INSTRUCTIONS FOR OPERATION

HOST COMPUTER INTERFACE SOFTWARE FOR VPS1300 AND VPS1344 MICROCOMPUTER-BASED CONTROL SYSTEMS

1. INTRODUCTION

The Host Computer Interface is a built-in software feature of the VPS1300 and the VPS1344 Microcomputer-Based Control Systems. It permits complete control of VPS systems from a host computer. Each system uses one or more RS-232 ports for communication with the host unit and for printing reports.

1.1 VPS1300 Microprocessor-Based Control System

The VPS1300 has two groups of RS-232 ports: the Supervisor port (J7, Supervisor CPU Module) and the alarm ports (J11 and J12, Alarm CPU Module). Both the supervisor CPU and the Alarm CPU can accept alarm commands. However, installations with a dedicated alarm computer can take advantage of the Alarm CPU's faster alarm response time. This is possible since it does not have the processing load of the Supervisor CPU.

The Supervisor RS-232 port is the primary VPS1300-to-host computer communications link. It can respond to all of the commands described in this manual.

The Alarm CPU ports provide alarm status information but can accept only two commands (Alarm Point Set and Reset) from a computer. They are not capable of responding to the basic VPS1300 command set. However, they feature a very fast response time to alarm commands.

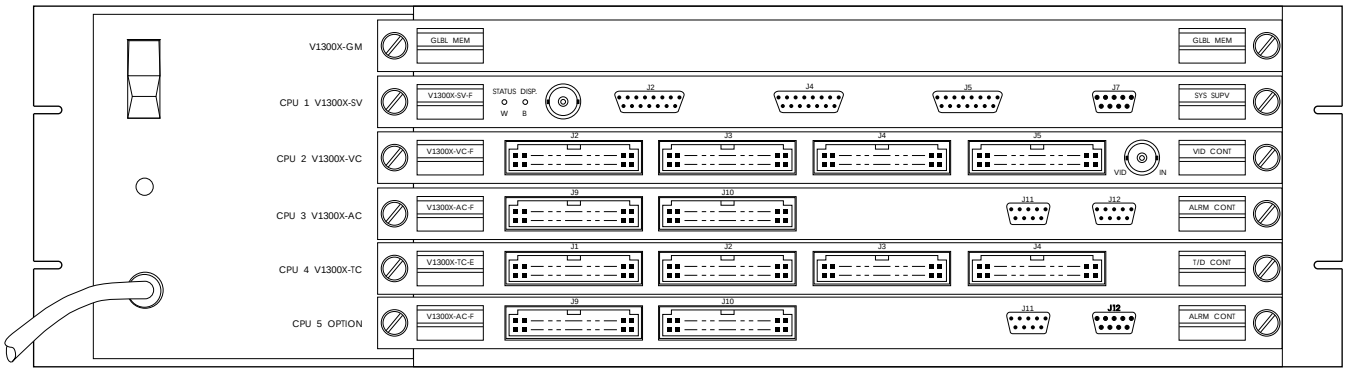

Figure 1-1
VPS1300 Control System (Rear View)

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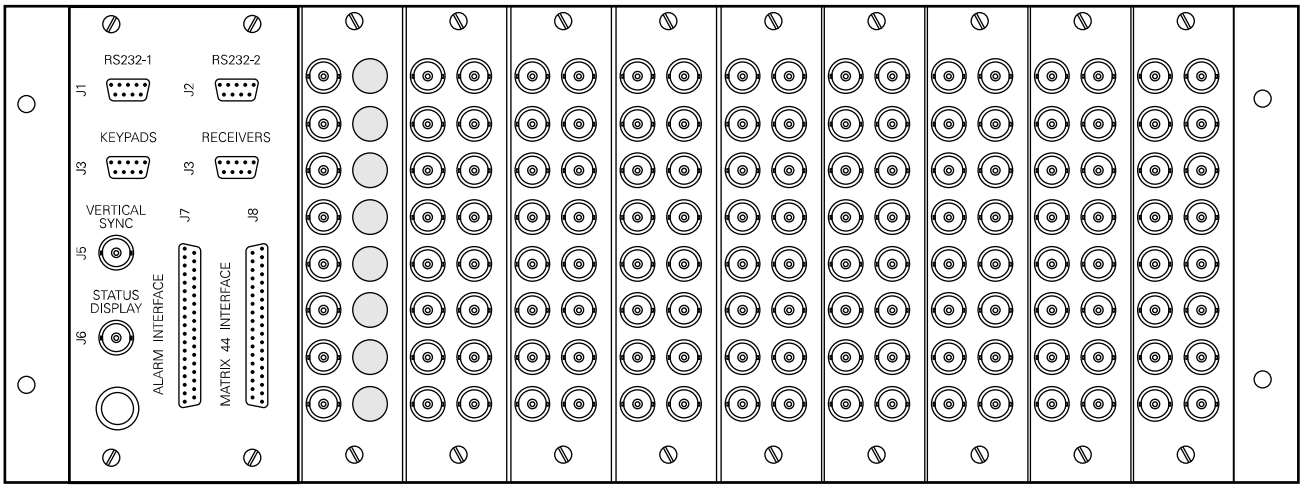

Figure 1-2
VPS1344 Control System (Rear View)

1.2 VPS1344 Microprocessor-Based Control System

The V1344SCPU Control CPU Module (Figure 1-2) features two RS-232 serial communication ports: the Host port (J1) and the Alarm port (J2). The Host RS-232 port is the VPS1344-to-host-computer link. It uses all of the VPS1300 command set. Unlike the VPS1300 alarm ports, the V1344SCPU alarm port only has output capabilities. It cannot accept any commands from a host computer.

2. INSTALLATION

Since the Host Computer Interface is a built-in feature, installation merely requires that the CPU be connected to the host computer and that the RS-232 parameters have the same settings for each unit. Refer to the appropriate installation manual for specific details. Figure 2-1 shows typical cable configurations for the VPS systems. Wire the cable to the host computer as indicated.

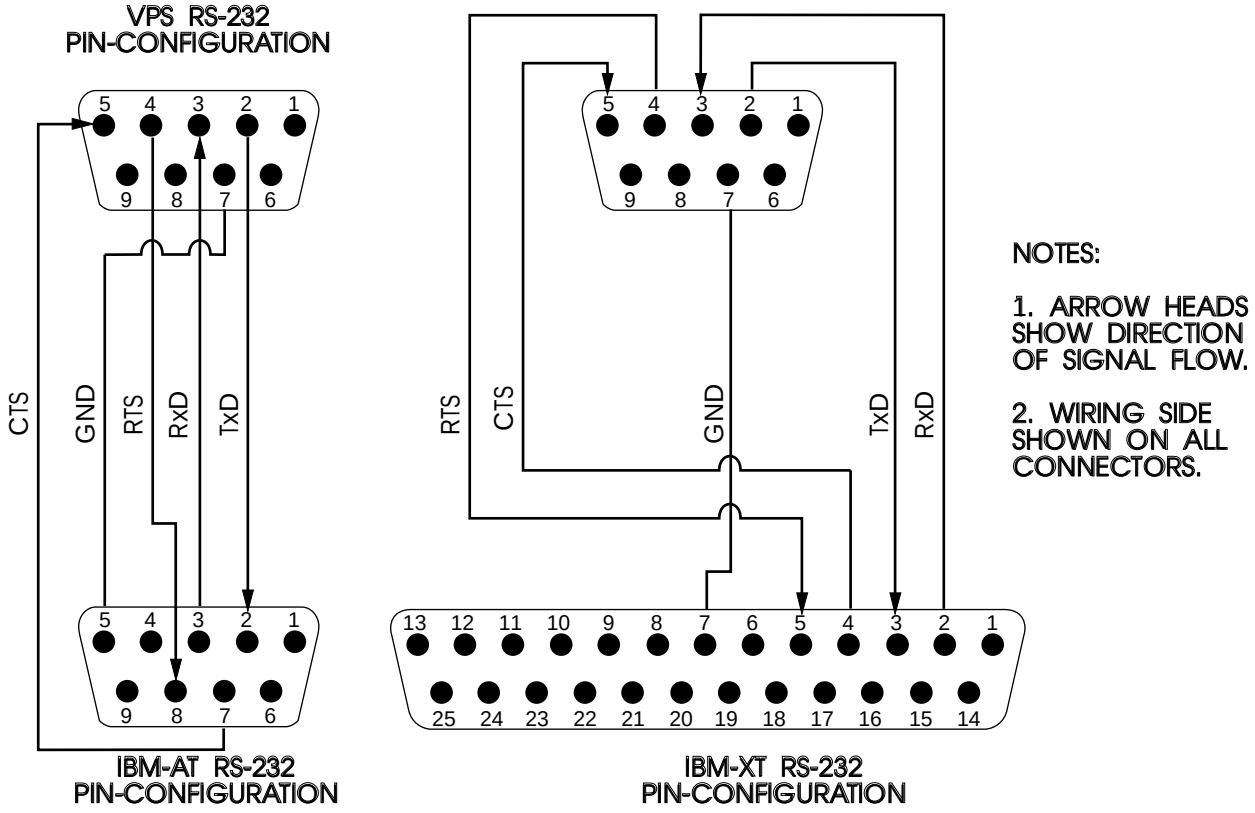

Figure 2-1
VPS RS-232 Cable Configurations

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3. OVERVIEW

The host computer interface provides access to the VPS systems for a host computer or terminal. Through the RS-232 channel, it is possible to:

1. Control all of the normal system functions (e.g., video switching, receiver control, etc.)

2. Monitor the various status conditions (e.g., receiver status, alarm status, etc.)

3. Receive system operation reports (e.g., keypad/monitor assignments, etc.)

4. Execute supervisory system commands (e.g., enable/disable keypads, etc.)

3.1 VPS1300 System

For an explanation of the host computer interface to be clear, it is necessary to have a basic understanding of the VPS1300 system. Figure 3-1 shows a simplified block diagram of a VPS1300 system. The system is described in detail below.

1. The CPU contains four parallel microcomputers, the system software, and the necessary communications and support circuitry to control the other system components. The CPUs are responsible for all communications and control routing in the system. (The V1300X CPU is described below.)

2. The VIDEO SWITCHER (Matrix 44 switch banks) is usually placed in close proximity to the CPU. Parallel communications over ribbon cable connect the CPU and the switch banks. Camera inputs and monitor outputs are connected to the switcher. Upon command from the CPU, the switcher completes the circuit routing the video signal from the specified camera to the desired monitor.

3. The KEYPAD (remote control panel) is the operator's interface to the system. It is connected to the CPU with two shielded twisted-pair cables and uses differential RS-422 communications at distances up to five miles from the CPU. The CPU polls each keypad for its input and sends status data out to each keypad for display.

4. The RECEIVER is a microcomputer-based device responsible for interpreting the CPU commands and turning them into the appropriate pan/tilt/lens or auxiliary functions. The receiver is usually placed close to the camera it controls. Like the keypad, each receiver is connected to the CPU with two shielded twisted-pair cables, and uses differential RS-422 communications. The CPU polls each receiver address for current status information and communications verification. Preset capability provides the ability to store and recall up to 99 pan/tilt/zoom/focus positions, depending on the receiver. Variable speed capability allows control of variable speed pan-and-tilt drives.

5. The V1200X-IA is an external alarm interface. Parallel communications over ribbon cable connect the CPU and the X-IA. The CPU polls the X-IA for alarm input data. The X-IA is used in conjunction with the alarm software features.

The VPS1300 system CPU card cage houses four parallel CPUs: a system supervisor CPU (V1300X-SV); a video switcher CPU (V1300X-VC); an alarm CPU (V1300X-AC); and a time/date/titler CPU (V1300X-TC). It also contains a global memory module, the V1300X-GM. VPS1300 system CPUs can be configured for various system sizes by using appropriate models of the individual CPU boards:

1. The standard configuration supports 256 cameras and 256 monitors and includes these CPU boards:

   V1300X-GM-S
   V1300X-SV-S
   V1300X-VC-S
   V1300X-AC-S
   V1300X-TC-S

2. The full configuration supports 512 cameras and 256 monitors. It includes these CPU boards:

   V1300X-GM-F
   V1300X-SV-F
   V1300X-VC-F
   V1300X-AC-F
   V1300X-TC-F

3. The expanded configuration supports 1024 cameras and 256 monitors and includes these CPU boards:

   V1300X-GM-E
   V1300X-SV-F
   V1300X-VC-F
   V1300X-AC-F
   V1300X-TC-E

Note that the SV, VC, and AC components are the same for both the full and expanded versions.

Throughout the remainder of this manual, the combined set of five CPU boards, housed in the V1300X-CC card cage, will be referred to collectively as "the CPU."

Time, date, and title generation is provided by one or more V1300X-TDC card cages equipped with V1300X-TDT cards. The V1300X-TDC is controlled by the V1300X-TC board, located in the V1300X-CC CPU card cage as described above.

3.2 VPS1344 System

The VPS1344 system provides virtually all of the same functions as the VPS1300; the basic difference is in maximum system size and the hardware architecture. The VPS1344 can support up to 120 cameras, 24 monitors, and 32 operator keypads. Figure 3-2 shows a typical VPS1344 system.

The system CPU, Model V1344SCPU, consists of a single card housed in a Matrix 44 switcher card cage. Only one V1344SCPU is required per system; if the system requires more than one switcher card cage, the CPU slot in the additional card cage is occupied by the V4430ADEC address decoder card.

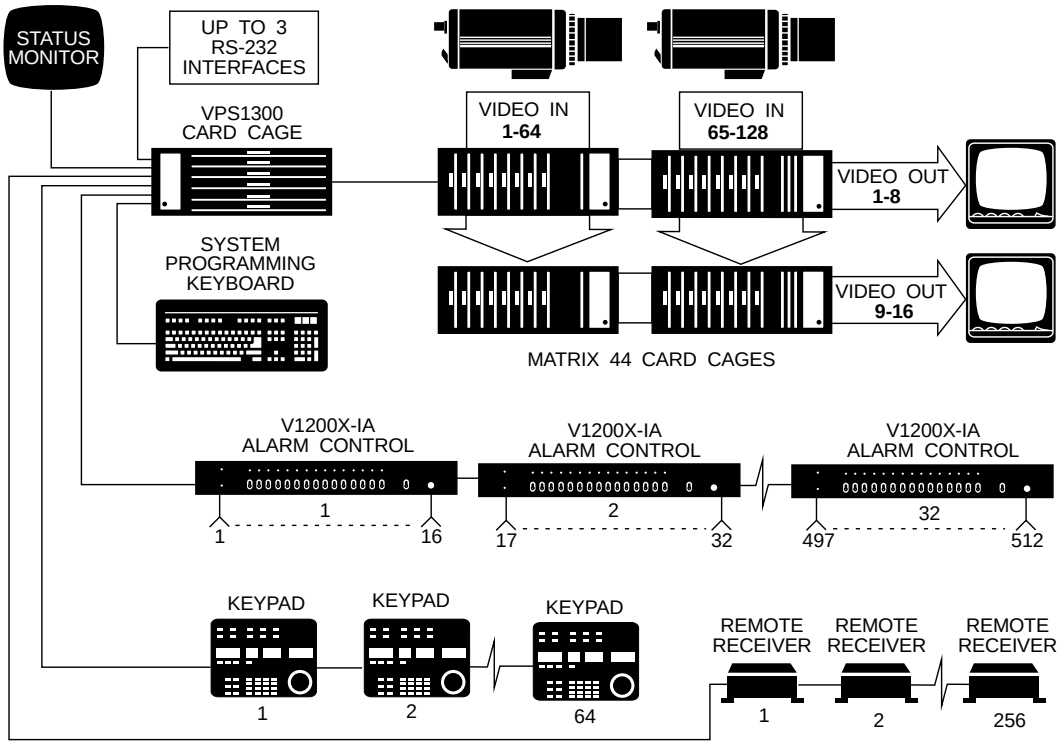

Figure 3-1
Simplified VPS1300 Block Diagram

Time, date, and title generation is provided by two V1344TDT cards, which also reside in the switcher card cage. Two of these cards are required for each group of eight monitor outputs:

1-8 monitors - 2 V1344TDT cards
9-16 monitors - 4 V1344TDT cards
17-24 monitors - 6 V1344TDT cards

Other components of the system, such as keypads, receivers, and so on, are identical to those described for the VPS1300 system, above.

