



# User Guide iLS4-121 iLS4-121S iLS4-241 and iLS4T-1 and iLS4T2

**ELECTRICAL LOAD SWITCHER MODULE  
capable of  
sequential outlets switching**



**SOLD SEPARATELY**  
Start up delay timer and  
sequential outlets switching device  
iLS4T-1: one by one / iLS4-121 only  
iLS4T-2: two by two/ any model

**novabiotique.com**

Made in North America

Tel. 418 856-6274 Fax 418 856-6239

Technical Support : 1-888-577-6274 or [tech@igrowing.ca](mailto:tech@igrowing.ca)



## PRESENTATION

This is the second generation of Plug'N'Grow iLS4 electrical load switcher modules. It comes with new functionalities.

iLS4-121 : Supply line 120 Vac : 4 outlets @ 120 Vac 15 A

iLS4-121S : Supply line 240 Vac : 4 outlets à 120 Vac 15 A

iLS4-241 : Supply line 240 Vac : 4 outlets à 240 Vac 15 A

The 3 basic module models switch ON all 4 outlets at once when voltage is applied to the sense adapter. This sense adapter may be plugged in a timer (e.g. lighting) or a climate controller managing high electrical load equipment.

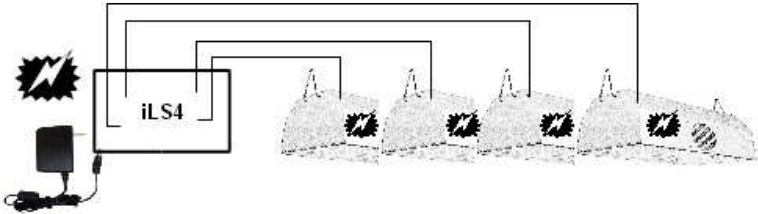


Figure 1: A timer feeds the adapter triggering the basic iLS4 to switch on the 4 outlets together immediately.

Having two same model iLS4 modules combined on the same electrical circuit is also offered.

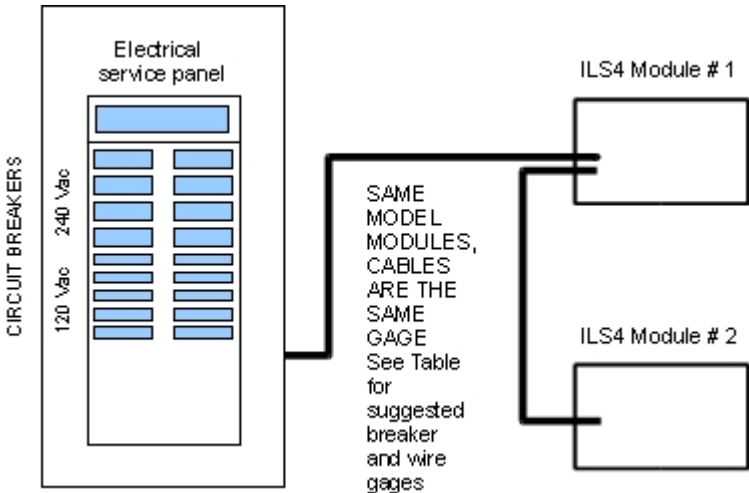


Figure 2: Cabling example of two same model iLS4 modules on one electrical circuit.

**OPTIONAL : Start up delay timer and sequence** (See Part II, page 6)

An external ON Delay timer (sold separately) provides:

- An accessible control to adjust the start up delay; and
- iLS4 module 4 outlets start up sequence.

The first feature is useful in preventing harmful lamps “hot start” and to put an extended delay between equipment start up for devices that require a minimum rest time between successive operations. The second feature lowers the electric current demand at one time on the circuit.



Figure 3: Optional On-delay timer is adjustable between 0 and 20 minutes in either of fixed or minimum delay. This option also manages the outlets powering sequence in 30 seconds steps.

