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Philips Advance LED Drivers – Versatility Delivered

LED Driver Categories

Long-lasting and low maintenance, LED-based light sources are an excellent solution for all lighting applications. For optimal performance, these solutions require reliable drivers matching the long lifetime of the LEDs. The Philips Advance Xitanium LED Driver portfolio offers a range of products specially designed to operate LED solutions for a variety of lighting applications such as office, retail, industrial and outdoor as well as meet wide variety of customer needs, but they can all provide certain common benefits.

Including:

- Reliable and consistent operation
- High efficiency — >90% in some cases
- Greater than 0.9 PF and Less than 20% THD
- Greater than 50,000 hrs⁴ lifetime
- 5-year limited warranty¹
- ROHS compliance²
- Safety approbations (UL, CSA, CE, ENEC, PSE, SELV or CQC)

Based on the features that each driver has to offer the Philips Advance Xitanium LED Drivers can be classified into three main categories: Fixed, Dimmable and Programmable.

Fixed

These are designed to meet the basic needs of LED lighting. Available in either dedicated input voltage or Intellivolt options, these drivers can address wide variety of output current and power requirements.

Dimmable

Along with the benefits of fixed drivers, these drivers are designed to address the growing demand for controllability and flexibility. The Adjustable Output Current (AOC) feature enables operation of various LED configurations from different LED manufacturers and offers “future proof” solutions for new LED generations. There are specific dimmable versions enabling use of lighting controls to help increase energy saving through a wide variety of protocols, such as 0-10V, Step-Dim, Trailing Edge and Leading Edge. In most of the cases the indoor drivers also integrate a 12V output for active cooling and NTC feedback for LED module temperature protection.

Additional Benefits with Dimmable LED Drivers Include:

- Wide variety of dimming interfaces (0-10V, Phase Cut, Step-Dim)
- Helps you address code requirements for energy efficient buildings
- Offers fixture design flexibility with the AOC feature
- Models offering features such as fan output and module temperature protection



See footnote on page 1-33.

Xitanium LED ELECTRONIC DRIVERS

Philips Advance LED Drivers – Versatility Delivered

LED Driver Categories

Programmable

Optimized to meet the ever evolving needs of today's LED lighting customers, Philips Advance Xitanium Programmable LED Drivers are a one-stop solution for the varying power needs of industrial high-bay, office, or retail lighting. Offering an unparalleled level of flexibility, these drivers provide a large number of features which can be customized based on the desired functionality of the luminaire design with simple programming interface. With multiple choices for current output levels, module temperature control settings and a network-ready DALI interface, this is an easily integrated driver solution. Luminaire designers and manufacturers are also able to streamline logistics without compromising on performance.

Additional Benefits with Programmable LED Drivers Include:

- Robust programmable solution that offers ultimate design flexibility with a reliable long lifetime
- Reduced SKU complexity and simplified logistics management (one driver to serve many needs)
- Multiple dimming options provide energy savings and can help reduce light pollution and CO₂ impact
- Easily programmable user interface for onsite customization of driver requirements
- Optimized life expectancies of up to 100,000 hours³
- Driver programmability provides features for the ever-evolving improvements in LED efficacy, removing the need to design-in a new LED driver as technology improves or changes

See footnotes on page 1-33.

Current Product Portfolio Positioning

	Point	Linear	Outdoor
	<ul style="list-style-type: none"> • Programmable solution • Reduced SKU complexity • Programmable Features: CLO, AOC, MTP 	<ul style="list-style-type: none"> • Programmable solution • Reduced SKU complexity • Programmable Features: CLO, AOC, MTP 	<ul style="list-style-type: none"> • Programmable solution • Reduced SKU complexity • Programmable Features: CLO, AOC, MTP, OTL, AST, Dimming type (0-10V, DALI, AmpDim or Dynadimmer)
	<ul style="list-style-type: none"> • Dimming interface options • AOC • MTP • Fan out for active cooling 	<ul style="list-style-type: none"> • Dimming interface options • AOC • MTP 	<ul style="list-style-type: none"> • 0-10V dimming • AOC • MTP
	<ul style="list-style-type: none"> • Fixed output current • 50k Hr. Lifetime⁴ • Connectors • Compact Housing • Reliability 	<ul style="list-style-type: none"> • Fixed output current • 50k Hr. Lifetime⁴ • Connectors • Linear Housing • Reliability 	<ul style="list-style-type: none"> • Fixed output current • 50k Hr. Lifetime (min)⁴ • High surge capability • Reliability

AOC: Adjustable Output Current, OTL: Over The Life,
MTP: Module Temperature Protection, AST: Adjustable Startup Time
CLO: Constant Light Output.

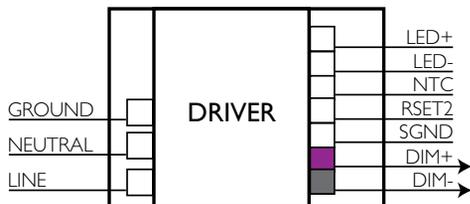
Adjustable Output Current (AOC)

AOC is a means of setting the secondary drive current of the LED driver to a prescribed level. This level is determined by the OEM during fixture design in order to create desired illumination levels, and is not intended for field modification. The desired current level is set by adding an external resistance across two terminals identified on the driver as "RSET" and SGND." The data sheets for applicable drivers include a table and graph that correlate desired drive current to a specific resistance value. Additional specifications on resistor type is also included. Resistors with >0.25W and >20V are typically acceptable.

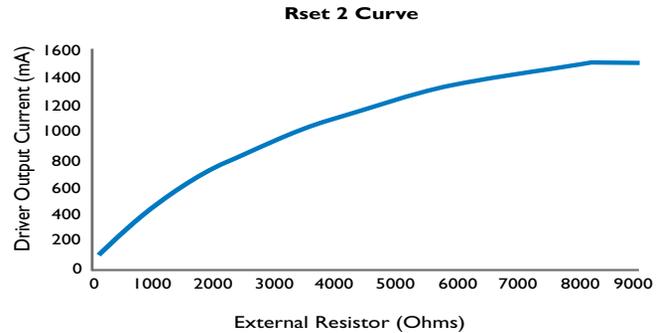
The resistor is furnished by the OEM and can be connected separately or incorporated elsewhere in the system (e.g., on the LED module). Two different current vs. resistance curves are used in these drivers, referred to as RSET1 and RSET2. RSET1 has a maximum current rating of 700mA (no resistance across the specified terminals). RSET2 has a maximum current rating of 2000mA (no resistance across the specified terminals).

AOC enables:

- Flexibility to select specific drive currents to optimize fixture performance
- Ability to consolidate SKUs and use one driver for multiple fixtures
- Ability to upgrade light engines and use the same driver, hence reducing qualification time and cost



Typical AOC application: 54W Linear Driver catalog number XI054CI50V054DNTI



Rset (Ohms)	Current (mA)
100	100
120	111
150	124.5
180	138.2
220	154.6
270	176.4
330	203.7
390	228.3
470	261.0
560	296.5
680	340.2
820	392.1
1000	452.1
1200	514.9
1500	602.3
1800	684.2
2200	779.7
2700	883.5
3300	992.7
3900	1085.5
4700	1191.9
5600	1273.0
6800	1402.1
8200	1503.1
>8200	1503.1

Xitanium LED ELECTRONIC DRIVERS

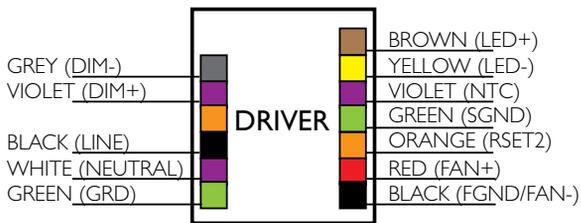
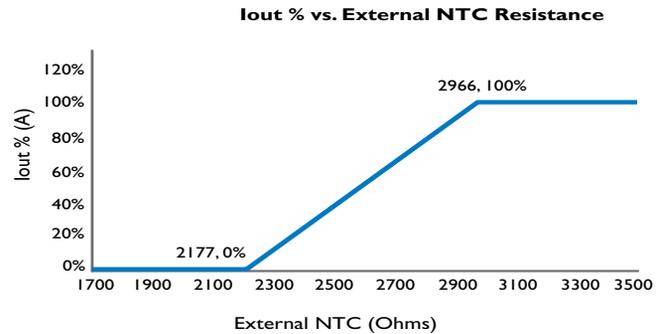
Module Temperature Protection (MTP)

The Module Temperature Protection feature allows the OEM to design the LED system to reduce drive current in the event that the module overheats, hence reducing heating and potentially avoiding failure. This feature is enabled by adding an external Negative Temperature Coefficient (NTC) across two terminals identified on the LED driver as "NTC" and "SGND." When activated in application — by reaching the minimum temperature appropriate for the given NTC — drive current begins reducing according to the temperature-current curve of the specific NTC. The data sheets for applicable drivers include a graph illustrating current output vs. NTC resistance, and also typically include an example graph of module temperature vs. current output using a specific NTC.

