PXLNET TRANSCEIVER KIT MANUAL
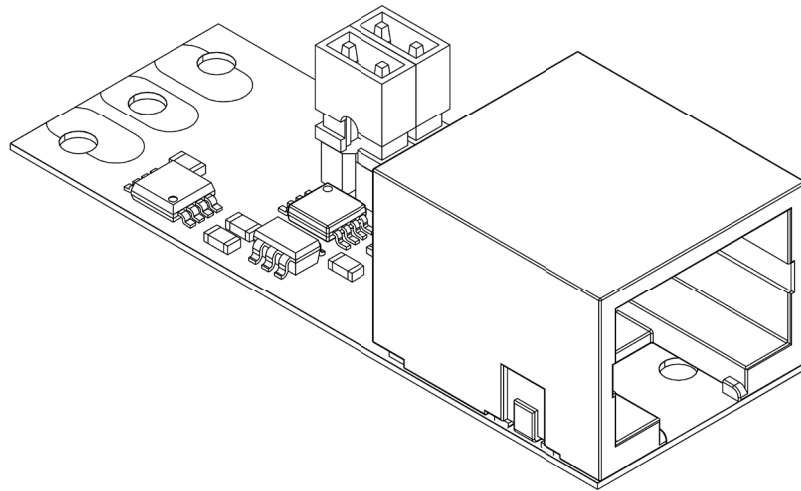
CTRLPIXELTRKITSP, CTRLPIXELTRKITST, CTRLPIXELTRKITRJ

CE **RoHS** **SPI** **DMX** **IP00**

REV. 22SEP2023

Acolyte | Architectural Lighting Solutions   Acolyte is a quality division of GENLED Brands™ | www.AcolyteLED.com | Page 1

THANK YOU FOR CHOOSING ACOLYTE AND DIGIDOT!

Acolyte and DiGidot offer powerful products and solutions to control LED pixels. C4 controllers are the heart of our control system, offering great flexibility and simple infrastructures. To benefit from all our system advantages, we offer innovative accessories like range extending equipment like the PxLNet Transceiver.

These products allow you to send PxLNet, which is a high speed, long-range SPI protocol. Install C4 controllers in a central place for easy access and maintenance while drastically reducing the amount of hardware required.

Have fun creating mesmerizing lighting installations!

The Acolyte and DiGidot teams

INDEX

INTRODUCTION

SPI protocols are sensitive to data distortion and often only work safely over up to 6.5 ft (2 m) of cable. The PxLNet Transceiver is a small module that can be used as a receiver or transmitter to extend the range of an SPI signal. The PxLNet Transceiver converts PxLNet, which is sent from a PxLNet Transmitter or Transceiver to the original SPI protocol that is sent from a C4 controller. A PxLNet Transmitter or Transceiver converts sensitive SPI protocols to PxLNet which can cover huge distances, up to 820 ft (250 m). Any single-wire SPI protocol (Data only) can be received or be transmitted by this module. You can connect the same number of universes to this receiver as to the C4 controller output port. The onboard voltage regulator accepts voltages ranging from 5-24 VDC and can be powered from the same power source as most pixel-controlled LED products. Installation is easy thanks to the RJ45 connector. The output can also be soldered directly to most industry standard SPI controlled LED strips. (If this module is soldered to the end of an LED strip or pixel-controlled product, it can be used as a transmitter if the Tx/Rx jumper is removed.)

