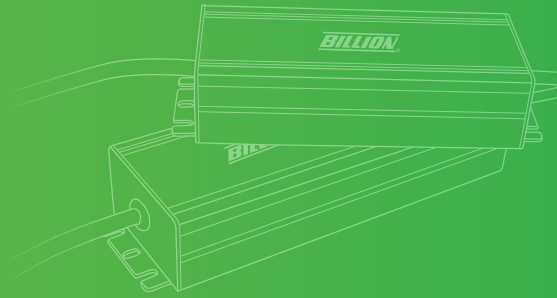


BILLION®



LED Driver Series and Smart Lighting Solution Guide



High-performance LED Driver / Power Supply Series

Nowadays, the energy efficiency and environmental issue have become increasingly important for energy cost control, energy independence improvement and environmental impact reduction in order to meet energy conservation objectives. Compared with traditional High-Pressure Sodium (HPS) streetlights, LED (Light Emitting Diode) lighting can provide improved life cycle cost and better color rendering. Therefore, more and more cities have been adopting the environmentally friendly and energy efficient lighting solutions without compromising illumination quality.

**OEM & ODM
are Welcome !**

As a leading green solution provider, Billion has developed an upgraded Intelligent Streetlight Control and Management System (LCMS) and a full range of LED driver series, including High Voltage Output LED driver, High Efficiency LED driver, Standard Streetlight driver, and Residential Lamp LED driver. The advanced streetlight built with the Billion LED drivers has optionally embedded with dimming function to provide high efficiency, reliability and energy saving for street lighting applications.

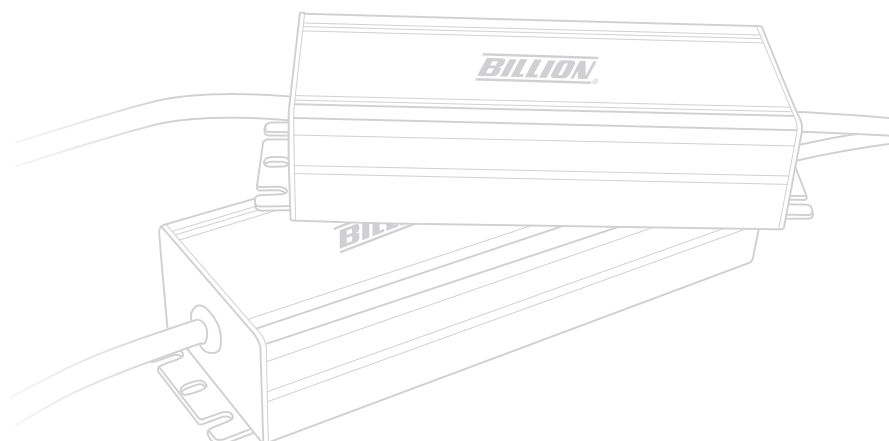


Key Advantages of Billion LED Drivers

- Automatically switch on/off according to environmental illuminations to extend LED life expectancy
- Automatically dim and adjust the lighting at midnight for the higher energy efficiency
- Remotely monitor and diagnose on individual streetlight

Features of Billion LED Drivers

- Timer dimming control options for low power consumption
- Natural-convection cooling system for high performance and reliability
- Built-in Active Power Factor Correction (PFC) function for energy saving and light weights
- Excellent protection functions provide maximum reliability: Over-Temperature Protection (OTP), Over-Current Protection (OCP), Over-Voltage Protection (OVP), and Short-Circuit Protection (SCP)
- Universal Alternating Current (AC) input voltage range of 90 ~ 305VAC
- Operation modes: CV (Constant Voltage) mode / CC (Constant Current) mode
- IP67 compliant rugged design for protection against dust and water
- Long life expectancy and low maintenance cost
- High quality LED drivers with warranty



Customized LED Driver Series



■ High Voltage Output LED Driver Series 50W

Model No.	102PL024-050072TCXX	102PL024-042060TCXX
DC Voltage Range	58 ~ 72V	47 ~ 60V
Rated Current	0.7A	0.7A
Efficiency	90%	90%
Rated power	50.4W	42W
Dimension (L*W*H)	132mm x 74mm x 48.4mm	132mm x 74mm x 48.4mm

■ High Voltage Output LED Driver Series 200W

Model No.	101PL025-200285BLXX	101PL025-208160BLXX
Input Voltage Range	100 ~ 277Vac	100 ~ 277Vac
DC Voltage Range	170 ~ 285V	108 ~ 160V
Rated Current	0.7A	1.3A
Efficiency	92%	90%
Rated power	199.5W	208W
Dimension (L*W*H)	244mm x 68mm x 39mm	244mm x 68mm x 39mm

High Performance Lightning and Surge Protection Products



■ Key Features of Surge Protective Devices (SPD)

- High performance surge protection for LED drivers
- Line-to-line protection
- Serial (2 wires) connection style
- Rugged IP67 design for indoor or outdoor installations
- LED status indicator to show the status of device

■ Specifications of Surge Protective Devices (SPD)

Model No.	102PL- 027- 240V	102PL- 027- 277V
Operating Voltage	240Vac 50/60Hz	277Vac 50/60Hz
MCOV (Maximum Continuous Operating Voltage)	300 VAC	320VAC
Maximum Surge Current (8/20us)	5KA	5KA
Maximum Surge Voltage	10KV	10KV
Dimension (L*W*H)	89.5mm x 49mm x 33mm	89.5mm x 49mm x 33mm

