ERA 600 Performance

User Guide

Martin
by HARMAN

User Documentation update information

Any important changes in the ERA 600 Performance User Guide are listed below.

Revision A

First version released. Covers ERA 600 Performance firmware version 1.1.0

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ERA 600 Performance User Guide, P/N 5124286-00 Rev. A

Contents

Introduction

Warning! Before installing, operating or servicing the ERA 600 Performance, 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 600 Performance 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 600 Performance. Both these documents are available for download from the ERA 600 Performance area of the Martin website at www.martin.com. This User Guide contains information that is mainly of interest for lighting designers and operators, whereas 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, because we publish revised versions 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 600 Performance:

- Read the 'Safety Information' section of the fixture's Safety and Installation Manual.
- Check that the installation is safe and secure.
- Check that the base is fastened securely so that the torque reaction when the head moves will not cause the base to move.
- Check that the head tilt lock is released.
- 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 600 Performance 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.

Effects

This section gives details of the effects available in the ERA 600 Performance. See the DMX protocol table on page 18 for a list of channels and commands used to control the effects via DMX.

Where fine control is available, the main 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 600 Performance's electronic shutter effect provides instant blackout and snap open as well as regular or random strobe and pulse effects with variable speed from approx. 1Hz to 20 Hz.

Dimming

Smooth 0-100% overall dimming is available with 16-bit control resolution. Four dimming curves are available (see Figure 6 on page 13).

Color mixing

The ERA 600 Performance features dichroic CMY color filters, with 16-bit continuous color mixing available on six DMX channels.

Color temperature control

16-bit color temperature control is available on two dedicated CTC channels. You can adjust the fixture's color temperature smoothly and continuously from 6500 K to 2700 K.

Color wheel

The ERA 600 Performance provides a color wheel that lets you select from 6 dichroic color filters plus open (see Figure 1).

The color wheel can be scrolled continuously with control of speed and direction.

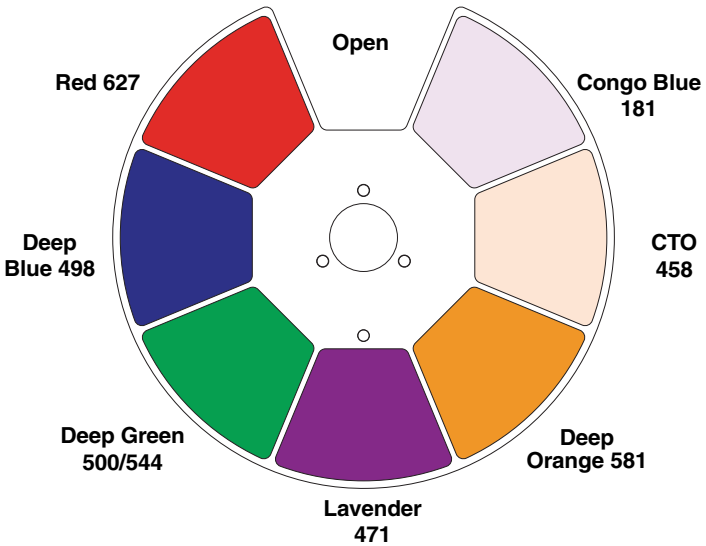


Figure 1: Color wheel

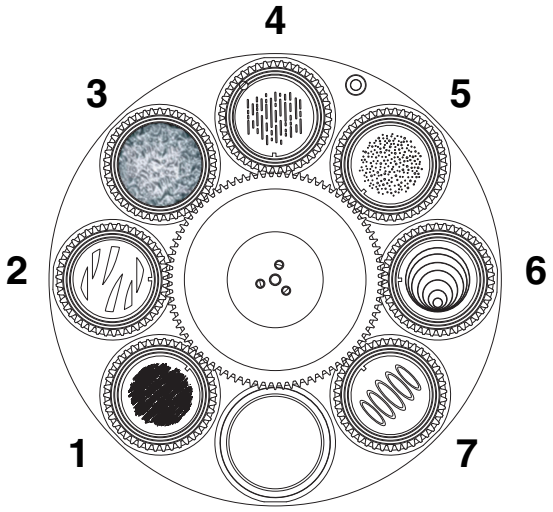
Rotating gobos

The rotating gobo wheel in the ERA 600 Performance has seven 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. Gobo selection and control type (indexing, continuous gobo rotation, gobo shake or continuous gobo wheel scrolling) are selected on channel 13. Depending on what is selected on this channel, the gobo indexed angle or gobo rotation speed are set on channels 14 and 15 with 16-bit control resolution.

