

HONOURTEK Delux Array Series HRB0912 Preliminary

Product Data Sheet
HRB0912

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 9-mm optical source. HRB0912 enables many kinds of application including retrofit and luminaire designs.

Features

- Compact high flux density light source
- Uniform high quality illumination
- Minimum 90,93 and 97 CRI options
- Streamlined thermal path
- Energy Star/ANSI compliant color binning structure with 3SCDM and 2 SDCM options
- 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

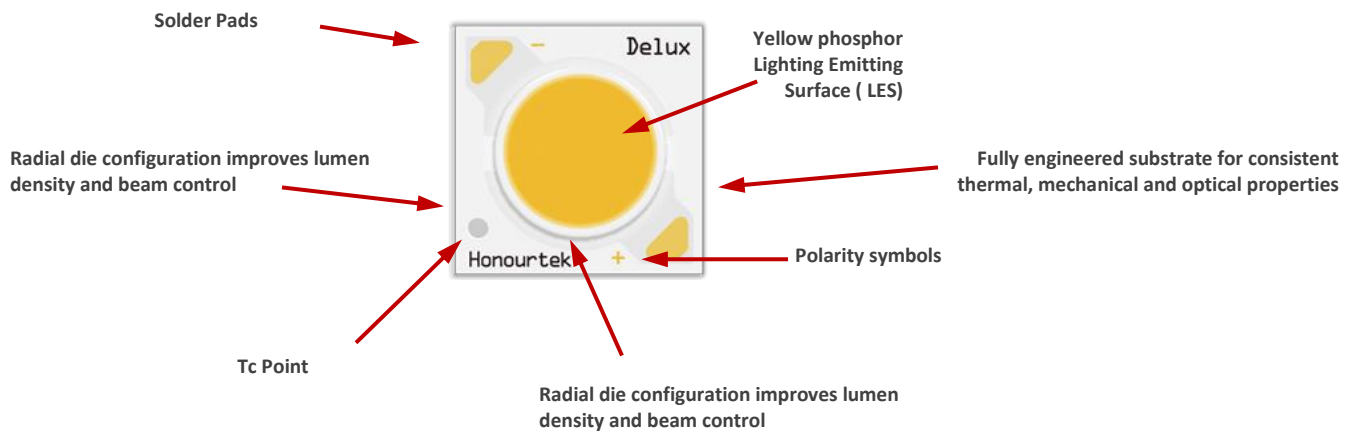
Warmer Series / Vigour Series / Standard Series

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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

HRB0912-30-92-36-X000-F1

HRB	09	12	30	90	36	X000	F1
Product Family	LES	Watt TYP	CCT	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(I_f=450mA,T_j=85°C)

Part Number	Series	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)	Efficacy (lm/W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.			
HRB0912-25-97-36-W000-F1	W	2500	95	97	1243	1330	1422	1150	1231	1317	36.2	16.3	76
HRB0912-28-97-36-W000-F1		2800	95	97	1322	1415	1513	1224	1310	1402	36.2	16.3	80
HRB0912-30-92-36-B000-F1	B	3000	90	92	1421	1520	1627	1316	1408	1506	36.2	16.3	86
HRB0912-30-97-36-B000-F1		3000	95	97	1354	1448	1549	1253	1341	1434	36.2	16.3	82
HRB0912-34-92-36-B000-F1		3400	90	92	1524	1630	1744	1410	1509	1615	36.2	16.3	93
HRB0912-40-92-36-B000-F1		4000	90	92	1596	1707	1827	1477	1581	1692	36.2	16.3	97
HRB0912-27-92-36-A000-F1	A	2700	90	92	1393	1491	1596	1290	1380	1477	36.2	16.3	85
HRB0912-27-97-36-A000-F1		2700	95	97	1314	1406	1505	1217	1302	1393	36.2	16.3	80
HRB0912-30-92-36-A000-F1		3000	90	92	1445	1546	1654	1338	1432	1532	36.2	16.3	88
HRB0912-30-97-36-A000-F1		3000	95	97	1384	1481	1585	1281	1372	1468	36.2	16.3	84
HRB0912-35-92-36-A000-F1		3500	90	92	1541	1649	1764	1427	1527	1633	36.2	16.3	94
HRB0912-35-95-36-A000-F1		3500	93	95	1360	1455	1557	1258	1347	1441	36.2	16.3	83
HRB0912-40-92-36-A000-F1		4000	90	92	1603	1715	1835	1484	1588	1700	36.2	16.3	97
HRB0912-40-95-36-A000-F1		4000	93	95	1572	1681	1799	1455	1557	1666	36.2	16.3	96

