



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 2-step and 3-step color consistency, and featuring a 12-mm optical source. HRB1220 enables many kinds of application including retrofit and luminaire designs.

Features

- Compact high flux density light source
- Uniform high quality illumination
- Minimum 90 and 97 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

Standard Series

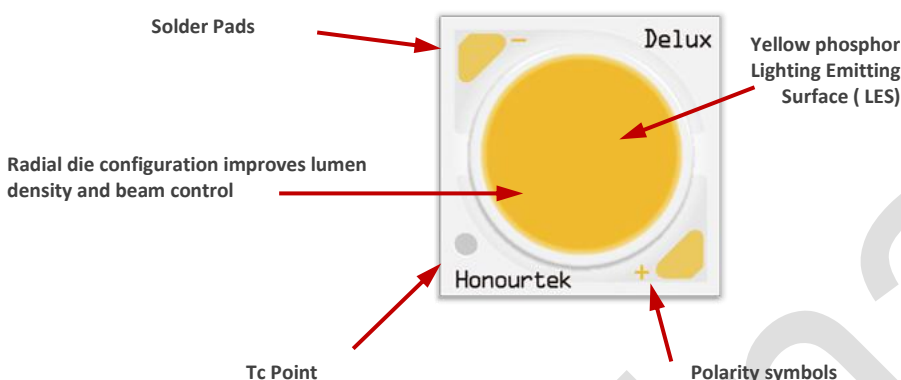
Table of Contents

	Page
Typical Product Features	3
Product bin and order code format	3
Lumen Maintenance Characteristics	4
Environmental Compliance	4
Minor Product Change Policy	4
Case Temperature Measurement Point	4
Cautionary statement	5
Product Selection Guide	6
Characteristics	6
Absolute Maximum Ratings	7
Drive Current versus Forward Voltage Characteristics	8
Typical Relative Luminous Flux vs. Drive Current	8
Typical Light Output Characteristics vs. Temperature	9
Typical Angular Radiation Pattern	9
RELATIVE SPECTRAL POWER DISTRIBUTION	10
Mechanical Dimensions	10
Equivalent Circuit	11
Chromaticity Coordinates	11
Packaging	12

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

HRB1220-30-92-36-X001-F1

HRB	12	20	30	92	36	X001	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=700mA,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 V _f (V)	Typical Power (W)	Efficacy (lm/W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.			
HRB1220-27-92-36-A001-F1	A	2700	90	92	2081	2227	2384	1928	2063	2207	36.3	25.4	81
HRB1220-27-97-36-A001-F1		2700	95	97	2041	2184	2336	1890	2022	2164	36.3	25.4	80
HRB1220-30-92-36-A001-F1		3000	90	92	2144	2294	2455	1985	2124	2273	36.3	25.4	84
HRB1220-30-97-36-A001-F1		3000	95	97	2102	2249	2406	1946	2082	2228	36.3	25.4	82
HRB1220-35-92-36-A001-F1		3500	90	92	2254	2412	2581	2087	2233	2390	36.3	25.4	88
HRB1220-35-95-36-A001-F1		3500	93	95	2066	2210	2365	2046	2190	2343	36.3	25.4	86
HRB1220-40-92-36-A001-F1		4000	90	92	2276	2436	2607	2108	2256	2414	36.3	25.4	89
HRB1220-40-95-36-A001-F1		4000	93	95	2232	2388	2555	2066	2211	2366	36.3	25.4	87

