249 Rolldown

User Manual

Contents

Technical specifications:

Item No.   : 249
Dimensions   : 81.6 + (Tube length) x 230 x 345 mm
                                     (3.2 + (Tube Length) x 9.1 x 13.6 in)
Minimum Tube length   : 1500mm (59 in)
Power supply   : 200-240V AC
Power consumption   : 500 W
Power plug   : powerCON TRUE1 Male & Female
Control signal   : DMX 512 1990 + DMX512A
DMX channels   : 6 channels
DMX connection   : XLR 5 pole Male & Female
Max lifting height   : 18 m (59 ft) **Limits set to 15m as default!**
Max lifting capacity   : 35 kg (77 lbs)
Lifting speed   : 1 m/s (3.2 ft/s)
Noise emission   : 70 dB
Ambient temperature   : 0-40Cº (32 – 104ºF)
Weight   : 40kg (88 lbs) + 5.1kg (11.2 lbs) per meter tube
Mounting clamp   : 2 or 4 Slim coupler (Max load: 300 kg each)
Mounting clamp separation   : 239mm +/- 12mm (9.41in +/- 0.47in)
Position accuracy   : +/- 1.5cm (0.6 in)
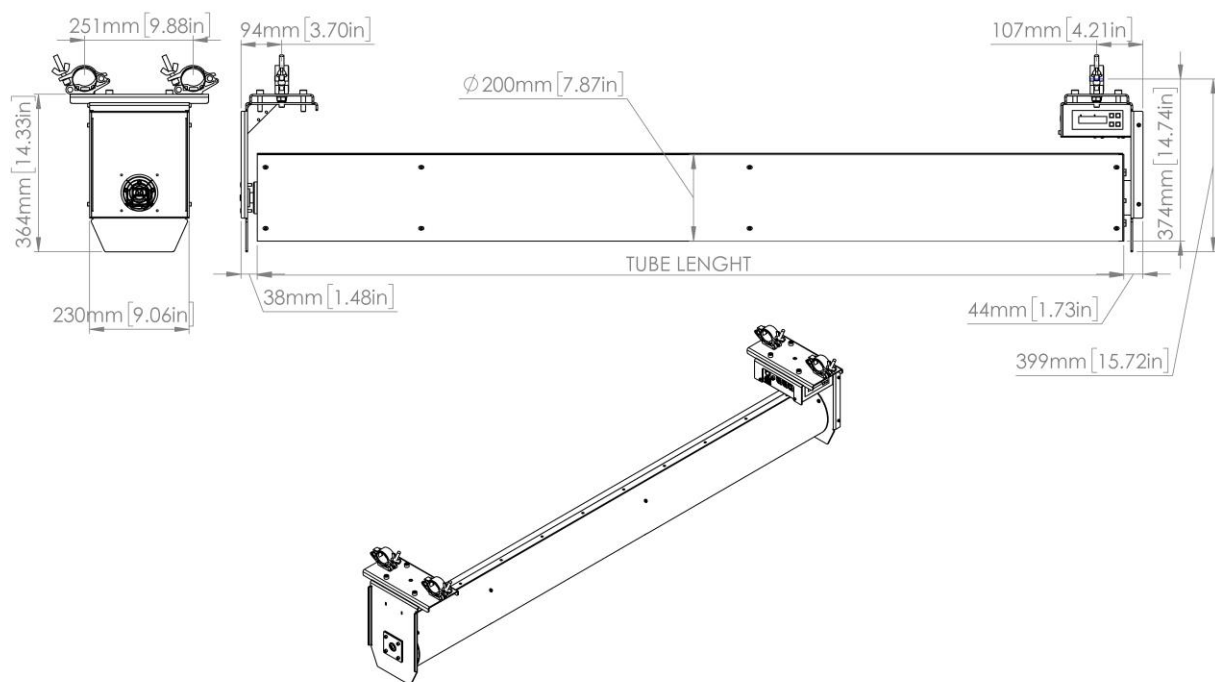
General:

Before using the Rolldown for the first time, please read the installation- safety- operation- and maintenance instructions carefully. Failure in handling can cause injury of persons and/or damage the Rolldown.

