SHOWLED

How to make your own ShowLED Star Curtain

Version-1.0

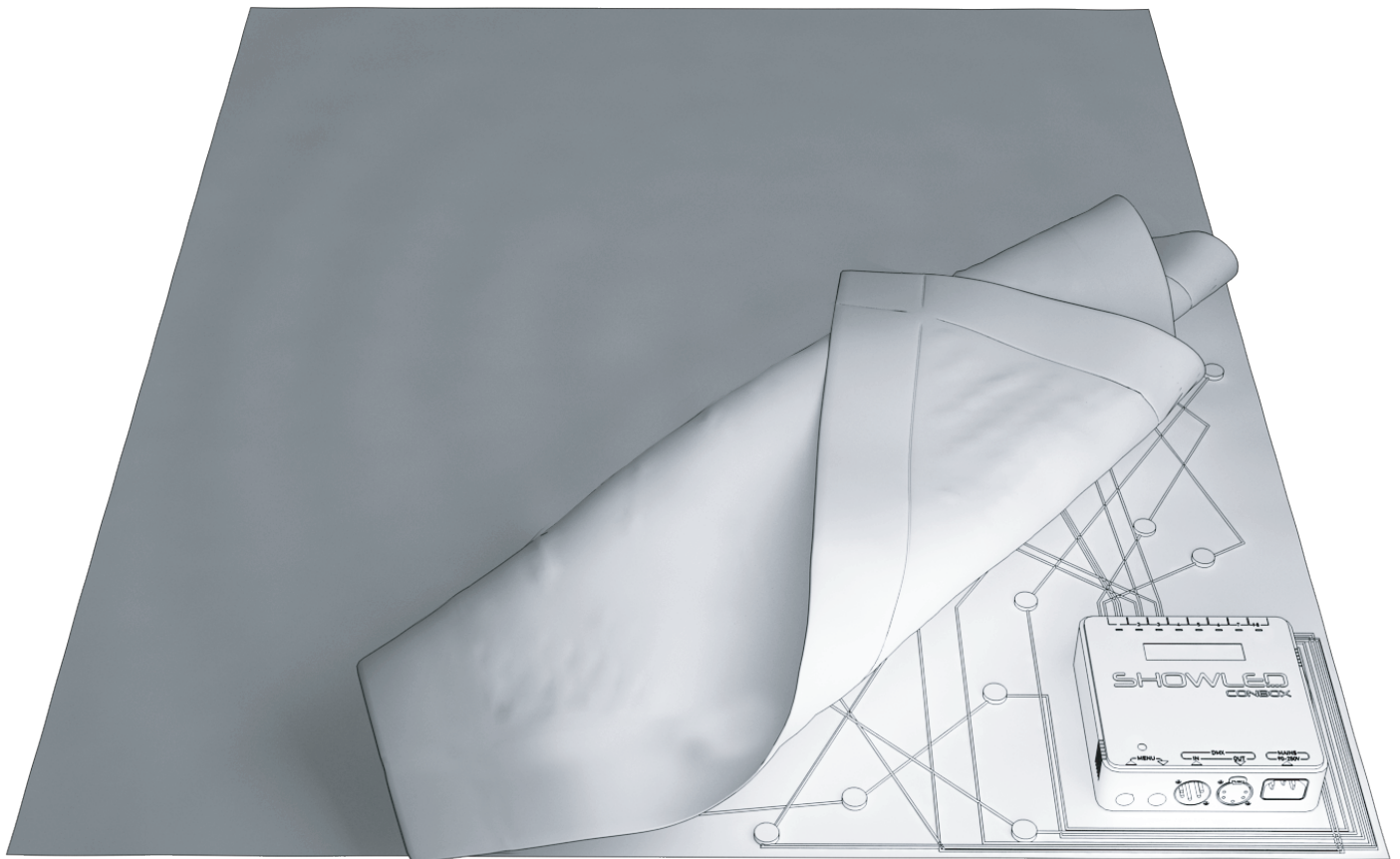## TABLE OF CONTENTS

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Items Required

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1. Chameleon RGB LED Strings or Classic Monochrome LED Strings

Two types of strings are available
- 12LEDs/String
- 16LEDs/String

2. Hammer
3. Hand Roller
4. Coloured Loop Adhesive Washers
5. Conbox Controller
6. Hole Pipe 5mm/10mm & Cutting board

7. 3M 4-way Plugs

Two types of plugs are available
- Orange Plugs for Classic curtain
- Grey Plugs for Chameleon curtain

8. Power Cord
9. Crimping Tool

Step 1   Determining LED Density

The ideal number of stars per m² is 5.7. We recommend a minimum density of 5.2 LEDs per m² for a star curtain with a regular distribution of LEDs.

