MAC Quantum Profile™
USER GUIDE

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User Documentation update information

Any important changes in the MAC Quantum Profile User Guide are listed below.

Revision B

Covers MAC Quantum Profile firmware version 1.1.0.

Revision A

First version released. Covers MAC Quantum Profile firmware version 1.0.0.

P/N 35000279, Rev. B

Contents

Introduction

Warning! Before using the MAC Quantum Profile™, read the latest version of the product's Safety and Installation Manual, paying particular attention to the Safety Precautions section.

This User Guide is a supplement to the Installation and Safety Manual that is supplied with the MAC Quantum Profile. Both these documents are available for download from 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.

Effects

This section gives details of the effects in the MAC Quantum Profile. See the DMX protocol tables starting on page 20 for details of the channels used to control the effects.

Where fine control is available, the main DMX control channel sets the first 8 bits (the most significant byte or MSB), and the fine channel sets 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.

Gobos

The MAC Quantum Profile has two gobo wheels, one with six rotating gobos and one with ten static gobos. Rotating gobos can be indexed, rotated with variable speed and direction and shaken. Shake can be varied from a slow 360° shake to a fast 10° shake.

Color control

The fixture features continuous CMY color mixing as well as a color wheel with six color filters plus open.

Prism

The fixture features a three-facet prism that can be rotated with variable speed and direction.

Iris

An iris is available with 0 - 100% continuous opening and variable speed animation effects.

Electronic shutter and strobe effects

Electronic shutter/strobe effects include instant blackout and snap open as well as a regular or random strobe with variable speed from 1 Hz to 20 Hz.

Dimming

Electronic dimming is available with 8-bit resolution in 16-bit Basic Mode and 16-bit resolution in 16-bit Extended Mode.

Zoom

The zoom system lets you vary the beam angle to allow wide or tight washlight and mid-air beam effects.

Focus

Projections can be focused from approximately 2 meters (7 ft.) to infinity remotely using DMX.

Pan and tilt

8-bit and 16-bit pan and tilt control are available in both 16-bit Basic and 16-bit Extended modes.

FX: pre-programmed effects

A library of pre-programmed effects is available via DMX in 16-bit Extended mode. These effects are called **FX** in this manual and in the fixture menus. The library is available twice in the DMX channel layout with identical functions and effects, and two different FX can be combined and run simultaneously with one ‘superimposed’ over the other.

See “FX: pre-programmed effects” on page 25 for an overview of the FX available.

You can select an FX on DMX channel 23 or 25. If you want to run two FX in combination, make a selection on both channel 23 *and* 25.

Where modification is possible, the selected FX can be modified using its **FX adjust** channel. Modifications can include speed, amount, offset, smoothness, etc. depending on the FX selected.

FX Sync

If two or more fixtures are set to display the same FX (and if the FX consists of a repeating cycle), its start point and duration can be synchronized in multiple fixtures by sending commands on the FX Synchronization channel. For synchronization to work, you must send the commands to all the fixtures at the same time.

Synchronized and sync shift FX display

You can set fixtures so that they all start the FX cycle at the same time or you can shift a fixture's FX start time so that it displays its FX in sync with other fixtures but with a time offset (delayed start). If you send a 180° offset command, for example, the fixture will start its FX cycle halfway through the cycle of a fixture that has no offset.

Random operation

The **random start** option randomizes the starting points of FX cycles in multiple fixtures. The overall speed of the FX is controlled on its adjust channel.

The **random duration** option randomizes the duration of FX. If you set multiple fixtures to random duration, the duration of an FX cycle will be different in the different fixtures. You can use each fixture's FX adjust channel to set an upper limit for the speed of the FX cycle in that fixture.

FX priority and overriding

If an FX is activated, it overrides any other settings for the parameters that the FX modifies. For example, an FX that modifies the zoom will override any zoom angle set on the zoom channel (DMX channel 3).

If the same FX is selected on both the **FX1 select** and **FX2 select** channels, only the **FX1 adjust** channel is active. The **FX2 adjust** channel is ignored.

If different FX are selected on the **FX1 select** and **FX2 select** channels, FX2 is superimposed onto FX1 and FX2 overrides FX1 whenever both FX modify the same parameter.

Animotion™ FX

Animotion™ effect options (for which patents are pending) are available by sending DMX values 30 - 37 on the FX channels. Animotion™ is an innovative type of beam movement that can be used for both dynamic projection and mid-air effects.

Optical configuration

Prism

The MAC Quantum Profile is supplied with an interchangeable three-facet rotating prism installed.

Color wheel

The MAC Quantum Profile color wheel has six interchangeable dichroic filters and an open position (illustration shows color wheel viewed from front of head):

