

6) INSTALLING THE PHOTOCELL:

- A)** Ensure that the transformer is off and main power cord unplugged.
- B)** Remove the front cover of the control panel
- C)** Remove the 7/8" black knockout cover from the side of the transformer
- D)** Pass the white connector from the photocell through the hole, on the inside of the housing, slide the spacer and locknut over the wire and tighten on the photo cell.
- E)** Disconnect the photocell jumper from the transformer, and plug in the white photocell connector in its place. Make sure it is fully inserted into the plug.
*** Remember to keep the photocell jumper loop***
- F)** Replace the front cover and plug the transformer back into an electrical outlet.
- G)** Position the photocell in a way so that no artificial light can inadvertently shine near the photocell, this will cause the system to cycle on and off.

7) TIMER AND PHOTOCELL OPERATION INSTRUCTIONS:

A) TIMER ON/OFF ONLY:

To operate the light set the timer to turn the system on before dark at your desired time. Then set the lights to turn off by the timer at the desired off time. ***Timer types may vary refer to the included documentation for specific timer setup instructions.***

B) PHOTOCELL ON/OFF ONLY:

To use the photocell remove the black cap from the top of the photocell. This method will keep the system running only when it is dark. So at dusk the system will turn on, and at dawn it will shut off.

C) PHOTOCELL AND TIMER ON/OFF:

To use the photocell remove the black cap from the top of the photocell. This method uses both the photocell and the timer module. Set the timer to turn on before it gets dark. At this point the unit will not turn on by itself until it gets dark, at which point the photocell will turn the transformer on. Now the timer can be set to turn off at a desired time in the middle of the night, the timer will override the photocell shutting off the transformer at any time even if it is still dark outside. ***Timer types may vary refer to the included documentation for specific timer setup instructions.***

Low Voltage Power Transformer Installation Guide 60W 100W 150W

WARNING– Install Power unit in or on non-combustible materials only

This device is accepted as a component of a landscape lighting system where the suitability of the combination shall be determined by CSA or local inspection authorities having jurisdiction.

Do not connect two or more power supplies in parallel.

WARNING: Risk of Electric Shock. Install power unit 5 feet (1.5m) or more from a pool, spa, or fountain. Where the unit is installed (a) indoors within 10 feet (3.0m) of a pool, spa or fountain or (b) outdoors, connect power unit to a receptacle protected by a GFCI.

1.) MOUNTING THE TRANSFORMER:

The transformer should be mounted to a solid foundation using the keyhole slots located at the top of the transformer.

NOTE: THE BOTTOM OF THE TRANSFORMER MUST BE LOCATED AT LEAST ONE FOOT ABOVE THE GROUND.

When securing the transformer to the wall make sure to use the correct fasteners, for the type of material that the transformer will be mounted to.

NOTE: SECONDARY WIRING IS INTENDED FOR SHALLOW BURIAL ONLY (LESS THAN 6").

2.) DETERMINING THE LOAD:

The transformer has a dedicated circuit breaker on the output.

60W unit has a 4 amp breaker

100W unit has a 6 amp breaker

150W unit has a 10amp breaker
12v-225w 15v-280w

The 60W and 100W unit has only a single 15vac output
The 150W unit has a 12vac and 15vac output

2) DETERMINING THE LOAD CONTINUED:

Once the necessary tap has been established for each run, the wattage loss per foot can be calculated using the Chart #1 and the formula below.

Cable Loss=(loss per foot X distance)

Example: using 100W on 10 AWG wire with a 40 ft run, and 150W on 10AWG wire with 80 ft run

$$\begin{aligned} &=(0.131 \times 40) + (0.293 \times 80) \\ &=(5.2) + (23.44) \\ &=28.64 \text{ Total watt losses from the Cable.} \end{aligned}$$

AWG	100W	150W
12	0.21	0.461
10	0.131	0.293

Chart 1 (wattage losses per foot)

To determine the maximum lamp load (total bulb wattage) you must subtract the cable loss from total transformer wattage. All of our transformers can perform efficiently up to the maximum rated wattage on any of the taps.

Maximum Lamp load = (transformer rating) - (cable loss)

Example: Using a 150W transformer, and the cable runs that were calculated above.

$$\begin{aligned} &=(150w) - (28.64) \\ &=121.36 = \text{approx } 121 \text{ watts} \end{aligned}$$

For this example the maximum total bulb wattage can not exceed 121 watts.

3. CONNECTING THE CABLES:

Remove the control panel cover by loosening the two screws. Feed the low voltage cables through the knockouts, located on the bottom plate.

The COMS and voltage TAPS are labeled on each transformer, connect the cables to the predetermined voltage TAPS and COMS.

To avoid any future problems, take care when putting the wires into the terminal blocks, and avoid exposing any wire strands (these could short circuit). When tightening terminal block screws, make sure that they are fully tightened.

