PXLNET TRANSCEIVER MANUAL

SPI | PxLNet | 5-60 VDC | IP00 | | RoHS | CE | Warranty
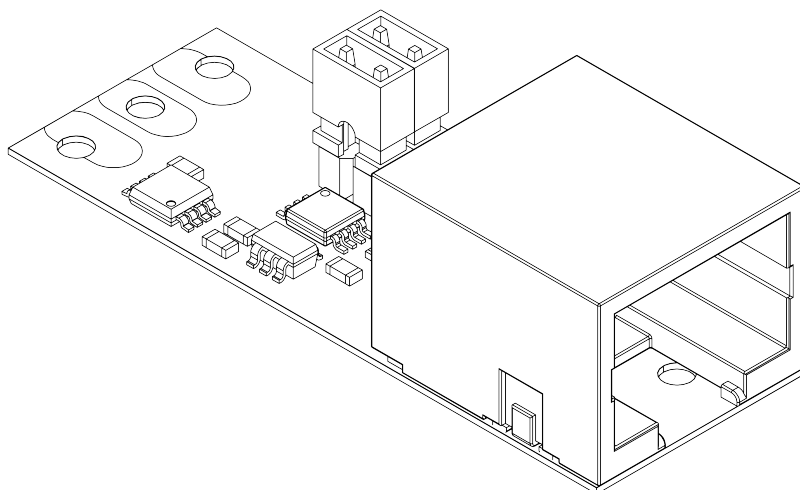
THANK YOU FOR CHOOSING DIGIDOT!

DiGidot offers powerful products and solutions to control LED pixels. The DiGidot C4 is the heart of our control system and offers great flexibility. In order to benefit from all our system advantages and to keep your infrastructure easy, we offer some innovative accessories like range extending equipment.
These products allow you to send high speed SPI protocols over large distances. This that you can install the DiGidot C4 controllers in a central place and drastically decreases the amount of hardware.

Have fun creating mesmerizing lighting installations!

Your DiGidot team

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INTRODUCTION

SPI protocols are sensitive to data distortion and often only work safely up to 2 meters (6.5 ft) of cable distance. The DiGidot PxLNet Transceiver is a small size module that can be used as receiver or transmitter to extend the range of an SPI signal.

The PxLNet Transceiver converts PxLNet, which is send form a DiGidot PxLNet Transmitter or a Transceiver to the original SPI protocol that is send from the DiGidot C4.

A DiGidot PxLNet Transmitter or Transceiver uses converts sensitive SPI protocols to PxLNet which can cover huge distances, up to 250 meters. Any single wire SPI protocol (Data only) can be received or be transmitted by this module.

You can connect the same amount of universes to this receiver as to the DiGidot C4 output port. The onboard voltage regulator accepts voltages ranging from 5V$_{DC}$ up to 24V$_{DC}$ and can therefore be powered from the same power source as most pixel controlled LED Products.

Installation is easy thanks to the RJ45 connector but it can also be soldered on the underside. The output can be soldered directly to most industry standard SPI controlled LED strips.

When this module is soldered to the end of a LED strips or pixel controlled product, it can be used as a transmitter when the Tx/Rx jumper is removed.

PRODUCT INFORMATION

Contents

▸ DiGidot TRxB Receiver module (PCB only)

▸ 3-pole screw terminal (optional, if requested at order)

NOTE: We put great care in our products and have a high quality control standard. Nonetheless we advise to double check for missing or damaged items.
In case of any missing or damaged items, please contact your supplier immediately. Never use damaged products!

