

Pixel-Gate

User Guide



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Version January 2016: All technical data and the weight and dimension information were carefully created – errors reserved. Any colour deviations are printing-related.

We reserve the right to make changes that serve further improvement.

**For older Pixel-Gate production dates and Firmware versions < 2.6.153:
Please use the older user guide. Many new features of the Generation 3 and video signal resolutions are not supported. Older Pixel-Gates can be updated to Generation 3 firmware with a hardware update.**

**Please contact us if you would like to update:
info@schnickschnacksystems.com or +49 (0) 221 992 019 -0**

Table of Contents

Overview	4	Artnet	13
Process/Workflow	5	Internal Patch Protection	14
Installation	5	Drop Frame	14
Connections	6	DVI-/DDC-Framerate	15
Video/Network Inputs	7	General Offset	15
Ethernet output	7	Syncpulse	15
Menu	8	Fill unused Artnet data with 0	16
Menu Navigation	9	DVI Color Space	16
Menu Selection	9	Pixel-Gate IP Addresses	16
Info	10	Using Several Pixel-Gates in Large Systems	16
Factory Settings	10	Cabling Examples	17
Quick Patch Mode	10	EU Declaration of Conformity	18
Pixel Patch Mode	11		
Error Message in Pixel Patch Mode	11		
Setup	12		
Black Level	13		
Gamma Correction	13		

Overview

The Pixel-Gate is a hardware solution for converting digital video signals (DVI or SDI) into network control data for LEDs (Art-Net™ or rather Schnick-Net). The mapping of the image data is hardware-based and therefore effective and high performing.

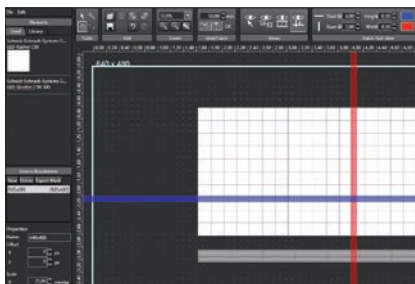
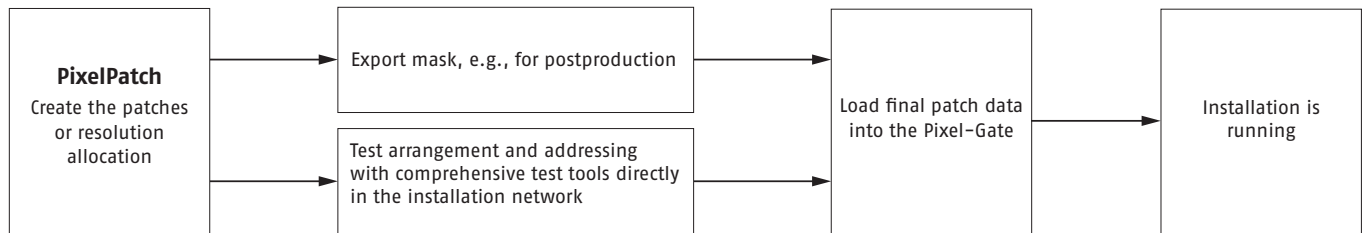
In combination with media servers, the Pixel-Gate relieves the server from resource-intensive pixel mapping. The Pixel-Gate belongs to the Generation 3 and offers system-wide synchronization as well as 60fps compatibility.

With its three versions – **Light**, **Plus** and **Pro** – it is the ideal supplement for small installations and larger shows as well.

The differences between the versions

- Light: ≤ 64 Universes, limited to products from Schnick-Schnack-Systems
- Plus: ≥ 150 Universes @60fps, limited to products from Schnick-Schnack-Systems
- Pro: ≥ 150 Universes @60fps, SD-SDI inputs, no manufacturer limitations

Process/Workflow



Use the PixelPatch software to create and edit patches comfortably.

Download the current software version under:
<http://schnickschnacksystems.com/en/products/software/pixelpatch/>



Installation

After unpacking, check the device immediately for any possible damage caused by transport. Damaged units cannot be put into operation.

If the Pixel-Gate is transported from a cold environment into a warm room, let it warm up for at least three hours before putting into operation. This allows any built-up condensation to evaporate and therefore avoids damaging the electronics.

When mounting on racks, please make sure there is enough air supply to the front and the back. The supply air temperature should never go over 35°C.