High Voltage Output LED Driver Series 65W-85W



Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac/≥0.95 at 230 Vac at rated power
- Leakage Current: <0.5mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C~60°C at rated power
- Operating Humidity: 10%~95% RH non-condensing
- MTBF: 300K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5
- Output current can be adjusted via built in variable resistor (Please contact Billion for more details)

Model No.	BLL0065F2-186	BLL0065F2-123	BLL0065F2-093	BLL0075F2-215	BLL0075F2-142
DC Voltage Range	111 ~ 186V	73 ~ 123V	55 ~ 93V	129 ~ 215V	85 ~ 142V
Rated Current	0.35A	0.53A	0.7A	0.35A	0.53A
Efficiency	91%	91%	91%	92%	92%
Rated power	65.1W	65.2W	65.1W	75.25W	75.26W
Ripple and Noise (Max.)	700mV	700mV	700mV	700mV	700mV
Current Tolerance	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	3000ms/115 Vac and 2000ms/230 Vac at rated power				
Dimension (L*W*H)	176mm x 68mm x 39mm				

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

	▲	▲	▲	▲	▲
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●

Model No.	BLL0075F2-108	BLL0075F2-072	BLL0085F2-161	BLL0085F2-122	BLL0085F2-081
DC Voltage Range	54 ~ 108V	43 ~ 72V	96 ~ 161V	60 ~ 122V	48 ~ 81V
Rated Current	0.7A	1.05A	0.53A	0.7A	1.05A
Efficiency	92%	92%	92%	92%	92%
Rated power	75.6W	75.6W	85.33W	85.4W	85.05W
Ripple and Noise (Max.)	700mV	700mV	700mV	700mV	700mV
Current Tolerance	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	3000ms/115 Vac and 2000ms/230 Vac at rated power				
Dimension (L*W*H)	176mm x 68mm x 39mm				

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

	▲	▲	▲	▲	▲
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●

High Voltage Output LED Driver Series 100W



Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.95 at 230 Vac at rated power
- Leakage Current: <0.5mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C~60°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 300K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5
- Output current can be adjusted via built in variable resistor (Please contact Billion for more details)

Model No.	BLL0100F2-190	BLL0100F2-139	BLL0100F2-143	BLL0100F2-096	BLL0100F2-072
DC Voltage Range	114 ~ 190V	86 ~ 139V	85 ~ 143V	57 ~ 96V	45 ~ 72V
Rated Current	0.53A	0.7A	0.7A	1.05A	1.4A
Efficiency	92%	93%	93%	92%	92%
Rated power	100.7W	98W	100.1W	100.8W	100.8W
Ripple and Noise (Max.)	1V	1V	1V	1V	1V
Current Tolerance	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	3000ms/115 Vac and 2000ms/230 Vac at rated power				
Dimension (L*W*H)	207mm x 68mm x 39mm				

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

UL US E31486	▲	▲	▲	▲	▲
CE	●	●	●	●	●
CE	●	●	●	●	●
FC	●	●	●	●	●
CB	●	●	●	●	●
IP67	●	●	●	●	●
F T10 M M	●	●	●	●	●
RoHS	●	●	●	●	●

High Voltage Output LED Driver Series 120W



Electrical Specifications

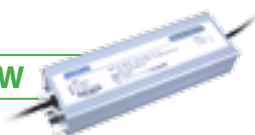
- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.95 at 230 Vac at rated power
- Leakage Current: <0.75mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C~60°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 300K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5
- Output current can be adjusted via built in variable resistor (Please contact Billion for more details)

Model No.	BLLQ120F2-343	BLLQ120F2-227	BLLQ120F2-172	BLLQ120F2-133	BLLQ120F2-115	BLLQ120F2-100	BLLQ120F2-086
DC Voltage Range	205 ~ 343V	136 ~ 227V	103 ~ 172V	80 ~ 133V	69 ~ 115V	60 ~ 100V	51 ~ 86V
Rated Current	0.35A	0.53A	0.7A	0.9A	1.05A	1.2A	1.4A
Efficiency	92%	92%	92%	92%	92%	92%	92%
Rated power	120.05W	120.31W	120.4W	119.7W	120.75W	120W	120.4W
Ripple and Noise (Max.)	1V	1V	1V	1V	1V	1V	1V
Current Tolerance	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	3000ms/115 Vac and 2000ms/230 Vac at rated power						
Dimension (L*W*H)	211mm x 68mm x 39mm						

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

UL US E31486	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CE	▲	▲	▲	▲	▲	▲	▲
CE	●	●	●	●	●	●	●
FC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CB	●	●	●	●	●	●	●
IP67	●	●	●	●	●	●	●
F T10 M M	●	●	●	●	●	●	●
RoHS	●	●	●	●	●	●	●

High Voltage Output LED Driver Series 120W-150W



Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.95 at 230 Vac at rated power
- Leakage Current: <0.75mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C~60°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 300K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5
- Output current can be adjusted via built in variable resistor (Please contact Billion for more details)