Product content:

1 Rolldown
1 Powercon plug for cable
1 Instruction manual

Description:

The Rolldown is a tube motor for rolling up curtains, projection screens, or fabric on stages.
The Rolldown is controlled from the lighting desk so that movements on and off the stage can be controlled in interaction with the lighting, adding dynamics and diversity to the show.
The lighting desk has to be programmed according to the manual, so the Rolldown will stop when the speed is put to 0 %.

Caution: "To reduce the risk of electric shock or injury: Use Indoors Only."
Caution: "To reduce the risk of electric shock, do not expose to rain: Store indoors."

Attention!

Before using the Rolldown read the user manual paying special attention to the chapter "Connecting the Rolldown".

Make sure the operator is able to watch the Rolldown while running it in order to have visual confirmation of the movements.

The Rolldown should only be operated by an experienced DMX-controlled-lighting-desk-operator.

When the Rolldown is used manually, the operator should make sure not to be placed in a hazardous situation.
Likewise it is the operator's responsibility not to run the Rolldown in a way that brings other persons in a hazardous situation.

Rolldown Features

The Rolldown has an advanced positioning system which is controlled by a 16 bit DMX channel, this gives a very high accuracy.
Both the positioning system and speed is controlled with DMX.
The working area for the Rolldown is set with DMX, this works like software limits for the movement. The Top position is set with channel 5 and the bottom position (range from top position) is set with channel 6.
For safety reasons channel 4 has to be set between 50 and 55% before the Rolldown will move. Any other value will stop the Rolldown from movement with DMX control. After a power up this channel has to be set outside the 50-55% area for a short period of time before the Rolldown can be controlled with DMX again.

Before the Rolldown is powered down channel 4 should be set outside the enable area. When it is set outside this area the current position is saved and when it is powered up no resetting of positions is needed.

If the Rolldown loses power it will stop.

DMX channels used for controlling the Rolldown

(For a more detailed description see page 6)

      DMX channel 1 – Position.   (16 bit DMX channel)
      DMX channel 2 – Position fine. (16 bit DMX channel)
      DMX channel 3 – Maximum speed
      DMX channel 4 – Motor Enable – between 50 % and 55 %, to enable the motor output.
      DMX channel 5 – Reset UP
      DMX channel 6 – Manual DWN, (Sets the TAC RANGE)

Connecting the Rolldown

Power supply

Power is connected to the Neutric Powercon TRUE1 connector. It is possible to daisy chain the power connection for several Rolldowns using the out connection in the power plug.

The frequency converter used for running the motor has a leakage current to ground, it is therefore very important that there is a proper ground connection to the Rolldown. If there isn't a proper ground connection there is a risk of a high voltage on the metal frame. This voltage can shock anyone touching the metal frame and damage the equipment!

This leakage current and some capacitors that are charged when the Rolldown is powered on means a residual-current circuit breaker (RCCB) might trigger when power is applied. The risk of triggering this is higher if several Rolldowns are connected to the same power source and power is applied to them at the same time.

DMX

DMX is connected to the male 5-pole XLR connector.
The DMX LED will light constantly when receiving a DMX signal and it will flash when no DMX is received.

Pinout:

DMX IN	DMX OUT
Pin 1 = GND	Pin 1 = GND
Pin 2 = Data –	Pin 2 = Data –
Pin 3 = Data +	Pin 3 = Data +
Pin 4 = NC .	Pin 4 = NC.
Pin 5 = NC.	Pin 5 = NC.

Emergency stop switch (Optional)

The Rolldown can be configured with an emergency stop
By default the emergency stop is NOT enabled!

> If the emergency stop switch is activated (pin 1 and pin 4 are disconnected) the red ERROR LED will light.

