



Fortimo LED Line systems 1R/2R/3R/SQ
surpassing fluorescent efficiency at lowest TCO

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PHILIPS



Fortimo LED Line systems - surpassing fluorescent efficiency at lowest total cost of ownership

The second generation of Fortimo LED Line systems is the ideal solution for new luminaires which traditionally would have been equipped with fluorescent tubes. The wide range offers a solution for all the different types of fluorescent luminaires from recessed and surface mounted office luminaires to trunking and profile luminaires in retail to waterproof and high bay luminaires in industrial applications.

This second generation offers: Increased energy efficiency up to 150 lm/W, improved luminaire manufacturability by reduced mounting time of the modules, by usage of less modules, and cables and by enabling automatic wiring, increased flexibility in cabling and extended range with the Square and High Flux.



High quality of white light

The Fortimo LED Line systems offer high quality of white light that enable office compliant luminaires. The homogeneity is even further improved for typical office luminaires with the new Fortimo LED Line Square range. All Fortimo LED Line systems are min CRI 80 to meet the indoor requirements and have a colour consistency as we know from the traditional fluorescent tubes, 3 SDCM.



Smart Systems

The linear driver portfolio developed for the Fortimo LED Line family consists of state of the art, advanced Xitanium drivers, offering the flexibility to set your own specification of LED system. The adjustable output current can be either programmed or set with a resistor. High energy efficiency, up to 92 %, is a characteristic

of the Xitanium driver family, as well as its ability to cope with multiple LED efficacy module upgrades. For the Fortimo LED Line family there will be a linear range of Xitanium drivers available, all capable of driving different multiples of LED Line modules, rising up to 12. For ultimate flexibility and choice these driver types will be available in fixed output, 1-10V and Touch & DALI versions. Non isolated drivers will have the same linear dimensions as typical mainstream T5 drivers. Isolated versions will have a slightly larger dimension.

On top of the different amount of modules driver by one driver, the Xitanium drivers enable the luminaire manufacturer to differentiate on lumen output, efficiency, lifetime per luminaire by just changing the current setting. This high level of flexibility is unique in the market

of LED systems and give the luminaire manufacturer unique chances to differentiate their luminaire while still using Zhaga modules.

The Fortimo LED Line family offers a choice of isolated (low voltage) or non-isolated (high voltage) systems. With non-isolated LED Line systems a Class I luminaire must be made, whereby there is no possibility of accidentally touching the live parts in the system. A non-isolated system has the advantage of being more efficient, cheaper and the driver has shorter dimensions. An isolated system affords the opportunity to make open-louvred Class II luminaires.



Future-proof system

The Fortimo LED Line family falls under the Philips future-proof promise, whereby future LED energy efficiency upgrades do not change the LED Line modules dimensions, lumen output or colour temperature. The design of the Xitanium driver is built around operating windows, which ensure the future proofness of the system. See the Philips LED Line Design-In guide for further information on this on www.philips.com/technology.

The Fortimo LED Line range consists of linear, light LED modules and Xitanium linear drivers, with high energy efficiency and high quality of white light. They are intended for luminaire manufacturers who want to replace linear fluorescent as the light source in many different types of luminaires for general lighting.

Fortimo LED Line portfolio

The Fortimo LED Line portfolio consists of 4 main ranges of products, which have been differentiated by the number of rows of LEDs contained on the module. The range with 1 row of LEDs is identified with 1R; the range with 2 rows of LEDs is identified with 2R; the range with 3 rows of LEDs is identified with 3R and the square range is identified with SQ. All ranges feature a variety of different length modules, lumen packages and colour temperatures. The associated linear Xitanium driver portfolio will include isolated and non isolated drivers, in fixed light output, 1-10V and DALI versions.

Fortimo LED Line 1R system

The Fortimo LED Line 1R system, with 1 row of LEDs on the module, has been designed with high lumen output, up to 2000 lm/ft, which make the 1R range the ideal solution for high application heights. The 1 row of LEDs enables a wide variety of optics and beams from batwing light distribution to tight beams. This makes the 1R range a better choice for the illumination of vertical surfaces or areas where high lighting levels are desired. Typical applications would be luminaires for industry halls, warehousing, supermarkets or indirect lighting in offices.

Fortimo LED Line 2R and 3R systems

The Fortimo LED Line 2R system with 2 rows of LEDs on the module and the Fortimo LED Line 3R with 3 rows of LEDs on the module, have been designed to produce high efficiency, pure white light, for general lighting applications where diffuse lighting on the horizontal plane is key. This range is ideal for incorporating into luminaires for use in general office lighting, where energy efficiency and glare control are of utmost importance.