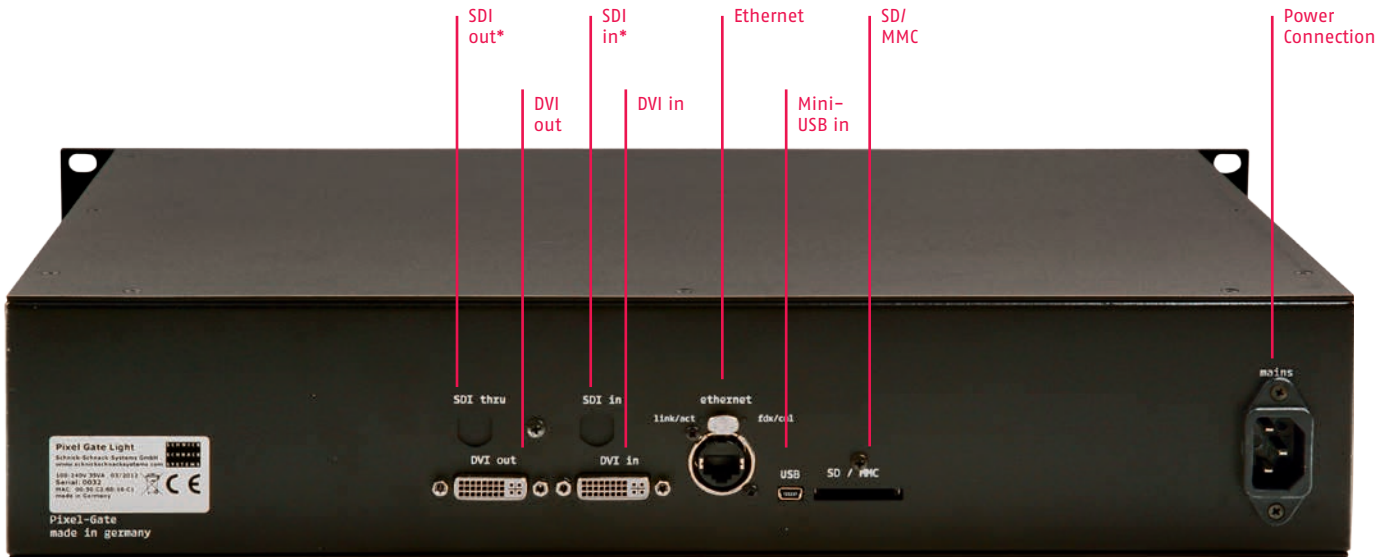
When installing the Pixel-Gate into a rack, it should be mounted on tracks to unburden the unit's front plate and to make service easier.

Connect the DVI-input, the Ethernet input and the power supply one after the other. Once all connectors are hooked up, the unit can be turned on. After about an hour, the Pixel-Gate is ready for operation.

Keep the unit out of direct sunlight. Never use aggressive cleaning agents or water. Simply wipe with a damp cloth. A mild cleaning agent can be used if necessary.

Connections

The following connection options can be found on the back of the device:



(SDI-IN)*	SDI-input	Power Connection	Mains plug
(SDI-OUT)*	SDI-output (to daisy-chain)	Network	Neutrik Ethercon
DVI IN	Input DVI	Mini USB-input	No function at present
DVI OUT	Output DVI (to daisy-chain the signal)	SD-Card reader	To load patch files and software update

* Only on Pixel-Gate Pro

Video/Network Inputs

The Pixel-Gate accepts all VESA-compliant resolutions at the DVI input up to full HD (1920 × 1080px).

DVI (gradually, 50–60Hz)

For example:

640 × 480px

768 × 576px (576p)

800 × 600px (preferred)

1024 × 768px

1152 × 864px

1280 × 720px (preferred) (720p)

1280 × 960px

1280 × 1024px

1368 × 768px

1920 × 1080px (1080p)

SDI

Only:

720 × 576px (PAL, 25Hz, interlaced)

720 × 486px (NTSC, 29Hz, interlaced)

Advice on DVI Resolution:

The driver in the new graphic cards can often only output resolutions from 800 × 600px via DVI. Smaller resolutions are supported less often. Please take this into account when creating your patches.