CONTENTS

- PxLNet Transceiver module (PCB only)
- 3-pole screw terminal (optional, if requested at order)

NOTE: We take great care with our products and have a standard of quality control, but we advise you 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: 1 W

Mechanical
Dimensions: 1.72 x 0.62 x 0.6 in. | 43.8 x 15.8 x 15.3 mm (L x W x H)
Net weight: 0.11 oz (6 g)

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

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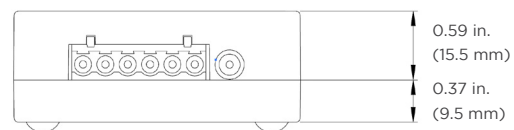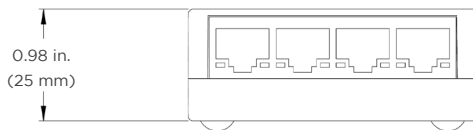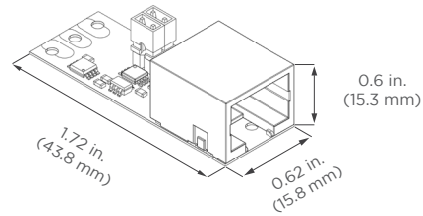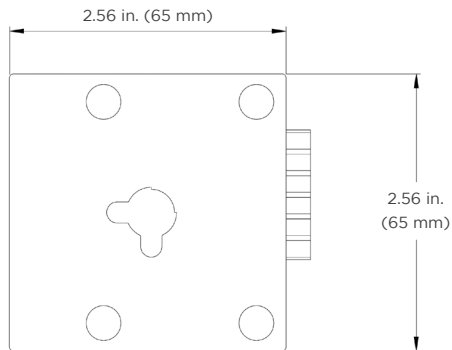DC input: Overvoltage protection (max. 60 VDC)

Connectivity
Solder pad wiring: 20-24 AWG (0.3-0.5 mm^2)
Terminal wiring: Recommended: 20-24 AWG (0.3-0.5 mm^2)
                                      Max. 14 AWG (2.5 mm^2)

Quality
Warranty: 1 year factory warranty
Compliances: CE, RoHS
Applied standards: EN60950-1:2006 +A11:2009 + A1:2010 + A12:2011
                                      + A2:2013, EC60950-1 / EN60950-1, EN61006-6-3,
                                      EN55032
HS Code: 8537109090

PRODUCT DESCRIPTION

2.56 in. (65 mm)

2.56 in. (65 mm)

0.6 in. (15.3 mm)

1.72 in. (43.8 mm)

0.62 in. (15.8 mm)

0.98 in. (25 mm)

0.59 in. (15.5 mm)

0.37 in. (9.5 mm)

Topside

1. Power (GND/DC-)
2. BUS I/O (Data Out)
3. Power (DC+ / 5-24 V)
4. Jumper (Ground lift)
5. Jumper (Tx / Rx mode)
6. RJ45 (Data input)
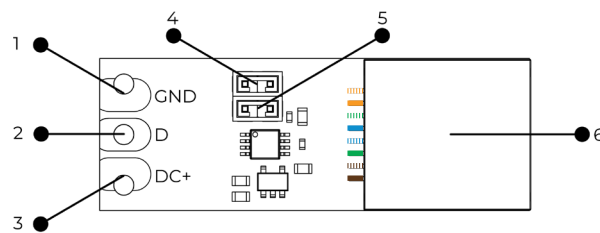
Pin 1: Orange/White = (DMX) Data +

Pin 2: Orange = (DMX) Data -

Pin 3: --

Pin 4: --

Pin 5: --

Pin 6: --

Pin 7: Brown/White = (DMX) GND/DC -

Pin 8: Brown = (DMX) GND/DC

Bottomside

7. Power (DC+ / 5-24 V)
8. BUS I/O (Data Out)
9. Power (GND/DC-)
10. BUS I/O (Data + In)
11. BUS I/O (Data - In)
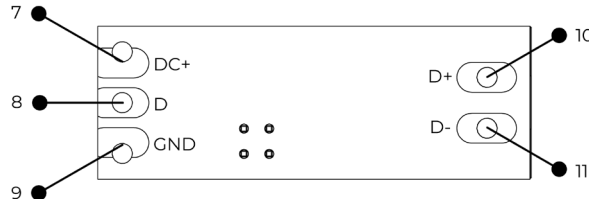
BEFORE INSTALLATION

Before installing our products it's important to note the following safety and installation instructions.

