User Manual

impression X5 IP

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GLP® impression X5 IP User Manual

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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 impression X5 IP 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 impression X5 IP 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 X5 IP lighting fixtures consists of:

- The **impression X5 IP Quick Start and Safety Manual**, supplied with X5 IP 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 **impression X5 IP User Manual**, available for download from www.glp.de. The User Manual explains features and control of X5 IP fixtures.
- The **impression X5 IP 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 impression X5 IP 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.
- Check the GLP website at www.glp.de and 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.
- 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.
- 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:

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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 storing, transporting or using the fixture.

2. Features

Light source

The impression X5 IP features a powerful light engine containing 19 x 40 W RGBL LEDs.

Control options

The impression X5 IP is compatible with DMX 512, RDM, Art-Net and sACN control protocols.

The fixture also features GLP iQ.Mesh and GLP's FPO (Flexible Protocol Option) Port. The GLP iQ.Mesh Module allows easy configuration, control, service and maintenance via the GLP iQ.Service App. The X5 IP is supplied as standard with a LumenRadio CRMX module installed on the FPO Port.

Powering on

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

Pan and tilt

The impression X5 IP 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 impression X5 IP 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 22).

Direction of pan and tilt movement

With the fixture standing on the ground, increasing the pan DMX value moves the yoke clockwise from its home position. Pan direction can be reversed using the **Fixture Settings → Pan Invert** setting (see 'Pan invert' on page 22) or via DMX on the Special/Control channel.

With the fixture standing on the ground, increasing the tilt DMX value moves the head towards the front from its home position. Tilt direction can be reversed using the **Fixture Settings → Tilt Invert** setting (see 'Tilt invert' on page 22) or via DMX on the Special/Control 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 22 or via DMX on the Special/Control channel.

Fixture performance and speed options

You can adjust the speed (and noise level) of pan and tilt movement, as well as the speed of all other mechanical effects, by selecting from three different performance options (see 'Performance modes' on page 20).

Zoom

The impression X5 IP has motorized zoom control. Control on the Zoom DMX channel moves from spot to flood as the DMX value increases.

You can adjust the speed (and noise level) of zoom movement, as well as the speed of all other mechanical effects, by selecting from three different performance options (see 'Performance modes' on page 20).

Main and Sub module

Some DMX control modes divide the fixture into two or more modules or layers (Main module and Sub module). For example, DMX modes 2-4 divide the fixture into:

- Main module (Layer 1 = one RGB(L) Wash fixture)
- Sub module (Layer 2 = pattern engine with segment or individual pixel control).

The Sub module has its own intensity and shutter channels. Professional controllers will handle this setup in a smart multi-fixture profile.

The **Sub module mode** setting lets you decide whether the Sub module should be subordinate to or independent of the Main module (see 'Sub module mode / Sub fixture mode' on page 19).

Individual segment or pixel control

The impression X5 IP has 19 individually controllable pixels. Each pixel cell houses a 40 W RGBL LED that can be controlled individually in intensity and color to create dynamic effects and pixel mapping.

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

In nearly all DMX modes, the Main module gives color mixing control of all pixels together as one segment.

- **Mode 1 (Basic)** gives control of all the fixture's main functions, with color mixing control of all the fixture's pixels together as one segment.

- **Mode 2 (Normal)** adds a Sub module as a second layer with pattern effects and color mixing control of all the fixture's pixels together as one segment.
- **Mode 3 (Segment)** adds a Sub module as a second layer with pattern effects and color mixing of three segments: the center pixel plus the inner and outer rings.
- **Mode 4 (Multipixel Advanced)** adds a Sub module as a second layer with pattern effects and RGB color mixing of each individual pixel.
- **Mode 5 (Multipix Compressed RGB)** is a **pixel mapping** mode which offers the main overall control options plus RGB color mixing of each individual pixel.
- **Mode 6 (Multipix Compressed RGBL)** is a **pixel mapping** mode which offers the main overall control options plus RGBL color mixing of each individual pixel.

In Modes 4, 5 and 6, the fixture always operates in the *Independent Mode* setting (see 'Sub module mode / Sub fixture mode' on page 19).

