Car Vision® System

Utilizing the

CVD650LCD

Software Version 1.0.5

System User's Guide

Revision E - Jan 2018

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General Information

Introduction

Thank you for selecting an INTEC Car Vision® System. Before using your system, please be sure to read and understand these instructions carefully. If you have any questions or concerns, please do not hesitate to contact us toll free at 800-468-3254 (west) or 800-522-5989 (east). You may also reach us via e-mail at info@intecvideo.com

What this Manual Covers

This manual covers the information necessary for the proper use of your Car Vision® Mobile Video Safety System. Information on installing your system can be found on the Quick Installation Guides provided with your equipment or by visiting www.intecvideo.com/installation.html

Important Information

Please read this guide carefully before use.

There are no user serviceable parts inside the system components. All service must be completed by authorized service personnel only. Please refer to the Warranty section described later in this manual.

Always use the proper tools, wear protective clothing and take necessary precautions when working around electricity to prevent electrical shock.

Use only INTEC specified and provided brackets and cables to connect the components of the system. Use of other than INTEC specified and supplied brackets and cabling could be dangerous and result in damage to the system components and void the warranty.

Use only INTEC specified and supplied accessories and options when upgrading your system.

Operating the camera system on too low or too high a voltage may damage the system.

Always confirm the view provided by the camera is adequate for your needs prior to vehicle use. Adjustments to the camera viewing angle should be made before use, if necessary.

Most states have laws pertaining to motor vehicles equipped with a video display within the driver's field of vision, either directly or indirectly, unless the video display is used in conjunction with a back up safety camera to monitor the blind spots around the vehicle. INTEC's products are specifically designed to enhance vehicle safety. Use of an INTEC display to view video in any manner other than intended requires installation in accordance with your state laws.

Do NOT let the Car Vision® System distract you from driving safely.

Certificates of Compliance

RoHS Compliant
2002 / 95 / EC

Complies with Part 15 of the FCC Rules

CE e13

Warnings and Cautions

Warnings

Do NOT attempt to connect other electrical devices to the power wire harness of the Car Vision® System as this can cause an over current situation which can lead to electrical shock or fire.

If at any time you see or smell smoke coming from the Car Vision® System, stop driving, exit the vehicle and disconnect main power. Check the system and remove any damaged components before you resume normal vehicle operation.

Do NOT attach the wiring to any moving parts, across sharp edges or close to heat sources as this may cause shorting of the wires and may lead to a fire or electrical shock.

When installing the system be sure to use only INTEC supplied brackets. The Car Vision® camera must be insulated from the vehicle body. The supplied camera bracket provides the required insulation. Failure to do so could result in a fire and lead to property damage or personal injury.

Do NOT install the camera in any area that allows it to extend out past the vehicle as this can cause injury if it were to come in contact with people walking around the vehicle.

Never use fuses of a larger rating than those supplied with your Car Vision® System. Use of larger rated fuses can cause excessive current through the system if a short occurs and could lead to a fire.

Confirm that the orientation of the image on the display is proper. Rear facing cameras should yield a mirror image, where items on the left of the vehicle appear on the left side of the monitor.

Cautions

Before you begin driving, be sure the display controls are adjusted properly. This will avoid unnecessary distractions while driving.

When installing the camera system be certain that all items are secure. Items that are not secure or mounted in an unstable manner can come loose and cause damage or personal injury.

Do NOT attempt to open or service your equipment. Removal of the product enclosure can lead to electrical shock. No user serviceable parts inside.

You should not attempt to make any adjustments to the Car Vision® System while driving as this can lead to an accident. Only make adjustments when the vehicle is stopped.

Keep the Car Vision® System clean and free from dirt, snow and ice. If the camera glass or display panel becomes dirty, clean them before use. If they are covered with snow and/or ice, it should be cleared off before use. Failure to do so could lead to an accident.

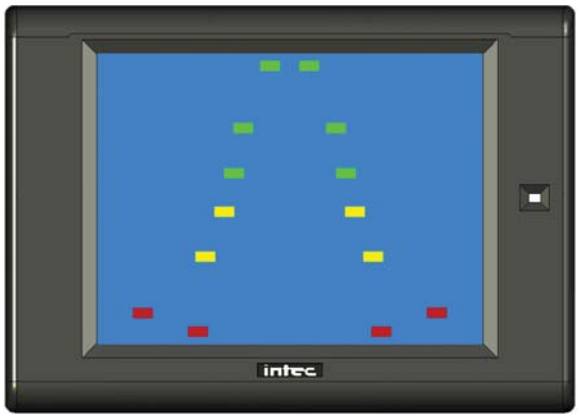
When running a cable from the exterior to the interior of a vehicle, care needs to be taken to seal the entry point. Failure to do so could allow in exhaust fumes, other toxic gases or water.

Getting Started

Turning On Your Car Vision® System

Your Car Vision® System, when properly installed, is activated automatically when power is applied to the trigger wire(s), typically reverse, but it can also be activated manually via the ON/SB button on the remote. Note: *The vehicle's ignition switch must be on or the vehicle must be running for the system to operate.*

When activated automatically (triggered) by placing the vehicle in reverse the system will turn on providing you with a clear image of what is behind your vehicle. Additionally, an on screen distance grid (pictured below) will appear. *The distance grid is for reference only and does not equate to any specific measurement.*



Verifying Proper Image Orientation

The orientation of the image displayed is critical to safe vehicle operation. An object on the right side of your vehicle needs to be seen on the right side of the displayed image.