Fortimo LED Line SQ system

The Fortimo LED Line SQ system with the square outer dimensions is designed to produce high efficiency, pure white and very homogeneous light for recessed, surface mounted and suspended office luminaires.

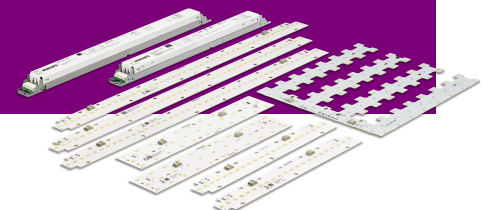
Composition of LED Line systems

A typical Fortimo LED Line system consists of:

- A number of LED Line modules
- 1 Xitanium driver
- Wires from driver to module, between modules and return end wires. Standard bulk wire can be used, so no special cables are provided by Philips

What is new in the Fortimo LED Line Gen 2?

- Increased energy efficiency up to 150 lm/W
- Improved luminaire manufacturability by reduced mounting time of the modules, by usage of less modules, and cables and by enabling automatic wiring
- Increased flexibility in cabling
- Extended range with the Square and High Flux to enable replacement of truly all traditional fluorescent luminaires



office



supermarket



industry

Fortimo LED Line Gen 2

Indoor | Linear light systems

Fortimo LED Line systems are designed to replace fluorescent lighting in new luminaires. The Fortimo LED Line systems are designed to produce pure white light for general lighting applications with high efficiency level, surpassing T5. The non-isolated part of the Fortimo LED Line portfolio is meant for building Class I, closed luminaires, whereby there is no possibility of accidentally touching the live parts in the system. A non-isolated system has the advantage of being more efficient, cheaper and the driver has shorter dimensions. The isolated drivers in the low voltage systems enable European Class II approbation on open louver luminaires.

Benefits:

- Increased energy efficiency
- Improved luminaire manufacturability
- Improved temperature management
- Applicable for all fluorescent luminaires
- Smart systems with Xitanium drivers
- Part of Philips guarantee scheme*

Features:

- Module efficiency up to 150 lm/W
- Quick mounting of modules with only 1 screw
- Introduction of push-in connectors increasing flexibility and enabling usage of bulk wiring and automated wiring
- Higher Tc up to 70 °C
- High quality of white light

Applications:

- General lighting applications in office, retail, industry
- 2R, 3R are ideal for applications requiring diffuse light
- 1R is ideal for applications requiring beam shaping
- This low voltage range enables European Class II approbation

* Guarantee scheme only applicable if the Fortimo LED Lines are ordered in multiples of 32 pcs.

Product specification

High voltage systems		Light output lm	Module efficacy lm/W	Power consumption W	Colour rendering Ra	Colour consistency SDCM	Lumen depreciation B50L70 hrs	Case temp. lifetime C	Order code (EOC)
1R	Fortimo LED Line 1ft 1100 lm 830 1R HV2	1065	132	8.1	80	3	50,000	70	87182917 06397 00
	Fortimo LED Line 1ft 1100 lm 840 1R HV2	1110	137	8.1	80	3	50,000	70	87182917 06410 00
	Fortimo LED Line 2ft 2200 lm 830 1R HV2	2135	132	16.2	80	3	50,000	70	87182917 06915 00
	Fortimo LED Line 2ft 2200 lm 840 1R HV2	2225	138	16.2	80	3	50,000	70	87182917 06977 00
2R	Fortimo LED Line 2ft 1250 lm 830 2R HV2	1165	132	8.6	80	3	50,000	58	87182917 59607 00
	Fortimo LED Line 2ft 1250 lm 840 2R HV2	1250	142	8.6	80	3	50,000	58	87182917 59973 00
3R	Fortimo LED Line 1ft 650 lm 830 3R HV2	605	134	4.6	80	3	50,000	56	87182917 04188 00
	Fortimo LED Line 1ft 650 lm 840 3R HV2	650	143	4.6	80	3	50,000	56	87182917 04416 00
	Fortimo LED Line 1ft 1100 lm 830 3R HV2	1060	143	7.4	80	3	50,000	70	87182917 04539 00
	Fortimo LED Line 1ft 1100 lm 840 3R HV2	1105	150	7.4	80	3	50,000	70	87182917 04638 00