3.3 System Component Relationships

Before trying to understand the operation of the VPS1300 and VPS1344 software, it is important to note some of the conventions and relationships used by the system.

Each keypad and receiver in the VPS1300 and VPS1344 system has a unique address. The CPU uses this address for communications. The CPU also uses this address as an index to reference any stored data that is pertinent to that device. This relationship is important because the status data reported to the RS-232 channel by the CPU will also be indexed by this address.

The receivers are indexed starting from address 1 and running up to the maximum address allowed for the system in question.

The keypads are indexed starting with the first remote address, running through the last remote.

Since it is possible for a VPS system to be ordered in a variety of configurations, a provision has been made for the RS-232 channel to obtain the pertinent operating information. The SYSTEM SPECIFICATION REPORT command (‘) will report the needed information.

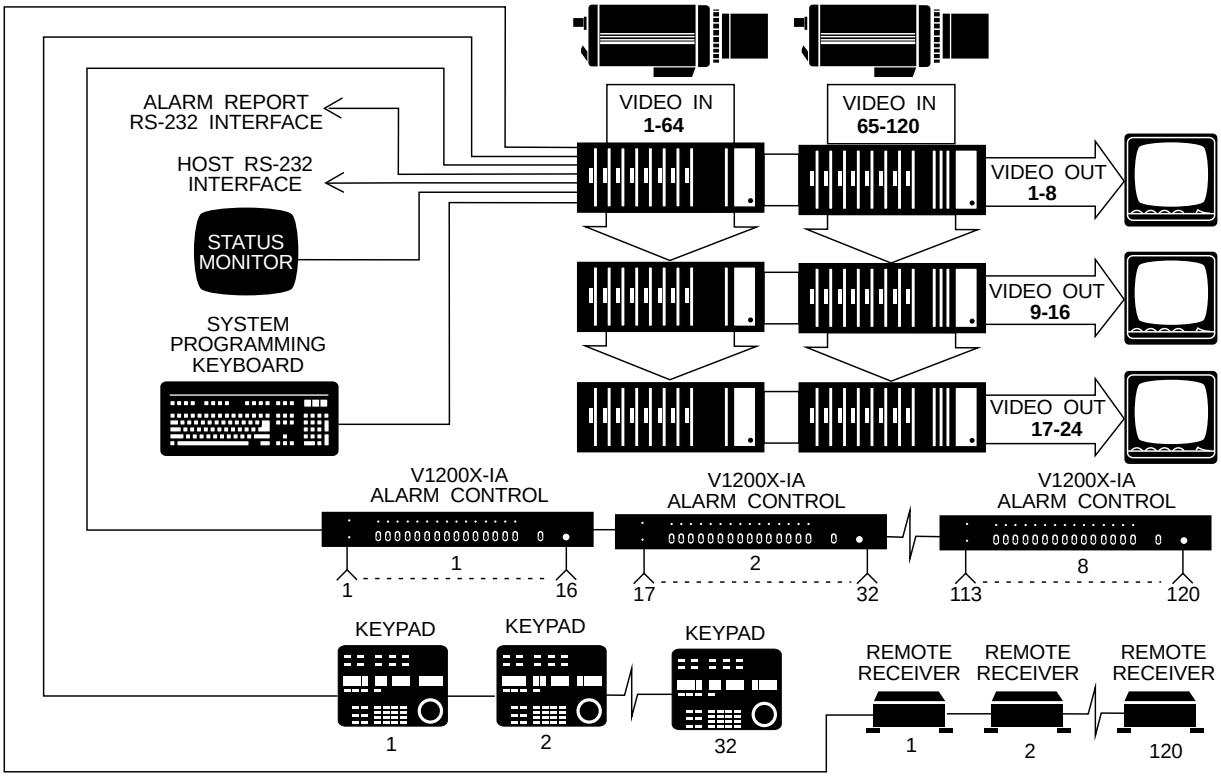

Figure 3-2
Typical VPS1344 Block Diagram

In a standard configuration, one receiver address controls one pan-and-tilt drive, which has one camera mounted on it. This one-to-one relationship between receivers, pan/tilt drives, and cameras leads to the convention of using the receiver address as the camera number. Consequently, “camera No. 1" refers to the receiver which has been set for address , the equipment that is connected to that receiver (i.e., pan and tilt drive, motorized lens, etc.), and the video signal which is connected to the video switcher input No. 1.

It is also important to recognize the relationship of keypads to monitors, and monitors to camera/receiver units. In order for the CPU to be able to route the operator’s control inputs to the correct camera location, there must be a command path from the keypad to the receiver. The key is the monitor assignment, which is used to provide the necessary link.

A typical operator’s command sequence illustrates how the system functions:

1. Select monitor 2 (assigns the keypad to monitor 2)

2. Select camera 5 (assigns camera/receiver 5 to monitor 2, causes the CPU to command the video switcher to route the video signal from camera input 5 to monitor output 2)

3. Pan right control (moves the pan and tilt drive controlled by receiver 5 to the right)

4. Iris open control (opens the iris of the lens on camera 5)

The major functions and operational characteristics of the VPS1300 software are described below.

When the CPU is powered up, it resets all X-IAs, polls all keypads and clears all monitors and displays.

In normal operation, the CPU polls the X-IAs for alarm input data, polls the receivers for status and communications verification, polls the on-line keypads for input data, and controls video switching for sequencing on monitors.

When an on-line receiver fails to answer a poll, the CPU deletes it from the table of on-line units and lights the “FAIL” LED on all of the on-line keypads.

When an on-line keypad has data, the CPU decodes and stores the data until the command is complete, and then attempts to execute the command.

When an alarm input is detected from a receiver or a V1200X-IA, the CPU processes the alarm according to the active alarm mode (standard process, sequencing, first available, salvo, sequencing salvo or free-form salvo). The CPU flashes the corresponding X-IA LED (if an X-IA alarm) and lights the ALARM LED on all of the on-line keypads.

4. RS-232 COMMAND CODES: DETAILED DESCRIPTIONS

The host computer interface provides a wide range of supervisory controls and reports. It gives the host computer all of the control functions of a Vicon keypad. The interface software emulates a keypad when using these control functions. Thus, the following descriptions often detail how a keypad interacts with the system.

NOTE: *There is a fundamental difference between the scope of a keypad's control and that of the host computer. In the VPS systems, the keypad can access only those cameras and monitors to which it has been granted access through the Camera/Monitor and Keypad/Monitor partitions. Also, it is possible for the System Supervisor to disable a keypad's ability to select cameras for sequencing. The host computer can control any camera and monitor in the system and cannot be restricted in any way. However, the host computer cannot add or delete a camera to a monitor's random sequence pattern.*

4.1 Introduction

4.1.1 RS-232 PARAMETERS

The VPS RS-232 parameters can be modified to correspond to the host computer's settings. Both units must have the same settings in order for communication on the RS-232 link to succeed. Typical parameter values are: 8 data bits, 1 start bit, 1 stop bit, odd parity, 9600 baud, half duplex. Refer to the On-Site Programming Manual, X552, for additional details.

4.1.2 HOST COMPUTER-TO-VPS SYSTEM TRANSMISSION

Each host computer transmission starts with an ASCII start-of-heading character (SOH/control A/01 hex), and ends with an ASCII carriage return (CR/control M/OD hex). The VPS system ignores any ASCII line feed (LF/control J/OA hex). This maintains compatibility with systems which do not transmit a line feed character with each carriage return character.

NOTE: *Each command MUST be framed by the <SOH> and <CR> commands. Communication failure will occur if this requirement is not met.*

4.1.3 VPS SYSTEM RESPONSES

The VPS system acknowledges each host command string with a status character. The VPS system has three possible responses:

1. An ASCII asterisk (*/2a hex) indicates a transmission error (i.e., parity, framing etc.).

2. An ASCII question mark (?/3F hex) indicates a command error (e.g., syntax errors, parameter errors, etc.).

3. An ASCII dollar sign ($/24 hex) indicates commands which have been accepted for processing.

NOTE: *Acknowledgement of a command does not automatically mean that it has been executed. There are conditions under which a VPS system fails to execute or overrides a command (e.g., alarm acknowledge command when there are no alarms pending, preset command to a receiver that is not equipped with preset option). Table 4-1, Command Failure Conditions, lists the possible reasons for command failure or override. The description of each command indicates which conditions apply.*

The host computer should not transmit a new command until the preceding command has been acknowledged with an ASCII dollar sign ($). In the event of an error, the host computer should retransmit the command.

TABLE 1-1
COMMAND FAILURE CONDITIONS

Ref No.	Description
1	Command syntax error
2	Invalid monitor number
3	Invalid camera number
4	Invalid preset number
5	Invalid dwell time
6	No prior monitor assignment made
7	Monitor displaying active alarm video
8	Monitor displaying active com/fail video
9	Monitor sequencing alarm videos
10	Monitor in sequence
11	Monitor not sequential monitor
12	Monitor seized by another keypad

Ref No.	Description
13	No prior monitor assignment made
14	Camera/receiver not equipped for function attempted
15	Camera/receiver does not respond to CPU communications
16	Camera/receiver in preset store mode
17	Camera/receiver seized by another keypad
18	No manual iris control possible with autoiris control engaged
19	Autopan cannot be engaged with pan in motion
20	No com/fails pending
21	Alarms pending
22	No alarms pending
23	Invalid keypad number.

4.2 Manual Video Switching

The manual video switching commands control the video switching matrix. There are only two commands needed for manual video switching. One command selects a monitor output, while the other selects a camera input.

4.2.1 MONITOR SELECT (MONSEL)

The first operation performed by a keypad is monitor selection. A monitor assignment gives the keypad control of the monitor and the camera/receiver assigned to that monitor.

A keypad operator presses MONSEL, enters the monitor number, and presses MONSEL again to make a monitor selection. The system assigns the keypad to the selected monitor and displays the selected monitor number in the status/monitor window. It then displays the currently assigned camera number in the camera window and displays the camera status on the keypad LEDs.

A### command syntax

A MONSEL command

3-digit decimal monitor number

Example: **<SOH>A004<CR>** assigns monitor 4 to the host computer.

Failure conditions: 1, 2

NOTE: *If it is necessary to verify command execution, use the keypad assignment report command (h###) instead.*

NOTES:

1. *In all of the operational descriptions that follow, it is understood that the monitor has already been selected.*

2. *As of September 1991, VPS1300 and VPS1344 systems will allow for a three-digit camera number for any command that includes a camera number; for instance, camera select, sequence, bypass, etc. Bulk commands still require a four-digit input.*

4.2.2 CAMERA SELECT

A camera selection assigns a camera/receiver to the currently assigned monitor. The VPS system routes the camera's video signal to the monitor. Use of any keypad

control functions (pan, tilt, focus, etc.) affects this camera/receiver.

From a keypad, the operator enters the camera number and presses CAMSEL. The system responds by switching the selected video input to the assigned monitor output and displaying the selected camera number in the camera window. It also displays the status of the camera on the keypad LEDs.

B####	command syntax
B	CAMSEL command
####	3- or 4-digit decimal camera number
Example:	**<SOH>B0001<CR>** routes video from camera 1 to the selected monitor output.
Failure conditions:	1, 3, 6, 7, 8, 9, 12

NOTE: *To verify the execution of the command, use the monitor assignment report command (f#####) instead.*

4.3 Sequential Video Switching

The VPS systems have two modes of sequencing camera video on monitors. The ascending mode causes camera video to sequence on a monitor in ascending numerical order. The random mode causes camera video to sequence according to the Random A/B sequencing patterns.

NOTE: *The host computer cannot add or delete a camera to a monitor's random sequence pattern.*

The maximum number of sequencing monitors is limited by the system size. Refer to Appendix A, Table A.1. Each monitor has its own camera switching patterns (A and B) and its own switching time interval. The commands provided here give the host computer operator the ability to modify the current camera pattern, set the switching dwell time, and start sequential operation.

4.3.1 SEQUENCE/BYPASS COMMANDS

The host computer uses these commands to add cameras to or remove them from active ascending sequence patterns (A or B). The host computer cannot insert or delete cameras from monitors which use random sequencing.

The bulk sequence/bypass commands let the host computer add all cameras to or remove all cameras from the selected monitor's active ascending sequence pattern (A or B).

4.3.1.1 Sequence Enter

The sequence enter command causes the system to add the specified camera to the active ascending sequence pattern (A or B) of the selected monitor.

From a keypad, the operator enters the camera number and presses SEQ. The system responds by switching the specified video input to the assigned monitor output. It displays the camera number in the camera window and the sequential status (1 = sequence) in the status/monitor window of the keypad.

C####	command syntax
C	sequence enter command
####	3- or 4-digit decimal camera number
Example:	**<SOH>C0001<CR>** enters camera 1 into the active ascending sequence pattern of the selected monitor.
Failure conditions:	1, 3, 6, 7, 8, 9, 11, 12

4.3.1.2 Bypass Enter

The bypass enter command causes the system to delete the specified camera from the active sequence pattern (A or B) of the selected monitor.

From a keypad, the operator enters the camera number and presses BYP. The system removes the specified camera's video input from the selected monitor. It then displays the camera number in the camera window and the sequential status (0 = bypass) in the status/monitor window of the keypad.

D####	command syntax
D	bypass enter command

####	3- or 4-digit decimal camera number
Example:	<**SOH**>**D0001**<**CR**> removes camera 1 from the current ascending sequence pattern of the selected monitor.
Failure conditions:	1, 3, 6, 7, 8, 9, 11, 12

4.3.1.3 Bulk Sequence Enter

The "Bulk" (all cameras) sequence command (C9999) operates on all cameras in the system. It adds to the selected monitor's active ascending sequence pattern (A or B). Since this operation involves multiple EEROM write cycles, it takes a few seconds to complete. This command has no effect on monitors operating in the random sequence mode.

NOTE: *Do not issue any camera sequence or bypass select commands while the system is processing a bulk sequence command. It immediately aborts the bulk command directed to the specified monitor.*

To initiate a bulk sequence, the keypad operator enters 9999 and presses SEQ. The system blanks the selected monitor. The keypad displays SP* (set program) in the camera window and displays the sequential status (1) in the status/monitor window. When the store operation is complete, the system displays PS (program set) in the camera window. It also displays the sequential status (1 = sequence) in the status/monitor window.

C9999	bulk sequence enter command
Example:	<**SOH**>**C9999**<**CR**> enters all video inputs into the current ascending sequence pattern of the selected monitor.
Failure conditions:	1, 3, 6, 7, 8, 9, 11, 12

4.3.1.4 Bulk Bypass Enter

The "Bulk" (all cameras) bypass command (D9999) operates on all cameras in the selected monitor's active ascending sequence pattern (A or B). It removes all cameras from the pattern. Since this operation involves multiple EEROM write cycles, it takes a few seconds to complete. This command has no effect on monitors operating in the random sequence mode.

***See Appendix A for V1200X keypad messages.**

NOTE: *Do not issue any camera select commands while the system is processing a bulk sequence command. It immediately aborts the bulk command.*

To initiate a bulk bypass, the keypad operator enters 9999 and presses BYP. The system blanks the selected monitor. The keypad displays SP* (set program) in the camera window and displays the sequential status (0) in the status/monitor window. When the store operation is complete, the system displays PS (program set) in the camera window. It also displays the sequential status (0 = bypass) in the status/monitor window.