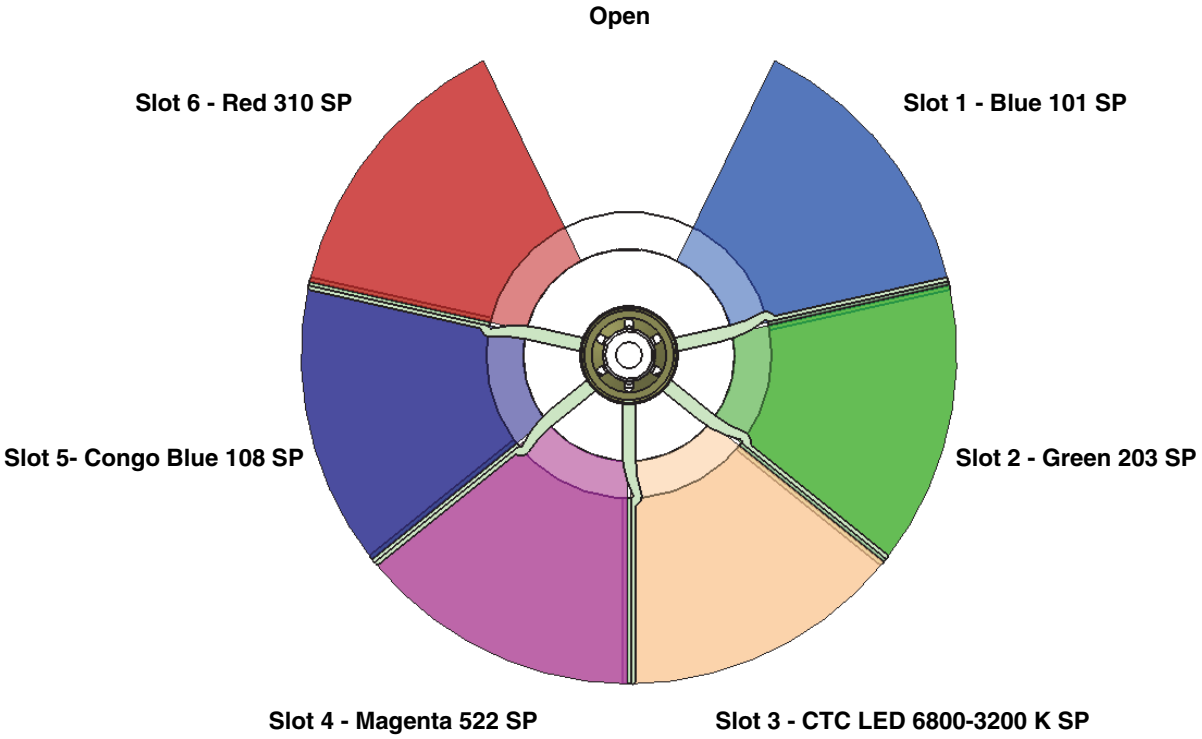


Figure 1: MAC Quantum Profile color wheel

As standard, the MAC Quantum Profile is supplied with the following color filters installed:

- Slot 1 - Blue 101 SP - P/N 46404801
- Slot 2 - Green 203 SP - P/N 46404802
- Slot 3 - CTC LED 6800-3200 K SP - P/N 46404803
- Slot 4 - Magenta 522 SP - P/N 46404804
- Slot 5 - Congo Blue 108 SP - P/N 46404805
- Slot 6 - Red 310 SP - P/N 46404806

Static gobo wheel

The MAC Quantum Profile's static gobo wheel has 10 static gobos plus an open position.

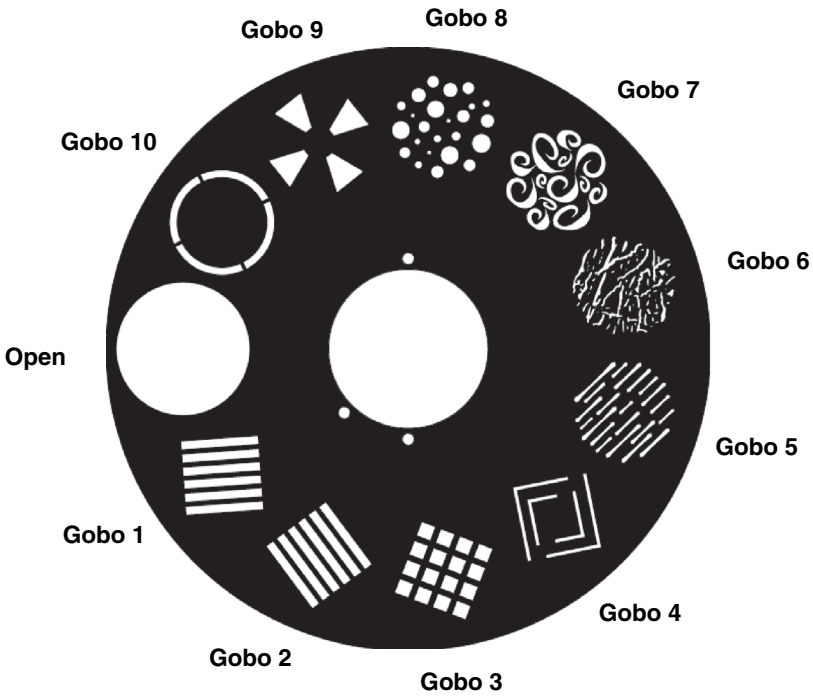


Figure 2: MAC Quantum Profile static gobo wheel

Rotating gobo wheel

The MAC Quantum Profile's rotating gobo wheel has 6 rotating gobos plus an open position. See Figure 3 (wheel viewed from front of head).

