HIGHLANDER WASH

User Manual

Fixture software version 34

-GLP-

GLP® Highlander Wash User Manual – Revision B

This document covers fixture software version 34

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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 manual 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 Highlander Wash 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 Highlander Wash 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 GLP Highlander Wash lighting fixtures consists of:

- The **Highlander Wash Quick Start and Safety Manual**, supplied with Highlander Wash 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 **Highlander Wash User Manual**, available for download from www.glp.de. The User Manual explains features and control of Highlander Wash fixtures.
- The **Highlander Wash DMX Channel Index**, containing the DMX control channel layout and DMX commands available in the fixture. This information is also included in the User Manual.

The Highlander Wash 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 product's user documentation and on the product. Read the user documentation and familiarize yourself with the safety precautions it contains before installing, using or servicing the product. 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 product'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 both the Quick Start and Safety Manual and this User Manual available to all persons who will install, operate or service the product. Save both documents for future reference.
- If you have any questions about the safe operation of the product, please contact an authorized GLP distributor (see list of distributors at www.glp.de).
- Use the product only as directed in this manual. Observe all markings in this manual and on the product.

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 storing, transporting or using the fixture.

Powering the fixture off

When you power the fixture off, douse the lamp but leave power applied to the fixture for 30 minutes before shutting down. This will allow cooling fans to cool down the fixture evenly, avoiding hotspots that can weaken or damage the lamp.

If you douse the lamp, leave power applied and wait 5 minutes or until the HOT message disappears from the display until you restrike it.

2. Features

Intended use

The Highlander Wash is for permanent or temporary indoor use in venues where the distance to illuminated surfaces is at least 8 m / 26.3 ft.). It may be used outdoors if it is protected from moisture and precautions are taken to prevent damage from direct sunlight. It may be placed upright on a level surface or suspended from a suitable structure as described in this manual.

The Highlander Wash is not suitable for household use, wherever unattended children have access to it, for permanent outdoor installation, or in areas where the distance from the fixture to illuminated surfaces is less than the minimum specified.

The Highlander Wash must be installed, operated, and maintained only by persons with the training, knowledge and skills to do so safely.

Lamp

The Highlander Wash has an OSRAM Lok-It! 1400/PS Brilliant 1400 watt short-arc discharge lamp with a CRI of 95. This lamp gives true-to-life color and very attractive skin tones, making it ideal for theatre settings. The lamp's average rated life is 750 hours. To minimize the risk of lamp explosion and obtain the best light output, replace the lamp before it reaches its rated lifetime following the directions in the fixture's Quick Start and Safety Manual supplied with the fixture and available for download from www.glp.de.

The fixture will not allow a lamp restrike if it senses that the lamp is too hot. If hot restrike protection is active, the message **HOT** appears in the fixture display.

If you have had lamp power applied and then powered the lamp off, allow the lamp to cool with the fixture powered on until the **HOT** message disappears from the display before restriking it. Allow the fixture to cool with power applied for 30 minutes before opening the lamp door or any other part of the housing.

Lamp power

The lamp can be operated at two power levels:

- At the **NORMAL** power setting, the lamp runs at 1400 W
- At the **ECO** power setting, the lamp runs at 1000 W.

You can toggle between these two settings under **Lamp Power** in the **Fixture Settings** control menu.

See the Highlander Wash Quick Start and Safety Manual for details of the lamp power available when the fixture is connected to AC mains power below 200 V.

Control options

The Highlander Wash is compatible with DMX 512, RDM, Art-Net and sACN control protocols. See the Highlander Wash Quick Start and Safety Manual for more details.

You can also control the Highlander Wash via wireless DMX if you install an optional CRMX module. Contact your GLP supplier for details.

Pan and tilt

The Highlander Wash pans through 670° and tilts through 264° with coarse and fine control channels and self-correcting position feedback. Position feedback can be disabled and control of pan and tilt can be reversed using the control panel or via DMX on the *Special/Control* channel.

Pan and tilt are automatically disabled while you are using the fixture's control panel.

Shutter

The Highlander Wash features a high-speed mechanical shutter with a choice of pulse and strobe effects. It provides a full blackout with no visible light when intensity is set to 0%

Dimming

The mechanical dimming system provides smooth full-range dimming.

Dimming curves

See Figure 1. Two dimming curve options are available: **Linear** and **Soft**.

- The **Linear** setting gives a dimming curve that the eye perceives as linear.
- 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.

