

## USER MANUAL

# eurolite®

## MD-2030 DMX Safety Rotary Motor



### CAUTION!

**Keep this device away from rain and moisture!  
Never open the housing!**

For your own safety, please read this user manual carefully before you initial start-up.

Every person involved with the installation, operation and maintenance of this device has to

- be qualified
- follow the instructions of this manual
- consider this manual to be part of the total product
- keep this manual for the entire service life of the product
- pass this manual on to every further owner or user of the product
- download the latest version of the user manual from the Internet

## INTRODUCTION

Thank you for having chosen a EUROLITE MD-2030 DMX Safety Rotary Motor. If you follow the instructions given in this manual, we are sure that you will enjoy this device for a long period of time.

Unpack your motor.

## SAFETY INSTRUCTIONS



### CAUTION!

**Be careful with your operations. With a dangerous voltage you can suffer a dangerous electric shock when touching the wires!**

This device has left our premises in absolutely perfect condition. In order to maintain this condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this user manual.



### Important:

*Damages caused by the disregard of this user manual are not subject to warranty. The dealer will not accept liability for any resulting defects or problems.*

If the device has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation water might damage your device. Leave the device switched off until it has reached room temperature.

This device falls under protection-class I. The power plug must only be plugged into a protection class I outlet.

Always plug in the power plug last.

Never let the power-cord come into contact with other cables! Handle the power-cord and all connections with the mains with particular caution!

Make sure that the available voltage is not higher than stated on the rear panel.

Make sure that the power-cord is never crimped or damaged by sharp edges. Check the device and the power-cord from time to time.

Always disconnect from the mains, when the device is not in use or before cleaning it. Only handle the power-cord by the plug. Never pull out the plug by tugging the power-cord.

Please consider that damages caused by manual modifications to the device are not subject to warranty.

Keep away children and amateurs!

## OPERATING DETERMINATIONS

This device is a mirrorball motor for turning mirrorballs. The maximum load of the installation eyelet must never be exceeded. The safety eyelet must never be used for loads.

This product is only allowed to be operated with an alternating voltage of 230 V, 50 Hz and was designed for indoor use only.

When choosing the installation-spot, please make sure that the device is not exposed to extreme heat, moisture or dust. There should not be any cables lying around. You endanger your own and the safety of others!

This device must never be operated or stockpiled in surroundings where splash water, rain, moisture or fog may harm the device. Moisture or very high humidity can reduce the insulation and lead to mortal electrical shocks. When using smoke machines, make sure that the device is never exposed to the direct smoke jet and is installed in a distance of 0.5 meters between smoke machine and device. The room must only be saturated with an amount of smoke that the visibility will always be more than 10 meters.

The ambient temperature must always be between  $-5^{\circ}\text{C}$  and  $+45^{\circ}\text{C}$ . Keep away from direct insulation (particularly in cars) and heaters.

The relative humidity must not exceed 50 % with an ambient temperature of  $45^{\circ}\text{C}$ .

This device must only be operated in an altitude between -20 and 2000 m over NN.

Never use the device during thunderstorms. Over voltage could destroy the device. Always disconnect the device during thunderstorms.

Make sure that the area below the installation place is blocked when rigging, derigging or servicing the fixture.

Operate the device only after having familiarized with its functions. Do not permit operation by persons not qualified for operating the device. Most damages are the result of unprofessional operation!

Never use solvents or aggressive detergents in order to clean the device! Rather use a soft and damp cloth.

Please use the original packaging if the device is to be transported.

Please consider that unauthorized modifications on the device are forbidden due to safety reasons!

If this device will be operated in any way different to the one described in this manual, the product may suffer damages and the guarantee becomes void. Furthermore, any other operation may lead to dangers like short-circuit, burns, electric shock, crash etc.

### WEEE Directive



When to be definitively put out of operation, take the unit(s) to a local recycling plant for a disposal which is not harmful to the environment. Do not dispose of as municipal waste. Contact your retailer or local authorities for more information.