Color mixing

The fixture's Main module features 16-bit color mixing with RGB, RGBL or x;y (CIE 1931) Color Mix control options. See 'Color Mix modes' on page 15.

Note: The Color Mix mode of the Sub module(s) is always RGB. For more details, see 'Color Mix modes' *on page 15.*

iQ.Gamut

iQ.Gamut is a new LED calibration technology from GLP that defines the color gamut for the color mix channels. You can select one of a range of calibrated iQ.Gamuts for the fixture to work within. This feature can be useful if you want to reproduce correct colors or avoid TV camera clipping. See 'iQ.Gamut' on page 18.

Mix Priority

The Mix Priority channel defines how the color mixing output of the Main module (Layer 1) and the color mixing output of the Sub module(s) (Layer 2) are merged together – or which value has higher priority. This lets you switch between the layers or create special effects using both layers.

The Mix Priority channel gives the following options:

- **Main Module + Sub Module HTP** – The fixture takes whichever color value of the Main module or Sub module is highest and uses that value to determine the output color (Highest Takes Priority).
- **Main Only** – The Sub module color value is ignored. The fixture uses the color value of the Main module.
- **Sub Only** – The Main module color value is ignored. The fixture uses the color value of the Sub module.
- **Main + Sub additive** – The Sub module color value is added to the Main module color value. The fixture uses the sum of both values.
- **Main minus Sub subtractive** – The Sub module color value is subtracted from the Main module color value.

- **Sub minus Main subtractive** – The Main module color value is subtracted from the Sub module color value.
- **TrueColor Main over Sub Snap** – The Sub module color stays in the background. The Main module color has higher priority and will not mix with Sub module color. As soon as the Main module color value is greater than zero, the Sub module color blacks out and the fixture uses the Main module color.
- **TrueColor Sub over Main Snap** – The Main module color stays in the background. The Sub module color has higher priority and will not mix with the Main module color. As soon as the Sub module color value is greater than zero, the Main module color blacks out and the fixture uses the Sub module color.
- **TrueColor Main over Sub Crossfade** – The Sub module color stays in the background. The Main module color has higher priority. If you fade in a Main module color, the Sub module color will crossfade to the Main module color.
- **TrueColor Sub over Main Crossfade** – The Main module color stays in the background. The Sub module color has higher priority. If you fade in a Main module color, the Sub module color will crossfade to the Main module color.
- **Main Module only** – Only Main Module color is used. Sub Module color is ignored.
- **Crossfading Main → HTP** – Manual crossfade from Main module color only → Main and Sub module color HTP
- **Main and Sub module HTP** – Main and Sub module color HTP (highest DMX value takes priority)
- **Crossfading HTP → Sub** – Manual crossfade from Main and Sub module color HTP → Sub module color only.
- **Sub Module only** – Only Sub Module color is used. Main Module color is ignored.

White point

The white point is the default white that is obtained when the shutter is opened. The impression X5 IP offers a choice of fixed white points in RGB Color Mix Mode, allowing convenient use in different environments. For details of setting the white point, see 'White point' on page 17.

Color temperature control (CTC)

In addition to the choice of default fixed white point, the fixture offers Color Temperature Correction (CTC) in all three color mixing control modes (RGB, RGBL and x;y). The CTC Channel allows a temporary change of white point and offers a smooth shift between whites from 10 000 K to 2 500 K following the black body line.

Depending on the selected Color Mix Mode (RGB, RGBL or x;y), if you select a color temperature on the CTC channel, the fixture will no longer use the specific open color and will instead use the selected color temperature.

If you select a color temperature on the CTC channel, it is still possible to adjust the color temperature using the RGB and RGBL channels.

Note: To obtain the desired color temperature on the CTC channel, you must set all Color Mix channels to 100%. If they are not at 100%, the system will mix color relative to the selected white point of the CTC channel.

The CTC channel affects all the fixture's modules. Setting the CTC channel to a specific color temperature will affect the open white of the Main module and Sub module.

