COHU, INC. ELECTRONICS DIVISION

Win MPC Graphical User Interface Manual

Camera on a Pan & Tilt Unit

Positioner

Dome type Positioner

9300 Local Control Unit

WinMPC Related Equipment

Win MPC Setup and Maintenance GUI for RS-232 and RS-422 Controlled Cameras

Technical Manual 6X-1032b

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LIST OF SECTIONS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION TO WINMPC

NOTE

Sections 1 and 2 of this manual contain a large amount of information about camera types and cable connections for those requiring this broad knowledge. For those wanting to immediately connect to a camera and begin using WinMPC, refer to Section 3 which begins on page 17. It may still be necessary to refer back to sections 1 and 2 for supporting information.

Win MPC is a Graphical User Interface (GUI) intended for setup and testing of various Cohu remote control receivers, cameras, camera-positioners, lens control units, camera-domes, and cameras paired with pan & tilt units. This GUI typically runs on a laptop computer that can be easily moved from location to location to perform these functions at remote sites.

Communications from the system control location to these various camera types is typically via RS-232 for up to 50 feet and RS-422 for up to several thousand feet. Beyond that it is necessary to add a long distance method of linking back to the control center. This is often done with fiber optic cable but microwave and other types of wireless links are also used.

The various windows and menus of the program offer many selections of control functions but if the related camera or related equipment do not have those features implemented then, of course, they cannot be performed by the GUI.

The control functions of DSP (Digital Signal Processing) cameras are unique enough that a separate window is opened when they are selected.

Throughout this manual the term **camera** will often be used as a generic term to include the camera, a camera/positioner unit, or a camera bolted to a pan & tilt unit.

A **positioner** in this manual will refer to a camera module with a pan and tilt capability integrated into a single mechanical assembly. It is one mechanical assembly not two distinct assemblies. A positioner will always be serially controlled over a single cable.

A **pan & tilt** unit will refer to a separate detachable assembly providing pan and tilt capabilities. A camera housing bolts to a pan and tilt unit. Two cables are always involved when pairing a camera to a pan & tilt unit. The pan/tilt control cable typically goes to the pan/tilt unit and a separate cable goes up to the camera.

WinMPC communicates only through use of Cohu protocol. It is used to select other communications protocols (figure 1) for use by cameras in the system, but all its control functions are via Cohu protocol.

1.1 SERIAL COMMUNICATIONS

WinMPC communicates with a serial protocol to control cameras and pan & tilt units (or integrated camera/positioners)

Three basic situations are commonly found when desiring to use serial communications to control cameras:

WinMPC Communications Basics

To communicate with a camera you must know three things about it:

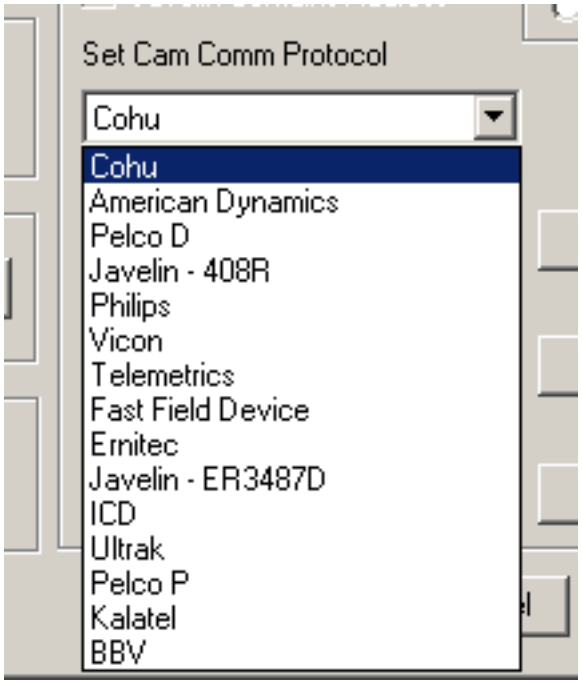
1. The address it is set to
2. The baud rate it is set to
3. The protocol it is set to

WinMPC must be set to these exact same settings before communications can be established.

Before interconnecting a cable between the camera and a PC running WinMPC, go to the camera setup screens in WinMPC and set WinMPC to:

1. The address being used by the camera
2. The baud rate being used by the camera
3. The protocol being used by the camera

(Note: The camera mentioned above could instead be an addressable control receiver in some installations.)



Note: Prototols are added regularlly, so this drop down listing may not be current.

Figure 1. Available Protocols

1. An analog camera will accept only analog control signals (no serial communications capability)

2. A camera has built-in serial communications capability

3. Either an analog or a serial camera is paired with some type of pan & tilt unit and a control receiver.

Pan and tilt units themselves are a complicating factor because they too usually are analog controlled but newer models may require serial control.

Analog Camera. In the case of an analog camera, a serial communications circuit board must be added either in the environmental housing with the camera or nearby in a control box or companion pan & tilt unit. This board converts serial to analog.

Serial Camera. With a serial camera, a direct serial link can be established between a PC running WinMPC and the camera. Most DSP cameras can be directly interconnected with WinMPC; however, some early models require a serial board to provide firmware support. These include the model 3500 and some 3800's.

Pan & Tilt Units. When a camera is paired with a pan & tilt unit several different serial communications arrangements are possible. A complicating factor is that some pan & tilt units can require analog control voltages and others require serial communications. These three variations are most common:

1. Serial communications is established with a nearby control receiver or junction box containing a serial board

2. Serial communications is established with a serial board (see section 1.2) in the camera housing and then pan & tilt control is passed back out to the pan & tilt unit. This case is only used for serially controlled pan & tilt units.

3. Serial communications is established with a serial board in the pan & tilt unit and that board splits the data into p & t serial data and camera serial data — which is passed on to the camera.

As mentioned, a unique case is the 3500 camera — an early version DSP camera. It is supported for serial communications only through a separate serial communications circuit board with dedicated firmware in the Model ER-2222 rack mount receiver unit. This receiver passes serial control functions to the camera and analog voltages to the associated pan & tilt motors.

1.2 SERIAL INTERFACE BOARDS

Several different types of serial interface boards are used to communicate with cameras and pan/tilt units.

In addition to the binary serial interface they provide these serial boards may also provide additional capabilities such as analog control voltages for lenses mounted on cameras, analog control voltages for pan/tilt units, and protocol translations for cameras that do not inherently "understand" the Cohu protocol.

In sum, then, serial boards offer various combinations of:

1. Serial interface with protocol translation (for either a camera protocol or a pan/tilt protocol)

2. Serial interface to split the serial into a camera serial stream and a pan/tilt serial stream (with protocol translations if needed)

2. Serial interface with analog lens driving capability

3. Serial interface with analog pan/tilt driving capability

1.3 WINMPC TRANSPARANCY

The previous discussion of serial communications with cameras and pan & tilt units becomes transparent when using the WinMPC Graphical User Interface (GUI). In this GUI it is only necessary to select the proper receiver or receiver/camera type to be controlled and then proceed to establish communications.

1.4 RS-422 AND RS-232 SERIAL CABLING

All the equipment discussed in this manual transfers serial data between units using either RS-422 or RS-232 serial communications. RS-422 is most common because it allows longer cable runs, but for short runs RS-232 is sometimes used. Most cameras are capable of only RS-422, but a few are capable of being reconfigured to using RS-232. Some cameras offer both 422 and 232 on the interface connector.

Since laptop PCs typically have offered only an RS-232 serial port, an RS-232/RS-422 converter is usually required for use with a laptop PC.

Newer laptops likely do not have an RS-232 port and thus a USB to RS-422 converter is required.

Use of either a 232/422 or a USB/232 and 232/422 converter is transparent to WinMPC. Be aware, though, that not all of these converters operate reliably in all situations.

1.5 LENS CONTROL

Lenses can have zoom, focus, and iris capabilities each of which require an analog control voltage.

Zooming changes the focal length to provides telephoto and wide angle coverage.

Focus is changed to obtain as sharp a picture as possible on the part of the scene of interest.

Iris provides an ability to control the amount of light passing through the lens by opening and closing a diaphragm. Most lenses intended for outdoor use have an auto iris capability in which they respond to signals from the camera circuits to automatically maintain the proper light level on the sensor. It is the iris more than anything else that makes it possible for a camera to view scenes with a range of scene illumination from near dark to the intensely bright light present at high noon.

If a manual control function is available for the iris, it can be opened and closed in response to scene lighting as desired without depending on the automatic iris control function. This can be helpful in high contrast situations when the area of the scene of interest is in deep shadows (perhaps backlighted) or maybe intensely lighted as with an object resting on the sand at a beach.

This zoom, focus, and manual iris capability require analog control voltages unless this is part of the serial capability of a camera.

Do not confuse the optical functions of mechanical lens with the pan, tilt, zoom capabilities combined into some DSP cameras. These DSP cameras only manipulate the video picked off the sensor to provide pan/tilt/zoom effects.

1.6 TYPICAL RS-422 SERIAL COMMUNICATIONS CONFIGURATIONS

Illustrations A through F in figure 2 illustrates some typical methods of connecting to various combinations of cameras and pan/tilt units whether they require analog control, serial DSP type control, or various combinations of both.

In every case the serial RS-232 communications is provided by WinMPC running on a laptop PC or similar windows based computer.

Arrow directions on the cabling merely illustrate the primary control path. Serial data flows both ways on the cables in a half duplex arrangement.

The LCU shown in part F of figure 2 is a special case. This rack mount panel is mounted in an equipment cabinet or control room near a camera so that maintenance personnel can easily work with the camera. This panel has control buttons and switches on the front panel to control camera and pan/tilt functions, but it also has a RS-232 port there so that a laptop PC running WinMPC can be used.

Illustration G in figure 2 shows the PC to WinMPC Master connection that can be selected on the Camera Setup screen. This Master Control Panel serves as the “intelligent” controller for a system of cameras, remote control panels, video switchers and such equipment.

-end section 1.0 -

2.0 SELECTING THE PROPER CONTROL SCREEN

Because the WinMPC graphical user interface is capable of controlling a wide variety of Cohu cameras, it is necessary to access the proper control screen or screens for the specific camera to be controlled. The term “camera” can include not only the camera but also its zoom lens and a pan/tilt unit or integral positioner capability.

NOTE

Screen views in this manual appear in figures 9 through figure 19. Each screen has an accompanying table describing features of that screen. These tables are not separately numbered but instead refer to the related screen figure number in their titles.

Primary control for standard analog type cameras is from the following two screens. These screens also provide the pan/tilt controls and lens controls for all camera types:

Figure 9. Cohu - WinMPC *(the “home” screen for WinMPC)*

Figure 10. Camera Setup

In addition to these two screens, DSP type cameras will also have a unique screen dedicated to their DSP functions. The DSP control screens are:

Figure 11. DSP 3500 Control

Figure 12. DSP 383X Control

Figure 13. Day/Night DSP Camera Control (3900’s)

Figure 14. DSP 3640

Figure 15. DSP5960 Controls

Figure 11 through figure 15 above are for the DSP camera control screens, but any pan/tilt and zoom lens functions they might be associated with are on the “home” screen. (Note though that some DSP cameras have digital zoom and pan/tilt associated with manipulating the scenes from the sensor.)

In addition to these seven screens there are a five illustrations of sub screens that will be opened in response to selecting various control functions. See figure 16 through figure 20 for these sub screens.

When controlling DSP type cameras it is necessary to go back to the Cohu - WinMPC “home” screen for control of the mechanical pan/tilt/zoom and lens iris/focus controls . (Note that DSP cameras can also have similar features as digital functions.)

2.1 TYPES OF CAMERAS AND RELATED EQUIPMENT

Many different combinations of cameras, positioners, lenses, and cameras paired with pan/tilt units can be controlled by WinMPC. They all have different capabilities and limitations, so using WinMPC requires some knowledge of the equipment being controlled. DSP cameras have additional controllable features not found on other camera types. Even among similar models the feature set can be different.

The next section begins with a description of pan/tilt units and positioners. See figure 2 for simplified diagrams of using WinMPC at some typical camera sites.

2.1.1 Pan/Tilt Units and Positioners

With most installations it is desirable to be able to remotely reposition the camera up/down and right/left to cover the whole scene in the area where it is mounted. Pan/tilt units, positioners, and dome type cameras provide this capability.

Pan/Tilt Units. For many years this capability has been provided by mounting the cameras on analog voltage controlled pan and tilt units. These p/t units use ac or dc motors to move the mounting platform and thus required analog control voltages to be applied.

Serially controlling one of these pan and tilt units requires a nearby control receiver to convert the binary serial data to analog signal voltage to control internal motors in these pan/tilt units.

The newest pan and tilt units are available with serial communications capability built in. These units can be paired with serially controlled cameras for a cleaner installation. Typically the system serial cable connects to the pan and tilt unit and then another cable routes serial between the pan/tilt unit and the serial camera.

It should be understood that the pan/tilt unit and the camera each have their own protocols. When these two units are interconnected to exchange binary serial data protocol translation will be required. This is a firmware function and it is transparent to users of WinMPC and any other control software.

When a camera is bolted to a pan/tilt unit two cables must be used to make the connections. Most often the system interconnection cable goes to the pan/tilt unit and then a separate cable goes up to the camera.

Positioners. As cameras have become smaller and lighter, this ability to reposition them right/left and up/down is more often combined into a single mechanical assembly containing a camera module and its pan/tilt positioning device. The combination is called a “Positioner.” Stepper motors are used instead of conventional

ac or dc motors. Since these positioners are the latest designs, they have serial communications as a built in feature.

These Positioners can be controlled via a single cable containing the RS-422 (or RS-232) serial wiring, video, coax, and power wires.

2.1.2 Model MPC-D and Model ER-2221 Series Control Receivers

Control receivers are an interface between the binary serial communications provided by WinMPC and analog cameras and pan/tilt units.

Control receivers translate this binary information into analog voltages for both the camera and the related pan/tilt unit, and lens control functions. Each receiver controls only one camera and its associated pan/tilt unit.

The Model MPC D is a weatherproof outdoor version of control receiver. The Model ER-2221 series are rackmount versions for use in a protected area. They are functionally similar but the 2221B has the additional feature of front panel controls for most functions.

2.1.3 Model ER-2222 Series Control Receiver

This version of rack-mounted control receiver provides binary serial communications for the camera but analog control voltages for the companion pan/tilt unit. It has front panel controls for most functions.

This panel is intended for use with the model 3500 camera and certain cameras of the 3800 series (3832, 3834, 3835). Each camera type requires that the its associated control receiver have firmware dedicated to that camera (i.e., ER2221C for 3830 cameras).

2.1.4 Model 9300 LCU (Local Control Unit)

This is a rack mounted panel with both front panel controls and RS-232 port intended for local control of a serial camera during setup and maintenance operations. This panel serves only one camera.

It typically mounts within an equipment cabinet at the bottom of a pole or similar nearby location. It is not related to the control receivers described in sections 2.1.2 and 2.1.3.

Communications between operators at the system control room and the remote camera route through this panel when it is in the Remote mode. It passes serial communications along to the camera (or positioner or camera and pan/tilt unit). (Remote is the normal operating mode.) Communications to the cameras is always Cohu protocol, 9600 baud, RS-422, half duplex (two way).

When this panel is placed in the Local mode, front panel switches are activated, but this also activates an RS-232 port on the front panel and disables the host port. A laptop computer can be connected to run WinMPC for additional capability beyond what is offered by the switches.

This panel does not perform analog control functions as does the MPC D and its related control receivers. It offers purely serial to serial communications.

2.1.5 Analog Cameras (Camera Type: Standard)

Analog camera sites typically do not have much to control beyond perhaps lens functions such as zoom, focus, and iris if this type lens is being used. These analog cameras must be used with a control receiver that translates the binary serial communication into analog voltages for the camera and its lens. Control voltages may also be required for a pan/tilt unit if the camera is paired with a p/t. The two basic control receivers for use with analog cameras and associated analog pan/tilt units are the model MPC-D weatherproof outdoor control receiver and the model ER221B indoor rack mount unit.

2.1.6 iDome / iView iViewII Cameras

The iDome / iView / iViewII series of cameras have a variety or features that can be controlled by Win MPC. This series offers three versions of integrated camera/positioner units that combine a high performance digital signal processing camera, pan-and-tilt, and control receiver into one integrated package.

These assemblies will typically be referred to as the “Camera.” If the internal camera module is to be specifically referenced it will be referred to as a “camera module.”

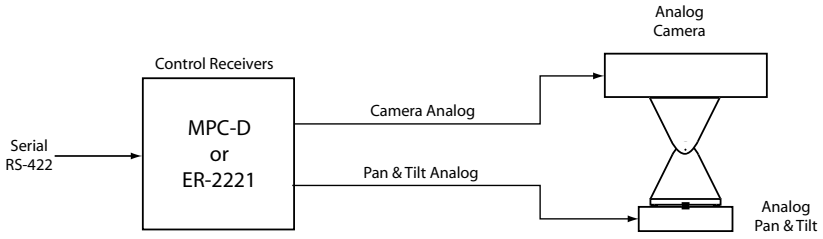
A communications protocol can be changed in the field by anyone. This is considered an administrative function and is normally part of the installation configuration process.

These cameras use digital signal processing. They have an internal source ID generator. Integration control plus a built-in video storage card provides full color continuous video even at very low light levels.

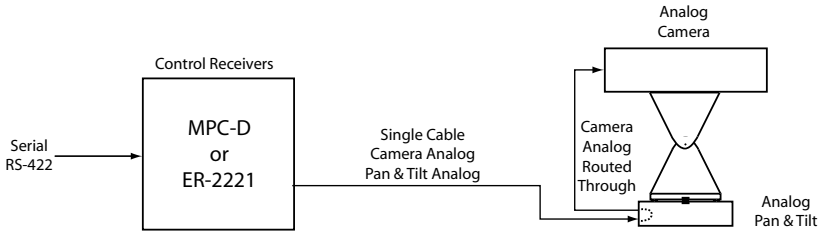
There are 64 preset positions that can be set each with a preset accuracy of 0.1 degree. In case of power failure, all 64 preset positions are stored in nonvolatile memory so that they are not lost.

The integrated receiver/driver, contained within the camera communicates using Cohu or other protocol messages. All camera functions are operable via RS-422 (preferred) and/or RS-232 (optional) serial communications.

