

M08 Tilt/pan unit

Configuration manual

Version 1.3



Table of contents

1. INTRODUCTION	4
2. SERIAL PORT PARAMETERS	4
3. ABOUT THE MENUS	5
4. CONFIGURING THE M08 TILTPAN	5
5. LANGUAGE	5
6. CAMERA PROTOCOL	6
7. CONFIGURING CAMERA PROTOCOL SETTINGS	6
7.1 ALLEGIANT	6
7.2 ERNITEC ERNA	7
7.3 PELCO "D"	7
7.4 DSIP (DISTRIBUTED SYSTEMS INTERCOMMUNICATION PROTOCOL)	7
8. PORT SETTINGS	8
9. CAMERA NAME	9
10. POSITION	9
11. PAN CORRECTION (DIRECTION OFFSET)	9
12. INTERLACED VIDEO	9
13. VIDEO INSERTS	9
13.1 VIDEO INSERT SETUP	10
13.2 VIDEO INSERTS 1 AND 2	11
13.3 VIDEO INSERT 3	12
14. PREPOSITIONS (PREPROGRAMMED POSITIONS OR PREPOS)	12
15. AUX COMMANDS	13
16. MOTION PARAMETERS	14
16.1 TILT- AND PAN SPEED PARAMETERS	14
16.2 LENS (OPTICS) PARAMETERS	15
17. TIME AND DATE	16
18. FACTORY SETTINGS	17
19. LOAD / SAVE SETTINGS AND EXIT THE CONFIGURATION MODE	17
20. AUX COMMANDS AND REMOTE CONFIGURATION	18
22. REMOTE CONFIGURATION	18
22.1 CAMERA NAME	18
22.2 PREPOSITION NAME	19
22.3 DIRECTION OFFSET (TRUE ANGLE)	19
22.3.1 SET HORIZON	19
22.4 MAXIMUM SPEED	20
22.5 ACCELERATION	20
22.6 ZOOM MAXIMUM SPEED	20
22.7 FOCUS MAXIMUM SPEED	20
22.8 ZOOM DEFAULT SPEED	20
22.9 FOCUS DEFAULT SPEED	20
22.10 PAN SPEED AT MAXIMUM ZOOM	20
22.11 TILT SPEED AT MAXIMUM ZOOM	21
22.12 INSERT 1 POSITION	21
22.13 INSERT 1 TYPE	21
22.14 INSERT 1 COLOURS	21
22.15 INSERT 2 POSITION	21
22.16 INSERT 2 TYPE	21
22.17 INSERT 2 COLOURS	22
22.18 INSERT 3 POSITION	22
22.19 INSERT 3 TYPE	22
22.20 INSERT 3 COLOURS	22
22.21 SET TIME	22
22.22 SET DATE	22

22.23 RESET	23
23. TEST AND DEBUG	23
23.1 STOP THE M08 MOTION	23
23.2 RESET	23
23.3 FPGA UPDATE	23
23.4 SOFTWARE UPDATE	24
24. SWITCHES AND CONNECTORS	24
24.1 DIP SWITCHES ON THE M08 ELECTRONICS	24
24. ASSEMBLY FOOTPRINT	25
25. POWER CONNECTION AND CAMERA CONTROL CONNECTORS	26
26. CONSOLE PORT (NOT IN ALL MODELS)	27
27. CAMERA CABLE CONNECTOR	28
28. VERSION HISTORY	28

1. Introduction

This document describes the configuration and software options of the M08 tiltpan unit designed and manufactured by Ajeco Oy.

The initial configuration of the unit is done by using a terminal program (such as Hyperterminal in a laptop for example) and connected to the tiltpan unit's serial port (RS-232). The user interface in the tiltpan unit is menu-based.

When the initial setup configuration has been done, some of the tiltpan units features may be accessed using a video matrix user interface (joystick for example), by applying so called AUX-commands. Features that may be accessed are for example the positions and types of the video-inserts, the camera name and the true-angle pan-indicators offset value.

The M08 can use and store 64 preprogrammed positions with tilt- and pan-directions, lens-settings plus a 16-character long name for the prepos. The name is visible as a video insert text if the tilt- and pan- directions are within 10-degrees of the preprogrammed settings. This means that when the user turns the unit manually within 10 degrees of the prepos, the name of the prepos will be visible in the video insert.

The tiltpan unit has 3 video-insert fields: Two large and one small. The larger video-insert fields are intended for text-information and the smaller video insert contains the current pan- and tilt angle e.g. shows the direction of the tiltpan unit.

2. Serial port parameters

The units RS232 configuration interface (Console port) uses the following parameters:

- 115200 bps speed
- 8 bits wordlength
- No parity
- One stop-bit

In short: 115200 8-N-1

The M08 unit firmware may be updated and programmed via the configuration/consoleport. This is done using the XMODEM-protocol.

The serial parameters for different controlling protocols (Pelco, Bosch, Allegiant, Biphase etc.) are protocol dependent (each protocol may have own settings). These settings are activated and selected from the tiltpan units menu.

3. The menus

The configuration setup of the M08 is done by selecting items from its menus. Select the desired item by typing its number and pressing ENTER (when using Hyperterminal for example). Menu item selections are numbered starting from number 1. Selecting 0 either returns the previous menu or exits the configuration setup from the main menu. Text inside brackets (*indicated by the symbols []*) show the current status/setting of the menu item. The main menu, for example, shows the current camera protocol and the menu language setting.

4. Configuring the M08 tiltpan

- Connect a serial communications cable from your laptop to the configuration port of the M08 tiltpan unit.
- Start your terminal program (Hyperterminal) and set the communication parameters as described earlier.
- Turn on the power to the M08 unit.
- The terminal program will show a short message of the tiltpan units operating system version. After this message, the terminal screen will display various messages related to the firmware versions and electronics. Press [Enter] after these messages to display the main menu.

