@75ohm | |
| Video Output | Composite 1V p-p@75ohm | |
| Power Source | 24 VDC@280mA or 12 VDC@490mA | |
| Power Consumption | 6.5 W Typical | |
| Operating Temperature | -35°F to +165°F | -37°C to +74°C |
| Operating Humidity | 0% to 95% relative humidity non-condensing | |
| Dimensions | D-7", H-4.5", W-2.31" | 17.78cm, 11.43cm, 5.86cm |
| Weight | 0.8 lbs. | .363 kg |

| Edge2-2 and Edge2-1 Processor | North America | International |
|--------------------------------------|--|--------------------------|
| Signal Format | NTSC | PAL |
| Video Input | Composite 1V p-p@75ohm | |
| Video Output | Composite 1V p-p@75ohm | |
| Power Source | 24 VDC@270mA or 12 VDC@480mA | |
| Power Consumption | 6.5 W Typical | |
| Operating Temperature | -35°F to +165°F | -37°C to +74°C |
| Operating Humidity | 0% to 95% relative humidity non-condensing | |
| Dimensions | D-7", H-4.5", W-2.31" | 17.78cm, 11.43cm, 5.86cm |
| Weight | 0.8 lbs. | .363 kg |

| Extension Module 2 Channel | North America | International |
|-----------------------------------|--|--------------------------|
| Power Source | 24 VDC@110mA or 12 VDC@200mA | |
| Power Consumption | 2.6 W Typical | |
| Operating Temperature | -35°F to +165°F | -37°C to +74°C |
| Operating Humidity | 0% to 95% relative humidity non-condensing | |
| Dimensions | D-7", H-4.5", W-1.14" | 17.78cm, 11.43cm, 2.89cm |
| Weight | 0.3 lbs. | .136 kg |

| Extension Module 4 Channel | North America | International |
|-----------------------------------|--|--------------------------|
| Power Source | 24 VDC@110mA or 12 VDC@200mA | |
| Power Consumption | 2.6 W Typical | |
| Operating Temperature | -35°F to +165°F | -37°C to +74°C |
| Operating Humidity | 0% to 95% relative humidity non-condensing | |
| Dimensions | D-7", H-4.5", W-2.31" | 17.78cm, 11.43cm, 5.86cm |
| Weight | 0.3 lbs. | .136 kg |

[Connector Pinout Information Edge2 Processor and 4-Channel Extension Module Edge Connector Pinouts \(Back View\)](#)

| Function | Pin Number | | Function |
|---------------------|------------|----|-----------------------------------|
| Logic Ground | A | 1 | Channel 1 Delay/Extension Input |
| DC Supply | B | 2 | Channel 2 Delay/Extension Input |
| External Reset | C | 3 | **Channel 3 Delay/Extension Input |
| *Video1 Ch1 In (+) | D | 4 | |
| *Video1 Ch1 In (-) | E | 5 | |
| Detector 1 Output | F | 6 | |
| Detector 1 Common | H | 7 | Channel 1 Status Output (TS2) |
| *Video2 Ch2 In (+) | J | 8 | |
| *Video2 Ch2 In (-) | K | 9 | |
| Chassis Ground | L | 10 | **Channel 4 Delay/Extension Input |
| | M | 11 | |
| | N | 12 | |
| *Video3 Ch3 In (+) | P | 13 | |
| *Video3 Ch3 In (-) | R | 14 | |
| **Detector 3 Output | S | 15 | |
| **Detector 3 Common | T | 16 | **Channel 3 Status Output (TS2) |
| *Video4 Ch4 In (+) | U | 17 | |
| *Video4 Ch4 In (-) | V | 18 | |
| Detector 2 Output | W | 19 | |
| Detector 2 Common | X | 20 | Channel 2 Status Output (TS2) |
| **Detector 4 Output | Y | 21 | |
| **Detector 4 Common | Z | 22 | **Channel 4 Status Output (TS2) |

Note: *Processor Only – To bring video in through the rear edge connector. If video is brought in through the front BNC connectors these contacts are not used.