Drivers 1st recommendation			1R systems		2R systems	3R systems		
Non-isolated LED drivers (HV)	Commercial name	Dimensions	LED Line 1ft 1100 lm 1R*	LED Line 2ft 2200 lm 1R*	LED Line 2ft 1250 lm 2R	LED Line 1ft 650 lm 3R	LED Line 1ft 1100 lm 3R	Order code (EOC)
DALI	Xitanium 150W 0.2-0.7 A 300V TD 230V iXt	360x30x21 mm	5, 6, 7, 8, 9, 10, 12, 14, 16, 18	3, 4, 6, 8	4, 5, 6, 8, 10, 12, 14, 16	10, 12, 14, 15, 16, 18, 20, 21, 24, 27, 28, 32	5, 6, 7, 8, 9, 10, 12, 14, 16, 18	8718291 768265 00
	Xitanium 110W 0.2-0.6 A 215V TD 230V iXt	360x30x21 mm	5, 6, 8, 10, 12	3, 4, 6	4, 5, 6, 8, 10, 12	8, 10, 12, 15, 16, 18, 20	5, 6, 8, 10, 12	8718291 736295 00
	Xitanium 75W 0.12-0.4 A 215V TD 230V	360x30x22 mm	4,5,6	2,3	4,5,6	5,6,8,10,12	4,5,6	8718291 684022 00
	Xitanium 36W 0.12-0.4 A 110V TD 230V	360x30x22 mm	2,3	1	2,3	3,4,6	2,3	8718291 684046 00
	Xitanium 17W 0.12-0.4 A 54V TD 230V	360x30x22 mm	1	n/a	1	1,2	1	8718291 98048 00
1-10V	Xitanium 75W 0.2-0.4 A 200V 1-10V 230V	360x30x22 mm	4,5,6	2,3	4,5,6	8,10,12	4,5,6	8718291 63800 00
	Xitanium 36W 0.12-0.4 A 100V 1-10V 230V	360x30x22 mm	2,3	1	2,3	3,4,6	2,3	8718291 87202 00
	Xitanium 17W 0.12-0.4 A 54V 1-10V 230V	360x30x22 mm	1	n/a	1	1,2	1	8718291 98062 00
Fixed Output	Xitanium 75W 0.12-0.4A 220V 230V	280x30x21 mm	4,5,6	2,3	4,5,6	5,6,8,10,12	4,5,6	87186964 40025 00
	Xitanium 36W 0.12-0.4A 115V 230V	280x30x21 mm	2,3	1	2,3	3,4,6	2,3	87186964 40001 00

* Remark: combinations of 1R modules are possible, total length of a chain can be any mix of 1ft and 2ft modules.
For example: total length of 3ft can be a combination of 3x LED Line 1ft, or a LED Line 2ft combined with a LED Line 1ft.

Low voltages		Light output lm	Module efficacy lm/W	Power consumption W	Colour rendering Ra	Colour consistency SDCM	Lumen depreciation B50L70 hrs	Case temp. lifetime C	Order code (EOC)
1R	Fortimo LED Line 1ft 1100 lm 830 1R LV2	1065	132	8.1	80	3	50,000	70	87182917 06298 00
	Fortimo LED Line 1ft 1100 lm 840 1R LV2	1110	137	8.1	80	3	50,000	70	87182917 06335 00
	Fortimo LED Line 2ft 2200 lm 830 1R LV2	2135	133	16.2	80	3	50,000	70	87182917 33027 00
	Fortimo LED Line 2ft 2200 lm 840 1R LV2	2225	138	16.2	80	3	50,000	70	87182917 33249 00
3R	Fortimo LED Line 1ft 650 lm 830 3R LV2	605	134	4.6	80	3	50,000	56	87182917 04454 00
	Fortimo LED Line 1ft 650 lm 840 3R LV2	650	143	4.6	80	3	50,000	56	87182917 04492 00

