

# HONOURTEK Delux Array Series HRB0604 Preliminary

Product Data Sheet  
HRB0604

HONOURTEK®



# 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 6-mm optical source. HRB0604 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

## 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

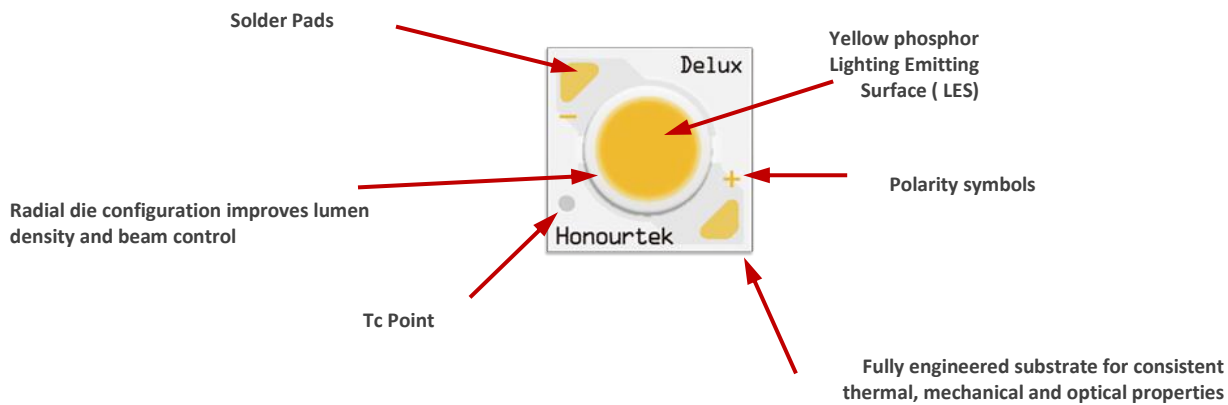
Warmer Series / Standard Series

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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

# HRB0604-30-92-36-X000-F1

HRB	06	04	30	92	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

**Table 1: Selection Guide, Pulsed Measurement Data**

**FLUX CHARACTERISTICS, ACCURATEWHITE ORDER CODES AND BINS (If=180mA,Tj=85°C)**

Part Number	Series	Nominal CCT (K)	CRI		Typical Pulsed Flux Tj = 25°C (lm)			Typical Pulsed Flux Tj = 85°C (lm)			Typical Vf (V)	Typical Power (W)	Efficacy (lm/W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.			
HRB0604-25-97-36-W000-F1	W	2500	95	97	501	536	574	464	497	532	36.2	6.5	76
HRB0604-28-97-36-W000-F1		2800	95	97	520	556	595	482	515	551	36.2	6.5	79
HRB0604-27-92-36-A000-F1	A	2700	90	92	563	603	645	521	558	597	36.2	6.5	86
HRB0604-27-97-36-A000-F1		2700	95	97	521	558	597	482	516	552	36.2	6.5	79
HRB0604-30-92-36-A000-F1		3000	90	92	580	621	664	536	574	615	36.2	6.5	88
HRB0604-30-97-36-A000-F1		3000	95	97	535	573	613	496	530	568	36.2	6.5	81
HRB0604-35-92-36-A000-F1		3500	90	92	595	636	681	549	588	629	36.2	6.5	90
HRB0604-35-95-36-A000-F1		3500	93	95	550	589	630	509	544	582	36.2	6.5	84
HRB0604-40-92-36-A000-F1		4000	90	92	605	649	694	561	601	643	36.2	6.5	92
HRB0604-40-95-36-A000-F1		4000	93	95	560	600	642	520	556	595	36.2	6.5	85

