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Your Solution Partner in Lighting Control

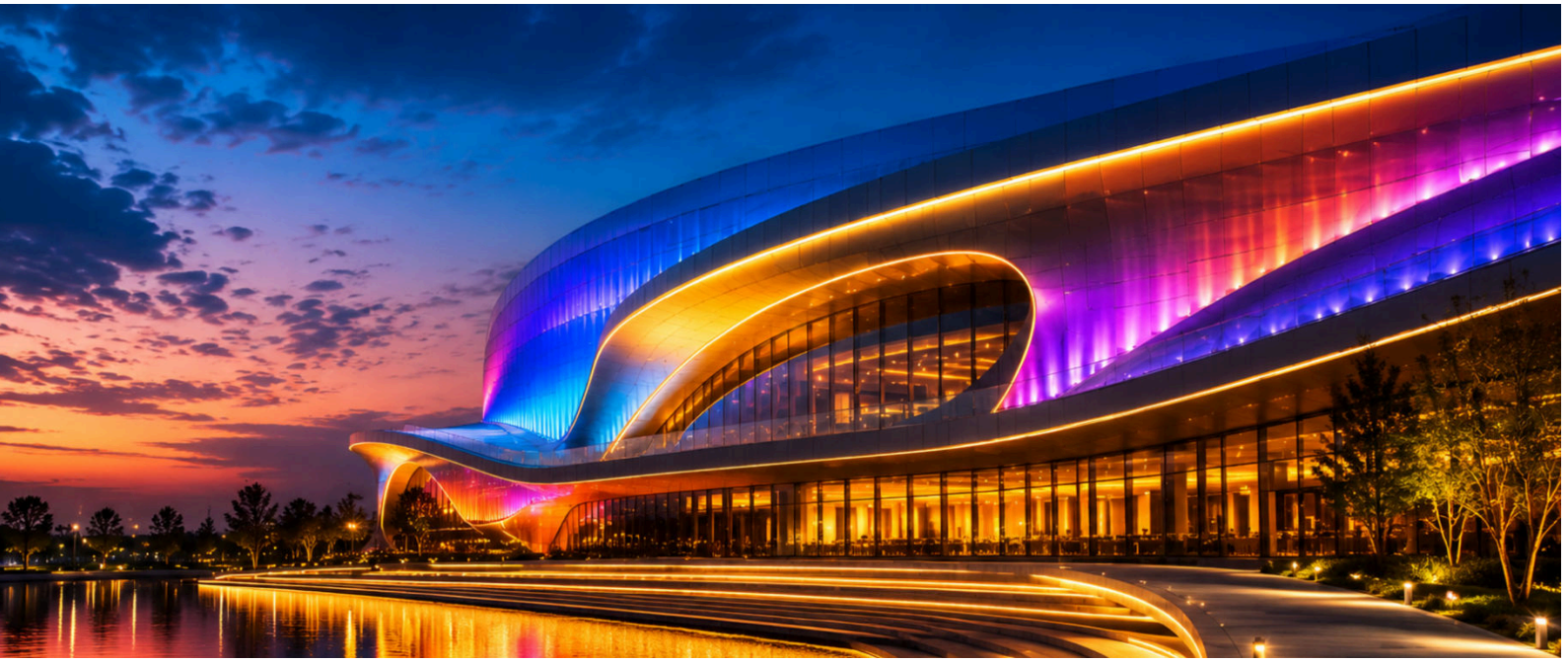
RDM/DMX ANALOG CONVERTER

RDM/DMX 0-10V Analog Converter

USER MANUAL



Version 3 / October 2026



Thank you for choosing the Zenopix Analog controller.

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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Safe Use

Use the device only in dry environments (indoors). The IP rating of the device is IP20. 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 or connect it 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 interface. Repair service is the sole responsibility of the manufacturer. If the interface 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

Zenopix Analog is covered by a standard 2-year manufacturer's warranty. Detailed information is available in the product warranty certificate or on our website.