The standard gobos are shown in the correct order in Figure 2. All gobos are interchangeable, but Gobo 3 (Limbo) is fused glass and has a special goboholder. The ERA 600 Performance Safety and Installation Guide contains details.

1 2 3 4 5 6 7

Slot - Gobo	Part number
1. Ray Brush	P/N 5123147-00
2. Too Many Doctors	P/N 5123148-00
3. Limbo (fused glass)	P/N 5123149-00
4. Light Lines	P/N 5123150-00
5. Dots in Space	P/N 5123151-00
6. Sonar	P/N 5123152-00
7. 5 Circles in Line	P/N 5123153-00



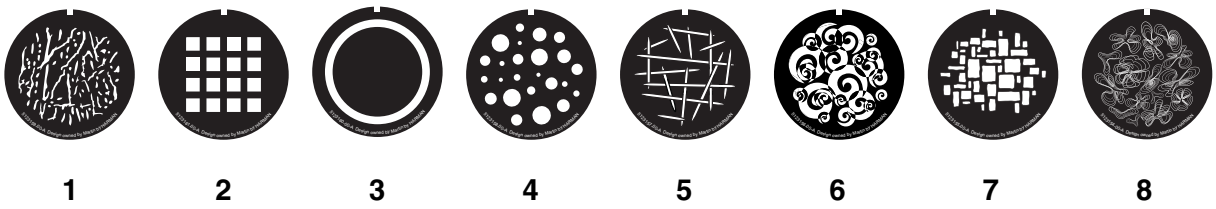
Rotating gobo wheel seen from LED side

Figure 2: Rotating gobos installed as standard

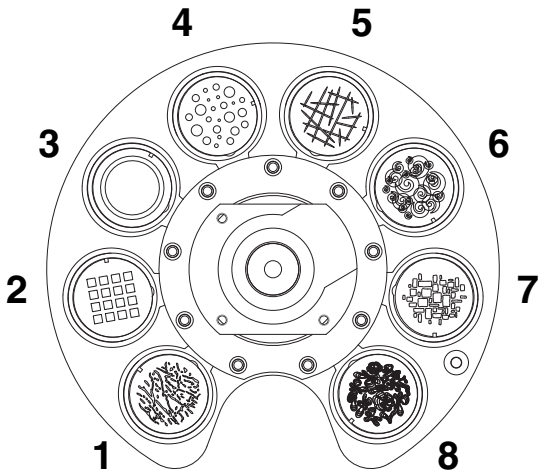
Static gobos

The static gobo wheel in the ERA 600 Performance has eight static gobos. The static gobo wheel can be scrolled continuously or shaken. Gobo selection and control type (indexing, continuous gobo rotation, gobo shake or continuous gobo wheel scrolling) are selected on channel 6. Depending on what is selected on this channel, the gobo indexing angle or gobo rotation speed are set on channels 7 and 8, where 16-bit control is available.

The standard gobos are shown in the correct order in Figure 3.



Slot - Gobo	Part number
1. Marble Veins	P/N 5123159-00
2. Squares	P/N 5123161-00
3. Lasercone Single	P/N 5123160-00
4. Dots	P/N 5123158-00
5. Mikado	P/N 5123157-00
6. Happy	P/N 5123156-00
7. Brick It	P/N 5123155-00
8. Ray Flowers	P/N 5123154-00



Static gobo wheel seen from LED side

Figure 3: Static gobos installed as standard

Static gobos may be replaced by Martin Global Service or its authorized agents only.

Animation wheel

The ERA 600 Performance is supplied with the “Radial Breakup” animation wheel installed. The wheel can be used to add animation effects to gobo projections.

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

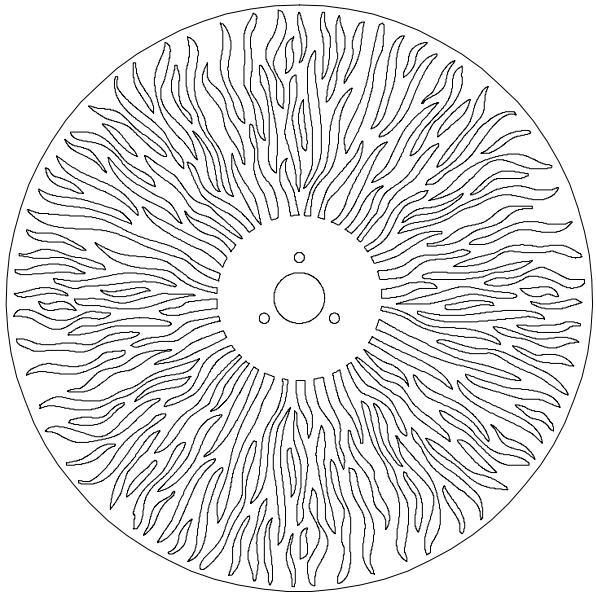


Figure 4: ‘Radial Breakup’ animation wheel

Frost

The ERA 600 Performance has a frost effect that gives a wash-type projection and softens gobo outlines.

