

# ENEC+ LICENSE

License No. ENEC-01127-P9-L-PLUS-UL

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**License Holder** Signify Netherlands B.V.  
High Tech Campus 48 - 5656 AE Eindhoven  
The Netherlands

**Production site**

**ENEC License No. (safety)** ENEC-01127-P8-M2, ENEC-03086-P1

**Certification Mark** See Annex 1

**Certified Product** Built-in LED Module

**Model** Main series: **Fortimo LED line** *p xu ylm zcc qR eVgd a*  
(see page 2-8 for Product Key explanation and variant series)

**Trademark**   


**Ratings** HV: I<sub>max</sub>: 1200 mA  $\overline{\text{---}}$   
LV: I<sub>max</sub>: 2000 mA  $\overline{\text{---}}$  (see page 2-8 for further ratings)

**Complying with the following** PD EPRS 001:2018-05 (based on EN 62717:2017)

**EPRS standard for**

**performance**

**EPRS Test Report No.** 4790123652.3.1-1 issued on 2021-12-23

**Additional Information** This certificate replaces the earlier issued ENEC-01127-P8-L-PLUS-UL dated 2021-04-07.

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**Certification Manager**  
Jan-Erik Storgaard

**Certification Body**

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## Product Key:

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

Where:

- p = Performance (may be blank or "PR" or "ST" or "VO");
- 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 or five 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 73);
- q = Number of LED's rows (one digit, may be "1" or "2" or "3" or "4" or "6" or "9" 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" or "5");
- 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)

## Ratings of the series:

Type	DC Current [mA]	Power [W]	Max Luminous Flux [lm]	T <sub>p Max</sub> [°C]	CCT [K]	CRI	Efficacy [lm/W]
HV	570	40	12000	90	2700-6500	80 90	114-169
HV (*)	1000	93,6					
HV (**)	1000	40					
HV (***)	640 (V <sub>f tot</sub> 81,5 V) or 320 (V <sub>f tot</sub> 163 V)	52,2					
HV (****)	1200	86,4					
HV (*****)	800	21					
LV	1120	40					
LV(#)	1440	47,52					

Ambient Temperature range: -10 °C ÷ +50 °C

(\*): 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.

(\*\*\*\*): For model Lunux (Fortimo LED Line 415mm 12000lm zcc 9R HV4 L)

(\*\*\*\*\*): For model Fortimo LED Line 1ft 800lm zcc 4R HV4 L

(#) Middle Flux module (between 700 and 1700lm per ft), g=5

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## Maximum safety ratings of the series:

Type	Supply DC Current [mA]	Power [W]	Number of LEDs	t <sub>c</sub> [°C]	Max. working voltage for basic insulation to mount. surface [V]
HV	570	40	72	90	420 (°)
HV (*)	1000	93,6	176	95	420
HV (**)	1000	40	120	85	420
HV (***)	640 (V <sub>f tot</sub> 81,5 V) or 320 (V <sub>f tot</sub> 163 V)	52,2	46	95	420
HV (****)	1200	86,4	184	85	420 (°°)
HV (*****)	800	21	32	80	350 (°°°)
LV	1120	40	44	90	120
LV(#)	1440	47,52	88	85	120

(\*): High flux modules (≥ 2000 lm/ft), T<sub>c</sub>: 85 if g=5  
(\*\*): 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.  
(\*\*\*\*): For model Lunux (Fortimo LED Line 415mm 12000lm zcc 9R HV4 L)  
(\*\*\*\*\*) : For model Fortimo LED Line 1ft 800lm zcc 4R HV4 L  
(°): 450 V for model Fortimo LED Line 1ft ylm zcc 3R HV4B T with parameter y ≤ 1500 lm  
(°°): When 1 mm additional creepage to mounting surface is taken near the supply terminal (to be verified in the final product)  
(°°°): When insulating washers (or plastic optics) are used on fixing screws.  
(#) Middle Flux module (between 700 and 1700lm per ft)

## Variants:

**Product Key: Variant series 1: LBA bs xu ylm zcc qR eh d p 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 one or two digits of release year (one or two digits);
- d** = Connector designator (may be blank or "F" = front connector, or "B" = back connector, or "D" = dual entry connector);
- p** = Performance (maybe blank or "CES" or "OC" or "PR")
- a** = Commercial suffix for commercial purposes (optional)

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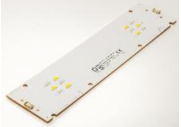
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See the following table for the Platform shapes allowed:

Platform shape (b field on Product Key)	Image of shape	Main characteristics
Area		Rectangular shape up to 5 rows, HV/LV Types
Line		1 row of LEDs, HV/LV Types
Slim		1 row of LEDs on a slim PCB, HV/LV Types (Slim)
Point		LEDs placed in groups (Max 6 LEDs each group), HV Type

