

landscape · entertainment · architectural · hospitality · illumination

Installation & User Guide

RXT Series Transformers & Controls



THE REMEDY



UL 1838
UL 1598

ETL Listed to UL Standards For Safety

MATERIAL & FEATURES:

- UL 1838 listed, the standard for low voltage landscape lighting systems
- 60, 120, 180, 300 and 600 watt output models
- Multi Voltage output (12.5, 13.5 & 14.5 Volts)
- Super Terminal Lugs with capacity of 3 x #8, 5 x #10, 7 x #12 or 9 x #14 gauge wire
- 304 Stainless Steel enclosure with No. 4 brushed finish
- Removable hinged door is lockable and weather sealed
- Above grade, NEMA 3R rated, rain tight enclosure
- LED indicators for instant recognition of 120v and 12v power
- Timer Ready standard (for plug in timers)
- Optional Mechanical Timer (-T), Digital Timer (-DT) and Astro Timer (-AT) face plates can be factory or field installed
- Photocell Ready with quick connector (not with -AT model)
- Supplied with two 1/2" conduit (trade size) holes & one 1-1/2" inlet with plugs in bottom panel plus 2 side panel 1/2" conduit (trade size) holes with plugs
- Break away bottom panel swings down for easy access wiring
- 11 gauge cold rolled steel 'L' brackets for stable mounting
- Mounting plate and hardware included



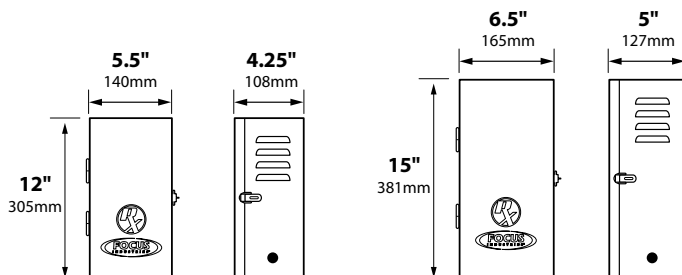
Timer Ready (Standard)

ELECTRICAL:

- Long life, high efficiency 266°F (130°C) class 'B' rated transformer core
- Copper Shielded isolation/insulation; No contact between 120v (primary) and 12v (secondary) windings
- 1500v Isolation between all windings and ground
- Grade M19 electric grade steel for superior electrical and magnetic properties
- Single phase, open core and coil
- E.I. laminated core has concentric winding and is protected by internal automatic resettable thermal switch.
- Double vacuumed impregnated with black slate flour
- Filled varnish for superior heat dissipation and noise reduction - Class 180°C
- 120v primary, 12.5v secondary 50/60 Hertz/cycle (standard)
- 6 foot 18/3 SJT-WA weatherproof grounded power cord (120v)
- ON/OFF control via rocker switch on 120v side, no idle energy consumption or noise when power is Off.
- Manually resettable circuit breaker for overload and short circuit protection
- Extra heavy duty (80 amp) terminal lugs



Digital Timer (-DT)



RXT- 12-60-MV
RXT- 12-120-MV
RXT- 12-180-MV

RXT- 12-300-MV
RXT- 12-600-MV



Astro Timer (-AT)

Mounting Your Transformer

Mounting location will be dictated by where the 110v/120v power is available such as garage, car port, closet, utility shed, pool enclosure, house exterior, etc. Suitable for indoor and outdoor use.

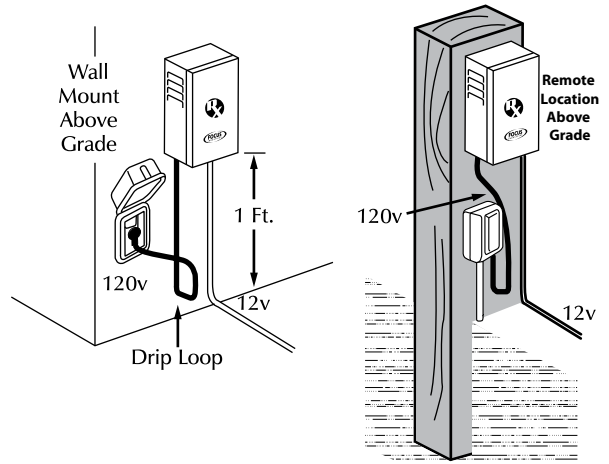
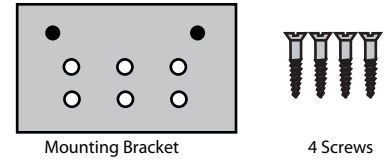
For Wall & Post Mount

Transformer must be installed a minimum of 12" above grade as measured from finished grade to bottom of transformer. For post mounting it is recommended to use pressure treated 4" x 4" x 36" post set in concrete footing.

