

ERA 500 Hybrid IP

User Guide



Martin[®]
by HARMAN

User Documentation update information

Any important changes in the ERA 500 Hybrid IP User Guide are listed below.

Revision A

First version released. Covers ERA 500 Hybrid IP firmware version 1.0.0

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HARMAN PROFESSIONAL DENMARK ApS, Olof Palmes Allé 44, 8200 Aarhus N, Denmark
HARMAN PROFESSIONAL SOLUTIONS U.S., 8500 Balboa Blvd., Northridge CA 91329, USA

www.martin.com

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Introduction



Warning! Before installing, operating or servicing the ERA 500 Hybrid IP, read the latest version of the product's Safety and Installation Manual, paying particular attention to the Safety Precautions section. The Safety and Installation Manual is supplied with the fixture. The latest version is also available for download from the ERA 500 Hybrid IP area of the Martin@ website at www.martin.com.

This User Guide is a supplement to the Installation and Safety Manual that is supplied with the ERA 500 Hybrid IP. Both these documents are available for download from the Martin website at www.martin.com. This User Guide contains information that is mainly for lighting designers and operators. The Safety and Installation Manual contains important information for all users, especially installers and technicians.

We recommend that you check the Martin website regularly for updated documentation. We publish revised manuals each time we can improve the quality of the information we provide and each time we release new firmware with changes or new features. Each time we revise this guide we list any important changes on page 2 so that you can keep track of updates.

Operating the fixture

Before applying power to or operating the ERA 500 Hybrid IP:

- Read the 'Safety Information' section of the fixture's Safety and Installation Manual.
- Check that the installation is safe and secure.
- Be prepared for the fixture to light up suddenly. Check that no-one is looking at the fixture from close range.
- Be prepared for the head to move suddenly. Check that there will be no risk of collision with persons or objects.

The ERA 500 Hybrid IP does not have an On/Off switch. To apply power to the fixture, apply power to the power input cable. The fixture's Neutrik powerCON TRUE1 connectors can also be connected live or under load.

Lamp lifetimes

The ERA 500 Hybrid IP in combination with the Philips MSD Platinum 18 R LL lamp has a long-life lamp management feature that extends the lamp lifetime beyond the nominal figure of 1500 hours. You can achieve up to 6000 hours in a typical entertainment context.

The lamp lifetime warning system in the fixture's control panel display takes real use of the lamp and the periods of low-power lamp mode into account. Messages when the lamp reaches 80% and 90% of its lifetime give useful warnings that lamp replacement will soon be necessary. Do not exceed the lamp lifetime. Replace the lamp at the latest when a CHANGE LAMP message appears in the fixture's display.

Humidity

It is normal for a small amount of condensation to appear inside the fixture as a result of changes in atmospheric conditions and ambient temperatures. This condensation should gradually disappear as the pressure relief valves purge humidity during warm-up/cool-down cycles.

If excessive condensation appears inside the fixture, check the humidity readouts in the INFORMATION menu in the fixture's control panel display. If humidity is higher than 50%, carry out the dehumidification procedure as directed in the Safety and Installation Manual.

Pooling of water inside the fixture may be an indication that one of the seals or housings is damaged. Contact Harman Professional Technical Support (see next section) for assistance.

Technical Support

If you have questions about how to install, service or operate the fixture safely, please contact Harman Professional Technical support:

- For technical support in North America, please contact: HProTechSupportUSA@harman.com
Phone: (844) 776-4899
- For technical support outside North America, please contact your national distributor.

Effects

This section gives details of the effects available in the ERA 500 Hybrid IP. See the DMX protocol table on page 19 for a list of channels and commands used to control the effects via DMX.

16-bit control

16-bit fine control is available for dimming, pan and tilt. Here, the main DMX control channel sets the first 8 bits (the most significant byte or MSB), and the fine channels set the second 8 bits (the least significant byte or LSB) of the 16-bit control byte. In other words, the fine channel works within the position set by the coarse channel.

Shutter and strobe effects

The ERA 500 Hybrid IP's mechanical shutter provides instant blackout and snap open as well as pulse effects and regular or random strobe effects.

Dimming

Smooth 0-100% overall dimming is available with 16-bit control resolution.

Color mixing

The ERA 500 Hybrid IP has dichroic CMY color filters that allow continuous CMY color mixing.

Color wheel

The ERA 500 Hybrid IP color wheel lets you select from nine dichroic color filters plus open (see Figure 1).

Filters 6- 8 are color temperature control filters.

As well as color wheel indexing for color filter selection, the color wheel can be scrolled continuously with variable speed and direction.

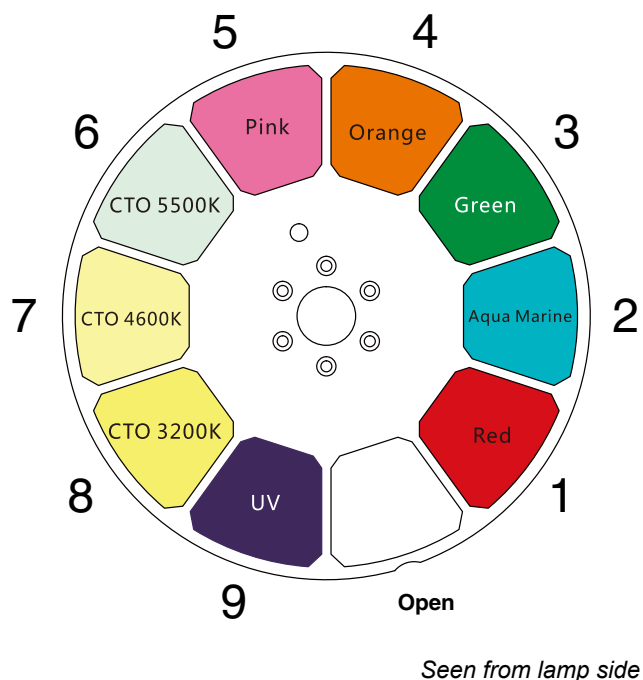


Figure 1: Color wheel

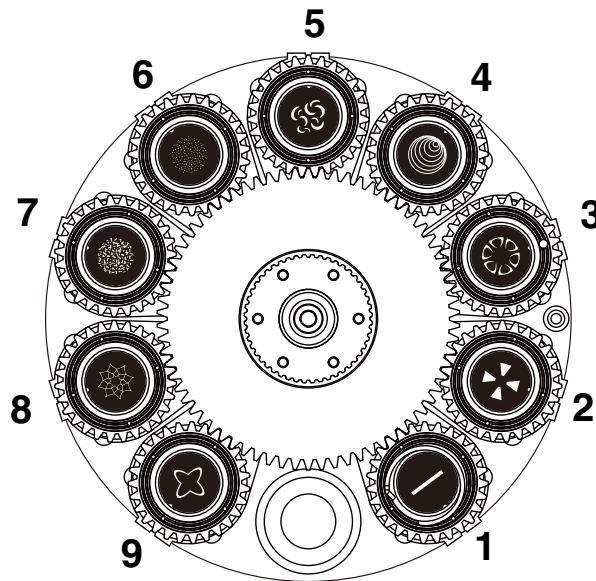
Rotating gobos

The rotating gobo wheel in the ERA 500 Hybrid IP has nine rotating gobos that can be selected, indexed (positioned at an angle), rotated continuously and shaken (bounced). The gobo wheel itself can also be scrolled continuously or shaken.