FLUX CHARACTERISTICS, ACCURATEWHITE ORDER CODES AND BINS(I_f=350mA,T_j=85°C)

Part Number	Series	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)	Efficacy (lm/W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.			
HRB0912-25-97-36-W000-F1	W	2500	95	97	1006	1076	1152	931	997	1066	35.4	12.4	80
HRB0912-28-97-36-W000-F1		2800	95	97	1073	1148	1229	994	1063	1138	35.4	12.4	86
HRB0912-30-92-36-B000-F1	B	3000	90	92	1171	1252	1340	1084	1160	1241	35.4	12.4	94
HRB0912-30-97-36-B000-F1		3000	95	97	1096	1172	1255	1015	1086	1162	35.4	12.4	88
HRB0912-34-92-36-B000-F1		3400	90	92	1257	1344	1439	1163	1245	1331	35.4	12.4	100
HRB0912-40-92-36-B000-F1		4000	90	92	1290	1380	1477	1195	1278	1367	35.4	12.4	103
HRB0912-27-92-36-A000-F1	A	2700	90	92	1152	1233	1319	1067	1142	1221	35.4	12.4	92
HRB0912-27-97-36-A000-F1		2700	95	97	1070	1145	1225	991	1060	1134	35.4	12.4	85
HRB0912-30-92-36-A000-F1		3000	90	92	1174	1257	1344	1088	1164	1245	35.4	12.4	94
HRB0912-30-97-36-A000-F1		3000	95	97	1122	1200	1284	1038	1111	1189	35.4	12.4	90
HRB0912-35-92-36-A000-F1		3500	90	92	1269	1359	1454	1176	1258	1347	35.4	12.4	101
HRB0912-35-95-36-A000-F1		3500	93	95	1124	1203	1288	1041	1114	1192	35.4	12.4	90
HRB0912-40-92-36-A000-F1		4000	90	92	1318	1410	1509	1220	1306	1397	35.4	12.4	105
HRB0912-40-95-36-A000-F1		4000	93	95	1073	1163	1253	996	1073	1159	35.4	12.4	87

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 $\pm 7\%$ tolerance on flux measurements.
4. Honourtek maintains a $\pm 2\%$ 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		450	600
Power			16.3	
Reverse current	mA			0.1
Forward voltage(@450mA,85° C)	V		36.2	
Forward voltage(@450mA,25° C)	V			40
Thermal Resistance	° C/W		1.8	

Absolute Maximum Ratings

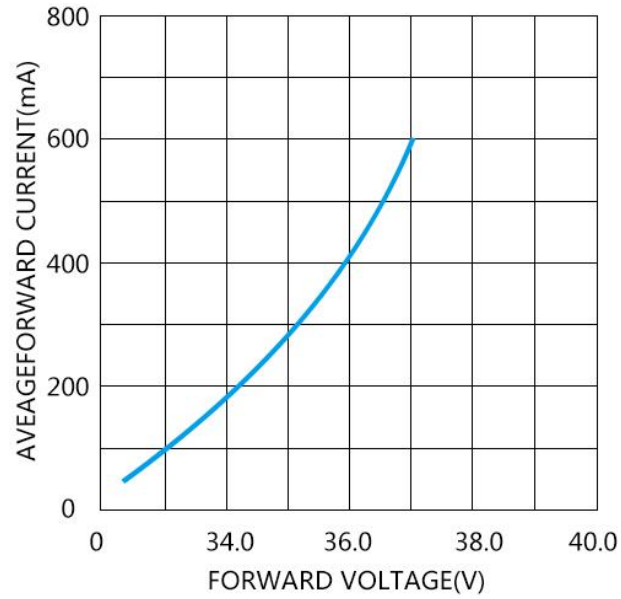
Table 3 : Maximum Ratings

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

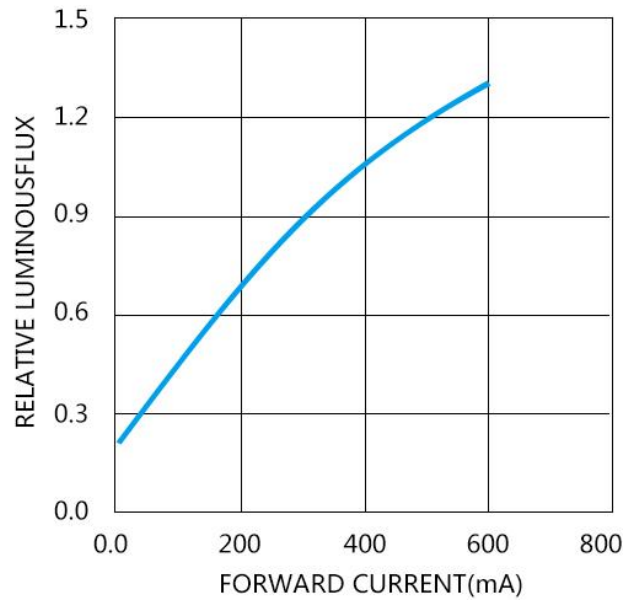
Notes :

