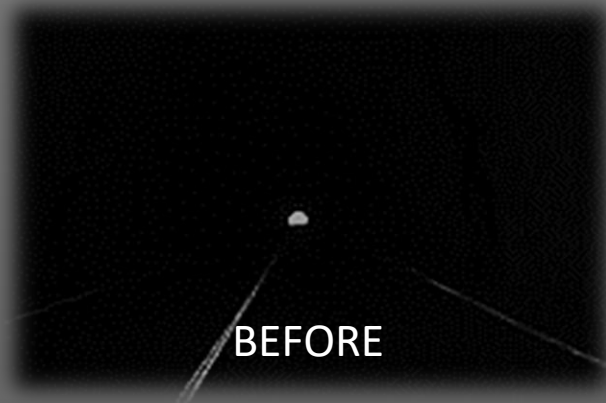




HALO

| underground lighting solutions

What is HALO?



*LED STRIP specifically designed to safely, effectively and economically illuminate dark mining tunnels in harsh South African underground mining environment

*Designed and certified specifically to South African underground electrical equipment requirements and standards



HALO

CONVENTIONAL
LIGHTING

HALO

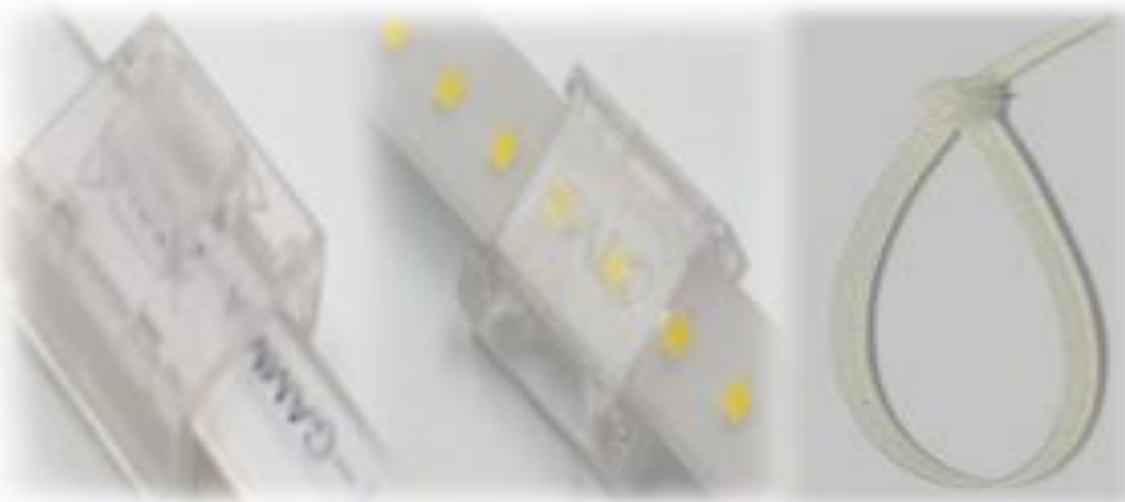


Low profile, 4mm x 14mm

CONVENTIONAL LIGHTING



Bulky, heavy, large



HALO clips, cable straps.
(All included in order)



Mounting accessories, connection accessories,
infrastructure accessories, cable accessories, etc.

HALO



Zero maintenance



LOW TOXIC EMISSIONS

Food grade silicone

CONVENTIONAL LIGHTING



Tubes, bulbs, ballast/drivers,
lamp holders, fuse links, etc.



TOXIC EMISSIONS

Epoxy, Polycarbonate, PVC, ABS

HALO



Emergency fail-safe device, cuts electricity to strip when damage is detected.



Rated 5 - 10 years based on running time of 24 hours per day

CONVENTIONAL LIGHTING



Electrocution hazard.

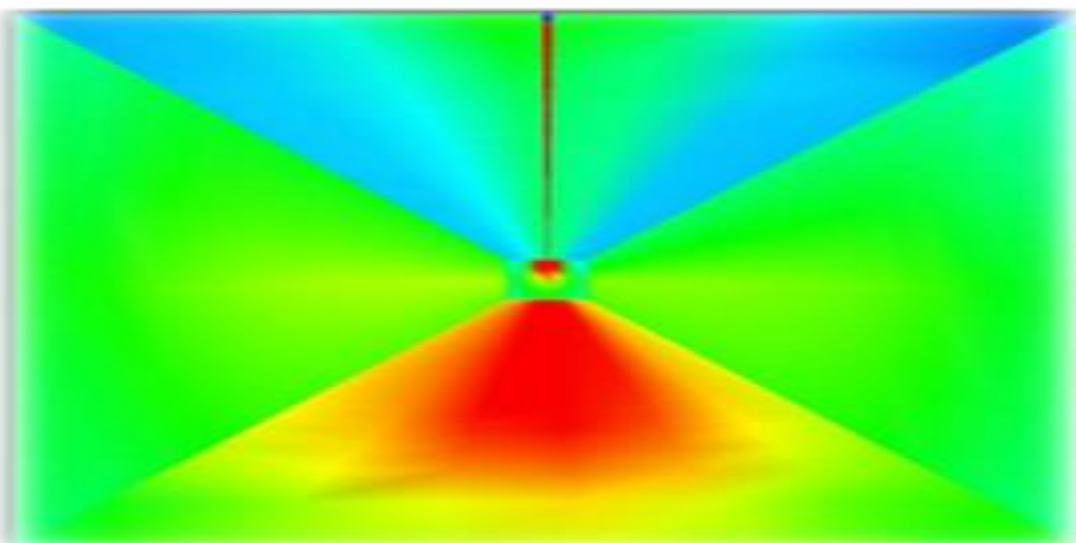


Rated based on 4 - 8 hours per day.
Requires 'resting' period

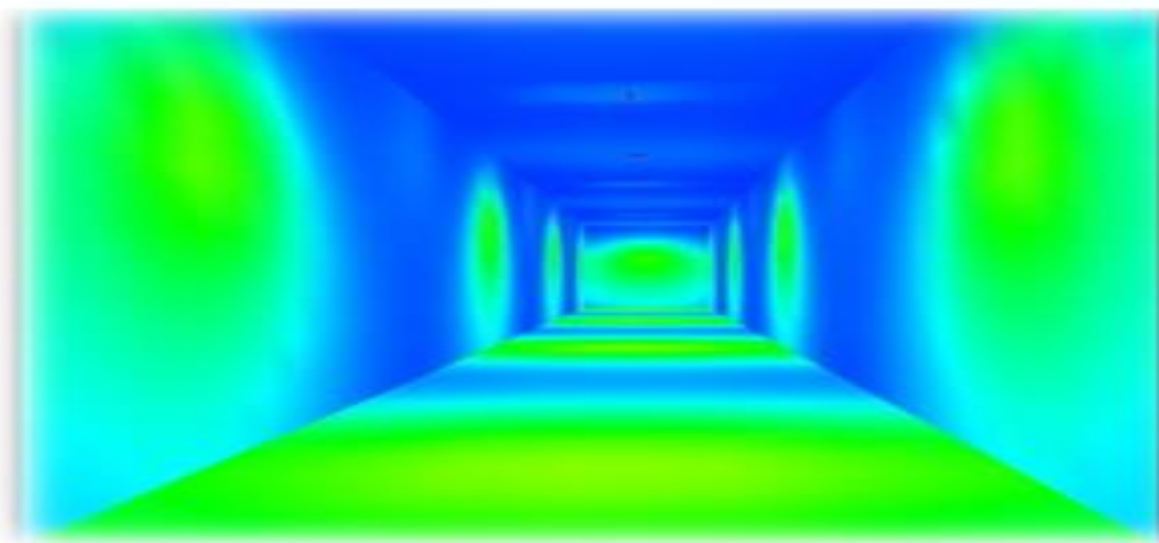
HALO



CONVENTIONAL LIGHTING



Bright, continuous 180° angle lighting meeting even the strictest OHS LUX requirements throughout the tunnel



Interrupted, 60° - 90° angle lighting creating shadows and leaving dark spots with OHS requirements not met in certain areas

HALO SERIES™

EVOLUTION OF ILLUMINATION

- HALO1 - HALO LED STRIP IN 230V, 110V, 48V, 36V AC - PLUG AND PLAY - 10M CONTINUOUS INTERCONNECTABLE ROLLS
- HALO2 - HALO LED STRIP IN 24V OR 12V DC - REQUIRES EXTERNAL POWER CONTROLLERS - LIMITED RANGE
- HALO DAISY CHAIN - 1m PCS HALO WITH MALE/FEMALE ADAPTORS – CONNECT TO JUMPER CABLES - EXTENDS RANGE
- **HALO OMEGA – EXPLOSION PROOF RANGE – AVAILABLE IN 12V TO 230V – ALPHA, BETA, GAMMA, DELTA**
- HALO GLOBE REPLACEMENT - 1m PCS OF HALO WITH E27 LAMPHOLDER CONNECTION TO REPLACE RETROFIT GLOBES
- HALO PULSE - RED/GREEN DIRECTIONAL FLASHING EMERGENCY EVACUATION SYSTEM - POWER CONTROLLER 230V - 24V
- HALO CLIPS - CUSTOM DESIGNED CLIPS TO SAFELY SECURE HALO TO STRAINING WIRE WITHOUT DAMAGING HALO
- HALO ALUMINIUM CHANNEL - ATTACH TO FLAT CEILING - NEAT INSERTION OF HALO - OPTION OF CLEAR/FROSTED COVER

HALO

evolution of illumination

HALO LED STRIP LIGHTING

AFFORDABLE - IMPROVE SAFETY – IMPROVE EFFICIENCY – RETURN ON INVESTMENT 12 MONTHS – ZERO MAINTENANCE – LIFESPAN UP TO 10 YEARS

The ground-breaking 2nd Generation HALO1 LED strip lighting launched in 2017, is the most technologically advanced underground lighting system in the world. It features innovative cutting-edge design elements which enable it to thrive in the harsh environments and deliver an unequalled lighting solution suited for modern-day mining.

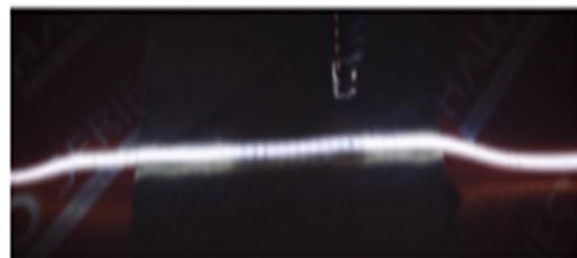


1500 LUMENS P/M • LIFESPAN 5-10 YEARS • 3 YEAR WARRANTY • IP 68 WATER AND DUSTPROOF • FLAME RETARDANT • ZERO TOXIC WHEN BURNED

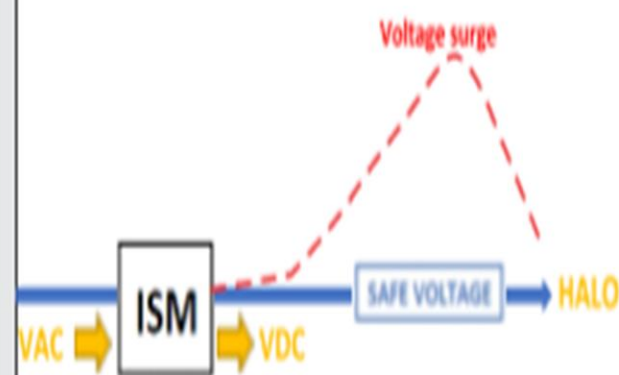
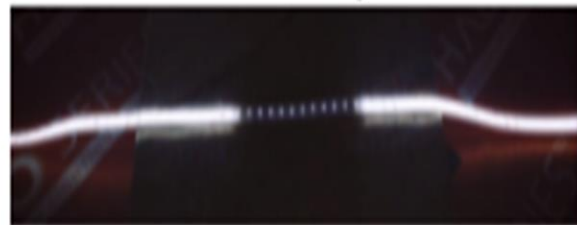
Every design facet of HALO is carefully & meticulously considered in line with its **dynamic & volatile operating environments** & incorporates **highly specialized components** & carefully selected materials working together in synergy to create a reliable lighting platform which delivers **optimal levels of illumination** in **high ambient temperature** and **wet conditions**, with estimated **lifespan of up to 10 years**.



HALO being exposed to heat



HALO automatically dimmed



“Restorable Short Circuit Protection” Automatic shut off in case of short circuit and restoration after the fault is rectified.

“Intelligent Temperature Management Systems ITM” The heat of the lighting system is carefully monitored & automatically dims the lighting should it exceed safe parameters and then restores to normal when temperatures are normalized.

“Intelligent Surge Management System ISM” ensure that only the safe voltages are permitted to energize the LED's.