Number of LEDs = Height (panel) X Width (panel) X Density (5.7)
Note: Round up/down to the nearest multiples of 12 or 16 LEDs/string to avoid cutting up LED strings

There are 8 output channels available on the controller. Divide LEDs as evenly as possible over the 8 channels. Grouping of LED socket strings is possible if more than 16LEDs per channel is required.

⚠ Do not exceed 512 LEDs for Classic curtain per Conbox controller
Do not exceed 256 LEDs for Chameleon curtain per Conbox controller

Step 2a   Planning - Small to Mid Sized Star Curtain (≤128 LEDs)

Planning process helps in determining LED positions and output channels accurately.
The planning process of a 4m x 6m star curtain is illustrated as an example.

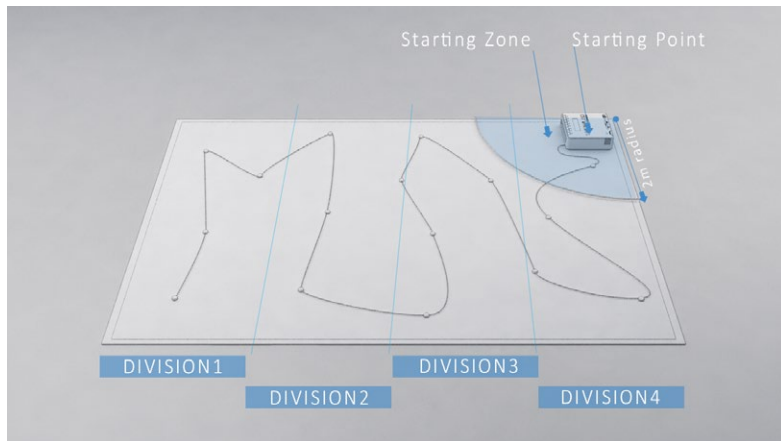|	
Panel Dimension	= 6m wide X 4m high
Number of LEDs	= 128 LEDs
Number of Strings	= 8 x 16LEDs/String
Number of LEDs/Channel	= 16 LEDs
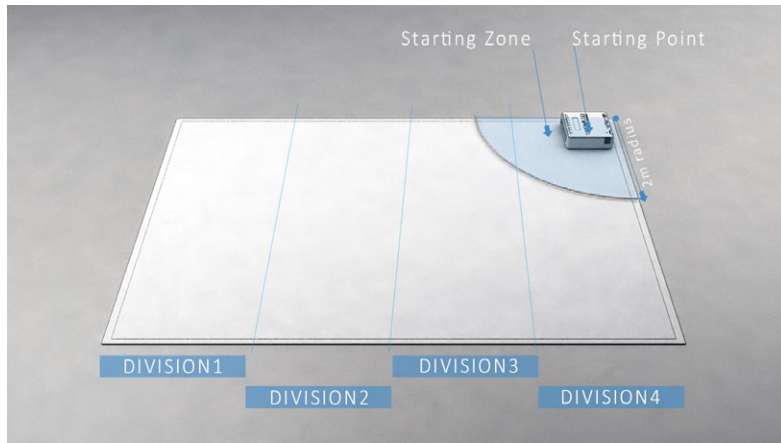
Divisions : 4 equal virtual divisions are created to spread the LEDs evenly.
Each division will contain approximately 1/4th of the total number of LEDs.

Starting Point : Where the Conbox controlller will be placed. The placement of Conbox controller can be customized using extension cables.

Starting Zone : Strings starting inside the starting zone will keep all strings connected to the Conbox without the need for any extra cable extensions.
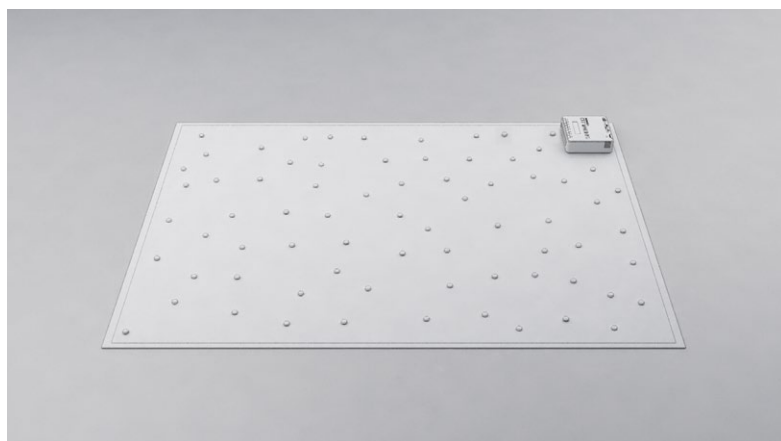Starting Zone is normally within a 2m radius around the Conbox controller.

