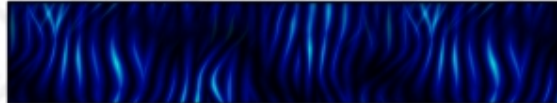


ENEC LICENCE

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

Production site



Certification Mark

See Page 4

Certified Product

See Annex 1

Built-in LED Module

Model

Main Series: Fortimo LED line xft ylm zcc qR eVg a

See Page 2/4

Trademark

PHILIPS

Rated Voltage / Frequency

-

Rated Current / Power

HV: I_{max}: 1000 mA

LV: I_{max}: 1120 mA

(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.

4786877604-2 issued on 2016-06-08

Additional



Certification Manager
Jan-Erik Storgaard

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 Services Service Terms. Only those Product(s) 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with the Service Agreement including without limitation if the Standard identified on this Certificate is amended or withdrawn prior the Date of withdrawal of said Standard(s).

Certification Body

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Model Details:

Product Key:

Main series: Fortimo LED line xft ylm zcc qR eVg a

Where:

- x = Product length in feet (one digit or three characters (for example 1.5))
- 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");
- e = Voltage type (one character, may be "H" or "L");
- g = Number of LED module's generation (one digit, may be "2" or "3");
- a = Alphanumeric 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	400 (V_{tot} 70 V)	28	44	85	420
HV (*)	650 (V_{tot} 36 V)	23,4	33	95	420
HV (**)	1000 (V_{tot} 40 V)	40	120	85	420
LV	1120 (V_{tot} 36 V)	40	44	85	120

(*): Only for model Fortimo LED line 1ft 2000lm zcc 3R HVg a

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

Product Key:

Variant series 1: LBA bs xft ylm zcc eh a

Where:

- b = Platform shape (4-5 characters, may be "Area", "2Line", "Line", "Slim", "Point", "Round");
- s = Segment (one character, Commercial application);
- x = Product length (or diameter) in feet or dimensions in mm for "Slim" shape (1-6 characters)
- 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);
- a = Alphanumeric commercial suffix for commercial purposes (optional)

Certification Body

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See the following table for the Platform shapes allowed:

Platform shape (b field on Product Key)	Main characteristics	LED used
Area	3 rows of LEDs, HV/LV Types	5630HE series or 5630SC series or 5630D series or 7030 series or 3020 series or 757D 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
Slim	1 row of LEDs on a slim PCB, HV/LV Type	5630HE series or 2835 series
Point	LEDs placed in groups of 6, HV Type	7030 series
Round	1 or 2 circular rows of LEDs, HV Type, 4 independent LED strings	5630HE series

Maximum ratings of the series:

Platform shape (b field on Product Key)	DC Current [mA]	Power [W]	Number of LEDs	t_a [°C]	Max. working voltage for basic insulation to mount surface [Vdc]
Area and Line (HV Type)	400 (V_{rkl} 70 V)	28	44	Area: 85 Line: 90	420
Area and Line (HV Type) (*)	650 (V_{rkl} 36 V)	23,4	33	95	420
Line (HV Type) (**)	800 (V_{rkl} 40 V)	32	24	95	420
Area and Line (LV Type)	1120 (V_{rkl} 36 V)	40	44	Area: 85 Line: 90	120
2Line	1000 (V_{rkl} 40 V)	40	120	85	420
Slim	700 (V_{rkl} 35 V)	24,5	44	85	HV Type: 350 (***) LV Type: 120
Point	1ft: 560 (V_{rkl} 20 V) 2ft: 560 (V_{rkl} 40 V)	1ft: 11,2 2ft: 22,4	1ft: 12 2ft: 24	1ft: 85 2ft: 90	420 420
Round	4 x 188 mA (V_{rkl} 4 x 40-80 V)	43,2	80	85	150 (And between adjacent independent strings)

(*) Only for models LBA bs1ft 2000lm zcc H h a

(**) Only for models LBA LineX 1ft 2000lm zcc H h a

(***) See additional information

The product and production described on the Licence comply with the ENEC requirements 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 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 site in accordance with the Terms and Conditions of the ENEC mark.