> The emergency stop switch is connected to the male 4 pole XLR connector.
> Pin 1 and Pin 4 should be powered with 12-15 volt DC to enable the running of the motor

> Pin out:
> Pin 1 = GND
> Pin 2 = NC
> Pin 3 = NC
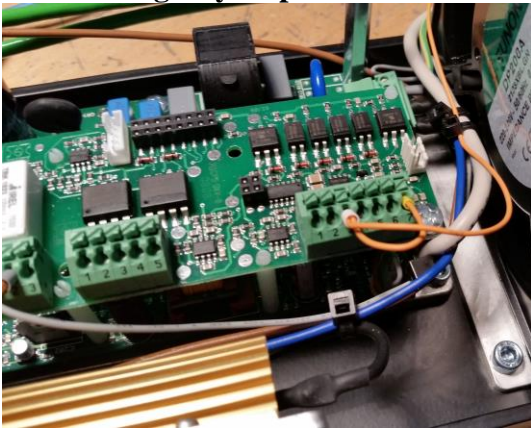> Pin 4 = 12 – 15 volt DC

Ready to use

> When the Rolldown has been connected to power, DMX, and an emergency stop switch, it is ready for use, and can be controlled from the lighting desk.
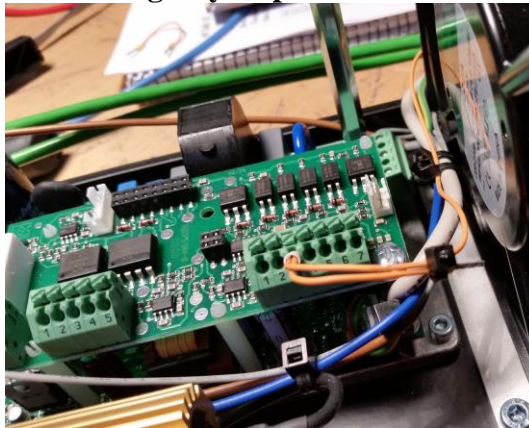
Enable Emergency stop

To enable to emergency stop 2 steps are required. First in the menu change E STOP to ON. Secondly inside the unit there is an orange wire that needs to be set correctly for operation with/without emergency stop.

Emergency stop disabled	Emergency stop enabled

When the emergency stop is enabled and the little piece of orange wire is not connected it is recommended that it is secured in some way so it does not hit anything. A small wire fastener or some electrical tape will be enough.

DMX Control

When the Rolldown is connected to power and DMX it is ready for use and can be controlled from the lighting desk.

DMX channel description

DMX channel 1 – Position.   (16 bit DMX channel)
DMX channel 2 – Position fine.   (16 bit DMX channel)
DMX channel 3 – Maximum speed
DMX channel 4 – Motor Enable – between 50 % and 55 %, to enable the motor output.
DMX channel 5 – Reset UP
DMX channel 6 – Manual DWN

DMX channel 1 – Position. (16 bit DMX channel)

This channel, together with channel 2, makes up a 16 bit position on the Rolldown.
A high value on channel 1 gives a high position. A low value on channel 1 gives a low position on the motor.

DMX channel 2 – Position fine. (16 bit DMX channel)

This is the fine position of the Rolldown. This channel, together with channel 1, makes up a 16 bit position on the motor.
Channel 2 is used to fine-tune the position.

DMX channel 3 – Speed

Channel 3 is used to control the speed or the maximum speed of the Rolldown.
If channel 3 is 0% the motor will not start.
If channel 3 is 50% the motor will run at 50% speed.

DMX channel 4 – Motor Enable 50 % and 55 %, for the motor to turn.

Channel 4 is used as an extra security channel.
The value on channel 4 needs to be between 50 and 55 %, for the motor to run.
All other values make the motor stop.
All other values will also reset any error shown.
After the Rolldown is powered up channel 4 needs to be outside the 50%-55% range for a short period before the enable works again.
All other values will save the current position before a power down.

