

ENEC LICENCE

Licence No. ENEC-01127-P1-A3
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Date of Issue 2017-03-17

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

Production site

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

See Page 2

Certification Mark

See Annex 1

Certified Product

Built-in LED Module

Model

Main series: **Fortimo LED line** *xu ylm zcc qR eVgd a*
See Page 2

Trademark

PHILIPS

Rated Voltage / Frequency

HV: I_{max}: 1000 mA ===

LV: I_{max}: 1900 mA ===

Rated Current / Power

See Rated Voltage / Frequency

Insulation Class

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Degree of protection (IP)

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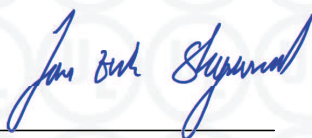
Tested acc. to

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

Test Report No.

4786877604-3 issued on 2017-03-17

Additional



Certification Manager
Jan-Erik Storgaard

Certification Body

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UL International Demko A/S, Borupvang 5A, DK-2750
Ballerup, Denmark, Tel. +45 44 85 65 65, info.dk@ul.com
www.ul-europe.com



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Model Details:

Product Key:

Main series: Fortimo LED line *xu ylm zcc qR eVgd a*

Where:

x = Product length in feet or mm or inch (1-4 digits/characters (for example 1.5 or 102))
u = Measurement unit for product length (two characters, may be "ft" or "mm" or "in")
y = Lumen output (three or four digits);
z = CRI of LED divided by 10 (one digit, may be "8" or "9");
cc = Color temperature of LED divided by 100 (two digits, may be between 27 and 65);
q = Number of LED's rows (one digit, may be "1" or "2" or "3" or "T");
e = Voltage type (one character, may be "H" or "L");
g = Number of LED module's generation (one digit, may be "2" or "3" or "4");
d = Connector designator (may be blank or "F" = front connector, or "B" = back connector, or "D" = dual entry connector);
a = Commercial suffix for commercial purposes (optional)

Maximum ratings of the series:

Type	DC Current [mA]	Power [W]	Number of LEDs	t_c [°C]	Max. working voltage for basic insulation to mount. surface [Vdc]
HV	570 ($V_{f\ tot}$ 70 V)	40	66	90	420
HV (*)	650 ($V_{f\ tot}$ 70 V)	28	44	95	420
HV (**)	1000 ($V_{f\ tot}$ 40 V)	40	120	85	420
HV (***)	180 ($V_{f\ tot}$ 140 V) or 360 ($V_{f\ tot}$ 70 V)	25,2	46	95	420
LV	1120 ($V_{f\ tot}$ 36 V)	40	44	90	120

(*): High flux modules (≥ 2000 lm/ft)

(**): Only for model Fortimo LED line 2ft 1250lm *zcc 2R HVgd a*

(***): When *g* = "T" in the product key. Maximum current depends on connecting method of the module.

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Model Details:

Product Key:

Variant series 1: LBA bs xu ylm zcc ehd a

Where:

- b** = Platform shape (4-5 characters, may be "Area", "2Line", "Line", "Slim", "USlim", "Point", "Round");
- s** = Segment (one character, Commercial application);
- x** = Product Length (or diameter) in feet or mm or inch or Product Area in mm (for example 1178x20) (1-7 digits/characters)
- u** = Measurement unit for product length (two characters or blank, may be "ft" or "mm" or "in")
- y** = Lumen output (three or four digits);
- z** = CRI of LED divided by 10 (one digit, may be "8" or "9");
- cc** = Color temperature of LED divided by 100 (two digits, may be between 27 and 65);
- e** = Voltage type (one character, may be "H" or "L");
- h** = Last digit of release year (one digit);
- d** = Connector designator (may be blank or "F" = front connector, or "B" = back connector, or "D" = dual entry connector);
- a** = Commercial suffix for commercial purposes (optional)

See the following table for the Platform shapes allowed:

Platform shape (b field on Product Key)	Main characteristics	LED used
Area	Rectangular shape or E-shape, 3 rows of LEDs or 2 rows of LEDs placed on E-shape, HV/LV Types	5630HE series or 5630SC series or 5630D series or 7030 series or 3020 series or 757D series or 2835 series or 757G series
2Line	2 rows of LEDs, HV Type	3014HE series
Line	1 row of LEDs, HV/LV Types	5630HE series or 5630D series or 7030 series or 3020 series or 757D series or NF2L757DRT-V1 or 2835 series or 757G series
Slim and USlim	1 row of LEDs on a slim PCB, HV/LV Types (Slim) LV Type (USlim)	5630HE series or 2835 series
Point	LEDs placed in groups (Max 6 LEDs each group), HV Type	7030 series or 5630HE series
Round	1 or 2 circular rows of LEDs, HV Type, 4 independent LED strings	5630HE series