Module Temperature Protection enables:

- Enhanced protection of the LED system from misapplication (e.g., day-burning)
- Longer potential life expectancy of the LED system

Typical MTP application: 50W Downlight Driver catalog number XI050CI00V054DNMI



Remote Mounting

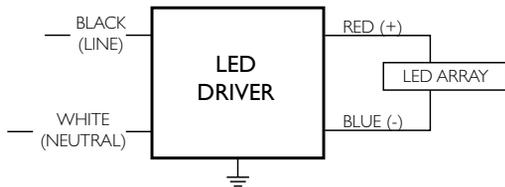
Most LED drivers are utilized in self-contained fixtures where the driver is included within the fixture, which is considered an electrical enclosure. Some applications call for remote mounting of the driver whereby the driver is in a separate electrical enclosure and not within the same enclosure/fixture as the LED light source. In these applications, it is typically acceptable to have the driver mounted remotely but care is required to ensure that voltage drop is minimized to not impact performance of the LED system.

Data sheets for most LED drivers include a table showing recommended maximum remote mounting distances for various wire gauges. In general, larger gauge wires will enable longer maximum distance, and higher LED drive currents will have lower maximum distances. Published maximum wiring distances are typically based on full load and longer distances are usually practical for lower load levels (consult your local sales representative for complete information).

**Typical remote mounting application:
100W Outdoor Driver catalog number
LEDINTA0024V4IFO**

Maximum Wiring Distance (at full load)

Wire Size (AWG)	Distance (feet)
26	3
24	4
22	7
20	11
18	18
16	29
14	46
12	71
10	120



Xitanium LED ELECTRONIC DRIVERS

Catalog Number Explanation

X	I	075	C070	V105	C	N	Y	1	M
<p>Packaging: M = Midpack B = Bulk Pack I = Individual Pack</p> <p>Version Control: 1 = Version 1 X = Version X 2 = Version 2</p> <p>Enclosure Designation</p> <p>Features: P = Programming N = Non-Programming</p> <p>Fixed or Dimming: F = Fixed C = Dimming A = AOC Only, no M = 0-10, DALI, X = TE (Trailing Z = TE (Trailing Edge) D = Dimming (0-10V) iso- dimming, no NTC PLS (Programmable Edge) & 0-10V & DALI (0-10V) isolated lated without N = Dimming (0-10V) LumiStep) Y = TE (Trailing R = TE (Trailing Edge) with AOC+NTC AOC+NTC Non Isolated T = Trailing Edge (Triac Edge), Touch & DALI & LE (Leading Edge) L= DALI(TD) only</p> <p>Max Voltage: Examples: 054 = 54V 012 = 12V 280 = 280V</p> <p>Max Current: Examples: 070 = 700mA 035 = 350mA 105 = 1.05A 053 = 530mA</p> <p>Max Power: Examples: 060 = 60W 025 = 25W 300 = 300W</p> <p>Input Voltage: I = 120-277 (UL, CSA) U = 120-240V E = 220-240V (CE, ENEC) Europe & APR A = 220-240V (CQC, CE) R = 120V (UL, CSA) H = 347-480V (UL, CSA) J = 100-242V (PSE) Japan V = 277V (UL, CSA) G = 120-200-230-277 (UL, CE, ENEC, CQC) K = 200-242V (PSE) Japan</p>									
<p>General X= Xitanium LED Driver</p>									

Most date codes are stamped on the back of the driver (opposite the label side). The date code is part of a larger group of numbers and letters, which call out the various codes for the factory where the driver was manufactured. Depending upon which Philips Lighting factory manufactured the driver, the date stamp can vary slightly, in terms of its position on the driver and the number sequence.

For plastic case drivers the date code will appear as a label

693P0MMA
53301707

The date code is the 5th day, of the 33rd week of 2001, stamped on the back of the ballast.

06127M50
F2104571

The date code is the 127th day of 2006 stamped on the back of the ballast.

Xitanium LED ELECTRONIC DRIVERS

Xitanium LED driver Tc points

The lifetime of LED drivers depends on the temperature during operation. This means there is a relationship between the Tc point on the LED driver and its lifetime. With this in mind, several diagrams have been made to aid in pinpointing the general area of the Tc point on the driver(s). Each driver has a designated diagram. See below to identify where the Tc point is.

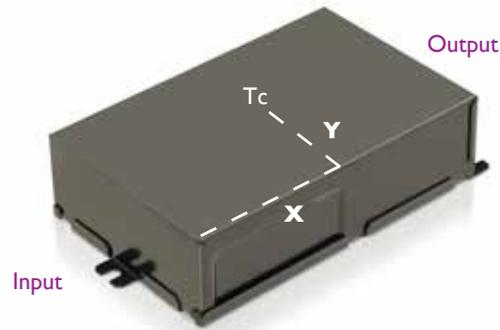
F Can

Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
LED Driver 48W/2.0A-24V 0-10V Intellivolt	LEDINTA0024V20DLO	42	19	(+/-) 5
LED Driver 48W/2.0A-24V Intellivolt	LEDINTA0024V20FLO	42	19	(+/-) 5
LED Driver 72W/3.0A-24V 0-10V Intellivolt	LEDINTA0024V30DLO	42	19	(+/-) 5
LED Driver 72W/3.0-24V Intellivolt	LEDINTA0024V30FLO	42	19	(+/-) 5
LED Driver 100W 4.1A-24V Intellivolt	LEDINTA0024V41FLO	42	19	(+/-) 5
LED Driver 100W/4.1A-24V/DIM Intellivolt	LEDINTA0024V41DLO	42	19	(+/-) 5
Xitanium Int 75W Programmable Sxt	929000702302	80	19	(+/-) 5
Xitanium Int 150W Programmable Sxt	929000702202	80	19	(+/-) 5
Xitanium 75W 0.35-0.70 GL Prog+SD Sxt	929000704913	80	19	(+/-) 5
Xitanium 150W 0.35-0.70 GL Prog+SD Sxt	929000705113	80	19	(+/-) 5
LED Driver 100W 0.7/0.5/.35A 120-277	LEDINTA700C140F3O	80	19	(+/-) 5
LED Driver 115W/0.40A-280V 347-480V	LEDHCNA0400C280FO	80	19	(+/-) 5
LED Driver 150W 0.35A Intellivolt	LEDINTA0350C425FO	80	19	(+/-) 5
LED Driver 150W 350mA 425V Fixed 347-480V	LEDHCNA0350C425FO	80	19	(+/-) 5
LED Driver 150W 350mA 425V 0-10V 347-480V	LEDHCNA0350C425DN	80	19	(+/-) 5
Xitanium 150W 0.35A 425V 0-10V 120-277V	LEDINTA0350C425DO	80	19	(+/-) 5
Xitanium 150W 0.53A 0-10V OTD	LEDINTA0530C280DO	80	19	(+/-) 5
Xitanium 150W 0.53A 280V 0-10V 347-480V	LEDHCNA0530C280DN	80	19	(+/-) 5
LED Driver 150W 0.70A Intellivolt	LEDINTA0700C210FO	80	19	(+/-) 5
Xitanium 150W/700mA-210V 347-480V OTD	LEDHCNA0700C210FO	80	19	(+/-) 5
LED Driver 150W/ 700mA 210V 0-10V 347-480V	LEDHCNA0700C210DN	80	19	(+/-) 5
LED Driver 150W/0.70A DIM Intellivolt	LEDINTA0700C210DO	80	19	(+/-) 5
Xitanium 150W 1.05A 140V 0-10V 120-277V	LEDINTA1050C140DO	80	19	(+/-) 5
Xitanium 150W 1.5A 100V 0-10V 120-277V	LEDINTA1500C100DO	80	19	(+/-) 5
Xitanium 100W 24V 4.1A 347-480 OTD	LEDHCNA0024V41FLO	35	19	(+/-) 5
LED Driver 100W 24V 4.1A 0-10V 347-480V	LEDHCNA0024V41DLO	35	19	(+/-) 5



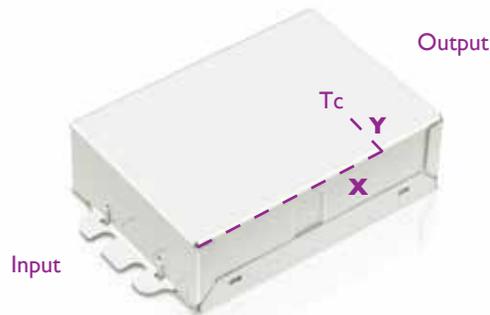
Xtanium LED ELECTRONIC DRIVERS

H Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
Xtanium 150W 0.20-0.35A GL Programmable + Sxt	XI150C035V425MPHI	70	44	(+/-) 5

