

Technology White Paper

Enfis Array Lighting Products Overview October 2009

Introduction

Enfis designs and produces the following products aimed at the high quality lighting markets:

- LED Arrays
- Driver Electronics
- Optical Reflectors
- Integrated Light Engine Solutions

This paper aims to briefly outline the performance parameters and provide an up to date showcase of Enfis array products aimed at lighting markets.

Enfis products are characterized by having multi-chip array platforms providing high quality white and colour changeable lighting. The arrays are designed to be operated at high luminous flux with efficiencies to meet the needs of modern lighting design and enhanced functionality such as integrated thermal and optical feedback and ultra-low thermal resistance provide a compelling reason to use Enfis array for high specification solid-state lighting applications. Colour tunability and CCT lock-in features overcome many problems associated with colour mixing of LEDs and allow the user to have the assurance of high quality controllable and efficient light with digital control and flexibility in terms of colour and intensity.

Enfis has 5 major array product platforms which provide broad coverage from the UNO-MICRO-COIN delivering 650 lumens from a small 10W integrated driver/array to the largest QUATTRO-MINI array delivering 8000 lumens of white light in a compact multi-channel array with integrated optical and thermal feedback features.

UNO-MICRO-COIN 7W-10W (Warm, Neutral and Cold White)

Consists of a 7W-10W single channel array with integrated constant current driver ideal for use in MR16 replacement applications or small form factor directional light sources.



29mm diameter coin with connection for 12V AC or DC supply voltage. Can be supplied with plastic optics for various beam angles.

Warm White (2600K – 3700K)

Power Consumed	5W	7W	10W	Watts
Cri Ra	>80	>80	>80	
Typical Luminous Flux	300	385	490	Lumens

Neutral White (3700K – 5000K)

Power Consumed	5W	7W	10W	Watts
Cri Ra	>75	>75	>75	
Typical Luminous Flux	350	440	565	Lumens

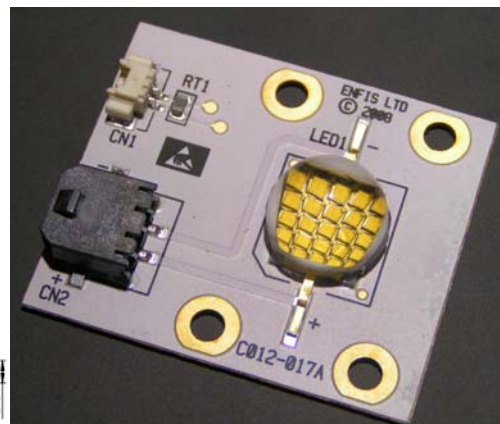
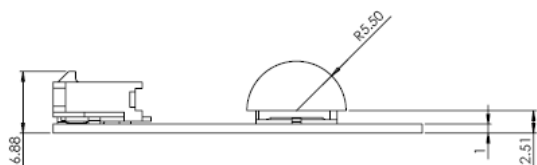
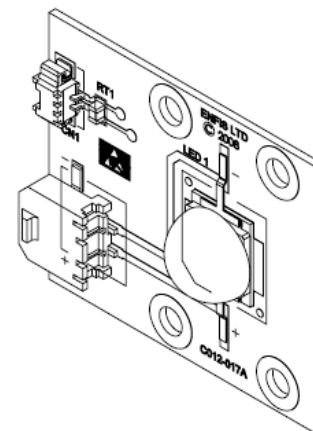
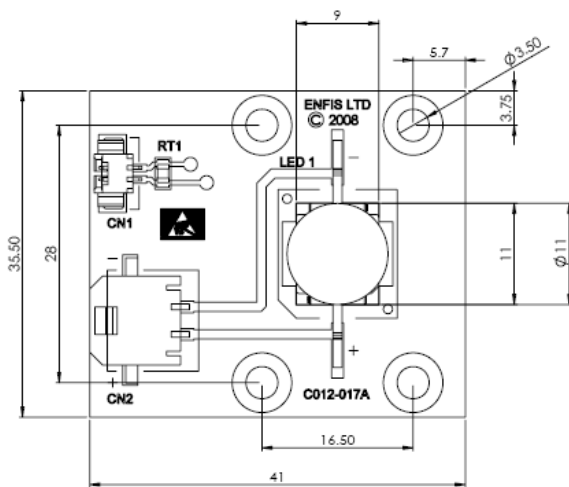
Cold White (>5000K)

Power Consumed	5W	7W	10W	Watts
Cri Ra	>75	>75	>75	
Typical Luminous Flux	400	510	650	Lumens

Results above based on heatsink temperature of 25C.