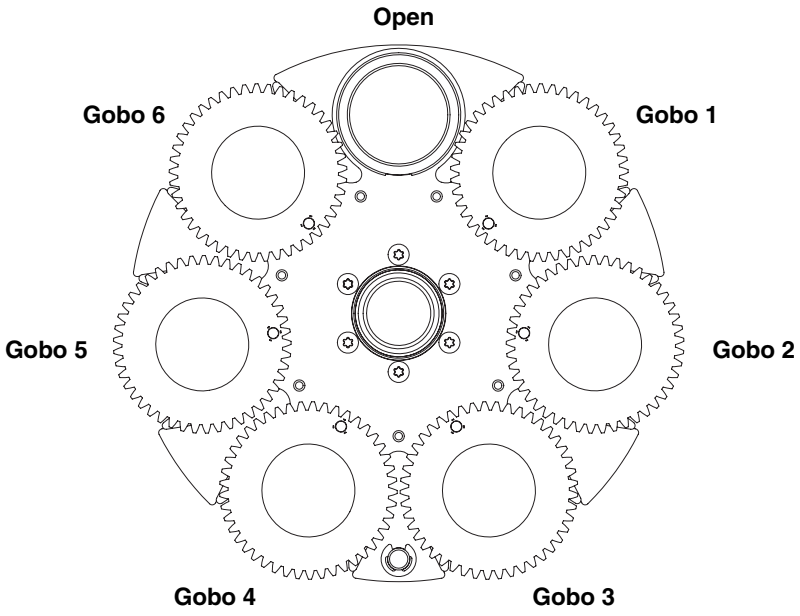


Figure 3: MAC Quantum Profile rotating gobo wheel

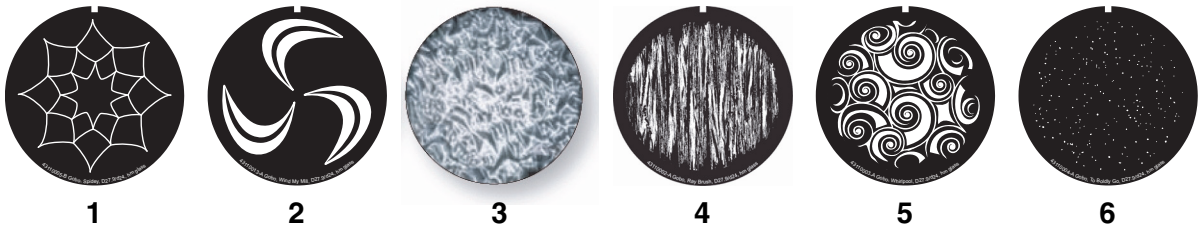
Rotating gobos

The standard gobos that are supplied installed in the fixture are shown in the correct order in Figure 4.

All gobos are interchangeable, but replacement gobos must match the dimensions, construction and quality of the gobos supplied as standard. The gobos are 27.9 mm external diameter, 24 mm image area diameter.

Limbo is a textured glass gobo that is glued permanently into its holder. If you replace Limbo, you will therefore need to order an additional goboholder to accept the new gobo.

Handling, installing and storing the gobos requires special care. See the MAC Quantum Profile Safety and Installation Guide for details.



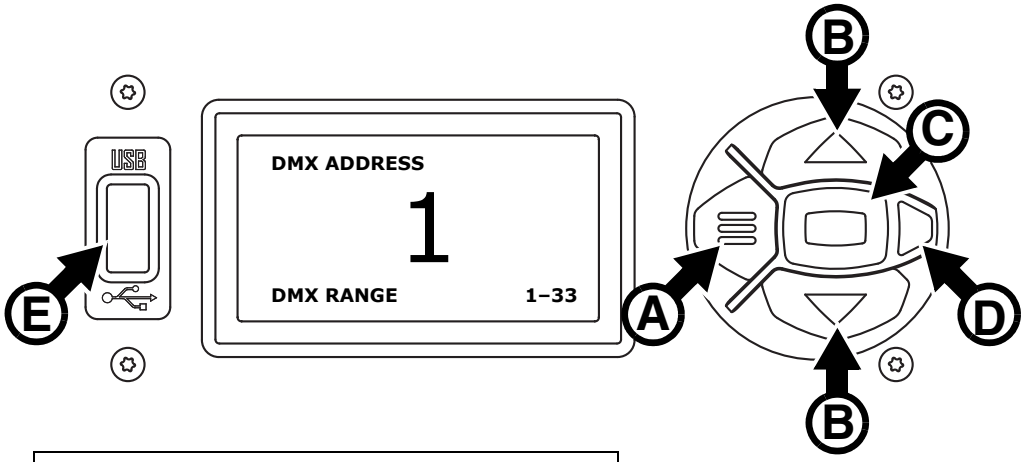
Rotating gobos

1. Spidey, D27.9/d24, hm glass.....P/N 43110005
2. Wind My Mill, D27.9/d24, hm glass.....P/N 43110013
3. Limbo, D27.6, tex. glass, glued in holder ..... P/N 62327298
4. Ray Brush, D27.9/d24, hm glass.....P/N 43110002
5. Whirlpool, D27.9/d24, hm glass .....P/N 43110003
6. To Boldly Go, D27.9/d24, hm glass.....P/N 43110004

Figure 4: MAC Quantum Profile Rotating gobos

Control panel operations

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



A - Menu	D - Status LED
B - Up/Down	E - USB port
C - Enter	

Figure 5: Display and control panel

When the MAC Quantum Profile 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 the range of DMX channels it uses in the DMX mode it is currently set to and any status messages (see "Service and display messages" on page 30) in the display.

The display can be set to automatically rotate to match standing or hanging fixture orientation in the **PERSONALITY** → **DISPLAY** menu or the Shortcuts menu (see "Shortcuts" on page 11).

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:.
  - 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.

Besides color, the status LED also gives the following information:

- **FLASHING**: No DMX signal detected.
- **CONSTANT**: Valid DMX signal detected

Battery power

The MAC Quantum Profile'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
- DMX control mode (Basic/Extended)
- Fixture ID
- Personality settings (pan/tilt invert, pan/tilt and effects speed, dimmer curve, focus tracking, video tracking, DMX reset, effect shortcuts, cooling mode, display behavior and error mode)
- Default settings
- Information (power on hours and power cycle 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 Quantum Profile display 180°.