Each string will be distributed evenly over the entire star curtain, connected to one output channel.

All the other strings follow a similar configuration as the above.

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Step 2b   Planning - Mid to Large Sized Star Curtain (>128 LEDs)

The planning process of a 4m x 9m star curtain is illustrated as an example.

Panel Dimension   = 9m wide X 4m high
Number of LEDs   = 208 LEDs
Number of Strings   = 12 x 12LEDs/String + 4 x 16LEDs/String
Number of LEDs/Channel = 24 [4x(12+12)] or 28 [4x(12+16)]
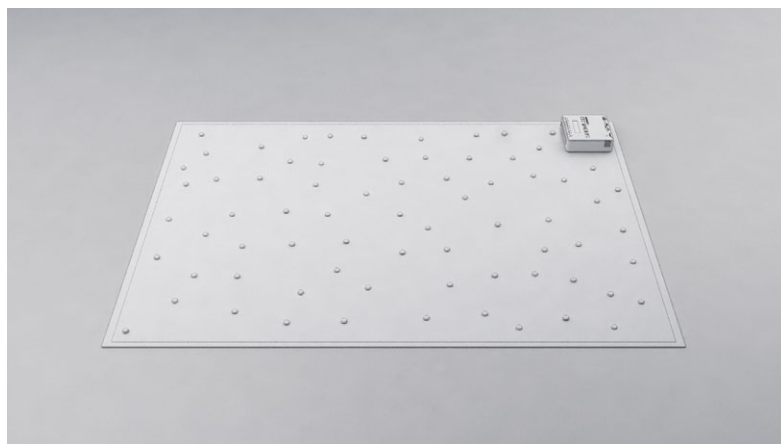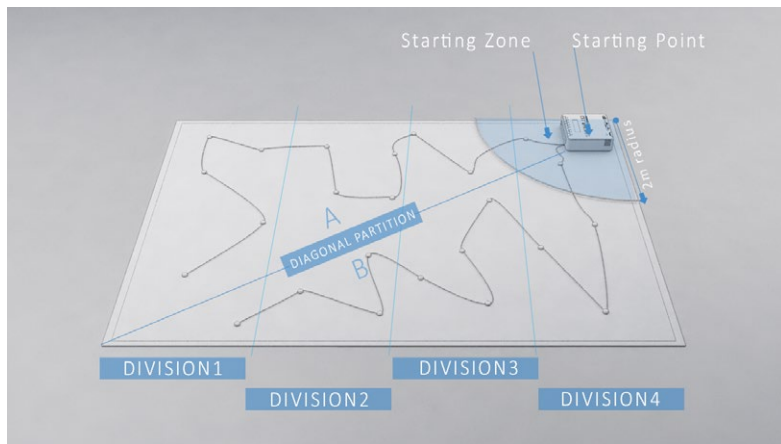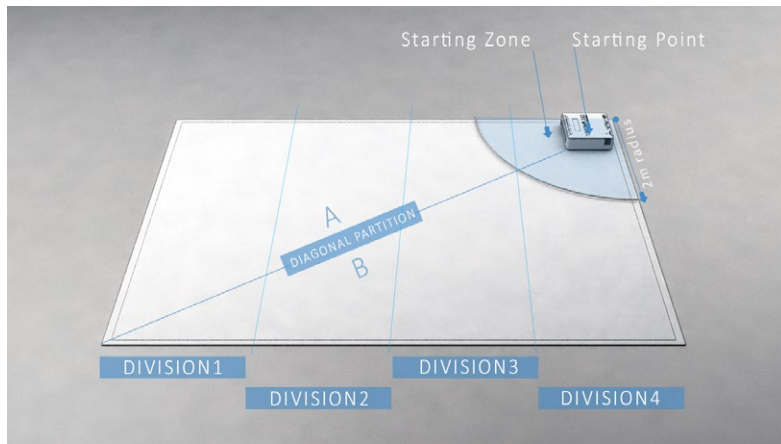
Partitions : Divide the star curtain in two triangles; one of the split corners will be the Conbox/cable exit position.
A diagonal division will support the output channels distribution effectively.