D9999	bulk bypass enter command
Example:	<**SOH**>**D9999**<**CR**> removes all video inputs from the current ascending sequence pattern of the selected monitor (i.e., camera video no longer sequences on the monitor).
Failure conditions:	1, 3, 6, 7, 8, 9, 11, 12

4.3.2 DWELL TIME ENTER

Monitor** dwell time (length of time that a video input is displayed) can be individually set for each sequential switching monitor. Use this command to set the dwell time for the assigned monitor.

NOTE: *For a monitor in sequential switching operation, a dwell time command stops the sequencing. A SEQUENCE START command is needed to restart sequencing.*

From a keypad, the operator enters the dwell time and presses DWELL. The system displays the dwell time in the camera window and displays dashes (—) in the keypad's status/monitor window.

E###	command syntax
E	dwell time enter command
###	3-digit decimal dwell time (0 - 255 seconds)
Example:	<**SOH**>**E005**<**CR**> sets a sequential dwell time of 5 seconds for the selected monitor.
Failure conditions:	1, 5, 6, 7, 8, 9, 11, 12

**The VPS1300 and VPS1344 systems support both individual camera dwell and monitor dwell. Only monitor dwell can currently be set through the RS-232 interface.

4.3.3 VIDEO CROSS-POINT RESET

This command is used when a video switch card is removed and replaced. The symptoms of this condition are distorted video, rolling video, multiple video images, and ghosting. It can affect several or all monitors. Resetting the switch-points eliminates the problem.

The command resets all monitors in the system and restores the last video selections.

E999	video cross-point reset command
Example:	**<SOH>A005<CR>** monitor 5 selected. **<SOH>E999<CR>** reset monitor's switch-points.
Failure conditions:	1, 5, 6, 7, 8, 9, 11, 12

4.3.4 SEQUENCE START

The sequence start command is used to put the selected monitor in sequential switching operation. The system sequences the cameras in either ascending or random order starting with the currently assigned camera number. (Ascending or random order sequencing is assigned to a monitor via the system editor keyboard located at the CPU.

From a keypad, the operator presses SEQ. The system starts sequencing video inputs on the monitor. The keypad displays S in its status/monitor window.

NOTE: *To verify command execution, use the monitor status report command (j###) instead of F.*

F	start sequential switching command
Example:	**<SOH>F<CR>** starts sequencing video inputs on the assigned monitor.
Failure conditions:	1, 6, 7, 8, 9, 11, 12

4.3.5 SYNC-SWITCH START

This instructs the VPS system to immediately start sequencing all monitors in the designated synchronous switch group (1 - 8).

C990#	command syntax
C990	sync-switch start command
#	1-digit decimal number (1 - 8) of sync-switch group
Example:	**<SOH>C9902<CR>** sync-switch group 2 starts sequencing.

4.3.6 SYNC-SWITCH STOP

This instructs the VPS system to immediately stop sequencing all monitors in the designated synchronous switch group (1 - 8).

D990#	command syntax
D990	sync-switch start command
#	1-digit decimal number (1 - 8) of sync-switch group
Example:	**<SOH>D9907<CR>** sync-switch group 7 stops sequencing.

4.4 Preset Functions

The preset function commands are used in conjunction with specially equipped lenses, pan-and-tilt drives, and receivers. The preset option provides the ability to store and recall up to 99 selected pan/tilt/zoom/focus positions for each receiver, depending on receiver model.

4.4.1 PRESET RECALL

This command returns a pan-and-tilt drive and lens to a previously stored position. Leading zeroes must be used.

NOTES:

1. *A preset recall command automatically engages the autoiris function.*

2. *Any manual pan/tilt/zoom/focus command overrides the preset recall command.*

From a keypad, with the keyswitch in the RUN position, the operator presses the ENTER button, enters the preset number, and presses ENTER again to recall a previously stored position. The system sends the recall command to the receiver. The keypad displays the preset number in the preset window and lights the preset LED on the keypad. The system turns off the LED when the receiver completes execution.

G##	command syntax
G	preset recall command
##	2-digit decimal preset number (01 - 99)
Example:	<**SOH**>**G02**<**CR**> recalls preset position 2.
Failure conditions:	1, 4, 6, 9, 10, 12, 13, 14, 15, 16, 17

NOTE: *To verify command execution, instead of G##, use the receiver status report command (g#####).*

4.4.2 PRESET STORE

The preset store command is used to store the current position of the pan/tilt/zoom/focus. The preset store function involves an analog-to-digital conversion and an EEPROM write operation that normally takes a few seconds to complete.

NOTE: *The receiver does not respond to communications while the A/D conversion and EEPROM store are being done. Use a leading zero for any preset less than 10.*

From a keypad (with the keyswitch in the PGM position) the operator presses the ENTER button. He or she then enters the preset number and presses ENTER again to store the current pan/tilt/zoom/focus position.

The system sends the store command to the receiver. The keypad displays the preset number in the preset window and lights the preset LED. The system turns off the LED when the receiver completes execution of the command.

H##	command syntax
H	store command.
##	2-digit decimal number (01 - 99) identifying the preset
Example:	<**SOH**>**H02**<**CR**> stores preset position 2.
Failure conditions:	1, 4, 6, 9, 10, 12, 13, 14, 15, 16, 17

NOTE: *Use the receiver status report (g#####) to determine if the receiver has finished executing the preset command.*

4.5 Receiver Functions

These commands give the operator control of the pan/tilt drive, the motorized lens, and the receiver auxiliary functions. The receiver can control concurrent tasks. Thus, it can accept multiple commands (e.g., the receiver can pan-left, tilt-up, zoom-out, and focus-far all at once). The keypad operator issues multiple commands by activating several of the controls simultaneously.

The host computer can achieve the same result by chaining multiple receiver commands in a single transmission. In a normal transmission, there is a start-of-heading character, the command, and a carriage return (e.g., <**SOH**>**A002**<**CR**>). "Chaining" refers to the practice of sending multiple commands in a single transmission (e.g., <**SOH**>**ILNP**<**CR**>).

4.5.1 MOMENTARY FUNCTIONS

The momentary function commands (i.e., pan, tilt, zoom, focus, iris, aux5, aux6) are sent to the receiver once for each change of state. For example, when the joystick is in the center position (no pan or tilt), no movement command is transmitted to the receiver.

When the state first changes (e.g., pan right), a command (pan right) is sent to the receiver. As long as the state of that control (or any other) does not change, no command is sent. When the state changes again (e.g., pan right and tilt up), the keypad sends another command (pan right and tilt up). When the state changes again (e.g., tilt up only) a new command (stop pan and tilt up) is then sent. The next change (e.g., release), causes another command (stop tilt) to be sent.

To avoid multiple command/acknowledgement transmissions, the host computer can chain commands. For example, to achieve the same result as the previous example, the host computer would:

1. To initiate a pan right, send a pan right command (<**SOH**>**J**<**CR**>).

2. To add the tilt up control, send a pan right chained to a tilt up (<**SOH**>**JM**<**CR**>).

3. To halt the pan only, send a tilt up command, effectivley releasing the pan right (<**SOH**>**M**<**CR**>).

4. To stop the tilt up, for the equivalent of a button release, send a command (or command chain) that does not include the tilt up command (<**SOH**><**CR**>).

4.5.1.1 Pan Left

From a keypad, the operator pushes the joystick to the left to make the pan-and-tilt drive pan to the left. The system transmits a pan left command to the receiver. Releasing the joystick stops the pan left motion. The system then responds by sending a stop pan command to the receiver. Any command string that does not include the pan left command halts the pan left motion.

I	pan left command
Example:	<**SOH**>**I**<**CR**> causes the pan-and-tilt unit to pan to the left.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.2 Pan Right

From a keypad, the operator pushes the joystick to the right to make the pan-and-tilt drive pan right. The system transmits a pan right command to the receiver. Releasing the joystick indicates an end of the pan right motion. The system then sends a stop pan command to the receiver which stops the pan right movement. Any command string that does not include the pan right command halts the pan right motion.

J	pan right command
Example:	<**SOH**>**J**<**CR**> causes the pan-and-tilt unit to pan to the right.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.3 Tilt Down

From a keypad, the operator pushes the joystick down to make the pan and tilt drive tilt down. The system transmits a tilt down command to the receiver. Releasing the joystick signals an end to the tilt down motion. The system then sends a stop tilt command to the receiver. Any command string that does not include the tilt down command halts the tilt down motion.

L	tilt down command
Example:	<**SOH**>**L**<**CR**> causes the pan-and-tilt unit to tilt the camera down.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.4 Tilt Up

From a keypad, the operator pushes the joystick up to make the pan-and-tilt drive tilt up. The system transmits a tilt up command to the receiver. Releasing the joystick signals an end to the tilt up motion. The system then sends a stop tilt command to the receiver. Any command string that does not include the tilt up command halts the tilt up motion.

M	tilt up command
Example:	<**SOH**>**M**<**CR**> causes the pan-and-tilt drive to tilt the camera up.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.5 Zoom Out

From a keypad, the operator pushes the ZOOM OUT switch to make the motorized lens zoom out (thus providing a wider angle of view). The system transmits a zoom out command to the receiver. Releasing the switch signals an end to the zoom out motion. The system then sends a stop zoom command to the receiver.

Any command string that does not include the zoom out command halts the zoom out motion.

N	zoom out command
Example:	**<SOH>N<CR>** causes the motorized lens to zoom out for a wider angle of view.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.6 Zoom In

From a keypad, the operator pushes the ZOOM IN switch to make the motorized lens zoom in (thus providing a close-up view). The system transmits a zoom-in command to the receiver. Releasing the switch signals an end to the zoom-in motion. The system then sends a stop zoom command to the receiver. Any command string that does not include the zoom-in command halts the zoom-in motion.

O	zoom-in command (ASCII capital letter O)
Example:	**<SOH>O<CR>** causes the motorized lens to zoom-in for a close-up view.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.7 Focus Near

From a keypad, the operator pushes the FOCUS NEAR switch to make the motorized lens focus at a point nearer to the camera. The system transmits a focus near command to the receiver. Releasing the switch signals an end to the focus near motion. The system then sends a stop focus command to the receiver. Any command string that does not include the focus near command halts the focus near motion.

P	focus near command
Example:	**<SOH>P<CR>**
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.8 Focus Far

From a keypad, the operator pushes the FOCUS FAR switch to make the motorized lens focus at a point farther from the camera. The system transmits a focus far command to the receiver. Releasing the switch signals an end to the focus far motion. The system then sends a stop focus command to the receiver. Any command string that does not include the focus far command halts the focus far motion.

Q	focus far command
Example:	**<SOH>Q<CR>**
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.1.9 Iris Close

From a keypad, the operator pushes the IRIS CLOSE switch to make the motorized lens iris close. The system transmits an iris close command to the receiver. Releasing the switch signals an end to the iris close motion. The system then sends a stop iris command to the receiver. Any command string that does not include the iris close command halts the iris close motion.

R	iris close command
Example:	**<SOH>R<CR>** causes the lens to close down the iris.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17, 18

4.5.1.10 Iris Open

NOTE: *To protect the camera video pickup device from damage due to overexposure, the receiver defaults to an autoiris engaged condition both on power-up and upon receipt of a preset recall command. The autoiris command overrides any manual iris command. To utilize the manual iris controls, autoiris must be disengaged.*

From a keypad, the operator pushes the IRIS OPEN switch to make the motorized lens iris open. The system transmits an iris open command to the receiver. Releasing the switch signals an end to the iris open motion. The system then sends a stop iris command to the receiver. Any command string that does not include the iris open command halts the iris open motion.

S	iris open command
Example:	**<SOH>S<CR>** causes the lens to open the iris.

Failure conditions: 1, 6, 9, 10, 12, 13, 14, 15, 16, 17, 18

4.5.1.11 Aux5, Aux6

From a keypad, the operator presses the AUX5 or AUX6 button to engage the appropriate auxiliary function. The system transmits an aux5 or aux6 command to the receiver. Releasing an AUX5 or AUX6 button signals to disengage the appropriate auxiliary function. The system then sends a disengage aux5 or aux6 command to the receiver. Any command string that does not include the specific auxiliary command disables that auxiliary function.

Y, Z aux5 and aux6 commands, respectively

Example: **<SOH>Y<CR>** causes the system to enagage auxiliary function 5 (if it is currently disengaged).

Failure conditions: 1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.5.2 LATCHING FUNCTIONS

The normally latching functions (i.e., autoiris, lens speed, autopan and aux1 - aux4) are toggled by activation of the control. As with the momentary functions, the VPS system looks for a change of state on the input. The system must see a keypad button release in order to be able to detect another input.

To have access to all of the functions available to a keypad (including the ability to operate variable speed and/or optionally equipped receivers), the host computer must simulate the on-off action of a keypad button. Consequently, successive latching function commands must be separated by a command string that does not contain the particular latching function in use.

To illustrate (with autoiris initially off):

a. From a keypad - pressing and releasing the autoiris button turns the autoiris function on. Pressing the button again turns the autoiris off.

b. From the host computer - sending the autoiris command turns the autoiris function on. However, before the host computer can turn the function off, it must first send the equivalent of a button release. Any command string that does not contain the autoiris command fills this requirement. The NULL command should be used if no other operation is desired. Once the release has been taken care of, the next autoiris command turns the autoiris off.

NOTE: *Consecutive latching commands (e.g., the autoiris command) from the host computer are equivalent to a keypad operator pressing and holding that function button (e.g., the autoiris button).*

4.5.2.1 Autopan

From a keyapad, the operator presses the AUTOPAN button to engage the autopan function (assuming that it is currently disengaged). The system transmits an autopan command to the receiver and turns on the keypad autopan LED.

Pressing the AUTOPAN button again disengages the autopan function. Any manual or preset pan operation also disengages the autopan function. The system sends a stop pan command to the receiver and extinguishes the LED on the keypad.

K autopan engage/disengage command

Example: **<SOH>K<CR>** engages autopan (if it is currently disengaged), or disengages it (if it is currently engaged).

Failure conditions: 1, 6, 9, 10, 12, 13, 14, 15, 16, 17, 19

NOTE: *Use the receiver status report (g####) to determine the current state of the autopan function.*

4.5.2.2 Autoiris

From a keypad, the operator presses the AUTOIRIS button to engage the autoiris function (assuming that it is currently disengaged). The system transmits the autoiris command to the receiver and lights the keypad's autoiris LED. Pressing the AUTOIRIS button again disengages the autoiris function. The system then sends

a disengage autoiris command to the receiver and turns off the LED on the keypad.

T	autoiris command
Example:	<**SOH**>**T**<**CR**> engages autoiris (if it is currently disengaged), or disengages it (if it is currently engaged).
Faiure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

NOTE: *Use the receiver status report (g####) to determine the current state, if necessary.*

4.5.2.3 Aux1, Aux2, Aux3, Aux4

From a keypad, the operator presses and releases an AUX1 - AUX4 button to engage the appropriate auxiliary function (assuming that it is currently disengaged). The system transmits the appropriate auxiliary command to the receiver and lights the keypad's corresponding auxiliary LED. Pressing and releasing the AUX button again signals to disengage the auxiliary function. The system then sends the appropriate aux1 - aux4 command to the receiver and turns off the corresponding LED on the keypad.

U, **V**, **W**, **X**	aux1, 2, 3, 4 commands, respectively
Example:	<**SOH**>**W**<**CR**> causes the system to enagage auxiliary function 3 (if it is currently disengaged), or to disengage it (if it is currently engaged).
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

NOTE: *Use the receiver status report (g####) to determine the current state of the auxiliary functions, if necessary.*

4.5.2.4 Lens Speed

Motorized lenses have two speeds available for zoom, focus and iris motion. The lens speed command toggles between the two speeds. When powered-up, the receiver defaults to the slow speed setting.