Settings stored permanently

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

- DMX address
- DMX control mode (Basic/Extended)
- Fixture ID
- All personality settings
- Resettable counters
- Service settings

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 Quantum Profile 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.

DMX modes

The **CONTROL MODE** menu lets you set the MAC Quantum Profile to one of the two DMX operating modes, basic 16-bit and extended 16-bit:

- Basic 16-bit mode offers coarse control of all effects plus fine control of rotating gobo indexing angle, rotating gobo rotation speed, pan and tilt.
- Extended 16-bit mode provides all the features of basic 16-bit mode plus fine control of dimmer, zoom and focus plus access to the FX (pre-programmed effects system).

The MAC Quantum Profile uses 19 DMX channels in basic 16-bit mode and 27 DMX channels in extended 16-bit mode.

To set the fixture's DMX mode:

1. Press Enter to enter the main menu.
2. Scroll to **CONTROL MODE**, then press Enter. Scroll to select either **BASIC** or **EXTENDED**, then press Enter to save.
3. Press Menu to exit.

Fixture ID

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

Personality

The MAC Quantum Profile 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.
- The **SPEED** menu lets you set **PAN/TILT** to **NORMAL**, **FAST** (optimized for speed) or **SLOW** (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 **NORMAL**, **FAST** or **SLOW**. 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 6):

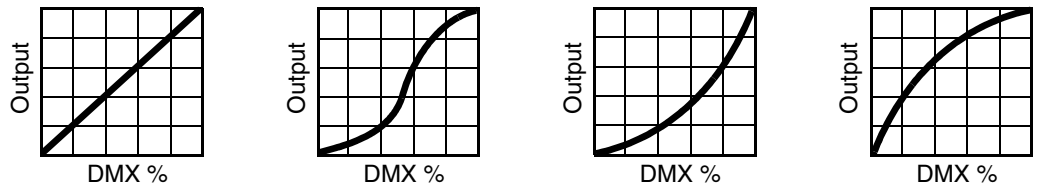


Figure 6: Dimming curve options

- **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.

- **VIDEO TRACKING** optimizes performance if the MAC Quantum Profile is used with a video source (pixelmapping).

  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).
  - If shortcuts are enabled, the color and gobo wheels can go through the open position during changes from one color to another. Colors and gobos change as fast as possible.
  - If shortcuts are disabled, the color and gobo wheels avoid the open position during changes. Color and gobo changes may take slightly longer.
- **COOLING MODE** lets you select between four cooling fan options to find the preferred balance between light output and quietest cooling fan operation:
  - **REGULATE FANS** regulates fixture temperature by deployment of cooling fans to give unrestricted light output. Fan speed can ramp up and down fast to respond to immediate cooling needs. This is the suggested mode for normal fixture operation.

  The next four CONSTANT settings let you adjust the level of cooling fan noise to suit the requirements of the location by setting fan speed to a constant level. The fixture controls temperature by adjusting light output. The lower the fan speed you set, the quieter fixture operation becomes but the more light output intensity is reduced.
  - **CONSTANT FAN FULL** sets cooling fans to run constantly at a speed that will normally give full light output in an ambient temperature of approximately 30° C (86° F). Light output is only reduced if this fan speed is not enough to control fixture temperature. This setting gives highest-level fan noise and least reduction in light intensity.
  - **CONSTANT FAN MID** sets cooling fans to run constantly at medium speed and reduces light intensity to approximately 80%. Light output is only reduced below 80% if medium fan speed is not enough to control fixture temperature.
  - **CONSTANT FAN LOW** sets cooling fans to run constantly at low speed and reduces light intensity to approximately 70%. Light output is reduced below 70% only if low fan speed is not enough to control fixture temperature.
  - **CONSTANT FAN ULOW** sets cooling fans to run constantly at ultra-low speed and reduces light intensity to approximately 60%. Light output is reduced below 60% only if ultra-low fan speed is not enough to control fixture temperature. This setting gives lowest-level fan noise and most reduction in light intensity.
- **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. Select **Auto** for automatic adjustment to match the ambient light level, or manually set the 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. Select **Auto** for automatic adjustment to match display intensity, or manually set the 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.

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. The savable settings comprise:

- all the settings in the PERSONALITY menu,
- the fixture's DMX address, and
- the fixture's DMX control mode: Extended 16-bit or Basic 16-bit mode.

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.
- **FAN SPEEDS** provides separate status readouts from the fixture's cooling fans.
- **TEMPERATURES** provides separate PCB temperature readouts.

DMX signal monitoring

The MAC Quantum Profile 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.

The remaining options under **DMX LIVE** display the DMX values in a range from 0 - 255 that are being received on each channel. The DMX channels displayed depend on whether the fixture is in 16-bit or 16-bit extended mode.

Test sequences

TEST activates effects in sequence, allowing you to test all effects, 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 Enter to pause the test and use Up and Down to select the test queue.
- Press Menu to stop the test.

Manual control

The **MANUAL CONTROL** menu lets you reset the MAC Quantum Profile 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 20.

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 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, 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.

Illuminating the display

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 illuminated in this way, the display will return to sleep mode according to the setting entered in the onboard control menus.

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 26 for details of these settings.

- Dimming curve
- Pan and tilt speed
- Effect shortcuts
- Video tracking
- Focus tracking
- Cooling mode
- Pan/tilt and zoom calibration offsets

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 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 Quantum Profile 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 ID

Each MAC Quantum Profile 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 Quantum Profile 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.

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 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** is for use by Martin™ Service and its authorized agents with service documentation from Martin™ only.
- **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 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.