Color Quality Control (CQC)

The CQC channel lets you modify the spectral mix of the white output in order to achieve a balance between better color rendering or higher output intensity. The following options are available:

- **High Quality (HQ)** deploys multiple LEDs to create a richer light spectrum that gives improved color rendering but also slightly lower output. Color is mixed with priority given to the best white color rendering quality. Saturated colors will have maximum saturation at DMX 000 and will smoothly become unsaturated until they reach 0% saturation (= white) at DMX value 127.
- **High Output (HO)** gives higher output intensity but reduced color rendering performance. Color is mixed with priority given to the highest output in white. Saturated colors will have maximum saturation at DMX 255 and will smoothly become unsaturated until they reach 0% saturation (= white) at DMX value 128.

While using white light, the CQC channel lets you change between white with priority on high-quality color rendering and white with priority on highest output. Additionally, the CQC channel lets you smoothly desaturate colors. If you have set a saturated color in the color mix, the CQC channel lets you smoothly desaturate the color from saturated to fully unsaturated (i.e. white).

Note: The CQC channel affects all the fixture's modules. Setting the CQC channel to a specific value will affect the colors of the Main module and Sub module.

*Note: The **HO** and **HQ** CQC options only affect the color mix if the fixture is in RGB or x;y Color Mix mode. In all other Color Mix modes this setting has no effect.*

Magenta/Green Shift (M/G Shift)

The Magenta/Green Shift channel lets you move the color coordinate of a white point, a mixed color or a selected CTC color along a vertical line on the color temperature curve in all three Color Mix modes. The corresponding white point is either shifted towards Green or Magenta.

If M/G Shift is enabled, it immediately affects all mixed colors as well as the color temperature that is selected on the CTC channel. It has no effect on the colors of the virtual color wheel.

Note: The M/G Shift channel affects the entire fixture. Setting the M/G Shift channel to a specific value will affect the output of the Main module and Sub module.

Color wheel

The impression X5 IP features a virtual color wheel channel that gives quick access to a wide range of LEE-referenced colors in all three Color Mix modes. Color wheel

color presets are always mixed with the best available spectrum. Color filter color coordinates are based on a Source C (daylight) light source.

Besides static color presets, the color wheel channel also offers continuous color scrolling through the colors of the spectrum. When set to Rainbow Scroll the fixture runs through a rainbow sequence of colors with color crossfading speed variable from slow to fast.

If a color coordinate is outside the possible color gamut of the light source, the fixture tries to match the target color as closely as possible.

Note: Color wheel color presets have higher priority than the Color Mix, CTO and M/G Shift channels.

The virtual color wheel channel must be set to DMX 000 in order to use normal RGB, RGBL or x:y color mixing.

Tungsten simulation

The tungsten filament simulation channel allows the user to select between different tungsten options in all three Color Mix modes.

The first part of the Tungsten channel offers standard tungsten features with fixed color temperature, red shift and delayed intensity changes. The color temperature, the color shift and the inertia of the selected tungsten filament light source are fully simulated. The value set on the Tungsten channel has higher priority than the color wheel or CTC.

The second part of the Tungsten channel lets you apply one of the tungsten effects (inertia and intensity) to the currently mixed color or the currently selected color temperature on the CTC channel.

Note: The Tungsten simulation channel affects the entire fixture. Setting the Tungsten channel to a specific value will affect the output of the Main module and Sub module.

Shutter

The fixture's shutter channel offers continuous blackout, continuous open and a range of intensity effects.

Depending on the selected Sub Module Mode, the shutter channel of the Main module channel group acts as either a master shutter or as the shutter channel of the Main module independently of the Sub module.

The following shutter effects are available:

- **Single flash** performs exactly one single flash with each value change within this DMX value slot.
- **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** 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.

Note: Depending on the selected Sub Module Mode, the dimmer and shutter channels of the Sub module can operate independently of or subordinately to the dimmer and shutter channels of the Main module.

Intensity

The electronic dimming effect provides smooth 16-bit dimming of the Main module and Sub module. Three dimming curves with different dimming characteristics are available. See 'Dimming curves' on page 18.

