

LED Lighting Information Sheet



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This Information sheet will introduce you to LED lighting for your Home, Boat, Motor Home or Business.

Why Use LED Lights?

Lighting based on LED technology is poised to replace lighting of all other types for domestic use. Why? Because at its best it is one of the most efficient forms of lighting available, with the longest life, runs cool and creates very little pollution in manufacture and disposal. In short it is the best Eco-friendly lighting technology currently available.

Most of us have seen some form of LED lighting. It is now commonplace to see LED torches, and camping lights. Typically these are relatively cheap and produce a useable blue/white efficient light. Obviously these could never provide the kind of light you need to replace ordinary lighting in a motor home or boat, let alone a house, so what is going on? The answer is a lot of very clever research which has year by year increased the light available from LEDs to the point where the latest and greatest LED technology outshines those torch lights by more than a 100 fold. It is this LED technology that really can light whole houses, and what's more the blue/white colour is a thing of the past, with bright warm colours now available. If you haven't yet seen this kind of LED light yet, your in for a surprise ! Obviously like most new technology it comes at a price, but increasingly that price is affordable and worth paying to get the brightest and the best. And that is where Weka Electronics focuses their efforts.

Of course there are other players in this rapidly growing market. Most import products from China & Asia. A quick internet search will find a number of companies who may supply some LED lighting technology but beware of some of the cheap and cheerful stuff, it frequently disappoints. It disappointed us so much we set up a company a couple years ago to make the best & brightest LED lights and lighting systems available. That company is Weka Electronics Ltd.

What are LED lights?

LED stands for "Light Emitting Diode". In other words the bit that generates the light is a silicon chip (a lump of sophisticated sand). And that gives LED lights a number of its key advantages. It makes it rugged as there is no delicate hot wire filament to burn out and very little heat. There is no glass or poisonous mercury vapour like fluorescent lights and so called "Eco" bulbs. As a result LED lights have a very, very long life (typically 50,000 hours) and if you do dispose of them create no pollution hazard. Better still being low voltage lights they are inherently safe, especially when used in wet environments such as shower rooms or outside on the deck.

Where can you use LED lights?

Anywhere. LED lights are ideal for:-

- *Houses*
- *Motor Homes*
- *Boats*
- *Batch's*
- *Commercial Property such as shops, restaurants and hotels*
- *Industrial lighting*

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Their high efficiency makes them a perfect choice when running off battery power and they are often fitted in conjunction with PV solar power systems. However, it is becoming increasingly common to use them in domestic and commercial property too, where the long term savings still make sense and the long life saves on maintenance. In retail environments the reliability & low heat are also attractive as spending the summer months under halogen lights is never a pleasant experience. The ruggedness and low voltage of LED lights also makes them especially suitable for industrial lighting.

What Colour Light will I get from LED lights?

Cheaper LED lights, such as those found in head torches, frequently have a blue tinge to the light. Fine for a head torch, not at all suitable for your home. Weka lights use only warm colours, with no blue tinge. We have two standard 'white' colours for most applications:-

Colour	Comment
<i>Soft White:</i>	<i>This is a bright white, with a hint of yellow and gives the brightest light and best efficiency. It is ideal for kitchens and reading. It is also fine for overall lighting, particularly if you need bright light. However if you need a warmer, colour, similar to a halogen choose warm white.</i>
<i>Warm White:</i>	<i>A warmer colour, similar to a halogen light. Not quite as bright or efficient as the soft white but usually preferred for general house lighting in bedrooms and lounges.</i>
<i>Other</i>	<i>Other colours are available for specialist applications. Green is popular for garden lighting, etc. Ask for details.</i>

(see detailed specifications if you need more detail)

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How much Power do LED Lights use and just how Bright are they?

As you can see from the figures below Weka LED lights are between 5 to 8 times more efficient than an equivalent halogen light. Ordinary light bulbs are even less efficient than halogens by 10-20%. Life times are improved when LED lights are dimmed, but normally reduced for halogens as the halogen 'cycle' fails at lower temperatures and the bulbs blacken and fail. You will also see that the efficiency is better when the lights are run at 3Watts, thus this is the best choice for battery powered applications in Motor Homes and boats. Whereas in Buildings the maximum light output is usually best, so choose the 7 Watt option.

