APPLICATION GUIDE

PYTHN

FLUENCE

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a signify brand

Introduction

PYTHN is a cutting-edge under-canopy lighting solution engineered for precision cannabis cultivation. Designed to deliver focused illumination to the shaded areas beneath the canopy, PYTHN ensures even light distribution that supports vigorous flower development and overall plant health.

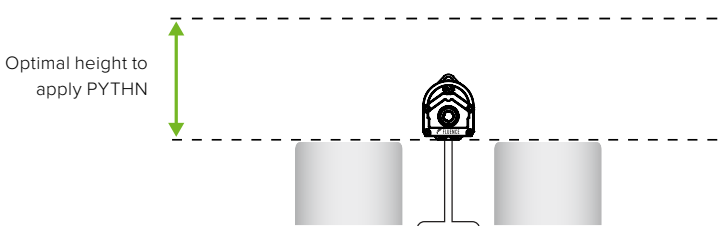
With energy-efficient LED technology and a fully modular design, PYTHN scales effortlessly—making it suitable for cultivation facilities of any size. By reducing the need for manual defoliation and enhancing the growth potential of lower-canopy buds, PYTHN helps growers achieve higher yields with a greater proportion of premium-grade flowers.

Each PYTHN module includes a plug-and-play connector, power cable, and telescopic stands for quick and simple installation. Multiple modules can be linked using a single power connection, minimizing setup time, material requirements, and installation costs.

PYTHN modules can be deployed as standalone fixtures or arranged in a continuous line by daisy chaining desired number of fixtures (see max nr of interconnected modules). The upward-directed light distribution pattern ensures optimal leaf illumination, promoting improved plant quality and more uniform growth throughout the canopy.

The PYTHN module comes in 4 versions:

- Broad R6 (LV 120-277 VAC)
- Broad R6 (EHV 347-400 VAC)
- Broad R8 (LV 120-277 VAC)
- Broad R8 (EHV 347-400 VAC)



Product information

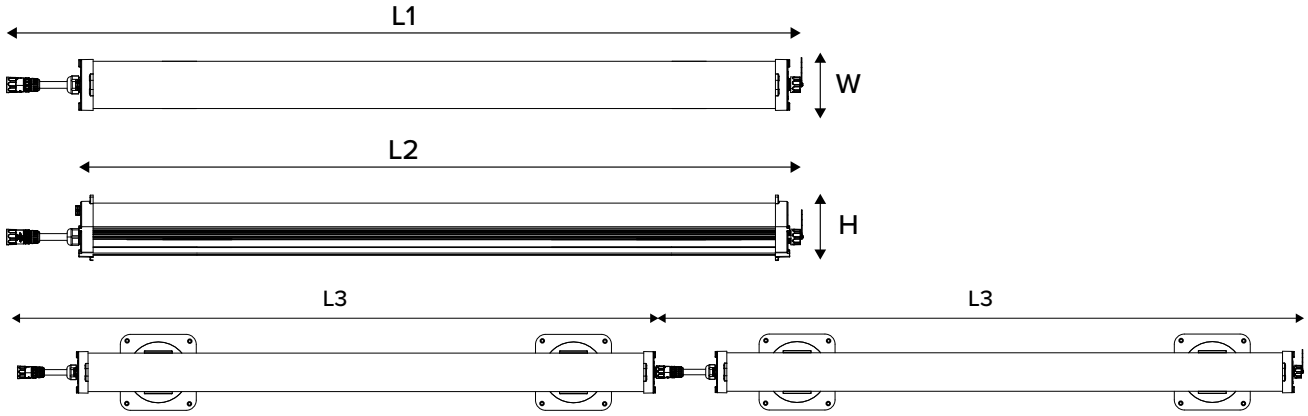
Technical specifications

Product description	Voltage	Nominal current @ 120V	Nominal current @ 208V	Nominal current @ 230V	Nominal current @ 240V	Nominal current @ 277V	Nominal current @ 347V	Nominal current @ 400V	Power	Photon flux	Typical efficacy
	(V~)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(W)	(µmol/s)	(µmol/J)
PYTHN module											
PYTHN,BP6,120-277V,BP	120-277V	1.05	0.61	0.55	0.53	0.46			120	360	3
PYTHN,BP6,347-400V,BP	347-400V						0.36	0.32	120	360	3
PYTHN,BP8,120-277V,BP	120-277V	0.92	0.53	0.48	0.46	0.4			105	360	3.4
PYTHN,BP8,347-400V,BP	347-400V						0.32	0.28	105	360	3.4

Legend:
BP6 = Broad R6
BP8 = Broad R8

Technical details	Parameter	Value
Frequency	f	50-60 Hz
Power factor	PF	> 0.9 at 100% load for EHV 347-400 VAC products > 0.95 at 100% load for LV 120-277 VAC products
Inrush current	I inrush	37A at 120V and T50 300us for PT-BP6-LV PT-BP8-LV 42A at 208V and T50 300us for PT-BP6-LV PT-BP8-LV 52A at 230V and T50 300us for PT-BP6-LV PT-BP8-LV 55A at 277V and T50 300us for PT-BP6-LV PT-BP8-LV 40A at 347V and T50 300us for PT-BP6-EHV PT-BP8-EHV 34A at 400V and T50 300us for PT-BP6-EHV PT-BP8-EHV
Residual current	RC	0.27mA at 120V for PT-BP6-LV PT-BP8-LV 0.32mA at 208V for PT-BP6-LV PT-BP8-LV 0.41mA at 230V for PT-BP6-LV PT-BP8-LV 0.38mA at 240V for PT-BP6-LV PT-BP8-LV 0.6mA at 277V for PT-BP6-LV PT-BP8-LV 0.59mA at 347V for PT-BP6-EHV PT-BP8-EHV 0.52mA at 400V for PT-BP6-EHV PT-BP8-EHV
Throughput current	I throughput	≤ 15 A (local regulations to be considered)
Through wiring	AWG / cross section	15 / 1.65 mm²
Total harmonic distortion	THD	< 10%
Protection against electric shock (IEC 60598-1)		Class I / ⏚