Note: **Processor and 4 Channel Extension Module Only.

Note: DIP Switch (S3) must be set to "ON" to bring video in through the backplane.

11. BIN DATA AND LOG (DIAGNOSTIC) DATA

11.1 Bin Data Structure - Vehicle and Bike Zones

Each line in the bin data has the following structure

Data String:

xxx, yyyy-mm-dd hh:mm:ss, V, S, O, Csm, Cmd, Clg, I, Video Status

String Definition:

- xxx – Zone Detail Number
- yyyy-mm-dd – Year-Month-Day
- hh:mm:ss – Hour:Minute:Second
- V – Volume (Count) for the bin interval
- S – Average Vehicle Speed for the bin interval
- O – Occupancy, expressed as a percentage for the bin interval
- Csm – Volume (Count) for small vehicle classification
- Cmd – Volume (Count) for medium vehicle classification
- Clg – Volume (Count) for large vehicle classification
- I – Amount of green time for the bin interval (seconds)
- Video Status – OK or No Video

11.2 Bin Data Structure - PedTrax

The system bin interval applies to the pedestrian data.

Data String:

xxx, yyyy-mm-dd hh:mm:ss, V, S, x, MinSpd, MaxSpd, x, I, Video Status

Note: *The order and content of the data string for PedTrax data is different from that of the Count or CSO zones for Vehicles and Bicycles. Count and CSO zone data is not affected by the addition of PedTrax.*

String Definition:

- xxx – Zone Detail Number
- yyyy-mm-dd – Year-Month-Day
- hh:mm:ss – Hour:Minute:Second
- V – Volume (Count) for the bin interval
- x – Not used for PedTrax in this firmware version
- x – Not used for PedTrax in this firmware version
- S – Average Pedestrian Speed for the bin interval
- MinSpd – Speed of slowest pedestrian for the bin interval

MaxSpd – Speed of the fastest pedestrian for the bin interval

x – Not used for PedTrax in this firmware version

I – Amount of green time or walk time for the bin interval (seconds) when logic level inputs are used.

Video Status – OK or No Video

Note: Speed data is recorded with a single decimal place, e.g., 2.8

Note: Entries denoted with 'x' are not used for this version of Ped Metrics and should be filled with zeroes.

Example

601, 2016-05-31 14:30:00, 27,0, 0, 3.2, 2.7, 4.1, 0, 900, Video OK

Zone Numbers

Ped Metric zone numbers are automatically generated.

601 – Camera 1, Left to Right Movement

602 – Camera 1, Right to Left Movement

603 – Camera 2, Left to Right Movement

604 – Camera 2, Right to Left Movement

11.3 Log Data Structure

Each line in the log data has the following structure

Data String:

yyyy-mm-dd hh:mm:ss text string

String Definition:

yyyy-mm-dd – Year-Month-Day

hh:mm:ss – Hour:Minute:Second

text string – One of the log entries listed above

Log Data Entries

Possible Diagnostic Entries – Replace # with Camera Number

- Camera # enter alt sensor fallback
- Camera # exit alt sensor fallback
- Camera # alt sensor no data
- Camera # alt sensor interference
- Camera # alt sensor errors
- Camera # alt sensor no errors
- System running TOD config #

- System running config #
- System rebooted
- Login by privilege user
- Login by non_privilege user
- Login by VSU user
- User entered system level access
- Logoff by user
- User set reboot in boot loader mode flag
- User entered reboot system command
- System entered DID mode
- System exit DID mode
- Camera # algo DID in T mode
- Camera # algo DID in W mode
- Camera # algo DID in TW mode
- Camera # algo in all clear mode
- System enter low contrast mode
- System exit low contrast mode
- System enter constant call mode
- System exit constant call mode
- Camera # enter low contrast mode
- Camera # exit low contrast mode
- Camera # algo detection quality in S1 mode
- Camera # algo detection quality in S2 mode
- Camera # algo detection quality in unknown mode
- Camera # enter glare mode
- Camera # exit glare mode
- Menu enabled
- Menu changes aborted
- Reset system to factory default & reboot system
- Changes saved to config #
- Changes not saved to config
- System enter alarms mode
- System exit alarms mode
- Camera # - Video restored
- Camera # - Video lost

The following group of messages are put in the log when the unit boots up to show the extension modules enumerated on the EM bus. What is shown below are all possible modules. The '#' in the first column is an incrementing number of each extension module in the order of enumeration. The '#' for total shows the total number of extension modules found.

