

MAC Encore Wash

CLD and WRM

User Guide



Martin[®]
by HARMAN

User Documentation update information

Any important changes in the MAC Encore Wash User Guide are listed below.

Revision C

Released March 2023. Added short explanation of PWM Slider and Stepper Motor FX. Covers firmware v. 1.6.1

Revision B

First public release version. Covers firmware version 1.0.0.

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Introduction



Warning! Before using the MAC Encore Wash, 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 available for download from the MAC Encore Wash Support and Downloads page on the Martin website at www.martin.com.

This User Guide is a supplement to the Installation and Safety Manual that is supplied with the MAC Encore Wash. Both these documents are available for download from the MAC Encore Wash product pages on 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.

You can also see the full product specifications and a range of useful documents such as 2D and 3D drawings from the MAC Encore Wash product pages at www.martin.com.

Effects

This section gives details of the effects that can be controlled via DMX. See the DMX protocol table on page 21 for details of the channels used to control them.

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 MAC Encore Wash's dimmer/shutter provides instant blackout and snap open as well as regular or random strobe effects with variable speed from approx. 1 Hz to 25 Hz.

Dimming

The dimmer effect provides smooth, high-resolution fading from 100% to zero.

Fine 16-bit dimming control is available on DMX channels 2 and 3.

Cyan, Magenta, Yellow and CTC

The amount of cyan, magenta, yellow applied to the MAC Encore Wash's light output can be varied from zero to 100%.

The amount of CTC (color temperature control) applied can also be varied from zero to 100%. The CTC flags installed as standard vary between CLD and WRM models:

- The CTC flags installed in CLD models let you apply a variable amount of warm color temperature.
- The CTC flags installed in WRM models let you apply a variable amount of cold color temperature.

Iris

The iris lets you change the diameter of the beam and projections. You can adjust the iris from fully open to closed.

Internal barn doors

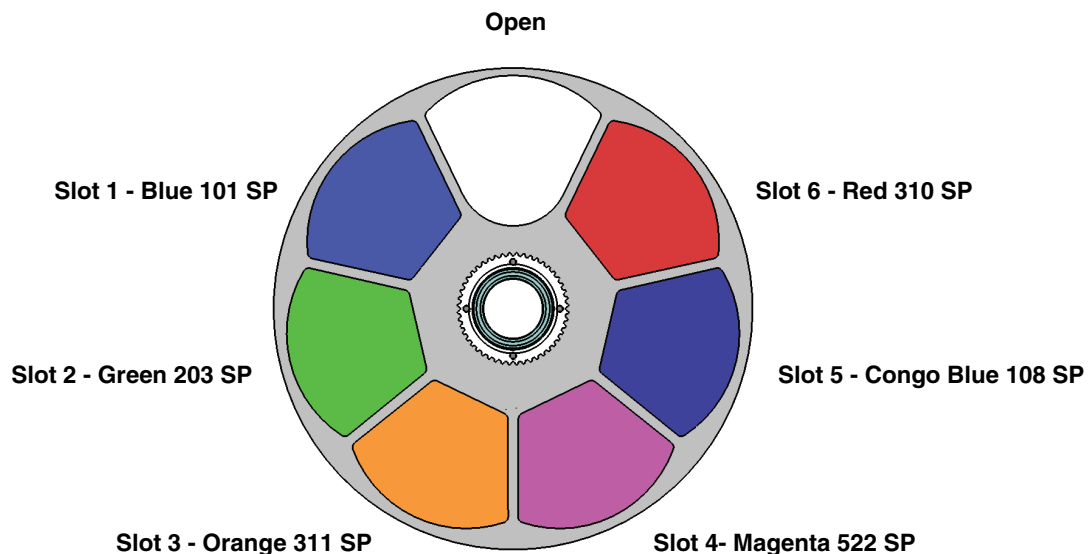
The internal barn door module in the MAC Encore Wash provides independent control of the two blades. You can insert each blade up to 55% into the beam, allowing full blackout in the center of the beam.

The complete barn door system can be rotated through +/- 100° to an indexed position.

You can deploy the iris at the same time as the barn doors to provide additional beam shaping.

Color wheel

The color wheel has six color filters that can be applied as split colors or in full-color steps. The color wheel can also be scrolled continuously, applying the color filters in sequence with control of color wheel speed and direction. Color filters can also be applied in random order at fast, medium or slow speed.



Color wheel seen from LED side

Figure 1: Color wheel

As standard, the MAC Encore Wash is supplied with the following color filters installed:

- Slot 1 - Blue 101 - P/N 5076512
- Slot 2 - Green 203 SP - P/N 5076513
- Slot 3 - Orange 311 SP - P/N 5076514
- Slot 4 - Magenta 522 SP - P/N 5076515
- Slot 5 - Congo Blue 108 SP - P/N 5076516
- Slot 6 - Red 310 SP - P/N 5076517
- Slot 7 - Open

Zoom and focus

Zoom and focus can be controlled from the lighting desk. The internal zoom system varies the focused beam angle from 12° to 48°.

Zoom/focus linking

Focus can be linked to zoom so that it automatically adjusts to match changes in zoom angle.

Linked zoom/focus works within 3 distance ranges (figures are approximate):

- Near (7 meters / 25 ft.)
- Medium (15 meters / 50 ft.)
- Far (30 meters / 100 ft. - infinity)

To link zoom and focus, select a distance range using the Fixture Control/Settings DMX channel or **FOCUS TRACKING** in the control panel **PERSONALITY** menu. Then adjust focus to obtain the required degree of sharpness. Linking is now enabled and focus will auto-adjust.

Pan and tilt

16-bit control of pan and tilt is available using two DMX channels for pan and two for tilt. The first channel in each case gives coarse (MSB) control of head position while the next channel gives fine (LSB) adjustment of the position set on the first channel.

Pre-programmed FX

The MAC Encore Wash offers a range of pre-programmed effect macros that we simply call FX. These macros give instant access to complex dynamic effects with no need for time-consuming programming at the controller. See “FX: pre-programmed effects” on page 25 for a full list of the FX available.

Most of the FX are easy to understand based on their names, but two of them deserve a short explanation:

- The **PWM Slider** FX adjusts the LED PWM refresh rate. Once you have selected **PWM Slider** on the FX Selection channel, you can use the next channel to adjust the PWM refresh rate from 2000 Hz to 3000 Hz as follows:

DMX value	Function
0 - 126	PWM frequency 3000 Hz
127 - 255	PWM frequency reduces from 3000 to 2000 Hz (NB: reduction is not precisely linear)

- The **Stepper Motor** FX applies ‘steppy’ tracking to the color wheel, iris, rotating gobo wheel rotation, gobo rotation, fixed gobo wheel rotation and prism rotation. When **Stepper Motor** is selected, control input is down-sampled and these effects move in hard steps. If you select **Stepper Motor** on the FX Selection channel, the next channel (FX Speed) adjust the size of the steps and adjusts their frequency from approx. 20 ms - 600 ms.