From a keypad, the operator presses the LENS SPEED button to change the lens speed (fast to slow or slow to fast). The system then transmits the lens speed command to the receiver.

[	lens speed command (ASCII left-hand square bracket)
Example:	<**SOH**>**[**<**CR**> causes the lens speed to toggle from fast to slow or slow to fast.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.6 Variable Speed Receivers

This section outlines the operation and control of variable speed receivers, which currently includes the V1300R and V1200R-LM with appropriate option boards and the V15UVS Universal Omniscan with built-in receiver. The V1310RB does not offer variable-speed operation.

Variable speed receivers offer four speeds for both pan and tilt motions. These receivers provide this function at the expense of four of their auxiliary functions (aux3 - aux6). The remaining auxiliary controls provide one latching function (aux1) and one momentary function (aux2).

Systems equipped with variable speed receivers are also normally equipped with keypads that have proportional joysticks and no aux3-aux6 switches. These keypads use the joystick to control both the direction and the speed of the pan-and-tilt drive. The keypads use combinations of the aux3-aux6 control outputs to command the different speeds.

The host computer has to control the speed by direct manipulation of the auxiliary control signals. By chaining the appropriate aux control(s) to the pan or tilt command, the host computer can utilize all of the speeds available.

The host RS-232 command set has been expanded to support the V15UVS Universal Omniscan with built-in receiver in addition to the V1300R and V1200R-LM receivers. These expanded commands are for pan-and-tilt speed control and for preset store and recall addressing. Speed control allows for 256 steps each for pan and tilt. Preset control allows for 99 preset positions.

In general, the speed values for pan and tilt commands will follow immediately after the command byte for

pan/tilt as three ASCII digits. The limits for speed are 001 for the minimum value and 256 for the maximum. If numbers are entered which are not in this range (001 - 256), the system will respond with the "Command Error" character, (?).

If a pan or tilt command is input without a speed value, the command will be processed as a standard pan/tilt command for a fixed speed receiver. Preset store and recall command formats remain the same as in earlier releases of VPS1300 software. The maximum preset address allowed has been increased to 99.

NOTE: *Although expanded preset and pan-and-tilt speed data will be transmitted from the VPS1300 system for any selected camera or receiver, models V1200R-LM and V1300R receivers are not equipped to properly interpret these expanded commands and therefore will not act upon their input. These expanded commands will work only in the model V1310RB Universal Receiver with V1310R-VPS interface board or in model V15UVS Universal Omniscan with built-in receiver.*

The commands used to control the variable speed receiver are outlined below:

4.6.1 V1300R AND V1200R-LM RECEIVERS

4.6.1.1 PAN LEFT

Any command string that does not include the pan left (I) command halts the pan left motion.

I	pan left slow speed command
IX	pan left medium-slow speed
IW	pan left medium-fast speed
IWX	pan left fast speed
Example:	<**SOH**>**IX**<**CR**> causes the pan-and-tilt drive to pan left at a medium-slow speed.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.6.1.2 PAN RIGHT

Any command string that does not include the pan right (J) command halts the pan right motion.

J	pan right slow speed command
JX	pan right medium-slow speed command
JW	pan right medium-fast speed command
JWX	pan right fast speed command
Example:	<**SOH**>**JWX**<**CR**> causes the pan-and-tilt drive to pan right at fast speed.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.6.1.3 TILT DOWN

Any command string that does not include the tilt down (L) command halts the tilt down motion.

L	tilt down slow speed command
LZ	tilt down medium-slow speed command
LY	tilt down medium-fast speed command
LYZ	tilt down fast speed command
Example:	<**SOH**>**LYZ**<**CR**> causes the pan-and-tilt drive to tilt the camera down at the fast speed.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.6.1.4 TILT UP

Any command string that does not include the tilt up (M) command halts the tilt up motion.

M	tilt up slow speed command

MZ tilt up medium-slow speed command

MY tilt up medium-fast speed command

MYZ tilt up fast speed command

Example: **<SOH>MZ<CR>** causes the pan-and-tilt drive to tilt the camera up at medium-slow speed.

Failure conditions: 1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.6.2. V15UVS RECEIVER

4.6.2.1 PAN LEFT

Pan left command structure : [SOH] I 0 4 5 [CR]
Where: [SOH] =ASCII start-of-heading character (01 hex)

I =pan left command code

045 =pan speed component (any number from 01- 256)

[CR] =ASCII carriage return character (0D hex)

4.6.2.2 PAN RIGHT

Pan right command structure : [SOH] J 1 2 3 [CR]
Where: [SOH] =ASCII start of heading character (01 hex)

J =pan right command code

123 =pan speed component (any number from 001 - 256)

[CR] =ASCII carriage return character (0D hex)

4.6.2.3 TILT DOWN

Tilt down command structure : [SOH] L 0 0 5 [CR]
Where: [SOH] = ASCII start of heading character (01 hex)

L =tilt down command code

005 =tilt speed component (any number from 001 - 256)

[CR] =ASCII carriage return character (0D hex)

4.6.2.4 TILT UP

Tilt up command structure : [SOH] M 0 4 5 [CR]
Where: [SOH] = ASCII start of heading character (01 hex)

M =tilt up command code

045 =tilt speed component (any number from 001 - 256)

[CR] =ASCII carriage return character (0D hex)4.6.6 AUX1

4.6.3 AUTOPAN

From a keypad, the operator presses the AUTOPAN button to engage the autopan function (assuming that it is currently disengaged). This engages the autopan at the slow speed. A second press of the AUTOPAN button engages the autopan at the medium-slow speed. A third press of the button engages the autopan at the medium-fast speed. The fourth press of the button sets the autopan at the fast speed. The fifth press disengages the autopan function.

The corresponding command from the RS-232 channel is K. The first K command is used to engage the autopan at the slow speed. The second, third, and fourth K commands will step up the speed through the medium-slow, medium-fast, and fast speeds, respectively. The fifth K command will disengage the autopan.

Example: **<SOH>K<CR>** causes the autopan unit to pan at the slow speed.

Failure conditions: 1, 6, 9, 10, 12, 13, 14, 15, 16, 17, 19

NOTE: *Use the receiver status command (g####) to determine if the autopan function is engaged, if necessary.*

4.6.4 AUX 1

From a keypad, the operator presses the AUX 1 button to engage the aux1 function (assuming that it is currently disengaged). The system then transmits an aux1 command to the receiver and lights the keypad's aux1 LED. Pressing the AUX1 button again signals the system to disengage the aux1 function. The system sends a disengage aux1 command to the receiver and turns off the keypad's LED.

U	aux 1 engage/disengage command
Example:	**<SOH>U<CR>** engages aux 1 (if it is currently disengaged) or disengages it (if it is currently engaged).
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

NOTE: *Use the receiver status report (g####) to determine the current state of aux 1.*

4.6.5 AUX2

From a keypad, the operator presses the AUX2 button to engage the aux2 function. The system then transmits an aux2 command to the receiver and lights the keypad's aux2 LED. Releasing the AUX2 button signals to the system to disengage the aux2 function. The system then sends a disengage aux2 command to the receiver and turns off the keypad's LED. Any command string that does not include the aux2 (V) command disables the aux2 function.

V	aux2 enable/disable command
Example:	**<SOH>V<CR>** engages aux2.
Failure conditions:	1, 6, 9, 10, 12, 13, 14, 15, 16, 17

4.7 Alarm Processing

4.7.1 ALARM MODES

The VPS system has the ability to process alarm inputs from receivers and V1200X-IA external alarm interface units. The system processes both types of input in the same manner (e.g., receiver No. 1 input is handled the same as X-IA input No. 1).

The VPS systems offer six alarm processing modes: standard (manual), sequencing, salvo (manual), sequencing salvo, free-form salvo, and first available.

4.7.1.1 Standard (Manual) Alarm Mode

The first alarm detected is automatically displayed steadily on all alarm monitors in the system. Subsequent alarms are queued for display and acknowledgement. When the alarm being displayed is acknowledged, the next alarm in the queue is displayed on the monitors. This mode supports up to 32 duplicate alarm monitoring stations (one alarm monitor per station).

4.7.1.2 Sequence Alarm Mode

The first alarm detected is automatically displayed on all of the alarm monitors. Subsequent alarms are queued. All alarms are sequenced, in queued order, on all alarm monitors. Each alarm video is displayed on all monitors for a set period of time (dwell). At the end of the dwell period, the next alarm video in queue is displayed on all alarm monitors. When an alarm is acknowledged, it is dropped from the sequence.

The alarm sequence dwell is programmable from 1 to 255 seconds. The sequencing alarm mode supports up to 32 duplicate alarm monitoring stations (one monitor per station).

4.7.1.3 Salvo (Manual)

The first salvo alarm is automatically and steadily displayed as a programmed group of cameras on associated alarm monitors at all alarm monitoring stations. For example, a system has eight alarm monitor stations of 4 alarm monitors (32 alarm monitors total). Each salvo alarm has four associated cameras, each assigned to a monitor position (1 - 4). When the alarm activates, the four cameras are displayed at all eight alarm monitor stations.

Subsequent alarms are queued for display and acknowledgement. When the displayed alarm is acknowledged, the salvo of cameras for the next alarm in the queue is displayed at each alarm monitoring station. Salvo size is programmable from 2 to 32 cameras. Salvo mode supports up to 16 duplicate alarm monitoring stations (2 monitors per station).

4.7.1.4 Sequencing Salvos

The first salvo alarm is automatically displayed as a programmed group of cameras on the associated alarm monitors at all alarm monitoring stations. For example, a system has eight alarm monitor stations of 4 alarm monitors (32 alarm monitors total). Each salvo alarm has four associated cameras, each assigned to a monitor position (1 - 4). When the alarm activates, the four cameras are displayed at all eight alarm monitor stations.

Subsequent alarms are queued. All alarms sequence, in queued order, on the associated alarm monitors. Each salvo alarm is displayed at all alarm monitoring stations for a set period of time (dwell). At the end of the dwell period, the next salvo alarm in queue is displayed at all alarm monitoring stations. When an alarm is acknowledged, its salvo of cameras is dropped from the sequence.

The alarm sequence dwell is programmable from 1 to 255 seconds. Salvo size is programmable from 2 to 32 cameras. Sequencing salvo mode supports up to 16 duplicate alarm monitoring stations (2 monitors per station).

4.7.1.5 Free-Form Salvo

This option provides the VPS1300 system with the ability to make multiple user-designated video switches for each alarm input. The VPS1300 defaults to 4 switches for each alarm input, but can support an increase of up to 32 switches per alarm input (with a corresponding reduction in the number of alarm inputs used).

With this option, the user selects the number of switches to be done for each alarm input, selects the cameras to be viewed, and selects the desired alarm monitor for each camera.

All alarms are placed into a queue for display and acknowledgement.

The first alarm detected automatically switches the specified cameras to the assigned alarm monitors. Subsequent alarms switch the specified cameras to their assigned alarm monitors if the assigned monitors are not already displaying a video from an earlier alarm.

4.7.1.6 First Available

The first alarm is automatically and steadily displayed on the first available alarm monitor at all alarm monitoring stations. For example, a system has eight alarm monitor stations of 4 alarm monitors (32 alarm monitors total). When the first alarm activates, it is displayed on the first available monitor in all eight alarm monitor stations.

Subsequent alarms are steadily displayed on the next available alarm monitor in all alarm stations. When no monitors are available, subsequent alarms are queued for display and acknowledgement. When an alarm being displayed is cleared, the next alarm in the queue is displayed.

First available mode supports up to 32 independent monitors at one station. This mode supports up to 16 duplicate alarm monitoring stations (2 monitors per station).

4.7.2 ALARM ACKNOWLEDGEMENT PROCEDURES

The alarm acknowledgement procedure is one area in which the host computer has a different scope of operation from the keypads. Each keypad is restricted by its keypad/monitor partition and the alarm monitor list. To acknowledge an alarm, a keypad must have an alarm monitor in its keypad/monitor partition table. That is, the monitor must be listed on both the alarm monitor list and the keypad's partition table. The host computer has no such restrictions. It can access any monitor on the alarm monitor list and acknowledge any alarm.

4.7.2.1 VPS Alarm Activity Byte (!)

The VPS system transmits an ASCII exclamation point (!/3F hex) for the first alarm detected. It retransmits the exclamation point at 1-second intervals until the host computer responds with either an alarm acknowledge command (ASCII backslash character, \) or an alarm report command (ASCII d character).

The system does not transmit the exclamation point for alarms which are queued after the first alarm. In a completely automated system, the host computer must transmit an Active Alarm Report request to determine if there are any active alarms in queue. This function may be enabled or disabled. Refer to Section 4.7.4.

4.7.2.2 Standard Acknowledgement Procedure

The sequence of events for alarm acknowledgement in the standard alarm mode is as follows:

1. Alarm activates. System displays alarm video on all alarm monitors. It then transmits alarm activation code to host computer, if enabled.

2. Host computer sends acknowledge command.

3 System assigns first alarm monitor to host computer if the host computer is not already assigned to an alarm monitor. The monitor displays first alarm in the queue.

4. Host computer sends acknowledge command.

5. Alarm is acknowledged and removed from queue. The next alarm (if any) in queue is displayed.

6. Host computer verifies whether or not alarms are still in queue.

NOTE: *If there are alarms in queue, repeat steps 4, 5, and 6 until all alarms are acknowledged.*

4.7.2.3 Sequencing Acknowledgement Procedure

The sequence of events for alarm acknowledgement in the sequencing alarm mode is as follows:

1. Alarm activates. System displays first alarm on all alarm monitors and starts sequencing alarms as they activate. It transmits alarm activation code to host computer, if enabled.

2. Host computer sends acknowledge command.

3. System assigns first alarm monitor to host computer if the host computer is not already assigned to an alarm monitor.

4. Host computer sends acknowledge command for current alarm displayed.

5. Sequencing stops with current alarm displayed steadily.

6. Host computer sends acknowledge command.

7. Alarm is acknowledged and removed from queue. Sequencing resumes with the next alarm (if any) in queue.

8. Host computer verifies whether or not alarms are still in queue.

NOTES:

1. *If there are alarms in queue, repeat steps 6, 7, and 8 until all alarms are acknowledged.*

2. *To set the dwell time for the alarm sequencing, send a dwell command chained with an alarm acknowledge command (\E### or E###\).*

4.7.2.4 Salvo (Manual) Acknowledgement Procedure

The sequence of events for alarm acknowledgement in the salvo (manual) mode is as follows:

1. Alarm activates. System displays salvo alarm group at each alarm station. It then transmits alarm activation code to host computer, if enabled.

2. Host computer sends acknowledge command.

3. System assigns first alarm monitor to host computer and displays alarm from one of the cameras in the salvo group.

4. Host computer sends acknowledge command.

5. Alarm is acknowledged, removed from queue. The next salvo alarm group (if any) in queue is displayed.

6. Host computer verifies whether or not alarms are still in queue.

NOTE: *If there are salvo alarms in queue, repeat steps 4, 5, and 6 until all alarms are acknowledged.*

4.7.2.5 Sequencing Salvo Acknowledgement Procedure

The sequence of events for alarm acknowledgement in the sequencing salvo mode is as follows:

1. Alarm activates. System starts sequencing salvo alarm groups on alarm monitors. System

transmits alarm activation code to host computer.

2. Host computer sends acknowledge command.

3. System assigns first alarm monitor to host computer. The video displayed is one of the cameras in the current salvo group.

