ADVANCE
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LED Modules

Fortimo LED Strip Performance FlexTune LV5

22in 2200lm

Fortimo LED strip performance FlexTune LV5 modules are the preferred light source for the Advance FlexTune system; which provides new level of design flexibility, control precision, and simplicity in tunable white lighting systems for commerical office, healthcare, hospitality, and education applications.

Fortimo LED strip performance FlexTune LV5 modules comes with a multitude of performance and product advancements that include higher efficacy, higher lumen output, increased lumen maintenance, additional mechanical designs when compared to the the previous generation (LV4). The modules also feature connectors at both ends to enable daisy chaining, and a high (>8kV) ESD rating for easy handling.

Commercial Product Name	12NC
FO Strip PR FT 22in 2200lm 827-865 LV5	929001764613

Features

- Pairs with Advance Xitanium SR FlexTune LED driver to provide: digital wireless control designed to provide precise CCT tuning and dimming control from 2700-6500K
- 3 SDCM color consistency
- 5.5in, 11in, 22in, 23.7 in. options
- (TM21) of L90 36,000 hours
- Connectors at both ends and tight Vf binning
- High Flux density of up to 2000lm/ft
- Narrow width of 20mm

Benefits

- Enables digital tuning of color temperature for tuneable white applications
- High energy efficacy and long lifetime[1]
- Low total cost of ownership
- Slim width and varied lengths provide excellent design flexibility
- 5-year limited system warranty with Advance Xitanium LED drivers[2]
- Specifications enable DLC Premium category[3]

Applications

- Retail
- Hospitality
- Office
- Education

1. Average rated life is based one engineering data testing and probability analysis. The hours are at the B50, L70 point – 50,000 hours life with 70% lumen maintenance at Tc point.
2. View limited warranty at www.signify.com/warranties for details and restrictions.
3. Fortimo LED strip LV5 is not a DesignLights Consortium™ (DLC) qualified product. It is an OEM component that meets certain performance specifications that are geared toward meeting DLC Standard Tier (v4.0) in a fully assembled fixture. The customer is liable for proper design, manufacturing, testing and qualification according to DLC requirements.

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Drive Currents

Paramter at I_{life}	Nominal*	Life**	Max***	Unit
FO Strip PR FT 22in 2200lm 8xx LV5	**308**	650	700	mA

Module Temperatures

Paramter at I_{life}	Nominal*	Life**	Max***	Unit
T_c (case temperature at T_c point)	**45**	85	95	°C

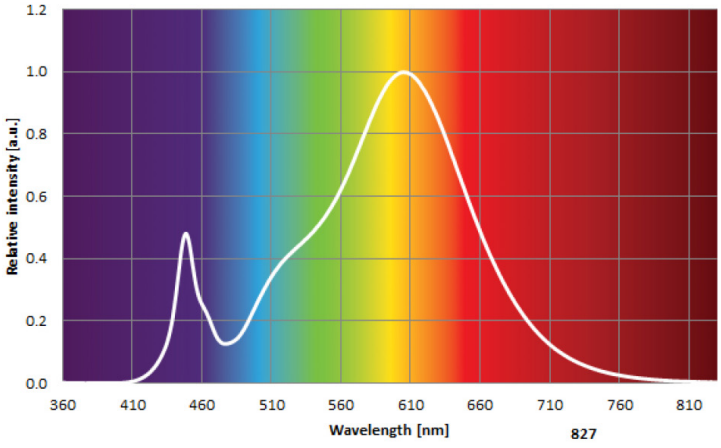
* Nominal value at which typical performance is specified.
** Value at which life time is specified.
*** Maximum value for safe operation, do not operate above this value.

Optical Characteristics – Table per CCT

FO Strip PR FT 22in 2200lm 827 LV5

Parameter	Min. (@ Inom)	Typ. (@ Inom)	Max. (@ Inom)	Unit
Luminous Flux	1890	2040	2190	Lm
Module Efficiency	149	165	182	Lm/W
Correlated Color Temperature (CCT) Target		2700		K
Color coordinates (CIEx, CIEy)		(0.457, 0.408)		-
Color consistency			3	SDCM
CRI	80			-

Operation point	Tc	lm	lm/W
160 mA	45 °C	1090	176
	70 °C	1040	170
	95 °C	990	163
650 mA	45 °C	4050	145
	70 °C	3880	140
	95 °C	3670	133
700 mA	45 °C	4330	142
	70 °C	4150	137
	95 °C	3920	131



