User Manual

KNV SYSTEM

KNV DOT

KNV LINE

Firmware Version v.34

GLP

Document revisions

Revision number	Notes	Released
A	First version available. Firmware v.23	April 2020
V34-20210824-1	Pixel configuration options added. Main LED PWM frequency now adjustable. PSU control panel display modified. Firmware v.34	August 2021

GLP® KNV Dot and Line User Manual – Revision V34-20210820-1

This manual covers fixture software version v.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 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! Read the KNV Dot and Line Quick Start and Safety Manual supplied with the product and available for download from www.glp.de before installing, operating or servicing the product. The Quick Start and Safety Manual contains important information for the safe use of KNV Dot and Line 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, contact your GLP supplier for assistance. Your GLP supplier will be happy to help.

The user documentation for GLP® KNV Dot and Line lighting fixtures consists of three documents:

- The **KNV Dot and Line Quick Start and Safety Manual**, supplied with KNV 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 dimensions drawings and technical specifications for the product.
- The **KNV Dot and Line User Manual**, available for download from www.glp.de. The User Manual explains features and control of KNV fixtures.
- The **KNV Dot and Line DMX Channel Index**, available for download from www.glp.de. The Channel Index is a separate document containing the DMX control channel layout and DMX commands available in fixtures. This information is also included in the User Manual.

KNV Dot and Line fixtures are 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 product's Quick Start and Safety Manual 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 Quick Start and Safety Manual and this user manual.
- Check the fixture software version indicated on page 2 of this user manual and then use the control panel on the KNV Line or KNV Dot PSU 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 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 user 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 fixtures, please contact an authorized GLP distributor (see list of distributors at www.glp.de).

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
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2. KNV Dot overview

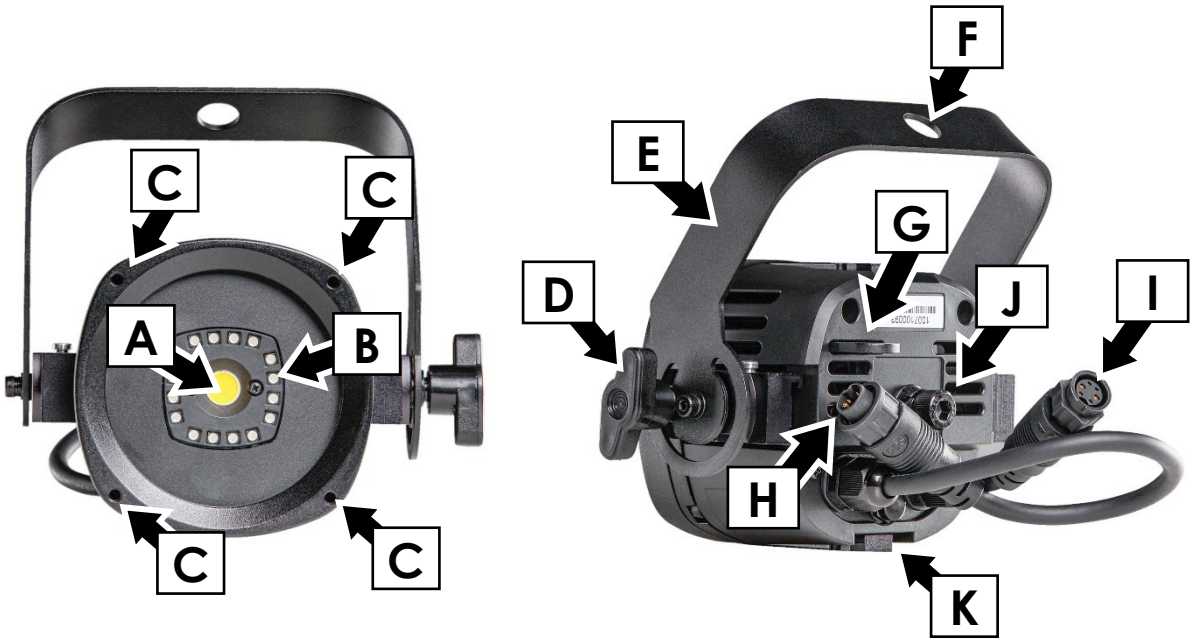

Figure 1. KNV Dot overview

A – White LED

B – 16 x RGB LEDs

C – Mounting points for optical accessories (M3 threaded holes)

D – Handscrew for tilt adjustment

E – KNV Dot Hanging Bracket

F – 13 mm hole for rigging clamp bolt or mounting bolt

G – Safety cable attachment point

H – Combined DC power and data IN connector

I – Combined DC power and data THRU connector

J – M8 Allen screw for custom mounting hardware

K – KNV Dot Slide Connector channel (4 x channels: top, bottom, left, right)

3. KNV Line overview

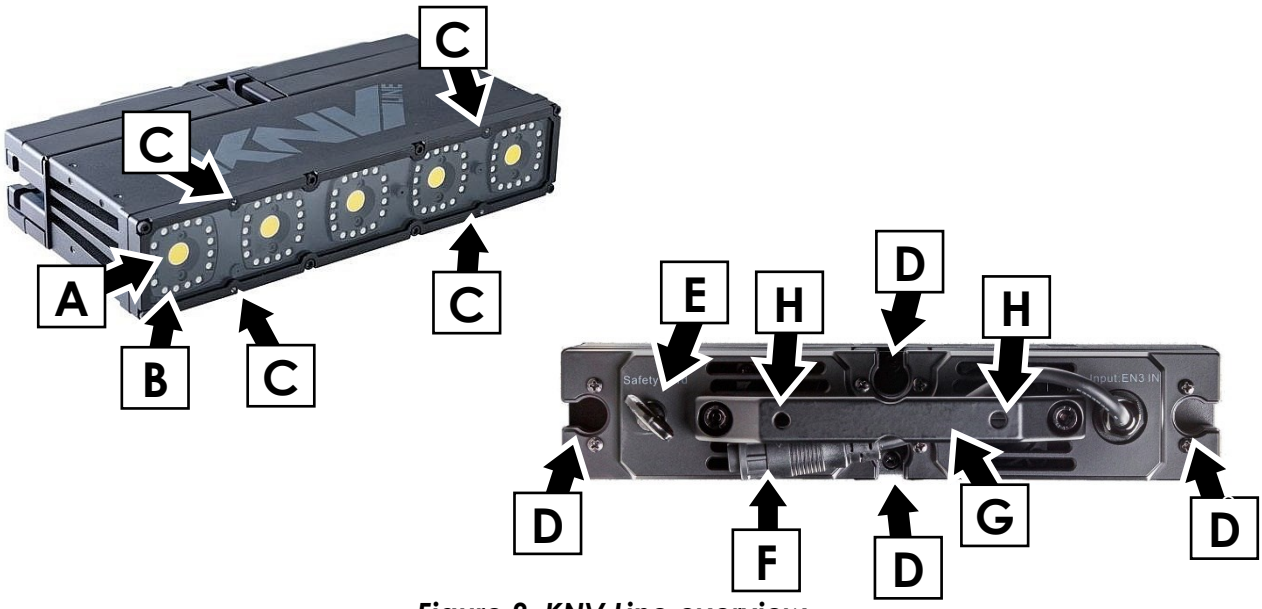

Figure 2. KNV Line overview

A – White LED

B – 16 x RGB LEDs

C – Mounting points for optical accessories (M3 threaded holes)

D – Channels for KNV Module Connectors

E – Safety cable attachment point

F – Combined DC power and data IN connector

G – Carrying handle

H – M6 threaded holes for fasteners on mounting hardware such as KNV system connector plate

4. KNV PSU overview

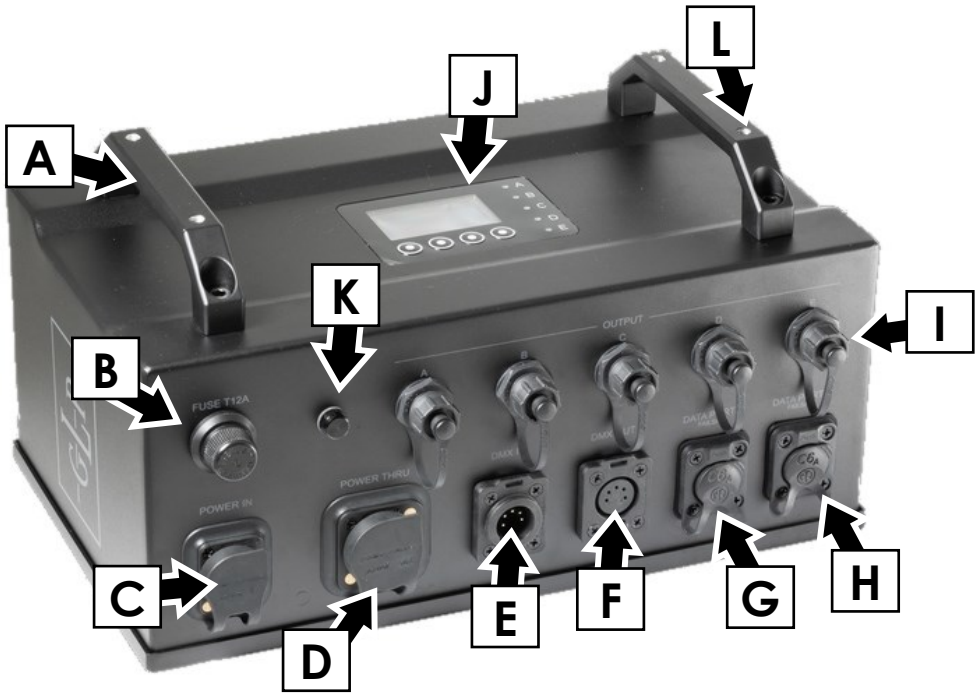

Figure 3. KNV PSU overview

A – Carrying handle

B – Primary fuse

C – Mains POWER IN connector

D – Mains POWER THRU connector

E – DMX IN connector, 5-pin XLR

F – DMX THRU connector, 5-pin XLR

G – Data port A (Art-Net/SACN), Neutrik EtherCON, failsafe

H – Data port B (Art-Net/SACN), Neutrik EtherCON, failsafe

I – Combined control data and DC power outputs A – E

J – Control panel with backlit display

K – Pressure relief valve

L – M6 threaded holes for mounting hardware (4 x holes total)

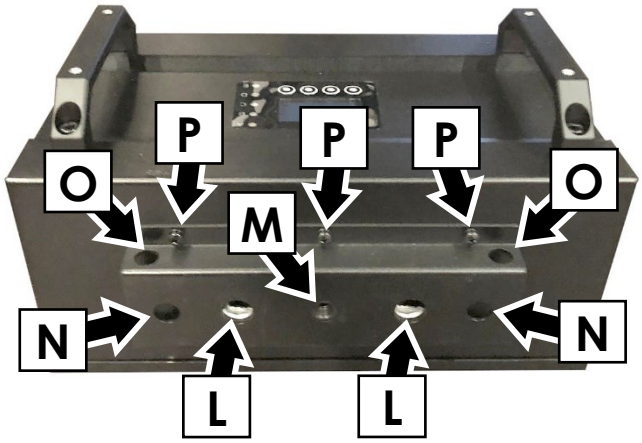

Figure 4. PSU mounting points

L – Quarter-turn fastener attachment points for 89 mm GLP Omega Bracket

M – Threaded hole for M10 mounting bolt

N – Safety cable / rigging clamp attachment point (Ø13 mm)

O – Safety cable attachment point

P – Mounting plate screw (6 x Phillips head screws total)

The PSU's mounting plate (the plate with the attachment points shown in Figure 4) can be repositioned by unscrewing the six mounting plate screws **P**, moving the mounting plate around to the side of the PSU that is opposite the control panel and reinstalling the six screws in the corresponding holes in that side.

5. Features

The KNV Dot and Line from GLP are powerful strobe/color effect lighting fixtures that can be interlocked and combined, giving enormous creative possibilities. When KNV Dot and Line fixtures are fastened together using hardware accessories from GLP, their pixel pitch and DMX control setup coordinate easily with KNV Cube and Arc fixtures. This allows all four types of fixture to be integrated easily into creative installations.

KNV Dot and Line fixtures combine powerful white light output from one 30 W cool white LED per pixel with bright color output from sixteen 0.25 W high-quality RGB LEDs per pixel in a circle around the white LED. The arrangement gives a total luminous flux of up to 2 200 lumens per pixel.

Fixtures can be used indoors in permanent and temporary installations. Their rugged construction and IP54 rating mean that they can also be used outdoors in temporary installations if precautions are taken to prevent immersion in water and damage from direct sunlight. They can be placed upright on a level surface or suspended from a suitable structure as described in the KNV Dot and Line Quick Start and Installation Manual.

Four mounting points with M3 threaded holes are provided on the front of fixtures for mounting optical accessories from GLP.

Power and data can be daisy-chained between KNV Dots.

All fixtures can be interlocked with quick-release mechanical fasteners for ease of installation.

The KNV is not suitable for household use, for use in any location where unattended children have access to it, or for use in permanent outdoor installations.