Generally, if your display is facing rearwards, you would want a Mirror image displayed from a camera facing rearward and a True image displayed from a camera facing forward. The image orientation of a camera on the right or left side of the vehicle will depend on how far off of center they are facing.

For example; a camera mounted on the right or left side of the vehicle facing straight out would usually require a True image be displayed. But angle the camera towards the rear and a Mirror image may be required. **Always confirm proper image orientation before operating your vehicle.**

How to Change Your Displayed Image Orientation

INTEC's CVC Series cameras are set as default at the factory to display a Mirror image when used with our CVD Series displays. Should you need to change the default image, you can do so through the displays on screen Installers Menu. See page 9 for system applications using a CVS100 or CVS102 series controller or page 13 for system applications using the CVS500 series controller for additional information. Additionally, a number of our CVC series cameras are equipped with image reversal switches, refer to your cameras quick installation guide for additional information.

Adjusting the Screen Brightness

Adjustments can be made to the LCD screen intensity level by pressing the Up or Down Arrow buttons on the remote control. *NOTE: If your Dimmer function is set to AUTO your screen brightness will revert back to its original setting when the power is cycled.*

Single or Dual Camera System Applications using a CVS100 or CVS102 Series Controller

Becoming Familiar with your CVR100 Remote

All adjustments to your Car Vision® system are made via the CVR100 remote control. For your convenience the buttons on the remote are backlit to aid in use under low light conditions. The CVR100 remote also includes a speaker for audio equipped systems and serves to provide an audible alert when the system is used in conjunction with our active radar component.

Button Label and Function

ON/SB	Manually turns the display on or places it in standby.
MENU	Accesses the on-screen users menu. Scrolls through the menu items.
(radar)	Adjusts the radar audible alert volume between three available preset levels. (Active when used with a compatible radar system)
▲	Increases screen brightness. Increases the value of a menu item.
▼	Decreases screen brightness. Decreases the value of a menu item.
EXT	Selects the external video input. (EXT must be set to ON in the Installer's Menu before EXT can be selected).
MENU + ▲	Press both buttons simultaneously to access the Installer Menu.

Navigating the On Screen Display Menu (CVS100 or CVS102)

There are three menus available when using a CVS100 or CVS102 controller, the Help Menu, the User Menu and the Installer Menu. The Help Menu explains the buttons used to navigate the menu. The User Menu allows you to adjust menu items associated with the image such as brightness, contrast, etc... The installer Menu allows you to adjust the more advanced features of your system such as image orientation. Navigating the menu is done via the CVR100 Remote Control.

Help Screen

The Help Menu is accessed from the User Menu by pressing the up or down arrow button twice. Exit the Help Menu by pressing any other button on the remote. There are no adjustments or settings available on the Help Menu.

User Menu

Press the Menu button on the CVR100 remote control to access the User Menu. Press the Menu button again to advance to the next line item. Use the Up and Down arrow keys on the remote to change the value of the selected line item. The Users Menu will time out after six seconds of inactivity.

Page 1 - Screen Settings	
HELP	Press the up or down arrow key twice to access the help screen.
VOLUME	Adjusts the volume level of the audio supplied by the camera.
BRIGHT	Adjusts the brightness of the image.
CONTRAST	Adjusts screen contrast.
COLOR	Adjusts color level.
TINT	Adjusts screen tint.
DIMMER	When set to AUTO the screen will brighten or dim based on the ambient light around it. When set to MAN the user controls the screen brightness via the Up and Down Arrow buttons on the remote.

Installer Menu

Press the Menu and Up Arrow buttons simultaneously on the CVR100 remote control to access the Installer Menu. Press the Menu button again to advance to the next line item. Use the Up and Down arrow keys on the remote to change the value of the selected line item. The Installer Menu does not time out and must be exited manually. The simplest method is via the ON/SB button on the remote.

Page 1	
RESET	Resets the display back to the factory default. With RESET highlighted press the up arrow button then press MENU. *Note: Resetting the Installer's Menu will also reset the User's Menu.*
LANGUAGE	Highlight the desired language and press the Menu button to set. Select from English, French, German or Spanish. *Not all Languages are available in all displays.*
EXT INPUT	Turns on/off the External video input function. *Note: For dual camera applications using the CVS102 EXT IN must be set to ON.*
CAMERA 1	"MIRROR" Displays the image from an INTEC camera on the screen as a Mirror image. "TRUE" Displays the image from an INTEC camera on the screen as a True image.
RADAR 1	Set to STD for standard radar, set to CAN for all others. Note: Radar 1 connects to the camera input via an INTEC cable and is only active when triggered.
ALARM	Turns the Radar Alarm Output function off and on. *See the Advanced Features section of this guide for more information on radar.*
VER	Displays the current software version for your display.

Advanced Features (CVS100 or CVS102)

External Video Input / Output (available in the CVS100 series controller)

Your system is equipped with an external video input that allows you to connect another video source. That source can be from another camera, GPS, or any other composite video source. *Note: The image orientation is native from the input source and not reversible through display.* In addition to the video input there is also a video and audio output. These allow you to output your native* Car Vision® camera video to an alternate display or DVR. The audio (when used with an audio capable camera) can be output to an alternate speaker, display or DVR.

Use of the Video Input / Output requires the optional CVS100VO3M or CVS100MVO3M cable harness available from INTEC.