Dimensions



Product name	Product dimensions					Product weight
	L1	L2	L3	W1	H1	
PYTHN	128 cm	118 cm	126,5 cm	8,2 cm	10,5 cm	3,4 kg
	50.4 in	46 in	49.8 in	3.2 in	4.1 in	7.5 lbs

Environmental ratings

Description	Parameter	Value	
Ambient storage temperature	$T_{storage}$	-20 - 40 °C	-4 - 104 °F
Ambient operating temperature	$T_{operating}$	0 - 35 °C	40 - 95 °F
Relative humidity, non-condensing @ storage, operation and application	RH	0 - 90 %	
Product lifetime @$T_{ambient}$ = 35 °C / 95 °F	Q90	36000 hrs	
Ingress protection rating		IP66	
UL/CSA rating		wet locations	

Important

Influencing factors of light output
As ambient temperature increases above operating temperature range, both the photon flux and the photon flux maintenance will decrease.
Pollution or damage of optics will also impact the light output.

Thermal protection
The PYTHN module has built-in thermal protection. If the temperature of the driver exceeds protection temperature, the module will dim down. After cooling down, the driver will provide back the full power.

Photobiological safety of lamps and lamp systems (IEC/EN 62471).
This International Standard describes the photobiological safety of lamps and lamp systems including luminaires.
The rating of the PYTHN is according with standard (Risk Group 1). Mind a safe application, or wear protection glasses at high intensity light.

Light source not replaceable
If the product becomes damaged, or the light source or control gear reaches reaches its end-of-life, the whole fixture needs to be replaced.
The external flexible cable or cord of this luminaire cannot be replaced; if the module or cord is damaged, the luminaire shall be disposed as electronic waste.

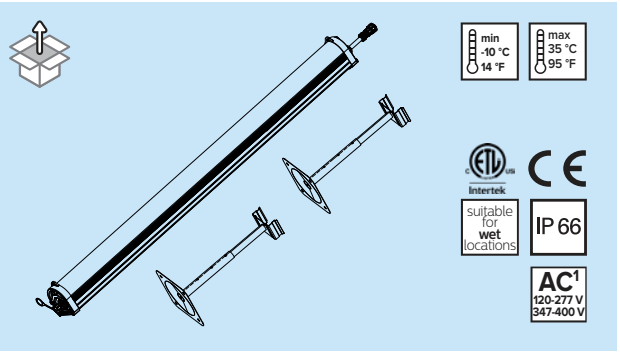
For indoor use only
The PYTHN modules are not suited to outdoor use.

Mechanical Installation

Important

Turn off and disconnect the power before installation. Installation must be performed by a qualified electrician in accordance with all national and local electrical and construction codes and regulations.

- **DO NOT** attempt to install or use until you have read and understood the installation instructions of this product contained in the Quick Installation Guide, this Application Guide and safety labels.
- Make sure that power cables are routed in a manner that will prevent accidental damage.
- Make sure all junction boxes are mounted to a rigid structure in accordance to local electrical code.
- Use wet-rated (IP66) junction boxes which are also suitable for the power cables used in the application.
- Use a strain-relief or power cable grip if needed.
- Use a cord grip suitable for use with three conductor wire and the type of cord suitable for the trade size of the junction box provided by others, if needed.
- **DO NOT** connect to live power until installation is complete.
- **DO NOT** modify or alter the product; doing so will void the warranty.



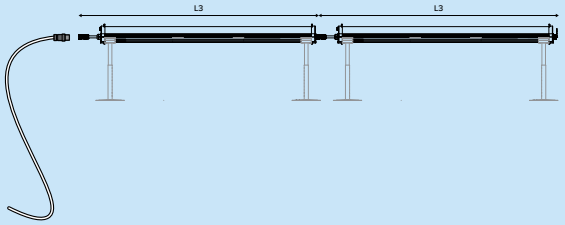
Unpacking

For the installation of PYTHN you need the following Fluence items:

- PYTHN module(s)
- PYTHN power cable(s)
- PYTHN Telescopic Stands

Depending on the application, you may need additional modules and/or accessories.

1 The voltage range is specific for each product and specifically mentioned on the product label.



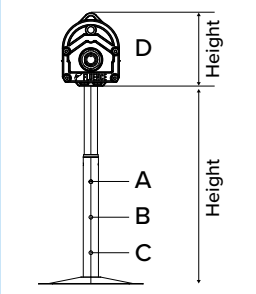
Preparation

When installing the PYTHN, two telescopic stands are required per PYTHN module, mounted on the surface/table where the plants are growing. The surface/table must be able to support the weight of the complete PYTHN installation.
A PYTHN power cable must be used at the start of each PYTHN run line.

