

Care & Usage Manual

For Your Outdoor Lighting System



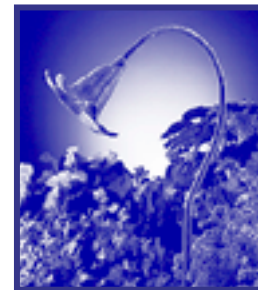
With the purchase of your new outdoor lighting system, you will not only enhance the beauty, safety and security of your home, but also increase its value.

Help ensure years of reliable, energy-efficient performance from your lights by following the tips provided in this booklet.

If you have any questions or would like additional information on any FirstEnergy program, please call us at 1-800-505-SAVE.

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Outdoor Lighting is brought to you by FirstEnergy's Ohio and Pennsylvania operating companies: Ohio Edison, The Illuminating Company, Toledo Edison, Penn Power, Penelec and Met-Ed.

Section 1: Understanding Your Lighting

What Is a Low-Voltage Lighting System?

Low-voltage lighting systems use a transformer to reduce the 110- or 120-volt home current to a harmless and more economical 12-volt current. Low-voltage outdoor lighting runs on a 12-volt current, so it's safe to use around pets, children and adults since there is no risk of injury from electrical shock. Instead of using one or two bright lights, a low-voltage system uses a few softer lights in multiple locations, providing a warm glow that illuminates rather than dominates your home.

Components of Your Lighting System

Once your lighting system is installed, your attention should be drawn to the enhanced beauty of your home and gardens, not the lights. A properly designed system does not emphasize the fixtures but the elements around it. To make the most of your lighting system, some or all of the following components may be used:

Path Lights. The most decorative fixtures, these lights are used to discreetly illuminate a garden path or small landscaping elements such as flowers and shrubs.



Directional Lights. These fixtures are barely visible but are bright enough to illuminate larger objects such as trees or a doorway. So, it takes only a few directional lights to brighten up the entire front of your home.



Transformer. This is the power center of your lighting system. Transformers determine the number of lights on a system. A higher wattage transformer will accommodate more lighting fixtures or fixtures with higher wattages. The maximum working capacity of a transformer is 80 percent of the wattage rating. For example, a 150 watt transformer can support 120 watts of lights. So, if you want to cover a large area with lighting, you'll need multiple lighting systems or a large transformer. Before adding lights to your existing transformer, check with your lighting contractor or with FirstEnergy to be sure that you have enough capacity. Once you reach the maximum wattage on your existing system, you'll need to install another transformer to add more lights.

Section 2: Maintaining Your System

Adjusting the Fixtures

To change the direction of a light slightly, turn the fixture carefully by hand. It is best to do this just as the lights come on at night so you can redirect the beam properly before the fixture gets warm. Before redirecting a flood light, be sure to loosen the positioning nut located on the neck of the fixture. In-ground fixtures are anchored by stakes and sometimes can shift. You may want to check the position of your fixtures occasionally and reposition as needed.

Cleaning the Fixtures

Your light fixtures are made from non-corrosive materials such as aluminum, brass, copper and composite materials. Only occasional cleaning with a damp, soft cloth and mild detergent is necessary. Periodically remove dirt and debris from around fixtures. Some of these fixtures will produce heat, so do not allow leaves and mulch to accumulate around them. Important: Clean the fixtures only when the system is turned off.

Sprinklers

Because your outdoor fixtures are made from high-quality, non-corrosive materials they are durable, even around sprinklers. However, it is best to avoid positioning the sprinkler heads close to and directly toward your fixtures or transformers.

Replacing Lamps

It is very important to replace a lamp right after it burns out. Failing to do so will shorten the life of the lamps remaining in your lighting installation. Using the highest-quality lamps in your fixtures helps to ensure years of trouble-free performance, while lower-quality lamps tend to cause fogged lenses, socket degradation and poor connections, which will ultimately result in a damaged fixture.

When replacing lamps, always use a glove or piece of protective material when handling them. Oil from your skin will shorten the life of the lamp if you have touched the filament area. Bulbs can be easily removed by twisting or gently pulling them out of the sockets, depending on the type of fixture and lamp. Before replacing the bulb, spray the socket with silicon-based lubricant or dip the bulb base in petroleum jelly to help prevent corrosion and to provide a better connection between the light bulb and the socket. Be careful not to over tighten the screws to avoid damaging the fixture. Please call us if you have questions about your fixtures or to learn more about our annual maintenance plan that includes lamp replacement.