Advice when using with Apple Mac:

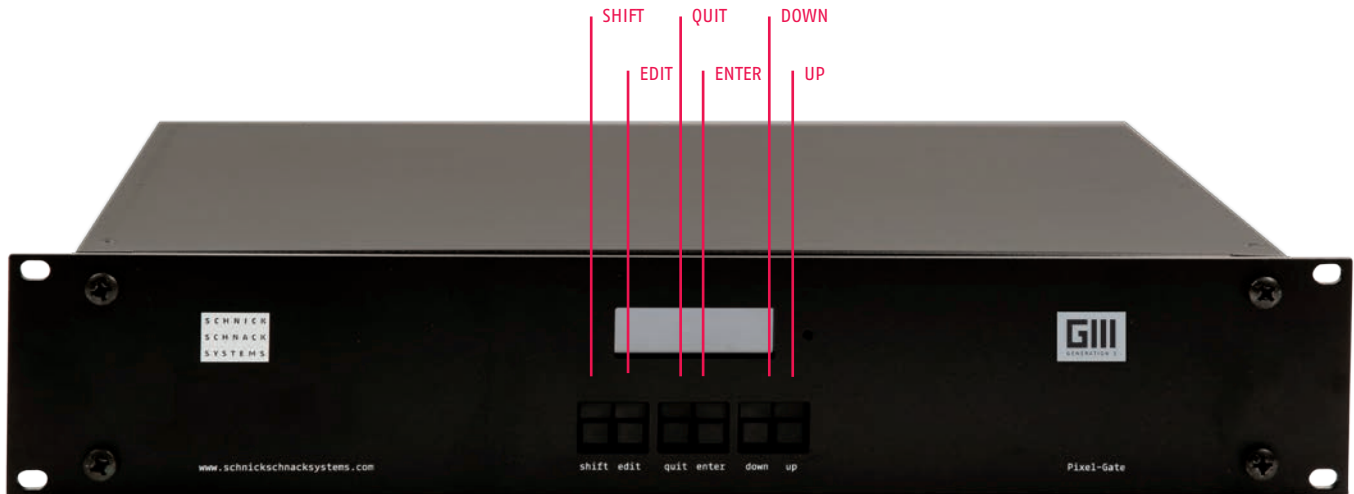
To ensure a secure DVI connection, we recommend the additional use of an EDID-Manager in the DVI feed to the Pixel-Gate.

Ethernet Output

- Schnicknet or Art-Net™
- Broadcast or Unicast if supporting 10/100 Mbit
- At least 100 Universes at 60fps (depending on the Pixel-Gate version: light is limited to 64 Universes)
- Sync-Impuls for Generation 3 products and automatic use of Schnicknet

Menu

On the front of the device you can find the following controls:



SHIFT+

EDIT

usage in conjunction with...

to navigate backwards through the data entry fields

ENTER

to confirm specific actions

EDIT

to navigate through the data fields

QUIT

to exit the chosen mode or sub menu

ENTER

to confirm actions, for example, changing mode of operation

UP

scrolls up through the list of modes. Increases the value of the currently selected data field

DOWN

scrolls down through the list of modes. Reduces the value of the currently selected data field

Menu Navigation

SCHNICK	Pixel-Gate
SCHNACK	
SYSTEMS	v3.2.170

New Mode:
info

New Mode:
Factory Defaults

New Mode:
Quick Patch

New Mode:
Pixel Patch

New Mode:
Setup Menu

Menu Selection

To reach the menu selection, press the **QUIT** key and confirm the question **CHANGE MODE?** with **ENTER**.

Select your preferred mode with the **UP/DOWN** keys and confirm with **ENTER**. Hitting **QUIT** returns you back to your original mode.

Change Mode?
Quit Enter

Info

This mode shows the type of device and the installed software version.

SCHNICK SCHNACK SYSTEMS	Pixel-Gate Light v3.2.170
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Factory Settings

Pressing and holding **SHIFT+ENTER** will set Pixel-Gate back to its factory settings.

Please note:

This step cannot be reversed!

Restore Factory Defaults? Quit	Shift+Enter
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Quick Patch Mode: easy start-up of C60-25 and C60-50 Panels

In combination with C60-50 or the C60-25 LED panels, the **Quick Patch** function offers a quick and easy entry into complex installations. When using tiles or strips, the PixelPatch software and the PixelPatch mode offer a wide range of possibilities.

Use **EDIT** to move the cursor through the data fields. Press the **INPUT** field to determine the type of signal input: **DVI** or **SDI** (option only with Pixel-Gate Pro).