FLUX CHARACTERISTICS, ACCURATEWHITE ORDER CODES AND BINS(I_f=550mA,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 V _f (V)	Typical Power (W)	Efficacy (lm/W)
			Min.	Typ.	Min.	Typ.	Max.	Min.	Typ.	Max.			
HRB1220-27-92-36-A001-F1	A	2700	90	92	1751	1874	2005	1621	1735	1856	35.4	19.5	89
HRB1220-27-97-36-A001-F1		2700	95	97	1716	1836	1965	1589	1700	1820	35.4	19.5	87
HRB1220-30-92-36-A001-F1		3000	90	92	1804	1930	2065	1670	1787	1907	35.4	19.5	92
HRB1220-30-97-36-A001-F1		3000	95	97	1768	1892	2024	1637	1752	1875	35.4	19.5	90
HRB1220-35-92-36-A001-F1		3500	90	92	1893	2025	2164	1752	1875	2006	35.4	19.5	96
HRB1220-35-95-36-A001-F1		3500	93	95	1855	1984	2124	1718	1838	1966	35.4	19.5	94
HRB1220-40-92-36-A001-F1		4000	90	92	1949	2085	2231	1805	1931	2066	35.4	19.5	99
HRB1220-40-95-36-A001-F1		4000	93	95	1911	2045	2188	1770	1893	2026	35.4	19.5	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		700	1050
Power	W		25.4	
Reverse current	mA			0.1
Forward voltage(@700mA,85° C)	V		36.3	
Forward voltage(@700mA,25° C)	V			40
Thermal Resistance	°C/W		N/A	

Absolute Maximum Ratings

Table 3 : Maximum Ratings

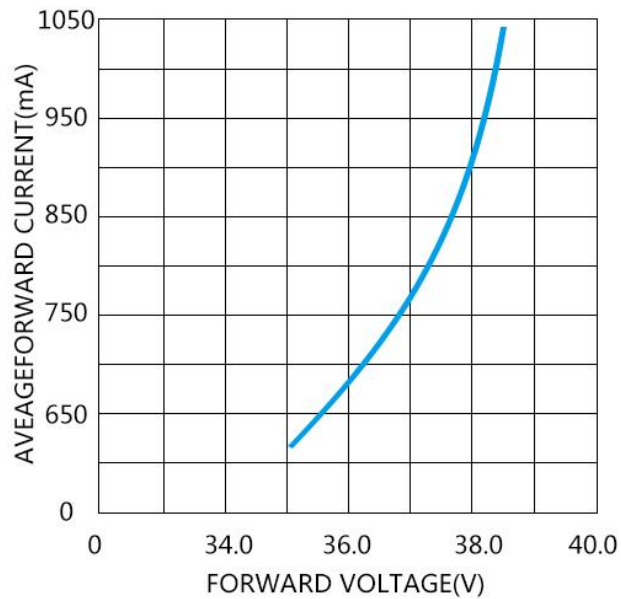
Parameter	Maximum Rating
LED Junction Temperature	120°C
Storage Temperature	-40°C to +105°C
Operating Case Temperature	105°C ^[2]
Soldering Temperature ^[1]	350°C for a maximum of 10 seconds

Notes :

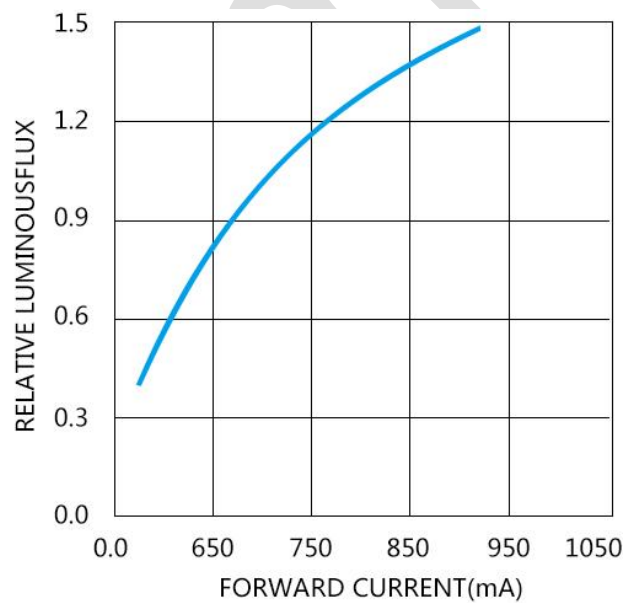
1. See Honourtek Application Note AN31, Assembly Considerations for Delux series LED arrays, for more information.
2. For IEC 62717 requirement, please contact Honourtek Sales Support.