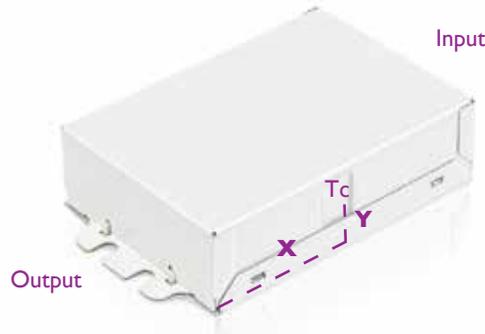
M2 Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
Xtanium 25W 0.2-0.5A 54V TE/0-10V 120V	XR025C050V054XPMI	84	12	(+/-) 5
Xtanium 25W 0.3-1.0A 36V TE/0-10V 120V	XR025C100V036XPMI	84	12	(+/-) 5
Xitanium 25W 0.3-1.0A 36V TD 120V	XR025C100V036LPMI	84	12	(+/-) 5
Xtanium 25W 0.3-1.0A36V 0-10V 277V	XV025C100V036DPMI	84	12	(+/-) 5
Xtanium 25W 0.2-0.5A 54V 0-10V 277V	XV025C050V054DPMI	84	12	(+/-) 5
Xtanium 50W 0.3A-1A 54V 0-10V 277V	XR050C100V054XPMI	84	12	(+/-) 5
Xtanium 50W 0.3-1A 54V 0-10V 277V	XV050C100V054DPMI	84	12	(+/-) 5
Xtanium 60W 0.3-1A 80V TE/0-10V 120V	XR060C100V080XPMI	84	12	(+/-) 5

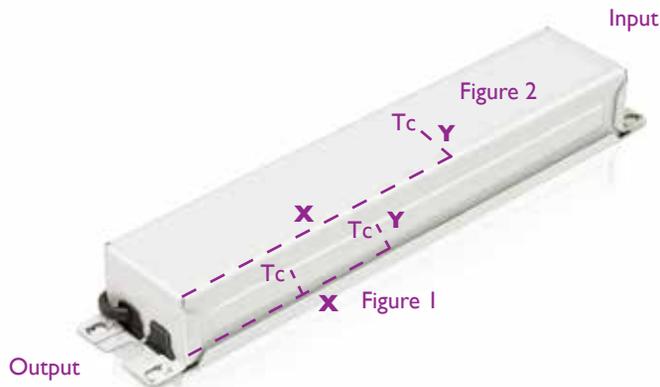
Xitanium LED ELECTRONIC DRIVERS

M5 Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
LED Driver 120-277V 0-10V DIM	913701213402	58	15	(+/-) 5
LED Driver 23W 520MA-60V/DIM Intellivolt	LEDINTA0520C60DB	58	15	(+/-) 5
LED Driver 45W 520MA-80V/DIM Intellivolt	LEDINTA0520C80DB	58	15	(+/-) 5
LED Driver 50W 1.0A-60V/DIM Intellivolt	LEDINTA1000C60DB	58	15	(+/-) 5

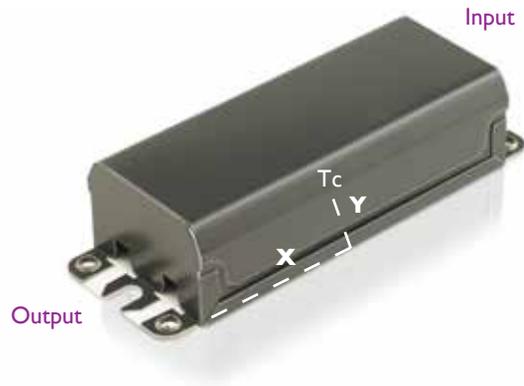
S Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)	Figure
LED Driver 67W/2.8A-24V Intellivolt	LEDINTA0024V28FO	42	14	(+/-) 5	1
Xitanium 58W 1.6A 36V 120-277 Outdoor	LEDINTA1600C36FO	42	14	(+/-) 5	1
LED Driver 53W/2.2A-24V Intellivolt	LEDINTA0024V22FO	42	14	(+/-) 5	1
LED Driver 60W 12V Intellivolt	LEDINTA0012V50FO	42	14	(+/-) 5	1
LED Driver 77W/3.2A-24V Intellivolt	LEDINTA0024V32FO	42	14	(+/-) 5	1
LED Driver 100W 4.1A-24V Intellivolt	LEDINTA0024V41FO	81	14	(+/-) 5	1
LED Driver 60W /12V 120V 60HZ	LED120A0012V50F	118	14	(+/-) 5	2
LED Driver 80W/24V 120V 60HZ	LED120A0024V33F	118	14	(+/-) 5	2

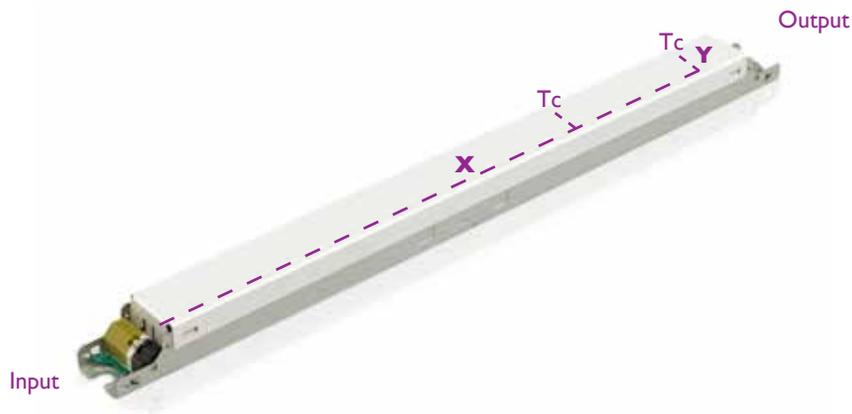
Xtanium LED ELECTRONIC DRIVERS

Y Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
Xtanium 75W 0.20-0.70A GL-Y I-10V SxT	XI075C070V105CNYI	39	21	(+/-) 5
Xtanium 75W 0.20-0.70A GL AOCM SxT	XI075C070V105DNYI	39	21	(+/-) 5

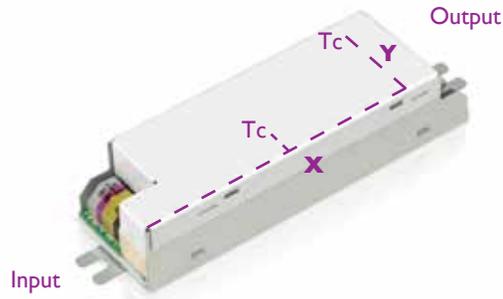
T Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
Xtanium 48W 2.0A 24V 120-277V 0-10V DIM	LEDINTA2000C24DO	257.5	12.5	(+/-) 5
Xtanium 75W 0.7-2.0A 54V TE/0-10V INT	XI075C200V054XPTI	302.5	12.5	(+/-) 5
Xtanium 75W 0.7-2.0A 54V DALI 120-277V	XI075C200V054YPTI	302.5	12.5	(+/-) 5

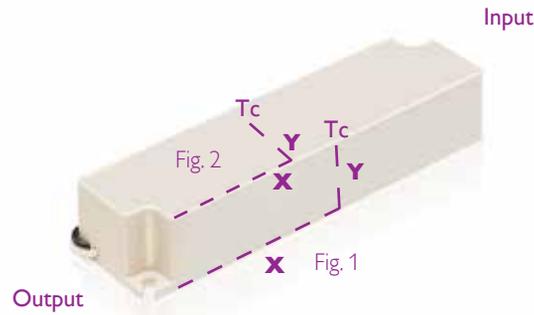
Xtanium LED ELECTRONIC DRIVERS

L Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)
Xtanium 25W 0.3-1.0A 36V TE/0-10V INT	XI025CI00V036XPLI	92	30	(+/-) 5
Xtanium 50W 0.3-1A 54V TE/0-10V I20-277	XI050CI00V054XPLI	60	15	(+/-) 5

V Can



Description	Driver Number	X (mm)	Y (mm)	Tolerance (mm)	Figure
LED Driver 10W/0.35A-28V I20V Outdoors	LEDI20A0350C28FO	36	12	(+/-) 5	1
LED Driver 12W/12V I20V 60HZ	LEDI20A0012V10F	36	12	(+/-) 5	1
LED Driver 17W/0.7A I20V 60Hz Outdoors	LEDI20A0700C24FO	36	12	(+/-) 5	1
LED Driver 20W/0.7A/DIM I20V Outdoors	LEDI20A0700C28DO	36	12	(+/-) 5	1
LED Driver 20W/0.7A 277V Outdoors	LED277A0700C28FO	36	12	(+/-) 5	1
Xtanium 21W 0.70A 30V 0-10V DIM 277V	LED277A0700C30DO	48	25	(+/-) 5	2

Outdoor LED Drivers

Xitanium LED Drivers for outdoor applications are available in three types:

Fixed Output

These drivers perform the basic necessary function for outdoor application, setting the standard for reliability and performance needed for outdoor lighting.