Additional information:

Effect on length in case of a central power supply: **Page 8**

Max nr of interconnected modules: **Page 11** - Electrical installation



A = 12 in (304,8 mm)

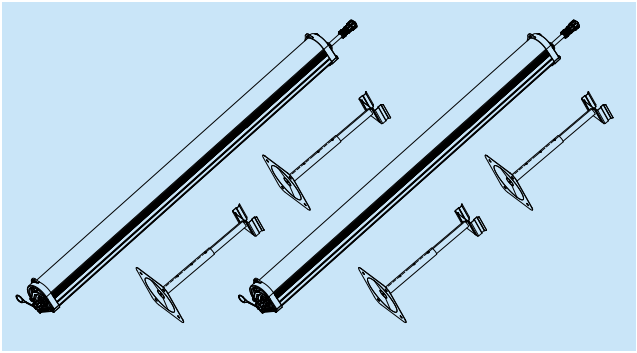
B = 10 in (254 mm)

C = 8 in (203,2 mm)

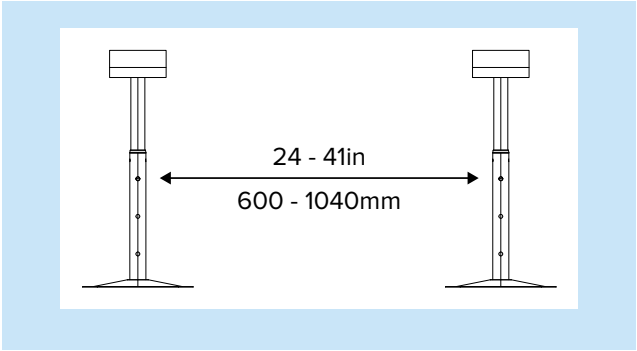
D = 3.31 in (84 mm)

Adaptable telescopic stands height

To adjust the mounting height of PYTHN to your preferred distance from the Canopy, adjustable telescopic stands are provided with three different height settings.

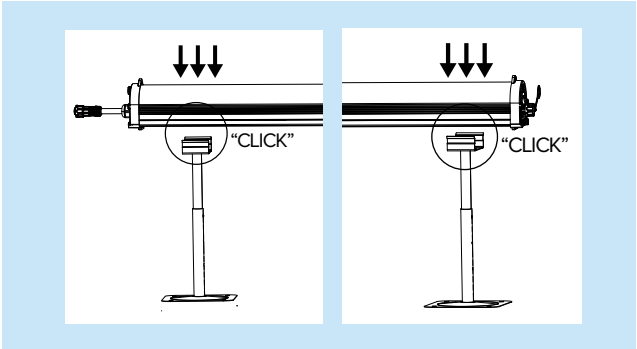


Installing the PYTHN telescopic stands
The PYTHN modules arrive in a box, containing 2 fixtures and 4 telescopic stands. Every fixture must be installed on 2 telescopic stands.

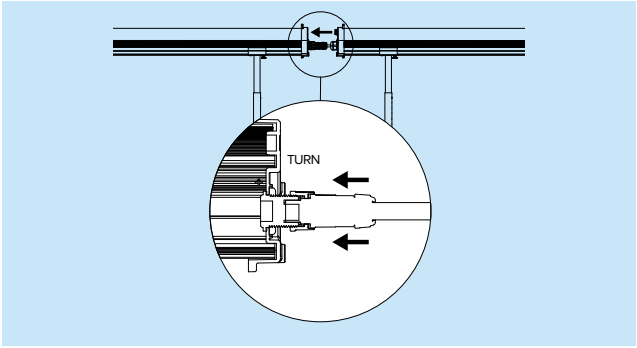


Mounting the first PYTHN module
Determine the distance between 2 telescopic stands, install them on the floor/table/growing surface and adjust the stands height. The installation distance between the stands must be between 60 and 104 cm (24in - 41in).

Make sure that the male connector of the PYTHN module is directed towards the PYTHN power cable.

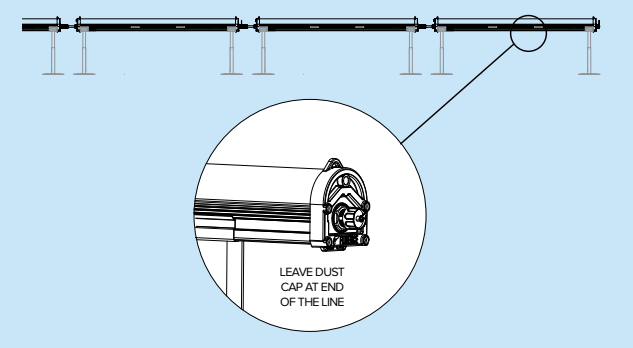


Place the fixture above the telescopic stands and press it gently until the module and the stands are snapped together correctly. You should hear a "click".

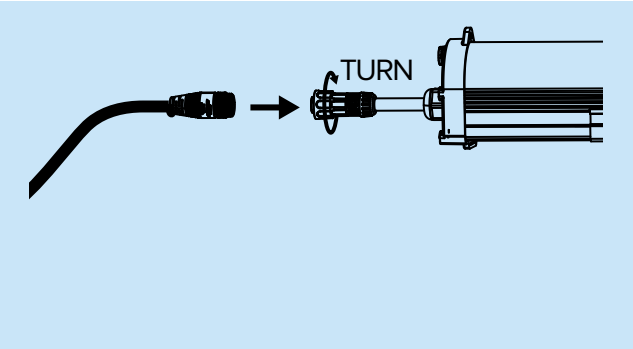


Mounting subsequent PYTHN module(s)
Remove the dust cap (twist off) of the first PYTHN module, place the second PYTHN module into two telescopic stands set at the same height. Connect both modules, end-to-end or via the jumper cable accessory (ordered separately) for installations perpendicular to the table/bench. Verify that the male and female connections are snapped together correctly and turn the locking ring to tighten.

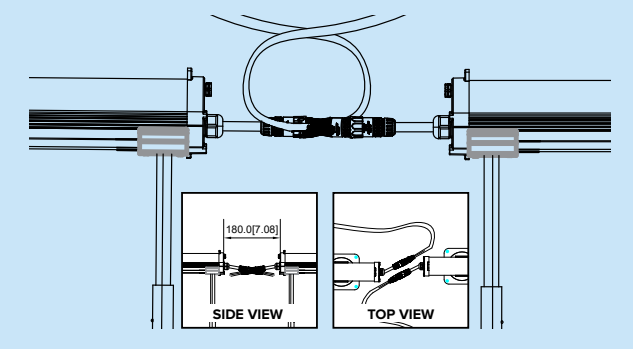
Repeat the previous steps until you have reached the end of the continuous line.



