ThinkGrow

Daisy Chain
Power Cord System

User Manual

ThinkGrow

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SAFETY PRECAUTIONS

Read the installation and operation instructions carefully before installing and operating this device.
Proper adherence to these instructions is essential to ensure the cables are sized and installed properly.

- Users are responsible for correct and safe installation and usage.
- It's highly recommended to have a licensed electrician install your lighting system.
- Ensure the existing electrical system can support the voltage and current requirements.
- The device is designed to be installed INDOORS IN A SPACE THAT IS PROTECTED FROM RAIN AND FLOODING.
- Be certain there is NO chance the unit could come into contact with water and that it is connected to a properly protected branch circuit.
- Never operate equipment with a damaged power cord. If the power cord is damaged, it must be replaced by the manufacturer, or a similarly qualified person to avoid danger.

OVERVIEW

LEDs have redefined indoor growing. ThinkGrow LEDs are among the best in the industry and now we are making them even better by introducing ThinkGrow's new Daisy Chain Power Cord System. Designed to interconnect between the LED drivers, the system can eliminate a massive amount of power outlets, and reduce the number of power cables required. Depending on the power source of your facility, using the daisy chain power cord can provide power to up to 18 lighting fixtures... all connected into a single 30-amp power cable.

The ThinkGrow Daisy Chain Power Cord / Extension Power Cord provides 3 different gauges of cable, AWG #10/12/14. The user can use any or all of the cable sizes within their installation.

*NOTE: Refer to the Specification chart below to select the proper cable size for the # of LEDs (amperage) that will be connected to each section of cable.

Each gauge of the cable is distinguished by different connector colors, as follows:

AWG 10
100-277V ⎓ ≤30A

AWG 12
100-277V ⎓ ≤20A

AWG 14
100-277V ⎓ ≤15A

SELECTING THE PROPER CABLE SIZE

In order to be able to specify how many LEDs can be connected to a single circuit, and to select the proper cable size for your installation, you must first do some simple electrical calculations.

The first thing you will want to do is to determine what the amperage draw for each of the lights you will be using is. ThinkGrow LEDs can operate at voltages ranging from 100 to 480. (*480v versions by special order). When the voltage is increased, the amperage needed to operate the same LEDs will go down. So it is always best to operate your LEDs at the highest voltage available within your facility.

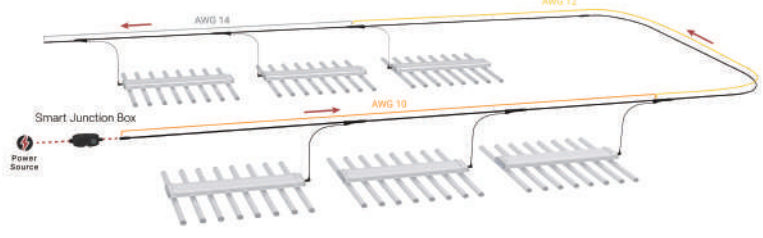
When you have determined what voltage you will be using, look up the listed amperage for the LEDs you will be using. You will also want to decide now what circuit type (amperage) you will be installing for the lights. You should NEVER "load" an electrical circuit more than 80%. Let's assume for example you will be using 30-amp / 240-volt circuits to power your LEDs. So on a 30-amp circuit, the maximum amperage connected to that circuit should not exceed 80% of 30-amps = 24 amps.

Let's say you will be using ThinkGrow Model V LEDs, and each of the Model V will use 1.3 amps of power @ 240 volts. We can divide the 24-amp maximum circuit load by 1.3 amps to determine the maximum number of LEDs that can be connected to a single 30-amp, 240-volt circuit. (24 / 1.3 = 18 LEDs) So we can connect a total of 18 Model V fixtures to a 30-amp, 240-volt circuit.

Next, we can determine what size of the daisy chain cables we can use. We have three different sizes of cable, each size has a maximum amperage it can handle. #14AWG = 15-amps, #12AWG = 20-amps and #10AWG = 30-amps. Again, we must "de-rate" the cable size to ensure the cables are never overloaded. So the "real" amperage limits for the cables would be 80% of the full amperage above. 15 x .8 = 12-amps, 20 x .8 = 16-amps, 30 x .8 = 24-amps.