TECHNICAL SPECIFICATIONS

Electrical

Input Voltage:	5-24VDC
Max. power consumption:	1W

Mechanical

Dimensions:	43.8 x 15.8 x 15.3 mm | 1.72 x 0.62 x 0.6" (L x W x H)
Net weight:	6gr | 0.11oz

Environmental

Operation Temperature (Tc):	0 to 50°C | 32 to 122°F
Max. ambient Temp. (Ta^{max}):	25°C | 77°F
Storage temperature:	-20 to 50°C | -4 to 122°F
Max. operating relative humidity:	90% (indoor use only)

Protection

IP rating:	IP00 (unprotected, indoor use only)
Voltage input:	Overvoltage protection (max. 60VDC)

Connectivity

Solder pad wiring:	0,3-0,5 mm2 | 20-24 AWG
Terminal wiring:	Recommended: 0,3-0,5 mm2 | 20-24 AWG / max. 2,5 mm2 | 14 AWG

Quality

Warranty:	1 year carry in factory warranty
Compliances:	CE, RoHs
Applied standards:	EN60950-1:2006 +A11:2009 + A1:2010 + A12:2011 + A2:2013, IEC60950-1 / EN60950-1, EN61006-6-3, EN55032

HS Code:	8537109090

Product description

Topside	Type	Description
1	Power	GND/DC-
2	BUS I/O	Data out
3	Power	DC+ / 5-24V
4	Jumper	Ground lift
5	Jumper	Tx/Rx mode
6	RJ45 Bus	Data input
Pin 1 (orange/white)	BUS I/O	Data + in
Pin 2 (orange)	BUS I/O	Data - in
Pin 7 (brown/white)	Power	GND/DC-
Pin 8 (brown)	Power	GND/DC-
Underside	Type	Description
7	Power	DC+ / 5-24V
8	BUS I/O	Data out
9	Power	GND/DC-
10	BUS I/O	Data + in
11	BUS I/O	Data - in
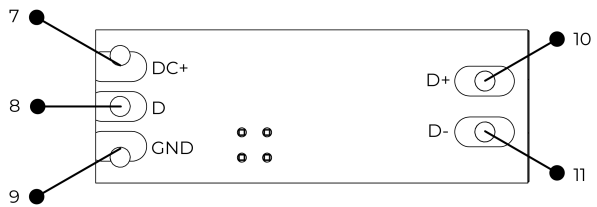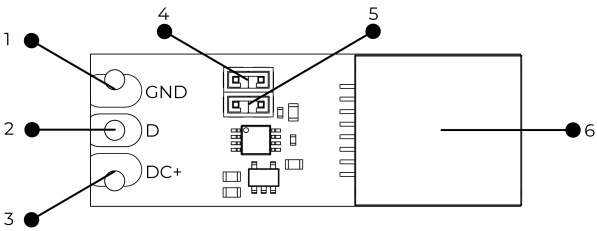
BEFORE INSTALLATION

Before installing DiGidot products it's important to take notice of following safety and installation instructions.

Safety instructions

▸ Before installation and use of this product, read this manual carefully.

▸ Make sure that these instructions are handed over to the end-user and those responsible for installation and usage.

▸ Local electrical and safety rules and guidelines always overrule this manual.

▸ DiGidot Technologies B.V. cannot be held liable for improper handling, product installation, usage or storage.

▸ Installation should only be carried out by a professional and certified installer that is qualified to work on the electric installation.

▸ Do not conduct any repairs of the device (there are no user serviceable parts inside). Any unapproved repairs and/or product modifications will void product warranty. DiGidot Technologies B.V. cannot be held liable for any consequences.

▸ Repairs of this product may only be carried out by the manufacturer DiGidot Technologies B.V.

▸ Repairs and maintenance on the installation may only be carried out by qualified technicians.

▸ Always disconnect the mains power when working on a high voltage electric installation, not doing so may result in product damage or personal injuries.

▸ Do not connect or modify this product other than described in this manual.

▸ Never use a product that is damaged or does not work correctly or when the product is visibly damaged or when the product starts to smoke, or when a crackling/sizzling noise is audible. If this is the case in any way, disconnect power and please contact your supplier immediately.

▸ This is a low voltage device. Working voltage is 5-24 Vdc only.

▸ The only way to power off this product is to disconnect it from the power source.

▸ The product is designed for indoor use (dry locations) only. Exposure to rain or moisture may cause fatal damage.

INSTALLATION & WIRING

Mounting options

We recommend to place this product in a protected enclosure such as a junction box.

Double sided (foam)tape may be used to on the underside of this product, to hold it in place. Please be careful when applying pressure, small components can come off when applying excessive force.