Box Contents

1× Zenopix Analog

1× Bag of Terminal Blocks

1× Technical Document and User Manual

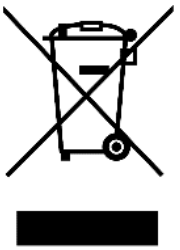
1× Warranty Certificate

1× Device Test Report

NOTE: After opening the package, check the contents of the package and the condition of the interface! 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

Zenopix **RDM/DMX Analog Converter** is an Analog Decoder device designed to convert digital DMX512 and RDM protocol signals into analog voltage (0–10V) or switching control outputs. It enables analog-controlled equipment such as LED drivers, AC/DC motor drives, speed control units, fountain systems and mechanical automation components to be integrated directly into DMX512 control networks. The device comes in two hardware configurations: a 24VDC input model **(6 Analog Outputs)** and a 110/230VAC input model **(3 Analog Outputs).**

Designed for professional lighting and automation applications, Zenopix Analog provides stable signal conversion, high performance and reliable operation. Its compact design, easy installation and compatibility with a wide range of analog equipment make it ideal for architectural, commercial and industrial lighting projects.

Key Features of the Analog Converter

- Dual Hardware Options: 24VDC input model (6 Channels) or direct 110/230VAC mains-powered model (3 Channels).
- SSR Trigger Compatible Enable Output: Provides up to 20mA output current per channel for direct Solid State Relay control. It cannot drive a mechanical relay. The Enable output voltage is 20VDC.
- Full RDM Support: Remote channel addressing, offset adjustments and parameter management via Zenopix Explorer or RDM consoles.
- Min/Max Limit (Offset) Setting: Lower and upper analog voltage limits are set independently via software.
- Versatile Applications: Fully compatible with fountain automation, AC/DC motor drives, 0–10V LED ballasts and mechanical automation systems.
- Firmware update: The controller is updated over RDM via Zenopix Explorer software.

Safety Instructions

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

⚠️	The AC version of this device operates at 110-230VAC. Do not use lower or higher voltages.
⚠️	The DC version of this device operates at low voltage (24VDC). Do not use lower or higher voltages.
⚠️	Any external power supply to be connected to the device 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.

Recommendation: For panel/rail applications, use one of these power supplies: Mean Well HDR-15-24, DRC-24V015W1RZ or Omron S8VK-G01524**.**

Technical Specifications

Input Power	DC Model: 24V DC Terminal Block AC Model: 220VAC Terminal Block
Power Consumption	<5 W (during normal operation)
RDM and DMX512 Input / Output	1 x 512 RDM/DMX Input - 1 x 512 RDM/DMX Output (Corresponding Input and Output Pins Are Directly Connected on the PCB)
Input / Output Connection Type	Data Input and Data Output 3-Pin, Pluggable terminal block
Number of Analog Output Channels	6 Channels, 20mA DC model 3 Channels, 20mA AC model
Analog Output Voltage	0-10V
Enable Output Voltage	20VDC, 20mA
Update	Over RDM with Zenopix Explorer Software
Enclosure	Plastic box
Dimensions	For 6 Channels: 126.20x105.56x55.74 mm (L×W×H) For 3 Channels: 91.5 x 70 x 58.5 mm (L×W×H)
Weight	For 6 Channels: 160g, For 3 Channels: 200g
Operating Temperature	0°C ~ 60°C
Operating Humidity	20 ~ 70% RH, Non-Condensing
Storage Temperature and Humidity	-10°C ~ 70°C, 0 ~ 70% RH, Non-Condensing
Protection	IP20
Certificates	CE, RoHS

Status LED Codes

Power LED: This LED stays on continuously when power is connected to the device.

Status LED: If there is no error, this LED blinks green.