A
ANALOG CAMERA WITH ANALOG PAN/TILT UNIT

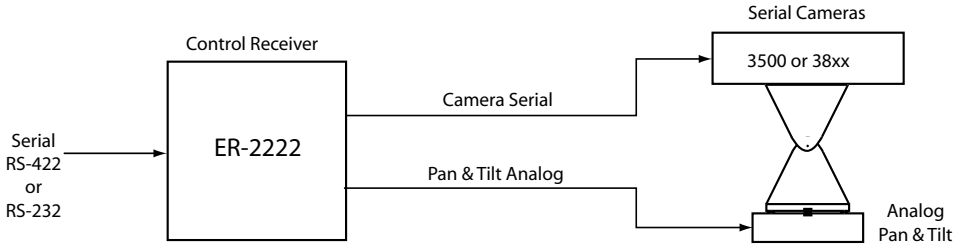


TWO-CABLE INSTALLATION



SINGLE CABLE INSTALLATION

B
SERIAL CAMERA WITH ANALOG PAN/TILT UNIT



C
SERIAL CAMERA WITH SERIAL PAN/TILT UNIT

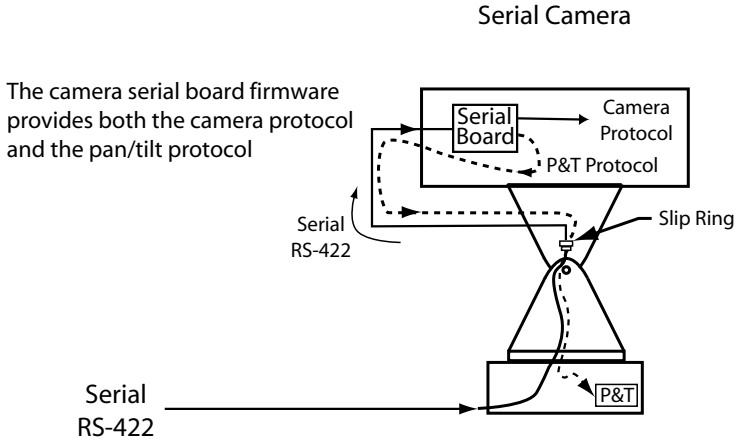


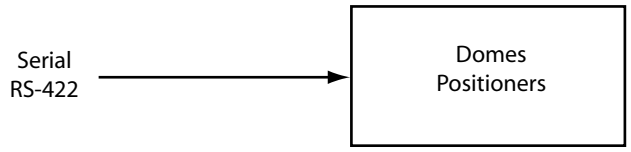
Figure 2. Typical Serial Communications Connections

(Continued on next page)

D

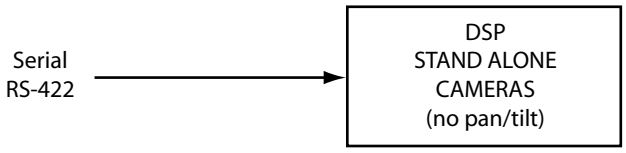
INTEGRATED SERIAL CAMERA AND PAN/TILT UNIT (Domes or Positioners)

DSP type camera mated with a pan/tilt unit into a single integrated package



E

STAND-ALONE SERIAL CAMERA (no pan/tilt or positioner)



F

Local Control Panel Installed at a Camera Location

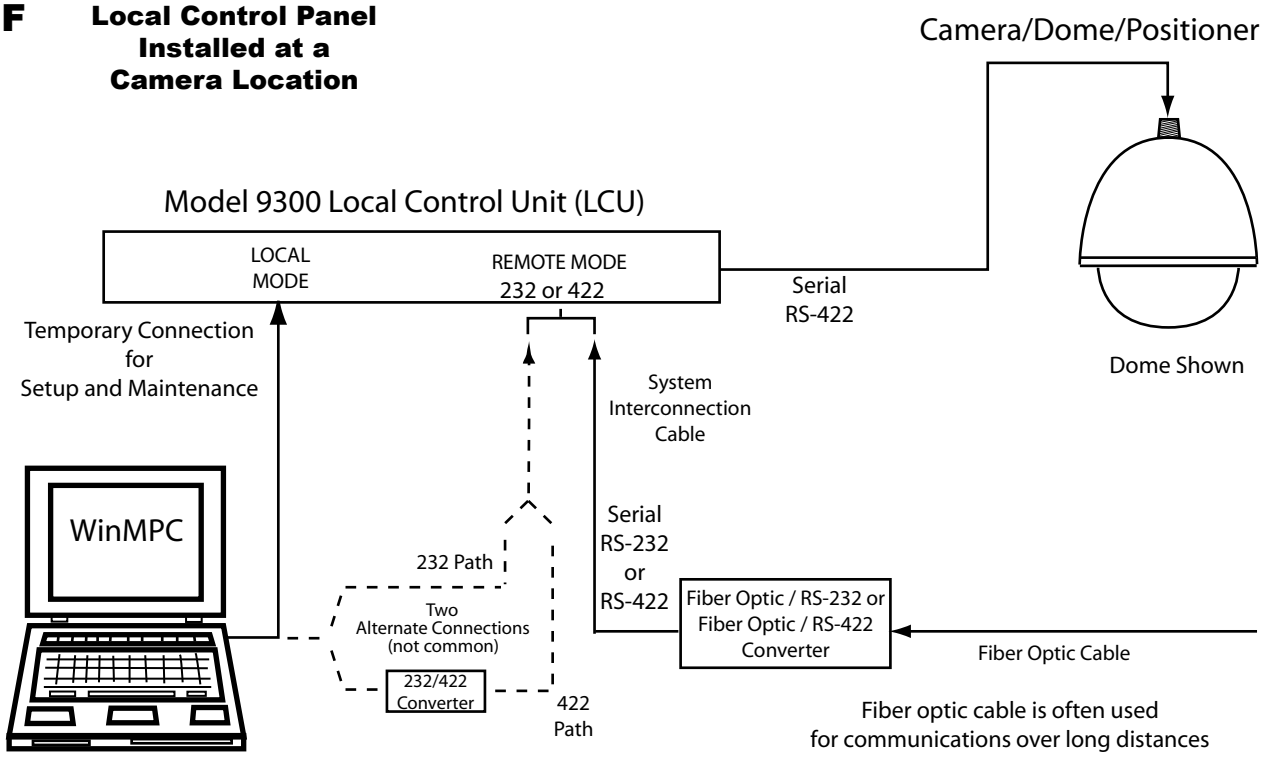


Figure 2. Typical Serial Communications Connections (Continued)

(Continued on next page)

G **WinMPC Controlling a Master Control Panel**

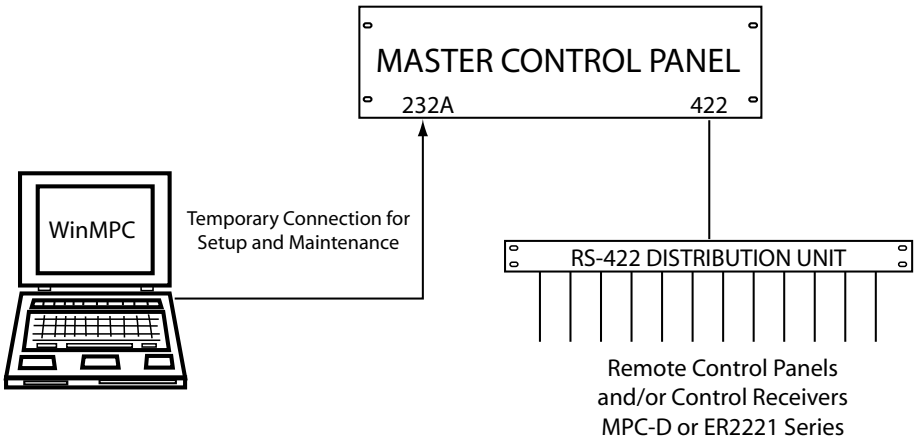


Figure 2. Typical Serial Communications Connections (Continued)

Table 1. Receiver vs. Camera Selections

SELECTED RECEIVER	ASSOCIATED CAMERA TYPES					
	Standard	3500	38xx	Day / Night (3900 series)	36xx	596x
MPC D*	X					
ER2221S*	X					
ER2222*		X	X			
Dome			X			
Positioner			X			
iDome / iView				X		
LCU*				X		
iView2				X		
36XX					X	
4200	*Not currently implemented*					
27XX	X					
596X						X

• In addition to the cameras shown here, the DPS Camera selection on the Cohu - WinMPC window opens a new window for the DSP 383x series of cameras. See figure 9.

*• An asterisk (*) in the SELECTED RECEIVER column designates an interface unit. These are not cameras; they maintain serial communications with WinMPC to control cameras and pan/tilt units.*

2.1.7 DSP Cameras

Digital Signal Processing (DSP) cameras typically have built-in serial communications capability and can be directly controlled by a laptop computer running WinMPC. These cameras can have many, varied internal features beyond what WinMPC or system operating software is intended to control. WinMPC is a setup, test, and maintenance software. It is not intended as the day-to-day control software for a camera.

DSP cameras are controlled through both the Cohu - WinMPC “home” screen and a dedicated screen related to the type of DSP camera to be controlled. The WinMPC “home” screen provides pan/tilt and lens control functions and access to other control and setup screens.

See section 2.4.1 and figure 3 for the sequence of steps to access the DSP screens. Each of the five screens that can be opened is dedicated to a particular series of DSP cameras.

2.2 CONTROL SOFTWARE

In addition to the WinMPC software (which is for maintenance, test, and setup purposes) two other control softwares are offered by Cohu for overall operation of a system of cameras. In addition, cameras such as the iDome, iView, and iViewII can operate from a variety of alternative protocols.

Sections 2.2.1 through 2.2.3 give a summary description of the three serial communications software packages using RS-232 or RS-422.

Section 2.2.4 references a version of WinMPC intended for IP Ethernet cameras. These Ethernet based cameras have nothing to do with the cameras covered in this manual. The version of WinMPC for Ethernet IP type cameras is another manual.

2.2.1 Win MPC (this manual)

Win MPC Graphical User Interface (GUI) software is available for setting the address and performing field tests for a single camera. WinMPC communicates only with Cohu protocol. It can be used to set other protocols in the equipment it is connected to. WinMPC can be obtained at no cost from either the Cohu cctv web site or by mail on disk. This manual documents only Win MPC. Cams and Net Cams software listed below are discussed for reference only.

2.2.2 Cams

The Cams protocol software is intended for controlling multi-camera systems when the Cohu MPC Master Control Panel is the central control “intelligence” for the system. All control and response commands among the various equipment in the system pass through the Master Control Panel.

2.2.3 Net Cams

The Net Cams software is intended for controlling multi-camera systems when a Windows based PC is the central control “intelligence” for the system. All control and response commands among the various equipment in the system pass through the Net Cams Server.

2.2.4 IP (Ethernet Cameras)

Neither this manual nor this version of WinMPC have any relationship to Ethernet based IP cameras or related equipment.

The WinMPC protocol described in this manual communicates via RS-232, RS-422, or RS-485. Ethernet IP cameras are controlled by another version of WinMPC.

2.3 ALTERNATIVE CONTROL PROTOCOLS

Cohu protocol is the native protocol of the cameras mentioned in this manual.

These cameras and related equipment can be made to operate from other protocols through use of firmware implementations that translate between the Cohu protocol and other protocols.

Not all features of an alternate protocol may be translated to the Cohu protocol and an alternate protocol may have features not supported by Cohu equipment.

Figure 1 lists the current protocols that have been implemented for Cohu cameras.

Also, these alternate protocols typically do not provide for setting the address and certain other functions of the cameras. Thus, Win MPC should be used for setting functions such as the address, touring, privacy zones, and such — but some protocols may have the ability to do some of these functions.

Once the address and other functions are set, Win MPC then selects the desired alternate protocol and all but two functions after that must be controlled by that alternate protocol interface.

When a camera is operating under a non-Cohu protocol Win MPC can control only two functions:

1. Set Address
2. Select a protocol

Win MPC must always be used to set the camera address and also to change its operating protocol. It may also have to be used to set functions such as touring and presets in Cohu protocol format in the event that the operating protocol does not support that function.

2.4 SELECTING A CAMERA FOR CONTROL

When initially starting WinMPC it is necessary to select the type of camera to be controlled.

Some cameras and pan/tilt units cannot be directly communicated with using binary serial communications and WinMPC. If such a camera or p/t do not have an inherent designed-in serial communications capability, some type of serial communications interface must be used between WinMPC and these units.

This can be a control receiver chassis mounted near the camera or it can be a serial interface board housed inside of the camera or p/t unit.

Except for the outdoor weatherproof MPC-D control receiver, control receivers may have local control functions on their front panel together with a serial interface connector for establishing local control with Win MPC.

Newer digital signal processing (DSP) cameras, domes, and positioners have serial communications built-in. They do not require any type of separate interface.

Selecting a Camera Type

Under the Special Functions area of the main Cohu - WinMPC window (figure 3) can be found a button labeled Camera Setup. Clicking this button opens the Setup screen (figure 4) with drop down menus available leading to all the cameras that can be controlled.

The setup screen has two areas related to control of equipment:

1. a Receiver selection area and
2. a Cam Type (Camera Type) selection area.

Clicking on the down arrow at the Receiver Type selection opens a drop down menu. Three of the selections on this menu are actual control receivers and one is an LCU (Local Control Unit) which is an interface panel used when local control is wanted at a remote camera site. The other selections are actually camera model series numbers.

This mix of selecting control receivers and camera model series in these two drop down menus is a result of WinMPC having to select the proper set of control functions.

Sometimes WinMPC interfaces directly with the camera, but with other cameras WinMPC must interface with an intermediate serial communications board bundled with the camera. And for other cameras WinMPC communicates with a separate control receiver or perhaps the optional model 9300 Local Control Unit (LCU).

Figure 5 shows the camera types associated with each Receiver selection. Sections 2.4.2 through 2.4.13 briefly describe each of these Receiver selections:

Choosing one of these “Receiver“ selections causes a default camera type to appear in the Camera selection box to the left. In most cases this will be the proper camera type to be controlled, but see figure 5 if it did not default to the camera family series you want to communicate with. This should only be an issue with the 38xx family of cameras.

If this is the camera type to be controlled you can continue on this Setup screen and set up the COM port, baud rate, and other functions.

After completing all the required selections on this screen clicking OK at the bottom returns you to the WinMPC ‘home” screen.

If an analog camera and analog pan & tilt are to be controlled all the required control functions are available on this screen.

However, if a DSP type camera is to be controlled, then clicking the DSP Camera button opens a new screen with controls for that camera.

The DSP Camera button is clicked only after coming back to this screen subsequent to making a receiver and camera type selection on the previous Setup screen. Section 2.4.1 expands upon making this DSP selection.

2.4.1 Accessing DSP Camera Functions

The Receiver Selections dropdown menu is used to access the proper screen to control a particular model of DSP camera.

Accessing DSP Functions for a particular camera is a three step process. The following sequence will open a screen of DSP controls for the camera desired.

1. In the Cohu - WinMPC Screen: select Camera Setup (this opens the Setup screen)
2. In the Setup Screen: select the Receiver Type from the dropdown menu and then click OK . It may be necessary to change the Camera selection if this default selection is not the camera type to be controlled. See figure 5.
3. Back in the Cohu - WinMPC screen: select DSP Functions. (This will open the proper DSP camera control screen based on the previous selections.)

Figure 3 shows details of the Cohu - WinMPC and Setup screens together with a step-by-step procedure for accessing these DSP functions.

2.4.2 MPC-D

Use this selection to communicate through an MPC-D weather proof NEMA outdoor mounted box to an analog camera and pan & tilt unit. A serial communications circuit board inside the box provides analog control voltages to the camera and P/T unit.

2.4.3 ER2221B

This panel is functionally similar to the MPC-D but it may have front panel switches for on-site control functions and may add ID text to the video. Use this selection to communicate through a rack mounted chassis to an analog camera and pan & tilt unit. A serial communications circuit board inside the box provides analog control voltages to the camera and P/T unit.

2.4.4 ER2222

Use the ER2222 selection to communicate through this rack mounted chassis to a serial camera and analog pan & tilt unit. A serial communications circuit board inside the box provides serial communications with the camera and analog control voltages to a pan/tilt unit. This rack mounted unit may have front panel local control capabilities for testing and setting up the camera and P/T unit.

2.4.5 Dome (3820)

The Dome selection is intended to communicate with the model 3820 dome camera/positioner unit. The 3820 has a built-in serial communications circuit board.

2.4.6 Positioner (3850)

This selection should be used to establish communications with a model 3850 camera / positioner.

2.4.7 iDome / iView (3900 Series)

When it is necessary to communicate with either a 3920 or 3950 iDome / iView, use this selection. This equipment has built-in serial communications.

2.4.8 LCU (Local Control Unit)

Select LCU when a model 9300 Local Control Unit is installed at the camera site. See figure 2 F.

WinMPC communicates with the LCU and the LCU then communicates with the nearby camera.

This rack mount panel typically mounts in an equipment cabinet located near the camera. It provides front panel switches for control of certain camera and pan/tilt functions. It also has a serial port on the front panel where a laptop computer running WinMPC can be connected.

WinMPC can also be interconnected with the rear panel RS-422 (or RS-232) port if desired. In this case the panel would be left in the remote mode.

The LCU is used at a camera location for maintenance purposes. It must be placed in Local mode to activate local panel control functions. This panel is normally in the Remote mode so that the system interconnection cable has communications with the camera.

Local mode times out after a five minutes of inactivity so that the panel is placed back in Remote mode. Remote mode than allows system control again.

2.4.9 iView2 (3960)

This Positioner has a side mounted camera integrated with a pan and tilt unit into one mechanical package. It has internal built-in serial communications for both the camera module and the pan/tilt components.

2.4.10 36xx (3644 & 3645)

The 3640 series cameras offer DSP features in a sealed and pressurized environmental housings. They produces a color output and are available with a variety of fixed focal length auto-iris lenses and also zoom lenses. They can be optioned with both an ID generator and fiber optic video output. A serial communications board may be contained within the housing.

2.4.11 4200

This product is currently in development.

2.4.12 27xx (2744 & 2745)

These monochrome CCD cameras offer very low light level dual-gain sensitivity. They can be optioned with an ID generator and also a fiber optic video output.

They are available with a variety of both fixed focal length auto-iris lenses and zoom lenses.

Although they are not DSP type cameras, they may have a serial communications board for zoom lens control functions.

This series is housed in sealed and pressurized environmental barrels.

2.4.13 596x

This thermal imaging camera/positioner is intended for continuous outdoor use. It is based on an uncooled,

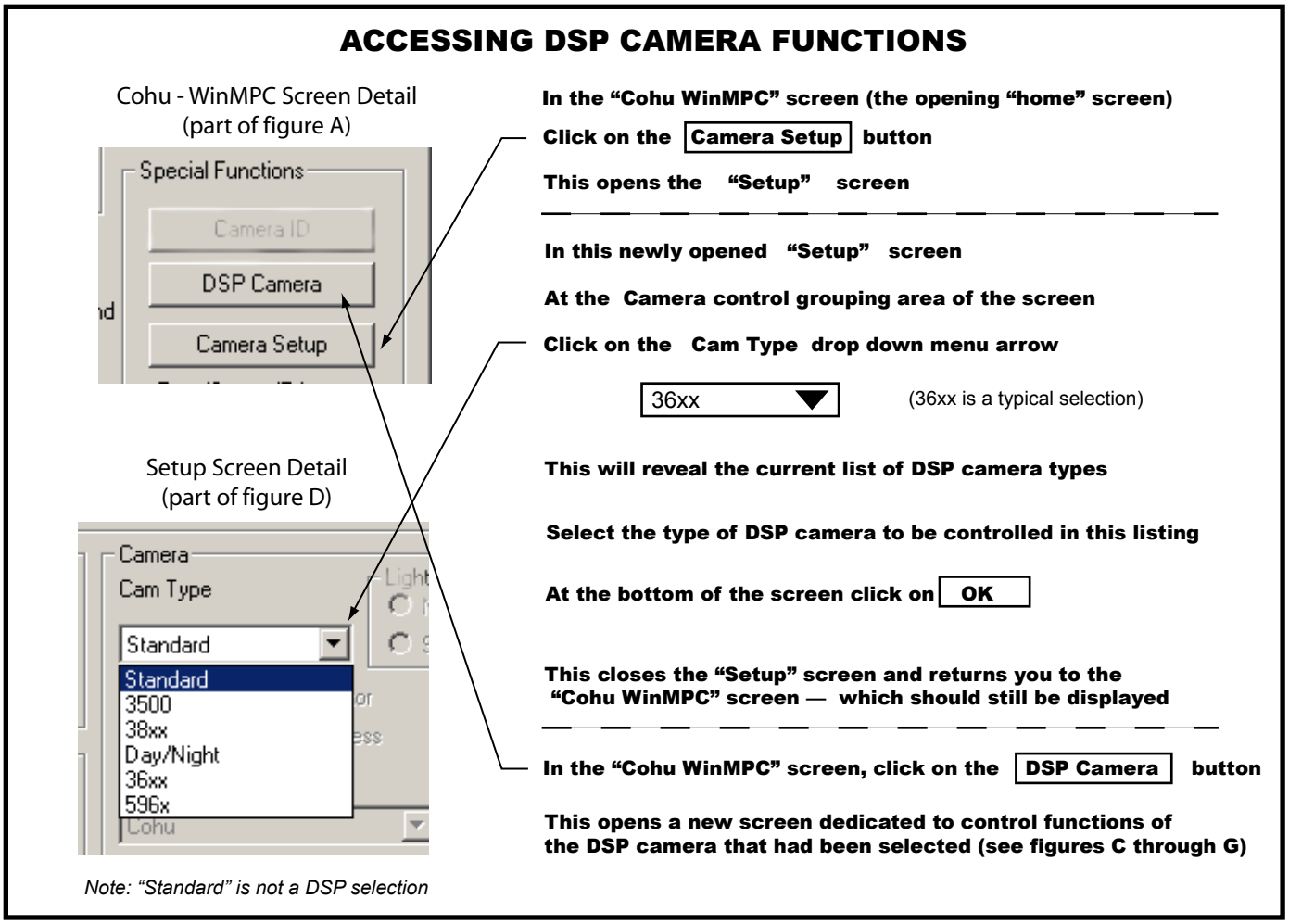


Figure 3. Accessing DSP Control Functions

microbolometer FPA detector operating in the 8-14 micron spectrum. It has a 320 x 240 resolution detector.