Model No.	BLL0120F2-343	BLL0120F2-227	BLL0120F2-172	BLL0120F2-115	BLL0120F2-086
DC Voltage Range	205 ~ 343V	136 ~ 227V	60 ~ 172V	60 ~ 115V	30 ~ 86V
Rated Current	0.35A	0.53A	0.7A	1.05A	1.4A
Efficiency	92%	92%	92%	92%	92%
Rated power	120W	120.3W	120.4W	120.75W	120.4W
Ripple and Noise (Max.)	4.2V	2.1V	2.1V	2.1V	2.1V
Current Tolerance	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	3000ms/115 Vac and 2000ms/230 Vac at rated power				
Dimension (L*W*H)	226mm x 68mm x 39mm				

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

	●	●	N/A	N/A	N/A
	●	●	●	●	●
	●	●	N/A	N/A	N/A
	●	●	N/A	N/A	N/A
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●
	●	●	●	●	●

Model No.	BLL0150F2-428	BLL0150F2-284	BLL0150F2-210	BLL0150F2-143	BLL0150F2-113	BLL0150F2-107	BLL0150F2-099
DC Voltage Range	120 ~ 428V	115 ~ 284V	60 ~ 210V	60 ~ 143V	50 ~ 113V	30 ~ 107V	80 ~ 99V
Rated Current	0.35A	0.53A	0.7A	1.05A	1.3A	1.4A	1.5A
Efficiency	93%	93%	93%	92.5%	92.5%	92.5%	92.5%
Rated power	149.8W	150.52W	147W	150.15W	146.9W	149.8W	148.5W
Ripple and Noise (Max.)	4.2V	2.1V	2.1V	2.1V	2.1V	2.1V	2.1V
Current Tolerance	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	3000ms/115 Vac and 2000ms/230 Vac at rated power						
Dimension (L*W*H)	226mm x 68mm x 39mm						

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

	●	●	●	●	●	●	●
	●	●	●	●	N/A	●	N/A
	●	●	●	●	N/A	●	N/A
	●	●	●	●	N/A	●	N/A
	●	●	●	●	N/A	●	N/A
	●	●	●	●	N/A	●	N/A
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●

High Efficiency LED Driver Series 100W (BLL0100F1 series)

Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.95 at 230 Vac at rated power
- Leakage Current: <0.75mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C~60°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 300K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5
- Output current can be adjusted via built in variable resistor (Please contact Billion for more details)

Model No.	BLL0100F1-12-C	BLL0100F1-20-C	BLL0100F1-24-C	BLL0100F1-30-C	BLL0100F1-36-C	BLL0100F1-48-C	BLL0100F1-54-C
DC Voltage Range	8.5 ~ 12V	15 ~ 20V	17 ~ 24V	21 ~ 30V	26 ~ 36V	33 ~ 48V	38 ~ 54V
Rated Current	8.4A	5A	4.2A	3.5A	2.8A	2.1A	1.75A
Efficiency	91%	91%	91.5%	92%	93%	93%	93%
Rated power	100.8W	100W	100.8W	105W	100.8W	100.8W	94.5W
Ripple and Noise (Max.)	300mV	300mV	300mV	300mV	300mV	300mV	300mV
Current Tolerance	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Hold Up Time (Max.)	2500ms/115 Vac and 1000ms/230 Vac at rated power						
Dimension (L*W*H)	211mm x 68mm x 39mm						

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

UL E31445	●	N/A	●	●	●	●	N/A
CCC	N/A	●	●	●	●	●	●
CE	●	●	●	●	●	●	●
FC	●	●	●	●	●	●	●
CB	●	●	●	●	●	●	●
IP67	●	●	●	●	●	●	●
F T10 M M	●	●	●	●	●	●	●
SELV	●	●	●	●	●	●	●

High Efficiency LED Driver Series 150W (BLL0150F1 series)

Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.95 at 230 Vac at rated power
- Leakage Current: <0.75mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C~60°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 300K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5
- Output current can be adjusted via built in variable resistor (Please contact Billion for more details)

Model No.	BLL0150F1-12-C	BLL0150F1-20-C	BLL0150F1-24-C	BLL0150F1-30-C	BLL0150F1-36-C	BLL0150F1-48-C	BLL0150F1-54-C
DC Voltage Range	8.5 ~ 12V	15 ~ 20V	17 ~ 24V	21 ~ 30V	26 ~ 36V	33 ~ 48V	38 ~ 54V
Rated Current	12.6A	7.5A	6.3A	5.25A	4.2A	3.15A	2.8A
Efficiency	92%	93%	93%	93.5%	93.5%	94%	94%
Rated power	151.2W	150W	151.2W	157.5W	151.2W	151.2W	151.2W
Ripple and Noise (Max.)	300mV	300mV	300mV	300mV	300mV	300mV	300mV
Current Tolerance	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Hold Up Time (Max.)	2500ms/115 Vac and 1000ms/230 Vac at rated power						
Dimension (L*W*H)	211mm x 68mm x 39mm						

Certification (● Certified ▲ In Progress N/A Depends on customer's need)








UL E31445	●	N/A	●	●	●	●	N/A
CCC	N/A	●	●	●	●	●	●
CE	●	●	●	●	●	●	●
FC	●	●	●	●	●	●	●
CB	●	●	●	●	●	●	●
IP67	●	●	●	●	●	●	●
F T10 M M	●	●	●	●	●	●	●
SELV	●	●	●	●	●	●	●

Standard Streetlight LED Driver Series 50W (BLL0050F series)



Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.95 at 230 Vac at rated power
- Leakage Current: <0.5mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C-50°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 200K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5