Divisions : 4 equal virtual divisions are created to spread the LEDs evenly.
Each division will contain approximately $1/4^{th}$ of the total number of LEDs, as a sum of LEDs on strings in triangles A and B.
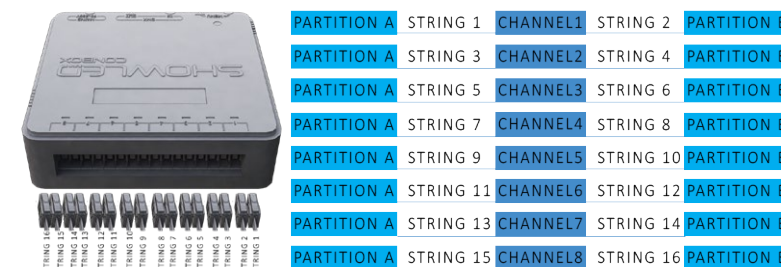
Starting Point : Where the Conbox controller will be placed. The placement of Conbox controller can be customized using extension cables.

Starting Zone : Strings starting inside the starting zone will keep all strings connected to the Conbox without the need for any extra cable extensions.
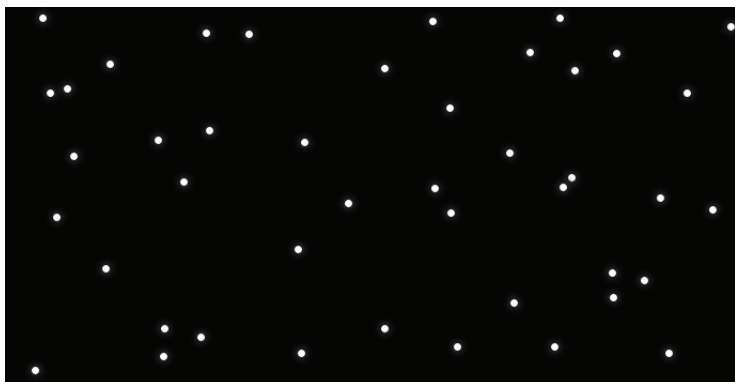Starting Zone is normally within a 2m radius around the Conbox controller.
Each string will be distributed evenly over each partition and division. The combination of both partitions will create a nice spread over the whole surface.
Strings from both partitions are grouped to a single output channel.

PARTITION A	STRING 1	CHANNEL1	STRING 2	PARTITION B
PARTITION A	STRING 3	CHANNEL2	STRING 4	PARTITION B
PARTITION A	STRING 5	CHANNEL3	STRING 6	PARTITION B
PARTITION A	STRING 7	CHANNEL4	STRING 8	PARTITION B
PARTITION A	STRING 9	CHANNEL5	STRING 10	PARTITION B
PARTITION A	STRING 11	CHANNEL6	STRING 12	PARTITION B
PARTITION A	STRING 13	CHANNEL7	STRING 14	PARTITION B
PARTITION A	STRING 15	CHANNEL8	STRING 16	PARTITION B

All the other strings follow similar configuration as the above.

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The Patterns

Classic : Spread the adhesive loop washers unevenly with clusters over the panel to get an irregular distribution of LEDs. Always put sockets from different channels in clusters.

Chameleon : Spread the adhesive loop washers evenly over the panel to get regular distribution of LEDs.

⚠️ If the clusters are made with sockets from the same channel, that channel will dim the entire cluster.

Step 3   Positioning Loop Velcro Washers

This step is continued with the 4m X 9m star curtain as an example.
Turn the fabric panel upside down on the floor or table. It must be completely flat on the surface.

First String, Partition A, Channel 1 : Take the string and walk along with it over the cloth laying it in a figure-S way. Ensure that the string comes close to all 3 sides and corners. Start with the cable lead on the starting point and stop with the last socket at the other end of the fabric (The sockets should not be more that 120cm apart from one another - 5cm tolerance in the cable).
Once the sockets are laid out and you are comfortable with their position, choose a washer colour and fix it firmly on the cloth under each socket. Do not fix the centre part of the adhesive loop washers on the cloth.
Second String, Partition B, Channel 1 : Take the same washer colour and repeat the process described above.
Third String, Partition A, Channel 2 : Choose a different washer colour and repeat the process described above.
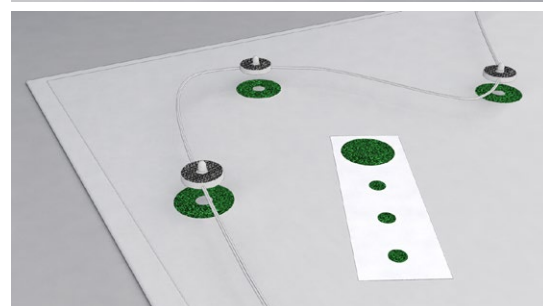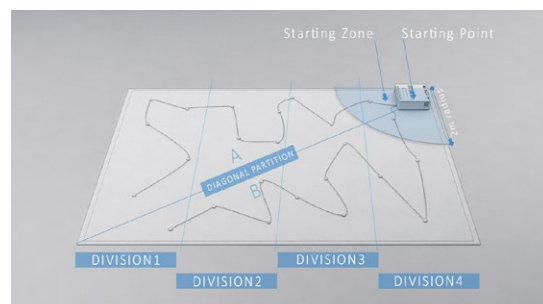