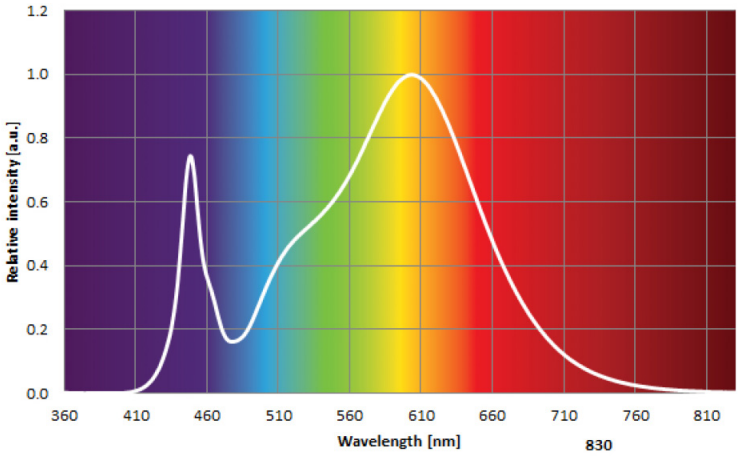
R9>0, Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

Fortimo LED Strip Performance FlexTune LV5 22in 2200lm

Optical Characteristics – Table per CCT

FO Strip PR FT 22in 2200lm 830 LV5				
Parameter	**Min. (@ Inom)**	**Typ. (@ Inom)**	**Max. (@ Inom)**	**Unit**
Luminous Flux	1890	2040	2190	Lm
Module Efficiency	151	168	185	Lm/W
Correlated Color Temperature (CCT) Target		3000		K

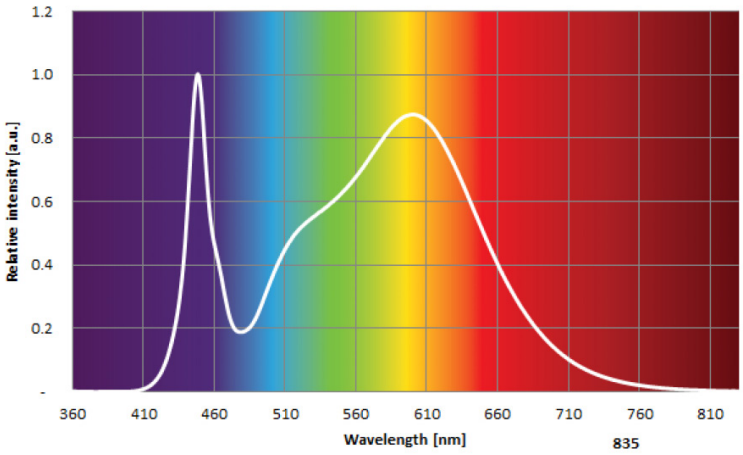
Operation point	Tc	Im	Im/W
160 mA	45 °C	1090	179
	70 °C	1040	173
	95 °C	990	166
650 mA	45 °C	4050	147
	70 °C	3880	142
	95 °C	3670	135
700 mA	45 °C	4330	145
	70 °C	4150	140
	95 °C	3920	133



Using the Advance Xitanium SR Flextune LED driver, set to constant light output. R9>0, Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

FO Strip PR FT 22in 2200lm 835 LV5				
Parameter	**Min. (@ Inom)**	**Typ. (@ Inom)**	**Max. (@ Inom)**	**Unit**
Luminous Flux	1890	2040	2190	Lm
Module Efficiency	153	170	187	Lm/W
Correlated Color Temperature (CCT) Target		3500		K

Operation point	Tc	Im	Im/W
160 mA	45 °C	1090	181
	70 °C	1040	175
	95 °C	990	168
650 mA	45 °C	4050	149
	70 °C	3880	144
	95 °C	3670	138
700 mA	45 °C	4330	147
	70 °C	4150	142
	95 °C	3920	135