Pattern control

The impression X5 IP offers a wide range of static and dynamic pre-programmed FX patterns on the Sub module. The Sub module color control channels define the color of the pattern effects.

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).

Note: The Mix Priority channel lets you decide how the output of the Main module and the Sub module (pattern or pixel mapping) should be merged.

Pattern selection

The pattern selection channel offers a choice of 59 static patterns, 50 dynamic patterns and 11 special 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

For dynamic patterns you can select either:

- an automatic clockwise or counterclockwise continuous run-through of the pattern steps with variable speed (dynamic speed control = DMX values 003 ... 127), or
- one step in the selected pattern (static indexing = DMX values 128 ... 255).

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).

Special/Control DMX channel

The Special/Control 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 Special/Control 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 Special/Control channel, you must send the DMX value for this function for 3 seconds. If you want to trigger an additional reset using the Special/Control 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 Special/Control DMX channel are also available via RDM.

3. Fixture settings

The settings described in this chapter let you customize the X5 IP. Settings can be available in the control panel on the fixture's yoke, via DMX and/or via RDM.

Color Mix modes

The Color Mix Mode setting offers three different options for color mixing: RGB Mode, RGBL Mode and x:y Mode.

RGB Mode

RGB Mode mixes color of the Main and Sub module(s) using Red, Green and Blue channels. The Lime LED is mixed automatically using the fixture's internal GLP iQ.Gamut algorithm.

RGB Mode offers a clean default white light at open which is considered to be the white point (RGB at 100%).

When the **Color Mix Mode** is set to **RGB**, the different DMX Modes have the following functionality:

- Mode 1 – Basic
  - Main Module: RGB control of all pixels as one group with Lime mixed automatically. Lime Channel has no function.
- Mode 2 – Normal
  - Main Module: RGB control of all pixels as one group with Lime mixed automatically. Lime Channel has no function.
  - Sub Module: RGB control of all pixels as one group with Lime mixed automatically.
- Mode 3 – Segment
  - Main Module: RGB control of all pixels as one group with Lime mixed automatically. Lime channel has no function.
  - Sub Module: RGB control of each segment with Lime mixed automatically.
- Mode 4 – Multipix Advanced
  - Main Module: RGB control of all pixels as one group with Lime mixed automatically. Lime channel has no function.
  - Sub Module: RGB control of each pixel with Lime mixed automatically.
- Mode 5 – Multipix Compressed RGB
  - RGB control of each pixel with Lime mixed automatically.
- Mode 6 – Multipix Compressed RGBL
  - RGBL control of each pixel.

RGBL Mode

RGBL Mode mixes the color of the Main module using Red, Green, Blue and Lime channels. The colors of the Sub module(s) are mixed with RGB only - always without Lime. The color gamut is still calibrated to the X5 range, but the white point (open) is not adjusted to the black body line and will show a white that is mixed using 100% RGBL.

*Note: The **HO** and **HQ** CQC options are not available in RGBL Mode.*

When the **Color Mix Mode** is set to **RGBL**, the different DMX Modes have the following functionality:

- Mode 1 – Basic
  - Main Module: RGB, RGBL or x;y control of all pixels as one group. If RGB or x:y control is selected, Lime is added automatically.
- Mode 2 – Normal
  - Main Module: RGB, RGBL or x;y control of all pixels as one group. If RGB or x:y control is selected, Lime is added automatically.
  - Sub Module: RGB control of all pixels as one group without Lime. Lime is always 0%.
- Mode 3 – Segments
  - Main Module: RGB, RGBL or x;y control of all pixels as one group with individual Lime control. If RGB or x:y control is selected, Lime is added automatically.
  - Sub Module: RGB control of each segment without Lime. Lime is always 0%.
- Mode 4 – Multipix Advanced
  - Main Module: RGB, RGBL or x;y control of all pixels as one group. If RGB or x:y control is selected, Lime is added automatically.
  - Sub Module: RGB control of each pixel without Lime. Lime is always 0%.
- Mode 5 – Multipix Compressed RGB
  - Main Module: RGB control of each pixel with Lime added automatically.
- Mode 6 – Multipix Compressed RGBL
  - Main Module: RGBL control of each pixel.

x:y Mode

x;y Mode lets you send x;y color coordinates to the fixture via DMX. The internal color algorithm mixes the four LED colors perfectly to match the x:y color coordinates.

