GLP
MAD MAXX CW

User Manual

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Fixture software v. 0.13.16

Document revisions

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GLP® MAD MAXX CW User Manual

Manufacturer’s head office:
German Light Products GmbH (GLP), Industriestrasse 2, 76307 Karlsbad, Germany
Tel (Germany): +49 7248 92719 - 0

Service & Support EMEA:
GLP, Industriestrasse 2, 76307 Karlsbad, Germany
Tel. (Germany): +49 7248 9271955
Email: support@glp.de
www.glp.de

Service & Support USA:
GLP USA, 16170 Stagg St., Van Nuys, CA 91406
Tel (USA): +1 818 767 8899
Support (US): info@germanlightproducts.com
www.germanlightproducts.com

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1. Safety

Key to symbols

The following symbols are used in the product's user documentation:

 **Warning!** Safety hazard. Risk of severe injury or death.	 **Warning!** Hazardous voltage. Risk of lethal or severe electric shock.
 **Warning!** See user documentation for important safety information.	 **Warning!** Fire hazard.
 **Warning!** Risk of eye injury.	 **Warning!** Hot surface. Risk of burn injury.


Warning! Read the Quick Start and Safety Manual supplied with the GLP MAD MAXX CW lighting fixture and available for download from www.glp.de before installing, operating or servicing the fixture. The Quick Start and Safety Manual contains important information for the safe use of MAD MAXX CW fixtures. If you fail to read that information, you may create a safety hazard with a risk of injury, death or damage.

If you have any doubts or questions about how to use the product safely, please contact your GLP® supplier, who will be happy to help.

The user documentation for MAD MAXX CW lighting fixtures consists of:

- The **MAD MAXX CW Quick Start and Safety Manual**, supplied with MAD MAXX CW fixtures and available for download from www.glp.de. The Quick Start and Safety Manual contains important safety information and installation instructions that the installer and user must read. It also contains a detailed product overview, dimensions drawings and technical specifications for the product.
- The **MAD MAXX CW User Manual**, available for download from www.glp.de. The User Manual explains features and control of MAD MAXX CW fixtures.
- The **MAD MAXX CW DMX Channel Index**, containing the DMX control channel layout and DMX commands available in the fixture. This information is not included in the User Manual – you need to download this document from www.glp.de.

The MAD MAXX CW is intended for use by experienced professionals with the knowledge and skills to set up, operate, and maintain high-powered, remotely

controlled lighting equipment safely and efficiently. These operations require expertise that may not be provided in this manual.

- Respect all warnings and directions given in the fixture's user documentation and on the fixture. Read the user documentation and familiarize yourself with the safety precautions it contains before installing, using or servicing the fixture. GLP and affiliated companies will take no responsibility for damage or injury resulting from disregard for the information in the user documentation.
- Make the Quick Start and Safety Manual, this User Manual and the DMX Channel Index available to all persons who will install, operate or service the fixture. Save these documents for future reference, but check the GLP website at www.glp.de regularly to make sure that you have the latest versions of the fixture s user documentation.
- Check the fixture software version indicated on page 2 of this User Manual and then use the fixture's control panel to check the version installed in the fixture. If the versions are not the same, the user manual may still cover the fixture, because software updates do not always affect the use of the fixture. However, it is possible that this User Manual does not match the fixture perfectly. Software release notes can help clarify this question. You can consult software release notes and download the correct version of this manual on the GLP website if necessary.
- If you have any questions about the safe operation of the fixture, please contact an authorized GLP distributor (see list of distributors at www.glp.de).
- Use the fixture only as directed in this manual. Observe all markings in this manual and on the fixture.

GLP Service and Support

Contact information for the nearest GLP Service and Support is available online at www.glp.de/en/service, by email at info@glp.de, or by telephone at the following numbers:

- GLP Germany: +49 (7248) 927 19-55
- GLP N. America: +1 818 767-8899
- GLP UK: +44 1392 690140
- GLP Asia: +852 (3151) 7730
- GLP Nordic: +46 737 57 11 40

Avoiding damage to the fixture

The Quick Start and Safety Manual contains important information that is intended to help you avoid possible damage to the fixture from other light sources, during transportation, etc. Read that information before installing, storing, transporting or operating the fixture.

2. Features

Light source

The MAD MAXX CW features a powerful light engine containing 19 x 90 W White LEDs.

Control options

The MAD MAXX CW is compatible with USITT DMX 512-A, RDM (ANSI/ESTA E.120), Art-Net, sACN and LumenRadio CRMX control protocols.

The fixture also features GLP iQ.Mesh. The GLP iQ.Mesh Module allows easy configuration, control, service and maintenance via the GLP iQ.Service App. The MAD MAXX CW is supplied as standard with a LumenRadio CRMX module.

Powering on

When power is applied to the fixture and no valid DMX signal is present, the fixture carries out a reset and the head moves automatically to its home position (pan center/tilt center).

Pan and tilt

The MAD MAXX CW has motorized pan and tilt movement with coarse and fine control channels.

Pan and tilt range

For details of pan and tilt angles, see the technical specifications in the MAD MAXX CW Quick Start and Safety Manual supplied with the fixture and available for download from www.glp.de.

It is possible to change the pan range from the standard angle **Normal** to the maximum possible angle **Extended** using the **Fixture Settings → Pan range** setting in the fixture's control panel (see 'Pan Range' on page 17).

Direction of pan and tilt movement

See illustration on right. With the fixture standing on the ground, increasing the pan DMX value turns the yoke clockwise. Increasing the tilt DMX value tilts the head towards the front (away from the connections panel).

Pan and tilt directions can be reversed using the **Fixture Settings → Pan Invert** and **Fixture Settings → Tilt Invert** settings (see page 17) or via DMX on the Control/Settings channel.

Pan and tilt position feedback and self-correction

The fixture has a pan/tilt position feedback and self-correction system that brings the head back to its correct position if it was unintentionally moved. When correcting pan and/or tilt, the fixture at first tries twice to move to the correct position. If it cannot move to this position, it waits for a short period and then tries again. Position feedback is automatically disabled for a short time if you press one of the control panel buttons on the yoke. This feature lets an operator move the yoke manually for more convenient use of the control panel and display. Pan and tilt remain automatically disabled while you are using the fixture's control panel.

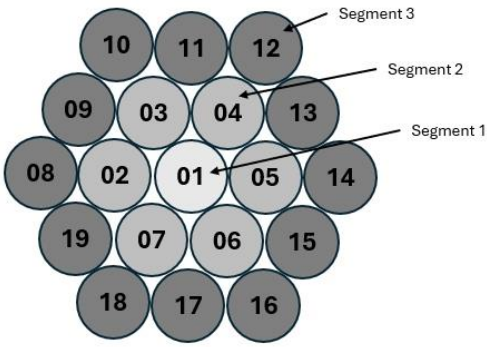
Position feedback can also be set to constantly disabled using the **Fixture Settings → Position Feedback** setting (see Pan/Tilt disable' on page 17 or via DMX on the Control/Settings channel.