Pruning Shrubs and Trees Around Your Fixtures

When your outdoor lighting system is first installed, it complements the trees and shrubs around it. As the plants grow, you may find that the effect of your lighting is diminished. Pruning the shrubs and trees to maintain their size and shape will keep your lighting system looking its best. Keep all ground cover away from in-ground fixtures so it does not interfere with the light path.

Concealing the Wire

After installation, the low-voltage wire is buried only a few inches deep. When you're planting additional landscape, it's easy to find and move the wire to avoid cutting it. Over time, and because of extremely heavy rain, the wire might come to the top of the ground, which is normal. To hide the wire, move any ground cover aside, dig a three-inch groove in the soil, lay the wire in it, and fill in the groove with the soil, replacing the ground cover.

Installation and Upgrades

Installation and upgrades should be done only by individuals experienced with wiring and electrical tools. We can professionally install additional landscape lighting for you at a small cost. Please call us at 1-800-505-SAVE to schedule a design consultation.

Section 3: Electrical Protection

Our outdoor lighting system contains dual circuit protection. The primary (120 volt) side of the transformer is thermally protected and will automatically shut off if overheated. If the secondary (12 volt) side is overloaded, the circuit breaker on the front of the transformer will trip. The unit will shut off if the total lamp wattage on the circuit exceeds the transformer's rated wattage. When this is the case, lower the lamp wattage or reduce the number of fixtures on the circuit. If the unit continues to cycle on and off, have the unit inspected by a qualified electrician. To reset the circuit breaker, depress the circuit breaker reset button, located under the small access panel on the face of the transformer. There are two circuit breakers on the 600 watt transformer.

Section 4: Timer and Photo-control Operation

Note: Always turn the timer control clockwise to set the time. Turning dial counter-clockwise will damage the unit.

Manual Control with Three-position Switch

Low position: This is the most efficient setting and is recommended for cable runs less than 50 feet, for high starting voltage on the primary side of the house or when less than 50 percent of the transformer's capacity is in use.

Off position: The control's center position turns off the transformer. In the "off" position, the timer will continue to function but will not turn on the lights.

High position: This setting is only for a fully loaded transformer (maximum wattage capacity), for long cable runs or

low starting voltage on the primary side from the house.

Note: Improper use of the "high" position may result in premature lamp burnout. Do not use "high" position unless the installer specifies. Multi-tap transformers do not have this three-position switch.

Automatic Timer Control

To activate the timer, turn the dial clockwise until the time arrow is pointing to the current time of day. Push in all the trippers on the timer dial that are between the desired on time and desired off time.

To override the timer and control unit manually, push in all the trippers.

Cover the photo-control eye with the cap to deactivate it.

Automatic Timer Control and Photo-control

To activate the timer, turn the dial clockwise until the time arrow is pointing to the current time of day. For the photo-control to turn on at dusk and off at desired time, set the timer to turn on before dark. The photocell will activate the lights when it gets dark. Preset the timer to turn the lights off at night, or push in all trippers, and the photocell will turn off the lights at dawn.

We recommend setting the lights on at 5 p.m. and off at 11 p.m., and on again at 6 a.m. and off at 8 a.m. for energy savings.

For the photo-control to turn the lights on at dusk and off at dawn, push in all trippers on timer dial.

Remove cover from photo-control to activate it.

Note: The dial is like a regular clock. Always turn the dial clockwise to set the clock. Turning the timer in the opposite direction may damage the timer. Trippers are out for "off" and in for "on." The instructions are on the inside lid of the transformer. Power interruptions can affect the timer. After an outage, you may need to reset the time of day.

Section 5: Troubleshooting

System Problems

Entire system will not operate.

1. Ensure you have power to outlet by plugging in small appliance. If no power to the 120 v outlet, check inside service panel breaker, GFI or fuse.
2. Check GFI and reset. (GFI located on outside receptacle or in service panel.)
3. Check that the three-position switch located under small access panel on power supply transformer is on “low.”
4. Check or reset circuit breakers located under small access panel on power supply transformer.
5. Check the timer. Make sure trippers are set to allow the system to come on. Check that the arrow is pointing to the current time of day – a.m. or p.m., as appropriate. Power interruptions may have interfered with the initial settings.
6. Cover the photo-control eye and check if the lights turn on.
7. Check low-voltage connection at power supply transformer for loose wires or screws.
8. Inspect the cable run for breaks. A break in the cable may cause the unit to short-circuit.

Circuit breaker on power transformer trips.