PYTHN end of line fixture
The last fixture in the line has to have the dust cap in place, as was delivered from factory, to comply to IP66.



Electrical connection of the PYTHN line
Connect the female connector of the power cable to the male connector of the 1st module and turn the locking ring tight. Connect this power cable to the power grid and its dimming cable to the lighting control system. Make sure to relief the stress from the cable connections by introducing a loop and using cable ties. Both connectors are positioned almost horizontally during operation, the lowest point of the power cable is just below the lowest point of the male connector.

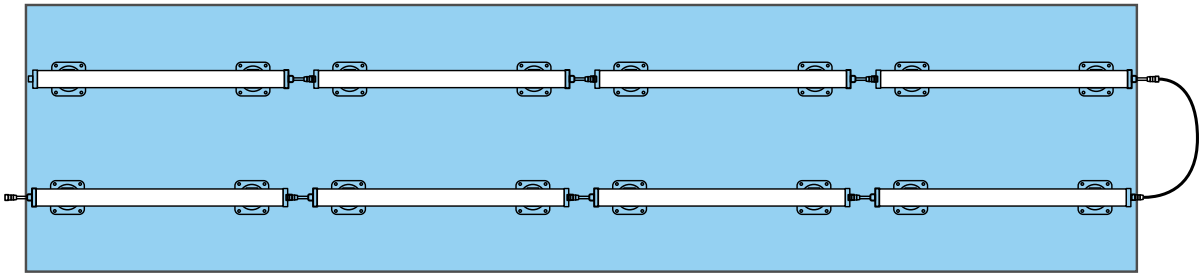


If a central power supply is used
Install the left and right PYTHN line with their own telescopic stands and separate power cables. The horizontal distance between the first luminaire of both lines must be 180mm. Follow all previous applicable steps (Page 7 & 8) to build and complete both lines.

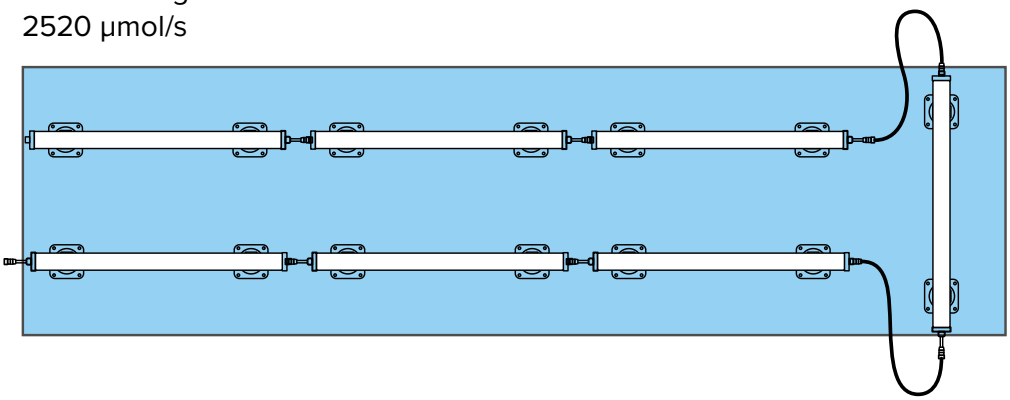
PYTHN Layout Scenarios

Determing your under-canopy layout
PYTHN fixture can be installed individually or in a continuous line, in the growing area length or perpendicular to it. Below there are 3 possible scenarios:

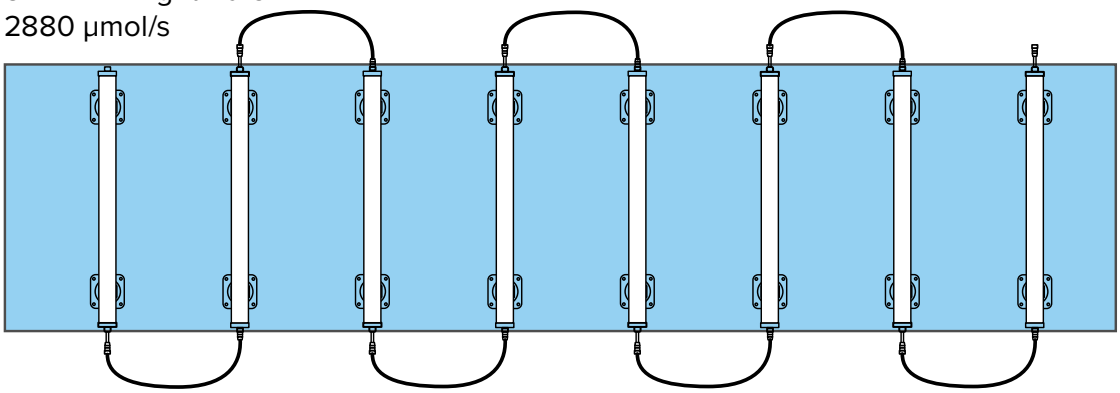
500 cm x 120 cm Bench
8 PYTHN Light Bars
2880 µmol/s



440 cm x 120 cm Bench
7 PYTHN Light Bars
2520 µmol/s



500 cm x 120 cm Bench
8 PYTHN Light Bars
2880 µmol/s



These scenarious are just for indication, project specific layouts will be covered by the lighting design.