Control panel operations

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

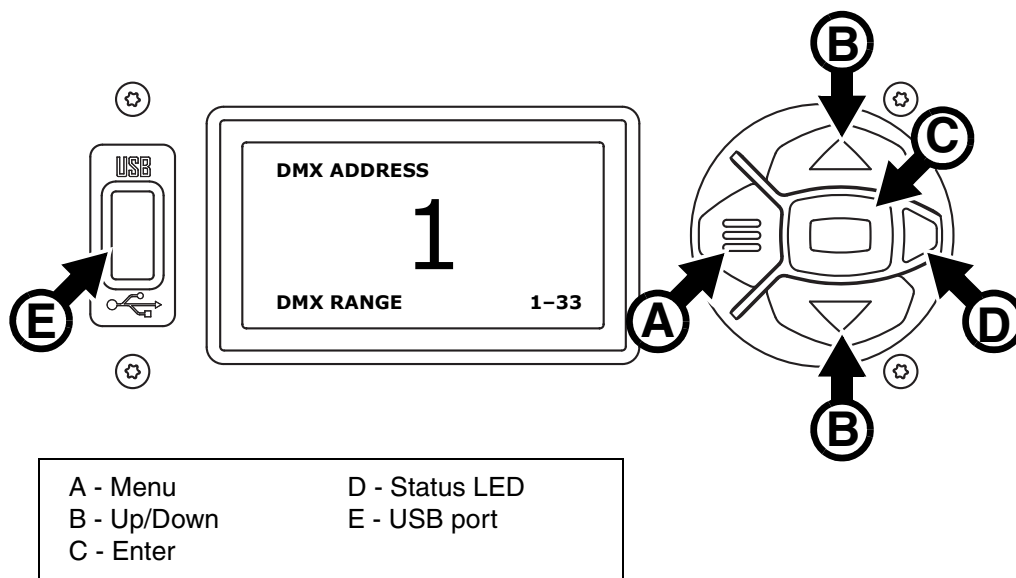


Figure 2: Display and control panel

When the MAC Encore Wash is powered on, it first boots and resets, then it displays its DMX address (or its fixture ID number, if one has been set) and any status messages (see page 30) in the display **A**.

The display can be rotated to match standing or hanging fixture orientation in the **PERSONALITY** → **DISPLAY** menu or the Shortcuts menu (see "Shortcuts" on page 9).

Using the control panel

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

Status LED

The LED **D** next to the control buttons indicates fixture status depending on the color displayed and DMX status depending on whether the LED flashes or lights constantly:

- **GREEN**: All parameters normal.
- **AMBER**: Warning (service interval exceeded, for example).
If **ERROR MODE** is set to **Normal**, the warning message will be shown in the display. If **ERROR MODE** is set to **Silent**, the display must be activated by pressing the Enter button C to display the warning message.
- **RED**: Error detected.
If **ERROR MODE** is set to **Normal**, the error message will be shown in the display. If **ERROR MODE** is set to **Silent**, display the error message BY GOING TO NORMAL OR SERVICE - ERROR LIST.
- **FLASHING**: No DMX signal detected.
- **CONSTANT**: Valid DMX signal detected.

Battery power

The MAC Encore Wash's onboard battery gives access to the most important functions in the control panel when the fixture is not connected to AC power. The following functions are available on battery power:

- DMX address
- Fixture ID
- All personality settings (pan/tilt, cooling, fan clean mode, dimming curve, DMX reset, parameter shortcuts, all display settings, error mode)
- Default settings
- Information (Power On Hours and Power Cycles counters, Software version)
- Error list

To activate the display when the fixture is not connected to power, press the Menu button **A**. Press again to enter the menus. The display extinguishes after 10 seconds with no user input and the control panel is de-activated after 1 minute with no user input. Press the Menu button **A** again to re-activate.

Shortcuts

If you hold the Menu button **A** pressed in for 2 - 3 seconds, a shortcut menu with the most important commands appears. Select a command with the Up and Down buttons **B** and press the Enter button **C** to activate, or press the Menu button again to cancel.

- **RESET ALL** resets the whole fixture
- **ROTATE DISPLAY** rotates the MAC Encore Wash display 180°.
- **FOLLOW SPOT TOGGLE** enables and disables followspot mode.

Settings stored permanently

The following settings are stored permanently in the fixture memory and are not affected by powering the MAC Encore Wash off and on or by updating the fixture software:

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

These settings can be returned to factory defaults using the control menus or via DMX.

Service mode

Holding the Menu and Enter buttons **A** and **C** both pressed in while powering the fixture on puts the fixture into service mode, in which pan and tilt are disabled and a **SERV** warning appears in the display. Service mode removes the risk of unexpected head movement during lamp adjustment. Cycling power and allowing the fixture to start normally takes it out of service mode.

DMX address

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 MAC Encore Wash 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 Enter to open the main menu.
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.

Fixture ID

The MAC Encore Wash 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 MAC Encore Wash will display this ID number by default, and indicate **FIXTURE ID** in the display.

Personality

The MAC Encore Wash provides several options that let you optimize the fixture for different applications in the **PERSONALITY** menu:

- The **PAN/TILT** menu lets you swap and/or invert pan and tilt.
- This menu lets you put the fixture into **FOLLOWSPOT MODE**. In this mode, control of pan and tilt via DMX or the control panel is disabled and pan and tilt movement are unlocked. This allows the head of the fixture to be aimed by hand using user-supplied handles mounted on the back of the head. The pan and tilt motors are energized so that they act as a gentle brake. This feature gives a damped feel and smooth control for followspot operators and also prevents the head from moving when operators remove their hands from the fixture.
The fixture remembers its followspot mode setting if you cycle fixture power off and on.
- The **LIMIT PAN/TILT** feature lets you set minimum and maximum limits for pan and tilt. This can be useful in a number of situations. It lets you ensure that the fixture only lights a specific zone on a stage, for example, and can also be used to prevent the head from colliding with other fixtures or objects.
- The **SPEED** menu lets you set **PAN/TILT** to **FAST** (optimized for speed) or **SMOOTH** (optimized for smooth movement – useful for slow movements in long-throw applications). Likewise, you can select an overall speed for all the effects by setting **EFFECT** speed to **FAST** or **SMOOTH**. You can also set effect speed to **FOLLOW P/T**, in which effects will always use whatever speed is set for pan and tilt.
- **DIMMER CURVE** provides four dimming options (see Figure 3):

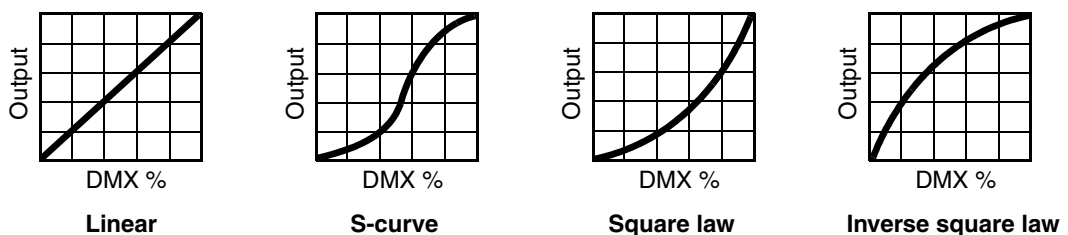


Figure 3: Dimming curve options

- **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.
- **TUNGSTEN EMULATOR** is an option that gives the look and feel of a tungsten lamp. The default color temperature of the MAC Encore Wash CLD variant is shifted to match the WRM variant, and a gradually increasing red shift is introduced as both variants are dimmed down. A slight lag is also added to dimmer and shutter response to simulate the warm-up and cool-down behavior of an incandescent source.
- **ALTERNATE COLOR TEMP** deploys the CTC flags to shift the fixture’s default color temperature. In CLD fixtures, default color temperature and color mixing behavior are adjusted to match WRM fixtures. WRM fixtures are adjusted to match CLD fixtures. You can use this setting to obtain similar appearance from CLD and WRM fixtures if both types of fixture are included in an installation.
- **FOCUS TRACKING** sets focus to automatically self-adjust, giving sharper focus when you use the zoom effect.