UNO-DOME 20W – 40W (Warm, Neutral and Cold White)

High density multi-chip array available in single colours and white. Ultra-low thermal resistance and high reliability for compact lighting applications. On board temperature sensor.



Warm White (2700K – 3300K)

Power Consumed	20W	30W	40W	Watts
Cri Ra	>80	>80	>80	
Typical Luminous Flux	1150	1500	1800	Lumens

Neutral White (3500K – 5000K)

Power Consumed	20W	30W	40W	Watts
Cri Ra	>75	>75	>75	
Typical Luminous Flux	1150	1500	1800	Lumens

Cold White (> 5500K)

Power Consumed	20W	30W	40W	Watts
Cri Ra	>75	>75	>75	
Typical Luminous Flux	1350	1800	2150	Lumens

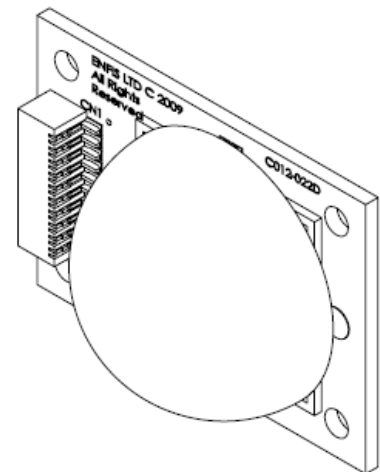
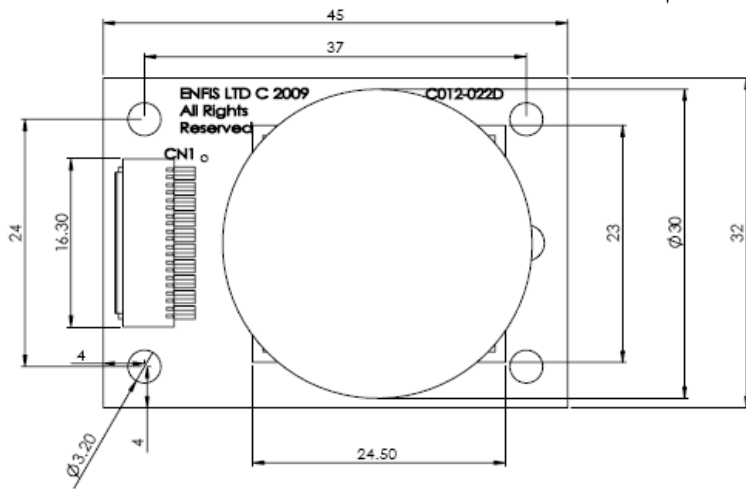
Results above based on heatsink temperature of 25C.

Optical reflector solutions available to provide a range of beam angles.

Mains in and 24V DC drivers available with high efficiency and dimmable options.

INNOVATE-DOME 40W – 50W (Warm, Neutral and Cold White)

Enfis cost effective high lumen high efficacy white light emitting array



Warm White (2700K – 3300K)

Power Consumed	40W	50W	Watts
Cri Ra	>80	>80	
Typical Luminous Flux	2200	2500	Lumens

Neutral White (3500K – 5000K)

Power Consumed	40W	50W	Watts
Cri Ra	>75	>75	
Typical Luminous Flux	2200	2500	Lumens

Cold White (> 5500K)