DMX channel 5 – Reset Up

To avoid accidental reset there is a 3 second delay on this channel.
Channel 5 is used to manually move the Rolldown up.
When channel 5 is in use it will run the motor up until channel 5 is set to 0% or it hits the limit switch UP.
10 – 100% makes the motor run up, at variable speed.
(10% = low speed – 100% = full speed).

DMX channel 6 – Manual DWN

To avoid accidental reset there is a 3 second delay on this channel.
Channel 6 is used to manually move the down.
When channel 6 is in use, it runs the motor in down, until the limit switch DWN is reached.
The position is reset and a new TAC RANGE is calculated. The new range is the tacho pulses, between top position set by channel 5 and bottom position set by channel 6.
The Rolldown should be reset to the top position with channel 5 before the range is set with channel 6. 10 – 100% makes the motor run down, at variable speed.
(10% = low speed – 100% = full speed).

MENU

The menu structure is divided into two different areas for safer motor control.

Control mode

In control mode the display can show 3 different screens the default screens looks like this and shows the DMX address of the Rolldown:

```
DMX CONTROL       .
START CHAN        1
```

It can also be set to display 2 other screens useful for troubleshooting. To change to the other screens press and hold the down arrow button for ~5seconds and the screen will change.

The second screen shows position values.

```
P: 7500     D: 2500   .
W: 5000    S: 100
```

P: shows the current position.
D: shows the distance to wanted position
W: is the wanted position
S: is the speed

The last screen shows the values of the DMX channels set for the Rolldown in the following format

```
CH1 CH2 CH3 Ch4
CH5 CH6 CH7 Ch8
```

So a screen could look this this:

```
128 128 255 133
0    0    0    0   .
```

To go back to a previous screen press and hold the up arrow button.

Menu navigation mode

Top Line shows

```
MENU NAVIGATE
```

In menu navigate mode, the different parameters can be changed.
In menu navigate mode the motor is stopped and DMX input has no effect, the motor can be moved by the MAN UP/DWN menu though.

Menu mode change

MENU - NAVIGATE:
The top line of the display is showing: `DMX CONTROL`
Push the buttons UP & DOWN and hold them for 3 seconds.
Now the top line of the display should show: `MENU NAVIGATE`

MENU - DMX CONTROL:
Go back to the starting position and activate DMX control
The top line of the display is showing: `MENU NAVIGATE`
Push the buttons UP & DOWN and hold them for 3 seconds.
Now the top line of the display is showing: `DMX CONTROL`

Navigate the menu

The top line of the display is showing: `MENU NAVIGATE`
Push the buttons UP or DOWN to go up and down in the menu choices.
The bottom line of the display is showing: `DMX ADDR          1`

Adjusting menu parameters

The top line of the display is showing: `MENU NAVIGATE`
The bottom line of the display is showing: `DMX ADDR          1`

Push ENT to change the DMX ADDR value.

The top line of the display is showing:	EDIT MENU VALUES
The bottom line of the display is showing:	DMX ADDR 1

Save changed value

The top line of the display is showing:	EDIT MENU VALUES
The bottom line of the display is showing:	DMX ADDR 270
Push ENT to change the top line to:	SAVING 1-20
Then press and hold ENT	
The top line of the display counts up to 20 then shows OK.	SAVING OK
The Value is now saved in the memory.	

Adjustable parameters

		Range	Default
MAN SPEED	Speed for manual driving	200 – 2500	800
MAN UP/DWN	Run the motor manual from the menu	MOTOR UP / MOTOR DOWN	
DMX ADDR	DMX start address	1 – 506	1
TAC RANGE	Tacho range	1 – 50.000	N/A
SPEED MAX	Maximum speed	500 – 3500	3500
SP MIN UP	Minimum speed UP	50 – 1000	200
SP MIN DWN	Minimum speed DWN	50 – 1000	200
E STOP	Enable/disable emergency stop	ON-OFF	OFF
REVERSE DIR	Reverse the direction	ON-OFF	OFF

MAN SPEED and MAN UP/DWN is used for manual control of the motor, without DMX signal.