Virtual iris

The MAD MAXX CW has a virtual iris effect. Control on the Iris DMX channel moves from open (full beam) to narrow and finally to blackout as the DMX value increases.

Individual segment or pixel control

The MAD MAXX CW has 19 individually controllable pixels. Each pixel cell houses a 90 W White LED that can be controlled individually in intensity and color to create dynamic effects and pixel mapping. The fixture can also be divided into three individually controllable segments. Pixels and segments are numbered as shown below.

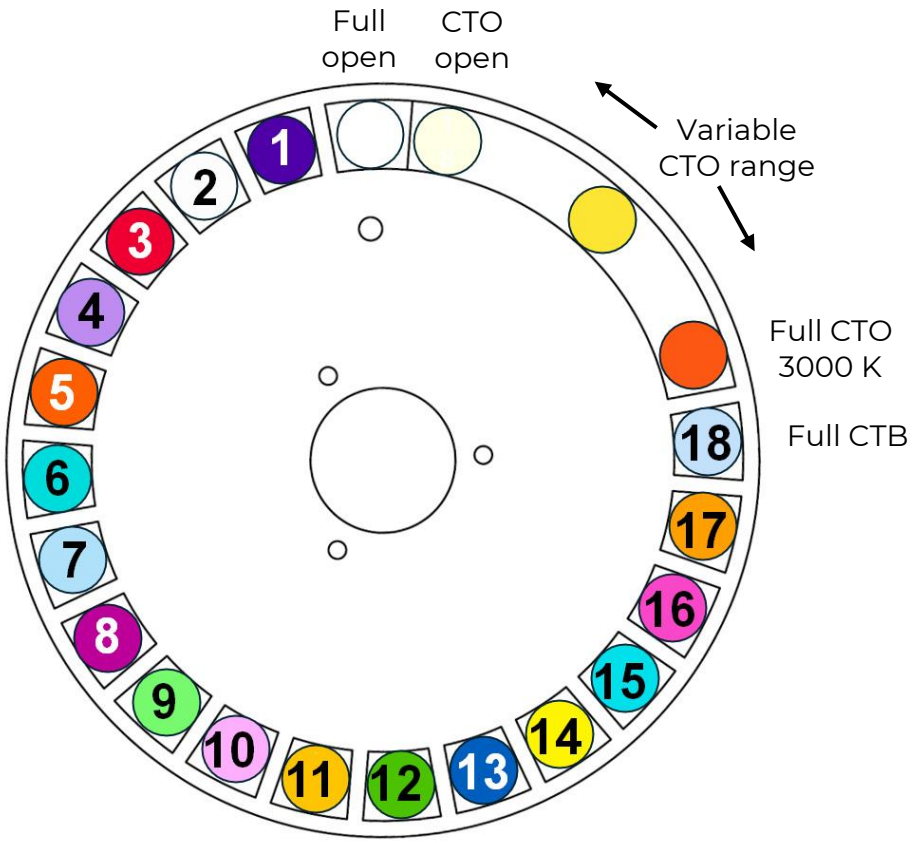


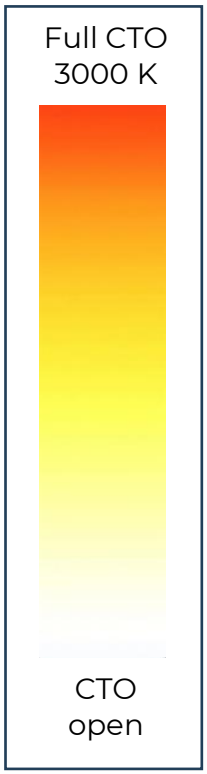
The fixture's different DMX control modes offer different options for working with the segments or pixels.

- **Mode 1 (Normal)** gives control of all the fixture's main functions including FX patterns and a color wheel effect, with all the fixture's pixels controlled together.
- **Mode 2 (Segments)** adds segment intensity control and color wheel effects controlled in three segments: the center pixel plus the inner and outer rings.
- **Mode 3 (Multi Beam)** adds pixel intensity control and color wheel effects controlled in nineteen pixels.

Color wheel

The MAD MAXX CW features one physical color wheel per pixel, 19 wheels in total. Each color wheel contains 16 color filters, one High CRI and one CTB filter and a variable CTO filter.





Variable CTO range

1. Congo Blue
   Similar Lee Filter: 181
2. High CRI
3. Primary Red
   Similar Lee Filter: 106
4. Surprise Pink
   Similar Lee Filter: 194
5. Deep Golden Amber
   Similar Lee Filter: 135
6. Lagoon Blue
   Similar Lee Filter: 172
7. Dark Steel Blue
   Similar Lee Filter: 174
8. Mauve
   Similar Lee Filter: 126
9. Laser Green
   Similar Lee Filter: 122
   (Fern Green)
10. Purple Red
11. Dark Orange
    Similar Lee Filter: 768
    (Egg Yolk Yellow)
12. Primary Green
    Similar Lee Filter: 139
13. Deep Blue
    Similar Lee Filter: 120
14. Yellow
    Similar Lee Filter: 101
15. Light Blue
    Similar Lee Filter: 118
16. Magical Magenta
    Similar Lee Filter: 795
17. Orange
    Similar Lee Filter: 105
18. Full CTB
    Similar Lee Filter: 201
    (Full CT Blue)
19. Variable CTO

Color filters in the MAD MAXX CW

Besides static full colors, the color wheel channel also offers continuous color scrolling with variable crossfading speed and stepped scrolling with snapping between colors.

Depending on which DMX Mode you choose, you can control the color wheels together on the entire fixture, in three segments, or in nineteen individual pixels.

Shutter

The shutter channel offers full blackout, full open and a range of shutter, pulse and strobe effects. The following effects are available:

- **Single flash** performs one single flash each time the value within this DMX value range is changed.
- **Pulse slow → fast** varies intensity up and down smoothly with the same fade-in and fade-out times. Speed can be adjusted from slow to fast.
- **Pulse opening** fades in and then snaps to blackout. Speed can be adjusted from slow to fast.
- **Pulse closing** fades out and then snaps to full. Speed can be adjusted from slow to fast.
- **Double flash** provides a quick double flash. Speed can be adjusted from slow to fast.
- **Strobe random pixel** (only available when the fixture is set to a DMX mode with individual pixel control) strobes individual pixels at random to give a kind of sparkling effect. Speed can be adjusted from slow to fast.
- **Strobe random all** strobes all of the fixture's pixels together at random intervals, allowing a random strobe between multiple fixtures. Speed can be adjusted from slow to fast. *Note that the random effect across multiple fixtures really is random!*
- **Strobe sync all** strobes all of the fixture's pixels together and also synchronizes the strobe in multiple fixtures so that all the fixtures flash at the same time. Speed can be adjusted from slow to fast.

