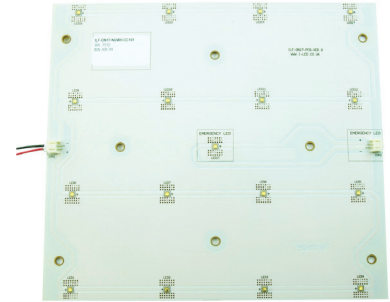


# Horticultural Recipe 16 LED Flood Boards

IHF-##16-####-SC221.

## Product Overview

IHS has a range of LED Light Engines designed for the key stages of plant development from germination/seeding to flowering and fruiting. Working closely with OSRAM Opto Semiconductors, IHS has identified 4 key LED recipes and produced a range of bespoke light engines. There are recipes for Seeding, Biomass, Fruiting and Flowering.



## Applications

- Horticultural Lighting
- Compact Designs
- Greenhouse Lighting
- Top Lighting

## Technical Features

- Our 16 LED Flood contain OSOLON® LEDs with integral 120 degree silicone resin lens, from OSRAM Opto Semiconductors
- Up to 100,000 hours lifetime to 70% of original brightness
- Mounting holes using M3 screws allows easy installation
- Size (L x W x H): 215mm x 194mm x 7.1mm
- Secondary Lens can be fitted – check suitable options in Lens and Reflector section
- Suitable Heatsinks available – check suitable options in Heatsink section
- Suitable Power Supplies available – check suitable options in Power Supply section
- Suitable Thermal Interface Material Available - check options in Thermal Interface Material section
- 16 LED Floods can be linked together to produce longer chains

\*This datasheet should be read in conjunction with the relevant OSRAM Opto Semiconductors data on the LED used

## Important Information and Precautions

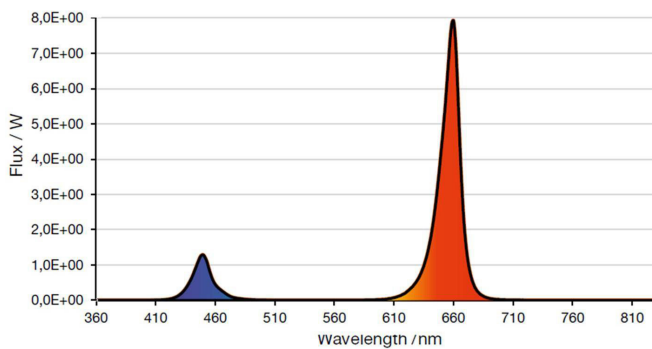
- The LEDs when powered up, are very bright. Thus it is advised that you do not look directly at it. Turn the Flood away from you and do not shine into the eyes of others.
- Floods will overheat in operation if not attached to a suitable Heatsink. Overheating can cause failure or irreparable damage.
- Floods, when operated, can reach high temperatures thus there is a risk of injury if they are touched.
- DO NOT HOT PLUG ON LED SIDE OF POWER SUPPLY
- DO NOT TOUCH or PUSH on the LED as this might cause irreparable damage.

## Standard Product Options

Our 16 LED Flood range of products are targeting 4 areas of horticulture: Biomass, Seeding, Flowering and Fruiting. Each of these areas has a version based on supplemental daylight.

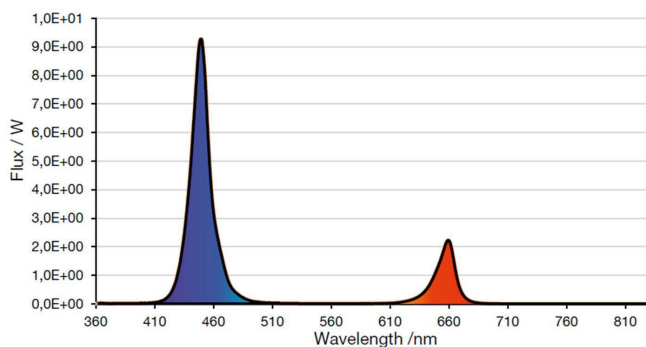
### Biomass

IHS Part Number	LED Recipe	Total Optical Power (W)	Individual Photal Flux (umol)	Combined Photal Flux (umol)	Forward Voltage	Relevant OSRAM LED Data
IHF-OX16-14HR2DB-SC221.	14 Hyper Red 655nm	15.45W	69.55	80.07	35.1V	GHCSSRM2.24
	2 Deep Blue 432nm		10.52			GDCSSRM2.14