Controlling fixtures and the KNV PSU

KNV Dot and Line fixtures can be controlled as individual pixels or as groups of pixels using any standard DMX controller. White and color output can be controlled separately or combined for stunning strobe, continuous output and wash effects. Using the powerful multilayer FX engine integrated into the KNV system, complex dynamic effects can be created quickly with no need for a separate pixel-mapping media server.

Fixtures are set up and controlled via the KNV PSU, a separate external power supply and control unit with an integrated control panel and display. Each KNV PSU can manage up to 25 pixels. These pixels can consist of 25 x KNV Dot fixtures, 5 x KNV Line fixtures, or a mixture of the two fixture types. Depending on which DMX mode you use, you can group control the pixels in groups or individually. Individual pixel control combined with the freedom to locate individual pixels almost anywhere you want in the installation gives enormous creative flexibility.

DMX control commands are similar – but not identical –to those of KNV Cube and Arc fixtures. Fixtures can be configured to behave identically or symmetrically if they are placed in the installation and pixel mapped with this in mind. For detailed guidance on setting up pixel mapping, see page 26.

White LEDs

KNV Dot and Line fixtures feature one or five cool white LEDs respectively that produce powerful white light at 5000 K. White LEDs can be controlled together or individually depending on the DMX control mode selected.

The white LEDs offer shutter and dimming effects including a powerful strobe, flashing at up to 16.67 Hz, or operate continuously to give high-output wash effects with a 120° beam angle.

You can also select from a wide range of pre-programmed dynamic FX patterns to run on the white LEDs.

Color LEDs

The Dot and Line fixtures' RGB LEDs are arranged into circles of 16 LEDs around each white LED. RGB LEDs can be controlled together or individually depending on the DMX control mode selected.

You can run a wide range of color effects (including strobe effects and dynamic FX patterns) on the RGB LEDs, or you can operate them continuously using RGB color mixing to provide a color wash with a 120° beam angle.

You can also use the RGB LEDs to add blue or red to the powerful white LEDs and adjust their color temperature.

Pixel mapping and pixel orientation

See the separate chapter 'KNV Dot and Line Pixel mapping' on page 26 for details of pixel mapping and co-ordination with KNV Cube and Arc fixtures. This chapter also gives details of the test pattern that you can use to check or visualize pixel mapping in arrays of multiple KNV Dot or Line fixtures.

Extra shutter

In DMX modes 1, 6 and 7 an extra shutter channel is available. You can choose whether this shutter effect should run on all LEDs (RGBW), on RGB LEDs only or on White LEDs only by making a selection via DMX on the *Control / Settings* channel in modes 1,6 and 7 or using the fixture's control panel.

The default setting for the extra shutter effect is RGBW.

Flare effect

A feature which we call the *Flare effect* can be applied to flashes when they are activated on strobe channels. The *Flare effect* is an interference effect that you can superimpose onto a flash. This effect is particularly impressive when combined with increased flash length.

Random pixel sparkle

The *Flare effect* channels include a *Random pixel* setting. This setting applies the flare effect to individual pixels at random, giving an impressive sparkling effect. Again, we recommend that you try combining this effect with increased flash length.

Hyperspeed

Hyperspeed is a very fast flash rate on the Shutter effects channels that gives a very powerful effect.

FX

The KNV Dot and Line share the KNV Cube and Arc's pre-programmed dynamic FX that give you quick access to a wide range of dynamic patterns and movement options for the pixels in an array of fixtures.

When FX are active, you can control them using six DMX channels:

- Five dedicated channels let you select an FX, set a crossfading speed, set pattern orientation, adjust FX length in pixels and set offsets.
- In addition to these channels, if an FX is active the third strobe channel becomes a sixth FX control channel and lets you adjust FX speed (see details below).

Dedicated FX channels

- The first FX channel, the **FX Selection** channel, lets you choose and activate an FX from a list of dynamic FX patterns.

  If this channel is set to zero, the third strobe channel controls strobe flash rate. If an FX is selected on this channel, the third strobe channel controls FX speed.
- The second FX channel, the **FX Crossfading** channel, sets the time it takes for the FX to fade out. You can set FX to crossfading and apply a crossfading time from fast to slow. You can also set FX to leave a tail behind them and apply a crossfading time for the tail from slow to fast.
- The third FX channel, the **FX Orientation** channel, lets you select from a long list of options for the orientation of the FX. Running the same FX but with different orientation options in multiple fixtures is a fast way to set up symmetrical and/or coordinated effects.
- The fourth FX channel, the **FX Offset** channel, lets you apply offsets to the FX, a feature which lets you quickly set up synchronized FX chases in multiple fixtures.

  Setting an offset determines the pixel *in the pattern* (not the pixel on the fixture) where the FX pattern will start. For example, if you set the length of an FX pattern to 10 pixels and you apply an offset of 6 pixels, the fixture will blackout for the time it takes the FX pattern to run on pixels 1 – 5, then the FX pattern will appear on the fixture when the pattern reaches pixel 6.
- The fifth FX control channel, the **FX Length** channel, lets you set the total length in pixels of the FX pattern.

FX speed control

If you select an FX on the *FX Selection* channel, the third strobe channel is redeployed and becomes the **FX Speed** control channel. Instead of controlling strobe flash rate, it now becomes the sixth FX control channel and lets you adjust the speed of the FX.

Setting up FX chases

If you select the same FX with the same speed in multiple fixtures, you can use the other FX channels in combination to set up an FX chase across multiple fixtures:

- **FX Crossfading / Crossfading with tail** sets the rate at which one FX pattern step fades out before the next pattern step arrives.
- **FX Orientation** can be used to add variety to a chase or set up multiple coordinated chases in different groups of fixtures.
- **FX Offset** sets the pixel on which the FX pattern will start.

  An FX pattern with no offset starts on pixel 1. You will obtain this if you set the FX Offset channel to zero and also if you set the FX Offset channel to 001.
- **FX Length** sets the number of pixels over which the FX pattern will run.

  The normal FX length is 5 pixels. You will obtain this 5-pixel length if you set the FX Length channel to zero. It is not possible to set FX Length to less than 5 pixels.

  When you set up FX chases, you will normally achieve the best results by increasing FX length in steps of 5 pixels (one fixture).

To obtain synchronized chases in multiple fixtures you must set up FX Length and FX Offset parameters in combination. Here is how FX Length and FX Offset work in a single fixture:

- FX Length = Off (DMX value zero on the *FX Length* DMX channel): The FX pattern will have the normal length of five pixels. It will start at pixel 1, run from pixel 1 to pixel 5 and then immediately start at pixel 1 again.
- FX Length = 30 (DMX value 030 on the *FX Length* DMX channel): The FX pattern will start at pixel 1, run from pixel 1 to pixel 5 and then black out for the time it takes to run the FX pattern on pixels 6 – 30.
- FX Offset = Off (DMX value zero on the *FX Offset* DMX channel): The FX pattern will start at pixel 1.
- FX Offset = 6 (DMX value 006 on the *FX Offset* DMX channel): The FX pattern will start at pixel 6. If you have set an FX length of 30, the pixels will black out for the time it takes to run the FX pattern on pixels 1 – 5, then run the FX pattern on pixels 6 – 10, then black out for the time it takes to run the FX pattern on pixels 11 – 30.

To create a single FX pattern chase that will run across an array of multiple fixtures, you need to:

- Set FX Length in all the fixtures to the total number of pixels that the pattern will run across, and
- Set FX Offset in each fixture in a sequence five pixels apart.

This means that, if you want an FX pattern to run across six fixtures in a horizontal row and return immediately to pixel 1 when it reaches pixel 30 at the end of the row, you must set FX Length to 30 on all six fixtures and set FX Offsets with a gap of five pixels between fixtures. To give a concrete example, here is how you must set up each fixture:

- Fixture 1: FX Length = 30, FX Offset = 1
  FX will start at Pixel 1 of the 30 pixels in FX Length and run on pixels 1 - 5

- Fixture 2: FX Length = 30, FX Offset = 6
  FX will start at Pixel 6 of the 30 pixels in FX Length and run on pixels 6 - 10
- Fixture 3: FX Length = 30, FX Offset = 11
  FX will start at Pixel 11 of the 30 pixels in FX Length and run on pixels 11 – 15
- Fixture 4: FX Length = 30, FX Offset = 16
  FX will start at Pixel 16 of the 30 pixels in FX Length and run on pixels 16 - 20
- Fixture 5: FX Length = 30, FX Offset = 21
  FX will start at Pixel 21 of the 30 pixels in FX Length and run on pixels 21 - 25
- Fixture 6: FX Length = 30, FX Offset = 26
  FX will start at Pixel 26 of the 30 pixels in FX Length and run on pixels 26 - 30

RGB color generator

The RGB color generator effect available in DMX modes 3, 5 and 8 gives instant access to automatic color effects such as random colors, ramp up/down colors and random pixel colors. These effects would be difficult to program on a DMX controller.

Dimming curves

See Figure 5. You can select from three dimming curves using the PSU's control panel or the *Control / Settings* DMX channel:

- **Linear** makes the dimming curve appear to increase and decrease evenly throughout the dimming range.
- **Soft** gives finer control at low light levels (where the eye is more sensitive to changes in light level) and coarser control at high levels.
- **Esoft (Extra-soft)** gives even finer control at low light levels even and coarser control at high levels.

The default setting is **Soft**.

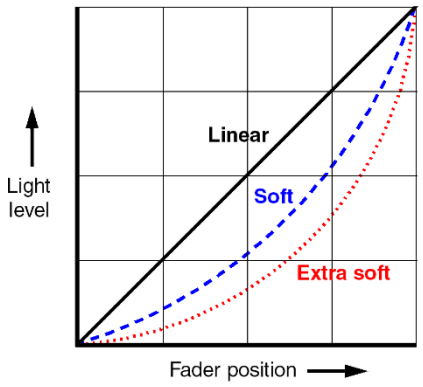

Figure 5. Dimming curves

Dimmer Flash

A shortcut to creating single flashes is available if you activate *Dimmer Flash* using the *Control / Settings* DMX channel or the *Fixture Settings* menu in the fixture's control panel.

When *Dimmer Flash* mode is enabled, if the Flash rate channel (the third of the Strobe channels) is set to zero, any new DMX value that you input on the Intensity channel (the first of the Strobe channels) will produce a single flash. In effect, all you need to do is 'nudge the dimmer fader' to produce a flash.

If you activate this function, you can tap flashes in sync with a music beat, easily keeping track of changes in the beat.

Output limitation

It is possible to limit LEDs to 10, 20, 40, 60 or 80 percent of their maximum output on the *Control / Settings* channel or using the fixture's control panel. You can set the limits separately for White and RGB LEDs.

Behavior when the fixture is not receiving a DMX signal

You can set the fixture to react in three 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):

- **No DMX = Hold** sets the fixture to continue obeying the last DMX values it received. This is the default setting.

  If no DMX signal was being received, the fixture will black out.

- **No DMX = Blackout** sets the fixture to black out.
- **No DMX = Stand-alone** sets the fixture to show the scene that has been stored using *Capture scene* (see below).

To program the scene that the fixture will display if it is set to Stand-alone and no DMX signal is present, use the *Capture scene* command:

- **No DMX = Capture scene** stores the scene that the fixture is currently displaying. Once stored, the scene is used as the fixture's *Stand-alone* scene.

All these settings are available via DMX on the *Control / Settings* channel and in the fixture's control panel.

To avoid any possibility of unexpected behavior from a powerful strobe light if the DMX signal fails, we recommend that you always set the fixture to *Blackout*.

Display

The KNV PSU's backlit graphic LCD display lets you set up control and behavior in the fixtures that you connect to the PSU. See Chapters 6 and 7 for more details.

Using the *Control / Settings* DMX channel or the fixture's control panel you can:

- Change the display orientation from Normal to Inverted for easier reading if the PSU is flown upside-down in a rig.
- Choose between three different display modes:
  - **Auto**: The display will automatically switch off after a few seconds if the PSU is receiving a valid control signal and has not detected an error. If the PSU is not receiving a valid control signal the display will flash. If the PSU has detected an error, the display will remain constantly on and show the error. **Auto** is the default setting.
  - **On**: The display stays on constantly. This setting can be useful when you are configuring or testing the installation.
  - **Off**: The display will automatically switch off after a few seconds even if the PSU is not receiving a valid control signal or if it has detected an error.

Fixture information

The **Information** menu in the control panel gives access to information such as the PSU's serial number and currently installed software version, a list of any errors that have been logged, readouts from the PSU's counters and temperature sensors, and general device information. You can also see a readout of the quality of the DMX signal that the PSU is receiving.

Custom settings and factory defaults

You can customize settings (DMX mode, Pixel orientation, etc.) via DMX or using the PSU's control panel. Custom settings are stored after a power off/on cycle and after a reset.