## DESCRIPTION OF THE DEVICE

### Features

#### DMX controlled mirrorball motor

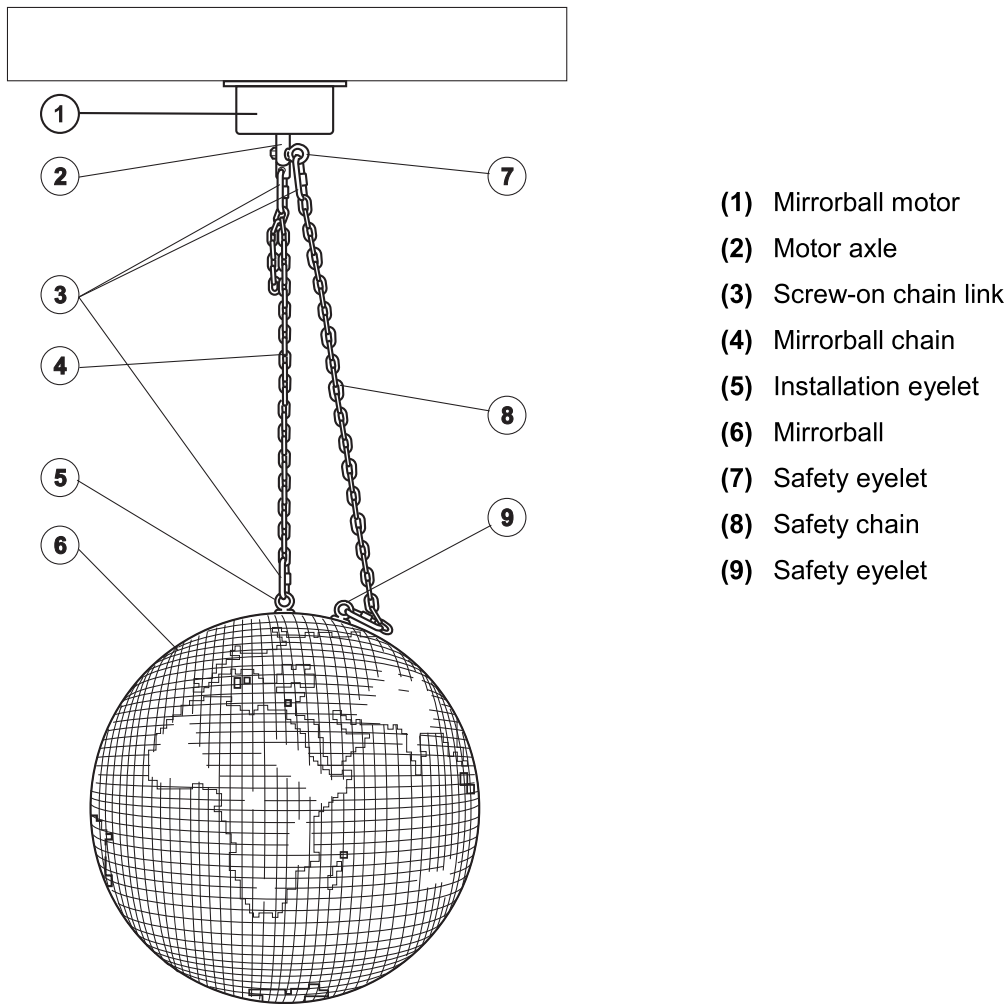
Suitable for driving mirror balls up to a maximum weight of 10 kg • This weight corresponds with a diameter of 50 cm for the EUROLITE mirror balls • The maximum load always means the mirror ball weight including the mirror ball chain, the safety chain and the fixation material • Operable in stand-alone mode or via DMX interface • DMX512 control possible via any commercial DMX controller (occupies 1 channel) • Functions: Rotation direction, Rotation speed, Master/Slave • Programable via DIP switches • 2 chains and 4 quick links must be ordered separately • Ready for connection via power cord with safety-plug • For professional use, e.g. in discotheques and in public places, the EN DIN 15560 norms have to be considered • The motor always has to be installed with a secondary safety attachment • Before taking into operation for the first time, the installation has to be approved by an expert

### Safety features

- Rugged construction with steel housing for long operation
- High stability due to massive motor axle
- Mechanic fall safety against axle loosening inside the motor
- Approved load with 12-fold testing weight
- Additional attachment eyelet for secondary attachment of the load
- EUROLITE safety rotary motors comply with the safety norm EN 292 and safety regulation BGV C1 (Germany)
- Quality management for testing every production charge

Besides the motor and the chain, you need two attachment chains and four quick links for the installation.