When using heat shrink, please cover the entire module and be careful when applying heat, especially with heat guns. When overheating this product, components and soldering may come loose, resulting in fatal damage.

> **TIP:** It's safe to use and cover this product with appropriate electronic protection resin to improve IP rating. Another option to improve IP rating is to use a conformal coating spray for electronics after all wires have been connected.

> **WARNING!**
> ‣ This product should not be subjected to higher temperatures than their specification range (risk of fatal damage)!
> ‣ Keep this products away from direct sunlight, rain or other moisture (short circuit risk).
> ‣ Do not use this product outdoors or in humid environments (short circuit risk).

> **WARNING! TAKE ESD SAFETY PRECAUTIONS!**
> When working with PCB modules such as this product, it is required to work according to ESD guidelines and undertake all necessary ESD safety precautions to minimise the risk of ESD inflicted product damage.

There are several ways to connect and integrate this receiver module.
You can use the RJ45 connector on the signal input side or you can solder your signal wires to the underside of the product. Please refer to the wiring schemes in this manual.

Data in
Use the RJ45 bus to connect a Cat-5E network cable or better.

or

Solder a DMX cable (110Ω impedance) or Cat-5E or better to the D+ and D- solder pads on the underside of the PCB. Solder the ground wire to the GND solder pad.

Data out & power in

Solder this module directly to the solder pads of any pixel tape that has a matching solder pad layout.

or

Solder wires with a wire gauge of 0,3-0,5 mm2 | 20-24 AWG, to GND, D, and 5-60V

GND = Ground
D = Data signal
5-24V = DC+ supply voltage

In case you've ordered screw terminal(s) for the PxLNet Transmitter, you can solder the 3-pole terminal to the output by placing the terminal on the top side of the PCB. Insert the 3 pins in the solder pad holes and make sure that the wire openings are facing outwards. Solder the pins on the underside.

The screw terminal allows you to insert connection wires of your lighting product with wire gauges up to max. 2,5 mm2 | 14 AWG.
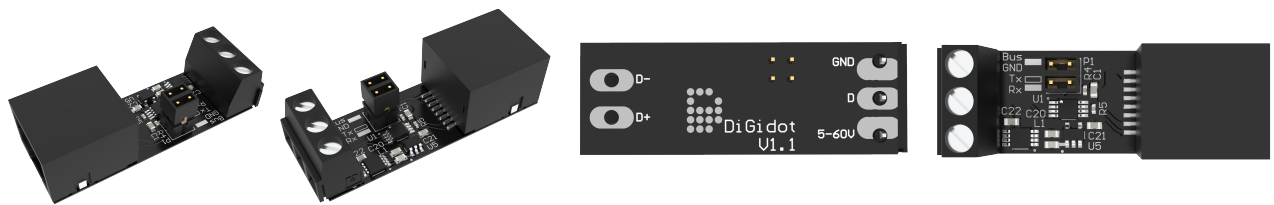
> **NOTE:** Keep wires between output and LED product within 2 meters (6.5 ft) in length.
> Ground output wire from PxLNet Transceiver must be equal in length as the Data wire.

Power supply

To power this product, the DC+ and GND must be connected to a SELV rated power supply that provides appropriate power at the required supply voltage.

Connecting power

Before connecting power, make sure that the outputs are wired and soldered correctly to avoid short circuits.

> **WARNING:** This product has no reverse polarity protection. Connecting applying voltage incorrectly will cause fatal damage!