Repeat this until the 8 colours of adhesive loop washers are distributed over the two partions.

⚠️ Mark on paper which colour within which partition holds 12 or 16 LEDs.

⚠️ Use the correct number of 12 and 16 LED strings for the velcro layout.

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Step 4   Rolling the Washers

The fabric will now have all the coloured loop washers attached (8 different colours for 8 different channels). The socket strings are not attached yet.

Rolling the washers: Use a small hand roller and apply pressure to each coloured washer, rolling back and forth several times. Depending on the fabric type this can also be done with a rubber hammer.

⚠ When using a rubber hammer, make sure the rubber hammer leaves no mark on the front of the fabric. Some fabrics are very sensitive

Step 5   Punching the Holes

Use a hole pipe, 10mm in diameter, to punch the holes from the inside of each washer with a cutting board underneath.

⚠ 10mm hole pipe for black/dark fabrics. 5mm hole pipe for coloured/light fabrics. Otherwise the black LED holders will show through the fabric.
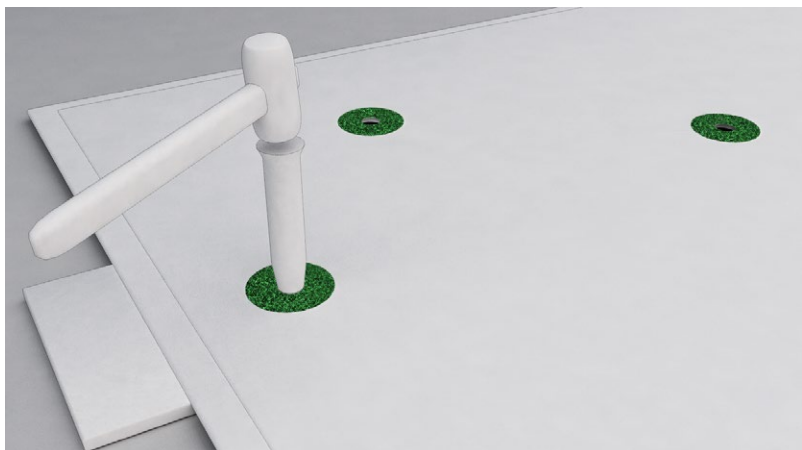
Step 6   Attaching Socket Strings

Straighten the LED strings out, one by one, and attach them to the coloured washers.

One string/one colour at a time.

⚠ Use your previously noted paper sheet to verify the LED string to colour match.
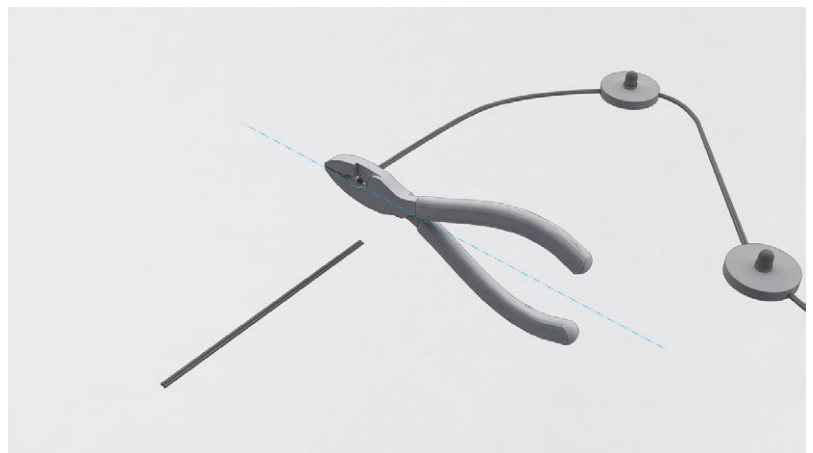
Step 7   Preparing the Cables for 3M Plugs - Classic

ShowLED strings come in pre-cut.