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Product Key:

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

Where:

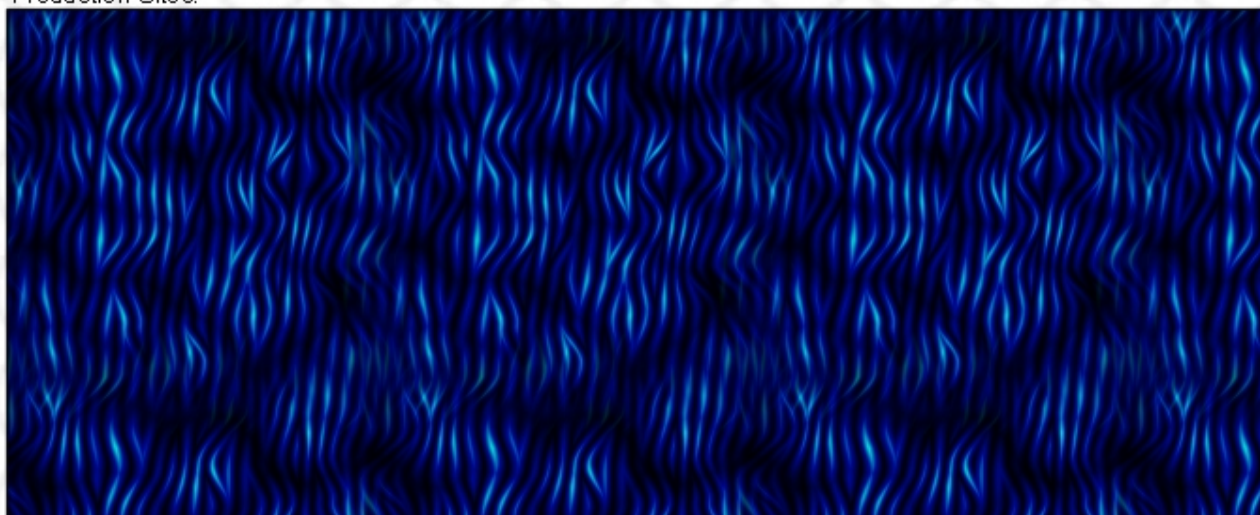
- b* = Family name (may be "Fortimo" or "CertaFlux")
- x* = Product length in feet or mm (one digit or three characters (for example 1.5 or 102))
- u* = Measurement unit for product length (two characters, may be "ft" or "mm")
- y* = Lumen output (three or four digits);
- z* = CRI of LED divided by 10 (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 (may be "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");
- a* = Alphanumeric commercial suffix for commercial purposes (optional)

The variant series 2 differs from the main series for the different rectangular shape (only 1 row of LEDs placed on a slim PCB).

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	48	85	420 (350 for $g = 4$)
	570 ($V_{f\text{tot}}$ 49 V)	28	48	80	
LV	600 ($V_{f\text{tot}}$ 36 V)	21,6	48	85	120
	760 ($V_{f\text{tot}}$ 37 V)	28,1	48	80	

Production Sites:



The product and production described on the Licence comply with the ENEC requirements and the UL Global Service Agreement with reference to Term 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 product(s) listed on the Licence 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 Condition for the ENEC mark.



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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.
- 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 Hh 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.
- 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 420 V (150 V for Platform shape *b* in the Product Key of variant series 1 = "Round", 350 V for HV modules of variant series 2).
- 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 1,8 A for modules with terminals Molex 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 LEDs 3020 and 2835 series and LED NF2L757DRT-V1 which are classified RISK GROUP 2 (Worst value of $E_{thr} = 338 \text{ lx}$) (See also photobiological test reports for more information).

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

- Addition of values "1" and "4" on parameter *g* of product key of variant series 2. Addition of parameter *d* of product key of variant series 2.
- Addition of new alternative BJB screwless terminal that has the same contact and insulating materials than the tested models.
- Reduction of creepage/clearance distances of HV modules of variant series 2 and reduction of maximum working voltage to 350 V.
- Increase of maximum current of modules of variant series 2.

The product and production described on the Licence comply with the ENEC requirements and the UL Global Service Agreement with reference to Term and Condition of the ENEC mark. The Owner of the Licence is entitled to use the ENEC 16 (as shown in annex 1) 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 product or production site in accordance with the Term and Condition of the ENEC mark.



Annex 1 to Licence No.

ENEC-01127-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

Certification Body

This is to certify that representative sample(s) of the Product described herein ("Certified Product") has 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 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 Brand identified on this Certificate is amended or withdrawn prior to the Date of Withdrawal of said Standard(s).

