

PILOTINO™ PCB

Advanced LED Decoder

Instruction Manual



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1. Introduction

The PILOTINO™ PCB is the newest addition to the LED CV DMX decoder family for SIRS-E®. Control any kind of CV LED Strip, COB, and other constant voltage LED products. This version of the PILOTINO™ comes in a bare PCB format. This product is intended to be embedded into custom fixtures and lighting control systems in which component size is critical. Equipped with 6 mounting holes, the PILOTINO™ PCB is ready to be installed with M2.5 X 5mm stand-offs into any sort of enclosure.



PILOTINO™ PCB

UL Class 2 Output Certified
UL Registered Input Certified



Key Features:

- Wireless Capability
- UL Regconized
- DMX Ready
- RDM Configurable
- RDM Data Feedback
- Selectable Output Frequency
- Onboard IO Socket (For Connectivity)
- Small Footprint
- Wire to Board Quick Connectors
- Standoff Mounting
- 5 Year Limited Warranty
- Made in Italy



Check our page

Package Contents

PILOTINO™ PCB - **SKU:** Pilotino-PCB



Check our YouTube Video!

2. Safety Information

Safety Information

The exposed PCB design of this product results in a major reduction in its foot print. With a slim and narrow design, this configuration is intended to be used in applications that would benefit from this feature. Some examples of applications include: fixture integration, custom control enclosures, and others. The exposed design comes with few precautions to take notice of.

The PILOTINO™ PCB is a non-waterproof device with an IP 20 rating. Keep the unit dry at all times and away from liquids and humid environments. Make all connections to the LEDs and driver prior to powering on the circuit. All lead voltage connections to the drivers must be performed by a licensed electrician. Do not touch any of the surfaces of the device once the unit is powered on. Ensure that all connections are secure and eliminate all possibilities of shorting the unit. Use the proper wire gauge for the wire to board connections and wiring blocks. We recommend using 12awg stranded wire for the power input, and 18awg for the output connections that connect to the LEDs. Do not mount the unit where vibrations or shock are present. Be sure that the thermal pad is attached to the back of the unit at all times.

WARNING - Risk of Fire or Electrical shock, do not interconnect output terminations

3. Electrical Specifications

UL Class 2 Output

Working Voltage: 12-24V DC

Output Channels: 1-5 Selectable

Max Current / Channel: 2.5A

Output Frequency: 1-5.2KHz PWM

Max Power / Channel: 30W @12V / 60W @24V

Max Power Out: 150W @12V / 300W @24V

Input Voltage (UL Non-class 2)

