Light Stream
Converter 6

Converter with built-in Ethernet switch and 6 customisable ports.
Designed for converting Art-Net signals to DMX or SPI
to control lighting fixtures.

- Quick setup via network
- Power supply 8V-48V DC or PoE
- Standby scene when no Art-Net stream is available
- Full support for Art-Net v4 protocol
- Up to 2 DMX spaces per port (up to 3 for SPI devices)
- Individual port operation in DMX IN mode, full RDM compatibility
- Galvanic isolation of power supply and DMX ports

For a complete table of specifications, see the **«Device data sheet»**
at the end of the manual.

Indication

Connector for connecting 8 to 48V DC

Buttons Set and Mode

RJ45 Ethernet ports:
LAN port
LAN port with PoE 48V

Mode indicator
Data indicator

Outgoing ports
Outgoing port indicators

Each indicator on the Converter can glow in several colours:

- green
- red
- orange (red+green LEDs switched on simultaneously)

«Mode» indicator

The «Mode» indication indicates the status of the Art-Net stream:

- **lights red** - Art-Net data to the ports assigned to the DMX converter ports spaces are not received
- **blinking yellow** - there is data in the Art-Net stream for the converter ports assigned to the converter ports spaces

«Data» indicator

The «Data» indication indicates the status of the Ethernet ports:

- **is lit or flashing green** - Ethernet data is being received
- **not lit** - no data is being received

Outgoing port indicators

Each port has an indicator next to it that tells you its current status.

The indication types are different for each of the port's operating modes:

- **DMX-OUT mode**
  - **lights green** - DMX signal is being transmitted
  - **lights up green, sometimes goes out for 0.1s** - DMX signal is being transmitted
    ArtSync synchronised
  - **no light** - DMX signal is not transmitted

- **DMX-OUT mode with RDM**
  - **blinks green** - DMX signal is not transmitted, RDM devices are being searched for
  - **orange momentary** - RDM device found
  - **lights up green, sometimes for 0.05s turns on red** - DMX signal is being transmitted,
    parallel data exchange via RDM
  - **lights up green, sometimes turns red for 0.05s, sometimes goes out for 0.1s.**
    - DMX signal is transmitted with ArtSync synchronisation, data exchange is going on in
    parallel via RDM

- **DMX-IN mode**
  - **lights red** - receiving incoming DMX signal
 - **flashes red** - no incoming DMX signal

- **In SPI mode**
  - **lit orange** - SPI signal is being transmitted
  - **glows orange, sometimes goes out for 0.1s** - SPI signal is being transmitted
    ArtSync synchronised
 - **not lit** - SPI signal is not transmitted

Wiring diagrams

Power supply from PSU «bus», Ethernet from switch «star»

A common wiring diagram.

Power supply   Ehternet switch

Player V2   Converter 6   Converter 6   Converter 6
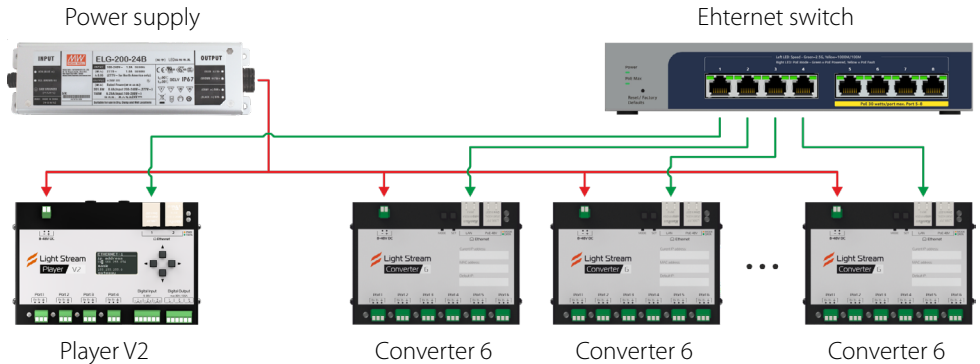
**Power supply from PSU by «bus», Ethernet from switch by «daisy chain»**

This connection scheme uses fewer switch ports. It is convenient to use short patch cords to connect the converters to each other by Ethernet daisy chain.

