

ENEC+ LICENSE

License No. ENEC-01182-P12-PLUS

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License Holder SIGNIFY NETHERLANDS B.V.
HIGH TECH CAMPUS 48 EINDHOVEN 5656 AE
NETHERLANDS

Production site

ENEC License No. (safety) ENEC License Number (Safety):
ENEC-01182-P8-M2 issued on 2023-10-24
Issued by ENEC Member Body:
15, UL International Demko A/S, Borupvang 5A DK-2750 Ballerup Denmark

Certification Mark See Annex 1

Certified Product Built-in LED Module

Model Fortimo SLM C zcc d m Lee s Gia
See page 2-7 for additional Information

Trademark

PHILIPS

Ratings I_{max} 3680 mA — V_{max} 44 V —

See page 3-8 for additional ratings

Complying with the following PD EPRS 001:2018-05 (based on EN 62717:2017)

EPRS standard for

performance

EPRS Test Report No.

4790994968.3.1_1 issued on 2023-11-15

Additional Information

This certificate replaces the certificate no. ENEC-01182-P11-PLUS-UL issued on 2023-04-18

Certification Manager
Thomas Wilson

Certification Body

This is to certify that representative sample(s) of the Product described herein ("Certified Product") have been investigated and found in compliance with the Standard(s) indicated on this License, in accordance with the ENEC+ Requirements. The Designated License holder is entitled to use the ENEC+ 15 Mark (as shown in annex 1) for the Certified Product manufactured at the production site(s) identified above in accordance with the ENEC Mark Service Agreement including without limitation the ENEC Mark Testing and Certification Services Service Terms. Only those Products bearing a valid ENEC Mark and the ENEC+ Mark should be considered as being covered by UL's ENEC+ Mark Service. This License shall remain valid unless terminated earlier in accordance with the Service Agreement including without limitation if the Standard identified on this License is amended or withdrawn prior the Date of Withdrawal of conflicting Standard(s).

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Factories:

Additional Model(s):

Product Key:

Main series: **Fortimo SLM C zcc d m Lee s Gia**

Where:

- z* = CRI of LED divided by 10 (one digit, may be “7” or “8” or “9”);
- cc* = Color temperature of LED divided by 100 (two digits, may be a value between 25 and 57);
- d* = Flavor of light (two or three characters, may be “CW” or “FP” or “FPR” or “FW” or “FWW” or “PW” or blank);
- m* = Die matrix (4 digits, example 1216: Chip configuration = 12 chips in series per string & 16 strings in parallel)
- ee* = Diameter of Light Emitting Surface (LES) in mm (one or two digits, example 19: LES dimensions = 19 mm);
- s* = CoB size in mm (four digits, example 2828: CoB dimensions = 28 mm x 28 mm));
- i* = Number of generation of CoB (one digit, may be “4” or “5”);
- a* = Suffix for commercial purposes (optional)

The naming key of this main series can be also written as:

Fortimo SLM C (z)(cc) (d) (m) L(ee) (s) G(i)(a)

The (one or more) substitute characters between each pair of brackets are a short form of some product feasibility (may be mechanical, electrical, thermal, or commercial purpose), each of them (including the pair of brackets) can be replaced with the expanded words as shown in the detailed descriptions as above.

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Maximum ratings of the series:

CoB Type (Die matrix)	Diameter of LES of CoB [mm]	CCT [K]	DC Current [mA]	Power [W]	Power Density of CoB [W/mm ²]	t _c [°C]
1211	19	≤ 4000	2400 (V _{f tot} 37,5 V)	90	0,32	105
		> 4000	1500 (V _{f tot} 36 V) *	54	0,19	
1208	15	≤ 4000	1690 (V _{f tot} 36 V)	60,8	0,34	105
		> 4000	935 (V _{f tot} 36 V) *	33,7	0,19	
1205	13	≤ 4000	1200 (V _{f tot} 36 V)	43,2	0,33	105
		> 4000	700 (V _{f tot} 36 V) *	25,2	0,19	
1204	13	≤ 4000	960 (V _{f tot} 36 V)	34,6	0,26	105
		> 4000	700 (V _{f tot} 36 V) *	25,2	0,19	
1203	9	≤ 4000	600 (V _{f tot} 36 V)	21,6	0,34	105
		> 4000	340 (V _{f tot} 36 V) *	12,2	0,19	
1202	9	≤ 4000	480 (V _{f tot} 36 V)	17,3	0,27	105
		> 4000	340 (V _{f tot} 36 V) *	12,2	0,19	
* : See additional information						

Higher numeric generations of CoB is a suitable replacement for lower numeric generations without additional normal temperature test on the final product if:

- The final product thermal management construction is not reduced, and
- The CoB size is identical, and
- The rated power of CoB is lower or equal.