Dimming

These drivers include 0-10V dimming as well as Adjustable Output Current (AOC) and Module Temperature Protection (MTP), typically. These features help address the growing demand for controllability and flexibility. 0-10V dimming allows the lighting system to be used with various controls to help increase energy savings. AOC enables the OEM to help increase performance of the fixture and provides flexibility for use in multiple fixtures. MTP further enhances life and reliability in the event of misapplication.

Programmable

These drivers offer unparalleled flexibility with the ultimate feature set managed through a programmable interface. This allows the OEM to create a fixture portfolio to meet specific needs for a wide range of applications, using a minimum number SKUs to reduce complexity and simplify logistics.

Xitanium LED Drivers for outdoor applications are specifically designed for use in:

- Area
- Roadway
- Parking garage
- Gas station canopy
- Wallpacks
- Floodlights

These drivers are available in wattages of 10W to 150W for hard-wired integration into outdoor luminaires for the most rugged applications. They operate to specification under wide temperature and electrical ranges to ensure reliability. Specific features of this series are:

- Standard drive currents 350, 530, 700, 1050 and 1500mA
- UL Class 1 or Class 2
- Input voltage ranges of 120-277V or 347-480V
- Surge protection
- High efficiency for maximum payback
- High reliability for low maintenance costs



Xitanium LED ELECTRONIC DRIVERS

Outdoor Drivers

Catalog #	Max Output Power (W)	Output Voltage (V)	Output Current (Amps)	Input Volts	UL/ CSA Class 2	Dimming					Features					Dim./ Wiring Dia.	Max Tcase (°C)
						0-10V	TE	LE	Step Dim	DALI	AOC	MTP	CLO	Fan	Others		
Fixed																	
LED120A0350C28FO	10	2.8 - 28	0.35	120	•											V-Can/1	90
LED120A0012V10F	12	12	1	120	•											V-Can/1	90
LED120A0700C24FO	17	2.8 - 24	0.7	120	•											V-Can/1	90
LED120A0700C28FO	20	2.8 - 28	0.7	120	•											V-Can/1	90
LED277A0700C28FO	20	2.8 - 28	0.7	277	•											V-Can/1	90
LED120A0024V14FO	34	2.8 - 24	1.4	120	•											J-Box/1	90
LED120A0024V18FO	40	2.8 - 24	1.75	120	•											J-Box/1	90
LEDINTA0024V20FLO	48	24	0.10 - 2.0	120 - 277	•											F-Can Bump/1	85
LEDINTA0024V22FO	53	24	2.2	120 - 277	•											S-Can/1	90
LEDINTA1600C36FO	58	9 - 36	1.6	120 - 277	•											S-Can/1	90
LED120A0012V50F	60	12	0.8 - 5.0	120	•											S-Can/1	90
LEDINTA0012V50FO	60	12	0.10 - 5.0	120 - 277	•											S-Can/1	90
LEDINTA0024V28FO	67	24	0.10 - 2.8	120 - 277	•											S-Can/1	90
LEDINTA0024V30FLO	72	24	0.10 - 3.0	120 - 277	•											F-Can Bump/1	85
LEDINTA0024V32FO	77	24	3.2	120 - 277	•											S-Can/1	90
LED120A0024V33F	80	24	0.8 - 3.3	120	•											S-Can/1	90
LEDHCNA0024V41FLO	100	3.5 - 24	0.10 - 4.16	347 - 480	•											F-Can Bump/1	85
LEDINTA0024V41FLO	100	3.5 - 24	0.10 - 4.16	120 - 277	•											F-Can Bump/1	85
LEDINTA0024V41FO	100	3.5 - 24	0.10 - 4.16	120 - 277	•											S-Can/1	90
LEDINTA700C140F3O	100	60 - 140	0.35/0.53/ 0.70	120 - 277												F-Can Bump/6	80
LEDHC-NA0350C425FO	150	120 - 425	0.35	347 - 480												F-Can Bump/1	80
LEDINTA0350C425FO	150	120 - 425	0.35	120 - 277												F-Can Bump/1	80
LEDHC-NA0700C210FO	150	60 - 210	0.7	347 - 480												F-Can Bump/1	80
LEDINTA0700C210FO	150	60 - 210	0.7	120 - 277												F-Can Bump/1	90
Dimmable																	
LED120A0700C28DO	20	10 - 28	0.7	120	•	•										V-Can/2	90
LED277A0700C30DO	21	15 - 30	0.7	277	•	•										V-Can/2	80
XI040C070V056CNJ1	40	12 - 54	0.7	120 - 277	•	•										J-Can/2	80
XI040C120V035CNJ1	40	12 - 36	1.2	120 - 277	•	•										J-Can/2	80
LEDINTA0024V20DLO	48	24	2	120 - 277	•	•										F-Can Bump/2	85
XI050C150V038CNH1	50	19 - 38	1.5	120 - 277	•	•										H-Can/2	80
LEDINTA0024V30DLO	72	24	3	120 - 277	•	•										F-Can Bump/2	85
XI075C053V140CNY1	75	71 - 143	0.53	120 - 277		•										Y-Can/2	80
XI075C053V140DNY1	75	71 - 143	0.10 - 0.53	120 - 277		•				•						Y-Can/3	80
XI075C070V105CNY1	75	54 - 107	0.7	120 - 277		•										Y-Can/2	80

Xitanium LED ELECTRONIC DRIVERS

Outdoor Drivers

Catalog #	Max Output Power (W)	Output Voltage (V)	Output Current (Amps)	Input Volts	UL/ CSA Class 2	Dimming					Features					Dim./ Wiring Dia.	Max Tcase (°C)
						0-10V	TE	LE	Step Dim	DALI	AOC	MTP	CLO	Fan	Others		
XI075C070V105DNY1	75	54 - 107	0.10 - 0.70	120 - 277		•					•					Y-Can/3	80
929000708003	75	54 - 107	0.10 - 0.70	120 - 277		•					•					Y-Can/3	80
XI075C105V070CNY1	75	36 - 72	1.05	120 - 277		•										Y-Can/2	80
XI100C150V038CNH1	100 (2x50)	19 - 38	1.5	120 - 277	•	•									•	H-Can/4	80
LEDINTA0024V41DLO	100	15 - 24	4.1	120 - 277	•	•										F-Can Bump/2	85
LEDHCNA0024V41DLO	100	15 - 24	4.1	347 - 480	•	•										F-Can Bump/2	85
LEDINTA0350C425DO	150	120 - 425	0.35	120 - 277		•										F-Can Bump/2	80
LEDHCNA0350C425DN	150	120 - 425	0.35	347 - 480		•										F-Can Bump/2	80
LEDINTA0530C280DO	150	120 - 280	0.53	120 - 277		•										F-Can Bump/2	80
LEDHCNA0530C280DN	150	120 - 280	0.53	347 - 480		•										F-Can Bump/2	80
LEDINTA0700C210DO	150	60 - 210	0.7	120 - 277		•										F-Can Bump/2	90
LEDHCNA0700C210DN	150	60 - 210	0.7	347 - 480		•										F-Can Bump/2	80
LEDINTA1050C140DO	150	40 - 140	1.05	120 - 277		•										F-Can Bump/2	80
LEDINTA1500C100DO	150	30 - 100	1.5	120 - 277		•										F-Can Bump/2	80
Programmable																	
929000708803	40	29 - 57	0.10 - 0.70	120 - 277		•				•	•	•	•		•	J-Can/5	80
929000710303	40	38 - 76	0.10 - 0.53	120 - 277		•				•	•	•	•		•	J-Can/5	80
929000702302	75	80 - 152	0.35 - 0.70	120 - 277		•				•	•	•	•		•	F-Can Flat/5	80
929000704913	75	80 - 152	0.35 - 0.70	120 - 277		•				•	•	•	•		•	F-Can Flat/5	80
929000710103	75	54 - 107	0.10 - 0.70	120 - 277		•				•	•	•	•		•	Z-Can/5	80
929000708903	75	36 - 75	0.10 - 1.05	120 - 277		•				•	•	•	•		•	F-Can Flat/5	80
929000710403	100	94 - 189	0.10 - 0.53	120 - 277		•				•	•	•	•		•	Z-Can/5	80
929000708703	100	71 - 143	0.10 - 0.70	120 - 277		•				•	•	•	•		•	Z-Can/5	80
XI150C035V425MPH1	150	212 - 425	0.2 - 0.35	120 - 277		•				•	•	•	•		•	H-Can/5	80
929000702202	150	125 - 280	0.35 - 0.70	120 - 277		•				•	•	•	•		•	F-Can Flat/5	80
929000705113	150	125 - 280	0.35 - 0.70	120 - 277		•				•	•	•	•		•	F-Can Flat/5	80
929000709003	150	70 - 148	0.10 - 1.05	120 - 277		•				•	•	•	•		•	F-Can Flat/5	80