A control field to the right side of the field shows that the Pixel-Gate is receiving an input signal.

Use the field **PANEL** and **OF** to chose the number of LED panels in the X and Y coordinates and the type of panel.

Use the **Scale** or **Offset** field to adjust the video file accordingly.

Input	DVI		Scale	1
Panel	5	x	2	of
Offset	X		Y	C60-25
				0

Pixel Patch Mode

The **Pixel Patch Mode** accesses a patch file that has been created by using the PixelPatch software and is saved on an SD card.

In the **INPUT** field with a Pixel-Gate Pro, you can switch between the SDI input and the DVI input.

In the **FILE** field, select the S3P patch file that you want to load from the SD card. If there are more files stored on the SD card, you can select the desired file with the **UP/DOWN** keys. Then confirm your chosen file with **ENTER** and hit **EDIT** to jump to the next field. The display will show that the file is being loaded.

Within the **PATCH** field, select the video resolution chosen for the source file. The Pixel-Gate requires this resolution to communicate with a DVI-source. Advancing with **EDIT/ENTER** loads the resolution and the allocation of the pixels is calculated. The display will first show "Loading" then the status "Calculating Files" and then "Saving Patch".

If you have installed everything correctly, the display will show the following information: **Running**. In the event of an error, the following notifications will be displayed.

Input	DVI No Input
File	01_Pix.S3P
Patch	800 x 600
Status	no input

Error Detection in Pixel Patch Mode

Display-Menu Item	Error Message	Description	Solution
Input	<No Input>	DVI (SDI) input signal cannot be found	Check the input cable connection and the source
File	<No set>	Patch file (S3P file from PixelPatch) not loaded/found	Check that the SD card with a valid Patch file is inserted
Patch	<No set>	Video resolution created in the Patch file is not loading	Select a given video resolution
Status	Resolution error	The output Patch has a different resolution than the DVI source	Select a different resolution within the Patch file, change the resolution of the source, create a new Patch file, or renew the DVI source and the Pixel-Gate connection
	Patch overflow	Within the created patches there are addressed Pixels outside the Patch's given resolution	Switch on the Drop Frame mode in the set-up menu. Create a new Patch file with the PixelPatch software, select another resolution or use the Offset to shift the given area of resolution so it matches the area of the LED products
	no network	Physical network connection not available	Check to see if the Ethernet cable to the Pixel-Gate and at the switch is connected correctly
	no input	DVI (SDI) input signal cannot be found	Check the input cable connection and the source

Setup

The following attributes can be adjusted by using this menu:

1. Black Level
2. Gamma Correction
3. Artnet
4. Save Patch internally
5. Drop Frame
6. DVI-/DDC-Framerate
7. General offset
8. Syncpuls
9. Fill unused Artnet data with 0
10. DVI Color Space

Use the **ENTER** button to access the sub menu.

Setup Menu:

Black Level

Setup Menu:

Gamma Correction

Setup Menu:

Artnet

Setup Menu:

Save Patch internally

Setup Menu:

Drop Frame

Setup Menu:

DVI-/DDC-Framerate

Setup Menu:

General Offset

Setup Menu:

Syncpuls

Setup Menu:

Fill unused Artnet data with 0

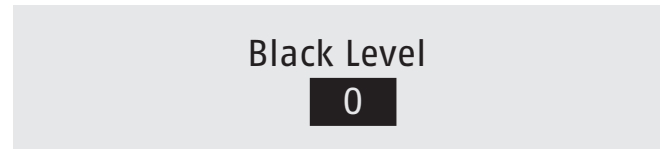
Setup Menu:

DVI Color Space

Black Level

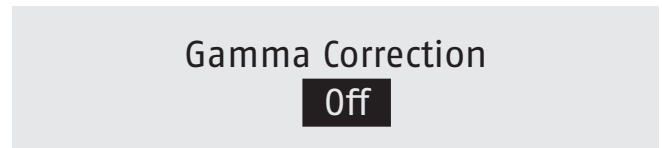
Use the **EDIT** button to select the data input field.

With a **Black Level** higher than 0 all pixels below the calibrated thresholds will be hidden and are therefore black. Adapting this attribute can be very useful if the content comes from an analogue source or if the black level of the video to be played tends towards light grey.



Gamma Correction

No function at present.