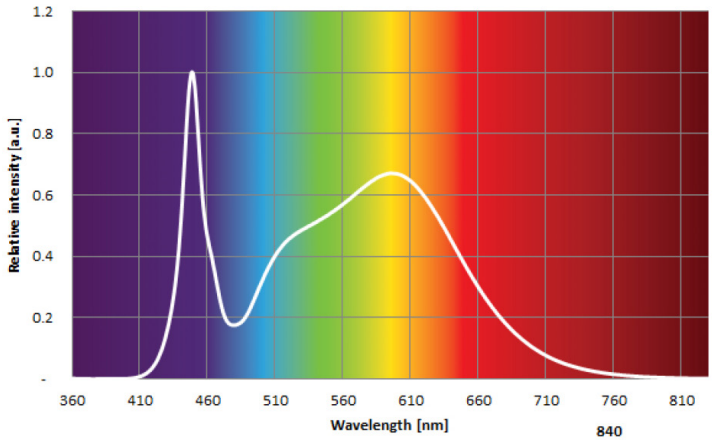
Using the Advance Xitanium SR Flextune LED driver, set to constant light output. R9>0, Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

Fortimo LED Strip Performance FlexTune LV5 22in 2200lm

Optical Characteristics – Table per CCT

FO Strip PR FT 22in 2200lm 840 LV5				
Parameter	**Min. (@ Inom)**	**Typ. (@ Inom)**	**Max. (@ Inom)**	**Unit**
Luminous Flux	1890	2040	2190	Lm
Module Efficiency	155	172	189	Lm/W
Correlated Color Temperature (CCT) Target		4000		K

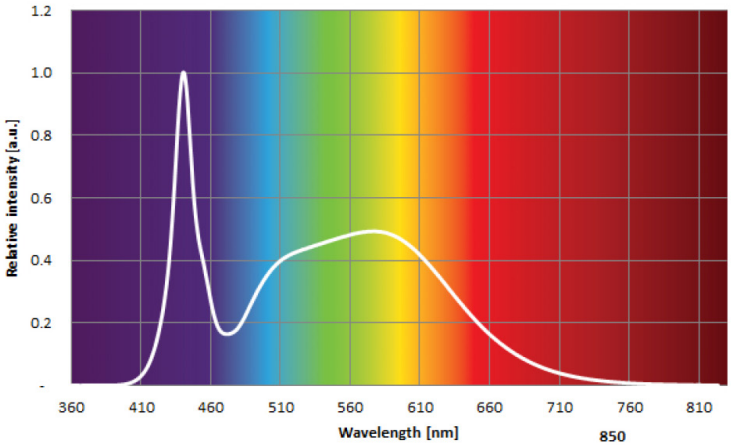
Operation point	Tc	Im	Im/W
160 mA	45 °C	1090	183
	70 °C	1040	177
	95 °C	990	170
650 mA	45 °C	4050	151
	70 °C	3880	146
	95 °C	3670	139
700 mA	45 °C	4330	149
	70 °C	4150	143
	95 °C	3920	137



Using the Advance Xitanium SR Flextune LED driver, set to constant light output. R9>0, Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

FO Strip PR FT 22in 2200lm 850 LV5				
Parameter	**Min. (@ Inom)**	**Typ. (@ Inom)**	**Max. (@ Inom)**	**Unit**
Luminous Flux	1890	2040	2190	Lm
Module Efficiency	158	175	193	Lm/W
Correlated Color Temperature (CCT) Target		5000		K

Operation point	Tc	Im	Im/W
160 mA	45 °C	1090	186
	70 °C	1040	181
	95 °C	990	173
650 mA	45 °C	4050	154
	70 °C	3880	148
	95 °C	3670	142
700 mA	45 °C	4330	151
	70 °C	4150	146
	95 °C	3920	139