DMX channel 8 lets you select a rotating gobo, select a rotating gobo and shake it, or set the entire rotating gobo wheel to continuous wheel rotation. Channel 9 lets you set the indexed angle or the rotation direction and speed of the gobo that is selected on channel 8.

The standard gobos are shown in the correct order in Figure 2. All gobos are interchangeable and can be replaced with custom gobos. Gobo replacement must be carried out by an authorized Martin Service partner.

Slot - Gobo	Part number
1. Bar	P/N 5123423-00
2. Lucky Stakes	P/N 5123424-00
3. Bite Me.....	P/N 5123425-00
4. Sonar	P/N 5123426-00
5. Kite Surf	P/N 5123427-00
6. Dots in Space	P/N 5123428-00
7. Organic Delight	P/N 5123429-00
8. Spidey.....	P/N 5123430-00
9. Cone	P/N 5123431-00



Seen from front lens side

Figure 2: Rotating gobo wheel

Static gobos

The static gobo wheel in the ERA 500 Hybrid IP has three iris apertures, eight static gobos and a gobo animation zone. Channel 10 is used for Gobo selection and control type (indexing, gobo wheel shake and continuous gobo wheel scrolling).

The gobos on the static gobo wheel are shown in the correct order in Figure 3.

- | | |
|---------------------|--------------------|
| 1. Gobo 1 (Iris 1) | 7. Gobo 7 |
| 2. Gobo 2 (Iris 2) | 8. Gobo 8 |
| 3. Gobo 3 (Pinspot) | 9. Gobo 9 |
| 4. Gobo 4 | 10. Gobo 10 |
| 5. Gobo 5 | 11. Gobo 11 |
| 6. Gobo 6 | 12. Animation zone |

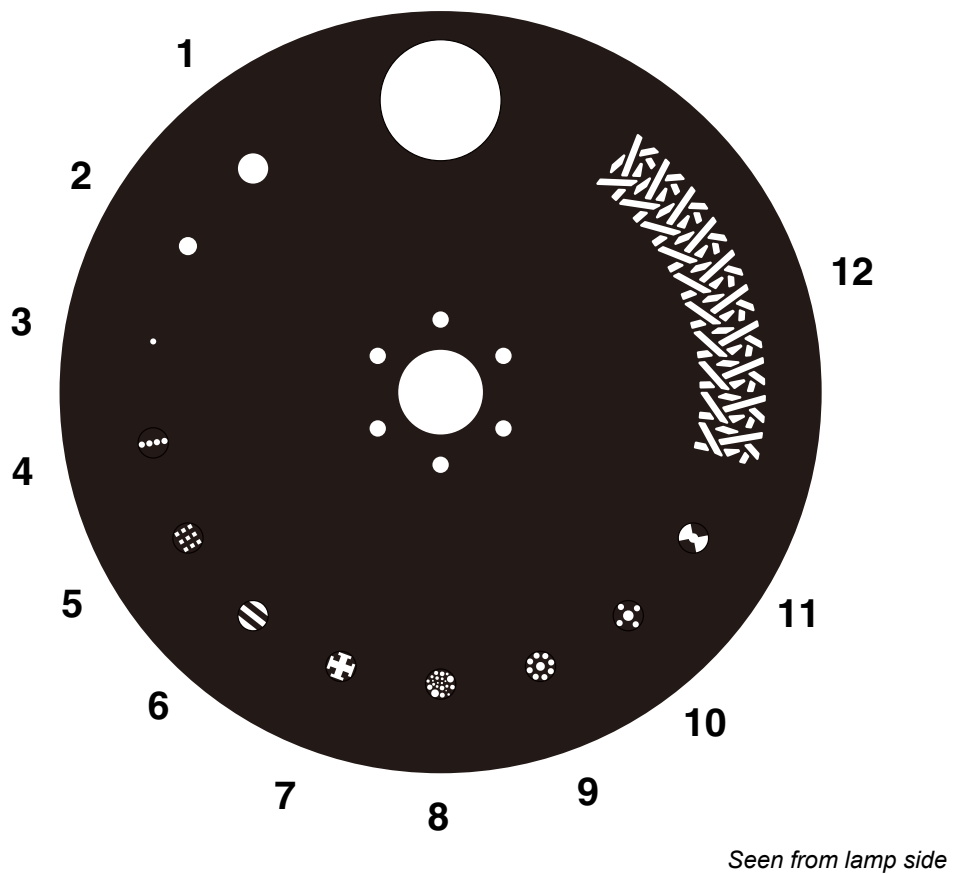


Figure 3: Static gobo wheel

Gobo animation

See Figure 4. The animation zone of the ERA 500 Hybrid IP static gobo wheel can be used together with a rotating gobo and moved with a pulsing see-saw action to add an animation effect to the gobo projection.

When using the gobo animation effect, adjust the fixture's focus to obtain the most realistic results.



Figure 4: Animation zone of static gobo wheel

Beamsmoother / spot diffuser

Applying the beamsmoother gives an almost perfectly smooth, even light output across the entire diameter of the projection. The beamsmoother is located immediately in front of the lamp, before any of the effects.

The beamsmoother is deployed automatically when you select rotating gobos to give the best projection, but it is optional when you select static gobos. The beamsmoother can be left out of mid-air effects for maximum punch, but will give more even projections when using the fixture as a spot projector.

Frost

Applying the Frost effect softens the beam. The heavy frost filter is located in front of the effects, so it will significantly diffuse gobo projections.

Rotating prisms

The ERA 500 Hybrid IP has two rotating prisms: one eight-facet circular prism and one six-facet linear prism.

Both prisms can be inserted into the beam at indexed angles or rotated with variable direction and speed. You can insert both prisms into the beam at the same time.

Zoom and focus

Adjusting focus lets you vary the sharpness of projected images at different distances. It can be particularly effective when used together with gobos and the animation wheel.

Pan and tilt

The ERA 500 Hybrid IP offers 540° of pan and 260° of tilt.