- ue module set
- #,EM_2CHAN(2)
- #,EM_2CHAN(4)
- #,EM_4CHAN(2)
- #,EM_4CHAN(4)
- #,IO_24CHAN
- #,IO_32CHAN
- #,EM_MCOMM
- #,EM_MCOMM(64)
- #,TS2(####)
- #,EM_PROC(2)
- #,EM_PROC(4)
- total,#

11.4 Data Retrieval for O6 Hardware Platform

This version of hardware contains a file system. As such the bin data is now stored in individual files by day. Up to 30 days of data can be stored on the processor. The following is a list of commands to use for downloading data from the system.

[Bin commands](#)



CAUTION! *There are no longer bin new or bin all commands.*

Bin status – Bin status command will return what days that bin data was collected. The Edge2 processor will store up to 30 days of bin data.

Sample Data

```
Bin status
0: bindata-2014-11-14.txt
1: bindata-2014-11-13.txt
2: bindata-2014-11-12.txt
3: bindata-2014-11-11.txt
4: bindata-2014-11-10.txt
5: bindata-2014-11-09.txt
6: bindata-2014-11-08.txt
7: bindata-2014-11-07.txt
8: bindata-2014-11-06.txt
9: bindata-2014-11-05.txt
10: bindata-2014-11-04.txt
11: bindata-2014-11-03.txt
12: bindata-2014-11-02.txt
```

Bin today – Bin today will return all of the bin data collected for the current day.

Sample Data

```
Bin today
025, 2014-11-14 03:05:00 2,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:05:00 4,16,12,2,0,2,60, Video OK
025, 2014-11-14 03:06:00 0,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:06:00 0,0,0,0,0,0,60, Video OK
025, 2014-11-14 03:07:00 3,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:07:00 1,11,3,0,0,1,60, Video OK
025, 2014-11-14 03:08:00 2,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:08:00 3,27,5,2,0,1,60, Video OK
Bin End
```

Bin yesterday – Bin yesterday will return bin data collected yesterday

Sample Data

```
Bin yesterday
001, 2014-11-13 13:00:00 175,16,8,140,16,19,3600, Video OK
002, 2014-11-13 13:00:00 109,0,0,0,0,0,0, Video OK
003, 2014-11-13 13:00:00 147,0,0,0,0,0,0, Video OK
004, 2014-11-13 13:00:00 116,0,0,0,0,0,0, Video OK
005, 2014-11-13 13:00:00 118,0,0,0,0,0,0, Video OK
006, 2014-11-13 13:00:00 79,9,35,38,12,29,3600, Video OK
012, 2014-11-13 13:00:00 18,0,0,0,0,0,0, Video OK
013, 2014-11-13 13:00:00 0,0,0,0,0,0,0, Video OK
014, 2014-11-13 13:00:00 5,0,0,0,0,0,0, Video OK
Bin end
```

Bin index x – (where x equals 0-29) Bin index will return bin data from an index. The index is listed in the bin status command. In this example Bin index 7 will return bin data from 2014-11-08.

Sample data

```
Bin index 7
005, 2014-11-08 23:50:00 0,0,0,0,0,0,0, Video OK
025, 2014-11-08 23:50:00 2,25,1,0,1,1,300, Video OK
026, 2014-11-08 23:50:00 3,10,1,1,0,2,300, Video OK
027, 2014-11-08 23:50:00 2,10,22,1,1,0,300, Video OK
028, 2014-11-08 23:50:00 0,0,0,0,0,0,300, Video OK
029, 2014-11-08 23:50:00 6,7,7,5,0,1,300, Video OK
030, 2014-11-08 23:50:00 5,20,3,4,0,1,300, Video OK
005, 2014-11-08 23:55:00 0,0,0,0,0,0,0, Video OK
Bin End
```

Bin date yyyy-mm-dd – (where yyyy = year, mm = month, dd = day) Bin data from a particular day can be retrieved with this command.