SAFETY INSTRUCTIONS

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

- Make sure these instructions are given to those responsible for installation, use and maintenance of this product.

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

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

- Installation should only be done by a professional certified installer who is qualified to work on electrical installations.

- 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. Acolyte and DiGidot Technologies B.V. cannot be held liable for any consequences.

- Repairs of this product may only be carried out by DiGidot Technologies B.V.

- Repairs and maintenance of the installation may only be carried out by qualified technicians.

- Always disconnect the mains power when working on a high voltage electric installation. Failure to do so may result in product damage or personal injury.

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

- Never use a product that is visibly damaged or does not work correctly. Never use a product if it starts to smoke or if a crackling/sizzling noise is audible. If this is the case, disconnect the power to the device and contact Acolyte immediately.

- This is a low voltage device. The working voltage is 5-24 VDC.

- 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 AND WIRING

Mounting options

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

Double-sided (foam) tape may be used on the underside of this product to secure it. 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 is safe to use and cover this product with appropriate electronic protection resin to improve IP rating. Another option to improve the 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 indicated in the specification range (risk of fatal damage)!

- Keep this product 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, you must work according to ESD guidelines and undertake all necessary ESD safety precautions to minimize 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 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 (110ff 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 ribbon with a matching solder pad layout ...

or ...

Solder wires with a wire gauge of 20-24 AWG (0.3-0.5 mm^2) to GND, D, and 5-60V.

GND = Ground D = Data signal

5-24V = DC+ supply voltage

If you have 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 the wire openings face outwards. Solder the pins on the underside. The screw terminal allows you to insert the connection wires of your LED product with wire gauges up to max. 14 AWG (2.5 mm^2).

NOTE: Wires between the output and LED product should be within 6.5 ft (2 m) in length. The ground output wire from the PxLNet Transceiver and Data wire must be equal in length.

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 the C4 controller and every power supply connected to each product that is controlled by a single C4 controller to each other. If the grounds are not connected, malfunctions may occur.

WIRING SCHEMES

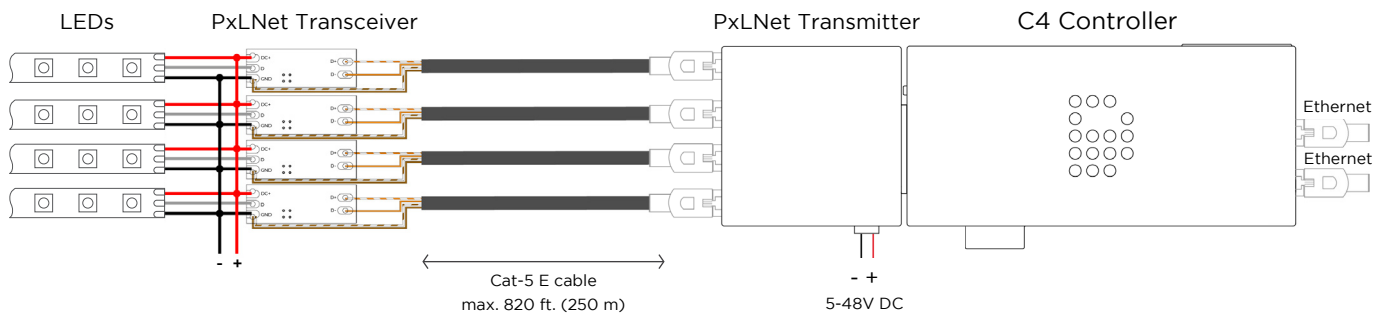The following wiring schemes show assorted options to connect this product.

