



Ref. Certif. No.

DK-45723-P1-A3-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEMESYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

Product
ProduitName and address of the applicant
Nom et adresse du demandeurName and address of the manufacturer
Nom et adresse du fabricantName and address of the factory
Nom et adresse de l'usineNote: When more than one factory, please report on page 2
Note: Lorsque il y plus d'une usine, veuillez utiliser la 2^{ème} pageRatings and principal characteristics
Valeurs nominales et caractéristiques principalesTrademark (if any)
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used
Type de programme du laboratoire d'essais
constructeurModel / Type Ref.
Ref. De type
Additional information (if necessary may also be
reported on page 2)
Les informations complémentaires (si nécessaire,,
peuvent être indiqués sur la 2^{ème} pageA sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à laAs shown in the Test Report Ref. No. which forms part
of this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue partie de ce Certificat

CERTIFICAT D'ESSAI OC

Built-in LED Module

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

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

☒ Additional Information on page 2HV: I_{max}: 1000 mA ===LV: I_{max}: 1900 mA ===

(see Test Report for further ratings)

PHILIPS

Main series: Fortimo LED line xu ylm zcc qR eVgd a
See Pages 2-6☒ Additional Information on page 2

IEC 62031(ed.1), IEC 62031(ed.1);am1, IEC 62031(ed.1);am2

4786877604-3 issued on 2017-03-17

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA

UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK

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UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

Date: 2017-03-17

Original Issue Date: 2016-09-12

Signature:

Jan-Erik Storgaard

For full legal entity names see www.ul.com/ncbnames

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 ($V_{f\text{ tot } 70\text{ V}}$)	40	66	90	420
HV (*)	650 ($V_{f\text{ tot } 70\text{ V}}$)	28	44	95	420
HV (**)	1000 ($V_{f\text{ tot } 40\text{ V}}$)	40	120	85	420
HV (***)	180 ($V_{f\text{ tot } 140\text{ V}}$) or 360 ($V_{f\text{ tot } 70\text{ V}}$)	25,2	46	95	420
LV	1120 ($V_{f\text{ tot } 36\text{ V}}$)	40	44	90	120

 (*): High flux modules ($\geq 2000\text{ lm/ft}$)

 (**): 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.

Additional information (if necessary)
Information complémentaire (si nécessaire)


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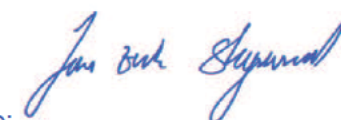
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Date: 2017-03-17

Original Issue Date: 2016-09-12

Signature:



Jan-Erik Storgaard

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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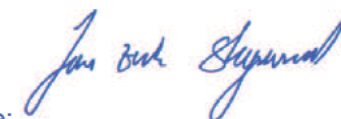
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Date: 2017-03-17

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Signature:



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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 ($V_{f\text{ tot } 70 \text{ V}}$)	40	66	90	420
Area and Line (HV Type) (*)	650 ($V_{f\text{ tot } 70 \text{ V}}$)	28	44	95	420
Line (HV Type) (**)	800 ($V_{f\text{ tot } 40 \text{ V}}$)	32	24	95	420
Area and Line (LV Type)	1120 ($V_{f\text{ tot } 36 \text{ V}}$)	40	44	90	120
Line (LV Type)	840 ($V_{f\text{ tot } 40 \text{ V}}$)	34	72 (4 ft)	75	120
Area (E-Shape) (HV Type)	280 ($V_{f\text{ tot } 138 \text{ V}}$)	39	88	85	420
2Line	1000 ($V_{f\text{ tot } 40 \text{ V}}$)	40	120	85	420
Slim	720 ($V_{f\text{ tot } 38 \text{ V}}$)	27,4	72	95	HV Type: 350 (***) LV Type: 120
USlim	1440 ($V_{f\text{ tot } 35 \text{ V}}$)	50,4	144	105	120 (***)
Point	1ft: 560 ($V_{f\text{ tot } 20 \text{ V}}$) 2ft: 560 ($V_{f\text{ tot } 40 \text{ V}}$)	1ft: 11,2 2ft: 22,4	1ft: 12 2ft: 24	1ft: 85 2ft: 90	420 420
Round	4 x 188 mA ($V_{f\text{ tot } 4 \times 40-80 \text{ V}}$)	43,2	80	85	150 (And between adjacent independent strings)

(*) : High flux modules ($\geq 2000 \text{ lm/ft}$)

(**) : Only for models LBA LineX 1ft 2000lm zcc Hhd a

(***) : See Additional information

Additional information (if necessary)

Information complémentaire (si nécessaire)



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Date: 2017-03-17

Original Issue Date: 2016-09-12

Signature:



Jan-Erik Storgaard

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))

Additional information (if necessary)

Information complémentaire (si nécessaire)



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DK-45723-P1-A3-UL

Model Details:

Product Key:

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

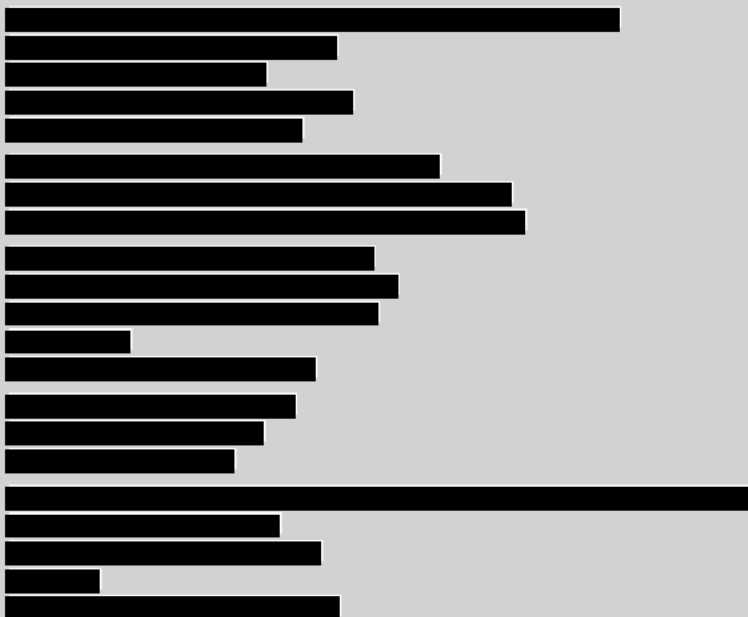
Where:

- 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 ($V_{f\text{tot}}$ 49,7 V)	34,8	128	80	420
HV/LV (Max 3500 lm)	1200 ($V_{f\text{tot}}$ 35,1 V)	42,1	132	80	350

Factories:



Additional information (if necessary)

Information complémentaire (si nécessaire)



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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 $E_{thr} = 338\ lx$).

Also investigated to: EN 62031:2008/A1:2013/A2:2015
National differences specified in the CB Test Report

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).

Additional information (if necessary)

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