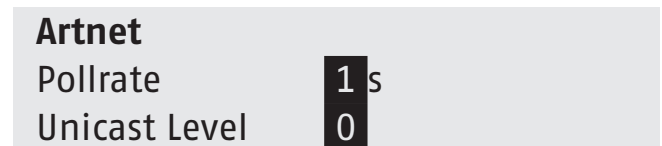


Artnet

In the ArtNet menu, you can choose between the **Unicast** and **Broadcast** mode and set the **Pollrate**.

The **Pollrate** determines in which interval the Pixel-Gate can search for the Art-Net nodes or system power supplies that are available in the network. If the poll rate is set at parameter 0, devices will only be looked for at the beginning. Devices that are connected or disconnected later will no longer be recognized. The parameter 0 lowers the network load but is only recommended in exceptional cases. Alternative: Set the parameter at, for example, 5s. The standard value amounts to 1s.

With the **Unicast Level** you can switch between Unicast and Broadcast. If the parameter is set at 0, the Pixel-Gate broadcasts all data in the network. By values greater than 0, the Pixel-Gate sends the data in Unicast. The parameter values 1, 2, 3 or 4 determine how many system power supplies/devices within the network can receive the same Universe. For example, if the parameter is set at 3, data from the same Universe can be received by up to three devices.



Internal Patch Protection

When this function is switched on, the currently loaded patch will be saved internally.

Save Patch internally

On

Drop Frame

This function is necessary in order to set the desired frame rate via Art-Net™ and to optimize the Pixel-Gate's performance with larger resolutions and a lot of network data.

Drop Frame

On

Drop Frame On

Every second frame of the incoming DVI signals will be ignored. Network-wide only every second frame of the incoming image data for the LEDs will be calculated and transmitted.

Example: usually DVI signal with 60Hz. On the LEDs 60Hz/2=30Hz will be emitted.

- Good for large networks to help optimize performance
- If only purely DMX products are connected 30Hz is sufficient for Ethernet ports

Drop Frame Off

All incoming frames of the DVI signal are calculated and on the network side are outputted as control data to the LEDs. At normal 60Hz on the DVI signal side, the control data is passed on to the LEDs at 60fps.

Recommendation: optimal image presentation with rapid movement is achieved when Generation 3 products are run with Dynamic-Pixel-Bus and Drop Frame Off.

The Pixel-Gate can internally store a maximum of 1000000 Pixels from incoming image signals. In earlier versions of the Pixel-Gate, the last rows of a video image in large resolution would not be saved so it could not be used in the Patch.

The new Calculation Filter automatically calculates only those Pixels needed for the Patch. The cropped resolution of previous versions is therefore omitted.

Please note: With older Pixel-Gate versions < 3.2.170 please refer to corresponding advice in the old user guide.

DVI-/DDC-Framerate

Use the **EDIT** button to select the data input field.

When establishing a DVI connection, the Pixel-Gate and the graphic unit of the playback device exchange information via the Display Data Channel (DDC). They agree on a resolution and frame rate that the DVI signal will be transmitted at.

The parameter **DVI/DDC Framerate** sets the preferred DVI frame rate in the EDID, that the Pixel-Gate expects from the playback.

DVI DDC Framerate
60 Hz

General Offset

General Offset is for fine adjustment of the Patches. The image detail of the Patch can still be shifted pixel-by-pixel and adjusted where necessary for X and Y.

General Offset
x 0 y 0

Syncpulse

With the **Syncpulse** parameters you can determine how the Pixel-Gate will synchronize the data of connected Generation 3 products. (Third-party products are not compatible with Syncpulse. Older system power supplies/Sys Ones simply ignore the Sync-command.)

When using Sync-impulses all data on all connected Generation 3 LED products is displayed simultaneously.

V-Lock (post)*

Sync-impulse will be sent to the network at the end of every received DVI video frame. (Recommended setting)

Low Latency (pre)*

A Sync-impulse will be sent as soon as the last patched Pixel is calculated. Especially low latency – depending on the network and system configuration – in rare cases it can happen that not all control data gets completely distributed among all connected LED products.

NO

No Sync-impulse will be sent.

DVI DDC Framerate
60 Hz

* With Pixel-Gate Firmware version <3.2.201 the Sync-Parameter are called pre, post and no

New as of Version 3.2.201 (In planning)

Fill unused Artnet data with 0

Yes

Unused channels in Universes will be depicted with the value 0. This way, in the case of heavily occupied Universes the amount of data per sent packet in the network remains as constant as possible.