This camera does not generate a conventional picture where details of the scene are shown. It shows only heat patterns radiating from the scene. A color pallet in the camera firmware allows assignment of colors to each level of heat picked up by the camera. The intended application for the camera determines what these assignments are.

The camera body is housed in a sealed and pressurized enclosure.

This camera has DSP functionality and offers a wide selection of control functions; however, WinMPC controls a limited set of these features for use during installation.

2.5 CAMERA SELECTIONS

Camera selections associated with the Camera Setup button are made on the Setup window. Some interactions occur automatically when selections are made in the Setup window. Certain items will be grayed out and others activated as different selections are made.

2.5.1 Standard Camera

The Standard Camera selection should be used to communicate with analog camera and pan/tilt units, but WinMPC cannot communicate directly with analog units. A serial-to-analog interface is required.

Typically a model MPC-D or ER-2221B control receiver is used to provide serial communications with analog cameras and pan/tilt units.

When a serial camera is paired with an analog pan/tilt unit, a model ER-2222 control receiver must be used. It provides serial output for the camera and analog output for the pan/tilt unit (i.e., 3500 or 3800 series cameras).

2.5.2 3500 Camera

The 3500 camera requires an external serial communications interface to be controlled by WinMPC. When

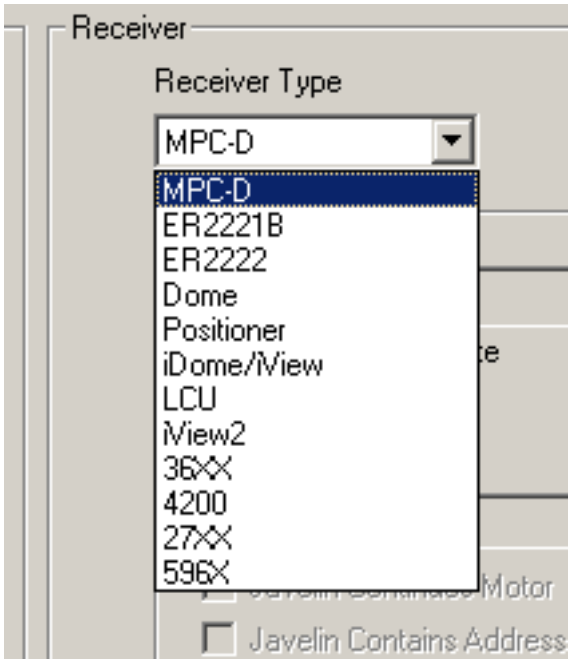


Figure 4. Receiver Type Selections

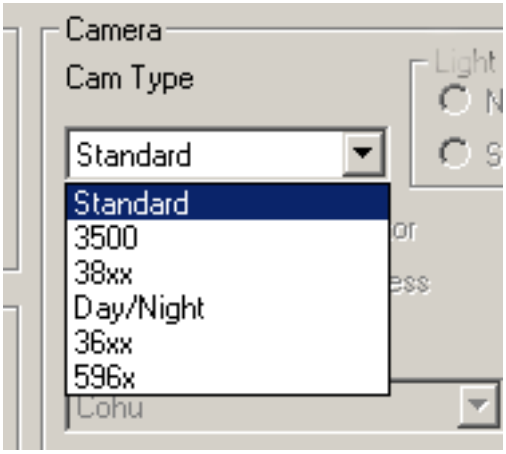


Figure 5. Camera Type Selections

this camera is paired with an analog pan /tilt unit the Model ER-2222 control receiver provides the interface capability for the serial 3500 and analog p/t unit.

2.5.3 38xx Camera

This selection is typically used for a model 3850 camera and its pan/tilt unit. When this serial camera is paired with an analog pan/tilt unit, the model ER-2222 control receiver provides the interface.

2.5.4 Day / Night (3900 Series) Cameras

When a 3900 iDome or 3900 iView are to be controlled by WinMPC, select Day / Night Camera. Both versions of the 3900 have built in serial communications and can be directly connected to WinMPC.

2.5.5 36xx Camera

The 36xx series of cameras offer DSP machine vision capabilities with a wide selection of features. Controlling this camera with WinMPC requires that it be paired with a serial control board in an environmental housing.

2.5.6 596x Camera

The 596x series of cameras provide thermal imaging of the scene.

WinMPC offers a selection of control functions related to enhancing the thermal image of the scene and also lens control functions such as zoom and focus.

Click OK to exit the Setup screen. Win-MPC will automatically begin polling the camera or receiver for status. Click the Status button to stop polling.

2.6 DSP CONTROL SCREENS

Cameras with DPS capabilities have a sufficient number of features that makes it necessary to open an additional screen dedicated to their unique control functions. The five DSP screens are:

- DSP 3500
- DSP 383X
- Day/Night DSP
- DSP 3640
- DSP 5960

These screens are shown in figures 11 through 15. The corresponding descriptions of each of the features in these screens are covered in the tables accompanying these figures.

Each screen has an accompanying table on the page next to it.

While DSP functions are controlled by a dedicated screen for each type of camera their related pan/tilt and zoom/focus/iris lens functions are all controlled by functions on the Cohu - WinMPC screen.

Controlling any camera that has a dedicated screen also requires that the main (Cohu - WinMPC) “home” screen be used if any pan/tilt or lens functions are to be controlled for mechanical pan/tilt units or the optical lens attached to the camera. (Digital features performing similar functions appear on the DSP screen itself.)

Sections 2.6.1 through 2.6.5 briefly describe each of these DSP cameras and expand on some of the features:

2.6.1 DSP 3500

Communicating with the 3500 camera requires a serial interface with firmware dedicated to this camera. (Figure 11 and its accompanying table pertain to this camera.)

2.6.2 DSP 383X

Communicating with the 3800 camera requires a serial interface with firmware dedicated to this camera. (Figure 12 and its accompanying table pertain to this camera.)

2.6.3 Day/Night (3900 Series) DSP

Day/night type cameras have either a 23x or 35x optical zoom capability and offer DSP functionality of many camera features. Serial communications can be directly established with these cameras. (Figure 13 and its accompanying table pertain to this camera.)

2.6.4 DSP 3640

The 3640 camera requires a dedicated serial communications board having dedicated firmware for the 3640 camera within its housing. (Figure 14 and its accompanying table pertain to this camera.)

2.6.5 DSP 5960

The unique characteristics of this thermal camera requires a DSP type screen dedicated to its features. Serial communications can be directly implemented with the camera. (Figure 15 and its accompanying table pertain to this camera.)

-end section 2.0 -

3.0 WINMPC CONTROL SCREENS

Win MPC is intended as a control GUI for setup and maintenance functions. Two primary setup functions are setting the address of a camera and selecting an alternate protocol when the camera must operate in a system not using the Cohu protocol.

3.1 DETERMINING CURRENT CAMERA SETTINGS

Before connecting WinMPC to a camera it is important to determine the current settings in the camera.

Connecting the camera to a monitor and applying power will result in the display of current settings for some DSP types of cameras. Of particular importance are:

1. Camera address,
2. Baud rate, and
3. Protocol.

Write these down so that they can be referred to later when needed.

Communicating with the camera may required setting WinMPC to the address, protocol, and baud rate currently implemented in the camera. The current protocol will likely have to be changed to Cohu protocol to perform any functions beyond an address change or a protocol change. The camera will likely have to be returned to the previous protocol when setup and testing is completed if it is to go back into the system.

3.2 WINMPC SETUP

When Win MPC (figure 9) is used for set up and testing, that camera must be isolated from all other cameras or other addressable equipment in the system. This generally is no problem since the camera setup is performed either at a test bench location or at the actual camera site itself when connected to a single camera.

If the address setting function of WinMPC were to be sent to multiple cameras they would all have the same address programmed into their memory. Since all cameras (and other addressable equipment) in a system must have a unique address, this would result in an inoperative system. (The Set Address command is broadcast to all addresses.)

3.2.1 Basic Steps to Establish Communications with a Camera

While this manual necessarily covers a large number of features for many different cameras, the actual process of establishing communications with a camera and performing control functions for one particular camera is not difficult.

The following two procedures assume that the PC running WinMPC is set to the proper serial port (commonly COM1) using the WinMPC Setup screen (figure 10).

For DSP Type Cameras

For newer type cameras with DSP functions use the following seven steps:

1. Disconnect the PC running WinMPC from the camera if it had already been connected
2. Connect the DSP type camera to a tv monitor and apply power to the camera
3. From the monitor screen read the address, baud rate, and protocol that the camera is currently set to. Write this down.
4. Set WinMPC to that baud rate, address, and protocol. These are typically found on the home screen and the Setup screen.
5. Connect the PC to the camera
6. Set WinMPC to control the type of DSP camera that it is currently connected to by selecting that model (or its control receiver) in the Receiver area of the Setup screen (See figure B and table B.)
7. Proceed to performing any control functions necessary
8. Once all necessary procedures have been completed using WinMPC, return the camera to the required protocol so it can be placed back into service in the system.

For non-DSP Type Cameras

For non DSP type cameras a slightly modified procedure is necessary because standard type cameras do not display their internal settings on a monitor when powered up.

If possible determine what the camera (or receiver) address had previously been set to, the baud rate to which it had been set, and the protocol to which it had been set.

If this information is not available it becomes a trial and error exercise to establish communications between WinMPC and the camera. Use the following eight steps:

1. Set WinMPC to the model of camera or type of communications receiver to be communicated with (The camera model number should be on the camera identification label.) Use Standard for all non DSP cameras.

2. Set baud rate on the Cohu - WinMPC Setup screen to 9600 (If the protocol is known to be Pelco D, first try 4800 baud.)

3. Click on Find Address on “home” screen and wait to see if WinMPC can find the address (figure 7). It can take several minutes to scan all 223 possible addresses.)

4. Repeat steps 2 and 3 using all the other baud rates one at a time until an address is found. (19.2k, 4800, 2400, 1200, 600, and finally 300 baud)

5. Proceed to step 6 once an address has been determined. Otherwise there is a problem and troubleshooting will be necessary. (See section 6.0.)

6. Set the camera to Cohu protocol (WinMPC can search for addresses without knowing the protocol to which the camera is set.) Not all protocols will respond. Find will not function with some protocols. Also, it may lock up some protocols.

7. Proceed with any setup and control functions necessary using the various WinMPC control screens

8. Once all necessary procedures have been completed using WinMPC, return the camera to the required protocol so it can be placed back into service in the system.

Table 2. Typical iDome/iView Communications Settings

COMMUNICATIONS FUNCTION	SETTINGS
Port	COM 1 (Typical - Verify)
Baud Rate	9600 (Typical - Verify)
Pan/Tilt	Var Speed P/T
	Max Pan Speed = 15
	Max Tilt Speed = 15
Comm Mode	PC to MPC Receiver
Camera	Day/Night
Receiver	iDome/iView

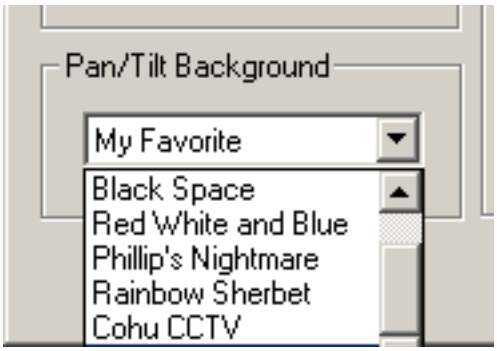


Figure 6. P/T Background Selection Menu Menu

3.3 COHU WINMPC (HOME) SCREEN FEATURES (Figure 9)

When first using WinMPC to communicate with any camera it is necessary to first ensure that reliable communications has been established. Once that has been determined it is then possible to perform any other required functions such as setting or verifying the address.

In general several things need to be done before moving on to other control functions:

1. Establish communications

2. Set WinMPC to the current camera address

3. Set the camera protocol to Cohu if it is currently in some other protocol.

4. Set Win-MPC’s baud rate to the camera (or receiver) baud rate.

When You Don't Know What the Camera is Set to

If you do not know any of these three setttings for the camera there are two possible paths to take:

1. You have a newer camera of the DSP type that will display the camera address, baud rate, and protocol on a tv monitor when the camera is first powered up.
    a. In this case connect the camera to a tv monitor, apply power, and record the three settings.
    b. Enter the address, baud rate, and protocol into the WinMPC software and then connect to the camera (see "DSP Configuration Procedure "below for more a more detailed procedure).

2. You do not have a newer type DSP camera with the ability to display camera characteristics:

    a. In this situation you will have to begin a trial and error process that can be very time consuming.

If you know one or two of the camera settings set WinMPC to those settings.

You must then begain the trail and error process to determine the remaining setting or settings. Select the most appropriate sequence listed below to perform:

1. You don't know either the camera baud rate or the camera address (or camera protocol)
You can select each baud rate one at a time and try all 223 possible addresses by manually entering them one at a time. (Using the "Find" function in all likelyhood will not work unless the camera is set to Cohu protocol. In fact it may lock up WinMPC. And cameras set to certain protocols will not respond to the Find function.) A blind search of all combinations of addresses, baud rates and protocols is not practical. There are over 20,000 possible combinations.

2. You know the camera address but not the baud rate (or protocol)
If you know the camera address, then set that address in WinMPC and select each protocol in turn until the camera responds. Each time you enter a new protocol you then have to click the Status button and note whether the camera responds back.

3. You know the camera address and its baud rate but not the protocol

Once a baud rate and an address is determined, you can then change the protocol to "Cohu" to continue using functions in WinMPC. However, if it is necessary to return the camera to the original protocol then you must first determine what that protocol is. Consult the system documentation or look at who made the head end controller (the operator control console software).

Write this protocol down for future reference. It is also a good idea to write down the camera address and the baud rate.

DSP Configuration Procedure

To configure a DSP type camera, use WinMPC to set its address, baud rate, and protocol IN THAT ORDER. Disable Status when setting an address. (It is necessary to have the camera set to Cohu protocol to change the camera baud rate.) Also, the command to change the protocol of a camera is not sent until "OK" button on the camera setup screen is clicked.

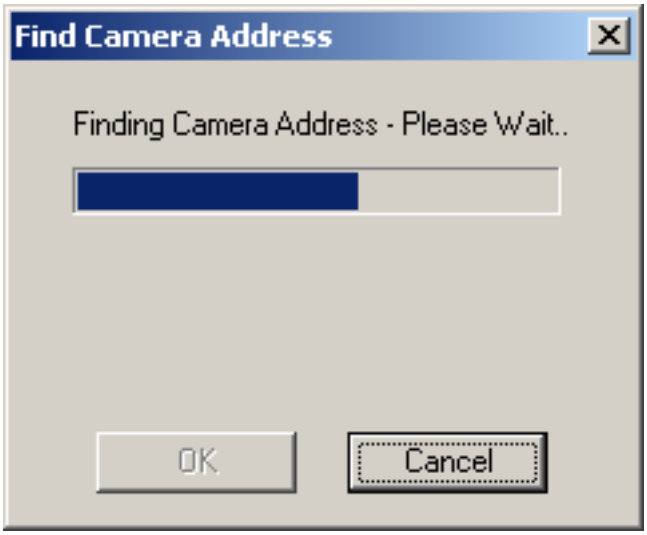


Figure 7. Find Address Window

3.3.1 Communications with a Typical Camera

Each camera in the system must have a unique address. It is probably best to set all camera addresses at a central distribution location prior to sending them out to the field installation sites. Providing a central control location for all address assignments may ensure that no duplications occur. It also assures that the camera or receiver are functional before installation.

Before the address can be set or any other setups made, it is necessary to establish communications with the camera. Figure 9 shows the home screen of Win MPC. Figure 10 shows the communications Setup window of Win MPC. The tables accompanying these screens lists the available selections. The following procedure assumes an iDome/iView type camera. This procedure requires that the camera is connected to a source of power and a laptop or PC running WinMPC. Proceed as follows:

1. Under the Special Functions area of the Cohu - WinMPC window, click on Camera Setup. The Setup screen should appear. Then select:
   a. Receiver to iDome/iView (or your camera or receiver)
   b. Select the Port being used on the PC (Com1, Com2, Com 3, Com 4)
   c. Baud Rate to required rate, typically 9600 (Click Set Baud)
   d. Comm Mode to PC to MPC Receiver
   e. Receiver to iDome/iView Camera (or your camera or receiver)
   f. Camera should default to Day/Night (or your camera type)
2. Under the **Pan/Tilt** menu area (assuming your camera has a pan/tilt capability):
   a. Select Var Speed P/T (default) for an iDome, iView, or iViewII.
   b. Max Pan Speed to 15
   c. Max Tilt Speed to 15
3. Under the **Pan/Tilt Background** menu area, select your personal preference. This choice has no effect on control data.
4. At the bottom of the window, click on OK to exit the setup window.

Note: Win-MPC retains these settings. Win-MPC will automatically start polling camera status upon returning to the home screen. Click the status button to stop this polling if desired. If no response data is received, the Comm Data light will turn red.

3.3.2 Setting the Camera Address

After the initial setup, if the address in not known, Win MPC can search for the existing camera address. Proceed as follows:

1. Click on the Find button at upper left of screen
2. Wait while the pop up window (figure 7) scans for the camera address (1 to 223) Factory default is 1.

CAUTION: Win MPC is intended to be connected to one camera at a time. If it were to be connected into a system of cameras and the address Set Function used, all cameras (or other equipment) in the system would have their addresses all set to the same address.