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

Drive Current versus Forward Voltage Characteristics ($T_a=25^{\circ}\text{C}$ Unless Otherwise Noted) $I_F=450\text{mA}$



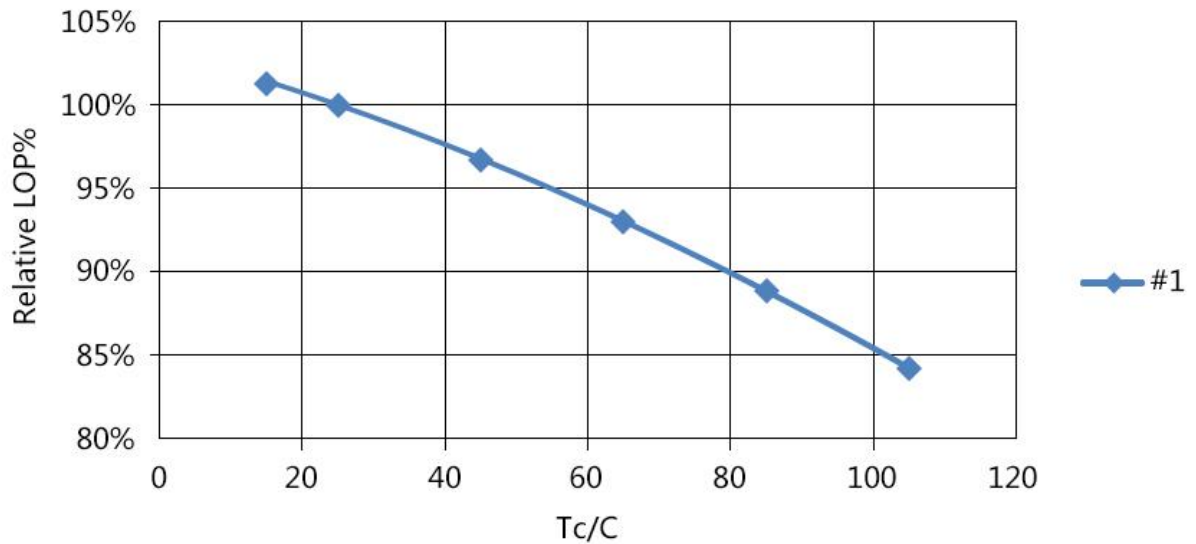
Typical Relative Luminous Flux vs. Drive Current, $T_j=85^{\circ}\text{C}$



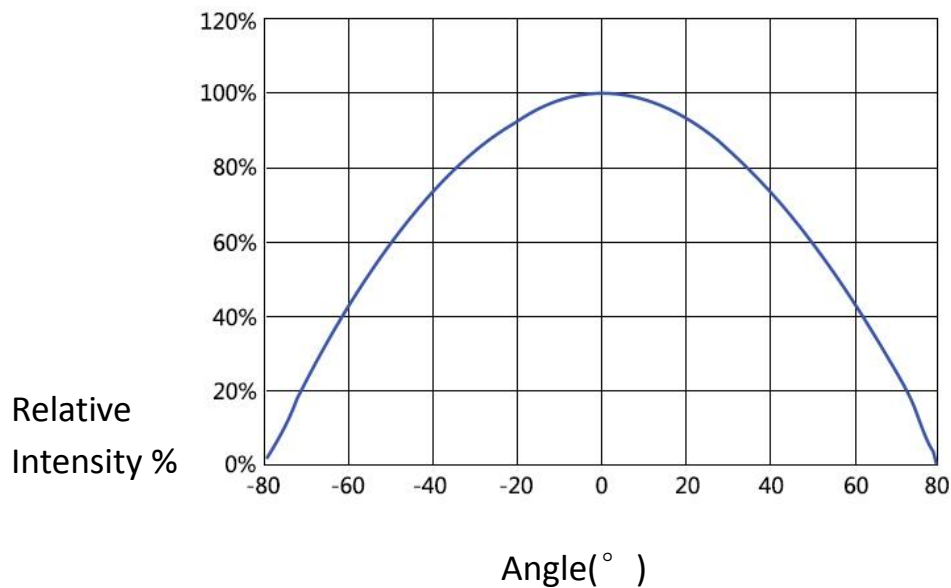
Typical Light Output Characteristics vs. Temperature