No

Unused channels will not be taken into account when transmitted.

Fill unused Artnetdata with 0

Yes

DVI Color Space

With this setting you can set the color space of the incoming image signal (for example, DVI Standard RGB-color space). Useful when adapting some HDMI sources to DVI.

RGB full range (Standard, Recommended)

RGB broadcast range

YCbCr 4:4:4 BT.601

YCbCr 4:2:2 BT.709

YCbCr 4:4:4 BT.601

YCbCr 4:4:4 BT.709

DVI Color Space

RGB full range

Additional information

Pixel-Gate IP Address

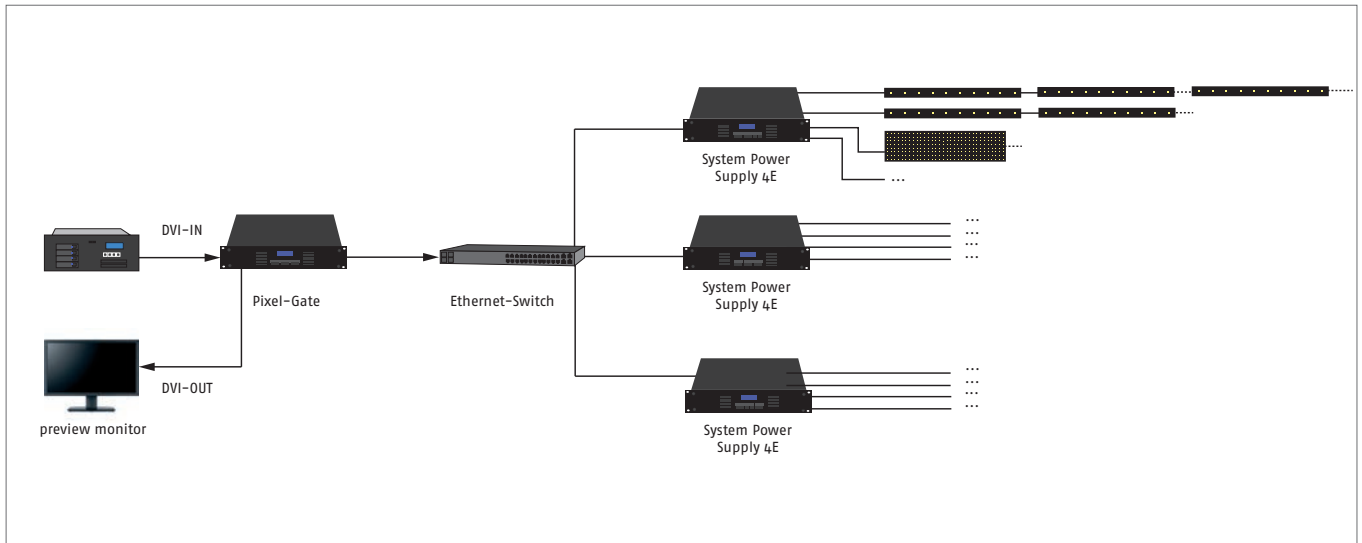
In compliance with the Art-Net™ specification, the Pixel-Gate IP address and the MAC address will be automatically generated from Schnick-Schnack-Systems manufacturer ID. It is in the 2.x.x.x IP range and cannot be changed.