Intensity

The electronic dimming effect provides smooth 16-bit dimming. Three dimming curves with different dimming characteristics are available. See 'Dimming curves' on page 13.

Depending on which DMX Mode you choose, you can control intensity on the entire fixture, in three segments, or in nineteen individual pixels.

FX patterns

The MAD MAXX CW offers 50 static and 50 dynamic pre-programmed FX patterns.

A static pattern is a fixed pattern with only one pattern step. This allows you a very quick selection of a non-dynamic effect. The pattern has active and inactive pixels. Each active pixel shows the selected pattern color while each inactive pixel is fully transparent.

A dynamic pattern is a sequence of pattern steps that has active and inactive pixels. Each active pixel shows the selected pattern color while each inactive pixel is fully transparent. You can set pattern steps to automatically change continuously (Pattern Speed) or you can directly select pattern steps (Pattern Index).

Pattern selection

The pattern selection channel offers a choice of 50 static patterns and 50 dynamic patterns. The dynamic patterns offer multiple pattern steps for individual step selection or continuous pattern step chasers.

Pattern 0 (DMX 000) is the idle pattern and just sets all pixels to active.

The Random Pixel FX pattern at the end of the Pattern Select channel randomly selects pixels to create an attractive sparkle effect.

Pattern speed/index

Dynamic patterns consist of multiple pattern steps. The Pattern speed/index channel lets you run a continuous sequence of pattern steps at variable speed, forward and backward (CW, Stop, CCW).

You can also call up individual pattern steps (index).

You can use the *One Step Forward* and *One Step Backward* options to navigate forward or backward through the pattern steps precisely using the DMX controller. If you change the DMX value change between *Next A* and *Next B,* the pattern jumps one step forward. Changing between *Previous A* and *Previous B* lets you move the pattern one step back.

Note: Bear in mind that different patterns can have a different number of pattern steps. This can affect synchronization between fixtures, for example, if you run different patterns in multiple fixtures.

Pattern step crossfading

The Pattern Step Crossfading channel lets you choose how one step in a pattern should change into the next step. This change can be a snap, a normal crossfade or a fade with tail (quick fade in and variable long fade out).

Pattern transition

The Pattern Transition channel lets you choose how Pattern A should change into Pattern B. This change can be a snap, a soft crossfade, a Fade Over Blackout (FOB) or Fade Over Full (FOF).

Control/Settings DMX channel

The Control/Settings DMX channel lets you change fixture settings and perform a fixture reset from the control desk (a possibility that can be very useful during a show or for a specific scene). To apply a command on the Control/Settings channel, you must hold the command for a certain number of seconds (see the DMX Channel Index available for download from www.glp.de).

To trigger a reset using the Control/Settings channel, you must send the DMX value for this function for 3 seconds. If you want to trigger an additional reset using the

Control/Settings channel, you must first move away from the Reset DMX value and then return to this value. This requirement to change DMX values eliminates the risk of the fixture entering an unwanted Reset loop if it is patched wrongly.

Note: Most of the fixture settings available in the fixture's control menus or on the Control/Settings DMX channel are also available via RDM.

3. Fixture settings

The settings described in this chapter let you customize the MAD MAXX CW. Settings can be available in the control panel on the fixture's yoke, via DMX and/or via RDM.

Dimming curves

The electronic dimming effect provides smooth 16-bit dimming. Three dimming curves are available:

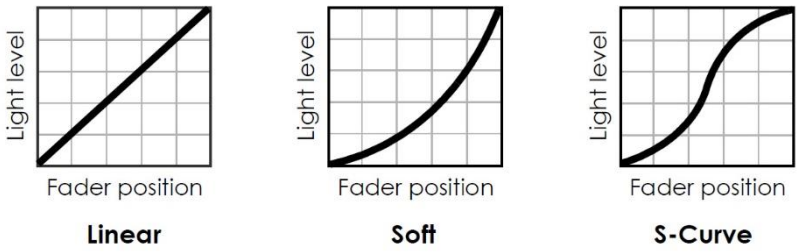


Figure 1. Dimming curves

- The **Linear** setting gives a dimming curve that the eye perceives as linear.
- The **Soft** (Square Law) setting gives finer control at lower light levels, where the eye is most sensitive to changes in light intensity, and coarser control at higher light levels.
- The **S-Curve** setting gives finer control at lower light levels and at higher light levels, with coarser control at medium light levels.

PWM frequency

This setting lets you select between different PWM frequencies for different applications and adjust LED frequencies to give the best results at different camera shutter frequencies. Changing the PWM frequency can improve dimming performance or help avoid flicker and beat frequencies in video images.

The following PWM settings are available:

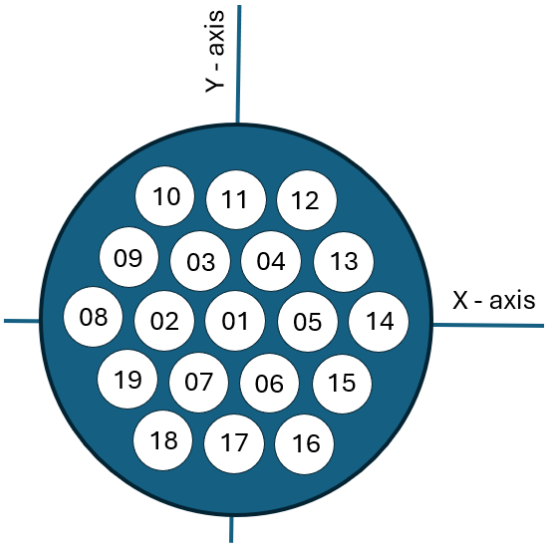
- **Low** – PWM frequency is fixed at a lower level, giving best dimming results.
- **Optimum** (default) – PWM frequency is set to a level which offers a good compromise between best dimming results and avoiding flicker.
- **High1** – PWM frequency is set to a higher level.
- **High2** – PWM frequency is set to highest level.

Note: A higher PWM frequency may affect dimming performance. The PWM frequency setting is stored in the fixture and is not affected by cycling power off and on. However, it will be affected if you use the Factory Defaults command in the control menus. As a rule, you should set all the fixtures in an installation to the same PWM frequency in order to ensure the same performance.

Pixel mirror

The **Pixel mirror** setting lets you flip the fixture's pixel layout on the x-axis, y-axis or both x- and y-axis:

- **Off** gives the standard pixel layout:



The drawing above shows the pixel layout with the fixture standing on the ground, pan at 50% (home position) and tilt at 50% (front).