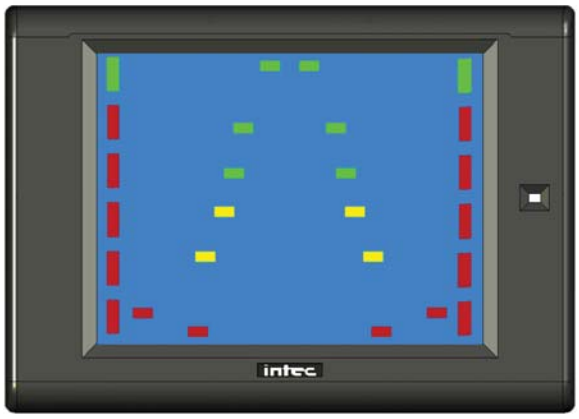
* The output video is native from the camera meaning it sends video straight from the camera to the video output which in most cases will produce a true image recording as opposed to the mirror image as seen on the display. To get a mirror image recording you'll need to reverse the camera image as well as set the image orientation in the display to TRUE. Note: Not available in EXT.

Not all cameras are field reversible and may need to be returned to INTEC to have the image reversed. Please contact INTEC for additional information.

Integrated Active Object Detection (Radar)

The integrated radar, when properly connected, will send a visual alert to the Car Vision® display and an audible alert to the Car Vision® remote when an object is detected within its operating range. The visual alert consists of OSD markers on the left and right sides of the display screen. When properly connected and powered, green markers at the top of the screen will illuminate indicating the radar is active. When an object is detected in the outer most detection area, the first of 5 red markers will illuminate starting at the top of the screen, directly below the green markers. As the object gets closer to the radar sensor(s), or if the vehicle is moving and getting closer to the object, additional red markers will illuminate and flash, and a beep increasing in frequency will be heard through the remote. While in reverse, the on-screen distance grid will also flash according to the detected object's distance from the sensor as shown below.

The integrated radar will operate only when connected via an INTEC cable to the Camera input on the controller. The radar is activated via a +11 to +32 VDC source applied to the blue trigger wire of the controller's power harness.



In addition there is a source voltage 1 amp radar alarm output (green) wire in the controller's power harness that can be used to activate an external device in the event your radar sensor detects an object within its range. ALARM must be set to ON in the installer's menu and the radar must be detecting an object within its range before the output voltage is present. *NOTE: Radar is only available with the CVS100 or 102M and CVS100 or 102XL controllers. It is NOT available in the CVS100H or CVS102H.*

One to Five Camera System Applications using a CVS500 Series Controller

Becoming Familiar with your CVR500 Remote

All adjustments to your Car Vision® system are made via the CVR500 remote control. For your convenience the buttons on the remote are backlit to aid in use under low light conditions. The CVR500 remote also includes a speaker for audio equipped systems and serves to provide an audible alert when the system is used in conjunction with our active radar component.

Button Label and Function

ON/SB	Manually turns the display on or places it in standby.
MENU	Accesses the on-screen users menu. Scrolls through the menu items.
	Adjusts the radar audible alert volume between three available preset levels. (Active when used with a compatible radar system) Goes back to the prior character when naming camera positions.
▲	Increases screen brightness. Increases the value of a menu item.
▼	Decreases screen brightness. Decreases the value of a menu item.
EXT	Selects the external video input. *(EXT must be set to ON in the Installer's Menu before EXT can be selected).* Displays the selected Multi-Camera View. Skips to the next character when naming camera positions.
CH1	Manually Selects Camera 1 Selects the next page while displaying the menu
CH2	Manually Selects Camera 2 Selects the prior page while displaying the menu
CH3	Manually Selects Camera 3
CH4	Manually Selects Camera 4
CH5	Manually Selects Camera 5
CYCLE	Allows the user to Auto Cycle through the connected cameras.
MENU + ▲	Press both buttons simultaneously to access the Installer Menu.

Navigating the On Screen Display Menu (CVS500)

There are three menus available when using the CVS500 controller, the Help Menu, the User Menu and the Installer Menu. The Help Menu explains the buttons used to navigate the menu. The User Menu allows you to adjust menu items associated with the image such as brightness, contrast, etc... The installer Menu allows you to adjust the more advanced features of your system such as image orientation, multi camera views, etc... Navigating the menu is done via the CVR500 Remote Control.

Help Screen

The Help Menu is accessed from the User Menu by pressing the up or down arrow button twice. Exit the Help Menu by pressing any other button on the remote. There are no adjustments or settings available in the Help Menu.

User Menu

Press the Menu button on the CVR500 remote control to access the User Menu. Press the Menu button again to advance to the next line item. Press the CH1 or CH2 buttons to navigate to the next or prior page. Use the Up and Down arrow keys on the remote to change the value of the selected line item. There are two User Menu pages.

Page 1 - Screen Settings	
HELP	Press the up or down arrow key twice to access the help screen.
VOLUME	Adjusts the volume level of the audio supplied by the camera.
BRIGHT	Adjusts the brightness of the image.
CONTRAST	Adjusts screen contrast.
COLOR	Adjusts color level.
TINT	Adjusts screen tint.
DIMMER	When set to AUTO the screen will brighten or dim based on the ambient light around it. When set to MAN the user controls the screen brightness via the Up and Down Arrow buttons on the remote.

Page 2 - Cycle Settings	
CAMERA 1 Thru CAMERA 5	Adjusts the time (0 to 20 Seconds) the camera input will be displayed when in the Cycle Mode. Note: If all positions are set to “0” the cycle function will be disabled.
EXT IN	Adjusts the time (0 to 20 Seconds) the EXT IN will be displayed when in the Cycle Mode. Note: EXT IN must be on before it can be included.