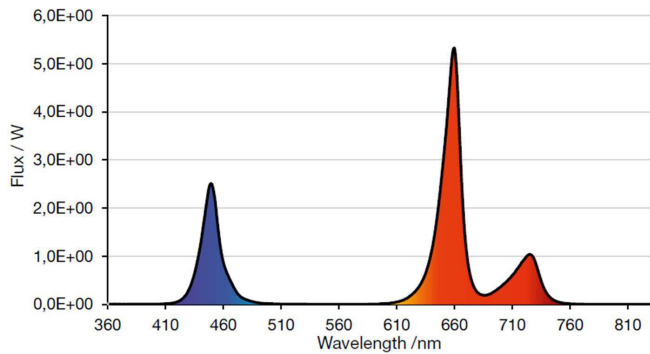
### Seeding

IHS Part Number	LED Recipe	Total Optical Power (W)	Individual Photal Flux (umol)	Combined Photal Flux (umol)	Forward Voltage	Relevant OSRAM LED Data
IHF-OX16-12DB4HR-SC221.	12 Deep Blue 432nm	20.32W	63.11	82.98	43.4V	GDCSSRM2.14
	4 Hyper Red 656 nm		19.87			GHCSSRM2.24



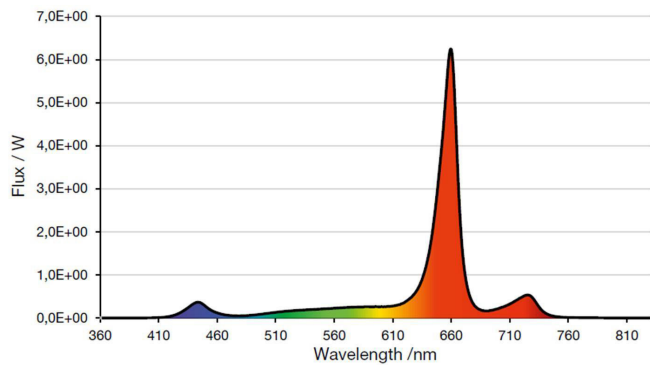
## Flowering

IHS Part Number	LED Recipe	Total Optical Power (W)	Individual Photal Flux (umol)	Combined Photal Flux (umol)	Forward Voltage	Relevant OSRAM LED Data
IHF-OX16-10HR3DB-3FR-SC221.	10 Hyper Red 656 nm	14.04W	49.68	70.31	35.75V	GHCSSRM2.24
	3 Deep Blue 432nm		15.78			GDCSSRM2.14
	3 Far Red 730nm		4.86			GFCSSPM1.24

