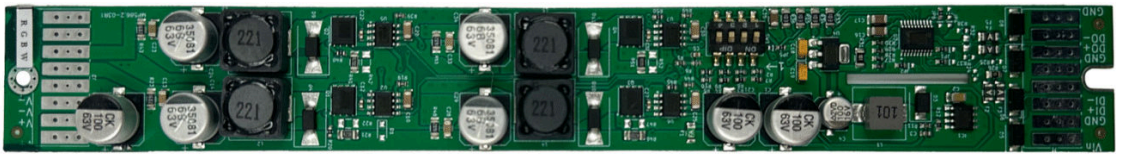
ZENOPIX
smart solutions

Your Solution Partner in Lighting Control

SELF-ADDRESSING ADJUSTABLE CONSTANT CURRENT DMX DECODER

USER MANUAL



Version 3 / October 2026

zenopix.com



Thank you for choosing the Self-Addressing, Adjustable Constant-Current DMX Decoder. Please read this booklet and the product user manual before using the product. The user manual is available on our website. If you experience any technical problem, you can contact our company using the information below and receive technical support.

Company Information and Contact Address

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The Self-Addressing Adjustable-Current DMX Constant Current Decoder *is a registered product of Zenopix® Limited Company.*

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Safe Use

Use the device only in dry environments (indoors). The device is an unenclosed PCB with no IP rating. Do not use the device in humid environments and avoid contact with water or other liquids. Switch off the power if you will not use the device for a long time. The use of galvanic isolation is always recommended. Do not remove any part from the unit. Do not connect the unit to an ungrounded circuit. Do not connect the unit to LEDs that are switched on. Connect the unit only to LEDs and controllers that are initially switched off. There are no user-serviceable parts inside or outside the device. Repair service is the sole responsibility of the manufacturer. If the device appears to be defective, please contact your dealer. After the warranty period has expired, you can contact your supplier or the manufacturer about having the unit repaired, if possible, for a service fee. This device must be used by professionals. The device is not designed to be operated by non-professionals or children.

Warranty Information

The Zenopix Self-Addressing, Adjustable Constant-Current DMX Decoder comes with a 2-year manufacturer's warranty, extendable to 5 years with an optional 3-year extension. Detailed information is available in the product warranty certificate or on our website.

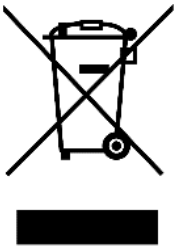
Box Contents

1× Zenopix Self-Addressing, Adjustable Constant-Current DMX Decoder

1× Device Test Report

NOTE: After opening the package, check its contents and inspect the device for damage! If anything is missing or damaged, contact your supplier. Do not use the device if it appears damaged!

Information on Human and Environmental Health



If the information in the User Manual is fully followed, this device poses no risk to human health or the environment. The device must not be disposed of with household waste; it must be delivered to an electrical and electronic equipment recycling center. It must be recycled or disposed of without harming nature or human health.

Introduction

The Zenopix Self-Addressing, Adjustable Constant-Current DMX Decoder speeds up your on-site installation with a "plug and play" approach. Eliminating addressing complexity entirely, this smart driver regenerates and amplifies the data as it passes it between fixtures. Thanks to its special architecture, it offers a solution to signal degradation in long-distance projects. Assigning DMX addresses one by one on a stage or site with hundreds of fixtures is a heavy workload.

Our automatic addressing technology removes this complexity entirely. Install the system and apply power. The devices automatically assign their addresses in sequence within seconds, without errors. By reducing on-site working time and errors, this feature lets you deliver projects quickly. It also enables fast and easy device replacement without field staff having to deal with complex addressing.

Features

- Operating voltage up to 48V.
- Hiccup-Mode Output Short-Circuit Protection
- Flicker-free thanks to high-frequency PWM switching.
- Easy installation.
- ESD protection.
- Signal regenerated on each decoder.