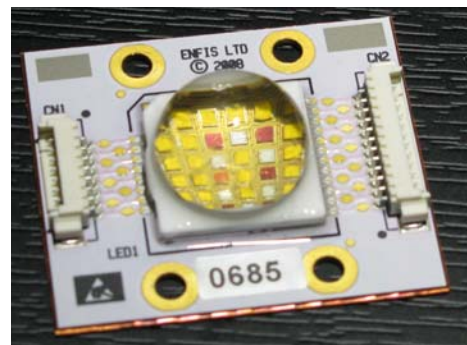
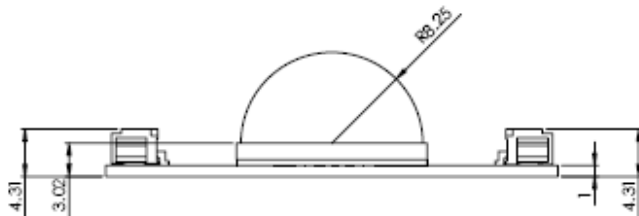
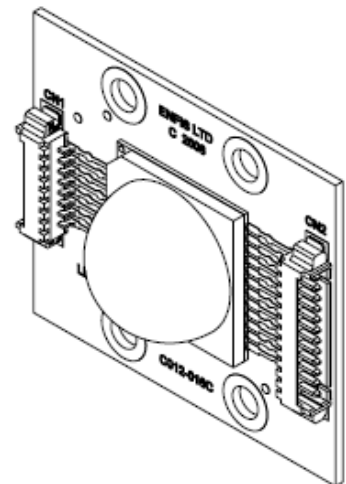
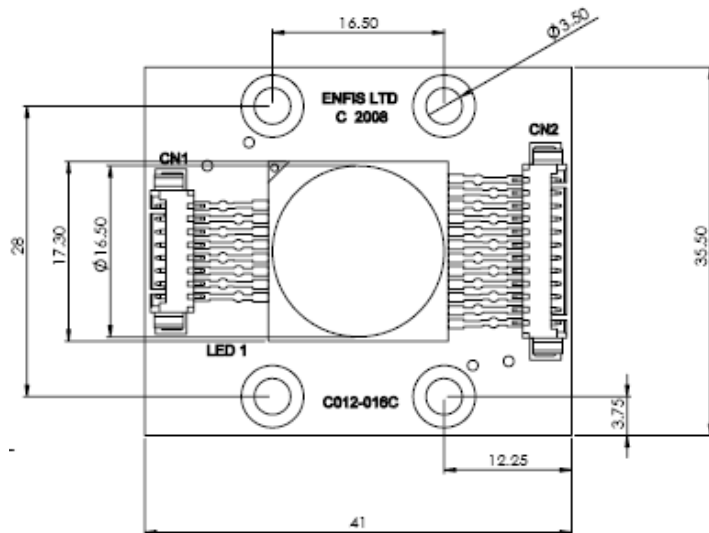
Power Consumed	40W	50W	Watts
Cri Ra	>75	>75	
Typical Luminous Flux	2650	3000	Lumens

Optical reflector solutions available to provide a range of beam angles.

Mains in and 24V DC drivers available with high efficiency and dimmable options.

UNO-PLUS-DOME 36W – 50W (Colour Tunable Colour and White)

Highly versatile 4-channel array with integrated thermal and optical feedback. Designed to operate at 36W-50W producing high quality colour tuneable light.



UNO-PLUS-RGBW

Colour	Power (W)/channel	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	Dominant Wavelength (nm) / CCT (K)	
Red	12.5	53	663	620nm - 630nm	
Green	12.5	48	600	516nm - 526nm	
VividBlue	12.5	10	125	445nm – 455nm	Either Option Available
Blue	12.5	17	213	460nm – 470nm	
Cold White	12.5	60	750	5500K – 7000K	Each
Neutral White	12.5	50	625	3500K – 5000K	Option
Warm White	12.5	50	625	2800K – 3500K	Available

UNO-PLUS-RGBA

Colour	Power (W)/channel	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	Dominant Wavelength Range	
Red	12.5	53	663	620nm - 630nm	
Green	12.5	48	600	516nm - 526nm	
VividBlue	12.5	10	125	445nm – 455nm	Either Option Available
Blue	12.5	17	213	460nm – 470nm	
Amber	12.5	48	600	587nm - 602nm	

UNO-PLUS-HiCRI-VariCCT

Colour	Total Array Power (W)	CCT (K)	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	CRI Ra
Tunable	50	3200K	45	2250	>90
White	50	4000K	45	2250	>90
Variable	50	5600K	45	2250	>90
CCT	50	6500K	45	2250	>90

Note – other colour temperatures are available – above are shown as examples

Warm White (2700K – 3300K)

Power Consumed	40W	50W	Watts
Cri Ra	>80	>80	
Typical Luminous Flux	2000	2250	Lumens

Neutral White (3500K – 5000K)

Power Consumed	40W	50W	Watts
Cri Ra	>75	>75	
Typical Luminous Flux	2000	2250	Lumens

Cold White (> 5500K)