- **VIDEO TRACKING** optimizes performance if the MAC Encore Wash is used with a video source. In normal use, the fixture processes the DMX signal it receives, tracking (or smoothing out) changes in values in order to ensure smooth fading between colors and/or intensities. This signal processing takes fractions of a second and is normally invisible, but if the fixture is used to display video (using Martin P3™ video system components to convert video to DMX, for example) the processing can interfere with video response times. If you enable video tracking, the fixture does not 'smooth out' DMX input but instead snaps instantly when a DMX value changes.
For best results, we recommend that you enable video tracking during video display and disable it (the default setting) during normal DMX control.
- **DMX RESET** defines whether the fixture or individual effects can be reset by sending a DMX command on the fixture settings channel. Setting it to OFF can help you avoid accidentally sending a Reset command during a show, for example.
- **EFFECT SHORTCUT** determines whether the effects take the shortest path between two positions (shortcuts enabled) or not (shortcuts disabled).
- **COOLING MODE** lets you select between various cooling fan options depending on whether your priority is maximum possible light output or quietest possible cooling fan operation:
 - **REGULATE FANS** optimizes cooling fan operation for maximum light output. It controls fixture temperature by varying cooling fan speed up to maximum level and does not limit light intensity. Maximum fan speed in regulated operation is normally enough to keep the fixture within its operating temperature range up to the maximum permitted ambient temperature of 40° C (104° F) without limiting light intensity. A fixture that reduces its light intensity when set to regulated fans operation may be a sign that the ambient temperature is higher than the permitted maximum or that the fixture requires cleaning.
 - **CONSTANT SPEED** lets you set a constant cooling fan speed. This lets you choose the balance between cooling fan noise and light intensity that is right for your application. You can set the cooling fan speed to high, medium, low or ultra-low level.

If the fixture gets close to its maximum recommended temperature when its cooling fans are running at the speed you have selected, it will begin to limit light intensity. The fixture will then continue to regulate light intensity if necessary to keep the fixture within its recommended operating temperature range.

Table 1 below shows the constant light output intensity that will normally be available after 30 minutes of operation at different ambient temperatures using the different cooling fan settings. Intensity is shown as a percentage of the fixture's maximum intensity.

If you set the fixture to **Constant medium** fan speed when the ambient temperature is 32° C (90° F), for example, 95% of the fixture's maximum output intensity will be available after 30 minutes of operation at constant full intensity.

	Ambient temperature		
	23° C (73° F)	32° C (90° F)	40° C (104° F)
Regulated fans	100%	100%	100%
Constant high	100%	100%	90%
Constant medium	100%	95%	74%
Constant low	85%	75%	61%
Constant ultra-low	68%	62%	50%

Table 1: Constant light output intensity available (as % of maximum) after 30 mins.

- **DISPLAY** offers the following options for the LCD display:
 - **DISPLAY SLEEP** determines whether the display remains on permanently, or goes into sleep mode 2, 5 or 10 minutes after the last time a control panel button is pressed.
 - **DISPLAY INTENSITY** lets you define the brightness of the display backlighting. You can set intensity to a level from 0% to 100%.
 - **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 CONTRAST** lets you define the contrast of the backlit graphic display. You can set contrast to a level from 0% to 100%.

- **ERROR MODE** enables or disables error warnings. If set to **NORMAL**, the display is activated and lights up if the fixture needs to report an error. If set to **SILENT**, the fixture does not light the display with error warnings but error messages can still be read when the display is activated manually. In both **NORMAL** and **SILENT** modes, the status LED lights amber to indicate a warning and red to indicate an error.
- **HIBERNATION MODE** sets light output intensity to zero and disables effect deployment and pan/tilt movement. The main purpose of the mode is to protect the fixture from the intake of airborne material such as dust and confetti and to provide an option for situations where noise is critical. The small reduction in power consumption obtained in Hibernation Mode is a by-product.
When you bring the fixture out of hibernation mode, it performs a full reset.

Factory defaults

FACTORY DEFAULT lets you reload the fixture's factory default settings. Effect calibration settings are not affected, so any changes you have made to zoom, pan and tilt offsets will be kept.

Custom settings

The custom configuration function CUSTOM 1 - CUSTOM 3 allows you to save and recall up to three sets of fixture settings that override the factory default settings. The custom settings comprise:

- all the settings in the PERSONALITY menu, and
- the fixture's DMX address.

Fixture information readouts

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

- **POWER ON TIME** provides two counters:
 - The **TOTAL** counter is not user-resettable and displays total hours powered on since manufacture.
 - The **RESETTABLE** counter is user-resettable and displays the number of hours the fixture has been powered on since the counter was last reset.
- **POWER ON CYCLES** also provides two counters:
 - The **TOTAL** counter is not user-resettable and displays the total number of power on/off cycles since manufacture.
 - The **RESETTABLE** counter is user-resettable and displays the number of power on/off cycles since the counter was last reset.
- **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.
- **LED TYPE** displays the fixture variant's LED type, CLD or WRM, for identification purposes. Note that you can change the fixture's base color temperature by applying an ALTERNATE COLOR TEMP command in the PERSONALITY menu, but the fixture's LED TYPE will not be affected.
- **FAN SPEEDS** provides separate status readouts from the fixture's cooling fans.
- **TEMPERATURES** provides separate PCB temperature readouts.

DMX signal monitoring

The MAC Encore Wash provides data on the DMX signal it is receiving in the **DMX LIVE** menu. This information can be useful for troubleshooting control problems.

RATE displays the DMX refresh rate in packets per second. Values lower than 10 or higher than 44 may result in erratic performance, especially when using tracking control.

QUALITY displays the quality of the received DMX data as a percentage of packets received. Values much below 100 indicate interference, poor connections, or other problems with the serial data link that are the most common cause of control problems.

START CODE displays the DMX start code. Packets with a start code other than 0 may cause irregular performance.

The remaining options under **DMX LIVE** scroll through the fixture's DMX channels. Press Enter to display the DMX values in a range from 0 - 255 that are being received on each channel.

Test sequences

TEST activates effects in sequence, allowing you to test all effects, LEDs only, pan and tilt movement only, or effects only (i.e. without pan and tilt movement) without a DMX controller:

- Select a test type and press Enter to start the test.
- Press Menu to stop the test.

Manual control

The **MANUAL CONTROL** menu lets you reset the MAC Encore Wash and operate the fixture without a DMX controller. To execute commands in the **MANUAL CONTROL** menu, select a menu item for 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 on page 21.

Adjusting settings via DMX

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

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

To help you avoid accidentally applying a setting that may disrupt a light show, for example, most of 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 times required to apply DMX commands on the Fixture control/settings channel are listed for each command on page 23 in the DMX protocol.

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.

Settings

A range of fixture personality and behavior settings can be adjusted via DMX, overriding any settings previously entered in the onboard control menus.

- The section for Channel 19 in the DMX Protocol on page 23 gives a list of the settings available and the DMX values required to activate them.
- You can find full explanations of the settings available on DMX channel 19 if you look up those settings in the "Control panel operations" chapter starting on page 8.