Should you wish to cut to length, please cut in a straight line.

⚠ If cables get distorted they might not fit the connector properly.

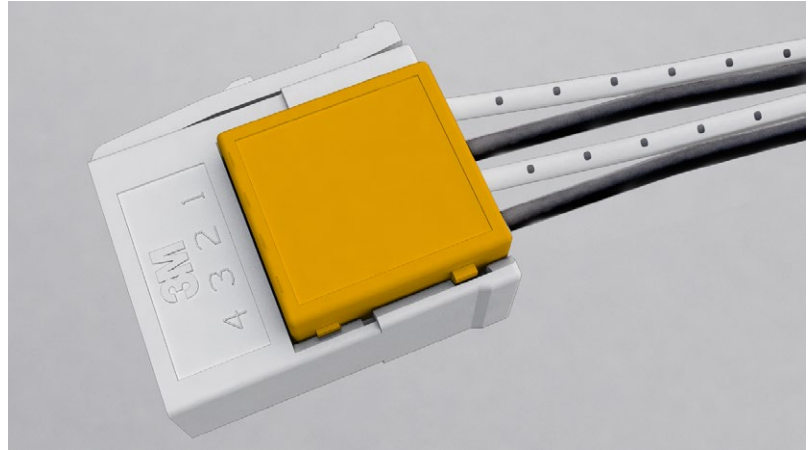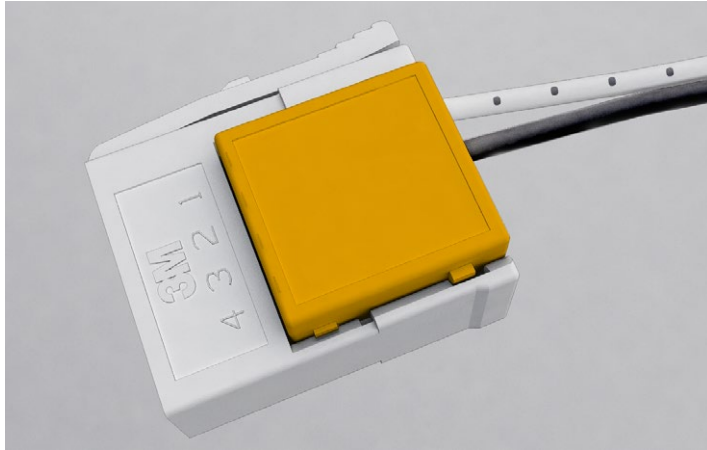Do not strip any of the wires. Only spread the wires 1 to 2 cm from the cable end.

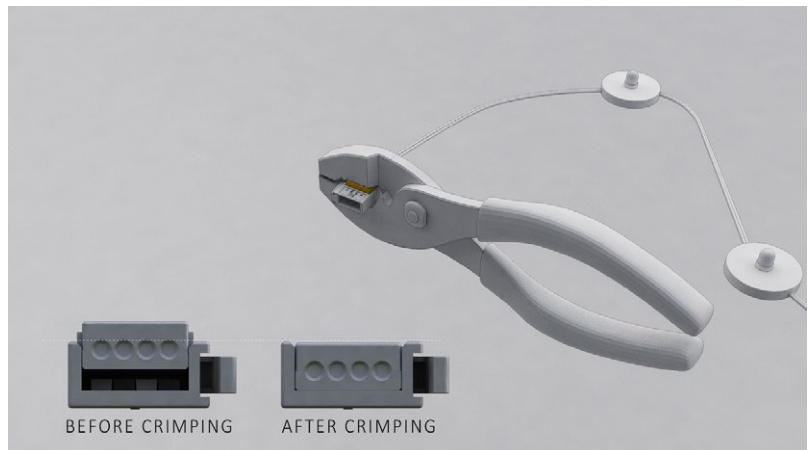Straighten the wires so they lie flat in the shown order.

Step 8   Connecting to 3M Plugs - Classic

Slide the cables into the plug until the far end.

(Applicable if more than 16 strings need to be connected to one controller.)