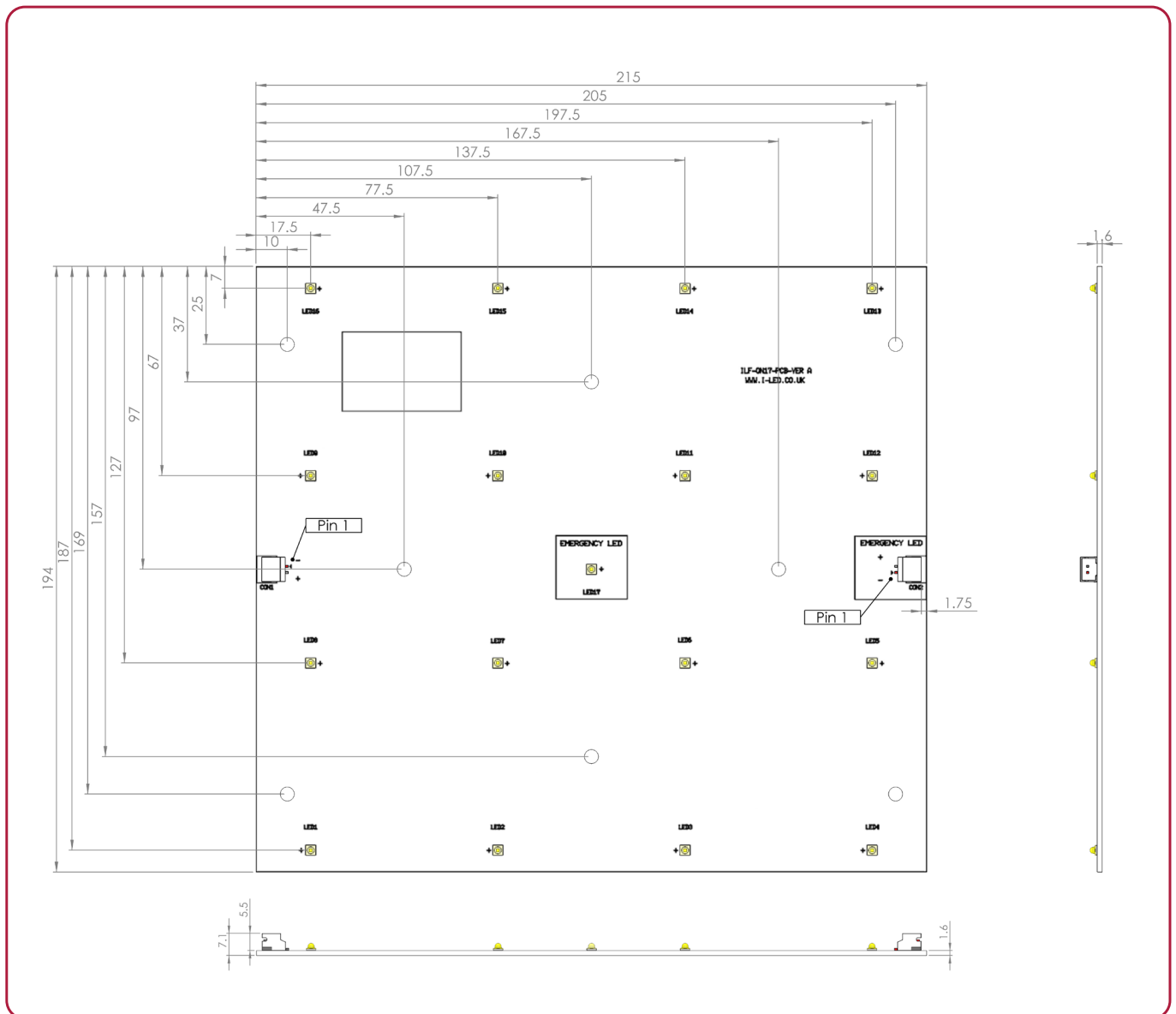


## Fruiting

IHS Part Number	LED Recipe	Total Optical Power (W)	Individual Photal Flux (umol)	Combined Photal Flux (umol)	Forward Voltage	Relevant OSRAM LED Data
IHF-OX16-1FR3N-W12HR-SC221.	3 Neutral White 4000K	13.35W	10.48	71.71	36.05V	GWCSSRM2.EM
	12 Hyper Red 656nm		59.61			GHCSSRM2.24
	1 Far Red 730nm		1.62			GFCSSPM1.24



## Technical Drawing (mm)



**3D drawing files are available on request from IHS. Please call or email**

### Cables

Connecting cable 300 mm long with mating connector one end and un-terminated at the other is available: IHS part number CAB-ILF-OX17.

Cable connects to connector on left-hand side of the 16 LED Flood Board. (Not the emergency LED connector).



## Lens and Reflector Options

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. You select the best LED for the application; choose LEDiL and you're selecting the best optical solution as well.