Xitanium LED ELECTRONIC DRIVERS

Outdoor Drivers Dimensions

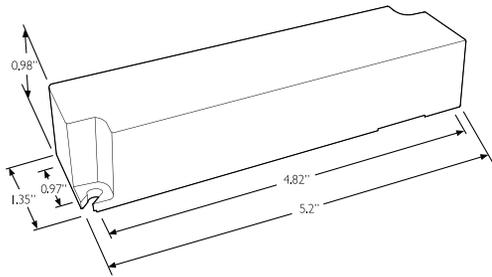


Fig. V-can Outdoor

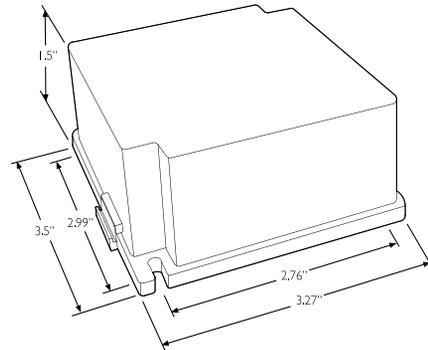


Fig. J-Box Outdoor

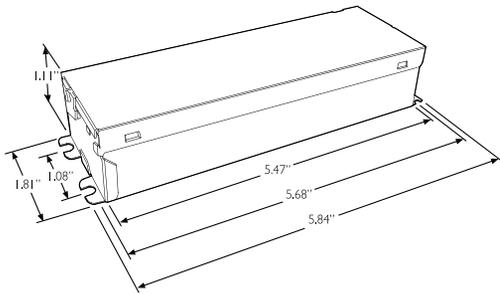


Fig. J-can

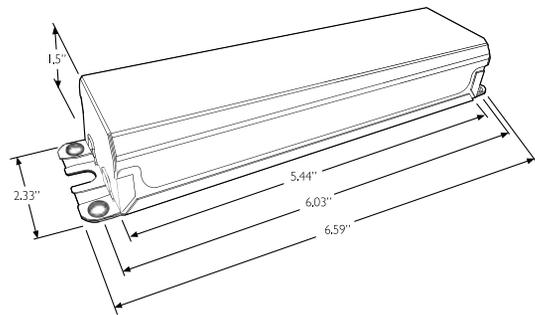


Fig. Y-can

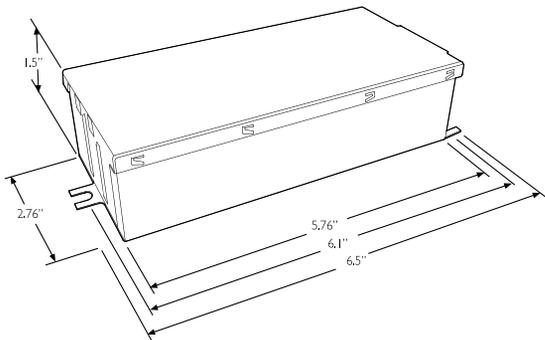


Fig. Z-can Outdoor

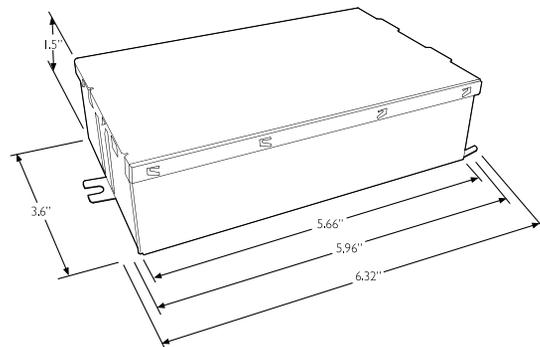


Fig. H-can

Outdoor Drivers Dimensions

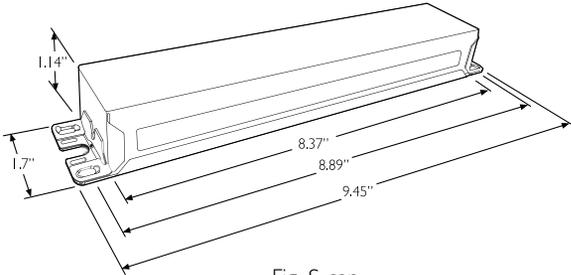


Fig. S-can

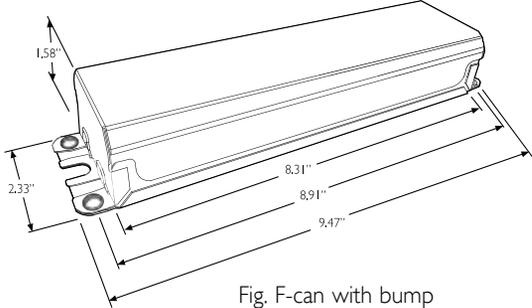


Fig. F-can with bump

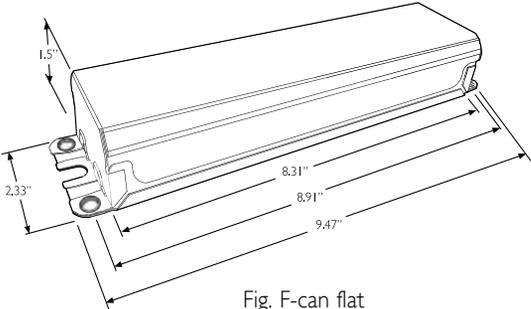
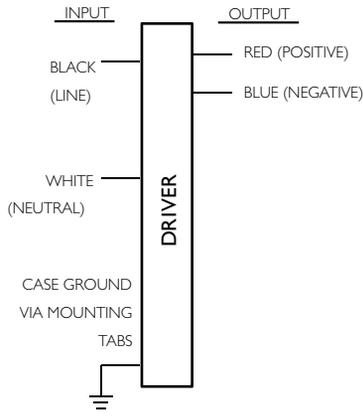


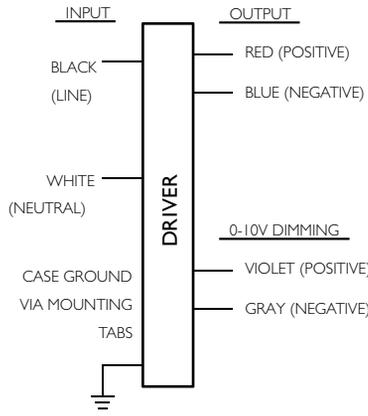
Fig. F-can flat

Xtanium LED ELECTRONIC DRIVERS

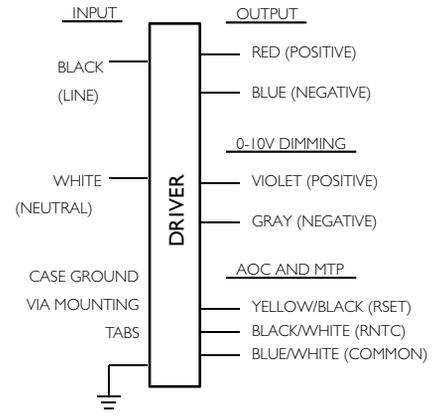
Outdoor Drivers Wiring Diagrams



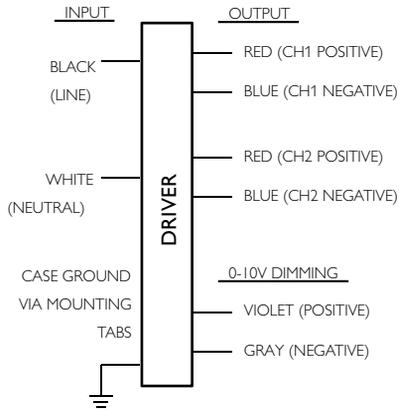
Diag. 1



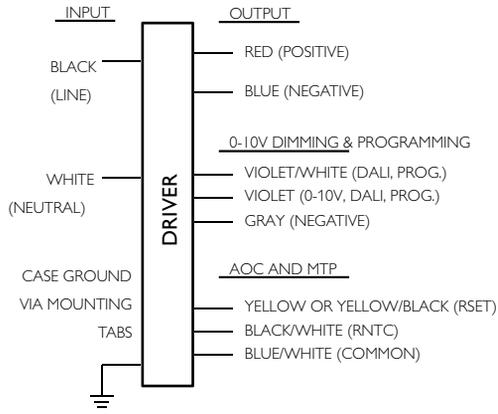
Diag. 2



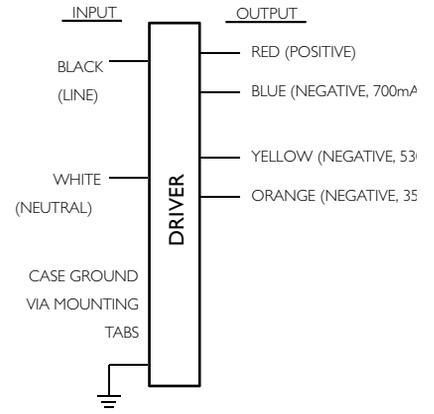
Diag. 3



Diag. 4



Diag. 5



Diag. 6

Downlight/Track Drivers

Xitanium LED Drivers for downlight and track applications are available in three types:

Fixed Output

These drivers perform the basic necessary function for the application, setting the standard for reliability and performance expected for commercial lighting.