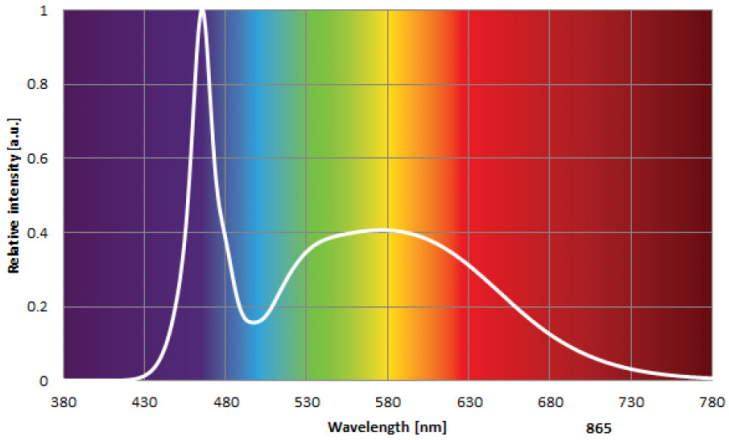


Fortimo LED Strip Performance FlexTune LV5 22in 2200lm

Optical Characteristics – Table per CCT

FO Strip PR FT 22in 2200lm 865 LV5				
Parameter	**Min. (@ Inom)**	**Typ. (@ Inom)**	**Max. (@ Inom)**	**Unit**
Luminous Flux	2040	2200	2370	Lm
Module Efficiency	162	180	198	Lm/W
Correlated Color Temperature (CCT) Target		6500		K
Color coordinates (CIEx, CIEy)		(0.312, 0.325)		-
Color consistency			3	SDCM
CRI	80			-

Operation point	Tc	Im	Im/W
160 mA	45 °C	1170	192
	70 °C	1130	186
	95 °C	1070	178
650 mA	45 °C	4370	158
	70 °C	4190	152
	95 °C	3960	146
700 mA	45 °C	4680	155
	70 °C	4470	150
	95 °C	4230	143



R9>0, Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

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Absolute Ratings

Parameter	Min.	Typ.	Max.	Unit
Current through the LED module (I-max)			700	mA
Working voltage			44	V_{dc}
Isolation breakdown voltage	700			V_{dc}
Ambient Temperature	-20[4]			°C

4. There cannot be any ice/fog/mist on any part of the module surface during the application at -20°C.

System Chain Limits for Same Length Modules

Total length (in)	Total current limit (A)
48	0.9
72	0.6
96	0.44

Please review the design-in guide or contact the Design-in team for further information.

Application Information

Compliance and Approval

UL & cUL - UL8750

Environmental

RoHS / REACH

IP Rating	No IP rating
Overheating Protection	No protection
Luminaire Class	UL Class 2

Estimated Number of Full Thermal Product Cycles @ 25°C Ambient Temperature

Case Temperature Tc [°C]	Amount of Cycles
45	100,000
55	100,000
65	100,000
75	65,000
85	25,000

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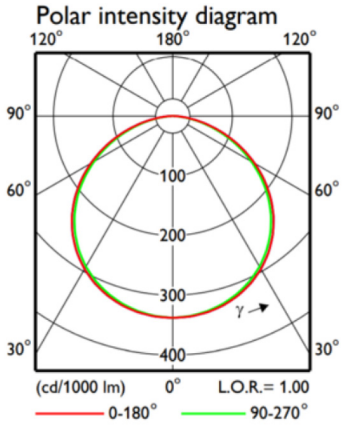
Beam Shape

The Fortimo LED strip generates a Lambertian beam shape, which is a pragmatic starting point for OEMs wishing to design secondary optics.



Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Forward voltage; If = 77mA, Tc = 45°C	39.4	39.9	40.4	V
Thermal power; If = 77mA, Tc = 45°C		5.9		W