Working Voltage: 12-24V DC

Max Power In: 150W @12V / 300W @24V

Max Current: 12.5A

Control Options

Input Control protocol: DMX512-A

RDM: Yes

DMX Resolution: 8/16 bit Selectable

Wi-Fi: ArtNet with PILOTINO WiFi™ PCB

CRM: Lumen Radio with PILOTINO CRM™ PCB

Ambient Parameters

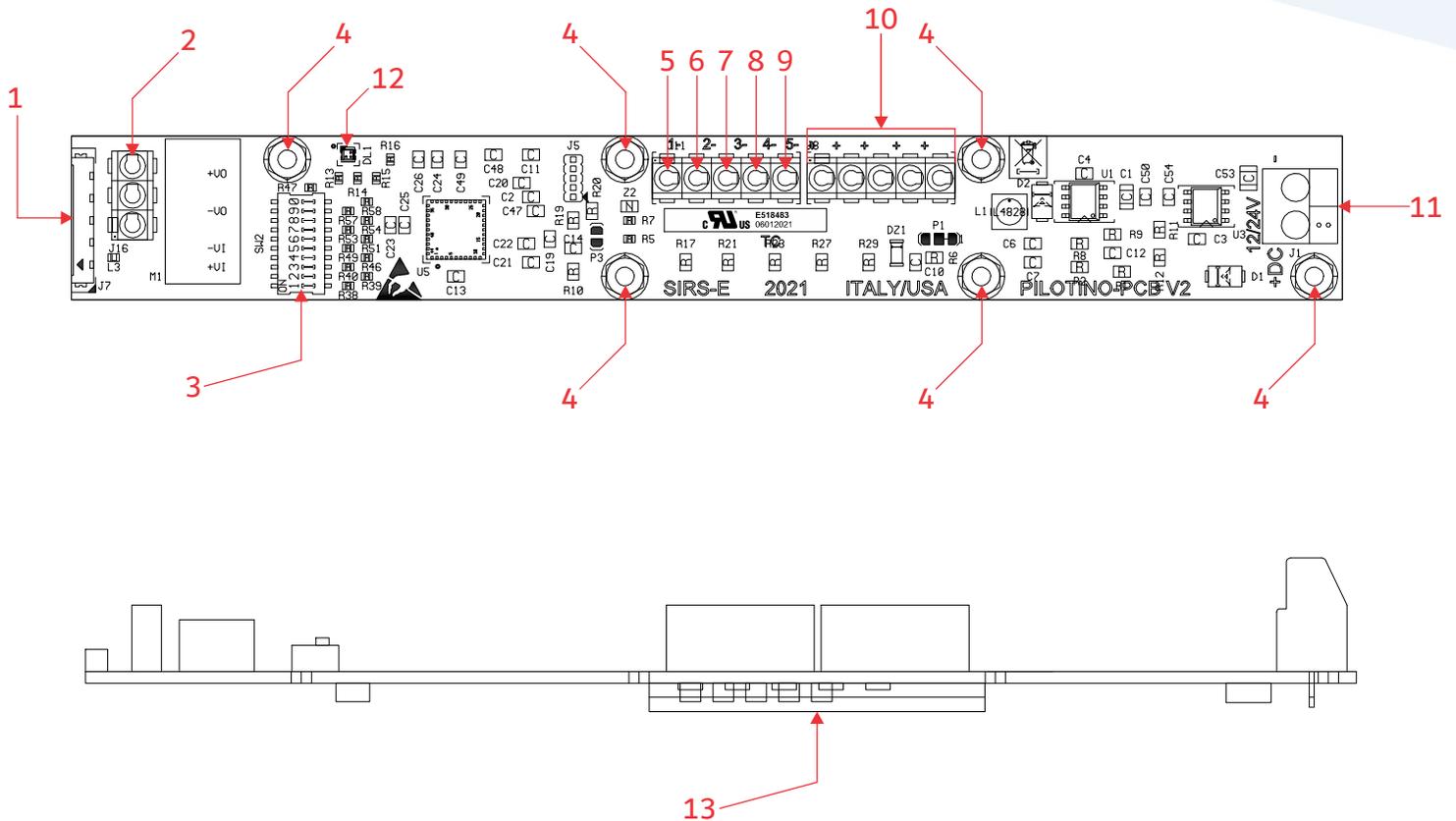
Ambient Operating Temperature: -10 °C - 45 °C

Relative Humidity: 5% - 80% non-condensing

IP Rating: IP 20 Non-waterproof (Keep dry)