**REMEMBER!! The maximum wattage per COM on EACH of these transformers are different. Please refer to step 2 for sizing

Ensure that ALL of the circuit breakers are off, then plug in the 120V power cord into a properly grounded 120V receptacle. Proceed to turn on one breaker at a time, while ensuring there is no short circuits in any of the cable runs.

NOTE: If additional wire is required for your low voltage connections, contact your nearest outdoor lighting supply company.

4) CHECKING HALOGEN LAMP VOLTAGES:

To ensure the proper voltage is supplying each fixture, they all must be checked with a voltmeter. Use a true RMS voltmeter to check the voltage at the fixtures to ensure accurate readings.

****The correct voltage should be between 10.5 and 11.8 volts****

CHECKING THE OUTPUT AMPS:

Once proper voltage to each fixture has been established, use a clamp-on Amp meter to check the output current on all of the wires connected to each TAP. Check the low-voltage cables at the bottom of the transformer.

CHECKING THE INPUT AMPS:

Depending on the transformer size, you are provided with either a long loop on the photocell jumper plug, or a dedicated amperage loop located right next to the photocell plug. Either of these locations should be used to determine the input current. Using a clamp-on Amp Meter, clamp around the loop and measure the current. (See Chart 2 for Maximum Currents)

	60W	100W	150W
AMPS	0.5A	0.8A	1.25

Chart 2: Max input currents

****REMEMBER!! Never exceed the maximum input current!!****

If the input current exceeds the maximum rated current, either remove fixtures from the system, or reduce the wattage of the fixtures bulbs.

Each transformer is marked with the maximum input current that is allowed.

5) INSTALLING THE 24 HOUR TIMER:

- A) Remove the front cover of the control panel
- B) Unplug the transformer's timer cord from the receptacle
- C) Plug the Cord into the 24 hour timer
- D) Plug the 24 hour timer into the receptacle
- E) Using the instructions provided with the 24 timer set to the desired time.

Low Voltage Power Transformer Installation Guide 300W 600W 900W

WARNING— Install Power unit in or on non-combustible materials only

This device is accepted as a component of a landscape lighting system where the suitability of the combination shall be determined by CSA or local inspection authorities having jurisdiction.

Do not connect two or more power supplies in parallel.

WARNING: Risk of Electric Shock. Install power unit 5 feet (1.5m) or more from a pool, spa, or fountain. Where the unit is installed (a) indoors within 10 feet (3.0m) of a pool, spa or fountain or (b) outdoors, connect power unit to a receptacle protected by a GFCI.

1.) MOUNTING THE TRANSFORMER:

The transformer should be mounted to a solid foundation using the keyhole slots located at the top of the transformer.

NOTE: THE BOTTOM OF THE TRANSFORMER MUST BE LOCATED AT LEAST ONE FOOT ABOVE THE GROUND.

When securing the transformer to the wall make sure to use the correct fasteners, for the type of material that the transformer will be mounted to.

NOTE: SECONDARY WIRING IS INTENDED FOR SHALLOW BURIAL ONLY (LESS THAN 6”).

2.) DETERMINING THE LOAD:

The transformer has a dedicated circuit breaker for each of the COM terminals. Each common can have a maximum of 21amps or the following maximum wattage per voltage.

12v-225w 13v-240w 14v-280w 15v-280w

A) Figure out the total wattage of the completed installation then divide that number by 300. This number will tell you how many runs from the transformer is required.

B) Measure the distance from the first fixture from each run, to the transformer and refer to the Chart 1 below to pick the correct TAP voltage and Wire size.

WATTS	TAP 1 (12V)		TAP 2 (13V)		TAP 3 (14V)		TAP 4 (15V)	
	AWG 12	AWG 10	AWG 12	AWG 10	AWG 12	AWG 10	AWG 12	AWG 10
100 - 149	38	60	76	120	113	180	151	240
150 - 199	25	40	50	80	76	120	101	160
200 - 249	19	30	38	60	57	90	76	120
250 - 300	N/A	24	N/A	48	N/A	72	N/A	96

Chart 1 (Runs in Feet)

2) DETERMINING THE LOAD CONTINUED:

C) Once the necessary tap has been established for each run, the wattage loss per foot can be calculated using the Chart #2 and the formula below.

Cable Loss=(loss per foot X distance)

Example: using 100W on 10 AWG wire with a 40 ft run, 300W on 10 AWG wire with 60 ft Run, and 150W on 10AWG wire with 80 ft run

AWG	100W	150W	200W	300W
12	0.21	0.461	0.855	N/A
10	0.131	0.293	0.537	1.2

$$=(0.131x40)+(1.2x60)+(0.293x80)$$

$$=(5.2)+(72)+(23.44)$$

$$=100.64 \text{ Total watt losses from the Cable.}$$

Chart 2 (wattage losses per foot)

D) To determine the maximum lamp load (total bulb wattage) you must subtract the cable loss from to total transformer wattage. All of our transformers can perform efficiently up to the maximum rated wattage on any of the taps.