The tiltpan unit is now in the configuration/setup mode. Menu selections may freely be explored the tested and selections will be made active only after saving the settings.

When the tiltpan unit is in the configuration/setup mode it will not respond to camera protocols (Pelco, Ernitec, Bosch, Allegiant, DSiP etc.)

The next chapters in this manual will describe the menu settings. Numbers in brackets indicate with which selections a specific setting can be accessed from the main menu, for example [5, 1] means that you can change the name setting of the camera by selecting 5 (enter) and 1 (enter).

5. Language

- **Language [1]**

The M08 tiltpan unit supports three languages for the configuration menus, the languages are:

Suomi (Finnish, default) [1,1]

English [1,2]

Swedish [1,3]

The language setting affects only the language of the menus. The main menu is automatically selected after changing the language setting.

6. Camera protocol

- **Protocol [2]**

The M08 tiltpan unit supports and may use some of the following protocols:

1. PHILIPS/Bosch Allegiant (AutoDome® Control Code Protocol) [2,1]
2. Ernitec ERNA (SYSTEM 500M/1000M) [2, 2]
3. PELCO “D” [2, 3]
4. DSiP (Ajeco Oy) [2, 4]

The default protocol setting is Allegiant. The main menu is automatically selected after changing the protocol setting. The main menu will show the current selected camera protocol.

Observe!

Different protocols may require additional parameter settings. Refer to “Protocol settings” and “Port Settings” below.

7. Configuring camera protocol settings

- **Protocol settings [3]**

Different camera control protocols may require different settings with the effect that this menu entry may look different depending on the selected protocol.

Begin by selecting the camera control protocol.

7.1 Allegiant

- **Protocol settings [3]**

The PHILIPS/Bosch Allegiant camera protocol will need only the camera number. Select 1, and the system prompts for a new camera number. Type the camera number and press Enter, the entered number is shown/displayed in the menu.

The camera number can be a value between 1 to 16384.

7.2 Ernitec ERNA

- **Protocol settings [3]**

The Ernitec ERNA camera protocol will need only the camera number. Select 1, and the system prompts for a new camera number. Type the camera number and press Enter, the entered number is shown/displayed in the menu.

The camera number can be a value between 1 to 254. The number 255 is reserved for broadcast-addressing

7.3 Pelco "D"

- **Protocol settings [3]**

The Pelco-D camera protocol will need only the camera number. Select 1, and the system prompts for a new camera number. Type the camera number and press Enter, the entered number is shown/displayed in the menu.

The camera number can be a value between 1 to 255.

7.4 DSiP (Distributed Systems intercommunication Protocol)

- **Protocol settings [3]**

The DSiP protocol requires more setting compared to CCTV camera protocols. On the other hand, the DSiP protocol allows for considerably larger functionality. The DSiP protocol supports strong encryption, parallel use of data communications networks and password controlled access to nodes for example. The aim of this document is not to describe the functionality of DSiP.

The M08 has the following DSiP protocol setup fields:

- **Login name [3, 1]**

This is the name used by the DSiP system for login purposes. The maximum length of the name-field is 40 characters.

- **Set Password [3, 2]**

The DSiP login password. The maximum length of the password is 40 characters.

- **Encryption [3, 3]**

This field is for selecting if the communication with the DSiP router should be encrypted or not. Select [Yes] or [No] for using or not using encrypted communication. Encrypted communication is usually also using timestamps for each packet in the communication stream.

- **Polling connection [3, 4]**

If Polled communication (selection [Yes]) is used, the M08 will only reply to queries sent from the DSiP router or the node controlling the M08 unit. This effectively means that the M08 is not allowed to initiate any communication by itself. This functionality is typically used in communication systems where more than a single M08 unit may use a shared communications link such as RS485 or for example a radio modem.

- **Timestamp [3, 5]**

If the Timestamp (selection [Yes]) is used, each response packet from the M08 will contain a timestamp. Control packets must also contain timestamps. Encrypted communication may typically require timestamp set to [YES].

- **Set encryption key [3, 6]**

This is the encryption key used for encrypted communication. The key is expressed as four 32 bit hexadecimal digits.

- **Node number [3, 7]**

When the M08 is used in a DSiP routing network it must have an individual DSiP node number within the range from 1 to 32767.

- **Organization (number) [3, 8]**

When the M08 is used in a DSiP routing network it must have an individual DSiP organization number within the range from 0 to 255.

- **Cloud = DSiP routing cloud number [3, 9]**

When the M08 is used in a DSiP routing network it must have an individual DSiP routing cloud number within the range from 0 to 255.

- **Set control authentication string (Password) [3, 10]**

This is the password that controlling nodes must use and present to the M08 when accessing the it. The default password is "Level1Pass".

8. Port Settings

- **Port Settings [4]**

This setting affects the camera control port parameters. The M08 tiltpan unit can be controlled using either RS422/RS232 serial communication or by using Bi-Phase communication with Philips (Bosch) Allegiant video matrixes.

The M08 will first ask if Bi-Phase is used. This question must be replied to with a letter y (Enter) or a letter n (Enter). The y is for Yes, n for No.

If the reply to the aforementioned question is n (Bi-Phase is not used), the M08 will continue by asking the serial communications speed parameter for RS422/485 communication. The reply should be, for example, 9600 (Enter). The selected port setting is visible in the menu.

9. Camera Name

- **Installation, Name [5, 1]**

Write the name of the installation site (camera name) at the prompt and press (Enter). The camera name is used with the video inserts.

