

212/213 Winch10 Cable

User Manual



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Technical specifications:

213/212

Power supply	: 230 volt AC 50 Hz (optional 115V/60Hz).
Power consumption	: Max 200 Watt.
Power plug	: Neutrik powerCON male
Power plug lamp	: Neutrik powerCON TRUE1 male
DMX Control signal	: DMX 512 1990 + DMX512A / 7 channels used.
DMX connection	: 5 pole XLR, In & link
Lifting capacity	: 10 kg. (22.0 lbs.)
Lifting speed	: Variable, 5-30 cm/sec. (2-12 inch/sec)
Cable wire	: Special Cable, UL approved Tensile strength > 100 kg
Cable Max voltage	: 300V
Cable Max Current	: 5A through power connection (red/black wire 0.75mm ²) 1A through data connection (white/yellow wire 0.25mm ²)
Cable Lifetime	: 10kg load up to 5000 cycles up and down 5kg load up to 100,000 cycles up and down 2.5kg load up to 250,000 cycles up and down
Min. Load	: 2.5 kg (5.5 lbs.)
Noise emission	: ~50 dB (1m distance)
Motor	: 24 V DC, 28.9 W, IP30
Mounting clamp	: Half coupler 50 mm. (2 inch)

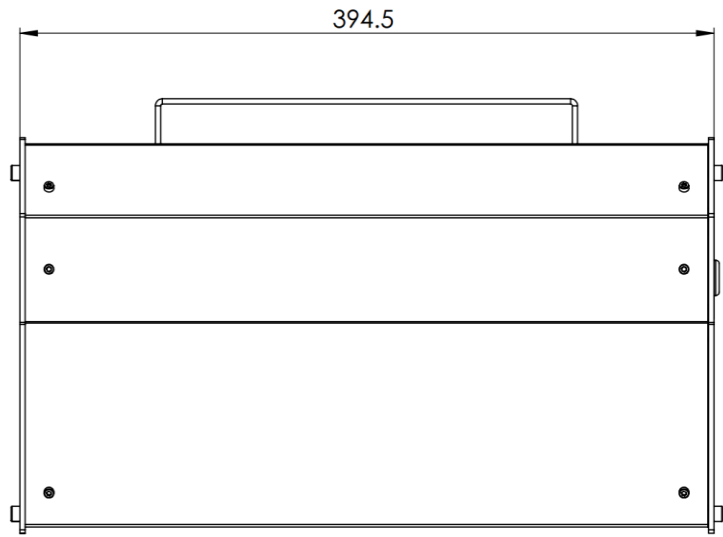
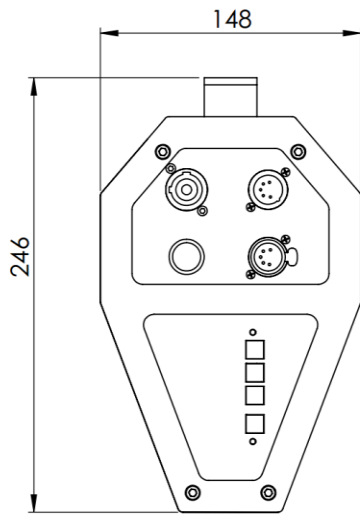
213 – Winch 10 Cable 10 meter

Dimensions	: 242 x 394.5 x 148 mm / 9.5 x 15.5 x 5.8 in (H-L-W) (Without mounting clamp)
Lifting height	: 9.8 m. (32 ft.)
Weight	: 8.4 kg (18.5 lbs.)