- Determine the location and final height of transformer. Eye level or slightly below are normally acceptable.
- Using supplied mounting bracket and screws, attach mounting bracket to surface using a torpedo level to ensure mount is level.
- Match up key holes on back of transformer with studs on mounting bracket and firmly push down transformer into place.

Note: When mounting outdoors, it is recommended to mount transformer within 3 feet of receptacle which will allow for power cord to be formed into a drip loop protecting the receptacle from water.

All hardware is included for most installations:
1 x Mounting bracket
4 x Sheet metal screws



Super Terminal Lug System

RXT Series transformers feature our Super Terminal Lug System. These 80 amp gray terminal lugs are extra large allowing for multiple cables into each lug.

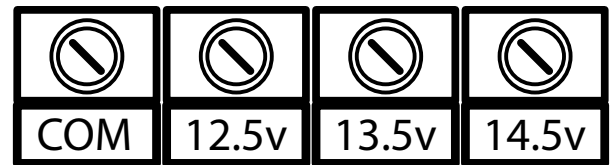
Fewer tools are required with the Super Terminal Lug System. No need for crimping connectors onto wires. Simply strip wire ends of low voltage cable and insert into proper terminal lug barrel. Tighten down terminal lugs securely.

All RXT Series transformers feature Multi Voltage (-MV) outputs through the Super Terminal Lug System. The system consists of four terminal lugs: One common lug, one 12.5v lug, one 13.5v lug and one 14.5v lug.

Each of the "hot" lugs (12.5v, 13.5v and 14.5v) has a maximum wattage capacity equal to the maximum load of the transformer.

One wire from each cable run must be connected to the common lug.

Super Terminal Lug System



LUG CAPACITY

- 3 x #8 gauge wires
- 5 x #10 gauge wires
- 7 x #12 gauge wires
- 9 x #14 gauge wires
- 12 x #16 gauge wires

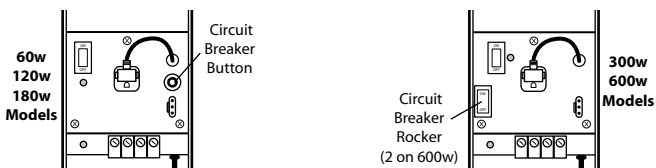
Circuit Breakers

Manual Reset Circuit Breaker

RXT Series transformers are protected by circuit breakers located in the front panel. These circuit breakers are safety switches that will turn off the transformer if it is overloaded or there is a short in the cable system.

RXT-12-60 has 7 amp circuit breaker
RXT-12-120 has 13 amp circuit breaker
RXT-12-180 has 20 amp circuit breaker

RXT-12-300 has 25 amp circuit breaker
RXT-12-600 has two 25 amp circuit breakers



Circuit breakers should always be in the ON position or transformer will not operate. Refer to the trouble shooting section of this manual if the circuit breakers are tripping off. After the problem has been corrected, the circuit breaker can be manually reset by pressing the circuit breaker button on the front panel (60w, 120w & 180w models.) Reset 300w and 600w models with On/Off rocker located on front panel.

Internal Circuit Switch

For added safety, RXT transformers cores are protected by an internal thermal circuit switch. This switch automatically shuts the transformer down if it is running too hot or has short circuit. After the transformer cools down (20 to 40 minutes) the circuit switch will reset automatically and transformer will turn back on.

Installation & Operating Instructions

Timer Ready (standard base model)

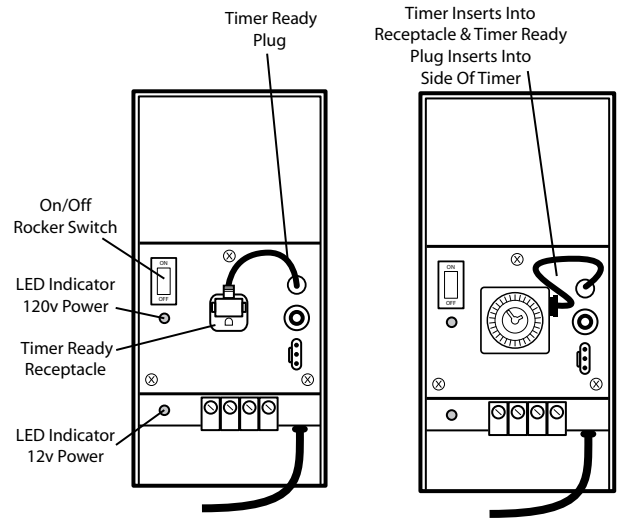
No installation is required for standard base model RXT transformers which come standard with a Plug-in Timer Ready receptacle.