Installer Menu

Press the Menu and Up Arrow buttons simultaneously on the CVR500 remote control to access the Installer Menu. Press the Menu button again to advance to the next line item. Press the CH1 or CH2 button to navigate to the next or prior page. Use the Up and Down arrow buttons on the remote to change the value of the selected line item. There are eight Installer Menu pages.

Page 1	
RESET	Resets the display back to the factory default. With RESET highlighted press the up arrow button then press MENU. *Note: Resetting the Installer’s Menu will also reset the User’s Menu.*
LANGUAGE	Highlight the desired language and press the Menu button to set. Select from English, French, German or Spanish. *Note: Not all Languages are available in all displays.*
EXT INPUT	Turns on/off the External video input function.
DISTANCE	Turns the distance grid off or on. *Note: The distance grid is only active when camera 1 is triggered via the camera 1 trigger wire.*
VER	Displays the current software version for your display.

Page 2 - Image Orientation	
CAMERA 1 Thru CAMERA 5	“MIRROR” Displays the image from an INTEC camera on the screen as a Mirror image. “TRUE” Displays the image from an INTEC camera on the screen as a True image.
Note: CAMERA 1 thru CAMERA 5 are the default names assigned to each of the five camera inputs. You have the option of changing those input names on Page 3 of the Installer Menu. Should you do so your assignments will display throughout the menu.	

Installer Menu Continued

Page 3 - Input Name	
INPUT 1 Thru INPUT 5	Sets the displayed name for the selected position. 0 thru 9, A thru Z and a number of special characters, including a Space, are available. Names can be up to 8 characters in length.
EXT IN RADAR 1 RADAR 2	Press or press and hold the Up or Down Arrow buttons. Up increments the character up in order, Down decreases the character. EXT selects the next character position. The Radar Volume button selects the prior character position. Assigned names display throughout the menu.

Radar is NOT available in the CVS500H and the option will not be displayed in the menu if that controller is used in the system.

Page 4 - EXT Multi-View	
	Sets the multi screen view that will be displayed via the EXT button on the remote control.
MUL.DISP	Press the up arrow button to turn the Multi-View display off or press the down arrow button to change the multi-screen view from QUAD to UP TRI, LOW TRI, or DUAL. The default setting is Quad.
VIEW 1 Thru VIEW 4	Used to select the Input displayed per screen segment. *Note: Changing MUL.DISP to a two or three camera view will change the number of view options accordingly.*

See the Multi-Screen view section of this guide for more information.

Page 5 - Trigger Multi-View	
	Sets the multi screen view that will be displayed via the Orange trigger wire.
MTR.DISP	Press the up arrow or down arrow button to change the multi-screen view from QUAD to UP TRI, LOW TRI, or DUAL The default setting is DUAL
VIEW 1 VIEW 2	Used to select the Input displayed per screen segment. *Note: Changing MTR.DISP to a three or four camera view will change the number of view options accordingly.*

See the Multi-Screen view section of this guide for more information.

Installer Menu Continued

Page 6 - Output Cycle (Active only when CYCLE is selected as one of the Video Outputs)	
INPUT 1 Thru INPUT 5 EXT IN	Adjusts the time (0 to 20 Seconds) the camera input will be displayed. *Note: If all positions are set to "0" the output cycle function will be disabled.*
OUTPUT CYCLE	Used to set the video output cycle times. Highlight SAVE and press the up arrow button. The word SAVE will change to OK indicating the programmed times have been saved.

Page 7 - Video Output	
OUTPUT 1 Thru OUTPUT6	Allows you to select which video options are available at any one of the up to six video outputs. Options available are: Camera positions 1 thru 5, Multiple Display, Cycle and EXT IN.
The CVS500M allows for only 3 programmable video outputs. V.OUT.4 through V.OUT.6 will not be displayed in the menu.	

Page 8 - Audio Output and Radar Select	
OUTPUT 1 OUTPUT 2	Allows you to set which camera audio is available at either of the two audio outputs.
RADAR 1 RADAR 2	Set to STD for standard radar, set to CAN for all others. Set to OFF to disable the radar function. *Note: Radar 1 is associated with camera 1 and is only active when camera 1 is triggered.* *Radar 2 is associated with camera 2 and when connected will always be active except when camera 1 is triggered.*
ALARM 1 ALARM 2	Turns the Radar Alarm Output function off and on.
Radar is NOT available in the CVS500H and the option will not be displayed in the menu.	

Advanced Features when used with a CVS500 Controller.

External Video Input

Your system is equipped with an external video input that allows you to connect another video source. That source can be from another camera, GPS, or any other composite video source. *Note: The image orientation is native from the input source and not reversible through display.*

Use of the Video Input requires the optional CVS500VO3M or CVS500MVO3M cable harness available from INTEC.

*Adding an INTEC CVC series camera to the External Video Input requires the VAP adapter. Contact your INTEC sales representative for additional information.

Programmable Video / Audio Output

Up to 6 video outputs (3 video outputs for the CVS500M) and up to 2 audio outputs can be programmed to display any single camera position, as well as, the multi-screen views and the external automatic cycle regardless of what is currently being displayed on the screen.

The outputs will continue to provide video out to record whether the display is on or in standby. Use of the external video and audio output feature is possible only when the controller is combined with an Intec CVD series display. Use of the External Video / Audio output requires INTEC's CVS500VO3M (for CVS500H and XL controllers) or CVS500MVO3M (for CVS500M controllers) video I/O harness.