Ventilation: Do not install in airtight spaces

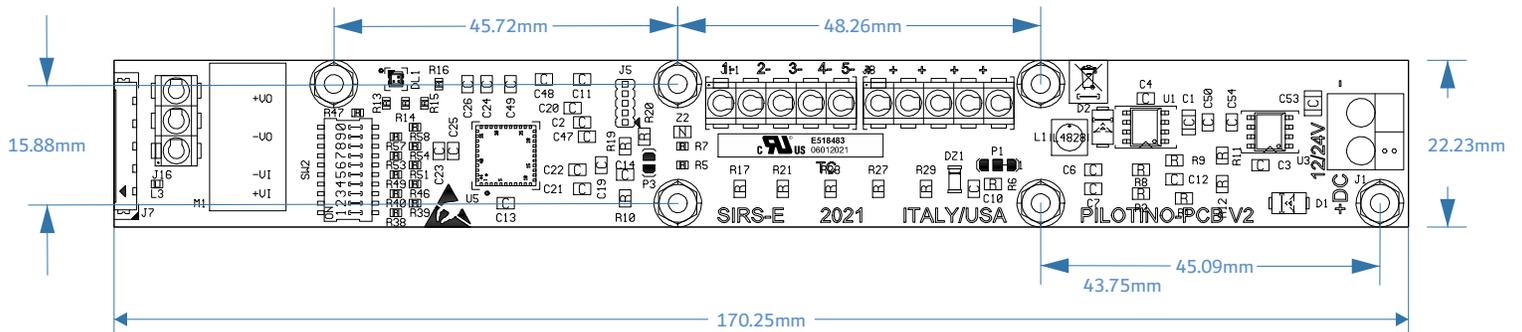
4. Onboard Features



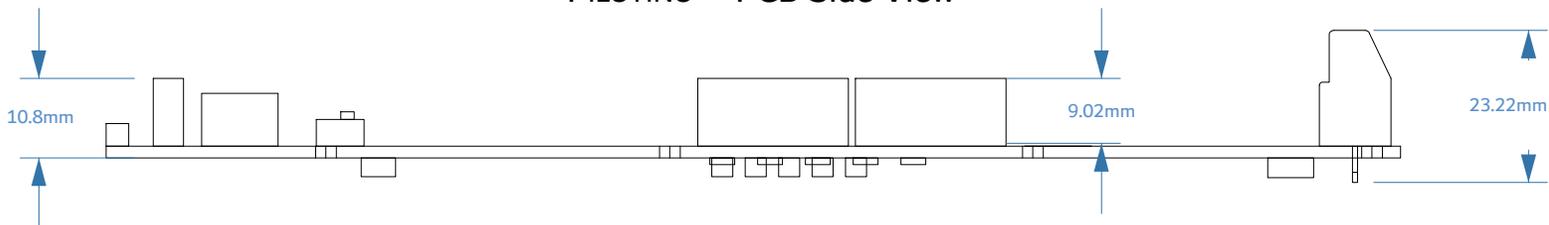
1. I/O Connection Socket + DMX in (For expansion Modules)
2. DMX IN/OUT Wire to board connector (As shown top to bottom: GND, D-, D+)
3. Dip Switches for DMX Addressing and other functions
4. Mounting holes for Standoffs M2.5 (metric)
5. Output wire to board connector Channel 1
6. Output wire to board connector Channel 2
7. Output wire to board connector Channel 3
8. Output wire to board connector Channel 4
9. Output wire to board connector Channel 5
10. Output wire to board dual connector COMM V+
11. Power Input wiring block connector
12. Mode Indicator LED
13. Thermal Pad (Do Not Remove)

5. Mechanical Details

PILOTINO™ PCB Top View



PILOTINO™ PCB Side View



6. Installation

Thermal Pad

The thermal pad that dissipates heat from the components of the device must always be used. This thermal pad is included with each PILOTINO™ PCB and comes installed from factory. Proper ventilation should be present within the enclosure in which the unit is installed.

Standoffs

Six 2.5M x 5mm standoffs should be used to properly mount the unit onto a smooth and level surface. It is recommended that the included factory 2.5M standoffs be used. To fasten the PILOTINO™ PCB onto a surface, first tighten the four central screws in a crisscross pattern. Once the central screws are torque down to ¼ turn past hand tight, do the same for the remaining 2 screws. Always tighten the screw opposite to the last screw that was torque down. Do not over tighten the screws as doing so will result in damage to the device.

Clearance

Due to the exposed contact points on the PILOTINO™ PCB, the risk of shorting the unit should be considered. A minimum of 10mm of clearance space is recommended. Never install the PILOTINO™ PCB within an enclosed space in which the PILOTINO™ PCB does not have sufficient space away from other components.

