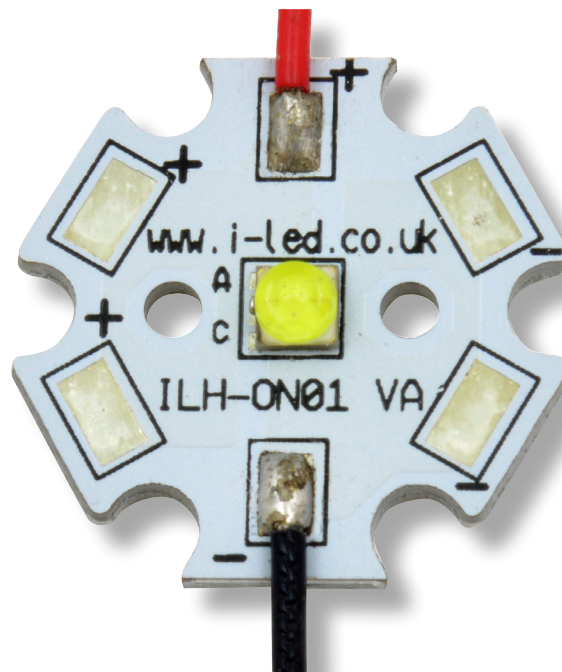


OSLON[®] Square Batwing 1 PowerStars

IHH-BW01-xxxx-SC221-WIR200.

At the heart of each PowerStar is an OSLON[®] Square Batwing ceramic LED. OSLON[®] Square Batwing can be driven up to 2000mA while OSRAM's latest power chip technology remains efficient even at the highest drive currents. A low thermal resistance of 3.4K/W ensures cool running and a highly efficient product. The OSLON[®] Square Batwing LEDs have a primary optic 140° which provides uniform illumination of the plant area without the need for additional optics. PowerStars are compact, powerful LED light sources built on aluminium substrates for optimal thermal management. Available with 200mm wires as standard.



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APPLICATIONS

- » General lighting
- » Decorative lighting
- » Task lighting
- » Spotlighting
- » Top lighting
- » Downlighters
- » Retail lighting
- » Entertainment lighting
- » Horticultural lighting
- » Inter lighting

SPECIFICATIONS

LED Family	OSLON® Square Batwing
Lifetime	Up to 100,000 hours lifetime to 70% of original brightness
Mounting	Mounting holes using M3 screws allows easy installation
Dimensions	(L x W x H) 20 x20 x 3.46mm
Connection	Available with 200mm connecting wires
Secondary Optics	A secondary optic can be fitted. Suitable options on page 6 or visit our website for a full range
Heatsinks	Required over 350mA. Suitable options on page 6 or visit our website for a full range
Power Supply	4-10W dimming and non-dimming. Suitable options on page 7 or visit our website for a full range
Chain	Powerstars can be linked together to produce longer chains
Current Range	Hyper Red 100-1400mA Horti-White 100-1800mA Deep Blue 100-2000mA Far Red 100-1000mA
Thermal Resistance	Hyper Red = 1.3K/W Horti-White = 1.6K/W Deep Blue =0.96K/W Far Red = 3.4K/W

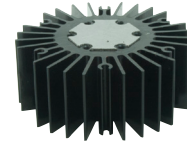
ACCESSORIES

Secondary Optics



LEDiL precision-engineered Lenses and Reflectors allow for rapid deployment of all types of light fixtures, including street lights, wall-wash, high-bay, sconces, emergency beacons, parking garage/low-bay, MR and AR downlights, and dock lights. Precision-engineered for maximum efficiency and durability, LEDiL Lenses and Reflectors are released alongside the latest product releases from our LED suppliers.

Heatsinks



IHS has a series of aluminium alloy heatsinks to be used with our standard range of PowerStars and PowerClusters. These heatsinks are supplied with fixing screws for the light engine and for fixing to a base plate. They also come with thermal interface material (TIM) attached to the top surface. Suitable options on [page 6](#) or visit [our website](#) for a full range.