You can select the dimming curve using the control panel or via DMX on the *Special/Control* channel.

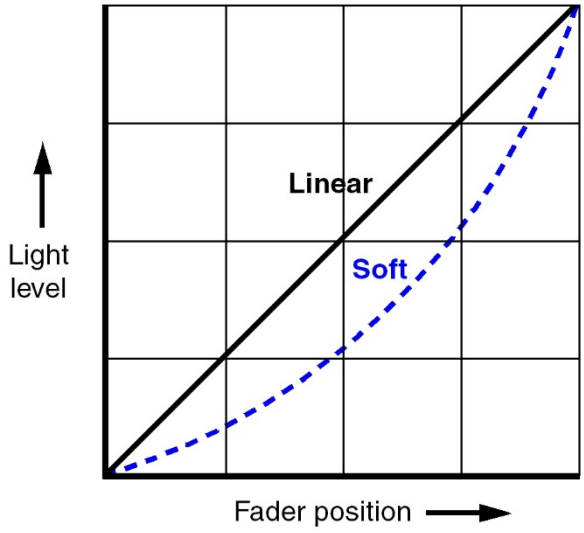


Figure 1. Dimming curves

CMY color mixing

The Highlander Wash features CMY color mixing with progressively saturated Cyan, Magenta and Yellow for full-range color and efficient output.

Color temperature control

A separate progressive CTO filter lets you vary the color temperature from 6700 K at the open position to 2700 K warm white when fully applied.

You can use color mixing on its own to achieve a custom color, or you can select a color on one of the fixture's color wheels and then fine-tune it using CMY and CTO in combination.

Color wheels

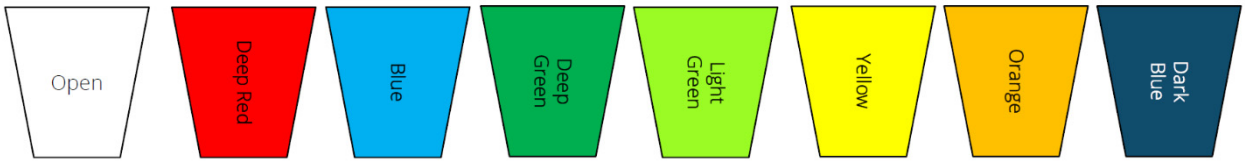
See Figure 2. The Highlander Wash features two separate color wheels with dichroic color filters:

- Color wheel 1 offers seven saturated colors plus open.
- Color wheel 2 offers four pastel colors, half minus green and two color correction filters plus open.

The color wheel control options let you:

- Select full colors or the open position,
- Scroll the color wheels for split color effects, or
- Rotate the color wheels continuously with variable direction and speed.

Color wheel 1



Color wheel 2

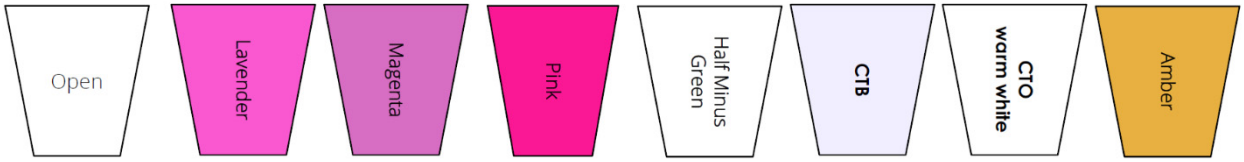


Figure 2. Color wheels

Effect shortcuts

By default, the color wheels take the shortest, fastest route from one slot to the next, even if this means that they may pass through the open position. To avoid the wheels passing through the open position when they change from one slot to the next you can set **Effect shortcuts** to **OFF** on the Special/Control DMX channel or in the control panel.

Framing

The four-blade framing module offers individual control of each blade, and the entire module can be indexed continuously from -45° to +45°. Blades can be continuously angled by +/- 30° and inserted by up to 100%, giving flexibility in choice of frame shape and size right down to dead blackout.

Two framing control modes are available:

- **Position/Indexing (PI) mode** lets you insert each blade into the beam from 0% to 100% on one channel and tilt each blade from -30° to + 30° on the next channel. Inserting

all four blades 100% into the beam will result in dead blackout. The fixture is set to PI mode by default.

- **Left/Right (LR) mode** gives you individual control of the left-hand and the right-hand sides of each of the four blades. In this mode, for example, DMX channel 25 gives control of the left-hand side of blade 1 and channel 26 gives control of the right-hand side of blade 1.

