

# ENEC LICENCE

Licence No. ENEC-01182-P2-A1  
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Date of Issue 2018-03-01

Licence Holder Philips Lighting B.V.  
High Tech Campus 45  
Eindhoven, 5656 AE Netherlands

Production site



Certification Mark  
Certified Product  
Model

See Annex 1  
Built-in LED Module  
Fortimo SLM C zcc dd m Lee s Gi a,  
Fortimo SLM zcc Lee hh s Gij a  
See Page 2 to 5

Trademark

**PHILIPS**

Rated Voltage / Frequency

Vmax 44 VDC  
(see test report for further ratings)

Rated Current / Power

I<sub>max</sub> 2750 mA DC  
(see test report for further ratings)

Insulation Class  
Degree of protection (IP)  
Tested acc. to

-  
-  
EN 62031:2008/A1:2013, EN 62031:2008/A2:2015,  
EN 62031:2008

Test Report No.  
Additional

4788293213-1 issued on 2018-02-26  
This replaces previous certificate ENEC-01182-P2 issued on  
2018-02-26 due to missing additional information. Built-in. See  
Page 6 and 7.

Certification Manager  
Jan-Erik Storgaard

This is to certify that representative sample(s) of the Product(s) described herein ("Certified Product(s)") have been investigated and found in compliance with the Standard(s) indicated on this Licence, in accordance with the ENEC Requirements. The Designated License holder is entitled to use the ENEC 16 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 Service's Service Terms. Only those Products bearing the ENEC Mark should be considered as being covered by UL's ENEC Mark Service. This Licence shall remain valid unless terminated earlier in accordance with the Service Agreement including without limitation if the Standard identified on this Certificate is amended or withdrawn prior the Date of Withdrawal of conflicting Standard(s).

Certification Body

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Model Details:

## Product Key:

Main series: **Fortimo SLM C** *zcc dd mLee sGi a*

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);  
*dd* = Color of light (two or three characters or none, may be "CW" or "FP" or "FPR" or "FW" or "FWW" or "PW" or blank)  
*m* = Die matrix (4 digits, may be "1202" or "1203" or "1204" or "1205" or "1208" or "1211")  
*ee* = Diameter of Light Emitting Surface (LES) in mm (one or two digits, may be a value between 9 and 19);  
*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)

## 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 <sup>2</sup> ]	t <sub>c</sub> [°C]
1211	19	≤ 4000	2400 (V <sub>tot</sub> 37,5 V)	90	0,32	105
		> 4000	1500 (V <sub>tot</sub> 36 V) *	54	0,19	
1208	15	≤ 4000	1690 (V <sub>tot</sub> 36 V)	60,8	0,34	105
		> 4000	935 (V <sub>tot</sub> 36 V) *	33,7	0,19	
1205	13	≤ 4000	1200 (V <sub>tot</sub> 36 V)	43,2	0,33	105
		> 4000	700 (V <sub>tot</sub> 36 V) *	25,2	0,19	
1204	13	≤ 4000	960 (V <sub>tot</sub> 36 V)	34,6	0,26	105
		> 4000	700 (V <sub>tot</sub> 36 V) *	25,2	0,19	
1203	9	≤ 4000	600 (V <sub>tot</sub> 36 V)	21,6	0,34	105
		> 4000	340 (V <sub>tot</sub> 36 V) *	12,2	0,19	
1202	9	≤ 4000	480 (V <sub>tot</sub> 36 V)	17,3	0,27	105
		> 4000	340 (V <sub>tot</sub> 36 V) *	12,2	0,19	

\* : See additional information

## Certification Body

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## Product Key:

Variant series 1: **Fortimo SLM** *zcc Lee hh s G j a*

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, may be a value between 9 and 19);  
 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);  
 j = 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 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 <sup>2</sup> ]	t <sub>c</sub> [°C]	T Holder [°C]
1211	19	≤ 4000	2400 (V <sub>rtdt</sub> 37,5 V)	90	0,32	105	100
		> 4000	1500 (V <sub>rtdt</sub> 36 V) *	54	0,19		
1208	15	≤ 4000	1690 (V <sub>rtdt</sub> 36 V)	60,8	0,34	105	100
		> 4000	935 (V <sub>rtdt</sub> 36 V) *	33,7	0,19		
1205	13	≤ 4000	1200 (V <sub>rtdt</sub> 36 V)	43,2	0,33	105	100
		> 4000	700 (V <sub>rtdt</sub> 36 V) *	25,2	0,19		
1204	13	≤ 4000	960 (V <sub>rtdt</sub> 36 V)	34,6	0,26	105	100
		> 4000	700 (V <sub>rtdt</sub> 36 V) *	25,2	0,19		
1203	9	≤ 4000	600 (V <sub>rtdt</sub> 36 V)	21,6	0,34	105	100
		> 4000	340 (V <sub>rtdt</sub> 36 V) *	12,2	0,19		
1202	9	≤ 4000	480 (V <sub>rtdt</sub> 36 V)	17,3	0,27	105	100
		> 4000	340 (V <sub>rtdt</sub> 36 V) *	12,2	0,19		

\* : See additional information

The product and production identified on the Licence comply with the ENEC requirements and the UL Global Service Agreement with reference to Term and Conditions for the ENEC mark. The Owner of the Licence is entitled to use the ENEC 16 (as shown in annex 1) for the product identified on the Licence and manufactured at the production identified. UL has to be informed in writing about any changes to the product or production identified in accordance with the Term and Conditions of the ENEC mark.