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Model Details:

Maximum ratings of the series:

Platform shape (b field on Product Key)	DC Current [mA]	Power [W]	Number of LEDs	t_c [°C]	Max. working voltage for basic insulation to mount. surface [Vdc]
Area and Line (HV Type)	570 ($V_{f\text{ tot}}$ 70 V)	40	66	90	420
Area and Line (HV Type) (*)	650 ($V_{f\text{ tot}}$ 70 V)	28	44	95	420
Line (HV Type) (**)	800 ($V_{f\text{ tot}}$ 40 V)	32	24	95	420
Area and Line (LV Type)	1120 ($V_{f\text{ tot}}$ 36 V)	40	44	90	120
Line (LV Type)	840 ($V_{f\text{ tot}}$ 40 V)	34	72 (4 ft)	75	120
Area (E-Shape) (HV Type)	280 ($V_{f\text{ tot}}$ 138 V)	39	88	85	420
2Line	1000 ($V_{f\text{ tot}}$ 40 V)	40	120	85	420
Slim	720 ($V_{f\text{ tot}}$ 38 V)	27,4	72	95	HV Type: 350 (***) LV Type: 120
USlim	1440 ($V_{f\text{ tot}}$ 35 V)	50,4	144	105	120 (***)
Point	1ft: 560 ($V_{f\text{ tot}}$ 20 V) 2ft: 560 ($V_{f\text{ tot}}$ 40 V)	1ft: 11,2 2ft: 22,4	1ft: 12 2ft: 24	1ft: 85 2ft: 90	420 420
Round	4 x 188 mA ($V_{f\text{ tot}}$ 4 x 40-80 V)	43,2	80	85	150 (And between adjacent independent strings)
(*): High flux modules (≥ 2000 lm/ft) (**): Only for models LBA LineX 1ft 2000lm zcc Hhd a (***) : See Additional information					

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Model Details:
Product Key:

Variant series 2: *b LED Strip xu ylm zcc d eVgD a*

Where:

- b* = Family name (may be "Fortimo" or "CertaFlux")
- x* = Product length in feet or mm or inch (1-4 digits/characters (for example 1.5 or 102))
- u* = Measurement unit for product length (two characters, may be "ft" or "mm" or "in")
- y* = Lumen output (three or four digits);
- z* = CRI of LED divided by 10 (one digit, may be "8" or "9");
- cc* = Color temperature of LED divided by 100 (two digits, may be between 27 and 65);
- d* = Connector designator in case of "ft" or "in" (may be blank or "NA" or "1R" or "FC" = front connector or "BC" = back connector);
- e* = Voltage type (one character, may be "H" or "L");
- g* = Number of LED module's generation (one digit, may be "1" or "2" or "3" or "4");
- D* = Connector designator in case of "mm" (may be blank or "F" = front connector, or "B" = back connector);
- a* = Commercial suffix for commercial purposes (optional)

Maximum ratings of the series:

Type	DC Current [mA]	Power [W]	Number of LEDs	t_c [°C]	Max. working voltage for basic insulation to mount. surface [Vdc]
HV	480 ($V_{f\text{ tot}}$ 80 V)	38,4	72	85 95 (*)	420 (350 for b = Fortimo and g = 4) (350 for b = CertaFlux and g = 3)
	570 ($V_{f\text{ tot}}$ 121 V)	69	120	80	
LV	600 ($V_{f\text{ tot}}$ 36 V)	21,6	48	85	120
	1900 ($V_{f\text{ tot}}$ 37 V)	70,3	144	80 95 (*)	

(*): Only for modules having lumen output 2000 lm or 4000 lm or 8000 lm (High flux modules (≥ 2000 lm/ft))

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Model Details:

Product Key:

