



Delux

Product Introduction

The Delux Series LED Array products deliver high quality light with Delux lighting-class reliability. This high flux density light source is designed to support a wide range of high quality, low cost directional luminaires and replacement lamps for commercial and residential applications. Available in 3-step color consistency, and featuring a 4.6-mm optical source. HRA0407 enables many kinds of application including retrofit and luminaire designs.

Features

- Compact high flux density light source
- Uniform high quality illumination
- Minimum 90 and 95 CRI options
- Streamlined thermal path
- Energy Star/ANSI compliant color binning structure with 3SCDM
- More energy efficient than incandescent , halogen and fluorescent lamps
- Low voltage DC operation
- Instant light with unlimited dimming
- Only provide A and B visual color bin

Benefits

- Enhanced optical control
- Clean white light without pixilation
- High quality true color reproduction
- Significantly reduced thermal resistance and increased operating temperatures
- Uniform consistent white light
- Lower operating costs
- Easy to use whit daylight and motion detectors to enable increased energy saving
- Reduced maintenance costs
- Environmentally friendly , no disposal issue

Series Include

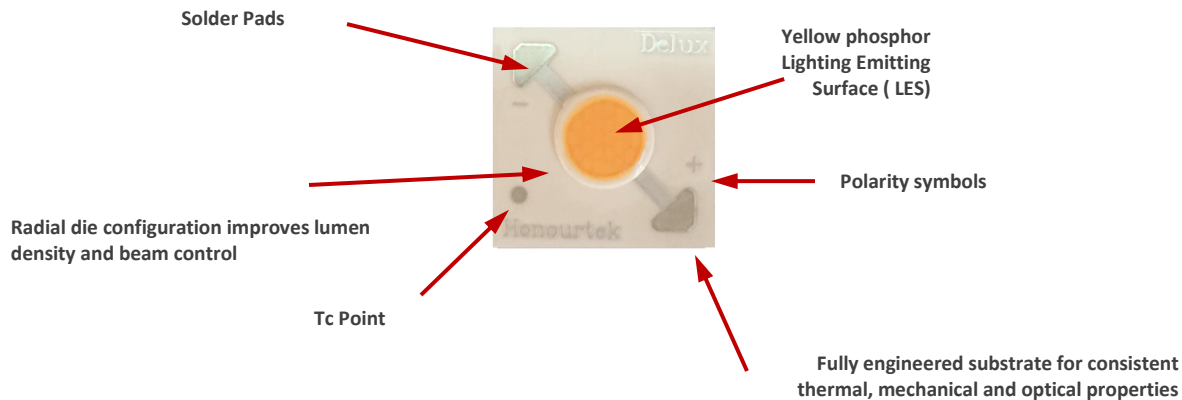
Warmer Series / Standard Series

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Typical Product Feature

Honourtek arrays are fully engineered devices that provide consistent thermal and optical performance on an engineered mechanical platform. The Delux Series arrays are the most compact chip-on-board devices across all of Honourtek' LED Array products. The arrays incorporate several features to simplify design integration and assembly.

Figure 1: Array Features



Product bin and order code format

HRA0407-30-97-36-X000-F1

HRA	04	07	30	97	36	X000	F1
Product Family	Light Emitting Surface Diameter	Watt TYP	Color Temperature	CRI	VOLTs	Series/ Basic Package	Flux Bin

Note : X000 nomenclature corresponds to the following:

- A000 = Standard Series
- B000 = Vigour Series
- W000 = Warmer Series
- J000 = Ocean Series
- M000 = Meat Series
- Y000 = Atmosphere Series

Lumen Maintenance Characteristics

Honourtek projects that its family of LED array products will deliver, on average, greater than 70% lumen maintenance after 50,000 hours of operation at two times the nominal drive current in Table 1. This performance assumes constant current operation at up to 2 times the nominal drive current with case temperature maintained at or below 85°C. For use beyond these operating conditions please consult your Honourtek sales representative for further assistance.