Dimming

These drivers include 0-10V or leading/trailing-edge dimming to integrate into common dimming systems used in commercial applications. Dimming enables increased energy savings and helps facilitate worker comfort.

Programmable

These drivers offer unparalleled flexibility with the ultimate feature set managed through a programmable interface. This allows the OEM to create a fixture portfolio to meet specific needs for a wide range of applications, using a minimum number SKUs to reduce complexity and simplify logistics.

Xitanium LED Drivers for downlight and track applications are specifically designed for use in:

- Office
- Retail
- Hospitality
- Meeting rooms

These drivers are available in wattages of 4W to 50W for hard-wired integration into recessed downlights and track light fixtures. The available form factors are ideally suited for these applications: The familiar Smart-Mate housing for junction-box mounting in downlights and slim housings for incorporation into track housings. Specific features of this series are:

- Adjustable output current to set output current to desired level
- Wide operating windows
- UL Class 1 or Class 2
- Input voltage range of 120-277V
- High efficiency for maximum payback
- High reliability for low maintenance costs

Xitanium LED ELECTRONIC DRIVERS

Downlight/Track Drivers

Catalog #	Max Output Power (W)	Output Voltage (V)	Output Current (Amps)	Input Volts	UL/ CSA Class 2	Dimming					Features					Dim./ Wiring Dia.	Max Tcase (°C)
						0-10V	TE	LE	Step Dim	DALI	AOC	MTP	CLO	Fan	Others		
Fixed																	
LEDUNIA0350C12F	4	2.8 - 12	0.35	120 - 230	•											8W/1	69
LEDUNIA0700C12F	8	2.4 - 12	0.7	120 - 230	•											8W/1	69
LED120A0024V07F	17	24	0.10 - 0.70	120	•											V-Can Indoor/13	80
LED120A0700C24F	17	2.8 - 24	0.7	120	•											V-Can Indoor/13	85
LED120A1400C24F	34	2.8 - 24	1.4	120	•											J-Box Indoor/21	85
Dimmable																	
XI020V070V030RNP1	20	15 - 30	0.4/0.5/0.6/0.7	120 - 277	•		•	•			•					P-Can/13	80
XI025C070V036DNM1	25	18 - 36	0.2 - 0.7	120 - 277	•	•					•	•				M5-Can/17	90
XI025C100V036DNM1	25	18 - 36	0.3 - 1.0	120 - 277	•	•					•	•				M1-Can/15	90
LEDINTA0520C60DB	30	25 - 56	0.35 - 0.52	120 - 277	•	•					•	•				M5-Can/17	77
913701213402	39	20 - 56	0.20 - 0.70	120 - 277	•	•					•	•		•		M5-Can/16	90
LEDINTA0520C80DB	40	40 - 77	0.35 - 0.52	120 - 277	•	•					•	•				M5-Can/17	74
XI050C100V054DNM1	50	27 - 54	0.3 - 1.0	120 - 277	•	•					•	•		•		M2-Can/14	75
LEDINTA1000C60DB	50	25 - 48	0.7 - 1.05	120 - 277	•	•					•	•				M5-Can/17	86
XI050C105V052DNM1	50	25 - 52	0.7 - 1.05	120 - 277	•	•					•	•				M5-Can/17	86
Programmable																	
XV025C100V036DPM1	25	18 - 36	0.3 - 1.0	277	•	•					•	•	•	•		M2-Can/18	75
XR025C100V036XPM1	25	18 - 36	0.3 - 1.0	120	•	•	•				•	•	•	•		M2-Can/18	75
XR025C100V036LPM1	25	18 - 36	0.3 - 1.0	120	•					•	•	•	•	•		M2-Can/19	75
XI025C100V036XPL1	25	18 - 36	0.3 - 1.0	120 - 277	•	•	•				•	•	•	•		25W LH-Can/20	75
XV050C100V054DPM1	50	27 - 54	0.3 - 1.0	277	•	•					•	•	•	•		M2-Can/18	75
XR050C100V054XPM1	50	27 - 54	0.3 - 1.0	120	•	•	•				•	•	•	•		M2-Can/18	75
XI050C100V054XPL1	50	27 - 54	0.3 - 1.0	120 - 277	•	•	•				•	•	•	•		50W LH-Can/20	75

Xitanium LED ELECTRONIC DRIVERS

Downlight/Track Drivers Dimension

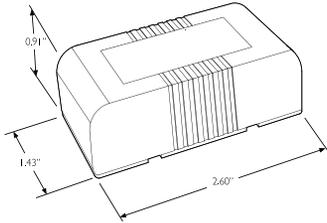


Fig. 8W

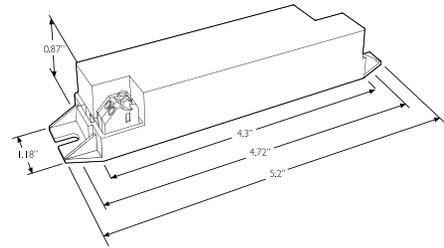


Fig. V-can Indoor

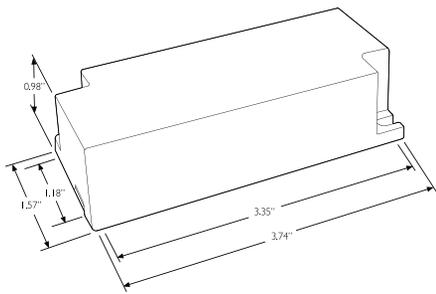


Fig. P-can

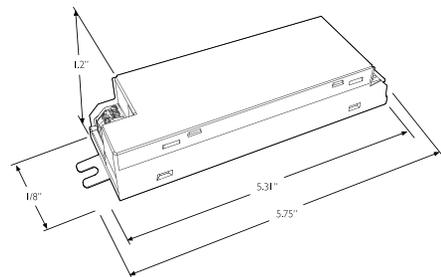


Fig. 25W LH-can

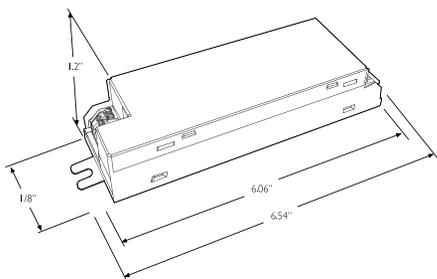


Fig. 50W LH-can

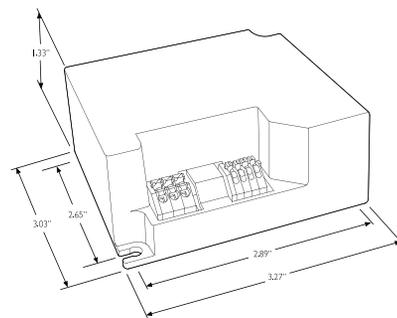
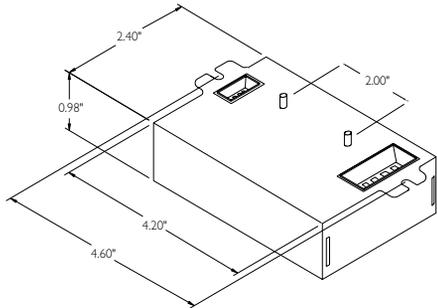