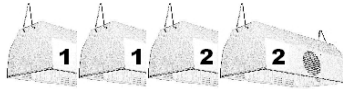
START UP SEQUENCE

iLS4-121 and iLS4-121S



START UP SEQUENCE

iLS4-241



**iLS4T-2 Timer can be used with iLS4-121 and iLS4-121S thus turning on 2 outlets at once as in the right picture. iLS4T-1 does not control iLS4-241.**

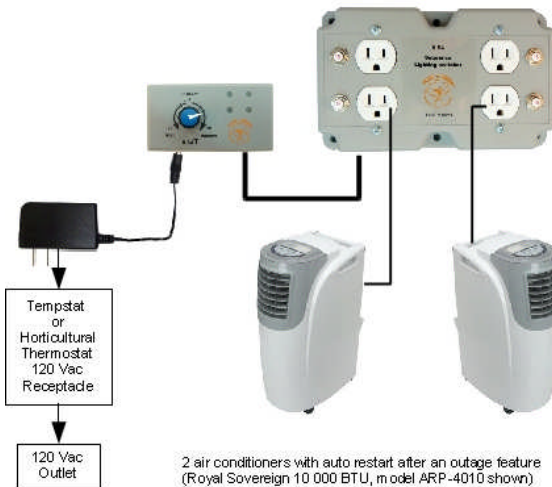





Figure 3: Two equipments turning on separately (30 sec.) after minimum rest

## Part I: iLS4 BASE MODULE

iLS4	Adapter 12 Vdc	Direct Cable
		

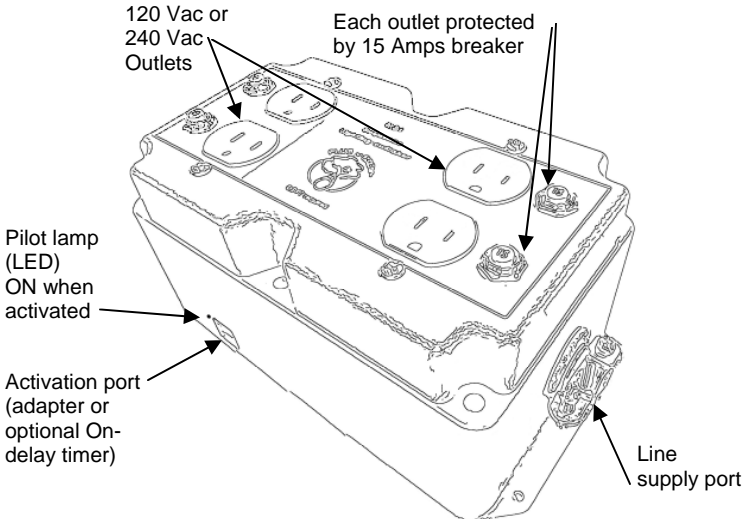
### 1. ILS4 MODULE INSTALLATION

Every iLS4 module must be affixed to a wall with its outlets face being vertical or affixed to the ceiling. The external optional On-Delay timer module should also be affixed to a wall. These modules should be located in a low humidity place with no possibility for condensation nor water splashing.

### 2. DESCRIPTION

Each iLS4 module has 4 receptacle outlets. A lighting device or equipment can be connected to each outlet. For models iLS4-121 and iLS4-121S, outlets are powered at 120 Volts. iLS4-241 outlets supply 240 Volts. Each outlet is protected by a 15 Amps "push to reset" breaker.

iLS4 module has an activation port (RJ-45 female connector) that receives the start up signal from either the adapter (base model) or the optional On-delay timer. The supply line cable enters the module through a clamp on the right side. A green pilot lamp glows when the module is activated.



### 3. ELECTRICAL INSTALLATION

Every electrical hook-up to the main service panel should be performed by a certified electrician and according to the Electricity Code in force at your location. In order to prevent fire, the supply line should be wired with the proper cable gage and into an appropriate size breaker/fuse on the main electrical service panel according to the total expected electrical load on the circuit. When two modules (same model mandatory) are hooked up on the same electrical circuit both modules supply cables should be of the same gage. Only copper wire should be used.

The table on the following page suggests the standards to properly gauge panel breaker/fuse size, supply wire gauge and supply wire gauge when wiring two iLS4 on the same breaker/fuse. Installing the larger wire gauge cable is recommended as there will be no re-wiring necessary if heavier loads are used in the future.