Drivers 1st recommendation			1R systems		3R systems	
Isolated LED drivers (LV)	Power level	Dimensions	LED Line 1ft 1100 lm 1R	LED Line 2ft 2200 lm 1R	LED Line 1ft 650 lm 3R	Order code (EOC)
DALI	Xitanium 75 W 0.7-2 A 54V TD 230V	425x30x25 mm	3,4,5,6,7,8	2,3,4	5,6,7,8,9,10,11,12	87182912 11884 00
	Xitanium 36 W 0.3-1 A 54V TD 230V	425x30x25 mm	2,3,4	1,2	2,3,4,5,6	87182916 57422 00
1-10V	Xitanium 75 W 0.7-2 A 54V 1-10V 230V	425x30x25 mm	3,4,5,6,7,8	2,3,4	5,6,7,8,9,10,11,12	8718291 696445 00
	Xitanium 36 W 0.3-1 A 54V 1-10V 230V	360x30x25 mm	2,3,4	1,2	2,3,4,5,6	8718291 684060 00
Fixed Output	Xitanium 75 W 0.7-2 A 54V 230V	425x30x25 mm	3,4,5,6,7,8	2,3,4	5,6,7,8,9,10,11,12	8718291 696414 00
	Xitanium 36 W 0.3-1 A 54V 230V	360x30x25 mm	2,3,4	1,2	2,3,4,5,6	8718291 684084 00

Remark: combinations of 1R modules are possible; total length of a chain can be any mix of 1ft and 2ft modules.
For example: total length of 3ft can be a combination of 3x LED Line 1ft, or a LED Line 2ft combined with a LED Line 1ft.

Zhaga



Fortimo LED Line 1R HV2

For further information visit the website:

www.philips.com/technology



Fortimo LED Line High Flux

Indoor | Linear light systems

Fortimo LED Line High Flux systems consist of linear LED modules with high flux, high energy efficiency and a high quality of light. Fortimo LED Line High Flux system are designed to enable LED lighting at higher application heights where more light is needed, such as trunking, battens and high-bay applications in warehouses, factories or big retail stores. These smart systems are completed with the Xitanium iXt drivers offering the flexibility to adjust current settings to differentiate on lumen output, efficacy and lifetime in extreme temperature conditions.

Benefits:

- Enabling LED lighting at higher application heights and high ambient temperatures
- Tunable lumen output, efficacy and lifetime
- Push-in connectors enabling automated wiring
- Five year system warranty

Features:

- High energy efficiency
- Lumen package: 2000 lm per foot
- Wide case temperature (T_c) range from -40 °C to +100 °C
- Excellent color consistency of 3 SDCM

Applications:

- Ideal for higher application heights where more light is needed, such as trunking, battens, high-bay.
- Typical segments are (unconditioned) warehouses, factories, big retail stores or cold storage.

Product specification (HV)

	High voltage	Light output	Module efficacy	Power consumption	Color rendering	Color consistency	Lifetime	Case temp. Lifetime	Order code
		lm	lm/W @ T _c 55 °C	W	CRI	SDCM	hours	°C	EOC
1R	Fortimo LED Line 1ft 2000lm 830 1R HV2	1910	136	14.1	>80	3	>50,000	90	87186964 18482 00
	Fortimo LED Line 1ft 2000lm 835 1R HV2	1950	138	14.1	>80	3	>50,000	90	87186964 18512 00
	Fortimo LED Line 1ft 2000lm 840 1R HV2	2000	142	14.1	>80	3	>50,000	90	87186964 18536 00
	Fortimo LED Line 1ft 2000lm 850 1R HV2	2010	143	14.1	>80	3	>50,000	90	87186964 18550 00
	Fortimo LED Line 2ft 4000lm 830 1R HV2	3820	136	28.2	>80	3	>50,000	90	87186964 18659 00
	Fortimo LED Line 2ft 4000lm 835 1R HV2	3900	138	28.2	>80	3	>50,000	90	87186964 18673 00
	Fortimo LED Line 2ft 4000lm 840 1R HV2	4000	142	28.2	>80	3	>50,000	90	87186964 18697 00
	Fortimo LED Line 2ft 4000lm 850 1R HV2	4020	143	28.2	>80	3	>50,000	90	87186964 18710 00