Illuminating the display

Among the useful features on the fixture control/settings channel is the fixture display setting. The fixture's display panel can be brought out of sleep mode with a DMX command. This makes it possible to read the fixture's DMX address while the fixture is installed in the rig.

After being turned on in this way, the display will return to sleep mode according to the setting entered in the onboard control menus.

Changing calibration offsets using DMX

The Fixture control/settings DMX channel allows pan, tilt and zoom to be calibrated by changing their factory default offsets in percent values from the DMX controller.

To set an effect offset:

1. Set the effect you want to calibrate to a specific value via DMX (for example, set all the fixtures in a group to DMX value 200 on the zoom channel).
2. Select 'Enable calibration' on the Fixture control/settings channel and hold for 5 seconds to activate.
3. The DMX control channels for pan, tilt and zoom now adjust the calibration offsets for those effects. Adjust each offset until the effect is in the required position (for example, adjust the zoom offset on each fixture in the group until the beam angle on all fixtures is identical – this is the position you will obtain when you send DMX value 200).
4. Send a 'Store ...' command for the effect on the Fixture control/settings channel and hold for 5 seconds to activate. Calibration offsets are now stored in memory and normal DMX control is restored.

Calibration offsets that are stored in memory are not affected by powering the fixture off and on or by updating the fixture software.

You can reset all calibration offsets to their default values by sending a DMX value on the Fixture control/settings channel. You must hold the value for 5 seconds. The fixture will return to factory default calibration values. If you have overwritten the factory default values by applying a CALIBRATION → SAVE DEFAULTS command in the SERVICE menu, the fixture will return to the last default calibration values that were saved).

RDM

The MAC Encore Wash can communicate using RDM (Remote Device Management) in accordance with ESTA's *American National Standard E1.20-2006: Entertainment Technology RDM Remote Device Management Over DMX512 Networks*.

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.

RDM UID

Each MAC Encore Wash 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**.

RDM communication

The MAC Encore Wash supports the standard RDM PIDs (Parameter IDs) required by ESTA plus a range of manufacturer-specific PIDs. Sending **SUPPORTED_PARAMETERS** and **PARAMETER_DESCRIPTION** commands from an RDM controller will call up a list of the PIDs supported in the firmware version installed in the fixture.

The PIDs in the following tables are supported in software v.1.0.0. Additional PIDs will be supported in later firmware versions.

Standard RDM Parameter IDs

GET allowed	SET allowed	RDM parameter ID's (slot 21-22)	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	
✓		PARAMETER_DESCRIPTION	

GET allowed	SET allowed	RDM parameter ID's (slot 21-22)	Notes
		Product information	
✓		DEVICE_INFO	
✓		DEVICE_MODEL_DESCRIPTION	
✓		MANUFACTURER_LABEL	
✓	✓	DEVICE_LABEL	
✓	✓	FACTORY_DEFAULTS	
✓		SOFTWARE_VERSION_LABEL	
		DMX Setup	
✓	✓	DMX_PERSONALITY	
✓		DMX_PERSONALITY_DESCRIPTION	
✓	✓	DMX_START_ADDRESS	
✓		SLOT_DESCRIPTION	
		Sensors	
✓		SENSOR_DEFINITION	
✓	✓	SENSOR_VALUE	
		Usage information	
✓	✓	DEVICE_HOURS	
✓	✓	DEVICE_POWER_CYCLES	
		Onboard LCD display	
✓	✓	DISPLAY_INVERT	
✓	✓	DISPLAY_LEVEL	
		Configuration	
✓	✓	PAN_INVERT	
✓	✓	TILT_INVERT	
✓	✓	PAN_TILT_SWAP	
		Control	
✓	✓	IDENTIFY_DEVICE	
	✓	RESET_DEVICE	
✓	✓	PERFORM_SELFTEST	
✓	✓	SELF_TEST_DESCRIPTION	

Manufacturer-specific RDM Parameter IDs

GET allowed	SET allowed	RDM parameter ID's (slot 21-22)	Notes
		DMX protocol	
✓	✓	DMX_RESET	
		Fixture behavior	
✓	✓	EFFECT_SPEED	
✓	✓	DISPLAY_ERRORS_ENABLE	
✓	✓	DIMMER_CURVE	
✓	✓	FOCUS_TRACKING	
✓	✓	DISPLAY_AUTO_OFF	
✓	✓	HIBERNATION_MODE	
✓	✓	TUNGSTEN_MODE	
✓	✓	ALTERNATIVE_LIGHT_SOURCE	Deploy CTC flags: - Apply warm CTC to CLD fixture - Apply cold CTC to WRM fixture
✓		LED_COLOR_TEMPERATURE	Get fixture's LED original color temperature (indicates fixture type: WRM or CLD)
		Pan/tilt	
✓	✓	PAN_TILT_SPEED	
✓	✓	PAN_TILT_ENABLE	
✓	✓	PAN_LIMIT_MIN	
✓	✓	PAN_LIMIT_MAX	
✓	✓	TILT_LIMIT_MIN	
✓	✓	TILT_LIMIT_MAX	
	✓	PAN_TILT_LIMIT_RESET	
		Fixture cooling	
✓	✓	FAN_CLEAN	

Software service functions

Service utilities

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

- **ERROR LIST** displays any error messages that are stored in internal memory.
- **FAN CLEAN** lets you set all cooling fans to run at maximum speed for short periods for cleaning purposes.
- **PT 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.
- **ADJUST** contains two adjustment submenus. **PAN/TILT** lets you set the home positions for pan and tilt. **CMYC** sets CMYC flag home positions and is for use by Martin® Service and its authorized agents only.
To adjust pan and tilt:
 1. in the **SERVICE** menu, go to **ADJUST** → **PAN/TILT AT END STOP** and select **STEP 1**
 2. Rotate the head clockwise (as seen when looking from head towards base) until it reaches its end stop.
 3. Tilt the head so that the front glass is pointing towards the control panel side of base.
 4. Press ENTER.
 5. Select **STEP 2** and repeat steps 2. to 4. above.
- **CALIBRATION** lets you set new default positions for calibration purposes, set effects to their factory default positions or overwrite the factory default positions with new values. See "Calibration" below.
- **USB** lets you update the firmware (fixture software) using a USB memory device. For a detailed guide to updating the firmware, see "Installing firmware using a USB memory device" later in this chapter.

Calibration

Martin® fixtures are adjusted and calibrated at the factory, and further calibration will normally only be necessary if fixtures have been subjected to abnormal shocks during transport, 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 **CALIBRATION** menu lets you define offsets in the fixture software to adjust the positions of pan, tilt and zoom relative to the DMX values the fixture receives. This allows you to fine-tune fixtures and achieve uniform behavior in different fixtures.

Calibration can be carried out using the fixture's onboard control panel and via DMX (see "Illuminating the display" on page 14).

A recommended procedure is to set pan, tilt and zoom 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. The calibration range available for each effect varies. Calibration values are expressed as percentages. After selecting a value, press Enter to set the effect to that value.

Loading and storing default calibration offsets

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

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

Firmware installation

The currently installed firmware (fixture software) version can be viewed in the control panel **INFORMATION** menu. Firmware updates are available from the Martin® website and can be installed using a USB memory stick or a Windows PC running the Uploader application in the Martin® DMX Tools suite (available for download free of charge from www.martin.com) and a Martin® M-DMX compact USB-DMX interface.