Important! ***The SERVICE → ADJUST menu has no useful function for the end user and is for use by Martin™ Service and its authorized agents with service documentation from Martin™ only. Do not use it, or you may cause damage that is not covered by the product warranty.***

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 ”Changing calibration offsets using DMX” on page 15).

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 Martin Uploader application and either a Martin Universal USB Duo™ USB-DMX interface device or a Martin DABS1™ USB-DMX interface device.

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.

Do not switch the fixture off during a firmware update, or firmware will be corrupted.

Installing 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 Quantum Profile '.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 Quantum Profile firmware:

1. Download the '.BANK' firmware file from the MAC Quantum Profile 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 Quantum Profile.
3. Insert the USB stick in the MAC Quantum Profile'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 Quantum Profile 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, including zoom-focus linking, 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 Quantum Profile 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 Martin Uploader™ application (also 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 USB Duo™ or Martin DABS1™.

To install the MAC Quantum Profile firmware:

1. Download the firmware '.MU3' file from the MAC Quantum Profile 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

Applicable when running MAC Quantum Profile firmware version 1.1.0.

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Function	Fade type	Default value
1	**1**	0 - 19 20 - 49 50 - 200 201 - 210 211 - 255	**Strobe/shutter effect** Shutter closed Shutter open Strobe, slow → fast Shutter open Random strobe, slow → fast	Snap	30
2	**2**	0 - 255	**Dimmer fade (MSB)** Closed → open	Fade	0
	3	0 - 65535	**Dimmer fade (LSB)** Closed → open	Fade	0
3	**4**	0 - 255	**Cyan** 0 → 100%	Fade	0
4	**5**	0 - 255	**Magenta** 0 → 100%	Fade	0
5	**6**	0 - 255	**Yellow** 0 → 100%	Fade	0
6	**7**		**Color wheel** *Continuous Scroll (split colors possible)* 0 1 - 14 15 16 - 29 30 31 - 44 45 46 - 59 60 61 - 74 75 76 - 89 90 91 - 104 105 - 160 *Stepped Scroll (snap to full color positions)* 161 - 163 164 - 166 167 - 169 170 - 172 173 - 175 176 - 178 179 - 192 *Continuous Rotation* 193 - 214 215 - 221 222 - 243 *Random color* 244 - 247 248 - 251 252 - 255 Open Open → Slot 1 Slot 1 (Blue) Slot 1 → Slot 2 Slot 2 (Green) Slot 2 → Slot 3 Slot 3 (CTC 3200 K) Slot 3 → Slot 4 Slot 4 (Magenta) Slot 4 → Slot 5 Slot 5 (Congo Blue) Slot 5 → Slot 6 Slot 6 (Red) Slot 6 → Open Open Slot 1 (Blue) Slot 2 (Green) Slot 3 (CTC 3200 K) Slot 4 (Magenta) Slot 5 (Congo Blue) Slot 6 (Red) Open CW, Fast → Slow Stop (This will stop the color wheel wherever it is at the time) CCW, Slow → Fast Fast Medium Slow	Snap	0

Table 1: DMX Protocol

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Function	Fade type	Default value
7	**8**		**Gobo selection, indexing, shake, rotation**	Snap	0
			Indexed gobo: set indexed angle on channels 9/10 (16-bit) or 10/11 (16-bit ext.)		
		0 - 4	Open		
		5 - 9	Gobo 1 (Spidey)		
		10 - 14	Gobo 2 (Wind My Mill)		
		15 - 19	Gobo 3 (Limbo)		
		20 - 24	Gobo 4 (Ray Brush)		
		25 - 29	Gobo 5 (Whirlpool)		
		30 - 34	Gobo 6 (To Boldly Go)		
			Continuous gobo rotation: set gobo rotation speed on channels 9/10 (16-bit) or 10/11 (16-bit ext.)		
		35 - 39	Gobo 1		
		40 - 44	Gobo 2		
		45 - 49	Gobo 3		
		50 - 54	Gobo 4		
		55 - 59	Gobo 5		
		60 - 64	Gobo 6		
			Gobo shake centered on indexed position: set indexed angle on channels 9/10 (16-bit) or 10/11 (16-bit ext.). Shake angle adjusts in following steps: 360°, 270°, 180°, 135°, 90°, 60°, 45°, 30°, 15° and 10°		
		65 - 88	Gobo 1 shake, 360° slow → 10° fast		
		89 - 112	Gobo 2 shake, 360° slow → 10° fast		
		113 - 136	Gobo 3 shake, 360° slow → 10° fast		
		137 - 160	Gobo 4 shake, 360° slow → 10° fast		
		161 - 184	Gobo 5 shake, 360° slow → 10° fast		
		185 - 209	Gobo 6 shake, 360° slow → 10° fast		
			Continuous gobo wheel scroll with indexed gobo: set gobo indexed angle on channels 8 and 9 (16-bit) or 9 and 10 (16-bit extended)		
		210 - 232	CW gobo wheel scroll, fast → slow		
		233 - 255	CCW gobo wheel scroll, slow* → fast		
8 **9**	**9** **10**		**Gobo indexing angle or rotation speed (16-bit fine, MSB and LSB)**	Fade	32768
			If indexed gobo is selected on channel 7 (16-bit) or 8 (16-bit ext.)		
		0 - 65535	Gobo indexing, -197.5° → +197.5° *(default DMX value 32768 sets gobo to 0°)*		
			If continuous gobo rotation is selected on channel 7 (16-bit) or 8 (16-bit ext.)		
		0 - 600	No gobo rotation, gobo indexed at 0°		
		601 - 32130	CW rotation, fast → slow		
		32131 - 32895	No gobo rotation, gobo stops at current position		
		32896 - 64515	CCW rotation, slow → fast		
		64516 - 65535	No gobo rotation, gobo indexed at 90°		