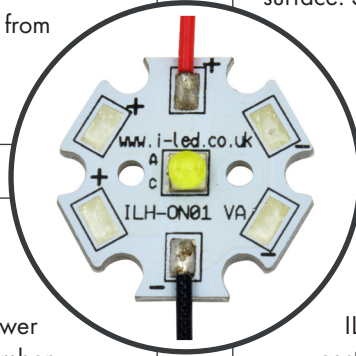
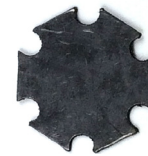
Power Supplies

ILS has a comprehensive range of standard Power Supplies. The table below shows the total number of ILS products each Power Supply can drive. Additional Power Supplies are being introduced so please call us or [check our website](#) for the latest offering. Suitable options on [page 7](#)



Thermal Interface Material (TIM)

ILS have produced a range of High-performance, cost effective Thermal Interface Materials to match perfectly their standard products. The product fills the air pockets between the two surfaces, forming a continuous layer to conduct heat away from the LED to the Heatsink. These strips have 3M thermal tape already attached for perfect thermal bonding.



PRODUCT OPTIONS

IHS Part Number	Colour	Colour Temp (Degrees Kelvin) / Dominant Wavelength	Typical Power W §	Forward Voltage	Flux	Radiance Angle	Relevant OSRAM LED Data
IHH-BW01-HORW-SC221-WIR200.	Horti-White	8180K	2.03W @700mA	2.8-3.2V	960mW @700mA	140° (+/-70°)	GW CSBRM3.HW
IHH-BW01-DEBL-SC221-WIR200.	Deep Blue	455nm	2.03W @700mA	2.8-3.2V	1300mW @700mA	140° (+/-70°)	GD CSBRM2.14
IHH-BW01-HYRE-SC221-WIR200.	Hyper Red	660nm	1.4W @700mA	1.8-2.2V	960mA @700mA	140° (+/-70°)	GH CSBRM4.24
IHH-BW01-FRED-SC221-WIR200.	Far Red	730nm	0.67W @700mA	1.6-2.2V	315mA @350mA	140° (+/-70°)	GF CSBPM2.24

Due to the special conditions of the manufacturing processes of LEDs, the typical data of technical parameters can only reflect overall statistical figures, and do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data.

§ Tolerance +/- 10%

MICROMOLES

IHS Part Number	240-790nm Total radiometric flux (mW)	PAR 400-700nm PPF $\mu\text{mol/s}$	PAR 360-780nm BPF $\mu\text{mol/s}$	PAR (adjusted DIN5031-10) 400-700nm BPF $\mu\text{mol/s}$	PAR (adjusted DIN5031-10) 360-780nm BPF $\mu\text{mol/s}$	PAR (adjusted Cree) 400-700nm BPF $\mu\text{mol/s}$	PAR (adjusted Cree) 360-780nm BPF $\mu\text{mol/s}$
IHH-BW01-HORW-SC221-WIR200.	1000	4.26	4.32	2.53	2.53	3.57	3.58
IHH-BW01-DEBL-SC221-WIR200.	1300	4.9	4.91	4.62	4.62	3.61	3.62
IHH-BW01-HYRE-SC221-WIR200.	960	5.24	5.27	4.23	4.23	4.89	4.9
IHH-BW01-FRED-SC221-WIR200.	315	0.26	1.89	0.42	0.42	0.16	0.53

MINIMUM AND MAXIMUM RATINGS

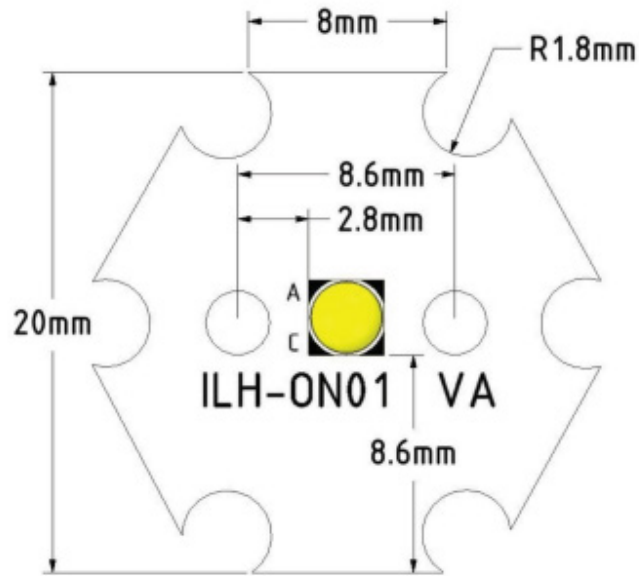
IHS Part Number	Operating Temperature at Tc-Point [° C]	Storage Temperature [° C]	Forward Current per Chip [mA]	Reverse Voltage [Vdc]
IHH-BW01-HORW-SC221-WIR200.	-40°C ~ 125°C	-40°C ~ 125°C	100-1800mA	Not designed for reverse operation
IHH-BW01-DEBL-SC221-WIR200.	-40°C ~ 125°C	-40°C ~ 125°C	100-2000mA	Not designed for reverse operation
IHH-BW01-HYRE-SC221-WIR200.	-40°C ~ 125°C	-40°C ~ 125°C	100-1400mA	Not designed for reverse operation
IHH-BW01-FRED-SC221-WIR200.	-40°C ~ 125°C	-40°C ~ 125°C	100-1000mA	Not designed for reverse operation