16-bit pan and tilt control are available. In each case, the second (LSB) DMX channel adjusts the position set on the first (MSB) channel.

Control panel

You can configure individual fixture settings (such as the ERA 500 Hybrid IP's DMX address), read out data, execute service operations and view error messages using the fixture's backlit graphic display and control panel.

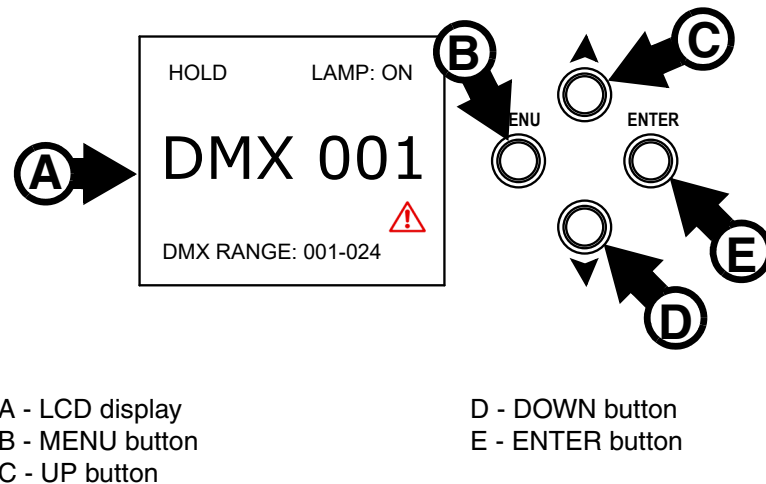


Figure 5: Display and control panel

When the ERA 500 Hybrid IP is powered on, it boots and carries out a reset. Then it shows the default information display shown in Figure 5:

- Fixture's DMX address
- 'No data' mode setting (in Figure 5 it is set to HOLD)
- Current lamp status: on/off.
- DMX channels occupied by the fixture. If the DMX address is set to 001, for example, the fixture will occupy channels 001–024.

If the fixture has registered any error or warning messages while it resets, the display will show a red warning triangle on the right below the DMX address. Press the ENTER button to see the messages.

Display appearance

The display flashes if no DMX signal is being received.

The display can be set to remain on constantly or enter sleep mode (in which it blacks out) after a period with no key press, and the display can be rotated to match standing or hanging fixture orientation, in the **PERSONALITY** → **DISPLAY** menu.

Using the control panel

- Press the MENU button **B** or ENTER button **E** to access the menus.
- Use the UP and DOWN buttons **C** and **D** to scroll up and down menus.
- Press the ENTER button **E** to enter a menu or make a selection.
- The currently selected item in a menu is indicated by a star ✱.
- Press the MENU button **B** to step backwards through the menus.

Shortcut menu

Holding the MENU button pressed in for two seconds brings up the Shortcuts menu in the display. The Shortcuts menu contains the following items:

- **RESET ALL** – Resets the entire fixture.
- **ROTATE DISPLAY** – Rotates the display 180°.

Key combination functions

Holding certain combinations of keys pressed in together gives quick access to specific functions as follows:

- MENU + UP = **RESET ALL** – Resets the entire fixture
- UP + DOWN rotates the control panel display through 180°
- MENU + ENTER = **SERVICE MODE** – Freezes pan and tilt but the rest of the fixture responds normally to the control panel. A **SERV** message appears in the display. Pan and tilt remain frozen until the next power off/power on cycle.

Important! You must use the MENU + ENTER key combination *immediately after* applying power. Push the power input cable connector into the input socket and twist clockwise to lock the connector and apply power to the fixture, then *immediately* press the MENU and ENTER buttons and hold them pressed in for a few seconds or until **SERV** appears in the display.

Settings stored permanently

The following settings are stored permanently in the fixture memory and are not affected by powering the ERA 500 Hybrid IP off and on or by updating the fixture software:

- DMX address
- All personality settings (pan/tilt, cooling mode, display settings etc.)
- Resettable counters
- Service settings
- Factory-set calibration data

Control options

DMX

The ERA 500 Hybrid IP accepts a DMX-512A data signal.

DMX setup

The DMX address, also known as the start channel, is the first channel used to receive instructions from the controller. For independent control, each fixture must be assigned its own control channels. If you give two ERA 500 Hybrid IP fixtures the same address, they will behave identically. Address sharing can be useful for diagnostic purposes and symmetrical control, particularly when combined with the inverse pan and tilt options.

DMX addressing is limited to make it impossible to set the DMX address so high that you are left without enough control channels for the fixture.

To set the fixture's DMX address:

1. Press MENU to open the main menu. If the menu is not at **DMX ADDRESS** scroll up and down to find it.
2. Press ENTER to open the **DMX ADDRESS** menu, scroll to the DMX address that you want to set for the fixture, and press ENTER to save it.
3. Press MENU to exit.

RDM

The ERA 500 Hybrid IP can communicate using RDM (Remote Device Management) in accordance with ESTA's *American National Standard E1.20-2006*.

RDM is a bi-directional communications protocol for use in DMX512 control systems, it is the open standard for DMX512 device configuration and status monitoring.

The RDM protocol allows data packets to be inserted into a DMX512 data stream without affecting existing non-RDM equipment. It allows a console or dedicated RDM controller to send commands to and receive messages from specific fixtures.

Data retrieved from the fixture via RDM will be presented differently by different RDM-compatible controllers.

Note that a firmware update can sometimes expand a fixture's RDM functionality. If this happens, the firmware release notes will give details.

RDM ID

Each ERA 500 Hybrid IP has a factory-set RDM UID (unique identification number) that makes it addressable and identifiable in RDM systems. The number can be found in the control panel **INFORMATION** menu under **RDM UID**.

Supported RDM PIDs

The ERA 500 Hybrid IP supports the standard RDM PIDs (Parameter IDs) required by ESTA plus one manufacturer-specific PID that sets how the fixture behaves if the DMX signal is lost (fixture blacks out or fixture holds current scene).

See the following tables.