Rotating prisms

The ERA 600 Performance has two rotating prisms: one four-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.

Iris

The iris diameter can be varied continuously from fully open to closed. Opening and closing pulse effects with variable speed are also available.

Framing

The 4-blade framing module in the ERA 600 Performance can be rotated to an indexed position within a total range of 120°.

The framing blades have independent control of angle and amount of insertion for each blade. By adjusting these parameters you can form the beam into any shape with three or four sides.

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.

The ERA 600 Performance’s zoom lens varies the focused beam angle from 6° to 45°. Wide zoom angles allow sharp focus on projection surfaces close to the fixture. At narrower zoom angles, sharp focus is only possible further from the fixture.

Long-range focus can always be set to infinity.

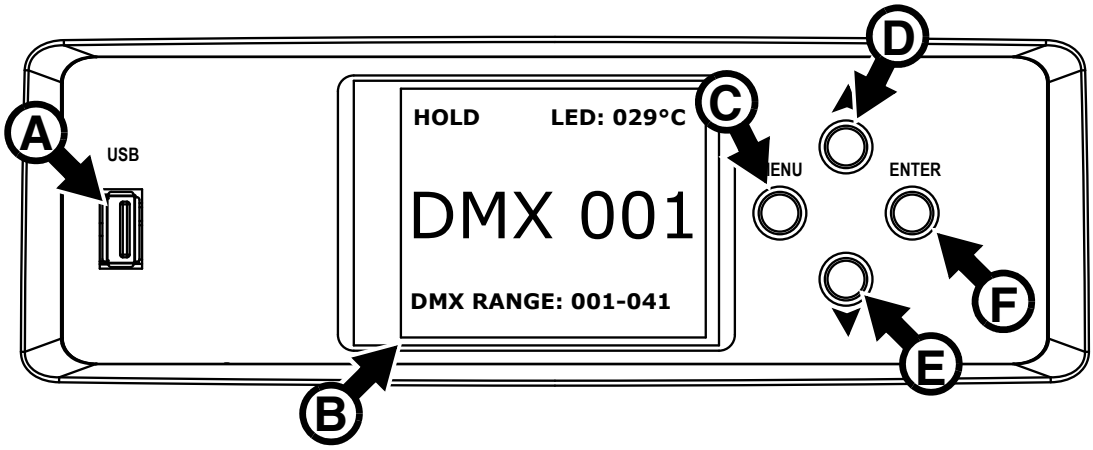
Pan and tilt

The ERA 600 Performance 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 600 Performance's DMX address), read out data, execute service operations and view error messages using the fixture's backlit graphic display and control panel.



A - USB port
B - LCD display
C - Menu button
D - Up button
E- Down button
F - Enter button

Figure 5: Display and control panel

When the ERA 600 Performance 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 LED temperature sensor reading.
- DMX channels occupied by the fixture. If the DMX address is set to 001, for example, the fixture will occupy channels 001–041.

If the fixture has registered any error or warning messages while it boots, the display will show a red warning triangle. Press the Enter button to see the messages.

Display appearance

The display flashes if no DMX signal is being received.

The display enters sleep mode and blacks out after 60 seconds with no activity. If you want to see the display of a fixture that is hanging in a rig, for example, you can bring it out of sleep mode remotely by sending a 'Display ON' command on the Control / Settings DMX channel.

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 **C** or Enter button **F** to access the menus.
- Use the Up and Down buttons **D** and **E** to scroll up and down menus.
- Press the Enter button **F** to enter a menu or make a selection.
- The currently selected item in a menu is indicated by a star ✜.
- Press the Menu button **C** to step backwards through the menus.

Settings stored permanently

The following settings are stored permanently in the fixture memory and are not affected by powering the ERA 600 Performance off and on or by updating the fixture software:

- DMX address
- Fixture ID
- All personality settings (pan/tilt, cooling mode, dimming curve, display settings etc.)
- Resettable counters
- Service settings

Control options

DMX

The ERA 600 Performance 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 600 Performance 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. Scroll to **DMX SETUP**.
2. Press Enter to enter the **DMX ADDRESS** menu, then scroll to the desired address and press Enter to save.
3. Press Menu to exit.

RDM

The ERA 600 Performance 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.