Sample Data

```
bin date 2014-11-14
Bin file bindata-2014-11-14.txt
```

```
025, 2014-11-14 03:05:00 2,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:05:00 4,16,12,2,0,2,60, Video OK
025, 2014-11-14 03:06:00 0,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:06:00 0,0,0,0,0,0,60, Video OK
025, 2014-11-14 03:07:00 3,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:07:00 1,11,3,0,0,1,60, Video OK
025, 2014-11-14 03:08:00 2,0,0,0,0,0,0, Video OK
029, 2014-11-14 03:08:00 3,27,5,2,0,1,60, Video OK
025, 2014-11-14 03:09:00 3,0,0,0,0,0,0, Video OK
Bin End
```

Log commands

The log commands follow the same format as the bin commands.



CAUTION! There are no longer log new or log all commands.



Note: A complete set of diagnostic log entries and their meaning can be found in the Edge2 User Guide.

Log status – The Edge processor stores up to 30 days of log data.

Sample data

```
log status
0: logdata-2014-11-16.txt
1: logdata-2014-11-15.txt
2: logdata-2014-11-14.txt
3: logdata-2014-11-13.txt
4: logdata-2014-11-12.txt
```

Log today – Log today will return all of the bin data collected for the current day.

Sample data

```
Log Today
2014-11-14 00:52:47 System rebooted
2014-11-14 00:52:47 System running config 1
2014-11-14 02:56:28 Zone 1 enter constant call mode
2014-11-14 02:56:28 Zone 2 enter constant call mode
2014-11-14 02:56:29 System enter constant call mode
2014-11-14 02:56:29 Camera 1 enter low contrast mode
2014-11-14 03:00:19 Login by privilege user
2014-11-14 03:03:51 Zone 29 enter constant call mode
2014-11-14 03:04:41 VP 1 - Video lost
2014-11-14 03:04:46 VP 1 - Video restored
2014-11-14 03:04:47 System exit constant call mode
2014-11-14 03:04:47 Camera 1 exit low contrast mode
2014-11-14 03:04:47 Zone 29 exit constant call mode
2014-11-14 03:04:47 Zone 1 exit constant call mode
```

```
2014-11-14 03:04:47 Zone 2 exit constant call mode
Log End
```

Log yesterday – Log yesterday will return bin data collected yesterday

Sample Data

```
Log yesterday
2014-11-16 08:39:55 Zone 6 enter constant call mode
2014-11-16 08:41:29 Zone 6 exit constant call mode
2014-11-16 09:53:35 Camera 2 algo detection quality in S2 mode
2014-11-16 09:56:35 Camera 2 algo detection quality in S1 mode
2014-11-16 14:19:52 VP 1 - Video lost
2014-11-16 14:19:52 VP 2 - Video lost
2014-11-16 14:19:53 VP 1 - Video restored
2014-11-16 14:19:53 VP 2 - Video restored
2014-11-16 14:21:27 VP 2 - Video lost
2014-11-16 14:21:28 VP 2 - Video restored
Log End
```

Log index x – (where x is 0-29) Log index will return bin data from an index. The index is listed in the bin status command. Bin index 7 will return bin data from 2014-11-08.

Sample Data

```
Log index 0
2014-11-16 05:02:23 Zone 6 enter constant call mode
2014-11-16 05:03:10 Zone 6 exit constant call mode
2014-11-16 05:03:53 Zone 6 enter constant call mode
2014-11-16 05:03:54 Zone 6 exit constant call mode
2014-11-16 05:05:50 Zone 6 enter constant call mode
2014-11-16 05:05:54 Zone 6 exit constant call mode
2014-11-16 05:39:01 Zone 26 enter constant call mode
2014-11-16 05:39:04 Zone 26 exit constant call mode
Log End
```

Log date yyyy-mm-dd – (where yyyy = year, mm = month, dd = day) Log data from a particular day can be retrieved with this command.