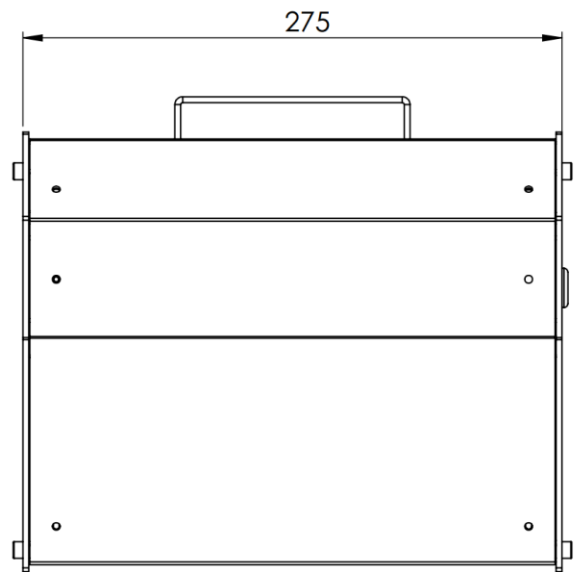
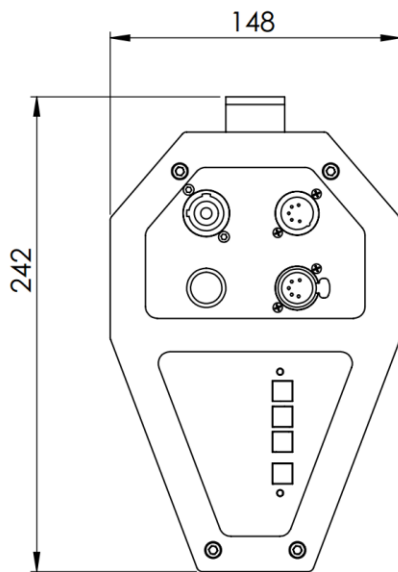
212 – Winch 10 Cable 4 meter

Dimensions	: 242 x 275 x 148 mm / 9.5 x 10.8 x 5.8 in (H-L-W) (Without mounting clamp)
Lifting height	: 3.8 m. (12.5 ft.)
Weight	: 6.1 kg (13.4 lbs.)

213 – Winch 10 Cable 10 meter



212 – Winch 10 Cable 4 meter



General:

Before using the winch 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 winch.

Product content:

1 Winch 10 Cable
2 Manfrotte Slim coupler (1 for 212, 4 meter version)
2 Mounting bolt and nut (M12) for slim coupler attachment (1 for 212, 4 meter version)
1 Powercon plug for cable
1 Powercon plug for power
1 Instruction manual

Description:

The Winch10_Cable is a small winch for lifting lamps and other electrical devices. The winch is controlled from the lighting desk, and thereby the stage movements are controlled in corporation with light, and adapt the dynamic needed to run a performance. The Winch10_Cable has an advanced positioning system with 16 bit precision. This gives a high level of accuracy, down to less than 1mm. The lifting speed is also controlled by DMX and it is possible to adjust the outer ranges of movement (how high or low the winch can move).

Winch 10_Cable should only be operated by an experienced DMX-controlled-lighting-desk-operator.

The lighting desk has to be programmed according to the manual, so the winch will stop when the speed is put to 0 %. It is also possible for the user to stop the winch on the main. After power failure the start position of the winch must be reset.

Manually running of the winch is only intended for mounting, service and tests.

Area of use:

The Winch is intended for indoor use only. It is designed for lifting and lowering a lamp or led object at the weight and speed stated in "Technical Data". Any other use of the winch may result in a risk of injury of persons or equipment damage.

Exceeding the load rating may cause failure of the equipment.

Use only approved rigging connectors to secure the winch.

Do not modify the winch. Any modification you might need should be done by Wahlberg.

It is the customers' responsibility that any local restrictions concerning the use of the winch are complied with.

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."

Overview:

MODE functions:	
MODE 1	Positioning with auto reset.
MODE 2.	Positioning with manual reset
MODE 7	Manual run up (no DMX needed).
MODE 8	Manual run down (no DMX needed).
MODE 3, 4, 5, 6	Only if specified, otherwise the motor stops.
DMX channels:	
DMX channel 1	Position rough. (Hi of a 16 bit DMX channel).
DMX channel 2	Position fine. (Lo of a 16 bit DMX channel).
DMX channel 3	Max speed.
DMX channel 4	Max travel top.
DMX channel 5	Max travel bottom.
DMX channel 6	Find TOP position, moving UP
DMX channel 7	Moving DOWN

Attention!

Before running the winch, it is important to put a counterbalance on the cable. This can be done either by putting some kind of weight on the thimble or by manually holding the cable back to keep it from becoming slack. If no weight is applied on the cable, it will jam on the drum.

Getting started:

If you are using the winch for the first time it is a good idea to read this, to learn how to get started properly and what to pay extra attention to.