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 600 Performance 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 600 Performance supports the standard RDM PIDs (Parameter IDs) required by ESTA plus two manufacturer-specific PIDs that:

- Set how the fixture behaves if the DMX signal is lost
- Select from one of the four available dimming curves.

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			
✓		QUEUED_MESSAGE	
✓		STATUS_MESSAGES	
✓		STATUS_ID_DESCRIPTION	
	✓	CLEAR_STATUS_ID	
RDM Information			
✓		SUPPORTED_PARAMETERS	
Product information			
✓		DEVICE_INFO	
✓		DEVICE_MODEL_DESCRIPTION	
✓		MANUFACTURER_LABEL	
✓	✓	DEVICE_LABEL	
✓		SOFTWARE_VERSION_LABEL	
✓		BOOT_SOFTWARE_VERSION_ID	
✓		COMMS_STATUS	
DMX Setup			
✓	✓	DMX_PERSONALITY	
✓		DMX_PERSONALITY_DESCRIPTION	
✓	✓	DMX_START_ADDRESS	
Sensors			
✓		SENSOR_DEFINITION	
✓		SENSOR_VALUE	
Usage information			
✓	✓	DEVICE_HOURS	
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)	Behavior if loss of DMX signal. Set to: 00 BLACKOUT 01 HOLD
	✓	DIMMER_CURVE (0X0343)	Set dimming curve to: 00 LINEAR 01 SQUARE LAW 02 INV SQ LAW 03 S-CURVE

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.

Fixture ID

The ERA 600 Performance lets you set a four-digit ID number to ease identification of the fixtures in an installation. When a fixture is powered on for the first time, it displays its DMX address by default. As soon as you set an ID number other than **0** in **FIXTURE ID**, the ERA 600 Performance will display this ID number by default, and indicate **FIXTURE ID** in the display.

Personality

The ERA 600 Performance 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 **SLOW** (optimized for smooth movement – useful for slow movements in long-throw applications).

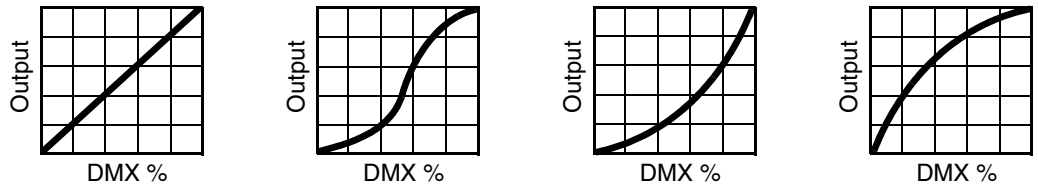


Figure 6: Dimming curve options

- **DIMMER CURVE** provides four dimming options (see Figure 6) that you can scroll through in the selection pane:
  - **LINEAR** – (optically linear) the increase in light intensity appears to be linear as DMX value is increased.
  - **S-CURVE** – light intensity control is finer at low levels and high levels and coarser at medium levels. This curve emulates the RMS voltage dimming characteristics of an incandescent lamp such as the tungsten halogen lamp of the Martin™ MAC TW1™.
  - **SQUARE LAW** – light intensity control is finer at low levels and coarser at high levels.
  - **INV SQUARE LAW** – light intensity control is coarser at low levels and finer at high levels.
- **DIMMING SPEED** lets you select a speed for reactions to changes in dimming level. At the **FAST** setting, the fixture reacts immediately to any change in dimming level and snaps to the new level. At the **SLOW** setting, the fixture will always carry out a short, smooth fade from one dimming level to the next.
- **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 light output. It controls fixture temperature by varying cooling fan speed up to the maximum speed available and does not limit light intensity.
  - **FULL** optimizes cooling fan operation for the lowest possible temperature by setting cooling fans to run constantly at full speed.

- **DISPLAY** offers the following options for the LCD display:
  - **DISPLAY ROTATION** lets you rotate the display manually through 180° so that it can be read easily no matter how the fixture is oriented.
  - **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.

Factory defaults

DEFAULT SETTINGS 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.

Test sequences

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

- all the fixture's effects
- dimming functionality
- each individual mechanical effect, 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 DIMMER**, **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 the fixture is held securely and that there is no danger of the head colliding, then press Enter to start the test sequence.
- Press Menu to stop the test sequence.

Fixture information readouts

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

- **POWER ON TIME** is a non user-resettable counter that displays total hours the fixture has been powered on since manufacture.
- **LED HOURS** is a non user-resettable counter that displays total hours the LEDs have been powered on since manufacture.
- **SW VERSION** displays the currently installed firmware (fixture software) version.
- **FIXTURE ID** lets you set a custom four-digit ID number for the fixture.
- **RDM UID** displays the fixture's factory-set unique ID for identification in RDM systems.
- **TEMPERATURES** displays the current PCB temperature readouts for the fixture's base and LED array.