Drive Current versus Forward Voltage Characteristics

(Ta=25°C Unless Otherwise Noted) IF=700mA



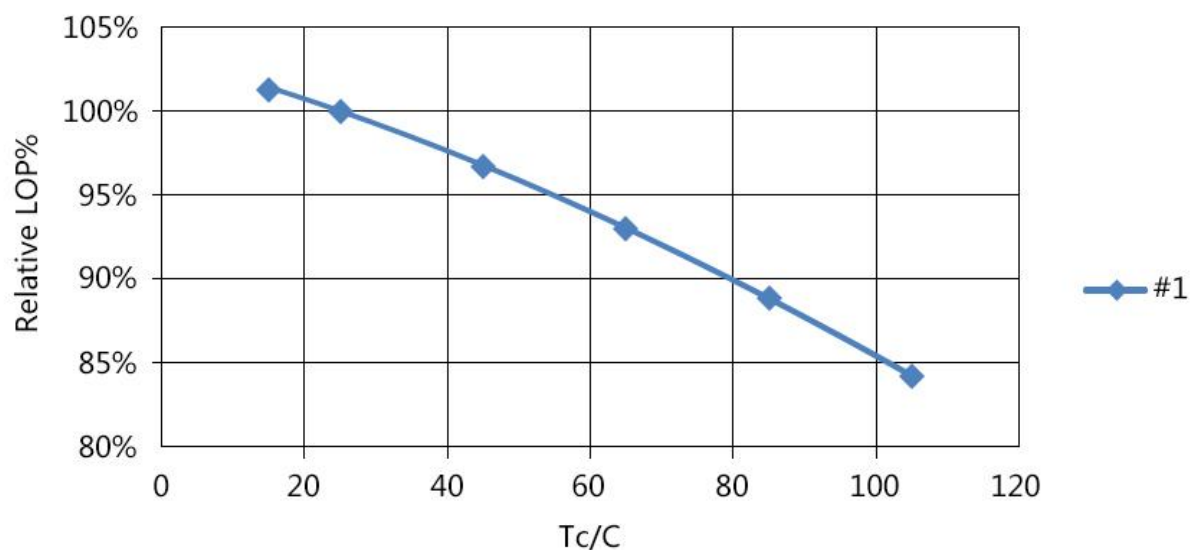
Typical Relative Luminous Flux vs. Drive Current, Tj=85°C



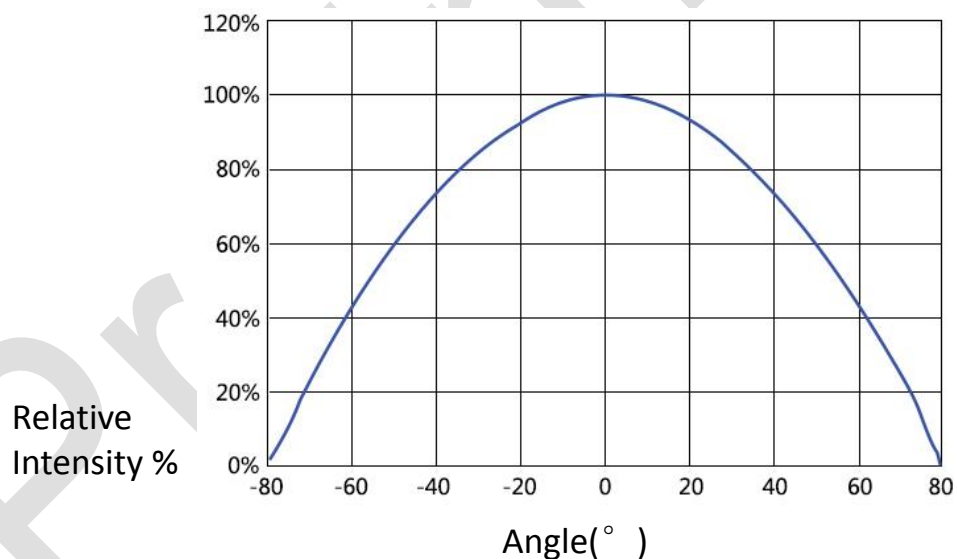
Typical Light Output Characteristics vs. Temperature