Non-isolated LED drivers (HV)			1R systems*		
Dimming type	Commercial name	Dimensions	LED Line 1ft 2000 lm 1R**	LED Line 2ft 4000 lm 1R**	Order code (EOC)
DALI	Xitanium 150 W 0.2-0.7 A 300 V TD 230 V iXt	360x30x21 mm	5, 6, 7, 8, 9	3, 4	8718291 768265 00
	Xitanium 110 W 0.2-0.6 A 215 V TD 230 V iXt	360x30x21 mm	4,5,6	2,3	8718291 736295 00
	Xitanium 75 W 0.12-0.4 A 215 V TD 230 V	360x30x22 mm	4,5,6	2,3	8718291 684022 00
	Xitanium 36 W 0.12-0.4 A 110 V TD 230 V	360x30x22 mm	2,3	1	8718291 684046 00
	Xitanium 17 W 0.12-0.4 A 54 V TD 230 V	360x30x22 mm	1	n/a	87182911 98048 00
1-10V	Xitanium 75 W 0.2-0.4 A 200 V 1-10 V 230 V	360x30x22 mm	4,5,6	2,3	87182911 63800 00
	Xitanium 36 W 0.12-0.4 A 100 V 1-10 V 230 V	360x30x22 mm	2,3	1	87182911 87202 00
	Xitanium 17 W 0.12-0.4 A 54 V 1-10 V 230 V	360x30x22 mm	1	n/a	87182911 98062 00
Fixed Output	Xitanium 75W 0.12-0.4A 220V 230V	280x30x21 mm	4,5,6	2,3	87186964 40025 00
	Xitanium 36W 0.12-0.4A 115V 230V	280x30x21 mm	2,3	1	87186964 40001 00

* Remark: combinations of 1R modules are possible, total length of a chain can be any mix of 1ft and 2ft modules.

For example: total length of 3ft can be a combination of 3x LED Line 1ft, or a LED Line 2ft combined with a LED Line 1ft.

** The current 17 W, 36 W and 75 W drivers limit the module up to 1835 lm/ft. The highest configurations 3 and 6 shall be driver at max with 360 mA giving 1670 lm/ft.

	Low voltage	Light output	Module efficacy	Power consumption	Color rendering	Color consistency	Lifetime	Case temp. Lifetime	Order code
		lm	lm/W @ T _c 55 °C	W	CRI	SDCM	hours	°C	EOC
1R	Fortimo LED Line 2ft 4000lm 830 1R LV2	3820	136	28.2	>80	3	>50,000	90	87186964 18574 00
	Fortimo LED Line 2ft 4000lm 835 1R LV2	3900	138	28.2	>80	3	>50,000	90	87186964 18598 00
	Fortimo LED Line 2ft 4000lm 840 1R LV2	4000	142	28.2	>80	3	>50,000	90	87186964 18611 00
	Fortimo LED Line 2ft 4000lm 850 1R LV2	4020	143	28.2	>80	3	>50,000	90	87186964 18635 00

Isolated LED drivers (LV)			1R systems	
Dimming type	Commercial name	Dimensions	LED Line 2ft 4000 lm 1R	Order code (EOC)
DALI	Xitanium 75 W 0.7-2 A 54 V TD 230 V	425x30x25 mm	1,2	87182912 11884 00
	Xitanium 36 W 0.3-1 A 54 V TD 230 V	425x30x25 mm	1	87182916 57422 00
1-10V	Xitanium 75 W 0.7-2 A 54 V 1-10 V 230 V	425x30x25 mm	1,2	8718291 696445 00
	Xitanium 36 W 0.3-1 A 54 V 1-10 V 230 V	360x30x25 mm	1	8718291 684060 00
Fixed Output	Xitanium 75 W 0.7-2 A 54 V 230 V	425x30x25 mm	1,2	8718291 696414 00
	Xitanium 36 W 0.3-1 A 54 V 230 V	360x30x25 mm	1	8718291 684084 00

Zhaga



Fortimo LED Line High Flux Systems

For further information visit the website:

www.philips.com/technology

Fortimo LED Line Square system

Indoor | Linear light systems

The Fortimo LED Line Square systems consist of white light LED modules with square outer dimensions delivering high energy efficiency and high quality of homogeneous light. These smart systems are completed with the Xitanium drivers, which enable easy generation management (future proof) and offer the flexibility to meet various application requirements. The Fortimo LED Line Square systems are designed to replace fluorescent lighting in recessed, surface mounted and suspended office luminaires.

Benefits:

- Enabling a very homogeneous shallow luminaires
- High energy efficiency
- Improved luminaire manufacturability
- Outer dimensions are Zhaga compliant
- Flexible specification due to smart Xitanium drivers
- Part of Philips guarantee scheme*

Features:

- Homogeneous exit windows from luminaires with depth of 4,5 cm
- Module efficiency up to 145 lm/W
- Quick mounting of modules with only 1 screw
- Push-in connectors with high flexibility and enabling usage of bulk wiring and automated wiring
- Tc up to 80 °C
- High quality of white light

Applications:

- Fortimo LED Line Square systems are ideal for office applications where the luminaires require a very homogeneous exit surface window
- Typical applications are recessed, surface mounted and suspended office luminaires
- Ideal replacement in e.g. a 600x600 for 4x14 W, 4x18 W, 3x14 W, 3x18 W, 4x24 W and 4x28 W

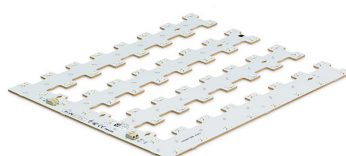
* Guarantee scheme only applicable if the Fortimo LED Lines are ordered in multiples of 44 pcs.