3. Note the address found. If this is not the correct address, enter the address required in the Set Addr line and click on the Set button.
4. Click on the Status button and confirm that response data is received and the Comm Error light is gray.
5. Proceed to section 3.3.3 to open the DSP control functions screen for this camera.

log2.txt

```
****************************************
07/09/04  12:39 PM  Camera Test Results

07/09/04  12:39 PM  TxC:  F8 01 cPS 81          Tick: 60
07/09/04  12:39 PM  Rx:   ACK
07/09/04  12:39 PM  Rx:   F8 01 cP1711135772 81
07/09/04  12:39 PM  TxA:  ACK
07/09/04  12:39 PM  TxC:  F8 01 V? 88           Tick: 1002
07/09/04  12:39 PM  Rx:   ACK
07/09/04  12:39 PM  Rx:   F8 01 V484000 8F
07/09/04  12:39 PM  TxA:  ACK
07/09/04  12:40 PM  TxC:  F8 01 cPS 81          Tick: 1001
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  Rx:   F8 01 cP1711135772 81
07/09/04  12:40 PM  TxA:  ACK
07/09/04  12:40 PM  TxC:  F8 01 r<TS 88         Tick: 131
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  TxC:  F8 01 r<TS 88         Tick: 370
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  TxC:  F8 01 r=TS 89         Tick: 60
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  TxC:  F8 01 r=TS 89         Tick: 60
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  TxC:  F8 01 r=TS 89         Tick: 60
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  TxC:  F8 01 r=TS 89         Tick: 60
07/09/04  12:40 PM  Rx:   ACK
07/09/04  12:40 PM  TxC:  F8 01 r>TS 8A         Tick: 60
```

Figure 8. Typical Log File

3.3.3 Selecting DSP Camera Screens

After sections 3.3.1 and 3.3.2 have been completed all that is necessary to open the related DSP camera screen is to click on the DSP Camera button on the “home” screen. This assumes that the proper Receiver Type and Cam Type are still selected. In the previous example this was an iDome/iView receiver type and the resulting default Cam Type of Day/Night.

Figure 3 is an illustration of the steps requires to enter the proper DSP camera screen for the type of DSP camera to be controlled.

When in the DSP control screen for a particular camera it may not be possible to control any lens functions or the pan/tilt unit movements. The DSP screen has to be closed out by clicking Close button at the bottom of the screen.

3.3.4 Camera Checkout Procedure

After communications has been established with the camera/positioner, various functions should be tested to verify proper operation. This can be done using the Win MPC interface. Check all the Momentary functions: zoom, pan left/right, and tilt up/down. Latch commands also should be tested: camera power, lens fast, manual iris, and manual focus. Several presets should be set and then re-established to verify their operation. After presets are established, the tour function should be tested for proper operation.

Once it has been verified that the camera is operating properly it can be released for service. If its protocol must be changed for the system installation, that must be done first. Once the protocol has been changed to a non-Cohu protocol Win MPC can no longer operate most functions of the iDome or iView. (It will only be able to set the camera address and change protocols).

3.4 TYPICAL SCREENS

This section describes control features of the various screens accessible with Win MPC. All these screen functions are also summarized in tables later in the manual. Various prompt messages may pop up over the various screens. Figure 20 shows these messages together with additional information about their meaning or the action required.

3.5 COHU WINMPC (HOME) SCREEN (figure 9)

This is the primary screen (figure 9) used to initiate control of the various cameras. From this screen multiple functions can be controlled - such as turning the camera on and off, setting the address, controlling lens functions, selecting tours, and others. Other screens are accessed from here to set up and control camera functions.

The large square area in the center is for control of pan and tilt units. Various backgrounds can be selected for this area (figure 6). The choice is personal preference.

At the bottom of this screen is a Log Functions area. This is a troubleshooting aid for use when problems are being experienced (figure 8). A logging file name and its storage location on the hard drive must first be established. Then any series of camera commands selected from the various buttons on the screens and the response messages will be recorded as a text file. This text log of all commands and responses can be viewed for inspection or it can be played back as often as desired. A notepad function is included so that comments can be added into the log file at any time during recording.

3.6 SETUP (COMMUNICATIONS) SCREEN FEATURES (fig. 10)

The primary use of this screen is to set up communications parameters with the various types of equipment. It also includes a few other functions such as pan/tilt speeds, pan/tilt background, and elevation setting.

3.6.1 Port

Select the port for the PC. This nearly always will be COM1. When using a USB/serial converter it may be necessary to define the port using the computer control panel.

3.6.2 Baud Rate

With a DSP type camera, applying power while it is connected to a monitor should display its camera address, protocol, and the baud rate it is set to. Select that baud rate to place the PC at the same baud rate as the camera.

Set the Win-MPC baud rate before connecting the communications cable to the PC.

3.6.3 Modem

This selection applies only when using an RS-232 modem and depends on whether RTS/CTS is required or not.

3.6.4 Comm Mode

WinMPC has two communications modes:

1. Through a Master Control Panel (the less common situation)
2. Directly with a Camera or a Control Receiver connected to a camera (most common)

Most uses of WinMPC will be No. 2 above - directly to the camera or through a Control Receiver to the camera. The intelligence for a system connected this way is a PC running Windows.

A Master Control Panel takes the place of a PC and provides the system intelligence with its own microprocessor. See illustration G in figure 2 for a simplified functional diagram of a Master Control Panel in use.

3.6.5 Receiver

Make this selection before going to the Camera portion of the Setup screen

3.6.6 Camera

Making a Receiver selection will fill this line with the proper camera family most times, but if the camera to be controlled is of the 38xx series it may have to be selected in this line.

3.6.7 Pan/Tilt Background

This choice is entirely up to the user. It offers different pan/tile backgrounds at the center of this display on the Cohu - WinMPC screen.

3.6.8 Pan/Tilt

This selection of controls set up the basic operating characteristics of pan/tilt operation for any camera with this capability.

In general, select variable speed pan/tilt and the maximum speeds of 15 unless it is known that this is not desirable. For analog type pan/tilt units, Fixed should be chosen.

Flip enable applies to iDomes which have a pan/tilt capability that allows the camera module to tilt straight down and come up the other side. If flip is not enabled for these cameras tilt will start at the maximum down position.

iViewII P/T Direction. When an iViewII is mounted upside down (as when hanging from a ceiling) the drop down menu here offers selections to reverse pan and tilt to provide a normal effect for scenes on the display monitor.

When the camera is upside down performing a pan right has the effect when viewing the scene of doing a pan left. Hanging the camera upside down also causes the scene to become upside down.

Selections in the drop down menu correct these effects.

3.6.9 Elevation Setting

This setting on the Setup screen pertains to cameras in environmentally sealed and pressurized housings. Dry nitrogen is used to purge out the atmospheric air so that nearly all moisture is removed from the housing. Dry desiccant packs in the housing then absorb additional moisture.

Maintaining the relative humidity within the camera housing very low prevents fogging of the window (or dome) when it gets cold.

As the final step when purging atmospheric air from the housing the purge valve is allowed to close and then the housing is slightly pressurized with the dry nitrogen.

A sensor inside the camera measures this pressure and provides the reading for display on an associated picture monitor and also as an alarm signal if the pressure becomes too low.

This sensor must be calibrated for atmospheric pressure at the site where the camera will be installed. Enter the altitude in feet for the location where the camera has been or is to be installed — including mounting height.

3.7 DSP CAMERA SCREENS

Receiver types and camera types must be selected on the Camera setup screen.

There are five basic types of DSP cameras each of which has a dedicated screen of control functions that opens. Sections 3.8 through 3.12 describe these screens.

3.8 DSP 3500 SCREEN (figure 11)

Various functions of a 3500 camera can be controlled from this screen. The table accompanying figure 11 lists these various functions and gives a brief description of their use. Color balance can either be set to automatic or manual. When manual is selected, a drop down menu below is activated to select various balance values.

Shutter and integration each can be set to either manual or automatic operation. Either manual selection activates a selection list directly below.

The screen also has zoom and scroll buttons to digitally zoom and scroll around within the viewing area of the camera sensor.

3.9 DSP 383x SCREEN (figure 12)

The table accompanying figure 12 briefly describes functions on this screen. Clicking on the Status ? button fills the screen selections with the current selections for various functions. Win-MPC automatically queries camera DSP status when the DSP window is open.

White balance can be selected for various types of scene lighting. Auto establishes automatic control of white balance by the internal camera circuits. To lock the current white balance in place click the LOCK button

Presets can be selected from 01 through 64.

The Digital Zoom Range selection can be used to either turn off any digital zoom or to limit it to either 2X, 4X, or 8X. This digital range comes into effect at the end of the optical zoom range. Resolution is reduced when digital zoom is used. The greater the digital zoom, the more resolution will be reduced.

The Iris selections provide for either turning on or off automatic iris operation. When in manual, manual control of shuttering can be used to provide approximately eight f/stops.

Auto integration can be used to enhance the ability of the camera to observe scene details at low light levels. The camera integrates the scene for longer than normal to capture more light. This can result in moving objects becoming blurred.

BkLite comp (Back Light Compensation) causes the camera to ignore bright areas of a scene (typically in the background) and show details of the foreground subjects by increasing gain. Light areas of the scene may be driven into saturation.

3.10 DAY/NIGHT DSP CAMEA CONTROL (figure 13) [3930/3955/3920]

This screen (figure 13) is accessed by clicking on the **DSP Camera** button of the **Special Functions** pane of the home page window.

Various functions related to the camera module are established from this DSP Camera window. The accompanying table lists all the functions of this window.

Clicking on the **Status?** button will “fill” the window with all the current selections. WinMPC automatically queries DSP status when DSP window is opened.

3.10.1 Shutter Pane

In the **Shutter** pane, selection of Auto establishes a standard 30 (25 PAL) frames per second rate for the camera sensor.

Selections from 1/2 to 1/15 place the sensor in what is called an “integration” mode. The result is to make the camera more sensitive to light but more prone to blurring if the scene is moving.

Selections from 1/60 (1/50 PAL) to 1/30000 place the sensor in what is referred to as “shuttering” mode. The sensor is collecting light from the scene for less time than normal. This provides a stop action effect for

fast moving objects and also can be used to make saturated (overexposed) parts of a scene visible at the expense of darker areas.

When the sensor is “integrating” (that is, collecting light from the scene for longer than the “normal” period), the camera stores the image and continues to output a video image at the standard 30 frames per second for the monitor until an updated scene is available from the sensor.

3.10.2 Day/Night Cntrl Pane (figure 13)

When **Auto** is selected the camera determines when to switch to monochrome (black and white) operation for increased sensitivity. This would typically occur as the sun was setting or perhaps when lighting was turned off in a large building. When the sun rises or building lights are turned on again the camera reverts back to color mode.

The default mode is Auto. Resolution is the same in both modes.

Selecting either Color or Mono locks the camera in the mode selected.

3.10.3 White Balance Pane

White Balance can be either Auto or Manual. When Manual is selected the two pair of buttons below provide for increasing or decreasing the red (left buttons) and blue (right buttons) in the scene.

3.10.4 Digital Zoom Range Pane

Off prevents the camera from performing any digital zooming. Other selections establish the maximum allowable digital zoom from 2X to 12X. This setting affects only digital zoom range. Digital zoom takes effect only after optical zoom is at its maximum.

3.10.5 WDR (Wide Dynamic Range) Pane

Selecting **On** enhances scene details at the extreme ranges of black and white.

3.10.6 Camera Firmware Version Pane (Figure 10)

Clicking Get Version displays the firmware version of the camera flash PROM. **This version information is often required by Cohu technical support personnel when discussing system installations.**

3.10.7 Line Lock Pane

When **Crystal** is checked the camera operates under control of its internal crystal oscillator.

Unchecked, the camera sync is referenced to the ac power line frequency. Selecting 0 through 5 in the accompanying window offsets the frame sync by 60 degree increments so that the camera can be locked to one of six system power phase references.

These 60 degree offsets are required when cameras or other equipment operate from different phases of the power lines. It could also be required if various cameras were operated from isolation transformers or other phase-changing devices. It is used to minimize glitches on the monitor when switching from one camera to another.

3.10.8 Video Freeze Pane

Clicking “Video Freeze” toggles between live video and a captured scene.

3.10.9 Elevation Set Pane

The internal pressure sensor must be offset for altitude differences at the installation location to ensure that the low pressure alarm properly alerts for low pressure. Altitudes from 0 to 10000 feet can be entered in the accompanying window.

3.10.10 OK Button

Clicking the OK button updates for any of the selections made.

3.11 DSP 3640 SCREEN (Figure 14)

The DSP 3640 control screen has similar control functions of other screens. Note that it has a Zoom Control area. These zoom and pan/tilt control functions are sensor related and have nothing to do with an actual zoom lens or pan/tilt unit that might be paired with the camera.

3.12 DSP 5960 SCREEN (figure 15)

This is a special type camera. It produces an image related the heat radiating from elements present in the scene. There is a default range of colors assigned to the various temperatures being seen by the camera, but these can be reassigned to other colors.

3.13 SUB SCREENS (Screens that Open in Response to Clicking Functions on the Major Screens)

A variety of secondary screens are opened in response to clicking buttons on the primary camera

control screens. Some of those subscreens are closely related to a particular camera and thus may be covered with a description of that camera instead of in this section. The remainder of this section, though, primarily describes screens that may be opened by several different types of cameras. Sections 3.13.1 through 3.13.6 are referred to in the sections of the manual describing camera functions.

3.13.1 Azimuth Setup

Positioners can be made to show the relative direction the camera is pointing in a N, NNE, NE, ENE, E, etc format. Either eight or sixteen cardinal directions can be selected.

The positioner must be positioned in azimuth as close to north as possible, then a Set button (figure 18) clicked in WinMPC to index this direction.

Refer to the table accompanying figure 18 for a description of all the functions related to displaying azimuth and elevation directions on the monitor screen.

3.13.2 Program Camera ID (figure 17)

This window (figure 17) is accessed by clicking on the **Special Functions** | **Camera ID** button on the home screen.

Two lines of 24 characters are available to enter text that will appear in the video sent to the viewing monitor. The **Enable** box must be checked for these lines to appear. The **ID Gen in Cam** box does not function with the iDome and iView cameras. Instead, it is used to ID commands to cameras that operate with a companion control receiver.

In the **Alarm Text** pane, only the **Blink** box functions with these cameras. Check this box if it is desired to have the low pressure notification that is sent to the screen blink on and off. Enable line 1 may be double clicked to disable a low pressure text alarm.

Display at top should be checked if it is desired to have these messages appear at the top of the display on the viewing monitor. Unchecked it will move the display to the bottom of the monitor.

3.13.3 Tours and Sectors Setup (figure 16)

[Different Camera can have Different Screens)

This window (figure 16) is accessible by clicking **Touring | Setup** on the Main Screen (figure 16).

Privacy zones and sector entries are immediately sent to the camera as they are made.

Four basic functions are accessible:

1. Up to 16 sectors can be programmed for viewing (depending on camera/receiver)

2. Up to 8 privacy zones can be programmed (depending on camera/receiver)

3. Up to 8 tours can be programmed each with up to 32 views (depending on camera). Before tours can be created views of various scenes must have been stored as presets. See section below.

4. All these selections can be saved as a file on the hard drive of the PC together with camera ID and presets that had been established. This file can later be uploaded to the camera if required. The file name contains the camera address number. Sector ID is also stored.

Sectors (DSP Cameras Only). Sector settings store left and right pan limits within which the camera will generate an on-screen identification display for that area. This ID might be the general direction the camera is pointing such as north or east. It could also identify the scene as “Visitors Parking Lot” or something similar.

Tilt, zoom, and focus position are not stored. A meaningful description can be entered into the text entry/read line. Maximum length is 24 spaces.

Privacy Zones (DSP Camera Only). Privacy zones blank the video when the camera pans through a privacy area. This blanking occurs anytime the camera enters one of the privacy zones - whether under manual pan control, presets, or sectors. Up to 8 zones can be created.

The camera is placed at the left desired limit and Set Left Limit is clicked. Then the camera is moved to the right limit and “Set Right Limit” is clicked.

Each privacy zone must be enabled by clicking the Enable check box.

Tour Setup. Tours automatically step the camera through up to 32 stops (presets) for automatic viewing of different scenes. Eight different tour sequences can be programmed. Any of the 64 preset that had been established can be used as a stop in the tour sequence. Presets can be repeated during a tour as many times as desired.

For all cameras but the 3900 series, the laptop or PC must stay connected to maintain the tour sequence. They are command driven. The 3900 series is not.

Before a tour sequence can be established all the desired scenes must have been stored as presets. See section 3.13.6.

To set up a tour, first select what tour number you want by clicking the menu line down arrow. Click the desired number. Then enter preset number in whatever sequence desired together with a dwell time.

Dwell time is the number of seconds that the camera pauses on that scene before moving to the next preset. To set all dwells to the same time, just enter a number and click on Set All Dwells. Dwell time can be from 5 to 60 seconds.

A particular preset can be entered as many times as desired in the tour sequence. If preset 5 perhaps were the front gate of a facility the tour could be set up to view that scene as many times as desired in the sequence.

The tours must be uploaded into the camera. After establishing all the desired tours, click on Upload Tours and wait for them to be uploaded into the camera.

DownLoad Button. Clicking the DownLoad button saves these selections to a unique file on the hard drive of the computer at the location where Win MPC is installed. A binary file with the name format “cam001.dat” is established (001 is camera 001). This file should be copied to a USB flash drive, CD, or some other location on the hard drive for permanent availability. This can be important if the laptop operating Win MPC is used to maintain more than one camera system that would likely have duplicate camera addresses.

UpLoad Button. The UpLoad button retrieves the “cam001.dat” file (if it is for camera 001) and sends the stored selections to the camera. If a “dat” file for that camera address is not available, an error message will be displayed on the screen. When working on multiple cameras great care must be taken to ensure that the “dat” files on the hard drive are the proper ones for the system being maintained.

Tour Setup Screen (figure 16)

Use the tour setup screen to establish the pause time allotted to each of the presets. Dwell time can be set from 5 to 60 seconds.

Click Set All Dwells to set the same dwell time for all tour stops. Each stop on a tour can also have a different dwell time.

3.13.4 Pan/Tilt

Buttons on this screen can be used to pan to left and right for setting up sectors and zones.

3.13.5 Other Maintenance

Two features appear on this Other Maintenance screen (figure 18):

Heater Trigger Level is a function implemented only on special dome type cameras operating in extremely harsh winter conditions. It provides for setting the temperature at which internal heaters in a dome camera turn on. Clicking the Get button returns a display of the current setting. Settings from 20 to 45 degrees C can be entered. This feature is found only on specially built domes.

Go to Preset Video Mode (Freeze/Live) provides an important function for use when the video from a camera may pass through some type of encoder or other device.

When a camera moves from one scene to another under control of the preset function, a extremely large burst of video data occurs during the period of rapid movement between scenes.

This short burst during movement is not a usable scene, but it does generate a large amount of data — which can possibly overload encoders and other devices.

Checking the Freeze Video box causes the camera to maintain the current preset scene until movement has stopped and the next scene is available.

Clicking the Get button determines the current status of this function.

3.13.6 Setting Presets

An important feature of any camera with a pan/tilt capability is the ability to store presets and then retrieve them later. Each scene stored is assigned a preset number (from 1 to 10 or up to 64 depending on the camera).

Probably the most important use of these stored scenes is to set up automatically running tours. Tours are somewhat like a slide show of important scenes in the area viewing in real time each in turn.

When a previously stored scene (a preset) is recalled by a tour, the camera returns to the exact pan, tilt, zoom, and focus settings originally stored.

Figure 16 shows the screen for setting up presets and tours.

3.13.7 Prompt Messages

A number of error messages can be generated in response to disallowed conditions. These are summarized in figure 20, illustrations A through L.