To use framing, select either Position/Index mode (this mode is selected by default) or Left/Right mode using either the fixture's control panel or the *Special/Control* DMX channel. Then use DMX channels 17 – 24 to control the four framing blades and use DMX channel 16 to set the indexed angle of the entire framing module.

Iris effect

The fixture uses the four framing blades to create an iris effect that can close the beam down from 100% to blackout.

If you use framing and the iris effect at the same time, the iris effect is overlaid on top of the framing function: in other words, you can use framing effects within the area defined by the iris.

Zoom

The Highlander Wash has a 1:7 zoom range. You can vary the beam angle from 5° to 44° (half-peak) / vary the field angle from 11° to 63° (one-tenth peak).

Control on the Zoom DMX channel is normally from spot to flood as the DMX value increases. You can invert this using the control panel and the *Special/Control* DMX channel so that control becomes flood to spot as you increase the DMX value.

Focus and focus tracking

You can adjust focus on DMX channel 15.

You can also set the fixture to use focus tracking, in which focus automatically adjusts to match different zoom positions. Focus tracking is enabled by default, letting you change zoom angles without any need to make adjustments on the focus channel.

It is possible to disable focus tracking completely or to optimize focus tracking for three different projection distance ranges using the *Special/Control* DMX channel. Four focus tracking settings are available:

- **Focus tracking OFF** sets the zoom and focus DMX channels to control zoom and focus completely independently of each other.
- **Focus tracking NEAR** sets focus to automatically adjust for optimum sharpness at projection distances of around 8 meters or less when the zoom angle is changed.
- **Focus tracking MEDIUM** sets focus to automatically adjust for optimum sharpness at projection distances of around 15 meters when the zoom angle is changed. Focus tracking is set to MEDIUM by default.
- **Focus tracking FAR** sets focus to automatically adjust for optimum sharpness at projection distances of over 20 meters when the zoom angle is changed.

If you have enabled Focus tracking **NEAR**, **MEDIUM** or **FAR** you can still override the automatic focus setting: any manual adjustment that you make on the Focus DMX channel will take priority over the automatic setting. However, if you change the zoom

angle again, the fixture will forget any manual focus setting and return to automatically adjusting focus to match the fixture's zoom angle.

Behavior when the fixture is not receiving a DMX signal

You can set the fixture to react in four different ways 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):

- **Hold DMX** sets the fixture to continue obeying the last DMX values it received. This is the default setting.
- **Blackout** sets the fixture to black out whenever it is not receiving a DMX signal.
- **Replay DMX Scene** 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.
- **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 **Replay DMX Scene** (see above) and is not receiving a DMX signal.

You can select one of the four settings above using either the control panel or the *Special/Control* DMX channel.

In the control panel, the commands for capturing and playing a stand-alone scene are available in two places: **Fixture Settings → No Signal** and **Manual Control → Manual DMX**. The commands are the same in both places.

Stand-Alone operation

If the fixture is set to **Replay DMX Scene** and if a stand-alone scene has been captured and 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.

Performance settings

You can select between three different settings for the movement speed of all the fixture's mechanical effects (pan/tilt, color wheel, zoom, focus, etc.):

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

You can select Movement Performance using either the control panel or the *Special/Control* DMX channel.

Fan modes

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

- **Regulated** sets fans to operate only at the speed that is necessary to cool the fixture and the lamp. As fixture temperature increases, temperature regulation increases fan speed to the level that is necessary.
- **High speed** mode suits operation in high ambient temperatures. Fans are set to constant operation at high speed. You can use **High speed** mode to cool down a fixture quickly after dousing the lamp or to help remove dust from cooling fans.

You can set the cooling fan mode using the control panel or the *Special/Control* DMX channel.

In both fan modes, if fixture temperature reaches a dangerous level the fixture will protect itself from damage by carrying out an emergency lamp shutdown. The message HEAT will appear in the display and it will be impossible to restrike the lamp until the temperature has fallen to a safe level.

Offsets

You can customize the Highlander Wash by creating offsets in the fixture's effects, including pan and tilt. Custom offsets let you adjust fixtures in multiple installations to compensate for the different positions of the fixtures in the rig, for example.