In x:y Mode, white point setting is disabled. CTC channel values overwrite x;y values.

When the **Color Mix Mode** is set to **x:y**, DMX Modes 1–4 are available. The modes have the following functionality:

- Mode 1 – Basic
  - Main Module: x;y control of all pixels as one group
- Mode 2 – Normal
  - Main Module: x;y control of all pixels as one group.
  - Sub Module: RGB control of all pixels as one group with Lime added automatically.
- Mode 3 – Segment
  - Main Module: x;y control of all pixels as one group.
  - Sub Module: RGB control of each segment with Lime added automatically.
- Mode 4 – Multipix Advanced
  - Main Module: x;y control of all pixels as one group
  - Sub Module: RGB control of each pixel with Lime added automatically.

White point

The white point is the default white that is obtained when the shutter is opened. The impression X5 IP offers a choice of fixed white points in RGB Color Mix Mode, allowing convenient use in different environments. The following fixed white points (color temperatures) are available:

- **8000 K** (effect light)
- **6500 K** (daylight – default)
- **5600 K** (TV and studio)
- **4200 K** (CDM)
- **3200 K** (tungsten)

If a fixed white point is enabled, the fixture mixes colors with reference to it. GLP iQ.Gamut navigates through the color space using the preferred Color Mode color mixing method.

Note: Fixed white point settings are only valid for RGB mode using the iQ.Gamut FULL. If any of the other defined color gamuts is selected, the defined white point of the selected color gamut is applied.

iQ.Gamut

iQ.Gamut is a new LED calibration technology from GLP that defines the color gamut for the color mixing channels. You can select one of a range of calibrated iQ.Gamuts for the fixture to work within. This feature can be useful if you want to reproduce correct colors or avoid TV camera clipping. The iQ.Gamut setting will only affect the color mix if the fixture is in **RGB** Color Mix Mode. In all other Color Mix modes this setting has no effect.

The following iQ.Gamut settings are available:

- **FULL** (default) – Color mixing is calibrated to the X5 color gamut and referenced to the selected fixed white point. This setting gives the best results with applications where deep saturated colors are needed.
- **Rec.2020** – Color mixing is matched to the defined Rec.2020 gamut including its white point. This setting gives the best results for UHD TV applications and avoids color clipping.
- **Rec.709** – Color mixing is matched to the defined Rec.709 gamut including its white point. This setting gives the best results for HD TV applications and avoids color clipping.
- **DCI P3.6** – Color mixing is matched to the defined DCI P3.6 gamut including its white
  point.

Dimming curves

The electronic dimming effect provides smooth 16-bit dimming of the Main module and Sub module. The following three dimming curves are available:

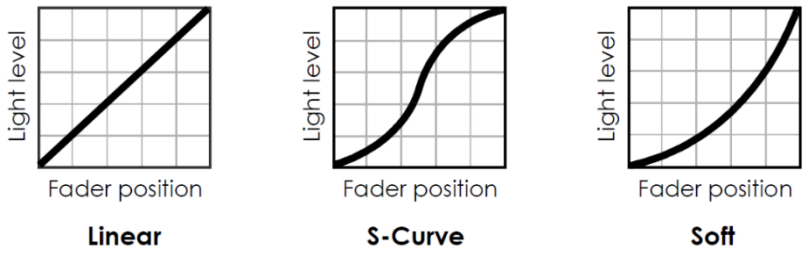


Figure 1. Dimming curves

- The **Linear** setting gives a dimming curve that the eye perceives as linear.
- The **S-Curve** setting gives finer control at lower light levels and at higher light levels, with coarser control at medium light levels.
- The **Soft** 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.

Note: Depending on the selected Sub module Mode, the dimmer and shutter channels of the Sub module can operate independently of or subordinately to the dimmer and shutter channels of the Main module.