Two options are available in the control panel for deleting multiple custom settings and restoring defaults:

- **Load Setting Defaults** reloads all the factory default settings **except** DMX address, DMX mode and Control protocol. This option returns the PSU and connected fixtures to baseline settings (Output limitation, Pixel orientation, Dimmer curve, etc.) without affecting their basic configuration in an installation.
- **Load Factory Backup** reloads all the factory default settings **including** DMX address, DMX mode and Control Protocol. This option reinitializes the PSU completely and returns it to its state when it left the factory.

6. Control menus and LCD display

Warning! DMX control is disabled when the control menus are active. Be prepared for connected fixtures to emit strong light as soon as you exit the control menus.

The control panel and LCD display provide access to user settings, readouts and utilities.

See Figure 6. The status LEDs **A – E** light to indicate the status of outputs A – E (see next page).

If the control panel display is in sleep mode, pressing any button activates the display.

You can change display orientation and display mode options on the *DMX Control / Settings* channel and in the *Display Orientation* and *Display Mode* menus in the control panel.

Default screen

When the PSU boots up it carries out a reset. Once the reset is completed, the panel displays the default screen. See Figure 6.

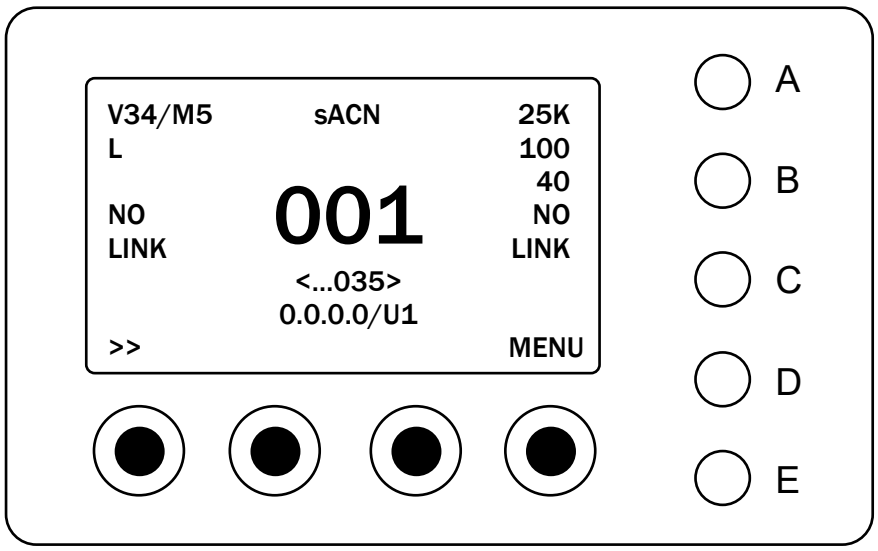

Figure 6. Default screen

The default screen as shown in Figure 6 gives the following commands and information:

>>	Opens shortcuts menu
MENU	Opens main control menus
NO LINK	Status of etherCon port
V34	Currently installed software version

/M5	Currently selected control mode
sACN	Currently selected signal source
001	Current DMX start address
(…035)	Highest DMX channel occupied (i.e. last channel in DMX footprint)
25k	Currently selected PWM
0.0.0.0/U1	Current IP Address and DMX universe (not available in battery mode)
L	Dimmer curve (L = Linear, S = Soft, E >= Extra Soft)
100	White output limit (100% = No limit, 10…80% = output limit enabled)
40	RGB output limit (100% = No limit, 10…80% = output limit enabled)

Main control menus

See Figure 7. Opening the main control menus from the default screen gives access to the full menu structure. 'Control menu layout' on page 22 lists the contents of the control menus.

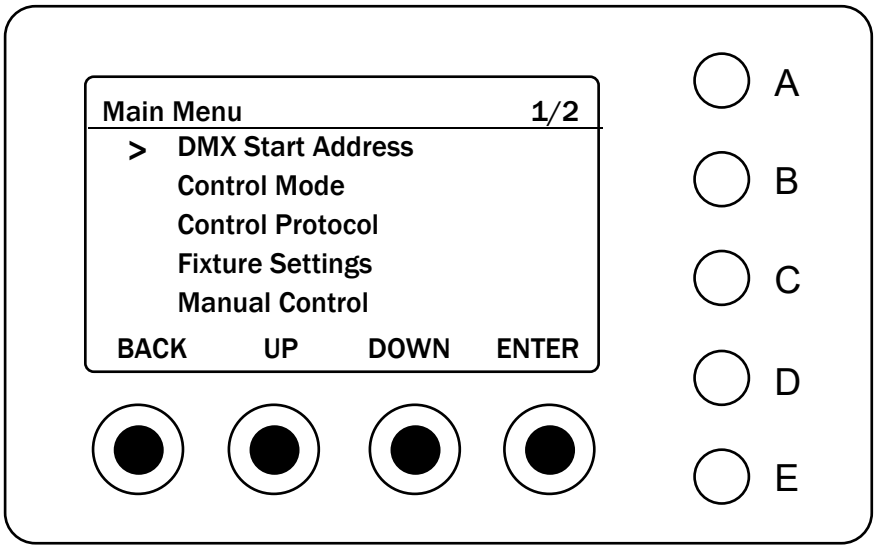

Figure 7. Control panel display

Control buttons

The functions of the four buttons below the display window are indicated in the display. The main functions are as shown in Figure 7:

- **BACK** – Go back one level and return to the top of the menu.
- **UP** – Scroll up or increase a number.
- **DOWN** – Scroll down or reduce a number.
- **ENTER** – Enter a menu, select a setting or implement a command.

Status LEDs

The five LEDs **A** to **E** indicate the status of the corresponding power/data outputs as follows:

- **WHITE** – Output in testing mode.
- **GREEN** – Output working normally, no errors detected.
- **GREEN FLASHING** – Output sending/receiving data, no errors detected.
- **RED** – Output has detected an error (overload, overcurrent, short circuit etc.). Shut down power to PSU and check all connected fixtures, cables and connections.

Shortcut menu

See Figure 8. Opening the *Shortcut Menu* from the default screen gives quick access to the PSU's basic functions:

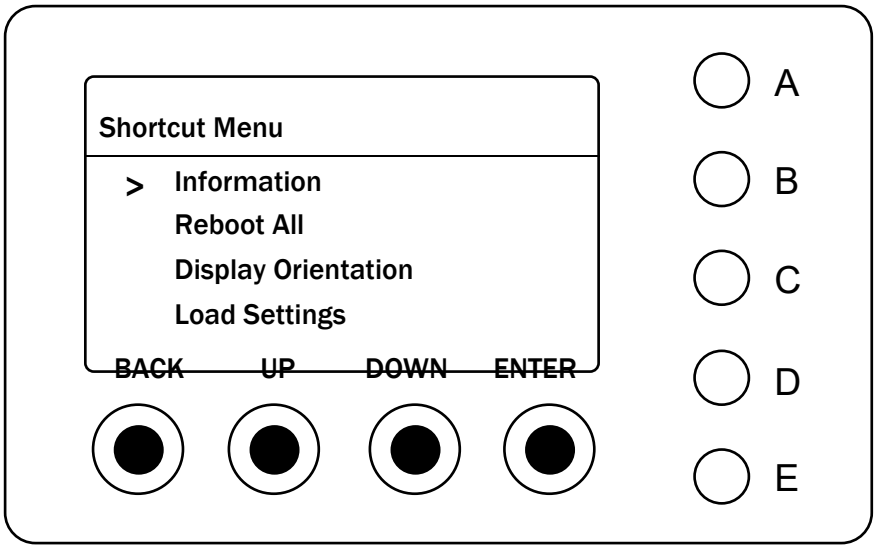

Figure 8. Shortcut menu

The Shortcut Menu contains the following submenus (see 'Control menu layout' on page 22 for full details of menu items).

Information	*Scroll through PSU information readouts*
Reboot All	*Reboot all functions*
Display Orientation	*Invert control panel display*
Load Settings (hold for 3 seconds to confirm)	*Load Preset 1, 2 or 3, or load default settings (except DMX address, DMX mode and control mode)*
Load Factory Backup (hold for 5 seconds to confirm)	*Load all factory default settings (including DMX address, DMX mode and control mode)*

7. Control protocol setup

The KNV PSU receives control data from a DMX controller and manages the control of up to 25 pixels (25 x KNV Dot fixtures, 5 x KNV Line fixtures or a mixture of the two fixture types). Setting up control of KNV Dot and Line fixtures therefore involves opening the menus in the control panel of the KNV PSU that the fixtures are connected to and configuring the PSU's DMX Address, DMX Mode and Control Protocol (DMX, Art-Net or sACN).

If you are using Art-Net or sACN you also need to make sure that the PSU will have a correct IP address and SubNet Mask.

The DMX, Art-Net and sACN fixture control settings described below 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.

Setting up fixture control

KNV Dot and Line fixtures can be controlled via USITT512 DMX, Art-Net network or sACN network. The KNV PSU's EtherCON in and out ports are fail-safe (if power to the PSU is lost or the PSU stops working, the control data signal will still be relayed between the ports).

If you would like advice with planning and installing a suitable control link, your GLP supplier will be happy to provide assistance.

DMX

To configure fixtures for DMX control over a standard DMX cable link, open the menus in the KNV PSU's control panel and make the following adjustments:

1. In the **DMX Address** menu, use the UP and DOWN buttons to scroll to a suitable start address, then press ENTER to confirm.
2. In the **Control Mode** menu, scroll to and select the DMX mode you want to use to control the fixture.
3. In **Protocol Setup → Protocol Type**, select **DMX**.

You can now the 25 pixels on the fixtures connected to the PSU's five outputs using standard DMX.

Art-Net

To configure fixtures connected to a KNV PSU to receive control data via Art-Net over an Ethernet network, open the menus in the PSU's control panel and make the following adjustments:

1. In the **DMX Address** menu, use the UP and DOWN buttons to scroll to a suitable start address, then press ENTER to confirm.
2. In the **Control Mode** menu, scroll to and select the DMX mode you want to use to control the fixture.
3. In **Protocol Setup → Protocol Type**, select **Art-Net**.

4. In the **Ethernet Config** menu, configure each PSU with its own unique IP address. To do this, you can either:
   a) set each PSU to generate its own IP address by choosing the ranges 2.x.x.x or 10.x.x.x (Art-Net specification),
   b) set each PSU to acquire an IP address automatically by DHCP, or
   c) assign IP addresses manually by entering individual IP addresses and Subnet masks.
5. 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.

You can now control the 25 pixels on the fixtures connected to the PSU's five outputs via Art-Net.

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 the KNV PSUs or switch to sACN.

sACN

To configure fixtures connected to a KNV PSU to receive control data via sACN over an Ethernet network, open the menus in the PSU's control panel and make the following adjustments:

1. In the **DMX Address** menu, use the UP and DOWN buttons to scroll to a suitable start address, then press ENTER to confirm.
2. In the **Control Mode** menu, scroll to and select the DMX mode you want to use to control the fixture.
3. In **Protocol Setup → Protocol Type**, select **sACN**.
4. In the **Ethernet Config** menu, configure each PSU with its own unique IP address. To do this, you can either:
   d) set each PSU to generate its own IP address by choosing the ranges 2.x.x.x or 10.x.x.x (Art-Net specification),
   e) set each PSU to acquire an IP address automatically by DHCP, or
   f) assign IP addresses manually by entering individual IP addresses and Subnet masks.
5. Select an sACN universe from 00001 to 63999.

You can now control the 25 pixels on the fixtures connected to the PSU's five outputs via sACN.