Custom offsets are for temporary adjustment of individual effects. They are not permanent fixture calibration values. Custom offset values are reset to zero if you apply a **Service → Advanced → Factory Backup** command in the control panel. If you need to adjust fixture calibration values, please contact GLP Service.

Changing settings by DMX

The *Special/Control* DMX channel lets you change fixture settings, power the lamp on/off and perform a fixture reset from the control desk. To apply a command on this channel you must hold the command for the time indicated in the DMX channel index section at the end of this manual.

3. 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.

Default screen

When power is applied, the fixture resets. After the reset has completed, the default screen appears in the display. The fixture asks you to press any key to unlock the control panel and display. When you unlock the display you will see this screen:

Figure 3. Control panel

See Figure 3. From left to right, the top line of the default screen displays:

- Main CPU software version

- Pan, tilt, and zoom modes: **N** (Normal) or **I** (inverse)
- Dimming curve: **L** (Linear) or **S** (Soft)
- Lamp power mode: **ECO** will be displayed if the ECO (1000 W) mode is enabled. There is no lamp power indication if the lamp is in Normal (1400 W) mode.
- Fixture's DMX address
- Protocol type: **DMX**, **Art-Net**, **sACN** or **CRMX** (if an optional CRMX module is installed)

In the example shown in Figure 3:

- The fixture is running CPU software version 26
- Pan, Tilt and Zoom are set to Normal
- The dimmer is set to Soft dimming curve
- Lamp power is set to 1000 W (ECO)
- The fixture is set to receive data via DMX protocol
- The fixture's DMX start address is 101.

Using the control panel

From the default screen you have three options:

- Pressing the ENTER button under **Menu** on the right opens the main menu for configuration, service and information.
- Pressing the BACK/ESC button on the left under **Shortcut** opens the quick menu with the most frequently used settings.
- Pressing both buttons quickly at the same time flips the display.
- If you have entered the **Information** menu, pressing and holding the ENTER button on the right temporarily prevents the display from entering Sleep mode. This lets you read data in the display for as long as you need to.

Once you have opened the main menu or the quick menu, navigate and apply commands as follows:

- Use the jog wheel to scroll up and down through menu items
- Use the ENTER button on the right to enter a submenu or confirm a selection.
- Use the BACK/ESC button on the left to exit a menu. If you have not confirmed a selection with the ENTER button, no command will be applied.

Fixture overview

If you rotate the jog wheel a half-turn while the default screen is being displayed, the display will change to a general fixture overview which gives you quick information about software version, lamp hours, fixture settings etc. This feature is very helpful for maintenance or service tasks.

Error codes

If the fixture detects an error it will display an error code in place of the DMX address. All error codes except the HOT message (lamp hot, restrike impossible until lamp has

cooled down) are sticky: they will remain in the display until the next power cycle or motor reset.

'Status and error codes' on page 26 gives a key to all the codes in the Highlander Wash.

Loss of DMX signal

The display flashes if the DMX signal is lost.

Display orientation

If the display orientation is set to **Normal** or **Upside-down** pressing both keys will invert the display orientation.

If the display orientation is set to **Auto**, pressing both keys inverts the display temporarily regardless of its current orientation. After you exit the menus, or after a short period with no key presses, the display will return to its **Auto** orientation.

4. Setting up the fixture control protocol

The Highlander Wash can be controlled via USITT512 DMX over a standard DMX cable link using the fixture's 5-pin XLR connectors or via Art-Net or sACN over network cable using the fixture's Ethernet port. This section explains how to configure the fixture to use the control data protocol that it is connected to.

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

DMX

To configure the fixture to receive DMX control data over a standard DMX cable link, 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 → Select Control Protocol** menu, set the control protocol to **DMX**.

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.

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 → Select Control Protocol** menu, set the control protocol to **Art-Net** (the default setting).
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 → Select Control Protocol** 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.

5. Control menus

Quick menu

The control panel's Quick Menu gives you quick access to the most frequently used commands. You can open the Quick Menu when you press the left-hand control button (marked Shortcut) when the display is showing the default screen.