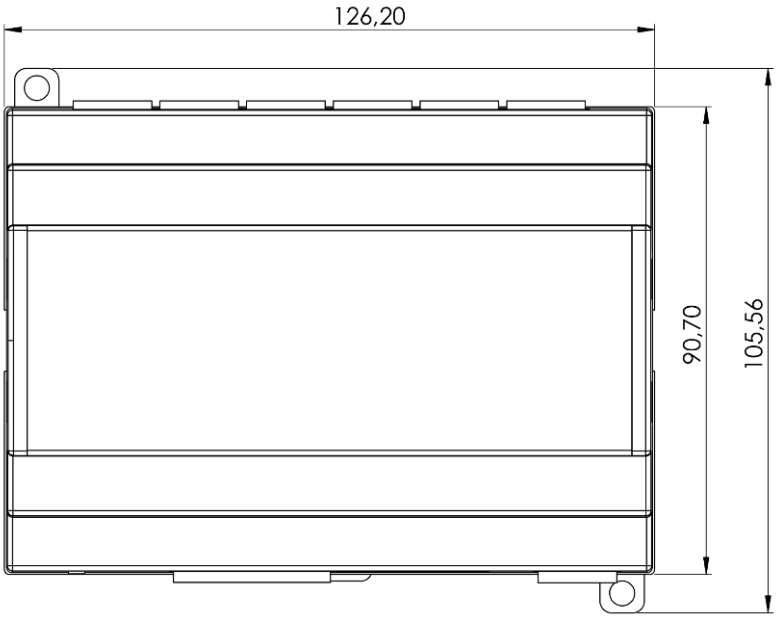
Status LED in Case of Error: When the device enters an error state, the LED lights solid red.

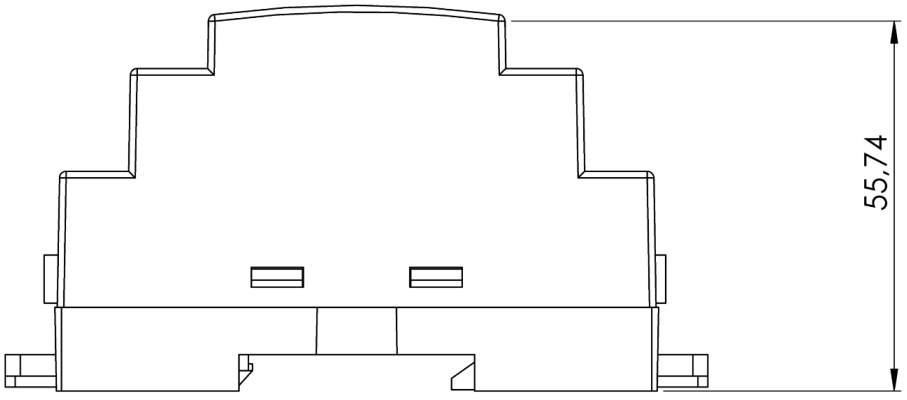
Resetting to Factory Default Settings

- Find a suitable tool to press the reset button located on the front of the device.
- Press and hold the reset button for 10 seconds.
- Release the button after all status LEDs on the front of the device have blinked.

If the process fails, repeat the steps.