1. Check end of cable to ensure copper strands are not touching at lighting fixtures.
2. Check connection of cable at power transformer to ensure copper strands are not touching.
3. Calculate the total wattage to ensure you have not exceeded rated wattage of transformer.
4. Check for other short circuits at fixture connection points.

Circuit breaker on power transformer trips after several minutes of operation.

1. Re-read section 3 and follow the instructions if appropriate. If breaker still trips, you may have a weak breaker that will need to be replaced.

System stays on during daylight.

1. Photocell is covered or defective.

System on well past dark.

1. Time of day incorrectly set or trippers incorrectly set.

System comes on but then turns off.

1. Check to see that there is no bright light shining on the photocell, which would switch off the system.
2. Make sure your timer trip pins are correctly set.

Fixture Problems

Fixture will not light.

1. Test the socket by inserting a lamp from a fixture that is working.
2. If a new lamp lights in the socket, check lamp removed from fixture for broken filament.
3. Check lamp for proper fit in socket.
4. Check socket for corrosion and clean it if needed.
5. Check fixture connection to main power cable.
6. If fixture still does not light, the lamp socket or the entire fixture may need to be replaced. Call your contractor.

Fixture is dim.

1. Check lamp for broken filament.
2. Check that fixture connections are tight.

3. An overloaded line can result in dim lights. Disconnect one or more bulbs to see if the remaining bulbs become brighter. If line is overloaded, use lower wattage lamps, remove one or two fixtures from circuit, or use larger capacity power transformer.

Fixtures only dim at end of a circuit run.

1. Dim lights at the end of cable may be a result of a short circuit. Check connections and wires for breaks.
2. Installer may need to use a heavier gauge of cable or change the wiring layout. Contact your contractor.

Section 6: Warranty

Transformer/Timer, Fixtures and Workmanship

One (1) year parts and labor

Transformer Only

Two (2) additional years, parts only from date of installation

Lamps

Thirty (30) days replacement only

Note: It is understood that transformers will be used in accordance with the instruction sheets provided with each transformer and that the voltages will not exceed the limits specified for the transformer. We cannot assume responsibility for units damaged by voltage surges or lightning.

Section 7: More Information on Lamp Life (Bulbs)

There is a relationship between the system voltage, the brightness of a lamp and the lamp's lifespan. As such, a higher voltage system will put out a lot of light, but the lamps will not last long. And a lower voltage system will put out less light, but will keep working longer.

The following table shows the effects of voltage drop for standard non-halogen lamps:

Voltage	Light Output	Lamp Life
12.5	170%	80%
12.0	100%	100%
11.5	80%	200%
11.0	75%	300%
10.5	65%	500%
10.0	50%	900%

For optimum system operation, our contractors design the systems to maintain voltage between 10.8 and 11.5 at each fixture.

With halogen lamps, such as MR16, voltage drop of more than ten percent (1.2) may affect lamp life. Some transformers, as previously described in Section 4, have a three-position switch (low/off/high). The "low" position is the preferred position. Using the "high" position may result in premature lamp burnout, so do not use the "high" position unless the installer specifies.

Pathlights are generally 18 watt bulbs (#1141). These are rated at 1000 hours. On average, you should expect to replace your pathlights once or twice a year, depending on the number of hours per day your lights are in service.

Long life 2000 hour lamps (#1141LL) are available through our lamp replacement program.

Directional/Accent MR16 flood lights are available in the following wattages:

20 watt (BAB or ESX) 35 watt (FMW)
50 watt (EXN or EXT)

These bulbs are rated for longer use – generally 3000 hours or more. If you operate your lights about nine hours a day, these bulbs should not need to be replaced more than once a year.

Before replacing, be sure to read the fine print on each bulb. The replacement bulb must be the exact same wattage and beam spread as the bulb being removed. Installing a higher wattage bulb could create an overload on the system which will void the warranty. It could also result in multiple bulb failures and – in extreme cases – could create a fire hazard at the transformer. Using a bulb with a different beam spread will change the impact of the lighting as designed by the installer. There are over 100 different wattage/beam spread combinations available in MR16 lamps. If you have questions, please contact your lighting installer, or call us at 1-800-505-SAVE and we'll be happy to assist you.

Low-voltage lighting systems are very economical to operate. On average, a system with six lights will cost only about \$2.15 each month. And ordering replacement lamps can be quick and easy. Either call 1-800-505-SAVE or mail in the enclosed form.

Or, just let someone else take care of all that. Many contractors offer maintenance plans. At certain times during the year, they'll replace lamps and service your lighting system for you. Call us at 1-800-505-SAVE to schedule your maintenance or service visit.



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