Connections

The PILOTINO™ PCB comes equipped with wire to board connectors, and a socket connector for the connectivity expansion modules. All wire connections should fit securely into the connectors; therefore, we recommend to use solid wire when installing LED strips and power cable wires. Be sure to insert each wire into the connectors deep enough so that no bare wire is exposed. A good rule of thumb is to strip the wires so that only about 3mm of insulation is removed. Always use both output terminals for the COMM V+ connection (See section 4, “Onboard Features” for more details). The PILOTINO™ PCB can be connected in a daisy chain format for the distribution of DMX signal. Never daisy chain more than 30 PILOTINO™ PCB in a single line. For larger projects, make use of DMX splitters to distribute the DMX data.

Settings

All of the advanced settings in the PILOTINO™ are meant to be accessed through RDM connectivity only. Any setting beyond the DMX addressing can only be edited through the use of an RDM controller or software. The PILOTINO™ is equipped with the latest version of RDM and is compatible with any controller, board, or software capable of RDM.

7. DMX Addressing

DMX Addressing

The PILOTINO™ PCB can be addressed by setting the onboard DIP switches in the following way:
(Be sure to perform all connections prior to turning on the power supply.)

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the CRMX module
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Set the desired address by following the binary value expressed by the DIP switch positions
7. DIP 1-9 Set DMX address: “Base 1” numbering is adopted with DMX channel 1= Code 1
DMX Channel 512=Unavailable
8. The green indicator LED will now flash steadily if the DMX signal is present

* To select DMX address with RDM compatible software , switch ON the DIP switch 10 and use the “DMX Start Address” menu.

8. RDM and Available PIDs

What is RDM?

RDM, or Remote Device Management, is a standardized bi-directional communication protocol used for managing, monitoring, and configuring lighting fixtures and other equipment that come equipped with RDM capability. This protocol is an enhancement of the USITT DMX512 protocol that is commonly used for configuring a wide array of lighting fixtures and other equipment.

Pilotino™ and RMD

The Pilotino™ comes equipped with full RDM capability and is compatible with any kind of RDM software, board, or controller. All of the advanced settings that the Pilotino™ is capable of can only be edited through an RDM device. The only setting that does not require an RDM device is the DMX addressing. This can be done through the onboard DIP switches (More information on addressing the Pilotino™ is available on page 9).

What are PIDs?

A PID within the RDM context is a certain parameter or setting that is available through the RDM protocol for configuring a fixture or a piece of equipment. Each PID can “Get” or “Set” information for configuring an RDM capable device.

Available PIDs for Pilotino™

DMX START ADDRESS - SET	SENSOR VALUE SUPPLY VOLTAGE - GET
FACTORY DEFAULTS - SET	SENSOR VALUE INTERNAL TEMPERATURE - GET
CURVE - SET	SENSOR VALUE SUPPLY CURRENT - GET
CURVE DESCRIPTION - GET	SOFTWARE VERSION LABEL - GET
DMX PERSONALITY - SET	DEVICE HOURS - GET
DMX PERSONALITY DESCRIPTION - GET	LAMP HOURS - GET
OUTPUT RESPONSE TIME - SET	SUPPORTED PARAMETERS - GET
OUTPUT RESPONSE TIME DESCRIPTION - GET	DEVICE INFO - GET
MODULATION FREQUENCY - SET	DEVICE MODEL DESCRIPTION - GET
MODULATION FREQUENCY DESCRIPTION - GET	MANUFACTURER LABEL - GET
DMX FAIL MODE - SET	DEVICE LABEL - SET
	IDENTIFY DEVICE - SET

8.1 RDM PID Descriptions

DMX START ADDRESS - SET: Used to configure the starting DMX address of the PILOTINO™ PCB.

FACTORY DEFAULTS - SET: Used to revert the PILOTINO™ PCB to factory default settings.

CURVE - SET: Used to set the Dimming Curve to achieve different dimming styles. There are 2 curve modes, linear and quadratic.

CURVE DESCRIPTION - GET: Shows the currently selected Dimming Curve.

DMX PERSONALITY - SET: Used to set the desired output mode (1-5 channel 8 bit or 1-5 channel 16 bit).

