User's Manual

Allegiant® Main CPU Interface Software Command Console Language

LTC 8300 Series, LTC 8511C, LTC 8610/00,
TC8710A, LTC 8810/00, LTC 8910/00
CPU Revision Level 7.2

LTC 8300 Series, LTC 8500 Series
LTC 8600 Series, TC8700 Series
LTC 8800 Series, LTC 8900 Series

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TABLE OF CONTENTS

1 INTRODUCTION **5**

2 GENERAL INSTRUCTIONS **5**

3 SEQUENCE/SWITCHING COMMANDS **7**
3.1 Switch Logical Camera To Monitor **7**
3.2 Switch Logical Camera To Monitor **7**
3.3 Switch Physical Camera To Monitor **7**
3.4 Run Sequence By Monitor Number **8**
3.5 Run Sequence By Keyboard Number **8**
3.6 Hold Sequence By Monitor Number **8**
3.7 Hold Sequence By Keyboard Number **8**
3.8 Step Sequence Forward By Monitor Number **8**
3.9 Step Sequence Forward By Keyboard Number **8**
3.10 Step Sequence Backward By Monitor Number **10**
3.11 Step Sequence Backward By Keyboard Number **10**
3.12 Sequence Request **10**
3.13 Sequence Unload **10**
3.14 Sequence Delete **11**

4 KEYBOARD FUNCTIONS **11**
4.1 Change Keyboard Monitor To Be Controlled **11**
4.2 Change Keyboard Monitor And Camera Numbers **11**
4.3 Log Keyboard On **11**
4.4 Log Keyboard Off **11**

5 SEQUENCE FUNCTIONS **12**
5.1 Request Sequence Summary Table **12**
5.2 Sequence Programming **12**
5.2.1 LTC 8300 Systems ***13***
5.2.2 LTC 8500 Systems ***14***
5.2.3 LTC 8600 Systems ***15***
5.2.4 LTC 8800 Systems ***16***
5.2.5 LTC 8900 Systems ***17***

6 LOCKOUT COMMANDS **17**
6.1 Set Monitor-To-User Block Lockouts **17**
6.2 Set Camera-To-User Block Lockouts **18**
6.3 Set Remote-To-User Block Lockouts **18**
6.4 Set Keyboard-To-User Block Lockouts **18**
6.5 Set Monitor-To-Keyboard Block Lockouts **18**
6.6 Set Camera-To-Keyboard Block Lockouts **19**
6.7 Set Remote-To-Keyboard Block Lockouts **19**
6.8 Set Monitor-To-User Individual Lockouts **19**
6.9 Set Camera-To-User Individual Lockouts **20**
6.10 Set Remote-To-User Individual Lockouts **20**
6.11 Set Keyboard-To-User Individual Lockouts **20**
6.12 Set Monitor-To-Keyboard Individual Lockouts **20**
6.13 Set Camera-To-Keyboard Individual Lockouts **20**
6.14 Set Remote-To-Keyboard Individual Lockouts **21**
6.15 Lock Monitor Based On User Priority **21**
6.16 Unlock Monitor Based On User Priority **21**
6.17 Lock Remote Based On User Priority **21**
6.18 Unlock Remote Based On User Priority **21**

7 RECEIVER/DRIVER COMMANDS **22**
7.1 Basic Control Commands **22**
7.2 Toggle Pan/Tilt/Zoom Control Commands **22**
7.3 Set Pre-Position **23**
7.4 Call Pre-Position **23**

7.5 Auxiliary Control Commands **23**
7.5.1 Auxiliary On ***23***
7.5.2 Auxiliary Off ***24***
7.5.3 Auxiliary Toggle ***24***
7.5.4 Latch Auxiliary On ***24***
7.5.5 Latch Auxiliary Off ***24***
7.5.6 Cancel Auxiliary Latch ***24***
7.6 Variable Speed Control Commands **24**

8 ALARM COMMANDS **25**
8.1 Activate An Alarm **25**
8.2 Deactivate An Alarm **25**
8.3 Arm/Disarm Alarm **26**
8.4 Arm/Disarm Monitors **26**
8.5 Set Step & Review Alarm Monitors **27**

9 SYSTEM STATUS COMMANDS **27**
9.1 Alarm Status **27**
9.2 Crosspoint Status **28**
9.3 Sequence Status **28**
9.4 Keyboard Status **29**
9.5 Monitor Status **29**

10 VIDEO DETECTION COMMANDS **30**
10.1 Execute Automatic Video Scan **30**
10.2 Enable/Disable Video Monitoring Of Input **31**
10.3 Video Detection Status **31**

11 SYSTEM COMMANDS **31**
11.1 Request System Software Revision Number **31**
11.2 Request Camera Hash Value **31**
11.3 Set Hexadecimal Mode **31**
11.4 Set Decimal Mode **31**
11.5 Set Time **32**
11.6 Display Time **32**
11.7 Set Time Format **32**
11.8 Set Date **32**
11.9 Display Date **32**
11.10 Set Date Format **32**
11.11 Set Camera Title **32**
11.12 Set Monitor Title **33**
11.13 Select Monitor Title Option **33**
11.14 Select Monitor Status Option **33**
11.15 Set Monitor Overlay Position **33**
11.16 Enable/Disable Monitor Overlay **33**
11.17 Set Monitor Overlay Brightness **34**
11.18 Monitor Message Override **34**
11.19 Broadcast Message **34**
11.20 Sound Keyboard Beep **34**
11.21 Enable Video Loss Raster Generator **34**
11.22 Set Raster Format **34**
11.23 Reset System **35**
11.24 Set Console Port Activity **35**
11.25 Echo Message **35**
11.26 Print Message **35**
11.27 Set RS-232 Console Port Parameters **35**
11.28 Request RS-232 Console Port Parameters **35**
11.29 Select Default Camera Numbers **36**
11.30 Set Defaults To Factory Settings **36**

12 ERROR MESSAGES **37**

1 INTRODUCTION

The Command Console Language is used to control functions of an Allegiant® series LTC 8300, LTC 8500, LTC 8600, TC8700, LTC 8800, or LTC 8900 switching/controller system through the use of its integral RS-232C port. A personal computer, dumb terminal or the On-Line feature of the Master Control Software package may be used to communicate with the Allegiant system to control various system functions, video switching, receiver/driver actions, and alarms.

This capability allows the Allegiant system to be interfaced with external software which typically is used to sense alarms or handle access control on an existing computer system.

It is strongly recommended that only qualified programmers who are already familiar with the Allegiant system operation make use of this interfacing feature. Incorrect use of the commands can cause unknown actions to occur possibly requiring a system reset.

2 GENERAL INSTRUCTIONS

As the Allegiant system is shipped from the factory, the CONSOLE port communication protocols are set according to the table below. These settings can be changed either using the optional Allegiant Master Control Software package or the appropriate command as listed in this manual.

Baud Rate = 19,200 (1200 on CPU revisions < 7.2)
Stop Bits = 1
Data Bits = 8
Parity = none
Handshake = ON

The 9-pin CONSOLE port is located on the rear panel of the Allegiant main CPU bay and has pinouts as indicated in the table below. If the Handshake feature is enabled but not desired, the signals can be defeated by placing a jumper across pins 4 and 5 of the CONSOLE port mating connector. If a jumper is added, remove any other cable connections on these two pins.

CONSOLE Port Pinouts

Pin #	Function
1	Chassis Ground
2	Receive
3	Transmit
4	CTS
5	RTS
6	No Connection
7	Data Ground
8	No Connection
9	No Connection

If multiple external devices will be connected to a single Allegiant, the LTC 8712A Series Console Port Expander accessory device may be used. Up to four devices can be interfaced to the CONSOLE port via the LTC 8712A port expander unit. Note that the 9-pin PRINTER port and the 9-pin ALARM port which are also located on the rear panel of the Allegiant systems can be configured via DIP switches located on the Allegiant's CPU module to operate as CONSOLE ports if desired. Refer to the Allegiant series Installation and Operating Instruction book for more information and selection of these features. All three RS-232 ports can be operated simultaneously if necessary, but the LTC 8712A Series unit can only be used on the original CONSOLE port. The PRINTER port has the same pinouts as the CONSOLE port, but the ALARM port on the Allegiant bay has a different pinout and is shown below.

ALARM Port Pinouts

Pin #	Designation
1	RTS
2	Tx
3	CHASSIS GND
4	DATA GND
5	DATA GND
6	Rx
7	CTS
8	12 VAC
9	12 VAC

A CONSOLE port to a standard 9-pin PC serial port cable is available by ordering part LTC 8506/00. If you choose to make up a cable yourself, the connections are shown below for reference.

LTC 8506/00 CONSOLE Cable Pinouts

9-Pin Male (CONSOLE)	Allegiant Designation	9-Pin Female (PC Side)
1	Chassis GND	None
2	Receive Data	3
3	Transmit Data	2
4	CTS	1
5	RTS	8
6	No Connection	None
7	Data GND	5
8	No Connection	None
9	No Connection	None (pins 4 & 6 jumped) (pins 1 & 7 jumped)

In general, the commands are very SPACE sensitive and should be entered exactly as indicated. For example, text commands contain a space between the text and the associated data values. A space is also inserted between the multiple data values within a command. Once on-line, the system prompt should appear from the connected system. If the prompt is not present, pressing ENTER (or sending carriage return character 0D hex) should bring the prompt up. The prompt will look as follows:

TC8300> (For LTC 8300 Series systems)
TC8500> (For LTC 8500 Series systems)
TC8600> (For LTC 8600 Series systems)
TC8700> (For older TC8700 Series systems)
TC8800> (For LTC 8800 Series systems)
TC8900> (For LTC 8900 Series systems)

All commands should be entered only when the above prompt is present unless otherwise specified. Typically, a single command per line is entered, but multiple commands may be entered if desired. Multiple commands on the same line must be separated using a semicolon (;) and can not exceed a maximum of 126 characters (including spaces). All command lines must be followed by a carriage return character (0D hex). The choice of using decimal or hexadecimal numbers is selectable (see system commands). Decimal is the default.

Note that the prompt used in the examples on the following pages will be shown as 'TC8x00>' if the command is common to all systems. If the command is unique to a certain model, then the specific prompt for that system will be shown.

Three distinct conventions are used in this manual when specifying camera and remote device numbers. They are best understood by reviewing the following example table which depicts a LTC 8500 Series system:

'Index' No.	'Physical' No.	'Logical' No.
1	1	1
2	2	999
3	3	3
(continue series)	"	"
63	63	63
64	64	64
65	(Not Applicable)	65
66	(Not Applicable)	66
(continue series)	"	"
319	"	319
320	(Not Applicable)	320

The 'Index' column is a sequential list of numbers ranging from 1 to the maximum number associated with the particular Allegiant system. The 'Physical' column represents the actual number of video inputs found on the rear panel of an Allegiant matrix bay. The 'Logical' column represents the camera number which is entered by operators via system keyboards and it is the number displayed on the text overlay of system monitors. When shipped from the factory, the system's 'logical' camera number is the same as the 'index' number. Using the Allegiant's Master Control Software package or the LTC 8850 Graphical User Interface software, the 'logical' camera numbers can be redesignated to any 3 or 4 digit number. An example

of this is shown in line two of the table above. Note that index numbers that range above the quantity of physical numbers are provided exclusively for use in Allegiant satellite system configurations.

As a reference, the maximum ranges for the numbering system are listed in the table below:

System	Index No.	Physical No.	Logical No.
LTC 8300	1 to 288	1 to 32	Any 4 digits
LTC 8500	1 to 320	1 to 64	Any 3 digits
LTC 8600	1 to 1152	1 to 128	Any 4 digits
TC8700	1 to 2304	1 to 368	Any 4 digits
LTC 8800	1 to 2304	1 to 256	Any 4 digits
LTC 8900	1 to 4608	1 to 4096	Any 4 digits

These 'index', 'physical', and 'logical' numbers are used with certain commands to specify the camera or remote devices being controlled. Note that no duplicate camera numbers are permitted within the same system. Please be careful to use the appropriate number type as instructed.

System User numbers available in an Allegiant system range from 1 to 32 (1 to 128 in LTC 8900 systems). Using the Allegiant's Master Control Software package or the TC8850 Graphical User Interface software package, this User 'index' number range can be redesignated to any non-duplicate 3 digit 'logical' User number. When shipped from the factory, the system's 'logical' user number is the same as the 'index' user number. Both 'index' and 'logical' type user numbers are used in various commands listed in this manual. Please be careful to use the appropriate number type as instructed.