Power supply   Ehternet switch

Player V2   Converter 6   Converter 6   Converter 6
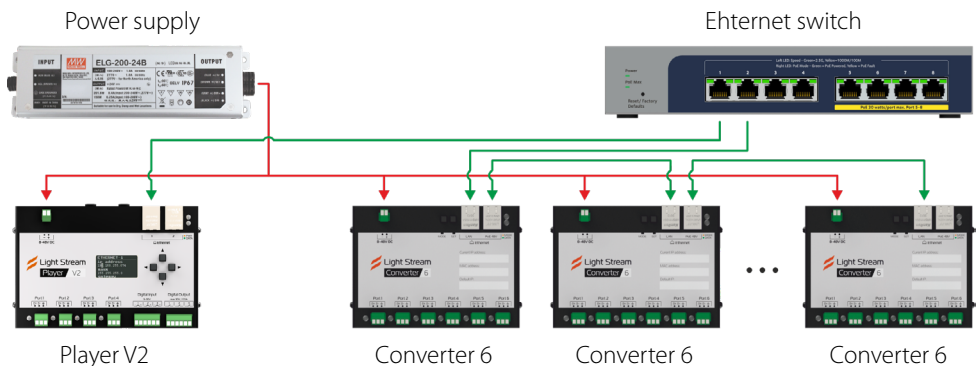
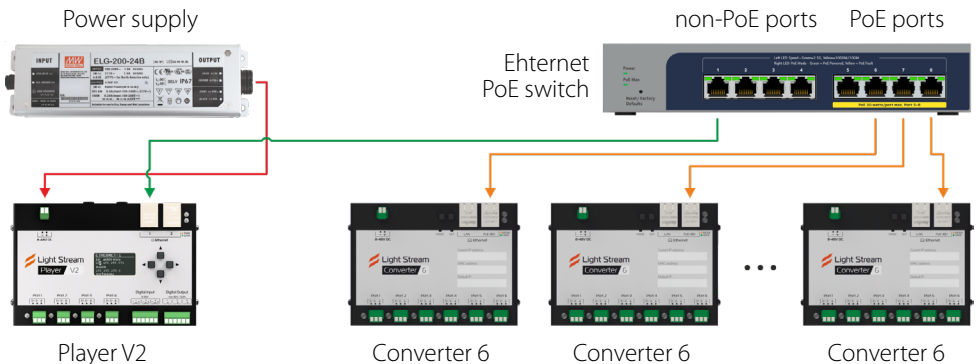**Power supply from PSU by «bus», Ethernet from LS Player V2 by «loop»**

On the second Ethernet port of Light Stream Player V2, subnet is configured by default 2. *. *. *. The converters connected to it do not find the DHCP server and then are available at the IP address

Default subnet 2 . * . * . * . (it is indicated on the sticker on the back of the Converter case). You get an isolated network for Art-Net converters with static IP addresses. Light Stream Player V2 interacts with them, you can configure and send Art-Net stream via unicast.

Power supply   Ehternet switch

Player V2   Converter 6   Converter 6   Converter 6
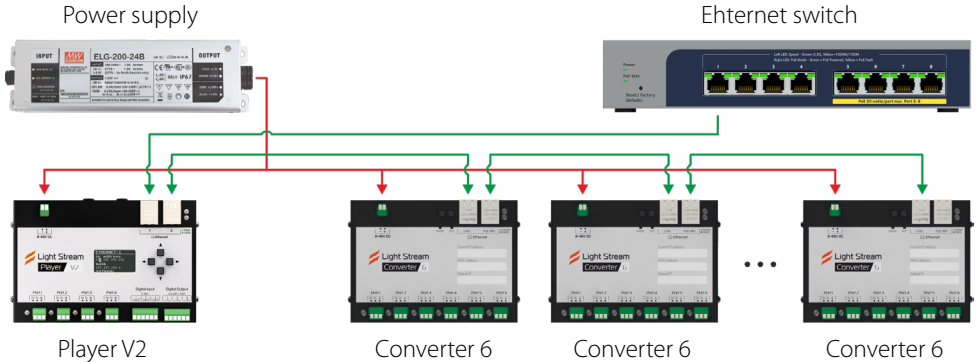
Power and Ethernet from a PoE «star» switch

Fast and easy switching thanks to the minimum of wires. Light Stream Converter does not need a separate power supply. PoE power supply supports only Ethernet port 2.
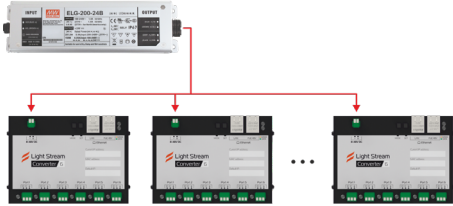