Detailed explanation of parameters

MAN SPEED   **Speed for manual driving.**   **Range**   **200 –2500**

MAN SPEED sets the speed for manual driving the motor.

MAN UP/DWN   **Manually driving the motor.**

MAN UP/DWN is used for manual control of the motor.
Pressing the UP button, makes the Rolldown run up, unless the up limit switch is activated
Pressing the DOWN button, makes the Rolldown run down, unless the down limit switch is activated

DMX ADDR   **DMX start address**   **Range**   **1 - 506**

DMX start address defines which DMX address the Rolldown reacts on.
The Rolldown uses 6 DMX channels.

TAC RANGE   **Tacho range**   **Range**   **1 – 50.000**

The tacho range is setting the maximum range of the Rolldown.
Note this is faster to set using channel 5 and 6.

SPEED MAX   **Maximum speed**   **Range**   **500 – 3500**

SPEED MAX sets the maximum speed.
If set to 1000, it means the motor run at 1000 RPM when DMX speed is set to full. SPEED MAX can be used to lower the maximum speed, e.g. while learning the system.

SP MIN UP   **Minimum speed up.**   **Range**   **50 – 1000**

The motor minimum speed, for the up direction.
The motor is allowed to run at different minimum speed for each direction; this is to differentiate between different mechanical loads for up and down. See SP MIN DWN.
Set this value to a speed where the motor will still run up at full load.

SP MIN DWN   **Minimum speed down**   **Range**   **50 - 1000**

The motor minimum speed, for the down direction.
The motor is allowed to run at different minimum speed for each direction, this is to differentiate between different mechanical loads for up and down, see SP MIN UP.
Set this value to a speed where the motor will still run down at full load.

E STOP   **Enable/disable emergency stop**   **Range**   **ON - OFF**

This enables/disables the emergency stop from the software. However to get the full functionality of the emergency stop a wire has to be plugged in inside the winch. See section on how to change the wire setting for more details.

REVERSE DIR   **Reverse the direction**   **Range**   **ON - OFF**

This enables/disables the reverse direction in the software. This means the way the fabric rolls up on the drum is reversed. So instead of rolling over the front of the tube it rolls down from the back.

Normal Operation

Duty cycle

The Rolldown should not be operated at a duty cycle higher than 33% for longer periods of time. This means if it is run for 30 min it needs a 1 hour break.

If it is used at high duty cycles the motor gets hot and might damage the gear or electronics.

Power up and power down

When power is applied to the Rolldown it goes through a startup sequence that takes some seconds. After power up the enable channel must be set outside the 50-55% area for a short period of time before the Rolldown will move again. This function is to prevent accidental movements when the Rolldown is connected to power.

Before the Rolldown is powered down channel 4 should be set to 0%. When it is set to 0% the current position is saved and it will know its position when it is powered up next time.

If channel 4 has not been set to 0% before the Rolldown is powered down, the top position has to be reset using channel 5 when it is powered up.

Lifting speeds and weight

The load of the Rolldown impacts the minimum speed it can operate at. At high loads the minimum speed up must be increased to a point where the Rolldown can still move.

If a lower load is used with high minimum speeds the Rolldown might have problems with finding its position. Lower the minimum speeds if this is a problem.

The minimum speed can be adjusted from the menu.