4. Host computer sends acknowledge command for current salvo alarm.

5. Sequencing stops with current alarm displayed steadily.

6. Host computer sends acknowledge command.

7. Alarm is acknowledged and removed from queue. Sequencing resumes with the next salvo alarm group (if any) in queue.

8. Host computer verifies whether or not alarms are still in queue.

NOTE: *If there are salvo alarms in queue, repeat steps 6, 7, and 8 until all alarms are acknowledged.*

4.7.2.6 First Available Acknowledgement Procedure

The sequence of events for alarm acknowledgement in the first available mode is listed after the following note:

NOTE: *The first available alarm monitor is determined by the order of the alarm monitor list. The closer a monitor is to the top of the list, the higher its priority. For example, assume the first four monitors in the list are: 99, 1, 2, and 3. Also assume that they are not yet assigned alarms. Therefore, the first available monitor is 99. The next available is 1, etc.*

1. Alarm activates. System assigns the alarm to the first available monitor and displays the alarm video. It also transmits alarm activation code to host computer, if enabled.

2. Host computer sends acknowledge command.

3. System assigns the monitor to host computer.

4. Host computer sends acknowledge command.

5. Alarm is acknowledged, removed from queue. The system automatically selects the next available alarm monitor (if any alarms are active).

6. Host computer verifies whether or not alarms are still in queue.

NOTE: *If other alarms are active, repeat steps 4, 5, and 6 until all alarms are acknowledged.*

4.7.3 ALARM ACKNOWLEDGE

From a keypad, the operator presses the ALARM button to perform each step of the alarm acknowledge process. Refer to Section 4.7.2 Alarm Acknowledgement Procedures.

The corresponding host computer command is \ (ASCII backslash).

\	alarm acknowledgement command
Example:	<**SOH**>\<**CR**> initiates a step in the current alarm mode's alarm acknowledgement procedure.
Failure conditions:	1, 22

NOTE: *Use the alarm status report (d#####) to determine the current alarm. Use the monitor status report (j###) to determine the current acknowledgement state.*

4.7.4 ALARM DISABLE

This command disables the reporting and processing of V1200X-IA alarms in the system (the default condition sets all V1200X-IA alarms enabled and all receiver alarms disabled). The command can be used to disable consecutively numbered alarms. In this case, the command must include the lowest numbered alarm and the highest numbered alarm separated by a comma.

_####	command syntax: a single alarm
_	alarm disable command
####	4-digit decimal alarm number
_###1,####2	command syntax: a range of alarms separated by a comma

###1 4-digit alarm number (lowest in the range)

###2 4-digit alarm number (highest in the range

Examples: **<SOH>_0001<CR>** disables alarm No. 1.
<SOH>_0037,0045<CR> disables alarms 37 through 45.

Failure conditions: 1, 3

NOTE: *Use the alarm enable status report (q) to determine which alarms the host computer has disabled.*

4.7.5 ALARM ENABLE

This command reenables the alarms previously disabled by the host compter. The command can also reenable consecutively numbered alarms. In this case, the command must include the lowest numbered alarm and the highest numbered alarm separated by a comma.

^#### command syntax: a single alarm

^ alarm reenable command

4-digit decimal alarm number

^###1,###2 command syntax: a range of alarms separated by a comma

###1 4-digit alarm number (lowest in the range)

###2 4-digit alarm number (highest in the range)

Examples: **<SOH>_0001<CR>** reenables alarm No. 1.
<SOH>_0037,0045<CR> reenables alarms 37 through 45.

Failure conditions: 1, 3

NOTE: *Use the alarm enable status report (q) to determine which alarms the host computer has enabled.*

4.7.6 ALARM AUTO-REPORT DISABLE

This command disables the automatic output of the alarm activity response byte (!). Once this is disabled, the VPS system no longer notifies the host computer when an alarm activates. The default power-up condition is enabled.

p alarm auto-report disable command

Example: **<SOH>p<CR>** causes the system to stop sending the alarm activity response byte (!) when an alarm is detected.

Failure conditions: 1

4.7.7 ALARM AUTO-REPORT ENABLE

This command reenables the automatic output of the alarm activity response byte (!). Once enabled, the system resumes notifying the host computer when an alarm is detected.

o alarm auto-report enable command (lower case o)

Example: **<SOH>o<CR>** causes the system to resume sending the alarm activity response byte (!) when an alarm is detected.

Failure conditions: 1

4.7.8 ALARM POINT SET

The Alarm Point Set command is equivalent to a V1200X-IA alarm input for the designated alarm. The VPS system responds as though that alarm has been activated.

NOTE: *An alarm point address that is set via the host computer must be reset by the host computer. Refer to 4.7.9 Alarm Point Reset.*

u####S command syntax

u specifies alarm point action

4-digit decimal alarm point number.

S alarm point set command

Example: **<SOH>u0172S<CR>** causes the system to act as though alarm 172 is active.

4.7.9 ALARM POINT RESET

The Alarm Point Reset command is equivalent to the reception of a V1200X-IA point going reset for the indicated alarm. It is not *NOT* the same as a alarm acknowledgement command, "\" (backslash). However, if the alarm operation is set for momentary alarms, the Alarm Point Reset command acts as an alarm acknowledgement.

An alarm point address that is set via the host computer can only be reset by the host computer using this command.

u####R command syntax

u specifies alarm point action

4-digit decimal alarm point number.

R alarm point reset command

Example: **<SOH>u0172R<CR>** causes the system to act as though alarm 172 has been reset.

4.8 Communication Failures

The VPS system does not initiate a communications failure message to the host computer. However, it does issue an Active Com/Fail Report when requested by the host computer.

The system handles communication failure acknowledgement in a fashion similar to alarm acknowledgement. The system responds to a com/fail command by displaying the video on the monitor previously selected by the host computer. Upon receipt of the second com/fail command, the system drops the camera station from its list of active stations.

If there are several communication failures active at the same time, the system maintains them in a queue. As one is acknowledged, the next is displayed on the selected monitor. This continues until all are acknowledged.

NOTE: *Communication failures do not require use of alarm monitors. The host computer can select any monitor in the system to acknowledge com/fails.*

4.8.1 COM/FAIL ACKNOWLEDGEMENT PROCEDURE

The sequence of events for com/fail acknowledgement is as follows:

1. Host computer selects a monitor.
2. Operator acknowledges communication failure by pressing the FAIL pushbutton.
3. System displays the first com/fail video in the queue.
4. Host computer acknowledges the com/fail.
5. If the FAIL LED remains on, there are more failures in the system. Press the FAIL push-button to view the video from the next com/fail receiver.
6. System drops the failed camera receiver from its list of active units.
7. Host computer verifies whether or not com/fails are still in queue.

NOTE: *If other com/fails are active, repeat steps 3, 4, and 5 until all com/fails are acknowledged.*

4.8.2 COM/FAIL ACKNOWLEDGE

From a keypad, the operator presses the FAIL button to perform each step of the com/fail acknowledge process.

The host computer command is] (right-hand square bracket).

] com/fail acknowledgement command

Example: **<SOH>]<CR>** initiates a step in the communication failure acknowledgement procedure.

Failure conditions: 1, 20, 21

NOTE: *Use the communications failure status report (e####) to determine the current list of pending communication failure alarms. Use the monitor status report (j###) to determine the current acknowledge state.*

4.9 Keypad Commands

These commands allow the host computer to enable and disable keypads and to make keypad/monitor assignments.

4.9.1 KEYPAD DISABLE

This command instructs the system to disable the specified keypad. This effectively takes the keypad off-line. This command has many uses both for its direct effect and for its indirect effect. For example, it can inhibit monitor or receiver control from a keypad. It could also be used indirectly to force the release of a seized receiver. Disabled keypads display OFF in their camera display windows.

NOTE: *Once the host computer disables a keypad, it can only be brought back on-line by the host computer. Do NOT disable all the keypads at once. This leaves the system totally dependent upon the RS-232 link.*

b###	command syntax
b	keypad disable command
###	3-digit decimal keypad number
Example:	**<SOH>b023<CR>** causes the system to disable keypad 23.
Failure conditions:	1, 23

NOTE: *Use the keypad status report (k###) to determine the status of a keypad.*

4.9.2 KEYPAD ENABLE

This command instructs the system to reenable a keypad previously disabled by the host computer. Also use this command to activate new keypads without waiting for a background poll.

a###	command syntax
a	keypad disable command
###	3-digit decimal keypad number
Example:	**<SOH>a023<CR>** causes the system to enable keypad 23.
Failure conditions:	1, 23

NOTE: *Use the keypad status report (k###) to determine the status of a keypad.*

4.9.3 KEYPAD ASSIGNMENT

This command assigns a keypad to a monitor. This enables the host computer to force keypad/monitor assignments.

cKKK,MMM	command syntax
c	keypad/monitor assignment command
KKK	3-digit decimal keypad number
MMM	3-digit decimal monitor number
Example:	**<SOH>c017,221<CR>** assigns monitor 221 to keypad 17.
Failure conditions:	1, 2, 23

NOTE: *Use the keypad/monitor report (h###) to determine a keypad/monitor assignment.*

4.10 Real-Time Clock Commands

These commands allow the host computer to set the time and date of the VPS system's real-time clock. They also let the host computer request time and date information from the system. The real-time clock operates in the 24-hour mode.

4.10.1 READ CURRENT TIME AND DATE

When requested for time/date data, the VPS system responds with the time in hours:minutes:seconds followed by the date in month/day/year format.

t read current time and date command

Example: **<SOH>t<CR>** causes the system to respond with the current time and date: 13:47:10 09/19/91.

4.10.2 SET TIME

The host computer uses this command to set the VPS system's time in hour, minute, and second format.

NOTE: *Colons ":" must be included to separate hour, minute, and second.*

thh:mm:ss command syntax

t specifies real-time clock action

hh:mm:ss set time command
Note that colons ":" must be included to separate hour, minute, and second. Leading zeros must be used for values less than 10.

Example: **<SOH>t15:05:00<CR>** sets the system's real-time clock to 3:05 pm.

4.10.3 SET DATE

The host computer uses this command to set the VPS system's date in month/day/year format.

NOTE: *Slashes "/" must be included to separate month, day, and year.*

tmm/dd/yy command syntax

t specifies real-time clock action

mm/dd/yy set date command
Note that slashes "/" must be included to separate month, day, and year. Leading zeros must be used for values less than 10.

Example: **<SOH>t06/23/91<CR>** sets the system's date to June 23, 1991.

4.10.4 SET TIME AND DATE

The host computer uses this command to set the VPS system's time and date in hour:minute:second and month/day/year formats.

NOTES:

1. *Slashes "/" must be included to separate month, day, and year.*
2. *Colons ":" must be included to separate hour, minute, and second.*
3. *The ASCII space character " " must be included to separate the date and time.*

tmm/dd/yy
hh:mm:ss
or
thh:mm:ss
mm/dd/yy command syntax

t specifies real-time clock action

mm/dd/yy set date segment of the command. Note that slashes "/" must be included to separate month, day, and year. Leading zeros must be used for values under 10.

hh:mm:ss set time segment of the command. Note that colons ":" must be included to separate hour, minute, and second. Leading zeros must be used for values under 10.

Example: **<SOH>t06/23/91 15:05:00<CR>** sets the system's date to June 23, 1991 and the time to 3:05 pm.

4.11 System Data Upload/Download

In the VPS1300 family of control systems, which includes VPS1344, the system configuration data is stored in the global memory. Time, date, and title information is stored in the titler modules. Both bodies of data can be uploaded from the VPS CPU to the host computer or downloaded from the host computer to the VPS CPU. This lets the host computer operator make a backup copy of a system's customer-programmed configuration.

The data is transmitted using the XMODEM protocol with CRC or checksum error checking. The host computer can terminate the transfer by transmitting the <control>X (018 hexadecimal). This command must be transmitted two or more times. The VPS system can also terminate the transfer by pressing the [ESC] key of the system edit keyboard.

4.11.1 SYSTEM CONFIGURATION AND TITLE DATA

This command initiates the upload or download procedure.

r#	command syntax
r	upload/download command
#	1-digit decimal number that specifies the type of data transfer
1 =	Send system configuration data via RS-232 port
2 =	Receive system configuration data via RS-232 port
3 =	Send system title data via RS-232 port
4 =	Receive system title data via RS-232 port
Example:	**<SOH>r3<CR>** transmits system title data to host computer.

4.11.2 UPLOAD/DOWNLOAD TERMINATE (<CONTROL> X)

The host computer can use this command to terminate an upload/download operation which is still in progress. The command must be transmitted twice.

<CTRL> X	load/download terminate command (018 hexadecimal)
Example:	**<CONTROL> X** terminates an in-progress data transfer.

4.12 Miscellaneous Commands

4.12.1 NULL COMMAND

The NULL command is used to terminate momentary and latching functions such as the pan, tilt, autopan, zoom, iris, autoiris, and auxiliary function commands.

The null command is used when it is necessary to stop one or more of these functions without initiating some other action. This command consists of the ASCII <SOH> and <CR> characters without any other characters.

<SOH><CR>	NULL command
Example:	**<SOH><CR>** stops any momentary or latching functions currently in progress.
Failure conditions:	not applicable

4.12.2 BROADCAST MESSAGE

The host computer can broadcast messages to a designated monitor in the VPS system, providing a time/date/title unit is installed. The maximum message size is 100 characters (5 lines with 20 characters per line). The message remains on the selected monitor until the host unit transmits another message of blanks.

NOTE: *A comma "," must be included to separate the monitor number from the message.*

s###,message command syntax

s broadcast message command

3-digit decimal monitor number

message Data to be printed on the specified monitor (100 characters max.) Note that the message must be preceeded by an ASCII comma "," character.

Example: **<SOH>s131,CHECK S.E. DOOR<CR>**

To clear the message, transmit <SOH> s131, <CR>.

4.13 Status Reports

4.13.1 ACTIVE ALARM REPORT

This command requests a report which states which alarm is at the top of the alarm stack. If no alarms are present, the response is 0000$

d active alarm report command

###1 report format

###1 first four-digit decimal alarm number.

0000$ no alarms

Example: **<SOH>d<CR>** requests active alarm report. 0174 indicates that alarm 174 is active.

Failure conditions: 1

4.13.2 ACTIVE COM/FAIL REPORT

This command returns a report which lists all of the pending com/fails in the system. If no alarms are active, the response is 0000$.

e active com/fail report command

###1,..., ###n,0000$ report syntax

###1 first four-digit decimal receiver number. A comma "," will be used to separate receiver numbers.

###n last four-digit decimal receiver number

0000$ end of report

Example: **<SOH>e<CR>** requests com/fail report **0017,0118,0503,0000$** indicates that receivers 17, 118, and 503 are not responding.

Failure conditions: 1

4.13.3 MONITOR ASSIGNMENT REPORT

This command is used to determine the camera that is assigned to each monitor. The command has single and group formats. The single format returns the camera assignment of the specified monitor. The group format returns a group of consecutive monitors and cameras. In the group format, a comma must be used to separate the two numbers.

f### command syntax (single monitor)

f##1,##2 command syntax (group of monitors)

f monitor assignment report command

3-digit decimal monitor number (single monitor)

##1 first 3-digit decimal monitor number (group of monitors)

##2 last 3-digit decimal monitor number (group of monitors)

CCCC$ report syntax (single monitor)

CCC1,CCC2, ...,CCCn$ report syntax (group of monitors)

CCCC 4-digit decimal camera number (single monitor report)

CCC1, CCC2,... 4-digit decimal camera numbers assigned to monitors

$ end of report

Examples: **<SOH>f012<CR>** requests report for monitor 12
0118$ camera 118 is assigned to monitor 12
<SOH>f003,005<CR> requests report for monitors 3-5.
0299,0071,0412$ cameras 299, 71, and 412 are assigned to monitors 3, 4, and 5, respectively.