Power supply   non-PoE ports   PoE ports

Ehternet PoE switch

Player V2   Converter 6   Converter 6   Converter 6

Connection and configuration instructions

Step 1: Connecting to power supply
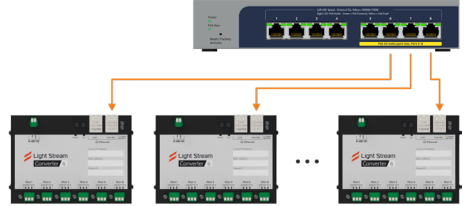
Power can be supplied in two ways:

Option 1

From 12V, 24V or 48V DC power supply unit

Option 2*

Over Ethernet wire together using PoE

* - in case of Light Stream Converter, only Ethernet port 2 supports PoE power supply
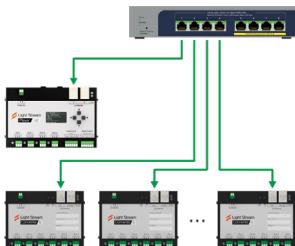For wiring diagrams, see: 'Wiring diagrams' on page <4>.

Step 2: Connecting to an Ethernet network

It is necessary to connect Light Stream Converter in one Ethernet network with Light Stream Player or Light Stream software installed on your PC:
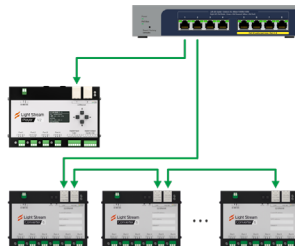
Option 1

Connect Light Stream Player and All Converter to Ethernet switch
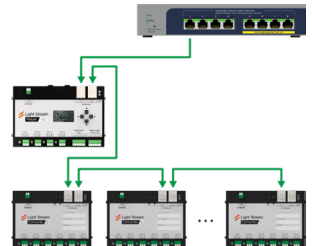
Option 2

Connect the first Converter to the Ethernet the first Converter to the switch, the others are «daisy chained» to it

Option 3*

Connect the first Converter to the second port of the Light Stream Player V2, the rest of them «daisy-chain» them

* - If it becomes necessary to control the converters using Light Stream software, a PC with the appropriate network settings will need to be connected to the second port of the Converter, the last one in the chain.

Examples of wiring diagrams can be found in the section: **«Wiring diagrams»** on page 4.

Step 3: Configure the Ethernet settings

Light Stream Converter network settings should allow it to exchange data with Light Stream Player or Light Stream software.

Option 1	Option 2
We use **static IP addresses** subnets 2 . * . * . * or **192 . 168 . * . * .**	Obtaining network settings **via DHCP**
If the Ethernet network does not have a DHCP server, the Converter will remain at a static IP address in subnet 2. IP address in subnet 2 . * . * . * (it is indicated on the sticker on the back of the Converter's case). Alternatively, you can set a different static IP address (in this case, the DHCP server autosearch will be disabled when connecting to the Ethernet network).	After connecting to the Ethertnet Converter with default settings, it tries to obtain network settings via DHCP. For correct operation it is necessary to configure the DHCP server to issue IP addresses in subnet 2 . * . * . * or 192 . 168 . * . * . . If the Art-Net stream will be transmitted unicast (to a specific IP), then it is also it is necessary to fix IP addresses given to converters in DHCP server settings, so that they will not change in the future.

Examples of suitable settings:

- Option 1. subnetwork 2 . * . * . *
  - 2 . 37 . 192 . 37 / 255 . 0 . 0 . 0 - IP address / mask
  - 2 . 0 . 0 . 2 / 255 . 0 . 0 . 0 - IP address / mask of Light Stream Player

- Option 2. Subnet 192 . 168 . 0 . *
  - 192 . 168 . 0 . 180 / 255 . 255 . 255 . 0 - IP address / mask Converter
  - 192 . 168 . 0 . 2 / 255 . 255 . 255 . 0 - IP address / mask of Light Stream Player

Important: Make sure that the IP addresses you have selected are not used by other devices on your network. Conflicting IP addresses can lead to connection problems. If you use DHCP and want to send the Art-Net stream to the Converter via unicast, you must configure the DHCP server so that it always gives the same IP address to each Converter.

For more details on configuring network settings other than default values, see: **«Converter setup»** > **«Configuring from the Light Stream Player interface»** on page 9.

Step 4: Configuring the converter operation mode

The remaining settings need to be configured over the network using either the Light Stream Player web interface or the Light Stream software on your computer.