Application Areas

- Stage Lighting
- Architectural Lighting Applications
- High-Power LED Wall-Washer Fixtures
- Parallel Lighting Systems with Common Anode Connection
- Professional LED Driving and Control Projects

Safety Instructions

To prevent misuse of the device, damage or personal injury, please follow the instructions below:

⚠️	This device operates at low voltage (DC 12-48V). Do not use lower or higher voltages. Do not apply reverse-polarity voltage to the device.
⚠️	Any external power supply to be connected must be fused according to its output power and/or protected against short circuits.
⚠️	It is the user's responsibility to protect the device against lightning, electric shock and high-voltage surges. Make sure that all necessary electrical surge protection measures have been taken at the installation site.
⚠️	In high-current applications, cable cross-sections and connectors must be selected according to the maximum current drawn by the device to prevent line losses and heating. Improperly sized cables and connectors can overheat, cause voltage drop and increase the risk of a short circuit, creating a fire hazard. The user is solely responsible for correct sizing.

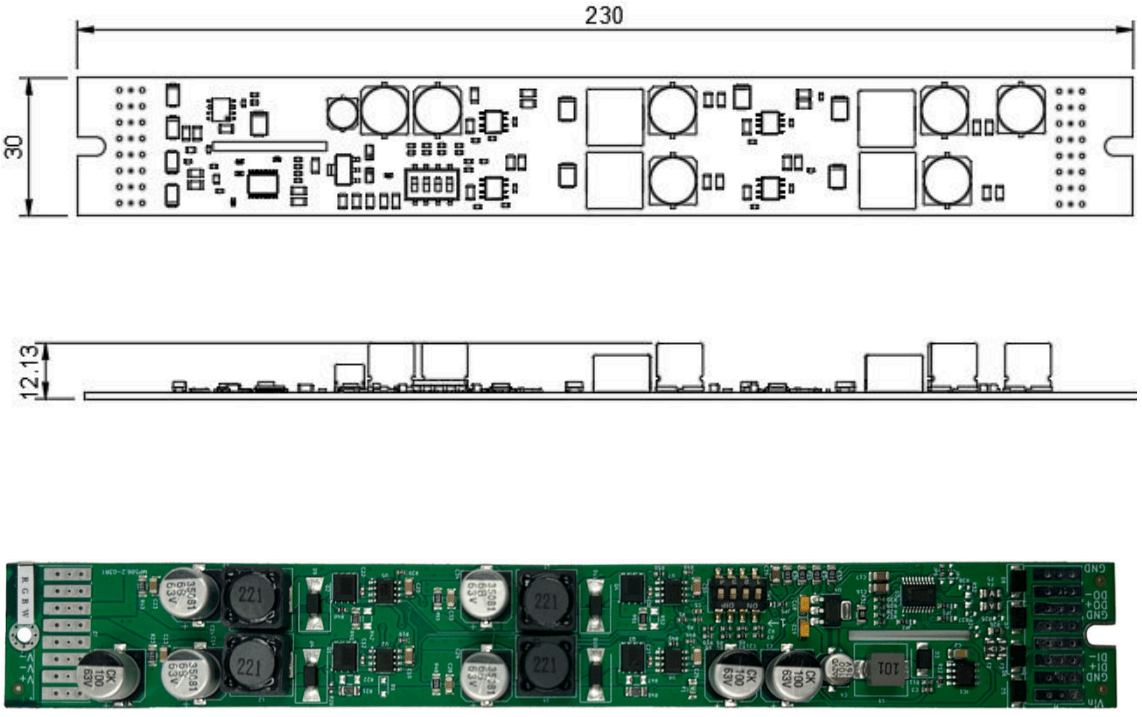
Technical Specifications

Dimming Interface	DMX512
Input voltage range	12-48VDC
Input voltage (Abs. Max.)	50VDC
Output voltage range	0V- Vin
No-load power	<1W
Drive Method	Common Anode (LED + terminals common)
Output current options *1	Configurable from 160mA to 1040mA.
Current hysteresis window ΔI_{HYS}	±%5
Max. cont. output power (4CH)	~ 200W (@4CH/48V 1040, 100% DIM)
Dimming Range	0~100% (0.4% resolution via DMX signal)
Dimming method	PWM
PWM switching frequency	Maximum 90 kHz
Efficiency	>90% efficiency (Test: 36V, 700mA, 9 LEDs in series)
Dimensions	230 x 30 x 12.13mm (L x W x H) without terminal blocks
Weight	55 gr
Operating temp./humidity	-10°C, +70°C / 20 ~ 70%RH, non-condensing
Storage temp./humidity	-20°C ~ 80°C, 0~ 80% RH, Non-Condensing
Certificates	CE, RoHS

***1:** The current value can be set according to the wattage requested by the user. Please do not hesitate to contact us for your special current requirements.*

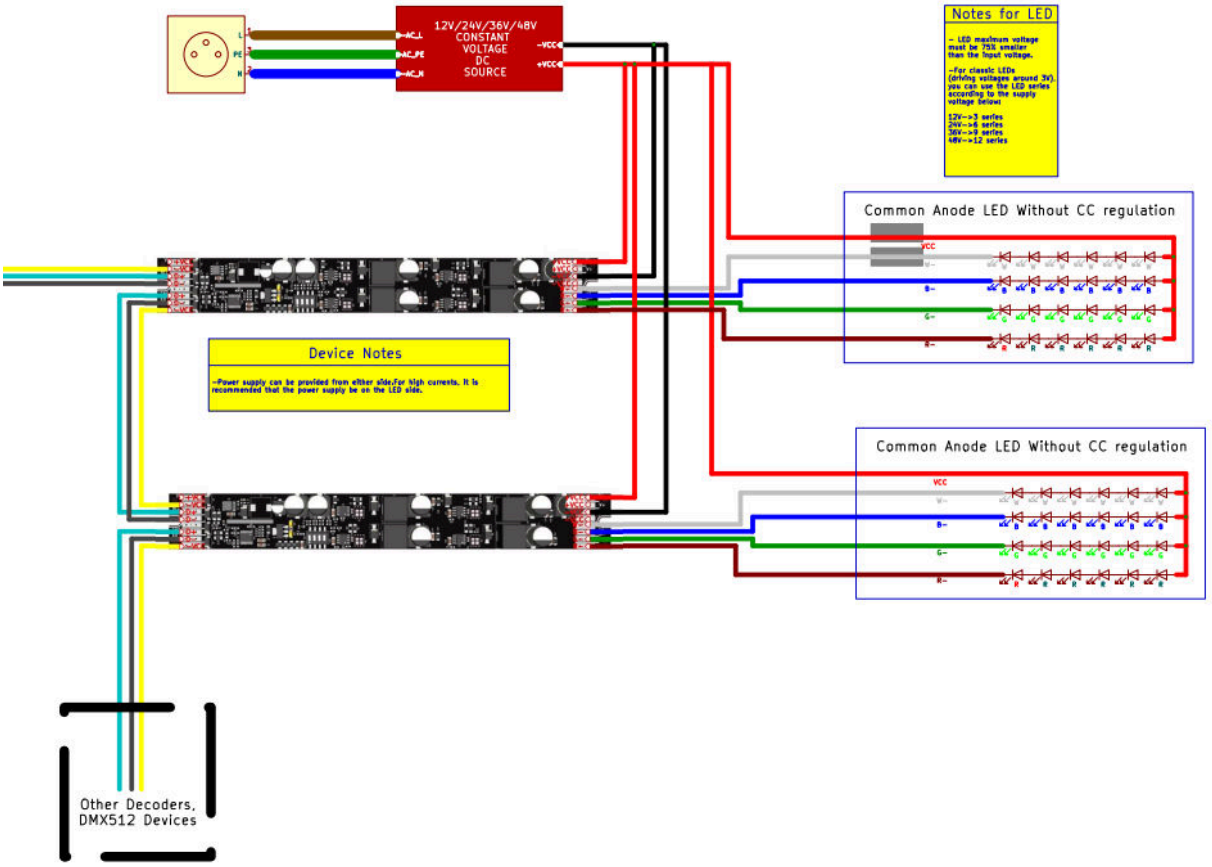
Recommendation: You can choose a DC power supply that meets your current and voltage requirements. A power supply with short-circuit protection is recommended. For example, Mean Well LRS-350-24 can be used.