Device Dimensions

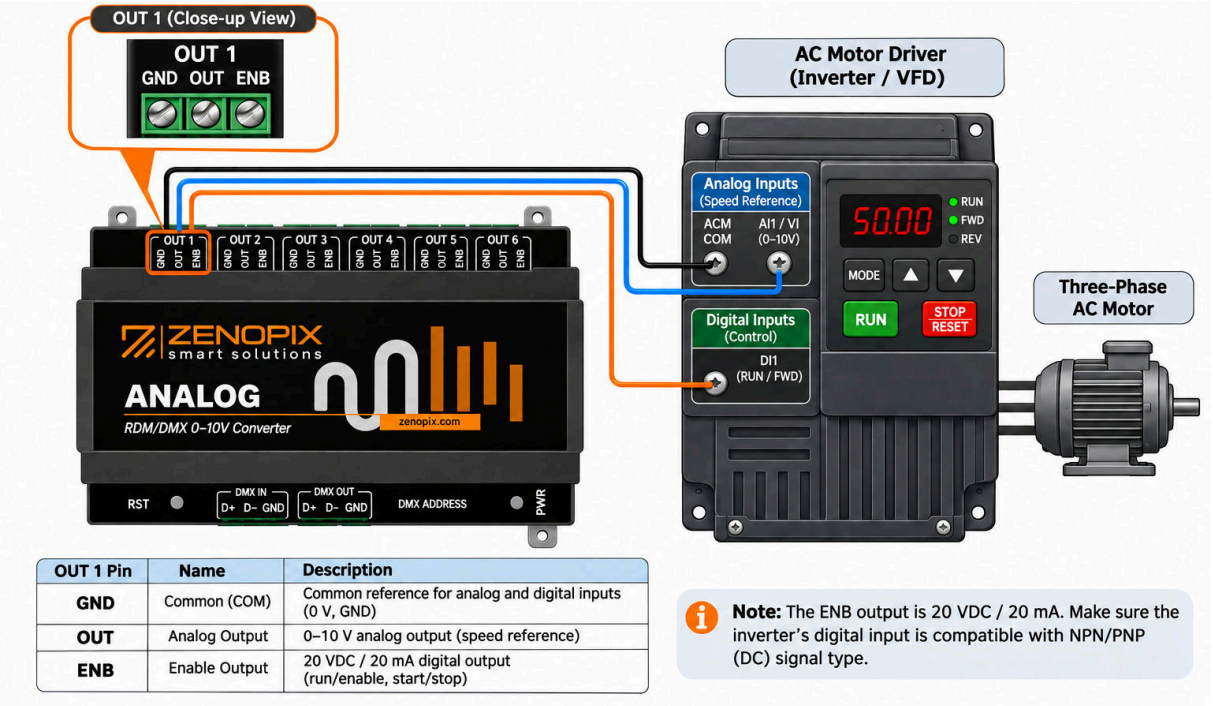




Pin Connections

The Zenopix Analog device has 6 outputs on the DC model and 3 outputs on the AC model. You can use these outputs with the 0-10V drivers you use to drive your high-power LEDs, or to control the pumps you use for shows in your pool fountains. Thanks to customized threshold settings, it is suitable for fountain applications or for high-power light animations used in areas such as stadiums. Below you can find the connection details for both applications.

1. Use with a Motor Driver



OUT 1 Pin	Name	Description
GND	Common (COM)	Common reference for analog and digital inputs (0 V, GND)
OUT	Analog Output	0–10 V analog output (speed reference)
ENB	Enable Output	20 VDC / 20 mA digital output (run/enable, start/stop)

Note: The ENB output is 20 VDC / 20 mA. Make sure the inverter's digital input is compatible with NPN/PNP (DC) signal type.

The 3-wire connection steps required for speed and start-stop control of an asynchronous motor drive (inverter/VFD) from the output terminals of the Zenopix Analog device are as follows:

Wire 1 (GND): Connect from the GND terminal on the Zenopix to the Analog Common (COM, ACM or GND) terminal of the motor drive. This is the common reference ground for the speed signal.

Wire 2 (OUT): Connect from the OUT terminal on the Zenopix to the 0-10V Speed Reference (AI1, VI or 0-10V) terminal of the motor drive. Zenopix

Analog converts the DMX signal to a 0-10V output for proportional motor speed control.