For more details about the setting, see: **«Converter setup»** > **«Configuring from the Light Stream Player interface»** on page 9.

Step 5: Setting up the «Duty Scene» mode

After switching on and before the Art-Net signal arrives, the Converter will send a standby scene (by default it is «blackout» - the value of all channels is 0) to all DMX / SPI ports.

If an Art-Net stream was coming in but was interrupted, the static last frame that was received by the Converter is sent to the ports. You can switch the Converter to the standby scene by pressing the button on the case or by rebooting.

If you configure your own «Duty Scene» the Converter will broadcast a pre-configured static scene instead of just «darkness.» This is useful if, for example, some lighting is required during the day or night when the Ethernet network is unavailable or the Art-Net stream is not being received for some reason.

For details about the setting, see: **«Converter setup»** > **«Service Menu»** > **«Setting up the «Duty Scene»»** on page 18.
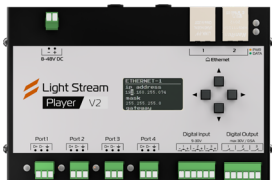
Converter setup

Converter can be flexibly customized to suit your needs.
You can use the following options to customize:

Option 1

Light Stream
Player

Option 2

Light Stream
software
on a computere

Default Converter settings

Network settings

When the unit is turned on, it tries to obtain settings via DHCP.

If no DHCP server is available, the unit will continue to operate with a static

IP address and default mask:

- **IP address** - <u>2 . * . * . *</u> (is indicated on the sticker on the back of the Converter case).
- **Mask** - <u>255 . 0 . 0 . 0</u>

Type of splitting of several Art-Net streams simultaneously arriving at the Converter: SINGLE

Converter port settings

- Port 1 - mode DMX512, space 1
- Port 2 - mode DMX512, space 2
- Port 3 - mode DMX512, space 3
- Port 4 - mode DMX512, space 4
- Port 5 - mode DMX512, space 5
- Port 6 - mode DMX512, space 6

If "something went wrong" during setup, you can return the Converter settings to default values at any time using the «Service menu» (see below).

See **«Converter setup»** > **«Service menu»** on page 17.

Configuring from the Light Stream Player interface

**Download the current version
Light Stream Player instructions**

To be able to configure Light Stream Converter and Light Stream Player, they must be on the same Ethernet subnet (IP addresses and masks allow them to exchange data). Searching for devices is automatic and takes some time.

Art-Net Devices page

Go to the web-interface of Light Stream Player. In the left side menu in the "Devices" section. open the item «Art-Net». In the table «Art-Net devices» displays all devices, that LS Player has seen in the network before or sees right now. We are interested in devices with the type «Dmx converter» and a name like «Converter 6-767B0A», where «Converter 6» is the device model and «767B0A» is the unique identifier of a particular device.

ArtNet devices

Name	Ip	Type	Firmware	Status	Ports	Rdm devices	Actions
Light Stream Player v2	192.168.0.201	Lighting console	0.14	Connection lost.	4	0	•••
Light Stream Player v1	192.168.0.200	Lighting console	0.14	Power On Tests successful	1	0	•••
Converter 6-915421	2.145.84.33	Dmx converter	OS-G v1.9.10.22	Power On Tests successful	6	0	•••
LS Converter 6 12	192.168.0.27	Dmx converter	OS-G v1.9.10.22	Power On Tests successful	6	0	•••

Rows per page: 10 ▼   1-4 of 4   <   >

Parameters displayed in the table

- **Name** - device name
- **IP** - address of the device on the Ethernet network.
- **Software** - software version of the converter.
- **Status** - current status of connection with the converter:
  - «Power On Tests successful» - converter on the network.
  - «Connection lost» - communication with the converter has been lost.
- **Ports** - number of converter ports for connecting DMX or SPI equipment.
- **RDM devices** - number of RDM DMX devices connected to the converter ports.
- **Actions** - call quick commands without opening the device card:
  - "Identify" - when this command is sent, all indicators on the Converter will blink several times for quick visual identification of the Converter.
  - "RDM devices" - quick passage to search for RDM devices connected to the converter ports.
    Remember to first activate RDM on the ports you want.

Parameters available for customization

To configure the converter, click anywhere on the «Art-Net devices» tab on the line with the converter we need.