Honourtek conducts lumen maintenance tests per LM-80. Observation of design limits is required in order to achieve this projected lumen maintenance.

Environmental Compliance

Honourtek is committed to providing environmentally friendly products to the solid-state lighting market. Delux series LED Arrays comply with the European Union directives on the restriction of hazardous substances in electronic equipment, namely the RoHS directive. Honourtek does not intentionally add the following restricted materials to any LED array products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

Minor Product Change Policy

The rigorous qualification testing on products offered by Honourtek provides performance assurance. Slight cosmetic changes that do not affect form, fit, or function may occur as Honourtek continues product optimization.

Case Temperature Measurement Point

A case temperature measurement point location is included on the top surface of the Delux series LED arrays. The location of this measurement point is indicated in the mechanical dimensions section of this data sheet.

The purpose of this measurement point is to allow the user access to a measurement point which correlates to the true case temperature on the back surface of the LED array. Once the LED array is installed, it is challenging to measure the back surface of the array, or true case temperature.

Consistent and repeatable temperature measurements can be correlated to the data sheet performance specifications and to published LM-80 reliability data. The use of the case temperature measurements point is fully explained in AN30.

Cautionary Statements

CAUTION: CONTACT WITH LIGHT EMITTING SURFACE (LES)

Avoid any contact with the LES. Do not touch the LES of the Delux series LED array or apply stress to the LES (yellow phosphor resin area). Contact may cause damage to the LED array.

Optics and reflectors must not be mounted in contact with the LES (yellow phosphor resin area). Optical devices may be mounted on the top surface of the plastic housing of the Delux series LED array. Use the mechanical features of the LED array housing, edges and/or mounting holes to locate and secure optical devices as needed.

CAUTION: CHEMICAL EXPOSURE HAZARD

Exposure to some chemicals commonly used in luminaire manufacturing and assembly can cause damage to the LED array. Please consult Honourtek Application Note AN31 for additional information.

CAUTION: EYE SAFETY

Eye safety classification for the use of Honourtek Delux series LED arrays is in accordance with IEC specification EN62471:Photobiological Safety of Lamps and Lamp Systems. Delux series LED arrays are classified as Risk Group 1 (Low Risk) when operated at or below the maximum drive current. Please use appropriate precautions. It is important that employees working with LEDs are trained to use them safely.

CAUTION: RISK OF BURN

Do not touch the Delux series LED array or yellow resin area during operation. Allow the array to cool for a sufficient period of time before handling. The Delux series LED array may reach elevated temperatures such that could burn skin when touched.

CAUTION: CHEMICAL EXPOSURE HAZARD

Exposure to some chemicals commonly used in luminaire manufacturing and assembly can cause damage to the LED Array. Please consult Application Note AN41 for additional information.

Product Selection Guide

FLUX CHARACTERISTICS, ACCURATEWHITE ORDER CODES AND BINS(I_f=200mA,T_j=85°C)

Table 1: Selection Guide, Pulsed Measurement Data

Part Number	Series Code	Nominal CCT (K)	CRI		Typical Pulsed Flux T _j = 25°C (lm)			Typical Pulsed Flux T _j = 85°C (lm)			Typical Vf (V)	Typical Power(W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.		
HRA0407-25-97-36-W000-F1	W	2500	95	97	638	683	731	590	632	676	36	7.2
HRA0407-28-97-36-W000-F1		2800	95	97	677	724	775	626	670	717	36	7.2
HRA0407-27-97-36-A000-F1	A	2700	90	92	712	762	815	660	706	755	36	7.2
HRA0407-30-90-36-A000-F1		3000	90	92	750	802	858	694	743	795	36	7.2
HRA0407-35-90-36-A000-F1		3500	90	92	728	779	834	674	722	772	36	7.2
HRA0407-40-90-36-A000-F1		4000	90	92	817	874	935	756	809	866	36	7.2
HRA0407-27-90-36-A000-F1		2700	95	97	685	733	784	634	679	727	36	7.2
HRA0407-30-97-36-A000-F1		3000	95	97	707	757	810	655	701	750	36	7.2