Again, it is recommended that only professional programmers make use of the Allegiant interfacing feature since certain commands may affect the performance of the system.

3 SEQUENCE/SWITCHING COMMANDS

3.1 Switch Logical Camera To Monitor

FORMAT = LCM+ (cam#) (mon#)

EXAMPLE: To switch monitor number 5 to view logical camera number 2 (and enable the on-screen title display), the following command is used:

TC8x00 > LCM+ 2 5

Note that this command utilizes a 'logical' camera number designation. Since the Allegiant system has the capability of renumbering the physical video inputs, use of the logical camera number switch command will ensure correct selections regardless of the system configuration.

This command also 'forces' the on-screen title to be visible. If display of the on-screen title is not desired, the "LCM-" command described below should be used.

Use of this or the "LCM-" command to control switch video when interfacing to Allegiant Satellite system configurations is strongly recommended.

3.2 Switch Logical Camera To Monitor

FORMAT = LCM- (cam#) (mon#)

EXAMPLE: To switch monitor number 5 to view logical camera number 2 (and blank the on-screen display), the following command is used:

TC8x00 > LCM- 2 5

Note that this command is identical to the "LCM+" command described above, except the on-screen title will be instantly blanked when this command is used.

3.3 Switch Physical Camera To Monitor

FORMAT = MON+CAM (mon#) (cam#)

EXAMPLE: To switch monitor number 5 to view the camera 'physically' connected to video input number 2 enter:

TC8x00 > MON+CAM 5 2

Note that numeric values in this command should not exceed the physical design capacity of the Allegiant system being controlled. This command should also be used with caution in Allegiant systems where the camera numbers have been

redesignated and no longer correspond to the actual video inputs. In systems that have been redesignated, it is recommended to use the 'LCM' logical camera number switch commands described above.

3.4 Run Sequence By Monitor Number

FORMAT = MON-RUN (monitor#)

EXAMPLE: If monitor number 2 is currently loaded with a sequence in the HOLD mode, the sequence may be run by the command:

TC8x00 > MON-RUN 2

Note that a sequence must currently be 'loaded' on the monitor.

3.5 Run Sequence By Keyboard Number

FORMAT = RUN (keyboard#)

EXAMPLE: If keyboard number 2 (where 2 is the actual port the keyboard is connected to on the Allegiant main bay) is currently controlling a monitor where a sequence is currently in the HOLD mode, the sequence may be run by the command:

TC8x00 > RUN 2

Note that a sequence must already be 'loaded' on the monitor and the keyboard must be 'controlling' that monitor. If a sequence is already running when this command is used, the sequence will immediately advance to the next step.

3.6 Hold Sequence By Monitor Number

FORMAT = MON-HOLD (monitor#)

EXAMPLE: If monitor number 2 contains a sequence currently in the RUN mode, the sequence may be stopped by the command:

TC8x00 > MON-HOLD 2

3.7 Hold Sequence By Keyboard Number

FORMAT = HOLD (keyboard#)

EXAMPLE: If keyboard number 2 (where 2 is the actual port the keyboard is connected to on the Allegiant main bay) is currently controlling a monitor where a sequence is currently in the RUN mode, the sequence may be stopped by the command:

TC8x00 > HOLD 2

Note that the keyboard must be currently 'controlling' the monitor which is running the sequence.

3.8 Step Sequence Forward By Monitor Number

FORMAT = MON-NEXT (monitor#)

EXAMPLE: If monitor number 2 is currently 'loaded' with a sequence which was previously running in the forward direction and is now in the HOLD mode, the sequence may be advanced one step forward by the command:

TC8x00 > MON-NEXT 2

If the sequence was previously running in the reverse direction and is now in the HOLD mode, this command will change the direction only. If the sequence is currently running in the forward direction, this command will cause the sequence to immediately advance one step. If the sequence is currently running in the reverse direction, this command will change the direction causing it to now run in the forward direction.

3.9 Step Sequence Forward By Keyboard Number

FORMAT = NEXT (keyboard#)

EXAMPLE: If keyboard number 2 (where 2 is the actual port the keyboard is connected to on the Allegiant main bay) is currently controlling a monitor where a sequence was previously running in the forward direction and is now in the HOLD mode, the sequence may be advanced one step forward by the command:

TC8x00 > NEXT 2

Note that the keyboard must be currently 'controlling' the monitor which the sequence is 'loaded' on.

If the sequence was previously running in the reverse direction and is now in the HOLD mode, this command will change the direction only. If the sequence is currently running in the forward direction, this command will cause the sequence to immediately advance one step. If the sequence is currently running in the reverse direction, this command will change the direction causing it to now run in the forward direction.

3.10 Step Sequence Backward By Monitor Number

FORMAT = MON-PREV (monitor#)

EXAMPLE: If monitor number 2 is currently 'loaded' with a sequence which was previously running in the reverse direction and is now in the HOLD mode, the sequence may be advanced one step backwards by the command:

TC8x00 > MON-PREV 2

If the sequence was previously running in the forward direction and is now in the HOLD mode, this command will change the direction only. If the sequence is currently running in the reverse direction, this command will cause the sequence to immediately advance one step backwards. If the sequence is currently running in the forward direction, this command will change the direction causing it to now run in the reverse direction.

3.11 Step Sequence Backward By Keyboard Number

FORMAT = PREV (keyboard#)

EXAMPLE: If keyboard number 2 (where 2 is the actual port the keyboard is connected to on the Allegiant main bay) is currently controlling a monitor where a sequence was previously running in the reverse direction and is now in the HOLD mode, the sequence may be advanced one step backwards by the command:

TC8x00 > PREV 2

Note that the keyboard must be currently 'controlling' the monitor which the sequence is 'loaded' on.

If the sequence was previously running in the forward direction and is now in the HOLD mode, this command will change the direction only. If the sequence is currently running in the reverse direction, this command will cause the sequence to immediately advance one step backwards. If the sequence is currently running in the forward direction, this command will change the direction causing it to now run in the reverse direction.

3.12 Sequence Request

FORMAT = SEQ-REQ (SEQ#) (MON#)

EXAMPLE: If sequence number 5 is to be 'loaded' onto monitor number 2 enter the following command:

TC8x00 > SEQ-REQ 5 2

Note that this command does not check user priority levels and will replace any existing sequence currently 'loaded' on the monitor. The sequence must also be a valid sequence (either contain the monitor number if an absolute sequence or be a relative sequence) for the monitor it is to be 'loaded' onto. Error number 51 will be returned if not. Salvo sequences must also be 'loaded' onto valid monitors and must not be started on a monitor where the sequence will exceed the number of monitors available. If the monitor numbers are exceeded, error number 52 will be returned.

3.13 Sequence Unload

FORMAT = SEQ-ULD (MON#)

EXAMPLE: If a sequence is currently 'loaded' on monitor number 5, it may be 'removed' from the monitor by the following command:

TC8x00 > SEQ-ULD 5

Note that this command does not check user priority levels and therefore will 'unload' any current sequence. Also note that this command does not delete the sequence from the system. The sequence is still stored in the system and may be 'reloaded' as desired. If a sequence is not currently 'loaded', no action will result.

3.14 Sequence Delete

FORMAT = DEL-SEQ (SEQ#)

EXAMPLE: If sequence number 9 is to be deleted from the system, enter the following command:

TC8x00 > DEL-SEQ 9

Note that this command irrevocably deletes the sequence from the system. If the sequence does not currently exist, no action is taken. There will be a short delay (typically 1 or 2 seconds) after this command is sent before the system can accept a new command.

4 KEYBOARD FUNCTIONS

4.1 Change Keyboard Monitor To Be Controlled

FORMAT = CHG-MON (MON#) (KYB#)

EXAMPLE: If keyboard number 1 is to be switched to monitor number 4 to control the camera currently displayed on monitor 4, enter the following command:

TC8x00 > CHG-MON 4 1

Note that this command only changes the monitor which is to be 'controlled'. The camera displayed on that monitor is not affected as it is in the next command listed below. This command can be used to change the keyboard to a monitor which has a sequence already 'loaded'. The sequence may then be started, stopped, etc. using the proper command as described above. Note that the keyboard must be in the 'logged-in' state. Error number 41 will be returned if not.

4.2 Change Keyboard Monitor And Camera Numbers

FORMA = MON-CAM (MON#) (KYB#) (CAM#)

EXAMPLE: If keyboard number 1 (where 1 is the actual port the keyboard is connected to on the Allegiant main bay) is to be switched to monitor number 4 to view 'index' camera number 8, enter the following command:

TC8x00 > MON-CAM 4 1 8

Note that this command not only changes the monitor which is to be 'controlled' by the keyboard, it also permits callup of a particular camera as part of the command. Note that the keyboard must be in the 'logged-in' state. Error number 41 will be returned if not.

4.3 Log Keyboard On

FORMAT = KBD-LOGON (KYB#) (USER#)

EXAMPLE: If logical user number 3 is to be logged-on to system keyboard number 1 (where 1 is the actual port the keyboard is connected to on the Allegiant main bay), enter the following command:

TC8x00 > KBD-LOGON 1 3

Note that this command duplicates the function of an operator 'logging-in' on a system keyboard.

4.4 Log Keyboard Off

FORMAT = KBD-LOGOFF (KYB#)

EXAMPLE: If system keyboard number 1 (where 1 is the actual port the keyboard is connected to on the Allegiant main bay) is to be logged-off, enter the following command:

TC8x00 > KBD-LOGOFF 1

Note that this command duplicates the function of logging-off of a system keyboard. Also note that the command will force the keyboard to log-off regardless of the dip switch setting on the Allegiant's CPU which determines activation of the log-in feature.

5 SEQUENCE FUNCTIONS

5.1 Request Sequence Summary Table

FORMAT = DIR

EXAMPLE: If a listing of the sequence summary table is desired, enter the following command:

TC8x00 > DIR

The system responds with a table of information indicating sequence numbers, sequence names, and sequence lengths for all sequences which are stored in the system memory.

5.2 Sequence Programming

Sequence programming requires an interactive process between the Allegiant system and an external computing device. A sequence 'program' must be generated using the computing device, then the tabulated information must be transferred using strict guidelines into the Allegiant system.

The computing device must contain or determine the following information before transfer to the Allegiant system can be made:

1. Sequence name - 8 characters max.
2. Sequence number - range is 1 to 60. (1 to 256 on LTC 8900).
3. Monitors used in sequence - determined from sequence table.
4. Length of sequence - determined from sequence table based on the total number of steps in the sequence.
5. Sequence type - must be specified as Absolute or Relative.
6. Overwrite authority - used when the sequence already exists in the Allegiant system.
7. Camera ID hash number - to insure camera numbers used in sequence match those programmed in Allegiant system. To calculate the camera hash number, multiply each camera's 'logical' id number by its 'index' number. The camera hash is the sum of these products, modulo 65536 (10000 hex). Trunk inputs and unconfigured cameras are not included in the calculation. If necessary, you can use the "CAMERA-HASH" command described in the System Commands section of this manual to interrogate the system.
8. Actual sequence table with camera, monitor, dwell times, and any remote control information - Operator programmed.

Once the above information is known, the computing device can then transfer the sequence data in the following format:

1. Send one or two carriage return characters (hex 0D) to request TC8x00 prompt. Prompt consists of space (20 hex), carriage return (0D hex), line feed (0A hex), TC8x00, space, >, space. Prepare system for download by sending DSEQ command followed by a carriage return. TC8x00 responds with echo of DSEQ command and 01 hex, then hex 06 if it is OK to proceed.
2. Download 128 byte control block containing sequence status information. Format as indicated below.
3. Download one checksum byte of first 128 bytes. The checksum byte is the low order byte of the sum of the contents of the 128 bytes. TC8x00 responds with hex 06 acknowledge (hex 15 denotes error), then TC8x00 returns status byte consisting of one of the following:

Hex Character	Meaning
82	OK to proceed; Overwrite authorized.
80	OK to proceed.
20	Incorrect camera hash number; Abort.
10	Sequence currently running; Abort.
04	Sequence currently in edit; Abort.
02	Sequence exists, no Overwrite; Abort
01	Insufficient room in memory; Abort.