Electrical connection

Warning

There are several options for connecting the PYTHN modules to the mains, between 120 V~ and 400V~, and determining the maximum number of interconnected modules, which mainly depends on the power consumption and/or inrush current of the PYTHN module. The number of circuit breakers, the circuit breaker type (3-pole or 4-pole), the tripping current of the circuit breakers, the cross-section (mm^2) and material of the cable conductors, the total length of the cable conductors and the use of an earth leakage protection (RCD). Examples for the maximum number of interconnected modules, are presented below. **These tables only give indication about the maximum allowed interconnected PYTHN modules, without the use of power or jumper cables. This, based on the distinction between limitation by power and limitation by protected (against short-circuit) conductor length.**

Always check the maximum allowed/protected cable length and diameter. A certified electrical installer must make the final decision, in accordance with all applicable international, national and local electrical and construction codes, norms and regulations.

Fixture is to be used in a fixed installation/ permanent electrical connection (it is not allowed to use a power chord with NEMA plug since PE connection can not be guaranteed.

Examples of max nr. of interconnected modules Fluence PYTHN

Area	Mains voltage (V~)	System configuration	Circuit breaker configuration type	Max nr mods/ phase pair		Max nr mods/ phase pair		Max nr mods/ phase pair	
Europe & Asia				**15A B-type**	**15A C-type**	**16A B-type**	**16A C-type**	**20A B-type**	**20A C-type**
Europe	230	L-N	1x4P	6	10	6	11	8	14
Europe	400	L-L	1x3P	11	18	12	20	15	25

Area	Mains voltage (V~)	System configuration	Circuit breaker configuration type	Max nr mods/ phase pair		Max nr mods/ phase pair		Max nr mods/ phase pair	
North America				**15A B-type**	**15A C-type**	**16A B-type**	**16A C-type**	**20A B-type**	**20A C-type**
US	120	L-N	1x4P	10	12	11	12	14	16
US	208	L-L	1x3P	9	15	9	16	12	20
US	240	L-L	1x3P	6	10	6	11	8	14
US	277	L-N	1x4P	5	9	6	10	7	12
Canada	347	L-N	1x4P	9	16	10	17	12	21

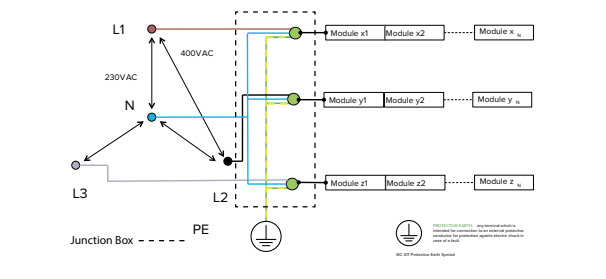
Legend:

L = Line
P = Phase
N = Neutral

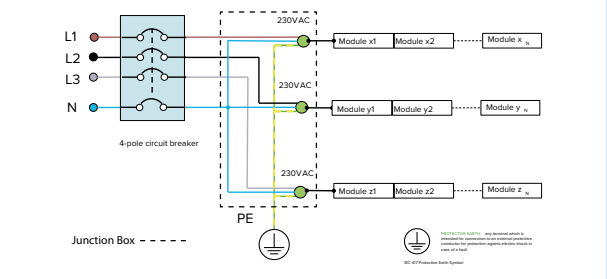
3P = 3 phase breaker type
4P = 3 phase + neutral breaker type
RCD = Residual-Current Device