#### Module connection

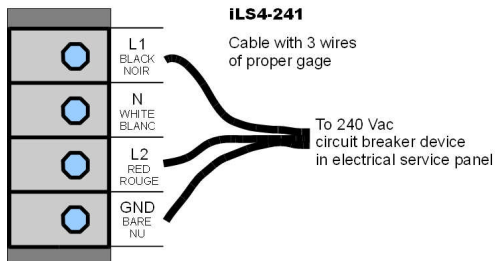
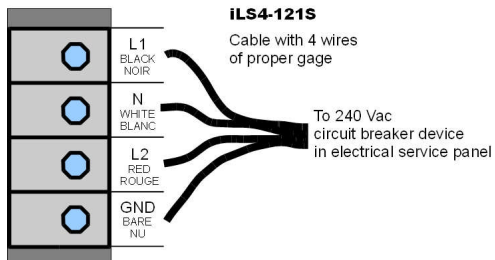
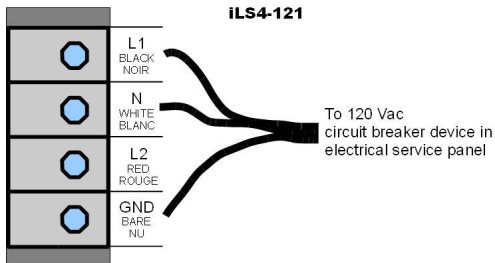
Remove the front cover's 6 screws; lift and rotate cover away from the supply line port to gain access to the power cable terminal block. Bring the power cable inside the module and follow either of the opposite figures showing the appropriate terminal block connection.

Avoid unplugging module's internal wires.

When 2 modules are wired to the same circuit, prepare and bring in both cables in the first module: wires are connected at the same terminals in both modules.

#### Starting up

The included adapter serves as a trigger signal cord. When a master timer or control switches ON the outlet where the adapter is plugged, the iLS4 module starts turning on its outlets. Plug the adapter to the connecting cable to iLS4 and to controlling outlet.





Check with the local electricity code that supersedes the following suggestions for wire and circuit breaker gauges

<b>iLS4-121</b> (Supply line : 120Vac, Outlets : 120Vac): Cable with 2 wires + 1 bare wire for ground						
4 X 400W			4 X 600W		4 X 1000W	
No second module	Total Amperage	14 A	Total Amperage	20 A	Total Amperage	34 A
	120Vac breaker/fuse	20 A	120Vac breaker/fuse	30 A	120Vac breaker/fuse	40 A
	120Vac supply line	12 GA	120Vac supply line	10 GA	120Vac supply line	8 GA
Second module iLS4 4 x 400W ou 4 x 600 W	Total Amperage	28 A				
	120Vac breaker/fuse	40 A				
	Both modules lines	8 GA				

<b>iLS4-121S</b> (Supply line: 240Vac, Outlets: 120VAC): Cable with 3 wires + 1 bare wire for ground						
<b>iLS4-241</b> (Supply line: 240Vac, Outlets: 240VAC): Cable with 2 wires + 1 bare wire for ground						
4 X 400W			4 X 600W		4 X 1000W	
No second module	Total Amperage	7 A	Total Amperage	10 A	Total Amperage	17 A
	240Vac breaker/fuse	15 A	240Vac breaker/fuse	15 A	240Vac breaker/fuse	20 A
	240Vac supply line	14 GA	240Vac supply line	14 GA	240Vac supply line	12 GA
Second iLS4 module 4 X 400W	Total Amperage	14 A	Total Amperage	17 A	Total Amperage	24 A
	240Vac breaker/fuse	20 A	240Vac breaker/fuse	20 A	240Vac breaker/fuse	30 A
	Both modules lines	12 GA	Both modules lines	12 GA	Both modules lines	10 GA
Second iLS4 module 4 X 600W	Total Amperage	17 A	Total Amperage	20 A	Total Amperage	27 A
	240Vac breaker/fuse	20 A	240Vac breaker/fuse	30 A	240Vac breaker/fuse	30 A
	Both modules lines	12 GA	Both modules lines	10 GA	Both modules lines	10 GA
Second iLS4 module 4 X 1000W	Total Amperage	24 A	Total Amperage	27 A	Total Amperage	34 A
	240Vac breaker/fuse	30 A	240Vac breaker/fuse	30 A	240Vac breaker/fuse	40 A
	Both modules lines	10 GA	Both modules lines	10 GA	Both modules lines	8 GA