Sample Data

```
Log date 2014-11-16
Log file logdata-2014-11-16.txt
2014-11-16 05:02:23 Zone 6 enter constant call mode
2014-11-16 05:03:10 Zone 6 exit constant call mode
2014-11-16 05:03:53 Zone 6 enter constant call mode
2014-11-16 05:03:54 Zone 6 exit constant call mode
2014-11-16 05:39:01 Zone 26 enter constant call mode
2014-11-16 05:39:04 Zone 26 exit constant call mode
Log End
```

11.5 Count Bin Capacities 04/05 Hardware Platform

Vantage Platform Intersection Count Bin Storage Capacity The following information is intended to assist the user in understanding the intersection count data bin storage capacity of the various Vantage platforms. Count data is handled in a FIFO (First In – First Out) format. This means that as data is added to the storage memory and the memory allocation becomes filled the oldest data will be dumped to make room for the new data. The Vantage intersection count data string consists of 16 bytes of information.

The storage capacity is based on the number of bins available (fixed per platform) and the total number of count zones (variable) and the selected count interval (variable). Given the number of bins available, you can easily calculate the storage capacity.

The chart below identifies the maximum number of days of intersection count data that can be stored per platform for the following scenarios —

#1 – One (1) zone per camera at a one (1) hour interval

#2 – Six (6) zones per camera at fifteen (15) minute intervals

| <u>Platform</u> | <u>Count Bins (B)</u> | <u>Scenario #1</u> | <u>Scenario #2</u> |
|-------------------|-----------------------|--------------------|--------------------|
| Edge2-1N (Single) | 83,968 | 3,487 days | 145 days |
| Edge2-2N (Dual) | 83,968 | 1,743 days | 72 days |
| Edge2-4N (Quad) | 69,632 | 725 days | 30 days |

For scenarios other than shown above the following formula may be used:

$$D = B / (Zt \times (60/I) \times 24)$$

Where:

D = Days

B = Bins

Zt = Total Number of Zones for all Cameras

I = Interval in Minutes

Count String Format:

Count Data String = Zone Detail Number, Date, Time, Count, Video Status

Typical Count Data String:

06,2005-09-15,09:25:00,006,Video OK

06 = Zone Detail Number

2005-09-15 = 9/15/05 (Date)

09:25:00 = 9:25 AM (Time)

006 = Count of 6 Vehicles During The Bin Interval Period

Video OK = Video Status at Time of Count

If the data exceeds the size of the memory buffer, the oldest data is simply over-written (FIFO).

12. COMMUNICATIONS CHANGES FOR 06 HARDWARE PLATFORM

Flow Control

When using VRAS or a terminal program to communicate with the new hardware version hardware flow control for connection to the USB B port has to be set to 'None'. Any other setting will cause the processor to not communicate.

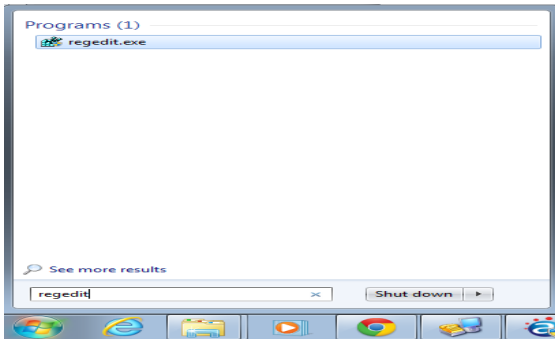
Driver

Windows OS identifies each new Edge2 processor as a new connection and will assign a new virtual com port number to it. To avoid this situation registry settings have to be made.