“Internal Power Management Systems IPM” consists of miniaturized AC/DC voltage converters built directly into the strip with no external components required.

“Specifically manufactured LED's” provide high performance with extended longevity in extreme conditions.

“Constant Current Regulator” ensures long distance operability.



HALO 1 - 230VAC / 110VAC / 36VAC

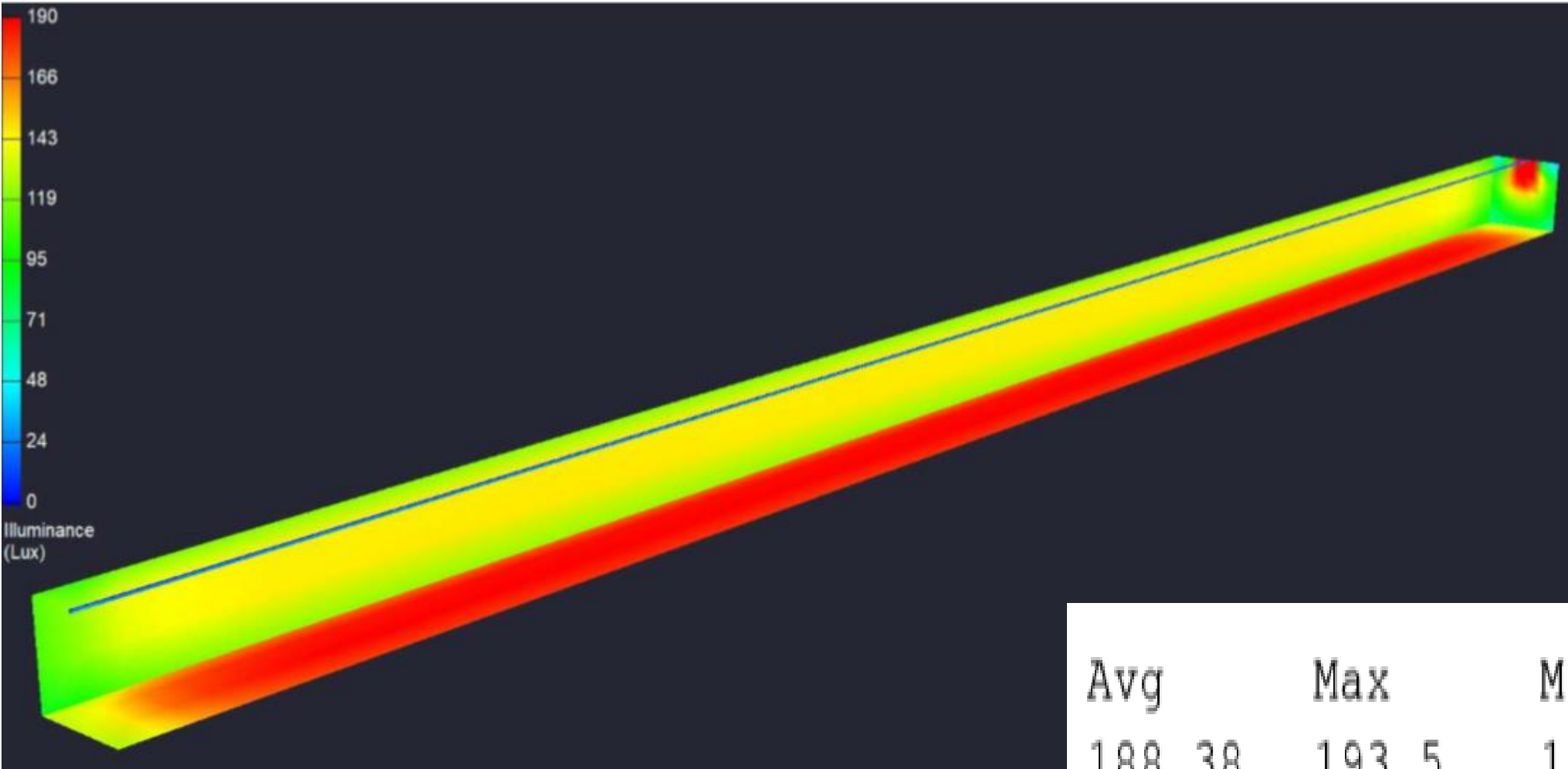
SPECIFICATIONS										
Category	ALPHA	BETA	GAMMA	DELTA	ALPHA	BETA	GAMMA	DELTA	ALPHA	BETA
Description	AC230V constant current				AC110V constant current				AC36V constant current	
LED Make	EPISTAR				EPISTAR				EPISTAR	
LED Type	SMD 2835	SMD 5050	SMD 2835	SMD 2835	SMD 2835	SMD 2835	SMD 5050	SMD 2835	SMD 5050	SMD 2835
LED configuration	140	105	72	70	144	108	66	72	60	60
Range fed from ONE side	100+ Meters				80+ Meters				20+ Meters	
Range fed from BOTH sides	NA				NA				40+ Meters	
Operating temperature	-40 - +45 degrees C				-40 - +45 degrees C				-40 - +45 degrees C	
IP Rating strip	68				68				68	
IP Rating connectors	68				68				68	
Power Consumption per Meter	17 W	12 W	10 W	9 W	17 W	10 W	9 W	8 W	12 W	10 W
Colour Rendering Index CRI	> 80				> 80				> 80	
Colour temperature	6500 Kelvin				6500 Kelvin				6500 Kelvin	
Luminous Efficacy	88 L/W	80 L/W	80 L/W	80 L/W	88 L/W	80 L/W	80 L/W	80 L/W	90 L/W	92 L/W
Lumens P/M	1500-1600	1200-1300	920-1100	700-800	1500-1600	1200-1300	920-1100	700-800	1000-1100	900-1000
Supply voltage VAC	200 ~ 240 VAC				90 ~ 140 VAC				36 VAC	
Light maintenance	15% - 20% Drop in 5 years				15% - 20% Drop in 5 years				15% - 20% Drop in 5 years	
Expected Lifespan	5 - 10 Years				5 - 10 Years				5 - 10 Years	
Warranty Lighting	3 Years				3 Years				3 Years	
Fire Retardant	Yes				Yes				Yes	
Outer covering	Food grade silicone				Food grade silicone				Food grade silicone	
Dimensions	4mm X 14mm				4mm X 14mm				4mm X 14mm	
Connectors	Factory fitted				Factory fitted				Factory fitted	
Tensile strength	+-50 - 60KG				+-50 - 60KG				+-50 - 60KG	
Overvoltage protection	Yes				Yes				Yes	
Overheat protection	Yes				Yes				No	
Dust repellent	Yes				Yes				Yes	
Packing	10 Meter interjoinable segments				10 Meter interjoinable segments				10 Meter interjoinable segments	

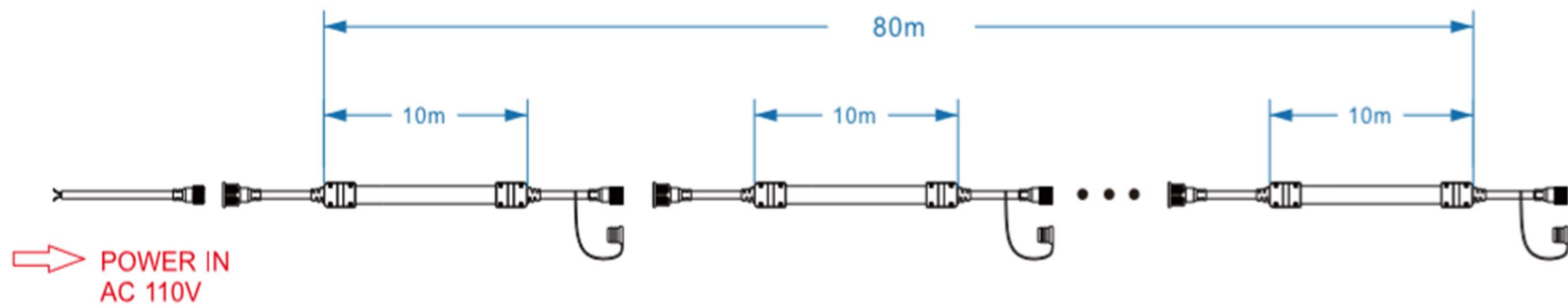
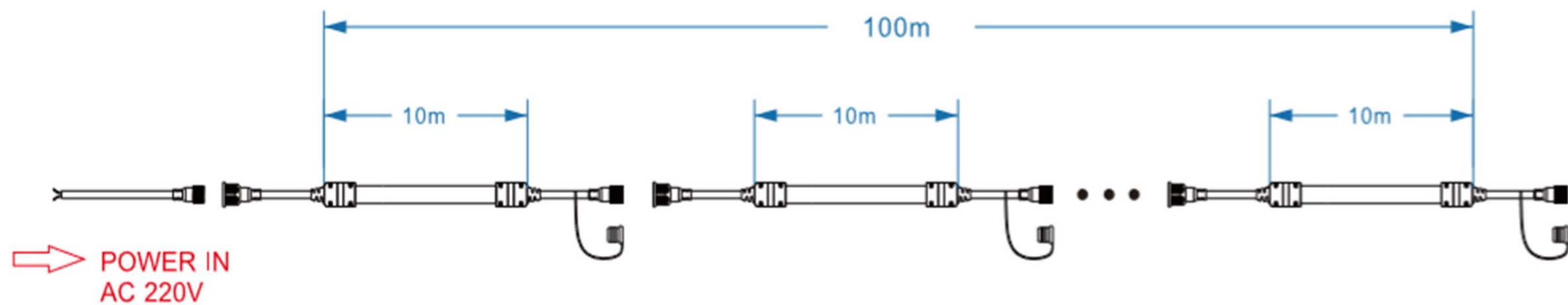
Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF
<div><div></div><div>+</div></div>	100	HALO1-ALPHA-230V	SINGLE	1600	0.800

100x4x4

Alpha Continuous





HALO 2

SPECIFICATIONS							
Model	ALPHA	BETA	GAMMA	DELTA	ALPHA	BETA	DELTA
Description	24VDC constant current				48VDC constant current		
LED Make	EPISTAR	EPISTAR	EPISTAR	EPISTAR	EPISTAR	EPISTAR	EPISTAR
LED configuration	144	120	60	30	128	96	64
Range	One side 20 Meters / Both sides 40 meters				One side 30 Meters / Both sides 60		
Operating temperature	-40 - +45 degrees C				-40 - +45 degrees C		
IP Rating strip	68				68		
IP Rating connectors	68				68		
Power Consumption per Meter	12 W	12 W	10 W	8 W	12 W	9 W	6 W
Colour Rendering Index CRI	> 80				> 80		
Colour temperature	6500 Kelvin				6500 Kelvin		
Luminous Efficacy	88 L/W	80 L/W	80 L/W	80 L/W	104 L/W	104 L/W	104 L/W
Lumens P/M	1500-1600	1200-1300	920-1100	700-800	1500-1600	1200-1300	700-800
Power controller Supply volts VAC	85 ~ 265 VAC				85 ~ 265 VAC		
Light maintenance	15% - 20% Drop in 5 years				15% - 20% Drop in 5 years		
Expected Lifespan	5 - 10 Years				5 - 10 Years		
Warranty Lighting	3 Years				3 Years		
Fire Retardant	Yes				Yes		
Outer covering	Food grade silicone				Food grade silicone		
Dimensions	4mm X 14mm				4mm X 14mm		
Connectors	Factory fitted				Factory fitted		
Tensile strength	+50KG				+50KG		
Overvoltage protection	Yes				Yes		
Overheat protection	Yes				Yes		
Packing	10 Meter interjoinable segments				10 Meter interjoinable segments		

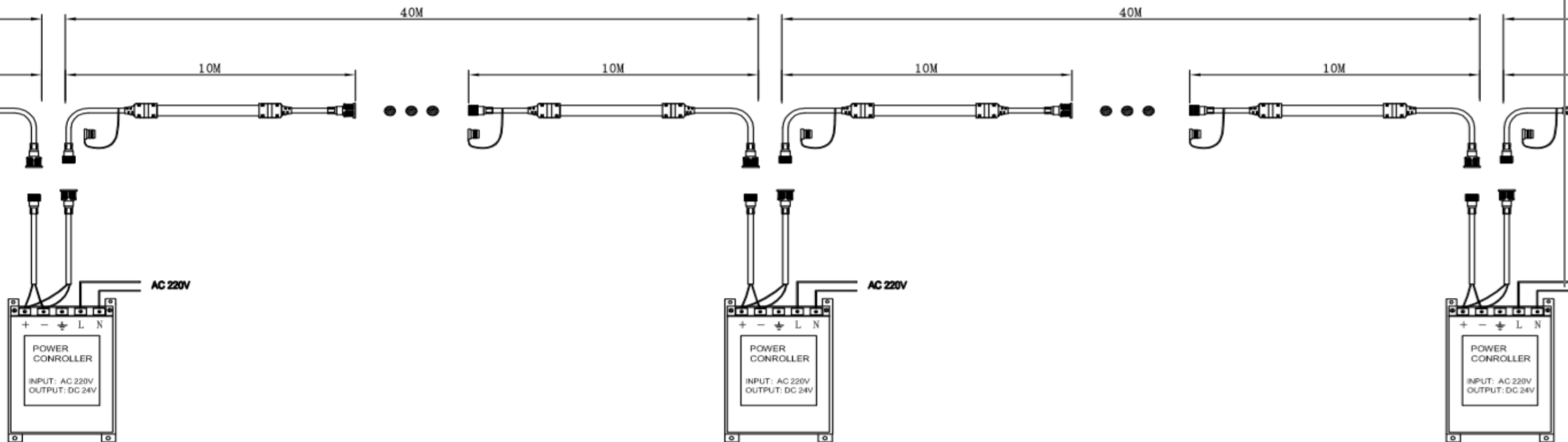
High PF Constant Voltage Waterproof LED Power Supply

CE   IP67



Features:

- Constant Voltage mode LED power supply.
- Universal AC input/full range .
- Withstand 3750VAC surge input for 5 seconds.
- Built-in active PFC function Efficiency>88%@full load.
- Available for customizing output current/voltage.
- Protections: Short Circuit/Over Load/Over Voltage/Over Temperature.
- Cooling by free air convection.
- Fully encapsulated with IP67 level.
- 2~3 times burn-in tests with 100% full load for more than 24 hours.
- Rubycon capacitor, 3 years warranty.