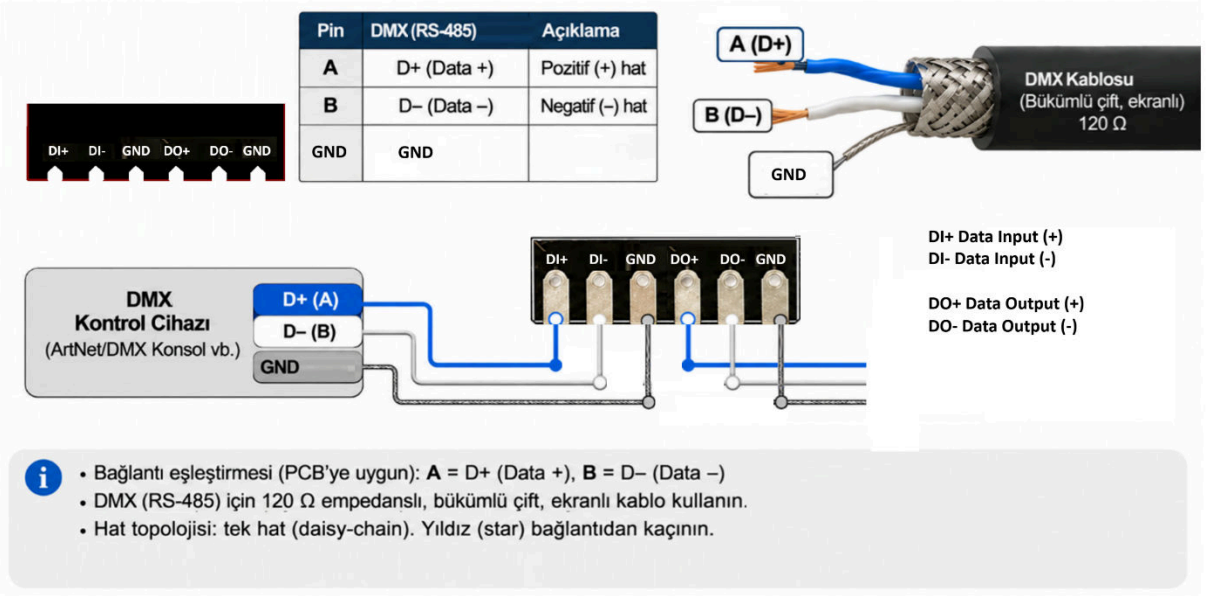
Device Dimensions



Self-Addressing Adjustable-Current DMX CC Decoder Dimensions

Pin Connections

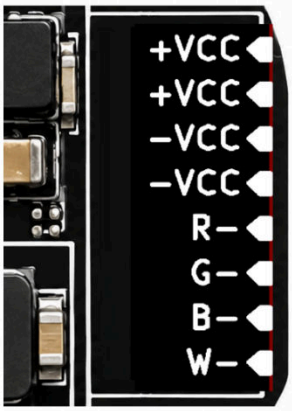


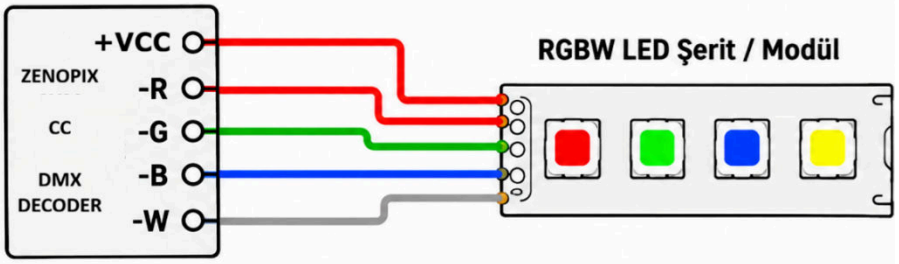


Pin	DMX (RS-485)	Açıklama
A	D+ (Data +)	Pozitif (+) hat
B	D– (Data –)	Negatif (–) hat
GND	GND	

- Bağlantı eşleştirmesi (PCB'ye uygun): **A** = D+ (Data +), **B** = D– (Data –)
- DMX (RS-485) için 120 Ω empedanslı, bükümlü çift, ekranlı kablo kullanın.
- Hat topolojisi: tek hat (daisy-chain). Yıldız (star) bağlantıdan kaçının.

Pin	Adı	Açıklama
+V	V+	Besleme pozitif (+)
-R	R–	Kırmızı kanal (sabit akım negatif çıkışı)
-G	G–	Yeşil kanal (sabit akım negatif çıkışı)
-B	B–	Mavi kanal (sabit akım negatif çıkışı)
-W	W–	Beyaz kanal (sabit akım negatif çıkışı)





Not: Çıkışlar "negatif anahtarlamalı" (common anode) yapıdadır.
LED'in ortak anodu +V'ye, her renk kanalı ise (R-, G-, B-, W-) pinlerine bağlanır.

- When wiring the device, select a suitable cable type and cross-section, and use cables and connectors rated for the required current.
- A data cable impedance of 120 Ω is recommended. Half-duplex RS485 or DMX cable is recommended.
- If your LED current is >4A, joining the +(Anode) terminals at the terminal blocks or solder pads on the device is not recommended. At high currents, it is better to distribute the +(Anode) terminals of the LEDs from the power supply in a star topology.
- The product has power inputs on both sides and can carry current through the product provided the total current is <4A. However, carrying power through the product is not recommended. If possible, connect the product's power on the side where the LEDs are connected, and leave the power input on the data input side unconnected. In applications where the total current exceeds 4A, distribute the +(Anode) terminals of the LEDs from the power supply in a star topology.