8. Control menu layout

Menus			***Notes***
DMX Address			
001-512			*Enter DMX address*
Control Mode			
Mode 1			*RGBW + Shutter*
Mode 2			*W Strobe FX + RGB Strobe FX*
Mode 3			*RGB Strobe FX + SPix W*
Mode 4			*W Strobe FX + SPix RGB*
Mode 5			*Multi-layer*
Mode 6			*SPix RGBW 8-bit*
Mode 7			*SPix RGBW 16-bit*
Mode 8			*SPix RGBW Strobe FX*
Protocol Setup			
Protocol Type	**DMX**		*Control via DMX protocol*
	ArtNet		*Control via Art-Net protocol*
	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*
		Custom IP	*Use custom IP address*
		DHCP	*Get IP address by DHCP*
	Custom IP address	XXX.XXX.XXX.XXX	*Enter custom IP address*
	Custom IP Subnet	XXX.XXX.XXX.XXX	*Enter custom subnet mask*
	ArtNet Port	**0** - 32768	*Set Art-Net port*
	sACN Universe	**1** - 63999	*Set sACN universe*
Pixel Configuration			
A1 … <**01**..25>			*Link controllable pixel positions to a physical pixel:* • *A1 is the first pixel of output A.* • *A2 is the second pixel of output A.* • *Etc.*
A2 … <01..**02**..25>			
A3 … <01..**03**..25>			
A4 … <01..**04**..25>			
A5 … <01..**05**..25>			
B1 … <01..**06**..25>			
B2 … <01..**07**..25>			
… Etc. …			
E4 … <01..**24**..25>			
E5 … <01..**25**>			
Auto configuration	Confirm (hold for 3 seconds to activate)		*Loads the default pixel position configuration (A1= pixel 01, A2= pixel 02, A3= pixel 03 …. E5= pixel 25)*

Fixture Settings			
Pixel Orientation	**Normal**		*Set pixel orientation: normal or rotated clockwise*
	90°		
	180°		
	270°		
Pixel Mirror	**Off**		*Flip pixels right-to-left*
	On		
Dimmer Curve	Linear		*Select dimming curve*
	Soft		
	ESoft		
Dimmer Flash	**Off**		*Set fixture to flash when dimmer channel value is moved*
	On		
Extra Shutter	**RGBW**		*Sets which LEDs are used in the extra shutter effect that is available in DMX Modes 1, 6 and 7.*
	White		
	RGB		
Output Limit W	**Off**		*Set maximum output for White LEDs*
	80%		
	60%		
	40%		
	20%		
	10%		
Output Limit RGB	**Off**		*Set maximum output for RGB LEDs*
	80%		
	60%		
	40%		
	20%		
	10%		
No Signal	Blackout		*Fixture blacks out when no DMX signal present*
	Hold		*Fixture holds current scene when no DMX signal present*
	Stand Alone		*Fixture goes to Stand-Alone scene when no DMX signal present*
	Capture DMX Values	Confirm (hold for 3 seconds to activate)	*Capture current scene for use as Stand-Alone scene*
Display Mode	**Auto**		*Display sleeps unless error detected or no valid control signal*
	On		*Display constantly on*
	Off		*Display off, even if error detected or no valid control signal*
Display Orientation	**Normal**		*Invert display*
	Upside-down		

Fan Mode	**Regulated**		*Fan speed temperature-regulated*
	High		*Fan speed constant high*
	Medium		*Fan speed constant medium*
	Low		*Fan speed constant low*
Effect Sync	**Internal**		*Invert display*
	Immediately		
PWM Frequency	2400 Hz	Main LED PWM frequency = 2400 Hz	*Adjust PWM frequency of main LED (RGB LED frequency remains unchanged at 18.3 kHz)*
	3000 Hz	**Main LED PWM frequency = 3000 Hz**	
	4800 Hz	Main LED PWM frequency = 4800 Hz	
	9600 Hz	Main LED PWM frequency = 9600 Hz	
	25 kHz	Main LED PWM frequency = 25 kHz	
Load Settings	Preset 1	Confirm (hold for 3 seconds to activate)	*Load custom fixture setting Preset 1 - 3*
	Preset 2	Confirm (hold for 3 seconds to activate)	
	Preset 3	Confirm (hold for 3 seconds to activate)	
	Default	Confirm (hold for 3 seconds to activate)	*Load factory default settings apart from DMX address, DMX mode, Control protocol*
Information			
Show Errorlist			*Show list of any errors stored in memory*
Show Serial Number			*Show PSU's serial number*
Show SW Version			*Show PSU's currently installed firmware version*
Show device info			*Shows general information for the PSU*
Show device hours			*Show total number of hours powered on (resettable and non-resettable)*
Device power cycles			*Show total number of power cycles (resettable and non-resettable)*
Show signal quality			*Show quality of DMX signal being received*
Show temperature			*Shows current temperatures of the PSU's sensors*

Manual Control				
Reset All	**No**			*Reboot all of the PSU's functions*
	Yes			
Manual DMX	Red	000 … 255		*Manually set effects (values correspond to DMX values)*
	Green	000 … 255		
	Blue	000 … 255		
	White	000 … 255		
	Shutter	000 … 255		
	Load No-Signal Scene	Confirm		*Load stored Stand-Alone scene*
	Save as No-Signal Scene	Confirm		*Store current manually set values as Stand-Alone scene*
	Capture DMX values	Confirm		*Store current DMX values as Stand-Alone scene*
	Reset Manual values	Confirm		*Reset all manually set values to zero*
Service				
Test Sequence	Confirm			*Run test sequence on all connected fixtures*
Fixture update				*Loads new software to all connected fixtures at outputs A - E*
Advanced	Confirm 3 seconds			
	Reset Counters	Device hours	Confirm (hold for 3 s. to activate)	*Reset PSU's internal counters*
		Device power cycles	Confirm (hold for 3 s. to activate)	
		Max. temperatures	Confirm (hold for 3 s. to activate)	*Reset PSU's internal maximum temperature log*
	Save Settings	Preset 1	Confirm (hold for 3 s. to activate)	*Load current PSU settings as presets that can be recalled in Fixture Settings → Load Settings*
		Preset 2	Confirm (hold for 3 s. to activate)	
		Preset 3	Confirm (hold for 3 s. to activate)	
	Load Factory Backup		Confirm (hold for 5 seconds to activate)	*Load factory default settings including DMX address, DMX mode and control protocol* ***Important!*** *May result in loss of communication with DMX controller until DMX address is reconfigured.*

Control Menus

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

9. KNV Dot and Line Pixel mapping

Three factors affect pixel mapping in KNV Dot and Line installations:

- the physical location of KNV Dot and Line fixtures,
- the order in which fixtures are connected to the outputs of the KNV PSU, and
- the pixel orientation and pixel mirroring settings available in the PSU control panel or remotely via DMX.

This means that the installer and lighting designer or operator need to plan the layout of the installation together using this chapter as a guide.

Standard pixel layout

See Figure 9 and Figure 10. Pixels are automatically mapped as shown when you connect KNV Dot and / or Line fixtures to a KNV PSU.

For example:

- If you connect a chain of five KNV Dots to **Output D** on the PSU, the **first** KNV Dot in the chain will respond to commands sent to **Pixel 16** and the **last** KNV Dot in the chain will respond to commands sent to **Pixel 20**.
- If you connect a KNV Line to **Output B** on the PSU, the **first** pixel of the KNV Line (the pixel at the cable entry end of the fixture) will respond to commands sent to **Pixel 06**. The **last** pixel of the KNV Line (the pixel at the safety cable attachment end of the fixture) will respond to commands sent to **Pixel 10**.

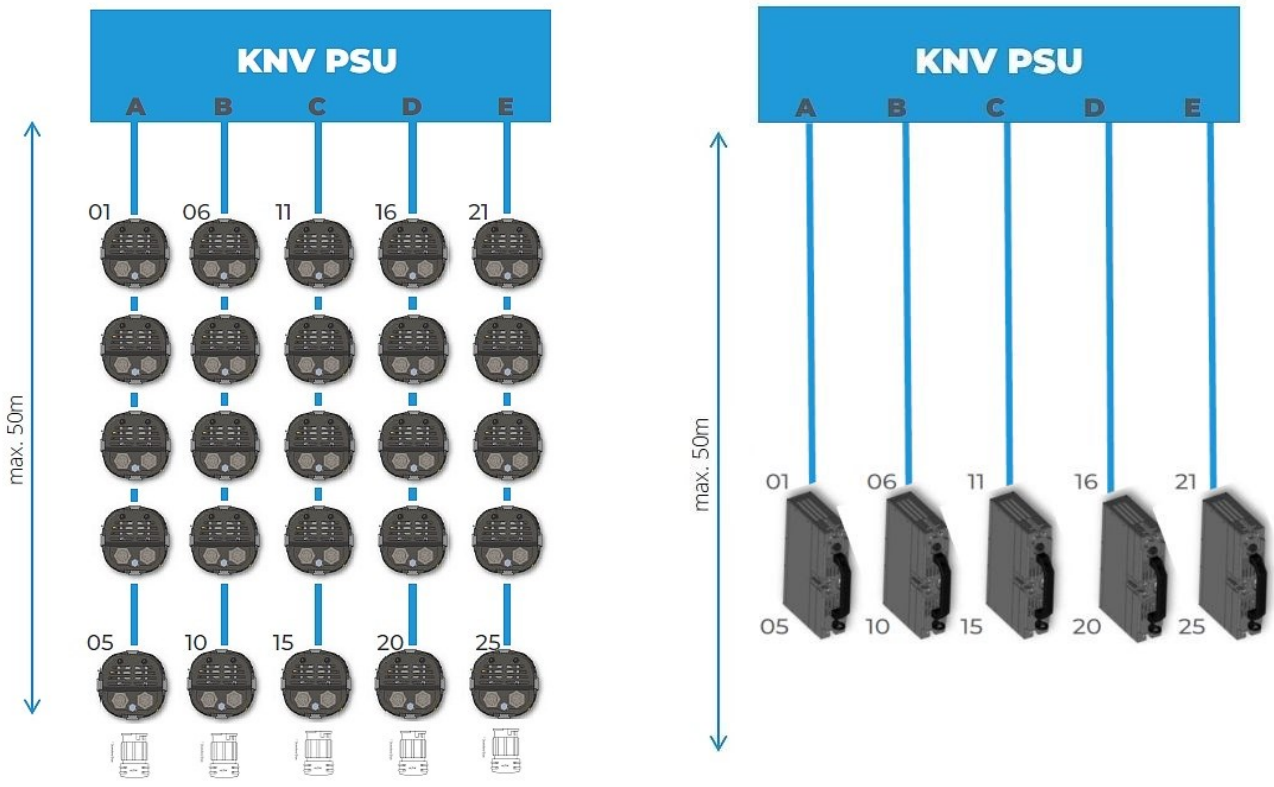

Figure 9. Pixel mapping – KNV Dot only and KNV Line only

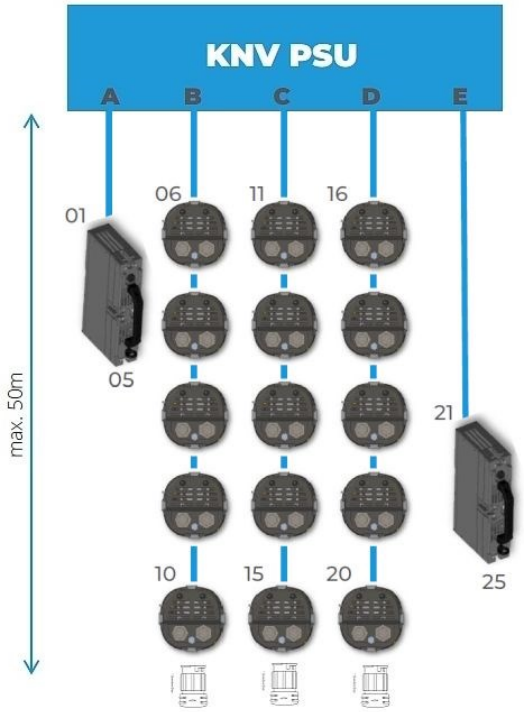

Figure 10. Pixel mapping – KNV Dot and Line mixed

KNV Dot and Line fixtures can be integrated into installations containing KNV Dot and Arc fixtures if you follow the pixel mapping guidelines below.

Matching pixel orientation in KNV Cube and Arc fixtures

To create a matrix of KNV Dot or Line fixtures that have the same 5 x 5 pixel layout as a KNV Cube or Arc fixture in its normal (unmirrored and unrotated) pixel configuration, see Configuration A below: install the KNV Dots or Lines horizontally running from left to right, connecting the top row of pixels to PSU output **A**, the next row down to PSU output **B** and so on until you connect the bottom row of pixels to PSU output **E**.

KNV Cube / Arc,
normal pixel orientation

01	02	03	04	05
06	07	08	09	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Configuration A:
KNV Dots / Lines installed in horizontal rows

A	→	01	02	03	04	05
B	→	06	07	08	09	10
C	→	11	12	13	14	15
D	→	16	17	18	19	20
E	→	21	22	23	24	25

Hanging vertically downwards and adjusting KNV Cube and Arc fixture settings

If you prefer to create a matrix of KNV Dot or Line fixtures hanging vertically downwards from PSU outputs **A** to **E** (as shown in Figure 9, Figure 10 and Configuration B below) but you still want identical pixel mapping with a KNV Cube or Arc fixture, open the **Fixture Settings** control menu on the KNV Cube or Arc, set **Pixel Mirrored** to **ON** and set **Pixel Rotation** to **90° CCW**. The pixels in the KNV Cube or Arc will be mapped as shown below.

KNV Cube / Arc,
Pixel Mirrored = ON
Pixel Rotation = 90° CCW

01	06	11	16	21
02	07	12	17	22
03	08	13	18	23
04	09	14	19	24
05	10	23	20	25

Configuration B:
KNV Dots / Lines suspended
in vertical columns

A	B	C	D	E
↓	↓	↓	↓	↓
01	06	11	16	21
02	07	12	17	22
03	08	13	18	23
04	09	14	19	24
05	10	23	20	25

Test patterns

You can check the pixel mapping setup of an array of KNV Dot and Line fixtures from the control desk by applying a Test pattern on the *Control / Settings* DMX channel or activating **Test sequence** in the **Service** menu.