Product specification

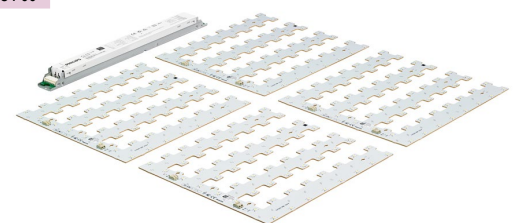
Fortimo LED Lines SQ	Light output lm	Module efficacy lm/W	Power consumption W	Colour rendering Ra	Colour consistency SDCM	Lumen depreciation B50L70 hrs	Case temp. lifetime C	Order code (EOC)
Fortimo LED line 1ft 1250 lm 830 SQ HV/LV	1207	140	8.6	80	3	50,000	80	87182917 02917 00
Fortimo LED line 1ft 1250 lm 840 SQ HV/LV	1250	145	8.6	80	3	50,000	80	87182917 02931 00
Fortimo LED line 1ft 1250 lm 865 SQ HV/LV	1250	145	8.6	80	3	50,000	80	87182917 02955 00

Non-isolated LED drivers (HV)			SQ systems	
Dimming type	Commercial name	Dimensions	LED Line 1ft 1250 lm SQ	Order code (EOC)
DALI	Xitanium 150 W 0.2-0.7 A 300 V TD 230 V iXt	360x30x21 mm	8, 10, 12, 15	8718291 768265 00
	Xitanium 110 W 0.2-0.6 A 215 V TD 230 V iXt	360x30x21 mm	6, 8, 9	8718291 736295 00
	Xitanium 75 W 0.12-0.4 A 215 V TD 230 V	360x30x22 mm	3,4,6,8	8718291 684022 00
	Xitanium 36 W 0.12-0.4 A 110 V TD 230 V	360x30x22 mm	2,4	8718291 684046 00
	Xitanium 17 W 0.12-0.4 A 54 V TD 230 V	360x30x22 mm	1	87182911 98048 00
1-10V	Xitanium 75 W 0.2-0.4 A 200 V 1-10 V 230 V	360x30x22 mm	6,8	87182911 63800 00
	Xitanium 36 W 0.12-0.4 A 100 V 1-10 V 230 V	360x30x22 mm	2,4	87182911 87202 00
	Xitanium 17 W 0.12-0.4 A 54 V 1-10 V 230 V	360x30x22 mm	1	87182911 98062 00
Fixed Output	Xitanium 75 W 0.12-0.4 A 220 V 230 V	280x30x21 mm	3,4,6,8	87186964 40025 00
	Xitanium 36 W 0.12-0.4 A 115 V 230 V	280x30x21 mm	2,4	87186964 40001 00

Isolated LED drivers (LV)			SQ systems	
Dimming type	Commercial name	Dimensions	LED Line 1ft 1250 lm SQ	Order code (EOC)
DALI	Xitanium 75 W 0.7-2 A 54 V TD 230 V	425x30x25 mm	4,5,6,7,8	87182912 11884 00
	Xitanium 36 W 0.3-1 A 54 V TD 230 V	425x30x25 mm	2,3,4	87182916 57422 00
1-10V	Xitanium 75 W 0.7-2 A 54 V 1-10 V 230 V	425x30x25 mm	4,5,6,7,8	87182916 96445 00
	Xitanium 36 W 0.3-1 A 54 V 1-10 V 230 V	360x30x25 mm	2,3,4	87182916 84060 00
Fixed Output	Xitanium 75 W 0.7-2 A 54 V 230 V	425x30x25 mm	4,5,6,7,8	87182916 96414 00
	Xitanium 36 W 0.3-1 A 54 V 230 V	360x30x25 mm	2,3,4	87182916 84084 00



Fortimo LED Line Square SQ HV-LV



Fortimo LED Line Square SQ HV-LV System

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www.philips.com/technology



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