Fan modes

Five cooling fan modes let you give priority to lowest fan noise or most powerful cooling:

- **Regulated** mode gives priority to light output and only operates fans as necessary. If the fixture is blacked out, fans switch off after some seconds. Only the fans that are necessary operate, and they run at minimum speed. When light output intensity is increased, temperature regulation increases fan speed to the level necessary to keep the fixture at optimum temperature.

  If light output is set to maximum intensity but the fans can keep the fixture at optimum temperature, there is no regulation of light intensity. If the fixture begins to exceed optimum temperature and the fans are running at maximum speed, light intensity is limited until optimum temperature can be maintained.

- **High** mode sets the fixture to give maximum light output and suits operation in high ambient temperatures. Fans are set to constant operation at high speed. Light output intensity is limited smoothly if it becomes necessary in order to keep fixture temperature at optimum level.

  You can also use **High** mode to cool down a fixture quickly after a period of operation or to help remove dust from cooling fans.

- **Medium** mode sets fans to constant operation at medium speed. Light output intensity is reduced to a level where it will normally remain constant at ambient temperatures of up to 45° C (113° F). Intensity is smoothly limited further if it becomes necessary in order to keep fixture temperature at optimum level.

- **Low** mode sets fans to constant operation at low speed and is optimized for minimum noise. Light output intensity is reduced to a level where it will normally remain constant at ambient temperatures of up to 30° C (86° F). Intensity is smoothly limited further if it becomes necessary in order to keep fixture temperature at optimum level.

- **Minimum** mode operates as follows:
  - If the fixture is at blackout, all unnecessary fans are shut down completely and only fans that are absolutely necessary remain active. These fans operate at low speed.
  - As soon as the fixture emits light, other necessary fans may start but will stay at minimum speed. Light output is limited.

Note: In all fan modes, if fixture temperature reaches a dangerous level, the LEDs are shut down for a period until the fans have brought the temperature down to a safe level.

Sub module mode / Sub fixture mode

The impression X5 IP offers two options for controlling the Main module and Sub module:

- **Normal** – In this mode, all Sub module channels are subordinate to the Main module channel group. This means that the intensity and shutter of the Main module act as master intensity and master shutter for the whole fixture.

- **Independent** – In this mode, the Sub module channel group can be controlled independently of the Main module channel group and acts as an independent fixture.

Note that no matter which Sub module mode setting you select, the following applies:

- The **Mix Priority** channel is always active and will affect how the two dependent or independent modules are mixed.
- Some of the general color management channels of the Main module such as CTC, CQC, M/G-Shift and Tungsten simulation will always affect the Sub module.

Performance modes

You can select between three different settings for the movement speed of the fixture's mechanical effects (pan/tilt and zoom):

- **Normal** sets mechanical effects movement to give an optimum balance between speed, quietness and smoothness. **Normal** is the default setting.
- **Fast** sets movement to maximum speed. This setting gives very fast effect movement but can result in higher noise levels.
- **Smooth** optimizes the smoothness of the mechanical effects and gives lowest-noise performance. This setting gives extremely low noise and smooth performance, but effect movement will be slower than in **Normal** mode.

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:

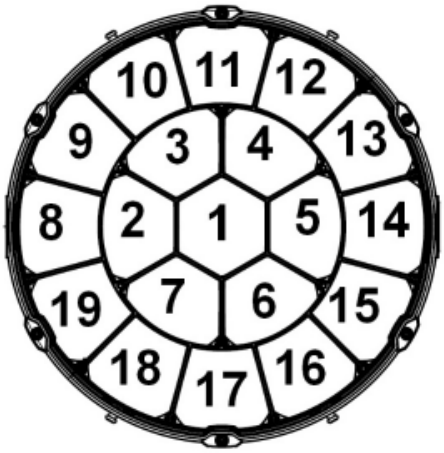
- **Low** – PWM frequency is fixed at a lower level, giving best dimming results.
- **Optimum** (default) – PWM frequency is set to a level which offers a good compromise between best dimming results and avoiding flicker.
- **High1** – PWM frequency is set to a higher level.
- **High2** – PWM frequency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

Pixel rotation

Lets you rotate the fixture's pixel layout by: **0° – 60° – 120° – 180° – 240° – 300°**.