Table 1: DMX Protocol

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Function	Fade type	Default value
10	**11**		**Static gobo wheel gobo selection, wheel rotation, random gobo**	Fade	0
			Continuous gobo wheel scrolling		
		0	Open		
		1 - 14	Open → Gobo 1		
		15	Gobo 1		
		16 - 29	Gobo 1 → Gobo 2		
		30	Gobo 2		
		31 - 44	Gobo 2 → Gobo 3		
		45	Gobo 3		
		46 - 59	Gobo 3 → Gobo 4		
		60	Gobo 4		
		61 - 74	Gobo 4 → Gobo 5		
		75	Gobo 5		
		76 - 89	Gobo 5 → Gobo 6		
		90	Gobo 6		
		91 - 104	Gobo 6 → Gobo 7		
		105	Gobo 7		
		106 - 119	Gobo 7 → Gobo 8		
		120	Gobo 8		
		121 - 134	Gobo 8 → Gobo 9		
		135	Gobo 9		
		136 - 149	Gobo 9 → Gobo 10		
		150	Gobo 10		
		151 - 164	Gobo 10 → Open		
		165	Open		
			Stepped gobo wheel scrolling		
		166 - 167	Gobo 1		
		168 - 169	Gobo 2		
		170 - 171	Gobo 3		
		172 - 173	Gobo 4		
		174 - 175	Gobo 5		
		176 - 177	Gobo 6		
		178 - 179	Gobo 7		
		180 - 181	Gobo 8		
		182 - 183	Gobo 9		
		184 - 185	Gobo 10		
		186 - 192	Open		
			Continuous gobo wheel rotation		
		193 - 214	CW gobo wheel rotation, fast → slow		
		215 - 221	Gobo wheel stops at its current position		
		222 - 243	CCW gobo wheel rotation, slow → fast		
			Random gobos		
		244 - 247	Fast		
		248 - 251	Medium		
		252 - 255	Slow		
11	**12**		**Prism rotation**	Snap	0
		0 - 2	Open		
		3 - 126	CW prism rotation, fast → slow		
		127 - 129	Prism stops at its current position		
		130 - 253	CCW prism rotation, slow → fast		
		254 - 255	Open		
12	**13**		**Iris**	Fade	0
		0 - 200	Open → closed		
		201 - 225	Animate fast → slow		
		226 - 230	Iris stops at current position		
		231 - 255	Animate reverse slow → fast		
13	**14**		**Zoom (MSB)**	Fade	
		0 - 255	Wide → narrow		
	15		**Zoom fine (LSB)**	Fade	32768
		0 - 65535	Wide → narrow		
14	**16**		**Focus (MSB)**	Fade	
		0 - 255	Far → near		
	17		**Focus fine (LSB)**	Fade	32768
		0 - 65535	Far → near		

Table 1: DMX Protocol

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Function	Fade type	Default value
15 **16**	**18** **19**	0 - 65535	**Pan, 16-bit (MSB and LSB)** Left → right (32768 = neutral)	Fade	32768
17 **18**	**20** **21**	0 - 65535	**Tilt, 16-bit (MSB and LSB)** Up → down (32768 = neutral)	Fade	32768
19	**22**		**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 only – 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, factory 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	Parameter shortcuts = ON (default)		
		31	Parameter shortcuts = OFF		
		32	Disable focus tracking		
		33	Enable focus tracking on near distance		
		34	Enable focus tracking on medium distance		
		35	Enable focus tracking on far distance		
		36 - 51	*No function*		
		52	Turn on control panel display – 1 sec.		
		53	Turn off control panel display – 1 sec.		
		54	Regulated fan speed, fixed light output intensity = full (default)		
		55	Fixed fan speed = full, regulated light output intensity		
		56	Fixed fan speed = medium, regulated light output intensity		
		57	Fixed fan speed = low, regulated light output intensity		
		58	Fixed fan speed = ultra low, regulated light output intensity		
		59 - 99	*No function*		
		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	*No function*		
		107	Store all CMY calibration – 5 sec.		
		108	Store rot. gobo wheel current slot index calibration – 5 sec.		
		109	*No function*		
		110	Store static gobo wheel calibration – 5 sec.		
		111	*No function*		
		112	Store iris calibration – 5 sec.		
		113	Store focus calibration – 5 sec.		
		114	Store zoom calibration – 5 sec.		
		115 - 198	*No function*		
		199	Reset all calibration values to factory defaults – 5 sec.		
		200 - 255	*No function*		
-	**23**	0 - 255	**FX1 selection (see Table 2)** Effect selection (adjust on DMX channel 24)	Snap	0
-	**24**	0 - 126 127 - 128 129-255	**FX1 adjustment** Effect reversed fast → slow Effect stops Effect slow → fast	Fade	128

Table 1: DMX Protocol

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Function	Fade type	Default value
-	**25**	0 - 255	**FX2 selection (see Table 2)** Effect selection (adjust on DMX channel 24)	Snap	0
-	**26**	0 - 126 127 - 128 129-255	**FX2 adjustment** Effect reversed fast → slow Effect stops Effect slow → fast	Fade	128
-	**27**	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 *Reserved* Random start (FX 1 adjust controls overall speed) Random duration *Reserved*	Snap	0

Table 1: DMX Protocol

MSB = Most significant byte
LSB = Least significant byte

FX: pre-programmed effects

The table below lists the pre-programmed dynamic effects (macros) that can be controlled using channels 23 - 27 in 16-bit Extended Mode.