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Variants:

Product Key:

Variant series 1: **Fortimo SLM zcc Lee hh s Gija**

Where:

z = CRI of LED divided by 10 (one digit, may be "7" or "8" or "9");
cc = Color temperature of LED divided by 100 (two digits, may be a value between 25 and 57);
ee = Diameter of Light Emitting Surface (LES) in mm (one or two digits, example 19: LES dimensions = 19 mm);
hh = Holder type (two characters or none, may be "DL" or "PI" or "ZP" or "ZPw" or blank);
s = CoB size in mm (four digits, example 2828: CoB dimensions = 28 mm x 28 mm);
i = Number of generation of CoB (one digit, may be "4" or "5");
j = Number of generation of Holder (one digit, may be "1" or "2");
a = Suffix for commercial purposes (optional)

The naming key of this variant series 1 can be also written as:

Fortimo SLM (z)(cc) L(ee) (hh) (s) G(i)(j)(a)

The (one or more) substitute characters between each pair of brackets are a short form of some product feasibility (may be mechanical, electrical, thermal, or commercial purpose), each of them (including the pair of brackets) can be replaced with the expanded words as shown in the detailed descriptions as above.

The variant series 1 differs from the main series for different product key and for the presence of LED CoB + LED Holder.

Maximum ratings of the series:

CoB Type	Diameter of LES of CoB [mm]	CCT [K]	DC Current [mA]	Power [W]	Power Density of CoB [W/mm ²]	t _c [°C]	T Holder [°C]
1211	19	≤ 4000	2400 (V _{f tot} 37,5 V)	90	0,32	105	100
		> 4000	1500 (V _{f tot} 36 V) *	54	0,19	-	-
1208	15	≤ 4000	1690 (V _{f tot} 36 V)	60,8	0,34	105	100
		> 4000	935 (V _{f tot} 36 V) *	33,7	0,19	-	-
1205	13	≤ 4000	1200 (V _{f tot} 36 V)	43,2	0,33	105	100
		> 4000	700 (V _{f tot} 36 V) *	25,2	0,19	-	-
1204	13	≤ 4000	960 (V _{f tot} 36 V)	34,6	0,26	105	100
		> 4000	700 (V _{f tot} 36 V) *	25,2	0,19	-	-
1203	9	≤ 4000	600 (V _{f tot} 36 V)	21,6	0,34	105	100
		> 4000	340 (V _{f tot} 36 V) *	12,2	0,19	-	--
1202	9	≤ 4000	480 (V _{f tot} 36 V)	17,3	0,27	105	100
		> 4000	340 (V _{f tot} 36 V) *	12,2	0,19	-	-

* : See additional information

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Product Key:

Variant series 2: **Fortimo SLM C zcc d m Lee s Gia**

Where:

z = CRI divided by 10 (may be blank when d= "CED", or one digit, may be "7" or "8" or "9");
cc: = CCT divided by 100 (may be blank when d= "CED", or two digits, may be a value maximum to 65)
d = Flavour of light (two or three characters, may be "CW" or "FP" or "FPR" or "FW" or "FWW" or "PW" or "PC" or "FLS", or "FVF", or "FIS" or "CED" or blank);
m = Die matrix (4 digits, example 1216: Chip configuration = 12 chips in series per string & 16 strings in parallel; or blank when d= "CED");
ee = Diameter of Light Emitting Surface (LES) in mm (one or two digits, example 23: LES dimensions = 23 mm);
s = PCB size in mm (four digits, example 2828: CoB dimensions = 28 mm x 28 mm);
i = Number of generation of CoB (one digit, may be "6" or "7");
a = Suffix for commercial purposes (optional)

The naming key of this variant series 2 can be also written as:

Fortimo SLM C (z)(cc) (d) (m) L(ee) (s) G(i)(a)

The (one or more) substitute characters between each pair of brackets are a short form of some product feasibility (may be mechanical, electrical, thermal, or commercial purpose), each of them (including the pair of brackets) can be replaced with the expanded words as shown in the detailed descriptions as above.