Entry tunnels (BETA)
Haulage tunnels(GAMMA)
Underground workshops (ALPHA/BETA)
Chairlifts (BETA)
Walkways (DELTA)
Stopes (ALPHA)
Winch tunnels (ALPHA)
Junctions (Accessories)



HALO

evolution of illumination

DAISY CHAIN LIGHTING

MOST AFFORDABLE LIGHTING SOLUTION WORLDWIDE – MODULAR - IMPROVE SAFETY – IMPROVE EFFICIENCY – ZERO MAINTENANCE – LIFESPAN UP TO 10 YEARS

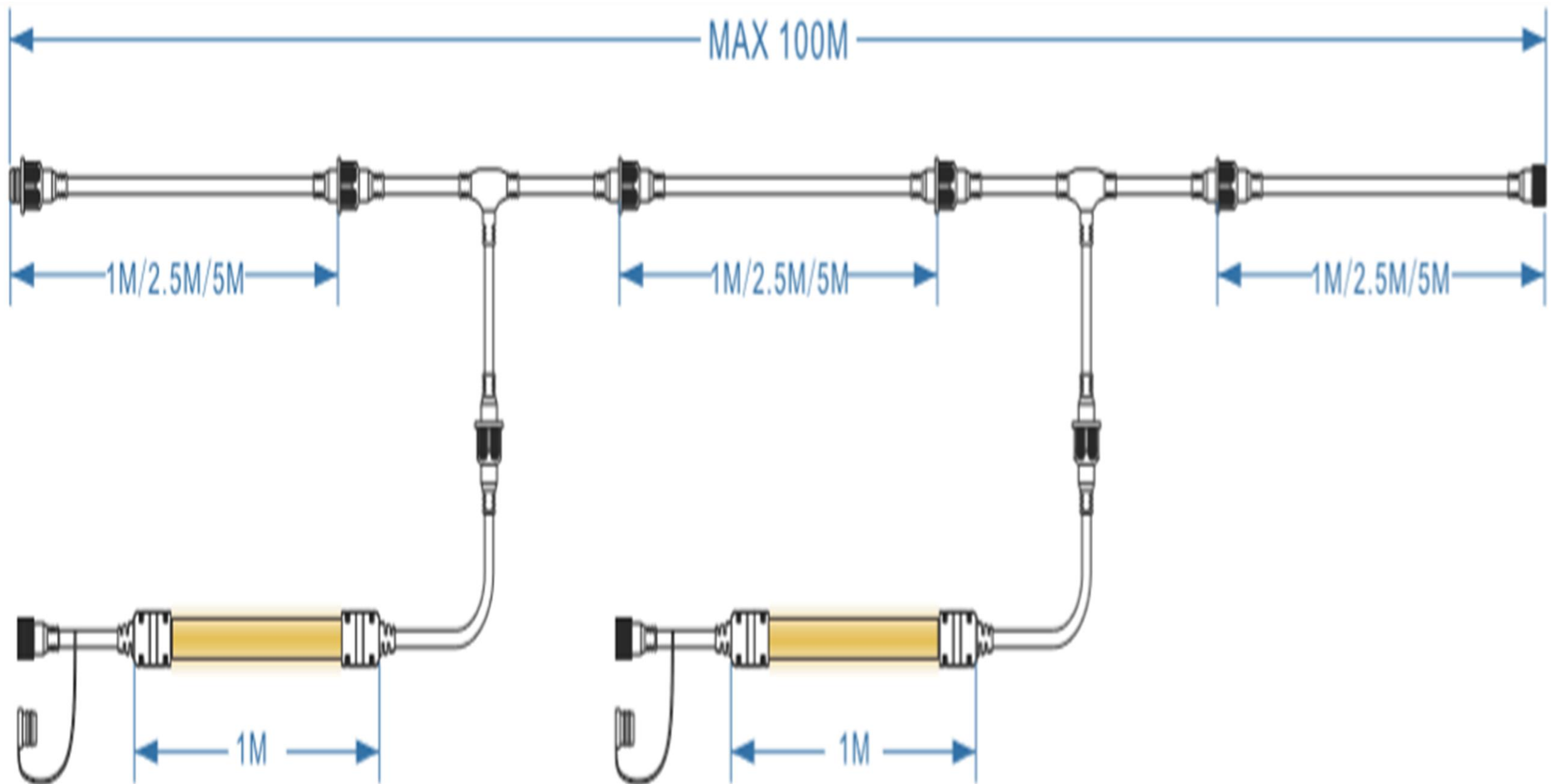
The **HALO Daisy Chain** lighting solution, is by far the **most versatile & affordable mine lighting platform** available worldwide, it exhibits all the outstanding features which made the **HALO LED Strip lighting** so popular such as **quality, reliability, high lumen output and longevity** to name a few but masterfully engineered into a **high quality & very cost-effective solution** that is **easy to install** and requires **no maintenance whatsoever**.