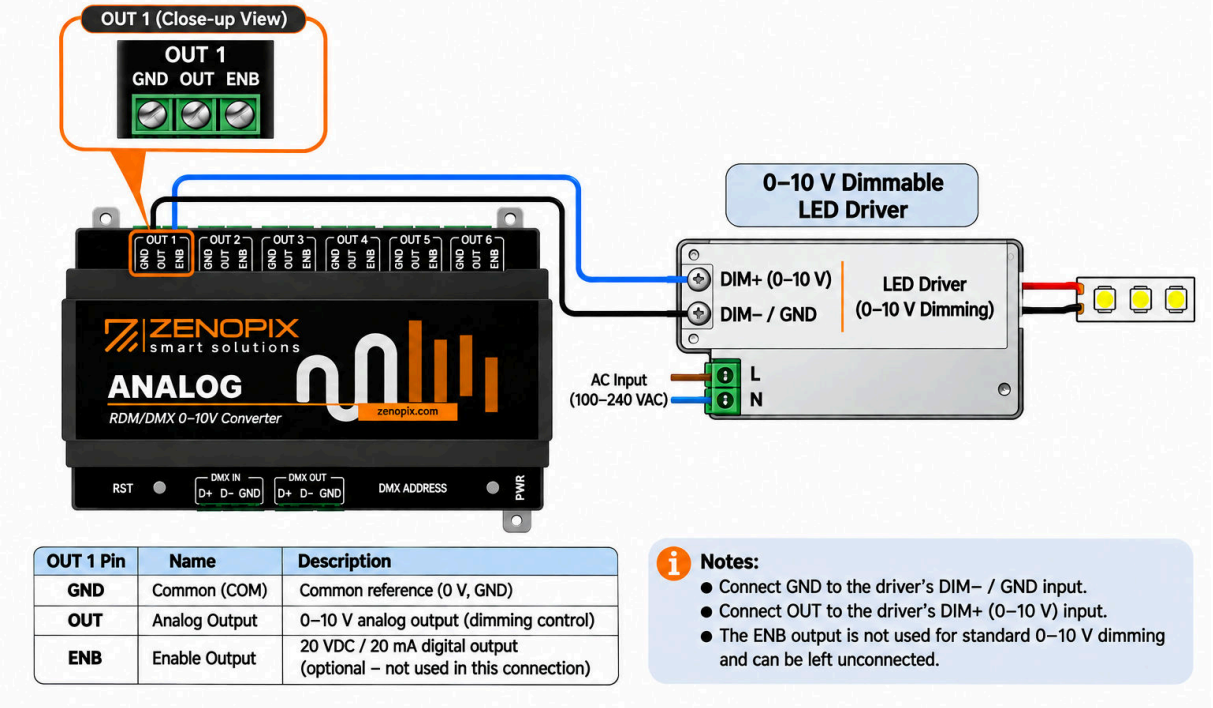
Wire 3 (ENB): Connect from the ENB (Enable) terminal on the Zenopix to the Digital Run terminal (FWD, RUN or DI1) of the motor drive. This connection gives the drive the start (enable) command to run the motor.

Do not route lines carrying high voltage or high current (for example, asynchronous motor cables) near the cable connecting the motor drive to the analog device. Keep the analog signal cable separate from the motor cable. Analog signals are sensitive to noise; therefore, use shielded/ screened cable to carry the analog signal. The cable length must not exceed 5 meters. Avoid unnecessary cable extensions and, if necessary, extend the DMX/RDM cable instead.

For details on the motor drive, carefully read the 0-10V connection details of the motor drive you will use.

*Note: The trigger logic (NPN or PNP) of your drive's digital run inputs (RUN/ FWD) must be compatible with the ENB (Enable) output of Zenopix Analog. If the motor does not start, you may need to check the NPN/PNP selection in your motor drive's parameters or on its switches. *

2. Use with an LED Driver



OUT 1 Pin	Name	Description
GND	Common (COM)	Common reference (0 V, GND)
OUT	Analog Output	0–10 V analog output (dimming control)
ENB	Enable Output	20 VDC / 20 mA digital output (optional – not used in this connection)

Notes:
- Connect GND to the driver's DIM– / GND input.
- Connect OUT to the driver's DIM+ (0–10 V) input.
- The ENB output is not used for standard 0–10 V dimming and can be left unconnected.

The 2-wire connection steps required for brightness (dimming) control of a 0-10V dimmable LED Driver from the output terminals of the Zenopix Analog device (for example, OUT 1) are as follows:

Wire 1 (GND): Connect from the GND terminal on the Zenopix to the ***DIM -*** (Negative) terminal in the 0-10V DIM INPUT section of the LED driver (the black wire in the image). This connection is the common reference ground for the dimming signal.

Wire 2 (OUT): Connect from the OUT terminal on the Zenopix to the **DIM +** (Positive) terminal in the 0-10V DIM INPUT section of the LED driver (the red wire in the image). Zenopix Analog converts the DMX signal to a 0-10V output for proportional brightness control of your high-power LED lighting.