The PILOTINO™ is capable of operating in 10 different Personality modes.

DMX PERSONALITY DESCRIPTION - GET: Shows the currently selected DMX Personality.

OUTPUT RESPONSE TIME - SET: Used to set the dimming response time related to the input signal.

OUTPUT RESPONSE TIME DESCRIPTION - GET: Shows the currently set Output Response Time.

MODULATION FREQUENCY - SET: Used for configuring the PWM rate output frequency to the LEDs

(1-5.2KHz are available).

MODULATION FREQUENCY DESCRIPTION - GET: Shows the currently selected Modulation Frequency setting.

DMX FAIL MODE - SET: Used for configuring the action employed by the device in the event of a DMX signal failure or loss. There are 3 fail modes to chose from: (1) Hold Last Value (2) Full , (3) Test= 60 DMX= 5% Output.

SENSOR VALUE SUPPLY VOLTAGE - GET: Shows a live feed of the input voltage value to the PILOTINO™.

SENSOR VALUE INTERNAL TEMPERATURE -GET: Shows a live feed of the internal temperature of the PILOTINO™.

SENSOR VALUE SUPPLY CURRENT - GET: Shows a live feed of the current draw of the PILOTINO™.

8.1 RDM PID Descriptions (cont.)

SOFTWARE VERSION LABEL - GET: Shows the current version of the PILOTINO™'s firmware.

DEVICE HOURS - GET: Shows the total hours of runtime that the device has completed since new.

LAMP HOURS - GET: Shows the hours of runtime that the device has supplied to the LEDs.

SUPPORTED PARAMETERS - GET: Shows a list of all the available PIDs as implemented in the PILOTINO™.

DEVICE INFO - GET: Used to retrieve important device information.

DEVICE MODEL DESCRIPTION- GET: Shows the ASCII text for the device model description.

MANUFACTURER LABEL - GET: Shows the ASCII text for the manufacturer's name.

DEVICE LABEL - SET: Used to label the device by the user.

IDENTIFY DEVICE - SET: Used for sending a strobing signal to the device's outputs to identify its location.

8.2 Output Curve

Output Curve

The PILOTINO™ PCB has 2 output curve modes to select from: Quadratic and Linear.

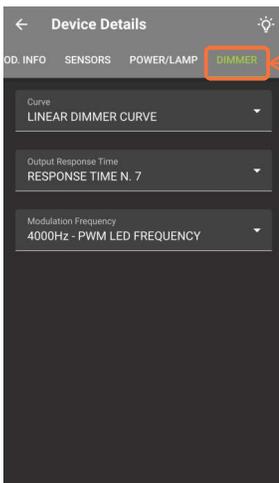
These modes can be accessed by setting the onboard DIP switches in the following way:

(Be sure to perform all connections prior to turning on the power supply.)

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position

For Quadratic:

1. Navigate and tap on “Dimmer” category tab.

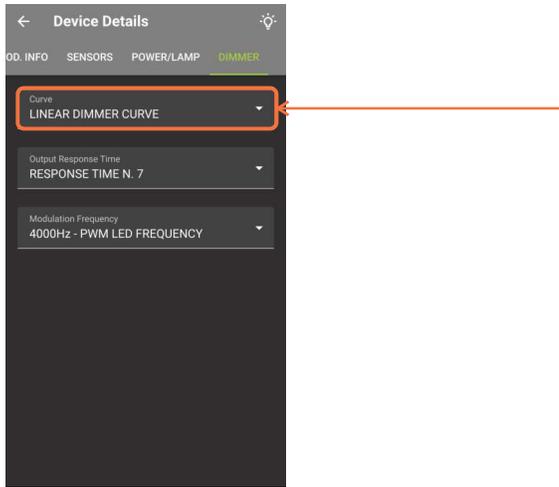


* The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.

8.2 Output Curve (cont.)

For Quadratic: (Cont.)