DMX signal monitoring

The **DMX LIVE** menu 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.

Manual control

The **MANUAL CONTROL** menu lets you reset the ERA 600 Performance and operate the fixture without a DMX controller.

To execute commands 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:

- **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** 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. 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). See "Calibration" below.
- **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.***
- **USB** lets you updates the firmware (fixture software) using a USB memory device. For a detailed guide to updating the firmware, see "Installing using a USB memory device" later in this chapter.

Calibration

Martin fixtures are adjusted and calibrated at the factory, and 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 relative to the DMX values the fixture receives. This allows you to fine-tune fixtures and achieve uniform behavior in different fixtures.

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 -127 to +128 is available for each effect. After selecting a value, press Enter to set the effect to that value.

Loading and storing default calibration offsets

SERVICE → **LOAD DEFAULTS** lets you erase the calibration offsets that you have defined and reload the default calibration offsets that are stored in memory**.**

SERVICE → **SAVE SETTING** lets you overwrite the factory default calibration offsets that are stored in memory with any new offsets that you have defined. ***Caution! The SAVE SETTING command makes permanent changes!*** Overwriting is permanent, so once you have saved new default offsets, **LOAD DEFAULTS** will load the new defaults, not the original factory defaults.

Installing firmware

You can check the currently installed firmware (fixture software) version in the **INFORMATION** menu in the ERA 600 Performance's control panel.

Firmware updates are available from the Martin website and can be installed using one of the following:

- A USB memory device inserted into the USB port beside the control panel.
- 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.

Installing using a USB memory device

The following are required in order to install firmware using a USB memory device:

- The ERA 600 Performance firmware update files available for download from the Martin website at www.martin.com.
- A USB drive such as a USB flash memory stick formatted in Windows using the FAT32 file system.

To install the ERA 600 Performance firmware using a USB drive:

1. Create a folder in the root of a USB drive and give it the version number of the firmware update as the folder name. Copy the eight firmware files to this folder (note that automatic updates will not work if files are missing or placed in a subfolder of this folder).
2. Disconnect the data link from the ERA 600 Performance.
3. Insert the USB drive into the ERA 600 Performance's USB host socket. The fixture should recognize the USB drive and illuminate the display. If the fixture does not recognize the USB drive, navigate to **SERVICE** → **USB** in the control panel.
4. Scroll to the folder with the update files on the USB drive and press Enter. The update will begin automatically and the display will show progress status. At the end of the update process the fixture will reboot. Do not remove the USB drive until the fixture has successfully rebooted.
5. Remove the USB drive from the fixture. The newly-installed firmware version will now be displayed in the **INFORMATION** menu.
6. Reconnect the data link.
7. If you have updated firmware to a newer version, check the ERA 600 Performance area of www.martin.com to see whether an updated version of this User Guide is available for the new firmware.

Fixture information and settings are not affected when you upload new firmware to the fixture.

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 that is available for download from the Martin website at www.martin.com.
- The latest ERA 600 Performance firmware file that Martin Companion automatically downloads 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 600 Performance firmware using Martin Companion:

1. Connect the Martin Companion Cable hardware interface to your PC and to the DMX link (or fixture's DMX IN connector).
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 600 Performance firmware in the Martin Companion application (**Firmware** → **ERA** → **ERA 600 Performance**).
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.

Adjusting settings via DMX

Certain fixture settings and parameters can be adjusted from the DMX controller on Channel 41, the Fixture control/settings channel.

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

To help you avoid accidentally applying a setting that may disrupt a light show, for example, the commands must be held for a certain time before they are applied. For example, the command that turns off the display illumination must be held for one second to activate it. The command that resets the fixture must be held for five seconds to activate it. The DMX protocol table in this user manual gives details of times required.

Resetting

Either the entire fixture or individual effects can be reset to their initial positions. Resetting individual effects can allow on-the-fly recovery if an effect loses its correct position, for example, without having to reset the entire fixture.

Illuminating the display

The fixture's display panel can be set to ON or OFF with a DMX command. This makes it possible to read the fixture's DMX address while the fixture is installed in the rig but black out the display panel during a show.

If the display is set to ON via DMX, it will enter sleep mode and black out after a short period of inactivity. To bring it out of sleep mode, set the display to ON again via DMX.

Control menu setting overrides

The following fixture settings can be adjusted via DMX, overriding the settings entered in the onboard control menus. See under "Control panel menus" on page 22 for details of these settings.

- Dimming curve
- Pan and tilt speed
- Fan speed

DMX protocol

ERA 600 Performance firmware version 1.1.0.