3.13.8 Log File

At the bottom of the “home” screen is a Log Functions area. This is a troubleshooting aid for use when problems are being experienced. A logging file name and its storage location on the hard drive must first be established. Then any series of camera commands selected from the various buttons on the screens and the response messages will be recorded as a text file.

This text log of all commands and responses can be viewed for inspection or it can be played back as often as desired. A notepad function is included so that comments can be added into the log file at any time during recording.

4.0 PREPARATION FOR SHIPMENT AND STORAGE

For shipping to the factory by Common Carrier, use the following address:

Cohu Electronics
3912 Calle Fortunada
San Diego, CA 92123-1827

Please contact the Customer Service Department for a Return Authorization (RA) number before sending any shipments to the factory:

cst@cohu.com
or
858-277-6700 extension 261

Prominently display the RA number on the outside of the shipping container(s) and on paperwork contained inside. Give a brief description of why the equipment is being returned and list the symptoms of any problems being experienced with the equipment.

5.0 OPERATION

All functions of the camera are controlled by a software GUI interface. Some installations, though, have a model 9300 local control panel installed near the camera for maintenance personnel to use when necessary.

5.1 LOCAL PANEL CONTROL

If the camera has been connected through a nearby Local Control Panel back to the central control facility, it is possible to connect a tv monitor to the Panel and control basic functions of the camera.

5.2 LOCAL LAPTOP PC CONTROL

A local laptop PC running Win MPC software can be used to connect to the camera and control a full range of functions including the setting of its address.

This laptop can either connect through an RS-232 connector on the front of a Local Control Panel (an optional item sometimes used at a camera location) or it can connect directly to the camera.

An iDome has input pins for both RS-232 and RS-422. A laptop connected directly to an iDome typically would use RS-232.

The iView, however, accepts only RS-422 input. (Special order units are available with RS-232 input in place of RS-422.)

Since laptop computers typically have an RS-232 serial output, connecting to RS-422 on a iView camera would require the use of an RS-232 to RS-422 converter.

5.3 CAMS OR NET CAMS CONTROL

Cams or Net Cams GUI features are nearly identical to those of Win MPC described in this manual.

The basic difference is that Win MPC is intended to be connected to only one camera at a time for installation and maintenance purposes whereas Cams and Net Cams are able to address multiple cameras and other equipment in a system setting.

6.0 TROUBLESHOOTING

If a camera does not appear to be operating as expected a troubleshooting log can be produced showing all commands and responses. This log is stored as a text file at a user selected location. It can be as large as the available space for storage.

It can be replayed as many times as desired so that identical camera actions can be observed multiple times. The log can also be printed out for inspection.

Figure 1 is an example of a log file. It shows typical commands sent and the responses received.

Note that “F8” leads off a transmitted command. If the command has been received an “ACK” is returned. A hex string can also be returned indicating the status of some functions.

Notes may also be added to the log file at the time of recording if desired.

-end text section-

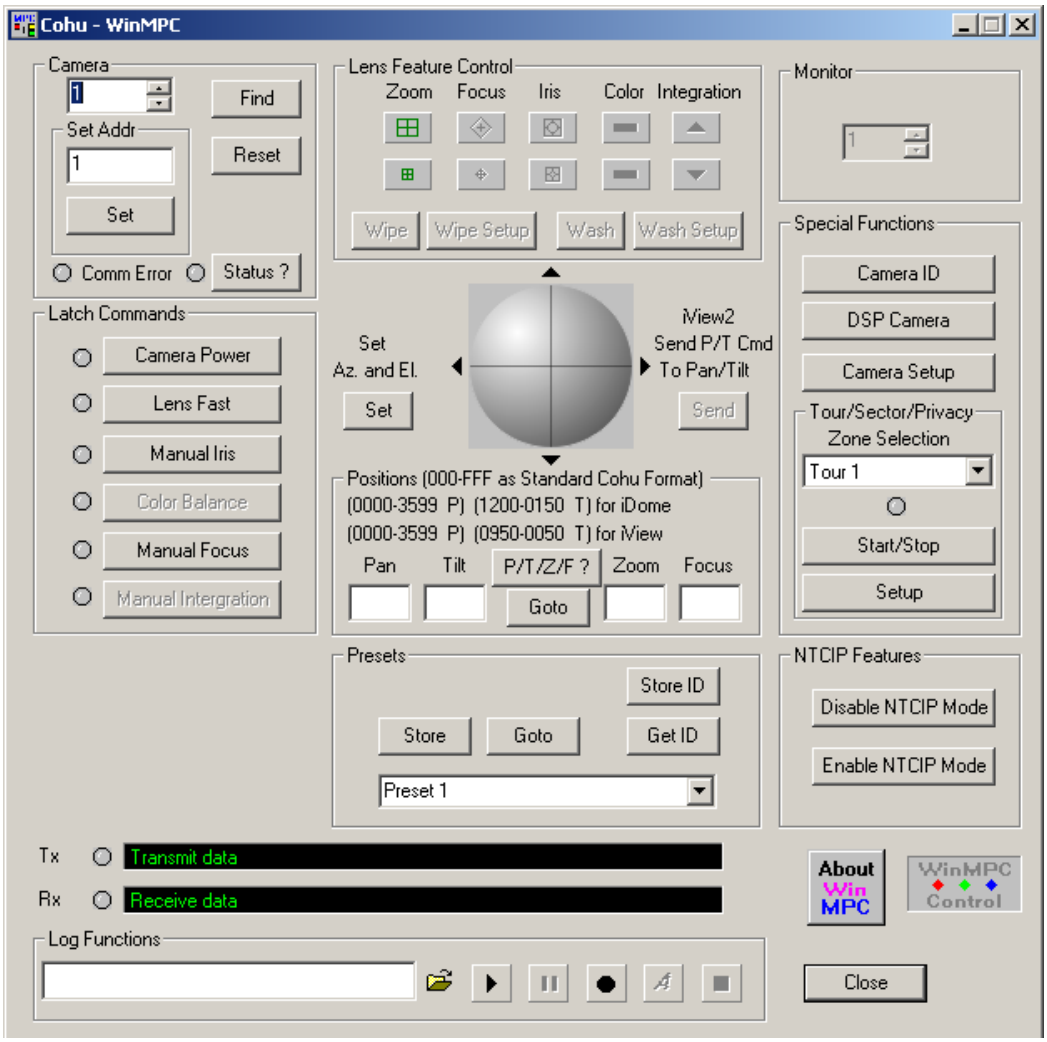


Figure 9. Cohu - WinMPC — Home Screen (See related table)

NOTE: Figures 9 through 20 illustrate various screens that are part of the WinMPC displays.

Each figure from figure 9 to figure 19 is accompanied by a table describing features on that screens. These tables are referenced to the accompanying figure and are not identified by separate table numbers.

Table for Figure 9. Home Screen Functions

REF	NAME	FUNCTION
	Camera	
9-1	(Select menu)	Scrolls up and down to select camera number. Can type in too.
9-2	Set Addr	Click to set address selected above
9-3	Find	Searches communications link for the camera address. First camera to respond has that address displayed in dialog box
9-4	Reset	Re initializes the camer
9-5	Status?	Polls the camera to show Latch Commands status and also Pan Tilt and Zoom positions
9-6	Comm Error	Illuminated, indicates that camera not responding to commands, or camera not receiving commands. Camea returns NAK
	Momentary	
9-7	Zoom	In/Out
9-8	Focus	Near/Far. For DSP cameras must first activate manual focus
9-9	Iris	Open/Close. Acrive only if manual iris is selected
9-10	Color	Not an iDome /iView function. Depends on camera/receiver typs
9-11	Integration	Not an iDome / iView function. Depends on camera/receiver type
	Monitor	
9-12	(Select Menu)	Selects monitor addresses from 1 to 32. Comm Mode on Camera Setup must be PC to MPC Master
	Latch Commands	
9-13	Camera Power	Click to turn power on/off
9-14	Lens Fast	Click to turn fast lens response on/off
9-15	Manual Iris	Click to turn manual iris on/off
9-16	Color Balance	Click on the red or blue buttons to correct color response
9-17	Manual Focus	Click to turn manual focus on/off
9-18	Manual Integration	Click to increase or decrease integration period
	PAN Left/Right & Tilt Up/Down Control Buttons Positions (0000-FFF as Standard Cohu Format)	
9-19	Pan / Tilt Buttons	Clicking an area causes pan, tilt, or simultaneous pan/tilt
9-20	P/T/Z/F ?	Returns position data to fill out windows
9-21	Goto	Positions camera to the pan, tilt, zoom data entered
9-22	Pan window	Decimal data entry for pan location (0 to 3559)
9-23	Tilt window	Decimal data entry for tilt location (0to 1010)
9-24	Zoom window	Hex data entry for zoom location (0 to FFF)
9-25	Focus window	No focus data returned. Always 0

Table continues on next page

Table for Figure 9. Home Screen Functions [Continued]

REF	NAME	FUNCTION
Receiver Status (ER-2221B & ER-2222 receiver types only)		
9-26	Local Control	Illuminated red when serial control is at the local location
9-27	Video Loss	Illuminates red when video is not being received from camera
9-28	Pressure Loss	Illuminates red when camera/dome pressure is too low
Presets		
9-29	Store	Stores present positions as the Preset No. in window below
9-30	Goto	Sends camera to the preset location in window below
9-31	Store ID	Stores the name assigned to a preset number
9-32	Get ID	Recalls the name assigned to a preset number
9-33	Preset drop down menu	Data recall or entry window. Meaningful name can be entered here for a preset number. Store ID button saves it. Get ID recalls an ID name.
Special Functions		
9-34	Camera ID	Button to enter text entry window (figure 12)
9-35	DSP Camera	Button to open DSP functions window (figure 9)
9-36	Camera Setup	Button to enter communications setup window (figure 4)
Touring		
9-37	Tour drop down menu	Selects desired tour (tour 1 through tour 8)
9-38	Start/Stop	Button to start/stop a tour
9-39	Setup	Button to set up sectors, privacy zones, and tours (fig.8)
9-40	**About Win MPC**	
	Opens window detailing software version and other information	
9-41	**Win MPC Control**	
	Window Identifier	
9-42	**CLOSE**	
	Closes Win MPC software	
Command Sent / Message Received Displays		
9-43	Tx (Command Sent)	(Upper Display) Displays the command being sent to the camera
9-44	Rx (Message Received)	(Lower Display) Displays the message returned by the camera
Log Functions		
9-45	(display line)	Enter or select name for the log file
9-46	(folder logo button)	Select location for log file
9-47	(right arrow button)	Play back the log file so camera goes through sequence
9-48	(circle / dot button)	Start and stop record function
9-49	(A button)	Enter text comments into the log file
9-50	(square button)	Stop log file sequence on playback
- end table -		

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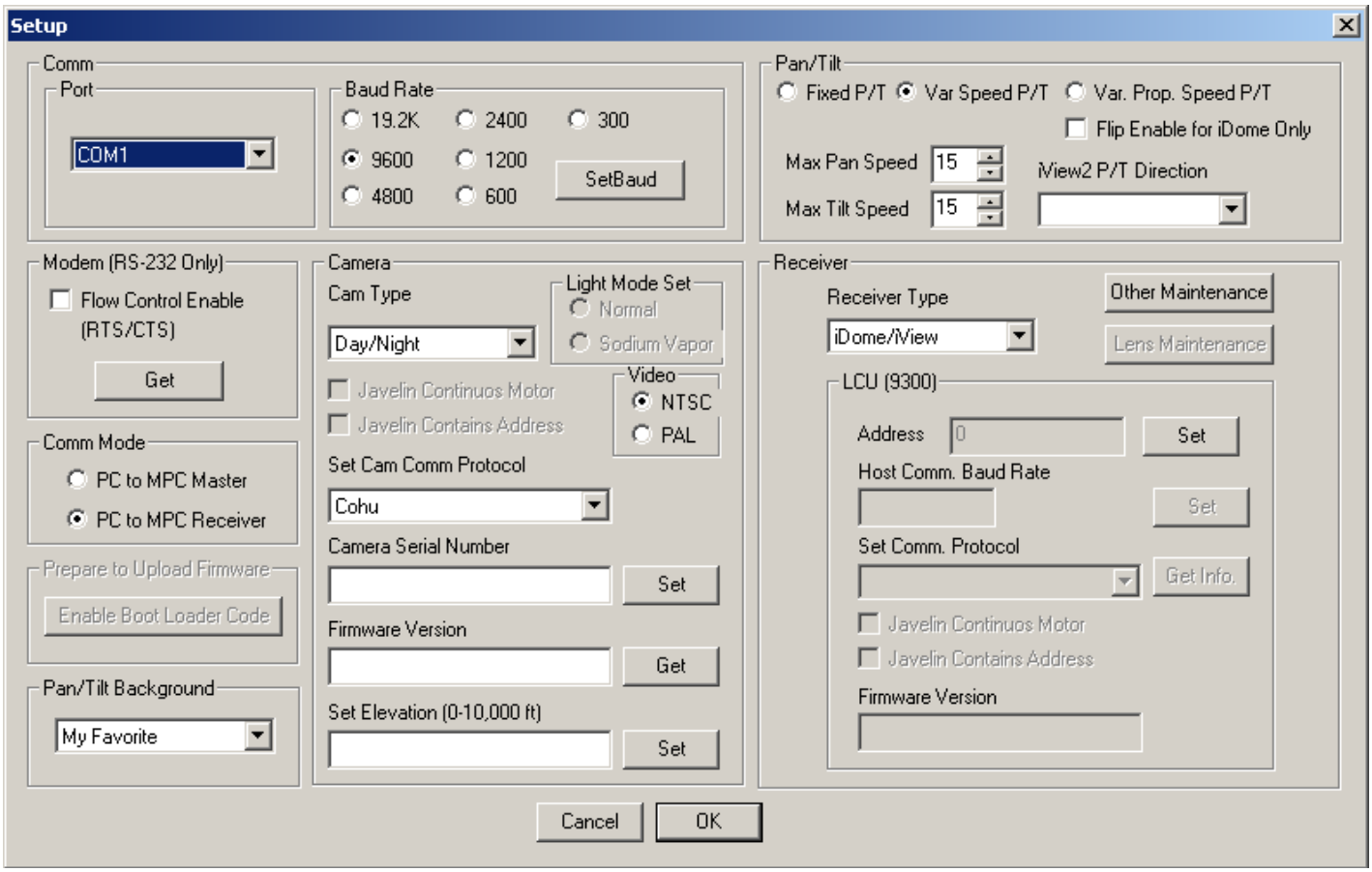

Figure 10. Setup (See related table)

Use this screen to:

- **Configure WinMPC's Comm Port and Baud Rate**
- **Set Comm Mode: PC to MPC Master or PC to MPC Receiver**
- **Select the pan/tilt background (user's preferernce)**
- **Select Receiver type**
- **Select Camera type. (This is auto selected by the Receiver Type selection above being made. That auto selection can be manually overridden**
- **Set Comm protocol. (Not active for all receiver types.)**
- **Set Camera protocol**
- **Set Camera serial number (for DSP cameras)**
- **Set Camera firmware version (for DSP cameras)**
- **Set Camera elevation (for DSP cameras)**
- **Set Pan/Tilt speed controls**
- **Set max Pan and max Tilt speeds**
- **Enable iDome flip. (Allows continual upright picture of subject passing directly under the camera**

Table for Figure 10. Setup - Communications

REF	NAME	FUNCTION
	Port	
10-1	COM 1	Selects the serial port on the computer to which the serial cable is connected This is typically Com 1
10-2	COM 2	
10-3	COM 3	
10-4	COM 4	
	Modem (RS-232 only)	
10-5	Flow Control Enable (RTS/CTS)	Click **Get** to get current flow control status when a modem is being used. If the modem requires flow control this box must be checked.
10-6	Get	Click to return the status of Flow Control Enable check box above
	Comm Mode	
10-7	PC to MPC Master	Establishes the protocol to communicate with a Cohu MPC master control panel
10-8	PC to MPC Receiver	Establishes the protocol to communicate with any device other than a Cohu master control panel
	Pan/Tilt Background	
10-9	(drop down menu)	Clicking on down arrow produces list of available backgrounds
	Baud Rate	
10-10	9600	Selects the baud rate at which the camera is to operated when installed into the system
10-11	4800	
10-12	2400	
10-13	1200	
10-14	600	
10-15	300	
10-16	Set Baud	Enters the baud rate selected
	Camera	
10-17	Standard	Select for an analog camera. Requires an interface receiver
10-18	3500	A digital camera that requires an interface receiver for serial communications
10-19	38xx	Use for either a 3820 dome or 3855 camera/positioner
10-20	Day/Night	The iDome / iView is a day/night camera
	Set Cam Comm Protocol	
10-21	(drop down menu)	List of available protocols to choose from: Cohu, American Dynamics, Pelco D, Javelin, Philips, Vicon, Telemetrics, Fast Field Devices, Emitec Selecting a protocol initiates a popup window to confirm the change
	(Javelin protocol Options)	
10-22	Javelin Continuous Motor	Check to have pan and tilt continue until a stop command is sent
10-23	Javelin Contains Address	Check to have the camera address in return messages

Table continues on next page

Table for Figure 10. Setup - Communications (continued)

REF	NAME	FUNCTION
	Firmware Version	
10-24	(display line)	
10-25	Get	Clicking the Get button returns the firmware version
	Set Elevation (0-10,000 ft)	
10-26	(data entry line)	Enter elevation at the installation location of a pressurized camera or dome
10-27	Set	Click this button to send the evevation entered
	Pan/Tilt	
10-28	Standard	Alternate selection for analog cameras. Used on conjunction with MPC-D or ER-222B receiver types
10-29	Var Speed P/T	The iDome / iView is a variable speed pan/tilt camera
10-30	Max Pan Speed	Sets the maximum pan/tilt speed. Typically set to 15 unless operating experience determines that less is desired
10-31	Max Tilt Speed	
10-32	Flip Enable for iDome Only	Click this box to cause an iDome to reverse top-bottom video and maintain an upright image as the camera swings through 90° (toward floor) with pan stopped
	Receiver	
10-33	MPC D	Weatherproof outdoor receiver for analog cameras and analog pan/tilt units
10-34	ER2221B	Rack mount receiver for use with analog cameras and pan/tilt units
10-35	ER2222	Rack mount receiver for use with 3830, 3855, 3820, or 3500 cameras
10-36	Positioner	Select for use with model 3855 positioners with a mounted camera
10-37	Dome	Select for use with model 3820 domes
10-38	iDome/iView	Select for controlling iDome / iView cameras
	LCU (9300) Active for LCU receiver types	
10-39	Address (entry line)	Enter an address from 0 to 223
10-40	Set	Click to enter the Address typed into the related address line
10-41	Host Comm. Baud Rate	Enter desired communications baud rate
10-42	Set	Click to enter the baud rate typed into the related baud rate line
10-43	Set Comm. Protocol (dropdown menu)	Choose from Cohu, American Dynamics, Pelco D, Javelin, Philips, Vicon, etc
10-44	Javelin Continuous Motor	Check to have pan and tilt continue until a stop command is sent Active for Javelin protocol only
10-45	Javelin Contains Address	Check to have the camera address in return messages. Javelin protocol only
10-46	Firmware Version	Version of protocol chosen displayed when Get Info. is clicked?
10-47	Cancel	Click to cancel selections
10-48	OK	Click to accept selections
	- end table -	