Next, we can determine what size of the Daisy Chain Power Cord we can use. We have three different sizes of cable, each size has a maximum amperage it can handle. #14AWG = 15-amps, #12AWG = 20-amps and #10AWG = 30-amps. Again, we must "de-rate" the cable size to ensure the cables are never overloaded. So the "real" amperage limits for the cables would be 80% of the full amperage above. 15 x .8 = 12-amps, 20 x .8 = 16-amps, 30 x .8 = 24-amps. We can use smaller Daisy Chain Power Cord on the LED fixtures connected at the "end" of the power line since those cables will not be carrying all of the amperages. The #14AWG cable can handle 12-amps, so we can have the last 9 of the LED fixtures connected inline using the #14 AWG cables. (12 / 1.3 = 9-amps) . We would then need to increase either to #12 or #10 AWG cables for the next group of LEDs that are connected inline. To determine how many of the larger #12AWG Daisy Chain Power Cord we can use, take the 12 amps total from the last 9 LEDs, and subtract that from the #12AWG maximum amperage, (16 - 12 = 4-amps) That indicates we can connect up to another 4-amps of LEDs inline using the #12AWG cables which would be 3 more LEDs (1.3 amps x 3 = 3.9-amps) So now we have the last 9 LEDs connected using #14AWG Daisy Chain Power Cord, the next 3 LEDs can use the #12AWG cables, which leaves the final 6 LED fixtures to be connected using the #10AWG cables. We can confirm that by taking the total amperage from the last 12 LEDs (12 x 1.3 = 15.6 amps) adding that total to the "first" 6 LEDs that will be connected inline. (15.6 + 6 x 1.3 = 23.4-amps). So in this example, the first 6 LEDs will use the #10AWG cables, then we will change to use the #12AWG cables for the next 3 LEDs, then the final 9 LEDs will be connected using the #14AWG cables.

If you are going to apply a variety of gauge Daisy Chain Power cords / Extension Cords in the LED power circuit, ensure the application of cables is installed in descending gauge order as AWG10> AWG12> AWG14.



(The diagram is only for reference, please take the actual product as the standard.)

CAUTION: Incorrect application may lead to equipment damage. The user is responsible for correct and safe installation and usage. Ensure the existing electrical system can support the voltage and current requirements.

DAISY CHAIN POWER CORD

DCA-10
AWG #10 Daisy Chain Power Cord
Input Voltage: 100-277V⎓≤30A
Gauge: 10
Copper Area: 5.26mm²
Length: 5ft (1.5m)
Resistivity: < 12 mΩ

DCA-12
AWG #12 Daisy Chain Power Cord
Input Voltage: 100-277V⎓≤20A
Gauge: 12
Copper Area: 3.31mm²
Length: 5ft (1.5m)
Resistivity: < 16 mΩ

DCA-14
AWG #14 Daisy Chain Power Cord
Input Voltage: 100-277V⎓≤15A
Gauge: 14
Copper Area: 2.08mm²
Length: 5ft (1.5m)
Resistivity: < 21 mΩ

IP67

Intertek 5008191

EXTENSION POWER CORD

DEA-10L
AWG #10 Extension Power Cord
Input Voltage: 100-277V⎓≤30A
Gauge: 10
Copper Area: 5.26mm²
Length: 10ft (3m)
Resistivity: < 17 mΩ

DEA-10
AWG #10 Extension Power Cord
Input Voltage: 100-277V⎓≤30A
Gauge: 10
Copper Area: 5.26mm²
Length: 3ft (0.9m)
Resistivity: < 12 mΩ

DEA-12
AWG #12 Extension Power Cord
Input Voltage: 100-277V⎓≤20A
Gauge: 12
Copper Area: 3.31mm²
Length: 3ft (0.9m)
Resistivity: < 16 mΩ

DEA-14
AWG #14 Extension Power Cord
Input Voltage: 100-277V⎓≤15A
Gauge: 14
Copper Area: 2.08mm²
Length: 3ft (0.9m)
Resistivity: < 21 mΩ

IP67

Intertek 5008191

CAUTION: ThinkGrow does not provide cable options for connection from the main power source. Customers need to properly select the correct size of the main power source (cables) for the installation. Incorrect application may cause equipment damage. The user is responsible for correct and safe installation and usage. Ensure the existing electrical system can support the voltage and current requirements.

MAXIMUM NUMBER OF LEDS THAT CAN BE CONNECTED

#10 AWG Maximum number of LEDs that can be connected					
LED Model	Input Power	Input Voltage			
		120 volts	240 volts	277 volts	480 volts
Model-I	720 Watt	4	8	9	16
Model-I Plus	720 Watt	4	8	9	16
Model-H	630 Watt	4	9	10	18
Model-W	630 Watt	4	9	10	18
Model-V	350 Watt	9	18	20	36

ThinkGrow #10 AWG cables are rated up to 30-amps.