Settings:

The settings of the winch should be the first thing to do. Both the setting of the MODE function and the DMX-address should be set before mounting the winch.

In this section we describe MODE 2.

Mounting:

The winch should be mounted to a ceiling or likewise, with the mounting clamps at the top of the winch.

2 mounting clamps should be used.

(Only one necessary for 212 4 meter version)



Lamp:

When the winch has been mounted, the lamp should be mounted and secured, and the wires to the lamp connected. If it is not possible to fit the lamp at this moment, it is important to hook on a counterbalance before running the winch. This can be done by hanging some weight at the end of the cable.

Connection:

When the winch has been mounted and a lamp is in place, both power and DMX signal should be connected, as described in the passage **Connections**. The winch is now ready to roll.

Manual reset:

When the winch is ready, the next thing to do is to reset it. This is done manually in MODE 2 on DMX channel 6 and 7.

Reset example:

The DMX channel 6 is set at 30% - The winch runs up. Let it run until the top stop, at the end of the wire, reaches the motor-house. Decrease the speed at DMX channel 6 as the end of the wire closes in on the motor-house. High speed could damage the winch and/or cable or blow the fuse.

The winch is now reset and the top-position is the point, where the motor was stopped.

The reset should always be done so that the top position is at the motor house.

Positioning:

When the winch has been reset and the top-position is set, it is possible to use it for positioning run. The position is set on the DMX channel 1 and 2, which controls the rough- and fine-position. Where 100 % is the top-position and 0 % is the bottom-position. The speed is set on the DMX channel 3, where 100 % is the fastest and 0 % is stopped. The winch doesn't run unless the DMX channel 3 is set above zero, and therefore also works as a main brake. To get the most accurate run in proportion to the top- and bottom-positions, read the passage **controlling the top- and bottom-positions**.

Connecting:

Power:

The winch is connected to 230VAC, by the enclosed Powercon plug. When the power is correctly connected, the green lamps on the winch are blinking.



DMX:

DMX is connected by the 5 pin XLR plug on the front of the winch (DMX IN). The DMX lamp will glow constant, when the connection is correct.

Power supply to the load:

When the load is mounted and secured, and the wires are connected, the load is ready for use.

Connect the appropriate power for the load.



Cable specification:

The cable has two 0.75 mm² conductors. The cable can handle up to 5 A current and is rated for up to 300V. And two 0.25 mm² conductors for data signals. The cable end in 4 wires red, black, yellow, and white. Each wire with a ferrule on the end.



Settings:

DMX address:

The DMX address is set on the 3 DMX-selectors on the front of the winch. The selected DMX address state from the channel, on the lighting desk from which the winch is controlled. The DMX address can be selected from 1 – 505. The winch uses 7 DMX channels in total.



MODE:

The wanted MODE function is set on the MODE-selector on the side of the winch. Each MODE states a certain function. (See under **MODE functions**).

LED's:

DMX lamp:

The DMX lamp is the green led, next to the DMX-selectors. The DMX lamp will glow constant if the DMX signal is connected correctly. The DMX lamp will flash if the DMX signal is missing or wrongly connected.



Position lamp:

The position lamp is the green led, next to the MODE-selector.

The position lamp indicates, by fast flashing, that the winch needs to be reset, before it can be used.

The positions lamp indicates, by slow flashing, that the winch has been reset and that it is going towards the wanted position.

The position lamp indicates, by stable light, that the winch has found the wanted position and the motor has stopped.

MODE functions:

Each MODE setting has a given function. Each mode gives an opportunity for different run settings with the winch.

The winch needs to be reset, before the positioning mode is possible. The winch can be reset manually or automatically. The winch must be reset each time its power supply has been disconnected. Read the passage about **controlling the top- and bottom-positions**, to explore and setup the winch best for your own particular need.

MODE 1:

Positioning with AUTO reset:

The winch resets automatically and thereby also sets the top-position automatically. The winch runs up until the top stop reaches the motor-house and stops. Because of this, the top-positions in this MODE will always be at the motor-house. To start the automatic resetting, speed must be added on the speed-channel (DMX channel 3).

When the winch has been reset, it is possible to use it in positioning mode.