Weka LED Light		Equivalent Halogen Light (equivalent light o/p)		Efficiency Improvement
Power Used	Lifetime (hours)	Power Used	Lifetime (hours)	
3 Watt NOVA / SPACE	50,000	25 Watt	400	Approx 8 times better for LED
7 Watt NOVA	50,000	35 Watt	400	Approx 5 times better for LED

What about compact fluorescents ("Eco bulbs")?

These have better efficiency than standard lights using around 30% of the power. Compared to these type's LED lighting is 2- 3 times more efficient. (The biggest issue with compact fluorescent is their size and safe disposal due to their mercury content). Compact fluorescent typically specify 5000-10,000 hours life time and can't normally be dimmed.

Detailed specifications will be found at the back of this document but the figures above are less technical and give you a good idea of what to expect when planning your installation.

(These figures only apply to Weka LED Lights, beware of other LED types we have measured rarely achieve 25% of these figures)

What's involved in fitting LED lights?

LED lights are a little different to install than conventional lighting. The best option depends upon where you are installing them so see the relevant section of this pamphlet for details.





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Motor Home & Boat Installation

These applications normally run from 12 or 24 volts DC. LED lights are ideal for this application with their very low power use and can often pay for themselves immediately simply by fitting less PV solar panels. Popular light fittings are shown below:-

Light Type	Best Weka Type	Characteristics	Comment
Reading Light	<i>STAR Light</i>	1 Watt adjustable Spot	Choose 'Soft White' colour for reading
Recessed Ceiling Light	<i>NOVA</i> 	3 Watt wide-angle	A wide angle light for overall lighting. Consider 'Soft White' for kitchens and work area's. Choose 'Soft White' or 'Warm White' for overall lighting according to preference.
Recessed Ceiling Light	<i>NOVA-Spot</i> 	3 Watt focused	Ideal for focusing light onto a small area with high ceiling. LED colour as for NOVA.
Surface Mount Ceiling Light	<i>SPACE</i> 	3 Watt wide-angle	Available with or without an integral switch. A wide angle light for overall lighting. LED colour as for NOVA
Surface Mount Ceiling Light	<i>SPACE-exterior</i> 	3 Watt wide-angle	An water-proof light ideal for BBQ's or showers, wide angle light for overall lighting. LED colour as for NOVA

The lights are supplied with small Weka 'IntelliDrive' power units which can drive a number of lights from either 12 or 24 volts. These are supplied with the lights when kits are purchased.

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Homes & Commercial Buildings

Option A: Small installations of 1-20 lights with only 240V mains power.

These applications normally run from 240V mains power. LED lights maybe used in specific locations such as kitchens, or decks.

In this case there are 2 options:

Option A1: Is for the lights to be supplied with 240V LED power supplies, type MD9. Each power unit may power a number of 1 Watt lights, 2 x 3Watt Lights or 1 x 7 Watt light.

Option A2: A single 240V power supply maybe used with the 'IntelliDrive' power units as discussed for Motor Home installations. This option may be lower cost for 10 lights or more. Popular light types are shown below.

Option B: Small installations of 1-20 lights with PV solar panels.

These applications normally run from 12 or 24 volts DC. LED lights are ideal for this application with their very low power use and can often pay for themselves immediately simply by fitting less PV solar panels. Popular light fittings are shown overleaf. The lights are supplied with small Weka 'IntelliDrive' power units which can drive a number of lights from either 12 or 24 volts. These are supplied with the lights when kits are purchased.

Option C: Larger installations of 20+ lights with 240V mains and/or PV solar power available.

These larger installations may run from 240V mains power or PV Solar arrays. LED lights maybe used in specific locations such as kitchens, or decks or throughout the whole house, replacing conventional lighting.

In this case the best option is to combine the lights with a Weka 'IntelliLight' lighting control system. This advanced lighting controller has many advanced features :-

- *LED Light Dimming: Each LED lighting channel is independently dimmable to a different level and you may have a dimming control at each entrance to a room.*
- *Intelligent Light switching. The action of each light switch is chosen after the installation and can be easily changed later. Thus you may choose that a switch by the front door should turn on all the lights in the house, or just the lounge and the hall. And if you change your mind later it is easy to change by simply re-programming the light controller.*
- *Power saving features. You can reduce the lighting power to half throughout the whole house by simply flicking one switch to limit the maximum power.*
- *You can program lighting 'moods' for the whole house and then select them with a single switch press. Perhaps the lounge lights will be dimmed, the hall on low the kitchen off, etc.*
- *Mains lighting may be integrated into the system, & switched with LED lighting.*
- *The system can also control your ventilation so that bathroom fans automatically switch on a few minutes after the light and automatically switch off 15 minutes later.*
- *Security lighting features can simulate activity in the house while your away on holiday.*
- *All of these advanced features are affordable as our lighting controllers are not expensive unlike similar C-Bus systems.*