You select effects on channels 23 and 25 by sending the values listed in the table. You can adjust effect parameters such as speed and intensity on channels 24 and 26, and you can adjust synchronization of effects across different fixtures on channel 27.

Applicable when running MAC Quantum Profile firmware version 1.1.0.

DMX value	Effect	DMX value	Effect	DMX value	Effect
1	Gobo X-fade	61	Mix to White Pulse	118	Windows
2	Bad Stepper	62	Random Mix Wave	119	Three Ring Circus
3-7	*Reserved*	63	Random Mix Step	120	Flying Bananas
8	Tick Tick Tick	64	Random Mix Pulse	121	Beamage
9	Tick Tock	65	Random Subtle Wave	122	Spider Twist
10	Wave	66	Red White Blue Fade	123	Milling Around
11	Step	67	Red White Blue Snaps	124	Flicker Dots
12	Pulse	68-69	*Reserved*	125	Tick Tock Cone
13	Double Strobe	70	Full Bumps	126	Flap Flap
14	Triple Strobe	71	All Bumps	127	Nervous Dots
15	Up, Down, Flash	72	Split Bumps	128	Chasing Dots
16	Up, Flash, Down, Flash	73	Random Split Bumps	129	Counter Flaps
17	Random Levels	74	Color Shaker	130-159	*Reserved*
18-20	*Reserved*	75	Fire	160	Fire
21	Electric Arc	76	Water	161	*Reserved*
22	Atomic Lightning	77	Ice	162	Water
23	Thunderstorm	78	Hot and Cold	163	*Reserved*
24	Welding	79	Warm and Fuzzy	164	Vertical Scratches
25-29	*Reserved*	80	Iris Wave	165	Horizontal Scratches
30	Stop Motion*	81	Iris Step	166	Box Animation
31	Movie Flicker*	82	Iris Pulse	167	Chasing Worms
32	Cross Chase*	83	Zoom Wave	168	Spidermotion
33	Random Dimmers*	84	Zoom Step	169	Curvy Field
34	Shakey Dimmers*	85	Zoom Pulse	170	Big Balls
35	Center Out Chase*	86	Random Size Wave	171	Veins
36	Negative Pulse*	87	Random Size Step	172	Yellow Veins
37	Positive Pulse*	88-89	*Reserved*	173	Wavy Bones
38-49	*Reserved*	90	Pin to Flood	174	Blubber
50	Rainbow Wave	91	Pounce	175-209	*Reserved*
51	Rainbow Step	92	Splash	210	Zoom Fade
52	Rainbow Pulse	93-109	*Reserved*	211	Fade Spin Zoom
53	RGB Wave	110	Three Beams	212	Gobo Twist
54	RGB Step	111	Small Spidey	213	Expand Twist
55	RGB Pulse	112	Circle Cuts	214	Expand Twist Out
56	CMY Wave	113	Mill Cuts	215-219	*Reserved*
57	CMY Step	114	Dots in Motion	220	Circle Square
58	CMY Pulse	115	Lots of Dots	221	Circle Open
59	Mix to White Wave	116	Moonflower	222	Line By Line
60	Mix to White Step	117	Starlight	223-255	*Reserved*

Table 2: FX in the MAC Quantum Profile

***Animotion effect**

Control panel menus

Applicable when running MAC Quantum Profile firmware version 1.1.0.

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.
CONTROL MODE	BASIC			16-bit basic DMX mode
	EXTENDED			**16-bit extended DMX mode**
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
	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
			SMOOTH	Optimize effects 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)
	FOCUS TRACKING	DISABLED		Focus tracking function disabled
		NEAR		Focus tracking, focus optimized for near distance
		MEDIUM		**Focus tracking, focus optimized for medium distance**
		FAR		Focus tracking, focus optimized for far distance
	VIDEO TRACKING	ENABLED		Color fading optimized for speed (suggested setting for pixelmapping)
		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)
	EFFECT SHORTCUT	**ON**		**Effects take shortest route during changes, crossing open positions if necessary**
		OFF		Effects avoid open positions during effects changes

Table 3: Control menus

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Notes (Default settings in bold print)
PERSONALITY (continued)	COOLING MODE	**REGULATE FANS**		**Fans optimized for light intensity (temperature controlled by regulating fan speed, light output unaffected)**
		CONSTANT FAN ULOW		Fans optimized for maximum quietness (temperature controlled by regulating light output, fan speed fixed at ultra-low)
		CONSTANT FAN LOW		Fans optimized for quietness (temperature controlled by regulating light output, fan speed fixed at low)
		CONSTANT FAN MID		Fans set to quietness/cooling compromise (temperature controlled by regulating light output, fan speed fixed at medium)
		CONSTANT FAN FULL		Fans optimized for cooling (temperature controlled by regulating light output only if required, fan speed fixed at high)
	DISPLAY	DISPLAY SLEEP	ON	Display 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 contrast of display (default = **41**)
	ERROR MODE	**NORMAL**		**Enable error messages and warnings in display**
		SILENT		Disable error messages and warnings in display (the status LED will still light to indicate fixture status if an error has been detected or the fixture has a warning)
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 3: 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.XXXXXXXX		Displays fixture's unique RDM ID
	FAN SPEEDS*	HEAD FAN 1 ... BASE FAN 3	0 - XXX RPM	Scroll to displays current speed of each cooling fan (head and base)
	TEMPERA-TURES*	EFFECT ... DCDC PCB	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 ... FX SYNC	XXX		Scroll to see values received on each DMX channel
TEST*	TEST ALL			Run test sequence of all functions To test a specific function, se 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	CYAN ... FOCUS		Run test sequence of each effect. Press Menu button to stop 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 fixture
	STROBE ... FX SYNC			Scroll through effects to manually control an effect

Table 3: 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*	*For use by Martin Service or its authorized agents only – use without Martin Service documentation may cause damage*
			STEP 2	
		CMY AT END STOP		
	CALIBRATION	DIMMER ...	0.00 ...+/- xx%	Define home position of all effects. Plus/minus percentage available depends on 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 3: 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 Quantum Profile 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 Quantum Profile 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 5 on page 10) flashes orange to indicate that there is a warning. Activating the display will show the warning.