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

Do not switch the fixture off during a firmware update, or firmware may become corrupted.

Installing firmware using a USB memory device

Important! *Do not remove a USB memory device while the fixture is updating files.*

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

- The MAC Encore Wash '.BANK' firmware update file, available for download from the Martin website at <http://www.martin.com>.
- A USB memory stick or other USB memory device with the update file copied from a PC into the USB stick's root directory.

To install the MAC Encore Wash firmware:

1. Download the '.BANK' firmware file from the MAC Encore Wash Product Support page at www.martin.com, read the firmware release notes carefully to check for any instructions or warnings, and copy the firmware file to the root directory of a USB stick.
2. Disconnect the data link from the MAC Encore Wash.
3. Insert the USB stick in the MAC Encore Wash's USB host socket. The fixture should recognize the USB stick and illuminate the display. If the fixture does not recognize the USB stick, navigate to **SERVICE** → **USB** in the control panel.
4. **AVAILABLE FIRMWARE** will appear in the display. You can now scroll through the firmware versions available.
5. To install a firmware version, select it and press Enter. The MAC Encore Wash asks you to confirm installation of the new firmware. Press Enter to confirm and press Menu to exit without confirming.
6. Allow the fixture to install the firmware and reboot.
7. Remove the USB stick. The newly-installed firmware version will now be displayed in the **INFORMATION** menu.
8. Reconnect the data link.
9. If you have installed a new firmware version, check the Martin® website to see whether an updated User Guide is available for this firmware.

Fixture information and settings, are not affected when new software is uploaded.

Installing using a PC and hardware interface

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

- The MAC Encore Wash firmware '.MU3' update file, available for download from the Product Support area of the Martin website at <http://www.martin.com>.
- A Windows PC running the latest version of the Uploader application in the Martin® DMX Tools suite (available for download free of charge from www.martin.com) and loaded with the firmware update file.
- A USB-DMX hardware interface device such as the Martin® M-DMX.

To install the MAC Encore Wash firmware:

1. Download the firmware '.MU3' file from the MAC Encore Wash support page on the Martin website to the PC.
2. Read the firmware release notes carefully to check for any instructions or warnings.
3. Follow the instructions for an auto upload/upload via DMX in the Martin Uploader application help files and supplied with the hardware interface.

DMX protocol

For fixtures running MAC Encore Wash firmware version 1.6.1.

Channel	DMX Value	Function	Fade type	Default value				
1	0 - 19	Strobe/shutter effect Shutter closed	Snap	30				
	20 - 49	Shutter open						
	50 - 200	Strobe, 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	0 - 255	CTC 0 → 100%	Fade	0				
8		Color wheel Indexing <i>Continuous scrolling</i> 0 Open 1 - 13 Open → Blue 14 Blue 15 - 27 Blue → Green 28 Green 29 - 41 Green → Orange 42 Orange 43 - 55 Orange → Magenta 56 Magenta 57 - 69 Magenta → Congo 70 Congo 71 - 83 Congo → Red 84 Red 85 - 97 Red → Open 98 - 160 Open	Snap	0				
		<i>Stepped scrolling</i> 161 - 163 Blue 164 - 166 Green 167 - 169 Orange 170 - 172 Magenta 173 - 175 Congo 176 - 178 Red 179 - 192 Open						
		Continuous rotation 193 - 214 CW fast → slow 215 - 221 Stop (wheel stops at current position) 222 - 243 CCW slow → fast						
		Random colors 244 - 247 Fast 248 - 251 Medium 252 - 255 Slow						
		9			0 - 255	Iris Open → closed	Snap	0
		10			0 - 255	Zoom Wide → narrow	Snap	0

Table 2: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
11	0 - 255	Focus Infinity → near	Snap	0
12	0 - 255	Barn door 1 Out → in	Snap	0
13	0 - 255	Barn door 2 Out → in	Snap	0
14	0 - 9 10 11 - 99 100 101 - 189 190 191 - 200 201 - 255	Barn door rotation -10° → -1° 0° (vertical line) 1° → 89° 90° (horizontal line) 91° → 179° 180° (vertical line) 181° → 190° <i>No function</i>	Snap	0
15	0 - 65535	Pan, 16-bit (MSB and LSB) Left → right (32768 = neutral)	Fade	32768
16				
17	0 - 65535	Tilt, 16-bit (MSB and LSB) Up → down (32768 = neutral)	Fade	32768
18				

Table 2: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value	
19		Fixture control/settings <i>(hold for number of seconds indicated to activate)</i>			
	0 - 9	<i>No function (disables calibration) – 5 sec.</i>			
	10 - 14	Reset entire fixture – 5 sec.			
	15	<i>No function</i>			
	16	Reset color only – 5 sec.			
	17	Reset beam only – 5 sec.			
	18	Reset pan and tilt only – 5 sec.			
	19 - 22	<i>No function</i>			
	23	Linear dimming curve – 1 sec. <i>(menu override, setting unaffected by power off/on)</i>			
	24	Square law dimming curve – 1 sec. <i>(menu override, factory default setting, setting unaffected by power off/on)</i>			
	25	Inverse square law dimming curve – 1 sec. <i>(menu override, setting unaffected by power off/on)</i>			
	26	S-curve dimming curve – 1 sec. <i>(menu override, setting unaffected by power off/on)</i>			
	27	<i>No function</i>			
	28	Fast pan and tilt speed – 1 sec. <i>(default setting, menu override - setting returns to MENU setting after power on/off)</i>			
	29	Smooth pan and tilt speed – 1 sec. <i>(menu override - setting returns to MENU setting after power on/off)</i>			
	30	Parameter shortcuts = ON			
	31	Parameter shortcuts = OFF			
	32	Focus tracking = OFF			
	33	Enable focus tracking at close range – 1sec.			
	34	Enable focus tracking at medium range – 1sec.			
	35	Enable focus tracking at long range – 1sec.			
	36	Video tracking = ON – 1sec.			
	37	Video tracking = OFF – 1sec.			
	38-40	<i>No function</i>			
	41	Beam smoothing = ON – 1sec.		Snap	0
	42	Beam smoothing = OFF – 1sec.			
	43-51	<i>No function</i>			
	52	Turn on control panel display – 1 sec.			
	53	Turn off control panel display – 1 sec.			
	54	Regulated fan speed, fixed light output intensity – 1sec.			
	55	Full fan speed, regulated light output intensity – 1sec.			
	56	Medium fan speed, regulated light output intensity – 1sec.			
	57	Low fan speed, regulated light output intensity – 1sec.			
	58	Ultra-low fan speed, regulated light output intensity – 1sec.			
	59-60	<i>No function</i>			
	61	Hibernation mode = ON – 5 sec.			
	62	Hibernation mode = OFF – 5 sec.			
	63-64	<i>No function</i>			
	65	Pan and tilt limits = ON – 5 sec.			
	66	Pan and tilt limits = OFF – 5 sec.			
	67	Store current pan position as lower pan limit – 5 sec.			
68	Store current pan position as upper pan limit – 5 sec.				
69	Store current tilt position as lower tilt limit – 5 sec.				
70	Store current tilt position as upper tilt limit – 5 sec.				
71	Reset pan and tilt limits and disable pan/tilt limit functionality – 1sec.				
72	Tungsten Emulation = ON – 1sec.				
73	Tungsten Emulation = OFF – 1sec.				
74	Alternative light source (color temperature shift) = ON – 1sec.				
75	Alternative light source (color temperature shift) = OFF – 1sec.				
76-99	<i>No function</i>				
100	Enable calibration – 5 sec.				
101	Store pan and tilt calibration – 5 sec.				
102	Store dimmer calibration – 5 sec.				
103	Store cyan calibration – 5 sec.				
104	Store magenta calibration – 5 sec.				
105	Store yellow calibration – 5 sec.				
106	<i>No function</i>				