Typical Flux vs. Junction Temperature

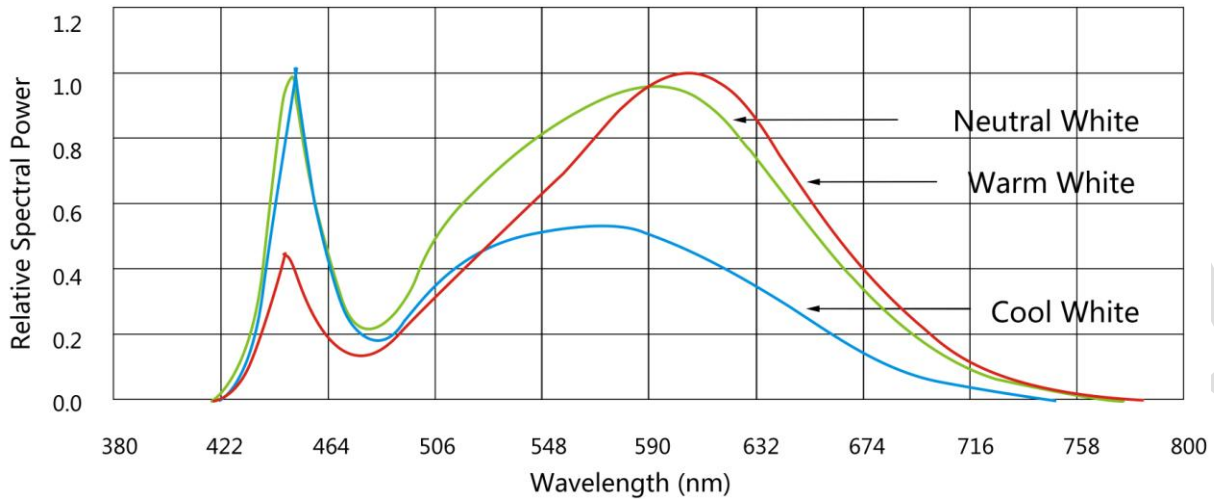
Relative LOP vs. Case Temperature



Typical Angular Radiation Pattern

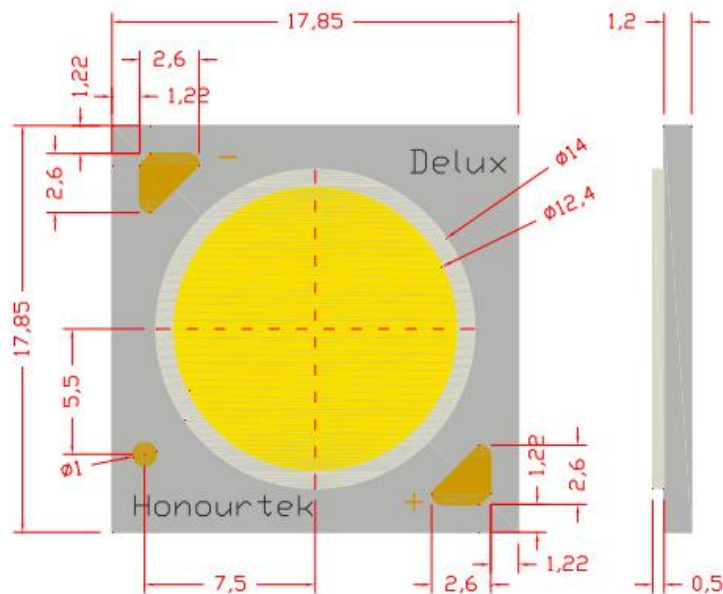


The following graph is the result of a series of pulsed measurements at $T_j=85^\circ\text{C}$.