Failure conditions: 1, 23

4.13.4 RECEIVER STATUS REPORT

This command returns a report which indicates the status of a receiver. The report consists of two numbers separated by a comma. The first number has nine digits, each of which represents the status of one of the receiver's functions. The last number (two digits) is the number of the last preset position called. See Figure 4-1.

g#### command syntax

g receiver status report command

4-digit decimal receiver number

$ end of report

Examples: **<SOH>g0062<CR>** requests report for receiver 62.

Failure conditions: 1, 23

4.13.5 KEYPAD ASSIGNMENT REPORT

This command is used to determine the keypad/monitor assignments. The command has single and group formats. The single format returns the monitor assignment of the specified keypad. The group format returns a group of consecutive keypads and monitors. In the group format, a comma must be used to separate the two numbers.

h### command syntax (single keypad)

h##1,##2 command syntax (group of keypads)

h keypad assignment report command

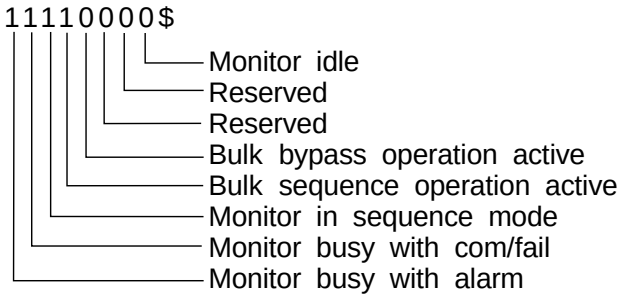

Figure 4-1
Monitor Status Report Syntax

3-digit keypad number (single keypad)

##1 first 3-digit decimal keypad number (group of keypads)

##2 last 3-digit decimal keypad number (group of keypads)

MMM$ report syntax (single monitor)

MM1,MM2, ...,MMn$ report syntax (group of keypads)

KKK 3-digit decimal monitor number (single monitor report)

...,MM1, ...,MM2,... 3-digit decimal monitor numbers assigned to keypads

$ end of report

Examples: **<SOH>h021<CR>** requests assignment of keypad 21
129$ indicates monitor 129 is assigned to keypad 21
<SOH>h007,009<CR> requests report for keypads 7-9.
052,007,041$ monitors 52, 7, and 41 are assigned to keypads 7, 8, and 9, respectively.

Failure conditions: 1, 23

4.13.6 CAMERA SEQUENTIAL STATUS REPORT

This command returns a report which indicates the sequence/bypass status of all of the cameras assigned to the selected monitor. This command will generate a report for monitors configured for either ascending-order or random-order sequencing. For ascending-or-

der sequences, the report consists of 256, 512, or 1024 status numbers (ASCII 1 = sequence or 0 = bypass) depending on the size of the system. The numbers are transmitted in groups of eight separated by commas. The first digit represents the status of the first camera, the second digit represents the status of the second camera, and so on. For random-order sequences, the report lists active cameras (i.e., cameras not on bypass) with conventional Arabic numerals.

i###	command syntax
i	camera sequential status report command
###	3-digit decimal monitor number
########, **########,** **...,#######n**	report syntax
#	1 = sequence, 0 = bypass
n	camera nunber 256, 512, or 1024 status
$	end of report

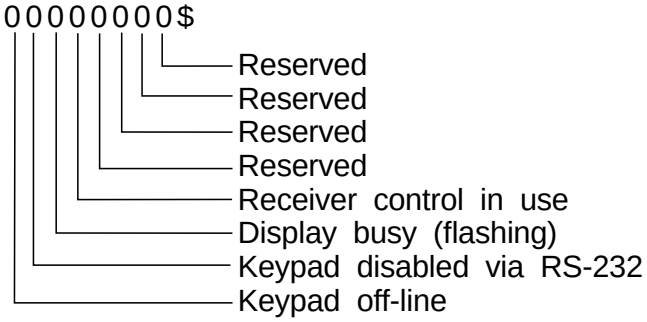

Figure 4-2
Keypad Status Report Syntax

Example:

10111111,11111111,11110000,11110101,
11100011,11111111,11100111,11011011,
11101010,11000110,01101010,00100100,
11110111,11111111,11111111,11111111,
11111101,10010111,11010000,10110101,
11100011,10011011,11010111,11010011,
11101010,11000110,01101010,00100100,
11110111,11101111,01001111,11101111$

Report for system with 256 cameras.

Failure conditions: 1, 2, 11

4.13.7 MONITOR STATUS REPORT

This command returns a report which indicates the status of a monitor. The report consists of eight digits where each digit represents the status of one monitor condition (1 = true, 0 = false). See Figure 4-2.

j###	command syntax
j	monitor status report command
###	3-digit decimal monitor number
	Report Syntax: see Figure 4-2.
$	end of report
Examples:	**<SOH>j047<CR>** requests report for monitor 47.
Failure conditions:	1, 23

4.13.8 KEYPAD STATUS REPORT

This command returns a report which indicates the status of a keypad. The report consists of eight digits where each digit represents the status of one keypad condition (1 = true, 0 = false). See Figure 4-3.

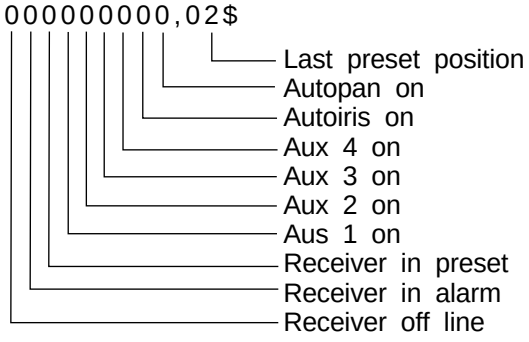

Figure 4-3
Receiver Status Report Syntax

k###	command syntax
k	keypad status report command
###	3-digit decimal receiver number
	Report Syntax: see Figure 4-3.
$	end of report
Examples:	**<SOH>k007<CR>** requests report for keypad 7.
Failure conditions:	1, 23

4.13.9 CAMERA SEIZE STATUS

This command is used to determine if a camera has been seized by any keypad. If no seize exists the monitor and keypad digits are zero.

l####	command syntax
l	camera seize status report command
####	4-digit decimal camera number
####,MMM, KKK	report syntax
####	4-digit decimal camera number
MMM	3-digit decimal number of monitor on which the camera displays
KKK	3-digit decimal number of keypad that seized the camera
$	end of report
Example:	**<SOH>l0157<CR>** requests report for camera 157 **0157,005,011** reports that camera 157 appears on monitor 5 and is siezed by keypad 11.
Failure conditions:	1, 3

4.13.10 MONITOR SEIZE STATUS

This command is used to determine if a monitor has been seized. If no seize exists, the camera and keypad digits are zero.

m###	command syntax
m	monitor seize status report command
###	3-digit decimal monitor number
CCCC,###, KKK	report syntax
CCCC	4-digit decimal number of camera displaying on the monitor
###	3-digit decimal number of monitor
KKK	3-digit decimal number of keypad that seized the camera
$	end of report
Example:	**<SOH>n005<CR>** requests report for camera 157 **0157,005,011** reports that monitor 5 is displaying camera 157 seized by keypad 11.
Failure conditions:	1, 2

4.13.11 KEYPAD SEIZE STATUS

This command is used to determine if a keypad has any camera/monitor combination seized. If no seize exists, the camera and monitor fields are zero.

n###	command syntax
n	camera seize status report command
###	3-digit decimal keypad number
CCCC, MMM,###	report syntax
CCCC	4-digit decimal number of camera seized by the keypad
MMM	3-digit decimal number of monitor on which the camera displays
KKK	3-digit decimal number of keypad
$	end of report
Example:	**<SOH>n011<CR>** requests report for keypad 11 **0157,005,011** reports that keypad 11 has seized camera 157 which appears on monitor 5.

Failure conditions: 1, 23

4.13.12 ALARM ENABLE STATUS REPORT

This command returns a report which indicates the status of all of the V1200X-IA alarms in the system (enabled or disabled). The report consists of 256, 512, or 1024 status numbers (ASCII 1 = enable or 0 = disable) depending on the size of the system. The numbers are transmitted in groups of eight separated by commas. The first digit represents the status of the first alarm input, the second digit represents status of the second alarm input, and so on.

q alarm enable status report command

########,
########,...,
#######n report syntax

1 = enabled, 0 = disabled

n alarm input no. 256, 512, or 1024 status

$ end of report

Example:

11111111,11111111,11110000,11110101,
11100011,11111111,11100111,11011011,
11101010,11000110,01101010,00100100,
11110111,11111111,11111111,11111111,
10111111,11111111,11110000,11110101,
11100011,11111111,11100111,11011011,
11101010,11000110,01101010,00100100,
11110111,11111111,11111111,11111111,
11111101,10010111,11010000,10110101,
11100011,10011011,11010111,11010011,
11101010,11000110,01101010,00100100,
11110111,11101111,01001111,11101111,
11111101,10010111,11010000,10110101,
11100011,10011011,11010111,11010011,
11101010,11000110,01101010,00100100,
11110111,11101111,01001111,11101110$

Report for system with 512 cameras.

Failure conditions: 1

4.13.13 SYSTEM SPECIFICATION REPORT

This command queries the VPS system for a list of operating parameters. The report indicates the following:

1. Revision date of the system supervisor software
2. The maximum number of keypads the system supports (MXK)
3. The maximum number of cameras system supports (MXC)
4. The maximum number of monitors system supports (MXM)
5. The maximum number of V1200X-IA alarm inputs the system supports (MXA)
6. The list of alarm monitors (AML)
7. The list of sequential monitors (SML)
8. Option indicators (OF1 and OF2)
9. The RS-232 terminal device's assigned keypad address (TDA)
10. The current R-232 terminal device monitor assignment (TDM)
11. The number of on-line keypads (OLK)
12. The number of on-line receivers (OLR)

Command:

‘ system specification status report command (ASCII single quote character)

Report Syntax:

MKX = ### 3-digit decimal number of keypads

MXC = #### 4-digit decimal number of cameras

MXM = ### 3-digit decimal number of monitors

MXA = #### 4-digit decimal number of alarms

AML = ##1,##2,...,##n list of all alarm monitors (3-digit decimal numbers)

SML = ##1,##2,...,##x list of all sequential monitors (3-digit decimal numbers)

OF1 = 00000000 disregard this entry

OF2 = 00000000 disregard this entry

TDA = ### keypad number assigned to host computer (3-digit decimal number)

TDM = ### Monitor currently assigned to host computer (3-digit decimal number)

OLK = ### number of keypads currently on-line (3-digit decimal number)

OLR = #### number of receivers currently on-line (4-digit decimal number)

$ end of report

Failure conditions: 1

5. QUICK REFERENCE TABLE

The following table is a quick reference guide to all of the standard RS-232 option command codes. For further detailed explanations of command codes, refer to Section 4. RS-232 Command Codes: Detailed Descriptions.

5.1 How To Use This Guide

This quick reference guide has been assembled by listing each command code in ASCII alphabetical order beginning with command code A. Each command code is listed in a "block" format where each block contains:

1. The ASCII command code
2. The command name
3. The hexadecimal value of the ASCII code
4. A brief description of the command
5. The command syntax
6. A list of any prerequisites the command may have
7. An example of the command

5.1.1 TYPICAL COMMAND CODE BLOCK

Command Code	Function	Hexadecimal Value
ASCII CHARACTER	NAME OF COMMAND	HEXADECIMAL VALUE OF THE ASCII CODE
A BRIEF DESCRIPTION OF THE COMMAND		
Command Syntax:	<SOH>TYPICAL COMMAND SYNTAX<CR>	
Prerequisites:	LIST OF ANY COMMAND PREREQUISITES	
Example:	<SOH>AN EXAMPLE<CR>	(A BRIEF EXPLANATION)

NOTES:

1. *All command strings must start with an ASCII <SOH>, (control A or 01 hex) and terminate with an ASCII <CR>, (control M or OD hex).*
2. *Where #### appears, #### equals a 3- or 4-digit input (ASCII 0 through 9).*
3. *NULL INSTRUCTION: The NULL INSTRUCTION is defined as the output string of <SOH><CR> i.e., no commands between Start of Heading and Carriage Return. The NULL INSTRUCTION halts any momentary movement at the selected receiver, such as: Pan/Tilt/Zoom/Focus/Iris. [e.g., if a Tilt Up & Aux. No. 5 command was issued (<SOH>MY<CR>), a NULL INSTRUCTION output of <SOH><CR> halts tilt and resets Aux. 5. If only one momentary function of an output string is to be reset, simply delete that function's command code from the original output string and retransmit. (e.g., to reset aux. 5 but retain tilt up, output the command <SOH>M<CR>.)*
4. *In commands where group inputs are allowed, the general syntax is ###1,###2, where the first set of #'s represents the lower limit (4 digits as shown) and the second set represents the upper limit (4 digits as shown). The comma must be included in the command string to separate the upper and lower limits.*
5. *In commands where "KKK,MMM" appears, KKK = 3-digit keypad number and MMM = 3-digit monitor address. Please note that the comma that separates the keypad and monitor numbers must be included in the command string.*

Each transmission starts with an ASCII <SOH> (01h), and ends with an ASCII <CR> (0Dh). Data transmission is full duplex.

The VPS1300 responds with an ASCII $ (24h) for each successful data transmission. If any errors are detected,

the VPS1300 sends an ASCII ? (3Fh) for syntax errors or an ASCII * (2Ah) for UART errors.

5.2 Command Code Blocks

Command Code	Function	Hexadecimal Value
NULL	NULL FUNCTION	NONE
NULL function is used to terminate a momentary or latching function (pan, tilt, focus, etc.) without initiating another function. It consists only of <SOH> and <CR> with no other characters.		
Command Syntax:	<SOH><CR>	
Prerequisites:	None	
Example:	<SOH>J<CR> <SOH><CR>	(Pan right.) (Stop pan right.)

Command Code	Function	Hexadecimal Value
A	MONITOR SELECT (MONSEL)	041
Monitor Select assigns the RS-232 terminal device to the selected monitor. All camera/receiver control commands issued after this command apply to the camera currently displayed in the selected monitor.		
Command Syntax:	<SOH>A###<CR>	
Prerequisites:	None	
Example:	<SOH>A032<CR>	(Monitor 032 selected.)

Command Code	Function	Hexadecimal Value
<CTRL>X	UPLOAD/DOWNLOAD TERMINATE	018
<CTRL> X command function is used to terminate a global configuration or title data upload/download operation which is still in progress.		
Command Syntax:	<CTRL> X	
Prerequisites:	Upload or download in progress	
Example:	<SOH>r2<CR> <CTRL> X	(Receive data.) (Terminate transfer.)

Command Code	Function	Hexadecimal Value
B	CAMERA SELECT (CAMSEL)	042
Camera Select switches desired camera video to preselected monitor for viewing and control. All camera control commands issued after this command apply to this camera address until another CAMSEL or MONSEL command is issued.		
Command Syntax:	<SOH>B####<CR>	
Prerequisites:	Prior MONSEL to valid monitor. (See Command Code A.)	
Example:	<SOH>B0123<CR>	(Camera 123 selected.)

Command Code	Function	Hexadecimal Value
C	SEQUENCE ENTER	043

Sequence Enter places the selected camera into the sequential display array for the preselected sequential monitor. When the monitor begins sequencing, this camera is included in the display. A special input code of camera 9999 places all cameras in sequence.

Command Syntax:	<SOH>C####<CR> - or - <SOH>C9999<CR>	
Prerequisites:	Prior MONSEL to one of the sequential monitors in the system.	
Example:	<SOH>C0005<CR>	(Place camera 0005 in sequence.)

Command Code	Function	Hexadecimal Value
D	BYPASS ENTER	044

Bypass Enter removes the selected camera from the sequential display array of the preselected sequential monitor. Camera video is skipped during sequencing. A special code of camera 9999 places all cameras in bypass.