MODE 2:

Positioning with MANUAL reset:

The winch is manually reset on the DMX channels 6 or 7. The top-position is, because of this, also set manually, which makes it possible to decide the position of the top-position.

We suggest anyway that it is set near by the motor-house.

When the winch is being reset, it is important to decrease the speed, as the top stop is closing in on the motor-house, otherwise the cable and winch can be damaged.

When the winch has been reset, it is possible to use it in positioning mode.

MODE 7:

Manual run up (no DMX needed)

The winch runs up with the speed set on the DMX-selectors. This function can be used as a test-function or in association with on- and off-applying of cable.

E.g. Set the winch to MODE 7 and the DMX address to 100, for a slow movement, or set the DMX address to 500 for fast movement.

MODE 8:

Manual run down (no DMX needed)

The winch runs down with the speed set on the DMX-selectors. This function can be used as a test-function or in association with on- and off-applying of cable.

E.g. Set the winch to MODE 8 and the DMX address to 100, for a slow movement, or set the DMX address to 500 for fast movement.

Technical explanation and the DMX-channels

The winch uses 7 DMX channels in total.

The start channel is set on the 3 DMX-selectors.

The 7 channels are used in the following way:

DMX channels:	
DMX channel 1	Position rough. (Hi of a 16 bit DMX channel).
DMX channel 2	Position fine. (Lo of a 16 bit DMX channel).
DMX channel 3	Max speed.
DMX channel 4	Max travel top.
DMX channel 5	Max travel bottom.
DMX channel 6	Find TOP position, moving UP
DMX channel 7	Find TOP position, moving DOWN

OBS: as an extra safety under positioning run, it is possible to remove the DMX signal, which will brake and stop the motor.

DMX channel 1 – Position rough:

The channel controls the position of the winch, with the speed set on the DMX channel 3.

This rough position works together with the fine position (DMX channel 2). The rough position and the fine position are multiplied in to a 16 bit channel. The rough position is the MSB.

DMX channel 2 – Position fine:

The channel controls the position of the winch, with the speed set on the DMX channel 3.

This fine position works together with the rough position (DMX channel 1). The fine position and the rough position are multiplied in to a 16 bit channel. The fine position is the LSB.

DMX channel 3 – Speed:

The channel controls the speed of the winch.

The channel defines the maximum speed. The winch runs with the set max speed, but slows down as closing in on the wanted position. This channel also works as a main brake. The motor does not run unless the channel is set above 0%.

The speed-channel can also be used to make soft and slow movements or fast and sudden movements.

DMX channel 4 – Max travel top:

The channel controls the maximum top travelling height of the winch. When the winch has been reset and the top-position thereby has been declared, it is possible, by adjusting this channel, to change how high the winch may run in proportion to the top-position. So the top travelling height for the winch is changed. Where 0% declares the **maximal** top travelling height, which means it runs all the way up to the reset top- position. Where 100% declares the **minimal** top travelling, which means it is as far from the reset top-position as possible. By adjusting this channel the positioning run from 0 - 100% will be within this new parameter. The top travelling height can be changed as needed, without resetting the winch top-position.

DMX channel 5 – Max travel bottom:

The channel controls the maximum bottom travelling height of the winch. When the winch has been reset and the top-position thereby has been declared, it is possible, by adjusting this channel, to change how low the winch may run in proportion to the bottom-position. So the bottom travelling height for the winch is changed. Where 0% declares the **maximal** bottom travelling height, which means it runs all the way down to the reset bottom-position. Where 100% declares the **minimal** bottom travelling, which means it is as far from the reset bottom-position as possible.

By adjusting this channel the positioning run from 0 - 100% will be within this new parameter. The bottom travelling height can be changed as needed, without resetting the winch top-position.

DMX channel 6 – Find TOP position, moving UP:

The channel is used to manually finding the top-position. The channel controls the speed from 0 – 100%. The winch starts to run up when channel 6 is set above 0 %.

When the winch reaches the wanted top-position, the speed must be set to 0 %, so that the motor stops. The top-position of the winch is thereby set, where the motor has been left at. The top-position should always be near by the motor-house. See more details in the passage **controlling the top- and bottom-positions**.

The positioning run in MODE 2 only works, when the winch has been reset.