- **x-mirror** flips the pixel layout over the x-axis (up → down, pixel 11 and pixel 17 swap places).
- **y-mirror** flips the pixel layout over the y-axis (left → right, pixel 8 and pixel 14 swap places).
- **x:y mirror** flips the pixel layout over both the x-axis and the y-axis.

Smart error

If **Smart error** is enabled and the fixture detects a color wheel error in a Beam cell, the fixture blacks out the cell to prevent the fixture showing a wrong color that could spoil the appearance of a show. The cell is dimmed to zero until power is cycled or the fixture is reset. If the error persists, the cell is blacked out again.

If **Smart error** is disabled and the fixture detects an error, it displays the error in the display panel but takes no further action.

Sun protection

An internal sun protection system helps protect the fixture's light source by automatically deploying a mechanical shutter and/or moving the head to a safety position.

Important! The sun protection system will help avoid damage, but it is not enough to completely protect all the fixture's LEDs from damage caused by incoming light

beams or sunlight in all situations. You must continue to take the usual precautions against sunlight damage: keep the head pointed away from the sun and other powerful light sources at all times and shade the head from sunlight if necessary.

It is important to bear this in mind if the fixture is in a location (installed in a rig or standing on the ground after removal from its flightcase, for example) where the fixture is in the shade but the sun can move across the sky, exposing the fixture to sunlight and causing damage.

Do not expose the head to powerful light beams coming from the side: lenses can focus light onto internal components even if the light reaches the fixture at an angle.

Each time the fixture is powered off, the sun protection system's mechanical shutter closes automatically. This means that the shutter will be closed when the fixture is removed from its flightcase at a new installation, for example, reducing the risk of damage. **Important!** The shutter does not give complete protection! Do not expose the fixture to sunlight. Provide shade over the fixture if necessary.

Note that, when the sun protection system is active, there can be a delay when light output is snapped open because the mechanical shutter has to open.

The following **Sun protection** settings are available:

- **Sensor** (default) – if all the light sensors on the head detect excessive light intensity (bright sunlight, for example), the fixture automatically protects the LEDs with a mechanical shutter. The control panel display background turns yellow and the message *Warning: Sun Protection Activated* appears in the display.

  If shutter protection is activated and the sensors detect excessive light for more than two minutes, the head slowly moves to a safety pan/tilt position. If the fixture is hanging, this means the pan and tilt home positions. If the fixture is standing, this means the pan home position and the maximum tilt position. The control panel display background turns orange and the message *Warning: Sun Protection Safety Position* appears in the display.

  In firmware v. 0.13.16, moving the head using the pan and tilt channels returns the fixture to normal pan and tilt operation and the fixture slowly dims up. The sun protection system returns to the default **Sensor** setting and continues to monitor for excessive light.

  Note: In future firmware versions, it will be necessary to send a *Sun protection system release* command using the control panel menus or on the DMX Control / Settings channel.

Note that the **Sensor** setting will not detect small, intensive light beams such as laser beams or beam lights.

- **Auto** – if light output is reduced to 0% for more than 10 seconds, the fixture automatically protects the LEDs with a mechanical shutter. The control panel display background turns yellow and the message *Warning: Sun Protection Activated* appears in the display.

  If shutter protection is activated and the sensors detect excessive light for more than two minutes, the head slowly moves to a safety pan/tilt position. If the fixture is hanging, this means the pan and tilt home positions. If the fixture is standing, this means the pan home position and the maximum tilt position. The control panel display background turns orange and the message *Warning: Sun Protection Safety Position* appears in the display.

  In firmware v. 0.13.16, bringing the dimmer back up from 0% returns the fixture to normal pan and tilt operation and the fixture slowly dims up. The sun protection system returns to the default **Sensor** setting and continues to monitor for excessive light.

  Note: In future firmware versions, it will be necessary to send a *Sun protection system release* command using the control panel menus or on the DMX Control / Settings channel.

- **Permanent** – the fixture blacks out, closes the mechanical sun protection shutter and moves the head to a safety pan and tilt position. If the fixture is hanging, this means the pan and tilt home positions. If the fixture is standing, this means the pan home position and the maximum tilt position.

  When the **Permanent** setting is activated, the control panel display background turns orange and the message: *Warning: Sun Protection Permanent On* is displayed.

  Selecting one of the other **Sun protection** settings exits the **Permanent** setting.

- **Off** – the **Sun protection** system is disabled. The control panel display background turns red and the message *Warning: Sun Protection Off* is displayed.

Important! The **Sensor** and **Auto** Sunlight protection settings leave the fixture vulnerable to sunlight damage during the two minutes before the head moves to the safety pan/tilt position. The operator must constantly be aware of the potential for expensive damage and must take the usual precautions outlined earlier.

No signal

The **No signal** settings let you manage how the fixture behaves if no DMX signal is present (if the fixture is being controlled by DMX but the DMX signal stops, or if you apply power to the fixture when no DMX signal is present):

- **Blackout** sets the fixture to black out whenever it is not receiving a DMX signal. This is the default setting.
- **Sun protection** switches the fixture to the **Permanent** setting of the **Sun protection** system.
- **Hold** sets the fixture to continue using the last DMX values it received.

- **Scene (Stand-alone)** sets the fixture to show its last manual DMX settings or play its stored stand-alone scene (see **Capture DMX Values** below) when the fixture is not receiving a DMX signal. If no manual DMX settings or stored stand-alone scene is present in the fixture's memory, the fixture blacks out.

  If the fixture is set to **Scene (Stand-alone)** and if a stand-alone scene has been stored in its memory using the **Capture DMX Values** command, it will display its stand-alone scene at all times when it is powered on but not receiving a DMX signal. You can therefore use this setting if you want fixtures to automatically start stand-alone operation when you apply power to them.

- **Capture DMX Values** takes a snapshot of the DMX values that are currently being received and stores them in the fixture's memory as its captured scene. The fixture will display this scene if it is set to **Scene (Stand-alone)** (see above) and is not receiving a DMX signal.

Pan invert

With the fixture standing on the ground, increasing the pan DMX value normally moves the yoke clockwise from its home position.

Changing the Pan invert setting to ON inverts the pan direction so that increasing the pan value turns the yoke counterclockwise.

Tilt invert

With the fixture standing on the ground, increasing the tilt DMX value moves the head towards the front from its home position.

Changing the Tilt invert setting to ON inverts the tilt direction so that increasing the tilt value turns the head towards the back (towards the connections panel).

Position feedback

Pan and tilt auto-correction (position feedback) is normally enabled (On). Changing this setting to OFF will disable the position feedback and auto-correction. If you need to return pan and tilt to their correct positions, you must perform a reset.

Pan/Tilt disable

- **Current disabled** de-activates pan and tilt by disabling the pan and tilt motor current. The fixture will not hold the head in position.
- **Off** gives normal pan and tilt control.