Connection examples Europe & Asia

230V AC power grid

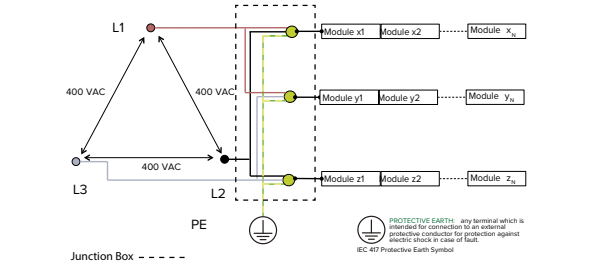


230V~ connection between phase and neutral

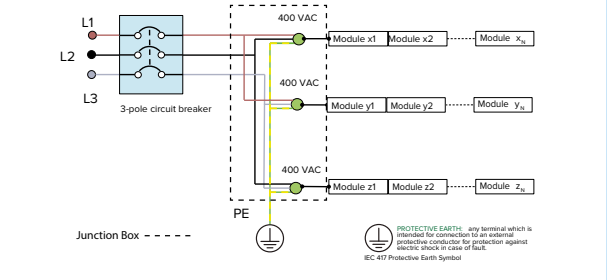


230V~ connection between phase and neutral

400 VAC power grid



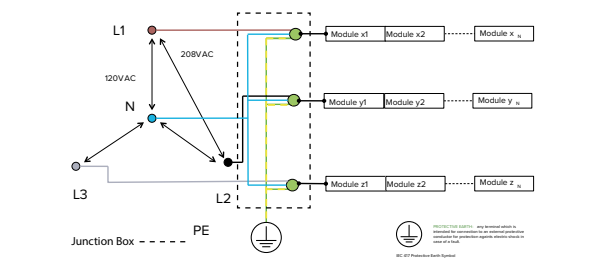
400V~ connection between phases



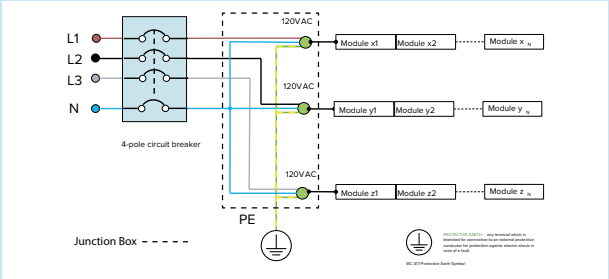
400V~ connection between phases

Connection examples North America

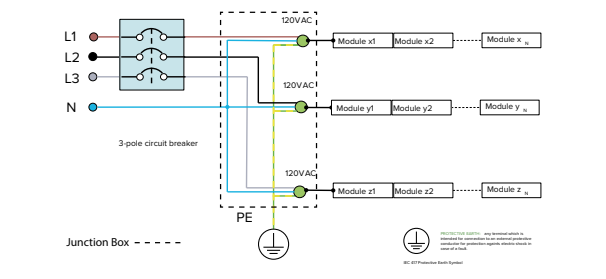
120V AC power grid USA



120V ~ Connection between phase and neutral

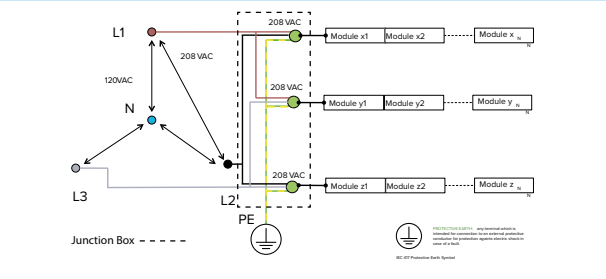


120V ~ Connection between phase and neutral

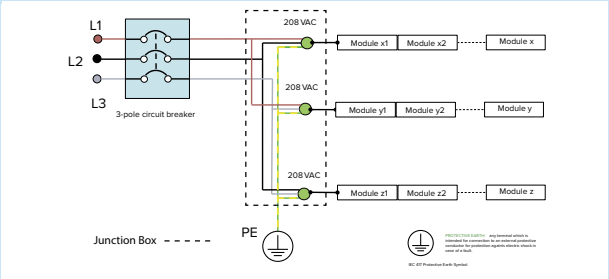


120V ~ Connection between phase and neutral

208V AC power grid

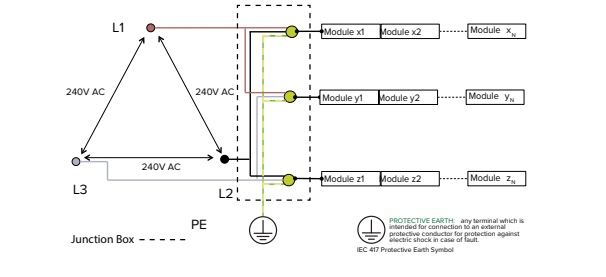


208V~ connection between phases

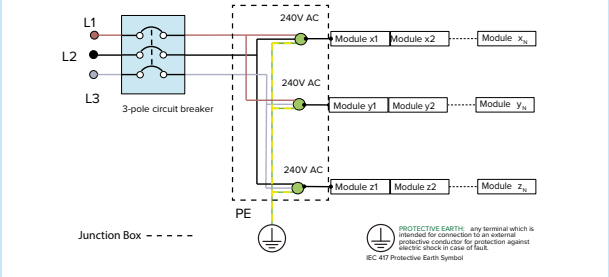


208V~ connection between phases

240V AC power grid

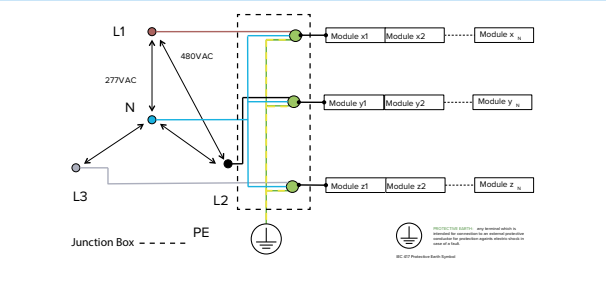


240V ~ connection between phases

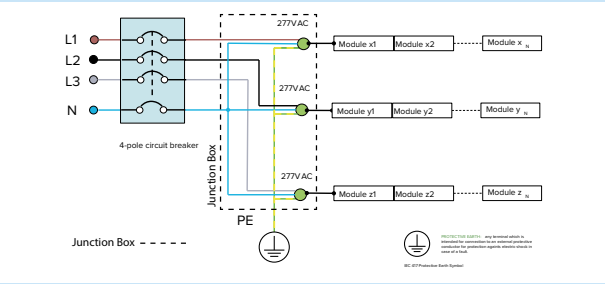


240V ~ connection between phases

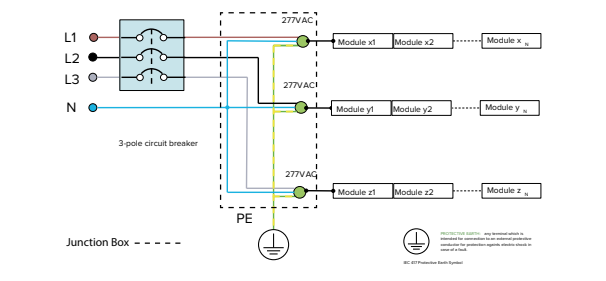
277V AC power grid



277V ~ Connection between phase and neutral

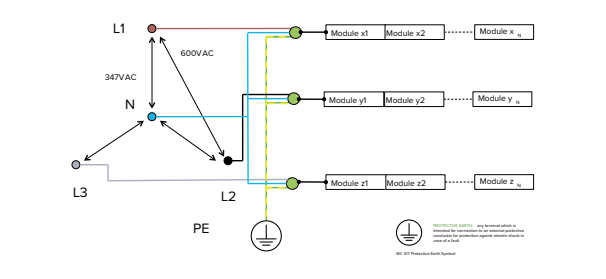


277V ~ Connection between phase and neutral

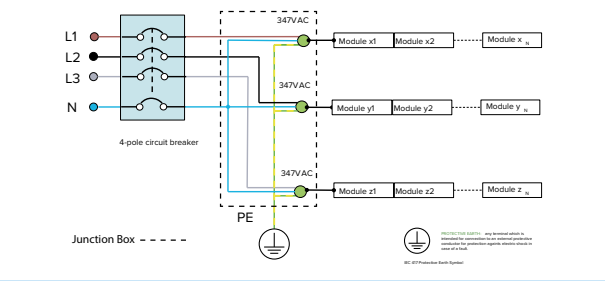


277V ~ Connection between phase and neutral

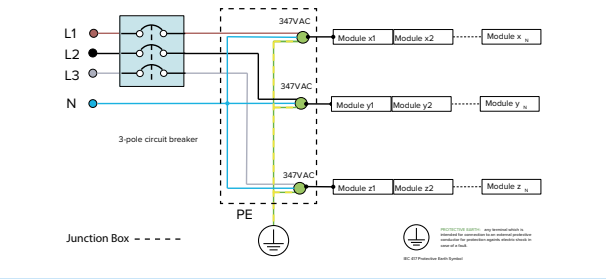
347V AC power grid



347V ~ Connection between phase and neutral



347V ~ Connection between phase and neutral



347V ~ Connection between phase and neutral

Important

- Use of 480 and 690V~systems is prohibited because driver voltage and safety isolation is not designed for these high voltages!