DMX channel 7 – Moving DOWN

The winch starts to run down when the speed is set above 0 %.

This can be used to manually move the winch down without using positioning.

Cable specifications

The cable has 4 conductors 2 for power and 2 for data.

The power is connected through the speakON plug with the red wire connected to the 1+ and the black connected to the 1-.

The data is connected with the green wire connected to 2+ and the white wire connected to 2-.

The cable is rated for a max voltage of 300V.

The max current through the power connection is 5A and the max current through the data connection is 1A.

Synchronized movements of multiply winches

If several winches are installed to perform synchronized movements some tricks are needed to get the best result.

By nature the motors perform mostly equal, but some motors are running faster at full speed than others.

To get around this issue a fading 16 bit position is needed.

Like when fading light, the positions of the different winches should be faded, and the winches will tend to follow that fade.

When fading the positions the speed channel should be a 100, to gain the highest possible speed.

Also the position channel should be added like a 16 bit channel and not just the MSB on channel 1.

The speed of the fade needs to be slower than the maximum speed, so the motors have speed enough to perform the movement.

If the fade of the positions is too fast, the winches will move at the maximum speed, and you will see the difference in the motor speed.

If the fade is too slow the winches will move – stop – move – stop, when the position changes, thus giving a very bumpy movement.

Controlling the top- and bottom-positions:

The top-position needs to be reset automatically or manually, before it is able to use the winch for positioning run. To get the most precise run, fit for your own needs, it is possible to regulate the top- and bottom-positions.

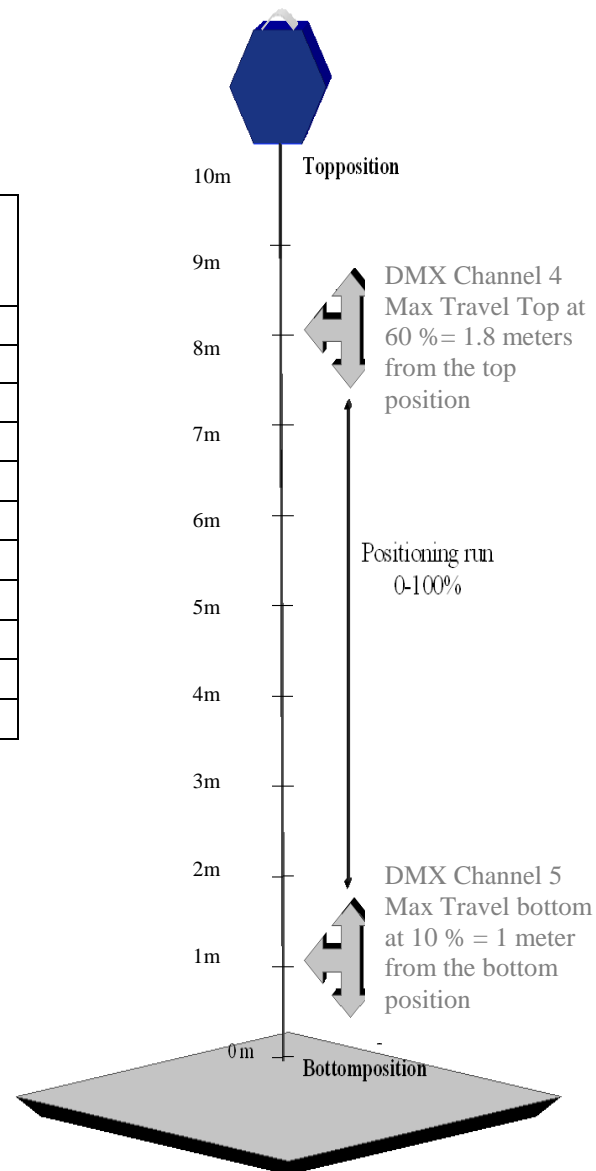
The top-position is reset manually by the DMX channels 6 or 7. When the top-position is being reset it should always be set all the way up to the motor-house.

This is important to notice because the winch has a preset bottom-position, which is always set 10 meters from the reset top-position. Therefore, if the top-position is set far from the motor-house and the bottom-position is not adjusted, the winch will still run 10 m (33 ft.) down and eventually run out of cable. To avoid this situation the max travel to the top and the bottom should instead be adjusted on DMX channels 4 and 5.