### Overview



- (1) Mirrorball motor
- (2) Motor axle
- (3) Screw-on chain link
- (4) Mirrorball chain
- (5) Installation eyelet
- (6) Mirrorball
- (7) Safety eyelet
- (8) Safety chain
- (9) Safety eyelet

## INSTALLATION



### **DANGER TO LIFE!**

Please consider the EN 60598-2-17 and the respective national norms during the installation! The installation must only be carried out by an authorized dealer!

The motor must only be installed in an absolutely horizontal position at a vibration-free, oscillation-free and fire-resistant location. By using a water-level, make sure that the motor is installed absolutely horizontally and that the motor axle points exactly to the bottom.

If the motor and the mirrorball are to be operated above persons, additional risks arise. A hazard analysis based on the location and application must be performed in order to ensure dimensioning and measures for a safe operation. Both the motor and the mirrorball meet the professional association safety regulations regarding safety and operation.

The installation of the mirrorball has to be built and constructed in a way that it can hold 10 times the weight for 1 hour without any harming deformation.

The installation must always be secured with a secondary safety attachment. This secondary safety attachment must be constructed in a way that no part of the installation can fall down if the main attachment fails.

When rigging, derigging or servicing the fixture staying in the area below the installation place, on bridges, under high working places and other endangered areas is forbidden.

The operator has to make sure that safety-relating and machine-technical installations are approved by an expert before taking into operation for the first time and after changes before taking into operation another time.

The operator has to make sure that safety-relating and machine-technical installations are approved by an expert after every four year in the course of an acceptance test.

The operator has to make sure that safety-relating and machine-technical installations are approved by a skilled person once a year.

### **Attachment**

The rotary motor should ideally be installed outside areas where persons may walk by or be seated.

**IMPORTANT! OVERHEAD RIGGING REQUIRES EXTENSIVE EXPERIENCE**, including (but not limited to) calculating working load limits, installation material being used, and periodic safety inspection of all installation material and the mirrorball. If you lack these qualifications, do not attempt the installation yourself, but instead use a professional structural rigger. Improper installation can result in bodily injury and/or damage to property.

The motor and the mirrorball have to be installed out of the reach of people.

If the motor shall be lowered from the ceiling or high joists, professional trussing systems have to be used. The motor must never be fixed swinging freely in the room.

**Caution:** Mirrorballs may cause severe injuries when crashing down! If you have doubts concerning the safety of a possible installation, do NOT install the motor!

Before attaching the device, make sure that the installation area can hold a minimum point load of 10 times the device's load (e.g. maximum load 3 kg - point load 30 kg).

The mirrorball motor must always be installed via all fixation holes. Do only use appropriate screws and make sure that the screws are properly connected with the ground.

The durability of the installation depends very much on the material used at the installation area (building material) such as wood, concrete, gas concrete, brick etc. This is why the fixing material must be chosen to suit the wall material. Always ask a specialist for the correct plug/screw combination indicating the maximum load and the building material.

**Procedure:**

- Step 1:** The fixation holes are located on the base plate.
- Step 2:** Hold the base plate onto the location where the device is to be installed.
- Step 3:** Mark the boreholes with a pen or a suitable tool.
- Step 4:** Drill the holes.
- Step 5:** Hold the base plate in the desired position and tighten it.

**The installation material must never include abrading material e. g. steel cables in order to avoid material wearing.**

The length of the chain must never exceed 100 cm.

Install the mirrorball chain with the screw-on chain link at the installation eyelet of the mirrorball and tighten the fixation screw.

Insert the fourth chain link of the mirrorball chain with the mirrorball in the screw-on chain link and tighten the fixation screw.

For overhead use, always install a safety chain on the mirrorball that can hold at least 12 times the weight of the installation. The safety chain must be slightly longer than the mirrorball chain so that the safety chain will always be tension-free. Pull the safety chain through the safety eyelet of the mirrorball and in the safety eyelet of the motor.

The maximum drop distance must never exceed 20 cm.