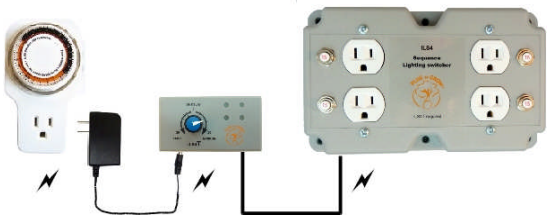
**Part II : OPTIONAL ON-DELAY TIMER AND SEQUENTIAL START UP**

**Option contents**

<p>iLS4T ON-Delay Timer</p> 	<p>RJ-45 Cable</p>  <p>If defective or longer length needed, replace by regular computer network cable</p>
---	---

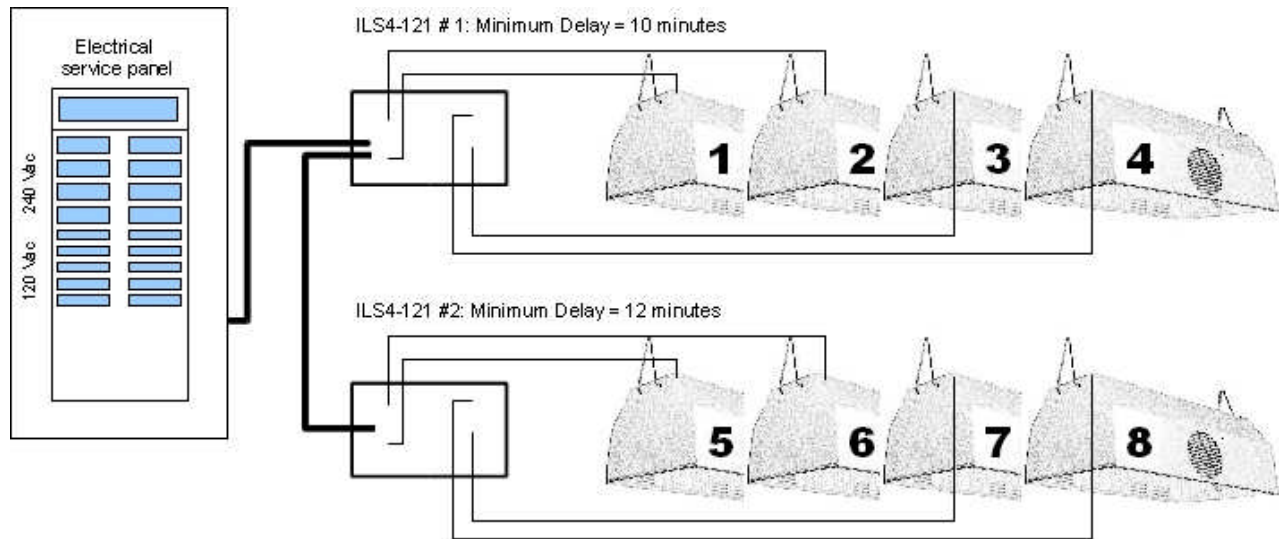


A master timer or climate controller transmits a switch on command to the iLS4 by turning on its own outlet thus powering up the iLS4 timer adaptor. When the adaptor low current is detected, the “switch on” command is received and the iLS4 outlets turn on sequence is activated after the chosen On-delay on iLS4T.



iLS4-121 et iLS4-121S : The four 120 Volts outlets switch on, one at a time, separated by a 30 seconds delay in a 1-2-3-4 sequence (page 7) when iLS4T-1 is used or 2 outlets at a time if iLS4T-2 is used (page 8).

iLS4-241 : the 240 Volts electrical outlets are switched on “two by two” with a 30 seconds delay between both activations Stand alone or having two iLS4-240 combined on the same circuit, each module may feed up to four (4) 1000 W lamps. The two module combination allows to switch on sequentially up in 8 lamps in four steps separated by at least 30 seconds (page 8).



T1 = Minimum Delay + 0 second = 10 minutes

T2 = Minimum Delay + 30 seconds = 10 min. 30 sec.

T3 = Minimum Delay + 60 seconds = 11 minutes

T4 = Minimum Delay + 90 seconds = 11 min. 30 sec.