- If interconnection cables are used the total length of the conduuctors will be limiting.
- The circuit breaker type needed and maximum number of modules depend on connection cable diameters and total protected length.
  - The connection wires used inside the module: diameter = 1.65mm^2, AWG15
  - Power cable: diameter = 1.5mm^2

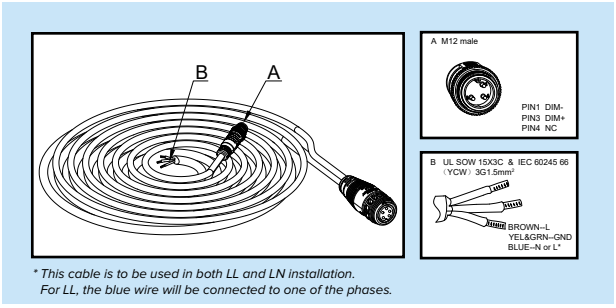
Ordering data Europe & Asia

Modules

Product description	12 NC	RCC	MOQ (pcs)	Box dimensions
PYTHN,BP6,120-277V,BP	9124 0170 7154	PT-BP6-LV-B	2	132,5x38x17
PYTHN,BP6,347-400V,BP	9125 0170 7155	PT-BP6-EHV-B	2	132,5x38x17
PYTHN,BP8,120-277V,BP	9126 0170 7156	PT-BP8-LV-B	2	132,5x38x17
PYTHN,BP8,347-400V,BP	9127 0170 7157	PT-BP8-EHV-B	2	132,5x38x17

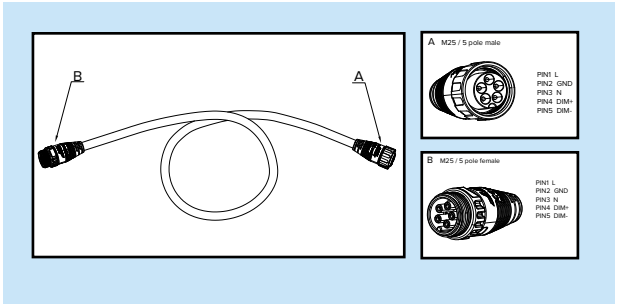
Cables

Product description	12 NC	RCC	MOQ (pcs)	Box dimensions
PYTHN,AC Cable, M25 5pin,4'9"(1.5m),SP	9127 0170 7166	PT-CAC-M25-5-1.5-S	1	23x22,5x3
PYTHN,Jumper Cable, M25 5pin,3'3"(1m),SP	9124 0170 7179	PT-JC-M25-5p-1m-S	1	23x22,5x3



** This cable is to be used in both LL and LN installation. For LL, the blue wire will be connected to one of the phases.*

PYTHN,AC Cable,M25 5pin,4'9"(1.5m),SP



PYTHN,Jumper Cable, M25 5pin,3'3"(1m),SP

Dim Cables

Product description	12 NC	RCC	MOQ (pcs)	Box dimensions
80 cm (31,5 IN) Dimming Signal Cable, Cca, Pigtail, M12 Connector	9124 017 01623	CCE-XXC3T2FL3X0.8	1	NA

Dimming Signal Cable Connections

Dimming Cable Wire Color	Power Supply Pin Connection
Black	DIM (+)
White	DIM (-)
Bare Wire	Shield Drain*

*NOTE: The dimming cable EMI shielding is not grounded via the power supply ground connection. This must be grounded to PE independently. Connect the dim cable shield drain to only one PE ground connection point, i.e. at the dimming control panel.