WIRING SCHEME 1

C4 controller with PxLNet Transmitter connected by Cat-5E network cables to PxLNet Transceivers that are soldered directly to a pixel-controlled LED ribbon.
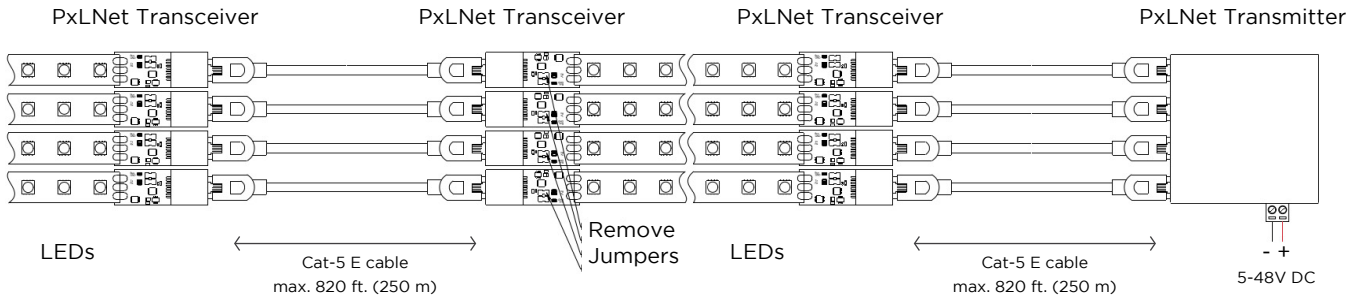
PxLNet Transceiver   PxLNet Transmitter   C4 Controller

Ethernet

Ethernet

LEDs

Cat-5 E cable
max. 820 ft. (250 m)

- +
5-48V DC
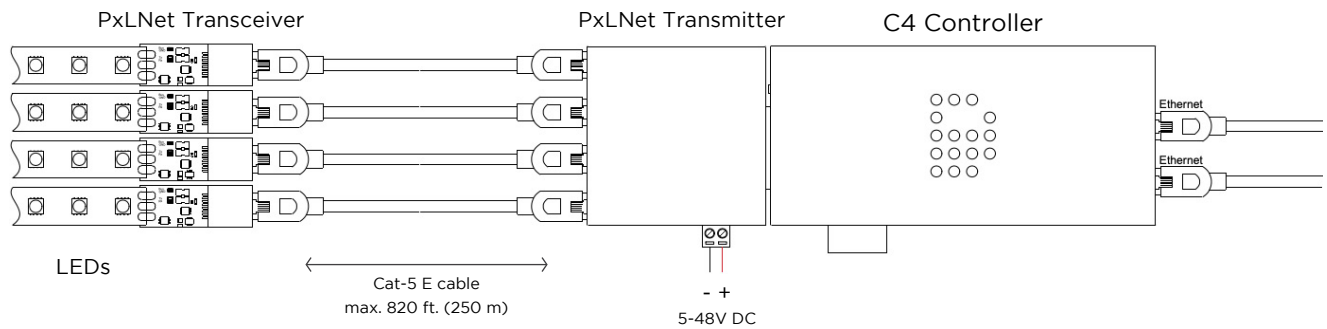
WIRING SCHEME 2

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

LEDs   PxLNet Transceiver   PxLNet Transmitter   C4 Controller

Ethernet

Ethernet

- +

Cat-5 E cable
max. 820 ft. (250 m)

- +
5-48V DC

WIRING SCHEME 3

C4 controller with PxLNet Transmitter module connected by Cat-5E network cables to PxLNet Transceivers that are soldered directly to a pixel-controlled LED ribbon. (PxLNet Transceiver is used in transmitting mode to send SPI between LED ribbons.)