KNV Dot and Line fixtures show a dynamic test pattern that helps you identify them when they are distributed freely in a creative installation. The dynamic pattern helps you identify the first fixture connected to each PSU output and see the pixel order of each line. The patterns of the pixels connected to each output are as follows:

Output A	First pixel: Constant RGB at 50% intensity All pixels: Continuous RGB chase on pixels 1-5 at 100% intensity
Output B	First pixel: Constant Red at 50% intensity All pixels: Continuous Red chase on pixels 1-5 at 100% intensity
Output C	First pixel: Constant Green at 50% intensity All pixels: Continuous Green chase on pixels 1-5 at 100% intensity
Output D	First pixel: Constant Blue at 50% intensity All pixels: Continuous Blue chase on pixels 1-5 at 100% intensity
Output E	First pixel: Constant Magenta at 50% intensity All pixels: Continuous Magenta chase on pixels 1-5 at 100% intensity

10. DMX control modes

Eight DMX control modes are available in the KNV Dot and Line.

Note that the DMX channel layout in KNV Dot and Line fixtures is not exactly the same as the channel layout in KNV Cube and Arc fixtures.

In all DMX modes, a *Control / Settings* channel lets you adjust fixture settings remotely from the DMX control desk.

- **DMX Mode 1** lets you control all 25 pixels together as a group with 16-bit resolution. A separate Shutter channel provides strobe, pixel and ramp-up/down effects. This extra shutter affects all white and all RGB LEDs by default, but you can change this setting via the Control/Settings DMX Channel or the fixture's control panel so that the shutter applies to white LEDs only or RGB LEDs only.
- **DMX Mode 2** splits the KNV into a White Strobe and a separate RGB Strobe, each with standard strobe light control channels: Intensity, Flash Rate and Flash Duration. In addition, the Flare effect and pre-programmed dynamic FX are available for each strobe.
- **DMX Mode 3** provides an RGB strobe plus 25 individually controllable white pixels. The RGB strobe has standard strobe control channels: Intensity, Flash Rate and Flash Duration. It also has the Flare effect and pre-programmed dynamic FX. The 25 individual white pixels have a separate Shutter channel with strobe, pixel and ramp-up/down effects.
- **DMX Mode 4** provides a White Strobe plus 25 individually controllable RGB pixels. The White strobe has standard strobe control channels: Intensity, Flash Rate and Flash Duration. It also has the Flare effect and pre-programmed dynamic FX. The 25 individual RGB pixels have a separate Shutter channel with strobe, pixel and ramp-up/down effects.
- **DMX Mode 5** provides three different layers:
  - The **Base Layer** has lowest priority (other layers override it), so it acts as a background layer. The Base layer has RGBW intensity control.
  - **Layer 2** has priority over the base layer, so it acts as a middle layer.
  - **Layer 3** has highest priority, so it acts as a top layer.
  - **Layers 2 and 3** both have standard RGBW strobe control channels plus the Flare effect and pre-programmed dynamic FX. Layers 2 and 3 also have a 16-bit Layer Master Channel that controls the transparency of the layer.

    FX layer priorities work in true color, which means that colors are not mixed. If you run a red snake FX on Layer 2 over the top of a blue background on the Base Layer, the snake will be red, not a mix of blue and red.

    Applying transparency to a layer allows the color of the background layer or the lower priority layer to shine through.

    If you want to dim a layer's colors without color from lower priority layers shining through, reduce the intensity of the colors without applying transparency to the layer. If you reduce the intensity of all the colors to zero, you can run a black effect over the top of lower priority layers.

- **DMX Mode 6** provides master shutter/strobe control plus 8-bit RGBW control of 25 individual pixels.
- **DMX Mode 7** provides master shutter/strobe control plus 16-bit RGBW control of 25 individual pixels.
- **DMX Mode 8** provides a base Layer 1 with RGBW 8-bit control of 25 individual pixels and an additional Layer 2 with RGBW FX.
- In **DMX Modes 2, 3, 4, 5 and 8** if no FX is selected (FX Selection channel is set to zero), the Flash rate channel controls the flash rate of the Strobe. If an FX is selected, the Flash rate channel is redeployed and controls the speed of the effect instead.
- **DMX Modes 6 and 7** give individual control of 25 separate pixels plus a master Shutter channel. The extra shutter with strobe, pixel and ramp-up/down effects applies to all the LEDs (white and RGB), by default, but you can change this setting via the *Control / Settings* DMX Channel or the PSU's control panel so that the shutter applies to white LEDs only or to RGB LEDs only.

Pixel Configuration

By default, the PSU configures the first physical pixel of the Output A line as Pixel 01 and the last physical pixel of the Output A line as Pixel 05. It configures the first physical pixel of the Output B line as Pixel 06 and the last physical pixel of the Output B line as Pixel 10, and so on.

Pixel Configuration lets you adjust the control position of the different physical pixels on the output lines by mapping an individual pixel to a specific position. For example, if you want the second KNV Dot at Output B to be Pixel 25 in your pixel mapping setup, just change the value "B2=07" to "B2=25".

The default pixel mapping positions are as follows:

- Output A: A1=01 / A2=02 / A3=04 / A4=04 / A5=05
- Output B: B1=06 / B2=07 / B3=08 / B4=09 / B5=10
- Output C: C1=11 / C2=12 / C3=13 / C4=14 / C5=15
- Output D: D1=16 / D2=17 / D3=18 / D4=19 / D5=20
- Output E: E1=21 / E2=22 / E3=23 / E4=24 / E5=25

You can load the above default pixel mapping configuration at any time using the **Auto Configuration** command.

Note: As the pixel mapping configuration is a control-critical setting, it is not restored to default settings if you apply a **Load Fixture Setting Defaults** command. In other words, an individual pixel configuration will not be affected by a **Load Fixture Setting Defaults** command. To delete custom pixel mapping and restore the default pixel configuration, apply either an **Auto Configuration** or **Load Factory Backup** command.

Managing unused DMX channels

If you connect less than 25 pixels to a KNV PSU and you are operating in DMX Modes 3, 4, 6, 7 and 8, you can reduce the DMX footprint of the installation and free up DMX channels by deleting unused DMX channels in your controller patch.

To give an example:

- You are operating in DMX Mode 6 and you only need to control 10 pixels. You have set the PSU to DMX address 001
- Connect pixels 1 – 5 to PSU output **A** and pixels 6 – 10 to PSU output **B**.
- PSU outputs **C**, **D** and **E** will not be connected to pixels.
- The KNV PSU will only work with data sent on DMX channels 001 – 042. DMX channels 043 – 102 will be ignored. You can simply unpatch these channels in your controller and give the next fixture DMX address 043.

*Note that if you send a **GET device_info** query via RDM, the PSU will not report a smaller DMX footprint if you leave outputs unused – it will always report the full DMX footprint.*

Special notes on the DMX tables

In the following DMX channel layout tables:

- Default settings are indicated with **bold type**.
- 'L = xx' indicates the length of the FX expressed as the number of steps that make up the FX (like the number of frames in an animation). If a pattern is listed as 'L = 10', the FX consists of ten steps.
- FX crossfade times apply to crossfading between the steps in the FX. If you apply a long crossfade time to a moving FX pattern, it will appear to leave a tail behind it as the pixels in the pattern fade down to zero.
- Where commands are marked with an asterisk * you must send that value continuously for 3 seconds (or other duration if indicated in the table) to apply the command.

11. Control channel layout

DMX Mode 1: RGBW 16-bit

10 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
RGBW						
1	**Red coarse**	Red intensity 0-100%	0-65535	0-100%	0	Fade
2	**Red fine**					
3	**Green coarse**	Green intensity 0-100%	0-65535	0-100%	0	Fade
4	**Green fine**					
5	**Blue coarse**	Blue intensity 0-100%	0-65535	0-100%	0	Fade
6	**Blue fine**					
7	**White coarse**	White intensity 0-100%	0-65535	0-100%	0	Fade
8	**White fine**					
9	**Shutter**	Shutter closed	0-4	0-1.6%	255	Snap
		Sync ramp up slow > fast	5-39	2.0-15.3%		Fade
		Sync ramp down slow > fast	40-74	15.7-29.0%		Fade
		Sync ramp up-down slow > fast	75-109	29.4-%42.7		Fade
		Sync double flash slow >fast	110-144	43.1-56.5%		Fade
		Random pixel slow > fast	145-179	56.9-70.2%		Fade
		Random strobe slow > fast	180-214	70.6-83.9%		Fade
		Sync strobe 0.289 > 16.67 Hz	215-249	84.3-97.6%		Fade
		Hyperspeed	250-252	98.0-98.8%		Snap
		Open	253-255	99.2-100%		Snap
Control / Settings						
10	**Control / Settings**	Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-56	21.2-22.0%		
		Extra Shutter RGBW* (Modes 1/6/7)	57-59	22.4-23.1%		
		Extra Shutter RGB only* (Modes 1/6/7)	60-62	23.5-24.3%		
		Extra Shutter White only* (Modes 1/6/7)	63-65	24.7-25.5%		
		No function	66-68	25.9-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		

	Control / Settings (continued)	**Display Auto***	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
		No DMX = Blackout*	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		
		No function	117-134	45.9-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		
		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		

DMX Mode 2: White strobe with FX, RGB with FX

23 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
Channel group A: White strobe with FX						
1	**White LEDs intensity**	Intensity 0-100%	0-255	0-100%	0	Fade
2	**White LEDs flash duration**	Flash duration 7-650 ms	0-255	0-100%	0	Fade
3	**White LEDs flash rate (if FX are not active)**	No flash *Single flash if Dimmer Flash = ON and value is changed on Ch 1*	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-252	98.4-98.8%		Snap
		Continuously on	253-255	99.2-100%		Snap
	FX speed (if FX are active)	*FX speed = stop*	*0-1*	*0-0.4%*		*Snap*
		FX speed = slow > fast	*2-253*	*0.8-98.8%*		*Fade*
		FX speed = stop	*254-255*	*99.2-100%*		*Snap*
4	**White LEDs Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap
5	**White LEDs FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		
		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		
		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		
		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		
		Wave (L = 8)	81-83	31.8-32.5%		

		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		
		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
6	**White LEDs FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
7	**White LEDs orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		
		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		
		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		
		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		
		Off	115-134	45.1-52.5%		

		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		
8	**White LEDs FX offset**	0-100%	0-255	0-100%	0	Fade
9	**White LEDs FX length**	0-100%	0-255	0-100%	0	Fade
Channel group B: RGB strobe with FX						
10	**RGB LEDs dimmer**	Intensity 0-100%	0-255	0-100%	0	Fade
11	**RGB LEDs flash duration**	Flash duration 7-650 ms	0-255	0-100%	0	Fade
12	**RGB LEDs flash rate (if FX are not active)**	No flash	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-254	98.4-99.6%		Snap
		Continuously on	255	100%		Snap
	FX speed (if FX are active)	*FX speed = stop*	*0-1*	*0-0.4%*		Snap
		FX speed = slow > fast	*2-253*	*0.8-98.8%*		Fade
		FX speed = stop	*254-255*	*99.2-100%*		Snap
13	**Red**	Red intensity 0-100%	0-255	0-100%	255	Fade
14	**Green**	Green intensity 0-100%	0-255	0-100%	255	Fade
15	**Blue**	Blue intensity 0-100%	0-255	0-100%	255	Fade
16	**RGB LEDs Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap

17	**RGB LEDs FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		
		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		
		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		
		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		
		Wave (L = 8)	81-83	31.8-32.5%		
		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		

		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
18	**RGB LEDs FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
19	**RGB LEDs orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		
		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		
		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		
		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		
		Off	115-134	45.1-52.5%		
		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		

20	**RGB LEDs FX offset**	0-100%	0-255	0-100%	0	Fade
21	**RGB LEDs FX length**	0-100%	0-255	0-100%	0	Fade
22	**RGB LEDs color generator**	Off	0-9	0-3.5%	0	Snap
		Random all pixels RGBCMY	10-19	3.9-7.5%		Snap
		Random single pixel RGBCMY	20-29	7.8-11.4%		Snap
		Random all pixels bright colors	30-39	11.8-15.3%		Snap
		Random single pixel bright colors	40-49	15.7-19.2%		Snap
		Red / Blue	50-59	19.6-23.1%		Snap
		Red / Green	60-69	23.5-27.1%		Snap
		Blue / Green	70-79	27.5-31.0%		Snap
		Yellow / Magenta	80-89	31.4-34.9%		Snap
		Yellow / Cyan	90-99	35.3-38.8%		Snap
		Cyan / Magenta	100-109	39.2-42.7%		Snap
		Yellow / Blue	110-119	43.1-46.7%		Snap
		Green / Magenta	120-129	47.1-50.6%		Snap
		Red / Green / Blue	130-139	51.0-54.5%		Snap
		Red / Yellow / Blue	140-149	54.9-58.4%		Snap
		Red / Green / Blue / Yellow / Magenta / Cyan	150-159	58.8%-62.4%		Snap
		Red / Green / Blue - Horizontal line	160-169	62.7-66.3%		Snap
		Red / Green / Blue - Vertical line	170-179	66.7-70.2%		Snap
		No function	180-219	70.6-85.9%		Snap
		Color scroll, slow -> fast	220-229	86.3-89.8%		Fade
		Lite in	230-239	90.2-93.7%		Snap
		Lite out	240-249	94.1-97.6%		Snap
		Off	250-255	98.0-100%		Snap
Control / Settings						
23	**Control / Settings**	Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-68	21.2-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
		No DMX = Blackout*	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		