FLUX CHARACTERISTICS, ACCURATEWHITE ORDER CODES AND BINS(I_f=250mA,T_j=85°C)

Part Number	Series Code	Nominal CCT (K)	CRI		Typical Pulsed Flux T _j = 25°C (lm)			Typical Pulsed Flux T _j = 85°C (lm)			Typical Vf (V)	Typical Power(W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.		
HRA0407-25-97-36-W000-F1	W	2500	95	97	729	780	835	675	722	773	36.9	9.2
HRA0407-28-97-36-W000-F1		2800	95	97	805	861	921	745	797	853	36.9	9.2
HRA0407-27-90-36-A000-F1	A	2700	90	92	832	890	952	771	825	883	36.9	9.2
HRA0407-30-90-36-A000-F1		3000	90	92	869	930	995	805	861	921	36.9	9.2
HRA0407-35-90-36-A000-F1		3500	90	92	830	888	950	769	822	880	36.9	9.2
HRA0407-40-90-36-A000-F1		4000	90	92	966	1034	1106	894	957	1024	36.9	9.2
HRA0407-27-97-36-A000-F1		2700	95	97	772	826	884	715	765	816	36.9	9.2
HRA0407-30-97-36-A000-F1		3000	95	97	806	863	923	747	799	855	36.9	9.2

Notes

1. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
2. Typical performance is estimated based on operation under DC (direct current) with the LED array mounted to a heat sink with thermal interface material and the case temperature maintained at 85°C. Based on Honourtek test setup, values may vary depending on the thermal design of the luminaire and/or the exposed environment to which the product is subjected.
3. Honourtek maintains a ± 7% tolerance on flux measurements.
4. Honourtek maintains a ± 2% tolerance on CRI measurements.
5. Check page 3 to find Series code meaning
6. Nominal CCT as defined by ANSI C78.377-2017.

Characteristics

Table 2: Characteristics Data

Characteristics	Unit	Minimum	Typical	Maximum
Viewing angle	degree		120	
ESD classification			Class 2	
DC forward current	mA		250	350
Power			9.2	
Reverse current	mA			0.1
Forward voltage(@250mA,85° C)	V		36.5	
Forward voltage(@250mA,25° C)	V		36.9	40
Thermal Resistance	° C/W			

Absolute Maximum Ratings

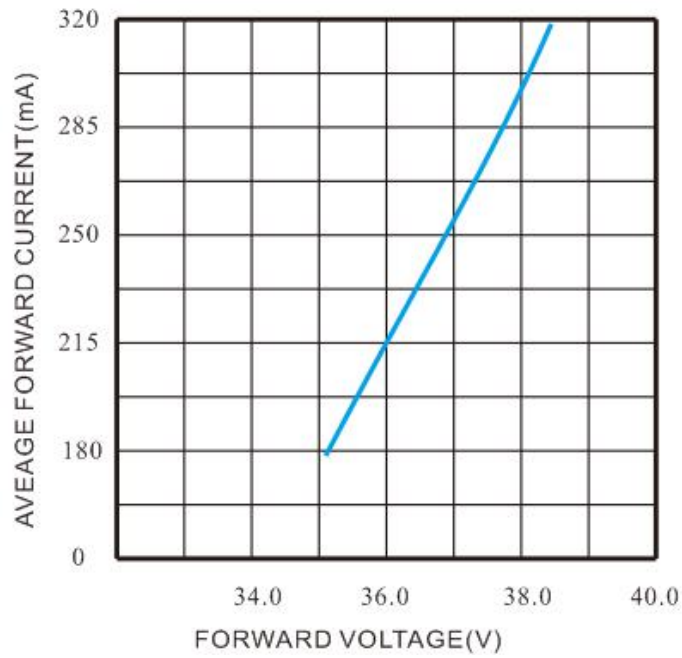
Table 3 : Maximum Ratings

Parameter	Maximum Rating
LED Junction Temperature	120°C
Storage Temperature	-40°C to +105°C
Operating Case Temperature	105°C ^[2]
Soldering Temperature ^[1]	350°C for a maximum of 10 seconds