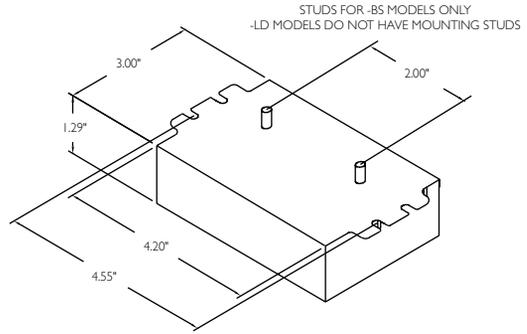
Fig. J-Box Indoor

Xitanium LED ELECTRONIC DRIVERS

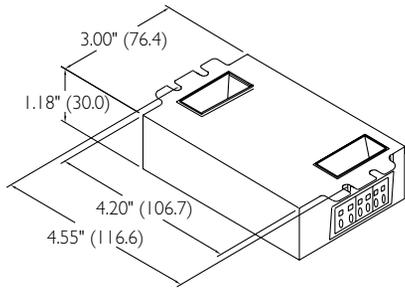
Downlight/Track Drivers Dimension



Size 1 Enclosure
Studs for -BS models only

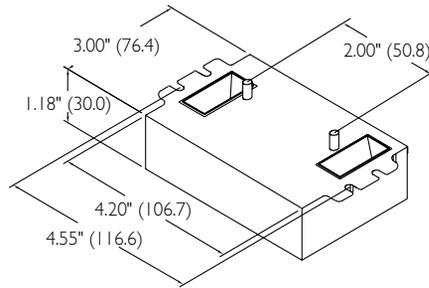


Size 2 Enclosure



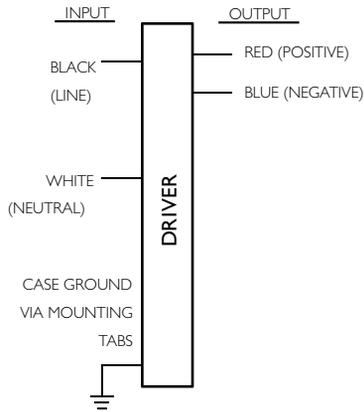
-LD

Size 5 Enclosure



-BS

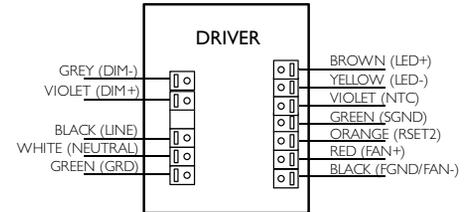
Downlight/Track Drivers Wiring Diagrams



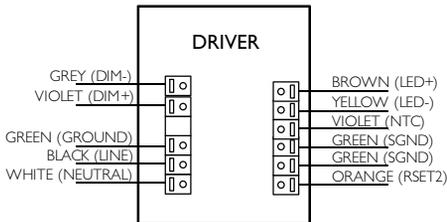
Diag. 1



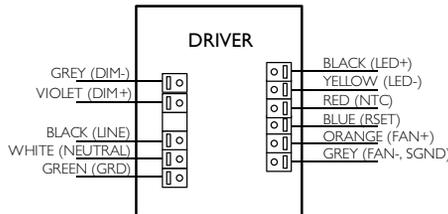
Diag. 13



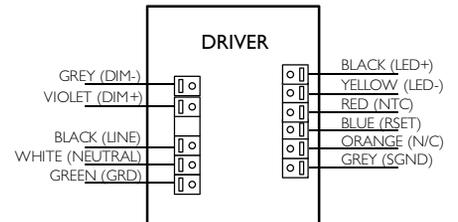
Diag. 14



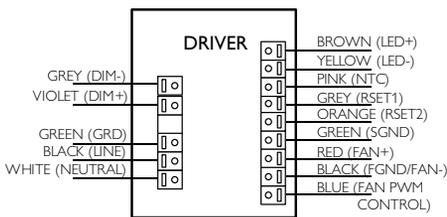
Diag. 15



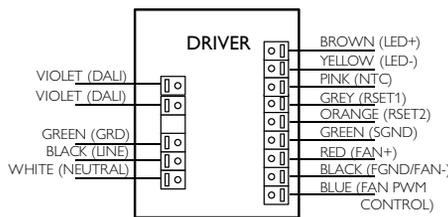
Diag. 16



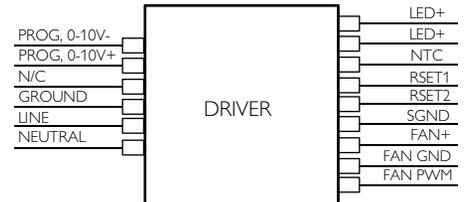
Diag. 17



Diag. 18



Diag. 19



Diag. 20

Xtanium LED ELECTRONIC DRIVERS

Linear LED Drivers

Xtanium LED Drivers for linear applications applications are available in three types:

Fixed Output

These drivers perform the basic necessary function for the application, setting the standard for reliability and performance expected for commercial lighting.

Dimming

These drivers include 0-10V or leading-edge dimming to integrate into common dimming systems used in commercial applications. Dimming enables increased energy savings and helps facilitate worker comfort.

Programmable

These drivers offer unparalleled flexibility with the ultimate feature set managed through a programmable interface. This allows the OEM to create a fixture portfolio to meet specific needs for a wide range of applications, using a minimum number SKUs to reduce complexity and simplify logistics.

Xtanium LED Drivers for linear applications are specifically designed for use in:

- Office
- Retail
- Hospitality
- Meeting rooms

These drivers are available in wattages of 48W to 75W or hard-wired integration into linear fluorescent-style fixtures (troffers). The form factor is perfectly suited to these applications and enables quick time to market by utilizing mechanical aspects familiar in traditional fluorescent fixtures. Specific features of this series are:

- Adjustable output current to set output current to desired level
- Wide operating windows
- UL Class 2
- Input voltage range of 120-277V
- High efficiency for maximum payback
- High reliability for low maintenance costs

Linear Drivers

Catalog #	Max Output Power (W)	Output Voltage (V)	Output Current (Amps)	Input Volts	UL/ CSA Class 2	Dimming					Features					Dim./ Wiring Dia.	Max Tcase (°C)
						0-10V	TE	LE	Step Dim	DALI	AOC	MTP	CLO	Fan	Others		
Dimmable																	
LEDINTA2000C24DO	48	12 - 24	1.0 - 2.0	120 - 277	•	•					•					T-425/7	80
XI054C150V054DNT1	54	27 - 54	0.7 - 1.5	120 - 277	•	•					•	•				T-360/8	85
XI054C150V054SNT1	54	27 - 54	0.7 - 1.5	120 - 277	•			•			•	•				T-360/9	85
XR054C150V054RNT1	54	27 - 54	0.7 - 1.5	120	•						•	•				T-360/10	85
XV054C150V054RNT1	54	27 - 54	0.7 - 1.5	277	•						•	•				T-360/10	85
Programmable																	
XI075C200V054XPT1	75	27 - 54	0.7 - 2.0	120 - 277	•	•					•	•	•			T-425 /11	75
XI075C200V054YPT1	75	27 - 54	0.7 - 2.0	120 - 277	•					•	•	•	•			T-425 /12	75

Linear Drivers Dimension

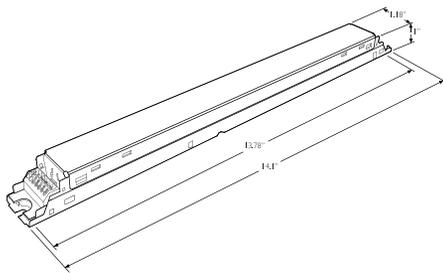


Fig. T-360

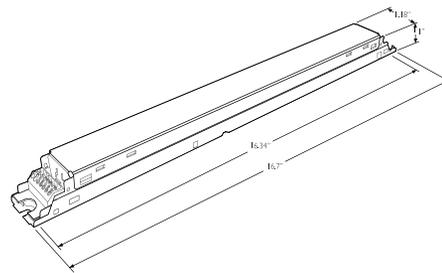


Fig. T-425

Xitanium LED ELECTRONIC DRIVERS

Linear Drivers Wiring Diagrams



Diag. 7



Diag. 8



Diag. 9



Diag. 10



Diag. 11



Diag. 12

Accessories

Philips Outdoor Surge Protection Devices

Rapidly increasing acceptance of LED-based light sources for outdoor applications brings with it new challenges on system durability. In order to ensure the lifetime of the solution, it is vital to protect the light engine against surges on the mains line. Even the most robust LED drivers offer a limited level of surge protection, not enough to defend against high surges, e.g. (indirect) lightning strikes. Applications such as road lighting and parking lots are especially susceptible. The Surge Protection Devices from Philips offer a reliable solution for protecting all outdoor power supplies from excessive surge voltages.

Why not make a LED driver with built-in surge protection?

In theory it is possible to design a driver with sufficient spacings internally to survive a 10kV surge voltage from lines to case (ground) without clamping the voltage so that hi-pot testing is not affected. This concept was implemented on some electronic HID control gear (Xtreme range). However, in a typical LED system, the LEDs are mounted to a heat sink which is connected to earth ground for thermal reasons. A common mode surge voltage of 10kV would break over the insulation between the LEDs and the heat sink in most installations and, therefore, voltage clamping is required. The typical breakdown of the LEDs to the heat sink is in the order of 2kV, so clamping below this level is necessary even if the driver is designed to handle the higher voltages. This is why a driver design that can handle 10kV surges does not help the system pass 10kV. The voltages must be clamped to a level that the LED-to-heat sink insulation can safely withstand to prevent LED failure. Also, not clamping the common mode surges would put a large burden on the wiring inside the fixture as everything would need to be designed to withstand 10kV (wires, connectors, wire nuts, etc.). An external surge protection device provides the necessary clamping eliminating the need for high voltage surge protection within the driver and at the same time protects the LEDs from common voltage surges.