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.
- **Hold** sets the fixture to continue using the last DMX values it received.
- **Scene (Stand-alone)** sets the fixture to play its stored stand-alone scene (see **Capture DMX Values** below) when the fixture is not receiving a DMX signal. If no stand-alone scene is stored in memory, the fixture will black 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 gray safety eyelet).

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

Changing the Pan/Tilt disable setting to "Current disable" de-activates pan and tilt by disabling the pan and tilt motor current.

Note: When changing from ON back to OFF to re-enable pan and tilt movement, you must carry out a reset before you can operate pan and tilt normally.

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 impression X5 IP 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.

- **Manual Control**: Manually sets a DMX value for each function.
- **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 Pan/Tilt**: Runs a test sequence of tilt movement only. Press BACK to stop the test sequence.
- **Test LED**: Runs a test sequence of the LED pixel only. Press BACK to stop the test sequence.
- **Test Zoom**: Runs a test sequence of Zoom functionality only. 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.
- **Job Offset**: Lets you set +/- offsets on mechanical effects. Custom offsets let you adjust fixtures in multiple installations (to compensate for the different positions of fixtures in a rig, for example).

  Any custom offsets that you create here will not affect the fixture's effect calibration.

  All custom offsets created here are deleted if you apply a **Load Factory Defaults** command.
- **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 (Fan Mode, Color Mix 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.

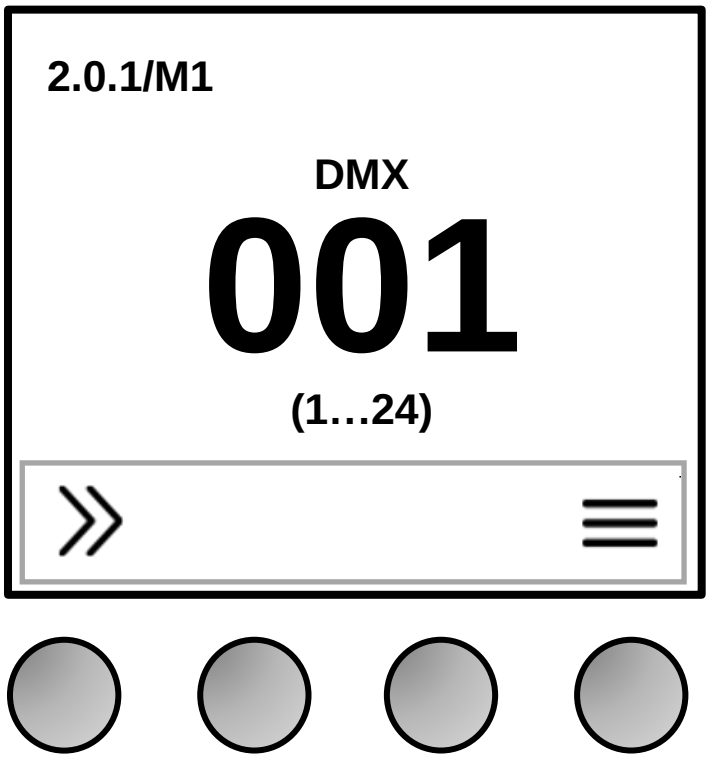


Figure 2. Default information screen

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 2.0.1
- 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 24.

Note: See 'Setting up the control protocol' on page 31 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:

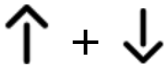
 BACK – Goes back one level towards the top of the menu

 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°

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 21).

Service and maintenance

See the separate *impression X5 IP 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 impression X5 IP 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 impression X5 IP 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:

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

Main menu

The following menus and commands are available in the impression X5 IP control panel.