Plug grounded power cord into outlet; Ground Fault Interrupter outlet (GFI) recommended. Green LED indicator on front panel under On/Off switch will light up confirming 120v power to transformer.

To operate: press rocker switch to "ON" or "OFF" position to turn lights on and off. Green LED indicator light next to terminal lugs will illuminate when 12v power to lights is on. LED indicator light will go off when 12v power is turned off.

Plug In Timer (supplied by others)

Unplug Timer Ready plug from receptacle on front panel. Plug in the Timer (supplied by others) to the receptacle on front panel. Insert Timer Ready plug into proper receptacle on Timer and turn transformer on. Follow manufacturer's instructions for operation of the Timer.



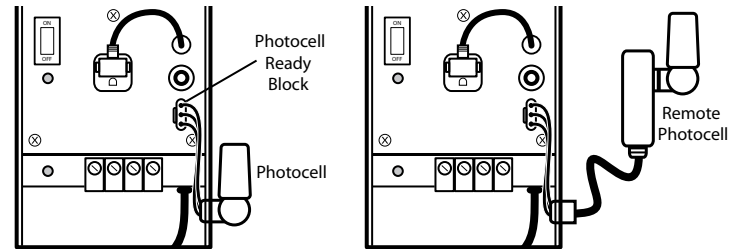
Shown w/ Plug In Timer

Photocell & Remote Photocell

Photocells must have full access to daylight. Any obstruction could affect operation of unit.

1. Unplug transformer prior to installation of Photocell.
2. On front panel, remove white male plug with Black jumper wire from Photocell Ready block. (Do not discard male plug as it can be used for load/ampere check.)
3. Determine which side of transformer has full access to unobstructed daylight and remove black plug from that side of transformer. Use Remote Photocell if transformer does not have access to unobstructed daylight.
4. Remove lock nut from Photocell; run plug and wires from Photocell through hole; replace and tighten lock nut to secure Photocell to housing. Connect male plug from Photocell to white female connector on front plate.

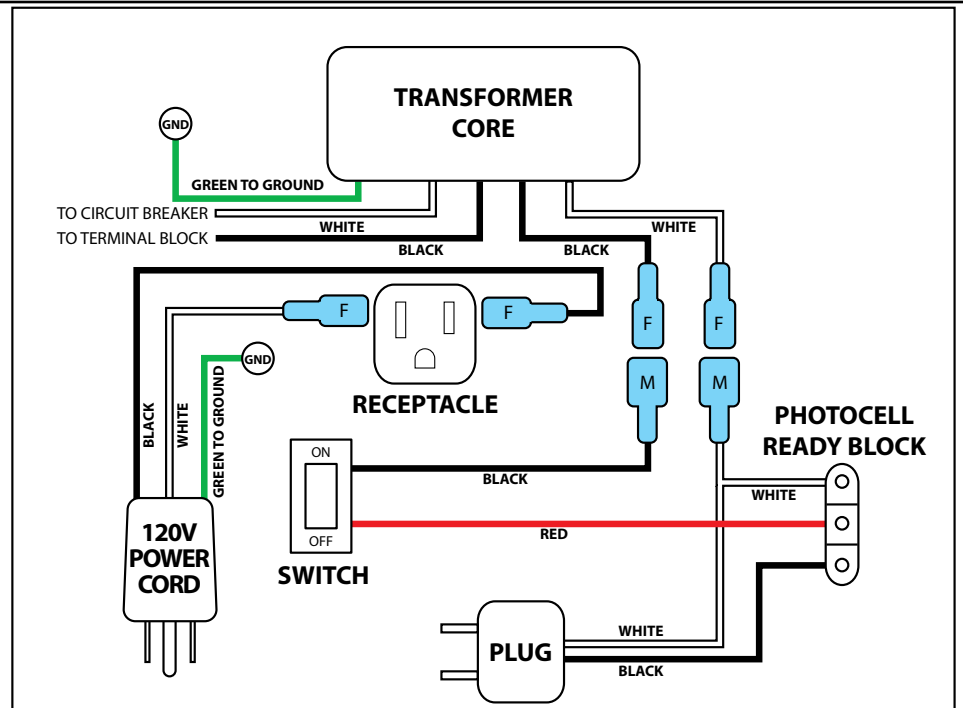
5. Plug transformer back in and power on. If a Timer is installed, set Timer permanently to "On" position for lights on at dusk and off at dawn. To have lights turned on by photocell and turned off by Timer at a specific time, for example midnight, set Timer to turn On at 12 noon (Photocell will override Timer and not allow power to lights until dusk) and set timer to time for lights to turn off.