Model No.	BLL0050F-12	BLL0050F-24	BLL0050F-36	BLL0050F-48
DC Voltage Range	8.5 ~ 12V	19 ~ 24V	26 ~ 36V	35 ~ 48V
Rated Current	4.2A	2.1A	1.4A	1.05A
Efficiency	84%	86%	89%	89%
Rated power	50.4W	50.4W	50.4W	50.4W
Ripple and Noise (Max.)	2.5V	3V	4V	4.5V
Current Tolerance	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	2000ms/115 Vac and 1000ms/230 Vac at rated power			
Dimension (L*W*H)	176mm x 68mm x 39mm			
Certification (●Certified ▲In Progress N/A Depends on customer's need)				
	●	●	●	●
	N/A	N/A	N/A	N/A
	●	●	●	●
	●	●	●	●
	N/A	N/A	N/A	N/A
	●	●	●	●
	●	●	●	●

Standard Streetlight LED Driver Series 70W (BLL0070F series)



Electrical Specifications









- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.94 at 230 Vac at rated power
- Leakage Current: <0.5mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -40°C-50°C at rated power
- Operating Humidity: 10% ~ 95% RH non-condensing
- MTBF: 200K hour min. MIL-HDBK-217F (25°C)
- Three-in-One dimming control (PWM, 1~10V, or resistance)
- Timer dimming control (Please contact Billion for more details)
- Meet 4kV surge-protection standard IEC61000-4-5

Model No.	BLL0070F-12	BLL0070F-24	BLL0070F-30	BLL0070F-36	BLL0070F-48	BLL0070F-54
DC Voltage Range	8.5 ~ 12V	18 ~ 24V	22 ~ 30V	26 ~ 36V	35 ~ 48V	37 ~ 54V
Rated Current	4.9A	3.15A	2.45A	2.1A	1.4A	1.4A
Efficiency	84%	87%	88%	89%	89%	89%
Rated power	58.8W	75.6W	73.5W	75.6W	67.2W	75.6W
Ripple and Noise (Max.)	2.5V	3V	3.2V	4V	4.5V	5V
Current Tolerance	±5%	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance	±10%	±10%	±10%	±10%	±10%	±10%
Hold Up Time (Max.)	2000ms/115 Vac and 1000ms/230 Vac at rated power					
Dimension (L*W*H)	176mm x 68mm x 39mm					
Certification (●Certified ▲In Progress N/A Depends on customer's need)						
	●	●	●	●	●	●
	N/A	N/A	N/A	N/A	N/A	N/A
	●	●	●	●	●	●
	●	●	●	●	●	●
	N/A	N/A	N/A	N/A	N/A	N/A
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●	●	●

Standard Streetlight LED Driver Series 100W (BLL0100F series)

Electrical Specifications







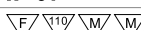

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.94 at 230 Vac at rated power
- Leakage Current: <0.75mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -30°C-55°C at rated power
- Operating Humidity: 20% ~ 95% RH non-condensing
- MTBF: 200K hour min. MIL-HDBK-217F (25°C)
- Meet 4kV surge-protection standard IEC61000-4-5

Model No.	BLL0100F-24	BLL0100F-30	BLL0100F-36	BLL0100F-48
DC Voltage Range	14 ~24V	22 ~30V	26 ~ 36V	33 ~ 48V
Rated Current	4.2A	3.3A	2.8A	2.1A
Efficiency	90%	90%	90%	90.5%
Rated power	100.8W	99W	100.8W	100.8W
Ripple and Noise (Max.)	150mV	150mV	150mV	200mV
Current Tolerance	±5%	±5%	±5%	±5%
Voltage Tolerance	-1 ~ +5%	-1 ~ +5%	-1 ~ +5%	-1 ~ +5%
Hold Up Time (Max.)	700ms/230 Vac and 1500ms/115 Vac at rated power			
Dimension (L*W*H)	222mm x 68mm x 39mm			
Certification (●Certified ▲In Progress N/A Depends on customer's need)				
	●	●	●	●
	N/A	N/A	N/A	N/A
	●	●	●	●
	●	●	●	●
	N/A	N/A	N/A	N/A
	●	●	●	●
	●	●	●	●
	●	●	●	●

Standard Streetlight LED Driver Series 150W (BLL0150F series)

Electrical Specifications

- Input: 90 ~ 305 Vac
- Power Factor: >0.98 at 115 Vac / ≥ 0.94 at 230 Vac at rated power
- Leakage Current: <0.75mA at 230 Vac/50Hz
- Protection: OTP, OCP, OVP, SCP
- Operating Temperature: -30°C-55°C at rated power
- Operating Humidity: 20%~90% RH non-condensing
- MTBF: 200K hour min. MIL-HDBK-217F (25°C)
- Meet 4kV surge-protection standard IEC61000-4-5

Model No.	BLL0150F-24	BLL0150F-30	BLL0150F-36	BLL0150F-48
DC Voltage Range	14 ~ 24V	22 ~ 30V	26 ~ 36V	33 ~ 48V
Rated Current	6.3A	5A	4.2A	3.2A
Efficiency	90%	91%	91%	91%
Rated power	151.2W	150W	151.2W	153.6W
Ripple and Noise (Max.)	150mV	150mV	150mV	200mV
Current Tolerance	±5%	±5%	±5%	±5%
Voltage Tolerance	-1 ~ +5%	-1 ~ +5%	-1 ~ +5%	-1 ~ +5%
Hold Up Time (Max.)	800ms/230 Vac and 1000ms/115 Vac at rated power			
Dimension (L*W*H)	222mm x 68mm x 39mm			
Certification (●Certified ▲In Progress N/A Depends on customer's need)				
	●	●	●	●
	N/A	N/A	N/A	N/A
	●	●	●	●
	●	●	●	●
	N/A	N/A	N/A	N/A
	●	●	●	●
	●	●	●	●
	●	●	●	●