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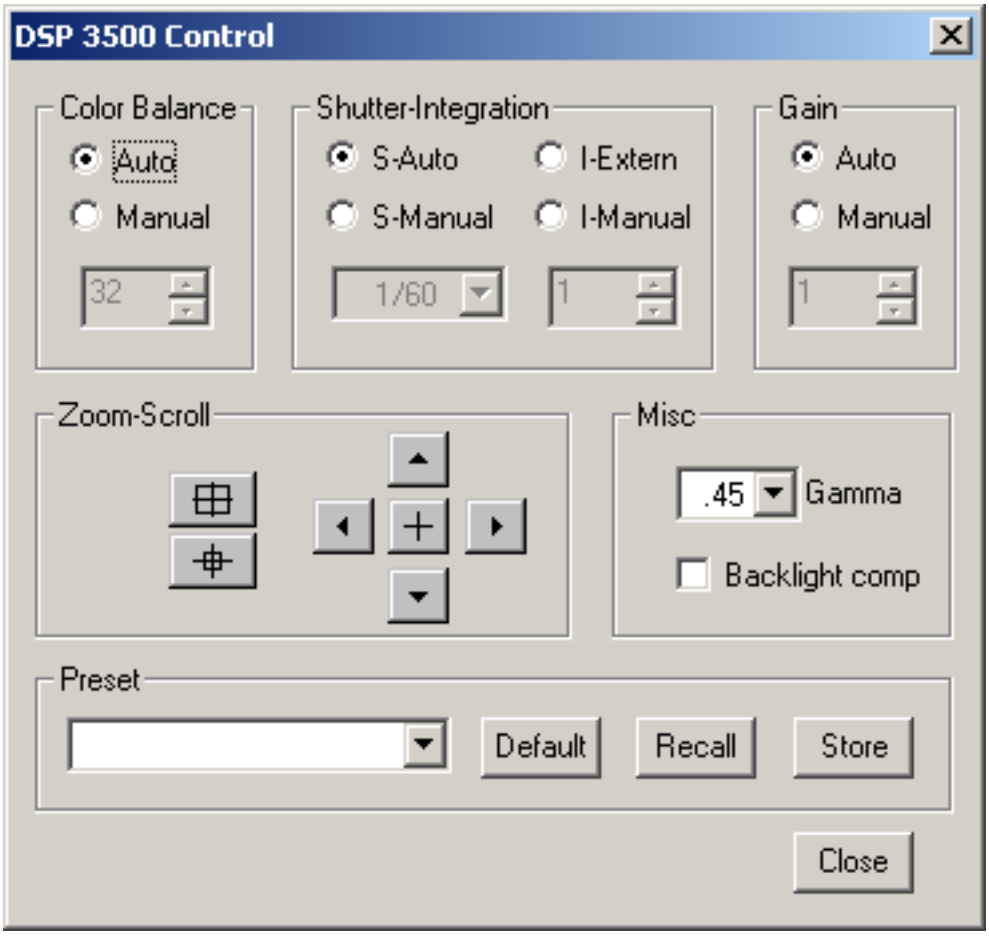


Figure 11. DSP 3500 Control (See related table)

Table for Figure 11. 3500 Camera Screen Functions

REF	NAME	FUNCTION
	Color Balance	
11-1	Auto	Select either Auto or Manual color balance. Manual activates a scrolling window of manual color balance settings
11-2	Manual	
11-3	(drop-down menu)	0 to 63 manual color balance selections when in manual. Value may also be typed in
	Shutter - Integration	
11-4	S-Auto	Selects automatic shuttering in response to light level
11-5	S-Manual	Selects manual shutter & activates drop down window below
11-6	(drop-down menu)	Selection of eight shutter speeds from 1/60 to 1/8000 second
11-7	I-External	Selects external control of integration
11-8	I-Manual	Selects internal control of integration & activates window below
11-9	(drop-down menu)	Selects integration periods from 1 to 99 seconds
	Gain	
11-10	Auto	Selects automatic gain control
11-11	Manual	Selects manual gain control and activates scrolling window below
11-12	(scrolling window)	Drop down selection of manual gain settings ?????? what are they
	Zoom-Scroll	
11-13	x1, x2, or x3	Selects zoom levels of 1, 2, or 3 times normal
11-14	Zoom out button (top)	Provides wider angle view of the scene which makes distant objects appear farther away
11-15	Zoom in button (bottom)	Brings distant parts of the scene closer at the expense of viewing angle
11-16	Pan right-left buttons	Moves through the scene in a right-left direction. Requires ›1X zoom
11-17	Tilt up-down buttons	Moves through the scene in an up-down direction. Requires ›1X zoom
	Misc	
11-18	Gamma (drop-down menu)	8 selections of gamma correction from 0.3 to 1.0
11-19	Backlight Comp	Selects backlight compensation
	Preset	
11-20	(drop-down menu)	Allows selections of either the factory default presets of 8 programmed presets from 01 to 09.
11-21	Default	Makes the current selection the factory default setting (not recommended)
11-22	Recall	Selects the preset currently selected in the drop-down window
11-23	Store	Stores the preset data at the current selection
	Close	
11-24	Close	Closes the DSP 3500 Control Window
	- end table -	

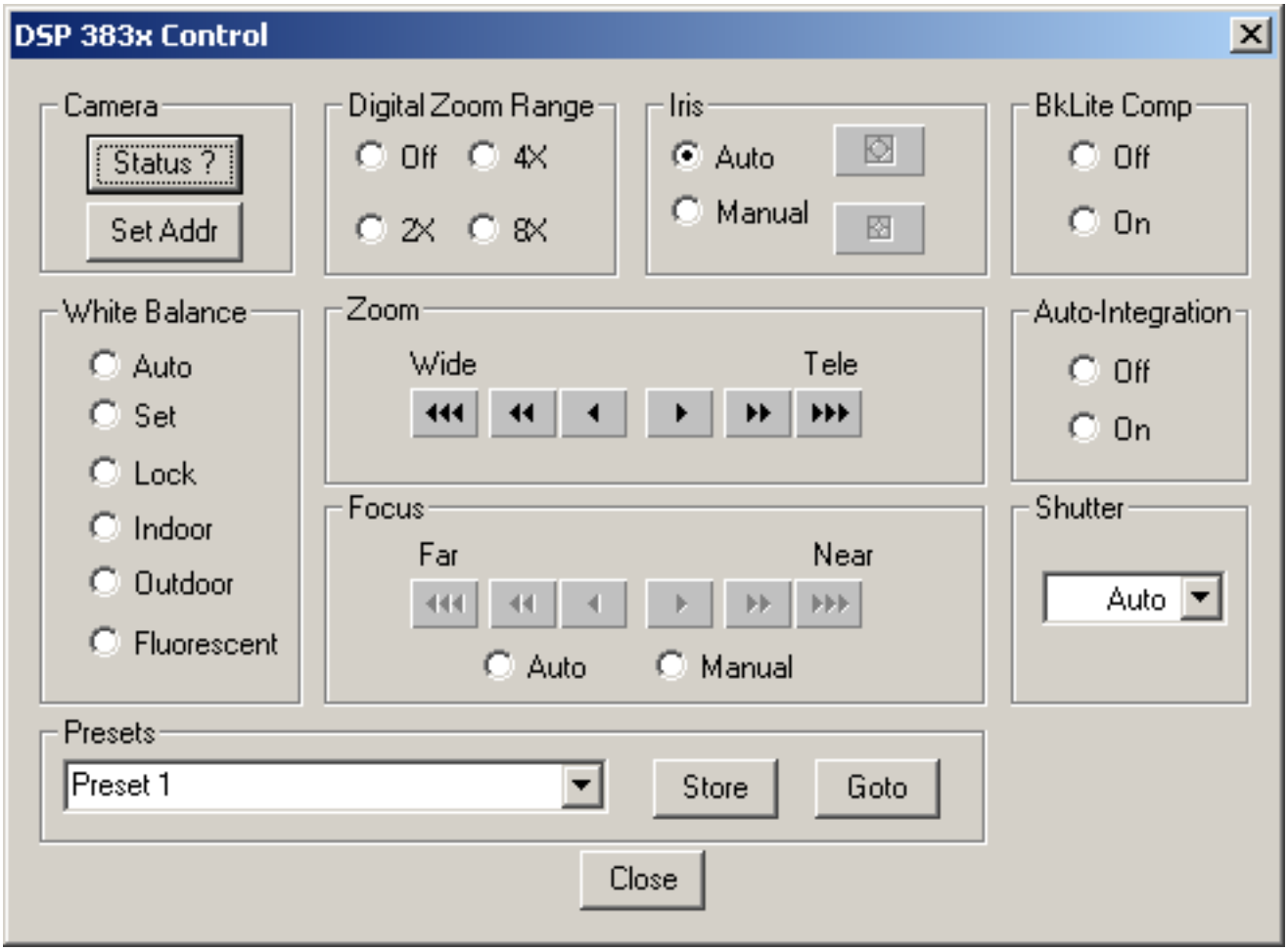


Figure 12. DSP 383x Control (See related table)

Table for Figure 12. DSP 383x Camera Screen Functions

REF	NAME	FUNCTION
	Camera	
12-1	Status?	Request status of conditions found on the DSP 383x screen
12-2	Set Addr	Sets camera address to address shown in camera window on main screen
	White Balance	
12-3	Auto	White balance is adjusted in Auto
12-4	Set	White balance is set for a particular scene color temperature
12-5	Lock	White balance is locked at the current setting
12-6	Indoor	White balance is preset for typical incandescent lights found indoors
12-7	Outdoor	White balance is preset for typical outdoor conditions with full sun
12-8	Fluorescent	White balance is preset for typical fluorescent lighting conditions
	Digital Zoom Range	
12-9	Off	Locks out any digital zooming so that only optical zooming is available
12-10	2X	Selects a digital zooming of 2X max (range 0 to 2X)
12-11	4X	Selects a digital zooming of 4X max (range 0 to 4X)
12-12	8X	Selects a digital zooming of 8X max (range 0 to 8X)
	Zoom	
12-13	Wide - Tele buttons	Causes the lens to zoom in and out . At end of zoom-in range any available digital zooming will then occur
	Focus	
12-14	Far - Near buttons	When in manual mode, buttons are activated to manually set focusing
12-15	Auto	Selects automatic focusing performed by the camera
12-16	Manual	Selects manual focusing so that the far - near buttons can be used
	Iris	
12-17	Auto	Iris opens and closes in response to scene lighting
12-18	Manual	Activates related open/close buttons so that iris is under manual control
12-19	Open/close buttons	When in manual mode, these buttons will open and close the iris
	BkLite Comp	
12-20	Off	Turns off backlight compensation
12-21	On	Turns on backlight compensation. Increases black gain so dark parts of the scene are not silhouetted against the bright background
	Auto Integration	
12-22	Off	Turns off automatic integration
12-23	On	Turns on automatic integration

- table continued on next page -

Table for Figure 12. DSP 383x Camera Screen Functions (continued)

REF	NAME	FUNCTION
Camera		
Shutter		
12-24	Selections drop down list	8 selections: 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Presets		
12-25	Drop down menu	Provides for selection of preset 1 to preset 64
12-26	Store	Stores current PTZ posiitions in the preset number highlighted in window
12-27	Goto	Causes the camera to go to the currently selected preset (1 to 64)
12-28	Close button	Closes the window
- end table -		

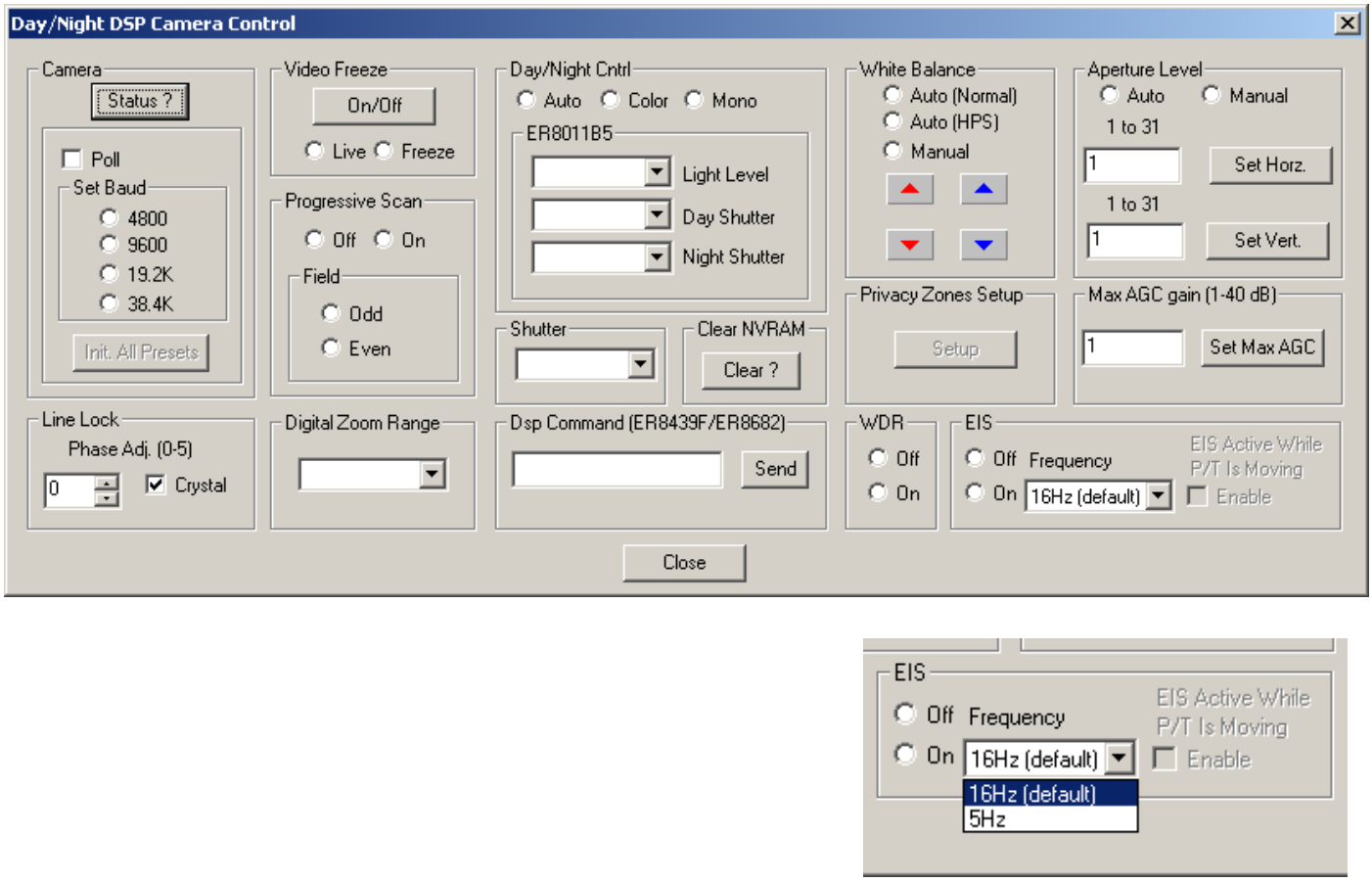
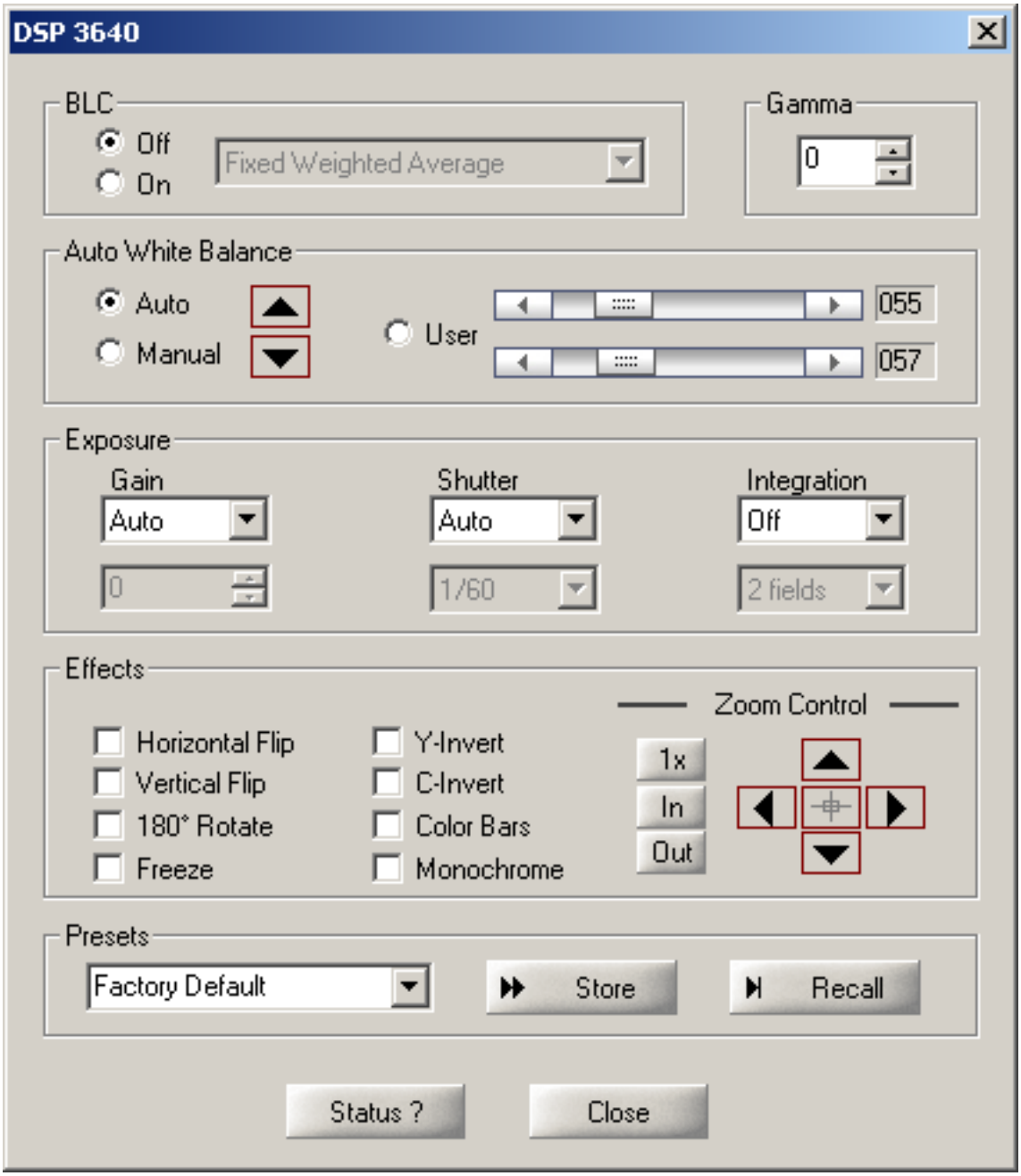


Figure 13. Day/Night DSP Camera Control (See related table)