Xitanium LED ELECTRONIC DRIVERS

Accessories

Philips Outdoor Surge Protection Devices

Philips 277V Surge Protection Device

The Philips Surge Protection Device (SPD) 277V is the ideal solution to the challenge of using LEDs in Outdoor lighting. The SPD clamps the voltage at the terminals of the luminaire, protecting the complete system against multiple nominal surges of up to 10kV / 5kA. For maximum-level of protection, the SPD can withstand a single hit of 10kV / 10kA. The device also eliminates the need for all luminaire internal components – wires, connectors, wire nuts, etc. – to be designed to withstand 10kV. Essential for LED systems installed in high-risk areas, the advantages of using the SPD are not limited only to LED systems. The product can be used in any new or existing lighting solution, regardless of technology.



Benefits

- Help maximize the lifetime value of outdoor lighting applications
- No down-time due to calamities (storms, lightning strikes, etc.)
- Lower maintenance cost due to fewer failures
- Easy to apply in new or existing installations
- Peace of mind on product performance

Features

- Resistant to peaks and surges of up to 10kA / 10kV
- Suitable for European Class I and Class II luminaires
- Xtreme standard: Long lifetime, robust protection against moisture, vibration and temperature extremes
- Can be used with all lighting technologies

Philips 277V Surge Protection Device

Type	Line voltage (V)	Protection level Up (L-N) (kV)	Protection level Up (LN-earth) (kV)	Open circuit voltage (kV)	Nominal surge current IN (kA)	Number of surges, nominal current (Comm/Diff. mode)
Surge Protection Device 277V	100-277	≤ 1.6	≤ 2.5	10	1	100 / 100
					3	100 / 100
					5	45 / 35

Type	Maximum surge current I _{MAX} (kA)	Number of surges, maximum current	Isolation classification	Lifetime @ T _c life, 90% survivals (hrs)	Suitable for Outdoor use?
Surge Protection Device 277V	10	Comm. mode: 1 Diff. mode: 1	Suitable for Class I & Class II	100,000	Yes

General product characteristics

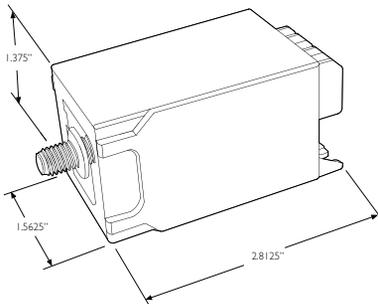
T ambient (°C): -40 to +70 °C

Tcase life (°C): +70 °C

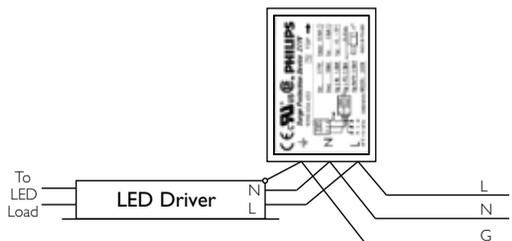
Compliances and approvals

ANSI/UL 1449

Dimensions



Mounting screw type: M8



Ordering & packing data

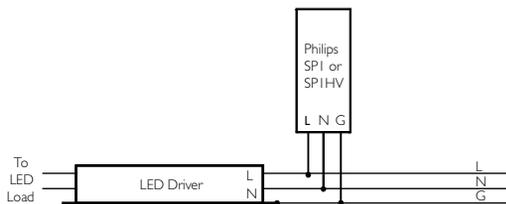
Type	I2NC	EOC	Minimum order quantity
Surge Protection Device 277V	9290 006 65202	8718291 161806 00	10

Xitanium LED ELECTRONIC DRIVERS

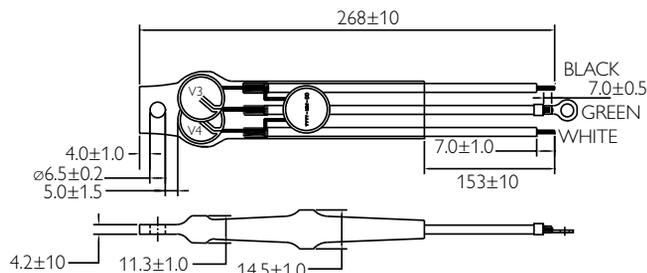
SPI

Surge Protection Device

Adapted to LED outdoor lighting, the Philips SPI surge protection device provides single phase protection for line/neutral, line/ground and neutral/ground in accordance with IEEE C62.41 2002 C High. The SPI small size corresponds to the current design requirements for the new technology luminaires, like a LED light engine in outdoor lighting.



Catalog#:	SPI
Voltage Input:	120V-277V (+/- 10%)
Frequency:	50Hz-60Hz
Maximum Continuous RMS Voltage AC:	320V
Maximum Energy:	430 Joules
Maximum Peak Current:	10kA (8/20µs standard wave)
Wiring:	14 Gauges stranded wires, 105°C, 600V
Wire Connections:	Black and white: 12mm skinned and thin plated Green: 12mm skinned with terminal malt
Mounting hole:	5.5mm
Ambient Temperature (Operating):	-55°C to 85°C

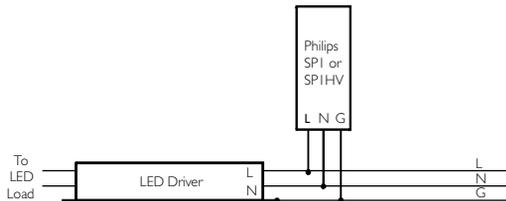


Xitanium LED ELECTRONIC DRIVERS

SPIHV

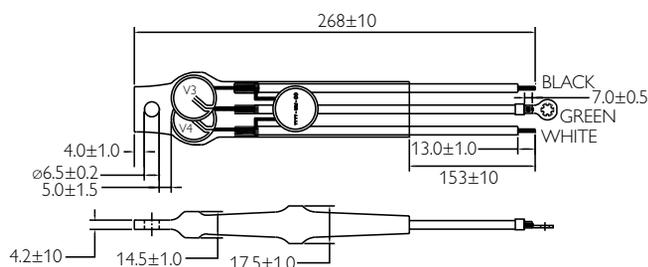
Surge Protection Device

Adapted to LED outdoor lighting, the Philips SPIHV surge protection device provides all phases protection for line/neutral, line/ground and neutral/ground in accordance with IEEE C62.41.2-2002 C High. The SPIHV small size corresponds to the current design requirements for the new technology luminaires, like a LED light engine in outdoor lighting.



Catalog#:	SPIHV
Voltage Input:	347V-480V (+/- 10%)
Frequency:	50Hz-60Hz
Maximum Continuous RMS Voltage AC:	520V
Maximum Clamping Voltage (8/20 μ s):	1500V
Maximum Energy:	570 Joules
Maximum Peak Current:	10kA (8/20 μ s standard wave)
Wiring:	14 Gauges stranded wires, 105°C, 600V
Wire Connections:	Black and white: 12mm skinned and thin plated Green: 12mm skinned with terminal malt
Mounting hole:	6.5mm
Ambient Temperature (Operating):	-55°C to 85°C

In order to protect the surrounding environment, this surge protection device must be enclosed in a luminaire that can contain flames and sparks, which may occur in case of malfunction, such as overvoltage power connection (ex:600V).



Xitanium LED ELECTRONIC DRIVERS

MultiOne configurator

A single intuitive system that configures the different functions in multiple lighting solutions

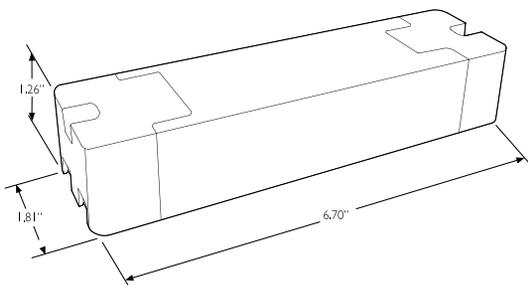
Today's customer demands more flexibility and customization possibilities than "physical configurations" can offer.

Programmable drivers from Philips offer a full range of controls, enabling customizable luminaire design and performance. It is possible to control light output levels, preset dimming protocols and set system specifications in the factory and even in the completed installations. The MultiOne configurator is the unique, intuitive tool that unlocks the full potential of all programmable drivers from Philips, ensuring driver performance matches the lighting solution needs.

Key benefits:

1. One tool for all the Philips DALI products (see supported product list)
2. Future proof platform for new feature deployment
3. Unique-in-the-market proposition of configuration and debugging tool
4. Offers unprecedented flexibility, before, during and after the product installation

Supporting software can be downloaded from:
www.philips.com/multione



Xitanium LED ELECTRONIC DRIVERS

Footnotes:

- 1 See www.philips.com/ledmodulesna and click on the appropriate product for complete warranty details
- 2 Restrictions on Hazardous Substances (RoHS) is a European directive (2002/95/EC) designed to limit the content of 6 substances [lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE)] in electrical and electronic products. For products used in North America compliance to RoHS is voluntary and self-certified
- 3 Minimum 90% survivals based on MTBF modeling
4. Philips Advance Xitanium LED Drivers are designed and manufactured to engineering standards correlating to an average life expectancy of 50,000 hours of operation at maximum rated case temperature.