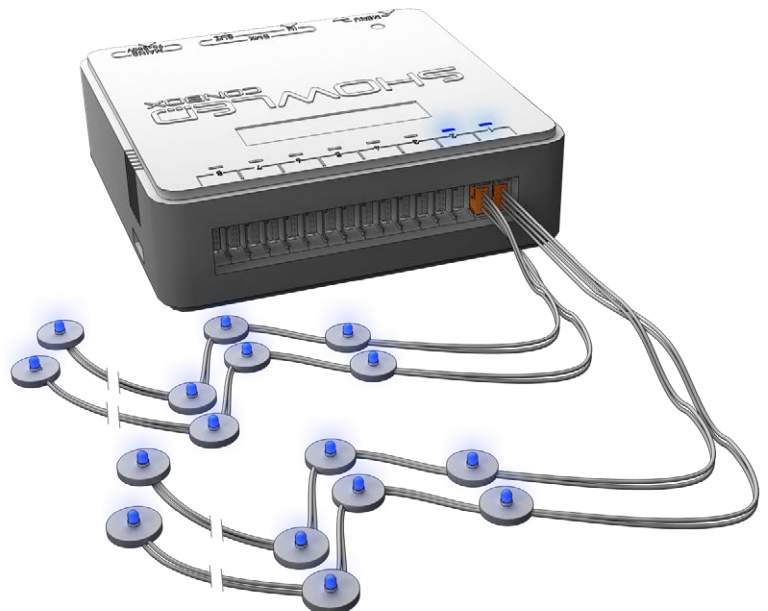## Step 9   Crimping 3M Plugs - Classic

Crimp the connector till you have an even top surface.

BEFORE CRIMPING   AFTER CRIMPING

Step 10   Testing Strings - Classic

Connect the crimped plugs to the Conbox controller.

LEDs on the connected string should light up at the same time/sequence as the indicator LED of that output channel on the controller.
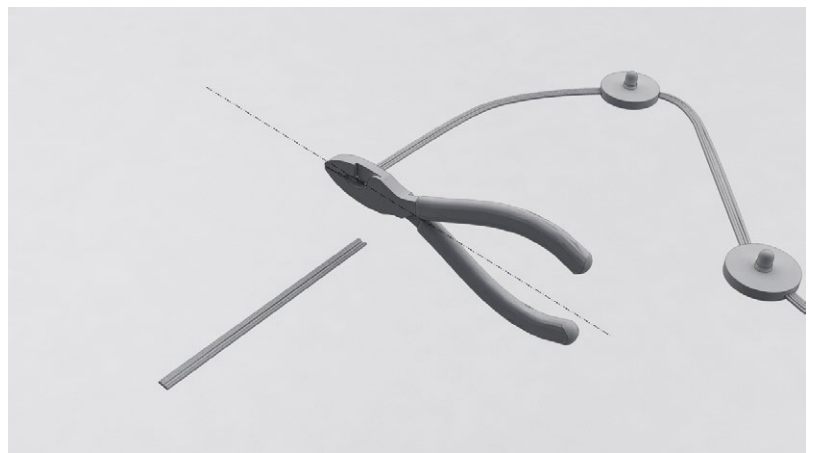
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Step 7   Preparing the Cables for 3M Plugs - Chameleon

ShowLED strings come in pre-cut.

Should you wish to cut to length, please cut in a straight line.
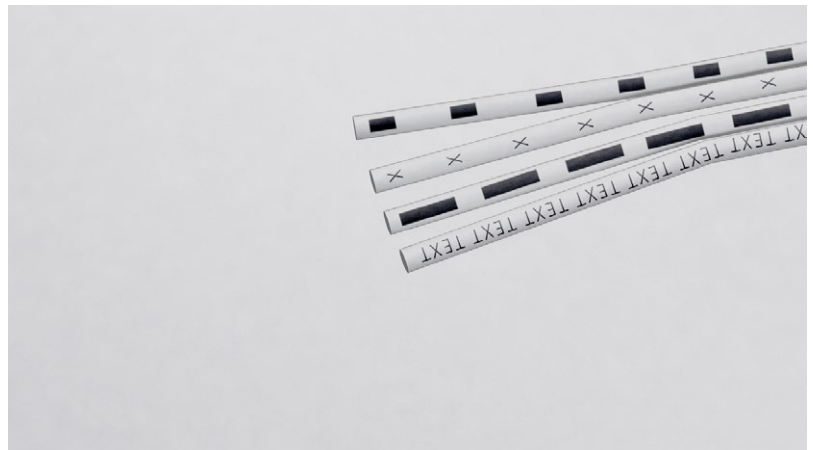

⚠️ If cables get distorted they might not fit the connector properly.