The Quick Menu contains the following items:

Menus		***Notes***
Lamp ON/OFF	Toggle	*Power lamp on / off*
Lamp Power	Normal	*Set lamp power to 1400 W*
	Eco	*Set lamp power to 1000 W*
Reset All		*Carry out a reset of all effects (takes a few seconds)*
Information		*Scroll through fixture information*
Load Settings	Preset 1	*Configure all fixture settings to a user preset – hold Enter for 3 seconds to activate.*
	Preset 2	
	Preset 3	
	Default	*Return fixture to default settings (not including DMX address, protocol type, Ethernet / CRMX configuration, user offsets, user presets and counters) – hold Enter for 3 seconds to activate.*
Factory Backup (!)		*Restore all factory default settings (including DMX address, protocol type, Ethernet / CRMX configuration, user offsets and user presets) – hold Enter for 5 seconds to activate.*

Main menu

The following menus and commands are available in the Highlander Wash control panel.

Menus			***Notes***
DMX Start Address			
1-490			*Set fixture's DMX address*
Protocol Setup			
Protocol Type	**DMX**		*Control via DMX protocol*
	Art-Net		*Control via Art-Net protocol (default)*
	sACN		*Control via sACN protocol*
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	xxx.xxx.xxx.xxx	*Enter custom IP address*
	Custom IP Subnet	xxx.xxx.xxx.xxx	*Enter custom subnet*
	Art-Net Port	0 - 32767	*Enter Art-Net port*
	sACN Universe	1 - 63999	*Enter sACN universe*
CRMX Unilink	Confirm		*Select CRMX protocol (only possible if CRMX module is installed)*
Fixture Settings			
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		
Zoom Invert	**OFF**		*Zoom wide to narrow*
	ON		*Zoom narrow to wide*
No Signal	**Hold DMX**		*Fixture continues to display current effect if no DMX signal received*
	Blackout		*Fixture blacks out if no DMX signal received*
	Replay DMX scene		*Plays the stored Captured Scene (see next menu item) if no DMX signal received*
	Capture DMX Values		*Captures current scene and stores it for use in **No Signal → Capture Scene***
Dimmer Curve	**Soft (Square)**		*Soft (square law) dimming curve*
	Linear		*Linear dimming curve*

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 / no DMX signal*
Display Orientation	**Auto**	*Display automatically inverts to match installation position*
	Normal	*Display normal (for use when fixture is standing)*
	Upside-down	*Display inverted (for use when fixture is flown head-down)*
Performance	Smooth	*Optimize pan, tilt and effects movement for smoothness*
	Normal	*Normal pan, tilt and effects movement*
	Fast	*Optimize pan, tilt and effects movement for speed*
Fan Mode	**Regulated**	*Fan speed temperature-regulated (optimized for lowest noise)*
	High	*Fan speed constant high (optimized for coolest operation)*
Framing Control	**Position/Index**	*Framing control Position / Indexing mode*
	Left/Right	*Framing control Left / Right mode*
Shortway	**On**	*Color wheel takes shortest route from one slot to next, even if it passes through open*
	Off	*Color wheel avoids open*
Auto Lamp On	**Off**	*No automatic lamp power on when fixture is powered on*
	On	*Lamp is automatically powered on when fixture is powered on*
Lamp Power	**Normal**	*Lamp at 1400 W power*
	Eco	*Lamp at 1000 W power*

Load Settings		Preset 1	*Configure all fixture settings to a user preset – hold for 3 secs.*
		Preset 2	
		Preset 3	
		Default	*Return fixture to default settings (not including DMX address, protocol type, Ethernet / CRMX configuration, user offsets, user presets and counters) – hold for 3 secs.*
Default Settings	No		*Return fixture to default settings (not including DMX address, DMX mode, user offsets, user presets, counters and temperature units)*
	Yes		
Information			
System Version			*Shows current fixture software version*
Temperatures			*Shows current sensor temperatures*
Errors			*Shows most recent and current errors, if any*
Counters		Lamp Counters	*Resettable and total counters for lamp strikes and hours that lamp has been powered on*
		Fixture Counters	*Counter for total number of power cycles; resettable and total counters for hours fixture has been powered on*
		Misc	*Number of times fixture has carried out automatic emergency shutdown*
DMX Monitor			*Shows DMX values currently being received on each channel*
Network			*Shows network status information*
CRMX			*Shows CRMX status information (if optional CRMX module is fitted)*
Main AC			*Shows AC power voltage information*
Manual Control			
Lamp On/Off	No		*Power lamp on/off*
	Yes		
Reset All	No		*Reset all effects*
	Yes		
Reset Pan & Tilt	No		*Reset pan and tilt*
	Yes		
Reset Head	No		*Reset all effects except pan and tilt*
	Yes		