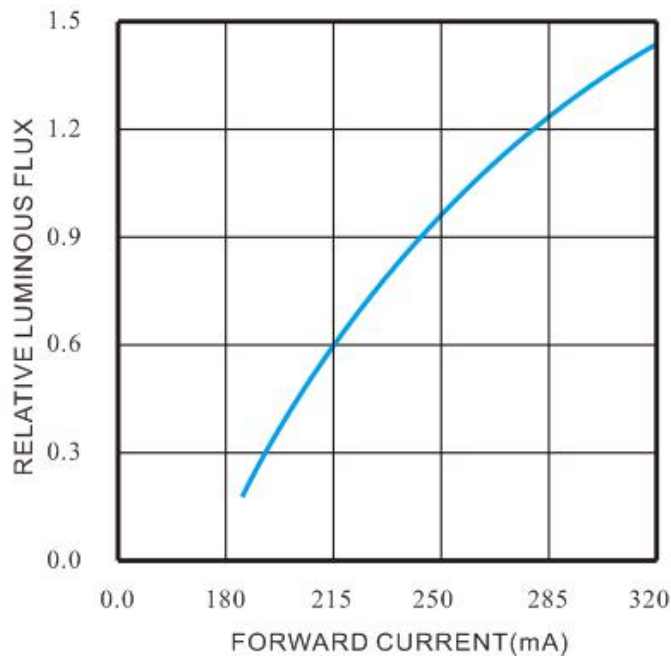
Notes :

1. See Honourtek Application Note AN31, Assembly Considerations for Delux series LED arrays, for more information.
2. For LM-80 requirement, please contact Honourtek Sales Support.