2. Navigate and tap on the “Curve” menu.



3. A drop down menu will appear, from here you can select the desired Curve Style.

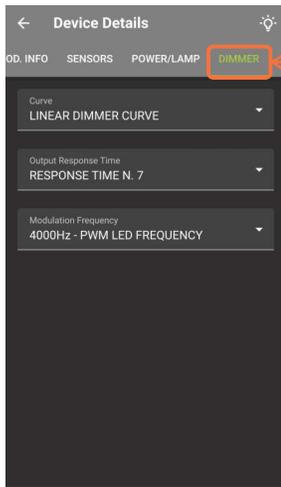


*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

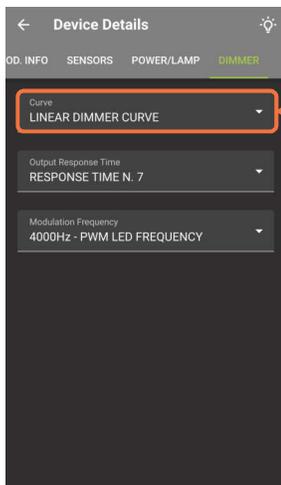
8.2 Output Curve (cont.)

For Linear:

1. Navigate and tap on “Dimmer” category tab.



2. Navigate and tap on the “Curve” menu.

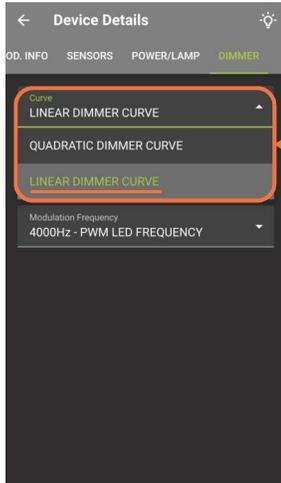


*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

8.2 Output Curve (cont.)

For Linear: (Cont.)

3. A drop down menu will appear, from here you can select the desired Curve Style.



4. Once the Dimmer Curve Style has been selected, the selection will be automatically saved in the device's memory.

*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

8.3 Output Frequency

Output Frequency

The PILOTINO™ PCB has 9 frequency output modes to select from:

1kHz, 1.5kHz, 2kHz, 2.5kHz, 3kHz, 3.5kHz, 4kHz, 4.5kHz, and 5.2kHz.

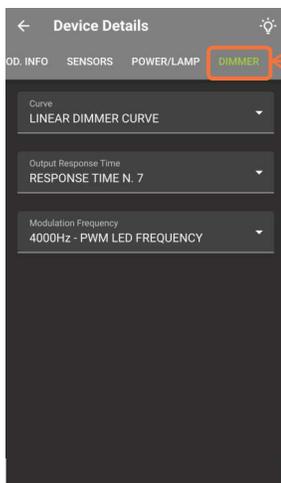
These modes can be accessed by setting the onboard DIP switches in the following way:

(Be sure to perform all connections prior to turning on the power supply.)

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position

For 1-5.2kHz:

7. Navigate and tap on “Dimmer” category tab.

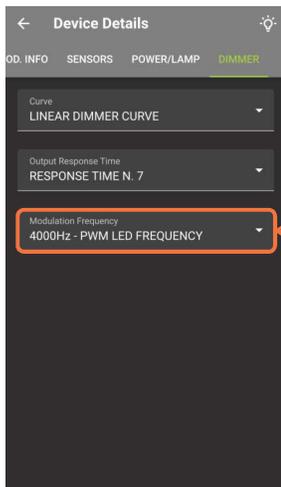


* The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.

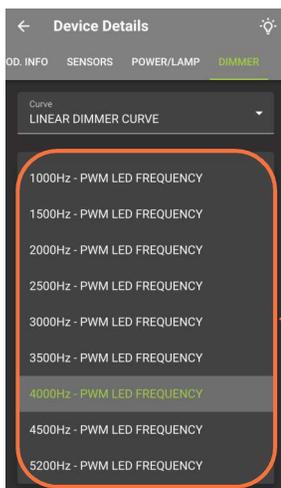
8.3 Output Frequency (cont.)

For 1-5.2kHz: (Cont.)