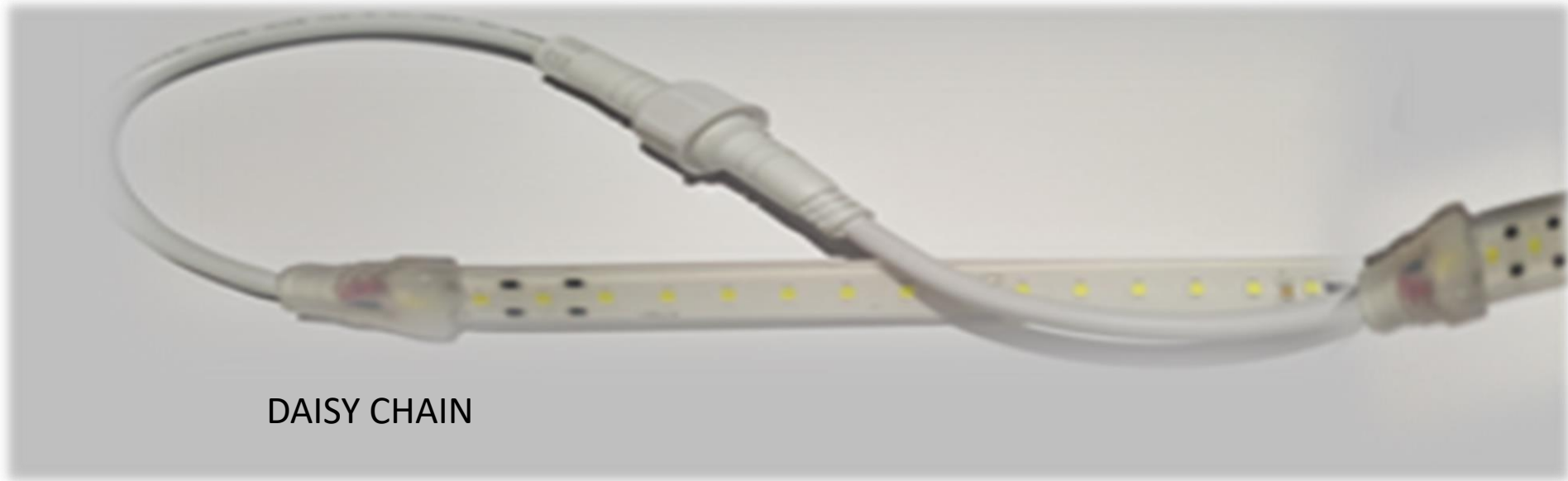
BEFORE



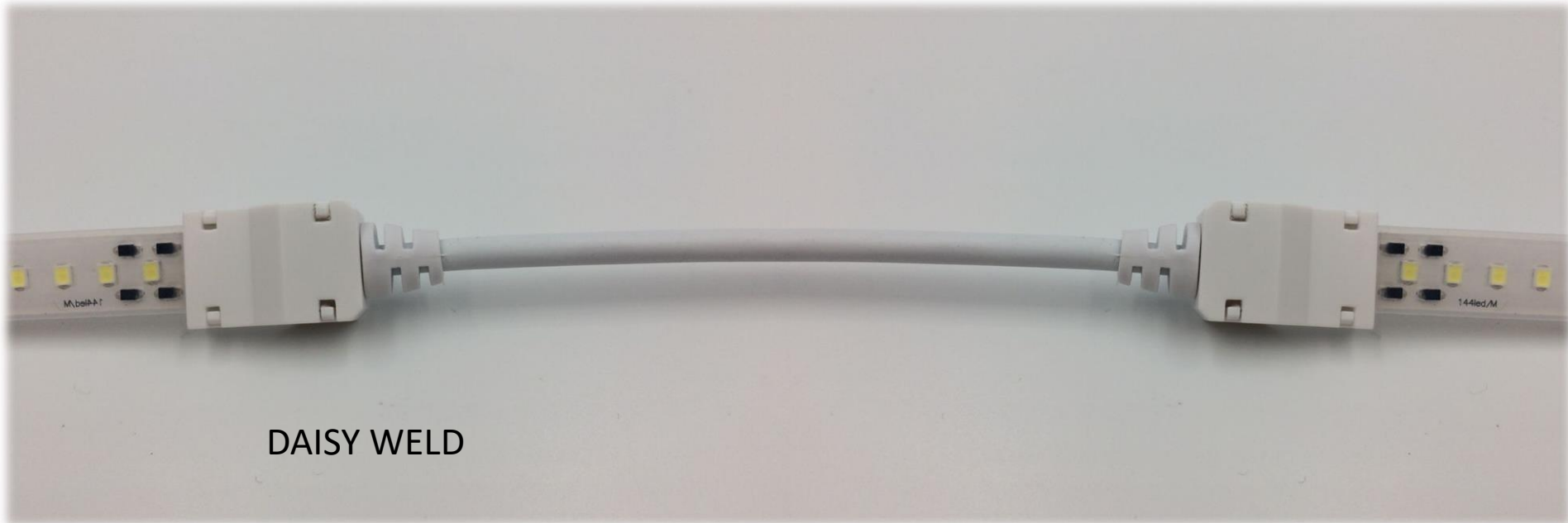
AFTER







DAISY CHAIN



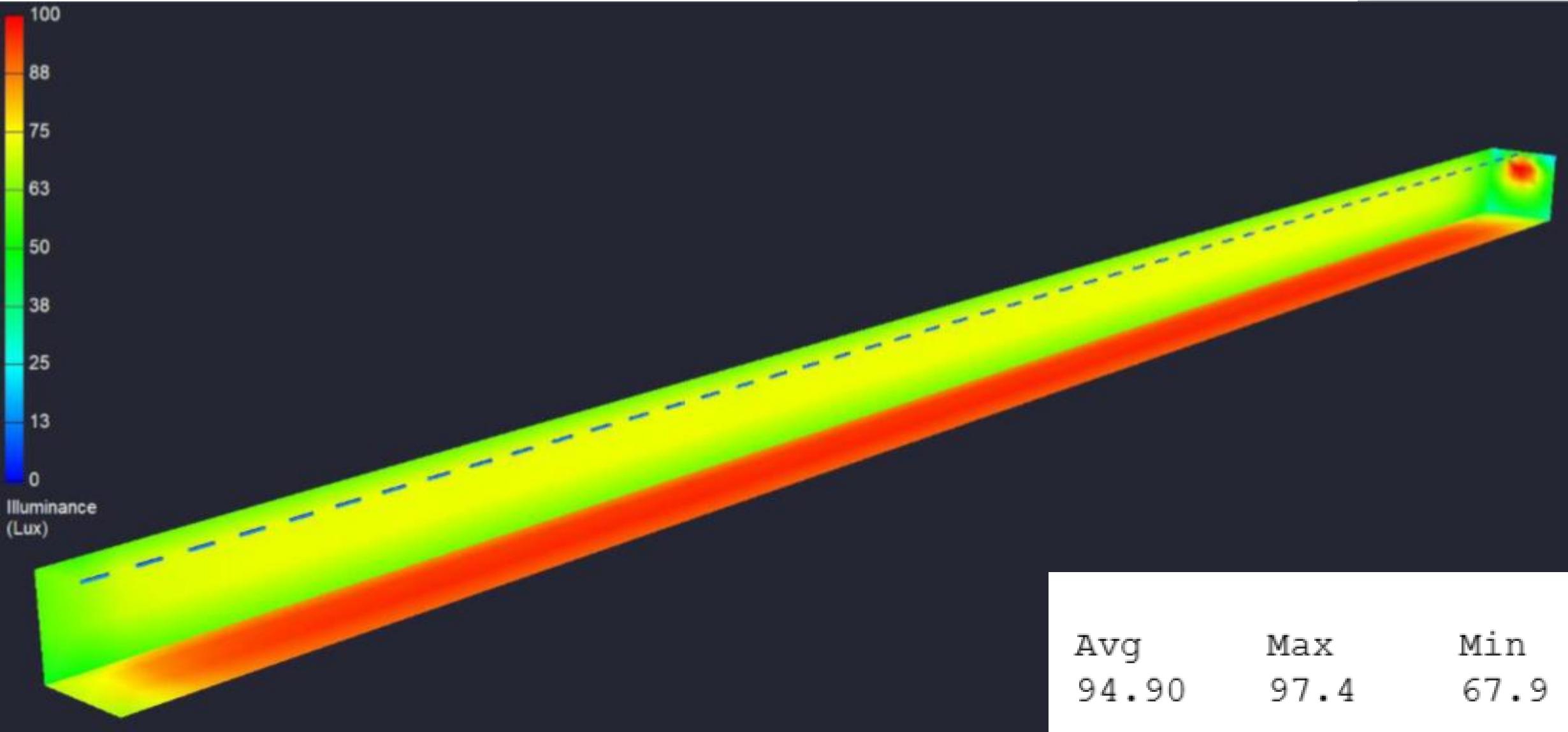
DAISY WELD

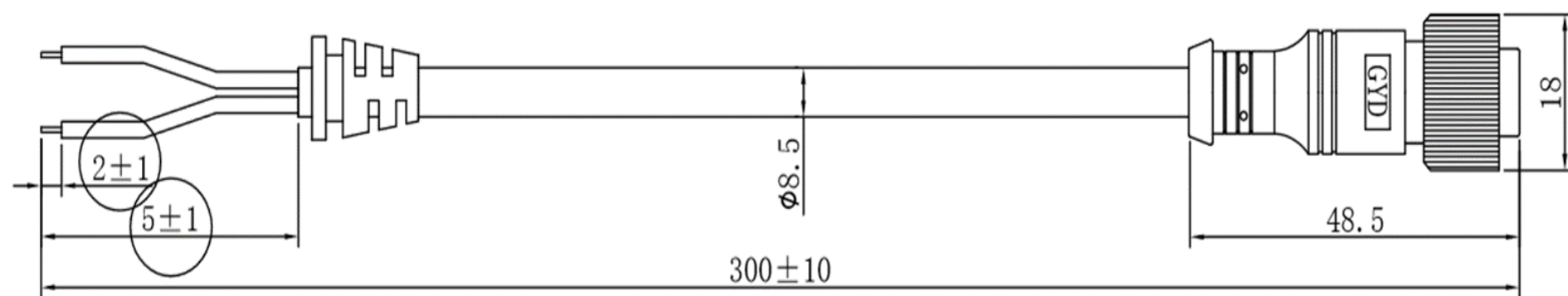
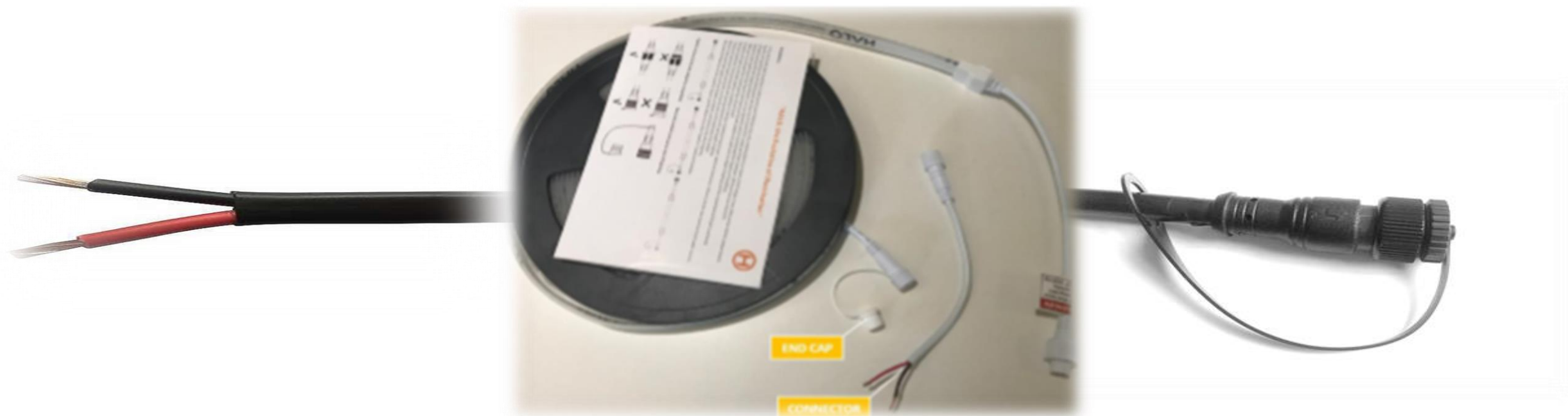
Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF
<div><div></div><div>+</div></div>	50	HALO1-ALPHA-230V	SINGLE	1600	0.800

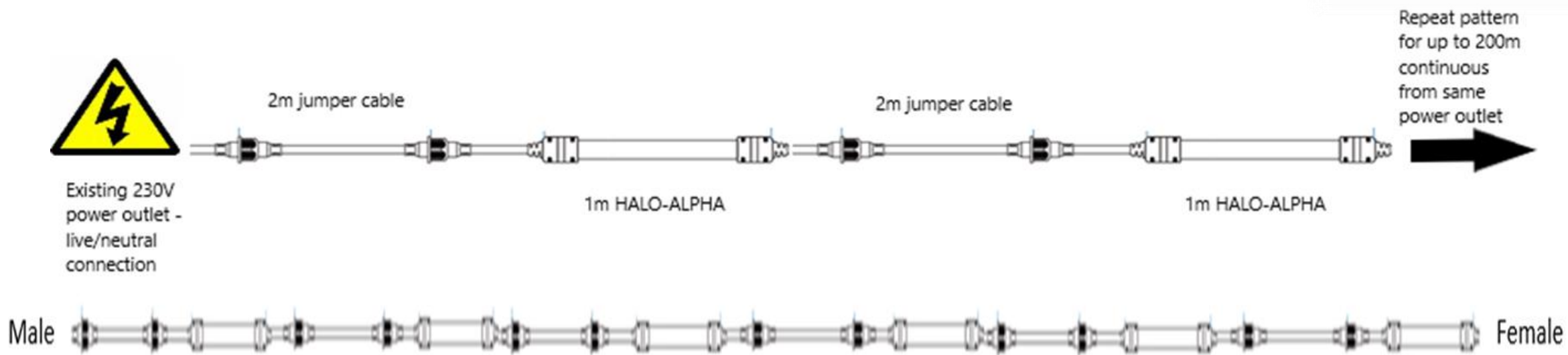
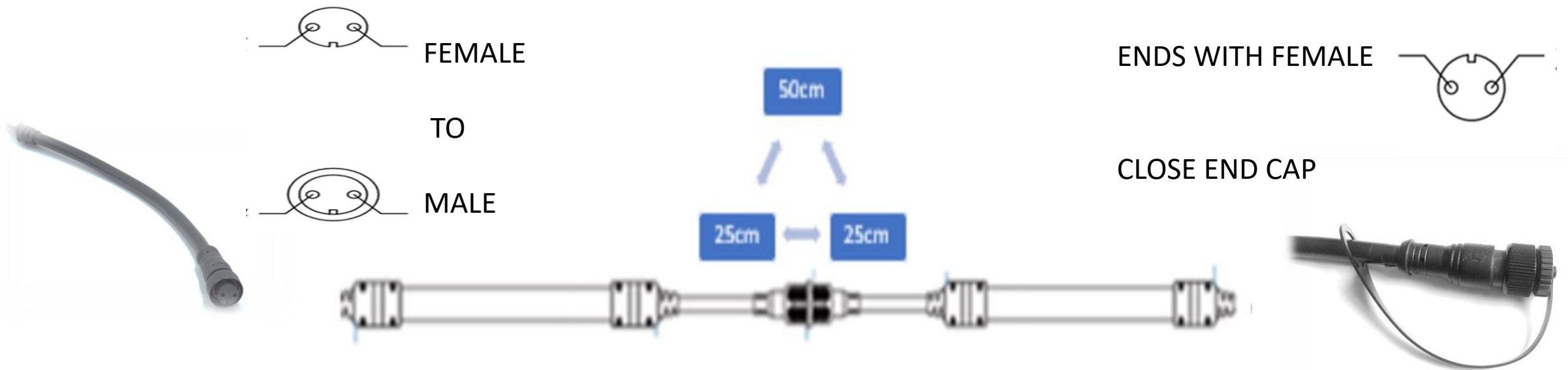
100x4x4