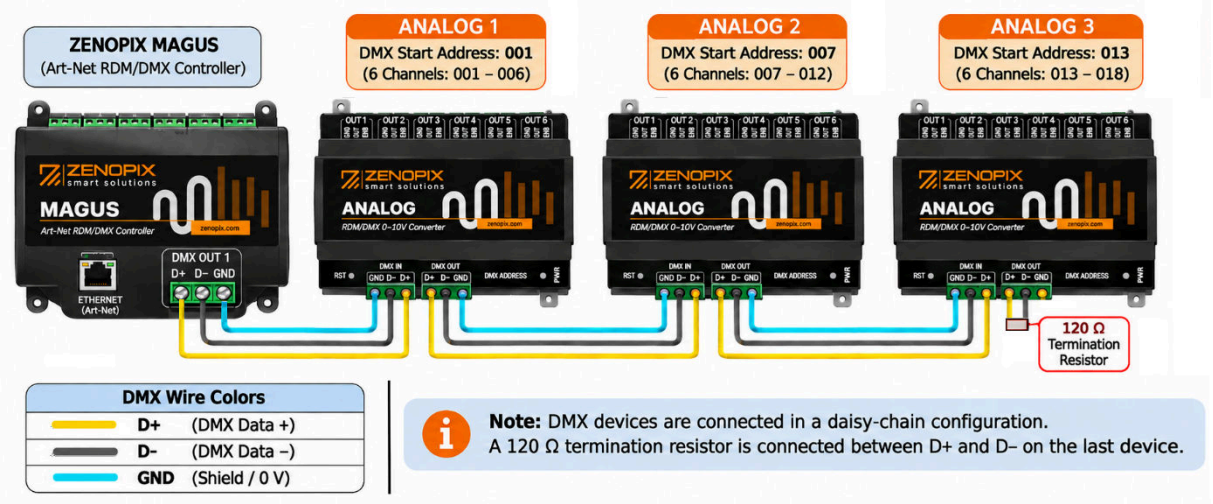
(Note: Since the 0-10V LED driver application in the image is supplied with continuous power, the ENB terminal on the Zenopix should be left unconnected in this scenario.)

Do not route lines carrying high voltage or high current (for example, cables supplying power to main electrical busbars) near the cable connecting the

LED driver to the analog device. Keep the analog signal cable separate from the power input and output cables of the LED driver. Analog signals are sensitive to noise; therefore, use shielded/screened cable to carry the analog signal. The cable length must not exceed 5 meters. Avoid unnecessary cable extensions and, if necessary, extend the DMX/RDM cable instead.

For safety rules and other details regarding the 220V AC mains input and High-Power LED output connections of the LED driver, carefully read the connection instructions of the LED driver you will use.

RDM/DMX Connection



When making the RDM/DMX connection, connect the devices in a daisy-chain structure (so that the DMX output of one device is connected to the DMX input of the next device). Do not use a Star topology on the DMX line. Where a star structure is unavoidable, use a splitter/repeater (2x4, 1x2, 1x8 options). Make the cable connections between terminals bearing the same name label*¹. It is recommended to use cables specifically manufactured for RS485 *². Do not route RDM/DMX signal lines near power lines carrying high voltage or high current (such as asynchronous motor supply cables or main power distribution busbars). For reliable signal transmission, connect a 120 Ω termination resistor to the DMX OUT port of the last device.

*¹ Cable labeling may vary between manufacturers. In Zenopix and general standard products, the DMX Data + (D+ or DP) pin corresponds to pin A, and the DMX Data- (D- or DN) pin corresponds to pin B. This may differ for some manufacturers. If the products do not receive a signal, you can swap the wires.

*² **Recommendation:** Belden cable recommendations for DMX cable are given 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	General / Local Code Equivalent
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

Setting the DMX address and output limits

The AC model of Zenopix Analog has 3 outputs and the DC model has 6. Each output can be configured via RDM and is controlled by a DMX channel. The start address determines which channel controls the first output. The other outputs use the following channels.

For example, for a 6-output device, if you set the start address to **101**, the device uses channels **101–106**. To control a second device independently, you can set its start address to **107**. If you want several devices to operate identically, you can give them the same start address. For the 6-output model, you can set the start address to any value from **1 to 507**. The factory setting is **1**.