- Please make sure your LEDs support common anode (+ terminals can be shared, -(cathode) terminals are independent).

- For this device, the 120 Ω termination resistor for the end of the DMX 512 line is built into the input. No additional termination is needed for the last device.
- Wiring must be performed by qualified personnel.
- Avoid reverse polarity during connection.

*[1] **Recommendation:** Recommended Belden cables for DMX are listed below. Make sure you use a twisted-pair cable with an impedance of 120 Ω. If the cable will be used outdoors, choose cables with high UV resistance.*

Area of Use	**Cable Type / Feature**	**Recommended Belden Cable**	**Equivalent Local Cable Designation**
Indoor	Standard (PVC Jacket)	Belden 9841	LI2Y(St)CH / LIYCY(TP)
Indoor	Halogen-Free (LSZH/ HFFR)	Belden 9841NH	LI2Y(St)CH
Outdoor	UV Resistant	Belden 3105T	LI2Y(St)C2Y
Outdoor	Armored (Underground Runs)	Belden 9841LS	LI2Y(St)C2Y-SWA

LED Selection

To get flawless dimming performance from your DMX Constant Current decoders and to maintain the thermal/electrical stability of the device, the following rules must be strictly observed when selecting and connecting LEDs.

Information Note for LED Module Designers

For the decoder to provide stable current regulation and remain stable during PWM/linear dimming transitions, the total forward voltage (V_{LED}) of the LED modules to be connected should not exceed 75% of the input supply voltage (V_{IN}). Exceeding this limit may cause a drop in output current or loss of regulation.