Removing Timer Ready plate for installation of Integral Timer (-T) Digital Timer (-DT) or Astro Timer (-AT)

If Integral Timer, Digital Timer or Astro Timer was installed at the factory, skip these removal and installation instructions.

1. Using Phillips #2 screwdriver, remove three screws on face of Timer Ready plate.
2. Gently lift plate off to expose wires.
3. Unplug quick connect of black and white wire from power cord to receptacle.
4. Unplug quick connect of white wire from Photocell Ready Block to transformer core
5. Unplug quick connect of black wire from On Off Switch to transformer core.
6. Remove entire plate.



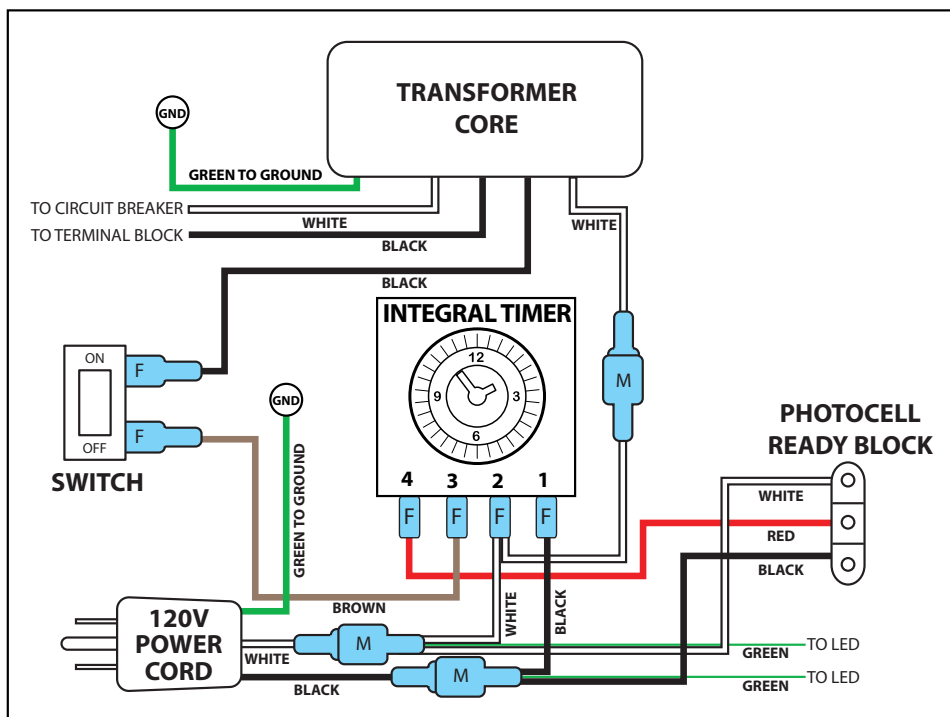
Wiring Diagram for Removal of Timer Ready Plate

Installation & Operating Instructions (continued)

Installing Integral Timer (-T) plate

No special tools required. Male/Female quick connectors are included with the wiring inside transformer and with wiring on Integral Timer plate.

1. Connect Black wire from #1 on Digital Timer to Black wire from power cord.
2. Connect first split White wire from #2 on Digital Timer to White wire from power cord.
3. Connect second split White wire from #2 on Digital Timer to White wire from transformer core.
4. Connect Black wire from On/Off Switch to Black wire from transformer core.
5. Carefully fit Digital Timer plate into transformer being careful not to pinch any wires.
6. Using Phillips #2 screwdriver, install 3 supplied screws and tighten firmly.



Wiring Diagram for Installation of Integral Timer Plate

Integral Timer operation

Setting Current Time

To set the current time turn the minute hand clockwise.

DO NOT SET THE TIME BY ROTATING THE "OUTER" DIAL.

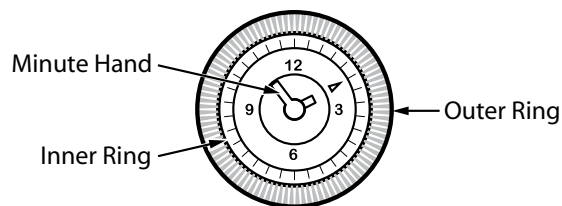
DO NOT ROTATE THE MINUTE HAND COUNTER CLOCKWISE AS THIS WILL DAMAGE THE GEARS.

Turn the minute hand clockwise until the time of day on the outer dial is aligned with the triangle marker on the inner dial (located at the two o'clock position)

Programming

The 24-Hour dial has quarter-hour (15 minute) divisions and AM/PM indications. Before proceeding make sure all of the white captive trippers are pushed to the inside ring position.