10. Position

- **Installation, Position [5,2]**

You may enter the physical position/location in longitude/latitude for the M08. This feature is used only when the DSIP communication protocol is used. The setting is visible in the menu.

11. Pan correction (direction offset)

- **Installation, Pan correction [5, 3]**

The M08 tiltpan unit may display a compass in the video insert. The compass indicator can indicate the true angle of the tiltpan. In many cases it is not possible to mount a tiltpan unit in such a way that the camera automatically points to a true compass direction without entering an offset value. The offset value is used for compensating the physical mounting position so that the video insert will display a true compass direction.

Enter the desired compensation value in degrees and press (Enter).

12. Interlaced video

- **Installation, Interlaced video [5,4]**

This selection is for selecting the type of video signal which is output from the camera. If, for example, a PAL video camera is used, select Yes (Enter, default). If a NTSC camera is used, select No (Enter).

13. Video inserts

The M08 tiltpan has 3 video insert fields. Two larger insert fields are each 256 x 32 pixels wide and one smaller video insert is 32 x 32 pixels wide. The larger video insert fields are used for displaying text information and the smaller is used

for displaying compass direction (tilt- and pan angles). The location of the video insert fields in the video image can be set and adjusted. Each of the video insert fields have individual settings as displayed in the Installation [5] menu.

13.1 Video insert setup

- **Installation , video insert 1 [5, 5]**
- **Installation , video insert 2 [5, 6]**
- **Installation , video insert 3 [5, 7]**

This menu selection is for setting the location-, color-, background color and magnification of the video insert field in the video image.

The location (2) is given and set as a horizontal (x-direction) and vertical (y-direction) coordinate in the video image. This coordinate indicates the upper left corner of the video insert field. The coordinate numbers must be divisible by 4. The numerical range is between 0 to 1024.

Note! Too small horizontal values (0..64) or too large horizontal values (> 768) may place the video insert field outside the visible area in the video image which may distort the video image. The video insert field location is visible in the menu, being for example [92 x 92].

The color (3) is entered as two separate values representing chrominance and luminance. The chrominance value works only if the video signal type is S-Video. When using composite video, only the luminance value is used. The chrominance and luminance values are entered as 0 to 7 where 0 represents Black and 7 represents White. The selected value is visible in the menu as for example [C:0 L:4] indicating a chrominance value 0 and a luminance value 4.

The background color (4) is entered as in the previous selection, however, the background color may also be transparent. The menu-system will first ask if a transparent background is desired. If the reply is y (Enter) for Yes, the background will be set as transparent. If the reply is n (Enter) for No, the menu-system asks chrominance and luminance values for the background color. The selections are visible in the menu.

The Magnification (5) setting is for horizontal and vertical size of the video insert field. Possible values are between 0 to 3. NOTE! A value of 0 removes the video insert field. A value 1 is for "normal size" and 2 and 3 will produce 2 or 3 times magnification of the video insert field. . The selections are visible in the menu for example as [h:1 v:1] indicating a horizontal and vertical magnification of 1, normal size.

NOTE! The M08 tilt/pan is not producing any video signal by itself, therefore a video source or a camera must be connected to the unit in order to show any

video inserts in the video image. The video insert fields are modulated as superimposed information to the original video signal from the camera.

13.2 Video inserts 1 and 2

- **Installation, Video insert 1, Insert [5, 5, 1]**
- **Installation, Video insert 2, Insert [5, 6, 1]**

The video inserts 1 and 2 are intended for displaying text in the video image. These menu selections are for selecting what information to display within the video insert fields. There are 9 possible alternatives:

- **(Insert) Off [5, 5, 1, 1] or [5, 6, 1, 1]**

Video insert is not in use.

- **Name [5, 5, 1, 2] or [5, 6, 1, 2]**

The video insert displays the “name” of the camera.

- **Pan direction [5, 5, 1, 3] or [5, 6, 1, 3]**

The video insert displays the pan-direction (compass) in degrees.

- **Tilt direction [5, 5, 1, 4] or [5, 6, 1, 4]**

The video insert displays the tilt-direction in degrees.

- **Tilt and pan directions [5, 5, 1, 5] or [5, 6, 1, 5]**

The video insert displays both tilt- and pan-directions in degrees.

- **Preposition name (Prepos) [5, 5, 1, 6] or [5, 6, 1, 6]**

The video insert displays the name of the Prepos if the camera is turned close enough to the the preprogrammed position.

- **Time [5, 5, 1, 7] or [5, 6, 1, 7]**

The video insert displays a time marker in 24h format expressed as HH:MM:SS.

- **Date [5, 5, 1, 8] or [5, 6, 1, 8]**

The video insert displays a date in the format DD.MM.YYYY.

- **Date and Time [5, 5, 1, 9] or [5, 6, 1, 9]**

The date and time is displayed in the format DD.MM.YYYY HH:MM:SS.

Video inserts 1 and 2 may have same selections.

13.3 Video insert 3

- **Installation, Video insert 3, insert [5, 7, 1]**

The video insert number 3 is dedicated to displaying the tilt- and pan directions. This menu selections selects what to display in the insert. There are four selections:

- **(Insert) Off [5, 7, 1, 1]**

The video insert number 3 is not used.

- **Digital compass [5, 7, 1, 2]**

The pan direction is expressed as degrees in the center of the insert circle. The scale has 30 degree increments. The small circle will follow the circumference of the insert circle representing pan-direction. The north-position is upwards. The tilt position is indicated by the gauge on right side of the insert circle.



- **Sailing compass (Compass type 2) [5, 7,1,3]**

This insert represents the pan-direction in degrees.