A safety chain which already held the strain of a crash or which is defective must not be used again.

There must never hang a mirrorball or other load at the safety eyelet. Loads must only be hanged at the quick link of the installation eyelet at the motor axle. If a mirrorball hangs for any reason at the safety eyelet, the motor must be taken out of operation immediately and the mirrorball must be uninstalled. The whole installation has to be checked for defects by an expert.

Make sure that the rotation of the mirrorball is never slowed down or stopped by decoration material etc.

Make sure that no side forces can impact on the installation.

Make sure that the mirrorball cannot be moved by air streams. The mirrorball and the motor must be installed and operated absolutely swivel free.

Please check in regular intervals, if the installation material (e. g. key ring, shackles or screw-on chain links) or chain links have been deformed. Uninstall the mirrorball immediately in such a case.

***DMX512 control***



**The wires must not come into contact with each other, otherwise the devices will not work at all, or will not work properly.**



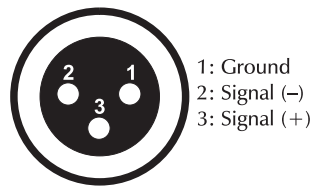
**Please note, the starting address depends upon which controller is being used.**



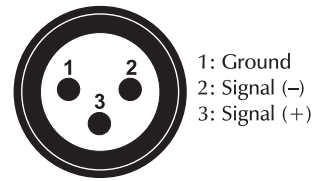
Only use a DMX cable and 3-pin XLR plugs and connectors in order to connect the controller with the fixture or one fixture with another.

**Occupation of the XLR connection:**

**DMX-output**  
XLR mounting-socket:



**DMX-input**  
XLR mounting-plug:



If you are using controllers with this occupation, you can connect the DMX output of the controller directly with the DMX input of the first device in the DMX chain. If you wish to connect DMX controllers with other XLR outputs, you need to use adapter cables.

**Building a serial DMX chain:**

Connect the DMX output of the first device in the DMX chain with the DMX input of the next device. Always connect one output with the input of the next device until all devices are connected.

**Caution:** At the last fixture, the DMX cable has to be terminated. Plug the terminator with a 120  $\Omega$  resistor between Signal (-) and Signal (+) in the DMX output of the last fixture.

**Master/Slave operation**

The master/slave operation enables that several devices can be synchronized and controlled by one master device.

On the rear panel of the device you can find an XLR jack and an XLR plug, which can be used for connecting several devices.

Choose the device which is to control the effects. This device then works as master device and controls all other slave devices, which are to be connected to the master device via a DMX-cable. Connect the OUT jack with the IN plug of the next device.

Please see further instructions under **Operation**.

**Connection with the mains**

Connect the device to the mains with the power plug. The occupation of the connection cables is as follows:

Cable	Pin	International
Brown	Live	L
Blue	Neutral	N
Yellow/Green	Earth	

**Attention!** The earth has to be connected!

If the device will be directly connected with the local power supply network, a disconnection switch with a minimum opening of 3 mm at every pole has to be included in the permanent electrical installation.

The device must only be connected with an electric installation carried out in compliance with the IEC standards. The electric installation must be equipped with a Residual Current Device (RCD) with a maximum fault current of 30 mA.

**DANGER TO LIFE!**

Before taking into operation for the first time, the installation has to be approved by an expert!

**OPERATION**

The device has two operating modes. It can be operated in manual mode via DIP Switches or it can be run in DMX-controlled mode.

## Operation via DIP Switches:

### Manual Mode: Rotation Direction and Speed

In order to select Manual Mode, set DIP-switch 10 to OFF.

Rotation speed can be selected via DIP-switch 1: 0.5 RPM = ON; 1 RPM = OFF.

Rotation direction can be selected via DIP-switch 2: clockwise = OFF; counterclockwise = ON.

DIP-switches 3 to 9 have no function.

### Master-Slave

In order to select the Master unit, set DIP-switch 10 to OFF.

Set DIP-switches 1 and 10 to OFF on the Slave devices.

## DMX-controlled operation:

You can control the devices individually via your DMX-controller. Every DMX-channel has a different occupation with different features.

For DMX-controlled operation set DIP Switch 10 to ON.