Exceeding maximum ratings for operating and storage temperature will reduce expected life time or destroy the LED module.

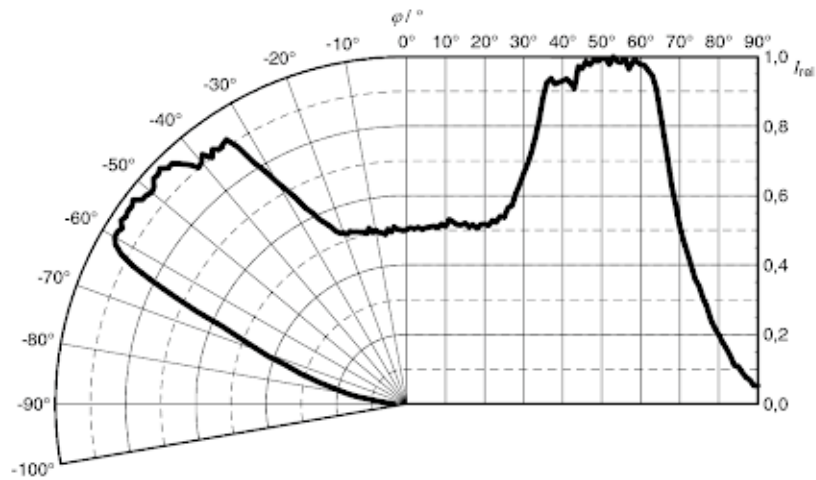
Exceeding maximum ratings for operating voltage will cause hazardous overload and will likely destroy the LED module.

The temperature of the LED module must be measured at the Tc-Point according to EN60598-1 in a thermally constant status with a temperature sensor or a temperature sensitive label.

TECHNICAL DRAWING (MM)









RADIATION OF SINGLE LED







SECONDARY OPTICS OPTIONS

Currently there aren't any secondary optics designed for the OSOLON® Square Batwing.

HEATSINK OPTIONS









IHS Product		350mA	700mA	1000mA	1400mA	1800mA	2000mA
No Heatsink, in free air		Yellow	Red	Red	Red	Red	Red
ILA-HSINK-STAR-50X20MM		Green	Green	Green	Yellow	Yellow	Yellow
ILA-HSINK-STAR-50X40MM		Green	Green	Green	Green	Green	Green
ILA-HSINK-STAR-50X60MM		Green	Green	Green	Green	Green	Green
ILA-HSINK-STAR-50X80MM		Green	Green	Green	Green	Green	Green
ILA-HSINK-70X70X55MM		Green	Green	Green	Green	Green	Green
ILA-HSINK-78X46X25MM		Green	Green	Green	Green	Green	Green

KEY

	Operates under the recommended ILS junction temperature
	Operates under the recommended LED maximum junction temperature
	Not suitable for use
	Heatsink not designed for use with this product

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POWER SUPPLY OPTIONS

	IHS Driver Part Number	Rating Watts	Current	Output Volts	Dimming
	IZC035-004F-4065C-SAL	4W	350mA	3-12V	none
	IZC070-004F-4065C-SAL	4W	700mA	2-6V	none
	IT-FIT-4/220-240/400-CS-I	4W	100-400mA	2.5-10V	none
	IT-FIT-7/220-240/700-CS-I	7W	350-700mA	2.5-11V	none
	IZC035-008F-5065C-SA	8W	350mA	3-36V	none
	IZC070-008F-5065C-SA	8W	700mA	3-12V	none
	OTi-DALI-10/220-240/700-NFC-I	10W	150-700mA	2.5-45V	DALI
	OTe-10/220-240/700-PC	10W	700mA	7-14V	Phase-Cut