*Note: When changing from **Current disabled** to **Off** to re-enable pan and tilt movement, the fixture will carry out a reset of pan and tilt.*

Pan Range

For normal use and to make swapping fixtures easier, pan is normally limited to a standard 540° maximum pan angle (NORMAL). However, if you wish to use the full pan range between mechanical end positions, it is possible to extend the standard range to the mechanical maximum (EXTENDED).

For details of pan angles, see the technical specifications in the MAD MAXX CW Quick Start and Safety Manual supplied with the fixture and available for download from www.glp.de.

Display Mode

Gives different display behavior options. This can be helpful in case of errors or during service operations. Three settings are available:

- **Auto** (default): the display automatically switches off after a few seconds if the fixture is receiving a valid control signal and has not detected an error. If the fixture is not receiving a valid control signal, the display will flash. If the fixture has detected an error, the display remains constantly on and shows the error.
- **On**: The display stays on constantly. This setting can be useful if you are configuring or servicing the fixture.
- **Off**: The display will automatically switch off after a few seconds even if the fixture is not receiving a valid control signal or if it has detected an error. Pressing any button turns on the display again.

Display Orientation

Lets you select **Normal**, **Upside-down** or **Auto** display orientation.

If **Display Orientation** is set to **Auto**, changing the display orientation by pressing UP and DOWN at the same time will only change the display orientation until the next power cycle.

Hibernation

Lets you put the fixture into energy-saving mode and disables all electronic components apart from the DMX receiving module.

You can take the fixture out of hibernation mode with a power off/on cycle, via RDM or using the Special / Control DMX channel. If you do this, the fixture will perform a fixture reset before returning to normal operation.

Load User Settings

Lets you load different custom fixture configurations or return the fixture to the default fixture settings.

*To save a custom setting preset from 1 to 3, see **Service → Advanced → Save Settings**.*

- **Load User Settings 1** to **3** loads one of three specific custom fixture settings. You must confirm the function for 3 seconds before the new settings are loaded (see ***Fixture Settings → Load User Settings**).*
- **Save User Settings 1** to **3** saves the current fixture settings as a set of user settings. You must confirm the function for 2 seconds in order to save the settings as one of the three custom settings presets (see ***Service → Advanced → Save User Settings**).*

*Note: The **Load User Setting Presets** and **Load User Setting Defaults** commands will only affect settings in the **Fixture Settings** group and will not affect DMX Address, Control Mode, Protocol Type, IP Settings, etc. This helps avoid loss of communication with the controller.*

Information

The **Information** submenu provides readouts of all relevant information such as the error list if any errors have been detected, the fixture's serial number, firmware version, device info, device hours counter, power cycles counter, DMX input monitor, signal quality etc.

Manual Control

This submenu gives different options for resetting the fixture manually. It can be helpful for service or stand-alone issues.

- **Reset All**: Performs a full fixture reset to initialize all features and effects.
- **Reset P/T**: Resets pan and tilt only to initialize pan and tilt positions.
- **Reset Head**: Resets all the features in the head.

Manual DMX

Gives control of the fixture using the fixture's own user interface. The menu timeout function is disabled as long this menu is open.

- **Pan … Color Wheel 1**: Manually sets a DMX value for each of the fixture's effects.
- **Reset Manual Values**: Resets all manual control values to default.

Settings that are made using the manual DMX control menu always take priority over external DMX commands. If external DMX control is connected and you exit the Manual DMX submenu, the DMX signal takes command again. If no external DMX control is connected and you exit the Manual DMX submenu, the fixture continues to display the manually set DMX scene for as long as no DMX signal is received or until fixture power is cycled off and on. The manual control values remain stored in memory until you apply a **Reset Manual Values** command (holding for 3 seconds to confirm).

Note: When entering manual control, be prepared for the fixture to start moving.

Service

The **Service** menu is split into two levels: **Service** and **Service → Advanced**. The **Advanced** submenu is for use by trained technicians only. Read the information below carefully before entering this level.

The Service menu contains the following items:

- **Live Diagnostic**: Calls up an overview of all main fixture information, signal quality and settings. This can be helpful while troubleshooting or talking to GLP Service.
- **iQ.Service Connect**: Wakes up the integrated GLP iQ.Mesh Module for 5 minutes and enables connectivity to the GLP iQ.Service App.

- **Test All**: Runs a test sequence of all LEDs for a quick test of the fixture. Press BACK to stop the test sequence.
- **Test P/T**: Runs a test sequence of pan and tilt movement only. Press BACK to stop the test sequence.
- **Test LEDs**: Runs a test sequence of the LEDs only. Press BACK to stop the test sequence.
- **Test Sun Protection**: Runs a test of Sun protection system functionality. Press BACK to stop the test.
- **Test Color Wheels**: Runs a test sequence of each color wheel one by one. Press BACK to stop the test sequence.
- **Test Fans (Auto)**: Starts a fan self-test. Tries to detect fan errors, clears any current errors if successful.
- **Test Fans (Manual)**: Tests fans one by one manually.
- **Test Encoders**: Auto test for all encoders.

Advanced Service

The **Advanced → Service** level is for trained technicians only. Read the information below carefully before entering this level. You must confirm by pressing and holding ENTER for 3 seconds before you can enter this level.

The **Advanced** submenu contains the following items:

- **Service Mode**: Disables pan, tilt and all display timeouts to make servicing inside the fixture head easier. This mode is automatically disabled after a power cycle.
- **Reset Counters**: Resets the different resettable fixture counters.

  Device counters are not reset by a **Load Factory Backup** command.
- **Save Settings**: Lets you save the current fixture settings to one of the three user settings presets. You can load a user settings preset that you have saved with a **Load User Settings** command (see **Fixture Settings → Load User Settings**). The default fixture preset cannot be changed.

  This command only saves fixture settings (Dimming Curve, Shortcuts etc.). It does not save fixture configuration information such as DMX address and DMX mode.

Load Factory Defaults

Reloads all factory defaults over the entire fixture and brings the fixture into standard show condition.

You must confirm the function for 3 seconds before the default settings are loaded.

Important! *The factory default settings that are reloaded with this command include all data and network configuration parameters such as DMX start address, IP configuration etc. You may therefore lose communication with your controller.*

*The **Load Factory Defaults** command does not affect device counters and calibration.*

Factory Menu

Important! Do not enter the Factory Menu if you are not a trained service professional with service documentation or clear instructions from GLP Service. Read the user and service documentation carefully before entering this menu. In the Factory Menu you can apply critical settings which can damage the fixture.

The Factory Menu is a hidden menu for the manufacturer or professional service technicians only. This special menu allows fixture calibration and the adjustment of all mechanical features following the manufacturer's instructions.