Program the time switch by pushing the white captive trippers to the outer ring position for the entire "lights on" time. (Each white captive tripper controls 15 minutes of time.) For example, if you want lights to turn on at 6:30pm and turn off at 11pm, all the white captive trippers between 6:30pm and 11pm should be pushed to the outer ring position.

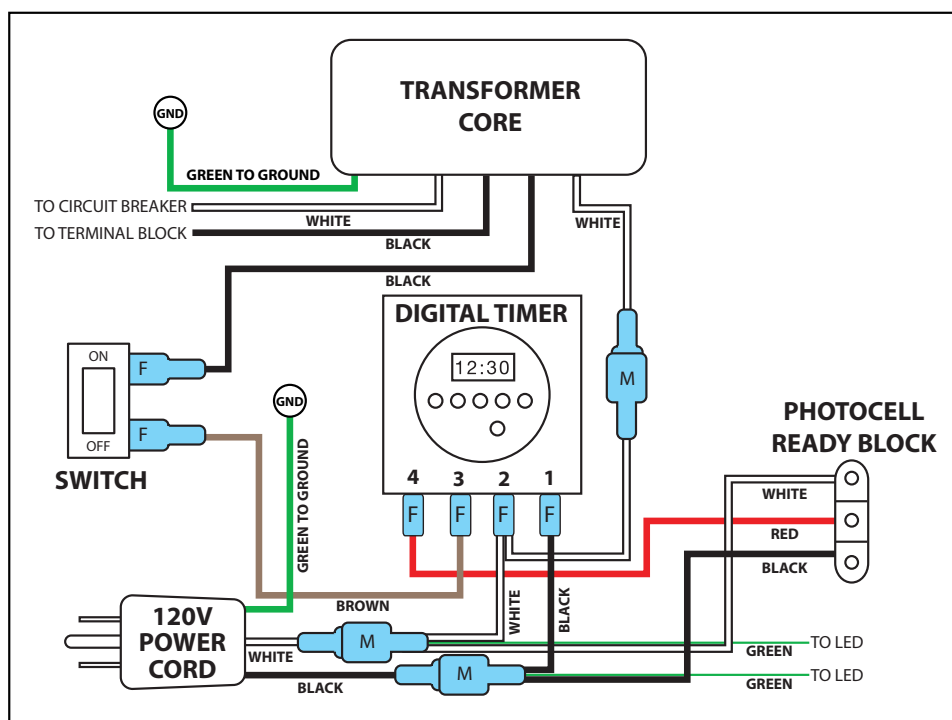


Installation & Operating Instructions (continued)

Installing Digital Timer (-DT) plate

No special tools required. Male/Female quick connectors are included with the wiring inside transformer and with wiring on Digital Timer plate.

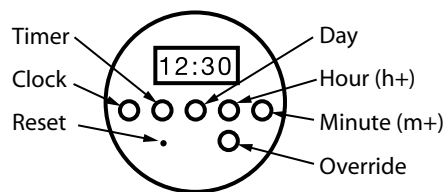
1. Connect Black wire from #1 on Digital Timer to Black wire from power cord.
2. Connect first split White wire from #2 on Digital Timer to White wire from power cord.
3. Connect second split White wire from #2 on Digital Timer to White wire from transformer core.
4. Connect Black wire from On/Off Switch to Black wire from transformer core.
5. Carefully fit Digital Timer plate into transformer being careful not to pinch any wires.
6. Using Phillips #2 screwdriver, install 3 supplied screws and tighten firmly.



Wiring Diagram for Installation of Digital Timer Plate

Digital Timer operation

A total of 7 "On/Off" settings can be programmed into the Digital Timer. This includes settings for weekday and/or weekends enabling the user to customize their lighting system based on their weekly schedules. For example, if you want the lights to only be on from 6pm to 11pm nightly but turn on at 4:30pm on weekdays, this can be set into the Digital Timer.



Initialize the Digital Timer

1. Power switch on transformer should be left in the "ON" position.
2. Push the reset key with a paper clip or pencil tip. The display will flash "12:00".
3. Press and release the "Clock" button to begin. The display will stop flashing.

Setting Current Time

1. Press and hold the "Clock" button during this entire procedure.
2. Press the h+ button to advance the hours.
3. Press the m+ button to advance the minutes.
4. Press the Day button to advance the day.
5. Release the "Clock" button once time and day are correct.
6. For beginning of Daylight Savings Time simultaneously press the h+ and m+ buttons. Display will indicate "DST" and advance hour by one. To end Daylight Savings simply press the h+ and m+ buttons simultaneously. Hour will decrease by one and "DST" will disappear from the display.

Manual On/Off function

Pressing the Override button will alternate the unit On and Off.