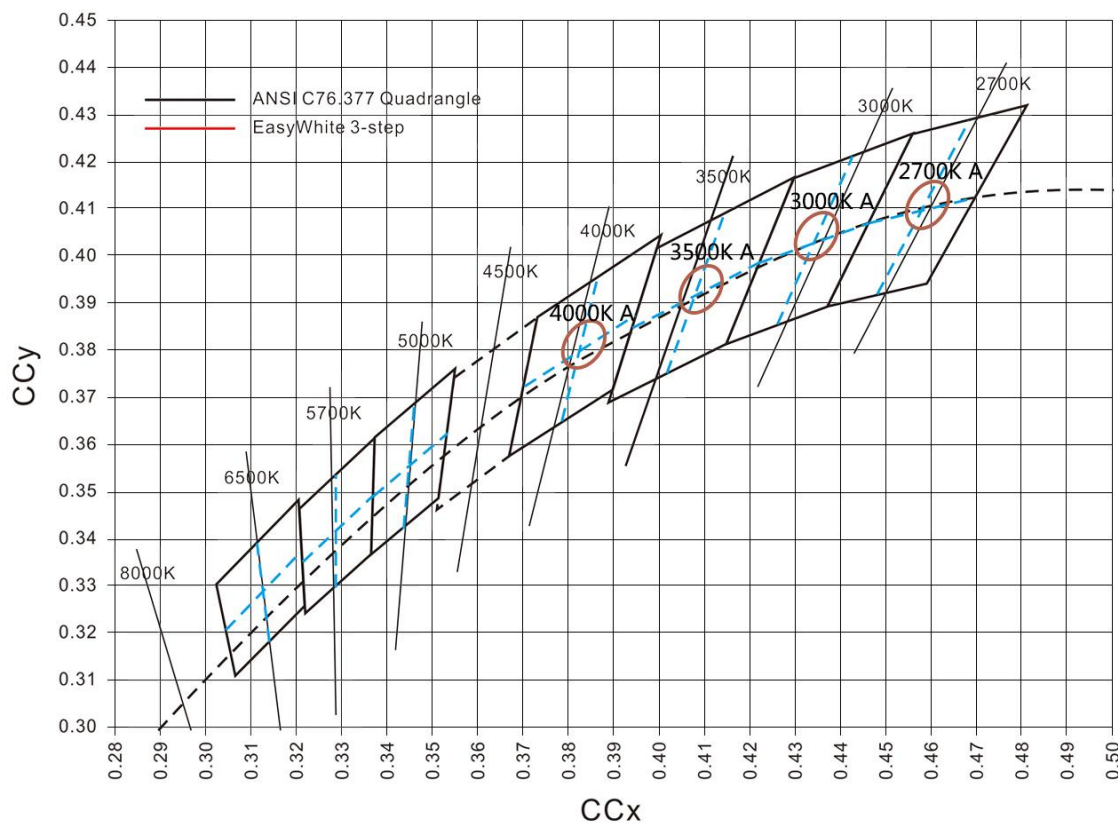


Drawing for Delux Arrays

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



Chromaticity Coordinates (Condition: IF=700 mA, Tj = 85° C)



HRB1220 White Chromaticity Bins

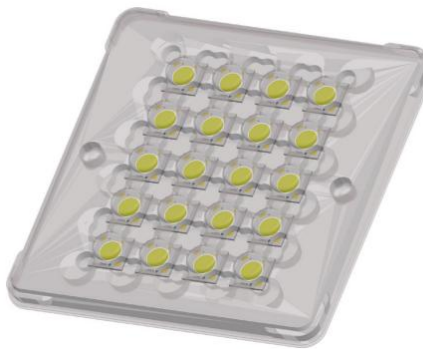
Center Point			Angle	3-step Bin	
CCT	CIE _x	CIE _y	θ (°)	a	b
2700K	0.4578	0.4101	53.7	0.0081	0.0042
3000K	0.4338	0.4031	53.2	0.00834	0.00408
3500K	0.4073	0.3917	54	0.00927	0.00414
4000K	0.3818	0.3797	53.7	0.00939	0.00402
5000K	0.3447	0.3553	59.6	0.00822	0.00354

Notes:

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 (CIE_x and CIE_y) measurements.

Packaging

Packaging Tray and Labeling



17.4 x 17.4 x 1 cm

Notes:

Honourtek HRB1220 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!

The logo for HONOURTEK, featuring the word "HONOUR" in red and "TEK" in grey.

©2018 HONOURTEK, INC. All rights reserved. Delux is a registered trademark of the HONOURTEK, INC in the United States and other countries.

DELUX HRB1220 Product Datasheet 042018

www.honourtek.com