14. Prepositions (Preprogrammed positions or Prepos)

- **Installation, Prepositions [5, 8]**

The M08 unit may store up to 64 preprogrammed positions, each position with a tilt, pan, lens-position and a 16 character long name. This menu selection allows for creating, editing and removing prepos values.

By selecting 1, list ([5, 8, 1]), the M08 will list each preprogrammed position. This list contains all information regarding a prepos. The number (in the list) indicates which video matrix selections to use for specific prepos. Return to the menu by pressing (Enter).

A new prepos value may be entered with selection 2. New prepos values [5, 8, 2] are entered in the order: Prepos number, name, pan- and tilt values and lens-position. The pan direction is entered as a compass direction (0 to 359 degrees). The tilt value is a degree between -90 to +90 where 0 indicates horizontal level. Zoom and focus values are entered as procent-values (0% to 100%).

A prepos value can be edited by selecting New prepos values and the number of an existing prepos value. New parameters/values will over write old ones.

A prepos value can be deleted by selecting 3. Delete [3, 8, 3] upon the system will query the number of the prepos to delete. If this menu selection is

accidentally selected, return to the previous menu by pressing (Enter) when the system asks for the prepos number.

15. AUX commands

- **Advanced, AUX commands [6,1]**

The M08 tiltpan unit has four so called AUX functions with the following meanings:

- **Video insert bypass [6,1,1]**

When this AUX command is entered, the video insert electronics is bypassed and the video signal is fed directly from the camera. The default value is 1.

- **Relay 1 [6,1,2]**

Select which AUX command that will affect a relay in the M08 electronics. The wiring of the relay is optional.

- **Camera select (Relay 2) [6,1,3]**

Select which AUX command that will affect a relay in the M08 electronics. The wiring of the relay is optional. This relay may be used for selecting another video source than the original camera (optional functionality and used in dual shelf installations).

- **Menu [6,1,4]**

This selection is for setting which AUX command to activate the M08 configuration menu (see below the section AUX commands and remote configuration).

- **Camera function [6,1,5]**

Change the black-hot / white-hot setting on infrared cameras. On supported daylight cameras this command will enter the camera setup menu.

- **Camera function 2 [6,1,6]**

Enter an infrared camera's setup menu.

- **DDE adjustment [6,1,7]**

Adjust the DDE setting on an infrared camera.

- **Autofocus [6,1,8]**

Tell an infrared camera (only FLIR HRC-E supported) to perform auto focus.

- **Camera 1 [6,2,1]**
- **Camera 2 [6,2,2]**

Specify the camera type for the primary camera (Camera 1) and the secondary camera (Camera 2). The following cameras types are available with additional functions:

1. This selects a **generic camera**. No additional features supported (see 15. Aux commands).
2. **Ikegami** - Camera setup menu supported.
3. **Panasonic** - Camera setup menu supported.
4. **Copst** - Infrared camera. Black-hot / white-hot switch supported.
5. **FLIR Tau/SR** - Infrared camera. Black-hot / white-hot switch, Zoom and DDE adjustment supported.
6. **FLIR HRC** - Infrared camera. Black-hot / white-hot switch, Zoom and focus, Autofocus, DDE adjustment and camera setup menu supported.

16. Motion parameters

- **Advanced, Motion parameters [6, 3]**

The M08 tilt/pan unit offers several adjustment possibilities for motion parameters and lens control which improves usability. The unit may be fine-tuned for various purposes.

16.1 Tilt- and Pan speed parameters

The speed of the M08 is adjusted by two parameters.

- **Tilt/Pan default speed [6, 3, 1]**

The M08 unit will move according to the default speed setting when it has been commanded to start a motion and the command is not containing specific speed settings. Typical such commands are “start moving left”. The default speed parameter is useful in applications where motion commands do not contain a speed argument. The speed value is 0 to 127.

- **Maximum Tilt/Pan speed at max zoom [6, 3, 2] and [6, 3, 3]**

This parameter is useful for instructing the M08 to use a maximum speed setting which correlates to the position of the zoom-lens. The purpose of this command

is to slow down the speed in relation to how far the zoom setting is. If the zoom setting is very far, it might be useful to move the camera very slowly in pan and tilt directions in order to keep the object under observation “in focus”. The selected speed is visible in the menu.

The parameter entered in this menu selection is a percentage value of the units maximum speed in relation to when the zoom is at the most far position. The units speed will increase when the zoom value decreases using a linear interpolation function described in the graph below.

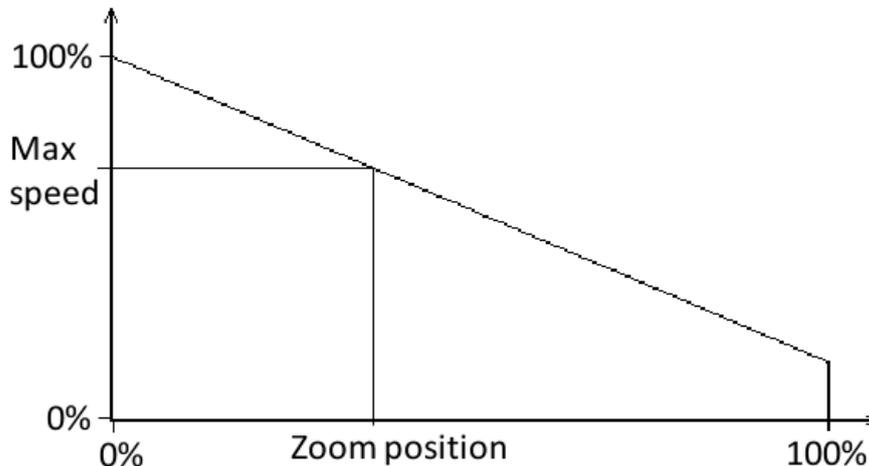


Fig 1: Tilt/Pan speed interpolation (with a 10% parameter)

16.2 Lens (optics) parameters

The control of the lens is adjusted by four parameters.