Menus			***Notes***
DMX Address			
001-512			*Set fixture's DMX start address. Highest address possible depends on control mode.*
Control Mode			
M1 Basic			*Set fixture's DMX control mode.*
M2 Normal			
M3 Segment			
M4 Multipix Advanced			
M5 Multipix Compressed RGB			
M6 Multipix Compressed RGBL			
Protocol Setup			
Data In	**DMX**		*Control via DMX, Art-Net or sACN Protocol, control via GLP iQ.Mesh protocol, control via LumenRadio CRMX (when CRMX module is installed in fixture's FPO port).*
	Art-Net		
	sACN		
	iQ.Mesh		
	CRMX (FPO)		
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	**0** ... 32768	*Enter Art-Net port*
	sACN universe	**1** ... 63999	*Enter sACN universe*
Linking options	iQ.Mesh Unlink		*Unlink from GLP iQ.Mesh link*
	CRMX (FPO) Unlink		*Unlink from CRMX (only available if CRMX module is installed at fixture's FPO port)*

Fixture Settings		
Color Mix Mode	**RGB**	*Direct RGB control in the selected color gamut. Lime added automatically. Colors are perfectly mixed by internal color algorithm referenced to the selected White point or CTC channel value. M/G shift and CQC manipulation are available.*
	RGBL	*Direct RGBL control. control of the four LED colors separately. White point at open will be 100% RGBL, not necessarily located on the black body line. Color wheel values override RGBL values. CTC channel, M/G shift and CQC manipulation are available.*
	x;y	*x:y color co-ordinate control. The internal color algorithm mixes the 4 LED colors perfectly to match the color coordinates. White point setting is disabled. Color wheel values override RAW values. CTC channel, M/G shift and CQC manipulation are not possible.*
White Point	8000 K	*Set fixture white point when RGB is at 100% (only available when in RGB color mixing mode)*
	6500 K	
	5600 K	
	4200 K	
	3200 K	
iQ.Gamut (*GLP's calibration technology – select a calibrated color gamut)*	**FULL**	*Color mixing is calibrated to the X5 color gamut. Gives best results in applications where deep saturated colors are needed*
	Rec.2020	*Color space defined to Rec.2020 Gamut (RGB color mixing mode only). Gives best results with UHD TV applications.*
	Rec.709	*Color space defined to Rec.709 Gamut (RGB color mixing mode only). Gives best results with UHD TV applications.*
	DCI P3.65	*Color space defined to DCI P3.65 Gamut (RGB color mixing mode only)*
Dimmer Curve	Linear	*Linear dimming curve*
	Soft	*Soft (square law) dimming curve*
	S-Curve	*Finer dimming control at low and high intensity*

Fan Mode	**Regulated**		*Fan speed temperature-regulated*
	High		*Fan speed constant high*
	Medium		*Fan speed constant medium*
	Low		*Fan speed constant low*
	Off		*All unnecessary fans disabled. Light output reduced.*
Subfixture Mode	**Normal**		*Main module's dimmer and shutter channels act as global dimmer/shutter and affect Sub module output*
	Independent		*Sub module is independent of Main module*
Performance	Fast		*Mechanical effects speed optimized for speed*
	Normal		*Mechanical effects speed balanced for speed and smoothness*
	Smooth		*Mechanical effects speed limited for optimized smoothness and low noise*
PWM Frequency	Low (L)		*Optimum fixed 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*
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*
Pixel rotation	**Off**		*Pixel layout rotated clockwise*
	60°		
	120°		
	180°		
	240°		
	300°		
No Signal	No Signal Mode	Blackout	*Fixture blacks out if no DMX signal received*
		Hold	*Fixture continues to display current effect if no DMX signal received*
		Scene	*Plays the stored captured scene (see next menu item) 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	< 001. .**128** ..255 >	*Manually control all effects*
	Tilt	< 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*
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 Zoom			*Run test sequence of zoom effect. Stop with BACK.*
	Test Fans (Auto)			*Run fan self-test. Tries to detect fan errors, clears if successful.*
	Test Fans (Manual)			*Manually test fans one by one*
	Test Encoders			*Auto test for all encoders*
Advanced *(Press and hold for 3 secs.)*	Service Mode	**OFF**		*Normal operation*
		ON		*Disable pan, tilt and display timeouts (exit by cycling power off and on.)*
	Job offsets	Pan Tilt Zoom		*Create custom job offsets in home positions of all effects. Default offset = **0** Note: This function is not fixture calibration!*
	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