Refer to the On-Screen Installer Menu pages 7 and 8 or page 15 of this guide for information on setting up the programmable audio and video outputs.

* The output video is native from the camera meaning it sends video straight from the camera to the video output which in most cases will produce a true image recording as opposed to the mirror image as seen on the display. To get a mirror image recording you'll need to reverse the camera image as well as set the image orientation in the display to TRUE. Note: Not available in EXT.

Not all cameras are field reversible and may need to be returned to INTEC to have the image reversed. Please contact INTEC for additional information.

Note: Programmable Audio and Video outputs are only available in the CVS500 Controller Version 2.0 or later and provide native camera video, therefore the image recorded may display opposite of that shown on the Car Vision® display. Some INTEC CVC Series cameras are equipped with an image reversal switch. See your cameras quick installation guide for details or contact INTEC for additional information or assistance in setting up your particular application.

Naming Input and Radar Positions

Each input (camera) and radar position can be named as to its purpose. For example, the rear camera can be named "REAR". By naming the camera position, the operator will be able to quickly and clearly identify what camera view they are looking at when they switch positions. Names can be up to 8 characters long and can include letters, numbers, special characters and spaces. Refer to page 3 of the Installers menu or page 14 of this guide for instructions on setting up input names.

Multi Display Camera View

There are 4 multi display camera views available. They are; Quad, Tri Up, Tri Low, and Dual.

The multi display camera views are fully programmable through the on-screen menu and allow you to select which camera position(s), 1 – 5, are displayed in each view. Setting a camera positions to “E” will effectively turn that position off. Setting all camera positions to “E” will display a grey screen.

To select what view will be displayed via the <EXT> button please refer to page 4 of the installers menu or page 14 of this guide.

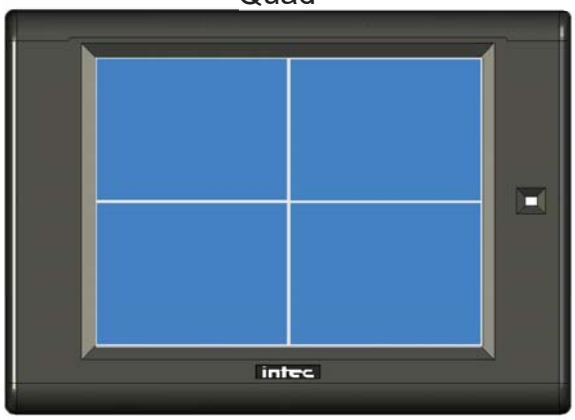
Note: Only one multi display camera view can be programmed for the <EXT> button.

Triggered Multi Display Camera View

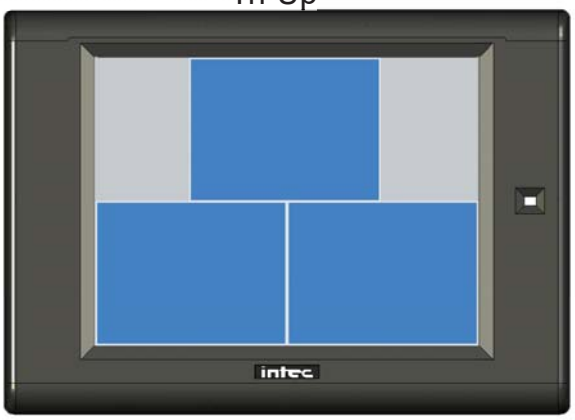
In addition to the EXT button multi display camera view there is a separate independently programmed triggered multi camera view available. This additional view is set up through page 5 of the installers menu and in the same manner as above. It is displayed when you apply +11 to +32 VDC to the orange trigger wire and can be connected to a switch to allow for a second multi display camera view if needed in your application.

Refer to the following images for the multi camera and triggered multi camera views available.

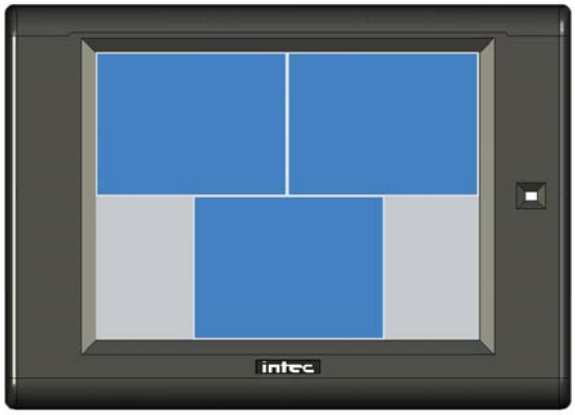
Quad



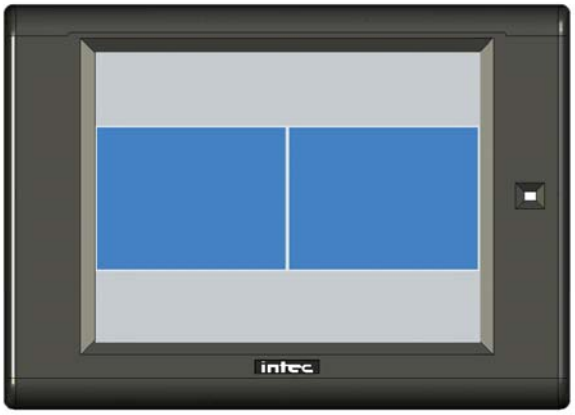
Tri-Up



Tri-Low



Dual



Programmable Auto Camera Cycle

The Auto Cycle allows the user to select dwell time intervals from 0 to 20 seconds for each camera position, including external video in. They will be displayed on the screen for the preset period of time before cycling to the next camera position. Setting the cycle time to “0” (zero) will exclude that position from being displayed during the cycle. Refer to page 2 of the On-Screen Menu or page 13 of this guide for information on setting up the programmable camera cycle.

