

Transformers and dc power supplies

Surface-mount weatherproof 12v transformers



The *Elipta* standard range of surface-mount 12v weatherproof wire-wound (magnetic) transformers are resin-potted into black polycarbonate boxes, normally to be mounted on a wall or post hidden behind planting and landscape features, or under decking in outbuildings. Each transformer has a self-resetting thermal cut-off to protect against overload, 1m mains input cable and 60cm 12v output cable for connection using separate weatherproof junction boxes (cables & connections carrying different voltages must be segregated). Both cables enter the case on the same end, allowing neat connection into junction boxes

Product code	Watts	Dimensions (mm)		
		W	L	H
T9502	20va	74	44	65
T9504	40va	87	60	60
T9506	60va	87	60	60
T9510	100va	97	59	92
T9515	150va	97	59	92
T9520	200va	119	72	105
T9530	300va	119	72	105
T9540	400va	140	88	125

below when mounted on a post. All sizes fit on a 75mm/3" post, except the 400va size which fits on a 100mm/4" post. **T9599** stainless steel mounting stakes are optional. **IP66**



Ground-burial 12v transformers



Product code	Watts
T2504	20va
T2524	50va
T2534	100va
T2544	150va
T2714	200va
T2724	300va

Ground-burial transformers are used when surface-mount transformers can't be hidden above ground, when installing **Lawnlights** in lawns or **Groundlights** in gravel areas, for example. **Ground-burial transformers** feature a polycarbonate enclosure in which the wire-wound toroidal transformer is resin sealed, a thermal overload cutoff and 1.5m rubber cables fitted. To avoid "wicking" of moisture into the transformer, connection to mains supply cables and multiple lighting cables must be via resin sealed underground joints; connection of the output cable to the input cable of a single light may be by means of a **T9962** cable joint kit.

Tip: Where multiple ground burial transformers are to be installed in an area, allow connection points with circuit protection above ground or use multi-core supply cables to allow for isolation in the event of future fault-finding or system extension

12v toroidal transformers & ground burial transformer kits



12v toroidal transformers with surface mount kits are available for contractors to fit in their own enclosures - eg. to make up twin transformers in one box. The kit comprises a wire-wound toroidal transformer incorporating thermal cutoff, two insulating rubber washers and a dished metal washer, bolt & nut for mounting >

Ground burial 12v transformer kits are useful to seal the transformer and all connections in one buried unit. The polycarbonate enclosure can be drilled for the number of cable glands needed: the toroidal transformer, incorporating a thermal cutoff, and cables are connected in the enclosure and tested; a sealant pack is then mixed in its own pouch & poured into the enclosure. When the resin has set (30 minutes) the assembly can be buried with a slab & warning tape over it. Sealant packs are also available separately or part of an underground joint kit.



Rating VA	Ground burial kit	Toroidal transformer
100va	T9410	T9610
150va	T9415	T9615
200va	T9420	T9620

Potted 12v electronic transformers & DC power supplies



Potted 12v electronic transformers are resin sealed to IP67 and resistant to condensation which can affect ordinary electronic transformers used outside. They are dimmable and especially useful where the lighting load may be varied, by adding a light or changing the lamp wattages, and a constant voltage is still needed to avoid over-voltage and prolong halogen lamp life. They are available as potted transformers for contractors to fit in their own enclosures (for example, to make up twin transformers in one enclosure), mounted in IP65 black enclosures, or with a resin sealant in a ground burial kit where surface mounting is not possible.

12v Electronic transformers			
Wattage	Potted	Wall-mount	Ground-burial
20-70w	T9301PT	T9301ENC	T9301GB
35-105w	T9302PT	T9302ENC	T9202GB
50-150w	T9303PT	T9303ENC	T9203GB

Potted electronic power supplies are resin sealed to IP67 and resistant to condensation which can affect ordinary power supplies used outside. They are constant voltage dc power supplies which will maintain a regulated supply voltage to groups of l.e.d lights, even down to just one 1w l.e.d. deck light or steplight, so avoiding damage to l.e.d.'s from over-voltage resulting from use of an underloaded wire-wound transformer. They are available as potted power supplies for contractors to fit in their own enclosures (for example, to make up twin supplies in one enclosure), mounted in IP65 black enclosures for wall, post or under-deck mounting, or with a resin sealant in a ground

12v DC power supplies			
Wattage	Potted	Wall-mount	Ground-burial
10w	T9201PT	T9201ENC	T9201GB
25w	T9202PT	T9202ENC	T9202GB

What is the difference between a transformer and a power supply ?

A transformer provides alternating current (a.c.) output of 12 volts; 12v ac from a wire-wound (magnetic) transformer is used to power halogen lights in the **Elipta** range. A dc power supply provides direct current (d.c.) which is compatible with **Elipta** l.e.d. lights: use a regulated 12v DC power supply to ensure stable voltage to a group of **Elipta** l.e.d. Lights. The power supply should be installed close to the lights as long cable runs can induce instability in l.e.d. lights run from a dc power supply. For larger l.e.d. installations, a 12v ac wire-wound transformer may be used provided it is loaded to at least 80% of it's nominal rating, eg 32w on a 40va transformer. **Electronic transformers should not be used with l.e.d. lights and lamps.**

What size of transformer do I need for halogen lights?