4. Note that the Prompt will be returned after all responses except 82 hex and 80 hex. For all other responses, the control block must be downloaded again once the appropriate corrective action is taken.
5. Download actual sequence table information in one or more blocks containing 128 bytes. Format as indicated in following table.

5.2.1 LTC 8300 Systems

The LTC 8300 control block of 128 bytes must consist of the following:

BYTE	CONTENTS
0	Set bits of 8 bit word corresponding to monitors used in sequence. BYTE 0 = monitors 1-6 with 2 most significant bits always 'reset'. If Relative Sequence, the LSB bit of the 8 bit word must always be set, if not, shift bytes right until this condition is met.
1,2,3	Always 'reset'.
4	MSB bit always set. Next bit set if Relative sequence or reset if Absolute sequence. Other bits always reset (Relative = hex C0, Absolute = hex 80).
5	Relative monitor difference value. For Relative sequences, value is equal to the number of times the 8 bit word in BYTE 0 was shifted. If Absolute sequence, byte is reset.
6-13	Sequence name - ASCII characters padded with spaces (20 hex).
14	Contains MSB # of actual sequence steps.
15	Contains LSB # of actual sequence steps.
16,17	All bits set.
18	Sequence number (0-59 or 0-3B hex).
19	Set to 1 for Overwrite of existing sequence, set to 0 if Overwrite is not desired.
20	MSB camera hash number. See below.
21	LSB camera hash number. See below.
22-127	Always reset.

LTC 8300 Camera hash number - If the system camera numbers have not been redesignated and range from 1 to 32 (with cameras 33 to 288 unconfigured), the camera hash number is 2CB0 hex, which would make byte 20 equal to 2C hex and byte 21 equal to B0 hex.

The LTC 8300 Sequence table is transferred in blocks of 128 bytes plus a checksum. Each block contains up to 12 sequence steps (unused steps are zero filled). The checksum byte is the sum of the contents of the 128 bytes. The LTC 8300 sequence steps have the following six byte format:

BYTE	CONTENTS
0	Dwell time (1 to 60 or 61 = SALVO, 62 = HOLD, 63 = UNLOAD).
1	Always reset.
2	MSB of camera 'index' number minus 1(0 to 287).
3	LSB of camera 'index' number minus 1.
4	Monitor number (0 to 5) minus Relative Monitor Difference (contents of control block BYTE 5).
5	Receiver driver command, if any (refer to R/C command table).

The receiver driver command byte has an opcode number in its lower nibble and a data value in its upper nibble. See the "RECEIVER/DRIVER COMMANDS" section of this manual for a list of valid opcodes and data values.

The format of the blocks is as follows:

Data Of Bytes	Number Bytes	Total
Sequence step 1	6	6
Sequence step 2	6	12
"	"	"
"	"	"
"	"	"
Sequence step 12	6	72
Zero fill	56	128
Checksum	1	129

After the 128 byte block is sent, the next byte must contain the checksum of the 128 byte block. The LTC 8300 system will respond with a hex 06 if correct or a hex 15 if an error has resulted. Continue if correct or start over if an error has occurred.

If the sequence contains additional lines, the above format is continued in transfers of 12 sequence lines for each 128 bytes. A checksum byte should be sent after each 128 byte block transfer, and the LTC 8300 should respond after each checksum is sent.

5.2.2 LTC 8500 Systems

The LTC 8500 control block of 128 bytes must consist of the following:

BYTE	CONTENTS
0	Set bits corresponding to monitors used in sequence (LSB = monitor 1). If Relative sequence, the LSB bit must always be set, if not, shift byte right until this condition is met.
1	MSB bit always set. Next bit set if Relative sequence or reset if Absolute sequence. Other bits always reset (Relative = hex C0, Absolute = hex 80).
2	Contains MSB # of actual sequence steps.
3	Contains LSB # of actual sequence steps.
4	Relative monitor difference value. For Relative sequences, value is equal to the number of times BYTE 0 was shifted. If Absolute sequence, byte is reset.
5	Reserved. Always reset.
6-13	Sequence name - ASCII characters padded with spaces (20 hex).
14-29	Always reset.
30,31	All bits set.
32-36	Always reset.
37	Sequence number (0-59 or 0-3B hex).
38	Set to 1 for Overwrite of existing sequence, set to 0 if Overwrite is not desired.
39	MSB camera hash number. See below.
40	LSB camera hash number. See below.
41-127	Always reset.

LTC 8500 Camera hash number - If the system camera numbers have not been redesignated and range from 1 to 64 (with cameras 65 to 320 unconfigured), the camera hash number is 5D60 hex, which would make byte 39 equal to 5D hex and byte 40 equal to 60 hex.

The LTC 8500 Sequence table is transferred in blocks of 128 bytes plus a checksum. Each block contains up to 12 sequence steps (unused steps are zero filled). The checksum byte is the sum of the contents of the 128 bytes.

The LTC 8500 sequence steps have the following six byte format:

BYTE	CONTENTS
0	Dwell time (1 to 60 or 61 = SALVO, 62 = HOLD, 63 = UNLOAD).
1	Always reset.
2	MSB of camera ‘index’ number minus 1(0 to 319).
3	LSB of camera ‘index’ number minus 1.
4	Monitor number (0 to 7) minus Relative Monitor Difference (contents of control block BYTE 4).
5	Receiver driver command, if any (refer to R/C command table).

The receiver driver command byte has an opcode number in its lower nibble and a data value in its upper nibble. See the "RECEIVER/DRIVER COMMANDS" section of this manual for a list of valid opcodes and data values.

The format of the blocks is as follows:

Data Of Bytes	Number Bytes	Total
Sequence step 1	6	6
Sequence step 2	6	12
"	"	"
"	"	"
"	"	"
Sequence step 12	6	72
Zero fill	56	128
Checksum	1	129

After the 128 byte block is sent, the next byte must contain the checksum of the 128 byte block. The LTC 8500 system will respond with a hex 06 if correct or a hex 15 if an error has resulted. Continue if correct or start over if an error has occurred.

If the sequence contains additional lines, the above format is continued in transfers of 12 sequence lines for each 128 bytes. A checksum byte should be sent after each 128 byte block transfer, and the LTC 8500 should respond after each checksum is sent.

5.2.3 LTC 8600 Systems

The LTC 8600 control block of 128 bytes must consist of the following:

BYTE	CONTENTS
0,1	Set bits of 16 bit word corresponding to monitors used in sequence. BYTE 0 = monitors 9-16, BYTE 1 = monitors 1-8 (LSB = monitor 1). If Relative Sequence, the LSB bit of the 16 bit word must always be set, if not, shift bytes right until this condition is met.
2,3	Always reset.
4	MSB bit always set. Next bit set if Relative sequence or reset if Absolute sequence. Other bits always reset (Relative = hex C0, Absolute = hex 80).
5	Relative monitor difference value. For Relative sequences, value is equal to the number of times the 16 bit word in BYTES 0,1 was shifted. If Absolute sequence, byte is reset.
6-13	Sequence name - ASCII characters padded with spaces (20 hex).
14	Contains MSB # of actual sequence steps.
15	Contains LSB # of actual sequence steps.
16,17	All bits set.
18	Sequence number (0-59 or 0-3B hex).
19	Set to 1 for Overwrite of existing sequence, set to 0 if Overwrite is not desired.
20	MSB camera hash number. See below.
21	LSB camera hash number. See below.
22-127	Always reset.

LTC 8600 Camera hash number - If the system camera numbers have not been redesignated and range from 1 to 128 (with cameras 129 to 1152 unconfigured), the camera hash number is CAC0 hex, which would make byte 20 equal to CA hex and byte 21 equal to C0 hex.

The LTC 8600 Sequence table is transferred in blocks of 128 bytes plus a checksum. Each block contains up to 12 sequence steps (unused steps are zero filled). The checksum byte is the sum of the contents of the 128 bytes. The LTC 8600 sequence steps have the following six byte format:

BYTE	CONTENTS
0	Dwell time (1 to 60 or 61 = SALVO, 62 = HOLD, 63 = UNLOAD).
1	Always reset.
2	MSB of camera ‘index’ number minus 1(0 to 1151).
3	LSB of camera ‘index’ number minus 1.
4	Monitor number (0 to 15) minus Relative Monitor Difference (contents of control block BYTE 5).
5	Receiver driver command, if any (refer to R/C command table).

The receiver driver command byte has an opcode number in its lower nibble and a data value in its upper nibble. See the "RECEIVER/DRIVER COMMANDS" section of this manual for a list of valid opcodes and data values.

The format of the blocks is as follows:

Data Of Bytes	Number Bytes	Total
Sequence step 1	6	6
Sequence step 2	6	12
"	"	"
"	"	"
"	"	"
Sequence step 12	6	72
Zero fill	56	128
Checksum	1	129

After the 128 byte block is sent, the next byte must contain the checksum of the 128 byte block. The LTC 8600 system will respond with a hex 06 if correct or a hex 15 if an error has resulted. Continue if correct or start over if an error has occurred.

If the sequence contains additional lines, the above format is continued in transfers of 12 sequence lines for each 128 bytes. A checksum byte should be sent after each 128 byte block transfer, and the LTC 8600 should respond after each checksum is sent.

5.2.4 LTC 8800 Systems

The LTC 8800 control block of 128 bytes must consist of the following:

BYTE	CONTENTS
0-3	Set the lower 32 bits of a 64 bit word corresponding to monitors used in sequence. BYTE 0 = monitors 25-32, BYTE 1 = monitors 17-24, BYTE 2 = monitors 9-16, BYTE 3 = monitors 1-8 (LSB = monitor 1). If Relative Sequence, the LSB bit of the 64 bit word must always be set, if not, shift bytes right until this condition is met. See also BYTES 32-35 below.
4	MSB bit always set. Next bit set if Relative sequence or reset if Absolute sequence. Other bits always reset (Relative = hex C0, Absolute = hex 80).
5	Relative monitor difference value. For Relative sequences, value is equal to the number of times the 64 bit word in BYTES 0-3, and 32-35 was shifted. If Absolute sequence, byte is reset.
6-13	Sequence name - ASCII characters padded with spaces (20 hex).
14	Contains MSB # of actual sequence steps.
15	Contains LSB # of actual sequence steps.
16,17	All bits set.
18	Sequence number (0-59 or 0-3B hex).
19	Set to 1 for Overwrite of existing sequence, set to 0 if Overwrite is not desired.
20	MSB camera hash number. See below.
21	LSB camera hash number. See below.
22-31	Always reset.
32-35	Set the higher 32 bits of a 64 bit word corresponding to monitors used in sequence. BYTE 32 = monitors 57-64, BYTE 33 = monitors 49-56, BYTE 34 = monitors 41-48, BYTE 35 = monitors 33-40 (LSB = monitor 33). If Relative Sequence, the LSB bit of the 64 bit word (in BYTE 3 above) must always be set, if not, shift bytes right until this condition is met. See also BYTES 0-3 above.
36-127	Always reset.

LTC 8800 Camera hash number - If the system camera numbers have not been redesignated and range from 1 to 256 (with cameras 257 to 2304 unconfigured), the camera hash number is D580 hex, which would make byte 20 equal to D5 hex and byte 21 equal to 80 hex.

The LTC 8800 Sequence table is transferred in blocks of 128 bytes plus a checksum. Each block contains up to 12 sequence steps (unused steps are zero filled The checksum byte is the sum of the contents of the 128 bytes. The LTC 8800 sequence steps have the following six byte format:

BYTE	CONTENTS
0	Dwell time (1 to 60 or 61 = SALVO, 62 = HOLD, 63 = UNLOAD.
1	Always reset.
2	MSB of camera ‘index’ number minus 1 (0 to 2303).
3	LSB of camera ‘index’ number minus 1.
4	Monitor number (0 to 63) minus Relative Monitor Difference (contents of control block BYTE 5).
5	Receiver driver command, if any (refer to R/C command table).

The receiver driver command byte has an opcode number in its lower nibble and a data value in its upper nibble. See the "RECEIVER/DRIVER COMMANDS" section of this manual for a list of valid opcodes and data values.