Drive Current versus Forward Voltage Characteristics

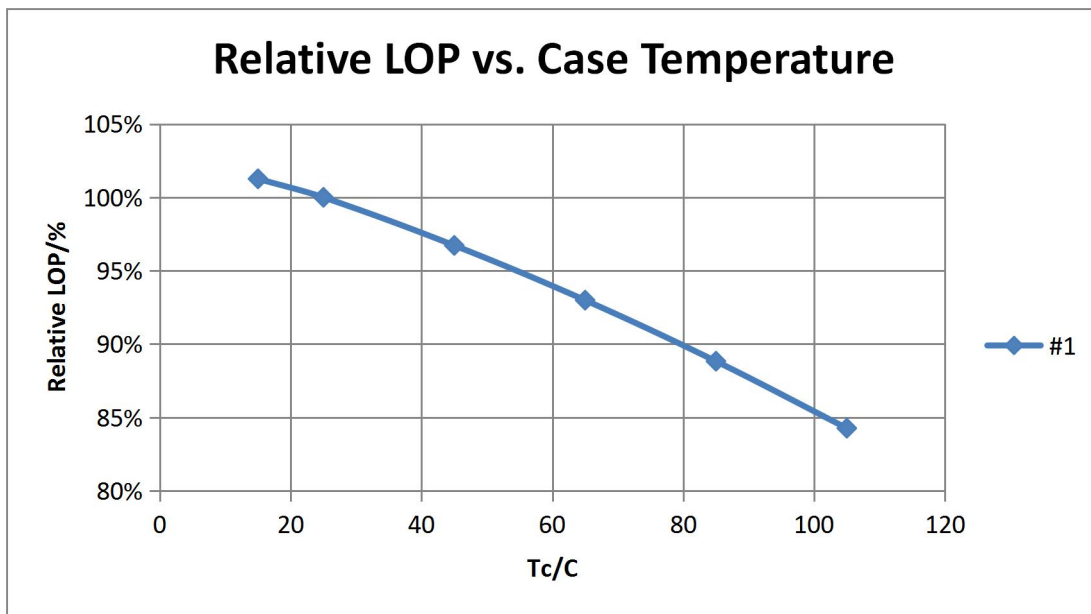


Typical Relative Luminous Flux vs. Drive Current, $T_j=85^\circ\text{C}$

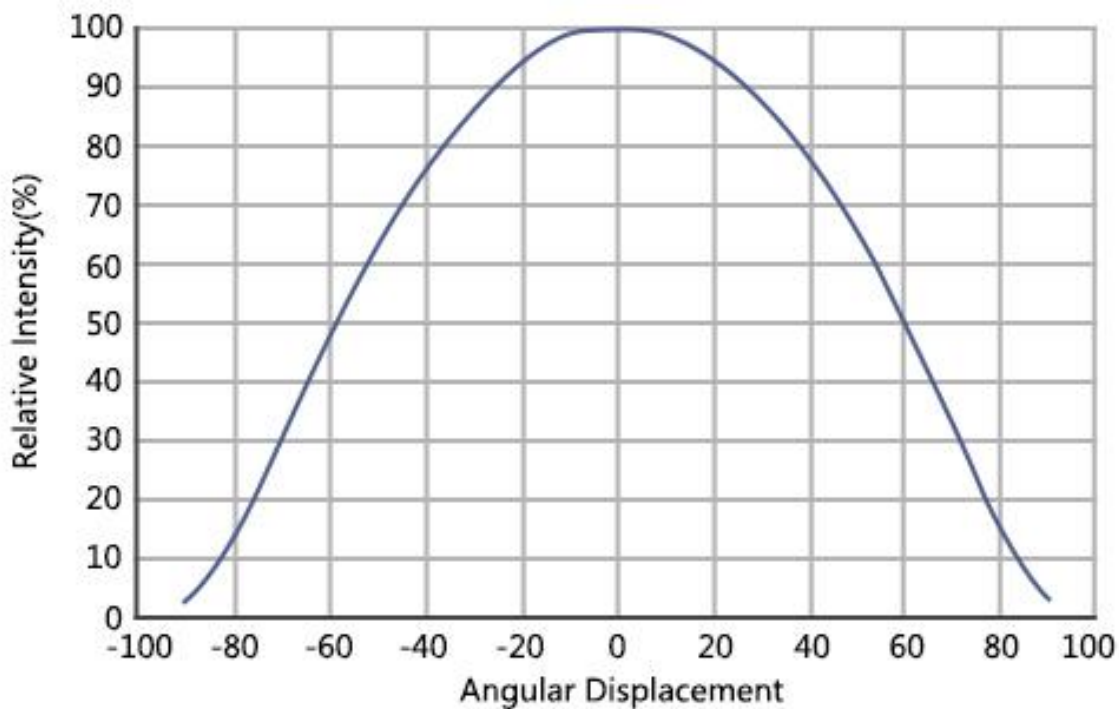


Typical Light Output Characteristics vs. Temperature