Maximum Lamp load = (transformer rating) - (cable loss)

Example: Using a 900W transformer, and the cable runs that were calculated above.

$$=(900w)-(100.64)$$

$$=799.36= \text{approx } 800 \text{ watts}$$

****For this example the maximum total bulb wattage can not exceed 800 watts.****

3. CONNECTING THE CABLES:

Remove the control panel cover by loosening the two screws. Feed the low voltage cables through the knockouts, located on the bottom plate.

The COMS and voltage TAPS are labeled on each transformer, connect the cables to the predetermined voltage TAPS and COMS.

To avoid any future problems, take care when putting the wires into the terminal blocks, and avoid exposing any wire strands (these could short circuit). When tightening the terminal blocks screw, make sure that it is fully tightened.

***REMEMBER!! The maximum wattage per COM on ALL transformers is 300W!**

Ensure that ALL of the circuit breakers are off, then plug in the 120V power cord into a properly grounded 120V receptacle. Proceed to turn on one breaker at a time, while ensuring there is no short circuits in any of the cable runs.

NOTE: If additional wire is required for your low voltage connections, contact your nearest outdoor lighting supply company.

4) CHECKING HALOGEN LAMP VOLTAGES:

To ensure the proper voltage is supplying each fixture, they all must be checked with a voltmeter. Use a true RMS voltmeter to check the voltage at the fixtures to ensure accurate readings.

***The correct voltage should be between 10.5 and 11.8 volts**

CHECKING THE OUTPUT AMPS:

Once proper voltage to each fixture has been established, use a clamp-on Amp meter to check the output current on all of the wires connected to each TAP. Check the low-voltage cables at the bottom of the transformer.

***Remember!! Each circuit can only have 21 amps MAXIMUM!**

CHECKING THE INPUT AMPS:

Depending on the transformer size, you are provided with either a long loop on the photocell jumper plug, or a dedicated amperage loop located right next to the photocell plug. Either of these locations should be used to determine the input current. Using a clamp-on Amp Meter, clamp around the loop and measure the current. (See Chart 3 for Maximum Currents)

	300W	600W	900W	1200W
AMPS	2.5A	5.0A	7.5A	10.0A

Chart 3: Max input currents

***REMEMBER!! Never exceed the maximum input current!**

If the input current exceeds the maximum rated current, either remove fixtures from the system, or reduce the wattage of the fixtures bulbs.

Each transformer is marked with the maximum input current that is allowed

5) INSTALLING THE 24 HOUR TIMER:

- A)** Remove the front cover of the control panel
- B)** Unplug the transformer's timer cord from the receptacle
- C)** Plug the Cord into the 24 hour timer
- D)** Plug the 24 hour timer into the receptacle
- E)** Using the instructions provided with the 24 timer set to the desired time.

6) INSTALLING THE PHOTOCELL:

- A)** Ensure that the transformer is off and main power cord unplugged.
- B)** Remove the front cover of the control panel
- C)** Remove the 7/8" black knockout cover from the side of the transformer
- D)** Pass the white connector from the photocell through the hole, on the inside of the housing, slide the spacer and locknut over the wire and tighten on the photocell.
- E)** Disconnect the photocell jumper from the transformer, and plug in the white photocell connector in its place. Make sure it is fully inserted into the plug.
*** Remember to keep the photocell jumper loop***
- F)** Replace the front cover and plug the transformer back into an electrical outlet.
- G)** Position the photocell in a way so that no artificial light can inadvertently shine near the photocell, this will cause the system to cycle on and off.

7) TIMER AND PHOTOCELL OPERATION INSTRUCTIONS:

A) TIMER ON/OFF ONLY:

To operate the light set the timer to turn the system on before dark at your desired time. Then set the lights to turn off by the timer at the desired off time. ***Timer types may vary refer to the included documentation for specific timer setup instructions.***

B) PHOTOCELL ON/OFF ONLY:

To use the photocell remove the black cap from the top of the photocell. This method will keep the system running only when it is dark. So at dusk the system will turn on, and at dawn it will shut off.

C) PHOTOCELL AND TIMER ON/OFF:

To use the photocell remove the black cap from the top of the photocell. This method uses both the photocell and the timer module. Set the timer to turn on before it gets dark. At this point the unit will not turn on by itself until it gets dark, at which point the photocell will turn the transformer on. Now the timer can be set to turn off at a desired time in the middle of the night, the timer will override the photocell shutting off the transformer at any time even if it is still dark outside. ***Timer types may vary refer to the included documentation for specific timer setup instructions.***