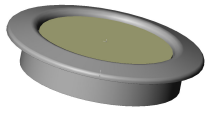
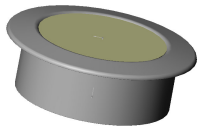
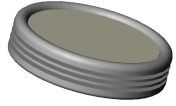

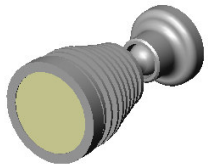
If powered from 240V mains power the unit is supplied with a mains power unit, if running from a PV solar array the controller runs directly from 24 Volts. Ask for specification.

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Popular light fittings for buildings are shown below:-

Light Type	Best Weka Type	Characteristics	Comment
Reading Light	<i>STAR Light</i>	1 Watt adjustable Spot	Choose 'Soft White' colour for reading
Recessed Ceiling Light	<i>NOVA</i> 	3 or 7 Watt wide-angle	A wide angle light for overall lighting. Consider 'Soft White' for kitchens and work area's. Choose 'Soft White' or 'Warm White' for overall lighting according to preference.
Recessed Ceiling Light	<i>NOVA-Spot</i> 	3 or 7 Watt focused beam	Ideal for focusing light onto a small area with high ceiling. LED colour as for NOVA.
Surface Mount Ceiling Light	<i>SPACE</i> 	3 Watt wide-angle	Available with or without an integral switch. A wide angle light for overall lighting. LED colour as for NOVA
Surface Mount Ceiling Light	<i>SPACE-exterior</i> 	3 Watt wide-angle	A water-proof light ideal for BBQ's or showers, wide angle light for overall lighting. LED colour as for NOVA
Powerful Exterior Spot Light	<i>Architectural Spot</i> 	7 Watt focused beam	A very powerful exterior grade spot light for exterior use to highlight architectural features or gardens. Colours other than white may be used, eg green to light foliage. Maybe supplied as a wall mount or garden 'spike' type.
Up/Down Light	<i>Up/Down Light</i>	10 or 14 Watt light dual beam up/down wall light.	An attractive exterior grade light suitable for interior or exterior use. Used to provide ambient lighting of walls and pathways. There are wide angle or focused beam options. LED colour as for NOVA. Special colours available on request.
LED ceiling Strip Light	<i>Strip Light</i>	5-10Watt per meter	This attractive strip light mounts high on the wall and throws light onto the ceiling to achieve subtle indirect lighting. The power level is variable dependent upon the amount of light required. . LED colour as for NOVA. Special colours available on request.

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Weka Electronics Light Fittings:

Specification	Units	STAR Light	SPACE Light	NOVA Light	NOVA-SPOT Light	Architectural Spot Light	Up/Down Light (Wide Angle)	Up/Down Light (Focused)	Comment
Type		Reading Light	Ceiling Light	Ceiling Light	Ceiling Spot Light	Spot Light	Wall Light	Focused Wall Light	
Interior/Exterior		Interior	Int/Ext	Interior	Interior	Int/Ext	Int/Ext	Int/Ext	
LED module		single	Triple	Triple	Triple	Triple	2 x Triple	2x Triple	
Nominal Power i/p	Watt	1.2	3.7	7.3	7.3	7.3	14.6	10.5	
Max Power i/p	Watt	2.0	4.0	7.5	7.5	10.0	15.0	15.0	
Beam Width (3dB)	+/- °	20	60	60	15	8	60	8	Half power beam width
Beam Width (3dB) as lit diameter at 1meter distance	Meters	0.7	3.4	3.4	0.5	0.3	3.4	0.3	Multiply by actual height in meters to gauge lighting spread. (Half power beam width)
Beam Width (10dB)	+/- °	30	80	80	40	15	80	15	1/10 power beam width
Warm White:									
Light o/p	Lumens	90	270	480	480	480	960	960	
Light o/p	Lux @ 1meter								
Colour Temperature	°K	2600K	2600K	2600K	2600K	2600K	2600K	2600K	
Soft White:									
Light o/p	Lumens	120	360	600	600	600	1200	1200	
Light o/p	Lux @ 1meter								
Colour Temperature	°K	4500K	4500K	4500K	4500K	4500K	4500K	4500K	