Once set up the Auto Cycle can be accessed by either pressing the CYCLE button on the remote or when the cycle trigger (light blue) wire is activated.

Note: If all camera positions are set to “0”, the cycle function is disabled.

Programmable Output Auto Camera Cycle

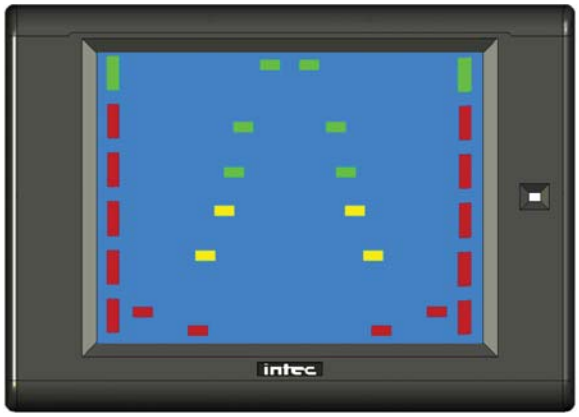
In addition to the Programmable Auto Camera Cycle there is a separate Programmable output Camera Cycle that allows you to set an alternate cycle that can be recorded via one of the available video outputs. Setting up output cycle is done through the installers menu, page 6. Refer to page 15 of this guide for more information.

Note: The output Auto Camera Cycle is only available when set via an available video output.

Integrated Active Object Detection (Radar)

The integrated radar, when properly connected, will send a visual alert to the Car Vision® display and an audible alert to the Car Vision® remote when an object is detected within its operating range. The visual alert consists of OSD markers on the left and right sides of the display screen. When properly connected and powered, green markers at the top of the screen will illuminate indicating the radar is active. When an object is detected in the outer most detection area, the first of 5 red markers will illuminate starting at the top of the screen, directly below the green markers. As the object gets closer to the radar sensor(s), or if the vehicle is moving and getting closer to the object, additional red markers will illuminate and flash, and a beep increasing in frequency will be heard through the remote. While in reverse, the on-screen distance grid will also flash according to the detected object's distance from the sensor as shown below.

The integrated radar is available for camera positions 1 and 2, and will operate only when connected via an INTEC cable to either of those positions on the controller. Radar 1 is activated via a +11 to +32 VDC source applied to the blue trigger wire of the controller's power harness. Radar 2 is active anytime there is power applied to the system and camera 1 is NOT triggered, even if the system is in Standby. Should an object be detected by radar 2 when the system is in Standby(or if a camera other than 1 or 2 is selected?), the display will turn on and display the video from camera 2 as well as provide the radar alert as described above..



In addition there is a source voltage 1 amp Radar Alarm output (green) wire in the controller's power harness that can be used to activate an external device in the event your radar sensor detects an object within it's range. ALARM must be set to ON in the installer's menu and the radar must be detecting an object within its range before the output voltage is present. *NOTE: Radar is only available with the CVS500M and CVS500XL controllers. It is NOT available with the CVS500H.*

Additional Features when used with a CVS500 Controller

Trigger Sequencing

Camera 1 through 5, Multi Display and Cycle triggers follow a priority sequence with camera 1 having the highest priority followed by camera 2 and so on until the Cycle trigger, with the Cycle trigger having the lowest priority. The following chart shows the priority sequencing.

Trigger Priority		
Wire Color	Function	Priority
Blue	Camera 1 Trigger	1st
Yellow	Camera 2 Trigger	2nd
White	Camera 3 Trigger	3rd
Green	Camera 4 Trigger	4th
Brown	Camera 5 Trigger	5th
Orange	Multi Display Trigger	6th
Light Blue	Cycle Trigger	7th

Turn Signal Triggering

The CVS500 is equipped with pulse latch triggering on camera position 2 and 3. This pulse latch will allow the system to remain triggered (on) even when attached to a power source such as a turn signal feed that pulses off and on.

Camera's 2 and 3 will remain active for approximately 2.5 seconds after the voltage has been removed from the corresponding trigger.

Momentary Rear Camera Override

While triggered, the rear camera can be momentarily overridden by pressing and holding down the CH 4 or CH 5 buttons on the remote. While holding down the button, the camera image will change to the corresponding camera position and will return to the rear camera when the button is released. The momentary override can only be done with camera positions 4 and 5 and will only override camera position 1 while it is triggered.

Maintenance and Troubleshooting

Preventative Maintenance

The most effective way of reducing camera system failure is regular preventative maintenance. At least once every two weeks and/or every time the vehicle is in for its scheduled maintenance is recommended.
Although it would be difficult to cover every possible scenario, the following are some examples to look for:

1. Physical damage to the camera. Examples: cracked camera glass, damaged casing or brackets.

2. Dirt or moisture on the camera's glass. Cleaning the camera's glass should be done with a clean, soft cloth to prevent scratching. For excessive dirt build up, you may need to rinse the camera glass with water or glass cleaner first.

3. Scratched camera glass. Excessive scratches on the cameras glass can distort the image. Cameras with scratched glass should be returned to INTEC for service.