For example, for a 3-output device, if you set the start address to **1**, the device uses channels **1, 2 and 3**. To control a second device independently, you can set its start address to **4**. If you want several devices to operate identically, you can give them the same start address. For the 3-output

model, you can set the start address to any value from **1 to 510**. The factory setting is **1**.

Configuration via computer

You can use a computer to set which DMX channels control the device and the minimum and maximum operating level of each output. For example, you can set the first output to be controlled by DMX channel 101, or limit the operating level of any output to between 20% and 80%.

To do this, you need to install the **Zenopix Explorer** software on your computer. **Zenopix Magus** establishes communication between the computer and the Analog device.

1. Connect the Magus to the network your computer is connected to.

2. Connect the DMX input of the Analog device to the DMX output of the Magus.

3. Search for devices in Explorer and select the Analog device you want to configure.

4. **DMX Start Address**: change the start address in this field and save.

5. **Offset**: change the lower and upper limits of each output in this field and save.

You can also set the start address with another RDM-enabled controller. To change the output limits, the controller must support the Zenopix **Offset** feature.

Using the output limits

For each output, you can set the lower and upper limits within the range **0%–100%**. The lower limit cannot be greater than the upper limit. The factory settings are **0%** for the lower limit and **100%** for the upper limit.

For example, if you set the lower limit to **20%** and the upper limit to **80%**:

- While operating, the output **does not drop below approximately 2 V**.

- The output **does not rise above approximately 8 V**.
- Levels between these two limits are controlled normally.
- When you send zero from the controller, the output **drops to 0 V**. The lower limit setting does not block the off command.

You can keep an output switched off by setting its upper limit to **0%**. At very low control levels, the output may stay at zero.

If the run input of the connected equipment is connected to the **ENB** terminal, a zero command also deactivates the enable signal at this terminal. How the equipment responds to this depends on its own settings.

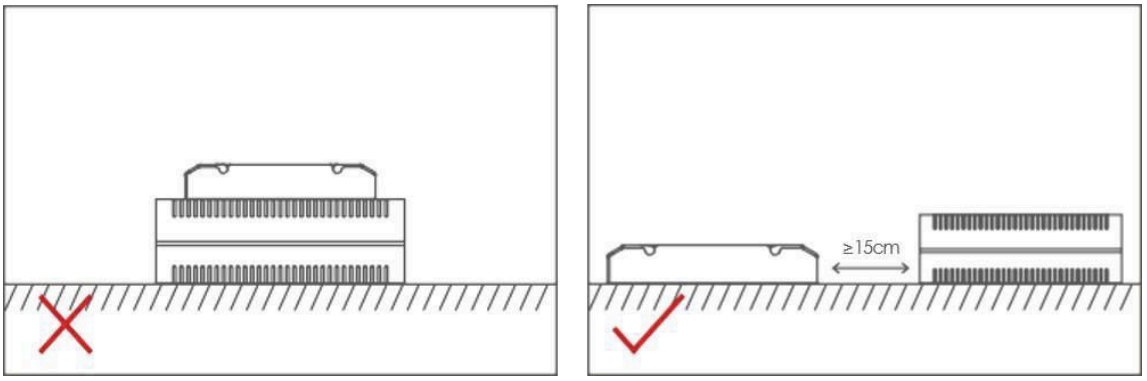
The address and output limit settings are stored in the device. They remain valid when the computer is disconnected or when the device's power is switched off and on again. After configuration, test each output to verify that the connected equipment operates as intended.