To enable the Factory Menu, apply power to the fixture and press the ENTER and HOME buttons together while the pre-boot screen is being displayed. You can release the buttons as soon as FACTORY MODE appears in the display. After doing this, **Factory Menu** is visible as the last item in the main menu. The Factory Menu will remain available until the next power cycle. While the Factory Menu is enabled, all display timeouts are disabled to make working on the fixture easier, and a Factory symbol is visible in the main screen.

4. Control panel

Warning! DMX control is disabled when the control menus are active. Be prepared for the head to move as soon as you exit the control menus.

The control panel and backlit graphic LCD display with self-charging battery allow you to change fixture settings, view readouts and use utilities quickly and intuitively, even when the fixture is disconnected from power.

To allow comfortable use of the control panel, pan and tilt are automatically disabled for a few seconds if you turn the yoke manually. Pressing any button on the control panel also disables pan and tilt for a few seconds. Pan and tilt remain disabled for as long you are working in the control panel. If no button is pressed for a few seconds, head movement is re-enabled with pan and tilt correction applied.

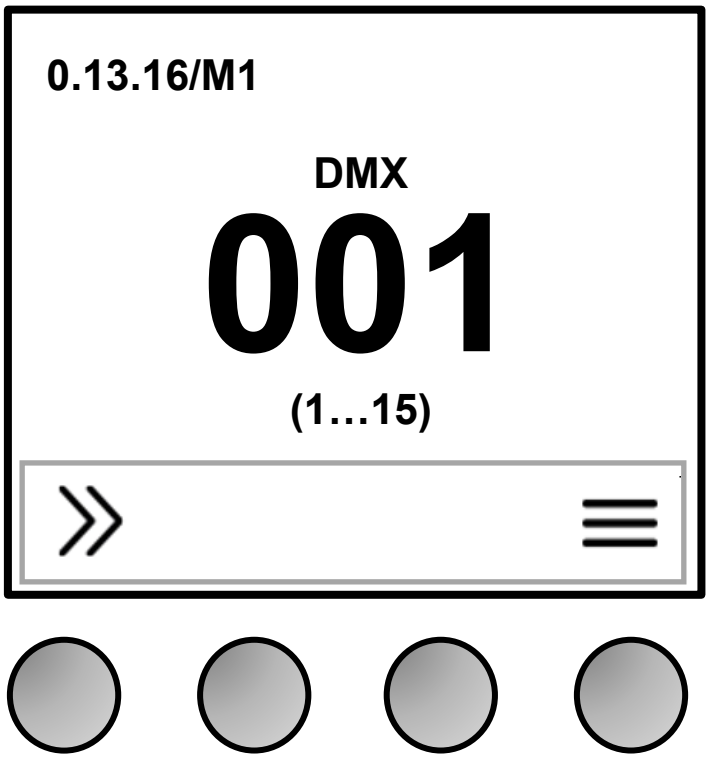


Figure 2. Default information screen

Default information screen

When power is applied, the fixture performs a reset. After the reset has completed, the default information screen appears in the control panel display on the side of the yoke.

At any other time, you can press any key to unlock the control panel. Doing this also calls up the default information screen in the control panel display.

See Figure 2. The top line of the default information screen consists of, from left to right:

- Main CPU firmware version
- DMX Mode

The center of the screen shows the following information:

- Signal source.
- Fixture's current DMX address in large characters. If the fixture's self-diagnosis system detects an error, the fixture will flash the error code alternately with the DMX address. This lets you see the DMX address and error code at a distance from the fixture.
- If the fixture detects a valid, active network at one of the fixture's etherCON ports, the default screen will show a network icon to the left or right of the DMX address:
  - Icon on left = data at Port A (on left of fixture when facing control panel)
  - Icon on right = data at Port B (on right of fixture when facing control panel)

  The fixture displays network speed below the network icon.

  If the fixture does not detect a network at one of the ports, it displays NO LINK instead of the network icon for that port.
- Below the current DMX address, the fixture displays in smaller characters the DMX channels that the fixture is currently using.

In the example shown in Figure 2:

- The fixture is running CPU software version 0.13.16
- The fixture is set to DMX Mode 1
- The fixture is set to receive data via DMX
- The fixture's DMX start address is 001
- The fixture is using DMX channels 1 to 15.

Note: See 'Setting up the control protocol' on page 26 for details of how to configure the fixture's network address.

Using the control panel

The four control panel buttons under the display have the following functions.

In the main screen:

QUICK MENU – Activates the Quick Menu

UP/DOWN – Press three times to open the live diagnostic tool

MENU – Activates the control panel if it is in sleep mode, then opens the main menu

When navigating through the menus:

 BACK – Goes back one level towards the top of the menu

 UP – Scrolls up or increments a number

 DOWN – Scrolls down or decreases a number

 ENTER – Confirms a setting or implements a command

At any time:

 UP and DOWN at the same time – Temporarily rotates the display 180°

Display background colors

The fixture has an internal Sun protection system which helps protect the fixture from damage caused by bright sunlight or other bright light sources. This system's status is indicated by the following display background colors:

- **Yellow** – Sun protection is set to SENSOR / AUTO and operating status is normal.
- **Orange** – Sun protection is set to PERMANENT / SENSOR / AUTO and the fixture has moved the head to pan/tilt safety positions.
- **Red** –Sun protection is set to OFF. **Important!** LEDs are not protected against external incoming light beams or sunlight! Setting Sun protection to OFF can lead to permanent damage to the fixture that is not covered by the manufacturer's warranty!

For more details, see 'Sun protection' on page 14.

Control button shortcuts

Battery Eco Mode (available in Battery Mode only)

When the fixture is running on battery power, holding MENU and ENTER together for 10 seconds activates Battery Eco Mode. This switches off the display completely to avoid any unwanted discharge of the battery and can be very useful when a fixture is put into long-term storage.

Live Diagnostics

Pressing UP or DOWN three times calls up an overview of all main fixture information, signal quality and settings. This can be useful if you are troubleshooting or if you are in contact with GLP Service.

Toggle Display Orientation

Pressing and releasing UP and DOWN together rotates the display through 180°.

*Note: If Display Orientation is set to **Auto**, changing the display orientation by pressing UP and DOWN at the same time will only change the display orientation until the next power cycle. To change the display orientation permanently, go to **Fixture Settings → Display Orientation** in the control panel menus.*

Error Messages

If the fixture detects an error, it shows an error message in the display. The message is 'sticky' and will continue to be shown in the display until the next power cycle or reset. To get details of the error message, follow the information in the display. These details are important if you talk to GLP service.

Loss of DMX signal

The display flashes if the DMX signal is lost (the fixture will then behave according to its No Signal setting – see 'No signal' on page 16).

Service and maintenance

See the separate *MAD MAXX CW Quick Start and Safety Manual* supplied with the fixture and available for download from www.glp.de for information on service and maintenance.