Table for Figure 13. Day/Night DSP Camera Contro

REF	NAME	FUNCTION
	Camera (troubleshooting and maintenace use only)	
13-1	Status ?	Obtains status for all screen functions (Fills out screen)
13-2	Poll check box	Checking this box obtains data rate flow between microprocessor and camera module
13-3	Set Baud	Sets baud rate selected below
13-4	4800, 9600, 19.2k, 38.4k	Baud rate selections for troubleshooting & maintenance
13-5	Init All Presets	Sets all 64 presets to the status of the currently selected preset
	Line Lock	
13-6	Phase Adj. (0-5)	When crystal box is not checked, camera sync is referenced to power line so that all cameras in system can have frames set to occur at same time
13-7	Scrolling select menu	Selects phase offsets in six 60 degree increments (0 to 5)
13-8	Crystal check box	When checked, camera sync is crystal referenced
	Video Freeze	
13-9	On/Off	Toggles between live video and a captured scene
	Digital Zoom Range	
13-10	Off	No digital zoom available at end of optical zoom range
13-11	2X, 5X, 10 X	Amount of digital zoom available at end of optical zoom range
	Clear NVRAM	
13-12	Clear ?	Password protected factory function. Initializes RAM with meaningful default data during manufacturing (clears out junk data)
	Day/Night Cntrl	
13-13	Auto	Automatically selects either color or monochrome camera output depending on the available light level on the scene
13-14	Color	Sets the camera to color mode for all lighting levels
13-15	Mono	Sets the camera to monochrome for all lighting levels
13-16	**Shutter**	
13-17	Auto/(Manual) selection	Auto sets camera to the normal 1/60 (PAL 1/50) second frame rate. Otherwise selections from 1/2 to 1/30,000 second available
	WDR	
13-18	Off	Normal video gain response is used
13-19	On	Video gain response is modified to enhance scene details at the extreme areas of black and white
	White Balance	
13-20	Auto	Color response automatically determined by camera
13-21	Manual	Color response determined by red & blue buttons below
13-22	Up/Down Arrow (left is red)	Increases/decreases red in video
13-23	Up/Down Arrow (right is blue)	Increased/decreases blue in video
	Dsp Command (ER8439F/ER8682)	
13-24	(Window)	Enter command line instructions here that are not available otherwise
13-25	Send	Causes command in window to be sent to camera
	OK	
13-26	OK	Enters settings made and clears window
	- end table -	



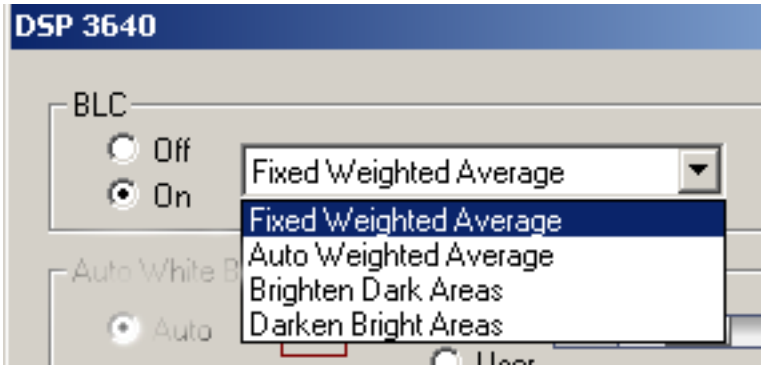


Figure 14. DSP 3640 (See related table)

Table for Figure 14. DSP 3640

REF	NAME	FUNCTION
		BLC (Bright Light Control)
14-1	Off / On	Clicking “On” activates a drop-down menu to choose a method of varying the relationship of black and white areas of the scene
14-2	Drop down menu choices	DSP Fixed Weighted Average DSP Auto Weighted Average Brighten Dark Areas Darken Bright Areas
		Gamma
14-3	Gamma select menu	Choices are from 0 to 9. 0 is the least amount of curve. 7 is maximum curve. 8 is standard linear response. 9 is linear but with about 15% increased output - at the expense of noise
		Auto White Balance
14-4	Auto	Auto allows the camera to dynamically adjust the white balance color termperature in response to changing light conditions
14-5	Manual	Manual activates the up/down buttons to set a fixed color temperature response of the camera
14-6	User	User activates the top (red) and bottom (blue) sliders to set a fixedamount of red (top bar) and blue (bottom bar)
		Exposure
14-7	Gain	Auto allows the camera to adjust gain dynamically in response to changing conditions of scene lighting. Manual activates the drop-down menu set gain in 8 steps from 0 to 7
14-8	Shutter	Auto allows the camera to increase shuttering speed in response to increasing light levels on the scene. Manual allows the operator to set a shutter speed from 1/60 sec to 1/50,000 sec. 1/60 sec is the normal, most light-sensitive selection. 1/50,000 greatly reduces the sensitivity of the camera to scene lighting.
14-9	Integration	Off conditions the camera to have a shutter rate no greater than 1/60 sec. Integration On allows the camera to become much more sensitive to scene lighting — but at the expence of smearing if the scene is moving either due to camera movement or to something in the scene moving. The longer the integration duration the move severe this smearing problem becomes. Integration is measured in fields. Choices are 2, 3, 4, 5, 10, 20, 40, 80, 160, 320, & 510 fields.
		Effects
14-10	Horizontal Flip	Swaps the scene left/right
14-11	Vertical Flip	Swaps the scene top/bottom
14-12	180° Rotate	Swaps the scene both left/right and top/bottom
14-13	Freeze	Holds the current scene until Freeze is clicked again
14-14	Y-Invert	Inverts black/white scene details to produce a negative image
14-15	C-Invert	Inverts all colors to their complementary color. Red becomes cyan; green becomes magenta; blue becomes yellow.
14-16	Color Bars	Adds color bars to the scene for test purposes
14-17	Monochrome	Removes color from the scene (turns off Chroma)
14-18	Zoom Control	These are digital control functions — not optical lens functions
14-19	1X / In / Out	1X is standard full display of scene details on the image sensor; In enlarges details in the center of the scene at the expense of details around the outside edges - which go out of view. This is a telephoto effect. Out returns the scene to a normal view in a wide angle effect.
14-20	Zoom up/down right/left & center	Clicking and holding one of these buttons causes the sensor to magnify that area of the scene. Clicking the center button returns the sensor to a normal full scene view.

- table continued on next page -

Table for Figure 14 . DSP 3640 (continued)

REF	NAME	FUNCTION
		Status?
14-21	Status?	Clicking Status? fills all the cells on the screen with the current settings
		Close
14-22	Close	Clicking the Close button closes the screen
		- end table -

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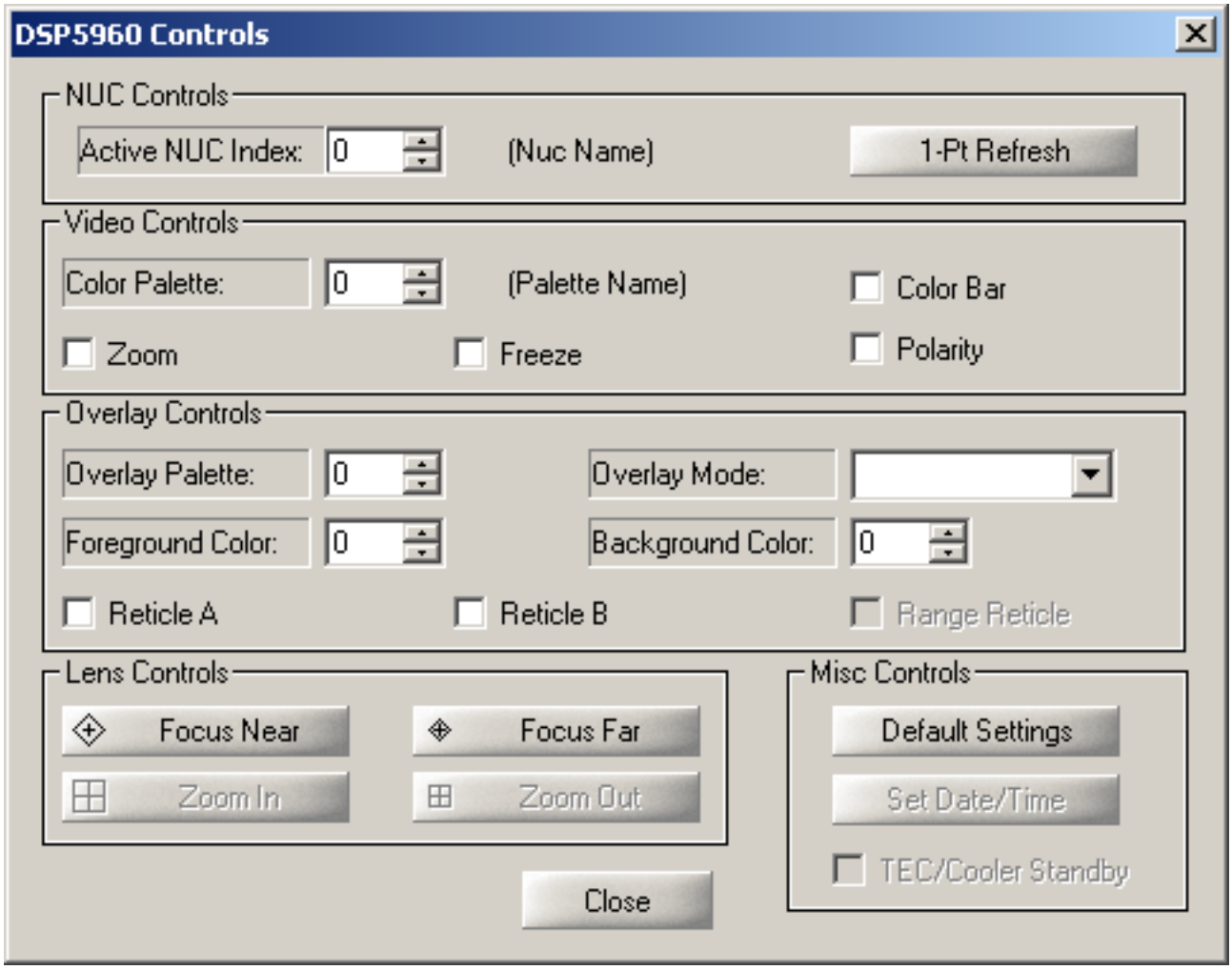


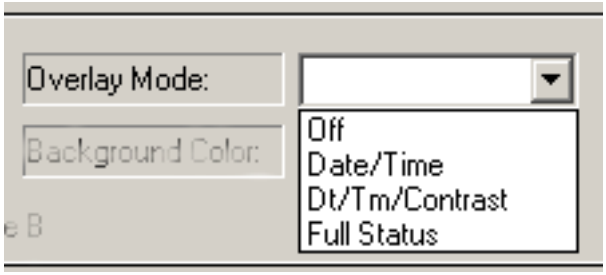
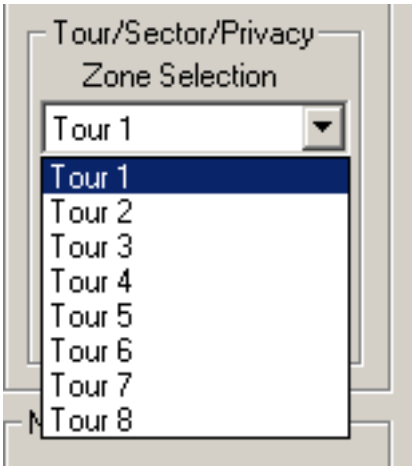


Figure 15. DSP 5960 Controls (See related table)

Table for Figure 15. DSP 5960

REF	NAME	FUNCTION
NUC (Non Uniformity Correction) Controls		
15-1	Active NUC Index	Selects the active stored NUC table
15-2	1-Pt Refresh	Performs a NUC calibration
Video Controls		
15-3	Color Pallet	Selects the desired color pallet
15-4	Color Bar	Displays the active color pallet in ramp format. Mapping of the colors is from least to greatest.
15-5	Zoom	Enables a 2X digital zoom
15-6	Freeze	Freezes the current image
15-7	Polarity	Inverts mapping of the video pallet
Overlay Controls		
15-8	Overlay Pallet	Selects the desired overlay pallet
15-9	Foreground Color	Selects the desired foreground overlay color
15-10	Overlay Mode	OFF:
		Date/Time:
		Dt/Tm/Contrast:
		Full Status:
15-11	Background Color	Selects the desired background overlay color (0 is transparent)
15-12	Recticle A	Enables Rectal A overlay
15-13	Recticle B	Enables Rectal B overlay
15-14	Range Recticle	Enables the Range Recticle (future)
Lens Controls		
15-15	Focus Near	Optically focuses on objects closer to the lens
15-16	Focus Far	Optically focuses on objects more distant from the lens
15-17	Zoom In	Optically performs a telephoto effect (brings things closer)
15-18	Zoom Out	Optically performs a wide angle effect (covers more area)
Misc Controls		
15-19	Default Settings	Returns camera to the factory settings
15-20	Set Date/Time	Sets date/time (future)
15-21	TEC/Cooler Standby	Sets solid state cooler to standby (future)
Close (button)		
15-22	Close	Closes the DSP 5960 window
- end table -		



Tour Dropdown Menu

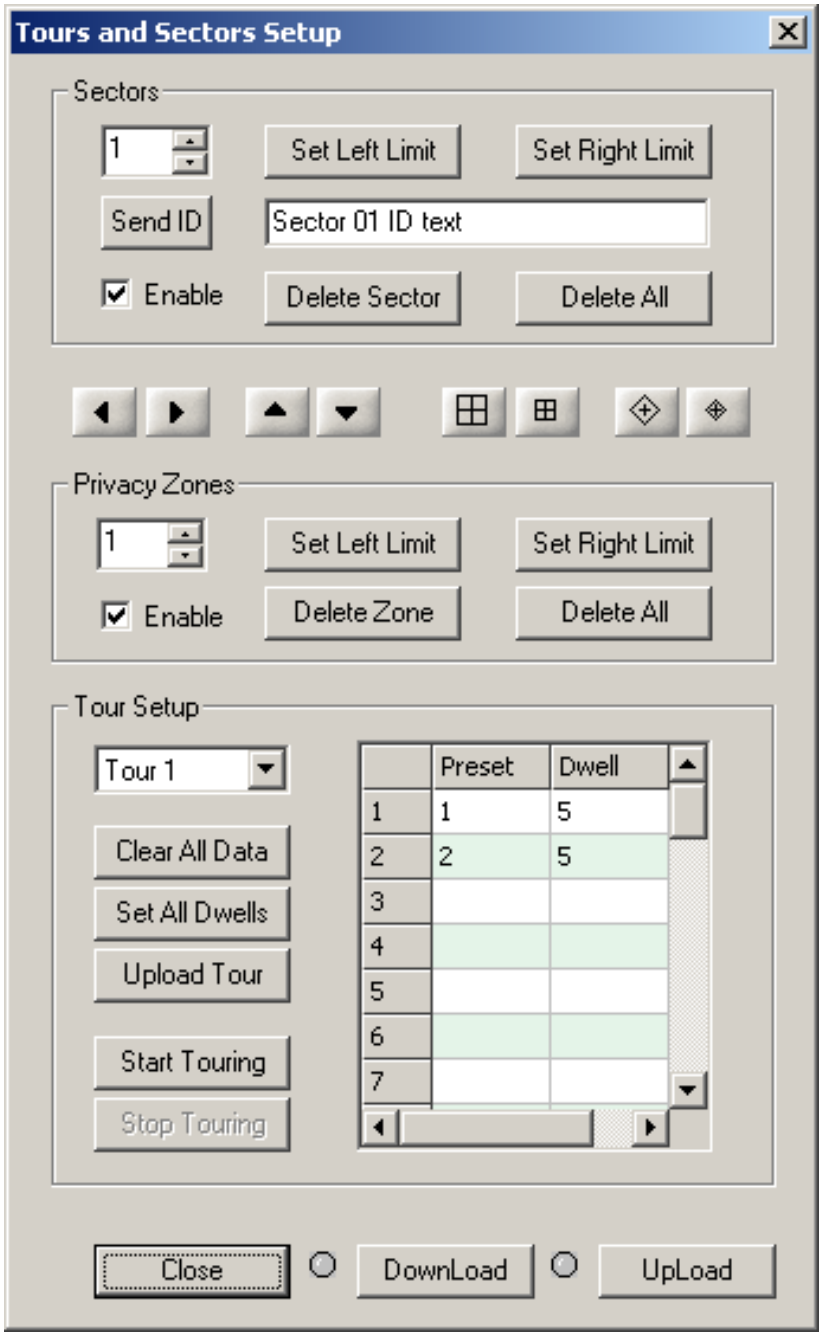


Figure 16. Tour and Sector Setup Screen (See related tabel)

Table for Figure 16. Tours and Sectors Setup

REF	NAME	FUNCTION
	Sectors	
16-1	(select menu)	Up to 16 sectors can be established
16-2	Send ID	Sends settings for currently selected ID to camera
16-3	Enable	Enables or disables the sector currently displayed
16-4	Set Left Limit	Sets current pan position of camera as the sector left limit
16-5	Set Right Limit	Sets the current pan position of camera as the sector right limit
16-6	Delete Sector	Deletes the currently selected sector
16-7	Delete All	Deletes all sector (1 thru 16) settings
16-8	(text window)	Test entry/display window to identify the selected sector
16-9	Left/Right Buttons	Control buttons for pan, tilt, zoom, and focus during setup of sectors. Only pan (left/right) information is stored.
16-10	Up/Down Buttons	
16-11	Zoom In/Out Buttons	
16-12	Focus Near/Far Buttons	
	Privacy Zones	
16-13	(select Menu)	Select menu for up to 8 privacy zones
16-14	Enable check button	Activates the privacy zone currently selected when checked
16-15	Set Left Limit button	Sets current pan position as the left limit of privacy zone
16-16	Set Right Limit button	Sets current privacy zone as the right limit of privacy zone
16-17	Delete Zone button	Deletes the currrently selected privacy zone
16-18	Delete All button	Deletes all privacy zones
	Tour Setup	
16-19	(tour select menu)	Tour 1 through Tour 8 available for selection on this menu
16-20	Clear All Data button	Deletes all tours
16-21	Set All Dwells button	Makes all dwells the same when one dwell time is entered
16-22	Upload Tour button	Sends the tour selections to the camera
16-23	Start Touring button	Starts the tour sequence
16-24	Stop Touring button	Stops the tour sequence
16-25	Preset / Dwell (1-32) window	Data entry window for up to 32 tour selections and dwell time (5 to 60 seconds) at each selection. Presets can be repeated
	Close	
16-26	Close button	Closes the window
	DownLoad	
16-27	DownLoad button & indicator	Saves settings of this screen plus camera ID and presets to the Win MPC location on the hard drive (a binary file with the file name format of “cam001.dat”). A backup can they be copied elsewhere if desired.
	UpLoad	
16-28	UpLoad button & indicator	Retrieves settings from the WinMPC location on the hard drive and loads them into camera
	- end table -	