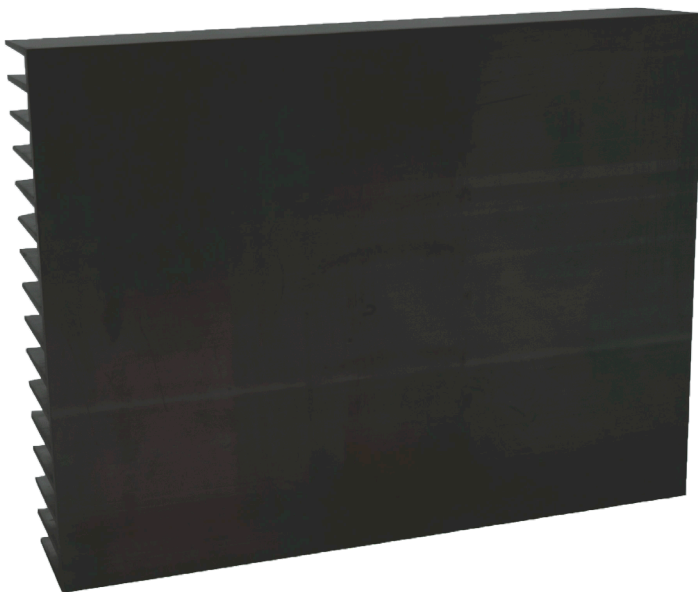
IHS Part Number	Beam	Diameter	Height	Family	FWHM	Colour	Fastening
C12469_LISA2-R-PIN	R	9.9mm	6.5mm	Lisa	83°	White	glue, pin
FP11002_LISA2-W-PIN	W	9.9mm	6.6mm	Lisa	46°	Black	glue, pin
FP11003_LISA2-WW-PIN	WW	9.9mm	6.8mm	Lisa	45°	Black	glue, pin
FP11047_LISA2-RS-PIN	RS	9.9mm	6.6mm	Lisa	16°	Black	glue, pin
FP11055_LISA2-RS-PIN	RS	9.9mm	6.8mm	Lisa	16°	Black	glue, pin
FP11081_LISA2-M-CLIP	M	9.9mm	6.6mm	Lisa	23°	Black	glue, clip
FP11082_LISA2-W-CLIP	W	9.9mm	6.6mm	Lisa	46°	Black	glue, clip
FP11083_LISA2-WW-CLIP	WW	9.9mm	7.0mm	Lisa	45°	Black	glue, clip
FP11084_LISA2-RS-CLIP	RS	9.9mm	6.6mm	Lisa	16°	Black	glue, clip
FP11120_LISA2-O-CLIP	O	9.9mm	6.6mm	Lisa	48° + 19°	Black	glue, clip
FP11124_LISA2-O-PIN	O	9.9mm	6.6mm	Lisa	48° + 19°	Black	glue, pin
FP11852_LISA2-O-90-PIN	O	9.9mm	6.6mm	Lisa	48° + 19°	Black	glue, pin
FP11957_LISA2-WWW-PIN	WWW	9.9mm	6.6mm	Lisa	48° + 19°	Black	glue, pin
FP11958_LISA2-WWW-CLIP	WWW	9.9mm	6.6mm	Lisa	91°	Black	glue, clip
FP13028_LISA2-M-PIN	M	9.9mm	6.8mm	Lisa	16°	Black	glue, pin
FP16558_LISA3-RS-PIN	RS	10mm	7.9mm	Lisa	15°	Black	glue, pin
FP16559_LISA3-M-PIN	M	10mm	7.9mm	Lisa	25°	Black	glue, pin
FP16560_LISA3-W-PIN	W	10mm	7.0mm	Lisa	35°	Black	glue, pin
FP16561_LISA3-WW-PIN	WW	10mm	7.0mm	Lisa	45°	Black	glue, pin
FP16562_LISA3-WWW-PIN	WWW	10mm	7.0mm	Lisa	63°	Black	glue, pin
FP16563_LISA3-O-PIN	O	10mm	7.9mm	Lisa	17° + 48°	Black	glue, pin
FA11204_TINA-O	O	16mm	9.5mm	Tina	32° + 14°	Black	tape, pin
FA11205_TINA-D	D	16mm	9.5mm	Tina	14°	Black	tape, pin
FA11206_TINA-M	M	16mm	9.5mm	Tina	30°	Black	pin, tape
FA11207_TINA-W	W	16mm	9.5mm	Tina	41°	Black	tape, pin
FA16662_TINA-BW	BW	16mm	9.5mm	Tina	Asymmetric	Black	tape, pin
C13253_TINA2-R-CLIP16	R	16mm	10.1mm	Tina	75°	White	clips
CA12374_TINA2-RS	RS	16mm	9.5mm	Tina	11°	Black	tape, pin
CA12375_TINA2-D	D	16mm	9.3mm	Tina	14°	Black	tape, pin
CA12376_TINA2-SS	SS	16mm	9.3mm	Tina	22°	Black	tape, pin
CA12377_TINA2-M	M	16mm	9.5mm	Tina	30°	Black	tape, pin
CA12378_TINA2-W	W	16mm	9.5mm	Tina	53°	Black	tape, pin
CA12379_TINA2-O	O	16mm	9.5mm	Tina	33° + 13°	Black	tape, pin
CP12687_TINA2-RS	RS	16mm	9.5mm	Tina	10°	Black	glue
CP12688_TINA2-D	D	16mm	9.5mm	Tina	12°	Black	glue
CP12689_TINA2-O	O	16mm	9.5mm	Tina	39° + 12°	Black	glue
CP12690_TINA2-M	M	16mm	9.5mm	Tina	30°	Black	glue
FA11824_TINA3-W	W	16mm	6.9mm	Tina	37°	White	tape, pin
FA11825_TINA3-WW	WW	16mm	6.9mm	Tina	44°	White	tape, pin
FA11826_TINA3-WWW	WWW	16mm	6.9mm	Tina	68°	White	tape, pin
FA11870_TINA3-OO	OO	16mm	6.9mm	Tina	53° + 36°	White	tape, pin
FA11905_TINA3-S	S	16mm	11.4mm	Tina	9°	white	tape, pin

## Heatsink Options

IHS has a series of Aluminium Alloy Heatsinks to be used with our standard range of 16 LED Floods. 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. More versions will be introduced over the coming months and we are also happy to manufacture custom Heatsinks to your request.

