

ENEC LICENCE

Licence No. ENEC-01127-P3-A1
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Licence Holder Philips Lighting B.V.
High Tech Campus 45
Eindhoven, 5656 AE Netherlands

Certification Mark See Annex 1
Certified Product Built-in LED Module
Model Fortimo LED line xu ylm zcc qR eVgd a
See Page 2-3-4-5-6

Trademark

PHILIPS

Rated Voltage / Frequency HV: I_{max}: 1000 mA ---
LV: I_{max}: 2000 mA ---
Rated Current / Power See rated voltage/frequency
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. 4788406206 issued on 2018-05-04
Additional


Certification Manager
Jens-Erik Storgaard

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 Licence, in accordance with the ENEC Requirements. The Designated Licence 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 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with the Service Agreement (including without limitation if the Standard identified on this Certificate is amended or withdrawn prior to the date of withdrawal of an ENEC Standard(s)).

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 [V]
HV	570	40	66	90	420 (****)
HV (*)	650	36,8	56	95	420
HV (**)	1000	40	120	85	420
HV (***)	640 (V _{r tot} 81,5 V) or 320 (V _{r tot} 163 V)	52,2	46	95	420
LV	1120	40	44	90	120

(*) : High flux modules (≥ 2000 lm/ft)

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

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

(****) : 450 V for model Fortimo LED line 1ft ylm zcc 3R HV4B T with parameter y ≤ 1500 lm

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Product Key:

Variant series 1: LBA *bs xu ylm zcc qR 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);
- qR* = Number of LED's rows (two characters or blank, may be "1R" to "5R");
- 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 (<i>b</i> field on Product Key)	Main characteristics
Area	Rectangular shape or E-shape, Up to 5 rows of LEDs or 2 rows of LEDs placed on E-shape, HV/LV Types
2Line	2 rows of LEDs, HV Type
Line	1 row of LEDs, HV/LV Types
Slim and USlim	1 row of LEDs on a slim PCB, HV/LV Types (Slim) LV Type (USlim)
Point	LEDs placed in groups (Max 6 LEDs each group), HV Type
Round	1 or 2 circular rows of LEDs, HV Type, 4 independent LED strings

Maximum ratings of the series:

Platform shape (<i>b</i> field on Product Key)	DC Current [mA]	Power [W]	Number of LEDs	t_c [°C]	Max. working voltage for basic insulation to mount. surface [V]
Area and Line (HV Type)	570	40	66	90	420

The production and production decided on the Licence comply with the ENEC requirement and the UL Global Service Agreement with reference to Terms and Condition for the ENEC mark. The Owner of the Licence is entitled to use the ENEC 16 (as shown in annex 1) for the production decided on the Licence and manufactured at the production decided. UL has to be informed in writing about any change to the production and production decided in accordance with the Terms and Condition of the ENEC mark.



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Area and Line (HV Type) (*)	650	36,8	56	95	420
Line (HV Type) (**)	800	32	24	95	420
Area and Line (LV Type)	1120	40	44	90	120
Line (LV Type)	840	34	72 (4 ft)	75	120
Area (E-Shape) (HV Type)	280	39	88	85	420
Area (5R)	1000 (HV Type) 2000 (LV Type)	72	120	90	420
Line	1000	40	120	85	420
Slim	720	27,4	72	95	HV Type: 350 (***) LV Type: 120
USlim	1440	50,4	144	105	120 (***)
Point	1ft: 560 2ft: 560	1ft: 11,2 2ft: 22,4	1ft: 12 2ft: 24	90	420
Round	4 x 188 mA (V _{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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Product Key:

Variant series 2: *bLED Strip w x y l m z c c d e f g D a*

Where:

- b* = Family name (may be "Fortimo" or "CertaFlux");
- w* = Product width in mm (optional) (two digits, if it is omitted width is 20 mm);
- x* = Product length in feet or mm or inch (1-4 digits/characters (for example 1.5 or 102));
- y* = Measurement unit for product length (two characters, may be "ft" or "mm" or "in");
- z* = Lumen output (three or four digits);
- c* = CRI of LED divided by 10 (one digit, may be "8" or "9");
- c* = 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" or "5");
- 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 [V]
HV	480	38,4	72	85	420 (350 for b = Fortimo and $g \geq 4$) (350 for b = CertaFlux and $g \geq 3$)
	570	69	120	95 (*)	
	720 (**)	48	88	80	
				90	
LV	600	21,6	48	85	120
	1900	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))

(**): When w = "32" in the product key

Product Key:

Variant series 3: *Fortimo LED Square y l m z c c d e f g D a*

Where:

- y* = Lumen output (three or four digits);
- z* = CRI of LED divided by 10 (one digit, may be "8" or "9");
- c* = 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 [V]
HV/LV (Max 2500 lm)	700	34,8	128	80	420
HV/LV (Max 3500 lm)	1200	42,1	132	80	350

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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 H/d 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 $U_{outmax} = 120$ Vdc.
- The customer is obligated to add an appropriated cooling system to the LED module in order to not exceed t_a 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, WAGO and Tyco Electronics 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, LED NF 2*757DRT-V1, LED NF 2*757GRT-V1 and LED 3030-2D 6V which are classified RISK GROUP 2 (Worst value of $E_{thr} = 338$ lx).

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This certificate replaces Certificate no. ENEC-01127-P3 issued on 2018-03-26

The product and production described on the Licence 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 Licence is entitled to use the ENEC 16 (as shown in annex 1) for the product(s) listed on the Licence and manufactured at the production described. UL has to be informed in writing about any change of the product or production site in accordance with the Terms and Conditions of the ENEC mark.



Annex 1 to Licence No.

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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

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 Licence, in accordance with the ENEC Requirements. The Designated Licence 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 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 to the Date of Withdrawal of a conflicting Standard(s).