Recommended Number of Standard LEDs in Series per Channel: When using standard lighting LEDs with an average operating voltage of 3V, the recommended number of LEDs in series per channel, depending on your power supply voltage, is as follows:

- For 12V DC Supply: 3 LEDs in Series *(Approx. 9V)*
- For 24V DC Supply: 6 LEDs in Series *(Approx. 18V)*
- For 36V DC Supply: 9 LEDs in Series *(Approx. 27V)*
- For 48V DC Supply: 12 LEDs in Series *(Approx. 36V)*

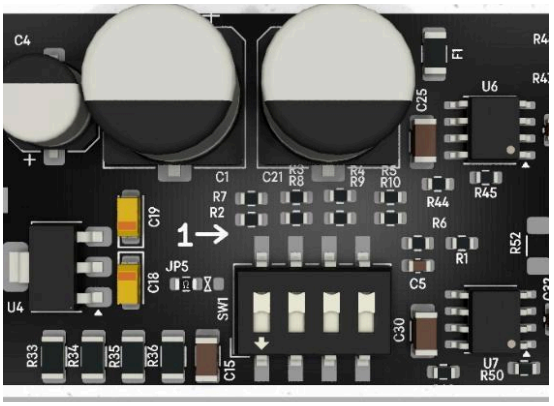
Device Settings

Addressing

The first device automatically takes the first address (Channel 1). By default, each decoder takes 4 channel addresses. You need to define the decoders as 4-channel devices in your animation software or lighting console. The channel order follows the RGBW labels on the outputs, with channel 1 being Red. The channel order cannot be changed by the user.

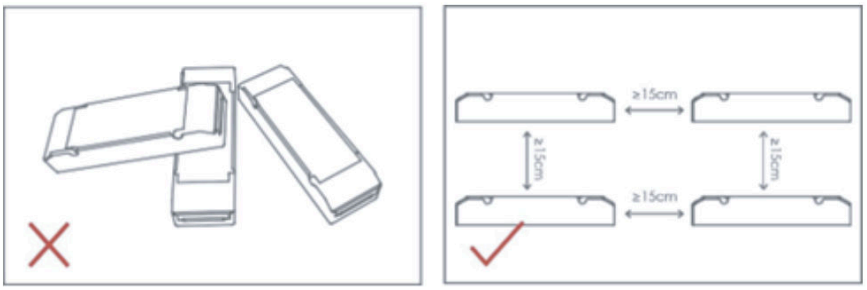
Current Setting

The device current can be set with the DIP switch on the device.

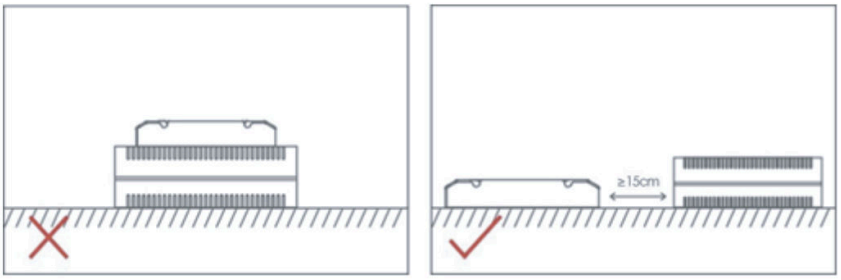


Binary Code	Current Value	Binary Code	Current Value
0000	1040mA	1000	320mA
0001	750mA	1001	270mA
0010	700mA	1010	260mA
0011	530mA	1011	230mA
0100	450mA	1100	210mA
0101	370mA	1101	190mA
0110	350mA	1110	195mA
0111	300mA	1111	160mA