Standard RDM Parameter IDs

GET allowed	SET allowed	RDM parameter IDs	Notes
Network Management			
		DISC_UNIQUE_BRANCH	
		DISC_MUTE	
		DISC_UN_MUTE	
Status Collection			
✓	✓	COMMS_STATUS	
✓		QUEUED_MESSAGE	
✓		STATUS_MESSAGES	
✓		STATUS_ID_DESCRIPTION	
	✓	CLEAR_STATUS_ID	
RDM Information			
✓		SUPPORTED_PARAMETERS	
✓		PARAMETER_DESCRIPTION	
Product information			
✓		DEVICE_INFO	
✓		DEVICE_MODEL_DESCRIPTION	
✓		MANUFACTURER_LABEL	
✓	✓	DEVICE_LABEL	
✓		SOFTWARE_VERSION_LABEL	
✓		BOOT_SOFTWARE_VERSION_ID	
DMX Setup			
✓	✓	DMX_PERSONALITY	
✓		DMX_PERSONALITY_DESCRIPTION	
✓	✓	DMX_START_ADDRESS	
✓		SLOT_INFO	
✓		SLOT_DESCRIPTION	
Sensors			
✓		SENSOR_DEFINITION	
✓	✓	SENSOR_VALUE	
Usage information			
✓		DEVICE_HOURS	
✓	✓	LAMP_HOURS	
✓	✓	LAMP_STRIKES	
✓	✓	LAMP_STATE	
✓	✓	LAMP_ON_MODE	
✓	✓	DEVICE_POWER_CYCLES	
Configuration			
✓	✓	PAN_INVERT	
✓	✓	TILT_INVERT	
Control			
✓	✓	IDENTIFY_DEVICE	
	✓	RESET_DEVICE	

Manufacturer-specific RDM Parameter IDs

GET allowed	SET allowed	RDM parameter ID's (slot 21-22)	Notes
Fixture behavior			
	✓	LAST_STATE (0XA004)	Sets behavior if loss of DMX signal. Set to: 00 BLACKOUT 01 HOLD

Fixture setup

The onboard control panel (see “Effects” on page 5) and the Control / settings DMX channel let you configure the fixture via a range of fixture settings.

Personality

The ERA 500 Hybrid IP provides several options that let you optimize the fixture for different applications in the **PERSONALITY** menu:

- **PAN INVERSE** and **TILT INVERSE** let you invert the direction of pan and tilt movement. This can be a fast way of setting symmetrical action in multiple fixtures with no need to reprogram cues.
- **PAN/TILT SPEED** lets you set pan and tilt movement to **FAST** (optimized for speed) or **SMOOTH** (optimized for smooth movement – useful for slow movements in long-throw applications).
- **AUTO LAMP ON** gives you options for setting the lamp to strike automatically.
- **DMX LAMP OFF** lets you decide whether it should be possible to douse the lamp via DMX. The default setting is ON (i.e. it is possible to douse the lamp via DMX).
If you want to make it impossible to douse the lamp via DMX by accident (if the lamp is hot this would mean a wait of approximately 5 minutes before you can restrike the lamp), change the setting to OFF.
- **NO DATA MODE** defines how the fixture reacts if it is powered on but not receiving a DMX signal (for example, if the DMX signal is lost during a show).
 - If set to **BLACKOUT**, the fixture will black out.
 - If set to **HOLD**, the fixture will hold all the last DMX values that it received and continue to show its current scene. It will continue to show this scene until it receives new DMX signals or it is powered off.
- **COOLING MODE** lets you select between two cooling fan options depending on whether your priority is highest light output or quietest cooling fan operation:
 - **REGULATED FANS** optimizes cooling fan operation for lowest noise. It operates cooling fans at the lowest speed necessary to keep temperatures within their normal operating ranges.
 - **FULL** optimizes cooling fan operation for the lowest possible temperature by setting cooling fans to run constantly at full speed.
- **DMX RESET** lets you decide whether it should be possible to reset the fixture via DMX with a command on the Settings DMX channel. The default setting is ON (i.e. it is possible to reset the fixture via DMX).
If you want to make it impossible to reset the fixture via DMX by accident (if the lamp is hot this would mean a wait of approximately 5 minutes before you can restrike the lamp), change the setting to OFF.
- **EFFECT SHORTCUT** lets you decide whether the gobo and color wheels should take the shortest route to the next slot, even if this means passing through the open position, or whether they should avoid the open position even if this means slightly longer changes between some slots. The default setting is ON (the fixture takes the shortest route even if this means passing through open).
- **DISPLAY** offers the following options for the LCD display in the fixture’s control panel:
 - **DISPLAY SLEEP** gives you options for putting the display into sleep mode, where it blacks out a certain period after the last key press on the control panel. If the display is in sleep mode, pressing ENTER will activate it again.
 - **DISPLAY ROTATION** lets you rotate the display through 180° so that it is easier to read when the fixture is installed with the head hanging downwards. The default setting is AUTOMATIC. With this setting, the display rotates automatically through 180° depending on which way up the fixture is installed.
 - **DISPLAY INTENSITY** lets you adjust the brightness of the display backlighting by setting the intensity to a level from 10% to 100%.
 - **TEMPERATURE UNIT** lets you choose whether the fixture should display all temperature readings in Celsius or Fahrenheit.
- **ERROR MODE** lets you define how the fixture displays any error messages or warnings:
 - **NORMAL**, the default setting, lights up the control panel display and displays any message or warning as soon as it is detected.
 - **SILENT** only displays messages and warnings when you access the fixture’s control panel and go to SERVICE → ERROR LIST.

Factory defaults

FACTORY DEFAULT lets you reload the fixture's factory default settings. Effect calibration settings are not affected, but all other user settings are returned to factory defaults.

Fixture information readouts

The following fixture information can be called up in the display:

- **POWER ON TIME** offers:
 - a non user-resettable counter that displays the number of hours the fixture has been powered on since manufacture, and
 - a user-resettable counter that displays the number of hours the fixture has been powered on since the last time the counter was reset. You can reset the resettable counter to zero in this menu.
- **LAMP ON TIME** offers:
 - a non user-resettable counter that displays the number of hours the lamp has been powered on since manufacture, and
 - a user-resettable counter that displays the number of hours the lamp has been powered on since the last time the counter was reset. You can reset the resettable counter to zero in this menu.
- **LAMP STRIKE** offers:
 - a non user-resettable counter that displays the number of times the lamp has been powered on since manufacture, and
 - a user-resettable counter that displays the number of times the lamp has been powered on since the last time the counter was reset. You can reset the resettable counter to zero in this menu.
- **SW VERSION** displays the currently installed firmware (fixture software) version.
- **RDM UID** displays the fixture's factory-set unique ID for identification in RDM systems.
- **FANS** lets you monitor the operation of each of the fixture's cooling fans. You can scroll through the list of fans and then press ENTER to display the current voltage at the fan's input terminals.
- **HUMIDITY** displays humidity level readouts as percentage relative humidity for the base and the head. Excessive humidity can result in condensation and degrade the fixture's performance and longevity. If the fixture detects relative humidity above 50% inside the fixture, carry out the dehumidifying procedure described in the fixture's Safety and Installation Manual (supplied with the fixture and available for download from www.martin.com) as soon as convenient.
- **TEMPERATURE** displays the current temperature readouts from the sensors on all of the fixture's PCBs (note that, if a sensor detects a temperature that exceeds the safe range, the fixture will automatically shut down lamp power until the temperature returns to normal).