- **Zoom Maximum Speed [6, 3, 4]**

The motor lens zoom maximum speed may be limited by using this parameter. This feature is useful when using a remotely controlled camera that may have a rather fast moving zoom lens. Remote control involves often some latency (delay) in the communication therefore it makes sense to drive the lens softly. The parameter value is entered as a percentage number of the maximum speed.

- **Focus Maximum Speed [6, 3, 6]**

The motor lens focus maximum speed may be limited by using this parameter. This feature is useful when using a remotely controlled camera that may have a rather fast moving focus lens. Remote control involves often some latency (delay) in the communication therefore it makes sense to drive the lens softly. The parameter value is entered as a percentage number of the maximum speed.

- **Zoom Default Speed [6, 3, 5]**

The lens zoom is moving with this (default zoom) speed when it is controlled by commands that do not carry speed parameters (typical commands; Start zoom). The default zoom speed is calculated from a formula:

$$\text{Speed} = (\text{Maximum_Zoom_speed} * \text{Default_Zoom_speed}) / 100.$$

It can be useful sometimes to use a slow speed setting on the zoom especially if the remote communication has large latency (delay).

The selected setting is visible in the menu.

- **Focus Default Speed [6, 3, 7]**

The lens focus is moving with this (default focus) speed when it is controlled by commands that do not carry speed parameters (typical commands; Start focus). The default focus speed is calculated from a formula:

$$\text{Speed} = (\text{Maximum_Focus_speed} * \text{Default_Focus_speed}) / 100.$$

It can be useful sometimes to use a slow speed setting on the focus especially if the remote communication has large latency (delay).

The selected setting is visible in the menu.

- **Acceleration [6, 3, 8]**

The acceleration setting affects the pan- and tilt-axes. It is worthwhile to use a low acceleration setting when using a heavy camera. The default acceleration value is 50%.

- **Maximum Velocity [6, 3, 9]**

This setting affects the maximum pan- and tilt speeds. The speed-value is entered as a percentage of full speed.

- **Tilt horizon offset [6, 3, 10]**

This setting sets the tilt-axis calibration angle so that the camera shelf is at horizontal position. This angle is the angle at which the tilt-upwards motion stops, that is, zero degrees is at horizontal level.

For example, if the camera is turned upwards and it stops, pointing straight up, the tilt horizontal angle is 90-degrees.

17. Time and date

- **Advanced, Set time [6, 5]**

The time-setting is displayed and the software is waiting for the user to enter a new time setting in exactly the same format as displayed. Observe the format, including space characters.

- **Advanced, Set date [6, 6]**

The date-setting is displayed and the software is waiting for the user to enter a new date setting in exactly the same format as displayed. Observe the format, including space characters.

- **Advanced, Time zone [6, 7]**

Sets the time zone.

18. Factory settings

- **Advanced, Restore factory settings [6, 8]**

This menu selection returns factory defaults and destroys all user settings. The firmware asks for confirmation before restoring factory default settings. Observe that all user data, settings and preprogrammed positions will be wiped by this command.

19. Load / save settings and exit the Configuration mode

- **Load settings [8]**

This command loads all settings from the M08 internal parameter memory. A confirmation is asked before loading the values.

- **Save settings [9]**

This command stores all settings permanently. Old values are overwritten. A confirmation is asked before saving settings.

- **Quit (Exit the menu) [0]**

This selection leaves the configuration mode and the M08 tiltpan unit becomes ready to accept camera-control commands from its communication interface. The firmware asks for a confirmation before leaving the configuration setup menu.

When leaving the configuration menu, a message "Starting" is displayed after which the M08 is ready for operation.

20. Aux commands and remote configuration

Some of the M08 parameter settings may be altered by using a video matrix user interface keyboard. The examples in this section assume using an Allegiant 8200 video matrix keyboard with joystick and by entering AUX commands.

Before using the video matrix keyboard, the basic configuration must be done as previously described in this manual and a camera must be mounted onto the M08 tiltpan. Please verify that the M08 tiltpan responds to the video matrix user interface before trying to use the AUX commands (verify that the M08 can be turned with the joystick, for example), this verifies that the initial setup is OK.

22. Remote configuration

The remote configuration activates a menu which is visible on a video monitor. The remote configuration process starts by entering the AUX-command which is set in the initial configuration menu [6,1,4] (see the section AUX-commands). From this point onwards it is assumed that the selected AUX command is number 8. By entering the following sequence [On 8 Enter] on the Allegiant keyboard video insert #2 becomes a menu window in the video monitor.

By using the joystick the user may make selections in the menu. Using the joystick Tilt-Down selects the next menu item (menu, letter etc.) and Tilt-Up the previous. The selection is activated by Pan-Right. Generally the AUX command that activates the menu will store the setting and the respective AUX off command discards the change.

The remote configuration ends by entering an AUX-off command (Allegiant: Off 8 Enter). Also, if a command/selection has not been entered/stored within 10 seconds, the M08 exits the remote configuration menu and possible selections will be discarded.

22.1 Camera name

Enter a new name for the camera by using the video matrix joystick. By using Pan-Right and Pan-Left the next or previous letter is selected. The selected (editable) letter is within a square on the video display. Scrolling through letters is done by using the joystick Tilt-Up/Down. Moving the joystick Down&Right selects the letter 'a', Up&Right selects 'A', Down&Left selects empty space ' ' and Up&Left selects '0'.