Alpha 1+1

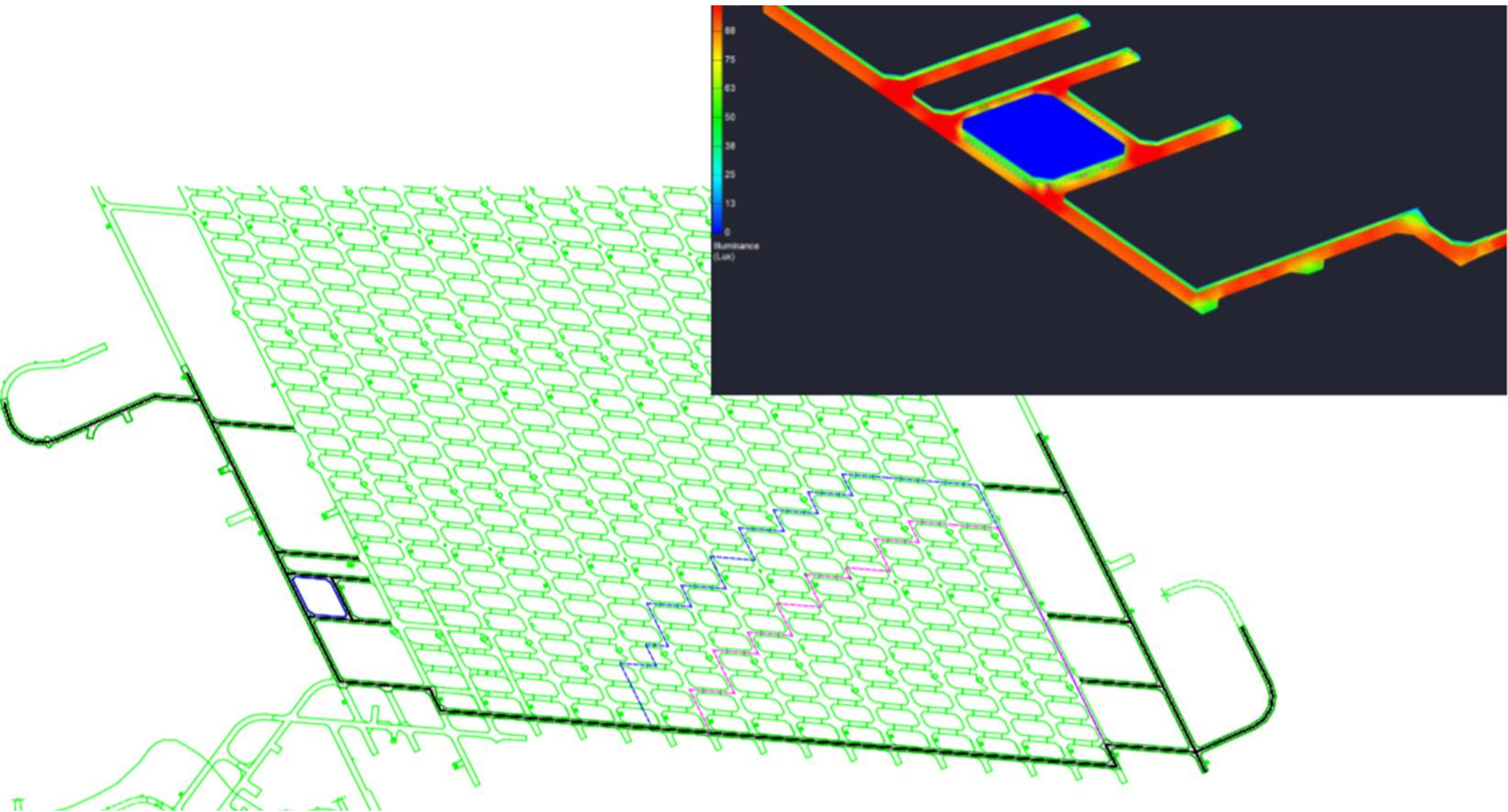


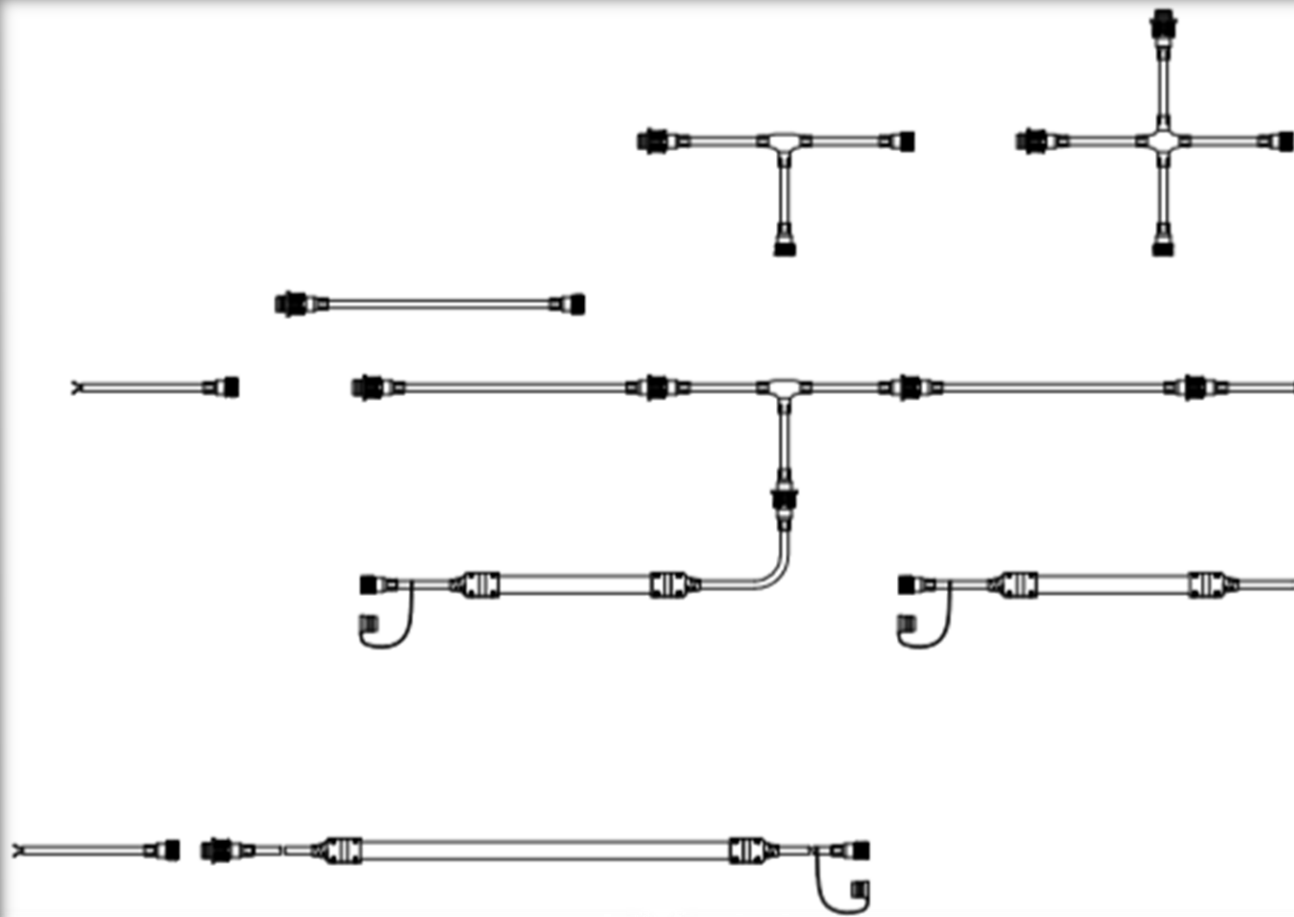


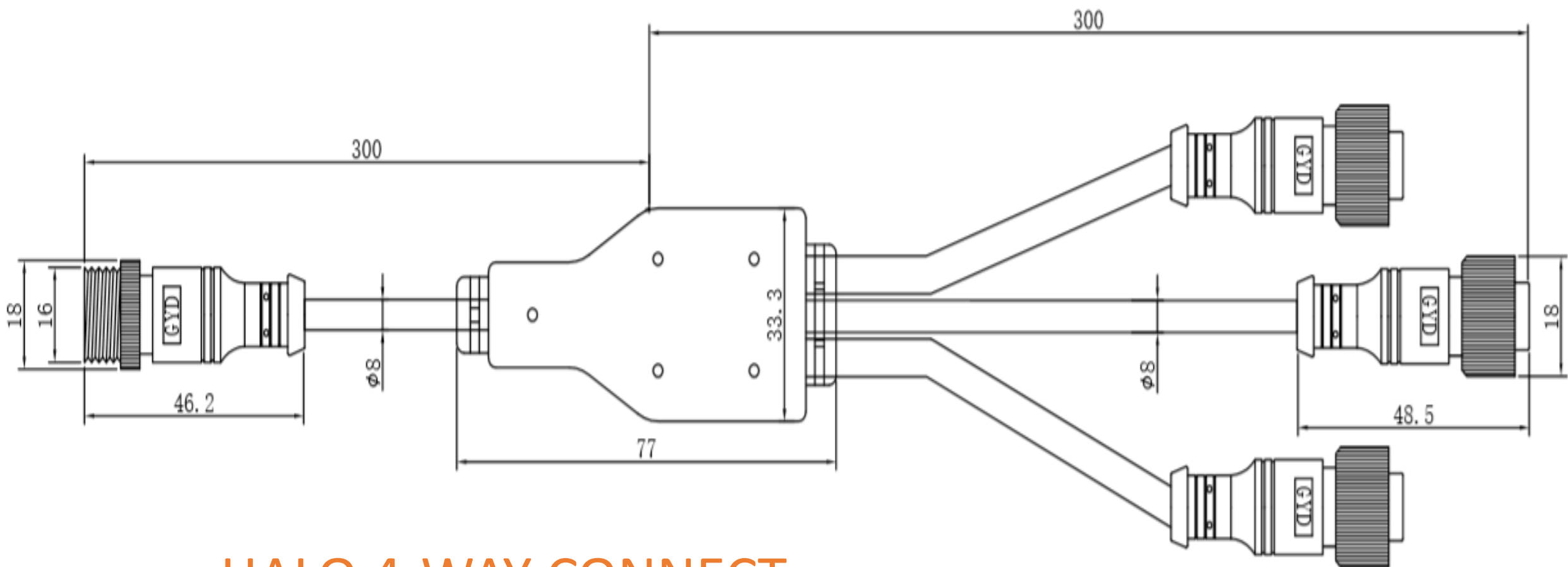
FEMALE TAIL



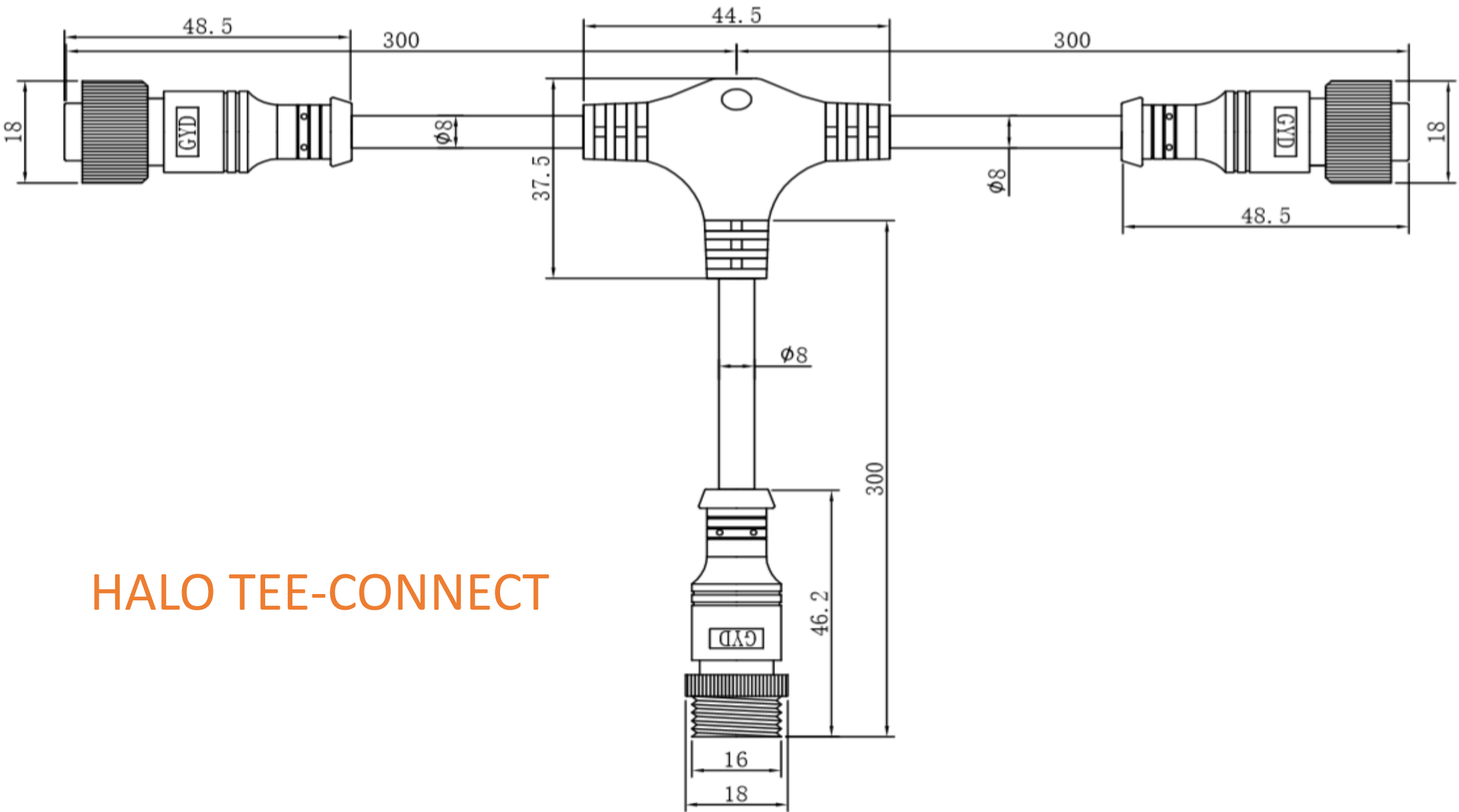
DAISY CHAIN







HALO 4-WAY CONNECT



HALO TEE-CONNECT

Entry tunnels (BETA)
Haulage tunnels(GAMMA)
Underground workshops (ALPHA/BETA)
Chairlifts (BETA)
Walkways (DELTA)
Stopes (ALPHA)
Winch tunnels (ALPHA)
Junctions (Accessories)



HALO

evolution of illumination

GLOBE REPLACEMENT SOLUTION

AFFORDABLE - IMPROVE SAFETY - IMPROVE EFFICIENCY - RETURN ON INVESTMENT 6 MONTHS - ZERO MAINTENANCE - LIFESPAN UP TO 10 YEARS

HALO Solutions have designed & developed our **latest cutting edge solution** as an improved option for globe replacements in underground mining. HALO provides massive improvements in safety and efficiency by enhancing the lighting dramatically in uniformity and overall illumination.

BEFORE – 18W LED



AFTER – HALO BETA 1 METER



AVAILABLE IN VARIOUS COLOURS FOR SIGNALLING



CONVENTIONAL LIGHTING

HALO GLOBE REPLACEMENT



The **low profile of only 4mm** for the **HALO** LED strip lighting keeps **HALO** clear from **dust accumulation** and **destructive traffic** which generally causes significant damage to other lighting systems and is a large contributing factor in the relentless maintenance of underground lighting. These costs are dramatically increased with the implementation of bulky LED globes which are costly to replace when damaged.