Command Syntax:	<SOH>D####<CR> - or - <SOH>D9999<CR>	
Prerequisites:	Prior MONSEL to one of the sequential monitors in the system.	
Example:	<SOH>D0005<CR>	(Remove camera 0005 from sequence.)

Command Code	Function	Hexadecimal Value
C990	SYNC-SWITCH START	043

Sync-Switch Start command begins the sequencing of all monitors in the designated synchronous switch group (1-8).

Command Syntax:	<SOH>C990#<CR>	
Prerequisites:	Prior MONSEL to one of the sequential monitors in the system.	
Example:	<SOH>C9905<CR>	(Sync-switch group 5 starts sequencing.)

Command Code	Function	Hexadecimal Value
D990	SYNC-SWITCH STOP	043

Sync-Switch Stop command ends the sequencing of all monitors in the designated synchronous switch group (1-8)

Command Syntax:	<SOH>D990#<CR>	
Prerequisites:	Prior MONSEL to one of the sequential monitors in the system.	
Example:	<SOH>D9905<CR>	(Sync-switch group 5 stops sequencing.)

Command Code	Function	Hexadecimal Value
E	DWELL ENTER	045

Dwell Enter sets the viewing time of the video on the monitor during sequencing. Dwell time is limited to the range of 001 to 255 seconds.

Command Syntax:	<SOH>E###<CR>	
Prerequisites:	Prior MONSEL to one of the sequential monitors.	
Example:	<SOH>E010<CR>	(Set dwell rate at 010 sec.)

Command Code	Function	Hexadecimal Value
E999	VIDEO CROSSPOINT RESET	045

Video Cross-Point Reset is used to reset the switcher cross-points of all monitors in a video switch bank.

Command Syntax:	<SOH>E999<CR>	
Prerequisites:	Prior MONSEL to one of the monitors.	
Example:	<SOH>E999<CR>	

Command Code	Function	Hexadecimal Value
F	BEGIN SEQUENCE	046

Begin Sequence initiates the sequential video display mode on the selected sequential monitor. View time of displayed video is at preselected dwell rate.

Command Syntax:	<SOH>F<CR>	
Prerequisites:	Prior MONSEL to one of the sequential monitors.	
Example:	<SOH>F<CR>	(Begin sequencing.)

Command Code	Function	Hexadecimal Value
G	PRESET SELECT	047

Preset Select transmits a preset recall of the input address to the receiver addressed on the monitor currently assigned to the RS-232 terminal device. Preset address range = 01 thru 10.

Command Syntax:	<SOH>G##<CR>	
Prerequisites:	Prior CAMSEL to receiver equipped with preset option.	
Example:	<SOH>G04<CR>	(Recall preset 4.)

Command Code	Function	Hexadecimal Value
H	PRESET ENTER	048

Preset Enter command causes the selected receiver to store the current positions of pan, tilt, zoom, and focus at the specified preset address (2-digit number, 01 - 10).

Command Syntax:	<SOH>H##<CR>	
Prerequisites:	Prior CAMSEL to receiver equipped with preset option.	
Example:	<SOH>H04<CR>	(Store position data at preset 4.)

For V1300R, V1310RB, and V1200R-LM Receivers

Command Code	Function	Hexadecimal Value
I	PAN LEFT	049
Pan Left causes the selected receiver's pan/tilt unit to pan to the left until a new pan or null instruction is issued. See Note 3. Variable speed receivers use the following commands: I = Pan left at slow speed. IX = Pan left at medium slow speed. IW = Pan left at medium fast speed. IWX = Pan left at fast speed.		
Command Syntax:	<SOH>I<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>I<CR>	(Pan/tilt unit pans left.)

For V15UVS Receiver

Command Code	Function	Hexadecimal Value
I	PAN LEFT	049
Pan Left causes the selected receiver's pan/tilt unit to pan to the left until a new pan or null instruction is issued. See Note 3. Variable speed receivers use the following commands: I = Pan left command code. ### = Pan speed component (any number from 001-256)		
Command Syntax:	<SOH>I ### <CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>I 045 <CR>	(Pan/tilt unit pans left.)

For V1300R, V1310RB, and V1200R-LM Receivers

Command Code	Function	Hexadecimal Value
J	PAN RIGHT	04A
Pan Right causes the selected receiver's pan/tilt unit to pan to the right until a new pan or null instruction is issued. See Note 3. Variable speed receivers use the following commands: J = Pan right at slow speed. JX = Pan right at medium slow speed. JW = Pan right at medium fast speed. JWX = Pan right at fast speed.		
Command Syntax:	<SOH>J<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>J<CR>	(Pan/tilt unit pans rght.)

For V15UVS Receiver

Command Code	Function	Hexadecimal Value
J	PAN RIGHT	04A
Pan Right causes the selected receiver's pan/tilt unit to pan to the right until a new pan or null instruction is issued. See Note 3. Variable speed receivers use the following commands: J = Pan right command code. ### = Pan speed component (any number from 001-256).		
Command Syntax:	<SOH>J ### <CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>J 123 <CR>	(Pan/tilt unit pans right.)

Command Code	Function	Hexadecimal Value
K	AUTOPAN (A/P)	04B
The Autopan command causes the selected receiver's pan-and-tilt unit to either: (1) Begin Autopan mode or (2) Halt Autopan mode. In receivers equipped with Variable Speed option, each Autopan input increments the A/P speed. (4 speed steps maximum. 5th input halts autopan.) NOTE: Manual pan input overrides and resets Autopan.		
Command Syntax:	<SOH>K<CR>	
Prerequisites:	Prior CAMSEL to receiver with autopan equipped pan-and-tilt unit.	
Example:	<SOH>K<CR>	(Receiver sets/resets Autopan.)

For V1300R, V1310RB, and V1200R-LM Receivers

Command Code	Function	Hexadecimal Value
L	TILT DOWN	04C
Tilt Down causes the selected receiver's pan-and-tilt unit to move the tilt platform in the downward direction until a new tilt or null instruction is issued. See Note 3. Variable speed receivers use the following commands: L = Tilt down at slow speed. LZ = Tilt down at medium slow speed. LY = Tilt down at medium fast speed. LYZ = Tilt down at fast speed.		
Command Syntax:	<SOH>L<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>L<CR>	(Pan-and-tilt unit tilts camera downward.)

For V15UVS Receiver

Command Code	Function	Hexadecimal Value
L	TILT DOWN	04C
Tilt Down causes the selected receiver's pan-and-tilt unit to move the tilt platform in the downward direction until a new tilt or null instruction is issued. See Note 3. Variable speed receivers use the following commands: L = Tilt down command code. ### = Tilt speed component (any number from 001-256).		
Command Syntax:	<SOH>L ### <CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>L 005<CR>	(Pan-and-tilt unit tilts camera downward.)

For V1300R, V1310RB, and V1200R-LM Receivers

Command Code	Function	Hexadecimal Value
M	TILT UP	04D
Tilt Up causes the selected receiver's pan-and-tilt unit to move the tilt platform in the upward direction until a new tilt or null instruction is issued. See Note 3. Variable speed receivers use the following commands: M = Tilt up at slow speed. MZ = Tilt up at medium slow speed. MY = Tilt up at medium fast speed. MYZ = Tilt up at fast speed.		
Command Syntax:	<SOH>M<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>M<CR>	(Pan-and-tilt unit tilts camera upward.)

For V15UVS Receiver

Command Code	Function	Hexadecimal Value
M	TILT UP	04D

Tilt Up causes the selected receiver's pan-and-tilt unit to move the tilt platform in the upward direction until a new tilt or null instruction is issued. See Note 3. Variable speed receivers use the following commands:
M = Tilt up command code.
= Tilt speed component (any number from 001-256).

Command Syntax:	<SOH>M ### <CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>M 045 <CR>	(Pan-and-tilt unit tilts camera upward.)

Command Code	Function	Hexadecimal Value
N	ZOOM OUT	04E

Zoom Out causes the selected receiver to drive the zoom element of the motorized zoom lens in the outward direction until a new zoom or null instruction is issued. Zoom-out action yields a wide-angle view of area. See Note 3.

Command Syntax:	<SOH>N<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>N<CR>	(Lens zooms out for wide angle.)

Command Code	Function	Hexadecimal Value
O	ZOOM IN	04F

Zoom In causes the selected receiver to drive the zoom element of the motorized zoom lens in the inward direction until a new zoom or null instruction is issued. Zoom-in action yields a close-up of view area. See Note 3.

Command Syntax:	<SOH>O<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>O<CR>	(Lens zooms in for close-up.)

Command Code	Function	Hexadecimal Value
P	FOCUS NEAR	050

Focus Near causes the selected receiver to drive the focus element of the motorized zoom lens in the near direction until a new focus or null instruction is issued. See Note 3.

Command Syntax:	<SOH>P<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>P<CR>	(Lens begins to focus near.)

Command Code	Function	Hexadecimal Value
Q	FOCUS FAR	051

Focus Far causes the selected receiver to drive the focus element of the motorized zoom lens in the far direction until a new focus or null instruction is issued. See Note 3.

Command Syntax:	<SOH>Q<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>Q<CR>	(Lens begins to focus far.)

Command Code	Function	Hexadecimal Value
R	IRIS CLOSE	052

Iris Close causes the selected receiver to drive the iris element of the motorized zoom lens in the closed direction until a new iris or null instruction is issued. NOTE: Autoiris overrides any manual iris commands. See Note 3.

Command Syntax:	<SOH>R<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system. Autoiris must be OFF!	
Example:	<SOH>R<CR>	(Iris begins to close.)

Command Code	Function	Hexadecimal Value
S	IRIS OPEN	053

Iris Open causes the selected receiver to drive the iris element of the motorized zoom lens in the open direction until a new iris or null instruction is isued. NOTE: Autoiris overrides any manual iris commands. See Note 3.

Command Syntax:	<SOH>S<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system. Autoiris must be OFF!	
Example:	<SOH>S<CR>	(Iris begins to open.)

Command Code	Function	Hexadecimal Value
T	AUTOIRIS	054

Autoiris either: (1) activates or (2) deactivates the autoiris function at the selected receiver. Autoiris overrides/disables any manual iris command input. NOTE: Receivers are placed in autoiris on power-up and when sent to Preset Recall.

Command Syntax:	<SOH>T<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>T<CR>	(Autoiris is set/reset.)

Command Code	Function	Hexadecimal Value
U	AUX No. 1	055

Aux. No. 1 input causes the selected receiver to either: (1) activate or (2) deactivate its No. 1 auxiliary relay.

Command Syntax:	<SOH>U<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>U<CR>	(Aux. No. 1 is set/reset.)

Command Code	Function	Hexadecimal Value
V	AUX No. 2	056

Aux. No. 2 input causes the selected receiver to either: (1) activate or (2) deactivate its No. 2 auxiliary relay. If the receiver is equipped with the variable speed option, Aux. No. 2 is active until a null instruction is issued.

Command Syntax:	<SOH>V<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>V<CR>	(Aux. No. 2 is set/reset.)

Command Code	Function	Hexadecimal Value
W	AUX No. 3	057

Aux. No. 3 input causes the selected receiver to either: (1) activate or (2) deactivate its No. 3 auxiliary relay. If the receiver is equipped with the variable speed option, Aux. 3 sets a portion of the Pan Speed. In this case, Aux. 3 remains set until a null instruction is issued. See Note 3.

Command Syntax:	<SOH>W<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system. [For pan speed, CAMSEL to receivers with PV option.]	
Example:	<SOH>W<CR>	(Aux. No. 3 is set/reset.)

Command Code	Function	Hexadecimal Value
X	AUX No. 4	058

Aux. No. 4 input causes the selected receiver to either: (1) activate or (2) deactivate its No. 4 auxiliary relay. If the receiver is equipped with the variable speed option, Aux. 4 sets a portion of the Pan Speed. In this case, Aux. 4 remains set until a null instruction is issued. See Note 3.

Command Syntax:	<SOH>X<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system. [For pan speed, CAMSEL to receivers with PV option.]	
Example:	<SOH>X<CR>	(Aux. No. 4 is set/reset.)

Command Code	Function	Hexadecimal Value
Y	AUX No. 5	059

Aux. No. 5 input causes the selected receiver to activate its No. 5 auxiliary relay. For receivers equipped with Variable Speed option, Aux. 5 controls a portion of the Tilt Speed. In either case Aux. 5 remains set until a null instruction is issued. See Note 3.

Command Syntax:	<SOH>Y<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system. [For tilt speed, CAMSEL to a receiver with PV option.]	
Example:	<SOH>Y<CR>	(Aux. No. 5 is set.)

Command Code	Function	Hexadecimal Value
Z	AUX No. 6	05A

Aux. No. 6 input causes the selected receiver to activate its No. 6 auxiliary relay. For receivers equipped with variable speed option, Aux. 6 controls a portion of the Tilt Speed. In either case Aux. 6 remains set until a null instruction is issued. See Note 3.

Command Syntax:	<SOH>Z<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system. [For tilt speed, CAMSEL to a receiver with PV option.]	
Example:	<SOH>Z<CR>	(Aux. No. 6 is set.)

Command Code	Function	Hexadecimal Value
[	LENS SPEED	05B

Lens Speed input causes the selected receiver to change its current lens speed setting to either HI or LOW speed. Only two steps of lens speed are available. On power-up, the receivers are set for LOW lens speed. Lens speed is independent of pan/tilt variable speed option.

Command Syntax:	<SOH>[<CR>	
Prerequisites:	Prior CAMSEL to any receiver in system.	
Example:	<SOH>[<CR>	(Lens speed altered.)

Command Code	Function	Hexadecimal Value
\	ALARM ACKNOWLEDGE	05C

The Alarm Acknowledge command acknowledges/resets alarms in the system alarm FIFO stack. The method of acknowledgement depends on the type of alarm mode active in the system software. This Alarm Acknowledge input mimics the action of an Alarm Acknowledge entered from a remote keypad. See detailed description section.

Command Syntax:	<SOH>\<CR> (Backslash)	
Prerequisites:	Alarm input from V1200X-IA or receiver. [NOTE: See Note 4.]	
Example:	<SOH>\<CR>	(Perform Alarm Acknowledge.)

Command Code	Function	Hexadecimal Value
]	COMMUNICATION FAIL ACKNOWLEDGE	05D

The Communication Failure Acknowledgement command is used to acknowledge communication failures detected by the Supervisor CPU during poll of receiver status. See Note 5.

Command Syntax:	<SOH>]<CR>	
Prerequisites:	Receiver Communication Fails in system.	
Example:	<SOH>]<CR>	(Com/Fail Acknowledged.)

Command Code	Function	Hexadecimal Value
^	ENABLE ALARM(S)	05E

The Enable Alarm(s) command is used to enable individual alarm inputs or groups of alarm inputs that were previously disabled by the Disable Alarm(s) command. See Note 6.

Command Syntax:	<SOH>^####<CR> (Individual) or <SOH>^###1,###2<CR> (Group)	
Prerequisites:	None.	
Example:	<SOH>^0001,0016<CR>	(Enable Alarm inputs 1-16.)

Command Code	Function	Hexadecimal Value
_	DISABLE ALARM(S)	05F
The Disable Alarm(s) command is used to disable individual alarm inputs or groups of alarm inputs from X-IA units. Any alarm detected from a disabled input is ignored by the CPU. See Note 6.		
Command Syntax:	<SOH>_####<CR> (Individual) or <SOH>_###1,###2<CR> (Group)	
Prerequisites:	None.	
Example:	<SOH>_0072<CR>	(Disable alarm input 72.)

Command Code	Function	Hexadecimal Value
‘	SYSTEM SPEC REPORT	060
The System Specification Report causes the CPU to output a list of system specific operating parameters. (See Detailed Description section for output format.)		
Command Syntax:	<SOH>’<CR> (Single “open quotation” mark.)	
Prerequisites:	None	
Example:	<SOH>’<CR>	(Transmit System Specification Report.)