Mounting the fabric/screen/curtain

The Rolldown has a rail that can be used for mounting the fabric along the entire length of the tube. There should be minimum 1 round left on the tube when the fabric is rolled all the way out if it is mounted with the rail.
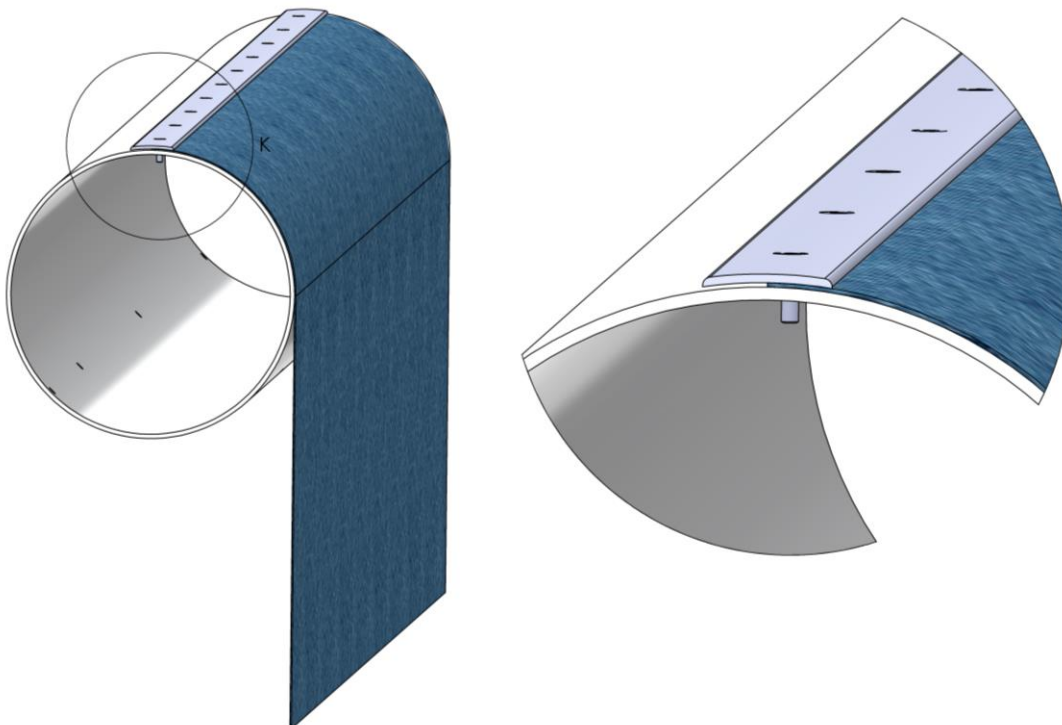
The fabric is mounted by loosening the unbraco screws holding the rail in place. When they are all loose, place the fabric under the rail and tighten the screws again to hold it in place.

Make sure the fabric is mounted on the correct side of the rail. If it is mounted on the wrong side it will fold over itself when moving to the top position.

The fabric can also be taped to the tube. This allows the fabric to be mounted at any angle. If tape is used for securing the fabric 2 rounds should remain on the drum when it is fully rolled out.

When mounting the fabric it is important to move the drum to the correct position before you mount anything.
If you are mounting a 4 meter fabric follow these steps.
- Move the drum to the TOP position with channel 5.
- Move the drum **at least** 4 meters down with channel 6
    (6.4 rotations: 400cm/62.8cm per rotation)
- Mount the fabric on the drum either with the rail or with tape.
- Now Go back up to the desired top position with channel 5
- Then set the range for the desired movement with channel 6
    This should be less than 4 meter because some fabric should be left on the drum.
Now the 100% position will be with the fabric rolled all the way up and the 0% position will be with the fabric rolled all the way out.
If you do not move the Rolldown down before mounting the fabric the physical top limit will prevent you from rolling the curtain all the way up.

Mounting the Rolldown

The Rolldown comes with 2 mounting clamps that can fit either 2 or 4 slim couplers. For maximum stability it should be mounted with 4 slim couplers.

When 2 slim couplers are used in each end they are 240mm +/- 15mm from each other.

If it is mounted with 1 slim coupler in each end it might not hang straight because the weight distribution might twist it sideways.

With 1 slim coupler in each end it is easier to mount quickly.

When it is mounted with 2 slim couplers in each end it cannot twist and will always hang straight

Adjusting Limit switches

The Rolldown has a physical TOP and BOTTOM limit switch. By default these are adjusted to 24 rotations on the drum which gives 15m lifting height. This can be changed up to 29 rotations which gives 18m lifting height.