**FLUX CHARACTERISTICS, ACCURATEWHITE ORDER CODES AND BINS (If=100mA,Tj=85°C)**

Part Number	Series	Nominal CCT (K)	CRI		Typical Pulsed Flux Tj = 25°C (lm)			Typical Pulsed Flux Tj = 85°C (lm)			Typical Vf (V)	Typical Power (W)	Efficacy (lm/W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.			
HRB0604-25-97-36-W000-F1	W	2500	95	97	303	324	347	281	300	322	34.7	3.5	87
HRB0604-28-97-36-W000-F1		2800	95	97	315	337	361	292	312	334	34.7	3.5	90
HRB0604-27-92-36-A000-F1	A	2700	90	92	337	361	385	312	334	357	34.7	3.5	96
HRB0604-27-97-36-A000-F1		2700	95	97	316	338	362	293	313	336	34.7	3.5	90
HRB0604-30-92-36-A000-F1		3000	90	92	348	372	397	322	344	368	34.7	3.5	99
HRB0604-30-97-36-A000-F1		3000	95	97	325	348	370	301	323	345	34.7	3.5	93
HRB0604-35-92-36-A000-F1		3500	90	92	358	383	409	331	354	379	34.7	3.5	102
HRB0604-35-95-36-A000-F1		3500	93	95	332	355	380	307	329	352	34.7	3.5	95
HRB0604-40-92-36-A000-F1		4000	90	92	368	394	421	341	365	391	34.7	3.5	105
HRB0604-40-95-36-A000-F1		4000	93	95	342	366	391	316	338	362	34.7	3.5	97

**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

## Characteristics

**Table 2: Characteristics Data**

Characteristics	Unit	Minimum	Typical	Maximum
Viewing angle	degree		120	
ESD classification			Class 2	
DC forward current	mA		180	250
Power			6.5	
Reserve current	mA			0.1
Forward voltage(@180mA,85° C)	V		36.2	
Forward voltage(@180mA,25° C)	V			40
Thermal Resistance	° C/W		N/A	

## Absolute Maximum Ratings

**Table 3 : Maximum Ratings**

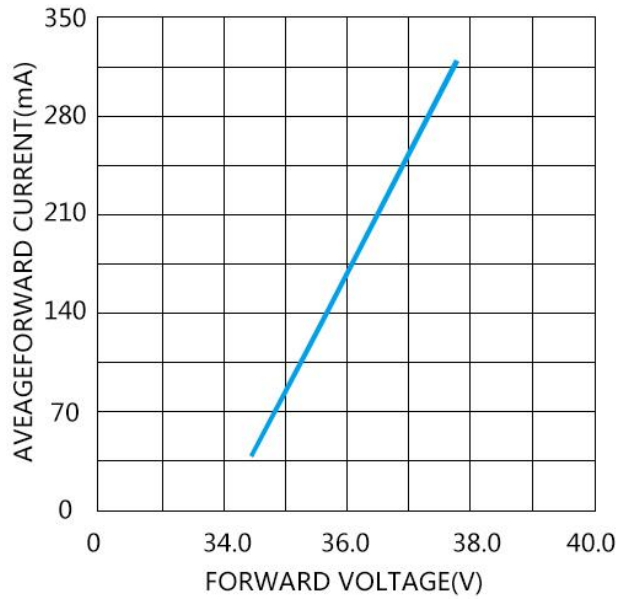
Parameter	Maximum Rating
LED Junction Temperature	120°C
Storage Temperature	-40°C to +105°C
Operating Case Temperature	105°C <sup>[2]</sup>
Soldering Temperature <sup>[1]</sup>	350°C for a maximum of 10 seconds

Notes :

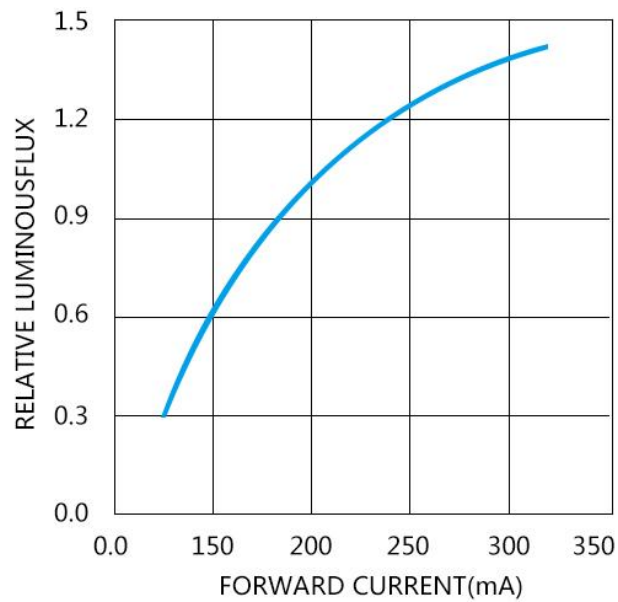
1. See Honourtek Application Note AN31, Assembly Considerations for Delux series LED arrays, for more information.
2. For IEC 62717 requirement, please contact Honourtek Sales Support.