Typical Flux vs. Junction Temperature

Relative LOP vs. Case Temperature

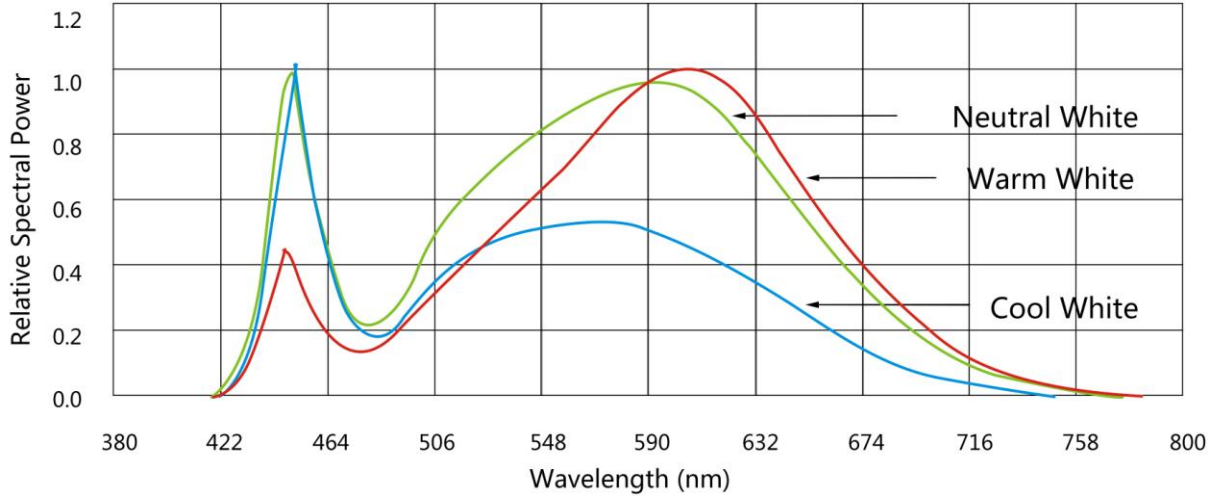


Typical Angular Radiation Pattern



RELATIVE SPECTRAL POWER DISTRIBUTION, Tj=85°C

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

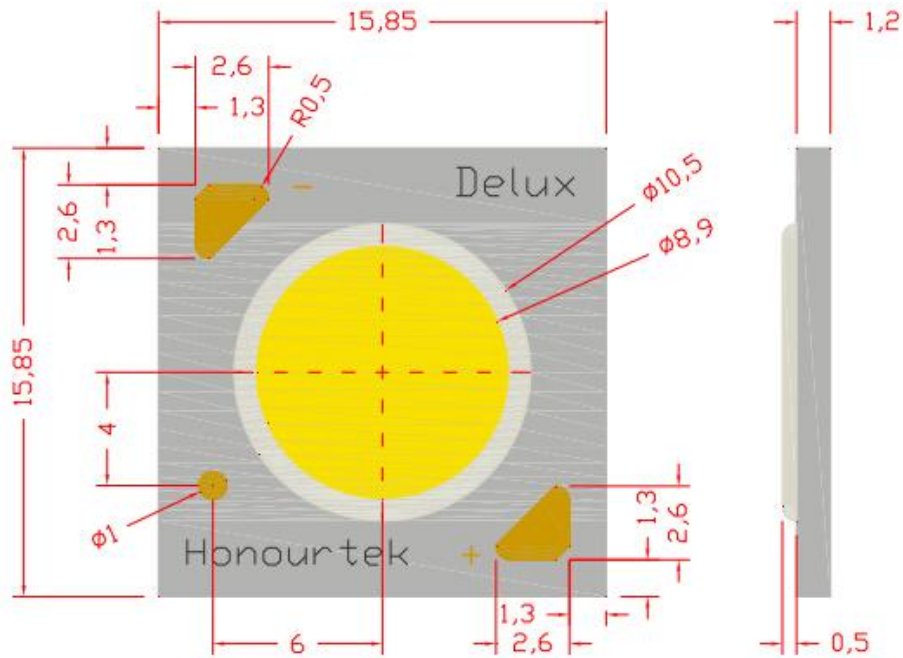


Mechanical Dimensions

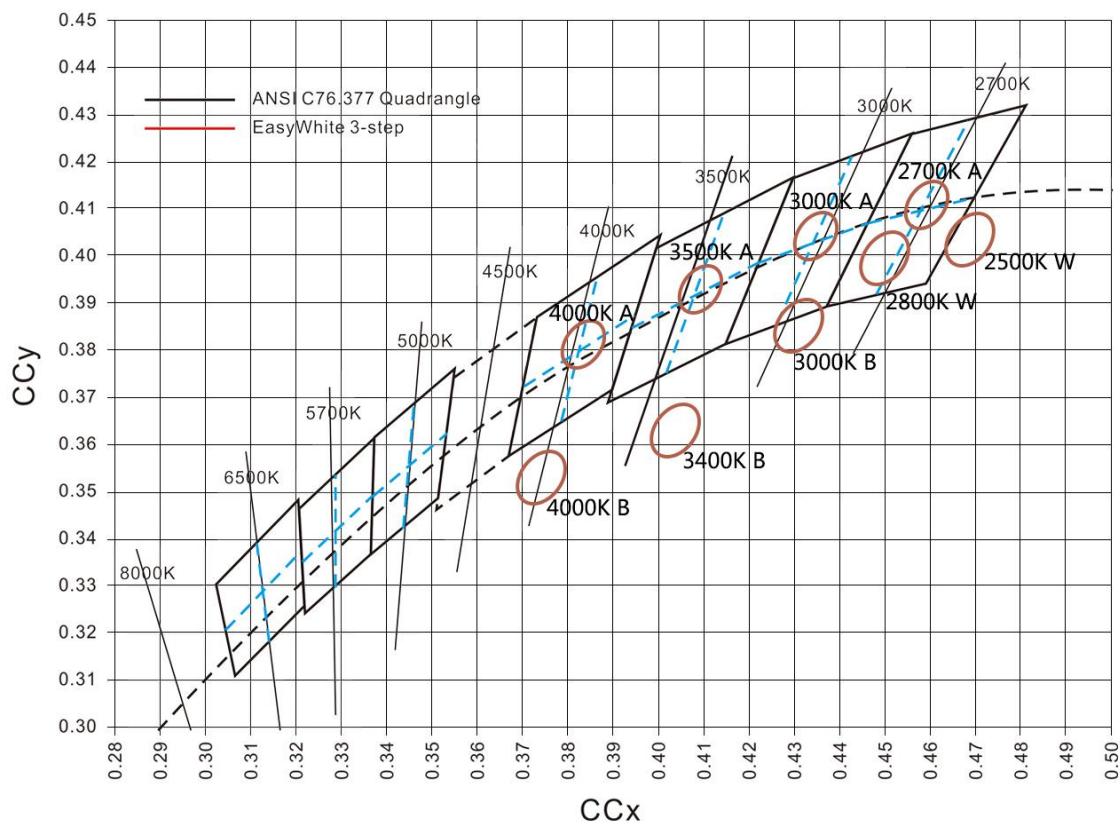
Drawing for Delux Arrays

LES = $\varnothing 8.9 \pm 0.2$

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



Chromaticity Coordinates (Condition: IF=450mA, Tj = 85° C)



HRB0912 White Chromaticity Bins

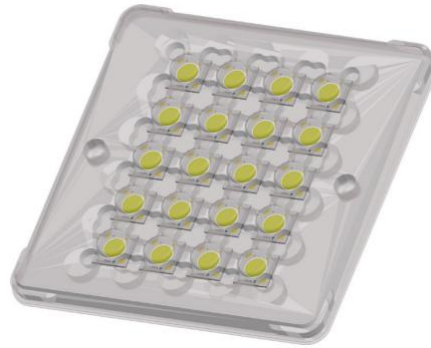
Center Point			Angle	3-step Bin	
CCT	CIEx	CIEy	θ (°)	a	b
2700K	0.4578	0.4101	53.7	0.0081	0.0042
3000K	0.4338	0.4031	53.2	0.00834	0.00408
3500K	0.4073	0.3917	54	0.00927	0.00414
4000K	0.3818	0.3697	53.7	0.00939	0.00402
5000K	0.3447	0.3553	59.6	0.00822	0.00354

Note:

1. Color region stay within MacAdam 3-step ellipse from the chromaticity center.
2. The chromaticity center refers to ANSI C78.367:2011.
Please refer to ANSI C78.367 for the chromaticity center.
3. θ 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 HRB0912 LEDs are packaged in trays of 20. Five 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.

Your Color Expert!

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

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