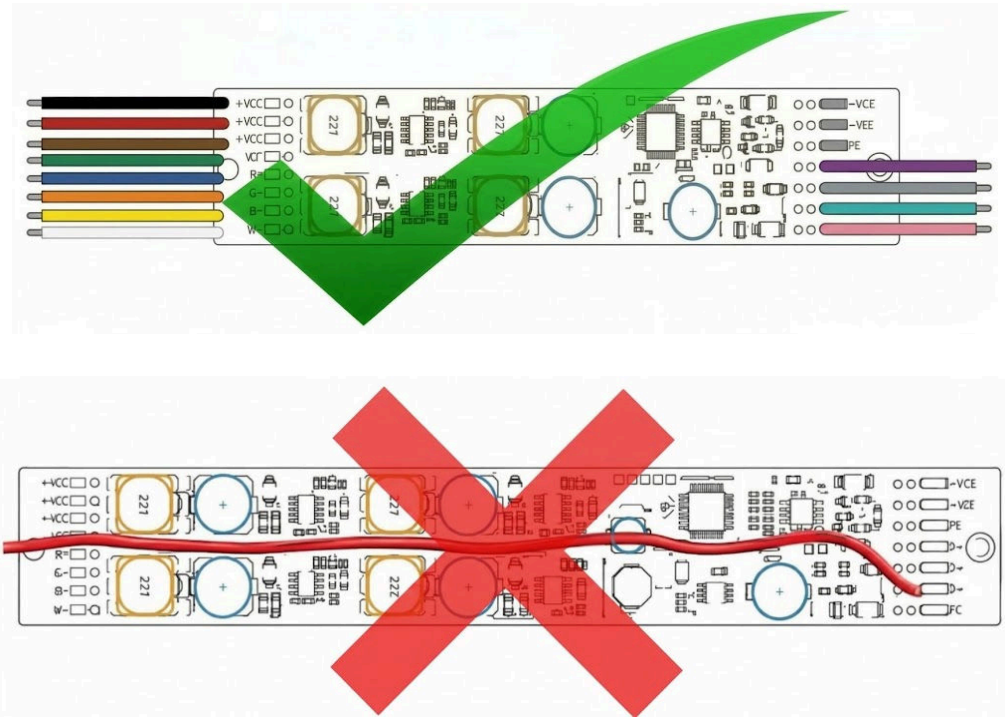
Installation and Precautions



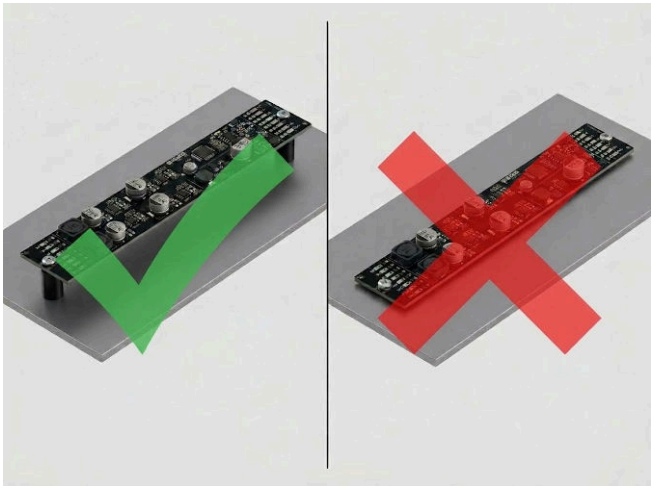
Please do not stack the products on top of each other. Leave **more than 15 cm** between two devices so as not to adversely affect heat dissipation or the service life of the products.



Please do not place the products on top of LED drivers. Leave **at least 15 cm** between the product and the driver to ensure proper heat dissipation and to prevent shortening the service life of the devices.



When wiring the product, do not route signal/power cables between the components. Make sure that any mechanical strain on the cables cannot damage the device. Plan the wiring of the product from the inside out.



Prevent the device from coming into direct contact with metal or conductive surfaces. Electrically isolating the device from conductive surfaces is entirely the user's responsibility. Short circuits caused by contact with conductive/metal surfaces pose a risk of arcing and fire. During installation, using insulating spacers (PCB standoffs), a suitably sized mounting channel, an insulating thermal pad or electrical insulation sleeving, or mounting directly on an insulating surface, is recommended.