## Drive Current versus Forward Voltage Characteristics

(Ta=25°C Unless Otherwise Noted) IF=180mA



## Typical Relative Luminous Flux vs. Drive Current, Tj=85°C

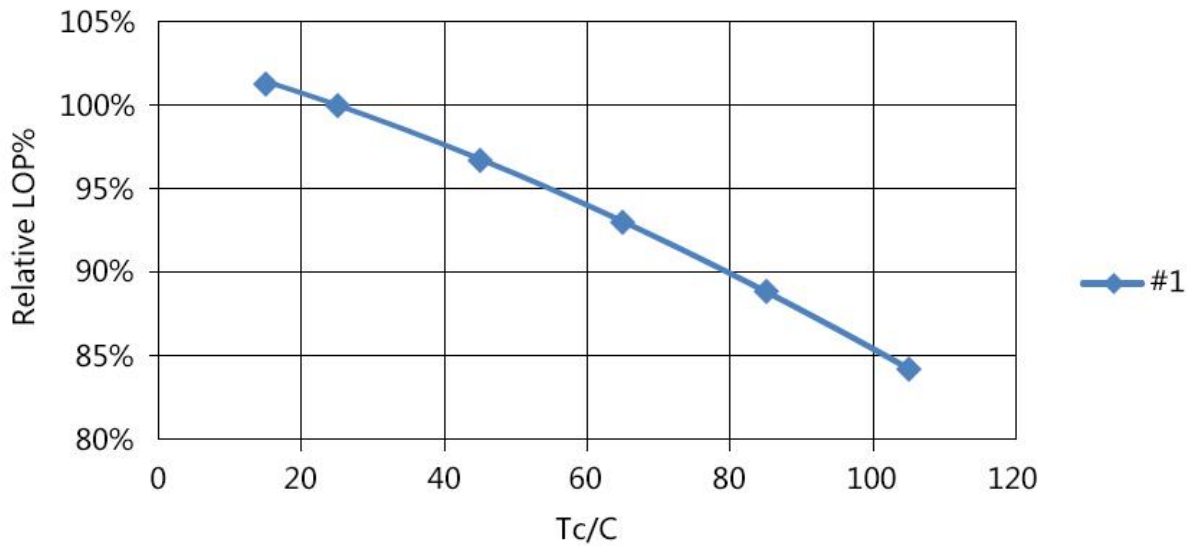




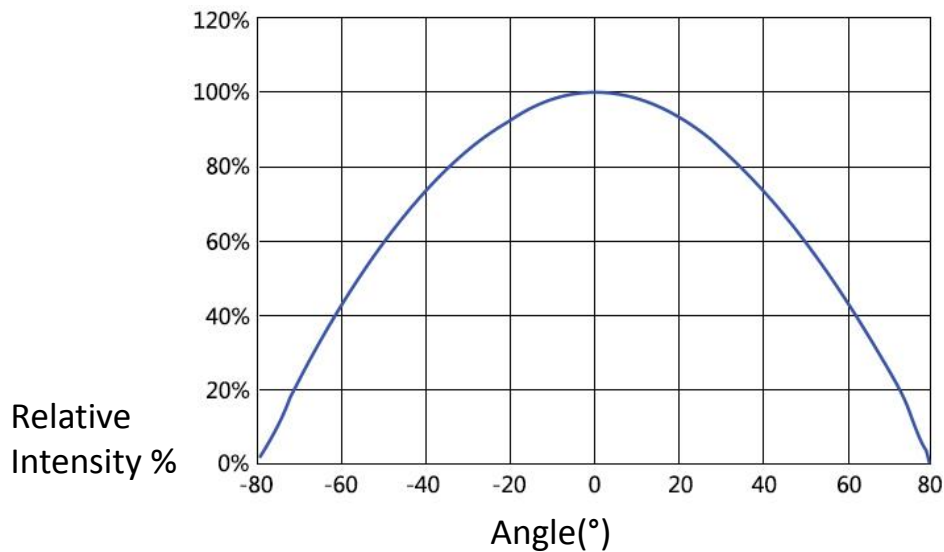
## Typical Light Output Characteristics vs. Temperature