		Rotation Off*	117-119	45.9-46.7%		
		Rotate 90° *	120-122	47.1-47.8%		
		Rotate 180° *	123-125	48.2-49.0%		
		Rotate 270° *	126-128	49.4-50.2%		
		Pixel mirror Off*	129-131	50.6-51.4%		
		Pixel mirror On*	132-134	51.8-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		
		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		

DMX Mode 3: RGB strobe with FX, White individual pixels

40 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
Channel group A: RGB strobe with FX						
1	**RGB LEDs dimmer**	Intensity 0-100%	0-255	0-100%	0	Fade
2	**RGB LEDs flash duration**	Flash duration 7-650 ms	0-255	0-100%	255	Fade
3	**RGB LEDs flash rate (if FX not active)**	No flash *Single flash if Dimmer Flash = ON and value is changed on Ch 1*	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-254	98.4-99.6%		Snap
		Continuously on	255	100%		Snap
	RGB LEDs FX speed (if FX active)	*FX speed = stop*	*0-1*	*0-0.4%*		Snap
		FX speed = slow > fast	*2-253*	*0.8-98.8%*		Fade
		FX speed = stop	*254-255*	*99.2-100%*		Snap
4	**Red**	Red intensity 0-100%	0-255	0-100%	255	Fade
5	**Green**	Green intensity 0-100%	0-255	0-100%	255	Fade
6	**Blue**	Blue intensity 0-100%	0-255	0-100%	255	Fade
7	**RGB LEDs Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap
8	**RGB LEDs FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		
		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		
		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		

		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		
		Wave (L = 8)	81-83	31.8-32.5%		
		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		
		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
9	**RGB LEDs FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
10	**RGB LEDs orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		
		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		
		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		

		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		
		Off	115-134	45.1-52.5%		
		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		
11	**RGB LEDs FX offset**	0-100%	0-255	0-100%	0	Fade
12	**RGB LEDs FX length**	0-100%	0-255	0-100%	0	Fade
13	**RGB LEDs color generator**	Off	0-9	0-3.5%	0	Snap
		Random all pixels RGBCMY	10-19	3.9-7.5%		Snap
		Random single pixel RGBCMY	20-29	7.8-11.4%		Snap
		Random all pixels bright colors	30-39	11.8-15.3%		Snap
		Random single pixel bright colors	40-49	15.7-19.2%		Snap
		Red / Blue	50-59	19.6-23.1%		Snap
		Red / Green	60-69	23.5-27.1%		Snap
		Blue / Green	70-79	27.5-31.0%		Snap
		Yellow / Magenta	80-89	31.4-34.9%		Snap
		Yellow / Cyan	90-99	35.3-38.8%		Snap
		Cyan / Magenta	100-109	39.2-42.7%		Snap
		Yellow / Blue	110-119	43.1-46.7%		Snap
		Green / Magenta	120-129	47.1-50.6%		Snap
		Red / Green / Blue	130-139	51.0-54.5%		Snap
		Red / Yellow / Blue	140-149	54.9-58.4%		Snap
		Red / Green / Blue / Yellow / Magenta / Cyan	150-159	58.8%-62.4%		Snap
		Red / Green / Blue - Horizontal line	160-169	62.7-66.3%		Snap
		Red / Green / Blue - Vertical line	170-179	66.7-70.2%		Snap
		No function	180-219	70.6-85.9%		Snap
		Color scroll, slow -> fast	220-229	86.3-89.8%		Fade
		Lite in	230-239	90.2-93.7%		Snap
		Lite out	240-249	94.1-97.6%		Snap
		Off	250-255	98.0-100%		Snap

14	**White LEDs shutter**	Shutter closed	0-4	0-1.6%	255	Snap
		Sync ramp up slow > fast	5-39	2.0-15.3%		Fade
		Sync ramp down slow > fast	40-74	15.7-29.0%		Fade
		Sync ramp up-down slow > fast	75-109	29.4-%42.7		Fade
		Sync double flash slow > fast	110-144	43.1-56.5%		Fade
		Pixel flare effect slow > fast	145-179	56.9-70.2%		Fade
		Random strobe slow > fast	180-214	70.6-83.9%		Fade
		Sync strobe 0.289 > 16.67 Hz	215-249	84.3-97.6%		Fade
		Hyperspeed	250-252	98.0-98.8%		Snap
		Open	253-255	99.2-100%		Snap
Control / Settings						
15	**Control / Settings**	Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-68	21.2-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
		No DMX = Blackout*	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		
		Rotation Off*	117-119	45.9-46.7%		
		Rotate 90° *	120-122	47.1-47.8%		
		Rotate 180° *	123-125	48.2-49.0%		
		Rotate 270° *	126-128	49.4-50.2%		
		Pixel mirror Off*	129-131	50.6-51.4%		
		Pixel mirror On*	132-134	51.8-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		

		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		
		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		
Channel group B: White individual pixels						
16	**White pixel 1**	Intensity 0-100%	0-255	0-100%	0	fade
17	**White pixel 2**	Intensity 0-100%	0-255	0-100%	0	fade
18	**White pixel 3**	Intensity 0-100%	0-255	0-100%	0	fade
19	**White pixel 4**	Intensity 0-100%	0-255	0-100%	0	fade
20	**White pixel 5**	Intensity 0-100%	0-255	0-100%	0	fade
21	**White pixel 6**	Intensity 0-100%	0-255	0-100%	0	fade
22	**White pixel 7**	Intensity 0-100%	0-255	0-100%	0	fade
23	**White pixel 8**	Intensity 0-100%	0-255	0-100%	0	fade
24	**White pixel 9**	Intensity 0-100%	0-255	0-100%	0	fade
25	**White pixel 10**	Intensity 0-100%	0-255	0-100%	0	fade
26	**White pixel 11**	Intensity 0-100%	0-255	0-100%	0	fade
27	**White pixel 12**	Intensity 0-100%	0-255	0-100%	0	fade
28	**White pixel 13**	Intensity 0-100%	0-255	0-100%	0	fade
29	**White pixel 14**	Intensity 0-100%	0-255	0-100%	0	fade
30	**White pixel 15**	Intensity 0-100%	0-255	0-100%	0	fade
31	**White pixel 16**	Intensity 0-100%	0-255	0-100%	0	fade
32	**White pixel 17**	Intensity 0-100%	0-255	0-100%	0	fade
33	**White pixel 18**	Intensity 0-100%	0-255	0-100%	0	fade
34	**White pixel 19**	Intensity 0-100%	0-255	0-100%	0	fade
35	**White pixel 20**	Intensity 0-100%	0-255	0-100%	0	fade
36	**White pixel 21**	Intensity 0-100%	0-255	0-100%	0	fade
37	**White pixel 22**	Intensity 0-100%	0-255	0-100%	0	fade
38	**White pixel 23**	Intensity 0-100%	0-255	0-100%	0	fade
39	**White pixel 24**	Intensity 0-100%	0-255	0-100%	0	fade
40	**White pixel 25**	Intensity 0-100%	0-255	0-100%	0	fade

Individual white pixel control on channels 16-40 can be mapped independently at the controller depending on how many pixels are connected to the KNV PSU outputs **A** – **E**.

Unused DMX channels can be deleted from the controller patch leaving them free for use by other fixtures.

DMX Mode 4: White strobe with FX, RGB 25-pixel

86 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
Channel group A: White strobe with FX						
1	**White LEDs dimmer**	Intensity 0-100%	0-255	0-100%	0	Fade
2	**White LEDs flash duration**	Flash duration 7-650 ms	0-255	0-100%	0	Fade
3	**White LEDs flash rate (if FX are not active)**	No flash *Single flash if Dimmer Flash = ON and value is changed on Ch 1*	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-252	98.4-98.8%		Snap
		Continuously on	253-255	99.2-100%		Snap
	FX speed (If FX are active)	*FX speed = stop*	*0-1*	*0-0.4%*		Snap
		FX speed = slow > fast	*2-253*	*0.8-98.8%*		Fade
		FX speed = stop	*254-255*	*99.2-100%*		Snap
4	**White LEDs Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap
5	**White LEDs FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		
		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		
		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		
		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		
		Wave (L = 8)	81-83	31.8-32.5%		

		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		
		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
6	**White LEDs FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
7	**White LEDs orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		
		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		
		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		
		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		
		Off	115-134	45.1-52.5%		

		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		
8	**White LEDs FX offset**	0-100%	0-255	0-100%	0	Fade
9	**White LEDs FX length**	0-100%	0-255	0-100%	0	Fade
10	**RGBW shutter**	Shutter closed	0-4	0-1.6%	255	Snap
		Sync ramp up slow > fast	5-39	2.0-15.3%		Fade
		Sync ramp down slow > fast	40-74	15.7-29.0%		Fade
		Sync ramp up-down slow > fast	75-109	29.4-%42.7		Fade
		Sync double flash slow > fast	110-144	43.1-56.5%		Fade
		Pixel flare effect slow > fast	145-179	56.9-70.2%		Fade
		Random strobe slow > fast	180-214	70.6-83.9%		Fade
		Sync strobe 0.289 > 16.67 Hz	215-249	84.3-97.6%		Fade
		Hyperspeed	250-252	98.0-98.8%		Snap
		Open	253-255	99.2-100%		Snap
Control / Settings						
11	**Control / Settings**	Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-68	21.2-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		

		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
		No DMX = Blackout*	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		
		Rotation Off*	117-119	45.9-46.7%		
		Rotate 90° *	120-122	47.1-47.8%		
		Rotate 180° *	123-125	48.2-49.0%		
		Rotate 270° *	126-128	49.4-50.2%		
		Pixel mirror Off*	129-131	50.6-51.4%		
		Pixel mirror On*	132-134	51.8-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		
		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		
Channel group B: RGB 25-pixel						
12		Red	0-100%	0-255	255	Fade
13	**RGB Pixel 1**	Green	0-100%	0-255	255	Fade
14		Blue	0-100%	0-255	255	Fade
…		Red	0-100%	0-255	255	Fade
…	**RGB Pixels 2 … 24**	Green	0-100%	0-255	255	Fade
…		Blue	0-100%	0-255	255	Fade
84		Red	0-100%	0-255	255	Fade
85	**RGB Pixel 25**	Green	0-100%	0-255	255	Fade
86		Blue	0-100%	0-255	255	Fade

Individual RGB pixel control on channels 12-86 be mapped independently at the controller depending on how many pixels are connected to the KNV PSU outputs **A** – **E**.

Unused DMX channels can be deleted from the controller patch leaving them free for use by other fixtures.

DMX Mode 5: Multi-layer RGBW with FX

35 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
Channel group A: Base layer RGBW (low priority)						
1	**Red**	Intensity 0-100%	0-255	0-100%	0	Fade
2	**Green**	Intensity 0-100%	0-255	0-100%	0	Fade
3	**Blue**	Intensity 0-100%	0-255	0-100%	0	Fade
4	**White**	Intensity 0-100%	0-255	0-100%	0	Fade
Channel group B: Layer 2 RGBW strobe with FX (medium priority, true color)						
5	**Layer 2 master (16-bit)**	Layer 2 = transparent	0-1	0-0.4%	0	Snap
6		Layer 2 intensity 0-100%	2-65535	0.8-100%		Fade
7	**Layer 2 flash duration**	7-650 ms	0-255	0-100%	0	Fade
8	**Layer 2 flash rate (if FX not active)**	No flash *Single flash if Dimmer Flash = ON and value is changed on Ch 5*	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-252	98.4-98.8%		Snap
		Continuously on	253-255	99.2-100%		Snap
	Layer 2 FX speed (If FX active)	*FX speed = stop*	*0-1*	*0-0.4%*		*Snap*
		FX speed = slow > fast	*2-253*	*0.8-98.8%*		*Fade*
		FX speed = stop	*254-255*	*99.2-100%*		*Snap*
9	**Layer 2 Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap
10	**Layer 2 Red**	Intensity 0-100%	0-255	0-100%	0	Fade
11	**Layer 2 Green**	Intensity 0-100%	0-255	0-100%	0	Fade
12	**Layer 2 Blue**	Intensity 0-100%	0-255	0-100%	0	Fade
13	**Layer 2 White**	Intensity 0-100%	0-255	0-100%	0	Fade
14	**Layer 2 FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		

		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		
		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		
		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		
		Wave (L = 8)	81-83	31.8-32.5%		
		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		
		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
15	**Layer 2 FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
16	**Layer 2 orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		