Residential Lamp LED Driver Series

Residential Lamp 12W

Model No.	BLL012FPX-028-XC
DC Voltage Range	20 ~ 28V
Efficiency	85%
Rated Current	0.45A
Rated power	12W
Dimension (L*W*H)	68.55mm x 35.8mm x 27mm

Residential Lamp 20W-50W

Model No.	BLL030FPX-024-XC	BLL030FPX-030-XC	BLL030FPX-036-XC	BLL030FPX-042-XC	BLL030FPX-048-XC
DC Voltage Range	24V	30V	36V	42V	48V
Efficiency	85%	85%	85%	85%	85%
Rated Current	1.0A	0.9A	0.83A	0.7A	0.63A
Rated power	24W	27W	29.88W	29.4W	30.24W
Dimension (L*W*H)	120mm x 35mm x 26.5mm				

Model No.	BLL040FPX-024-XC	BLL040FPX-030-XC	BLL040FPX-036-XC	BLL040FPX-042-XC	BLL040FPX-048-XC
DC Voltage Range	24V	30V	36V	42V	48V
Efficiency	85%	85%	85%	85%	85%
Rated Current	1.3A	1.17A	1.05A	0.95A	0.83A
Rated power	31.2W	35.1W	37.8W	39.9W	39.84W
Dimension (L*W*H)	120mm x 35mm x 26.5mm				

Model No.	BLL050FPX-024-XC	BLL050FPX-030-XC	BLL050FPX-036-XC	BLL050FPX-042-XC	BLL050FPX-048-XC	BLL050FPX-050-XC
DC Voltage Range	24V	30V	36V	42V	48V	50V
Efficiency	83%	85%	85%	84%	85%	85%
Rated Current	1.5A	1.35A	1.25A	1.05A	0.96A	0.9A
Rated power	36W	40.5W	45W	44.1W	46.08W	45W
Dimension (L*W*H)	140mm x 45mm x 33mm					

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

CE	●	●	●	●	●	●
F SELV	●	●	●	●	●	●

Residential Lamp 36W-50W (Potting)

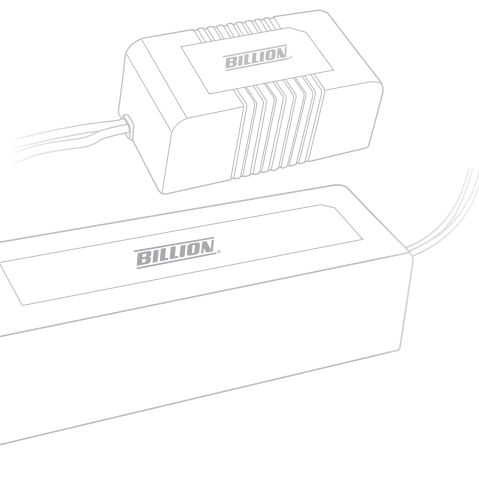
Model No.	BLL050FPO-024-XC	BLL050FPO-030-XC	BLL050FPO-036-XC	BLL050FPO-042-XC	BLL050FPO-048-XC	BLL050FPO-050-XC
DC Voltage Range	24V	30V	36V	42V	48V	50V
Efficiency	83%	85%	85%	84%	85%	85%
Rated Current	1.5A	1.35A	1.25A	1.05A	0.96A	0.9A
Rated power	36W	40.5W	45W	44.1W	46.08W	45W
Dimension (L*W*H)	140mm x 45mm x 33mm					

Certification (● Certified ▲ In Progress N/A Depends on customer's need)

CE	●	●	●	●	●	●
F SELV	●	●	●	●	●	●

High Voltage Residential Lamp 50W-70W (Potting)

Model No.	BLL050F2PO-072-XC	BLL050F2PO-108-XC	BLL060F2PO-072-XC	BLL060F2PO-108-XC	BLL070F2PO-072-XC	BLL070F2PO-108-XC
DC Voltage Range	72V	108V	72V	108V	72V	108V
Efficiency	89%	90%	89%	90%	89%	90%
Rated Current	0.7A	0.46A	0.83A	0.56A	0.97A	0.65A
Rated power	50.4W	49.68W	59.76W	60.48W	69.84W	70.2W
Dimension (L*W*H)	140mm x 45mm x 33mm		163mm x 45mm x 33mm			



Indoor Smart Lighting Solutions

Introduction

As a total solution provider, Billion has developed indoor smart lighting solution by using ZigBee Light Link (ZLL) standard which is a new lighting industry standard, allowing consumers to wirelessly and easily control the LED lamps, light bulbs, timers, and switches. It provides the users with new lighting functionalities such as remote on/off control, programmable timer control, dimming, and mood lighting applications.

The Billion indoor smart lighting solutions can result in energy saving and associated cost savings for users through the careful configuration of dimming and control to ensure that no more energy is consumed than it is actually needed.