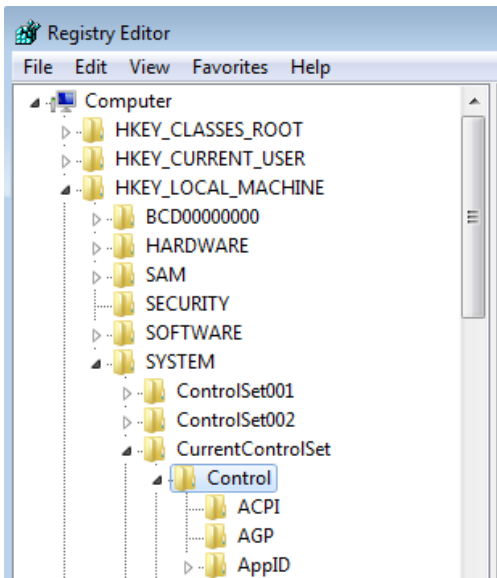


CAUTION! *Incorrect settings in the registry may cause your PC to stop work. Please consult your IT department before proceeding.*

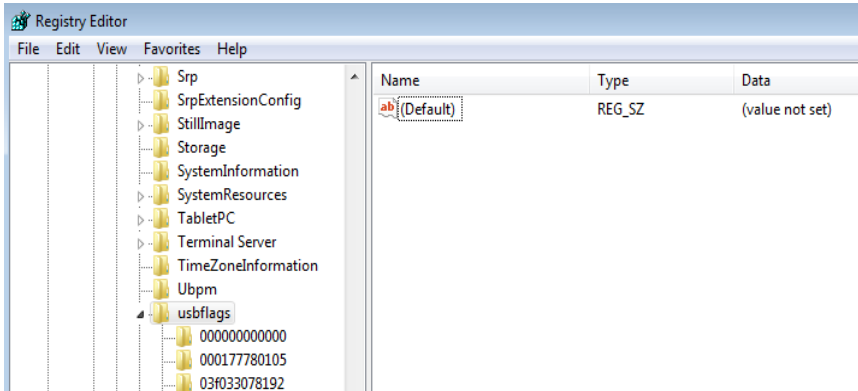
- a. Click on windows logo and type regedit in the search field, then press <enter>.



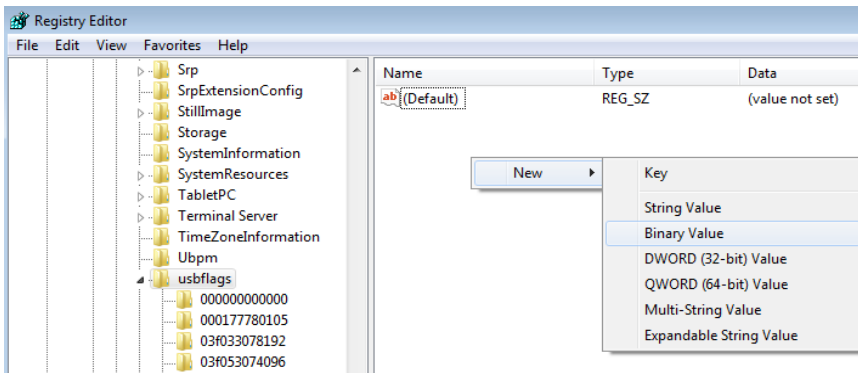
- b. Go to HKEY_LOCAL_MACHINE -> SYSTEM -> CurrentControlSet -> Control.



c. Under the Control, scroll down to find usbflags and click on it.