The all new **HALO Globe Replacement** is a **quick and easy replacement** to all globe fixtures. It consists of a universal globe adaptor which is inserted into existing light fixtures and then effortlessly connected onto any length and colour of **HALO** LED Strip lighting by means of the factory fitted "plug & play" adaptors.

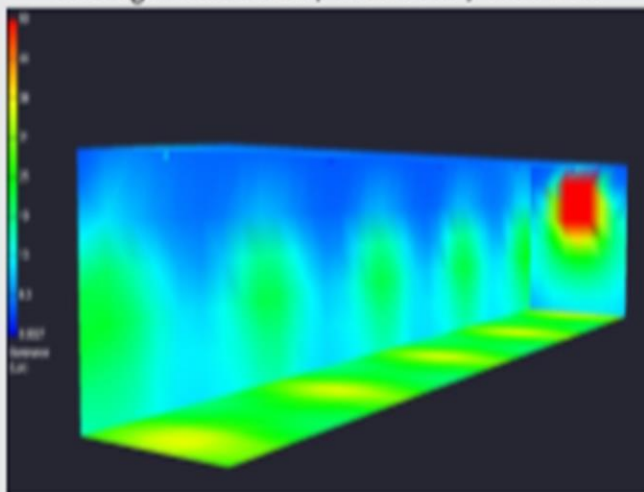


HALO Globe Adaptor connects to HALO LED Strip with "Plug & Play" adaptors.

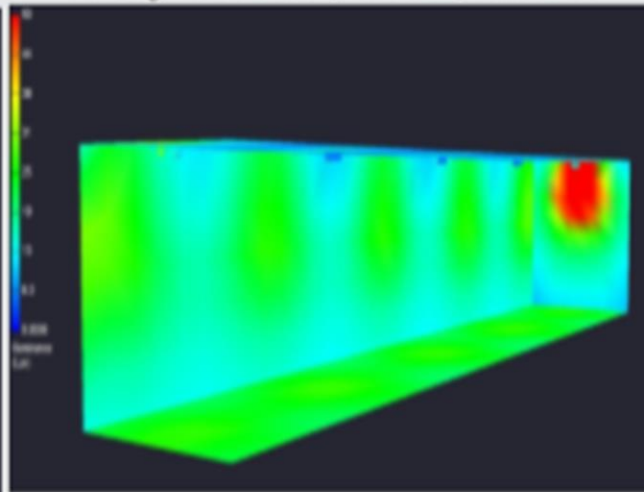
SIMULATIONS IN TUNNEL 3.5 METER X 3.5 METER X 20 METER MEASURED IN LUX

In computer generated simulations and on site installations, it is evident that the **HALO** globe replacement provides a **far superior lighting platform** in **lumen output & light uniformity** and has the ability to provide a **360 degree light distribution** illuminating ceilings and most other areas which conventional lighting cannot do.

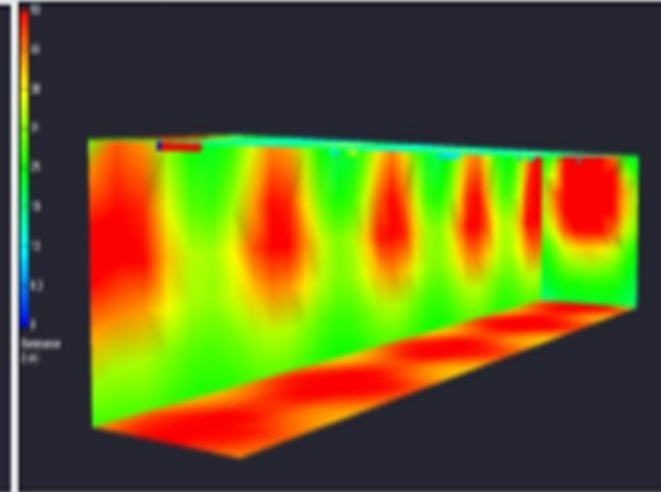
18W LED Globe
Average Max 26.10 / Max 39.5 / Min 18.3

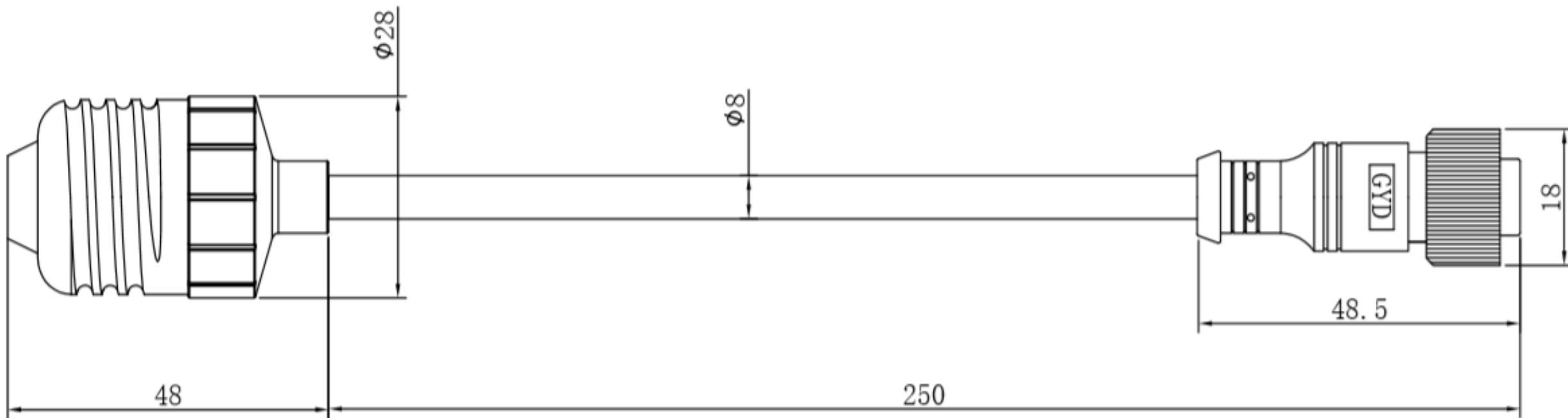


HALO1 – ALPHA – 0.5 meter
Average Max 23.23 / Max 28 / Min 19.3



HALO1 – ALPHA – 1 meter
Average Max 46.33 / Max 55.7 / Min 38.7





E27 CONNECT (AKA GLOBE REPLACEMENT)



18W E27 LAMP COOL WHITE



HALO1-ALPHA-E27 GLOBE REPLACEMENT 500mm



HALO | pulse



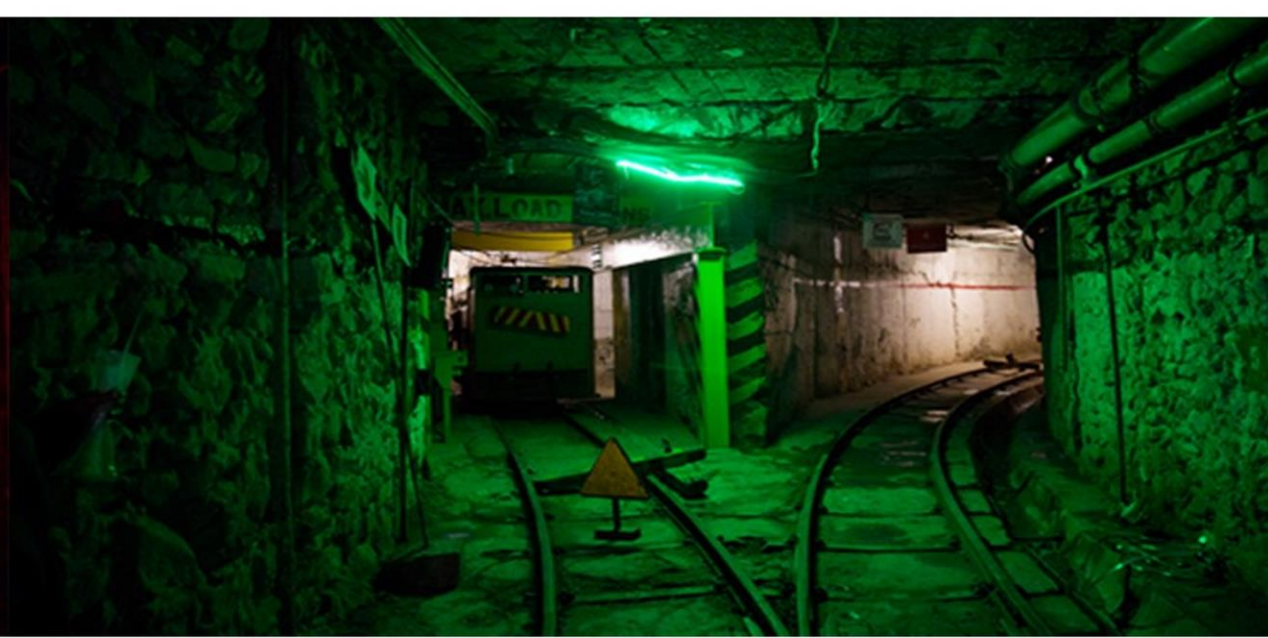
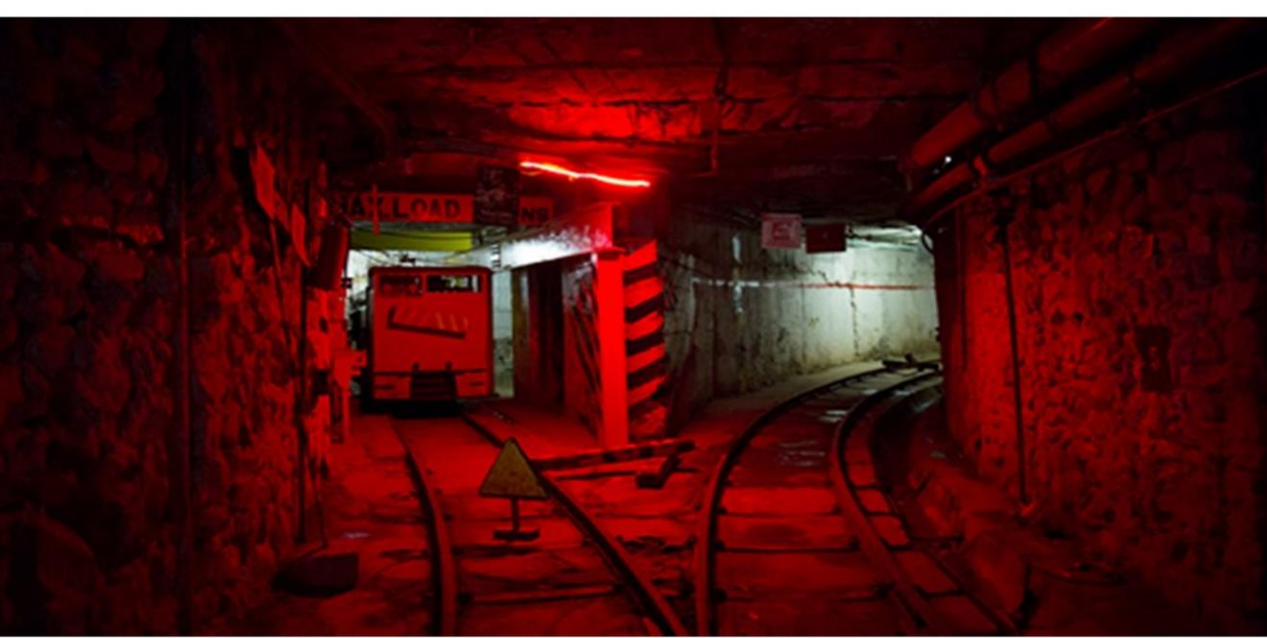
EMERGENCY EVACUATION SYSTEM



The HALO PULSE is a multifunctional lighting indication system which has the ability to provide a range of functions that can easily be changed by means of the remote-control facility.

This pulse function provides a directional flow of LED illumination which is an exceptional solution as an evacuation system that can be used in mines or buildings or any public areas immediately notifying people throughout an installation regardless of size and providing a directional exit bringing calm to an otherwise dangerous and chaotic situation.





SAFETY FIRST!

This pulse function is particularly effective in areas where there are multiple floors or levels & in high ambient noise conditions or accommodating people with hearing impairments.