The format of the blocks is as follows:

Data Of Bytes	Number Bytes	Total
Sequence step 1	6	6
Sequence step 2	6	12
"	"	"
"	"	"
"	"	"
Sequence step 12	6	72
Zero fill	56	128
Checksum	1	129

After the 128 byte block is sent, the next byte must contain the checksum of the 128 byte block. The LTC 8800 system will respond with a hex 06 if correct or a hex 15 if an error has resulted. Continue if correct or start over if an error has occurred.

If the sequence contains additional lines, the above format is continued in transfers of 12 sequence lines for each 128 bytes. A checksum byte should be sent after each 128 byte block transfer, and the LTC 8800 should respond after each checksum is sent.

5.2.5 LTC 8900 Systems

The LTC 8900 system does not support sequence downloads from external computing devices. Programming of sequences must be done via system keyboards or via the software on the System Controller PC.

6 LOCKOUT COMMANDS

Lockout commands are used to restrict Users or system keyboards from gaining access to certain system functions. Users may be restricted from operating keyboards, selecting monitors, viewing cameras, and controlling remote devices. System keyboards may be restricted from accessing monitors, cameras, and remote devices (receiver/drivers). The locks may be installed either in blocks or individually based on User or keyboard numbers. Block type lock commands would be used when it is necessary to reassign system wide restrictions associated with a lockout table. Individual type lock commands would be used when it is necessary to reassign restrictions for only a single User or a single keyboard. These commands duplicate the lockout table functions found in the Allegiant's Master Control Software package or the TC8850 Graphical User Interface software package.

Note that if the system log-on feature is not enabled, the User related restrictions will appear to be based upon system keyboards (at least until the limit of physical keyboards supported by the system is exceeded). The system keyboards are automatically defaulted by the System to be associated with a User number when the log-on feature is not enabled, i.e., keyboard 1 is defaulted to User 1, keyboard 2 to User 2, and so on.

In the block type lock commands, certain User and keyboard data values are determined using a 'bit map' concept. If a bit is 'set', the corresponding User or keyboard would be restricted from accessing the device.

For LTC 8300, LTC 8500, LTC 8600, and LTC 8800 systems, the 32 different Users (or keyboards if the log-in feature is not enabled) in the system, the bitmap would consist of a 32 bit word (four data bytes) where the least significant bit represents User (or keyboard) number 1. In LTC 8900 systems, the 128 Users in the system would consist of a 128 bit word (sent as 4 groups of 4 data bytes).

If applicable, leading zeros at the beginning of the individual Data groups do not need to be included. If all bits of a data group are zero, only a single zero needs to be sent to represent that group.

For keyboard bitmaps, a LTC 8500 system permits 8 keyboards, so the keyboard bitmap would consist of a single 8 bit word (1 data byte). With LTC 8600 systems, 16 keyboards are permitted, so the keyboard bitmap would consist of a 16 bit word (2 data bytes).

In individual type lock commands, the 'lock data' value must be set to 1 for the device to be locked or 0 to be unlocked. The examples below assume that the current numeric base is HEXADECIMAL.

Priority based monitor locks are also available that can be set/removed according to User number. These commands duplicate the monitor lock/unlock functions which can be entered via a system keyboard.

There will be a short delay (typically 1 or 2 seconds) after lockout commands are sent before the system can accept a new command.

6.1 Set Monitor-To-User Block Lockouts

This command configures a lockout table that determines which system Users are permitted access to a specific system monitor. When a User is restricted from a system monitor, the currently displayed camera cannot be changed by the User if the keyboard is currently controlling the monitor when the lock is installed. If the keyboard is not currently controlling the monitor, the User will not be able to select the locked monitor.

FORMAT = LOCK-MON-USR (monitor#) (user bitmap)

EXAMPLE: If Users 4, 5, 7, 8, 15, and 25 are to be restricted from accessing monitor number 2, enter the following command (using hex base):

TC8x00> LOCK-MON-USR 2 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-MON-USR 2 00000000 00000000 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-MON-USR 2 0 0 0 10040D8

6.2 Set Camera-To-User Block Lockouts

This command configures a lockout table that determines which system Users are permitted access to a specific system camera. When a User is restricted from accessing a system camera, the camera can not be switched to any monitor by the User. Since the User cannot access the camera, any remote (receiver/driver) associated with the camera is not controllable by the User.

FORMAT = LOCK-CAM-USR (index camera#) (user bitmap)

EXAMPLE: If Users 4, 5, 7, 8, 15, and 25 are to be restricted from accessing camera number 250, enter the following command (using hex base):

TC8x00> LOCK-CAM-USR FA 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-CAM-USR FA 00000000 00000000 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-CAM-USR FA 0 0 0 10040D8

6.3 Set Remote-To-User Block Lockouts

This command configures a lockout table that determines which system Users are permitted access to control the remote (receiver/driver) associated with a system camera.

FORMAT = LOCK-REM-USR (index remote#) (user bitmap)

EXAMPLE: If Users 4, 5, 7, 8, 15, and 25 are to be restricted from accessing the remote associated with camera number 202, enter the following command (using hex base):

TC8x00> LOCK-REM-USR CA 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-REM-USR CA 00000000 00000000 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-REM-USR CA 0 0 0 10040D8

6.4 Set Keyboard-To-User Block Lockouts

This command configures a lockout table that determines which system Users are permitted access to a specific system keyboard. The system log-on feature must be enabled when using this command. When a User is restricted from accessing a system keyboard, they are prohibited from logging-on to that keyboard.

FORMAT = LOCK-KBD-USR (keyboard#) (user bitmap)

EXAMPLE: If Users 4, 5, 7, 8, 15, and 25 are to be restricted from accessing keyboard number 3, enter the following command (using hex base):

TC8x00> LOCK-KBD-USR 3 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-KBD-USR 3 00000000 00000000 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-KBD-USR 3 0 0 0 10040D8

6.5 Set Monitor-To-Keyboard Block Lockouts

This command configures a lockout table that determines which system Keyboards are permitted access to a specific system monitor. When a keyboard is restricted from a system monitor, the currently displayed camera cannot be changed if the keyboard is currently controlling the monitor when the lock is installed. If the keyboard is not currently controlling the monitor, it will be prohibited from selecting the locked monitor. Note that the restrictions will apply regardless of the User associated with the keyboard.

FORMAT = LOCK-MON-KBD (monitor#) (keyboard bitmap)

EXAMPLE: If keyboards 4, 5, 7, 8, 15, and 25 on a LTC 8800 system are to be restricted from accessing monitor number 2, enter the following command (using hex base):

TC8x00> LOCK-MON-KBD 2 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-MON-KBD 2 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-MON-KBD 2 0 10040D8

Note that the first example is shown for a LTC 8800 system which supports 32 keyboards. The second example shows the format for a LTC 8900 system which supports 64 keyboards. The keyboard bitmap value must be changed accordingly for LTC 8300 systems (4 keyboards are supported), LTC 8500 systems (8 keyboards are supported), or LTC 8600 systems (16 keyboards are supported).

6.6 Set Camera-To-Keyboard Block Lockouts

This command configures a lockout table that determines which system keyboards are permitted access to a specific system camera. Note that the restrictions will apply regardless of the User associated with the keyboard. Since the keyboard cannot access the camera, any remote (receiver/driver) associated with the camera is not controllable by the locked keyboard.

FORMAT = LOCK-CAM-KBD (index camera#) (keyboard bitmap)

EXAMPLE: If keyboards 4, 5, 7, 8, 15, and 25 on a LTC 8800 system are to be restricted from accessing camera number 250, enter the following command (using hex base):

TC8x00> LOCK-CAM-KBD FA 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-CAM-KBD FA 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-CAM-KBD FA 0 10040D8

Note that the first example is shown for a LTC 8800 system which supports 32 keyboards. The second example shows the format for a LTC 8900 system which supports 64 keyboards. The keyboard bitmap value must be changed accordingly for LTC 8300 systems (4 keyboards are supported), LTC 8500 systems (8 keyboards are supported), or LTC 8600 systems (16 keyboards are supported).

6.7 Set Remote-To-Keyboard Block Lockouts

This command configures a lockout table that determines which system keyboards are permitted access to control the remote (receiver/driver) associated with a system camera.

FORMAT = LOCK-REM-KBD (index remote#) (keyboard bitmap)

EXAMPLE: If keyboards 4, 5, 7, 8, 15, and 25 on a LTC 8800 system are to be restricted from accessing the remote associated with camera number 202, enter the following command (using hex base):

TC8x00> LOCK-REM-KBD CA 010040D8

Same command formatted for LTC 8900 system:

TC8900> LOCK-REM-KBD CA 00000000 010040D8

Since leading zeros are not absolutely necessary, the same command for a LTC 8900 system can be sent as:

TC8900> LOCK-REM-KBD CA 0 10040D8

Note that the first example is shown for a LTC 8800 system which supports 32 keyboards. The second example shows the format for a LTC 8900 system which supports 64 keyboards. The keyboard bitmap value must be changed accordingly for LTC 8300 systems (4 keyboards are supported), LTC 8500 systems (8 keyboards are supported), or LTC 8600 systems (16 keyboards are supported).

6.8 Set Monitor-To-User Individual Lockouts

This command permits an individual User to be restricted from accessing a system monitor. When a User is restricted from a system monitor, the currently displayed camera cannot be changed by the User if the keyboard is currently controlling the

monitor when the lock in installed. If the keyboard is not currently controlling the monitor, the User will not be able to select the locked monitor.

FORMAT = SET-MON-USR-LOCK (monitor#) (index user#) (lock data)

EXAMPLE: If User 4 is to be restricted from accessing monitor number 2, enter the following command (using hex base):

TC8x00> SET-MON-USR-LOCK 2 4 1

6.9 Set Camera-To-User Individual Lockouts

This command permits an individual User to be restricted from accessing a system camera. When a User is restricted from accessing a system camera, the camera can not be switched to any monitor by the User. Since the User cannot access the camera, any remote (receiver/driver) associated with the camera is not controllable by the User.

FORMAT = SET-CAM-USR-LOCK (index camera#) (index user#) (lock data)

EXAMPLE: If User 4 is to be restricted from accessing camera number 18, enter the following command (using hex base):

TC8x00> SET-CAM-USR-LOCK 12 4 1

6.10 Set Remote-To-User Individual Lockouts

This command permits an individual User to be restricted from controlling the remote (receiver/driver) associated with a system camera.

FORMAT = SET-REM-USR-LOCK (index remote#) (index user#) (lock data)

EXAMPLE: If User 14 is to be restricted from accessing the remote associated with camera number 33, enter the following command (using hex base):

TC8x00> SET-REM-USR-LOCK 21 E 1

6.11 Set Keyboard-To-User Individual Lockouts

This command permits an individual User to be restricted from accessing a specific system keyboard. The system log-on feature must be enabled when using this command. When a User is restricted from accessing a system keyboard, they are prohibited from logging-on to that keyboard.

FORMAT = SET-KBD-USR-LOCK (keyboard#) (index user#) (lock data)

EXAMPLE: If User 10 is to be restricted from accessing keyboard number 3, enter the following command (using hex base):

TC8x00> SET-KBD-USR-LOCK 3 A 1

6.12 Set Monitor-To-Keyboard Individual Lockouts

This command permits a keyboard to be restricted from accessing a system monitor. When a keyboard is restricted from a system monitor, the currently displayed camera cannot be changed if the keyboard is currently controlling the monitor when the lock is installed. If the keyboard is not currently controlling the monitor, it will be prohibited from selecting the locked monitor.

Note that the restrictions will apply regardless of the User associated with the keyboard.

FORMAT = SET-MON-KBD-LOCK (monitor#) (keyboard#) (lock data)

EXAMPLE: If keyboard 4 is to be restricted from accessing monitor number 11, enter the following command (using hex base):

TC8x00> SET-MON-KBD-LOCK B 4 1

6.13 Set Camera-To-Keyboard Individual Lockouts

This command permits a keyboard to be restricted from accessing a system camera. When a keyboard is restricted from accessing a system camera, the camera can not be switched to any monitor using the keyboard. Since the keyboard will not permit access to a camera, any remote (receiver/driver) associated with the camera is not controllable from the keyboard.

Note that the restrictions will apply regardless of the User associated with the keyboard.