Programming On/Off Events

1. Press the "Timer" button once. **TIMER ON** --:-- appears
2. Using the h+ and m+ buttons enter the desired ON time. When complete press the Timer button once.
3. Next, **TIMER OFF** --:-- will be displayed. Using the h+ and m+ buttons enter the desired time off. When complete press the Timer button once.
4. If complete press the "Clock" button to return to current time.
5. Note that a total of 7 On & 7 Off events can be programmed.

Block Programming

1. When programming On/Off events, all days are indicated by default. To change the day selection simply keep pressing the Day button and the display will change through different weekday and weekend blocks.
2. Follow the programming steps above to set On/Off events for your desired blocks.

Deleting Programs

1. Press the Timer button until the desired program is displayed.
2. Then press and hold the h+ and m+ buttons until --:-- is displayed.
3. Press the Timer button to complete deletion of program.
4. When finished press the Clock button to return to current time.

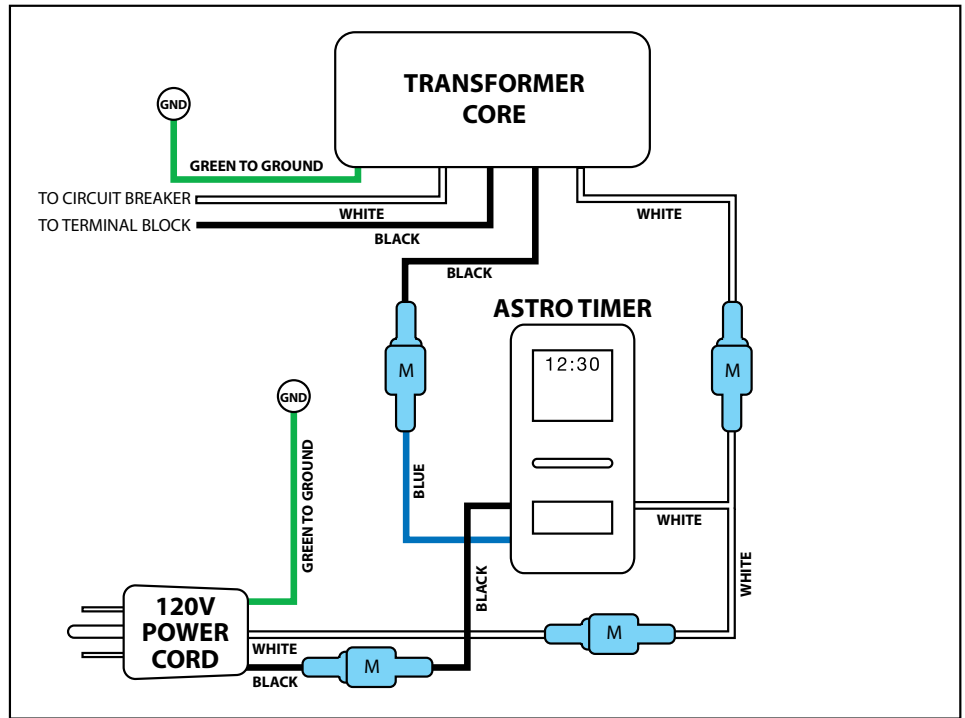
Note: To reset all programmed events and time push the reset key with a paper clip or pencil tip.

Installation & Operating Instructions (continued)

Installing Astro Timer (-AT) plate

No special tools required. Male/Female quick connectors are included with the wiring inside transformer and with wiring on Astro Timer plate.

1. Connect Black wire from Astro Timer to Black wire from power cord.
2. Connect first split White wire from Astro Timer to White wire from power cord.
3. Connect second split White wire from Astro Timer to White wire from transformer core.
4. Connect Blue wire from Astro Timer to Black wire from transformer core.
5. Connect Green ground wire from power cord to Green wire from transformer core.
6. Carefully fit Astro Timer plate into transformer being careful not to pinch any wires.
7. Using Phillips #2 screwdriver, install 3 supplied screws and tighten firmly.