Examples of correspondence between main series and variant series 1:

Main series	Variant series 1
Fortimo LED line 2ft 2200lm 865 1R HV3	LBA LineP 2ft 2200lm 865 H5
Fortimo LED line 1ft 650lm 830 3R LV3	LBA AreaP 1ft 650lm 830 L5

Ratings of the series (LBA at T<sub>p</sub> 85°C):

Platform shape (b field on Product Key)	Max DC Current [mA]	Max Power [W]	Max Luminous Flux [lm]	T <sub>p</sub> Max [°C]	CCT [K]	CRI	Efficacy [lm/W]
Area and Line (HV Type)	570	40	3909	85	2700- 6500	80 90	111-149

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<b>Area and Line</b> (HV Type) (*)	650	28					
<b>Line</b> (HV Type) (**)	800	32					
<b>Area and Line</b> (LV Type)	1120	40					
<b>Line</b> (LV Type)	840	34					
<b>Point</b>	1ft: 560 2ft: 560	1ft: 11,2 2ft: 22,4					
<b>Area</b> (5R)	1000 (HV Type) 2000 (LV Type)	72	10200	85	4000, 6500	80	141
Ambient Temperature range: -10 °C ~ +50 °C (*): High flux modules (≥ 2000 lm/ft) (**): Only for models LBA LineX 1ft 2000lm zcc Hhd a							

## Ratings of the series (LBA Slim):

Platform shape (b field on Product Key)	Max DC Current [mA]	Max Power [W]	Max Luminous Flux [lm]	T <sub>p</sub> Max [°C]	CCT [K]	CRI	Efficacy [lm/W]
Slim	570	22,8	2100	95	3000-6500	80 90	92-105
SlimP	600	24	3000	85	2700-6500	80	125
SlimS	525	18	3100	80	2700-6500	80	172
Ambient Temperature range: -10 °C ~ +50 °C							

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Maximum safety ratings of the series:

Platform shape (b field on Product Key)	Supply DC Current [mA]	Power [W]	Number of LEDs	t <sub>c</sub> [°C]	Max. working voltage for basic insulation to mount. surface [V]
Area and Line (HV Type)	570	40	66	90	420
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
2Line	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	1ft: 11,2	1ft: 12	90	420
	2ft: 560	2ft: 22,4	2ft: 24		
Round	4 x 188 mA (Vf tot 4 x 40-80 V)	43,2	80	85	150 (And between adjacent circuits)
(*): High flux modules (≥ 2000 lm/ft) (**): Only for models LBA LineX 1ft 2000lm zcc Hhd a (***) : See Additional information					

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## Variant series 2: Fortimo LED line *p xu y zcc qR egd a*

Where:

- p* = Performance (may be blank or "PR" or "ST" or "VO");
- 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 classification (may be "LF", or "MF", or "HF",);
- 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 73);
- q* = Number of LED's rows (one digit, may be "1" or "2" or "3" or "4" or "6" or "9" or "T");
- e* = Voltage type, may be "HV" for High voltage or "LV" for Low Voltage or "HV/LV" for High voltage or Low voltage compatible);
- g* = Number of LED module's generation (one digit, may be "2" or "3" or "4" or "5");
- 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);

## Variant series 3: LBA *bs xu m jkl nUP zcc qR eh d p a*

Where:

- b* = Platform shape (4-5 characters, may be "Area", "3Line", "2Line", "Line", "Slim", "USlim", "Point", "Round");
- s* = Segment (one or two characters, 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")
- m* = package size of LED chip used, eg 2835, 3030
- j* = 1 digits, Number of LED dies or chips;
- k* = 1-2 digits, voltage of LED chips =>use "LED" instead of LED chips to avoid confusion. Can be optimized now or together with next update?
- l* = LED type, 1character, L for lateral; F for flip chip)
- n* = 1-3 digits, total number of leds used
- z* = CRI of LED divided by 10 (one digit, may be "8" or "9"); (optional)
- cc* = Color temperature of LED divided by 100 (two digits for fixed CCT or six characters for tunable type, may be a value between 27 to 65 for fixed, or "27-865" or "27 865" where z is "8" or "27-965" or "27 965" where z is "9" for tunable.); (optional)
- 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 one or two digits of release year (one or two digits);
- d* = Connector designator (may be blank or "F" = front connector, or "B" = back connector, or "D" = dual entry connector);
- p* = Performance (maybe blank or "CED");
- a* = Commercial suffix for commercial purposes (optional)

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Factories:

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# Annex 1 to License No. ENEC-01127-P9-L-PLUS-UL

Annex of the form of the Mark



15 is the 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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