Legend: MOQ = Minimum Order Quantity

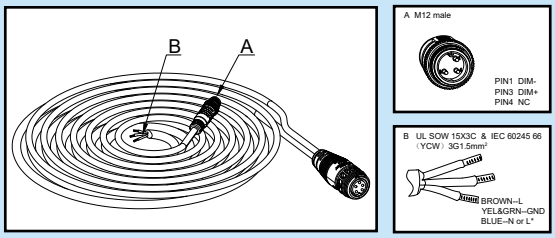
Ordering data North America

Modules

Product description	12 NC	RCC	MOQ (pcs)	Box dimensions
PYTHN,BP6,120-277V,BP	9124 0170 7154	PT-BP6-LV-B	2	132,5x38x17
PYTHN,BP6,347-400V,BP	9125 0170 7155	PT-BP6-EHV-B	2	132,5x38x17
PYTHN,BP8,120-277V,BP	9126 0170 7156	PT-BP8-LV-B	2	132,5x38x17
PYTHN,BP8,347-400V,BP	9127 0170 7157	PT-BP8-EHV-B	2	132,5x38x17

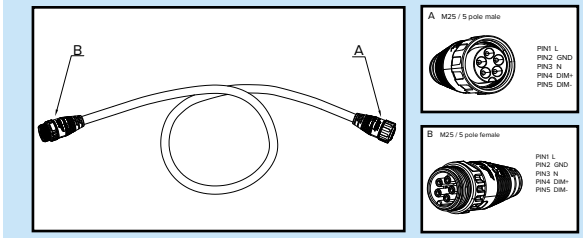
Accessories

Product description	12 NC	RCC	MOQ (pcs)	Box dimensions
PYTHN,AC Cable, M25 5pin,4'9"(1.5m),SP	9127 0170 7166	PT-CAC-M25-5-1.5-S	1	23x22,5x3
PYTHN,AC Cable, M25 5pin,4'9"(1.5m),SP	9124 0170 7179	PT-JC-M25-5p-1m-S	1	23x22,5x3



** This cable is to be used in both LL and LN installation. For LL, the blue wire will be connected to one of the phases.*

PYTHN,AC Cable,M25 5pin,4'9"(1.5m),SP



PYTHN,Jumper Cable, M25 5pin,3'3"(1m),SP

Dim Cables

Product description	12 NC	RCC	MOQ (pcs)	Box dimensions
DIM Cable, 1CH, M12 w/Leads, 11IN	9124 0170 1621	CCA-XXU3T2FL3X0.3x	1	NA
DIM Cable, 1CH, M12 w/Leads, 5FT	9124 0170 1622	CCA-XXU3T2FL3X1.5x	1	NA

Dimming Signal Cable Connections

Dimming Cable Wire Color	Power Supply Pin Connection
Red	DIM (+)
Black	DIM (-)
Bare Wire	Shield Drain*

*NOTE: The dimming cable EMI shielding is not grounded via the power supply ground connection. This must be grounded to PE independently. Connect the dim cable shield drain to only one PE ground connection point, i.e. at the dimming control panel.

Legend: MOQ = Minimum Order Quantity

Crop protection and cleaning products

Use of cleaning agents, crop-protection products and other chemicals (e.g. pesticides, fungicides and insecticides)
Fluence products are engineered to meet the highest standards in daily usage and are compatible with the most commonly used cropprotection products and cleaning agents in the field. However, if crop-protection products and cleaning agents are used in concentrations above the values prescribed by the supplier(s) of such crop-protection products and/or cleaning agents, this may damage the protective surfaces of the Fluence products, which will render the warranty invalid.

Please ensure that you take the following instructions into account when cleaning the Fluence products and your facility, or when using crop protectors.

Cleaning Fluence products
- Turn off and disconnect the power before cleaning the product.
- Use a soft damp cloth and a cleaning agent, e.g. green/soft soap or Isopropanol, to remove dust or dirt from the Fluence product.
- Do not use rough or coarse-grained materials, scouring pads, bleach or solvents, as they could scratch or damage the Fluence product.
- Do not wipe the Fluence product with a dirty cloth as this may leave a residue, scratch the lenses or reduce the light output.
- The use of a non-approved cleaning agent or solvent could scratch or damage the Fluence product.
- The Fluence product has an IP66 rating which means that water jets with a pressure of maximum 1 bar can be used. Do NOT clean the Fluence PYTHN product with high pressure waterpower jets.

Contamination of the light emitting surface
To keep the maximum amount of light for your crop and the optimal performance of your light source during the entire lifetime, you must clean your Fluence products on a regular basis. Keeping the light emitting surface clean will enable you to get the maximum yield and quality of your crop. Cleaning is also required to maximize the useful life of your Fluence product.

Contamination of the light emitting surface will reduce the light-output of the Fluence product. A seemingly limited amount of dirt can already cause a significant reduction of the light output, even up to 15%. By cleaning the light emitting surface regularly, reduction of the light output can be prevented. Dirt on the light emitting surface absorbs light which will lead to an increase in the temperature of the product. This has a negative impact on the lifetime of the product.

By cleaning the light emitting surface, the useful lifetime of your Fluence product will be optimal. Overdue or inadequate cleaning maintenance may void the warranty obligations of Signify.

Important
- Plan regular inspections for your Fluence products. Be aware, seemingly low levels of contamination on the light emitting surface, that may not be directly visible from a larger distance, already have a negative impact on performance.
- Clean the light emitting surface on a regular basis according to the cleaning instructions.

Compliance with international standards

The Fluence PYTHN has been tested for and complies with the following international standards:

Test	Stress type	Standard
Mechanical integrity	Drop test	ASTM D-5276-98
	Vibration test	IEC 60068-2-64
Endurance	Damp heat (temp. humidity)	IEC 60068-2-30
	Temperature shock	IEC 60068-2-14
	Ingress protection	IEC 60529 IP66
Quality / Environment	Environmental standard	ISO 14001
	Hazardous Substance	RoHS Proposition 65
EMC	Generated disturbances to the environment	EN IEC 55015
		EN IEC 61000-3-2
		EN 61000-3-3
		FCC part 15B: Class B
		IECS-005
	Immunity	EN IEC 61547
Safety		ANSI/CAN/UL 8800
		IEC 62471
		IEC 60598-1
		IEC 60598-2-1
Approval marks	Declaration of conformity	CE
		ETL

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