Channel	DMX Value	Function	Fade type	Default value
1		**Strobe/shutter effect**	Snap	0
	0 - 19	Shutter closed		
	20 - 24	Shutter open		
	25 - 64	Strobe, fast → slow		
	65 - 69	Shutter open		
	70 - 84	Opening pulse, fast → slow		
	85 - 89	Shutter open		
	90 - 104	Closing pulse, fast → slow		
	105 - 109	Shutter open		
	110 - 124	Random strobe, fast → slow		
	125 - 129	Shutter open		
	130 - 144	Random opening pulse, fast → slow		
	145 - 255	Shutter open		
2	0 - 65535	**Dimmer fade (MSB)** Closed → open	Fade	0
3		**Dimmer fade, fine (LSB)**	Fade	0
4	0 - 65535	**Cyan (MSB)** 0 → 100%	Fade	0
5		**Cyan fine (LSB)** 0 → 100%	Fade	0
6	0 - 65535	**Magenta (MSB)** 0 → 100%	Fade	0
7		**Magenta fine (LSB)** 0 → 100%	Fade	0
8	0 - 65535	**Yellow (MSB)** 0 → 100%	Fade	0
9		**Yellow fine (LSB)** 0 → 100%	Fade	0
10	0 - 65535	**CTO (MSB)** 0 → 100%	Fade	0
11		**CTO fine (LSB)** 0 → 100%	Fade	0
12		**Color wheel** **Indexing** *Solid colors*	Fade	0
	0 - 5	Open		
	6 - 11	Color 1		
	12 - 17	Color 2		
	18 - 23	Color 3		
	24 - 29	Color 4		
	30 - 35	Color 5		
	36 - 41	Color 6		
	42 - 47	Color 7		
		Split colors		
	48 - 127	Continuous color wheel indexing		
		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
13		**Gobo wheel 1** **Gobo selection**	Snap	0
	0 - 6	Open		
	7 - 13	Gobo 1		
	14 -20	Gobo 2		
	21 - 27	Gobo 3		
	28 - 34	Gobo 4		
	35 - 41	Gobo 5		
	42 - 48	Gobo 6		
	49 - 55	Gobo 7		
	56 - 62	Gobo 1 shake		
	63 - 69	Gobo 2 shake		
	70 - 76	Gobo 3 shake		
	77 - 83	Gobo 4 shake		
	84 - 90	Gobo 5 shake		
	94 - 97	Gobo 6 shake		
	98 - 104	Gobo 7 shake		
		Continuous gobo wheel rotation		
	105 - 178	CW, fast → slow		
	179 - 181	Stop (wheel stops at current position)		
	182 - 255	CCW slow → fast		
14		**Gobo wheel 1** **Gobo indexing/rotation**	Snap	0
	0 - 127	Gobo indexing 0 - 360°		
	128 - 190	Gobo rotation CW fast → slow		
	191 - 192	Stop		
	193 - 255	Gobo rotation CCW slow → fast		
15		**Gobo wheel 1** **Gobo indexing/rotation fine**	Fade	0
	0 - 255	Indexed position / rotation speed fine		
16		**Gobo wheel 2** **Gobo selection**	Snap	0
	0 - 6	Open		
	7 - 13	Gobo 1		
	14 -20	Gobo 2		
	21 - 27	Gobo 3		
	28 - 34	Gobo 4		
	35 - 41	Gobo 5		
	42 - 48	Gobo 6		
	49 - 55	Gobo 7		
	56 - 62	Gobo 8		
	63 - 69	Gobo 1 shake		
	70 - 76	Gobo 2 shake		
	77 - 83	Gobo 3 shake		
	84 - 90	Gobo 4 shake		
	91 - 97	Gobo 5 shake		
	98 - 104	Gobo 6 shake		
	105 - 111	Gobo 7 shake		
	112 - 118	Gobo 8 shake		
		Continuous gobo wheel rotation		
	119 - 185	CCW, fast → slow		
	186 - 188	Stop (wheel stops at current position)		
	189 - 255	CW slow → fast		
17		**Animation**	Snap	0
	0 - 5	Open		
	6 - 128	Indexing CCW 0° → 540°		
	129 - 191	Continuous rotation CW fast → slow		
	192	Stop		
	193 - 255	Continuous rotation CCW slow → fast		
18		**Frost**	Fade	0
	0 - 255	No frost → full frost		
19		**Rotating Prism 1 deployment**	Snap	0
	0 - 10	Off		
	11 - 255	On		
20		**Rotating Prism 1 movement**	Snap	0
	0 - 127	Indexing 0° - 360°		
	128 - 190	Rotation CW fast → slow		
	191 - 192	Stop		
	193 - 255	Rotation CCW slow → fast		