***OBS:** If these two spectrums overlap the max top position overrules the max bottom position and the winch will move down to that position, but will be unable to be moved with normal positioning, because the operating spectrum has been reduced to 0.*

DMX channel 4	Meter from the top position*	DMX channel 5	Meter from the bottom position*
0 %	0 m (0 ft)	0 %	0 m (0 ft)
10 %	0,3 m (1.0 ft)	10 %	1 m (3.3 ft)
20 %	0,6 m (2.0 ft)	20 %	2 m (6.6 ft)
30 %	0,9 m (3.0 ft)	30 %	3 m (9.8 ft)
40 %	1,2 m (3.9 ft)	40 %	4 m (13.1 ft)
50 %	1,5 m (4.9 ft)	50 %	5 m (16.4 ft)
60 %	1,8 m (5.9 ft)	60 %	6 m (19.7 ft)
70 %	2,1 m (6.9 ft)	70 %	7 m (23.0 ft)
80 %	2,4 m (7.8 ft)	80 %	8 m (26.2 ft)
90 %	2,7 m (8.9 ft)	90 %	9 m (29.5 ft)
100 %	3 m (9.8 ft)	100 %	10 m (32.8 ft)

*Table values are different for 212 4 meter version. The top position values are from 0 to 1.2 meters and the bottom position values are from 0 to 4 meters.



Inspections and Maintenance:

Interval of inspections should be determined according to the frequency of use and the working scenario of the winch.

Signs of malfunction or poor operation should always lead to an inspection of the winch, and the winch should be taken out of operation until the error is eliminated.

Maintenance plan:

Before every use and Weekly:

Every time when rigging the winch, before running the winch – and at least every week when the winch is in use:

- Check the entire length of the cable for cuts in the insulation, bends, crushed areas and other damages.
- Check that the cable is running smoothly on the drum.
- Check the function of the top stop.
- Check the top and bottom position.

Monthly:

At regular intervals – but at least every month when the winch is in use:

- Check the mounting clamp for damages and proper fastening.
- Check that the cable is running smoothly on the drum. If the insulation has a dry or rough surface, you can lubricate it with a tiny amount of silicone grease.
- Check the secure fastening of the lamp.
- Check the electric connection of the lamp.
- Change damaged parts.

Every 12 month:

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

Every 48 month:

The winch should be inspected by an authorised 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 winch showing the date of the inspection, the basis of the inspection and the name of the inspector.

Cable Life

The lifetime of the cable varies with the load it is running with. A winch running with a load of 10kg will have a significant shorter lifetime than one with 2.5kg load.

At 10kg load the wire will last up to 5000 up and down cycles

At 5 kg it will last up to 100,000 up and down cycles.

At 2.5 kg it will last 250,000+ up and down cycles.

The cable itself will not break but it will no longer conduct electricity.

Faults – defects:

Cable trouble:

If the cable in some way should get damaged, get stuck or have problems rolling on and off, it is necessary to open the winch, so it becomes possible to check if the cable is loose or if it is bungled up inside.

This can be done the following way:

Disconnect the power to the winch and the cable.

Loosen the screws, on one of the sides on the winch.

Remove the screws, on one of the covers on the winch, and take off the cover plate.

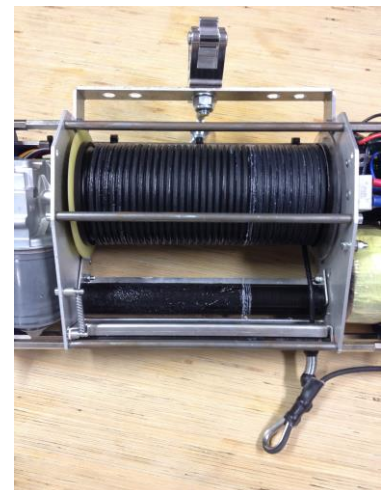
See the picture to the right.

If the cable is not tight around the drum, or if it is bungled up, the cable needs to be unravelled. This is done by manually unravelling and loosening the cable and pulling it out of the winch. It can be necessary to remove the other cover to work the cable out of the winch properly.

Roll out the cable in its entire length to check it properly.