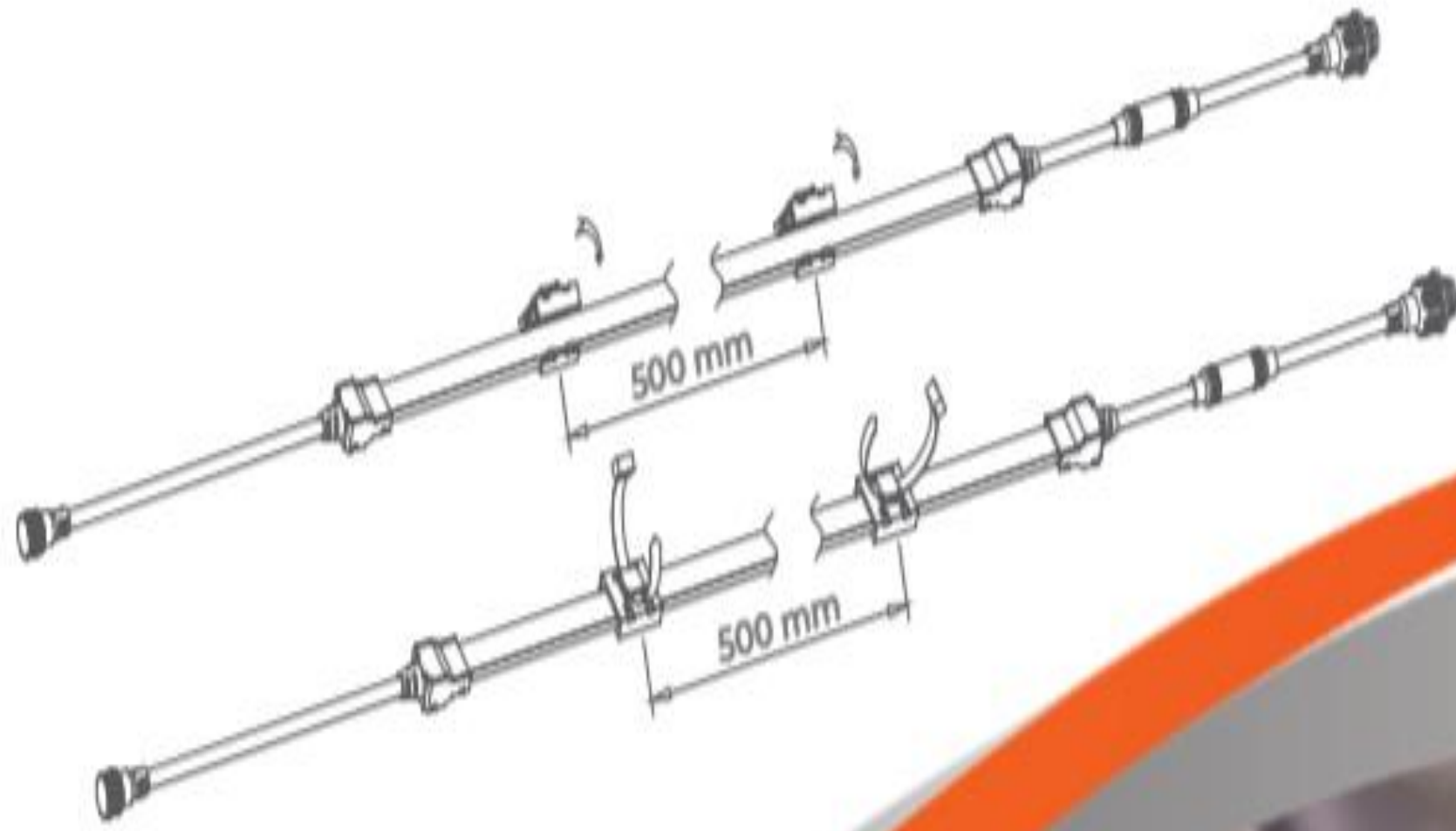






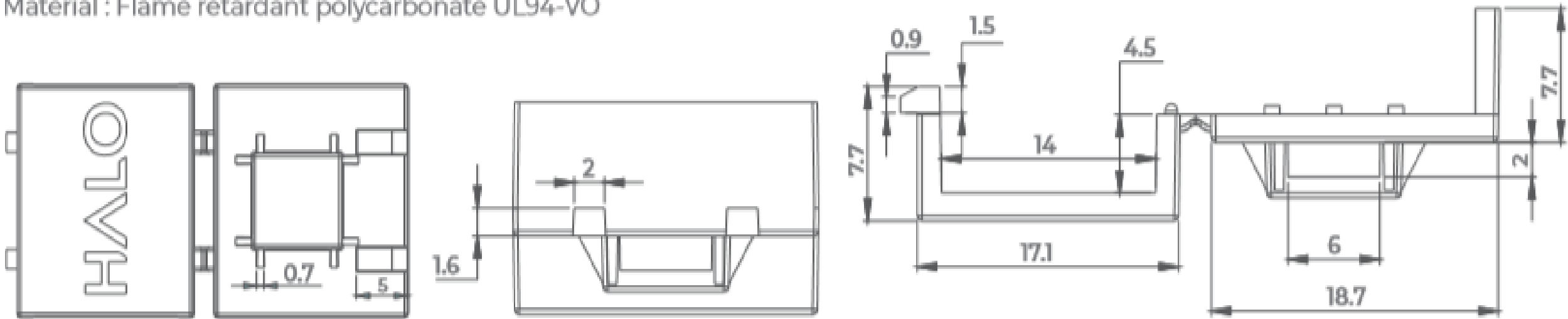
Refuge tunnel
Refuge bay entrance
Face
Danger zones

The clip should be installed apart at **500mm** intervals and once the PVC straps are properly tensioned & the clips securely fastened to the infrastructure, the **HALO LED Lighting** is then placed within the clip and **lightly tensioned** by hand to remove any sagging, thereafter the **topside cover** is pushed down firmly over the **LED lighting** to clip into the underside part, providing a snug and secure fastening for the **HALO LED Lighting** ensuring ideal support.



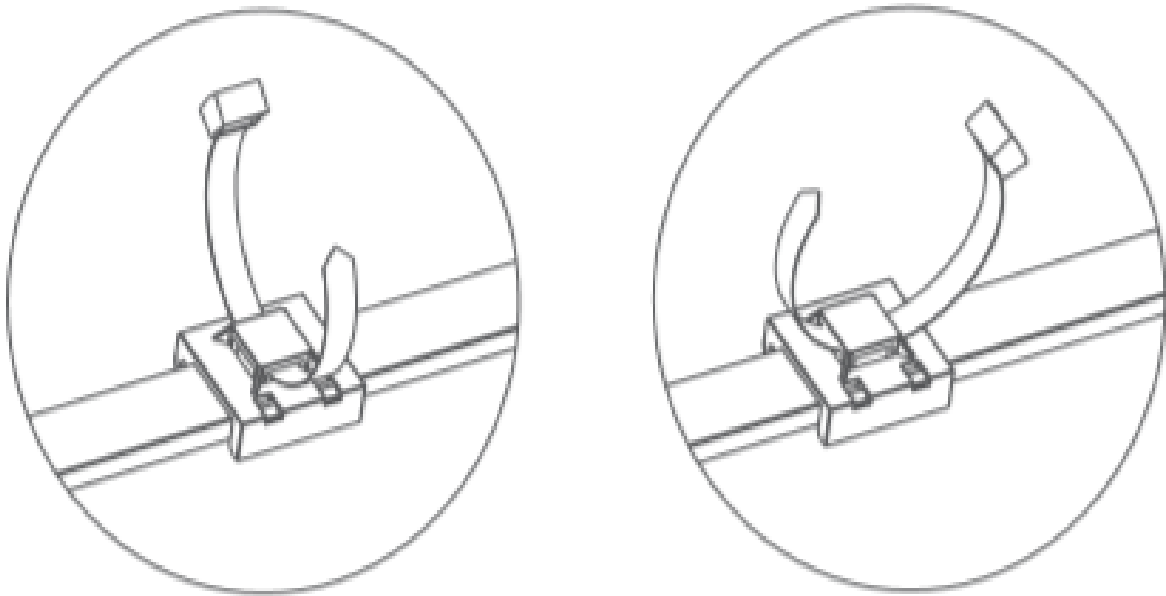
Weight each : 2.5 grams

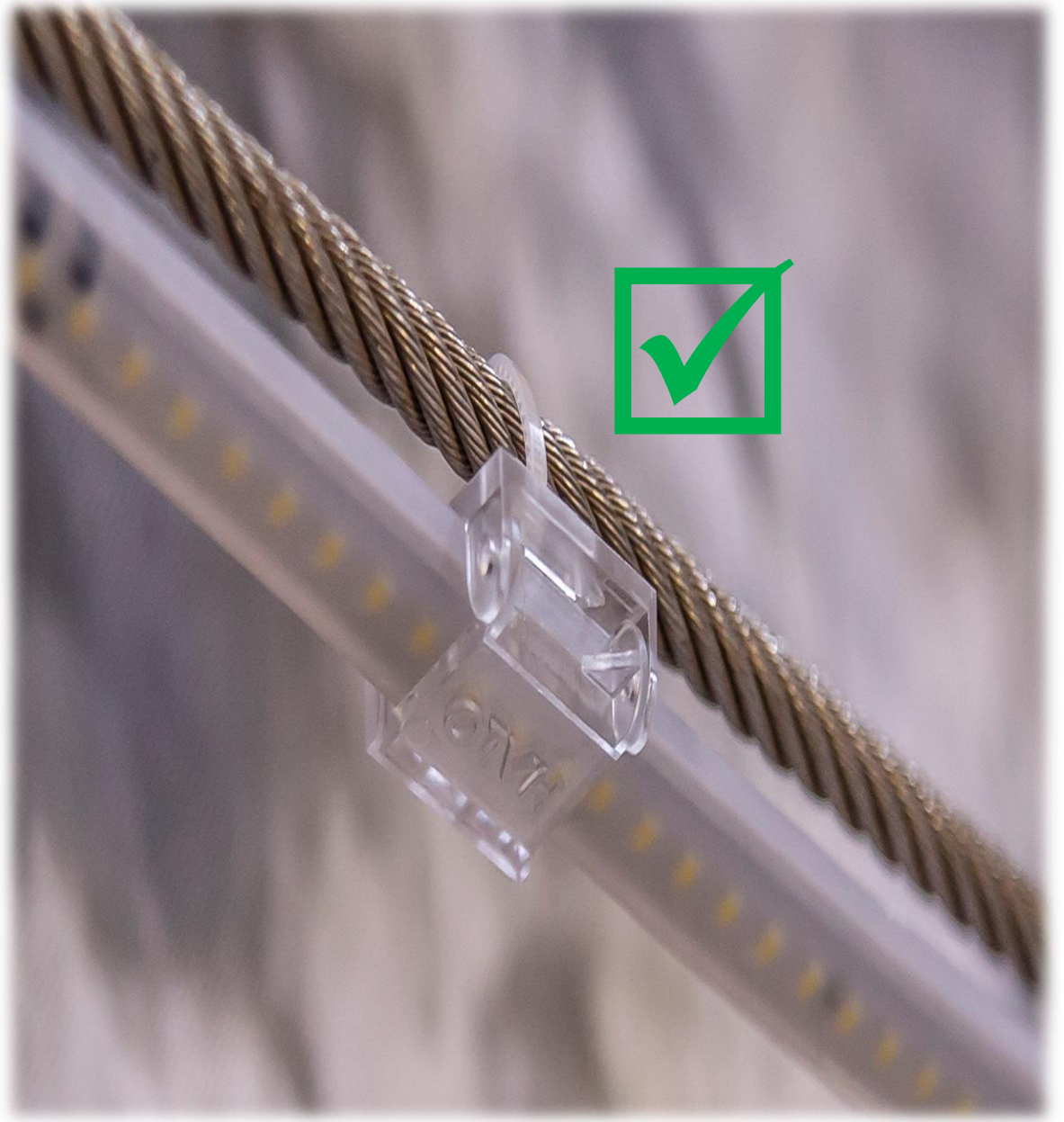
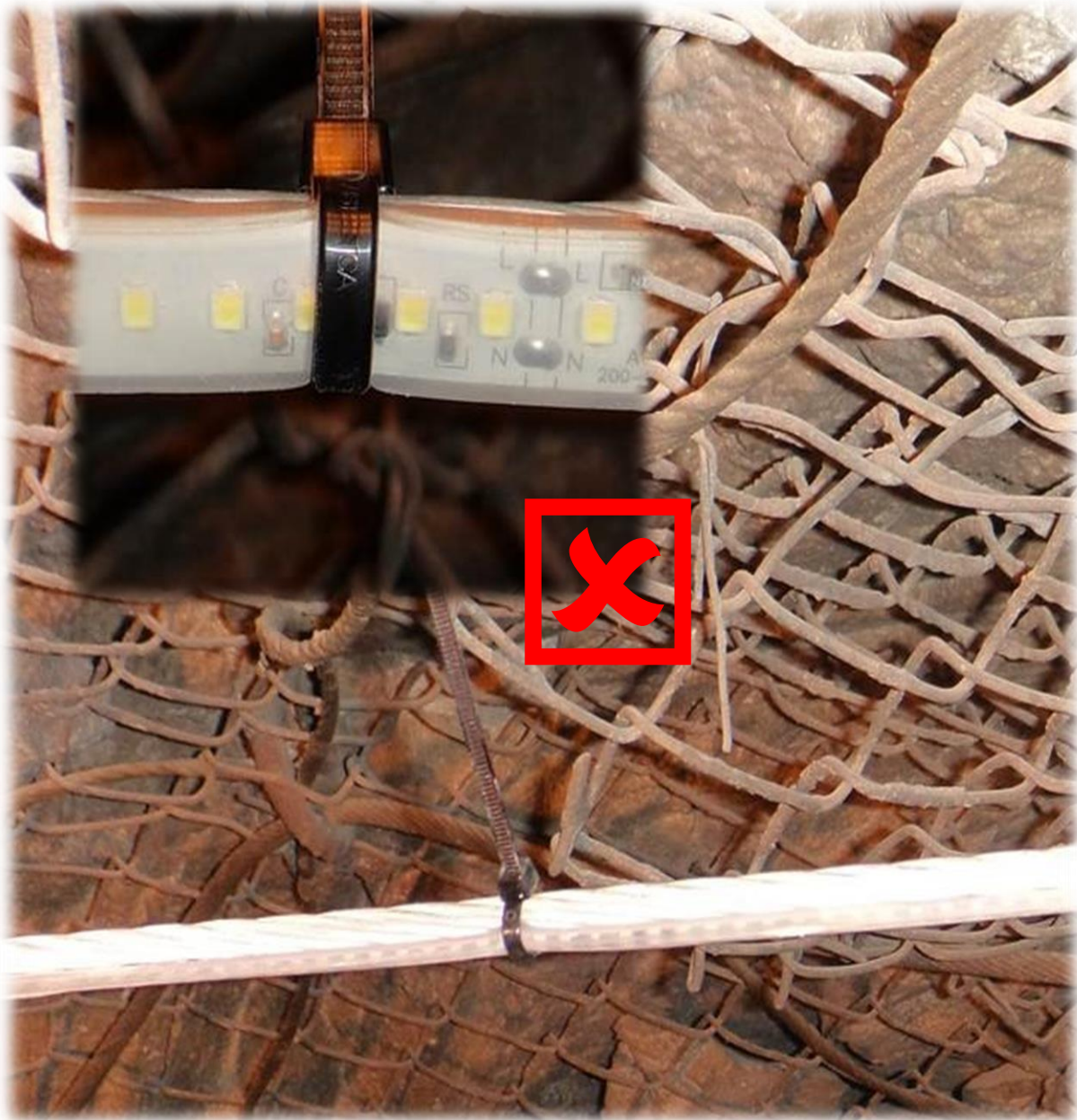
Material : Flame retardant polycarbonate UL94-VO