DMX signal monitoring

The **DMX LIVE** menu lets you monitor the quality of the DMX signal that the fixture is receiving. A poor signal can lead to fixture operation problems. This can often be rectified by checking cable and connectors for faults and interference from power cables. If you have long cable runs you can generally improve the quality of the DMX signal by adding a DMX splitter-amplifier such as the Martin RDM 5.5 Splitter, available from your Martin supplier. Always use a DMX splitter-amplifier to split a DMX link into two or more branches.

The **DMX LIVE** menu also lets you scroll through all the fixture's DMX channels and display the DMX values from 0 - 255 that are being received on each channel.

Test sequences

The **FIXTURE TEST** menu lets you test:

- all the fixture's effects by running one pre-programmed sequence
- specific effects individually, or
- pan and tilt only.

Before you run a test, prepare for the head to move and the fixture to light up suddenly without warning.

To run a test:

- In the **FIXTURE TEST** menu, scroll to **TEST ALL**, **TEST EFFECTS** or **TEST PAN/TILT** and press ENTER.
- In the **TEST EFFECTS** menu, scroll to the effect you want to test and press ENTER to start a test sequence for that effect.
- In the **TEST PAN/TILT** menu, choose **PAN** or **TILT**, make sure that there is no danger of the head colliding, then press ENTER to start the test sequence.
- Press MENU to stop the test sequence.

Manual control

The **MANUAL CONTROL** menu lets you reset the ERA 500 Hybrid IP, power the lamp on and off, and operate the fixture's effects without a DMX controller.

To manually control effects in the **MANUAL CONTROL** menu, select the effect that you want to control, then enter a value from 0 to 255 to apply a command. The menu items and values correspond to the commands listed in the DMX protocol in this User Manual.

When you exit the **MANUAL CONTROL** menu, the fixture will keep its effect positions and settings until you enter a new menu. When you do this, the fixture will revert to default positions and settings. The fixture will also revert to default positions and settings if you exit and then re-enter **MANUAL CONTROL**.

Service utilities

The **SERVICE** menu provides utilities for technicians rigging or servicing the fixture:

- **ERROR LIST** displays a complete list of any errors that the fixture has detected and any warnings that the fixture has stored in memory.
- **PAN/TILT FEEDBACK** lets you disable feedback to the fixture software from the pan, tilt and effects positioning systems. If feedback is set to **ON** (the default setting) and a pan, tilt or effect position error is detected, the shutter closes and the effect resets. This feature can be disabled by setting feedback to **OFF**.

The **OFF** setting is not saved when the fixture is powered off, and the system will be re-enabled the next time the fixture starts. If a pan/tilt position error occurs and the system cannot correct pan/tilt position within 10 seconds, feedback is automatically disabled.

- **CALIBRATION** lets you set home positions of pan, tilt and all the fixture's mechanical effects if the fixture loses adjustment. See "Calibration" below for more details. Adjustment may also be required by some firmware updates. If so, this will be mentioned in the firmware release notes.
- **LOAD DEFAULTS** returns the fixture to its factory default home positions (or to the home positions saved using the **SAVE SETTING** command if any home positions have been saved there).
- **SAVE SETTING** replaces the fixture's factory default home positions with the home positions currently set in the **CALIBRATION** menu.

***Caution!** The **SAVE SETTING** command makes permanent changes! See "Calibration" below for more details.*

- **DEHUMIDIFY** runs a process which removes humidity from inside the fixture. Among other things, the process requires the removal of the fixture's pressure relief valves. See the ERA 500 Hybrid IP Safety and Installation Manual (supplied with the fixture and available for download at www.martin.com) for instructions on carrying out dehumidification.

Calibration

Martin fixtures are adjusted and calibrated at the factory to ensure uniform behavior in different fixtures. Further calibration should only be necessary if fixtures have been subjected to abnormal shocks during transport or if normal wear and tear has affected alignment after an extended period of use. You can also use calibration to fine-tune fixtures for a particular location or application.

The **SERVICE** → **CALIBRATION** menu lets you define offsets in the fixture software to adjust the positions of pan, tilt and effects.

A recommended procedure is to set pan, tilt and effects to the same DMX values in multiple fixtures and then calibrate each fixture using its onboard control panel while comparing its light output with a reference fixture. A calibration range of -128 to +127 is available for each effect. After selecting a value, press ENTER to set the effect to that value.

To keep the custom positions that you have set, scroll to **SAVE SETTING** and press **ENTER**. Otherwise the fixture will return to the factory default positions after a power off/on cycle.

Loading and storing default calibration offsets

SERVICE → **LOAD DEFAULTS** erases any custom calibration settings and returns the fixture to its factory default home positions.

SERVICE → **SAVE SETTING** lets you replace the home positions that are currently stored in memory with the custom positions that you have defined using the **CALIBRATION** menu. The fixture will use these settings and also return to them after power off/on cycles. If you want to erase any custom positions that you have saved in this way, you can return the fixture to the factory default positions by applying a **LOAD DEFAULTS** command.

Installing firmware

You can check the currently installed firmware (fixture software) version in the **INFORMATION** menu in the ERA 500 Hybrid IP's control panel.

Firmware updates are available from the Martin website and can be installed using a Windows PC running the Martin Companion software suite with a Martin Companion Cable USB/DMX hardware interface connected to the DMX link or directly to the fixture's DMX IN connector.

Calibration data is stored in the relevant modules wherever possible so that a module will stay calibrated if is removed from the fixture or installed in another fixture.

Important! Do not switch the fixture off or disconnect the source of the firmware during an update, or the firmware will be corrupted.

If you update firmware to a newer version, check the ERA 500 Hybrid IP area of www.martin.com to see whether an updated version of this User Guide is available for the new firmware.

Installing using a PC running Martin Companion

The following are required in order to install firmware using a PC:

- A Windows PC running the latest version of the Martin Companion software suite (available for download from the Martin website at www.martin.com).
- The latest ERA 500 Hybrid IP firmware file. Martin Companion automatically downloads this file from the Martin fixture firmware cloud when Martin Companion is launched on a PC that is connected to the Internet.
- A Martin Companion Cable USB-DMX hardware interface, available from your Martin supplier by ordering P/N 91616091.