To do so, set the MODE to 0 and connect the power to the winch (NOT the cable).

OBS: *Be careful not to touch the power supply inside the winch, as it is exposed. This can cause an electric shock and damage the winch.*



When the power is connected, the manual run function must be used.

Set the DMX start address to zero (000)

Set the MODE to manual down (MODE 8)

Set the speed on the DMX address - Suggested address is 100, which is a fine slow speed and easy to follow.

When the motor starts and the cable is rolling out, it is important to hold on to the cable to prevent it from tangling around the drum.

When the cable is rolled off all the way, set the speed (DMX start address) to zero (000) and disconnect the power.

OBS: *Be careful not to get fingers or likewise caught in the drum as it turns. This can damage you and the winch.*

Check the entire cable for damages. If the cable is okay it must be rolled on again.

Connect the power to the winch again.

Set the MODE to manual up (MODE 7)

Set the speed on the DMX address to 100.

When the motor starts and the cable is rolling on, it is important to hold on to the cable and thereby making a counterbalance, so it rolls on tightly around the drum.

While rolling up the cable, apply a tiny amount of silicone grease to the cable. (Just put a tiny amount of silicone grease on your fingers, and apply it to the cable while rolling up. Don't overdo it). This will make the cable roll smoothly and with less friction on the drum.

Make sure not to bend or damaged the loose cable as it rolls on.

When the cable is rolled on all the way, set the speed (DMX start address) to zero (000) and disconnect the power.

When the cable has been applied to the winch again it is a good idea, to run it up and down a couple of times, before assembling the winch. Remember always to make a counterbalance in the cable when running with the winch, as this is often the reason why the cable gets loose and tangled up in the first place.

If the cable is damaged, it has to be replaced.

The replacement of the cable should be done by Wahlberg.

Power defect:

If the winch does not react when the power is connected check the following:

Check that the power plug is properly connected, both to the POWER IN plug on the winch and to the main power plug.

Check that the fuse is intact. It can be replaced with a new 2A fuse.

Check that the fuse is tightly screwed on in the fuse cap, even if it has just been changed.

If the load does not react when the cable is connected check:

The cable plug is properly connected both to the CABLE plug on the winch and to the main supply.



Winch 10 Cable - Cheat Sheet

MODE functions:	
MODE 1	Positioning with auto TOP reset.
MODE 2.	Positioning with manual top reset (factory setting)
MODE 7	Manual run up (no DMX needed).
MODE 8	Manual run down (no DMX needed).
MODE 3, 4, 5, 6	Only if specified, otherwise the motor stops.
DMX channels:	
DMX channel 1	Position rough. (Hi of a 16 bit DMX channel).
DMX channel 2	Position fine. (Lo of a 16 bit DMX channel).
DMX channel 3	Max speed.
DMX channel 4	Max travel top.
DMX channel 5	Max travel bottom.
DMX channel 6	Find TOP position, moving UP
DMX channel 7	Moving DOWN

How to get started.

- 1: Place / Rig the winch in something with a minimum clearance of 2.5 meter below.
The winch should be fixed in 2 places to ensure it is always level.
- 2: Fit the lamp securely or put on a counterweight of minimum 2.5 kg.
- 3: Set the DMX start address to 001, and the MODE to 2.
- 4: Apply DMX from a Lighting desk, best is a desk with manual faders.
Make sure that your 7 channels are patched from DMX channel 1 to 7.
Pull all channels to 0%
- 5: Apply power to the winch.
DMX lamp should be lit, and the mode lamp should be flashing.
- 6: Pull channel 6 to 20 % -- the winch starts pulling the cable.
Stop (pull channel 6 to 0%) when the cable is at the top position (pulled into the winch)
NOW the winch has found its TOP position and is ready to drive with position control.
- 7: Pull channel 1 (position) to 95 %
Pull channel 3 (speed) to 20%
Now the winch starts to move down, with 20% speed, until the position is 95% up.
- 8: Pull channel 1 (position) to 80%
Now the winch starts to move down, with 20% speed, to a position that is 80% up.
- 9: Pull channel 1 (position) to 90 %
Pull channel 3 (speed) to 50%
The Winch starts to move UP again, with 50% speed, and stops 1 meter before the top.