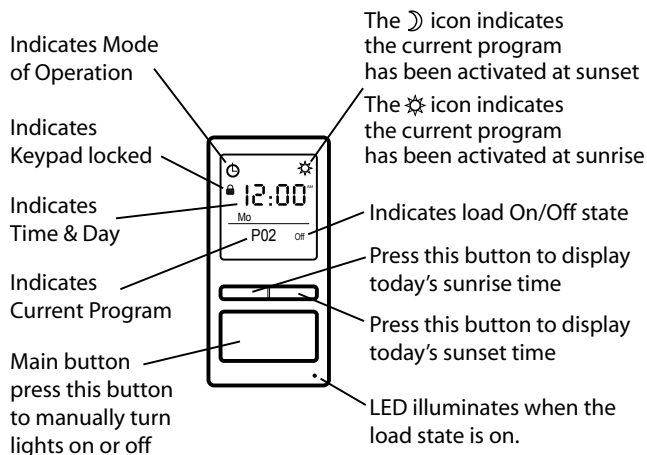


Wiring Diagram for Installation of Astro Timer Plate

Astro Timer operation

The Astro Timer features automatic sunrise/sunset activation based on your longitude and latitude coordinates. It automatically adjusts for Daylight Savings Time and never needs reprogramming. Built in memory protects settings during a power failure.

Below are basic set up instructions. Please refer to the full Astro Timer User Guide included with transformer and/or Astro Timer plate.



Quick Start-up

By default the Astro Timer will turn lights on at sunset and turn them off at 11:00pm. If these settings are appropriate for you then you only need to set the time, day and latitude/longitude coordinates.

Operating Modes

Manual Mode: Briefly press the main button to turn the lights on or off.

Automatic Mode: In this mode the timer follows the set programs

Setting the Clock

1. Press the main button for 3 seconds to enter the setup menus and navigate to the Time Menu.
2. Use the Time Menu to select the time format (12-hour or 24-hour) and to set the clock and date.

Daylight Savings Time

Daylight Savings function is enabled by default (DLS On). To turn off Daylight Savings Time consult the Astro Timer Users Guide.

Latitude/Longitude Coordinates

1. Find the coordinates of your city or nearest city using the supplied table in the Astro Timer User Guide or go to www.itouchmap.com to find your precise coordinates based on your address.
2. Enter your coordinates.
NOTE: Enter a negative value for a south latitude or west longitude.

Programming the Schedule

You can select up to 21 "On" programs (P01 On to P21 On) and 21 "Off" programs (P01 Off to P21 Off). After selecting each program, set the day(s) for the program. You can select a specific day, all 7 days or "none". Choose "none" for any unused program.

Please refer to the Astro Timer User Guide to set the program start and end times and different programming options for individual days or weekends.

Using Multi Volt Taps

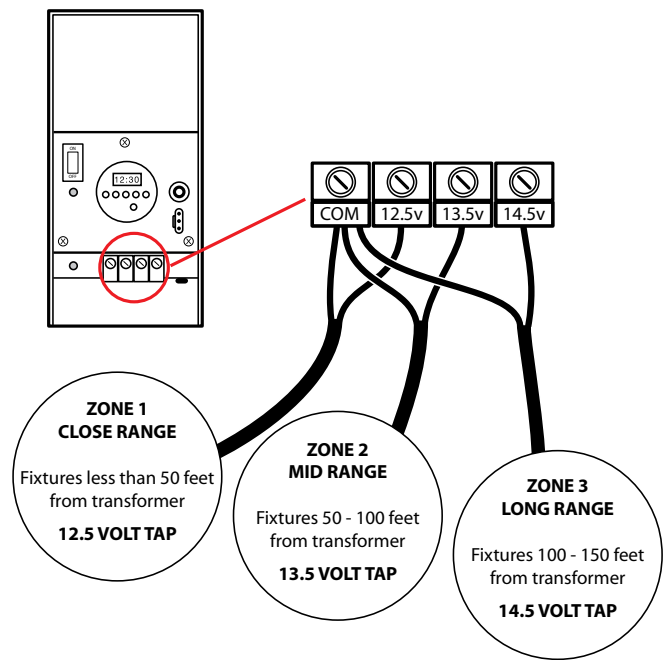
Maximum lamp life and consistent light output is achieved when providing between 11 volts and 12 volts to each fixture. Using the right gauge wire for the distance of the run, grouping fixtures into zones and tapping up to 13.5v or 14.5v for longer distance zones will accomplish this.

RXT Transformers feature 12.5v, 13.5v and 14.5v taps allowing for proper voltage to be applied to each zone. The diagram at the right is a generalization of the multi voltage system set up.

Other factors to consider are:

- Total wattage on each run
- Wire gauge being used
- Layout of the installation (see Installation Layouts below)
- LED lighting allows for greater distance on runs and lower resistance

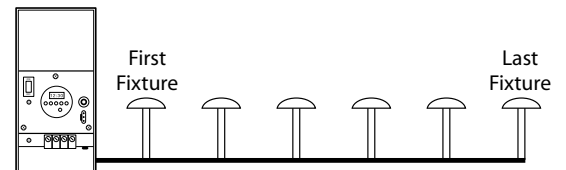
Note: Focus recommends all installations to be performed by a certified landscape contractor.