In the opened window you will see all available settings:

Converter 6-915421   [Identify]

Long name:	Converter 6-915421 ✎
Type:	Dmx converter
Status:	Power On Tests successful
IP address:	2.145.84.33
Assign method:	◉ Static ○ Dhcp
IP address	2.145.84.33
Network mask	255.0.0.0
Gateway	0.0.0.0
	[Cancel] [Save]
Firmware:	OS-G v1.9.10.22
Merge type:	SINGLE ✎

Ports:

№	Name	Out signal	Universe	Rdm	Tx
1	#DMXOUT1	DMX	1	off	⬤
2	#DMXOUT2	DMX	2	off	⬤
3	#DMXOUT3	DMX	3	off	⬤
4	#DMXOUT4	DMX	4	off	⬤
5	#DMXOUT5	DMX	5	off	⬤
6	#DMXOUT6	DMX	6	off	⬤

Dmx settings:

Break time:	Mab time:	Chan time:	Pause time:	Channel count:
176	12	48	176	512

Max FPS: 40 ⑦

Send macros:

Key:	Subkey:	Data:	
55 ▾	33 ▾		[Send]

- **Name** - the displayed name of the converter.
- **Type** - Light Stream Converters correspond to the "DMX Converter" type.
- **Status** - current status of connection with the converter:
  - «Power On Tests successful» - online converter.
  - «Connection lost» - the converter has been lost.

- **IP** - Ethernet address of the device.
  - **Type**
    - **Static** - specifying static network settings.
    - **DHCP** - obtaining network settings automatically.
  - **IP address** - device address.
  - **Network mask** - device netmask.
  - **Gateway** - device gateway

- **Software** - Converter software version.
- **Merge type**

  If DMX spaces assigned to the Light Stream Converter port are present in several Art-Net streams coming from different IP addresses at the same time, a conflict will arise. It is necessary to select what will be played back:
  - **SINGLE** (by default)
  - **MERGEHTP**
  - **DUALHTP**

- **Ports** - individual settings for each of the converter ports:
  - **№** - serial number of the port.
  - **Name** - is the system name of the port.
  - **Outgoing Signal** - select the type of outgoing signal:
    - **DMX** - when devices controlled by DMX protocol are connected to the port.
    - **SPI** - when and SPI light sources are connected to the SPI-Extender port.
  - **Universe -** DMX space number from the incoming Art-Net stream that will be broadcast to devices connected to this port on the converter.

- **RDM**
  - **«on»** - Activate the RDM protocol to search for and control compatible devices on this port.
  - **«off»** - deactivate if no such devices are to be connected.

- **Tx** - indication of signal playback on the port
  - 🟢 • signal is sent
  - ⚪ • no signal

- **DMX settings**

Edit the DMX signal settings. Do not change them unless you understand why you are doing so and what it will affect.

- Available customizations: Break time, Mab time, Chan time, Pause time, Channel count.
- To send **2 DMX spaces** to each port, the value of
  «Channel count» from 512 to 1024.

Configuration from the Light Stream software interface


**Download the current version
of the Light Stream software manual:**

Check that the computer and converters are in the same Ethernet subnet (IP addresses and masks allow them to exchange data). allow them to exchange data). Open the Light Stream program on your computer. Create a new project.
Go to to the Fixtures tab.
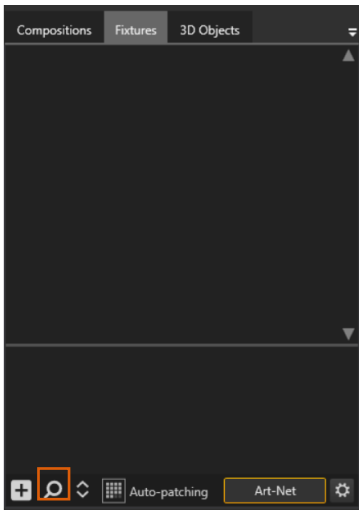
At the bottom, click on the «magnifying glass» icon to search for devices on the local network.
This will open a window «Search Art-Net nodes».
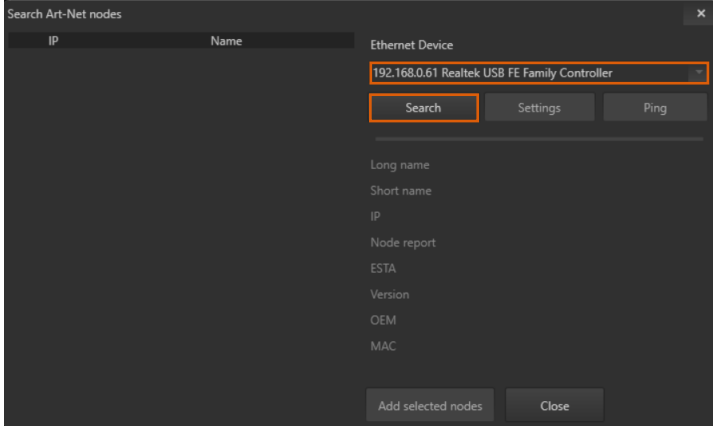
Select the network card in the «Ethernet Device» drop-down list,
to which the converter is connected.

