SCHNICK SCHNACK SYSTEMS

Pixel-Gate Mini

Datasheet

GENERATION 3

Overview

FEATURES

- **Hardware Pixel Grabber and DMX/DPB-Converter in a single unit**
- **LED-Output suppliying 67 Watt**
- **Direkt Conversion to DMX512 possible**
- **Small and compact**
- **Only one Powersupply required**
- **Configurable using Laptop or Smartphone**
- **HTML5 Webserver eliminates the need of an extra App**
- **low Latency**
- **Outputs Synchronizable**
- **HDMI up to 1920 x 1080 p @ 60Hz**
- **Compatibel with sACN, Art-Net™ and Schnicknet**
- **Made in Germany**

The Pixel-Gate Mini combines several functions in a small device.

On the one hand, it is a hardware pixel grabber that translates pixels of a digital video signal into control signals for LEDs. On the other hand, it is a complete Ethernet-DMX/DPB converter with an output for 67 Watt LEDs (24V – 2.8A). This combination opens up a new field of application for pixel grabbing. The price and design now allow it to be used in smaller and smallest installations. The size is about the same as that of a digital signage player.

The very small and compact device can be used in any application. The cabling effort is minimal. Apart from a 72 Watt power supply and usually an HDMI source, all you need is the right LED products.

Hardware Pixel Grabber

A hardware pixel grabber is a device that makes individual pixels of a video signal available to other systems. With the Pixel-Gate Mini, the fast HDMI signal is decoded. The transfer speed on an HDMI cable at a resolution of 1920 x 1080p@60Hz is around 4 Gbit/s. This means that the HDMI connection is often the cable with the highest transmission rate. Microcontrollers can't handle this speed. For this purpose, Schnick-Schnack-Systems develops hardware based on programmable logic including an image buffer. That's why we're talking about a hardware pixel grabber. Alternatively, something like this could also be done with a PC with an appropriate video card and software. However, the special hardware here offers the advantage of lower latency, higher reliability and increased IT security.

Patch und Pixelmapping

A so-called patch is loaded into the Pixel-Gate Mini and tells the device which pixels are needed and how they should be provided at the output. Individual pixels are usually used to control LEDs. This is called pixel mapping. First, all LED elements with the real distances (unit: meters) are drawn into the two-dimensional area of the pixel patch in the free software „Pixel-Patch". Subsequently, a frame representing the video image is scaled so that all LEDs are within the frame of the video image. Scaling is done in millimeters per pixel. Usually, multiples of the available pixel pitch are used here. The program then calculates which pixels are closest to which LEDs and creates a table that assigns DMX universes and channels to the pixels. This table is the pixel map. Whether the assignment is correct can be tested directly in the software with vertical and horizontal lines by connecting the computer to the LED installation.

The file of the pixel patch software is now loaded into the pixel gate.

Since only the required pixels are transmitted, the Pixel-Gate Mini significantly reduces the amount of data. From around 2 million pixel data to 8192 channels or less. Often, not all images are needed, because the 512-channel DMX512 could not transmit 50 or 60 images at all, unlike Schnack-System's own DPB. As a result, often only every second image is transmitted,

reducing a framerate from 60fps to 30 fps, which is sufficient for many applications. The Pixel-Gate Mini has the „Drop-Frame" function for this purpose.

The operation of the Pixel-Gate Mini is almost identical to the DPB router with its four outputs, enhanced by the function of pixel grabbing.

HDMI

The Pixel-Gate Mini is tested by an HDMI-authorized independent lab for compatibility with other HDMI sources and works with all HDMI sources up to Full HD resolution (1920 x 1080p@60Hz).

DMX/DPB Out

The DMX/DPB output can be used to connect compatible LEDs or other DMX equipment directly. Even an adapter to 5-pin XLR is possible and available.

Ethernet, Art-Net™ and sACN

The system can be expanded via Ethernet if required. Depending on the version of the Pixel-Gate Mini, the device sends up to 4 or 16 universes to the network as DMX-Over Ethernet when the HDMI signal is present. Depending on the type of LED, quite large installations are possible. For bigger installations, larger versions are available with the Pixel-Gates Light, Plus and Pro.

The Ethernet port is used for two functions. On the one hand, the device is configured via it, and on the other hand, pixel data is sent or received via this connection.

An internal HTML5 web server provides the basis for this, with its help the Pixel-Gate Mini can be configured completely remotely. There is no need for special software, which is especially important for long-lasting fixed installations. The responsive design of the network pages detects whether the browser is operated on a laptop or desktop computer or a smartphone and adapts the website accordingly. Apple's current smartphones and most Android devices support wired Ethernet adapters, or the devices can be connected to the Pixel-Gate Mini via a Wi-Fi access point. This allows changes to be made without a computer using a smartphone.

If there is an HDMI signal and a patch is loaded, the pixel data is sent to the network. Of course, the integrated DMX/DPB output can also be operated with data from the network.