When the camera name has been edited, enter the AUX-command On 8 Enter to store the new name. The AUX-command Off 8 Enter will discard the edited name.

22.2 Preposition name

Enter a new name for the location by using the video matrix joystick. By using Pan-Right and Pan-Left the next or previous letter is selected. The selected (editable) letter is within a square on the video display. Scrolling through letters is done by using the joystick Tilt-Up/Down. Moving the joystick Down&Right selects the letter 'a', Up&Right selects 'A', Down&Left selects empty space ' ' and Up&Left selects '0'.

When the location name has been edited, enter the AUX-command On 8 Enter to store the new name. The AUX-command Off 8 Enter will discard the edited name.

If the configuration setup has been selected to display the video insert for the location name, the name will be visible in the video monitor (after exiting the remote configuration mode). A small "tick" after the name in the display indicates that the name has not yet been stored in the M08 memory. To store the name of a location (prepos) the camera should be pointed at the desired position and a video matrix command should be entered to store the name. The command is: (Allegiant: Set #number Enter. The name and location/position is now stored in the M08 memory and the "tick" symbol is removed.

22.3 Direction offset (True Angle)

Before activating this menu selection the camera should be pointed towards a "known" location e.g. turn the camera towards an object which angle (in degrees) is known. Ensure that the compass video insert is activated in the configuration menu and thus visible on the video monitor.

Next, select the menu item 3 from the remote configuration menu. When using the joystick now, the camera is NOT turning, instead, the video insert compass is moving. When the compass video insert shows the same degree value as which the camera is currently pointed towards enter the AUX-command On 8 Enter to store the Direction compensation value in the M08 memory. After this procedure, the compass video insert will show the actual true angle of the camera.

22.3.1 Set horizon

Before activating this menu selection the camera should perfectly level i.e. perpendicular to the earth's gravity and the pointing towards the horizon. Next, select the menu item 4 from the remote configuration menu and confirm the new horizon angle by entering the AUX-command On 8 Enter.

22.4 Maximum speed

The maximum speed setting of the M08 tilt/pan is edited as a percentage of the mechanics max speed. The percentage value changes when the joystick is moved Up or Down.

22.5 Acceleration

This menu selection allows for adjusting the acceleration of the M08 tilt/pan. A small acceleration value is useful especially when operating heavy camera units. The drawback can be sluggish response to tilt/pan commands. The acceleration value is entered as a percentage value increasing and decreasing by tilting Up or Down with the joystick.

22.6 Zoom maximum speed

Use the joystick Up or Down to change the maximum speed of the optics zoom. See the section Lens (optics) parameters. Enter the AUX-command (Allegiant) On 8 Enter to store the new zoom speed value.

22.7 Focus maximum speed

Use the joystick Up or Down to change the maximum speed of the optics focus. See the section Lens (optics) parameters. Enter the AUX-command (Allegiant) On 8 Enter to store the new focus speed value.

22.8 Zoom default speed

Use the joystick Up or Down to change the default speed of the optics zoom. See the section Lens (optics) parameters. Enter the AUX-command (Allegiant) On 8 Enter to store the new zoom speed value.

22.9 Focus default speed

Use the joystick Up or Down to change the default speed of the optics focus. See the section Lens (optics) parameters. Enter the AUX-command (Allegiant) On 8 Enter to store the new focus speed value.

22.10 Pan speed at maximum zoom

Use the joystick Up or Down to change the Pan-speed used at maximum zoom setting. See the section Tilt and Pan speed parameters. Enter the AUX-command (Allegiant) On 8 Enter to store the parameter value.

22.11 Tilt speed at maximum zoom

As in the previous menu selection, but this affects the Tilt-speed.

22.12 Insert 1 position

Ensure that the video insert 1 is enabled (see the next section).

Use the joystick (all angles) to move the video insert 1 on the video monitor display. When the insert is at the desired location, enter the AUX-command On 8 Enter to store the new position.

22.13 Insert 1 type

Select a desired type for the video insert 1 (see the section Video inserts #1 and #2) by using the joystick Up & Down. Store the selected insert type by moving the joystick Right. The remote configuration menu is then displayed on the video monitor. The selection may be discarded by entering the AUX-command Off 8 Enter on the matrix keyboard.

22.14 Insert 1 colours

Ensure that the video insert 1 is enabled. See the previous section in this manual.

The color of the video insert will change according to moving the joystick Up or Down. The color is lighter when moving Down and darker when moving Up. The background color changes when moving the joystick Left or Right. A lighter background is done by moving Right and a darker background (or transparent) is achieved by moving the joystick Left.

22.15 Insert 2 position

Ensure that the video insert 1 is enabled (see the next section).

Use the joystick (all angles) to move the video insert 1 on the video monitor display. When the insert is at the desired location, enter the AUX-command On 8 Enter to store the new position.

22.16 Insert 2 type

Select a desired type for the video insert 2 (see the section Video inserts #1 and #2) by using the joystick Up & Down. Store the selected insert type by moving the joystick Right. The remote configuration menu is then displayed on the video monitor. The selection may be discarded by entering the AUX-command Off 8 Enter on the matrix keyboard.

22.17 Insert 2 colours

Ensure that the video insert 2 is enabled. See the previous section in this manual.

The color of the video insert will change according to moving the joystick Up or Down. The color is lighter when moving Down and darker when moving Up. The background color changes when moving the joystick Left or Right. A lighter background is done by moving Right and a darker background (or transparent) is achieved by moving the joystick Left.

22.18 Insert 3 position

Ensure that the video insert 3 is enabled (see the next section).