		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		
		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		
		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		
		Off	115-134	45.1-52.5%		
		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		
17	**Layer 2 FX offset**	0-100%	0-255	0-100%	0	Fade
18	**Layer 2 FX length**	0-100%	0-255	0-100%	0	Fade
19	**Layer 2 FX color generator**	Off	0-9	0-3.5%	0	Snap
		Random all pixels RGBCMY	10-19	3.9-7.5%		Snap
		Random single pixel RGBCMY	20-29	7.8-11.4%		Snap
		Random all pixels bright colors	30-39	11.8-15.3%		Snap
		Random single pixel bright colors	40-49	15.7-19.2%		Snap
		Red / Blue	50-59	19.6-23.1%		Snap
		Red / Green	60-69	23.5-27.1%		Snap
		Blue / Green	70-79	27.5-31.0%		Snap
		Yellow / Magenta	80-89	31.4-34.9%		Snap
		Yellow / Cyan	90-99	35.3-38.8%		Snap
		Cyan / Magenta	100-109	39.2-42.7%		Snap
		Yellow / Blue	110-119	43.1-46.7%		Snap
		Green / Magenta	120-129	47.1-50.6%		Snap
		Red / Green / Blue	130-139	51.0-54.5%		Snap
		Red / Yellow / Blue	140-149	54.9-58.4%		Snap
		Red / Green / Blue / Yellow / Magenta / Cyan	150-159	58.8%-62.4%		Snap
		Red / Green / Blue - Horizontal line	160-169	62.7-66.3%		Snap
		Red / Green / Blue - Vertical line	170-179	66.7-70.2%		Snap
		No function	180-219	70.6-85.9%		Snap

		Color scroll, slow -> fast	220-229	86.3-89.8%		Fade
		Lite in	230-239	90.2-93.7%		Snap
		Lite out	240-249	94.1-97.6%		Snap
		Off	250-255	98.0-100%		Snap
Channel group C: Layer 3 RGBW strobe with FX (high priority, true color)						
20	**Layer 3 master**	Layer 3 = transparent	0-1	0-0.4%	0	Snap
21		Layer 3 intensity 0-100%	2-65535	0.8-100%		Fade
22	**Layer 3 flash duration**	7-650 ms	0-255	0-100%	0	Fade
23	**Layer 3 flash rate (if FX are not active)**	No flash *Single flash if Dimmer Flash = ON and value is changed on Ch 20*	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-252	98.4-98.8%		Snap
		Continuously on	253-255	99.2-100%		Snap
	Layer 3 FX speed (If FX are active)	FX speed = stop	0-1	0-0.4%		Snap
		FX speed = slow > fast	2-253	0.8-98.8%		Fade
		FX speed = stop	254-255	99.2-100%		Snap
24	**Layer 3 Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap
25	**Layer 3 Red**	Intensity 0-100%	0-255	0-100%	0	Fade
26	**Layer 3 Green**	Intensity 0-100%	0-255	0-100%	0	Fade
27	**Layer 3 Blue**	Intensity 0-100%	0-255	0-100%	0	Fade
28	**Layer 3 White**	Intensity 0-100%	0-255	0-100%	0	Fade
29	**Layer 3 FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		
		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		
		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		
		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		

		Wave (L = 8)	81-83	31.8-32.5%		
		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		
		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
30	**Layer 3 FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
31	**Layer 3 orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		
		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		
		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		
		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		

		Off	115-134	45.1-52.5%		
		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		
32	**Layer 3 FX offset**	0-100%	0-255	0-100%	0	Fade
33	**Layer 3 FX length**	0-100%	0-255	0-100%	0	Fade
34	**Layer 3 FX color generator**	Off	0-9	0-3.5%	0	Snap
		Random all pixels RGBCMY	10-19	3.9-7.5%		Snap
		Random single pixel RGBCMY	20-29	7.8-11.4%		Snap
		Random all pixels bright colors	30-39	11.8-15.3%		Snap
		Random single pixel bright colors	40-49	15.7-19.2%		Snap
		Red / Blue	50-59	19.6-23.1%		Snap
		Red / Green	60-69	23.5-27.1%		Snap
		Blue / Green	70-79	27.5-31.0%		Snap
		Yellow / Magenta	80-89	31.4-34.9%		Snap
		Yellow / Cyan	90-99	35.3-38.8%		Snap
		Cyan / Magenta	100-109	39.2-42.7%		Snap
		Yellow / Blue	110-119	43.1-46.7%		Snap
		Green / Magenta	120-129	47.1-50.6%		Snap
		Red / Green / Blue	130-139	51.0-54.5%		Snap
		Red / Yellow / Blue	140-149	54.9-58.4%		Snap
		Red / Green / Blue / Yellow / Magenta / Cyan	150-159	58.8%-62.4%		Snap
		Red / Green / Blue - Horizontal line	160-169	62.7-66.3%		Snap
		Red / Green / Blue - Vertical line	170-179	66.7-70.2%		Snap
		No function	180-219	70.6-85.9%		Snap
		Color scroll, slow -> fast	220-229	86.3-89.8%		Fade
		Lite in	230-239	90.2-93.7%		Snap
		Lite out	240-249	94.1-97.6%		Snap
		Off	250-255	98.0-100%		Snap

Control / Settings						
		Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-68	21.2-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
35	**Control / Settings**	**No DMX = Blackout***	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		
		Rotation Off*	117-119	45.9-46.7%		
		Rotate 90° *	120-122	47.1-47.8%		
		Rotate 180° *	123-125	48.2-49.0%		
		Rotate 270° *	126-128	49.4-50.2%		
		Pixel mirror Off*	129-131	50.6-51.4%		
		Pixel mirror On*	132-134	51.8-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		

		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		

DMX Mode 6: RGBW 25-pixel, 8-bit

102 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
RGBW Shutter / Strobe						
1	**Shutter, all pixels**	Shutter closed	0-4	0-1.6%	255	Snap
		Sync ramp up slow > fast	5-39	2.0-15.3%		Fade
		Sync ramp down slow > fast	40-74	15.7-29.0%		Fade
		Sync ramp up-down slow > fast	75-109	29.4-%42.7		Fade
		Sync double flash slow > fast	110-144	43.1-56.5%		Fade
		Pixel flare effect slow > fast	145-179	56.9-70.2%		Fade
		Random strobe slow > fast	180-214	70.6-83.9%		Fade
		Sync strobe 0.289 > 16.67 Hz	215-249	84.3-97.6%		Fade
		Hyperspeed	250-252	98.0-98.8%		Snap
		Open	253-255	99.2-100%		Snap
Control / Settings						
2	**Control / Settings**	Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-56	21.2-22.0%		
		Extra Shutter RGBW* (Modes 1/6/7)	57-59	22.4-23.1%		
		Extra Shutter RGB only* (Modes 1/6/7)	60-62	23.5-24.3%		
		Extra Shutter White only* (Modes 1/6/7)	63-65	24.7-25.5%		
		No function	66-68	25.9-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		

		No DMX = Stand-alone*	102-104	40.0-40.8%		
		No DMX = Blackout*	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		
		No function	117-134	45.9-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		
		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		
RGBW 25-pixel 8-bit						
3	**Pixel 1 RGBW**	Red intensity 0-100%	0-255	0-100%	0	Fade
4		Green intensity 0-100%	0-255	0-100%	0	Fade
5		Blue intensity 0-100%	0-255	0-100%	0	Fade
6		White intensity 0-100%	0-255	0-100%	0	Fade
…	**Pixel 2 … 24 RGBW**	Red intensity 0-100%	0-255	0-100%	0	Fade
…		Green intensity 0-100%	0-255	0-100%	0	Fade
…		Blue intensity 0-100%	0-255	0-100%	0	Fade
…		White intensity 0-100%	0-255	0-100%	0	Fade
99	**Pixel 25 RGBW**	Red intensity 0-100%	0-255	0-100%	0	Fade
100		Green intensity 0-100%	0-255	0-100%	0	Fade
101		Blue intensity 0-100%	0-255	0-100%	0	Fade
102		White intensity 0-100%	0-255	0-100%	0	Fade

Individual RGBW pixel control on channels 03-102 be mapped independently at the controller depending on how many pixels are connected to the KNV PSU outputs **A** – **E**.

Unused DMX channels can be deleted from the controller patch leaving them free for use by other fixtures.

DMX Mode 7: RGBW 25-pixel, 16-bit

202 DMX Channels

Channel		Command	DMX range	Percent	Default DMX	Fade
RGBW Shutter / Strobe						
1	**Shutter, all pixels**	Shutter closed	0-4	0-1.6%	255	Snap
		Sync ramp up slow > fast	5-39	2.0-15.3%		Fade
		Sync ramp down slow > fast	40-74	15.7-29.0%		Fade
		Sync ramp up-down slow > fast	75-109	29.4-%42.7		Fade
		Sync double flash slow > fast	110-144	43.1-56.5%		Fade
		Pixel flare effect slow > fast	145-179	56.9-70.2%		Fade
		Random strobe slow > fast	180-214	70.6-83.9%		Fade
		Sync strobe 0.289 > 16.67 Hz	215-249	84.3-97.6%		Fade
		Hyperspeed	250-252	98.0-98.8%		Snap
		Open	253-255	99.2-100%		Snap
Control / Settings						
2	**Control / Settings**	Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-56	21.2-22.0%		
		Extra Shutter RGBW* (Modes 1/6/7)	57-59	22.4-23.1%		
		Extra Shutter RGB only* (Modes 1/6/7)	60-62	23.5-24.3%		
		Extra Shutter White only* (Modes 1/6/7)	63-65	24.7-25.5%		
		No function	66-68	25.9-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
		No DMX = Blackout*	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		

		No function	117-134	45.9-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		
		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		
RGBW 25-pixel 16-bit						
3	**Pixel 1 RGBW (16 bit)**	Red intensity coarse	0-65535	0-100%	0	Fade
4		Red intensity fine				
5		Green intensity coarse	0-65535	0-100%	0	Fade
6		Green intensity fine				
7		Blue intensity coarse	0-65535	0-100%	0	Fade
8		Blue intensity fine				
9		White intensity coarse	0-65535	0-100%	0	Fade
10		White intensity fine				
…	**Pixel 2 … 24 RGBW (16-bit)**	Red intensity coarse	0-65535	0-100%	0	Fade
…		Red intensity fine				
…		Green intensity coarse	0-65535	0-100%	0	Fade
…		Green intensity fine				
…		Blue intensity coarse	0-65535	0-100%	0	Fade
…		Blue intensity fine				
…		White intensity coarse	0-65535	0-100%	0	Fade
…		White intensity fine				
195	**Pixel 25 RGBW (16-bit)**	Red intensity coarse	0-65535	0-100%	0	Fade
196		Red intensity fine				
197		Green intensity coarse	0-65535	0-100%	0	Fade
198		Green intensity fine				
199		Blue intensity coarse	0-65535	0-100%	0	Fade
200		Blue intensity fine				
201		White intensity coarse	0-65535	0-100%	0	Fade
202		White intensity fine				

Individual RGBW pixel control on channels 03-202 be mapped independently at the controller depending on how many pixels are connected to the KNV PSU outputs **A** – **E**.

Unused DMX channels can be deleted from the controller patch leaving them free for use by other fixtures.

DMX Mode 8: RGBW 25-pixel, 8-bit with RGBW FX

116 DMX Channels

Channel	Command	DMX range	Percent	Default DMX	Fade
Channel group A: RGBW strobe with FX					
1	Layer 1 = transparent	0-1	0-0.4%	0	Snap
2 **Layer 1 master (16-bit)**	Layer 1 intensity 0-100%	2-65535	0.8-100%		Fade
3	**Layer 1 flash duration**	Flash duration 7-650 ms	0-255	0-100%	255	Fade
4	**Layer 1 flash rate (if FX not active)**	No flash *Single flash if Dimmer Flash = ON and value is changed on Ch 1*	0-1	0-0.4%	0	Snap
		Flash rate 0.289-16.67 Hz	2-250	0.8-98%		Fade
		Hyperspeed	251-254	98.4-99.6%		Snap
		Continuously on	255	100%		Snap
	Layer 1 FX speed (if FX active)	*FX speed = stop*	*0-1*	*0-0.4%*		Snap
		FX speed = slow > fast	*2-253*	*0.8-98.8%*		Fade
		FX speed = stop	*254-255*	*99.2-100%*		Snap
5	**Layer 1 Flare effect**	Off	0-9	0-3.5%	0	Snap
		Slow > fast	10-49	3.9-19.2%		Fade
		Off	50-59	19.6-23.1%		Snap
		Random slow > fast	60-109	23.5-42.7%		Fade
		Off	110-119	43.1-46.7%		Snap
		Random pixel slow > fast	120-169	47.1-66.3%		Fade
		Off	170-255	66.7-100%		Snap
6	**Red**	Layer 1 red intensity 0-100%	0-255	0-100%	0	Fade
7	**Green**	Layer 1 green intensity 0-100%	0-255	0-100%	0	Fade
8	**Blue**	Layer 1 blue intensity 0-100%	0-255	0-100%	0	Fade
9	**White**	Layer 1 white intensity 0-100%	0-255	0-100%	0	Fade
10	**Layer 1 FX selection**	Sync strobe - all	0-2	0-0.8%	0	Snap
		Sync strobe - circle mask	3-5	1.2-2.0%		
		Sync strobe - 4 dot mask	6-8	2.4-3.1%		
		Sync strobe - 1 dot mask	9-11	3.5-4.3%		
		Random strobe - all	12-14	4.7-5.5%		
		Random strobe - circle mask	15-17	5.9-6.7%		
		Random strobe - 4 dot mask	18-20	7.1-7.8%		
		Random strobe - 1 dot mask	21-23	8.2-9.0%		
		Lite in/out - all	24-26	9.4-10.2%		
		Lite in/out - circle mask	27-29	10.6-11.4%		
		Lite in/out - 4 dot mask	30-32	11.8-12.6%		
		Lite in/out - 1 dot mask	33-35	12.9-13.7%		
		Snake	36-38	14.1-14.9%		
		Raindrops	39-41	15.3-16.1%		
		Random pixel	42-44	16.5-17.3%		
		Random fake x 2 (L = 13)	45-47	17.6-18.4%		
		Random fake x 4 (L = 7)	48-50	18.8-19.6%		
		Line (L = 5)	51-53	20.0-20.8%		
		Double line (L = 3)	54-56	21.2-22.0%		
		Corner to corner line (L = 9)	57-59	22.4-23.1%		
		Tilted double lines (L = 5)	60-62	23.5-24.3%		