FORMAT = SET-CAM-KBD-LOCK (index camera#) (keyboard#) (lock data)

EXAMPLE: If keyboard 4 is to be restricted from accessing camera number 18, enter the following command (using hex base):

TC8x00> SET-CAM-KBD-LOCK 12 4 1

6.14 Set Remote-To-Keyboard Individual Lockouts

This command permits a keyboard to be restricted from controlling the remote (receiver/driver) associated with a system camera.

FORMAT = SET-REM-KBD-LOCK (index remote#) (keyboard#) (lock data)

EXAMPLE: If keyboard 14 is to be restricted from accessing the remote associated with camera number 33, enter the following command (using hex base):

TC8x00> SET-REM-KBD-LOCK 21 E 1

6.15 Lock Monitor Based On User Priority

This command permits a monitor to be locked based on a user number. It duplicates the same function that an operator does when activating the 'Monitor-Lock-On' command using a system keyboard. Once the monitor is locked, only the operator who locked it or those operators with a higher priority would be able to control its video switching.

FORMAT = LOCK-MONITOR (monitor#) (logical user#)

EXAMPLE: If monitor 4 is to be locked by 'logical' user number 8, enter the following command:

TC8x00> LOCK-MONITOR 4 8

6.16 Unlock Monitor Based On User Priority

This command permits a locked monitor to be unlocked based on a user number. It duplicates the same function that an operator does when activating the 'Monitor-Lock-Off' command using a system keyboard. The monitor can only be unlocked by the operator who locked it or by those operators with a higher priority.

FORMAT = UNLOCK-MONITOR (monitor#) (logical user#)

EXAMPLE: If monitor 6 is to be unlocked by 'logical' user number 2, enter the following command:

TC8x00> UNLOCK-MONITOR 6 2

6.17 Lock Remote Based On User Priority

This command provides the capability to restrict control over receiver/drivers based on the priority level of a user number. It duplicates the same function that an operator does when activating the 'Lock <camera number> On' command using a system keyboard. Once the remote device is locked, only the operator who locked it or those operators with higher priority levels would be able to control it. If the remote device is already locked by an operator with a higher priority level, no action will occur.

FORMAT = LOCK-REMOTE (logical camera#) (user index#)

EXAMPLE: If the receiver/driver associated with camera 6 is to be locked by user 'index' number 3, enter the following command:

TC8x00> LOCK-REMOTE 6 3

6.18 Unlock Remote Based On User Priority

This command permits a locked receiver/driver to be unlocked based on the priority level of a user number. It duplicates the same function that an operator does when activating the 'Lock <camera number> Off' command using a system keyboard. The remote device can only be unlocked by the operator who locked it or by those operators with a higher priority level. If the remote device had been locked by an operator with a higher priority level, no action will occur.

FORMAT = UNLOCK-REMOTE (logical camera#) (user index#)

EXAMPLE: If the receiver/driver associated with camera 7 is to be unlocked by user 'index' number 2, enter the following command:

TC8x00> UNLOCK-REMOTE 7 2

7 RECEIVER/DRIVER COMMANDS

7.1 Basic Control Commands

FORMAT = R/C (logical cam#) (OpCode#) (data)

Select the OpCode# (the OpCode# is used to identify the function group) and Data information for the desired action according to the table below using the values corresponding to the existing numeric mode (Decimal or Hex):

OpCode# (hex)	OpCode# (decimal)	Data (hex)	Data (decimal)	Function
1	1	1	1	Turn Aux 1 ON
1	1	2	2	Turn Aux 1 OFF
1	1	3	3	Toggle Aux 1
1	1	5	5	Turn Aux 2 ON
1	1	6	6	Turn Aux 2 OFF
1	1	7	7	Toggle Aux 2
1	1	9	9	Turn Aux 3 ON
1	1	A	10	Turn Aux 3 OFF
1	1	B	11	Toggle Aux 3
1	1	D	13	Turn Aux 4 ON
1	1	E	14	Turn Aux 4 OFF
1	1	F	15	Toggle Aux 4
2	2	n=0 to F	n=0 to 15	Go To Prepos.#(n+1)
3	3	t=0 to 7	t=0 to 7	Zoom IN for (t+1)/2 sec.
3	3	t=8 to F	t=8 to 15	Zoom OUT for (t-7)/2 sec.
4	4	t=0 to F	t=0 to 15	RIGHT for (t+1)/2 sec.
5	5	t=0 to F	t=0 to 15	LEFT for (t+1)/2 sec.
6	6	t=0 to F	t=0 to 15	DOWN for (t+1)/2 sec.
7	7	t=0 to F	t=0 to 15	UP for (t+1)/2 sec.
A	10	t=0 to 7	t=0 to 7	Focus FAR for (t+1)/2 sec.
A	10	t=8 to F	t=8 to 15	Focus NEAR for (t-7)/2 sec.
B	11	1	1	Aux 5 ON
B	11	2	2	Aux 5 OFF
B	11	3	3	Toggle Aux 5
B	11	5	5	Aux 6 ON
B	11	6	6	Aux 6 OFF
B	11	7	7	Toggle Aux 6
B	11	9	9	Aux 7 ON
B	11	A	10	Aux 7 OFF
B	11	B	11	Toggle Aux 7
C	12	n=0 to F	n=0 to 15	Set Prepos.#(n+1)

EXAMPLE: To activate pre-position # 16 on camera # 1, enter the following command:

TC8x00>R/C 1 2 15

Note that since the decimal mode is being assumed, the numeric value for the data was selected from the decimal column in the table. Also note that the actual number of seconds a time dependent command will be activated may only approximate the value entered.

7.2 Toggle Pan/Tilt/Zoom Control Commands

(TC8561A Series Receiver/drivers or TC8561 Series with software version 204 or higher)

FORMAT = REMOTE-TGL (logical cam#) (Data1) (Data2)

For the TOGGLE commands, the control information is selected according to the bit mapped Data1 and Data2 contents. This format allows for multiple functions to be performed simultaneously. A logic 1 in a bit position means that the associated function will be toggled (turned ON if currently OFF, or turned OFF if currently ON). A "Cancel All" command can be sent which immediately turns OFF all pan/tilt/zoom functions by setting the MSB of Data1. Note that once the function is activated, it will remain active until either the command is sent again or the Cancel All command is sent. The format for Data1 and Data2 is as follows:

"Cancel All" command:

	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Data1	1	x	x	x	x	x	x	x
Data2	x	x	x	x	x	x	x	x

TOGGLE commands:

				Pan/Tilt		Zoom Lens		
	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Data1	0	x	x	LEFT	UP	OUT	NEAR	OPEN
Data2	x	x	x	RIGHT	DOWN	IN	FAR	CLOSED

Where "x" = don't care.

EXAMPLE: To toggle the functions left and down simultaneously for camera # 5, enter the following command:

TC8x00>REMOTE-TGL 5 16 8

Note that since the decimal mode is being assumed, the values for Data1 and Data2 were determined using the decimal equivalents for the left and down functions.

7.3 Set Pre-Position

FORMAT = PREPOS-SET (logical camera#) (pre-position#)

EXAMPLE: If camera number 10 is to be programmed for pre-position number 25, move the camera into the desired pan/tilt/zoom position, then enter the following command:

TC8x00> PREPOS-SET 10 25

Note that the range of valid pre-position numbers is from 1 to 16 for camera sites equipped with TC8561 Series receiver/drivers and from 1 to 99 for camera sites containing the newer TC8561A Series receiver/drivers. The AutoDome Series of dome cameras will respond to either 66 or 99 pre-positions depending on the age of the model. Higher pre-position numbers (above 100) are also used to activate certain programming functions in the AutoDome series. Note that number ranges above 100 are also not supported on older TC8500 series (those with CPU versions under 7.0).

7.4 Call Pre-Position

FORMAT = PREPOS (logical camera#) (pre-position#)

EXAMPLE: If camera number 50 is to be sent to pre-position number 8, enter the following command:

TC8x00> PREPOS 50 8

Note that the range of valid pre-position numbers is from 1 to 16 for camera sites equipped with TC8561 Series receiver/drivers and from 1 to 99 for camera sites containing the newer TC8561A Series receiver/drivers. The AutoDome series of dome cameras will respond to either 66 or 99 pre-positions depending on the age of the model. Higher pre-position numbers (above 100) are also used to activate certain programming functions in the AutoDome series. Note that number ranges above 100 are also not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.5 Auxiliary Control Commands

The following series of auxiliary control commands can be used instead of the R/C series auxiliary control commands listed above. In addition, the 'Latch' type commands listed below provide the ability to control level type adjustments associated with the AutoDome series of dome cameras. Note that these commands were not supported on older LTC 8500 Series (those with CPU versions under 7.0).

7.5.1 Auxiliary On

FORMAT = AUX-ON (logical camera#) (auxiliary#)

EXAMPLE: If auxiliary number 5 is to be activated on receiver/driver number 8, enter the following command:

TC8x00> AUX-ON 8 5

Note that no action will result if the remote device being controlled does not support the Auxiliary# value sent. Note that this command was not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.5.2 Auxiliary Off

FORMAT = AUX-OFF (logical camera#) (auxiliary#)

EXAMPLE: If auxiliary number 4 is to be deactivated on receiver/driver number 9, enter the following command:

TC8x00> AUX-OFF 9 4

Note that no action will result if the remote device being controlled does not support the Auxiliary# value sent. Note that this command was not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.5.3 Auxiliary Toggle

FORMAT = AUX-TGL (logical camera#) (auxiliary#)

EXAMPLE: If auxiliary number 2 is to be toggled on receiver/driver number 6, enter the following command:

TC8x00> AUX-TGL 6 2

Note that no action will result if the remote device being controlled does not support the Auxiliary# value sent. Note that this command was not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.5.4 Latch Auxiliary On

FORMAT = LATCH-AUX-ON (logical camera#) (auxiliary#)

EXAMPLE: If auxiliary number 5 is to be latched on receiver/driver number 8, enter the following command:

TC8x00> LATCH-AUX-ON 8 5

This command is useful for making level type adjustments on the AutoDome series of cameras. Note that no action will result if the remote device being controlled does not support the Auxiliary# value sent. Note that this command was not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.5.5 Latch Auxiliary Off

FORMAT = LATCH-AUX-OFF (logical camera#) (auxiliary#)

EXAMPLE: If auxiliary number 5 is to be 'un-latched' on receiver/driver number 8, enter the following command:

TC8x00> LATCH-AUX-OFF 8 5

This command is useful for making level type adjustments on the AutoDome series of cameras. Note that no action will result if the remote device being controlled does not support the Auxiliary# value sent. Note that this command was not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.5.6 Cancel Auxiliary Latch

FORMAT = CANCEL-AUX-LATCH (logical camera #)

EXAMPLE: To stop operation of a 'LATCH-AUX-ON' or 'LATCH-AUX-OFF' command on receiver/driver number 8, enter the following command:

TC8x00> CANCEL-AUX-LATCH 8

This command will cancel a continuously operating level adjustment (started by LATCH-AUX-ON or LATCH-AUX-OFF) on an AutoDome camera. Note that this command was not supported on older LTC 8500 series (those with CPU versions under 7.0).

7.6 Variable Speed Control Commands

The following series of variable speed control commands are used to control the variable speed functions of the AutoDome series of dome cameras. Once a variable speed command is received by the AutoDome, it will continue to operate until the 'all off' or another control command is received.

FORMAT = VARSPEED_PTZ [logical camera #] [pan speed] [tilt speed] [zoom speed] [function code]

Where:

camera # = the logical number of the camera to be controlled.

pan speed = a number from 0 to F (hexadecimal); 0 = slowest, F = fastest.

tilt speed = a number from 0 to F (hexadecimal); 0 = slowest, F = fastest.

zoom speed = a number from 0 to 7; 0 = slowest, 7 = fastest.

function code = selected from table below:

Function	Hex	Decimal
all off	000	0
pan right	001	1
pan left	002	2
tilt down	004	4
tilt up	008	8
zoom out	010	16
zoom in	020	32
focus near	040	64
focus far	080	128
iris close	100	256
iris open	200	512

Function codes may be added together to operate multiple functions with a single command line. Note that the current AutoDome series lens only provides two lens speeds. Speed values 0 to 4 will activate the slower speed and speed values 5 to 7 will activate the faster speed. Also note that this command is not supported on current TC8561 and TC8561A Series receiver/drivers.