If you will use the product in high-current applications (>500mA per channel) or where it will be exposed to high temperatures, it is recommended to apply a thermal pad to the points shown in the figure above or to the entire rear surface (without components) to transfer heat to another surface.

WARNINGS

- The products must be installed by qualified professionals.
- This product is an unenclosed PCB and **is not waterproof**. Please protect it from physical impact, sun, water and rain. This product is not suitable for direct outdoor installation. If it will be used outdoors, make sure it is mounted in a waterproof enclosure. The user is responsible for outdoor use. Good heat dissipation will extend the service life of the products. Please ensure good ventilation.
- Make sure the operating voltage meets the product specifications.
- The cable gauge used must be sufficient to supply the connected lighting fixtures, and the cable connection must be secure.
- Before switching on the products, please make sure that all wiring is correct, as an incorrect connection may damage the lighting fixtures. If a fault occurs, please do not attempt to repair the products yourself. If you have any questions, please contact your suppliers.
- This manual is subject to change without prior notice. If you have any questions, please do not hesitate to contact us.

Technical Support

If you have further questions about the use of the Zenopix Self-Addressing, Adjustable Constant-Current DMX Decoder or technical problems, use the following resources for troubleshooting:

- Read the Zenopix Constant Current Decoder user manual
- Contact your supplier or sales representative.
- Check our website for the latest information
- For any technical problem, you can contact us directly at info@zenopix.com.

Frequently Asked Questions (FAQ)

Can I use multiple decoders at the same time?

Yes, you can.

Does the device support RDM?

No, the device does not support RDM. For RDM-enabled products, you can check out our other decoder products.

What equipment is recommended for use with this device?

For DMX applications, we recommend using this decoder with Zenopix Magus, Zenopix Elea or Zenopix AER. The device can also operate with all controllers compliant with the DMX512 Standard.

I am experiencing flicker, freezing or latency in LED fixtures. What could be the cause?

- The cable between the decoder and the LEDs is too long (>5 meters)
- The power supply cannot provide sufficient current.
- Non-standard cabling or exceeding the maximum signal transmission distance (>100 meters).
- Delay of data packets due to heavy network traffic

- Grounding problems or ground loops

The distance between the controller and the decoders is too long (>100 meters). What should I do?

- You can repeat the signal by adding one more decoder in between.
- How can I address the devices?
- No manual addressing is required for the device. When the system starts, addressing begins automatically from the first device according to the channel numbers.

How many devices can I use on one DMX line?

On one line (Universe), you can use as many self-addressing decoders as the DMX standard allows. Remember that in self-addressing systems, if a device is damaged, disconnected from the line or removed, data cannot reach the devices after it. For this reason, connecting too many devices to one line directly increases the area affected in case of a failure.

What are its advantages and disadvantages compared to RDM or DMX?

Thanks to its bidirectional communication, the RDM protocol enables remote fault detection but is generally limited to 32 devices per line; self-addressing decoders cannot report faults, but theoretically support up to 128 devices per line. This plug-and-play structure, which requires no manual addressing or signal repeaters, regenerates the signal at each device. However, the biggest disadvantage of self-addressing systems is that, due to their series connection logic, if any device on the line fails or is disconnected, all fixtures after that point stop working.

Order Code

PRODUCT CODE	DMXCC	AJ	LS	SA	ST
Capacity					
Adjustable Current (Dip Switch)		AJ			
Enclosure Type					
Long Slim PCB			LS		
Feature					
Self-Addressing				SA	
Connection					
Screw Terminal Blocks					ST
Pluggable Terminal Blocks					PT
Solder Pads without Terminal Blocks					SL

Your lighting solution partner

Zenopix is an R&D, technology and manufacturing company specialized in lighting control systems, built on nearly twenty years of expertise in electronics and software.

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