A frequently asked question is "how many lights can I run from one transformer"? In fact, transformers are available in a wide range of wattage ratings, so look at the question in reverse: "what size of transformer do I need to power a group of lights"? This is simply a matter of multiplying the wattage and numbers of the lamps used in the lights to be connected to the transformer, as shown in the examples. In most cases, consider some spare capacity within the transformer rating to allow scope to increase some lamp wattages as plants grow, or to allow flexibility in adding a light in the future. Use **Powersaver** energy saving l.e.d. lamps which use a third less power for the same light output to reduce transformer size.

- Multiply the lamp wattages for each type of light as in the examples >
- Allow up to 30% spare capacity in the transformer to allow brighter halogen lamps as plants grow, or for addition of extra lights
- Transformers are available in 20, 50 or 100 watt steps, so choose the next step up from the total wattage you have calculated
- Check that the total load of halogen lights is at least two-thirds of the transformer rating you propose to use; avoid using a big transformer with only a small load (few lights and low lamp wattages) as this can result in "overvoltage" which reduces lamp life and causes premature failure.

What size of power supply do I need for l.e.d. lamps?

Look at the question in reverse: "what size of power supply do I need to power a group of l.e.d. lights"? This is simply a matter of multiplying the power consumption in watts numbers of l.e.d. lights or lamps to be connected to the power supply, as shown in the examples. Consider some spare capacity within the power supply rating to allow scope to add a light in the future: dc power supplies provide a regulated output voltage, avoiding "overvoltage" which causes premature l.e.d. failure

- Multiply the lamp wattages for each type of light or the l.e.d. power consumption as shown in the examples (right)
- Power supplies are available in 2 sizes - 10w and 25w - choose the next step up from the total wattage you have calculated
- You can use a 12v wire-wound transformer, which is less expensive than a power supply, if the total load of for l.e.d. lights and l.e.d. lamps is at least 80% of the transformer rating you propose to use. Do not use a big transformer with only a small load as this will result in "overvoltage" and cause premature l.e.d. failure
- For l.e.d. loads of less than 16w, use a 12v dc power supply
- Do not use an electronic transformer with Elipta l.e.d. products
- Do not use constant current l.e.d. drivers with Elipta l.e.d. products

Tips on transformer location and cabling

- Keep cable runs from transformers to lights as short as possible to ensure optimum performance - see **Help** page for advice
- Locate a transformer centrally amongst a group of lights; for example, with lamps of up to 50 watts a radius of 8 metres defines the area of coverage for spike mounted lights from one transformer. Most transformer models have a single low voltage output cable: use an exterior junction box of appropriate size alongside the transformer to connect to cables running to individual lights or groups of lights.
- If you want 2 sets of lights in an area to be operated by separate switches, you must provide a separate transformer for each group of lights and a separate mains supply to each transformer.
- If the distance from the transformer position exceeds the maximum cable length recommended for a single light, revise the transformer layout (increasing the number of transformers to reduce the low voltage cable runs) or use thicker cable such as T9910 4.0mm². To connect a light to 4.0mm² cable use a T9963 cable splice kit; to connect 2 or more lights to a 4.0mm² cable use an exterior junction box of appropriate size for above-ground connections or a T9969 underground joint kit.
- Use **Powersaver** energy-saving halogen lamps to reduce power consumption, which increases the permissible cable length
- Use l.e.d. lamps instead of halogen lamps to reduce power consumption, which increases the permissible cable length & size
- If the cable run for multiple lights connected to one cable exceeds the maximum shown, divide the lights onto individual cables.
- In gardens with lighting or irrigation, garden with a fork rather than a spade until you are sure there are no lighting cables or irrigation pipes where you want to plant your new shrub!

Examples: transformer & power supply selection

Low voltage halogen lights	Number of lights	Lamp wattage	Total wattage
Recessed uplight	1	50	50
Underwater light	1	35	35
Steplight	2	20	40
Wall spotlight	2	20	40
Total	<u>7</u>		165
Spare capacity			35
Transformer rating			200

Low voltage halogen lights	Number of lights	Lamp wattage	Total wattage
Spike spotlight	2	50	100
Wall up/downlight	2	40	80
Wall spotlight	1	20	20
Spreadlight	2	20	40
Total	<u>7</u>		240
Spare capacity			60
Transformer rating			300

LED lights	Number of lights	(W) Power consumption	Total wattage
Navigtor Minor	10	0.5	5
Navigator Major	5	1	5
Navigator Eye	2	2	4
Half eyelid steplight	2	0.6	1.2
Total	<u>19</u>		15.2
Spare capacity			4.8
Transformer rating			20

Lights with led modules fitted	Number of lights	(W) Power consumption	Total wattage
3 x 1w MR16 blue	2	5	10
3 x 2w MR16 white	4	6	24
1w MR11 white	2	2.4	4.8
MR16 colour change	2	2	4
Total	<u>10</u>		42.8
Spare capacity			7.2
Transformer rating			50