*For detailed information on RDM commands, please visit our website. *

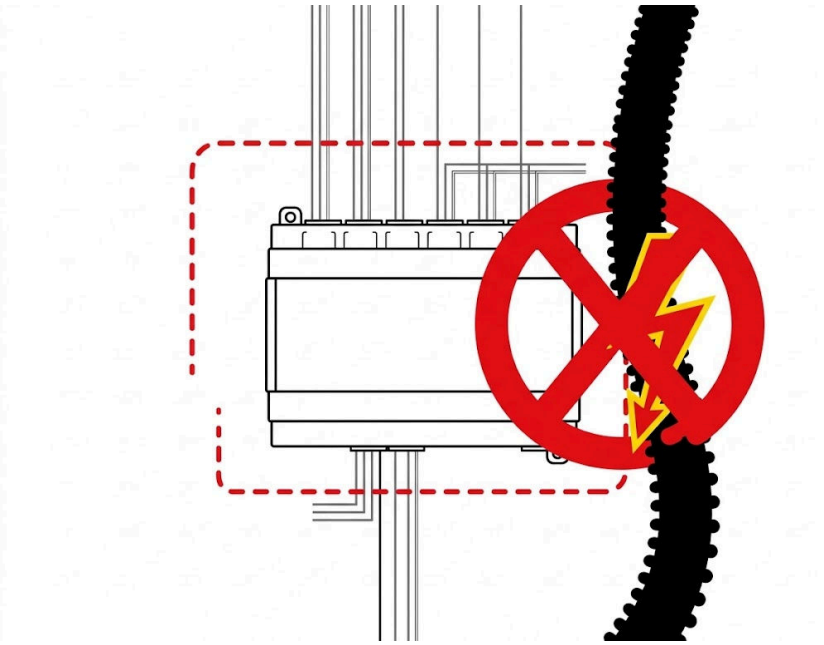
Verification and Safety Warnings:

Make sure that the power to the devices is completely disconnected while making the connections. After energizing the system, you can measure the outputs with a multimeter by sending a value to the relevant channel from your DMX console or software. If your motor drive supports it, you can confirm that wire 2 is correct by observing on its display that the voltage changes between 0 and 10V.

Installation Precautions



Please do not place the products on top of LED/motor drivers. Keep at least 15 cm between the product and the driver to ensure adequate heat dissipation and preserve the service life of the products.



Isolation of the signal lines is critical for stable operation of the Zenopix RDM/DMX Analog Converter. Routing high-current/high-voltage cables near the device body or terminal connections may cause fluctuations in the output signals or permanent damage to the hardware. Keep high-current and high-voltage cables physically separated from the device.

WARNINGS

- The products must be installed by qualified professionals.
- Zenopix products are not waterproof (except for special models). Protect the products from direct sunlight and rain. For outdoor installations, mount each product in a waterproof enclosure. Good heat dissipation will extend the service life of the products. Please ensure good ventilation.
- Make sure the operating voltage meets the product specifications.
- Before switching on the products, please make sure that all wiring is correct, as an incorrect connection may damage the 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 RDM/DMX Analog converter or technical problems, use the following resources for troubleshooting:

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

Frequently Asked Questions (FAQ)

Can I use multiple Decoder devices at the same time?

-Yes, you can.

Does the device support RDM?

-Yes, the device supports RDM.

What equipment is recommended for use with Zenopix Analog?

-It is recommended to use it with Zenopix Magus for RDM applications, and with Zenopix Elea or Zenopix AER for DMX-only applications. The device can also operate with all controllers compliant with the DMX512 Standard.

I am experiencing voltage fluctuation at the product output, LED flicker, freezing or latency. What could be the cause?

-No 120 Ω termination resistor at the end of the DMX line.

-The cable between the decoder output and the controlled interface 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

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

-To extend the signal cable or prevent signal degradation, you can check out Zenopix Repeater products.

How can I address the devices?

You can address the device using any standard RDM controller. For easy addressing in the field, you can check out the Zenopix Addresser product.

How many devices can I use on one DMX/RDM line?

The recommended maximum number of devices per line (Universe) is 32. For applications with more than 32 devices per line, 1 repeater must be used for every 32 devices.

How many different pumps/LEDs can I control with one Analog device?

The AC and DC models of the Analog device have 3 and 6 outputs respectively. You can control 3 different analog drivers with the AC model and 6 with the DC model.

Order Code

PRODUCT CODE	ANL	3	DC	EB	PT
Capacity					
3 Outputs		3			
6 Outputs		6			
Power Supply					
AC			AC		
DC			DC		
Enclosure Type					
Enclosed				EB	
Connection					
Pluggable Terminal Blocks					PT

*** The 3-output model is available with AC power supply only, and the 6-output model with DC power supply only.**

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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