Use the joystick (all angles) to move the video insert 1 on the video monitor display. When the insert is at the desired location, enter the AUX-command On 8 Enter to store the new position.

22.19 Insert 3 type

Select a desired type for the video insert 3 (see the section Video inserts) by using the joystick Up & Down. Store the selected insert type by moving the joystick Right. The remote configuration menu is then displayed on the video monitor. The selection may be discarded by entering the AUX-command Off 8 Enter on the matrix keyboard.

22.20 Insert 3 colours

Ensure that the video insert 3 is enabled. See the previous section in this manual.

The color of the video insert will change according to moving the joystick Up or Down. The color is lighter when moving Down and darker when moving Up. The background color changes when moving the joystick Left or Right. A lighter background is done by moving Right and a darker background (or transparent) is achieved by moving the joystick Left.

22.21 Set Time

The video display will show the current time setting and a cursor. Select the next number by using the joystick Right and Left. The digit increases when moving the Joystick Up and decreases at Down. When the time has been edited it is stored by entering the AUX-command On 8 Enter or discarded by Off 8 Enter.

22.22 Set date

The video display will show the current date setting and a cursor. Select the next number by using the joystick Right and Left. The digit increases when moving the

Joystick Up and decreases at Down. When the time has been edited it is stored by entering the AUX-command On 8 Enter or discarded by Off 8 Enter.

22.23 Reset

Enter the AUX-command On 8 Enter for resetting the M08 tiltpan unit, or Off 8 Enter for returning to normal mode.

23. Test and debug

- **Test and debug [7]**

This menu selection is also activated when the M08 is in its normal mode, by pressing enter in the configuration selection menu (used by the Hyperterminal).

The test and debug commands are mainly intended for a skilled service technician. Some of the test/debug items are described in the following.

23.1 Stop the M08 motion

- **Test and debug, Stop [7,7]**

Stops the tilt and pan motors immediately.

23.2 Reset

- **Test and debug, Reset [7,8]**

Reset the M08 firmware and hardware. The menu asks for confirmation before activating the selection.

23.3 FPGA update

- **Test and debug, FPGA update [7,11]**

The M08 electronics contains a FPGA circuit (Field Programmable Gate Array). The update firmware is required from Ajeco. If a FPGA firmware is available, the following steps are needed to perform an update of the M08 FPGA. These operations require a PC and Hyperterminal with the serial console cable connected to the tiltpan.

1. Store the FPGA firmware file on a hard disk.
2. Make the menu selection [7, 11]
3. The menu asks for confirmation, enter y (for YES) and press Enter.

4. The M08 is now ready to receive the new FPGA firmware. Send the firmware file to the M08 using XMODEM protocol.
5. Reset the M08 when the firmware has successfully been sent.

The FPGA firmware update can be discarded by pressing Enter in the Hyperterminal program. If the file transfer is unsuccessful or interrupted the M08 tiltpan will not operate correctly after it has been reset. At this stage, the FPGA must be reprogrammed.

If the update fails for some reason, the video monitor will display the text "FPGA init error!" after which the M08 will reset itself. The test and debug menu will be activated if Enter is pressed while the error message is displayed. This allows for making a new attempt to program the FPGA.

23.4 Software update

- **Test and debug, Software update [7,12]**

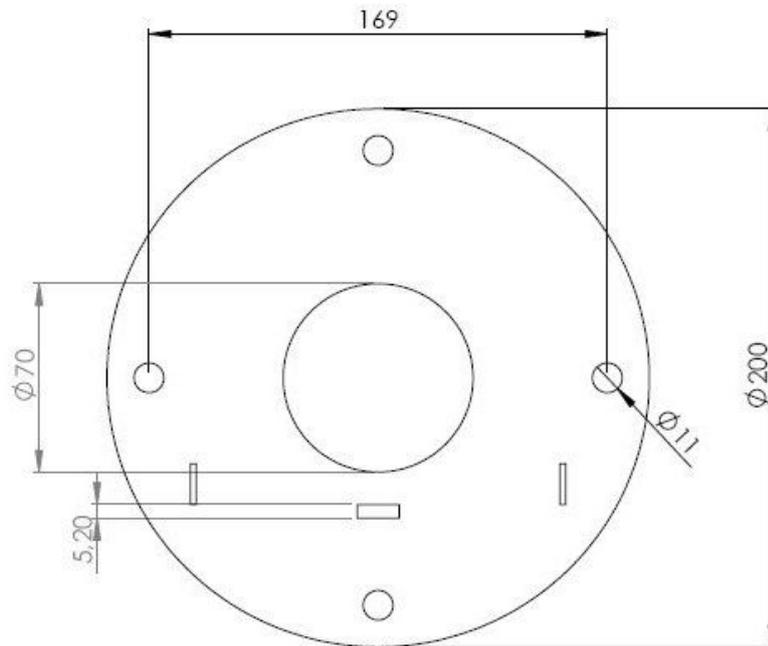
This menu selection allows for updating the firmware program in the M08 tiltpan unit. The file transfer is done by Hyperterminal XMODEM protocol in a similar fashion as the FPGA firmware update. When the new firmware has successfully been transferred to the M08 unit, the internal process in the M08 stores it permanently. This stage takes approximately 5 seconds after which the new firmware starts.

24. Switches and Connectors

24.1 DIP switches on the M08 electronics

1	Not in use
2	
3	Not in use
4	Not in use
5	Not in use
6	Not in use
7	Lens control: "ON" : The lens is driven by 3 wires "OFF": The lens is driven by 4 wires
8	Not in use

24. Assembly footprint



All measures are in millimeters.