Typical Flux vs. Junction Temperature

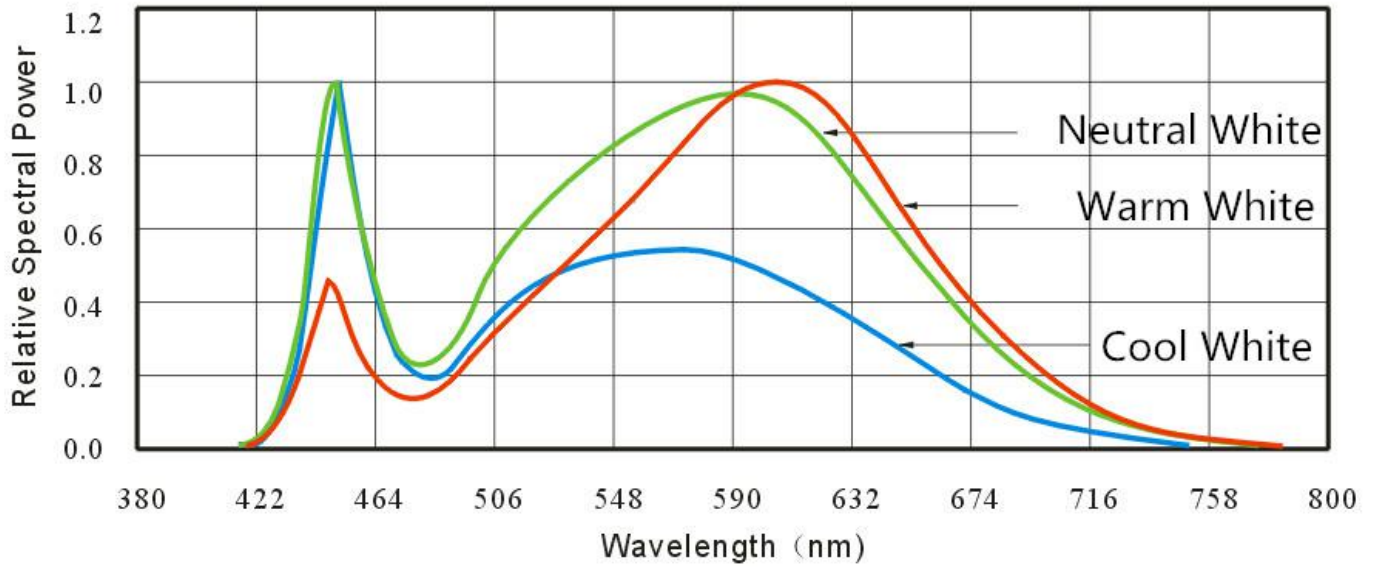


Typical Angular Radiation Pattern



RELATIVE SPECTRAL POWER DISTRIBUTION, T_j=85°C

The following graph is the result of a series of pulsed measurements at T_j=85° C.