4. Moisture behind the camera glass. If this is found, simply removing the cover and wiping off the glass will not solve the problem. Repairing the source of where the moisture is coming into the camera is the only way to prevent it from happening again. The camera should be returned to INTEC for service.

5. Damage to the cable and the connector seal. This includes the main cable as well as the camera and monitor pigtails. Examples: Cuts or abrasions in the cable, cuts in the connector seal or a connector seal that has come loose. *Note: Connector sealing is not required in the XL and Hirose Camera Series.*

6. Dirt on the display. Cleaning the display should be done with a clean, soft cloth to prevent scratching. For excessive dirt build up you can lightly dampen your cloth with water or glass cleaner.

7. Physical damage to the display, remote or controller and its power conductors. Examples: Cracked display casing, missing parts, exposed power wires.

8. Equipment that has come loose. Examples: Cables that are not secure, cameras, displays, and their brackets which may have come loose.

9. Educating the drivers on reporting minor problems before they become major problems. Example: Unreported moisture intrusion can result in the camera being damaged beyond repair. By taking a few minutes to inspect the camera system on a regular basis you will ensure long-term reliability with minimum cost and down time.

Periodic checks of the camera system components and wiring will help spot potential trouble areas before they result in a system failure. An excellent time to check is each time the vehicle is in for routine maintenance.

Status LED’s and Fuses (CVS100 or CVS102)

The CVS100 is equipped with two status LED’s relating to power. One (right) for system power and the other (left) for the 1 Amp radar alarm output. These fuses are located under the hinged weatherproof cover on the top of the controller.

The Power LED will be illuminated green when power (+11 to +32 VDC) is applied to the controller. The Power LED will not be illuminated (off) if the 2 Amp power fuse is open or “blown”.

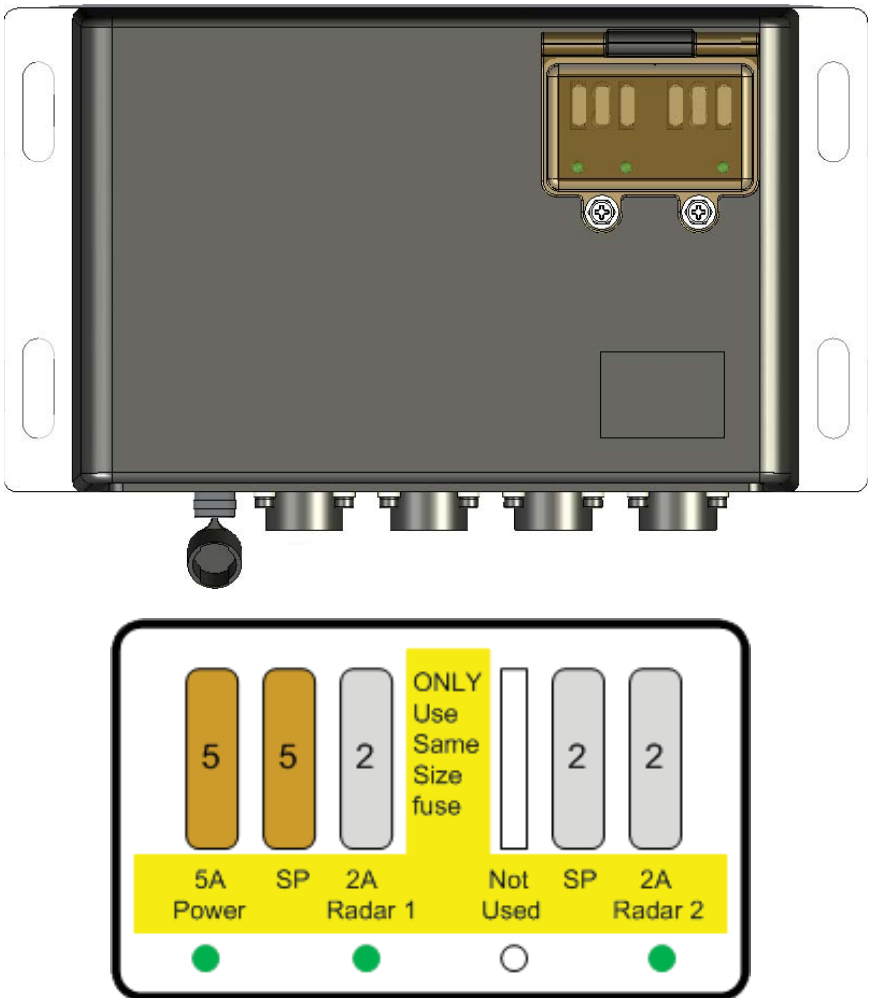
The Radar Alarm Output LED will be illuminated green when power is applied to the controller and off in the event the fuse is blown. There is also a spare 2 Amp fuse.

INTEC strongly recommends using only properly rated fuses at all times.

In addition the CVS100 is equipped with internal auto reset fuses for camera and display power. These fuses are designed to open in the event of a short in the camera, display, remote or associated cabling if the external fuse fails to blow. The internal fuses will reset once the short has been removed and system power has been cycled. Disconnecting and reconnecting the system power cord or turning the key switch off for 10 seconds and then back on again should be sufficient to cycle the power.

Status LED's and Fuses (CVS500)

The CVS500 is equipped with three status LED's relating to power. One for system power and the other two for the 1 Amp radar alarm outputs. These fuses are located under the hinged weatherproof cover on the top of the controller.