EXAMPLE: If camera number 5 is to be panned left at maximum speed, enter the following command (hexadecimal mode shown):

TC8x00> VARSPEED_PTZ 5 F 0 0 2

8 ALARM COMMANDS

It is recommended that the commands listed below for arming/disarming only be used when the alarm response mode has been selected using the system keyboard. If the system has been programmed using the Master Control Software or LTC 8850 Graphical User Interface's VersAlarm™ feature, the arm/disarm commands must conform exactly to the programmed Monitor Group alarm configurations or incorrect operations may result.

NOTE: In the default mode, the alarm number activated corresponds to a camera having the same number, i.e., Alarm #1 activates camera #1. This relationship can be reassigned using the Master Control Software or LTC 8850 Graphical User Interface software packages so that an alarm number may refer to any camera number and even include multiple cameras (up to 4 per alarm).

Also note that the following commands will not effect the way the system responds to the alarmed camera. The way the system responds is determined by which alarm response mode is active and how the individual cameras and monitors have been armed.

8.1 Activate An Alarm

FORMAT = +ALARM (alarm#)

EXAMPLE: To activate alarm number 6, enter the following command:

TC8x00>+ALARM 6

Note that before this command can be used again for the same alarm number, the -ALARM command described below must first be sent.

8.2 Deactivate An Alarm

FORMAT = -ALARM (alarm#)

EXAMPLE: To deactivate previously activated alarm number 6, enter the following command:

TC8x00>-ALARM 6

This command must always be sent to reset an existing alarm before another +ALARM command with the same alarm number is sent.

8.3 Arm/Disarm Alarm

FORMAT = ALARM-TBL (data) (alarm#)

This command duplicates the system keyboard's Alarm ON/OFF function. The data field must be selected from the Binary Progression Table according to which monitors the alarm will be armed/disarmed on. Each alarm to be armed/disarmed must be entered this way. The system alarm ranges are as follows: 1-64 for LTC 8300, 1-128 for LTC 8500, 1-512 for LTC 8600, 1-1024 for LTC 8800, and 1-2048 for LTC 8900 systems. Note that existing Allegiant series alarm accessory products are only capable of supporting 1024 alarms on LTC 8900 systems, but up 2048 are available via an external interface using CCL commands.

For the LTC 8300, MAX-MON is 6, and MAX DATA is 63 (hex 3F).

For the LTC 8500, MAX-MON is 8, and MAX DATA is 255 (hex FF).

For the LTC 8600, MAX-MON is 16, and MAX DATA is 65535 (hex FFFF).

For the LTC 8800, MAX-MON is 64, and MAX DATA is hex FFFFFFFFFFFFFFFF. Data should be entered as two separate values (most significant 32 bits, then least significant 32 bits).

For the LTC 8900, MAX-MON is 512, and MAX DATA would consist of 128 “F” hex characters! Because of this large number, the data field needs to be split into 16 separate packets, each having 32 bits. If possible, do not include leading zeros in the individual packets because the entire command must fit into the line capacity of 127 characters. Due to this limit, there will be certain combinations of this command that will be impossible to send.

EXAMPLE: To enable alarms on monitors 1 and 2 for alarm input 5, enter the following command:

TC8x00>ALARM-TBL 3 5

Note that this command only arms/disarms alarm inputs. Each system monitor must also be armed/disarmed to correspond with the alarm inputs.

There will be a short delay (typically 1 or 2 seconds) after this command is sent before the system can accept a new command.

8.4 Arm/Disarm Monitors

FORMAT = MON-ARM (data)

This command duplicates the system keyboard's User Monitor ON/OFF function. The data field is selected from the Binary Progression Table shown below according to which Step/Review monitors will be armed/disarmed. One command is structured to arm/disarm all monitors in the system at the same time. Note that this command must be used carefully when working with the Monitor Group alarm concept. You must insure that at least one Step monitor is armed for each Monitor Group that is being armed. If this is not done, no monitors will be armed in that Monitor Group. Since there can be anywhere from 1 to 6 Monitor Groups in a LTC 8500 system (1 to 8 in a LTC 8500, 1 to 16 in a LTC 8600, 1 to 64 in a LTC 8800, and 1-512 in a LTC 8900), this can become a very complex command.

For the LTC 8300, MAX-MON is 6, and MAX DATA is 63 (hex 3F).

For the LTC 8500, MAX-MON is 8, and MAX DATA is 255 (hex FF).

For the LTC 8600, MAX-MON is 16, and MAX DATA is 65535 (hex FFFF).

For the LTC 8800, MAX-MON is 64, and MAX DATA is hex FFFFFFFFFFFFFFFF. Data should be entered as two separate values (most significant 32 bits, then least significant 32 bits).

For the LTC 8900, MAX-MON is 512, and MAX DATA would consist of 128 “F” hex characters! Because of this large number, the data field needs to be split into 16 separate packets, each having 32 bits. If possible, do not include leading zeros in the individual packets because the entire command must fit into the line capacity of 127 characters. Due to this limit, there will be certain combinations of this command that will be impossible to send.

EXAMPLE: To arm monitors 1 and 2 to respond to alarms, enter the following command:

TC8x00>MON-ARM 3

There will be a short delay (typically 1 or 2 seconds) after this command is sent before the system can accept a new command.

Binary Progression Table

MONITORS TO BE ARMED							DATA	COMMENTS
MAX-MON	. . .	4	3	2	1			
-	. . .	-	-	-	-		0	All monitors disarmed
-	. . .	-	-	-	A		1	Monitor 1 armed
-	. . .	-	-	A	-		2	Monitor 2 armed
-	. . .	-	-	A	A		3	Monitors 1 & 2 armed
-	. . .	-	A	-	-		4	Monitor 3 armed
-	. . .	-	A	-	A		5	Monitors 1 & 3 armed
		.						
	(Continue series)							
		.						
A	. . .	A	A	-	A		MAX DATA-2	Monitor 2 disarmed
A	. . .	A	A	A	-		MAX DATA-1	Monitor 1 disarmed
A	. .	A	A	A	A		MAX DATA	All monitors armed

8.5 Set Step & Review Alarm Monitors

FORMAT = REVIEW-MON (Review monitor #) STEP-MON (Step monitor #)

EXAMPLE: To assign monitor number 1 as a Review monitor and monitor number 2 as a Step monitor, enter the following two commands:

TC8x00>REVIEW-MON 1

TC8x00>STEP-MON 2

Any system monitor may be designated as either a Review or a Step monitor but there must be at least 1 Step monitor in any Monitor Group. Since there can be anywhere from 1 to 6 Monitor Groups in a LTC 8300 system (1 to 8 in a LTC 8500, 1 to 16 in a LTC 8600, 1 to 64 in a LTC 8800, and 1-512 in a LTC 8900), this command must conform to the existing Monitor Group configuration if the system is to function properly. Note that the ARM/DISARM ALARM table must also be valid for the desired monitors before alarm video will be displayed. If there are no system conflicts, the assigned monitor will also be armed.

9 SYSTEM STATUS COMMANDS

Status commands are useful for determining various real time conditions of the switching system. After any of the commands listed below are sent, the Allegiant responds with an echo of the status command, the 'NAK' (15 hex) character (except on all systems prior to CPU software revision number 5.1 where a space character (20 hex) is sent instead), the data bytes as explained below, and a checksum byte (the sum of the data bytes module 256). The prompt (TC8x00>) is returned after the status response has been completed. Note that the examples below show the responses after the command has been echoed by the system.

9.1 Alarm Status

This command is used to determine the alarm status of the system.

FORMAT = ALM-STATUS

RESULT: The number of returned data bytes will correspond to the number of bits required to represent the total number of alarms in the relevant system. For LTC 8300 systems, 8 data bytes are required to represent the 64 alarms in the system. LTC 8500 systems will respond with 16 data bytes (128 alarm numbers). LTC 8600 systems will respond with 64 data bytes (512 alarm numbers). LTC 8800 will respond with 128 data bytes (1024 alarm numbers). LTC 8900 will respond with 256 data bytes (2048 alarm numbers). Bits which are ‘set’ represent active alarms. For each byte, the LSB represents the lowest alarm number.

EXAMPLE: For a LTC 8300 with alarm numbers 2, 9, and 42 in alarm, the status response (shown in hex) will be as follows: 15 02 01 00 00 00 02 00 00 05

9.2 Crosspoint Status

This command is used to determine the camera-to-monitor switching status.

FORMAT = ON-STATUS

RESULT: The system will respond for each monitor in the system with 2 data bytes. The first data byte pair corresponds to the index camera number switched to monitor 1. The first byte of the pair represents the high order part of the index camera number and the second byte of the pair will correspond to the low order part of the index camera number. Camera numbers are 'index' numbers starting at zero (LTC 8300 = 0 to 287, LTC 8500 = 0 to 319, LTC 8600 = 0 to 1151, LTC 8800 = 0 to 2303, LTC 8900 0 to 4607).

EXAMPLE: For a LTC 8600 with cameras 1, 10, 25, 36, 40, 52, 58, 64, 80, 85, 93, 99, 102, 115, 123, and 128 on monitors 1 through 16 respectively, the status response (shown in hex) will be as follows: 15 00 00 00 09 00 18 00 23 00 27 00 33 00 39 00 3F 00 4F 00 54 00 5C 00 62 00 65 00 72 00 7A 00 7F 47

9.3 Sequence Status

This command reports information concerning sequences loaded on the system monitors.

FORMAT = SEQ-STATUS

RESULT: The response will contain information on both the monitor alarm status of the system and the sequence status. The alarm status data bytes will precede the data bytes for the sequence information.

The alarm status data is sent as a bitmap of the monitors in alarm. Each byte of data will represent 8 monitors. A single data byte is sent for LTC 8300 and LTC 8500 systems, 2 bytes for LTC 8600 systems, 8 bytes for LTC 8800 systems, and 32 bytes for LTC 8900 systems. The least significant bit (LSB) will represent the lowest monitor number. The first byte corresponds to monitors 1 to 8. Bits which are set represent monitors in alarm. If a monitor is currently in alarm, the sequence data corresponding to that monitor is not valid during the alarm condition.

The sequence information is sent as a packet of five data bytes for each monitor in the system. There will be 6 data packets for LTC 8300 systems, 8 for LTC 8500 systems, 16 for LTC 8600 systems, 64 for LTC 8800 systems, and 512 for LTC 8900 systems. The content of the five data bytes is generated as follows:

The first byte of the packet contains the sequence number (0 to 59). If no sequence is loaded on the monitor, this value will contain 255 (FF hex), and the data contained in the following bytes is invalid and should be ignored.

The second byte of the packet contains the index number of the User (0 to 31) who loaded the sequence. The value 255 (FF hex) may be sent if no sequence is loaded.

The third byte of the packet contains the number of the keyboard (0 to 3 for LTC 8300 systems, 0 to 7 for LTC 8500 systems, 0 to 15 for LTC 8600 systems, 0 to 31 for LTC 8800 systems, and 0 to 63 for LTC 8900 systems) which was used to load the sequence. If a system keyboard was not used or if no sequence is loaded, the value is considered undefined and will typically contain 255 (FF hex).

The fourth byte of the packet contains the status of the sequence. If no sequence is loaded, the value is considered undefined and should be ignored. In a sequence containing multiple monitors, this data is valid only for the lowest monitor number programmed in the sequence. The data is generated as follows:

0 = Sequence in hold backwards.
1 = Sequence in run backwards.
2 = Sequence in hold forwards.
3 = Sequence in run forwards.

The fifth byte of the packet contains the number of the lowest monitor number (monitor 1 = 0) in a sequence containing multiple monitors. This data is necessary to determine the correct sequence status as indicated above. The value 255 (FF hex) may be sent if no sequence is loaded.

EXAMPLE (For system not in alarm): For a LTC 8600 with a forward running sequence number 34 loaded onto and programmed for only monitor 2 by User 3 using keyboard number 4, the response (shown in hex) will be as follows: 15 00 00 FF FF FF 02 FF 21 02 03 03 01 FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF FF FF FF 02 FF 0C

9.4 Keyboard Status

This command is used to determine the current status of the various system keyboards.

FORMAT = BD-STATUS

RESULT: The system will respond for each keyboard in the system with a five byte packet of data. There will be 4 data packets for LTC 8300 systems, 8 data packets for LTC 8500 systems, 16 for LTC 8600 systems, 32 for LTC 8800 systems, and 64 for LTC 8900 systems. The first packet will represent data for keyboard 1, the second for keyboard 2, etc.

