

The Passive Revolution

FrigoDynamics® Passive 2-Phase HX Solutions
for Citizen CoB Light Engines



zero noise level

no lifetime issues

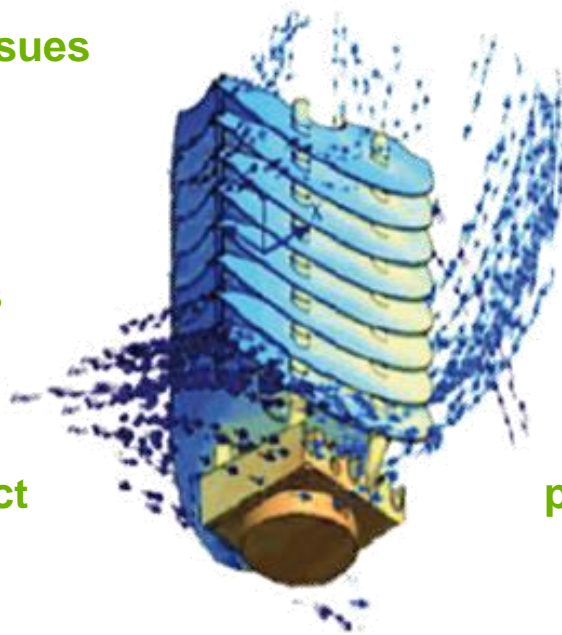
no CO₂ emission

cools all
lumen values

lighter than other
passive solutions

compact

performs in any
orientation



passive convection
natural airflow

CITIZEN
Micro HumanTech



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 **FrigoDynamics**®
thermal solutions

FrigoDynamics GmbH
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FrigoDynamics® Passive 2-Phase HX Solutions for Citizen CoB Light Engines



Der SC 2-Phasen Wärmetauscher

besteht durch ein besonderes, patentiertes Design, nützt den Kamineffekt aus und maximiert dadurch die Kühlleistung. Die kompakte Auslegung ist ideal für Track/Spot Licht Applikationen. Die Lösung arbeitet in alle Richtungen.

The SC 2-Phase HX

has a unique patented design utilizing the chimney effect, thus maximizing cooling performance. The compact shape allows it to fit in typical cylindrical track/spot light type applications. Performs in any orientation.

Échangeur de chaleur pour le 2-phase SC

une conception spéciale, brevetée, bénéficieront de l'effet de cheminée et cela maximise la performance de refroidissement. Le design compact est idéal pour les applications légères de piste/spot.

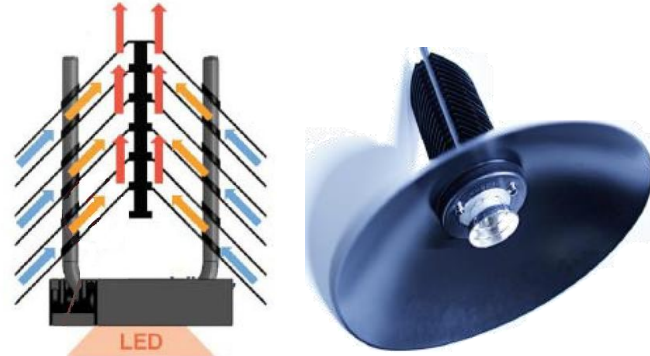
La solution fonctionne dans toutes les directions.

El SC Intercambiador de calor por cambio de fase

tiene un diseño único y patentado utilizando el efecto chimenea, lo que maximiza la refrigeración de rendimiento. La forma compacta permite encajar en pista/spot cilíndrica en aplicaciones típicas de luminarias. Funciona en cualquier dirección.

Lo scambiatore di calore SC 2 fasi

un design speciale, brevettato, potranno beneficiare l'effetto camino e questo massimizza le prestazioni di raffreddamento. Il design compatto è ideale per applicazioni leggera traccia/spot. La soluzione funziona in tutte le direzioni.



The only viable high power cooling solutions which provably work much longer than the product they cool