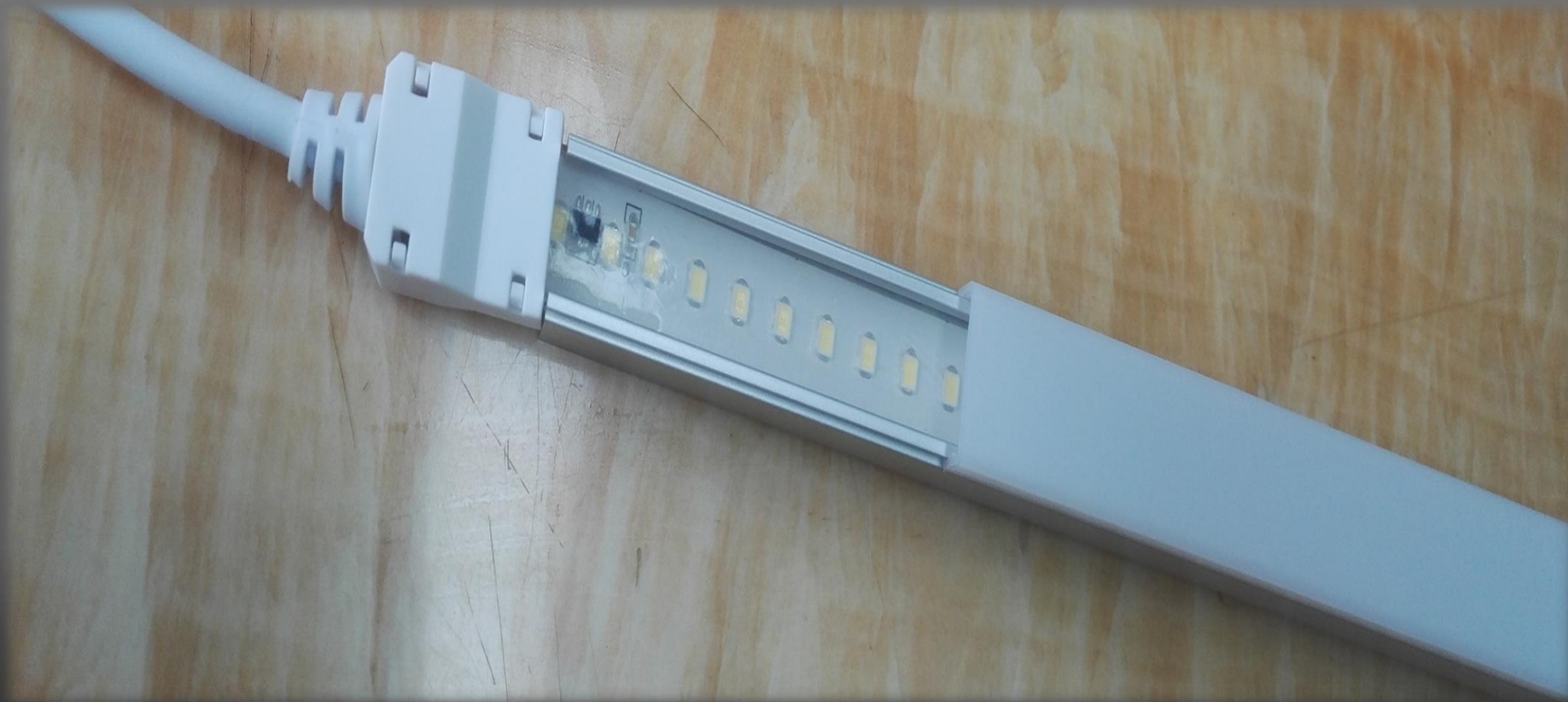
DESIGN & INSTALLATION

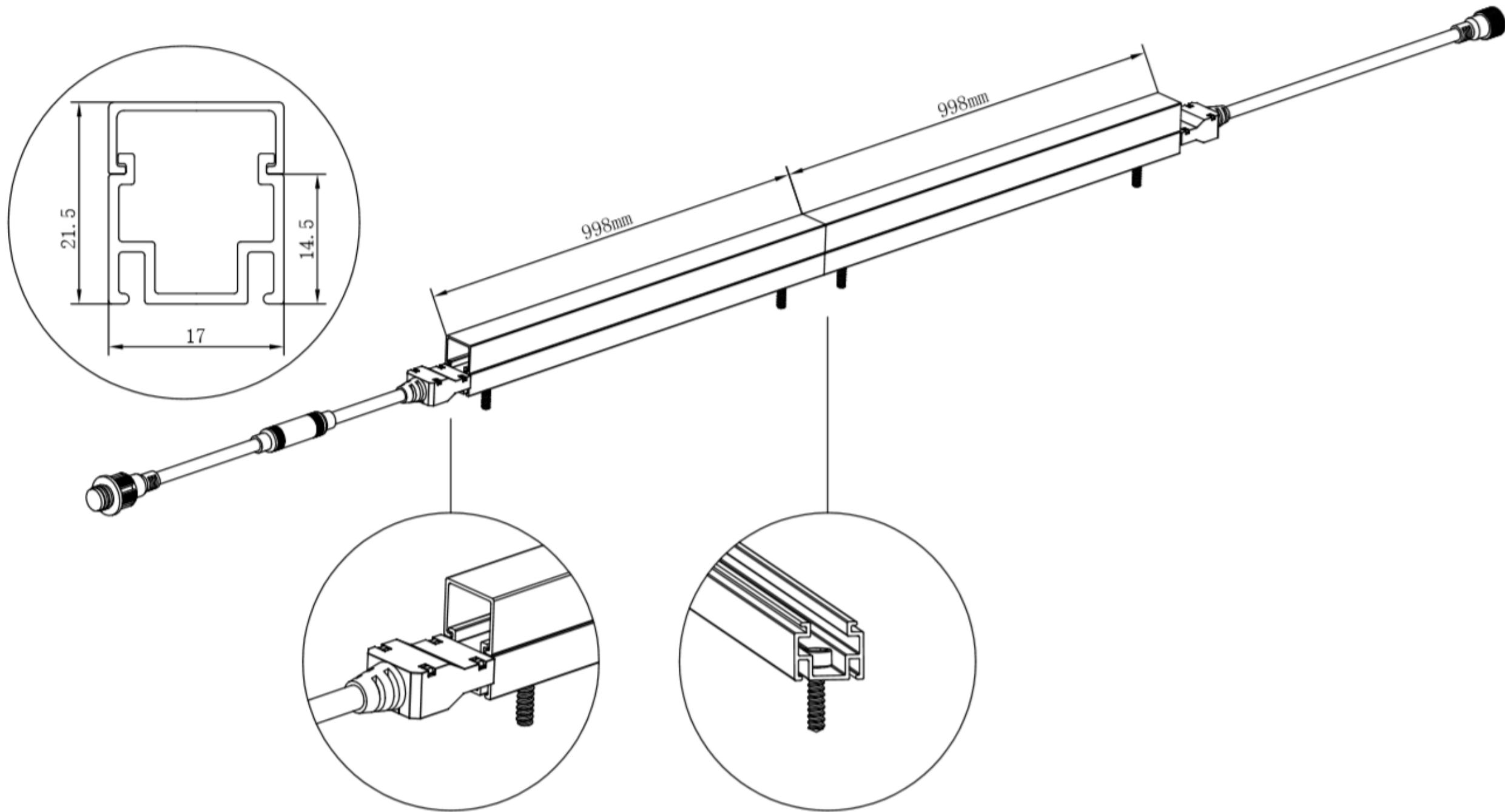
The clip is designed with a **slot opening** on the underside of the clip, through which the **PVC straps** can be inserted and then fastened onto the existing infrastructure; this slot is designed with **4 entrance and exit windows** which allows the clip to be fitted in such a way as to allow a **vertical** or **horizontal** HALO installation. The PVC straps should then be tied to any **existing Infrastructure** and held firmly in place.



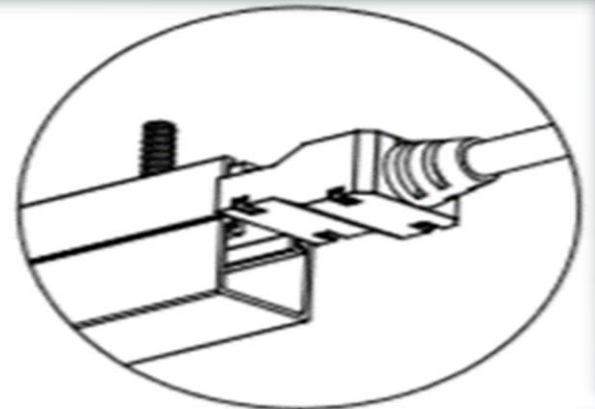
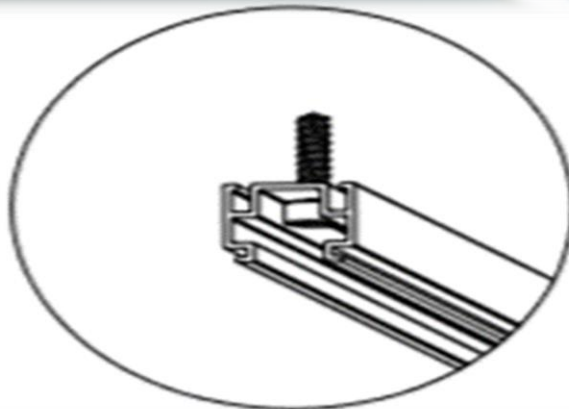


HALO | aluminium channel





Walkways
Office buildings
Domestic
Warehouses
Storage facilities
Change houses
Bathrooms



HALO | warranty

3 year “DOUBLE for your TROUBLE” warranty

On proven factory faults

If 1000 meters fail, we replace 2000 meters

T&C's apply

THANK YOU

HALO

"evolution of illumination"


LORRAINE DE BRUYN


GLOBAL MARKETING & SALES



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 +27(0) 10 591 1194

 www.halosolutions.co.za

"Arise, shine, for your light has come, and the glory of the Lord rises upon you."
Isaiah 60:1