5. Setting up the control protocol

The MAD MAXX CW can be controlled using:

- USITT512 DMX over a standard DMX cable link using the fixture's 5-pin XLR connectors
- DMX via Art-Net or sACN using one of the fixture's two Ethernet ports
- GLP's wireless iQ.Mesh technology
- LumenRadio CRMX. The integrated GLP FPO (Flexible Protocol Option) port allows the installation of an additional protocol module. The fixture is supplied with a LumenRadio CRMX module installed in the FPO port as standard.

This section explains how to configure the fixture to use one of these control data protocols.

*Note: The control protocol settings are not affected if you apply a **Fixture Settings → Load User Settings → Setting Defaults** command in the fixture's control panel, but they are returned to factory defaults if you apply a **Load Factory Defaults** command in the main menu.*

DMX

The fixture is set up for control via a standard DMX cable link by default.

If the control data protocol has been changed and you want to return to DMX control over a standard DMX cable link:

1. Open the menus in the fixture's control panel.
2. In the main menu, open **DMX Address** and give the fixture a suitable DMX address.
3. In the **Protocol Setup → Data In** menu, set the control protocol to **DMX**.

Art-Net

To configure the fixture to receive DMX control data via Art-Net, open the menus in the fixture's control panel and make the following adjustments:

1. In the first menu (root menu), give a suitable DMX address to the fixture.
2. In the **Protocol Setup → Protocol Type** menu, set the control protocol to **Art-Net**.
3. Give all fixtures their own unique IP addresses. To do this, you can either:
   - set fixtures to generate their own IP addresses by choosing the ranges 2.x.x.x or 10.x.x.x (Art-Net specification),
   - set fixtures to acquire IP addresses automatically by DHCP, or
   - assign IP addresses manually by entering individual IP addresses and Subnet mask.
4. Select an Art-Net port/universe from 00000 (Network 0 / Subnet 0 / Universe 0) to 32767 (Network 7 / Subnet 15 / Universe 255). Note that the first Art-Net universe is considered to be universe number 00000, not 00001.

These settings will not be affected if you apply a **Load Default Settings** command in the fixture's control panel, but they will be returned to factory defaults if you apply a **Load Factory Backup** command in the fixture's control panel.

Note that it is possible to transmit DMX data as broadcast or unicast packages via Art-Net. If a large number of universes (more than 30) is broadcast, data loss can occur. If you suspect that this is happening, configure your console to unicast Art-Net DMX packages to fixtures, or switch to sACN.

sACN

To configure the fixture to receive DMX control data via sACN, open the menus in the fixture's control panel and make the following settings:

1. In the first menu (root menu), give a suitable DMX address to the fixture.
2. In the **Protocol Setup → Protocol Type** menu, set the control protocol to **sACN**.
3. Give all fixtures their own unique IP addresses. To do this, you can either:
   - set fixtures to generate their own IP addresses by choosing the ranges 2.x.x.x or 10.x.x.x (Art-Net specification),
   - set fixtures to acquire IP addresses automatically by DHCP, or
   - assign IP addresses manually by entering individual IP addresses and Subnet mask.
4. Select an sACN universe from 00001 to 63999.

These settings will not be affected if you apply a **Load Default Settings** command in the fixture's control panel, but they will be returned to factory defaults if you apply a **Load Factory Backup** command in the fixture's control panel.

iQ.Mesh

To set up the fixture for control via GLP iQ.Mesh:

1. Open the menus in the fixture's control panel.
2. In the **Protocol Setup → Data In** menu, set the control protocol to **iQ.Mesh**.

LumenRadio CRMX

Note: The MAD MAXX CW is supplied as standard with a LumenRadio CRMX module installed in the fixture's FPO port. The CRMX control option is only available with this module installed.

To set up the fixture for control via LumenRadio CRMX:

1. Open the menus in the fixture's control panel.
2. In the **Protocol Setup → Data In** menu, set the control protocol to **CRMX**.

6. Control menus

Quick menu

The control panel's Quick Menu gives you quick access to the most frequently used commands. To open the Quick Menu, press the left-hand control button » marked when the display is showing the default information screen.

The Quick Menu contains the following items:

<table>
<tr><th colspan="3">Menus</th><th>Notes</th></tr>
<tr><td colspan="3">Reset All</td><td>Resets the entire fixture (takes a few seconds).</td></tr>
<tr><td colspan="3">Live Diagnostic</td><td>Calls up overview of all main fixture information, signal quality and settings.</td></tr>
<tr><td>iQ.Service Connect</td><td colspan="2">>>>Connect<<<</td><td>Enables connectivity to the GLP iQ.Service App for 5 minutes.</td></tr>
<tr><td rowspan="4">Load User Settings</td><td>User Setting Preset 1</td><td>>>>Confirm<<<</td><td rowspan="3">Loads custom user settings</td></tr>
<tr><td>User Setting Preset 2</td><td>>>>Confirm<<<</td></tr>
<tr><td>User Setting Preset 3</td><td>>>>Confirm<<<</td></tr>
<tr><td>Setting Defaults</td><td>>>>Confirm<<<</td><td>Returns fixture to default settings (not including DMX address, protocol type, Ethernet / CRMX configuration, user offsets, user presets and counters).</td></tr>
<tr><td>Load Factory Defaults (!)</td><td colspan="2">Displays Message: Fixture may lose connection to controller

>>>Confirm<<<</td><td>Restores all factory default settings (including DMX address, protocol type, Ethernet / CRMX configuration, user offsets and user presets). Important! The fixture may lose contact with the controller!</td></tr>
</table>

Main menu

The following menus and commands are available in the MAD MAXX CW control panel.

Menus			***Notes***
DMX Address			
001-512			*Set fixture's DMX start address. Highest address possible depends on control mode.*
Control Mode			
M1 Normal			*Set fixture's DMX control mode.*
M2 Segments			
M3 Individual Beams			
Protocol Setup			
Data In	**DMX**		*Control via DMX, Art-Net or sACN Protocol, control via GLP iQ.Mesh protocol, control via LumenRadio CRMX*
	Art-Net		
	sACN		
	CRMX		
	iQ.Mesh		
Ethernet config	Addressing mode	Auto 2.x.x.x	*Auto Addressing in the range 2.x.x.x*
		Auto 10.x.x.x	*Auto Addressing in the range 10.x.x.x*
		DHCP	*Get IP address by DHCP*
		Custom IP	*Use custom IP address*
	Custom IP address	000.000.000.000	*Enter custom IP address*
	Custom IP subnet	000.000.000.000	*Enter custom subnet IP address*
	ArtNet port	**00000** ... 32768	*Enter Art-Net port*
	sACN universe	**00001** ... 63999	*Enter sACN universe*
	Node	**Disabled**	*Sets fixture to make data received via Art-Net or sACN available at its XLR DMX output connector*
		Enabled	
Linking options	CRMX Unlink		*Unlink from CRMX*
	iQ.Mesh Unlink		*Unlink from GLP iQ.Mesh link*