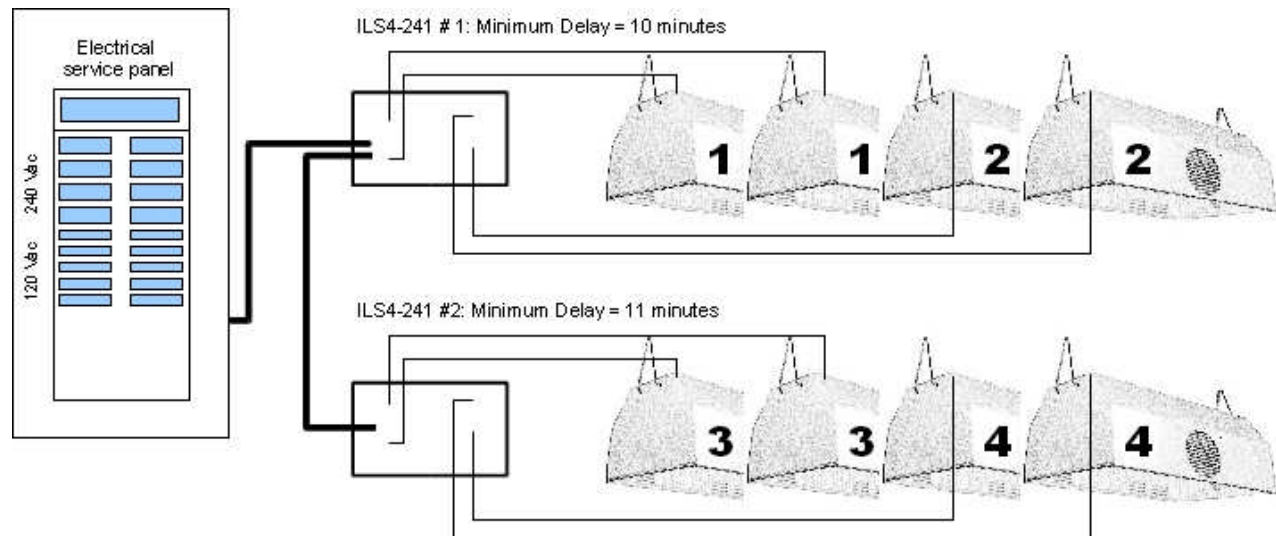
T5 = Minimum Delay + 0 second = 12 minutes

T6 = Minimum Delay + 30 seconds = 12 min. 30 sec.

T7 = Minimum Delay + 60 seconds = 13 minutes

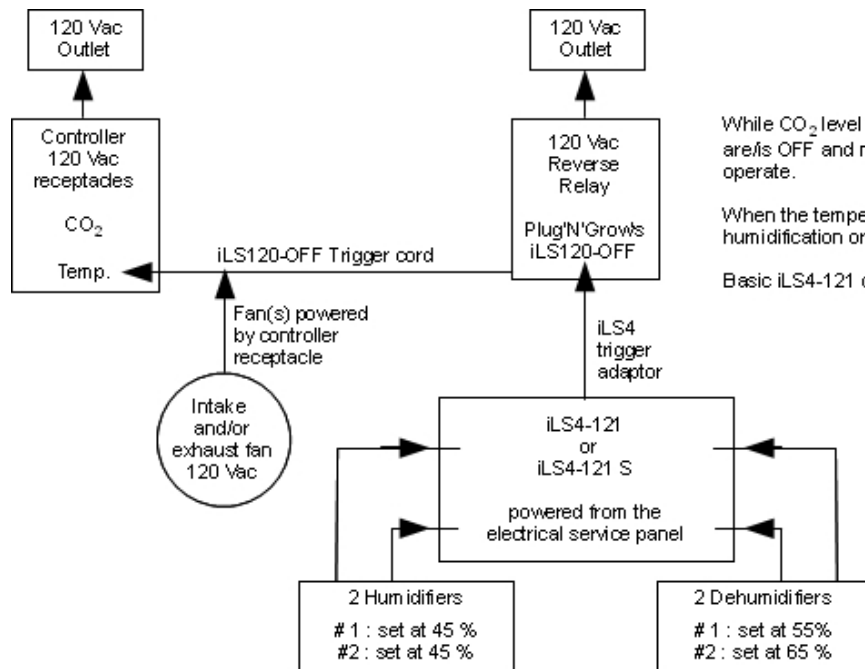
T8 = Minimum Delay + 90 seconds = 13 min. 30 sec.