The components of indoor lighting solutions are as follows:

- Billion Smart Energy Gateway
- Billion ZLL Smart Lighting Control Box
- Smart Phone APP and backend cloud system (provided by SI/software companies)
- Dimmable LED Lights with indoor LED drivers (provided by LED light vendors)

Major Components of Indoor Smart Lighting Solutions

Billion ZLCB

ZLL Smart Lighting Control Box

- Compliant with ZigBee ZLL (ZigBee Light Link)
- AC input: 100 ~ 277VAC 50/60Hz
- Relay switching load: 277VAC 3A (N.C)
- Output: 4 set of 0~10V max. 8mA dimming output
- RF: ZigBee 2.4GHz IEEE 802.15.4
- Antenna: Internal Antenna



Billion SG6200NXL

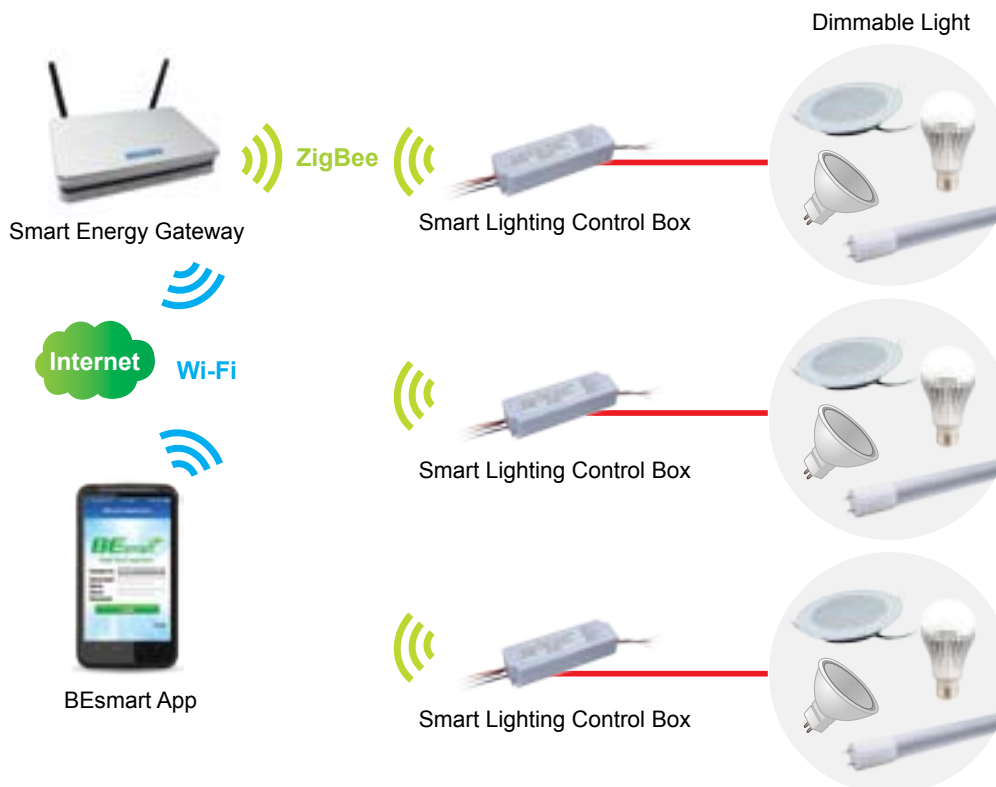
Smart Energy Gateway

- A Fully IEEE 802.15.4 and ZigBee PRO compliant
- Compliant with ZigBee HA (Home Automation Profile) and ZLL (ZigBee Light Link)
- Dual WAN – broadband and 3G connections
- 802.11n wireless AP and client mode, up to 300 Mbps data rate
- Wireless bridge to connect with existing wireless gateway
- 2 x USB 2.0 ports for 3G networks and converting to RS485 interface
- Supports local control by Wi-Fi and remote control by cloud or P2P technology
- Provides API for vendors to develop their App and cloud service
- Dimension: 120 x 35 x 27mm



Indoor Smart Lighting Applications

The Billion indoor smart lighting solutions can support three kinds of control: local control via Wi-Fi and remote control via cloud or P2P. For example, a warehouse administrator can choose to dim each lamp next to the store room via their smart phone wherever they are inside or outside the warehouse by using wireless LAN network or the Internet. With unique P2P technology, there is no NAT issue and system integrators can easily come out their own cloud services and provide intelligent lighting applications to their end customers.



Flexible API for SI/Software companies

The Billion SG6200NXL provides flexible and easy development platform via a well-defined API (Application Program Interface) for system integrator and software partner to integrate their back-end solution and application software, and further to come out their own cloud service. It can be able to access and control the Billion ZLL Smart Lighting Control Box according to received API automatically, and so system integrator can develop their backend system in any hardware platform by any software language.

Examples of APP - Billion BEsmart



Intelligent Streetlight Control and Management System

With over 40 years of experience in power supply and energy management technologies, Billion has become a leading green product supplier in industry and has been devoting itself to the development on Internet of Things (IoT) applications. In addition to the strategic partnership built with worldwide leading LED solution providers, Billion continues to enhance the smart lighting portfolios and its Intelligent Streetlight Control and Management System (LCMS) solution has become tier-one product line demonstrating strong potential in the market.

Billion LCMS solution is based on narrowband power line communication (PLC) system, enabling the administrators to centrally manage and control the large-scale streetlight networks. With Billion customized LED driver embedded, Billion LCMS solution is able to provide high efficiency, reliability and energy saving for street lighting applications.