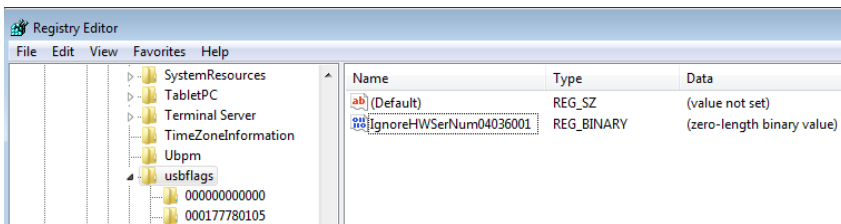
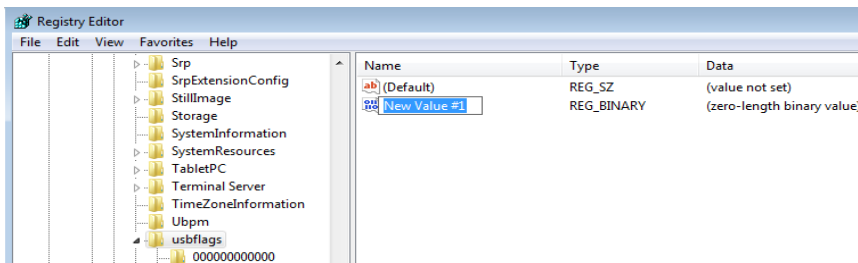


d. Right click the mouse in the open area and add a new Binary Value.

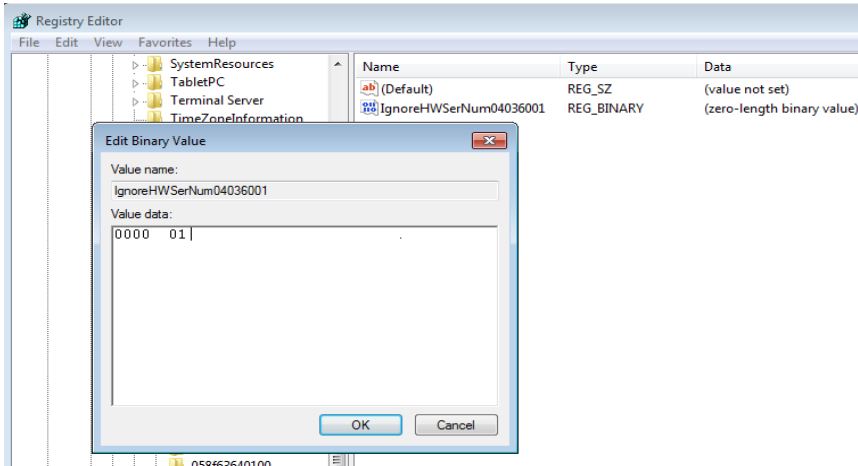


e. Rename the “New Value #1” with

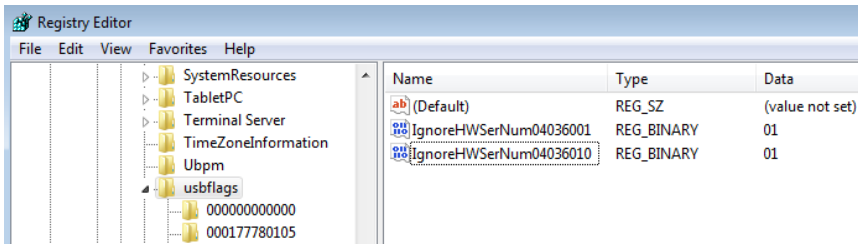
IgnoreHWSerNum04036001



- f. Double click the renamed file and set the Value Data to 01 then click ok.



- g. Repeat steps 4 through 6 for a second entry to the registry.
This time use the Value Name "IgnoreHWSerNum04036010"




- h. Process Complete

 **Note:** Restart your PC for the changes to take effect.

13. PRODUCT SUPPORT

Product Support Team

The Iteris® Product Support Team consists of a group of highly skilled individuals that are knowledgeable and readily available to answer your questions or assist you with any of our Vantage products. Please do not hesitate to contact us at:

 Toll free: (888) 254-5487

For more information on Iteris, as well as the products and services that we provide, visit our website at:

 www.iteris.com

Iteris Resource Center

This site contains additional training and technical support information covering the whole range of Vantage products. Registration is easy. Visit the address below to register and begin enjoying the benefits immediately.

 www.iteris.com/support

The Resource Center app is available from the Apple App Store or the Google Play store.



iteris[®]

1700 Carnegie Avenue

Santa Ana, CA 92705

Phone: (949) 270-9400

Fax: (949) 270-9401