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## Product Key:

Variant series 2: **Fortimo SLM C** *zcc ddmLee sGja*

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);  
 dd = Color of light (two or three characters or none, may be "CW" or "FP" or "FPR" or "FW" or "FWW" or "PW" or "PC" or blank)  
 m = Die matrix (4 digits, may be "1202" or "1202s" or "1203" or "1204" or "1204s" or "1205" or "1208" or "1211" or "1216")  
 ee = Diameter of Light Emitting Surface (LES) in mm (one or two digits, may be a value between 6 and 23);  
 s = CoB size in mm (four digits, example 2828: CoB dimensions = 28 mm x 28 mm);  
 j = Number of generation of CoB (one digit, may be "6" or "7");  
 a = Suffix for commercial purposes (optional)

## 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 <sup>2</sup> ]	t <sub>c</sub> [°C]
<b>1216</b>	23 *, 23**	2750 (V <sub>rated</sub> 41 V)	113	0,27	105
<b>1211</b>	19 *, 19**	2400 (V <sub>rated</sub> 41 V)	98	0,35	105
<b>1208</b>	15 *, 15**	1710 (V <sub>rated</sub> 41 V)	70	0,40	105
<b>1205</b>	13 *, 13**	1050 (V <sub>rated</sub> 41 V)	43	0,32	105
<b>1204</b>	13 *	850 (V <sub>rated</sub> 41 V)	35	0,26	105
	9 **	1350 (V <sub>rated</sub> 44 V)	59,4	0,93	105
<b>1204s</b>	9 *	740 (V <sub>rated</sub> 41 V)	30,3	0,47	105
<b>1203</b>	9 *, 9**	570 (V <sub>rated</sub> 41 V)	23	0,36	105
<b>1202s</b>	6,5 *	380 (V <sub>rated</sub> 41 V)	15,5	0,47	105
<b>1202</b>	6 **	675 (V <sub>rated</sub> 44 V)	29,7	0,90	105

\*: Concerning CoB's Generation 6

\*\*: Concerning CoB's Generation 7

The product and production identified on the Licence comply with the ENEC requirements and the UL Global Service Agreement with reference to Term and Conditions for the ENEC mark. The Owner of the Licence is entitled to use the ENEC 16 (as shown in annex 1), for the product identified on the Licence and manufactured at the production identified. UL has to be informed in writing about any changes to the product or production identified in accordance with the Term and Conditions of the ENEC mark.



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## Product Key:

Variant series 3: **Fortimo SLM** *zcc Lee hh sGij a*

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, may be a value between 6 and 23);  
 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" or "7");  
 j = Number of generation of Holder (one digit, may be "1" or "2");  
 a = Suffix for commercial purposes (optional)

The variant series 3 differs from the variant series 2 for 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 <sup>2</sup> ]	t <sub>c</sub> [°C]	T Holder [°C]
1216	23 *, 23**	2400 (V <sub>r</sub> tot 41 V)	98	0,24	105	100
1211	19 *, 19**	2400 (V <sub>r</sub> tot 41 V)	98	0,35	105	100
1208	15 *, 19**	1710 (V <sub>r</sub> tot 41 V)	70	0,40	105	100
1205	13 *, 13**	1050 (V <sub>r</sub> tot 41 V)	43	0,32	105	100
1204	13 *	850 (V <sub>r</sub> tot 41 V)	35	0,26	105	100
	9 **	1350 (V <sub>r</sub> tot 44 V)	59,4	0,93	105	100
1204s	9 *	740 (V <sub>r</sub> tot 41 V)	30,3	0,47	105	100
1203	9 *, 9**	570 (V <sub>r</sub> tot 41 V)	23	0,36	105	100
1202s	6,5 *	380 (V <sub>r</sub> tot 41 V)	15,5	0,47	105	100
1202	6 **	675 (V <sub>r</sub> tot 44 V)	29,7	0,90	105	100