> **IMPORTANT:** Make sure to equalize the ground potentials.
> Always connect grounds (DC-) of DiGidot C4 controller and every power supply, connected to every product that is controlled by a single DiGidot C4 controller to each other.
> If the grounds are not connected, this may cause malfunctioning.
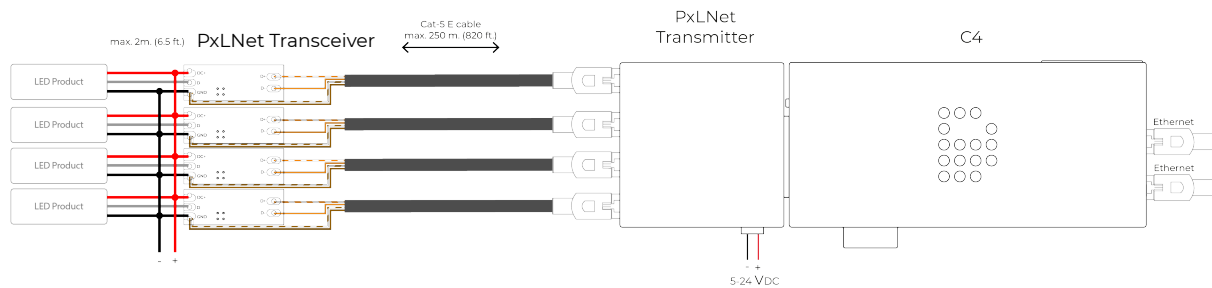
Wiring schemes

Following wiring schemes show various options to connect this product.
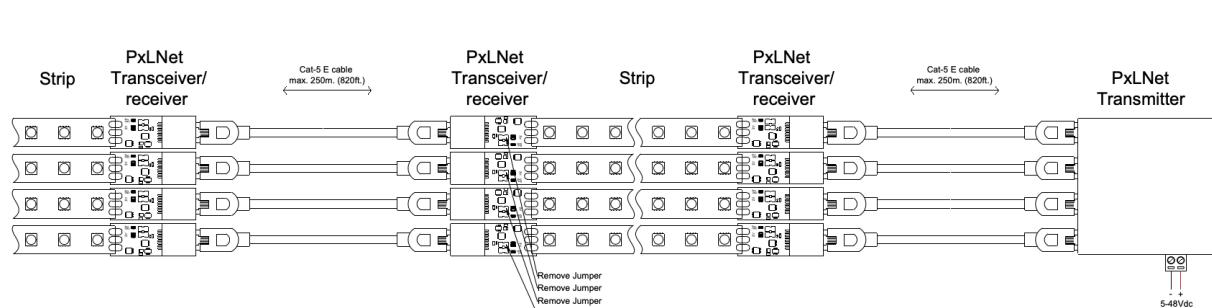
Wiring scheme 1
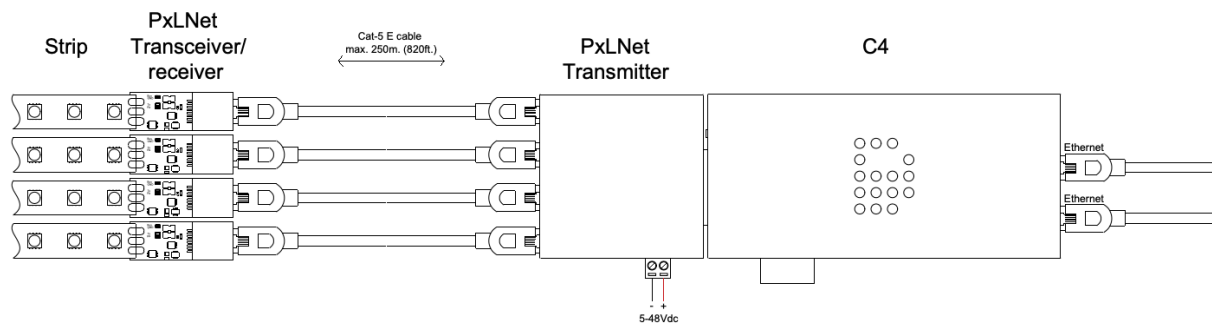
DiGidot C4 with PxLNet Transmitter connected by Cat-5E network cables to PxLNet Transceivers that are soldered directly to pixel controlled LED strip.
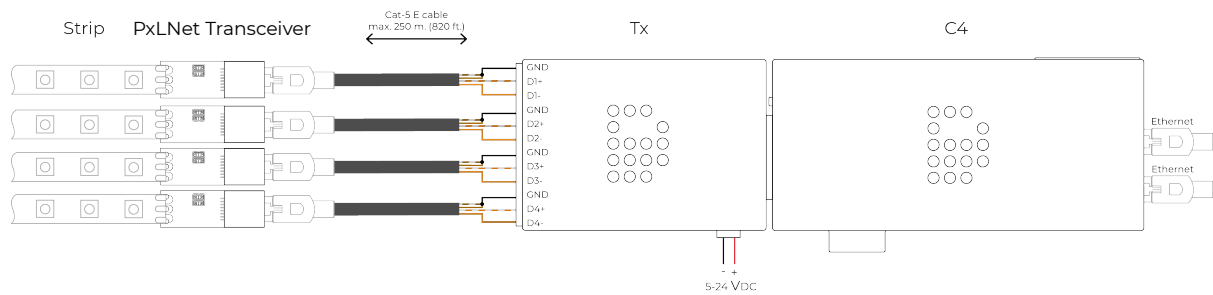
Wiring scheme 2