Typical Flux vs. Junction Temperature

### Relative LOP vs. Case Temperature

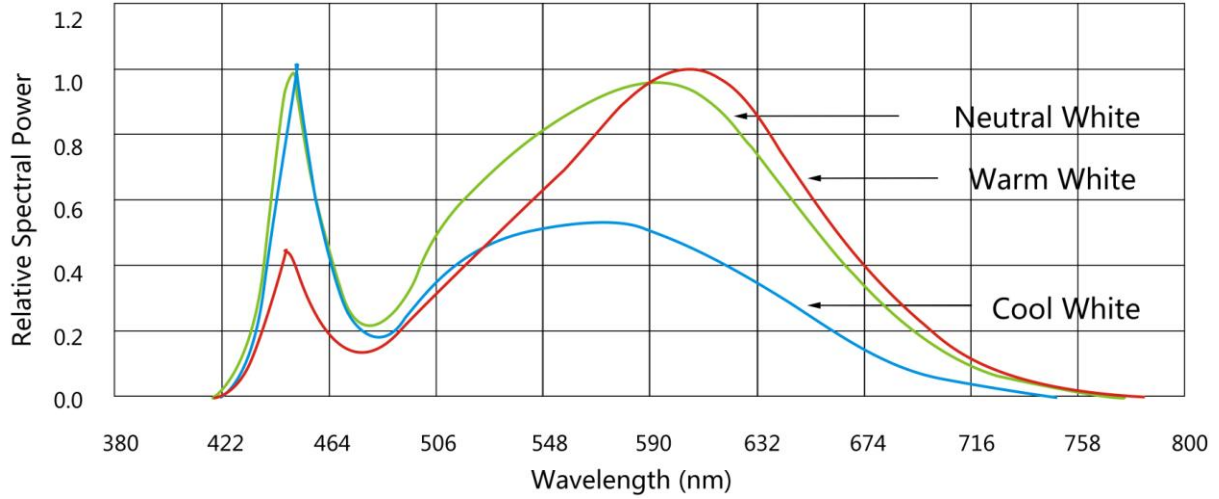


## Typical Angular Radiation Pattern



## RELATIVE SPECTRAL POWER DISTRIBUTION, Tj=85°C

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

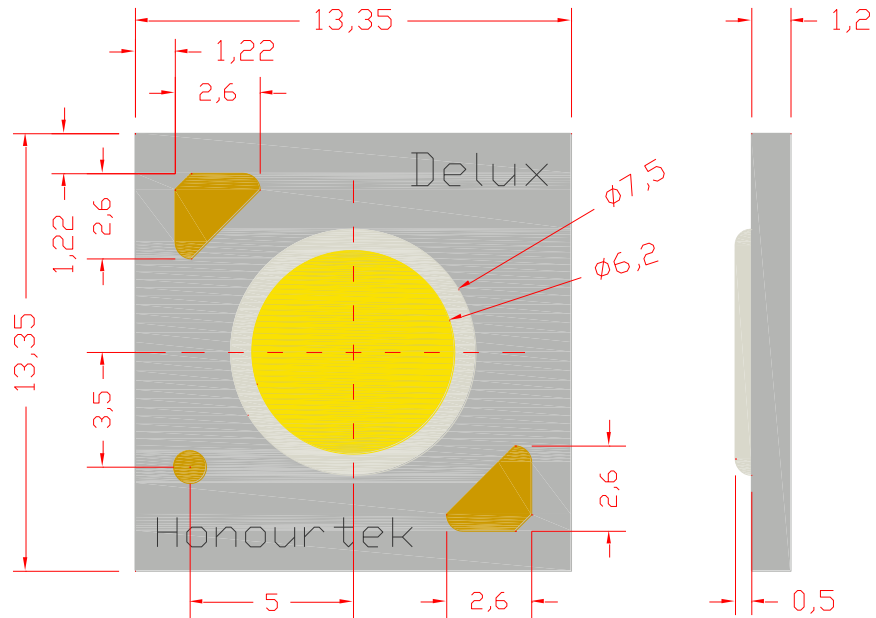


## Mechanical Dimensions

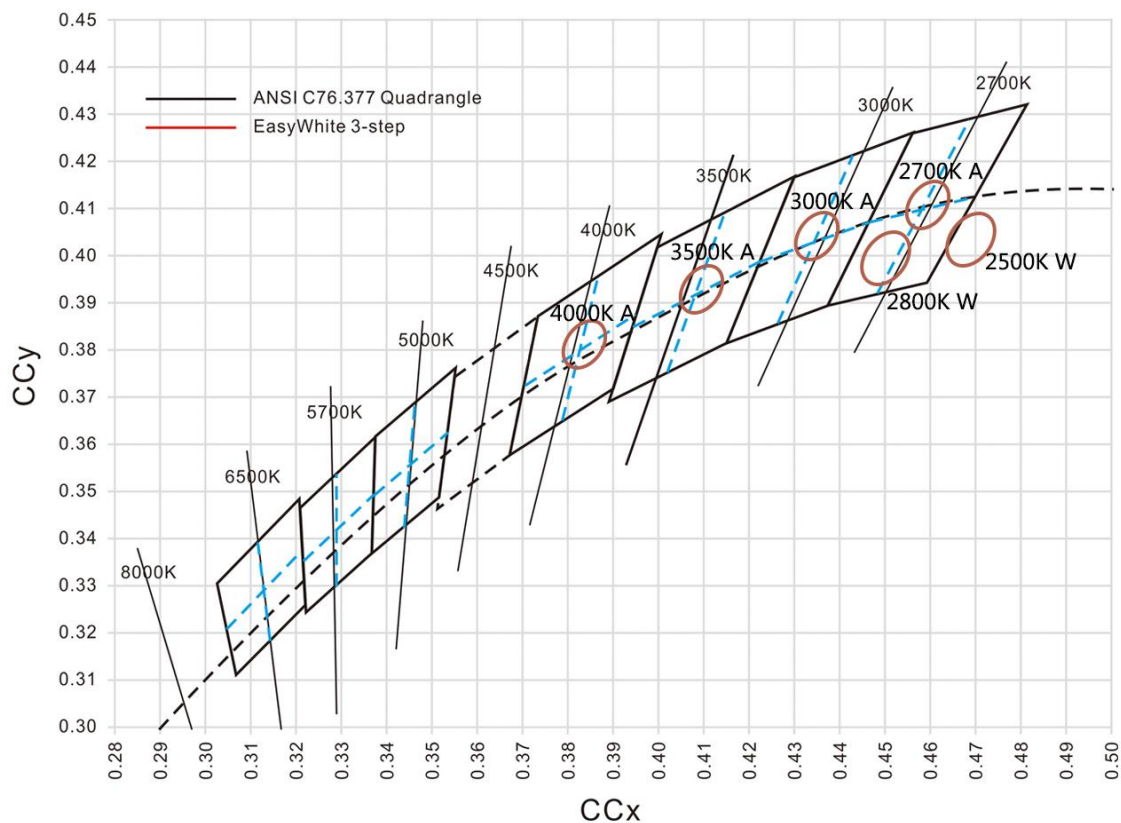
### Drawing for Delux Arrays

LES =  $\varnothing 6 \pm 0.2$

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



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



## HRB0604 White Chromaticity Bins

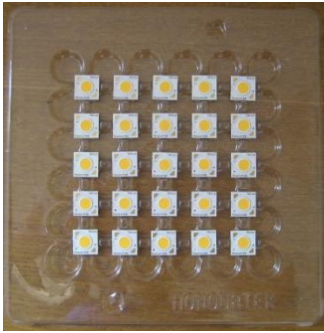
Center Point			Angle	3-step Bin	
CCT	CIEx	CIEy	$\theta$ (°)	a	b
2700K	0.4578	0.4101	53.7	0.0081	0.0042
3000K	0.4338	0.4031	53.2	0.00834	0.00408
3500K	0.4073	0.3917	54	0.00927	0.00414
4000K	0.3818	0.3797	53.7	0.00939	0.00402
5000K	0.3447	0.3553	59.6	0.00822	0.00354

### Note:

1. Color region stay within MacAdam 3-step ellipse from the chromaticity center.
2. The chromaticity center refers to ANSI C78.377:2011.  
Please refer to ANSI C78.377 for the chromaticity center.
3.  $\theta$  is the angle between the major axis of the ellipse and the x-axis, and a and b are the major and minor semi-axes of an ellipse. (Ref. IEC 60081:1997 AnnexD)
4. 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 HRB0604 LEDs are packaged in trays of 25. Four trays are sealed in an anti-static bag and placed inside a carton, for a total of 100 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](http://Honourtek.com).

Your Color Expert!

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

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