	2-Phase HX		SC HPK-Fin™ 150			SC HPK-Fin™ 180			SC HPK-Fin™ 230					
			Dimensions			Ø100 H ~150			Ø100 H ~180			Ø100 H ~230		
			Tambient			25°C	35°C	40°C	25°C	35°C	40°C	25°C	35°C	40°C
CLL032-1208 (96 die) 960 mA	42,9 W	R j-c 1,20 C/W	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue			
CLL032-1212 (144 die) 1440mA	64,4 W	R j-c 0,80 C/W	Blue	Green	Blue	Blue	Blue	Blue	Blue	Blue	Blue			
CLL042-1218 (216 die) 1080mA	58,8 W	R j-c 0,40 C/W	Blue	Blue	Green	Blue	Blue	Blue	Blue	Blue	Blue			
CLL042-1218 (216 die) 1620mA	88,1 W	R j-c 0,40 C/W	Green	Red	Red	Blue	Green	Blue	Blue	Blue	Blue			
CLL042-1218 (216 die) 2160mA	117,5 W	R j-c 0,40 C/W	Red	Red	Red	Red	Red	Red	Blue	Blue	Blue			
CLL042-1818 (324 die) 1080mA	58,8 W	R j-c 0,40 C/W	Blue	Blue	Green	Blue	Blue	Blue	Blue	Blue	Blue			
CLL042-1818 (324 die) 1620mA	88,1 W	R j-c 0,40 C/W	Green	Red	Red	Blue	Green	Blue	Blue	Blue	Blue			
CLL042-1818 (324 die) 2160mA	117,5 W	R j-c 0,40 C/W	Red	Red	Red	Red	Red	Red	Blue	Blue	Blue			
CLL052-1825 (450 die) 1500mA	79,1 W	R j-c 0,25 C/W	Green	Red	Red	Blue	Green	Blue	Blue	Blue	Blue			
CLL052-1825 (450 die) 2000mA	105,4 W	R j-c 0,25 C/W	Red	Red	Red	Red	Red	Red	Blue	Blue	Blue			

Please [contact](#) us, should you have special requirements you do not see covered here.

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Der OC 2-Phase Wärmetauscher

überzeugt durch sein flaches, patentiertes Design und eignet sich dadurch besonders für den Einsatz in abgehängten Decken, wenn der Einbauraum in der Vertikalen limitiert ist.

The OC 2-Phase HX

the patented design gives it a low profile ideal for fitting in spaces that have height restrictions. The shape allows it to fit in typical recess downlight type applications.

L'échangeur de chaleur de la phase 2 OC

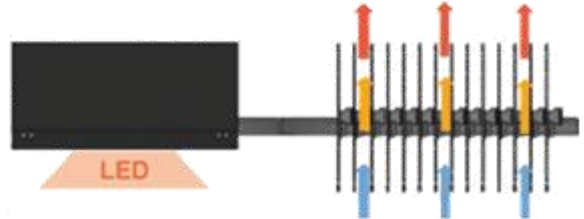
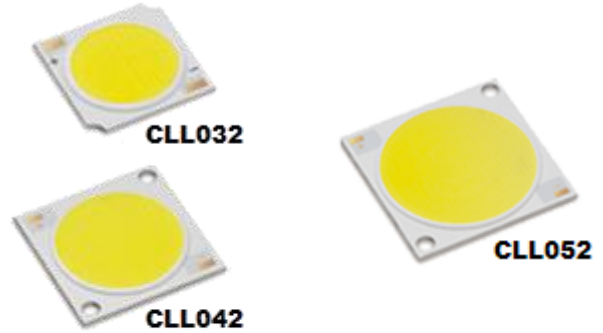
avec ses plats, brevetés design et est donc idéal pour une utilisation dans les plafonds suspendus, si peu d'espace de l'installation à la verticale.

El OC Intercambiador de calor por cambio de fase

El diseño patentado da un bajo perfil ideal para encajar en espacios que tienen altura limitada, por tanto es ideal para su uso en los falsos techos para los downlight.

Lo scambiatore di calore OC 2 fasi

con il suo piatto, design brevettato ed è quindi ideale per l'uso in soffitti sospesi, se limitato lo spazio di installazione in verticale



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FrigoDynamics® thermal solutions			2-Phase HX		OC HPK-Fin™ 210			OC HPK-Fin™ 250			OC HPK-Fin™ 300		
Tc < 75°C Tc < 85°C Tc < 100°C			Dimensions		H55 x W120 x L210			H55 x W120 x L250			H55 x W120 x L300		
Tambient			R j-c		25°C	35°C	40°C	25°C	35°C	40°C	25°C	35°C	40°C
CLL032-1208 (96 die) 960 mA	42,9 W	R j-c 1,20 C/W											
CLL032-1212 (144 die) 1440mA	64,4 W	R j-c 0,80 C/W											
CLL042-1218 (216 die) 1080mA	58,8 W	R j-c 0,40 C/W											
CLL042-1218 (216 die) 1620mA	88,1 W	R j-c 0,40 C/W											
CLL042-1218 (216 die) 2160mA	117,5 W	R j-c 0,40 C/W											
CLL042-1818 (324 die) 1080mA	58,8 W	R j-c 0,40 C/W											
CLL042-1818 (324 die) 1620mA	88,1 W	R j-c 0,40 C/W											
CLL042-1818 (324 die) 2160mA	117,5 W	R j-c 0,40 C/W											
CLL052-1825 (450 die) 1500mA	79,1 W	R j-c 0,25 C/W											
CLL052-1825 (450 die) 2000mA	105,4 W	R j-c 0,25 C/W											

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Der TC 2-Phase Wärmetauscher

überzeugt durch sein flaches, patentiertes Design und eignet sich dadurch besonders für den Einsatz in abgehängten Decken, wenn der Einbauraum in der Vertikalen limitiert ist.