**8 lamps turning on "One at a time" every 30 seconds in 8 steps**



$T1 = \text{Minimum Delay} + 0 \text{ second} = 10 \text{ minutes}$   
 $T2 = \text{Minimum Delay} + 30 \text{ seconds} = 10 \text{ min. } 30 \text{ sec.}$   
 $T3 = \text{Minimum Delay} + 0 \text{ second} = 11 \text{ minutes}$   
 $T4 = \text{Minimum Delay} + 30 \text{ seconds} = 11 \text{ min. } 30 \text{ sec.}$

**8 lamps: A pair turning on every 30 seconds in 4 steps**



While CO<sub>2</sub> level is enhanced, the intake and/or exhaust cooling fan(s) are/is OFF and needed humidification or dehumidification may operate.

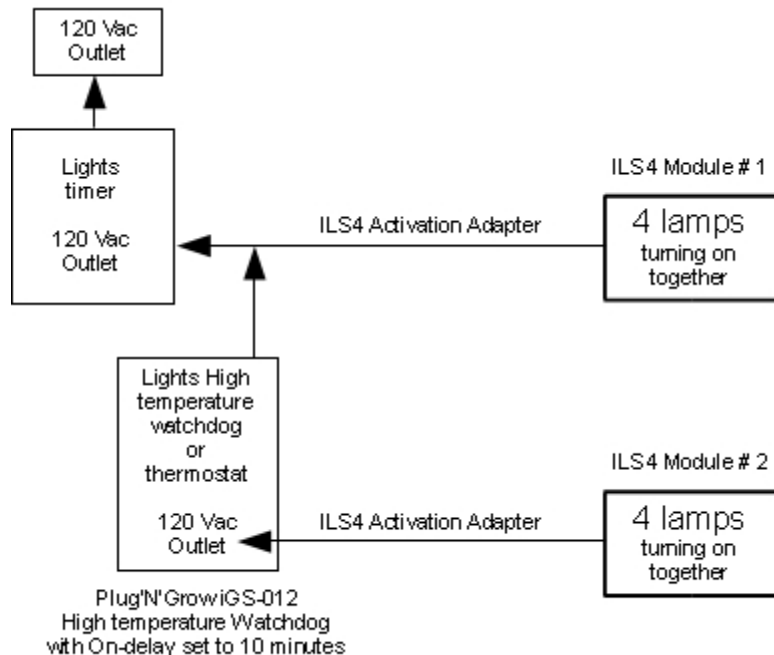
When the temperature is right and the fan turns off, needed humidification or dehumidification may operate.

Basic iLS4-121 or iLS4-121S without optional On-delay timer required

This humidity control strategy works with:

- All horticultural thermostat or « tempstat » like Plug'N'Grow's IGS-021
- All controller managing CO<sub>2</sub> and temperature like Plug'N'Grow's IGS-220

**Add humidity control to a CO<sub>2</sub> and temperature combined environmental controller**



### High Temperature Lighting Shut Off

#### 1. With iLS4 base modules (schematic)

Using a pair number of iLS4 modules to control the garden's lighting and having half the modules plugged to a high temperature watchdog control, half the garden lights are turned off for the time needed for the temperature to decrease to plants' acceptable level. For example, the high temperature watchdog control is set at 100 F or 38 C.

The high temperature watchdog should also provide an On-delay timer to protect the HID lamps against the hot bulb start up events that reduce the bulb life.

#### 2. iLS4 Modules and optional On-delay timer

In this scheme, the high temperature watchdog control is replaced by a heating thermostat (set at 100 F or 38 C) and each iLS4 optional timer is set to a minimum On-delay. The benefit of this scheme is that lamps turn on one or two at a time instead of four (4) together as in scheme 1.