Fixture Settings			
Dimmer Curve	Linear		*Linear dimming curve*
	Square Law		*Fine dimming control at low intensity levels*
	S-Curve		*Fine dimming control at low and high intensity levels*
Short Way (shortcuts) *NB: In preparation*	**Enabled**		*Color wheel takes shortest route between colors, even if this means crossing open position*
	Disabled		*Color wheel avoids crossing open position when changing between colors*
PWM Frequency *NB: In preparation*	Low (L)		*Fixed low frequency for best dimming results*
	Optimal (0)		*Optimum dynamic frequency for best performance*
	High 1 (H1)		*Fixed high frequency*
	High 2 (H2)		*Fixed highest frequency*
	Max (M)		*Maximum frequency*
Pixel Mirror	**Off**		*Normal pixel layout*
	Mirror X		*Pixels mirrored over x-axis*
	Mirror Y		*Pixels mirrored over y-axis*
	Mirror XY		*Pixels mirrored over x-axis and y-axis*
Smart error	**ON**		*If a color wheel error is detected on a beam cell, fixture blacks out cell*
	OFF		*Any errors detected are displayed on fixture display*
Sun protection	Auto		*Sun protection system deploys automatically*
	Sensor		*Sun protection system controlled by sunlight sensors on front of head*
	Permanent		*Sun protection system permanently on*
	Off		*Sun protection system permanently off*
No Signal	No Signal Mode	Blackout	*Fixture blacks out if no DMX signal received*
		Sun protection	*Fixture blacks out and enters Sun protection mode if no DMX signal received*
		Hold	*Fixture continues to display current effect if no DMX signal received*
		Scene	*Fixture plays the captured scene stored using **Capture DMX Vales** if no DMX signal received*
	Capture DMX Values	*>>>Confirm<<<*	*Captures current scene and stores it for use in **No Signal Mode → Scene***
Pan Invert	**OFF**		*Reverse direction of pan movement*
	ON		
Tilt Invert	**OFF**		*Reverse direction of tilt movement*
	ON		

Position feedback	OFF		*Enable/disable pan/tilt position correction*
	ON		
Pan Disable	**OFF**		*Disables pan motor*
	Current Disable		
Tilt Disable	**OFF**		*Disables tilt motor*
	Current Disable		
Pan range	**Normal**		*Pan range limited to 540°*
	Extended		*Pan range = maximum physically possible*
Display Mode	**Auto**		*Display dims after a short period of inactivity if no errors and valid DMX signal*
	On		*Display constantly on*
	Off		*Display dims even if there are errors or if there is no DMX signal*
Display Orientation	**Auto**		*Display automatically inverts to match installation position*
	Normal		*Display normal (for use when fixture is standing)*
	Flip		*Display inverted (for use when fixture is flown head-down)*
Hibernation	On		*Fixture enters energy saving mode, all electronics except DMX receiver are disabled. Cycling power off and on exits hibernation.*
Load User Settings	User Setting Preset 1	>>> Confirm<<<	*Apply a user preset to fixture settings*
	User Setting Preset 2	>>> Confirm<<<	
	User Setting Preset 3	>>> Confirm<<<	
	Setting Defaults	>>> Confirm<<<	*Return fixture to default settings (not including DMX address, protocol type, Ethernet / CRMX configuration, user offsets, user presets and counters)*

Information			
Live diagnostic			*Shows overview of fixture information*
Show errors			*Shows any stored errors*
Show temperatures			*Shows fixture temperature*
Show fan status			*Shows current cooling fan status*
Show controllers info			*Shows controllers info*
Show iQ.Mesh status			*Shows current GLP iQ.Mesh status*
Show LED calibration			*Shows LED calibration information*
Show fixture counters			*Shows total device hours (non-resettable), resettable device hours, total power cycles (non-resettable), resettable power cycles, resettable air filter hours*
Show DMX input			*Shows DMX values being received*
Show DMX info			*Shows info about any lost DMX packages*
Manual Control			
Reset All			*Reset all effects*
Reset Pan & Tilt			*Reset pan and tilt*
Reset Head			*Reset all effects except pan and tilt*
Manual DMX ***Warning! Fixture will start moving!*** Press **Enter**	Pan coarse	< 001. .**128** ..255 >	*Manually control all effects*
	Pan fine	< 001. .**128**.. 255 >	
	Tilt coarse	< 001. .**128**.. 255 >	
	... scroll through all effects		
	Reset Manual Values	Confirm for 3 seconds *(press Enter)*	*Reset all manually entered DMX values to zero*

Service				
Live Diagnostic				*Shows overview of fixture information, signal quality and settings*
iQ.Service Connect		>>> Connect <<<		*Enables connectivity to the GLP iQ.Service app.*
Tests	Test All			*Run test sequence of all effects including pan and tilt. Stop with BACK.*
	Test P/T			*Run test sequence of pan and tilt only. Stop with BACK.*
	Test LED			*Run test sequence of all LEDs. Stop with BACK.*
	Test Fans (Auto)			*Run fan self-test. Tries to detect fan errors, clears if successful.*
	Test Sun Protection			*Run test of Sun Protection system*
	Test Color Wheels			*Manually test each color wheel one by one*
	Test Fans (Manual)			*Manually test fans one by one*
	Test Encoders			*Auto test for all encoders*
Advanced *(Press and hold for 3 secs. to enter this menu)*	Service Mode	**OFF**		*Normal operation*
		ON		*Disable pan, tilt and display timeouts (exit by cycling power off and on.)*
	Reset counters	Lamp Hours	Confirm 2 seconds	*Reset to zero*
		Service Timer	Confirm 2 seconds	
		Air filter	Confirm 2 seconds	
	Save User Settings	User Setting Preset 1	Confirm 2 seconds	*Saves current fixture settings as user settings preset*
		User Setting Preset 2	Confirm 2 seconds	
		User Setting Preset 3	Confirm 2 seconds	
Load factory defaults				
>>>Confirm<<<				*Reloads all factory default settings and default fixture configuration settings.*

*Default settings are written in **BOLD type***

7. Error messages

When restarting the fixture or sending a RESET command, the fixture performs an initialization process to test all functions and sensors. The fixture also continuously checks itself for correct operation.

If an error is detected, the fixture display shows the message **ERROR**.

- Pressing ✕ ignores the error message and exits the error display.
- Pressing ✓ shows information about the error.

Note: Make a note of any error message displayed. You may need these details for error diagnosis. Please be ready to give them to GLP Service if necessary.

Certain critical error messages are permanently stored in the display. In this case, please contact your GLP service agent.


GLP