Table 2: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
19 contd.	107	Store all CMY calibration – 5 sec.	Snap	0
	108 - 110	<i>No function</i>		
	111	Store internal barn door calibration – 5 sec.		
	112	Store iris calibration – 5 sec.		
	113	Store focus calibration – 5 sec.		
	114	Store zoom calibration – 5 sec.		
	115	Store color wheel calibration – 5 sec.		
	116 - 198	<i>No function</i>		
	199	Reset all calibrations to factory default – 5 sec.		
200 - 255	<i>No function</i>			
20	0 - 255	FX1 selection (see Table 3 on page 25) Effect selection (adjust on DMX channel 15)	Snap	0
21	0 - 126 127 - 128 129-255	FX1 speed Effect reversed fast → slow Effect stops Effect forward slow → fast	Fade	128
22	0 - 255	FX2 selection (see Table 3 on page 25) Effect selection (adjust on DMX channel 17)	Snap	0
23	0 - 126 127 - 128 129-255	FX2 speed Effect reversed fast → slow Effect stops Effect forward slow → fast	Fade	128
24	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 - 100 101 - 120 121 - 140 141 - 255	FX synchronization No sync Offset shift 10° Offset shift 20° Offset shift 30° Offset shift 40° Offset shift 50° Offset shift 60° Offset shift 70° Offset shift 80° Offset shift 90° Offset shift 100° Offset shift 110° Offset shift 120° Offset shift 130° Offset shift 140° Offset shift 150° Offset shift 160° Offset shift 170° Offset shift 180° Offset shift 190° Offset shift 200° Offset shift 210° Offset shift 220° Offset shift 230° Offset shift 240° Offset shift 250° Offset shift 260° Offset shift 270° Offset shift 280° Offset shift 290° Offset shift 300° Offset shift 310° Offset shift 320° Offset shift 330° Offset shift 340° Offset shift 350° Synchronized: all fixtures start FX cycles at same time <i>No function</i> Random start (FX 1 adjust controls overall speed) Random duration <i>No function</i>	Snap	0

Table 2: DMX Protocol

MSB = most significant bit, LSB = least significant bit

FX: pre-programmed effects

The table below lists the pre-programmed dynamic FX (effect macros) that can be controlled using DMX channels 20-24.

Select FX on channels 20 and 22 by sending the values listed in the table. Adjust effect parameters such as speed and/or amount of effect applied on channels 21 and 23, and adjust synchronization of effects across different fixtures on channel 24.

Applicable when running MAC Encore Wash firmware version 1.6.1.

DMX value	Effect	DMX value	Effect	DMX value	Effect
0 - 1	NO FX	37	POSITIVE PULSE	71	COLOR WHEEL ALL STEP
2	STEPPER MOTOR	38	RINGS IN OUT	72	COLOR WHEEL SPLIT STEP
3-5	NO FX	39	NO FX	73	COLOR WHEEL RANDOM SPLIT STEP
6	PWM SLIDER	40	RANDOM COLOR WAVE	74	COLOR WHEEL SHAKER
7-9	NO FX	41	RANDOM COLOR STEP	75	FIRE
10	INTENSITY SINE WAVE	42-49	NO FX	76	WATER
11	INTENSITY STEP	50	RAINBOW WAVE	77	ICE
12	INTENSITY PULSE	51	RAINBOW STEP	78	HOT AND COLD
13	DOUBLE STROBE	52	RAINBOW PULSE	79	WARM AND FUZZY
14	TRIPLE STROBE	53	RGB WAVE	80	IRIS RAMP
15	UP FLASH	54	RGB STEP	81	IRIS STEP
16	UP FLASH DOWN FLASH	55	RGB PULSE	82	IRISH PULSE
17	RANDOM LEVEL	56	CMY WAVE	83	ZOOM WAVE
18-20	NO FX	57	CMY STEP	84	ZOOM STEP
21	ELECTRIC ARC	58	CMY PULSE	85	ZOOM RAMP
22	THUNDERSTORM ATOMIC	59	MIX TO WHITE WAVE	86	RANDOM SIZE WAVE
23	THUNDERSTORM	60	MIX TO WHITE STEP	87	RANDOM SIZE STEP
24	WELDING	61	MIX TO WHITE PULSE	88-89	NO FX
25-29	NO FX	62	RANDOM BOLD	90	PIN TO FLOOD
30	ANIMATION	63	RANDOM MIX STEP	91	POUNCE
31	MOVIE FLICKER	64	RANDOM MIX PULSE	92	SPLASH
32	CROSS CHASE	65	RANDOM SUBTLE	93-209	NO FX
33	RANDOM DIMMERS	66	RED WHITE BLUE WAVE	210	ZOOM FADES
34	SHAKEY DIMMERS	67	RED WHITE BLUE STEP	211-255	NO FX
35	CENTER OUT CHASE	68-69	NO FX		
36	NEGATIVE PULSE	70	COLOR WHEEL FULL STEP		

Table 3: FX in the MAC Encore Wash

Control panel menus

MAC Encore Wash firmware version 1.6.1.

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)	
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.	
FIXTURE ID	0 – 9999	User-settable fixture ID number		0	
PERSONALITY	PAN/TILT	PAN INVERT	ON/OFF	Inverse DMX pan control: right → left	
		TILT INVERT	ON/OFF	Inverse DMX tilt control: down → up	
		FOLLOWSPOT MODE	ON/OFF	Enable followspot mode	
		LIMIT PAN/TILT	LIMIT ENABLE -> ON/OFF	ON/OFF	Enable pan and tilt limits
			PAN MIN -> degrees		Set minimum limit for pan angle
			PAN MAX -> degrees		Set maximum limit for pan angle
			TILT MIN -> degrees		Set minimum limit for tilt angle
	TILT MAX -> degrees		Set maximum limit for tilt angle		
	SPEED	PAN/TILT	FAST	Optimize pan/tilt movement for speed	
			SMOOTH	Optimize pan/tilt movement for smoothness	
		EFFECT	FOLLOW P/T	Effects speed follows the speed setting applied to pan and tilt via DMX or in control menu	
			FAST	Optimize effects movement for speed	
	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)	
	TUNGSTEN EMULATOR	ON/OFF		Enable tungsten lamp emulation	
	ALTERNATE COLOR TEMP	ON/OFF		Applies alternative color temperature: sets CLD fixture to warm white and WRM fixture to cold white by deploying CTC flags	
	FOCUS TRACKING	ENABLED		Focus self-adjusts depending on zoom angle	
		DISABLED		Focus remains at distance set via DMX	
	VIDEO TRACKING	ENABLED		Color fading optimized for speed of color changes	
		DISABLED		Color fading optimized for smoothness	
	DMX RESET	ON		Fixture can be reset via DMX	
OFF			Fixture cannot be reset via DMX (can be overridden: see DMX protocol)		