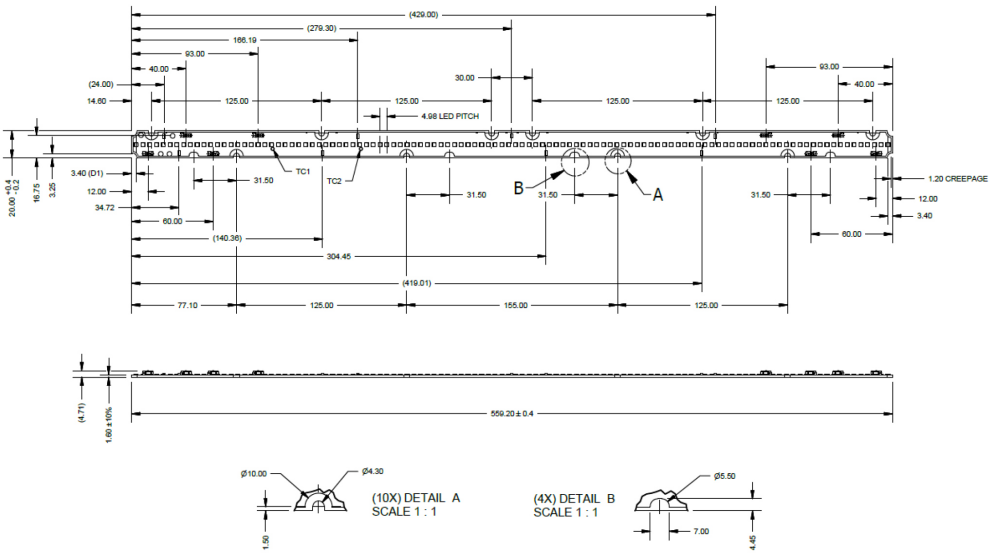
Wiring

Specification Item	Value	Unit	Condition
Input Wire Cross-Section	0.2...0.8	mm^2	Solid
	18...24	AWG	
	0.45...0.7	mm^2	Stranded
	20...22	AWG	
Input Wire Strip Length	4.5...5.5	mm	

Mechanical Characteristics

Specification Item	Min	Typ	Max	Unit
Length	558.8	559.2	559.6	mm
Width	19.8	20.0	20.4	mm
Height Excl. Connector		2.3		mm
Height Incl. Connector		6.3		mm
Warpage			0.75	%

FO Strip PR FT 22in 2200lm xxx LV5



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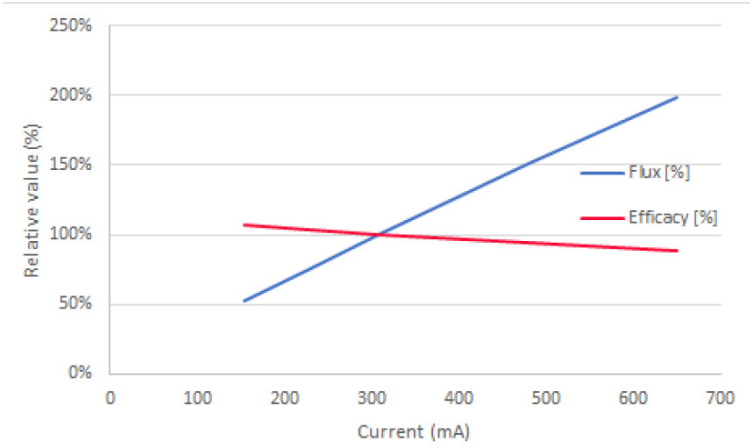
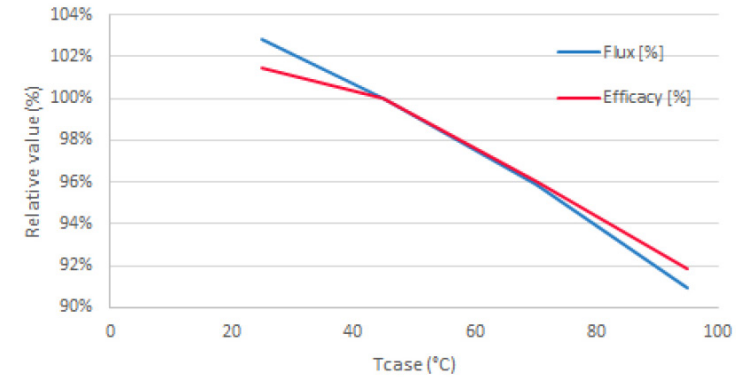
Tuning Information

Flux and Efficacy Vs. Current (at Nominal Temperature)



I [mA]	Flux [%]	Efficacy [%]
154	52%	107%
230	76%	103%
308	100%	100%
480	151%	94%
650	199%	88%

Flux and Efficacy Vs. Tc



Tc [°C]	Flux [%]	Efficacy [%]
95	91%	92%
70	96%	97%
45	100%	100%
25	103%	102%

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Lumen Maintenance Based on Theoretical TM21 Calculations

Operation point	Tc	L70	L80	L90
80% I-nom 62 mA	Tc-nom 45 °C	>50	>50	50
	Tc 70 °C	>50	>50	47
	Tc-life 95 °C	>50	>50	41
I-nom 77 mA	Tc-nom 45 °C	>50	>50	50
	Tc 70 °C	>50	>50	47
	Tc-life 95 °C	>50	>50	41
I-life 163 mA	Tc-nom 45 °C	>50	>50	50
	Tc 70 °C	>50	>50	47
	Tc-life 95 °C	>50	>50	41

Application limited to indoor applications (office/hospitality/educational), indoor warehouse and light industry.

The information presented in this document is not intended as any commercial offer and does not form part of any quotation or contract.

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