The first byte of each packet will contain the monitor number (monitor 1 starts at zero) currently being controlled by the keyboard.

The second byte of the packet contains the index User number (User 1 = zero) currently assigned to the keyboard.

The third byte of the packet represents 'log-on' and 'installed' status. Bit 0 of the third byte represents the log-on condition. If set, the keyboard is currently 'logged-on', if 0, all other information is invalid. Bit 6 of the third byte represents the 'installed' status. If set, the keyboard is considered 'installed' (non-installed keyboards are not polled by the system), if 0, all other information is invalid.

The fourth byte of the packet is generated as follows:

Bit 7 is set whenever the logged-in operator is controlling a remote (receiver/driver) on systems containing CPU revision level 5.2 or higher. In systems prior to level 5.2, this bit is always reset.

Bits 0 to 6 contain the high order index camera number data.

The fifth byte of the packet contains the low order index camera number data (camera 1 = zero).

EXAMPLE: For a LTC 8500 system with the following conditions:

1. All keyboards are installed and logged-in.
2. User 1 is logged-in to keyboard 1, User 2 to keyboard 2, etc.
3. Keyboard 1 is controlling monitor 1 which displayed camera 1, keyboard 2 is controlling monitor 2 and camera 2, etc.

The status response (shown in hex) will be: 15 00 00 41 00 00 01 01 41 00 01 02 02 41 00 02 03 03 41 00 03 04 04 41 00 04 05 05 41 00 05 06 06 41 00 06 07 07 41 00 07 5C.

9.5 Monitor Status

This command reports the information contained in the status section of the text overlay displayed on the system monitor screens.

FORMAT = MON-STATUS-LINE

RESULT: The system will respond with a 3 byte packet for each system monitor. The LTC 8300 will contain a total of 18 data bytes (plus checksum), the LTC 8500 will contain a total of 24 data bytes, the LTC 8600 has 48 data bytes, the LTC 8800 has 192, and the LTC 8900 has 768 data bytes. The first packet corresponds to the status of monitor 1.

Note that this command will not be valid on LTC 8900 systems having sequence numbers greater than 63.

The first byte of the packet is generated as follows:

If bit 7 (the most significant bit) is set, the remaining bits represent an error number being displayed. Current error numbers range from 1 to 96. A complete listing of the error numbers and their meanings can be found in the Allegiant Series Installation and Operating Instruction manual.

If bit 7 is clear and bit 2 is set, the remaining bits represent the number of a user who locked a monitor or a remote. This is displayed on the monitor text overlay immediately after either error 3 (remote locked) or error 4 (monitor locked) is displayed. This occurs whenever someone unsuccessfully attempts to access a locked monitor or remote. The system will first display the error number for a few seconds, then the number of the user who locked the device. To translate the value of the status byte into the user number (when bit 7 is clear and bit 2 is set), use the following formula: user = (data div 8) * 4 + (data mod 4) + 1.

If both bits 7 and 2 are clear, bits 4 to 6 represent the alarm switcher state as follows:

40 (hex) = No alarm sequence.
00 (hex) = Alarm sequence stopped backwards.
10 (hex) = Alarm sequence running backwards.
20 (hex) = Alarm sequence stopped forwards.
30 (hex) = Alarm sequence running forwards.

If both bits 7 and 2 are clear, bit 1 will be set if someone has locked the monitor. Bit 0 will be set if someone has locked the current remote device.

The second byte of the packet is generated as follows:

Bits 6 and 7 indicate the sequence type:
- 00 (hex) = No sequence loaded.
- 40 (hex) = Absolute type sequence loaded.
- 80 (hex) = Relative type sequence loaded.

Bits 4 and 5 indicate the monitor armed status:
- 00 (hex) = Monitor not armed.
- 10 (hex) = Monitor armed as Step type monitor.
- 20 (hex) = Monitor armed as Display type monitor.
- 30 (hex) = Data temporarily unavailable (alarm response currently being updated).

Bit 3 indicates the current camera armed status:
- 00 (hex) = Camera not armed.
- 08 (hex) = Camera armed.

Bits 0 to 2 indicate the switching sequence state:
- 04 (hex) = No sequence loaded.
- 00 (hex) = Sequence stopped backwards.
- 01 (hex) = Sequence running backwards.
- 02 (hex) = Sequence stopped forwards.
- 03 (hex) = Sequence running forwards.

The third byte of the packet is generated as follows:

Bits 6 and 7 indicate the current alarm status:
- 00 (hex) = Monitor not in alarm.
- 40 (hex) = Current camera being displayed in alarm.
- 80 (hex) = Monitor is in alarm, current camera is not in alarm.

Bits 0 to 5 indicate the sequence number:
- 0 = No sequence loaded.
- Not 0 = Represents loaded sequence number (1 to 60).

EXAMPLE: For a LTC 8500 system with the following conditions:

1. Monitor 1 running Absolute sequence number 5 in the forward direction, not armed for alarms, and displaying a camera with a remote lock.
2. Monitor 2 is locked, and running an Alarm sequence in the forward direction.
3. All other system monitors have no sequences, are not armed for alarms, and have no locks.

The response will be: 15 41 43 05 32 1C 40 40 04 00 40 04 00 40 04 00 40 04 00 40 04 00 40 04 00 AF

10 VIDEO DETECTION COMMANDS

(Applies to LTC 8300, LTC 8600, LTC 8800, and LTC 8900 Systems only)

The LTC 8300, LTC 8600, LTC 8800 and LTC 8900 systems have the capability of detecting and monitoring the presence of the video signals applied to their inputs. The Video Detection commands listed below provide a means to: a) Automatically scan the inputs, identify those inputs presently receiving video, and begin monitoring them, b) Individually enable or disable the monitoring of a specific input, and c) Interrogate the current detection status.

10.1 Execute Automatic Video Scan

To execute an automatic scan of all video inputs to identify those inputs receiving video, enter:

TC8x00> AUTO-INSTALL

After this command has been executed, the system begins monitoring the status of all inputs which were found to have video present. When a monitored input loses or regains video, the system will print a message on the printer.

10.2 Enable/Disable Video Monitoring Of Input

FORMAT = INSTALL-CAM (input) (data)

A single video input may be enabled or disabled for video-loss monitoring. In the command above, the camera's physical video BNC number is entered as the 'input' value. To enable the input to be monitored, the value 1 (or any non-zero value) is entered for the 'data'. To disable the input from being monitored, enter a 0 for the 'data' value. Legal physical 'input' numbers are 1 to 32 for a LTC 8300, 1 to 128 for a LTC 8600, 1 to 256 for a LTC 8800, and 1 to 4096 for a LTC 8900.

EXAMPLE: To enable system camera number 5 (actually physical BNC number 5) to be monitored for loss of its video signal, enter the following command:

TC8x00> INSTALL-CAM 5 1

10.3 Video Detection Status

This feature is used to interrogate the system to determine the current video input status. The status data indicates which inputs are receiving video signals and which inputs are being monitored for video loss. (The system always looks for video on every input, but only "monitored" inputs will cause the system to generate a warning message when video is lost or regained.) To obtain the latest status report, enter the command as follows:

TC8x00> VIDEO-STATUS

After the command is echoed back to the console, the Allegiant will send the 'NAK' (15 hex) character (except on systems prior to CPU software revision number 5.1, where a space character (20 hex) is sent instead), followed by the video status data, and a checksum. The checksum is an 8-bit sum of the video status data bytes. The number of data bytes will be equal to the number of local physical camera inputs (32 for a LTC 8300, 128 for a LTC 8600, 256 for a LTC 8800, and 4096 for a LTC 8900) divided by 4. Each byte will contain status information for four cameras in the following format:

I3 V3 I2 V2 I1 V1 I0 V0

V0 is bit 0 (the least significant bit); I3 is bit 7 (the most significant). V0 will be 1 if the first camera represented in this byte has video present. I0 will be 1 if system monitoring of the camera input has been enabled. V0 will be valid regardless of the value of I0. Subsequent data bytes will each contain data for 4 cameras in the same fashion until status information is received for all inputs.

11 SYSTEM COMMANDS

11.1 Request System Software Revision Number

To request the software revision information of the system, enter the following command:

TC8x00>REVISION

The system will respond with two sets of numbers on the same line that the command was entered. The first number will represent the current CPU operating level of the system. The second number will be displayed in parenthesis and represents the version level of the corresponding Allegiant PC based Master Control Software package compatible with the system.

11.2 Request Camera Hash Value

Logical camera numbers being used in sequences programmed by an external computing device must match those programmed in the Allegiant system. Using system default settings, this would always be the case. In situations where the system's logical camera numbers have been changed, a problem will occur. To ensure that this situation doesn't occur, a 'camera hash' value is included as part of any sequence download. Information on how to calculate and use the camera hash value can be found in the Sequence Functions section of this manual. If necessary, the command below can be used to obtain the current value directly from an operating system. Enter the following command to request the camera hash value:

TC8x00>CAMERA-HASH

11.3 Set Hexadecimal Mode

If numeric values are to be entered in hexadecimal format, enter the command as follows:

TC8x00>HEX

11.4 Set Decimal Mode

If numeric values are to be entered in decimal format, enter the command as follows:

TC8x00>DECIMAL

11.5 Set Time

To set the time in the system, enter the time in a 24 hour format in the form shown below:

TC8x00>!TIME (hour) (minute) (second)

EXAMPLE: To set the time for 1:00 PM, enter the following command:

TC8x00>!TIME 13 0 0

The updated time will then be displayed on all monitors.

11.6 Display Time

To display the time on the current output device, issue the following command:

TC8x00>TIME

03:14:34 (system time will be displayed)

11.7 Set Time Format

To set the time format to be displayed in either the 12 or 24 hour mode, enter one of the following:

TC8x00>12HR (for 12 hour AM/PM display)

TC8x00>24HR (for 24 hour display)

11.8 Set Date

To set the date in the system, enter the date in the following format:

TC8x00>!DATE (month) (day) (year)

EXAMPLE: To set the date for June 4, 1989, enter the following command:

TC8x00>!DATE 6 4 89

The updated date will then be displayed on all monitors.

11.9 Display Date

To display the date on the current output device, issue the following command:

TC8x00>DATE
03-09-89 (system date displayed)

11.10 Set Date Format

To set the date to be displayed in any one of 3 formats, enter one of the following:

TC8x00>STANDARD-DF (for day/month/year format)

TC8x00>US-DF (for month/day/year format)

TC8x00>ASIAN-DF (for year/month/day format)

11.11 Set Camera Title

FORMAT = CAM-TITLE "ABCDEFGHIJKLMNOP" (CAM#)

EXAMPLE: To program the title LOADING DOCK for camera number 6, enter the following command:

TC8x00> CAM-TITLE "LOADING DOCK " 6

Note that the title may contain a maximum of 16 characters (including spaces). Since the camera title is stored in non-volatile memory, there may be a short delay after this command is sent before the system can accept another command.

There will be a short delay (typically 1 or 2 seconds) after this command is sent before the system can accept a new command.

11.12 Set Monitor Title

FORMAT = PUT.MSG "ABCDEFGHIJKL" (monitor#)

EXAMPLE: To enter the title MONITOR #3 for monitor number 3, enter the following command:

TC8x00>PUT.MSG "MONITOR #3 " 3

The title may contain a maximum of 12 characters (spaces included). Also note that the specific monitor must have the monitor message feature enabled. This must be selected by either using the "MON-MSG" command listed below or through the USER function using the system keyboard. Refer to the system operation manual for further instructions on USER function 5 procedure.

There will be a short delay (typically 1 or 2 seconds) after this command is sent before the system can accept a new command.

11.13 Select Monitor Title Option

FORMAT = MON-MSG (monitor#)

EXAMPLE: To select the monitor title option instead of the monitor status display for monitor number 3, enter the following command:

TC8x00>MON-MSG 3

This command duplicates the USER function 5 using a system keyboard.

11.14 Select Monitor Status Option

FORMAT = MON-STAT (monitor#)

EXAMPLE: To select the monitor status option instead of the monitor title display for monitor number 3, enter the following command:

TC8x00>MON-STAT 3

This command duplicates the USER function 5 using a system keyboard.