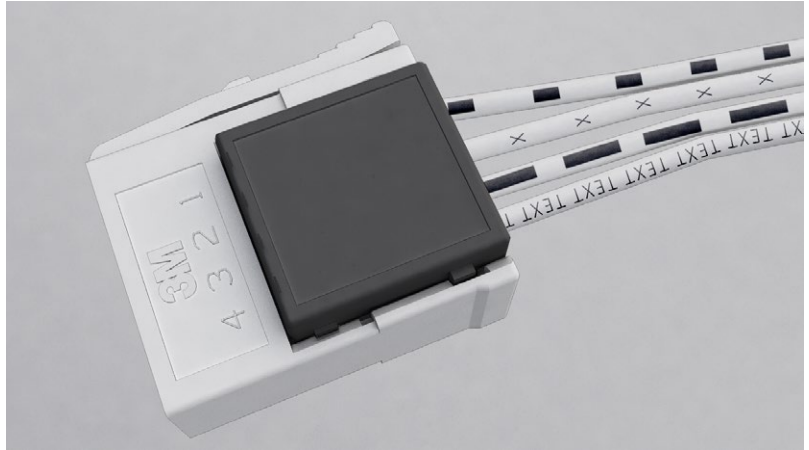Do not strip any of the wires. Just spread the wires 1 to 2 cm from the cable end.

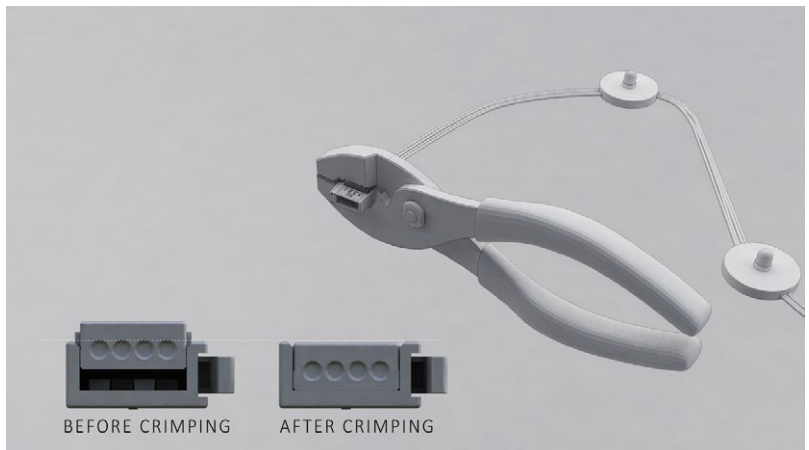Straighten the wires so they lie flat in the shown order.

Step 8   Connecting to 3M Plugs - Chameleon

Slide the cables into the plug until the far end.
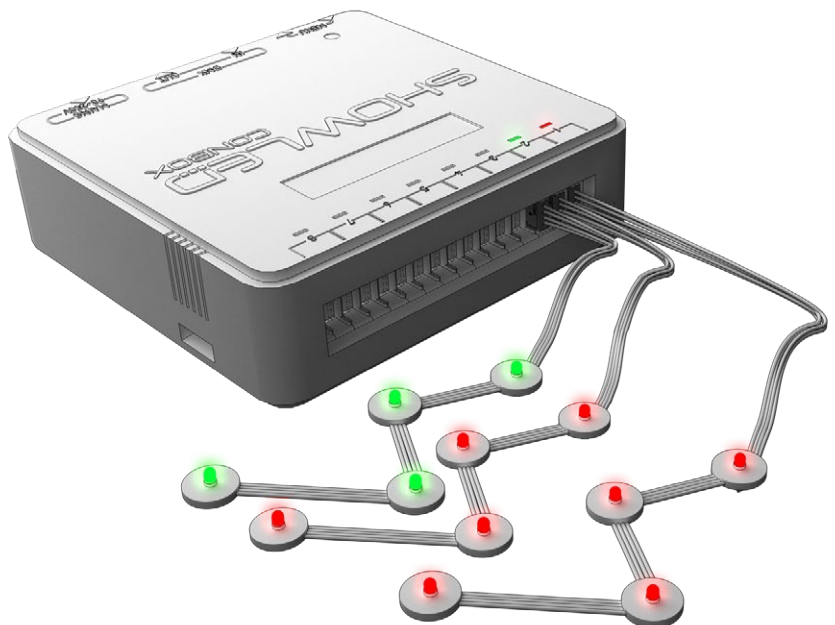
Step 9   Crimping 3M Plugs - Chameleon

Crimp the connector till you have an even top surface.

BEFORE CRIMPING   AFTER CRIMPING

Step 10   Testing Strings - Chameleon

Connect the crimped plugs to the Conbox controller.

RGB LEDs on the connected string should light up at the same time/sequence and the same colour as indicator LED of that output channel on the controller.

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