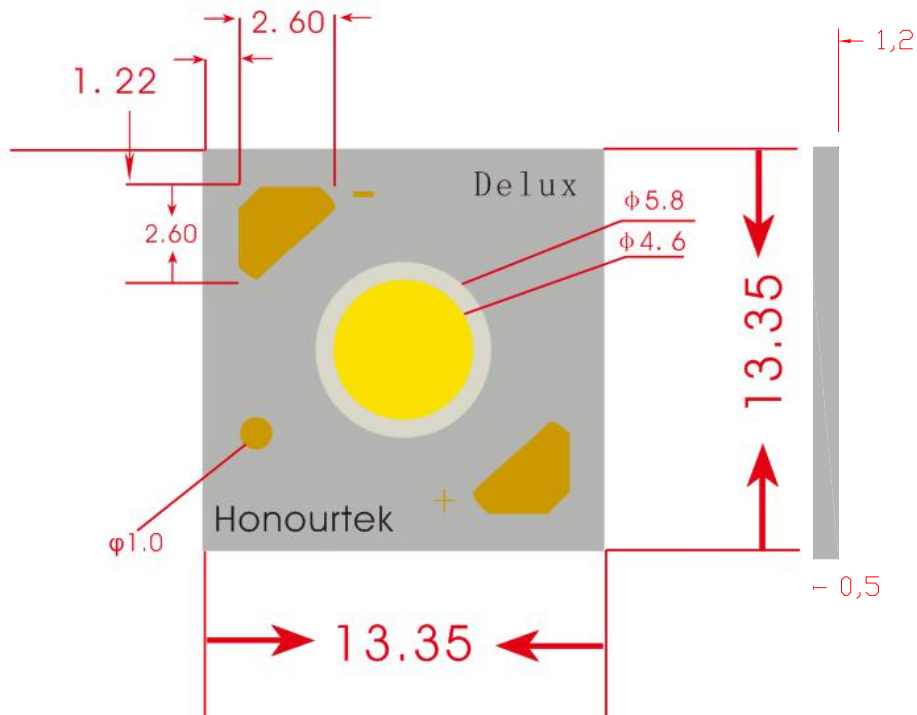


Mechanical Dimensions

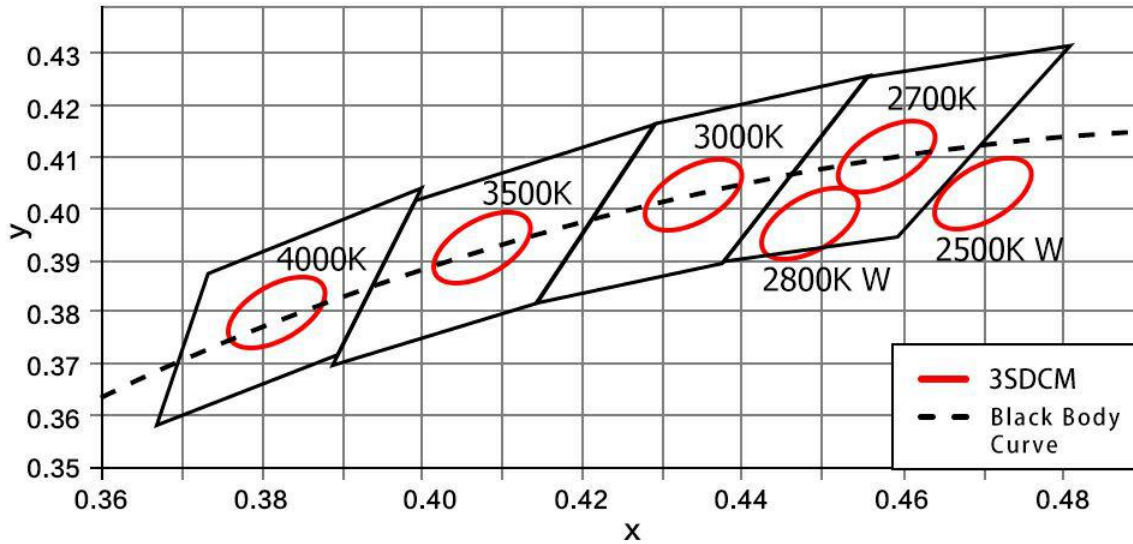
Drawing for Delux Arrays

LES = $\varnothing 4.6 \pm 0.2$

Dimensions are in mm.
Tolerances unless otherwise
Specified : $\pm 0.1\text{mm}$



Chromaticity Coordinates (Condition: IF=180 mA, Tj = 85° C)



HRA0407 White Chromaticity Bins

CCT	2700K	3000K	3500K	4000K
ANSI BIN 2011	(2580K-2870K) 2725K ±145K	(2870K-3220K) 3045K±175	(3220K-3710K) 3465 ±245K	(3710K-4260K) 3985 ±275K
ANSI BIN 2017	2725K ±83K	3045K±100K	3465 ±124K	3985 ±154K
Delux BIN	2725K ±75K	3045K ±75K	3465 ±80K	3985 ±100K
Center Point(x,y)	0.4578, 0.4101	0.4339, 0.4033	0.4078, 0.3930	0.3818, 0.3797

Note:

1. Color region stay within MacAdam 3-step ellipse from the chromaticity center.
2. The chromaticity center refers to ANSI C78.377.2017.
3. Honourtek maintains a +/- 0.005 tolerance on chromaticity (CIEx and CIEy) measurements.

Packaging

Packaging Tray and Labeling



17.2 x 17.2 x 1 cm

Notes:

Honourtek HRA0407 LEDs are packaged in trays of 25. Eight trays are sealed in an anti-static bag and placed inside a carton, for a total of 200 LEDs per carton.

About HONOURTEK

HONOURTEK is the global Specific Application Color and Customized LED Supplier. The company develops, manufactures and distributes groundbreaking LEDs that shatter the status quo and help customers gain and maintain a competitive edge.

With keeping create better light color. HONOURTEK is uniquely positioned to deliver lighting advancements well into the future by maintaining an unwavering focus on quality, innovation and reliability.

To learn more about our portfolio of LEDs, please visit Honourtek.com.

LED solutions with best color

A large version of the HONOURTEK logo, with "HONOURTEK" in red and "TEK" in grey.

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