Click the «Search» button to start the device search. The found devices will be displayed on the left side of the window.
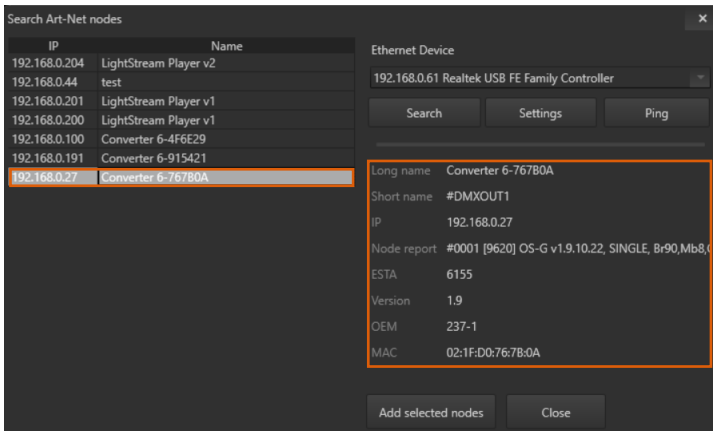
Select the desired converter in the list. Brief information about it will be displayed on the right.

When you press the "Ping" button on the selected converter, all indicators will blink several times. This way you can quickly recognize all found Light Stream Converters.

Parameters available for customization

To go to the Light Stream Converter settings window, click the «Settings» button.

- **Main settings**
  - **IP address** - current IP address of the converter.
  - **Mask** - the suggested mask value (regardless of what mask is currently specified in the settings).
    To change the IP address and mask, enter the required values, then click the **«Set IP»** button.
  - **«Ping»** button - sending a Ping command to the Light Stream Converter.
    When it is received, all indicators on the converter will blink several times.
  - **Long name** - converter name.
    You can change and press the **«Set»** button to save.
  - **Port mode** - selecting the converter ports operation mode.
    - **Режимы DMX**
    - **DMX512** - fully compliant with the DMX standard from 1990. 512 channels per port.
    - **DMX1024HS** - a modern modification of the DMX standard.

By increasing the signal frequency, the number of channels per line is doubled. Compatible with many Chinese-made light sources. 1024 channels per port.

- **SPI modes**
  - SPI 170 pix
  - SPI 340 pix
  - SPI 680 pix x1
- **SPI chips**

  if you have selected the SPI port mode, you will need to specify the SPI chip to be used
  - GS8206
  - WS2814
  - WS2811
  - WS2811L
  - WS2812
  - WS2818
  - UCS1903
  - UCS8903
  - TM1803
  - TM1914
- **Ports** - list of Light Stream Converter ports, the type selected and the DMX spaces assigned to them. For example:
  - **Short name** - automatically generated short port name depending on the selected mode and port number.
  - **Universe** - DMX space number transmitted to the port

    You can also set the space number in the classical way:
    - **Net** - network number
    - **Sub** - subnet number
    - **Univ** - universe number

Service menu

You can use the service menu for quick settings. It can be used even without connecting the Converter to an Ethernet network.
All controls are performed using the «Mode» and «Set» buttons.

Available commands
Each command corresponds to a different flashing mode of the «Data» indicator:

- 1 time red - reset network settings to default values
- 2 times red - reset Converter port settings to default settings
- 1 time green - switch to "Static IP" mode
- 2 times green - switch to "DHCP" mode
- 3 times green - save the IP address obtained via DHCP and make it static

Setting via the service menu

1. Enter the menu
- Turn off the power to the Converter
- Press and hold down the «Mode» button
- Supply power
- The converter will turn on in the service menu mode

The «Mode» indicator will be lit orange and the «Mode» button can be released.

2. Select the desired command
Press the «Mode» button to cycle through the service menu commands. You can see which command is currently selected by blinking of the LED «Data» (see «Available commands» above).