Table 1: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
21	0 - 10 11 - 255	**Rotating Prism 2 deployment** Off On	Snap	0
22	0 - 127 128 - 190 191 - 192 193 - 255	**Rotating Prism 2 movement** Indexing 0° - 360° Rotation CW fast → slow Stop Rotation CCW slow → fast	Snap	0
23	0 - 255	**Iris** Open → closed	Fade	0
24	0 - 65535	**Zoom (MSB)** Wide → narrow	Fade	0
25		**Zoom fine (LSB)**	Fade	0
26	0 - 65535	**Focus (MSB)** Infinity → near	Fade	0
27		**Focus fine (LSB)**	Fade	0
28	0 - 255	**Framing blade 1: position** Out → in	Fade	0
29	0 -126 127 - 128 129 - 255	**Framing blade 1: angle** Angle – Parallel Angle +	Fade	127
30	0 - 255	**Framing blade 2: position** Out → in	Fade	0
31	0 -126 127 - 128 129 - 255	**Framing blade 2: angle** Angle – Parallel Angle +	Fade	127
32	0 - 255	**Framing blade 3: position** Out → in	Fade	0
33	0 -126 127 - 128 129 - 255	**Framing blade 3: angle** Angle – Parallel Angle +	Fade	127
34	0 - 255	**Framing blade 4: position** Out → in	Fade	0
35	0 -126 127 - 128 129 - 255	**Framing blade 4: angle** Angle – Parallel Angle +	Fade	127
36	0 -126 127 - 128 129 - 255	**Framing module angle** Minimum (-60°) 0° Maximum (+60°)	Fade	127
37	0 - 65535	**Pan (MSB)** Left → right	Fade	32768
38		**Pan, fine (LSB)**		
39	0 - 65535	**Tilt (MSB)** Up → down	Fade	32768
40		**Tilt, fine (LSB)**		

Table 1: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
41		**Fixture control/settings** *(hold for number of seconds indicated to activate)*	Snap	0
	0 - 9	*No function (disables calibration)* – 5 sec.		
	10 - 14	Reset entire fixture – 5 sec.		
	15	*No function*		
	16	Reset color – 5 sec.		
	17	Reset beam only– 5 sec.		
	18	Reset pan and tilt only – 5 sec.		
	19 - 22	*No function*		
	23	Linear dimming curve – 1 sec. (menu override, setting unaffected by power off/on)		
	24	Square law dimming curve – 1 sec. (menu override, default setting, setting unaffected by power off/on)		
	25	Inverse square law dimming curve – 1 sec. (menu override, setting unaffected by power off/on)		
	26	S-curve dimming curve– 1 sec. (menu override, setting unaffected by power off/on)		
	27	*No function*		
	28	Fast pan and tilt speed– 1 sec. (default setting, menu override - setting returns to MENU setting after power on/off)		
	29	Smooth pan and tilt speed– 1 sec. (menu override - setting returns to MENU setting after power on/off)		
	30 - 51	*No function*		
	52	Control panel display = ON – 1 sec.		
	53	Control panel display = OFF – 1 sec.		
	54	Regulated fan speed, fixed light output intensity (default) – 1 sec.		
	55	Full fan speed, regulated light output intensity – 1 sec.		
	56 -255	*No function*		

Table 1: DMX Protocol

Control panel menus

ERA 600 Performance firmware version 1.0.0.

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)
DMX SETUP	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 INVERSE	**NO**/YES		Inverse DMX pan control: right → left
	TILT INVERSE	**NO**/YES		Inverse DMX tilt control: down → up
	PAN/TILT SPEED	**FAST**		**Optimize pan/tilt movement for speed**
		SLOW		Optimize pan/tilt movement for smoothness
	DIMMER CURVE	LINEAR		Optically linear dimming curve
		SQUARE LAW		**Square law dimming curve**
		INV SQ LAW		Inverse square law dimming curve
		S-CURVE		S-curve (fixture emulates incandescent lamp voltage linear RMS dimming curve)
	DIMMING SPEED	**FAST**		**Snap dimmer reaction**
		SLOW		Short crossfade when dimmer value changes
	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 light intensity: temperature-controlled by regulating fan speed, light output unaffected**
		FULL		Fans run at constant full speed
	DISPLAY	DISPLAY ROTATION	**NORMAL** / ROTATE 180	Display orientation **normal** or rotated 180°
		DISPLAY INTENSITY	10 ... **100 %**	Set display intensity in % (default = **100**)
		TEMPERATURE UNIT	°**C** / °F	All temperature readouts in Celsius / Fahrenheit
DEFAULT SETTINGS	FACTORY DEFAULT	LOAD	ARE YOU SURE? YES/NO	Return all settings (except calibrations) to factory defaults
FIXTURE TEST	TEST ALL	TESTING		Run test sequence of all LEDs and all effects
	TEST DIMMER	DIMMER		Run dimming test sequence. Press Enter to pause and to restart test sequence. Press Menu button to exit test
	TEST EFFECTS	CYAN ... BLADE 4 ANGLE		Run test sequence of 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