To install the ERA 500 Hybrid IP firmware using Martin Companion:

1. Apply power to the ERA 500 Hybrid IP fixture(s) and allow to boot. Connect the Martin Companion Cable hardware interface to your PC and to the fixture's DMX IN connector or to the DMX link. All ERA 500 Hybrid IP fixtures that are powered on and connected to the DMX link will have their firmware updated.
2. Start the PC and launch the Martin Companion application.
3. Check that the Martin Companion application correctly detects the Martin Companion Cable (a green dot should appear next to **USB Connected** in the top right-hand corner of the window).
4. Locate the latest ERA 500 Hybrid IP firmware in the Martin Companion application (**Firmware** → **ERA** → **ERA 500 Hybrid IP**).
5. Start the firmware update by clicking **Update Firmware** in the Martin Companion application. Do not disconnect the Martin Companion cable or power off the fixture(s) until the upload is complete and the fixture(s) has successfully rebooted.
6. If you are updating multiple fixtures over a DMX link, check that they have all rebooted correctly.

Adjusting settings via DMX

The fixture settings and operations listed below can be applied from the DMX controller on Channel 24, the Fixture settings channel.

Commands sent on the fixture control channel override any settings entered in the fixture's onboard control menus.

Important! To help you avoid accidentally applying a setting that may disrupt a light show, for example, the commands must be held for 5 seconds before they are applied.

Lamp on/off

You can strike or douse the lamp via DMX with a Lamp ON or Lamp OFF command.

Blackout during changes

If you want to avoid changes in pan and tilt position or changes in effects being visible to the audience or spectators, you can set the fixture to black out (close the shutter) during any of the following:

- Pan and/or tilt movement
- Change of color on the color wheel
- Change of gobo on either of the two gobo wheels

By default, the fixture does not black out during any of the above changes.

Resetting

You can reset any of the following:

- The entire fixture (reboot including a lamp restrike)
- All effects
- Pan and tilt positions

Resetting the effects or resetting pan and tilt without resetting the entire fixture can allow on-the-fly recovery if an effect or the head loses its correct position. Resetting the entire fixture requires a lamp restrike and involves a possible delay before the lamp is cool enough to restrike.

DMX protocol

ERA 500 Hybrid IP firmware version 1.0.0.

Channel	DMX Value	Function	Fade type	Default value
1	0 - 19	Strobe/shutter effect Shutter closed	Snap	30
	20 - 49	Shutter open		
	50 - 180	Strobe, slow → fast		
	181 - 190	Opening pulse, slow → fast		
	191 - 200	Closing pulse, slow → fast		
	201 - 210	Shutter open		
	211 - 255	Random strobe, slow → fast		
2	0 - 65535	Dimmer fade (MSB) Closed → open	Fade	0
3		Dimmer fade, fine (LSB)	Fade	0
4	0 - 255	Cyan 0 → 100%	Fade	0
5	0 - 255	Magenta 0 → 100%	Fade	0
6	0 - 255	Yellow 0 → 100%	Fade	0
7		Color wheel Indexing <i>Solid colors</i>	Fade	0
	0 - 6	Open		
	7 - 12	Color 1 (Red)		
	13 - 18	Color 2 (Aquamarine)		
	19 - 25	Color 3 (Green)		
	26 - 31	Color 4 (Orange)		
	32 - 37	Color 5 (Pink)		
	38 - 44	Color 6 (CTO 5500 K)		
	45 - 50	Color 7 (CTO 4600 K)		
	51 - 56	Color 8 (CTO 3200 K)		
	57 - 63	Color 9 (UV)		
		<i>Split colors (continuous color wheel indexing)</i>		
	64 - 65	Open		
	66 - 71	Open → Color 1		
	72	Color 1 (Red)		
	73 - 78	Color 1 → Color 2		
	79	Color 2 (Aquamarine)		
	80 - 85	Color 2 → Color 3		
	86	Color 3 (Green)		
	87 - 92	Color 3 → Color 4		
	93	Color 4 (Orange)		
	94 - 99	Color 4 → Color 5		
	100	Color 5 (Pink)		
	101 - 106	Color 5 → Color 6		
	107	Color 6 (CTO 5500)		
	108 - 113	Color 6 → Color 7		
	114	Color 7 (CTO 4600 K)		
115 - 120	Color 7 → Color 8			
121	Color 8 (CTO 3200 K)			
122 - 127	Color 8 → Color 9			
	Continuous rotation			
128 - 190	CW, fast → slow			
191 - 192	Stop (wheel stops at current position)			
193 - 255	CCW slow → fast			

Table 1: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
8		Gobo wheel 1 (rotating gobos)	Snap	0
		Gobo selection		
	0 - 7	Open		
	8 - 15	Gobo 1 (Bar)		
	16 - 23	Gobo 2 (Lucky Stakes)		
	24 - 31	Gobo 3 (Bite Me)		
	32 - 39	Gobo 4 (Sonar)		
	40 - 47	Gobo 5 (Kite Surf)		
	48 - 55	Gobo 6 (Dots in Space)		
	56 - 63	Gobo 7 (Organic Delight)		
	64 - 71	Gobo 8 (Spidey)		
	72 - 79	Gobo 9 (Cone)		
	80 - 87	Gobo 1 shake		
	88 - 95	Gobo 2 shake		
	96 - 103	Gobo 3 shake		
104 - 111	Gobo 4 shake			
112 - 119	Gobo 5 shake			
120 - 127	Gobo 6 shake			
128 - 135	Gobo 7 shake			
136 - 143	Gobo 8 shake			
144 - 151	Gobo 9 shake			
	Continuous gobo wheel rotation			
152 - 202	CCW fast → slow			
203 - 204	Stop (wheel stops at current position)			
205 - 255	CW slow → fast			
9		Gobo wheel 1	Snap	0
		Gobo indexing/rotation		
	0 - 127	Gobo indexing 0 - 360°		
	128 - 190	Gobo rotation CW fast → slow		
	191 - 192	Stop		
193 - 255	Gobo rotation CCW slow → fast			
10		Gobo wheel 2 (static gobos)	Snap	0
		Gobo selection		
	0 - 4	Open		
	5 - 9	Gobo 1 (Iris 1)		
	10 - 14	Gobo 2 (Iris 2)		
	15 - 19	Gobo 3 (Iris 3 / Pinspot)		
	20 - 24	Gobo 4		
	25 - 29	Gobo 5		
	30 - 34	Gobo 6		
	35 - 39	Gobo 7		
	40 - 44	Gobo 8		
	45 - 49	Gobo 9		
	50 - 54	Gobo 10		
	55 - 59	Gobo 11		
	60 - 79	Gobo animation zone		
	80 - 84	Gobo 1 shake		
	85 - 89	Gobo 2 shake		
	90 - 94	Gobo 3 shake		
	95 - 99	Gobo 4 shake		
	100 - 104	Gobo 5 shake		
	105 - 109	Gobo 6 shake		
	110 - 114	Gobo 7 shake		
	115 - 119	Gobo 8 shake		
120 - 124	Gobo 9 shake			
125 - 129	Gobo 10 shake			
130 - 134	Gobo 11 shake			
135 - 184	Animation zone action slow → fast			
	Continuous gobo wheel rotation			
185 - 218	CCW slow → fast			
219 - 221	Stop (wheel stops at current position)			
222 - 255	CW slow → fast			
11		Spot diffuser / beamsmoother	Snap	0
	0 - 127	Disabled		
	128 - 255	Enabled		
12		Frost	Fade	0
	0 - 127	Disabled		
	128 - 255	Enabled		
13		Rotating Prism 1 deployment	Snap	0
	0 - 10	Off		
	11 - 255	On		