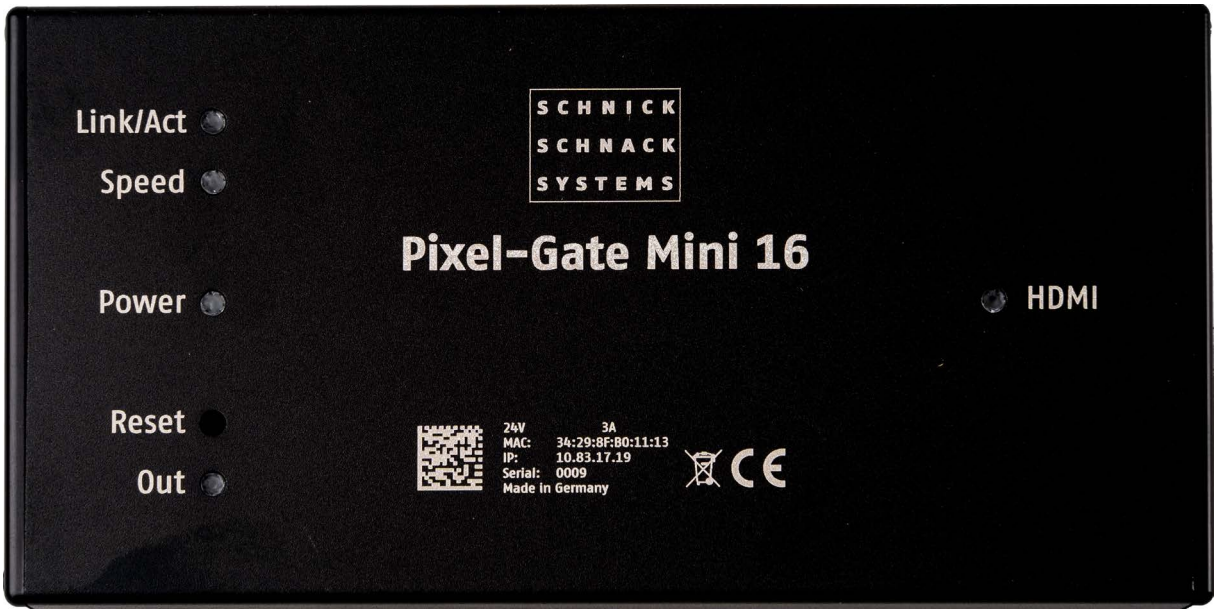
Pixel data is sent and/or received via Art-Net™™ and sACN. Since there is little traffic on the Ethernet network, even with a maximum number of channels with a maximum of 16 universes, transmission generally takes place via broadcast. The larger pixel gates also offer „unicast" as an alternative.

The device generates „Schnick-Sync" packets when set to synchronize compatible LEDs with the image. You can choose between low-latency synchronization and synchronization to the V-Sync of the HDMI signal.

The DMX/DPB port synchronizes according to „Schnick-Sync", as well as „Art-Net-Sync™" and „sACN"-Sync.

The merge function of the internal HTP merger allows two sources to play on the LEDs at the same time. Prioritization according to sACN is also supported.

Mechanische Daten



Eigenschaften	
Abmessungen	160 × 24 × 80 mm (B × H × T)
Gewicht	0,30kg

Electrical Data

Property	
Operating Voltage	24 VDC
Power requirement	4,8 W internal
Operating Temperature	0-40°C

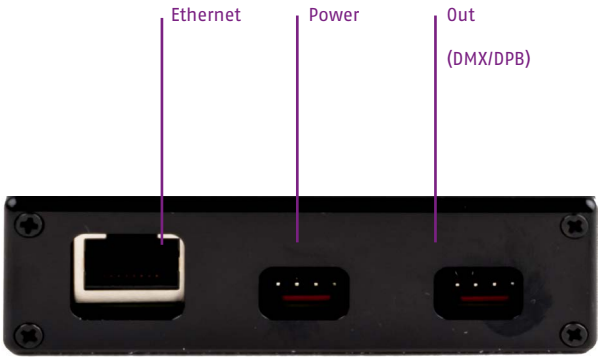
Supported Resolutions

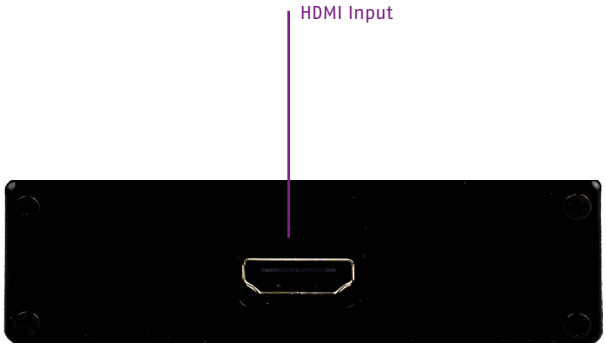
1: 640x480p/60Hz 4:3	17: 720x576p/50Hz 4:3
2: 720x480p/60Hz 4:3	18: 720x576p/50Hz 16:9
3: 720x480p/60Hz 16:9	19: 1280x720p/50Hz 16:9
4: 1280x720p/60Hz 16:9	31: 1920x1080p/50Hz 16:9
16: 1920x1080p/60Hz 16:9	(interlaced is not supported)

Interfaces

LED-Output	Systemconnector red
Link/Act	RJ45 Connector Ethernet
Power	Systemconnector red
Video Input	HDMI 1.4

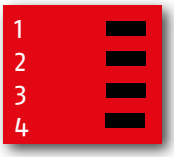
Interfaces at the unit:





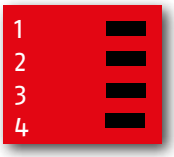
Pin Assignment

Systemconnector red (Input)



GND
Open
Open
24 V

Systemconnector red (Output)



GND
Data -
Data +
24 V

Ordering Numbers

	Operating Voltage	Current (I_{max})	Channels	Input	Output	Item Number
Pixel-Gate Mini 4	24V DC	In: 1 x 3A Out: 1×2,8A	4 × 512 Channel	HDMI, Systemconnector red (Power only)	Systemconnector red (DMX/DPB), Ethernet RJ45	205.0004
Pixel-Gate Mini 16	24V DC	In: 1 x 3A Out: 1×2,8A	16 × 512 Channel	HDMI, Systemconnector red (Power only)	Systemconnector red (DMX/DPB), Ethernet RJ45	205.0005

Datasheet Release Notes

Version February 2024: 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.

Warum 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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