## ON-DELAY ADJUSTMENT

The 0 to 20 minutes On-delay setting functionality in either Fixed or Minimum. This functionality is useful in preventing harmful lamps “hot start” and to put an extended delay between equipment start up for devices that require a minimum rest time between successive operations. The knob pointing arrow position and shown delay scale are relative and imprecise. Trial and error is the best way to set the required delay.

### 1- Fixed Delay

The iLS4 timer powering adaptor acts as a sense cord triggered when powered up. The iLS4 unit will wait the set amount of time before launching the outlets turn on sequence. The unit waiting time will be the same at every power up of the adapter. Use this feature to sequentially turn on multiple high electrical loads performing the same task like HID lamps, multiple dehumidifiers, high pressure pumps and the like. The feature is useful to lower the electric current demand at one time on the circuit.

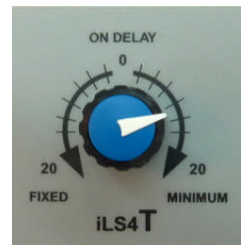
Adjust by turning the timer knob in the left half of timer's dial.



### 2. Minimum Delay

When the adaptor powers up, the unit will wait the set amount of time MINUS the time duration of the power outage to the adapter unit. If the adapter was unpowered longer than the set delay, then the outlets will turn on without any delay. Use this feature to prevent hot-bulb start-ups, to eliminate frequent cycling which can reduce equipments' useful life.

Adjust by turning the timer knob in the right half of timer's dial.



### 3. No Delay

Pointing the timer knob's arrow to the top center of the dial, the step by step outlet powering up starts at once (iLS4T-1 : 4 steps/ iLS4T-2 : 2 steps).



Visit our Website [www.igrowing.com](http://www.igrowing.com) for more products and suggestions

## TROUBLESHOOTING GUIDE

When iLS4 does not work properly, check first the module's outlet breakers, then

1. Check the model number at the back of the iLS4T Timer: iLS4T-1 does not work with iLS4-241; also, iLS4T-2 switches on outlets two by two on either iLS4 model.
2. Check the AC adapter is in good working order
  - a. unplug lamps or equipments from the iLS4 to avoid damaging them while testing; and
  - b. plug the direct cable in the iLS4 module, plug the adapter to the direct cable and in a live electrical outlet;

If the green pilot lamp does not turn on when plugging, the AC adapter is faulty

3. Check the iLS4T Timer is in good working order
  - a. Plug the timer to the iLS4 using the cable with the male RJ-45 connectors at both ends and set the timer dial to "0", plug the AC adapter to the timer and in a live outlet:
    - a. On iLS4T-1, if the lower left pilot LED does not glow, the timer is faulty; or
    - b. On iLS4T-2, if both left pilot LEDs do not glow, the timer is faulty.

Then, if pilot LEDs switch on in turn and remain lit, the timer is working well (iLS4T-1: one by one, iLS4T-2: two by two).
4. Check the iLS4 is in good working order
  - a. Plug the direct cable in the iLS4 module, plug the adapter to the direct cable and listen while plugging in a live electrical outlet: a "click" noise should be heard from the iLS4 module: all four outlets should be powered up at the same time: one can check the outlets using a voltmeter or a 120 Volt lamp.
  - b. Plug the iLS4T timer to the iLS4 module and set the dial button to "0", listen while plugging the adapter in a live electrical outlet: a "click" noise should be heard from the iLS4 module: another "click" should be heard when each pilot LED turn on every 30 seconds (iLS4T-1) or when two LEDs turn on.
5. Check the 240 volt supply line: one power wire could be disconnected or a service panel breaker tripped: on iLS4-121S, 2 outlets do not power up; on iLS4-241, the equipment does not work and either, there is no voltage available in the outlets or 120 Volt is read.

## WARRANTY

Nova Biomatique, Inc. (hereafter NBI) warrants this PLUG'N'GROW product to be free of defects in material and workmanship for a period of three (3) years from the date of original purchase by the end-user (proof of purchase required). The warranty only applies to the original purchaser of the new product from an authorised store. The warranty claim is submitted to NBI by the retailer. The warranty is limited to the repair or replacement, upon NBI's appraisal, of any defective part of the product covered by warranty.

The warranty **does not cover the following**: defects resulting from shipping (insurance is recommended), customers' installation, improper or abusive uses (excessive dirty condition), excessive wear, negligence or tampering.