\*: Concerning CoB's Generation 6

\*\*: Concerning CoB's Generation 7

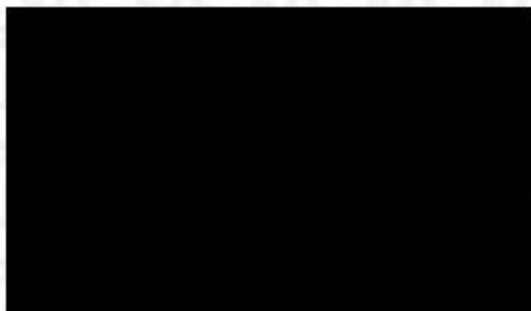
The product and production are labelled on the Licence to comply with the ENEC requirements and the UL Global Service Agreement with reference to Term and Conditions for the ENEC mark. The Owner of the Licence is entitled to use the ENEC 16 (as shown in annex 9) for the product labelled on the Licence and manufactured at the production site labelled. UL has to be informed in writing about any changes to the product or production site in accordance with the Term and Conditions of the ENEC mark.



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Production Sites:



Additional Information:

- The modules have been evaluated according to IEC/TR 62778 and the Lamp classification Group for Blue Light Hazard is Risk Group 1 Unlimited for modules having generation of CoB "4" or "5", Risk Group 2 for modules having generation of CoB "6" or "7" when are used at maximum rated currents. These Generation 6 and 7 modules are classified as Risk Group 1 if they are used according to the maximum currents listed below:

	CoB Type							
	1216	1211	1208	1205	1204	1204s	1203	1202s
Maximum Currents for RG1 Classif. [mA]	1824 (Gen 6)	1254 (Gen 6)	912 (Gen 6)	570 (Gen 6)	456 (Gen 6) 420 (Gen 7)	456	342 (Gen 6)	228 (216 for 1202 Gen 7)

		CoB Type				
		1216	1211	1208	1205	1203
Maximum Currents for RG1 Classif. [mA]	zcc = 765	1797 (Gen 7)	1248 (Gen 7)	548 (Gen 7)	468 (Gen 7)	258 (Gen 7)
	zcc = 857	2298 (Gen 7)	1349 (Gen 7)	599 (Gen 7)	480 (Gen 7)	264 (Gen 7)

- For modules having generation of CoB "4" or "5" with CCT > 4000 K the customer can increase the rated currents (for example 1500 mA for Type 1211) up to the rated currents of modules having CCT ≤ 4000 K (2400 mA for Type 1211). In this case the photobiological hazard shall be additionally evaluated in the final product.

- The insulation between active parts of LED CoB and accessible conductive parts (metal mounting surface) is tested for basic insulation related to 50 Vdc for CoB Types 1202, 1202s, 1203, 1204s, 1204 Gen 7 and all CoBs provided with holders having Field hh in the product key of variant series = "PI", 150 Vdc for CoB Types 1204, 1205, 1208, 1211, 1216 provided with holders having Field hh in the product key of variant series = "DL" or blank and 200 Vdc for CoB Types 1204 Gen 6, 1205, 1208, 1211, 1216 provided with holder having Field hh in the product key of variant series = "ZP" or "ZPw".

The production and production site listed on the Licence comply with the ENEC requirements and the UL Global Service Agreement with reference to Term and Conditions for the ENEC mark. The Owner of the Licence is entitled to use the ENEC 16 (as shown in annex 9) for the products listed on the Licence and manufactured at the production site listed. UL has to be informed in writing about any changes to the production and production site in accordance with the Term and Conditions of the ENEC mark.



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- Maximum 3 CoBs can be placed in series configuration for CoB Types 1204 Gen 6, 1205, 1208, 1211, 1216 provided with holders having Field hh in the product key of variant series = "DL" or blank.  
Maximum 4 CoBs can be placed in series configuration for CoB Types 1204 Gen 6, 1205, 1208, 1211, 1216 provided with holder having Field hh in the product key of variant series = "ZP" or "ZPw". No series configuration can be used for CoB Types 1202, 1202s, 1203, 1204s, 1204 Gen 7 and all CoBs provided with holders having Field hh in the product key of variant series = "PI".
- Creepage and clearance distances on the overall LED module (LED CoB + LED Holder) shall be evaluated on the final product.
- LED Holders have been evaluated as integral component according to IEC/EN 60838-1:2004 + A1:2008 + A2:2011 and IEC/EN 60838-2-2:2006 + A1:2012
- M3 fixing screws for LED Holders shall be used. The fasteners used to secure the module to the mounting surface must be tightened with a torque between 0,4 and 0,6 Nm
- The modules can be supplied only by electronic LED controlgears separately approved according to IEC/EN 61347-2-13 and protected against output short-circuit and overload.
- The customer is obligated to add an appropriated cooling system to the LED module in order to not exceed tc value. Temperature test shall be performed on the final product to verify the effectiveness of this cooling system.

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# Annex 1 to Licence No. **ENEC-01182-P2-A1**

Annex of the form of the Mark



\* 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

**Certification Body**

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