8. Navigate and tap on “Modulation Frequency Menu” category tab.



9. A drop down menu will appear, from here you can select the desired Output Frequency



*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

8.3 Output Frequency (cont.)

For 1-5.2kHz: (Cont.)

10. Once the Output Frequency has been selected, the selection will be automatically saved in the device's memory.

8.4 Bit Mode Selection

Bit Mode Selection

The PILOTINO™ PCB has 10 bitmode channel configurations to select from: 1,2,3,4, or 5 channels 8 bit and 1,2,3,4 or 5 channels 16 bit

These modes can be accessed by setting the onboard DIP switches in the following way:

(Be sure to perform all connections prior to turning on the power supply.)

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position
7. Follow the same steps used to change the other RDM functions: To select the bit mode, use the "DMX Personality menu"

* The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.

8.5 DMX Failure Settings

DMX Failure Settings

The PILOTINO™ PCB has 3 reaction modes in the event of a DMX input failure: Hold Last Value, Full On, and Test.

These modes can be accessed by setting the onboard DIP switches in the following way:

(Be sure to perform all connections prior to turning on the power supply.)

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position
7. Follow the same steps used to change the other RDM functions: To select DMX failure setting, use the “DMX Fail Mode” menu

- Scene 1: Hold Last Value - Scene 2: Full On - Scene 3: Test (5% of all Channels)

8.6 Response Time

Response Time

The PILOTINO™ PCB has 5 response time modes for the DMX signal input:

These modes can be accessed by setting the onboard DIP switches in the following way:

(Be sure to perform all connections prior to turning on the power supply.)

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position
7. Follow the same steps used to change the other RDM functions: To select the response time of the device, use the “Output Response Time” menu:

1 & 2 = Fast 3 = Normal 4 & 5 = Slow

8.7 Default Settings

Default Settings

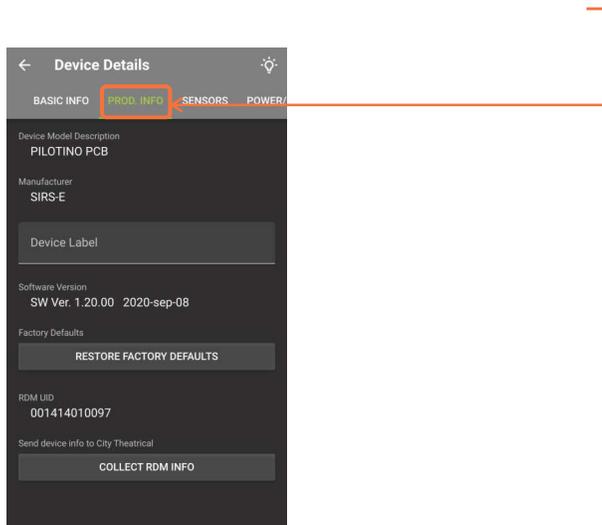
The PILOTINO™ PCB can revert back to it's original factory configurations with a simple command from an RDM controller.

The procedure to achieve factory default settings are as follows:

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position

Restore Factory Defaults:

7. Navigate and tap on “Prod. INFO” category tab.



*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

8.7 Default Settings (cont.)

Restore Factory Defaults:

8. Tap on the button labeled: “RESTORE FACTORY DEFAULTS”.



9. The PILOTINO™ PCB will be automatically restored to its factory default settings.

10. Default Settings :

- Output Curve : Quadratic
- Frequency Output : 1kHz
- Bit Mode : 5 channels - 8 bit
- DMX Failure Setting : Hold last value
- Response time : 3-Normal

*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

8.8 Onboard Sensors

Onboard Sensors

The PILOTINO™ PCB comes equipped with 3 sensors that will relay information back to an RDM controller. The unit is capable of sending out real time readings for Internal Temperature, Input Voltage, and Current. The steps below explain how to access the sensor's information:

1. Connect the input power from the power supply
2. Connect the LEDs to the output wire to board connectors
3. Connect the DMX input to the connectors or achieve a wireless connection with the PILOTINO CRMX™ PCB
4. Switch ON the power supply
5. The green indicator LED will turn on steady
6. Switch DIP switch 10 to the ON position

Sensors:

7. Navigate and tap on "SENSORS" category tab; from here, the 3 sensors gauges will appear and show the information.

9. Mode LED Indicator

- Green Static : Power On
- Green Blinking : DMX Signal Present
- Red Static : Current Protection
- Yellow Blinking : Upload or download Firmware (Information for Service Center Only)
- Yellow Static : DMX address out of range
- Magenta Static : Input voltage out of range

*** The RDM configuration example shown depicts the user interface from the DMXcat controller by City Theatrical. Other software and controllers will show a different set of steps or layouts, but the idea is the same.**

10. Hardware and Accessories

The onboard IO socket is meant to be used with the expansion modules to equip the PILOTINO™ PCB with onboard WiFi or CRMX capabilities. With the PILOTINO CRMX™ PCB or PILOTINO WiFi™ PCB, you instantly convert this decoder into a CRMX or ArtNet node receiving unit. Allowing for a completely wireless solution.

Key Features: PILOTINO WiFi™ PCB

- Compatible with any ArtNet App
- Robust Wireless 2.4GHz Signal
- WiFi Mode: Station / SoftAP
- Onboard IO socket for quick integration
- Wire to Board Quick Connectors
- Plug and Play with Onboard IO Socket
- 5 Year Limited Warranty
- Made in Italy
- Dimensions mm (L W H): 68 22.3 11.4



PILOTINO WiFi™ PCB

Key Features: PILOTINO CRMX™ PCB

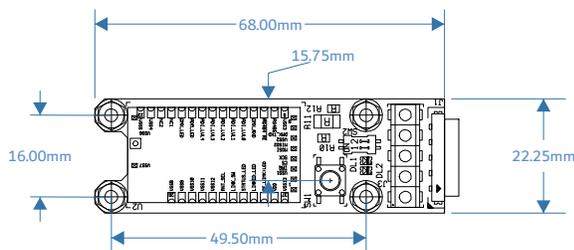
- Compatible with any CRMX device
- Robust Wireless Signal
- RDM Compatible
- Onboard IO socket for quick integration
- Wire to Board Quick Connectors
- Plug and Play with Onboard IO Socket
- 5 Year Limited Warranty
- Made in Italy
- Dimensions mm (L W H): 68 22.3 11.4



Wireless DMX RDM
PILOTINO CRMX™ PCB

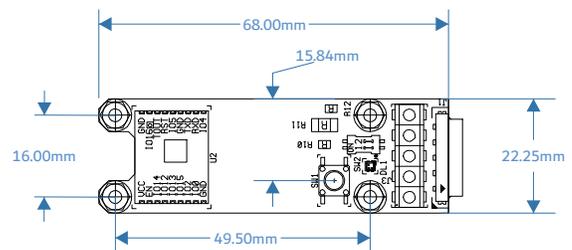
Mechanical Details:

PILOTINO CRMX™ PCB Top View

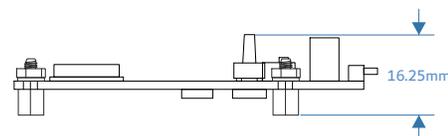


PILOTINO CRMX™ PCB Side View

PILOTINO WiFi™ PCB Top View



PILOTINO WiFi™ PCB Side View



SKU: Pilotino-WiFi

SKU: Pilotino-CRMX

10. Hardware and Accessories (cont.)

Antenna

The expansion modules are to equip the PILOTINO™ PCB with onboard WiFi or CRMX (wireless DMX) capabilities can be instantly converted into a Wireless DMX, RDM or ArtNet node receiving unit. Each expansion module has an ANT pin to connect a receiving/transmitting Antenna opposite from the IO socket.

Key Features:

- Frequency of 2.4-2.5GHz
- 50 ohm impedance
- u.FL to Female SMA connection
- Coax cable at 10 cm in length




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