The possible warning messages are listed in Table 4 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.
DCTW	DC TEMP HIGH DC PCB 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 sensor detects abnormally high operating temperature.*
SERV	SERVICE MODE Fixture in service mode.
SL W	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.*
ZFTW	ZF TEMP HIGH Zoom PCB sensor detects abnormally high operating temperature.*

Table 4: 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 Quantum Profile 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 5:

Short code	Long message and explanation
BEER	BEAM SHAPER POS Error in magnetic indexing circuit. Beam shaper position timeout reached.
BETC	BEAM TMP CUT OFF Beam temperature sensor continuously measures temperature above maximum limit.
BETE	BEAM TMP SEN ERR Beam temperature sensor error or no communication with sensor.
C1ER	COLORWHEEL 1 ERR Error in magnetic indexing circuit. Color wheel position timeout reached.
CEEF	COM ERR EFFECT Effects module communication error.
CEPT	COM ERR P/T Pan/tilt system communication error.
CEZF	COM ERR Z/F Zoom/focus system communication error.
CELD	COM ERR LED DRV LED driver communication error or no communication with sensor.
COLD	FIXTURE COLD Fixture too cold. Physical movement of effects is disabled until fixture has warmed up.
CYER	CYAN ERROR Error in electric indexing circuit. Cyan position timeout has been reached.
DCTC	DC TEMP CUT OFF DC PCB temperature sensor continuously measures temperature above maximum limit.
DCTE	DC TEMP SEN ERR DC PCB temperature sensor error or no communication with sensor.
EFTC	EFF TEMP CUT OFF DC PCB temperature sensor continuously measures temperature above maximum limit.
EFTE	EFF TEMP SEN ERR DC PCB temperature sensor error or no communication with sensor.
FAN	BASE 1 FAN ERR Base fan 1 error or no communication with sensor.
FAN	BASE 2 FAN ERR Base fan 2 error or no communication with sensor.
FAN	BASE 3 FAN ERR Base fan 3 error or no communication with sensor.
FAN	HEAD FAN 1 ERR Base fan 1 error or no communication with sensor.
FAN	HEAD FAN 2 ERR Head fan 2 error or no communication with sensor.
FAN	HEAD FAN 3 ERR Head fan 3 error or no communication with sensor.

Table 5: Error messages

Short code	Long message and explanation
FAN	HEAD FAN 4 ERR Head fan 4 error or no communication with sensor.
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).
FG1E	FIX GOBO W 1 ERR Error in magnetic indexing circuit. Static gobo wheel position timeout has been reached.
FOER	FOCUS ERROR Error in electric indexing circuit. Focus position timeout has been reached.
G1ER	GOBO W 1 ERR Error in magnetic indexing circuit. Rotating gobo wheel position timeout has been reached.
IRER	IRIS ERROR Error in electric indexing circuit. Iris position timeout has been reached.
LDTC	LED TEMP CUTOFF LED board temperature sensor continuously measures temperature above maximum limit.
LDTE	LED TEMP SEN ERR LED board temperature sensor error or no communication with sensor.
MAER	MAGENTA ERROR Error in electric indexing circuit. Magenta position timeout has been reached.
PAER	PAN ERROR Pan position electrical indexing system timeout.
PFTC	PFC TEMP CUTOFF Power factor correction system sensor continuously measures temperature above maximum limit.
PFTE	PFC TEMP SEN ERR Power factor correction system temperature sensor error or no communication with sensor.
PSER	PAN SENSOR ERROR Fixture unable to retrieve reliable data from pan position sensor.
PTTC	PT TEMP CUTOFF Pan/tilt PCB sensor continuously measures temperature above maximum limit.
PTTE	PT TEMP SEN ERR Pan/tilt PCB sensor error or no communication with sensor.
R1ER	GOBO W 1 ROT ERR Error in magnetic indexing circuit. Rotating gobo position timeout has been reached.
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.
UEEF	UPL ERR EFFECT Upload to Pan/Tilt error
UEZF	UPL ERR Z/F Upload to Zoom/Focus error
UITC	UI TEMP CUTOFF User interface (display/control panel) sensor continuously measures temperature above maximum limit.
UITE	UI TEMP SEN ERR User interface (display/control panel) sensor error or no communication with sensor
YEER	YELLOW ERROR Error in electric indexing circuit. Yellow position timeout has been reached.
ZFTC	ZF TEMP CUTOFF Zoom/focus sensor continuously measures temperature above maximum limit.

Table 5: Error messages

Short code	Long message and explanation
ZFTE	ZF TEMP SEN ERR Zoom/focus sensor error or no communication with sensor.
ZOER	ZOOM ERROR Error in electric indexing circuit. Zoom position timeout has been reached.

Table 5: Error messages

The fixture reports a calibration error if valid calibration data is not detected in EEPROM. The fixture may be unable to read/write calibration data to EEPROM.

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