Variant series 3: Fortimo LED Square ylm zcc d HV/LV2 a

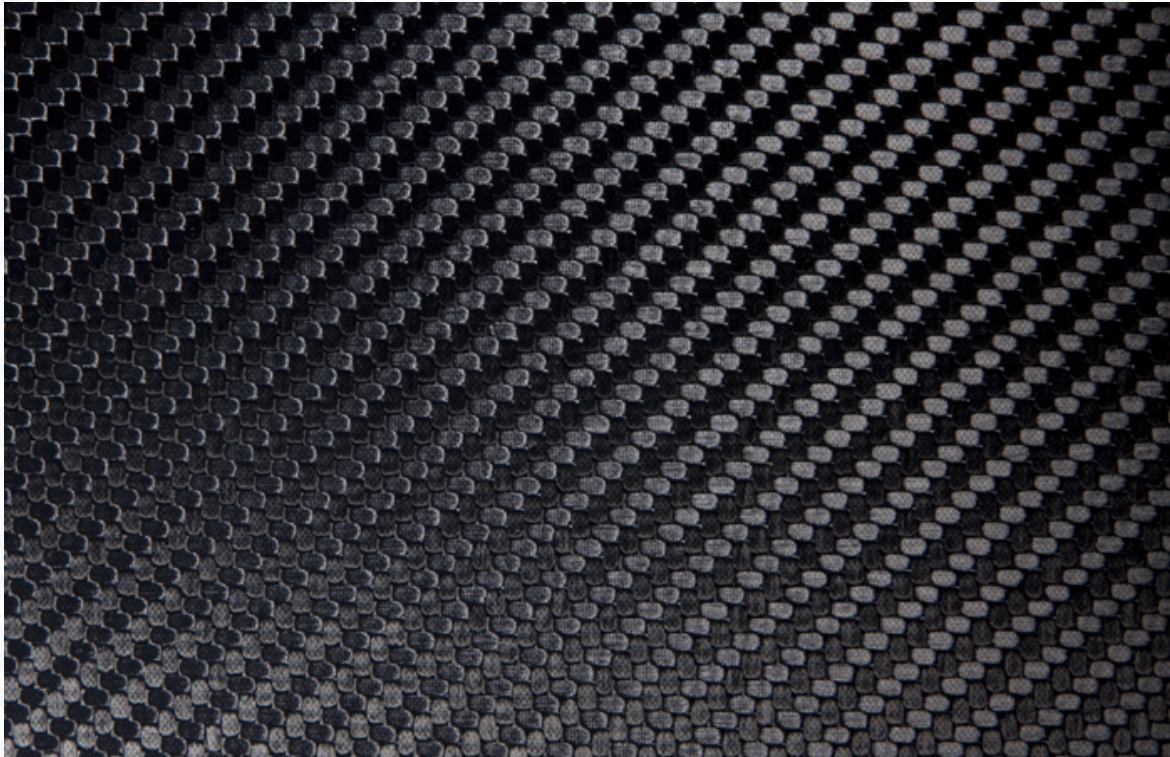
Where:

- y = Lumen output (three or four digits);
z = CRI of LED divided by 10 (one digit, may be "8" or "9");
cc = Color temperature of LED divided by 100 (two digits, may be between 30 and 65);
d = Connector designator (may be blank or "FC" = front connector or "BC" = back connector);
a = Commercial suffix for commercial purposes (optional)

Maximum ratings of the series:

Type	DC Current [mA]	Power [W]	Number of LEDs	t _c [°C]	Max. working voltage for basic insulation to mount. surface [Vdc]
HV/LV (Max 2500 lm)	700 (V _{f tot} 49,7 V)	34,8	128	80	420
HV/LV (Max 3500 lm)	1200 (V _{f tot} 35,1 V)	42,1	132	80	350

Factories:



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Additional Information:

- Modules having Platform shape *b* in the Product Key of variant series 1 = "Slim" can be named also with dimensions *x* in mm instead in feet (for example: LBA SlimS 595x20 500lm 830 L5).
- The model Fortimo LED Strip 2ft 2200lm 835 HV1 KR is identical to the model Fortimo LED Strip 2ft 2200lm 835 HV3, the difference between names is only for commercial purpose.
- The insulation between active parts of LED module and accessible conductive parts (metal mounting surface) is tested for basic insulation related to 420 V for HV modules (150 V for Platform shape *b* in the Product Key of variant series 1 = "Round", 350 V for HV modules of variant series 2) and related to 120 V for LV modules.
- HV modules, modules having Platform shape *b* in the Product Key of variant series 1 = "Slim", module "LBA LineP 2ft 4000lm zcc L5", module "Fortimo LED line 2ft 4000lm zcc 1R LV3" and all modules of variant series 2 shall use PCBs with PTI > 600 V.
- Manufacturer and customers shall maintain clearances and creepage distances between tracks on PCB and screws/accessible conductive parts in compliance with table 11.1 of IEC/EN 60598-1 using working voltage values of 420 V for HV modules (150 V for Platform shape *b* in the Product Key of variant series 1 = "Round", 350 V for HV modules of variant series 2) and 120 V for LV modules and considering basic insulation. When Connector designator "D" or "d" in the Product Keys = "B" or "BC" or "D" clearances and creepage distances shall be also maintained between accessible conductive parts and terminals mounted in the back of the modules or all metal terminals.
- M4 fixing screws with diameter of their heads not exceeding 8 mm shall be used (if in metallic material). Modules having Number of LED's rows *q* in the Product Key of main series = "2" or Platform shape *b* in the Product Key of variant series 1 = "2Line" or "Slim" shall use M3 fixing screws with diameter of their heads not exceeding 5,6 mm. Manufacturer recommends for all modules the use of washers made in insulating material. The fasteners used to secure the module to the mounting surface must be tightened with a torque between 0,6 and 1 Nm.
- LED Module "LBA SlimP xft ylm zcc Hhd a" shall be used only with insulating washers made of suitable material, having 2,2 mm minimum thickness, with the internal hole suitable for only M3 screws and having the external diameter not less than 5,6 mm and it shall be installed with creepage/clearance distances to metal mounting surface of at least 1 mm.
- 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.
- Modules having Platform shape *b* in the Product Key of variant series 1 = "USlim" can be supplied only by SELV LED Controlgears having $U_{out\ max} = 120\ Vdc$.
- The customer is obligated to add an appropriated cooling system to the LED module in order to not exceed t_c value and the maximum temperatures of the module's components. Temperature test shall be performed on the final product to verify the effectiveness of this cooling system.
- HV (High Voltage) modules can be used in series configuration if the total voltage of the load of LED controlgear does not exceed the maximum working voltages listed on ratings.
- LV (Low Voltage) modules can be used in parallel configuration if the current per module does not exceed its rated current and the current in the chain of modules does not exceed 2 A for modules with terminals Molex Lite-Trap, Mini Lite-Trap, BJB and WAGO and 1 A for modules with terminals Molex Flexi-Mate.
- The modules have been also evaluated according to IEC TR 62778 (Second Edition): RISK GROUP 1 UNLIMITED with exception of modules having LED 3020 and LED NF2L757DRT-V1 which are classified RISK GROUP 2 (Worst value of $E_{thr} = 338\ lx$).

The original report was modified to include the following changes/additions:

- Update of maximum ratings of models "Slim" and "USlim" of variant series 1.
- Update of maximum ratings of variant series 2.
- Addition of model "T" with new ratings into main series and update of product key.
- Addition of three alternative PCB and alternative fuses in the table of components (in bold).

This certificate replaces the certificate no. ENEC-01127-P1-A2 issued on 2017-02-13

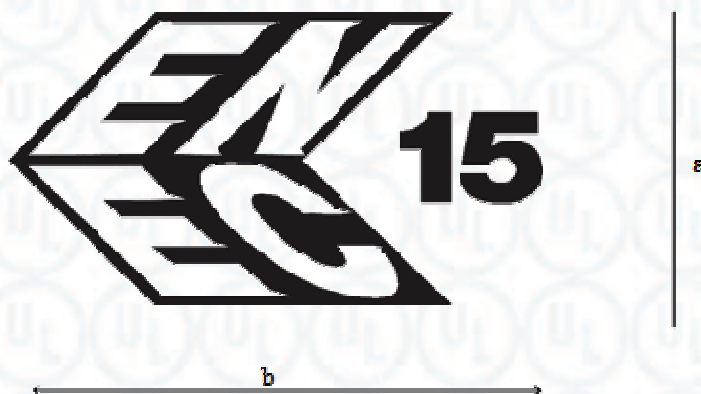
The product and production sites listed on the License comply with the ENEC requirement and the UL Global Service Agreement, with reference to Terms and Conditions for the ENEC mark. The Owner of the License is entitled to use the ENEC 15 (as shown in annex 1) for the products listed on the License and manufactured at the production site listed. 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.



Annex 1 to Licence No.

ENEC-01127-P1-A3

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

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