Installation Layouts

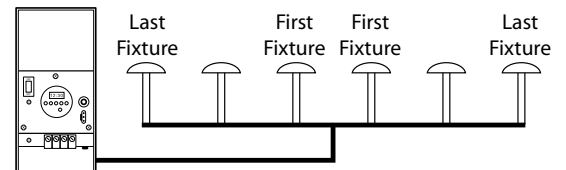
Straight Run

This is the simplest but least efficient layout method. More voltage is supplied to the first fixture on the run and each fixture following will receive less and less voltage due to voltage drop. This method is adequate for short runs where voltage difference is not more than 1.5 volts from first to last fixture.



Split Load

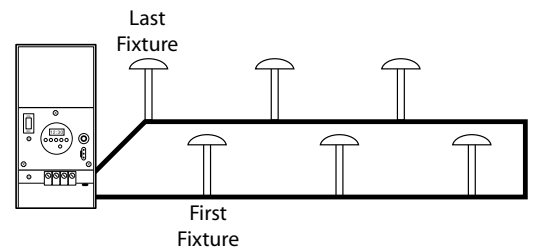
This method center feeds the cable run and reduces the voltage difference between the first and last fixture on either side of the run. This method is recommended because it is easy to install and minimizes voltage drop between fixtures.



Loop

This is similar to the Straight Run layout except there is an extra length of cable connecting the last fixture in the run back to the transformer. Since voltage drop is coming from both sides of the run it will produce more uniform voltage to the fixtures.

Note: You must connect the same wire leads on both ends of the run to the same transformer terminals on the same circuit. Mark end of the cable before installation so when it comes back to the transformer the correct wires are connected to the correct terminals.



Special Notes

Note 1: Voltage drop is inherent in all lighting systems. Always use proper size cable. When possible, center the transformer & minimize your cable distance. Make multiple cable runs to achieve your desired coverage. The more copper, the less voltage drop. Use a voltmeter when making the installation to insure that voltage supplied to each fixture does not exceed 12v.

Note 2: Remember to plan ahead for growth or additions. Always use a larger size transformer or leave room on your current one for adding more fixtures or increasing light wattage. By doing this you will be able to build up your light output as you add more fixtures to your landscape. Replace light bulbs quickly when they burn out, otherwise a higher voltage will be supplied to remaining fixtures due to reduced load / resistance. This is extremely important when using multi-voltage transformers.

Troubleshooting

The two most common problems that occur when installing 12v low voltage landscape lighting systems are:

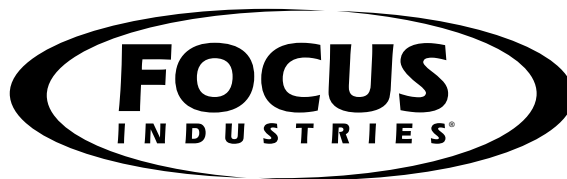
1. Overloading the transformer
2. Exceeding cable distance or using smaller gauge cable than required for the load

LIGHTS DO NOT WORK AT ALL	
Problem	Solution
Is the transformer plugged in?	• Plug in the transformer
Is the 12v cable attached properly to terminal lugs?	• Make sure solid connection is made and wires do not fall out of terminal lugs.
Are fixtures attached to cable?	• Make sure connection or wire nuts are properly installed
Are light bulbs installed in fixtures?	• Make sure light bulbs and sockets make good contact
Is the 120v receptacle on?	• Make sure power is available at the receptacle. Test with voltmeter or any 120v appliance

CIRCUIT BREAKERS TRIP	
Problem	Solution
Circuit overloaded?	• Count the number of fixtures and multiply by their light bulb wattages. Make sure the total does not exceed VA rating located on the label affixed to inner door of transformer.
Short circuit. Cable wire cut or damaged.	• Check connections. Repair damaged fixture cable.

LIGHTS ON BUT VERY DIM	
Problem	Solution
Possible overload on circuit	• Remove fixtures until proper light output is achieved
Exceeding distance requirements	• Shorten cable run from transformer • Increase wire size to reduce voltage drop • Additional runs of cable to share load may be required
Poor connectors	• Check and secure connections from cable to transformer, fixture to cable and light bulb to socket
Primary voltage is low	• Increase primary voltage by a boost transformer or increase 120v wire size from panel to receptacle (consult a licensed electrician). • Select the proper voltage tap based on distance and load needed (must use a voltmeter)

LIGHTS DIM AT END OF RUN	
Problem	Solution
Cable run exceeded the limits	• Shorten cable runs or increase cable size (more copper) use only 12/2, 10/2, 8/2 or 12/3 cable • Run additional cable and share load • Select proper voltage based on distance and load needed (must use voltmeter)



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