#12 AWG Maximum number of LEDs that can be connected					
LED Model	Input Power	Input Voltage			
		120 volts	240 volts	277 volts	480 volts
Model-I	720 Watt	2	5	6	10
Model-I Plus	720 Watt	2	5	6	10
Model-H	630 Watt	3	6	7	12
Model-W	630 Watt	3	6	7	12
Model-V	350 Watt	6	12	14	24

ThinkGrow #12 AWG cables are rated up to 20-amps.

#14 AWG Maximum number of LEDs that can be connected					
LED Model	Input Power	Input Voltage			
		120 volts	240 volts	277 volts	480 volts
Model-I	720 Watt	2	4	4	8
Model-I Plus	720 Watt	2	4	4	8
Model-H	630 Watt	2	4	5	9
Model-W	630 Watt	2	4	5	9
Model-V	350 Watt	4	9	10	18

ThinkGrow #14 AWG cables are rated up to 15-amps.

CAUTION: Incorrect application may lead to equipment damage. The user is responsible for correct and safe installation and usage. Please follow the NEC requirements of overcurrent protection for continuous loads for the circuit application. Meaning the needed ampacity needs to multiply the load by 125% (80% rule). Ensure the existing electrical system can support the voltage and current requirements.

ThinkGrow
Daisy Chain Power Cords

DCA-10
AWG #10
5' (1.5m)

DCA-12
AWG #12
5' (1.5m)

DCA-14
AWG #14
5' (1.5m)

DEA-10L
AWG #10
10' (3m)

DEA-10
AWG #10
3' (0.9m)

DEA-12
AWG #12
3' (0.9m)

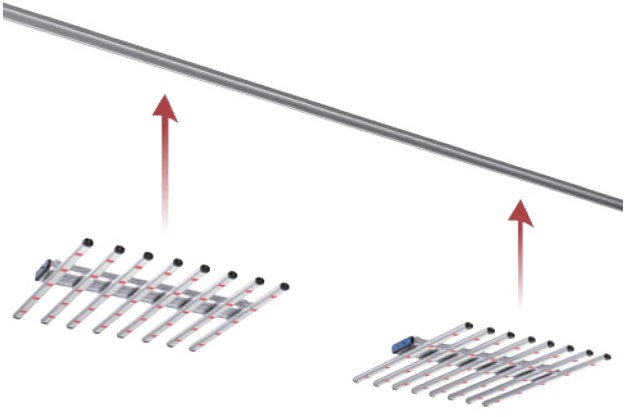
DEA-14
AWG #14
3' (0.9m)

ThinkGrow
Extension Power Cords

CONNECTION INSTRUCTION

STEP 1

Upon hanging the ThinkGrow LEDs, connect each fixture using the Daisy Chain Power Cord.



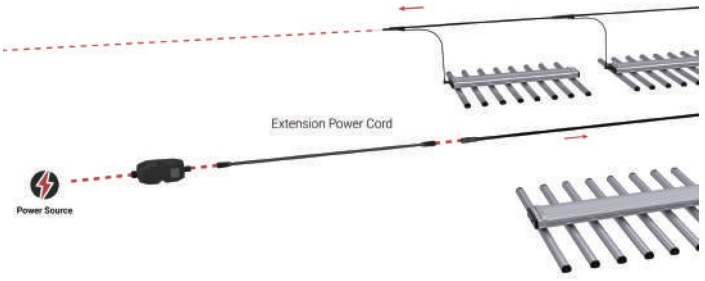
(The cable is ready to use straight out of the box, no extra clipping or assembling is needed.)