	Operates under the recommended IHS junction temperature
	Operates under the recommended LED maximum junction temperature
	Not suitable for use
N/A	Heatsink not designed for use with this product

IHS Product		no Heatsink in free air	ILA-HSINK-280X190X50MM-BLK	ILA-HSINK-270X216X83MM-BLK	ILA-HSINK-230X250X100MM-BLK	ILA-HSINK-210X200X25MM-BLK	ILA-HSINK-220X190X50MM-BLK	ILA-HSINK-250X200X15MM-BLK	ILA-HSINK-250X200X25MM-BLK
Dragon 72 Flood	350mA					N/A	N/A	N/A	N/A
	700mA					N/A	N/A	N/A	N/A
	1000mA					N/A	N/A	N/A	N/A
OSLON® 72 Flood	350mA					N/A	N/A	N/A	N/A
	700mA					N/A	N/A	N/A	N/A
	1000mA					N/A	N/A	N/A	N/A
OSLON® 27 Flood	350mA		N/A	N/A	N/A			N/A	N/A
	700mA		N/A	N/A	N/A			N/A	N/A
Stanley 3J/6J 27 Flood	350mA		N/A	N/A	N/A			N/A	N/A
	700mA		N/A	N/A	N/A			N/A	N/A
OSLON® 16 Flood	350mA		N/A	N/A	N/A	N/A	N/A		
	700mA		N/A	N/A	N/A	N/A	N/A		



## Power Supply Options









IHS has a comprehensive range of standard Power Supplies. The table below shows forward voltage of each LED driver please consult the product options table to find the forward voltage of the LED Flood used.

Additional Power Supplies are being introduced so please call us or check our website for the latest offering.

To determine how many LED Floods can be used with each LED driver you will need the following. Forward voltage of the PowerStar and forward voltage of the LED Driver.

For example IHF-OX16-1FR3NW12HR-SC221. forward voltage of 1.9-2.60V (this can be found under product options page 2) and IZC035-017F-0067A-SA has an output voltage of 6-48V.

To determine the minimum number of LED Flood this driver can run take the minimum output voltage of the Driver 6.00V and divide by the forward minimum voltage of the LED Flood  $36.05 - 6.00 \div 36.05 = 0.17$  LED Floods. To determine the maximum number of LED Floods this driver can run take the maximum forward voltage 48.00V and divide this by the maximum forward voltage of the LED Flood  $36.05V - 48.00 \div 36.05 = 1.33$  LED Floods.

IHS Driver Part Number	Current	IP Rating	Forward Voltage	Image
IZC035-017F-0067A-SA	350mA	IP67	6 - 48V	
IZC035-018T-9500A-SX	350mA	IP20	15 - 52V	
IZC070-035F-0067C-SA	700mA	IP67	9 - 48V	
IZC045-040A-9266C-SA	450mA	IP66	30 - 89V	
IZC095-040M-9067C-SAL	950mA	IP67	25.2 - 42V	
IZCVAR-040M-9020C-SAL	350mA, 500mA, 600mA, 700mA, 900mA	IP20	350mA 2-100V, 500mA 2-80V, 600mA 2-67V, 700mA 2-57V, 900mA 2-45V	
IZC070-075A-9267C-SA	700mA	IP67	54 - 108V	
IZC050-060F-9067C-QA	500mA	IP67	40 - 110V	

## Thermal Interface Material Options

IHS have produced a range of high-performance, cost effective Thermal Interface Materials to match perfectly our 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.

Product	Non Adhesive	Single Sided Adhesive	Double Sided Adhesive
OSLON® 16 Flood	ILA-TIM-17FL-215X194-0A	ILA-TIM-17FL-215X194-1A	ILA-TIM-17FL0215X194-2A

Other sizes are available, including customised parts.

## Assembly Information

- The mounting of the 16 LED Flood 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.

## 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 16 LED Flood.
- The 16 LED Flood, 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 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 data sheet 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.



## For further information please contact IHS

The values contained in this datasheet can change due to technical innovations. Any such changes will be made without separate notification.

Intelligent Horticultural Solutions is a division of Intelligent Group Solutions, focusing on providing LED solutions to the rapidly evolving and highly important horticultural lighting market.

All trademarks recognised.