Product Features

- Increases energy efficiency by automatically dim or adjust the streetlight according to environmental illuminations via embedded lighting sensors.
- Offers a high performance, high availability and high reliability streetlight management solution.
- Provides the function of user-defined lighting schedule with 10 dimming levels to save more energy.
- Enables user to remotely monitor, control and diagnose on individual, group or all streetlights from control center.
- Integrated with Google Map platform where complete information of streetlights are presented and identified. User can choose on-line or off-line mode to browse and check real-time status of streetlight network.
- Supports smart phone applications for on-site streetlight testing. Through real-time location system, users can automatically identify and track the location of each streetlight and report back to control center.

Applicable User



System Integrator



Municipality



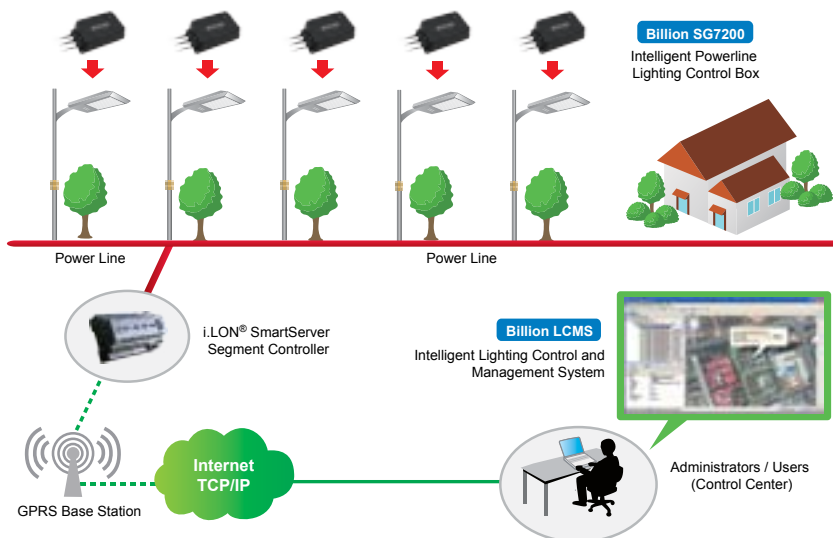
Commercial Building



Multi-Location Enterprise

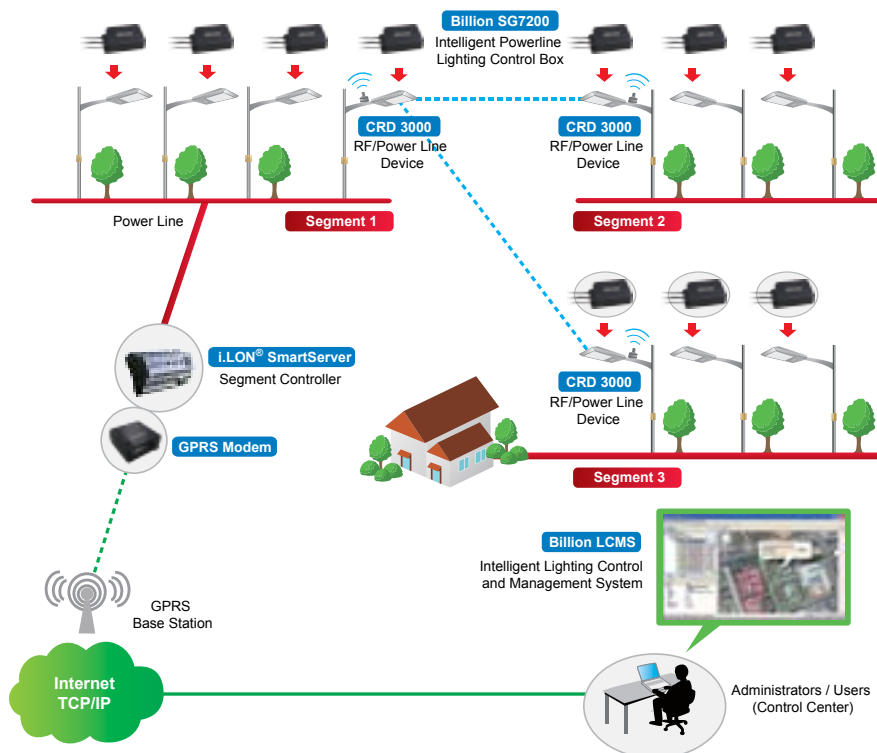
Smart Lighting Application in a Smart City

Billion Intelligent Streetlight Control and Management System (LCMS) enables a community to meet energy conservation objectives by adopting comprehensive street lighting solutions. Energy savings of up to 70% efficiency is achievable as a result of improved performance of luminaries, lamps and intelligent control management. It is ideal for project managers or administrators at utilities, departments of transportation, transit authorities, and municipalities to meet their energy conservation goals.



Narrowband PLC System Architecture (Single Segment)

The Intelligent Powerline Lighting Control Box (Billion SG7200) functions as a main intermediary communication tool which enables the administrator to remotely monitor the whole streetlight asset through LCMS under Narrowband Powerline Communication (PLC) system.



Narrowband PLC System Architecture (Multiple Segments)

The RF/Power Line Device (CRD 3000) is a street light bridge module that extends the communication range of the Segment Controller, acting as a repeater for the street lighting network. The figure above shows a repeating chain that could be used to relay a network management command from the segment controller to target devices, such as other CRD 3000 devices or specific luminaries, to bridge different powerline segments for reducing hardware and WAN network deployment cost.