Manual DMX ***Warning! Fixture will start moving!*** Press **Enter**	Pan	< 001..**128**..255 >	*Manually control all effects (Framing always in P/I mode)*
	Pan Fine	< 001..**128**..255 >	
	Tilt	< 001..**128**..255 >	
	Tilt fine	< 001..**128**..255 >	
	… scroll through effects		
	…		
	Load **No-Signal** Scene	Confirm *(press Enter)*	*Display the scene that is stored as Captured Scene*
	Save as **No-Signal** Scene	Confirm *(press Enter)*	*Capture current scene and store it as Captured Scene for use in **No Signal** menu*
	Capture DMX Values	Confirm *(press Enter)*	*Sets all manual DMX values to the values currently being received via DMX*
	Reset Manual Values	Confirm *(press Enter)*	*Reset all manually entered DMX values to zero*
Service			
Test Sequences	Test All		*Run test sequence of all effects including pan and tilt*
	Test Pan / Tilt Only		*Run test sequence of pan and tilt only*
	Test Head Only		*Run test sequence of all effects except pan and tilt*
Reset Counters	Device Hours		*Zero the resettable fixture on-time hours counter*
	Lamp Counters		*Zero the resettable lamp strikes and lamp-on hours counters*
Service Mode	On/Off		*Enable/disable pan and tilt*
Advanced *(Press and hold for 3 secs.)*	Offsets	Pan … …	*Create custom offsets in home positions of all effects. Default offset = **0***
	Clear FW Image	Yes/No	*Clear firmware file from memory*
	Reprogram Slaves	Yes/No	*Install firmware from image file in all slaves*
	Save Settings	Preset 1	*Saves current fixture settings as custom presets for use in **Fixture Settings → Load Settings***
		Preset 2	
		Preset 3	
	Factory Backup (!)	Yes/No	*Restore all factory default settings (including DMX address, protocol type, Ethernet / CRMX configuration, user offsets and user presets) – hold for 5 secs.*
	Enter Factory Mode	Yes/No	*Contact GLP Service before entering this menu – changes can cause damage to the fixture that is not covered by the product warranty*

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

6. DMX control layout

Normal Mode (26 DMX channels)

Channel	Function	Description	DMX range	Default DMX	% Range	Fade
1	Pan coarse	-335° – +335° (16-bit)	0 – 65535	32767	0 – 100%	Fade
2	Pan fine					
3	Tilt coarse	-132° – +132° (16-bit)	0 – 65535	32767	0 – 100%	Fade
4	Tilt fine					
5	Color wheel 1	Open	0 – 5	0	0 – 2.0%	Snap
		Color 1 – Deep red	6 – 10		2.4 – 3.9%	Snap
		Color 2 – Blue	11 – 15		4.3 – 5.9%	Snap
		Color 3 – Deep green	16 – 20		6.3 – 7.8%	Snap
		Color 4 – Light green	21 – 25		8.2 – 9.8%	Snap
		Color 5 – Yellow	26 – 30		10.2 – 11.8%	Snap
		Color 6 – Orange	31 – 35		12.2 – 13.7%	Snap
		Color 7 – Deep blue	36 – 40		14.1 – 15.7%	Snap
		Open	41 – 43		16.1 – 16.9%	Snap
		Color wheel indexing 0 – 360° (continuous)	44 – 167		17.3 – 65.5%	Fade
		Color wheel rotation CW fast – slow	168 – 211		65.9 – 82.7%	Fade
		Color wheel rotation stop	212		83.1%	Snap
		Color wheel rotation CCW slow – fast	213 – 255		83.5 – 100%	Fade
6	Color wheel 2	Open	0 – 5	0	0 – 2.0%	Snap
		Color 1 – Lavender	6 – 10		2.4 – 3.9%	Snap
		Color 2 – Magenta	11 – 15		4.3 – 5.9%	Snap
		Color 3 – Pink	16 – 20		6.3 – 7.8%	Snap
		Color 4 – Half minus green	21 – 25		8.2 – 9.8%	Snap
		Color 5 – CTB	26 – 30		10.2 – 11.8%	Snap
		Color 6 – CTO	31 – 35		12.2 – 13.7%	Snap
		Color 7 – Amber	36 – 40		14.1 – 15.7%	Snap
		Open	41 – 43		16.1 – 16.9%	Snap
		Color wheel indexing 0 – 360° (continuous)	44 – 167		17.3 – 65.5%	Fade
		Color wheel rotation CW fast – slow	168 – 211		65.9 – 82.7%	Fade
		Color wheel rotation stop	212		83.1%	Snap
		Color wheel rotation CCW slow – fast	213 – 255		83.5 – 100%	Fade
7	Cyan	Cyan 0 – 100%	0 – 255	0	0 – 100%	Fade
8	Magenta	Magenta 0 – 100%	0 – 255	0	0 – 100%	Fade
9	Yellow	Yellow 0 – 100%	0 – 255	0	0 – 100%	Fade
10	CTO	CTO 0 – 100%	0 – 255	0	0 – 100%	Fade
11	Shutter	Shutter closed	0 – 15	255	0 – 5.9%	Snap
		Pulse, random, slow – fast	16 – 47		6.3 – 18.4%	Fade
		Pulse, slow – fast	48 – 79		18.8 – 31%	
		Pulse open, slow – fast	80 – 111		31.4 – 43.5%	
		Pulse close, slow – fast	112 – 143		43.9 – 56.1%	
		Strobe, random, slow – fast	144 – 199		56.5 – 78.0%	
		Strobe, 1 – 10 Hz	200 – 239		78.4 – 93.7%	
		Shutter open	240 – 255		94.1 – 100%	Snap