3. Execute the selected command
The command is executed by pressing the «Set» button.

4. Exit the service menu
you can use either of two methods to get out:
- press «Set» in an empty list item (the «Data» indicator does not flash).
- wait 60 seconds, Converter will restart in normal mode.

Setting up the «Duty Scene»

A recording of «Duty Scene»

1. Start the Art-Net stream transfer to the Converter with a static scene that will need to be to be recorded into the «Duty Scene».

2. Check that the Art-Net signal is being received by the Converter and that the DMX or SPI signal is being sent to the correct ports.

3. Hold down the «Mode» button for 3 seconds until the «Mode» indicator starts flashing rapidly.

4. «Duty Scene» is recorded.

Forced startup of «Duty Scene»

1. Check the display to make sure that the Art-Net signal is not being received by the Converter.

2. Press and hold the «Set» button for 1 second.

3. «Duty Scene» is up and running.

Working with RDM

Converter fully supports the RDM protocol. It transmits all received RDM data via the Art-RDM protocol to the Light Stream Player.

RDM is disabled by default. It is enabled on each port separately. For more details, see:
«Converter setup» > «Configuring from the Light Stream Player interface» > «Parameters available for customization» on page 11.

If no Art-Net stream is received

«Duty Scene» before the Art-Net stream came along

If no Art-Net stream is received after the Converter is turned on, the Converter broadcasts a «Duty Scene» to all ports.

When power is applied to the Converter, the lights will not randomly turn on, but will will remain in the «off»state or in the «Duty Scene» state you have set up until the Art-Net stream appears.

By default, a «blackout» signal is written to the «Duty Scene».
It can be overwritten with a static light scene for your object.

It is possible to test the operation of the luminaires even without an Art-Net flow source. Also, this presetting will not leave the object without illumination even in the case of Art-Net flow source is unavailable after the Converter is turned on.

As soon as an Art-Net stream is received by the Converter, data from the stream is broadcast to the ports.

If the Art-Net stream is interrupted
If the Art-Net stream is lost, the Converter broadcasts the last available data for all DMX addresses until the Art-Net stream is restored (or until the Converter is turned off).

In case of a communication failure between the converter and the Art-Net signal source, the indicators will not turn off or will glow «chaotically». The animation will simply stop in a static position until communication is restored.

If the Art-Net stream is lost, there are two ways to turn on the "Duty Scene":
1. Disconnect the Converter from the power supply and turn it on again
2. Press the «Set» key on the converter body once

Attention
Some DMX lights can memorize the last DMX signal they received. And even after the converter is turned off, they will continue to play it back. For a complete reset, the power must be disconnected from the DMX lights as well.

Working with multiple Art-Net streams

Converter can work not only with a single Art-Net stream, but also with multiple streams. This can be useful for both redundancy and merging of two streams.

The Art-Net to Converter stream merge type is selected for the entire device and applies to all of its ports. on all of its ports. How to set the desired mode is described in the section: **«Converter setup» > «Configuring from the Light Stream Player interface» > «Parameters available for customization»** on page 11.

Single

In the Single merge type, the converter uses only one Art-Net stream.

- Converter remembers the IP address of the first received Art-Net stream and uses only its data. Streams from other IPs are ignored.
- If the main stream is interrupted for more than 5 seconds, the converter will automatically switch to the next available Art-Net stream by memorizing its IP address.

  Art-Net stream redundancy.
  To increase reliability, you can transmit the same Art-Net stream from two different IP addresses. IP addresses. If the main stream is interrupted, the converter will automatically switch to the backup stream after 5 seconds.

MergeHTP

In the MergeHTP merge type, the converter merges two Art-Net streams from different IP addresses, selecting the maximum value for each DMX address.

- Converter can process only two Art-Net streams from different IP addresses simultaneously, additional streams will be ignored
- If one of the two Art-Net streams is interrupted, after 5 seconds Converter will switch to the next available Art-Net stream.

  Play two Art-Net streams from different IP addresses.
  This can be useful if you want to combine effects from two sources. For example, the source of the first Art-Net stream will send a calm animation, and the source of the second stream will send a «Salute» animation at the right moment. Converter will merge these streams, and the «Salute» animation will be played over the calm animation.

DualHTP

In the DualHTP merge type, each converter port merges two independent DMX spaces. DMX spaces, selecting the maximum value for each DMX address.