STEP 2

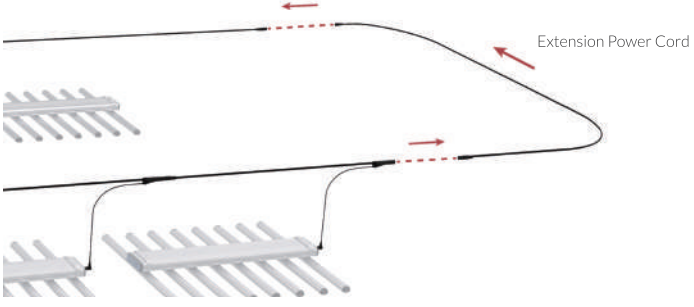
Plug the splitter cord from the Daisy Chain Power Cord into the power slot on the LED's driver; and connect each Daisy Chain Power Cord with the male-to-female connector going from LED to LED and so on;

STEP 3

Use the ThinkGrow Extension Power Cord to reach your Daisy Chain Power Cords to the power source; by connecting them with the male-to-female push-lock connector;

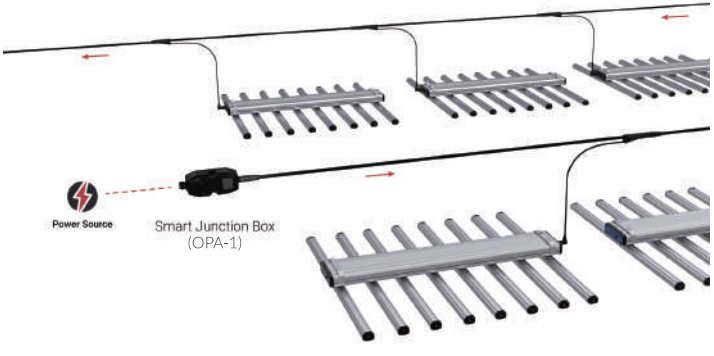


Also can use the ThinkGrow Extension Power Cord if your connections have further extension needs.



STEP 4

It is recommended to use the ThinkGrow Smart Junction Box to connect the Daisy Chain Power Cord System to your facility's power source for safety reasons.

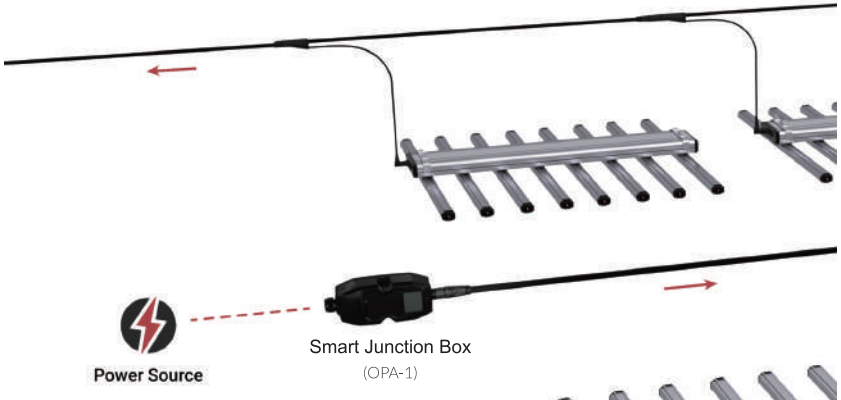


(The diagram is only for reference, please take the actual product as the standard.)

THINKGROW SMART JUNCTION BOX

Optimal solution for Power Efficacy Management

ThinkGrow Smart Junction Box is an electronic circuit breaker that is connected inline with each “string” of LEDs to monitor and protect the circuit from power overload. If the circuit protector detects unusual high amperage, the power to the LEDs will be turned off to prevent damage to the LEDs and the Daisy Chain Power Cord System.



- Overcurrent Protection
- Power Surge Protection
- Power Consumption Data Collection
- On-site monitoring
- Wireless Power-data Logging(with Hydro-X Pro)

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WARNING : DO NOT allow the Daisy Chain Power Cords System and Smart Junction Box to be exposed to water or excessive heat. DO NOT open or attempt to repair or disassemble the module, as there are no user-serviceable parts inside. Opening the module will void the warranty.

If the surface of the Daisy Chain Power Cords System and Smart Junction Box is dirty, wipe it with a dry towel. The Daisy Chain Power Cords System and Smart Junction Box operates under natural ventilation conditions.

AVERTISSEMENT : NE laissez PAS le système de cordons d'alimentation en guirlande et la boîte de jonction intelligente être exposés à l'eau ou à une chaleur excessive. NE PAS ouvrir ni tenter de réparer ou de démonter le module, car il ne contient aucune pièce réparable par l'utilisateur. L'ouverture du module annulera la garantie.

Si la surface du système de cordons d'alimentation en guirlande et de la boîte de jonction intelligente est sale, essuyez-la avec une serviette sèche. Le système de cordons d'alimentation en guirlande et la boîte de jonction intelligente fonctionnent dans des conditions de ventilation naturelle.