Table 2: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)
INFORMATION	POWER ON TIME	0 ... XXX HR		Display number of hours fixture has been powered on since manufacture (not user-resettable)
	LED HOURS	0 ... XXX HR		Display number of hours LEDs have been powered on since manufacture (not user-resettable)
	SW VERSION	V.X.X.X		Displays currently active fixture software (firmware) version
	FIXTURE ID	0000 - 9999		User-settable ID number. Use Up and Down buttons to scroll to the chosen ID number. Use Enter to confirm.
	RDM UID	4D50.XXXXXXXX		Displays fixture's unique RDM ID
	TEMPERA-TURES	LED / BASE		Scroll through current readings on all PCB temperature sensors
DMX LIVE	STROBE ... PAN/TILT SPEED	0 - 255		Scroll to see values currently being received on each DMX channel
MANUAL CONTROL	RESET	ALL		Reset fixture
		PAN / TILT		Reset pan and tilt only
		EFFECTS		Reset effects only
	STROBE ... PAN/TILT SPEED			Scroll through effects, then manually control an effect
SERVICE	PAN/TILT FEEDBACK	**ON**		**Enable pan/tilt position feedback system**
		OFF		Disable pan/tilt position feedback system
	CALIBRATION	PAN ... BLADE 4 ANGLE	-127 – +128 ... -127 – +128	Scroll through effects, press Enter to select. Adjust home position and press Enter to confirm.
	LOAD DEFAULTS	LOAD		Load factory default calibration settings
	SAVE SETTING	SAVE		Replace factory default calibration settings with current calibration settings
	USB	NO DEVICE / INVALID FILE		No USB device present or no firmware on USB device
		UPDATING FILES		Fixture updating internal memory from USB device

Table 2: Control menus

Service and display messages

The ERA 600 Performance monitors its own performance and has a diagnostic error recognition system that lets it display messages with information about any problem 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.

Excessively high temperatures

If any of the temperature sensors reports that the fixture has exceeded its recommended temperature range, the fixture reports a temperature warning and reduces light output to reduce its temperature. If the temperature reaches a dangerous level, light output is shut down completely.

Temperature warnings are canceled and full light output becomes available again as soon as the temperature returns to normal.

Status message list

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

Code	Notes
Animation 1	Animation wheel error
BaseFan	Base cooling fan warning
BaseTemp	Base temperature warning
Blade	Framing module error
CoolFan1	LED cooling fan 1 warning
CoolFan2	LED cooling fan 2 warning
CoolFan3	LED cooling fan 3 warning
CoolFan4	LED cooling fan 4 warning
CoolFan5	Cooling fan 5 warning
CoolFan6	Cooling fan 6 warning
CMYFan1	CMY module cooling fan 1 error
CMYFan2	CMY module cooling fan 2 error
CPU1	CPU 1 (Display PCB) error
CPU2	CPU 2 (Pan/tilt control) error
CPU3	CPU 3 (CMY control) error
CPU4	CPU 4 (Gobo/color wheel control) error
CPU5	CPU 5 (Framing control) error
CPU6	CPU 6 (Zoom/focus control) error
CPU7	CPU 7 (Prism/frost control) error
CPU8	CPU 8 (LED control) error
CTO	Color Temperature Control color flag error
Cyan	Cyan color flag error
FixedGobo	Fixed gobo wheel error
Focus	Focus error
Frost1	Frost effect error
GoboFan	Gobo wheel cooling fan warning
GoboRot	Gobo rotation error
HeadFan1	Head cooling fan 1 error

Table 3: Status messages

Code	Notes
HeadFan2	Head cooling fan 2error
HeadTemp	Head temperature warning
Magenta	Magenta color flag error
Pan	Pan error
Prism1	Prism 1 error
Prism1Rot	Prism 1 rotation error
Prism2	Prism 2 error
Prism2Rot	Prism 2 rotation error
RotGobo	Rotating gobo wheel error
Temp	LED temperature error
Tilt	Tilt error
Yellow	Yellow color flag error
Zoom	Zoom error

Table 3: Status messages