The Power LED will be illuminated green when power (+11 to +32 VDC) is applied to the controller. The Power LED will not be illuminated (off) if the 5 Amp power fuse is open or "blown".

The 2 Amp Radar Alarm Output LED's will be illuminated when power is applied to the controller and off in the event the fuses are blown. There is also a spare 5 amp and a spare 2 Amp fuse.

INTEC strongly recommends using only properly rated fuses at all times.

In addition the CVS500 is equipped with internal auto reset fuses for camera and display power. These fuses are designed to open in the event of a short in the camera, display, remote or associated cabling if the external fuse fails to blow. If this happens the POWER LED will turn red. The internal fuses will reset once the short has been removed and system power has been cycled. Disconnecting and reconnecting the system power cord or turning the key switch off for 10 seconds and then back on again should be sufficient to cycle the power.

Troubleshooting

For support and troubleshooting information please visit www.intecvideo/support.html or contact your INTEC service representative at either our Western Office (800) 468-3254 or our Eastern Office (800) 522-5989 or e-mail us at service@intecvideo.com

Service and Warranty

How to get Service

Contact INTEC's Customer Service Department at either our Western Office (800) 468-3254 or our Eastern Office (800) 522-5989 or e-mail us at service@intecvideo.com

Explain the problem to the customer service representative. The representative may offer suggestions for you to try. If these suggestions don't work, you may be asked to send some or all of your system to INTEC.

A Return Materials Authorization (RMA) number will be issued. Refer to this number during any future contact with INTEC concerning this service.

Please have the following information available to give to the customer service representative:

1. The product model number.

2. A description of the problem.

3. Your name, address and phone number.

4. The name, address and phone number of the person to whom the repair product is to be returned if different than above.

5. Any special requests (i.e. repair estimates, expedite return shipment).

Send the product, prepaid and insured to your closest INTEC office:

Western U.S. and Canada:
INTEC Video Systems, Inc.
Customer Service Department
23301 Vista Grande
Laguna Hills, CA 92653 Attn:RMA_____

Eastern U.S. and Canada:
INTEC Video Systems, Inc.
Customer Service Department
4256 State Route 51 North
Belle Vernon, PA 15012 Attn:RMA_____

Make sure to package your Car Vision® unit carefully to avoid any damage during shipping. If possible, use the original carton and packaging materials. Our warranty does not cover loss or damage in transit.

Make sure your name, address and phone number appear somewhere on the shipping container or paperwork enclosed within.

You may also call to inquire about any installation issues or concerns.

Warranty

INTEC warrants the Car Vision® products when purchased new, to be free from defects in material and craftsmanship. INTEC will repair or replace, at INTEC's sole option and without charge, any part which under normal and proper use is found to be defective within the effective period of this limited warranty. Except as required by law, this limited warranty is only made to the original purchaser and may not be transferred to any third party. The effective period of this limited warranty is 12 months from the original date of purchase from INTEC, except as set forth herein for the following products:

Cameras	**Years**	**Displays**	**Years**	**Controllers**	**Years**	**Remotes**	**Years**
CVCx00XL/HXL	8	CVD500LCD	5	CVSx00M/H	5	CVR100	5
CVC500AHXL	6	CVD650LCD	5	CVSx00XL	8	CVR500	5
CVCx00/AH/FM	5						
Cables							
CVU/UP/H/XL/XLP/TT	2						

This limited warranty is void and does not cover product that has been lost or at the sole determination of INTEC has been damaged in shipment, subjected to misuse, abuse, tampering, neglect, accident, improper installation, use on improper voltage or current, use contrary to operating instructions, or disassembly, repair, or alteration by anyone other than INTEC or an INTEC authorized service agent. This limited warranty does not cover costs incurred for removal or reinstallation of the product, or damage to vehicle or its electrical systems.

TO THE FULLEST EXTENT PERMITTED BY LAW, IN NO EVENT SHALL INTEC BE LIABLE TO ANYONE FOR SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, OR EXPENSES. THE SOLE LIABILITY OF INTEC SHALL BE DISCHARGED BY REPAIRING OR REPLACING, AT THE SOLE DISCRETION OF INTEC, ANY PART OR PARTS WHICH MAY PROVE DEFECTIVE UNDER NORMAL AND PROPER USE WITHIN THE CONDITIONS AND EFFECTIVE PERIOD OF THIS LIMITED WARRANTY, PROVIDED THE PRODUCT IS RETURNED TO INTEC, DELIVERY PREPAID AND INSURED. THERE SHALL BE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER OBLIGATION ON THE PART OF INTEC.

This limited warranty gives you specific legal rights, and you may also have other rights that vary from state to state. You should contact the appropriate state agency to find out what these rights might be. The laws of the State of California apply to this limited warranty without regard to conflict-of-laws principles and the parties irrevocably agree to the jurisdiction of the courts in Orange County, California.

For Warranty Service, call INTEC's Customer Service Department at
(800) 468-3254 (West), or (800) 522-5989 (East).

Locations

Western Regional Sales and Service
23301 Vista Grande
Laguna Hills, California 92653 USA

USA and Canada
Tel: 800-468-3254
Fax: 949-859-3178

International
Tel: 949-859-3800
Fax: 949-859-3178

Eastern Regional Sales and Service
4256 State Route 51 North
Belle Vernon, Pennsylvania 15012 USA

USA and Canada
Tel: 800-522-5989
Fax: 724-929-6590

International
Tel: 724-929-5500
Fax: 724-929-6590

intec video systems, inc.

www.intecvideo.com