Use DIP Switches 1 to 9 to set the desired DMX addresses.

## Addressing

Each device occupies 1 channel. To ensure that the control signals are properly directed to each device, the device requires addressing. This is to be adjusted for every single device by changing the DIP-switches as set out in the table below.

The starting address is defined as the first channel from which the device will respond to the controller.

Please make sure that you do not have any overlapping channels in order to control each device correctly and independently from any other fixture on the DMX data link. If two, three or more devices are addressed similarly, they will work similarly.

### Occupation of the DIP-switches:

Setting the DMX-starting address:	DIP-switch no.	1	2	3	4	5	6	7	8	9
Device number & channels	Starting address	1	2	4	8	16	32	64	128	256
Device 1 - channel 1	On	▲								
	Off		▽	▽	▽	▽	▽	▽	▽	▽
Device 2 - channel 2	On		▲							
	Off	▽		▽	▽	▽	▽	▽	▽	▽
Device 3 - channel 3	On	▲	▲							
	Off			▽	▽	▽	▽	▽	▽	▽
Device 4 - channel 4	On			▲						
	Off	▽	▽		▽	▽	▽	▽	▽	▽
Device 5 - channel 5	On	▲		▲						
	Off		▽		▽	▽	▽	▽	▽	▽

### Controlling:

After having addressed all devices, you may now start operating these via your controller.

### Note:

The modes of DMX 512 data are shown via the DMX indicator.

After switching on, the device will automatically detect whether DMX 512 data is received or not. If the data is received, the control LED lights up permanently.

If there is no data received at the DMX-input, the control LED will be off.

This situation can occur if:

- the 3 PIN XLR plug (cable with DMX signal from controller) is not connected with the input of the device.
- the controller is switched off or defective,
- the cable or connector is defective or the signal wires are not properly connected with the input connector.



**DMX-Protocol****Rotation direction and speed**

Channel:	Value:	Function:
1	000 - 000	No rotation
	001 - 127	Decreasing clockwise rotation
	128 - 128	No rotation
	129 - 255	Increasing counter-clockwise rotation

**CLEANING AND MAINTENANCE**

The operator has to make sure that safety-relating and machine-technical installations are inspected by an expert after every four years in the course of an acceptance test.

The operator has to make sure that safety-relating and machine-technical installations are inspected by a skilled person once a year.

The following points have to be considered during the inspection:

- 1) All screws used for installing the devices or parts of the device have to be tightly connected and must not be corroded.
- 2) There must not be any deformations on housings, fixations and installation spots (ceiling, suspension, trussing).
- 3) Mechanically moved parts like axles, eyes and others must not show any traces of wearing (e.g. material abrading or damages) and must not rotate with unbalances.
- 4) The electric power supply cables must not show any damages, material fatigue (e.g. porous cables) or sediments. Further instructions depending on the installation spot and usage have to be adhered by a skilled installer and any safety problems have to be removed.

**DANGER TO LIFE!**

**Disconnect from mains before starting maintenance operation!**

We recommend a frequent cleaning of the device. Please use a soft lint-free and moistened cloth. Never use alcohol or solvents!

There are no serviceable parts inside the device. Maintenance and service operations are only to be carried out by authorized dealers.

If the fuse interrupts, please reset the breaker.

Should you need any spare parts, please use genuine parts.

If the power supply cable of this device will be damaged, it has to be replaced by authorized dealers only in order to avoid hazards.

If defective, please dispose of the unusable device in accordance with the current legal regulations.

Should you have further questions, please contact your dealer.

**TECHNICAL SPECIFICATIONS**

Power supply:	230 V AC, 50 Hz ~
Power consumption:	13 W
Max. load WLL (4-fold):	30 kg
Max. load BGV C1 (8-fold):	15 kg
Max. load BGV C1 (10-fold):	12 kg
Max. load BGV C1 (12-fold):	10 kg
Max. diameter of mirror ball:	50 cm (EUROLITE)
Rotation-speed:	up to 5 RPM
Dimensions (LxWxH):	230 x 130 x 140 mm
Weight:	3 kg

**Please note: All information is subject to change without prior notice. 08.04.2016 ©**