12	Dimmer coarse	Intensity 0 – 100%	0 – 65535	32768	0 – 100%	Fade
13	Dimmer fine					
14	Zoom	Narrow (spot) – wide(flood)	0 – 255	128	0 – 100%	Fade
15	Focus	Near – far	0 – 255	128	0 – 100%	Fade
16	Framing module indexing	CW indexing from 0° to -45° Center: 0° CCW indexing from 0° to +45°	0 – 128 128 129 – 255	128	0 – 50.2% 50.2% 50.6 – 100%	Fade Snap Fade
17	Framing blade 1 position / left	PI mode: In – out LR mode: Blade left side	0 – 255 0 – 255	0 0	0 – 100% 0 – 100%	Fade Fade
18	Framing blade 1 index / right	PI mode: Tilt -30° – +30° LR mode: Blade right side	0 – 255 0 – 255	128 0	0 – 100% 0 – 100%	Fade Fade
19	Framing blade 2 position / left	PI mode: In – out LR mode: Blade left side	0 – 255 0 – 255	0 0	0 – 100% 0 – 100%	Fade Fade
20	Framing blade 2 index / right	PI mode: Tilt -30° – +30° LR mode: Blade right side	0 – 255 0 – 255	128 0	0 – 100% 0 – 100%	Fade Fade
21	Framing blade 3 position / left	PI mode: In – out LR mode: Blade left side	0 – 255 0 – 255	0 0	0 – 100% 0 – 100%	Fade Fade
22	Framing blade 3 index / right	PI mode: Tilt -30° – +30° LR mode: Blade right side	0 – 255 0 – 255	128 0	0 – 100% 0 – 100%	Fade Fade
23	Framing blade 4 position / left	PI mode: In – out LR mode: Blade left side	0 – 255 0 – 255	0 0	0 – 100% 0 – 100%	Fade Fade
24	Framing blade 4 index / right	PI mode: Tilt -30° – +30° LR mode: Blade right side	0 – 255 0 – 255	128 0	0 – 100% 0 – 100%	Fade Fade
25	Iris effect	Open – closed	0 – 255	128	0 – 100%	Fade