		Tilted double lines in to out (L = 3)	63-65	24.7-25.5%		
		Center line running dot (L = 5)	66-68	25.9-26.7%		
		Middle line running dot (L = 5)	69-71	27.1-27.8%		
		Outer line running dot (L = 5)	72-74	28.2-29.0%		
		Corner to corner (L = 5)	75-77	29.4-30.2%		
		Arrow (L = 7)	78-80	30.6-31.4%		
		Wave (L = 8)	81-83	31.8-32.5%		
		Wheel (L = 8)	84-86	32.9-33.7%		
		Half wheel (L = 16)	87-89	34.1-34.9%		
		Circling dot (L = 8)	90-92	35.3-36.1%		
		Outer circle (L = 8)	93-95	36.5-37.3%		
		Inner circle (L = 4)	96-98	37.6-38.4%		
		Outer 4 dots (L = 4)	99-101	38.8-39.6%		
		Outer single dot (L = 16)	102-104	40.0-40.8%		
		Middle single dot (L = 8)	105-107	41.2-42.0%		
		Spinning 2x1 dots (L = 8)	108-110	42.4-43.1%		
		Asymmetrical 4 dots (L = 8)	111-113	43.5-44.3%		
		Symmetrical 4 dots (L = 8)	114-116	44.7-45.5%		
		Square (L = 3)	117-119	45.9-46.7%		
		Inside out (L = 6)	120-122	47.1-48.8%		
		Inside out 2 (L = 3)	123-125	48.2-49.0%		
		Abstract 1 (L = 3)	126-128	49.4-50.2%		
		Abstract 2 (L = 3)	129-131	50.6-51.4%		
		Abstract 3 (L = 3)	132-134	51.8-52.5%		
		Hash tag (L = 2)	135-137	52.9-53.7%		
		Flip flop (L = 2)	138-140	54.1-54.9%		
		Jumping slash (L = 13)	141-143	55.3-56.1%		
		Jumping 'L' (L = 12)	144-146	56.5-57.3%		
		Jumping pins (L = 12)	147-149	57.6-58.4%		
		Fat dot (L = 4)	150-152	58.8-59.6%		
		Bars (L = 2)	153-155	60.0-60.8%		
		3 x lines (L = 5)	156-158	61.2-62.0%		
		2 x lines (L = 5)	159-161	62.4-63.1%		
		Spiral (L = 28)	162-164	63.5-64.3%		
		Off - No Strobe or FX	165-255	64.7-100%		
11	**Layer 1 FX crossfade time**	Off	0-1	0-0.4%	0	Snap
		Crossfade fast > slow	2-127	0.8-49.8%		Fade
		Crossfade and tail slow > fast	128-255	50.2-100%		Fade
12	**Layer 1 FX orientation**	Off	0-4	0-1.6%	0	Snap
		Rotate 90°	5-9	2.0-3.5%		
		Rotate 180°	10-14	3.9-5.5%		
		Rotate 270°	15-19	5.9-7.5%		
		Horizontal flip	20-24	7.8-9.4%		
		Rotate 90° & vertical flip	25-29	9.8-11.4%		
		Rotate 180° & horizontal flip	30-34	11.8-13.3%		
		Rotate 270° & vertical flip	35-39	13.7-15.3%		
		Off	40-44	15.7-17.3%		
		Random rotate & flip	45-49	17.7-19.2%		
		Random position	50-54	19.6-21.2%		
		Rotate 90° & random position	55-59	21.6-23.1%		
		Rotate 180° & random position	60-64	23.5-25.1%		
		Rotate 270° & random position	65-69	25.5-27.1%		
		Off	70-74	27.5-29.0%		
		Bounce	75-79	29.4-31.0%		
		Rotate 90° & bounce	80-84	31.4-32.9%		

		Rotate 180° & bounce	85-89	33.3-34.9%		
		Rotate 270° & bounce	90-94	35.3-36.9%		
		Off	95-99	37.3-38.8%		
		Rotate CCW at end	100-104	39.2-40.8%		
		Rotate CW at end	105-109	41.2-42.7%		
		Random rotate at end	110-114	43.1-44.7%		
		Off	115-134	45.1-52.5%		
		Rotate 90° **	135-139	52.9-54.5%		
		Rotate 180° **	140-144	54.9-56.5%		
		Rotate 270° **	145-149	56.9-58.4%		
		Horizontal flip **	150-154	58.8-60.4%		
		Rotate 90° & vertical flip **	155-159	60.8-62.4%		
		Rotate 180° & horizontal flip **	160-164	62.7-64.3%		
		Rotate 270° & vertical flip **	165-169	64.7-66.3%		
		Off	170-174	66.7-68.2%		
		Random rotate & flip **	175-179	68.6-70.2%		
		Random position **	180-184	70.6-72.2%		
		Rotate 90° & random position **	185-189	72.5-74.1%		
		Rotate 180° & random position **	190-194	74.5-76.1%		
		Rotate 270° & random position **	195-199	76.5-78.0%		
		Off	200-204	78.4-80.0%		
		Bounce **	205-209	80.4-82.0%		
		Rotate 90° & bounce **	210-214	82.4-83.9%		
		Rotate 180° & bounce **	215-219	84.3-85.9%		
		Rotate 270° & bounce **	220-224	86.3-87.8%		
		Off	225-229	88.2-89.8%		
		Rotate CCW at end **	230-234	90.2-91.8%		
		Rotate CW at end **	235-239	92.2-93.7%		
		Random rotate at end **	240-244	94.1-95.7%		
		Off	245-255	96.1-100%		
13	**Layer 2 FX offset**	0-100%	0-255	0-100%	0	Fade
14	**Layer 2 FX length**	0-100%	0-255	0-100%	0	Fade
15	**Layer 1 FX color generator**	Off	0-9	0-3.5%	0	Snap
		Random all pixels RGBCMY	10-19	3.9-7.5%		Snap
		Random single pixel RGBCMY	20-29	7.8-11.4%		Snap
		Random all pixels bright colors	30-39	11.8-15.3%		Snap
		Random single pixel bright colors	40-49	15.7-19.2%		Snap
		Red / Blue	50-59	19.6-23.1%		Snap
		Red / Green	60-69	23.5-27.1%		Snap
		Blue / Green	70-79	27.5-31.0%		Snap
		Yellow / Magenta	80-89	31.4-34.9%		Snap
		Yellow / Cyan	90-99	35.3-38.8%		Snap
		Cyan / Magenta	100-109	39.2-42.7%		Snap
		Yellow / Blue	110-119	43.1-46.7%		Snap
		Green / Magenta	120-129	47.1-50.6%		Snap
		Red / Green / Blue	130-139	51.0-54.5%		Snap
		Red / Yellow / Blue	140-149	54.9-58.4%		Snap
		Red / Green / Blue / Yellow / Magenta / Cyan	150-159	58.8%-62.4%		Snap
		Red / Green / Blue - Horizontal line	160-169	62.7-66.3%		Snap
		Red / Green / Blue - Vertical line	170-179	66.7-70.2%		Snap

		No function	180-219	70.6-85.9%		Snap
		Color scroll, slow -> fast	220-229	86.3-89.8%		Fade
		Lite in	230-239	90.2-93.7%		Snap
		Lite out	240-249	94.1-97.6%		Snap
		Off	250-255	98.0-100%		Snap
Control / Settings						
		Idle	0-11	0-4.3%	0	Snap
		Effect sync – Immediate (1 sec.)	12-15	4.7-5.9%		
		Effect sync – Power line (3 sec.)	16-29	6.3-11.4%		
		Effect sync – Internal (3 sec.)	30-32	11.8-12.5%		
		No function	33-38	12.9-14.9%		
		Dimmer flash Off*	39-41	15.3-16.1%		
		Dimmer flash On*	42-44	16.5-17.3%		
		Dimming curve ESoft*	45-47	17.6-18.4%		
		Dimming curve Soft*	48-50	18.8-19.6%		
		Dimming curve Linear*	51-53	20.0-20.8%		
		No function	54-68	21.2-26.7%		
		Fan mode regulated*	69-71	27.1-27.8%		
		Fan mode high*	72-74	28.2-29.0%		
		Fan mode medium*	75-77	29.4-30.2%		
		Fan mode low*	78-80	30.6-31.4%		
		No function	81-83	31.8-32.5%		
		Display On*	84-86	32.9-33.7%		
		Display Off*	87-89	34.1-34.9%		
		Display Auto*	90-92	35.3-36.1%		
		Display invert Off*	93-95	36.5-37.3%		
		Display invert On*	96-98	37.6-38.4%		
		No DMX = Capture scene*	99-101	38.8-39.6%		
		No DMX = Stand-alone*	102-104	40.0-40.8%		
16	**Control / Settings**	**No DMX = Blackout***	105-107	41.2-42.0%		
		No DMX = Hold*	108-110	42.4-43.1%		
		Test pattern On*	111-113	43.5-44.3%		
		Test pattern Off*	114-116	44.7-45.5%		
		Rotation Off*	117-119	45.9-46.7%		
		Rotate 90° *	120-122	47.1-47.8%		
		Rotate 180° *	123-125	48.2-49.0%		
		Rotate 270° *	126-128	49.4-50.2%		
		Pixel mirror Off*	129-131	50.6-51.4%		
		Pixel mirror On*	132-134	51.8-52.5%		
		White output limitation Off*	135-137	52.9-53.7%		
		White output limitation 80%*	138-140	54.1-54.9%		
		White output limitation 60%*	141-143	55.3-56.1%		
		White output limitation 40%*	144-146	56.5-57.3%		
		White output limitation 20%*	147-149	57.6-58.4%		
		White output limitation 10%*	150-152	55.8-59.6%		
		No function	153-158	60.0-62.0%		
		RGB output limitation Off%*	159-161	62.4-63.1%		
		RGB output limitation 80%*	162-164	63.5-64.3%		
		RGB output limitation 60%*	165-167	64.7-65.5%		
		RGB output limitation 40%*	168-170	65.9-66.7%		
		RGB output limitation 20%*	171-173	67.1-67.8%		
		RGB output limitation 10%*	174-176	68.2-69.0%		
		No function	177-191	69.4-74.9%		

		Main LED PWM 2400 Hz (5 sec.)	192-194	75.3-76.1%		
		Main LED PWM 3000 Hz (5 sec.)	195-197	76.5-77.3%		
		Main LED PWM 4800 Hz (5 sec.)	198-200	77.6-78.4%		
		Main LED PWM 9600 Hz (5 sec.)	201-203	78.8-79.6%		
		No function	204-206	80.0-80.8%		
		Main LED PWM 25 kHz (5 sec.)	207-209	81.2-82.0%		
		No function	210-251	82.4-98.4%		
		Reboot fixture*	252-255	98.8-100%		
Layer 2 RGBW 25-pixel 8-bit						
17	**Pixel 1 RGBW**	Red intensity 0-100%	0-255	0-100%	0	Fade
18		Green intensity 0-100%	0-255	0-100%	0	Fade
19		Blue intensity 0-100%	0-255	0-100%	0	Fade
20		White intensity 0-100%	0-255	0-100%	0	Fade
…	**Pixel 2 … 24 RGBW**	Red intensity 0-100%	0-255	0-100%	0	Fade
…		Green intensity 0-100%	0-255	0-100%	0	Fade
…		Blue intensity 0-100%	0-255	0-100%	0	Fade
…		White intensity 0-100%	0-255	0-100%	0	Fade
113	**Pixel 25 RGBW**	Red intensity 0-100%	0-255	0-100%	0	Fade
114		Green intensity 0-100%	0-255	0-100%	0	Fade
115		Blue intensity 0-100%	0-255	0-100%	0	Fade
116		White intensity 0-100%	0-255	0-100%	0	Fade

Individual RGBW pixel control on channels 17-116 be mapped independently at the controller depending on how many pixels are connected to the KNV PSU outputs **A** – **E**.

Unused DMX channels can be deleted from the controller patch leaving them free for use by other fixtures.