Using more Pixel-Gates in larger systems

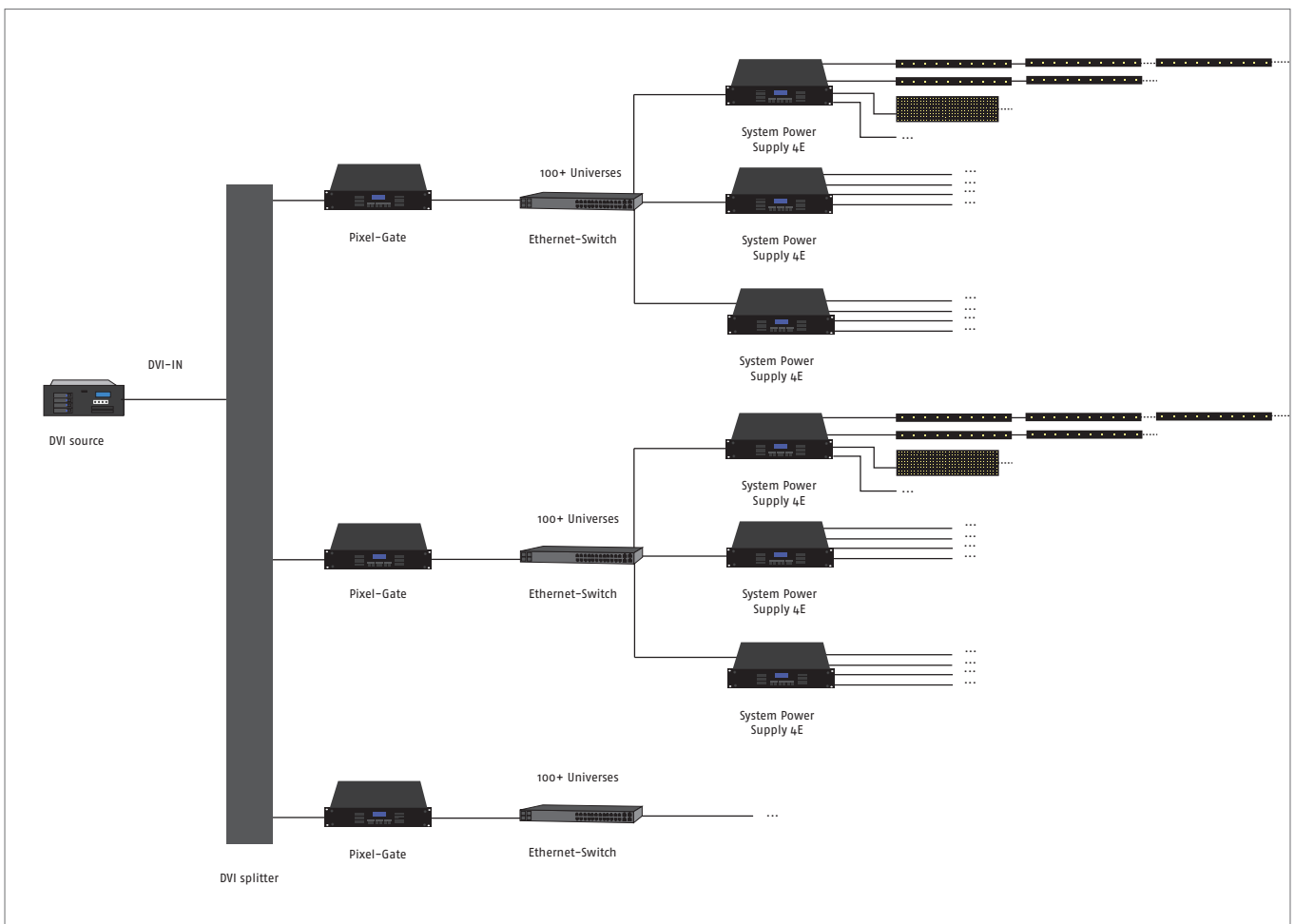
When using more than one Pixel-Gate we recommend the use of a DVI splitter that will distribute the incoming DVI signals to all Pixel-Gates.

We are happy to assist you if you have any questions regarding the installation of larger LED systems and optimal Pixel-Gate parameters and our technical support is available to give you personal advice and at no extra cost.

Cabling Examples



Cabling for large installations with several Pixel-Gates



Technical data

Case	19 inch, two height unit
Dimensions	483 × 88 × 430 mm (W × H × D)
Input voltage	100–250 V AC, 50–60 Hz
Interface	1 × Ethernet 10/100 MBit von Neutrik etherCON (ArtNet IN)
Weight	5,5 kg

EU Declaration of Conformity

EC-Declaration of conformity

I hereby declare that the product

Pixel-Gate –Light, -Plus, -Pro

(Name of product, type or model, batch or serial number)

meets the essential requirements referred to in Article 3 of the Council Directive 99/5/EC.

The following harmonized standards have been applied:

EN 60950-1:2003

EN 55022:2006

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Koeln, 9th. April 2009

(Place, Date of issue)



(Signature)

Dipl. Ing. (FH) Erhard Lehmann

(Name in block letters)

Why Schnick Schnack Systems?

As installation times become increasingly shorter the complexity of systems simultaneously increases as do the requirements of customers.

We are a supplier who delivers high-quality reliable systems – under tight deadline constraints that are not only quick to install but also simple to operate and service.

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