- The numbers of the two DMX spaces are specified for each port
- The sources of Art-Net streams can be either on different IP addresses or on the same IP address

*Control one DMX port from two programs on one computer.*

Imagine you need to connect DMX lighting fixtures and DMX relays to one Converter port and control them simultaneously using different software on the same computer. To one Converter port and control them simultaneously using different software on the same computer. One program controls the lights (space № 3, DMX addresses 1-449) and the other program controls the DMX relays (space №120, DMX addresses 450-512). In DualHTP mode, space № 3 and space № 120 are assigned to the same port. The Converter will receive data from space № 3 for channels 1-449 and from space № 120 for channels 450-512, transmitting the maximum values for each channel to the port.

Light Stream Converter 6 device datasheet

Assignment

Converter with built-in Ethernet switch and 6 customizable outgoing ports.

Designed to convert Art-Net signals to DMX or SPI for controlling lighting fixtures.
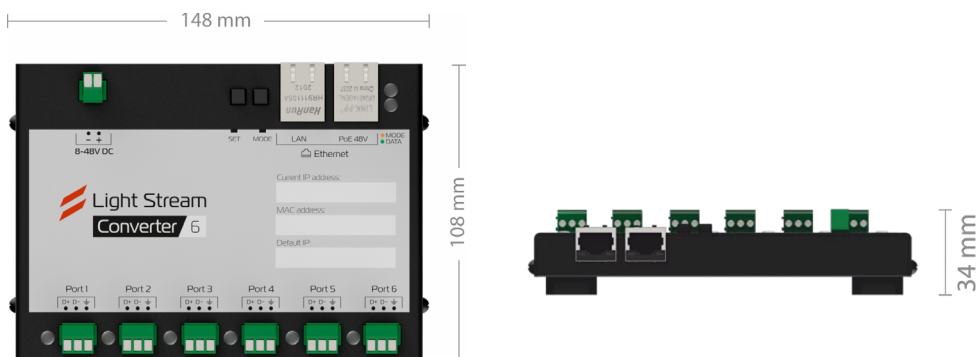
Ergonomics

Case	Metal, with additional fasteners for mounting on DIN rail
Weight	420 г
Dimensions	148 мм • 108 мм • 34 мм

Interfaces

Ethernet ports	2 x 100Mbit/s Ethernet ports (built-in switch)
Outgoing ports	6 ports DMX out-in / RDM / SPI
Supported protocols	Art-Net v4 (compatible with v1, v2, v3) DMX512 (classic and advanced)
Number of addresses per port	512 or 2048 (optional for SPI and high-speed DMX)

Supported SPI chips	Any IC with single wire control such as: UCS8903, GS8206, GS8208, WS2811, WS2812, WS2814, WS2818, SK6812, UCS1903, TM1804 and others
Galvanic isolation on the ports	By signal: optical By power supply: up to 1000V DC
Voltage and consumption	8-48V DC, PoE (type B) 24-48V DC up to 5 W
Power consumption	5 W (480мА@8V, 300мА@12V, 150мА@24V, 75мА@48V)
Connection connectors power and outgoing ports	screw terminal connectors for cables up to 1.5 mm^2

Operating conditions

Operating temperature	-40℃ to +50℃
Storage temperature	-50℃ to +70℃
Humidity	5% to 85%, non-condensing
Resistance to electrostatic discharges	Air discharge ± 15 kV DC
IP rating	IP20
Warranty	3 years of limited manufacturer's warranty

Equipment
Light Stream Converter 2 - 1 pc.
Ethernet cable -1 pc.
Connectors - 2 pin 1 pc, 3 pin 6 pcs.

Disposal
If the device has reached the end of its service life and is out of service, it should be disposed of in accordance with the applicable laws of the Russian Federation.
The packaging can be completely recycled.

Manufacturer's warranty

The warranty period is: 3 calendar years from the date of sale.

The warranty covers the failure of the device, provided that the rules and climatic conditions of operation are observed.

The warranty is void if the Buyer has made any changes to the device, as well as
if there are mechanical damages, traces of liquids, cinders, tampering on the case or board of the device.
liquids, burning, tampering.

Warranty replacement and repair shall be performed at the Seller's address.

Certificate of Acceptance

Light Stream Converter 6 complies with the requirements of regulatory documentation and is recognized as fit for use.

Mark of sale

Seller's signature   Seller's seal

_____   P.S.

The manufacturer reserves the right to make changes in the design of the product and parts that do not impair the quality of the product without prior notice.

Technical support

You can get free assistance from a specialist on the support portal
https://lightstream.pro/ru/support#lightstreamchat