26	Special/Control	No function	0 – 26	0	0 – 10.2%	Snap
		Performance fast*	27 – 29		10.6 – 11.4%	
		Performance normal*	30 – 32		11.8 – 12.5%	
		Performance smooth*	33 – 35		12.9 – 13.7%	
		No function	36 – 38		14.1 – 14.9%	
		Dimmer curve soft*	39 – 41		15.3 – 16.1%	
		Dimmer curve linear*	42 – 44		16.5 – 17.3%	
		No function	45 – 53		17.6 – 20.8%	
		Display off*	54 – 56		21.2 – 22%	
		Display auto*	57 – 59		22.4 – 23.1%	
		Display on*	60 – 62		23.5 – 24.3%	
		Display orientation normal*	63 – 65		24.7 – 25.5%	
		Display orientation invert*	66 – 68		25.9 – 26.7%	
		Display orientation auto*	69 – 71		27.1 – 27.8%	
		No signal = blackout*	72 – 74		28.2 – 29.0%	
		No signal = hold*	75 – 77		29.4 – 30.2%	
		No signal = play stand-alone*	78 – 80		30.6 – 31.4%	
		Capture stand-alone scene (DMX snapshot)*	81 – 83		31.8 – 32.5%	
		No function	84 – 86		32.9 – 33.7%	
		Fan regulated*	87 – 89		34.1 – 34.9%	
		Fan high speed*	90 – 92		35.3 – 36.1%	
		No function	93 – 104		36.5 – 40.8%	
		Position feedback off*	105 – 107		41.2 – 42.0%	
		Position feedback on*	108 – 110		42.4 – 43.1%	
		Effect shortcuts off*	111 – 113		43.5 – 44.3%	
		Effect shortcuts on*	114 – 116		44.7 – 45.5%	
		Tilt invert off*	117 – 119		45.9 – 46.7%	
		Tilt invert on*	120 – 122		47.1 – 47.8%	
		Pan invert off*	123 – 125		48.2 – 49.0%	
		Pan invert on*	126 – 128		49.4 – 50.2%	
		Zoom invert off*	129 – 131		50.6 – 51.4%	
		Zoom invert on*	132 – 134		51.8 – 52.5%	
		No function	135 – 140		52.9 – 54.9%	
		Focus tracking off*	141 – 143		55.3 – 56.1%	
		Focus tracking near*	144 – 146		56.5 – 57.3%	
		Focus tracking medium*	147 – 149		57.6 – 58.4%	
		Focus tracking far*	150 – 152		58.8 – 59.6%	
		No function	153 – 158		60.0 – 62.0%	
		Framing Control = PI Mode, (position/Index)*	159 – 161		62.4 – 63.1%	
		Framing Control = LR Mode, (left/right)*	162 – 164		63.5 – 64.3%	
		No function	165 – 191		64.7 – 74.9%	
		Lamp power Eco*	192 – 194		75.3 – 76.1%	
		Lamp power Normal*	195 – 197		76.5 – 77.3%	
		No function	198 – 200		77.6 – 78.4%	
		Auto lamp on enabled*	201 – 203		78.8 – 79.6%	
		Auto lamp on disabled*	204 – 206		80.0 – 80.8%	
		No function	207 – 209		81.2 – 82.0%	
		Lamp on*	210 – 212		82.4 – 83.1%	
		Lamp off*	213 – 215		83.5 – 84.3%	
		No function	216 – 245		84.7 – 96.1%	
		Reset pan/tilt only *	246 – 248		96.5 – 97.3%	
		Reset head only*	249 – 251		97.6 – 98.4%	
		Reset all*	252 – 255		98.8 – 100%	

* Hold value for 3 seconds to apply

Notes

*Default settings are written in **bold type**.*

To apply a command on the Special/Control channel, send the corresponding DMX value for 3 seconds.

Percentage values are calculated by dividing DMX values by 2.56 and rounding to the nearest 0.1%.

7. Status and error codes

This section provides a key to the five-letter status and error codes used in the Highlander Wash.

*All states except **HOT** are sticky, meaning they are shown in the fixture's control panel display until the next power cycle or the next motor reset.*

Motor errors are usually issued by a failed self-test (motor not connected, PCBA not connected) or position feedback errors during a reset (motors with position feedback only).

Code	Notes
** HEAT*	*Overtemperature condition detected. Lamp housing temperature sensor exceeded threshold, or temperature switch tripped. Lamp will be powered off and cooldown sequence will be initiated.*
** HOT*	*Lamp failed to strike. Possible causes: lamp was too hot, no lamp installed, or ELD (Electronic Lamp Detector) connector is missing. In addition, when you douse the lamp the fixture will display a HOT code until it is cool enough to power down the fixture.*
** FOCER*	*Focus error*
** ZOOER*	*Zoom error*
** CW1ER*	*Color Wheel 1 error*
** CW2ER*	*Color Wheel 2 error*
** CMYER*	*Cyan, Magenta, Yellow or CTO error*
** FRAER*	*Error on one or more framing blades or on framing rotation*
** PANER*	*Pan error*
** TILER*	*Tilt error*
** DIMER*	*Dimmer error*
** SHUER*	*Shutter error*
** ELDER*	*Issued if lamp is doused unexpectedly or if communication with the ELD is lost / not possible*
** MEMER*	*Communication with onboard flash memory is not possible, or written data in flash memory cannot be read properly (inability to read flash data can be due to end of flash memory lifetime)*
** FANER*	*Fan error*