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THERMAL INTERFACE MATERIAL OPTIONS

Non Adhesive	Single Sided Adhesive	Double Sided Adhesive
ILA-TIM-STAR-OA	ILA-TIM-STAR-1A	ILA-TIM-STAR-2A

Other sizes are available, including customised parts

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ASSEMBLY INFORMATION

- » The mounting of the PowerStar has to be on a metal heatsink.
- » In order to optimise the thermal management, the metal surface needs to be clean (dirt and oil free) and planar for the best contact with the LED module. A thermal grease or heat transfer material is highly recommended.

IMPORTANT INFORMATION AND PRECAUTIONS



The PowerStar's LED, when powered up, is very bright. Thus it is advised that you do not look directly at it. Turn the PowerStar away from you and do not shine into the eyes of others.



PowerStars, when operated, can reach high temperatures thus there is risk of injury if they are touched.



PowerStars will overheat in operation if not attached to a suitable Heatsink. Over heating can cause failure or irreparable damage.



DO NOT HOT PLUG ON LED SIDE OF POWER SUPPLY.



Do not operate PowerStars with a Power Supply with unlimited current. Connection to constant voltage Power Supplies that are not current limited may cause the PowerStar to consume current above the specified maximum and cause failure or irreparable damage.



DO NOT TOUCH or PUSH on the LED as this can cause irreparable damage.

SAFETY INFORMATION



The LED module itself and all its components must not be mechanically stressed.



Assembly must not damage or destroy conducting paths on the circuit board.



The mounting of the module is carried out by attaching it at the mounting holes. Metal mounting screws must be insulated with synthetic washers to prevent circuit board damage and possible short circuiting.



To avoid mechanical damage to the connecting cables, the boards should be attached securely to the intended substrate. Heavy vibration should be avoided.



Observe correct polarity! Depending on the product, incorrect polarity will lead to emission of red or no light. The module can be destroyed!



Pay attention to standard ESD precautions when installing the PowerStas.



The PowerStar's, as manufactured, have no conformal coating and therefore offer no inherent protection against corrosion. Damage by corrosion will not be accepted as a materials defect claim. It is the user's responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.



For outdoor usage, a housing is definitely required to protect the board against environmental influences. The design of the housing must correspond to the IP standards in the application. It is also the responsibility of the user to ensure any housings or modifications keep the Tc junction temperature to within stated ranges.



To also ease the luminaire/installation approval, electronic control gear for LED or LED modules should carry the CE mark and be ENEC certified. In Europe the declarations of conformity must include the following standards: CE: EC 61374-2-13, EN 55015, IEC 61547 and IEC 61000-3-2 - ENEC: 61374-2-13 and IEC/EN 62384.



The evaluation of eye safety occurs according to the standard IEC 62471:2006 ("photobiological safety of lamps and lamp systems"). Within the risk grouping system of this CIE standard, the LED specified in this datasheet falls into the class "moderate risk" (exposure time 0.25s). Under real circumstances (for exposure time, eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. As is also true when viewing other bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment and even accidents, depending on the situation.

FURTHER INFORMATION

The values contained in this datasheet can change due to technical innovation. Any such changes will be made without separate notification. Intelligent Horticultural Solutions is a division of Intelligent Group Solutions, delivering LED solutions to the rapidly evolving and highly important horticultural lighting market.

All trademarks recognised.



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ABOUT IHS

LEDs are producing revolutionary advancements in many areas of technology and life, but none more important than in horticulture. The complexities and knowledge required are growing daily, with different plants requiring different spectral illumination and control.

Intelligent Horticultural Solutions (IHS) was formed in 2017 to support the development of products in the fast moving and exciting area of LED lighting. We have brought together key horticultural LED manufacturers, leveraging their 20+ years of experience in general LED lighting in order to offer development platforms and custom growing solutions.

IHS is part of the [Intelligent Group Solutions Ltd \(IGS\)](#) group of companies founded in 2001 which operate from the head office in Thatcham, Berkshire. Sister divisions specialise in a variety of opto and mainstream electronics distribution, design as well as prototyping and assembly services. The horticultural specialism has evolved, due to market demand in the LED division, Intelligent LED Solutions (ILS).

INTELLIGENT GROUP SOLUTIONS DIVISIONS