Nova Biomatique, Inc. (hereafter NBI) distributors, dealers or other sales representatives are prohibited from adding or deleting items from this warranty coverage.

Shipping fees are the customer's responsibility, except for repairs covered by the warranty, where NBI will only assume the return standard ground shipping fees.

**For any question related to your warranty, to repairs and to technical support, please visit [novabiomatique.com](http://novabiomatique.com) or contact us by email at [tech@igrowing.ca](mailto:tech@igrowing.ca)**

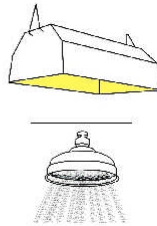
Manufactured by : Nova Biomatique inc.  
85, route 132  
La Pocatière (QC) Canada G0R 1Z0

# PLUG'N'GROW's multi-timer iGS-016

## To put an end to roasted plants!

### A precise control for LIGHTING, IRRIGATION and lamps cooling

- High flexibility for cycle adjustment settings (up to 72 hours)
  - Create your “short day”: 16 hours? 18 hours? YES, IT DOES IT
  - Water 6 of every 23 seconds? YES, GO AHEAD!
- Adjustment settings to the second
- Perfect lighting and irrigation coordination



### Reinforced PROTECTION for plants and equipments

In case of:

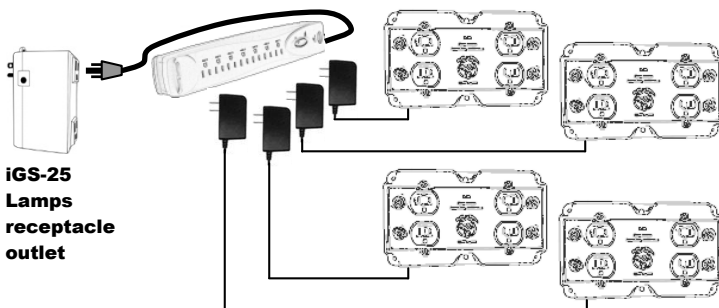
- Pump breakdown ⇒ *Switch on emergency pump (dual pump system)*
- Power failure ⇒ *Lamps restart delay adjustable*
- Low nutrient solution level ⇒ *Pump and lamps switch off*
- Overheated growing environment ⇒ *Lamps switch off*

❖ **2 pumps outlets: 1 for main pump and 1 for emergency pump**

❖ **1 lighting outlet**

❖ **1 lamps cooling fan outlet**

Visit [novabiotmatique.com](http://novabiotmatique.com) for details



Visit [novabiotmatique.com](http://novabiotmatique.com) for details

## PLUG'N'GROW's iGS-220 combined controller

### Day & Night Temperature OR Relative Humidity & CO<sub>2</sub> Control with Photocell

- Displays CO<sub>2</sub> (PPM), temperature and relative humidity values
- Output 1 for CO<sub>2</sub> enrichment or ventilation
- Output 2 for either of heater, AC, fan, dehumidifier or humidifier
- Adjustable set points for lit and dark garden
- Adjustable operation priority and additional shut-off delay
- Automatic differential adjustment for conditions closest to set point
- Easy calibration by the user
- 120 V, 15 A, 1 HP total load capacity
- **Upgradable to iGS-221 Control for 6 equipments**
- **Precise 1000 ppm CO<sub>2</sub> Calibration with PLUG'N'GROW's Calibration kit**



Visit [novabiotmatique.com](http://novabiotmatique.com) for details

## PLUG'N'GROW's Bottled CO<sub>2</sub> Regulator RG1

- works with any CO<sub>2</sub> control device with a standard 110-120 Volt, 3 prongs outlet: ppm display CO<sub>2</sub> controller recommended
- Grow room 650 and up to 7500 cubic feet
- CO<sub>2</sub> Flow up to 50 SCFH, 2.5 -3 times the maximum flow offered by competing products
- ASCO™\*, North American made "continuous duty" industrial solenoid valve, 20 000 000 cycles life expectancy
- Features a heater to avoid regulator and valve freezing and seizing at high CO<sub>2</sub> flow
- Designed to last years and years and covered by a 3 year warranty



Visit [novabiotmatique.com](http://novabiotmatique.com) for details