Table 4: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)	
PERSONALITY (continued)	EFFECT SHORTCUT	ON		Effects take shortest route during changes, crossing open positions if necessary	
		OFF		Effects avoid open positions during effects changes	
	COOLING MODE	REGULATED FANS		Fans optimized for light intensity (temperature controlled by regulating fan speed, light output unaffected)	
		FULL		Fans set to full/medium/low/ultra-low constant speed, fixture temperature controlled by regulating light output.	
		MEDIUM			
		LOW			
	ULTRA-LOW				
	DISPLAY	DISPLAY SLEEP	ON		Display remains permanently on
			2 MINUTES		Display goes into sleep mode 2 minutes after last key press
			5 MINUTES		Display goes into sleep mode 5 minutes after last key press
			10 MINUTES		Display goes into sleep mode 10 minutes after last key press
		DISPLAY INTENSITY	10 ... 100		Set display intensity in % (default = 100)
		DISPLAY ROTATION	NORMAL / ROTATE 180		Display orientation normal or rotated 180°
		DISPLAY CONTRAST	1 ...100		Adjust display contrast (default = 41)
	ERROR MODE	NORMAL		Enable error messages and warnings in display	
SILENT		Disable error messages and warnings in display (status LED will still light to indicate fixture status if error has been detected or fixture has a warning)			
HIBERNATION MODE	OFF		Disable hibernation mode		
	ON		Enable hibernation mode (light output and motor operation set to zero)		
DEFAULT SETTINGS	FACTORY DEFAULT	LOAD	ARE YOU SURE? YES/NO	Return all settings (except calibrations) to factory defaults	
	CUSTOM 1	LOAD	ARE YOU SURE? YES/NO	Load Custom Settings 1	
		SAVE	ARE YOU SURE? YES/NO	Save fixture's current settings as Custom Settings 1	
	CUSTOM 2	LOAD	ARE YOU SURE? YES/NO	Load Custom Settings 2	
		SAVE	ARE YOU SURE? YES/NO	Save fixture's current settings as Custom Settings 2	
	CUSTOM 3	LOAD	ARE YOU SURE? YES/NO	Load Custom Settings 3	
		SAVE	ARE YOU SURE? YES/NO	Save fixture's current settings as Custom Settings 3	

Table 4: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)
INFORMATION	POWER ON TIME	TOTAL	0 ... XXX HR	Display hours fixture has been powered on since manufacture (not user-resettable)
		RESETTABLE	CLEAR COUNTER? YES/NO	Display hours fixture has been powered on since last counter reset (user-resettable)
	POWER ON CYCLES	TOTAL	0 ... XXX HR	Display number of times fixture has been powered on since manufacture (not user-resettable)
		RESETTABLE	CLEAR COUNTER? YES/NO	Display number of times fixture has been powered on since last counter reset (user-resettable)
	SW VERSION	XX.XX.XX		Displays currently active software version
	RDM UID*	4D50.XXXXXXXXX		Displays fixture's unique RDM ID
	LED TYPE*	COLD/WARM		Displays fixture's LED color temperature type
	FAN SPEEDS*	HEAD FAN 1... BASE FAN 3	0 - XXX RPM	Displays current speed of all cooling fans (head and base)
	TEMPERATURES*	CMY EFFECT ... DC/DC	X C	Displays temperature in °C of all PCBs
DMX LIVE*	RATE	0 - 44 HZ		DMX transmission speed in packets per second
	QUALITY	0 - 100%		Percent of packets received
	START CODE	0 - 255		Value of the DMX start code
	STROBE ... CONTROL	...		Scroll to see values being received on each DMX channel
TEST*	TEST ALL			Run test sequence of all functions To test a specific function, use Up/Down buttons to scroll through functions and pause. Press Enter to restart test sequence. Press Menu button to exit test.
	TEST LEDS			Run test sequence of LEDs only. To test a specific LED group, use Up/Down buttons to scroll through groups and pause. Press Enter to restart test sequence. Press Menu button to exit test.
	TEST EFFECTS			Run test sequence of effects. To test a specific effect, use Up/Down buttons to scroll through effects and pause. Press Enter to restart test sequence. Press Menu button to exit test.
	TEST PAN/TILT	PAN		Run test sequence of pan functions. Press Menu button to stop test
		TILT		Run test sequence of tilt functions. Press Menu button to stop test
MANUAL CONTROL*	RESET	RESET		Reset fixture
	STROBE ... CONTROL	0 - 255		Scroll through effects, then enter a DMX value to manually control an effect

Table 4: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)	
SERVICE	ERROR LIST	Empty or up to 20 errors		Display any errors in memory	
	FAN CLEAN	ON/OFF		Activate fan cleaning	
	PT FEEDBACK	ON		Enable pan/tilt position feedback systems	
		OFF		Disable pan/tilt position feedback	
	ADJUST	PAN/TILT AT END STOP	STEP 1	Adjust pan and tilt end stop positions. This operation can be carried out by the end user. See under "Service utilities" on page 19.	
			STEP 2		
		CMYC	CYAN...MAGENTA ...YELLOW...CTC		For use by Martin® Service or its authorized agents only.
	CALIBRATION	DIMMER ... BARNDOOR ROT	0.00 ...+/- xx%	Scroll through effects. Define home position for each effect	
		PAN	0.00 ...+/- xx%	Define pan home position	
		TILT	0.00 ...+/- xx%	Define tilt home position	
		LOAD DEFAULTS	LOAD	Load factory default calibration settings	
		SAVE DEFAULTS	SAVE	Replace factory default calibration settings with current calibration settings	
	USB	NO DEVICE		No USB device present or no firmware on USB device	
		UPDATING FILES		Fixture updating internal memory from USB device	
		AVAILABLE FIRMWARE	XX.XX.XX ... XX.XX.XX	Select firmware from versions stored in internal memory. Scroll to select version, then press Enter and confirm your choice to update	

Table 4: Control menus

** Menus marked * are available only when the fixture is connected to mains power. All other menus are available in mains- and battery-powered operation.*

Service and display messages

The MAC Encore Wash gives service and maintenance information by displaying a large 3- or 4-character short code and a smaller full-text message in the fixture's display. The short code is visible at a distance, allowing easier reading with the fixture still in the rig, for example, while the full-text message gives more detailed information.

Warning messages

Warning messages indicate that either:

- problems might appear in the future if no action is taken, or
- the user needs to pay special attention to a function or procedure when working with the fixture.

The MAC Encore Wash communicates warnings as follows:

- Warning codes are shown continuously in the display and disappear when the user reacts to the warning.
- If more than one warning is detected, all warnings are displayed in sequence.
- If the display is inactive, the fixture's status LED (see Figure 2 on page 8) flashes orange to indicate that there is a warning. Activating the display will show the warning.