Table 1: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
14	0 - 127	Rotating Prism 1 movement	Snap	0
	128 - 190	Indexing 0° - 360°		
	191 - 192	Rotation CW fast → slow		
	193 - 255	Stop Rotation CCW slow → fast		
15	0 - 10	Rotating Prism 2 deployment	Snap	0
	11 - 255	Off On		
16	0 - 127	Rotating Prism 2 movement	Snap	0
	128 - 190	Indexing 0° - 360°		
	191 - 192	Rotation CW fast → slow		
	193 - 255	Stop Rotation CCW slow → fast		
17	0 - 255	Zoom Narrow → wide	Fade	0
18	0 - 255	Focus Far → near	Fade	0
19	0 - 65535	Pan (MSB) Left → right	Fade	32768
20		Pan, fine (LSB)		
21	0 - 65535	Tilt (MSB) Up → down	Fade	32768
22		Tilt, fine (LSB)		
23	0 - 255	Pan/Tilt speed Fast → slow	Fade	0
24	0 - 39	Fixture settings <i>(hold for 5 seconds to activate)</i>	Snap	0
	40 - 54	<i>No function</i>		
	55 - 69	Lamp ON		
	70 - 79	Lamp OFF		
	80 - 89	Blackout during Pan/Tilt move enabled		
	90 - 99	Blackout during Pan/Tilt move disabled		
	100 - 109	Blackout during Color wheel change enabled		
	110 - 119	Blackout during Color wheel change disabled		
	120 - 129	Blackout during Gobo change enabled		
	130 - 199	Blackout during Gobo change disabled		
	200 - 209	<i>No function</i>		
	210 - 219	Reset All		
	220 - 229	Reset Effects only		
	230 - 255	Reset Pan/Tilt only <i>No function</i>		

Table 1: DMX Protocol

Default settings on the Fixture settings channel are shown in **bold print**.

Control panel menus

ERA 500 Hybrid IP firmware version 1.0.0.

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes	
DMX ADDRESS	1 – XXX			DMX address (default address = 1). The DMX address range is limited so that the fixture will always have enough DMX channels within the 512 available.	
PERSONALITY	PAN INVERT	OFF/ON		Inverse DMX pan control: right → left	
	TILT INVERT	OFF/ON		Inverse DMX tilt control: down → up	
	PAN/TILT SPEED	FAST			Optimize pan/tilt movement for speed
		SMOOTH			Optimize pan/tilt movement for smoothness
	AUTO LAMP ON	OFF			Automatic lamp strike disabled
		ON			Lamp strikes automatically 60 seconds after fixture is powered on
		DMX			Lamp strikes automatically 60 seconds after DMX signal is received
	DMX LAMP OFF	ON			Lamp can be powered off via DMX (using command on Fixture settings channel)
		OFF			Lamp cannot be powered off via DMX
	NO DATA MODE	BLACKOUT			If data signal stops, fixture blacks out
		HOLD			If data signal stops, fixture holds last received data on all channels (holds current scene)
	COOLING MODE	REGULATED FANS			Fan speed optimized for lowest noise: temperature-controlled by regulating fan speed
		FULL			Fans run at constant full speed
	DMX RESET	ON			Fixture can be reset via DMX (using command on Fixture settings channel)
		OFF			Fixture cannot be reset via DMX
	EFFECT SHORTCUT	ON			Effects take shortest route during changes, crossing open positions if necessary
		OFF			Effects avoid crossing open positions during changes
	DISPLAY	DISPLAY SLEEP	ON		Control panel display constantly on
			2 MINUTES		Control panel display goes into sleep mode after 2 / 5 / 10 minutes
			5 MINUTES		
			10 MINUTES		
		DISPLAY ROTATION	AUTOMATIC		Control panel display rotates 180° automatically if fixture is installed with the head below the base
			NORMAL		Control panel display orientation normal
			ROTATE 180		Control panel display rotated 180°
	DISPLAY INTENSITY	10 ... 100		Set control panel display intensity in % (default = 100)	
	TEMPERATURE UNIT	°C / °F		All temperature readouts in Celsius / Fahrenheit	
	ERROR MODE	NORMAL			Enable error messages and warnings in display
		SILENT			Disable error messages and warnings in display

Table 2: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes
FACTORY DEFAULT	LOAD	ARE YOU SURE?	NO	Return all settings (except calibrations) to factory defaults
			YES	
INFORMATION	POWER ON TIME	TOTAL	0 - xxx HR	Display number of hours fixture has been powered on since manufacture (not user-resettable)
		RESETTABLE	CLEAR COUNTER? YES/NO	Display number of hours fixture has been powered on since counter was last reset (user-resettable)
	LAMP ON TIME	TOTAL	0 - xxx HR	Display number of hours lamp has been powered on since manufacture (not user-resettable)
		RESETTABLE	CLEAR COUNTER? YES/NO	Display number of hours lamp has been powered on since counter was last reset (user-resettable)
	LAMP STRIKES	TOTAL	0 - xxx	Display number of lamp strikes since manufacture (not user-resettable)
		RESETTABLE	CLEAR COUNTER? YES/NO	Display number of lamp strikes since counter was last reset (user-resettable)
	SW VERSION	V.X.X.X		Display currently active fixture software (firmware) version
	RDM UID	4D50.XXXXXXX		Display fixture's unique RDM ID
	FANS	BASE FAN 1 ... HEAD FAN 12	xx.x V	Display current voltage of all cooling fans: base fans 1 - 3, lamp fan and head fans 1 - 12.
	HUMIDITY	HEAD	xx%	Display relative humidity in head
BASE		xx%	Display relative humidity in base	
TEMPERATURE	MAIN PCB ... BASE	x.x °C	Scroll through current readings on all PCB temperature sensors: main PCB, pan/tilt PCB, CMY PCB, effects PCB, zoom/focus PCB, fan PCB 1, fan PCB 2, head PCB, base PCB	
DMX LIVE	RATE	0 - 45	xx Hz	DMX transmission speed in packets per second
	QUALITY	0 - 100	xx %	Percentage of packets received
	STROBE ... FUNCTION	0 - 255		Scroll through DMX channels in sequence to see DMX values currently being received on each channel
	TEST ALL			Run test sequence of all functions. Press MENU button to exit test.
FIXTURE TEST	TEST EFFECTS	STROBE ... FOCUS		Run test sequence of individual effects. To test a specific effect, use UP/DOWN buttons to scroll to effect. Press ENTER to pause and restart test sequence. Press MENU button to exit test
	TEST PAN/TILT	PAN		Run test sequence of pan functions. Press MENU button to exit test.
		TILT		Run test sequence of tilt functions. Press MENU button to exit test.
	MANUAL CONTROL	RESET	HEAD MOTORS	
PAN / TILT MOTORS			Reset pan and tilt motors only	
ALL MOTORS			Reset all motors	
LAMP ON/OFF		ON		Strike lamp
		OFF		Douse lamp
STROBE ... PAN/TILT SPEED	0-255		Scroll through effects, then manually control an effect	