The TC 2-Phase HX

the patented design gives it a low profile ideal for fitting in spaces that have height restrictions. The shape allows it to fit in typical recess downlight type applications.

L'échangeur de chaleur de la phase 2 TC

avec ses plats, brevetés design et est donc idéal pour une utilisation dans les plafonds suspendus, si peu d'espace de l'installation à la verticale.

El TC Intercambiador de calor por cambio de fase

El diseño patentado da un bajo perfil ideal para encajar en espacios que tienen altura limitada, por tanto es ideal para su uso en los falsos techos para los downlight.

Lo scambiatore di calore TC 2 fasi

con il suo piatto, design brevettato ed è quindi ideale per l'uso in soffitti sospesi, se limitato lo spazio di installazione in verticale



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			2-Phase HX			TC HPK-Fin™ 110			TC HPK-Fin™ 160			TC HPK-Fin™ 210		
						Dimensions			H113 x W120 x L110			H113 x W120 x L160		
Tc < 75°C	Tc < 85°C	Tc < 100°C	Tambient			25°C	35°C	40°C	25°C	35°C	40°C	25°C	35°C	40°C
CLL032-1208 (96 die) 960 mA	42,9 W	R j-c 1,20 C/W												
CLL032-1212 (144 die) 1440mA	64,4 W	R j-c 0,80 C/W												
CLL042-1218 (216 die) 1080mA	58,8 W	R j-c 0,40 C/W												
CLL042-1218 (216 die) 1620mA	88,1 W	R j-c 0,40 C/W												
CLL042-1218 (216 die) 2160mA	117,5 W	R j-c 0,40 C/W												
CLL042-1818 (324 die) 1080mA	58,8 W	R j-c 0,40 C/W												
CLL042-1818 (324 die) 1620mA	88,1 W	R j-c 0,40 C/W												
CLL042-1818 (324 die) 2160mA	117,5 W	R j-c 0,40 C/W												
CLL052-1825 (450 die) 1500mA	79,1 W	R j-c 0,25 C/W												
CLL052-1825 (450 die) 2000mA	105,4 W	R j-c 0,25 C/W												

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Der HB 2-Phasen Wärmetauscher

besticht durch ein besonderes, patentiertes Design, nützt den Kamineffekt aus und maximiert dadurch die Kühlleistung. Die kompakte und sehr leichte Auslegung ist ideal für wirkliche High Power Applikationen. Die Lösung arbeitet in alle Richtungen.

The HB 2-Phase HX

has a unique patented design utilizing the chimney effect, thus maximizing cooling performance. The compact shape allows it to fit in typical cylindrical track/spot light type applications. Performs in any orientation.

El HB Intercambiador de calor por cambio de fase

tiene un diseño único y patentado utilizando el efecto chimenea, lo que maximiza la refrigeración de rendimiento. La forma compacta permite encajar en pista/spot cilíndrica en aplicaciones típicas de luminarias. Funciona en cualquier dirección.

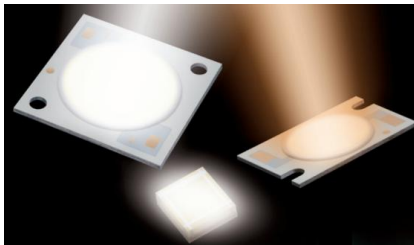
Lo scambiatore di calore HB 2 fasi

un design speciale, brevettato, potranno beneficiare l'effetto camino e questo massimizza le prestazioni di raffreddamento. Il design compatto è ideale per applicazioni leggera traccia/spot. La soluzione funziona in tutte le direzioni.

High Bay



Flood Light



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FrigoDynamics® thermal solutions			2-Phase HX Dimensions Tambient			HB HPK-Fin™ 200			HB HPK-Fin™ 270			HB HPK-Fin™ 360		
						Ø160 H ~200			Ø160 H ~270			Ø160 H ~270		
Tc < 75°C	Tc < 85°C	Tc < 95°C				25°C	35°C	45°C	25°C	35°C	45°C	25°C	35°C	50°C
CLL042-1218 (216 die) 1620mA	88,1 W	R j-c 0,40 C/W												
CLL042-1818 (324 die) 1620mA	88,1 W	R j-c 0,40 C/W												
CLL042-1218 (216 die) 2160mA	117,5 W	R j-c 0,40 C/W												
CLL042-1818 (324 die) 2160mA	117,5 W	R j-c 0,40 C/W												
CLL052-1825 (450 die) 1500mA	79,1 W	R j-c 0,25 C/W												
CLL052-1825 (450 die) 2000mA	105,4 W	R j-c 0,25 C/W												
CLL052-1825 (450 die) 2500mA	131,8 W	R j-c 0,25 C/W												
CLL052-1825 (450 die) 3000mA	163,6 W	R j-c 0,25 C/W												

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