WIRING SCHEME 4

C4 controller with Tx module connected by Cat-5E network cables to PxLNet Transceivers that are soldered directly to a pixel-controlled LED ribbon.
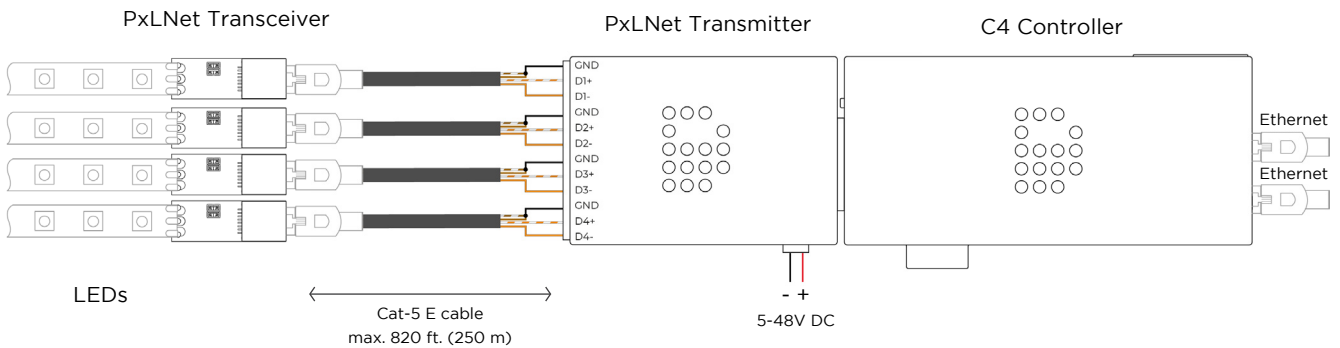
NOTE: These wiring schemes do not show the powering of the LED ribbons. This is usually done on the same solder pads at the beginning of the ribbon or LED product. The operating voltage of the LED products must be within range of the supply voltage PxLNet Transceiver. Otherwise, the PxLNet Transceiver must be separately powered and grounds must be connected.

CONNECTING POWER

To use the PxLNet Transceiver as a single channel transmitter, it is required to connect the D to the SPI Data signal, ensure that it is properly powered and remove the Tx/Rx jumper (5). You can then connect a network cable to the RJ45 bus and connect it to the next PxLNet Transceiver in receiving mode (Rx). The distance between two PxLNet Transmitters is max. 820 ft (250 m).

TIPS & TROUBLESHOOTING

If run into any trouble, please check your setup according to following checklist:

1. Double check all cables and connections.

2. Double check any soldered connections.

3. Double check the network cable pinout and crimped connectors.

4. Is the C4 controller 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 is set correctly and that all IP addresses are set within the appropriate range.

   • Refer to further troubleshooting tips in the C4 Controller user manual.

8. Are the C4 controller inputs and outputs configured correctly?

   • Make sure that the IC/SPI protocol is configured correctly.

   • Make sure that input and output matches the system setup.

9. Is the ground (DC-) from the C4 controller output terminal connected to all the grounds from the power supplies for the LED products?

GENERAL INFORMATION

ONLINE RESOURCES

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

REMARKS

We've taken great care in writing this manual. However, if you encounter any discrepancies or something isn't clear, please contact us. This manual and function-specific instructions are based on firmware and interface versions mentioned in the 'Manual version' section.

COMPLIANCES & EU DECLARATION OF CONFORMITY

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

CE MARKING

DiGidot Technologies BV hereby declares that this product complies with and was tested according to all essential requirements of all relevant CE directives.

WARRANTY

This product has a carry-in manufacturer's warranty of 1 year which covers any design faults, production faults and component failures. Warranty is void 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 must be issued by email to support@digidot.eu.

DISPOSAL AND RECYCLING

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

FEEDBACK

Tell us all about your experience with PxLNet! The continuous development of this 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

DiGidot Technologies BV Valschermkade 27-28 1059 CD Amsterdam The Netherlands

Phone: +31 (0)20 820 1849

info@digidot.eu www.digidot.eu

Chamber of commerce registration: 67637825

VAT identification no.: NL857103581B01

Managing director: Stefan Verhoef

COPYRIGHT

DISCLAIMER