Maximum ratings of the series:

CoB Type (Die matrix)	Diameter of LES of CoB [mm]	DC Current [mA]	Power [W]	Power Density of CoB [W/mm ²]	t _c [°C]
1216	23 *	3680 (Vf tot 41V)	151	0,36	105
	22 *	3680 (Vf tot 41V)	151	0,40	105
1212	22 *	2760 (Vf tot 41V)	113	0,30	105
1211	18,5 *	2530 (Vf tot 41V)	104	0,39	105
	22 *	2530 (Vf tot 41V)	104	0,27	105
1210	14,5 *	2300 (Vf tot 41V)	94	0,57	105

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1208	15 *	1840 (V _{f tot} 41V)	75	0,43	105
	14,5 *	1840 (V _{f tot} 41V)	75	0,46	105
1206	13 *	1380 (V _{f tot} 41V)	57	0,43	105
	14,5 *	1380 (V _{f tot} 41V)	57	0,34	105
1205	13 *	1150 (V _{f tot} 41V)	47	0,36	105
	14,5 *	1150 (V _{f tot} 41V)	47	0,29	105
1204	9,8 *	920 (V _{f tot} 41V)	38	0,50	105
	13 ^	850 (V _{f tot} 41 V)	35	0,26	105
	9 **	1350 (V _{f tot} 44 V)	59	0,93	105
	9 ^	740 (V _{f tot} 41 V)	30	0,48	105
1203	9 *	690 (V _{f tot} 41V)	28	0,44	105
	9,8 *	690 (V _{f tot} 41V)	28	0,38	105
1202	9,8 *	460 (V _{f tot} 41V)	19	0,25	105
	6,5 ^	380 (V _{f tot} 41 V)	16	0,47	105
	6,5 **	675 (V _{f tot} 44 V)	30	0,90	105
1201	9,8 *	230 (V _{f tot} 41V)	9	0,13	105
CED	22	1440 (V _{f tot} 41V)	59	0,16	105
	13	720 (V _{f tot} 41V)	30	0,22	105

^: Concerning CoB's Generation 6

*: Concerning CoB's Generation 6 and 7s

**: Concerning CoB's Generation 7

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Product Key:

Variant series 3: **Fortimo SLM zcc Lee hh s Gija**

Where:

z = CRI of LED divided by 10 (one digit, may be "7" or "8" or "9");
cc = Color temperature of LED divided by 100 (two digits, may be a value between 22 and 65);
ee = Diameter of Light Emitting Surface (LES) in mm (one or two digits, example 23: LES dimensions = 23 mm);
hh = Holder type (two or three characters or none, may be "DL" or "PI" or "ZP" or "ZPw" or blank);
s = CoB size in mm (four digits, example 2828: CoB dimensions = 28 mm x 28 mm);
i = Number of generation of CoB (one digit, may be "6", "7");
j = Number of generation of Holder (one digit, may be "1" or "2");
a = Suffix for commercial purposes (optional)

The naming key of this variant series 3 can be also written as:

Fortimo SLM (z)(cc) L(ee) (hh) (s) G(i)(j)(a)

The (one or more) substitute characters between each pair of brackets are a short form of some product feasibility (may be mechanical, electrical, thermal, or commercial purpose), each of them (including the pair of brackets) can be replaced with the expanded words as shown in the detailed descriptions as above.

The variant series 3 differs from the variant series 2 for a different product key, for the presence of LED CoB + LED Holder and for different maximum ratings for CoB Type 1216.

Maximum ratings of the series:

CoB Type	Diameter of LES of CoB [mm]	DC Current [mA]	Power [W]	Power Density of CoB [W/mm ²]	t _c [°C]	T Holder [°C]
1216	23 *	2750 (V _{f tot} 41 V)	98	0,27	105	100
1211	18,5*	2400 (V _{f tot} 41 V)	98	0,37	105	100
1208	15 *	1710 (V _{f tot} 41 V)	70	0,40	105	100
1206	13 *	1200 (V _{f tot} 41 V)	49	0,37	105	100

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1205	13 *	1050 ($V_{f\text{ tot } 41\text{ V}}$)	43	0,32	105	100
1204	13 ^	850 ($V_{f\text{ tot } 41\text{ V}}$)	35	0,26	105	100
	9 **	1350 ($V_{f\text{ tot } 44\text{ V}}$)	59	0,93	105	100
	9 ^	740 ($V_{f\text{ tot } 41\text{ V}}$)	30	0,48	105	100
1203	9 *	570 ($V_{f\text{ tot } 41\text{ V}}$)	23	0,37	105	100
1202	6,5 ^	380 ($V_{f\text{ tot } 41\text{ V}}$)	16	0,47	105	100
	6,5 **	675 ($V_{f\text{ tot } 44\text{ V}}$)	30	0,90	105	100

^: Concerning CoB's Generation 6

*: Concerning CoB's Generation 6 and 7

**: Concerning CoB's Generation 7

Higher numeric generations of CoB is a suitable replacement for lower numeric generations without additional normal temperature test on the final product if:

- The final product thermal management construction is not reduced, and
- The CoB size is identical, and
- The rated power of CoB is lower or equal.

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Annex 1 to License No. ENEC-01182-P12-PLUS

Annex of the form of the Mark



15 is the identification number of the Certification Body

Size of the mark:

The size of the mark may be reduced on the condition that
it remains legible and that the ratio $b/a=1,7$ is kept

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