The possible warning messages are listed in Table 5 below:

Short code	Long message and explanation
BANK	BANK NO ACCESS Error unpacking firmware bank during/after software upload. Fixture will continue to operate on existing firmware. Warning message is cleared by a successful software upload or at the next power off/on cycle.
BETW	BEAM TEMP HIGH Beam temperature sensor detects abnormally high operating temperature.*
CMTW	CMY TEMP HIGH CMY module temperature sensor detects abnormally high operating temperature.*
DCTW	DC TEMP HIGH DC PCB sensor detects abnormally high operating temperature.*
EFTW	EFF TMP HIGH Effects module temperature sensor detects abnormally high operating temperature.*
IBTW	IBD TMP HIGH Internal barn doors module temperature sensor detects abnormally high operating temperature.*
LDTW	LED DRV TMP HIGH LED driver temperature sensor detects abnormally high operating temperature.*
PFTW	PFC TEMP HIGH PFC unit temperature sensor detects abnormally high operating temperature.*
PTTW	PT TEMP HIGH Pan/tilt PCB temperature sensor detects abnormally high operating temperature.*
PUTW	PSU TEMP HIGH PSU temperature sensor detects abnormally high operating temperature.*
SERV	SERVICE MODE Fixture in service mode.
SLW	SAFETY LOOP A safety loop error occurred but is no longer active. Warning message is cleared at the next power off/on cycle.
UITW	UI TEMP HIGH User interface (LCD display and control panel) PCB sensor detects abnormally high operating temperature.*

Table 5: Warning messages

Short code	Long message and explanation
ZFTW	ZF TEMP HIGH Zoom PCB sensor detects abnormally high operating temperature.*

Table 5: Warning messages

*High temperature warnings are canceled as soon as temperature returns to normal. If temperature reaches cutoff level, the warning is replaced by a cutoff error message.

Error messages

Error messages indicate that a problem is present. The MAC Encore Wash communicates errors as follows:

- Error messages flash in the display.
- If more than one error is detected, the fixture flashes all errors three times each.
- Errors are shown in the display regardless of display status: they override an inactive display and any other information that the display might be showing.
- If an error is present, the status LED flashes red.

The possible error messages are listed in Table 6 below:

Short code	Long message and explanation
BDER	BARNDOOR ERR Internal barn doors position error.
BEER	BEAM SHAPER POS Beam shaper position error.
BETC	BEAM TMP CUT OFF Beam temperature cutoff activated.
BETE	BEAM TMP SEN ERR Beam temperature sensor error.
C1ER	COLOR WHEEL 1 ERR Color wheel position error.
CECM	COMM ERR CMY CMY flags position system communication error.
CEEF	COMM ERR EFFECT Effects position system communication error.
CELD	COM ERR LED DRV LED driver communication error.
CEPT	COM ERR P/T Pan/tilt driver communication error.
CEZF	COM ERR Z/F Zoom/focus driver communication error.
CMTC	CMY TEMP CUT OFF CMY module temperature cutoff activated.
CMTE	CMY TEMP SEN ERR CMY module temperature sensor error.
COLD	FIXTURE COLD Fixture too cold. Physical movement of effects is disabled until fixture has warmed up.
CTER	CTC ERROR CTC flags position error.
CYER	CYAN ERROR Cyan flags position error.
DCTC	DC TEMP CUT OFF DC PCB temperature cutoff.
DCTE	DC TEMP SEN ERR DC PCB temperature sensor error.

Table 6: Error messages

Short code	Long message and explanation
EFTC	EFF TEMP CUT OFF Effects module temperature cutoff activated.
EFTE	EFF TEMP SEN ERR Effects module temperature sensor error.
FAN	BOTTOM FAN ERR
FAN	CMY FAN ERR
FAN	TOP FAN ERR
FAN	HEAD FAN 1 ERR
FAN	HEAD FAN 2 ERR
FAN	HEAD FAN 3 ERR
FAN	HEAD FAN 4 ERR
FAN	BASE 1 FAN ERR
FAN	BASE 2 FAN ERR
FAN	BASE 3 FAN ERR
FAN	MID FAN ERR
FAN	HEAD FAN 5 ERR
FAN	HEAD FAN 6 ERR
FAN	HEAD FAN 7 ERR
FAN	HEAD FAN 8 ERR
FAN	HEAD FAN 9 ERR
FAN	HEAD FAN 10 ERR
FAN	HEAD FAN 11 ERR
FBEP	PAN FBACK ERR Pan position magnetic indexing system timeout. Fixture is unable to correct pan position (but pan movement will often still be possible).
FBET	TILT FBACK ERR Tilt position magnetic indexing system timeout. Fixture is unable to correct tilt position (but tilt movement will often still be possible).
FOER	FOCUS ERROR Focus position error. Fixture is unable to control focus.
IBTC	IBD TEMP CUT OFF Internal barn doors temperature cutoff activated.
IBTE	IBD TEMP SEN ERR Internal barn doors module temperature sensor error.
IRER	IRIS ERROR Iris effect position error.
LDTC	LED TEMP CUT OFF LED board temperature cutoff activated.
LDTE	LED TEMP SEN ERR LED board temperature sensor error.
MAER	MAGENTA ERROR Magenta flag position error.
MMER	MISSING MODULE ERR Impossible to communicate with a module that should be present. Module missing or not correctly connected.
NLCI	NO LED COLOR INFO Fixture unable to retrieve LED color/type information.
PAER	PAN ERROR Pan position electrical indexing system timeout.
PFTC	PFC TEMP CUT OFF Power factor correction system temperature cutoff.
PFTE	PFC TEMP SEN ERR Power factor correction system temperature sensor error.

Table 6: Error messages

Short code	Long message and explanation
PSEER	PAN SENSOR ERROR Fixture unable to retrieve reliable data from pan position sensor.
PTCM	PT SENSOR ADJUST Pan/tilt sensors are incorrectly adjusted.
PTTC	PT TEMP CUT OFF Pan/tilt temperature cutoff activated.
PTTE	P/T SENSOR ERROR Pan/tilt sensors are incorrectly adjusted.
PUTC	PSU TEMP CUT OFF PSU temperature cutoff activated.
PUTE	PSU TEMP SEN ERR PSU temperature sensor error.
SLER	SAFETY LOOP Safety loop circuit activated. A temperature circuit breaker has shut down LEDs. Circuit breaker resets automatically after temperature has returned to normal operating range.
TIER	TILT ERROR Tilt position electrical indexing circuit timeout.
TSER	TILT SENSOR ERR Fixture unable to retrieve reliable data from tilt position sensor.
UECM	UPL ERR CMY Could not upload new CMY effect system firmware during a firmware upload. Error cleared when new firmware is uploaded successfully or power is cycled off and on.
UEEF	UPL ERR EFFECT Could not upload new effects systems firmware during a firmware upload. Error cleared when new firmware is uploaded successfully or power is cycled off and on.
UELD	UPL ERR LED DRV Could not upload new LED driver firmware during a firmware upload. Error cleared when new firmware is uploaded successfully or power is cycled off and on.
UEPT	UPL ERR PAN/TILT Could not upload new pan/tilt system firmware during a firmware upload. Error cleared when new firmware is uploaded successfully or power is cycled off and on.
UEZF	UPL ERR Z/F Could not upload new zoom/focus system firmware during a firmware upload. Error cleared when new firmware is uploaded successfully or power is cycled off and on.
UITC	UI TEMP CUT OFF User interface (LCD display and control panel) PCB temperature cutoff activated.
UITE	UI TEMP SEN ERR User interface (LCD display and control panel) PCB temperature sensor error.
VOLO	VOLT AT NODE LOW Low voltage detected in node PCBA.
YEER	YELLOW ERROR Yellow flag position error.
ZFTC	ZF TEMP CUT OFF Zoom/focus effect temperature cutoff activated.
ZFTE	ZF TEMP SEN ERR Zoom/focus effect temperature sensor error.
ZOER	ZOOM ERROR Zoom position electrical indexing system timeout.

Table 6: Error messages