25. Power connection and Camera control connectors

M08 connector panel

only RS422: one 7-pin C16 male connector

Connector: Power & Commands - 7 pin AMP C01630C00610012

Pin number	Function	Note
1	Power 24Vac or 24 Vdc	
2	Power 24Vac or 0 Vdc	
3	RS422 RXD-	100 or 125 ohm termination
4	RS422 RXD+	100 or 125 ohm termination
5	RS422 TXD-	
6	RS422 TXD+	
7		

M08 connector panel

both RS422 and RS232: 7-pin C16 female connector

Connector: Power & Commands - 7 pin AMP C01630G00610012

Pin number	Function	Note
1	RS232 TXD	output from M08
2	RS232 RXD	input to M08
3	RS422 TXD+	output from M08
4	RS422 TXD-	output from M08
5	RS422 RXD+	100 or 125 ohm termination
6	RS422 RXD-	100 or 125 ohm termination
7	signal GND	for RS232

M08 connector panel

Power connector: one 4-pin C16 male connector

Connector: Power - 4 pin AMP C01620C00310012

Pin number	Function	Note
1	Power 24Vac or 0 Vdc	
2	-	
3	Power 24Vac or +24 Vdc	
4	Chassis ground	

26. Console port (not in all models)

M08 connector

panel

with 4-pin connecto

Connector: Console / configuration - 4 pin Hirose HR10A-7R-4S

Pin	Function	Note
1	RS232 TXD	output from M08
2	RS232 RXD	input to M08
3	signal GND	
4		

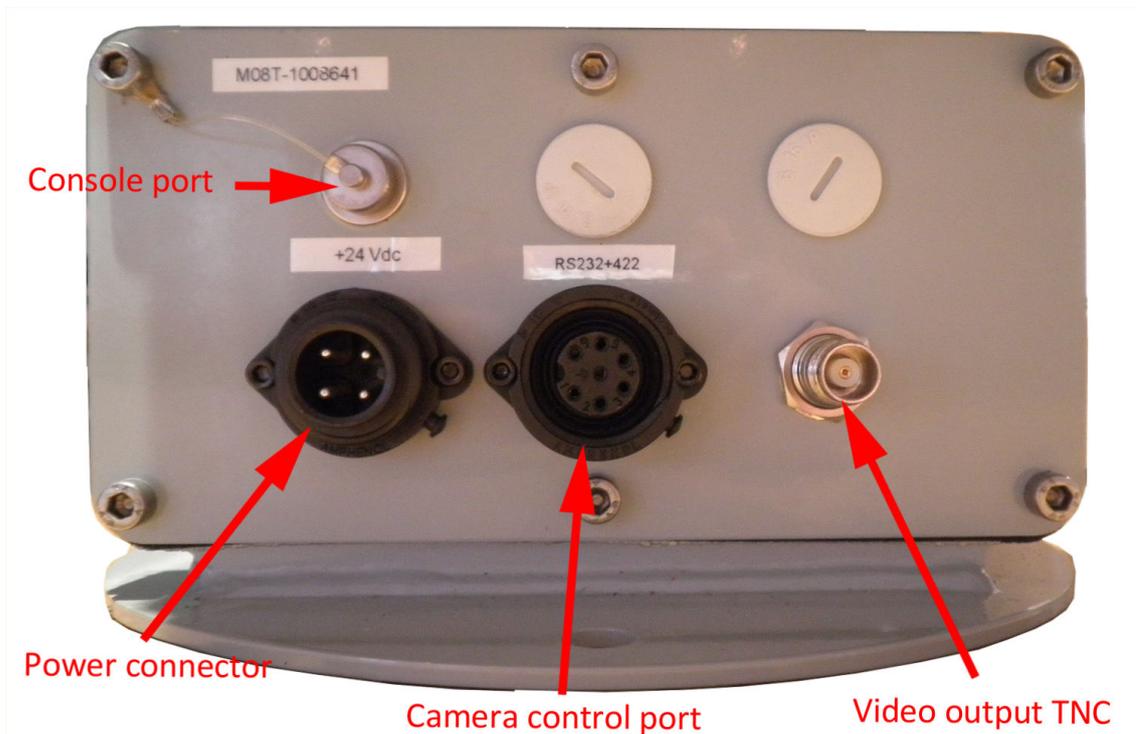
M08 connector

panel

with 5-pin connec

Connector: Console / configuration - 5 pin Binder 09-0416-00-05

Pin	Function	Note
1	RS232 TXD	output from M08
2	RS232 RXD	input to M08
3	signal GND	
4		
5		



M08 tiltpan connector panel

27. Camera cable connector

Military 19 pin bayonet connector, type

Connector: Amphenol 62GB-16A-1419SN

Pin	Color of wire	Function
A	red	24VDC heater, max 10W
B	grey	0VDC heater
C	grey-white	12VDC Camera
D	grey-brown	0VDC Camera
E	pink	zoom out
F	yellow	zoom in
G	brown	focus far
H	white	focus near
J	pink-white	pot excitation +
K	pink-brown	focus signal
L	green-brown	zoom signal
M	green-white	pot excitation ret
N	violet	video
P	black	video ground
R	pink-grey	RS422+ to Camera
S	red-blue	RS422- to Camera
T	blue	12VDC to ir-Camera
U	yellow-white	
V	yellow-brown	
	Not used wire: : green	

28. Version history

<p>Rev 1.0 - 06.03.2008</p> <p>Rev 1.1 – 07.5.2008 Camera cable connector and base connector descriptions added</p> <p>Rev 1.2 – 22.8.2008 Updated with M08 ver 1.2.2. Console connector descript added.</p> <p>Rev 1.3 – 30.5.2011 Console port signals added.</p>