These physical limit switches are for safety, for normal operation the software limits set with channel 5 and 6 are used.

To change the physical limits the motor unit has to be demounted because the limit switch is inside the tube.

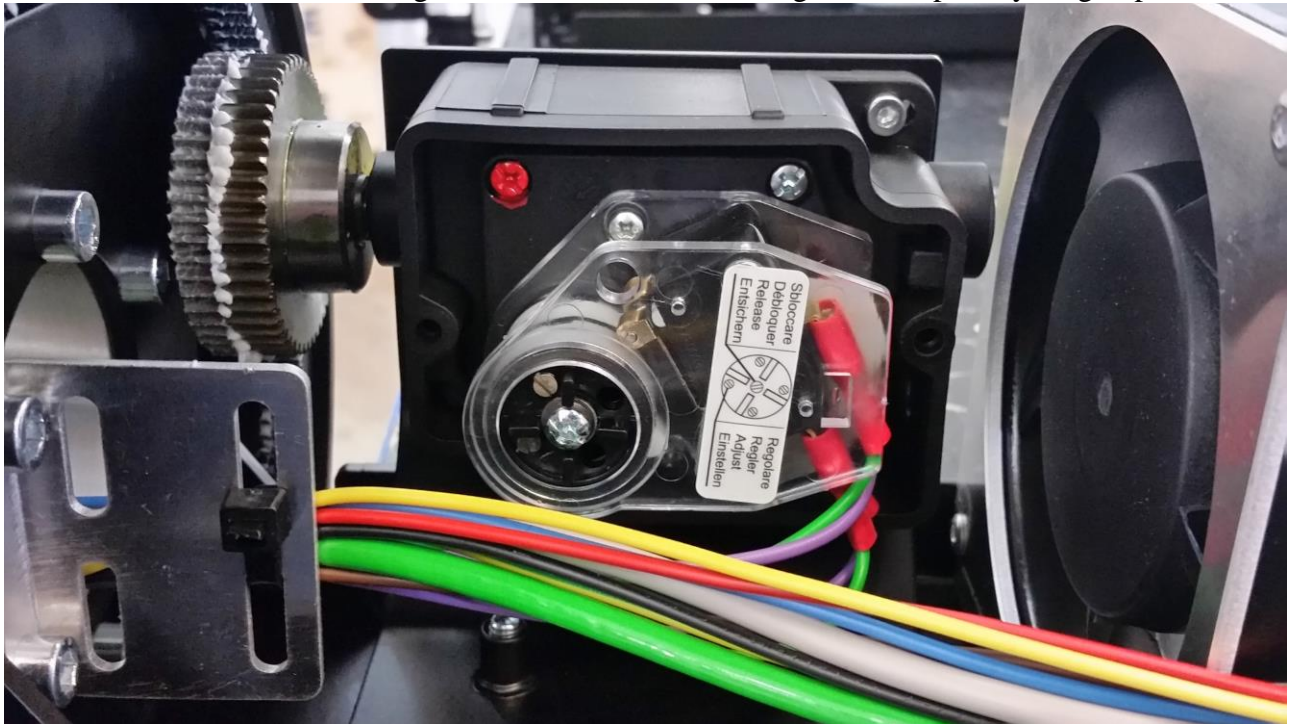The motor is fastened with 8 countersunk screws in the tube.

When these 8 screws have been removed the motor can be pulled out of the tube. Do this carefully since the motor is heavy and can be difficult to remove alone.

The limit switches are located in a black box.

There are 3 screws used for adjusting the limits the middle one has to be loosened a bit to allow the adjustment.

The screws are numbered, number 1 adjusts the top limit and number 2 adjusts the bottom limit.

When the limits have been changed fasten the middle screw again to keep everything in place.

Make sure to check the limits again one last time after the middle screw has been tightened before the motor is mounted in the tube.

Put the motor back inside the tube again and mount it with the 8 countersunk screws again.