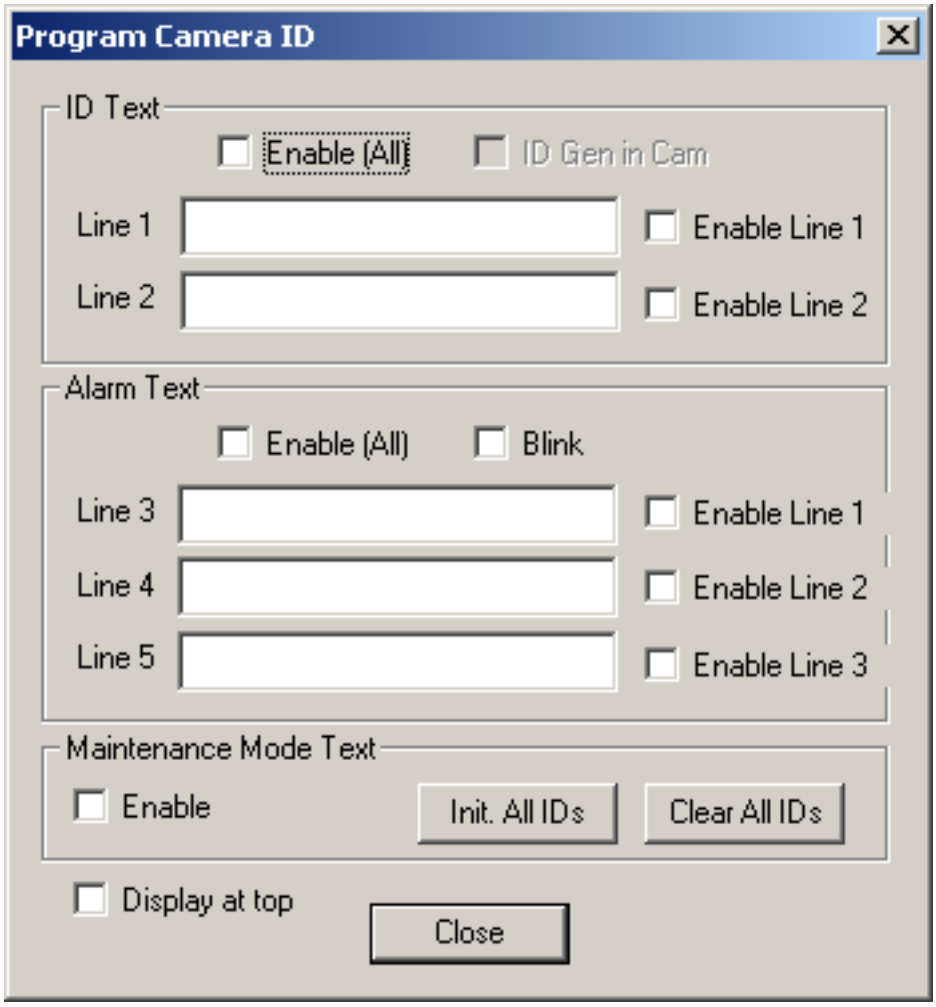


Figure 17. Program Camera ID Screen (See related table)

Table for Figure 17. Program Camera ID

REF	NAME	FUNCTION
ID Text		
17-1	Enable check box	Turns on any ID text for viewing on monitor
17-2	ID Gen in Cam check box	Check this box when the camera has an id generator
17-3	Line 1 entry window	24 character spaces available for each line
17-4	Line 2 entry window	
Alarm Text		
17-5	Enable check box	Allows low pressure message to display when activated
17-6	Blink check box	Causes any alarm message to blink when activate
17-7	Line 3	24 characteristic spaces available for each alarm message
17-8	Line 4	
17-9	Line 5	
Maintenance Mode Text		
17-10	Enable check box	Displays temperature & pressure for iDome, iView or enhanced 3855 cameras
17-11	Clear All IDs button	Click this button to clear all ID Text and Alarm Text
Display at top (check box)		
17-12	Display at top	Causes any ID or alarm text to appear at top of monitor
Cancel (select button)		
17-13	Cancel (select button)	Cancels window without making any selected changes
OK (select button)		
17-14	OK (select button)	Enters any changes made in window
Note: Accessing this screen does not cause the current selections to appear. (These messages are available on the viewing monitor)		
- end table -		

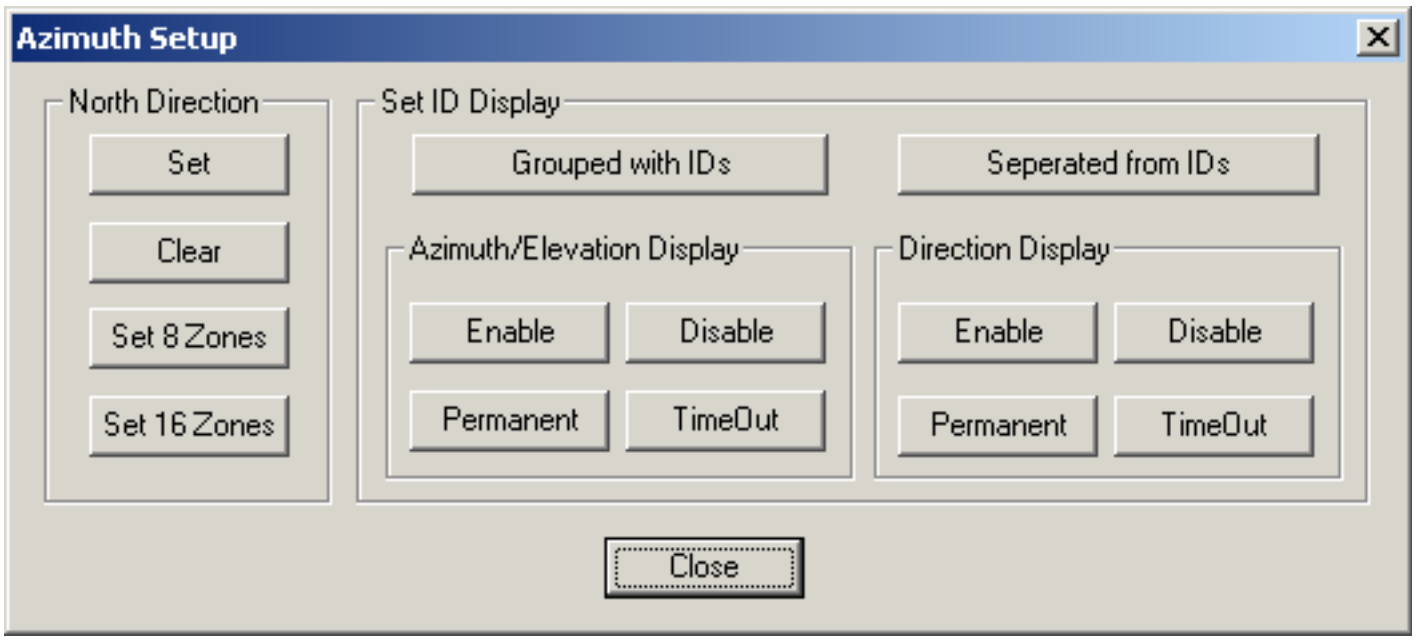


Figure 18. Set Azimuth (Compass) Screen (See related table)

Table for Figure 18. Azimuth (Compass) Setup

REF	NAME	FUNCTION
	North Direction	
18-1	Set	Positioned the camera to exact north and then click this button to establish a direction reference index for the camera
18-2	Clear	Click this button to clean the current north index
18-3	Set 8 Zones	Click this button to establish N, NE, E, SE, S, SW, W, NW as the direction identifications
18-4	Set 16 Zones	Click this button to display N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, & NNW as the direction identifications
	Set ID Display	
18-5	Group with IDs	Click this button to have the direction identifications grouped with the other IDs avaiailable in the display at top or bottom
18-6	Separate from IDs	Click this button to have the direction identification at the opposite location from the other IDs available on the screen (top/bottom)
	Azimuth/Elevation Display	
18-7	Enable	Click this button to display azimuth and elevation on the screen
18-8	Disable	Click this button to remove azimuth & elevation from displaying
18-9	Permanent	Click this button to have azimuth & elevation always displayed
18-10	Timeout	Click this button to have azimuth & elevation disapperar several seconds after the camera stops moving
	Direction Display	
18-11	Enable	Click this button to display direction on the screen
18-12	Disable	Click this button to prevent direction from displaying
18-13	Permanent	Click this button to have direction always displayed
18-14	TimeOut	Click this button to have direction disapear several seconds after the camera stops moving
	Close	
18-15	Close	Click this button to close the Azimuth Setup screen
	- end table -	

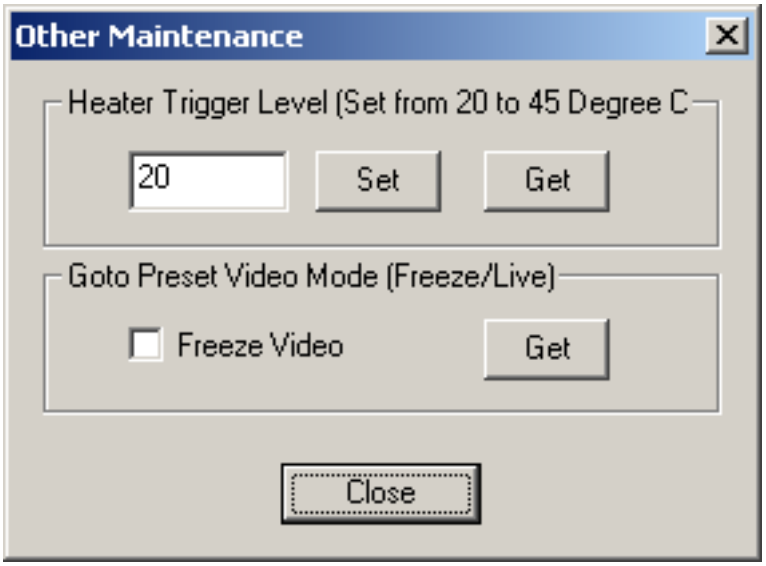
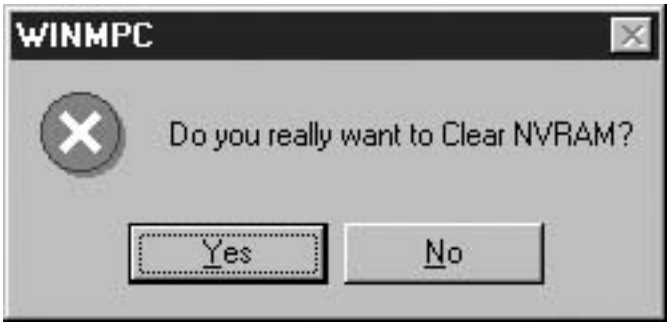


Figure 19. Other Maintenance Screen — Heater-on Temperature Set and Freeze Video Window (See related table)
(Accessed from Setup Window)

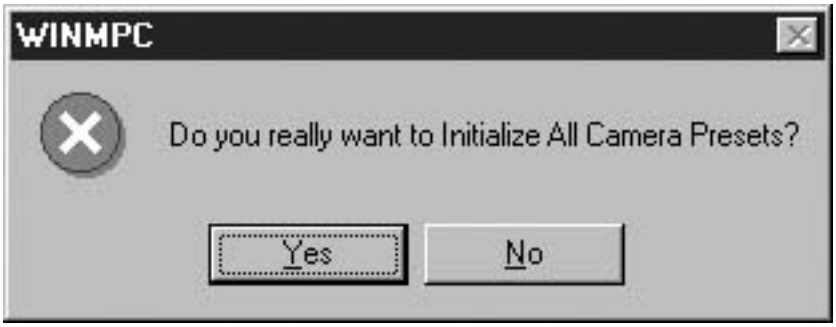
Table for Figure 19. Other Maintenance Screen

REF	NAME	FUNCTION
	Heater Trigger Level	
19-1	(entry line)	Enter a temperature at which the heaters are to come on when the interior temperature in the camera becomes too low
19-2	Set	Click to establish the temperature entered on the entry line
19-3	Get	Click to determine what temperature is currently set as the temperature for the heaters to come on in the camera
	Go to Video Mode (Freeze/Live)	
19-4	Freeze Video	When this box is checked, video will “freeze” during the time the camera pan/tilt is repositioned - such as when touring. Uncheck it to turn off this feature. Freezing this video can be a benefit when the video is processed through an encoder. The rapid movement of a camera when repositioned between presets during a tour sequence generates a large amount of video which can overload encoders. Since the rapidly moving scene cannot be followed by the human eye anyway blanking it causes no problems.
19-5	Get	Click to determine if the box had previously had been checked or not.
	- end table -	



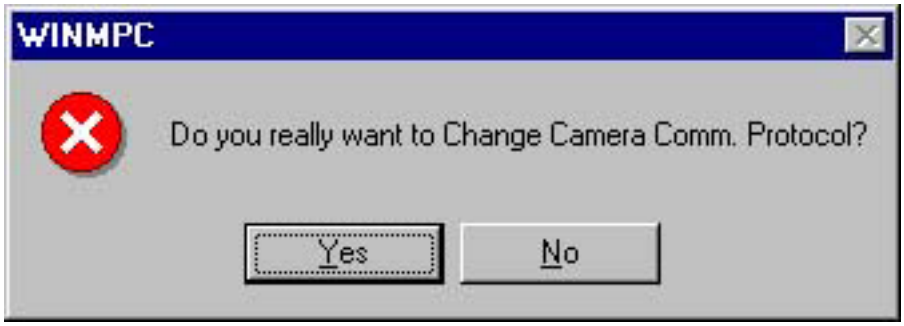
A

Password access is required to (1) overwrite NVRAM with default data or (2) to select another communications protocol



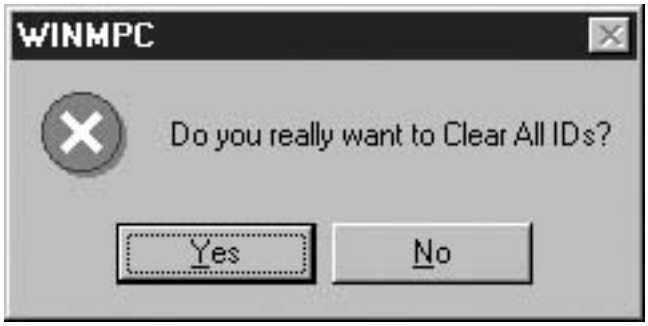
B

A cautionary message that the currently entered presets for this camera are about to be overwritten



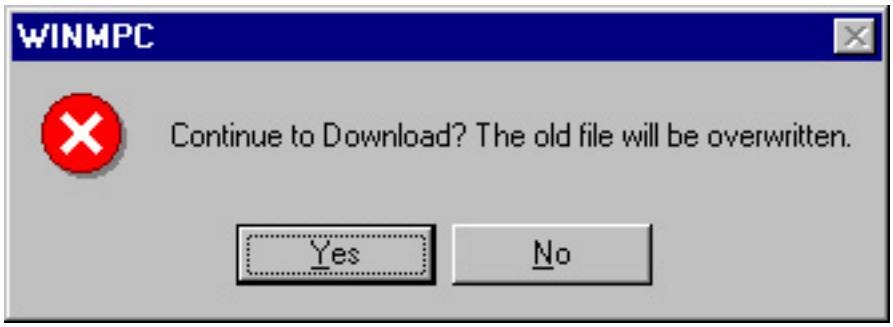
C

A cautionary message that the currently selected communications protocol is about to be changed



D

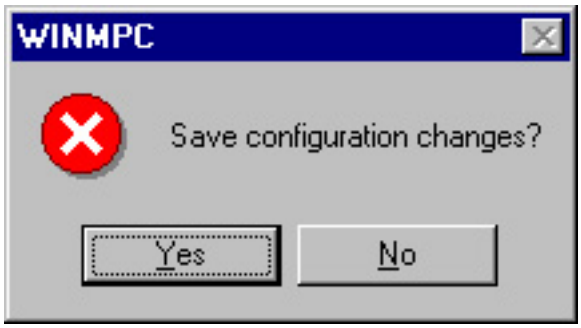
A cautionary message that the currently entered display identifications for this camera are about to be overwritten



E

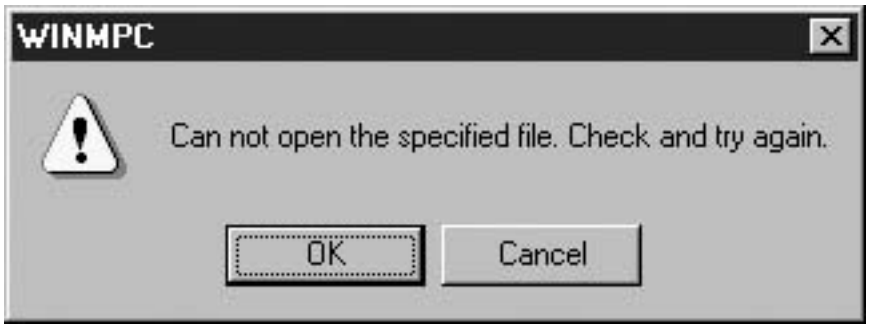
Prompt received when “Download” has been selected on the “Tours and Sectors” menu

Figure 20. Prompt Messages



F

Prompt received when “Close” has been selected on “Tours and Sectors” menu



G

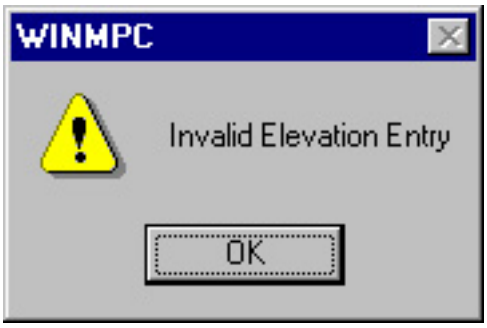
The file name does not exist at the location specified

H

Error message received when attempting to upload a “Tours and Sectors” file to a camera when a “*.dat” file for that camera address is not available

I

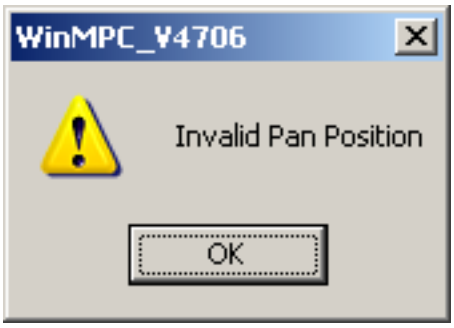
Communications could not be established with the camera



J

Elevation entries for altitude pressurization compensation must be in the range 0 to 10000 feet

Figure 20. Prompt Messages (continued)



K

The pan position entered is outside the allowable limits

L

Before a log file can be recorded for trouble-shooting and maintenance purposes a file name and storage location must be entered

Figure 20. Prompt Messages (continued)

- end section -

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COHU ELECTRONICS WARRANTY

Cohu, Inc., Electronics Division warrants equipment manufactured to be free from defects of material and workmanship. Any such defective part or parts will be repaired or replaced when confirmed by Cohu examination to have become defective within two years from the date of shipment to the original purchaser for standard CCD, CMOS and uncooled thermal cameras and one year from date of shipment to the original purchaser for image intensified cameras, and all other Cohu manufactured products.

Pressurized Housings: Pressurized camera products include a lifetime pressurization warranty. Cohu will re-pressurize, at no charge, returned environmental cameras not exhibiting evidence of physical damage due to misuse. All warranty repairs will be performed at the Cohu factory or as otherwise authorized by Cohu in writing. Purchaser shall prepay transportation charges to Cohu.

Extended IR Cameras: Cameras utilizing extended infrared (extended IR) sensors found to exceed acceptable white blemish specifications within one month of delivery shall be repaired or replaced without charge.

This Warranty does not extend to Cohu equipment subjected to misuse, accident, neglect, improper application, or repaired or altered other than by Cohu, or unless authorized by Cohu in writing. Cameras utilizing extended IR sensors are not warranted for use in areas of elevated levels of cosmic radiation.

Television image pickup tubes, image intensifiers, lenses, and products manufactured by companies other than Cohu are warranted by their original manufacturers. This Warranty is in lieu of all other warranties, express, implied, or statutory, including warranties of fitness for a particular purpose and merchantability, and this Warranty sets forth the purchaser's sole remedy in connection with such warranties. Whether as a result of breach of contract or warranty, tort (including negligence) or otherwise, Cohu shall not be liable for any penalties regardless of reason, including but not limited to collateral, consequential, incidental, or exemplary damages, including without limitation, any loss of profit or revenues, loss of use of any equipment or goods, or removal or re-installation of equipment without prior written approval.

A Return Authorization (RA) Number must be obtained from Cohu prior to returning any item for warranty repair or replacement. 11-06