11.15 Set Monitor Overlay Position

This command sets the position of the overlay information on a system monitor. The x-data value ranges from 0 (far left of screen) to 7 (far right of screen). The y-data value ranges from 0 (top of screen) to 15 (bottom of screen). Valid ranges for monitor numbers are: LTC 8300 = 6, LTC 8500 = 8, LTC 8600 = 16, LTC 8800 = 64, and LTC 8900 = 256.

FORMAT = MON-OVERLAY-POS (monitor#) (X-data) (Y-data)

EXAMPLE: To position the overlay information on monitor number 1 to a center screen setting, enter the following command:

TC8x00>MON-OVERLAY-POS 1 2 5

11.16 Enable/Disable Monitor Overlay

This command determines which sections of the overlay information will be displayed on a system monitor. The data1 value determines if camera number, titles, and status information will be displayed. The data2 value determines if time and data information will be displayed. Enter a 1 in the appropriate position if the information is to be displayed or a 0 for it to be disabled. Valid ranges for monitor numbers are: LTC 8300 = 6, LTC 8500 = 8, LTC 8600 = 16, LTC 8800 = 64, and LTC 8900 = 256. Currently, the LTC 8500 system does not support the selection to display time/date only (data1=0, data2=1).

FORMAT = MON-OVL-ENABLE (monitor#) (data1) (data2)

EXAMPLE: To set the overlay information on monitor number 1 to display time and data information only, enter the following command:

TC8x00>MON-OVL-ENABLE 1 0 1

11.17 Set Monitor Overlay Brightness

This command sets the white brightness of a monitor's overlay information. The data value ranges from 0 (full brightness) to 3 (dimmest setting). Valid ranges for monitor numbers are: LTC 8300 = 6, LTC 8500 = 8, LTC 8600 = 16, LTC 8800 = 64, and LTC 8900 = 256.

FORMAT = MON-BRIGHTNESS (monitor#) (data)

EXAMPLE: To set the overlay information on monitor number 1 to its brightest setting, enter the following command:

TC8x00>MON-BRIGHTNESS 1 0

11.18 Monitor Message Override

This command provides a means to 'temporarily' override the normal monitor/status overlay section of a system's monitor to display a 12 character message. The message will be displayed until the system is reset (either via the reset system command or via a AC power off/on cycle) or by issuing the command without the text field. Since messages sent using this command are stored in 'temporary' memory, they can be changed frequently and will update on the displays more quickly than using the 'PUT-MSG' monitor title command described earlier. Valid ranges for monitor numbers are: LTC 8300 = 5, LTC 8500 = 8, LTC 8600 = 16, LTC 8800 = 64, and LTC 8900 = 256.

FORMAT = MON-MSG-OVERRIDE (monitor#) "ABCDEFGHIJKL"

EXAMPLE: To override the standard monitor message on monitor number 1, enter the following command:

TC8x00>MON-MSG-OVERRIDE 1 "TEST MESSAGE"

Note that the "Monitor Title" overlay option must be active for these messages to be displayed.

11.19 Broadcast Message

To broadcast a temporary message (default time = 10 seconds) of up to 24 characters (12 characters for LTC 8500 systems) in length to ALL monitors, enter the following command:

TC8500>BROADCAST "ABCDEFGHIJKL"

TC8x00>BROADCAST "ABCDEFGHIJKLMNOPQRSTUVWX"

11.20 Sound Keyboard Beep

FORMAT = BEEP (keyboard#)

EXAMPLE: To activate the short beep sound of a system keyboard, enter the following command:

TC8x00>BEEP 3

Keyboard number 3 will sound a single beep.

11.21 Enable Video Loss Raster Generator

This command controls the internal raster generator which is used in conjunction with the system's video loss message feature. It is only valid on LTC 8300, LTC 8600, LTC 8800, and LTC 8900 systems.

TC8x00>_VIDLOSS_SYNC_GEN 1

To disable the raster generator, change the numeric value to zero

11.22 Set Raster Format

The LTC 8300, LTC 8600, LTC 8800, and LTC 8900 systems contain an integral raster generator which is used in conjunction with the system's video loss message feature. The raster format of this internal generator should be set to match the type of signals being used in the system (either NTSC or PAL). Normally, this setting is configured at the factory and should never require attention. In the unlikely event that the format must be changed, the following command can be used to select the desired format to NTSC mode:

TC8x00> _VIDEO_FORMAT 1

To set the format to PAL mode, change the numeric value zero.

11.23 Reset System

To duplicate a power off and on reset condition to the system, enter the following command:

TC8x00>RESET-SYSTEM

The reset message will then be displayed.

11.24 Set Console Port Activity

To convert the CONSOLE port to operate as a PRINTER port, enter the following command:

TC8x00>PRT2CON 1

To convert back to a CONSOLE port, the same command should be entered, but the data value must be entered as 0 instead of 1. Note that while in the Printer mode, the command will not be echoed on the screen.

11.25 Echo Message

To send a message to the Allegiant which will be echoed back along with the system's time and date, enter the following command:

TC8x00>DISPLAY "text message"

The text message must be enclosed in quotes and can consist of up to 117 characters in length. The system will respond with:

{Date} {Time} {text message}

11.26 Print Message

To print a message on the Allegiant's Printer port (along with the time and date) enter the following command:

TC8x00> PRINT "text message"

The text message must be enclosed in quotes. The system will print the date, time, and message.

11.27 Set RS-232 Console Port Parameters

To change the RS-232 parameters for the CONSOLE port, enter the following command followed by data values corresponding to the table shown below:

TC8x00>SET-RS232 {data1} {data2} {data3} {data4} {data5}

Values for data1 through data 5:

Baud Rate	Data Bits	Parity Bit	Stop Bit	Handshake Setting
1=1200	7=7	0=None	1=1	0=OFF
2=2400	8=8	1=Even	2=2	1=ON
3=4800		2=Odd		
4=9600				
5=19200				
6=57600				

11.28 Request RS-232 Console Port Parameters

To request the current system settings for the CONSOLE port RS-232 parameters, enter the following command:

TC8x00>GET-RS232

The system will respond with a series of numbers which correspond to the values shown in the table under the SET-RS232 command.

11.29 Select Default Camera Numbers

The default camera number ranges on CPUs prior to revision 6.8 set all 'logical' cameras numbers equal to their 'index' number values. Starting with CPU revision 6.8 and higher, the 'logical' camera numbers will be defaulted to an "unconfigured" state. Normally this command would not need to be used, but in some cases it may be necessary to convert the camera numbers back to the old default values to maintain compatibility with older external interface programs which have used sequence downloads. To re-configure the 'logical' camera numbers back to their old default values, enter the following command:

TC8x00> _RECONFIGURE_CAMERA_NUMBERS 1

Note that this command will not affect any camera inputs which have been designated as Trunk lines. Also, the command may be issued with a numeric value of zero to set the camera numbers to the 'newer' default values.

There will be a short delay (typically 1 or 2 seconds) after this command is sent before the system can accept a new command.

11.30 Set Defaults To Factory Settings

To reset the system to the factory default settings, enter the following command:

TC8x00>DEFAULT

When this command is entered, the system will reset to the following conditions:

1. Console, printer, and alarm ports set to 19,200/8/1/none/off.
2. Time/date to 10:00, 1/1/90, 12Hr, US format.
3. Basic alarm response mode, with monitor 1 and monitor 2 armed for all alarms.
4. Alarm dwell time set to two seconds on LTC 8500 Series systems and one second on LTC 8300, LTC 8600, LTC 8800, and LTC 8900 Series systems.
5. All alarm titles are disabled.
6. Broadcast timer set to 10 seconds.
7. All keyboards polled.
8. Boot screen memory cleared.
9. All sequences deleted.
10. Monitor overlays enabled, set to full brightness, and positioned at bottom center of screen.
11. All Lockout table cleared.
12. All monitors display camera 1.
13. Keyboards set to control monitor corresponding to keyboard port number.
14. All camera numbers set to correspond to physical inputs. Camera titles set to "Camera Title ?"
15. Monitor titles set to "MONITOR 00XX".
16. System set to "Limited Printing" mode. (Not applicable on LTC 8900 systems.)
17. Use of default camera enabled on Login.
18. Administrator enabled for multiple keyboard Login.
19. Leading zeros displayed in 3 digit format for camera numbers on LTC 8300, LTC 8600, LTC 8800, and LTC 8900 Series.
20. Monitor and alarm crosspoint and alarm active data sent to the biphase line on LTC 8300, LTC 8600, LTC 8800, and LTC 8900 Series.
21. User table reset to default.
22. All time-events deleted.

Note that there will be a considerable delay (typically 15 to 60 seconds) after this command is sent before the system is operational again.

12 ERROR MESSAGES

The following list describes the error messages which are generated by the Allegiant systems when an improper command has been received. Messages due to "internal system errors" would be displayed along with date and time of occurrence.

Error in command's parameters:
- ERROR : not enough arguments
- ERROR : too many arguments
- ERROR : expected numeric (radix-name) argument
- ERROR : expected argument in quotes
- ERROR : overflow evaluating numeric argument
- ERROR : argument(s) out of range
- ERROR : arguments should be in ascending order

Undefined logical camera number given in command parameter
- ERROR : invalid camera number

Unknown CCL command:
- Console Command "(unrecognized command)" not found

Entered string matches two or more CCL commands:
- Console Command "(string)" ambiguous

Undocumented CCL command has not been implemented:
- UNIMPLEMENTED

CCL command is not valid for this unit:
- ERROR : command not supported on this system

Not enough stack space to process command:
- ERROR : insufficient stack space

Not enough heap space to process command:
- ERROR : out of memory

Error with undocumented ABBR command:
- Abbreviation Table Full

Error with SET-STAR command:
- ERROR : could not find script

Error with undocumented CLR-BOOT command:
- **FAILED**

Error with KBD-LOGON command:
- ERROR : invalid user ID number
- ERROR : user locked out of keyboard

Error executing SEQ-REQ command:
- ERROR (two character error number per below)
  - 6 = monitor-lockout table locks system administrator from monitor
  - 50 = sequence does not exist
  - 51 = absolute sequence requested on wrong monitor
  - 52 = monitor number too high for this relative sequence
  - 56 = requested sequence is currently being edited

Internal system error due to reprogramming of alarm tables while alarms are active:
- "SYSTEM WARNING: "
  - "ALARM VIDEO DISCARDED DUE TO RECONFIGURATION OF ALARM SYSTEM"

Internal system error due to alarm overflow (thousands of alarm videos are simultaneously displayed):
- "SYSTEM WARNING: "
  - "ALARM (number) DISCARDED DUE TO INTERNAL ALARM SYSTEM OVERFLOW"

Internal system error due to monitor being armed while too many alarms are active:
- "SYSTEM WARNING: "
  - "ALARM VIDEO DISCARDED DUE TO INTERNAL ALARM SYSTEM OVERFLOW"

Internal system error due to hardware eeprom error (should never happen):
- "SYSTEM WARNING: "EEPROM WRITE ERROR"

Internal system error due to recursive eeprom usage (should never happen):
- "SYSTEM WARNING: INTERNAL EEPROM PRIVILEGE STACK OVERFLOW"

Internal errors when printing out system messages (should never happen):
- "SYSTEM ERROR: ILLEGAL TABLE MESSAGE NUMBER"
- "SYSTEM ERROR: ILLEGAL SYSTEM MESSAGE NUMBER"
- "SYSTEM ERROR: UNKNOWN MESSAGE TYPE"

Internal error in heap memory management (should never happen):
- "HEAP ERROR: (error code)"

Internal error with undocumented RADIX command (should never happen):
- "ERROR: unknown radix!"

Internal system error due to semaphore deadlock or time-out (should never happen):
- "SEVERE SYSTEM WARNING: SEMAPHORE DEADLOCK Sem = (n); task = (n); owner = (n)"
- "SEVERE SYSTEM WARNING: semaphore TIMOUT Sem = (n); task = (n); owner = (n)"

Error while processing a bootscreen script:
- SCRIPT ERROR on line (n):
  - out of memory while processing arguments
  - syntax error in script command
  - out of memory while processing .FOR loop
  - no matching .FOR for .NEXT command
  - unknown error

Error using “MON-CAM” or “CHG-MON” command when specifying a ‘logged-off’ keyboard:
- ERROR 41

3935 890 01611 97-41

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