Note that the angle of the rail can be changed by 90, 180, or 270 degrees relative to the limits. If the top and bottom limits are just off by one of these angles it can be corrected by just removing the screws holding the motor units and the tube together. Then turn them by the desired angle and put it back together.

LED Functions

DMX LED

The DMX lamp will be steady green when receiving a DMX signal.
The DMX lamp will flash green if no DMX signal is present.

Error LED

The error LED will light red if there is an error.
Reset error is done by setting DMX channel 4 to 0.
When the Error LED lights red, there will also be an error description in the display.

Errors and error codes:

Rolldown will not start, display shows nothing.	Check if the Rolldown is connected to mains power. Check if the fuse in the Rolldown is blown.
Rolldown will not start, DMX lamp is blinking.	Check DMX signal
Display says "Not in Pos"	The Rolldown cannot move to its position, this usually occurs when the load is high. To solve this go into the menu and increase the Minimum speed up.

Power failure:

The Rolldown will stop at power failure. When the power is re-established, the Rolldown has to be reset before it is ready to use.

It is advisable to set all the DMX channels on 0 % before the power is re-established.

Inspections and Maintenance:

Interval of inspections should be determined according to the frequency of use and the working scenario of the Rolldown.
Signs of malfunction or poor operation should always lead to an inspection of the Rolldown, and it should be taken out of operation until the error is eliminated.

Maintenance plan:

Before every use and Weekly:

Every time when rigging the Rolldown and before running it – and at least every week when it is in use:
- Check the emergency stop.(If it's an emergency stop version)
- Check that the curtain rolls up evenly.
- Check that the curtain is fastened correctly.

Monthly:

At regular intervals – but at least every month when the Rolldown is in use:
- Check the mounting clamps for damages and proper fastening.
- Clean the grid of the ventilator and air outlet.
- Change damaged parts.

Every 12 month:

The Rolldown has to be inspected by a specialist every 12 months

Every 48 month:

The Rolldown should be inspected by an authorized expert every 48 months.

The results of the regular inspections are to be documented and kept available at the company. The written result of the last inspection must be kept available at the site of operation, e.g. by an inspection sticker on the Rolldown showing the date of the inspection, the basis of the inspection and the name of the inspector.

Cheat sheet- Rolldown

wahlberg
MOTION DESIGN

Before use

When using the Rolldown, make sure you can see it, so you have visual confirmation on the movements.

The Rolldown uses 6 DMX channels, in order to make it easier to learn how to use it patch out the 6 DMX channels to faders on your lighting desk.

After applying power to the Rollup channel 4 needs to be outside the 50%-55% range for a short period before the enable works again. This is easily done by setting the channel to 0% or 100% for a short period of time.

DMX channels

DMX channel 1 – Position.   (16 bit DMX channel)
DMX channel 2 – Position fine.   (16 bit DMX channel)
DMX channel 3 – Maximum speed
DMX channel 4 – Motor Enable – between 50 % and 55 %, to enable the motor output.
DMX channel 5 – Reset UP
DMX channel 6 – Manual DWN   (Set range)

Getting started

1. Hang up the Rolldown, so there is space for the curtain to move without hitting the floor.

2. Set all DMX channels to 0%.

3. Connect to 200-240VAC – The display is now showing the start-up message.

4. Set DMX channel 4 between 50 % and 55 %. - Motor is now enabled.

5. Set DMX channel 5 to 50% wait for the load to move to the top position.

    When it is at the top position set channel 5 to 0%

6. Set DMX channel 6 to 50 % wait for the curtain to go 2m down

    When the curtain is 2m out, set DMX channel 6 back to 0 % - Now the travel range is now 2m.

7. Set DMX channel 1 to 100 % and DMX channel 3 to 20 % - The curtain is now running to the top with 20 % speed.

8. Set DMX channel 1 to 50% and DMX channel 3 to 50 % - The curtain is now running 1m down with 50 % speed.

When the Rolldown is powered down it should be in the top position (100%). If it is left in this position no resetting is necessary after it is powered up again.