Command Code	Function	Hexadecimal Value
a	ENABLE KEYPAD	061
The Enable Keypad command causes the CPU to reenable or wake up any keypad that was disabled or turned off by the Disable Keypad instruction. The CPU then includes this keypad in its normal service routines.		
Command Syntax:	<SOH>a###<CR>	
Prerequisites:	None	
Example:	<SOH>a001<CR>	(Enable keypad No. 1.)

Command Code	Function	Hexadecimal Value
b	DISABLE KEYPAD	062
The Disable Keypad command causes the CPU to delete the selected keypad from active poll and service routines. This effectively turns the keypad off and renders the keypad nonoperational. The CPU sends an OFF message to the selected keypad. The keypad can only be brought back on-line by the Keypad Enable command.		
Command Syntax:	<SOH>b###<CR>	
Prerequisites:	None	
Example:	<SOH>b001<CR>	(Disable keypad 1.)

Command Code	Function	Hexadecimal Value
c	ASSIGN KEYPAD	063

The Assign Keypad command causes the CPU to assign the selected keypad to the input monitor address. See Note 7.

Command Syntax:	<SOH>cKKK,MMM<CR> (KKK = keypad, MMM = monitor)	
Prerequisites:	Keypad selected must be on line and enabled.	
Example:	<SOH>c001,008 <CR>	(Assign keypad 1 to monitor 8.)

Command Code	Function	Hexadecimal Value
d	REPORT ALARM(S)	064

The Report Alarm command causes the CPU to output to the RS-232 terminal device any alarm currently on the top of FIFO command stack. The end of report is marked by 0000$.

Command Syntax:	<SOH>d<CR>	
Prerequisites:	None	
Example:	<SOH>d<CR>	(Report alarm status.)

Command Code	Function	Hexadecimal Value
e	REPORT COMMUNICATION FAILURE(S)	065

The Report Communication Failure(s) command causes the CPU to output any and all receiver addresses currently in the FIFO communications failure stack. Each four-digit address in the report is separated by a comma. The end of report is marked by 0000$.

Command Syntax:	<SOH>e<CR>	
Prerequisites:	None	
Example:	<SOH>e<CR>	(Report Comm. Fail status.)

Command Code	Function	Hexadecimal Value
f	REPORT MONITOR ASSIGNMENTS	066

The Report Monitor Assignment(s) command causes the CPU to output the current camera-to-monitor assignment(s) for the monitor or group of monitors selected. The 4-digit camera numbers in the report are separated by a comma. See Note 6.

Command Syntax:	<SOH>f####<CR> (Individual or <SOH>f###1,###2<CR> (Group)	
Prerequisites:	None	
Example:	<SOH>f003<CR>	(Report number of camera assigned to monitor 3.)

Command Code	Function	Hexadecimal Value
g	REPORT RECEIVER STATUS	067

The Report Receiver Status command causes the CPU to poll and report the status of the selected receiver. See detailed description of this command for definition of reported data.

Command Syntax:	<SOH>g####<CR>	
Prerequisites:	None	
Example:	<SOH>g0204<CR>	(Report status of receiver No. 204.)

Command Code	Function	Hexadecimal Value
h	REPORT KEYPAD ASSIGNMENTS	068

The Report Keypad Assignment(s) command causes the CPU to report the current monitor-to-keypad assignment(s) for the keypad or group of keypads selected. The 3-digit monitor numbers in the report are separated by a comma. See Note 6.

Command Syntax:	<SOH>h###<CR> (Individual) or <SOH>h##1,##2<CR> (Group)	
Prerequisites:	None	
Example:	<SOH>h004,007<CR>	(Report monitors assigned to keypads 4-7.)

Command Code	Function	Hexadecimal Value
i	REPORT SEQUENTIAL STATUS	069

The Report Sequential Status command causes the CPU to output the sequential status of all cameras for the specified sequential monitor. This command will generate a report of cameras sequencing in ascending or random order. See the detailed description of this command for report definition.

Command Syntax:	<SOH>i###<CR>	
Prerequisites:	Input monitor address must be that of one of the system sequential monitors.	
Example:	<SOH>i006<CR>	(Report camera sequence status for monitor 6.)

Command Code	Function	Hexadecimal Value
j	REPORT MONITOR STATUS	06A

The Report Monitor Status command causes the CPU to output the current status of the selected monitor. See detailed description of this command for report definition.

Command Syntax:	<SOH>j###<CR>	
Prerequisites:	None	
Example:	<SOH>j001<CR>	(Report status of monitor 1.)

Command Code	Function	Hexadecimal Value
k	REPORT KEYPAD STATUS	06B

The Report Keypad Status command causes the CPU to output the current status for the selected keypad. See detailed description of this command for report definition.

Command Syntax:	<SOH>k###<CR>	
Prerequisites:	None	
Example:	<SOH>k009<CR>	(Report status of keypad 9.)

Command Code	Function	Hexadecimal Value
l	REPORT CAMERA SEIZE STATUS	06C

The Report Camera Seize Status command causes the CPU to test and report the seized condition of the selected camera. See detailed description of this command for report definition.

Command Syntax:	<SOH>l####<CR>	
Prerequisites:	None	
Example:	<SOH>l0175<CR>	(Report seize condition of camera 175.)

Command Code	Function	Hexadecimal Value
m	REPORT MONITOR SEIZE STATUS	06D

The Report Monitor Seize Status command causes the CPU to test and report the seized condition of the selected monitor. See detailed description of this command for report definition.

Command Syntax:	<SOH>m###<CR>	
Prerequisites:	None	
Example:	<SOH>m002<CR>	(Report seize condition of monitor 2.)

Command Code	Function	Hexadecimal Value
n	REPORT KEYPAD SEIZE STATUS	06E

The Report Keypad Seize Status command causes the CPU to test and report the seized condition of the selected keypad. See detailed description of this command for report definition.

Command Syntax:	<SOH>n###<CR>	
Prerequisites:	None	
Example:	<SOH>n012<CR>	(Report seize condition of keypad 12.)

Command Code	Function	Hexadecimal Value
o	ENABLE ALARM AUTO-REPORT	06F

The Enable Alarm Auto-Report causes the CPU to report the first alarm placed on the alarm FIFO stack, the moment it is detected.

Command Syntax:	<SOH>o<CR>	
Prerequisites:	None	
Example:	<SOH>o<CR>	(Enable alarm auto-report.)

Command Code	Function	Hexadecimal Value
p	DISABLE ALARM AUTO-REPORT	070

The Disable Alarm Auto-Report command causes the CPU to turn off automatic reporting of the first alarm that is placed on the alarm FIFO stack.

Command Syntax:	<SOH>p<CR>	
Prerequisites:	None	
Example:	<SOH>p<CR>	(Disable alarm auto-report.)

Command Code	Function	Hexadecimal Value
q	REPORT ALARM ENABLE STATUS	071

The Report Alarm Enable Status command causes the CPU to transmit a report of the enable/disable status of V1200X-IA alarm inputs. See detailed descriptions in Section 4.

Command Syntax:	<SOH>q<CR>	
Prerequisites:	None	
Example:	<SOH>q<CR>	(CPU sends alarm enable report.)

Command Code	Function	Hexadecimal Value
r	SYSTEM GLOBAL CONFIG. AND TITLE UPLOAD/ DOWNLOAD	072

System Global Configuration and Title Data Upload/Download transfers data to/from the VPS1300 System. A number (1 - 4) specifies the type of transfer involved. See Detailed Description section for addititonal information.
1 = Send global configuration via RS-232 port.
2 = Receive global configuration via RS-232 port.
3 = Send system title data via RS-232 port.
4 = Receive system title data via RS-232 port.

Command Syntax:	<SOH>r#<CR>	
Prerequisites:	None	
Example:	<SOH>r4<CR>	(Receive system title data.)

Command Code	Func	Hexadecimal î **s**
s	BROADCAST MESSAGE	073

Broadcast Message is used by the host computer to send a message to a designated monitor. The monitor is identified by a three-digit number and a comma "," MUST be used to separate the monitor number from the message. The maximum message size is 100 characters. It remains on the selected monitor until the host computer transmits another message of blanks.

Command Syntax:	<SOH>s###,message<CR>	
Prerequisites:	None	
Example:	<SOH>s003,CHECK THAT S.E. DOOR IS LOCKED<CR>	(Message to operator at monitor 3.)

Command Code	Function	Hexadecimal Value
t	READ CURRENT TIME AND DATE	074

This is used by the host computer to request the time and date. The VPS CPU responds with the time in hours:minutes:seconds ollowed by the date in month/day/year format.

Command Syntax:	<SOH>t<CR>	
Prerequisites:	None	
Example:	<SOH>t<CR>	(VPS CPU transmits time and date to host computer.)

thh:mm:ss	Function	
	SET TIME	

Set Time causes the VPS CPU to set its internal clock to the specified time in hour:minute:second format. The time is sent in three 2-digit groups separated by colons (hh:mm:ss). The time must be specified in the 24-hour mode.

Command Syntax: <SOH>thh:mm:ss<CR>

Prerequisites: None

Example: <SOH>t17:05:00 <CR> (Set the time to 5:05 pm.)

tmm/dd/yy	Function	
	SET TIME	

Set Date causes the VPS CPU to set its internal clock to the specified date in month/day/year format. The date is sent in three 2-digit groups separated by slashes (mm/dd/yy).

Command Syntax: <SOH>tmm/dd/yy<CR>

Prerequisites: None

Example: <SOH>t09/09/91 <CR> (Set the date to Sept. 9.)

tmm/dd/yy hh:mm:ss thh:mm:ss mm/dd/yy	Function	
	SET DATE AND TIME	

Set Date and Time causes the VPS CPU to set its internal clock to the specified date and time. The date is sent in month/day/year format. It is specified in three 2-digit groups separated by slashes (mm/dd/yy). The time is specified in 24-hour format (hour:minute:seconds) as three 2-digit groups separated by colons (hh:mm:ss). The time and date must be separated by a blank space.

Command Syntax: <SOH>tmm/dd/yy hh:mm:ss<CR>
<SOH>thh:mm:ss mm/dd/yy<CR>

Prerequisites: None

Example: <SOH>t09/09/91 17:05:00<CR> <SOH>t17:05:00 09/09/91<CR> (Set the date to Sept. 9 and time to 5:05 pm)

Command Code	Function	Hexadecimal Value
u...R	ALARM POINT RESET	075

The Alarm Point Reset command is equivalent to a V1200X-IA alarm reset for the designated alarm. The VPS system responds as though that alarm has been deactivated.

Command Syntax: <SOH>u####R<CR>

Prerequisites: Prior Alarm Point set issued for this alarm point.

Example: <SOH>u0071R <CR> (Reset alarm point 71.)

Command Code	Function	Hexadecimal Value
u...S	ALARM POINT SET	075

The Alarm Point Set command is equivalent to a V1200X-IA alarm input going active for the designated alarm. The VPS system responds as though that alarm has been activated. Only the Alarm Point Reset command can restore the alarm to an inactive state.

Command Syntax: <SOH>u####S<CR>

Prerequisites: None.

Example: <SOH>u0071S <CR> (Set alarm point 71.)

6. ALARM RS-232 RESPONSES

The VPS1300 system provides two RS-232 dedicated alarm ports. Alarm ports provide a dedicated alarm computer with very fast response to alarm conditions and computer requests. This is due to the fact that the port is dedicated to alarm circuits. These circuits do not have the processing overhead of the Supervisor CPU. Another use of the alarm port is to dump alarm reports to a line printer. The alarm ports can respond to only two of the host computer interface commands, alarm point set and alarm point reset. All other commands are ignored.

The VPS1344 has one RS-232 port for host computer communications, including alarm data and commands, and a second RS-232 port to download alarm reports to serial line printers.

6.1 Alarm RS-232 Output

The VPS system responds via the alarm ports to four possible conditions: valid command inputs, invalid command inputs, alarm point set, and alarm point reset. Figure 6-1 shows an example of a typical VPS1300 alarm transaction.

NOTE: *The VPS systems provide alarm status reports via the alarm ports. These are sent independently of host computer commands.*

6.1.1 RESPONSE TO VALID COMMAND

This response has the following format:

<CR><LF>
Ok — response to valid command

Ok — Upper case ASCII O, lower case ASCII k

This function is available on the VPS1300.

6.1.2 RESPONSE TO INVALID COMMAND

This response has the following format:

<CR><LF>? — response to invalid command

? — ASCII question mark character

This function is available on the VPS1300.

6.1.3 RESPONSE TO ALARM POINT SET COMMAND

This response is sent not only upon receipt of the Alarm Point Set command but when any alarm is detected. This function is available on both VPS1300 and VPS1344 systems. This alarm status report has the following format:

<CR><LF>####tdetected MM-DD-YY HH:MM:SS

active alarm report

— 4-digit decimal alarm point address

t — alarm type: X for V1200X-IA alarm, R for receiver alarm

MM-DD-YY — date alarm detected (month, day, year)

HH:MM:SS — time alarm detected (24-hour format: hour, minute, second)

6.1.4 RESPONSE TO ALARM POINT RESET COMMAND

This response is sent only when an alarm is acknowledged. The Alarm Point Set command triggers this response only for an alarm that is programmed as a momentary alarm since it also acts as an alarm acknowledgement. No report is issued upon receipt of an alarm point reset for a latching alarm since this does not constitute an alarm acknowledgement. This function is available on both VPS1300 and VPS1344 systems. An alarm status report has the following format:

<CR><LF>####t cleared MM-DD-YY HH:MM:SS

response to alarm point reset command

— 4-digit decimal alarm point address

t — alarm type: X for V1200X-IA alarm, R for receiver alarm

MM-DD-YY — date alarm reset (month, day, year)

HH:MM:SS — time alarm reset (24-hour format: hour, minute, second)

Transmission Type	Direction*	ASCII Characters Transmitted
Command	⇒	<SOH>u0001S<CR>
Response	⇐	<CR><LF>Ok
Status	⇐	<CR><LF>0001X detected 07:19:91 04:18:20
Command	⇒	<SOH>u0001R<CR><LF>
Response	⇐	<CR><LF>Ok
Status	⇐	<CR><LF> 0001X cleared 07:19:91 04:19:34

*Host Computer ⇔VPS system

Figure 6-1
Example of a Typical Alarm Exchange, VPS1300 System

7. INDEX OF COMMANDS

The numbers in the Detailed Description and Quick Reference Columns are page numbers.

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APPENDIX A

A.1 Allocation of Cameras and Monitors to Random and Ascending Sequencing Patterns

		Sequencing Modes					
		Mode 1				Mode 2	
		Random		Ascending		Ascending	
System Type	Maximum System Size	Cam	Mon	Cam	Mon	Cam	Mon
VPS1344	120 × 24	120	16	120	24	120	24
VPS1300 Standard	256 × 256	128	16	256	48	256	64
VPS1300 Full	512 × 256	256	32	512	96	512	128
VPS1300 Expanded	1024 × 256	512	64	1024	192	1024	256

A.2 Keypad Message Conversion Chart

The VPS1300 and VPS1344 CPUs are compatible with all V1200X and V1300X series control keypads. Some functions initiated by or passed through the host computer are indicated by codes displayed on system keypads. Communications failures will also be announced on the keypad. (For messages not listed here, refer to the keypad instruciton manual.) These messages differ depending on keypad series as follows:

Condition	V1200X Keypads		V1300X Keypads	
	Code	Message	Code	Message
Bulk Function Running	SA	Set all operation	SP	Set program
Bulk Function Complete	AC	All cameras	PS	Program set
Alarm Signal Is Input	A	Alarm	P1	Priority 1 alarm
Communication Failure Has Occurred	C	Communication Failure	P2	Priority 2 alarm

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