Major Components of LCMS

Billion SG7200

Intelligent Powerline Lighting Control Box

- Standards-based power line signaling
- Certified with LonMark Outdoor Laminar Controller profile
- Uses existing city electricity wires for power and communications



i.LON® SmartServer Segment Controller

- Standards-based advanced bridge to IP networks
- Segment controller



Billion LCMS

Intelligent Streetlight Control and Management System Software

- Flexible architecture with choice of luminaries
- Remote monitoring and diagnosis
- Manage large numbers of networked streetlights



CRD 3000

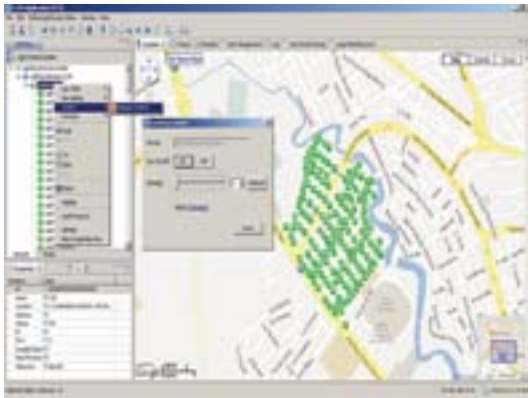
RF/Powerline Bridge

- RF bridge of Echelon PLC signal for connecting different PLC segments
- Ideal for large-scale, multiple segments streetlight area



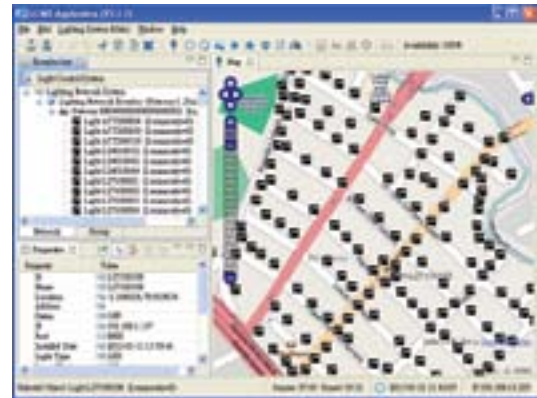
LCMS Platform

Billion Intelligent Streetlight Control and Management System (LCMS) is the core of the Billion Smart Lighting Solution. Operated on a web browser user interface, Billion LCMS software allows administrator to remotely manage and control the wide range of streetlight networks, further assist city authority gain greater intelligence and reliability in relation to its entire streetlight asset.



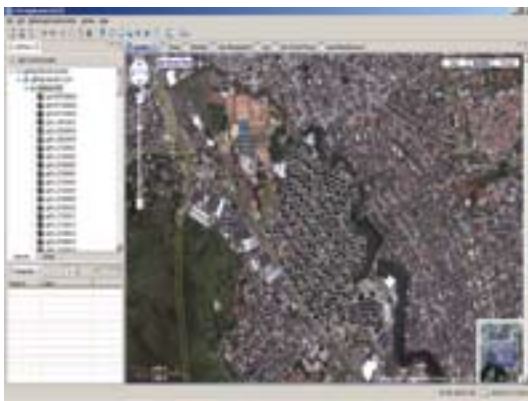
Neat User Interface

Straightforward and instinctive UI designs along with comprehensive functions make it easy and simple for administrator to operate.



Off-line Mapping Mode

Administrator is available to import the graphic map into Billion LCMS to operate in an off-line mapping mode to enable smarter large-scale streetlight management.



Google Map Integration

Complete information of streetlight is presented and identified on the Google Map. Administrator can choose on-line or off-line mode to browse and check real-time status of the streetlight network.



Easy Installation with Handheld Device

Administrator can make GPS location quickly by using a smart phone and collect the light controller ID information with barcode scanner App easily.



LED-driver.billion.com
www.smartgrid.com.tw
www.billion.com

Company Quick Facts

Capital	USD 31 Million
Employees	700+ (Taiwan, China, and USA)
Initial Public Offer	Taichex #3027 since Jan. 19, 2000
R&D Laboratories	5 Labs (Taiwan and China)
Production Capacity	400,000+ units per month
Certification	ISO 9001, ISO14001, IECQ QC080000, TL 9000

Billion Products and Solutions



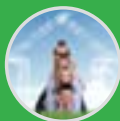
Communication
Products



Smart Grid AMI
Series



Power & Energy
Management Products



Smart Home
Series



Smart Lighting
Solutions

Billion Electric Co., Ltd.

8F., No. 192, Sec. 2, Zhongxing Road,
Xindian Dist., New Taipei City,
Taiwan, R.O.C.
TEL : +886-2-2914-5665
FAX : +886-2-2918-2895
E-mail : marketing@billion.com

BEC Technologies Inc.

Central Region Headquarters
1500 Precision Drive, Suite 100
Plano, TX 75074
USA
TEL : +1-972-422-0877
FAX : +1-972-422-0886
E-mail : smartgrid@billion.com

Billion China

EG-Billion Electronics (Dongguan) Co., Ltd.
The Scientific & Technologic Industry Zone
Shijie Town, Dongguan City, Guangdong Province
China
TEL : +86-769-86633718
FAX : +86-769-86633739
E-mail : marketing@billion.com