Table 2: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes
SERVICE	ERROR LIST	Empty or up to 20 errors		Display any errors stored in memory
	PAN/TILT FEEDBACK	ON		Enable pan/tilt position feedback system
		OFF		Disable pan/tilt position feedback system
	CALIBRATION	PAN ... FOCUS	-127 – +128 ... -127 – +128	Scroll through effects, press ENTER to select. Use UP and DOWN buttons to adjust home position. Press ENTER to store.
	LOAD DEFAULTS	LOAD		Load factory default calibration settings
	SAVE SETTING	SAVE		Replace factory default calibration settings with current calibration settings
	DEHUMIDIFY	RUN	HEAD HUMID xx%	Current humidity levels
BASE HUMID xx%				
EXIT			Exit dehumidification	

Table 2: Control menus

*Default settings are shown in **bold print**.*

Service and display messages

The ERA 500 Hybrid IP monitors its own performance and has a diagnostic error recognition system that lets it display messages with an indication of any problem that has been detected.

If the fixture has a status message to report, a red warning triangle appears in the bottom right of the control panel display. If the red triangle is present, pressing the ENTER button displays any active status messages.

High temperature management

If any of the temperature sensors reports that the fixture has exceeded its recommended temperature range, the fixture reports a temperature warning. If the temperature reaches an unsafe level, the lamp is doused automatically, the fixture shows a LAMP HOT POWER OFF warning, and it is impossible to restrike the lamp until the lamp is cool enough to strike normally.

Status message list

The status messages that the fixture can display are listed in Table 3 below:

Code	RDM code	Notes
BALLAST COMM ERR	0X9078	Ballast communication error
BASE FAN 1 START ERR	0X9058	Base cooling fan warning
BASE FAN 1 STOP ERR	0X9059	Base cooling fan warning
BASE FAN 2 START ERR	0X905A	Base cooling fan warning
BASE FAN 2 STOP ERR	0X905B	Base cooling fan warning
BASE FAN 3 START ERR	0X905C	Base cooling fan warning
BASE FAN 3 STOP ERR	0X905D	Base cooling fan warning
COLOR RESET FAIL	0X90A3	Color wheel reset failure
CYAN RESET FAIL	0X90A0	Cyan color flag reset failure
DIFFUSER RESET FAIL	0X90AF	Spot diffuser / beamsmoother reset failure
FOCUS RESET FAIL	0X90A7	Focus reset failure
GOBO1 RESET FAIL	0X90A4	Rotating gobo wheel reset failure
GOBO2 RESET FAIL	0X90A6	Static gobo wheel reset failure
GRAVIT SENSOR ERR	0X9079	Fixture orientation sensor error
HEAD FAN1 START ERR	0X9060	
HEAD FAN1 STOP ERR	0X9061	
HEAD FAN2 START ERR	0X9062	
HEAD FAN2 STOP ERR	0X9063	
HEAD FAN3 START ERR	0X9064	
HEAD FAN3 STOP ERR	0X9065	
HEAD FAN4 START ERR	0X9066	
HEAD FAN4 STOP ERR	0X9067	
HEAD FAN5 START ERR	0X9068	
HEAD FAN5 STOP ERR	0X9069	
HEAD FAN6 START ERR	0X906A	
HEAD FAN6 STOP ERR	0X906B	
HEAD FAN7 START ERR	0X906C	
HEAD FAN7 STOP ERR	0X906D	
HEAD FAN8 START ERR	0X906E	
HEAD FAN8 STOP ERR	0X906F	

Table 3: Status messages

Code	RDM code	Notes
HEAD FAN9 START ERR	0X9070	
HEAD FAN9 STOP ERR	0X9071	
HEAD FAN10 START ERR	0X9072	
HEAD FAN10 STOP ERR	0X9073	
HEAD FAN11 START ERR	0X9074	
HEAD FAN11 STOP ERR	0X9075	
HEAD FAN12 START ERR	0X9076	
HEAD FAN12 STOP ERR	0X9077	
LAMP HOT POWER OFF	0X8004	Lamp is hot: restrike not possible until lamp temperature has normalized
LAMP 80% USED	0X8005	Lamp lifetime warnings: lamp replacement will soon be required
LAMP 90% USED	0X8006	
CHANGE LAMP	0X8007	Lamp at end of lifetime. Do not use fixture until new lamp is installed.
LAMP FAN1 START ERR	0X905E	
LAMP FAN1 STOP ERR	0X905F	
MAGENTA RESET FAIL	0X90A1	Magenta flag reset error
PAN ENCODE ERR	0X9010	
PAN RESET ERR	0X9012	
PCBA CMY/COLOR ERR	0X9099	
PCBA EFFECT ERR	0X909B	
PCBA FAN BOARD1 ERR	0X909D	
PCBA FAN BOARD2 ERR	0X909D	
PCBA PAN/TILT ERR	0X9098	
PCBA ZOOM FOCUS ERR	0X909A	
PRISM1 PRESET FAIL	0X90A9	Prism 1 reset failure
PRISM1 RPRESET FAIL	0X90AA	Prism 1 rotation reset failure
PRISM2 PRESET FAIL	0X90AB	Prism 2 reset failure
PRISM2 RPRESET FAIL	0X90AC	Prism 2 rotation reset failure
RGOBO1 RESET FAIL	0X90A5	Rotating gobo 1 reset failure
TILT ENCODE ERR	0X9011	
TILT RESET ERR	0X9013	
YELLOW RESET FAIL	0X90A2	Yellow flag reset error
ZOOM RESET FAIL	0X90A8	

Table 3: Status messages



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