Transmitter connected by Cat-5E network cables that are soldered to PxLNet Transceivers and output wires soldered that are connected to LED products.

Wiring scheme 3

DiGidot C4 with PxLNet Transmitter module connected by Cat-5E network cables to PxLNet Transceivers that are soldered directly to pixel controlled LED strip. PxLNet Transceiver used in transmitting mode to send SPI between LED strips.

Wiring scheme 4

DiGidot C4 with Tx module connected by Cat-5E network cables to PxLNet Transceivers that are soldered directly to pixel controlled LED strip.

Note: These wiring schemes do not show powering of the LED tapes. This is usually done on the same solder pads at the beginning of the strip or LED product. The operating voltage of the LED products must be within range of the supply voltage PxLNet Transceiver. Otherwise The PxLNet Transceiver must be powered separately and grounds must be connected.

OPERATING MODE

In order to use the PxLNet Transceiver as a single channel transmitter, it is required to connect the D to the SPI Data signal, make sure it's properly powered and remove the Tx/Rx jumper (5).
You can now connect a network cable to to the RJ45 bus and connect it to the next PxLNet Transceiver in receiving mode (Rx). The distance between two PxLNet Transmitters is max. 250 meters.

TIPS & TROUBLESHOOTING

In case you run unto any trouble, please check your setup according to following checklist.

Standard troubleshooting checklist

1. Double check all cables and connections.
2. Double check soldered connections
3. Double check Network cable pinout and crimped connectors
4. Is the DiGidot C4 powered correctly?
5. Are the LEDs powered correctly?
6. Are all power supplies connected correctly to your mains power supply.
7. Is your network setup done correctly?
    ‣ Prevent IP Address conflicts
    ‣ Make sure that the subnet mask range is set correctly and that all IP Address are set within the appropriate range.
8. Are the inputs and outputs configured correctly?
    ‣ Make sure that the correct IC/SPI protocol is configured.
    ‣ Make sure that input and output matches the system setup.
9. Is your ground (DC-) from the DiGidot C4 output terminal connected to all the grounds of the LED products power supplies?

GENERAL INFORMATION

Online resources

For technical specifications, latest documentation, manuals, product information, support and upgrades, please visit www.digidot.eu.

Remarks

We've put great care in writing this manual. However in case you encounter any discrepancies or unclarities, please contact us.
This manual and function specific instructions are based on firmware and interface versions mentioned in the chapter 'Manual version'.

Compliances & EU declaration of Conformity

This product is designed and produced by DiGidot Technologies B.V., Amsterdam, The Netherlands.

Hereby, DiGidot Technologies B.V. declares that this product complies with and was tested according to essential requirements of all relevant CE directives.

Warranty

This product is covered by a carry-in manufacturer's warranty of 1 year which covers any design faults, production faults and component failures.

Warranty voids if the product was installed or used incorrectly or not in accordance with this manual, and/or if the product was damaged due to external factors, modified or electrically overloaded. Warranty conditions of DiGidot Technologies B.V. apply. Warranty claims have to be issued by email: support@digidot.eu.

Disposal and recycling

This product should not be disposed with other household waste. When you decide to dispose this product and/or its battery, do so in accordance with local environmental and recycling regulations.

Feedback

Tell us all about your experience with DiGidot!
The continuous development of the DiGidot control platform is only possible thanks to feedback from our users. If you have any suggestions, please contact us by email: info@digidot.eu.

Imprint

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