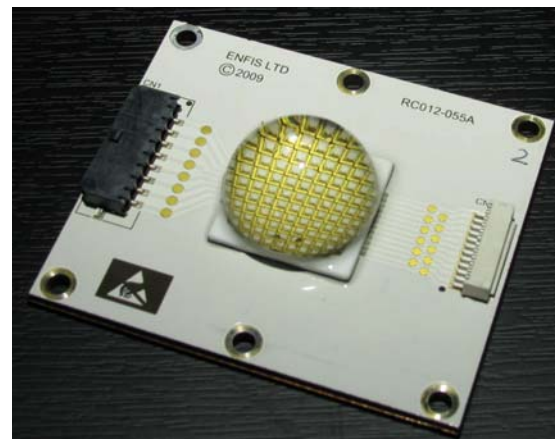
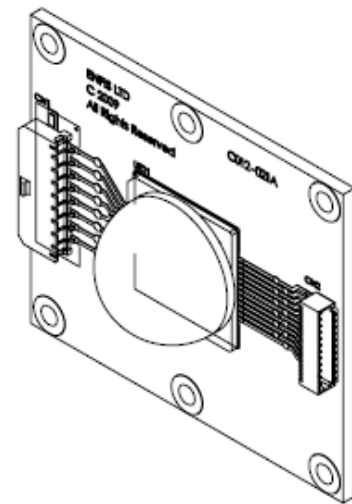
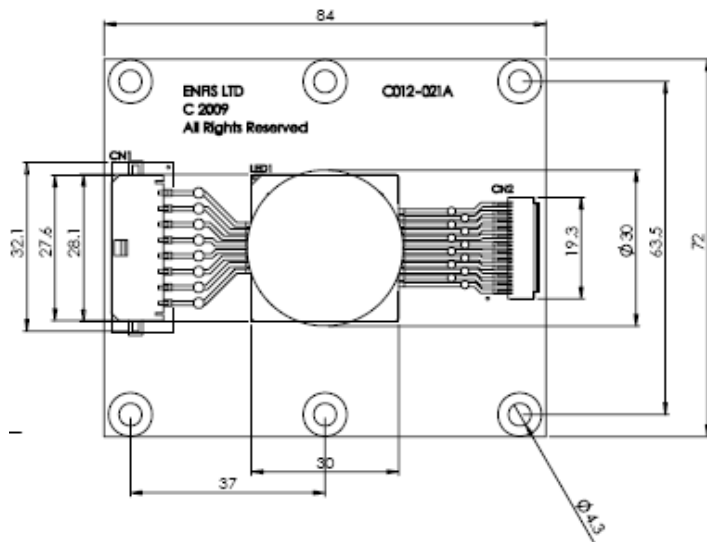
Power Consumed	40W	50W	Watts
Cri Ra	>75	>75	
Typical Luminous Flux	2400	2700	Lumens

Optical reflector solutions available to provide a range of beam angles.

Mains in and 48V DC drivers available with high efficiency and dimmable options.

QUATTRO-MINI-DOME 100W – 160W (Colour Tunable Colour and White)

Highest power array platform. Highly versatile 4-channel array with integrated thermal and optical feedback. Designed to operate at 100W-160W producing high quality colour tuneable light.



QUATTRO-MINI-RGBW

Colour	Power (W)/ Channel	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	Dominant Wavelength / CCT	
Red	50	42	2100	620nm - 630nm	
Green	50	38	1900	516nm - 526nm	
VividBlue	50	8	400	445nm – 455nm	Either Option
Blue	50	14	700	460nm – 470nm	Available

Colour	Power (W)/ Channel	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	CCT (K)	
Cold White	50	50	2500	5500K – 7000K	Each Option Available
Neutral White	50	40	2000	3500K – 5000K	
Warm White	50	40	2000	2800K – 3500K	

QUATTRO-MINI-RGBA

Colour	Power (W) / channel	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	Dominant Wavelength Range	
Red	50	42	2100	620nm - 630nm	Either Option Available
Green	50	38	1900	516nm - 526nm	
VividBlue	50	8	400	445nm – 455nm	
Blue	50	14	700	460nm – 470nm	
Amber	50	38	1900	587nm - 602nm	

QUATTRO-MINI-HiCRI-VariCCT

Colour	Total Array Power (W)	CCT (K)	Typical Efficacy (lm/W)	Typical Luminous Flux (Lumens)	CRI Ra
Tunable	120	3200K	45	5400	>90
White	120	4000K	45	5400	>90
Variable	120	5600K	45	5400	>90
CCT	120	6500K	45	5400	>90

Note – other colour temperatures are available – above are shown as examples

Warm White (2700K – 3300K)

Power Consumed	120W	160W	Watts
Cri Ra	>80	>80	
Typical Luminous Flux	6000	7200	Lumens

Neutral White (3500K – 5000K)

Power Consumed	120W	160W	Watts
Cri Ra	>75	>75	
Typical Luminous Flux	6000	7200	Lumens

Cold White (> 5500K)

Power Consumed	120W	160W	Watts
Cri Ra	>75	>75	
Typical Luminous Flux	7200	8500	Lumens

Optical reflector solutions available to provide a range of beam angles.
 Mains in and 48V DC drivers available with high efficiency and dimmable options.

For more information of Enfis LED Array, Light Engines, Drivers and Optics please got to www.enfis.com
 Or telephone +44 (0)1792 485660 for immediate assistance.