

Explosion-proof Integrated LED Driver and Emergency Control Unit

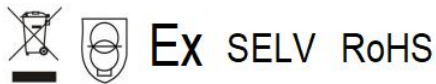
1106002 Series



Highlights & Features

- DC33–41V, 0.33A/0.66A, 2-channel constant current output light source
- Explosion-proof potting design, suitable for hazardous locations
- Wide voltage input, adapts to harsh industrial environments
- Suitable for luminaires used in explosive gas atmospheres such as coal mines, tunnels, and hazardous goods warehouses
- Multiple circuit protections, safe and reliable
- All-in-one solution combining driver and emergency function
- Energy-efficient, long-life design, 5-year Warranty
- Applicable to Class I luminaires

Safety Standards



Description

This integrated constant-current driver and emergency lighting controller is developed for explosion-proof LED luminaires. It adopts a novel isolated topology circuit, integrating LED driver power supply and emergency backup power management. Under normal mains supply, it provides constant-current output to dual-channel LED light sources while charging the external 7.2V Ni-MH battery pack. Once mains power fails, the unit switches to emergency mode automatically within 0.3 seconds. The battery powers one LED channel. Emergency duration depends on battery capacity; a standard 3Ah battery delivers 90-minute emergency operation. The inner cavity is filled with explosion-proof quartz sand, and silicone potting is applied at input and output terminals. PCB and electronic components comply with explosion-proof standards, making the unit suitable for hazardous areas with explosive gas mixtures like petrochemical sites. It provides an output port for status indicator to show battery charging/discharging conditions.

Model Information

Model No.	110600200017	110600200037
Input voltage range	100–277Vac	
Rated output voltage	33–41Vdc	
Rated output current	330mA	660mA
Applicable luminaire	LED light source 10–14W×2	LED light source 20–28W×2

Product Features

This power supply adopts a new isolated topology integrating constant-current drive and emergency functions. It features low noise, wide input voltage range, dual-channel output, energy saving, environmental friendliness, high power factor, high efficiency, galvanic isolation between input and output, direct emergency drive for light sources, and rapid heat dissipation when combined with luminaire housing.

Product Performance

- Open-circuit protection: When no load is connected or the output is open-circuited, the output switches to voltage-stabilizing mode instantly to prevent damage caused by excessive output voltage. It automatically resumes constant-current operation after the open-circuit fault is cleared.
- Short-circuit protection: If the positive and negative output terminals are shorted due to abnormality, the unit shuts down output automatically to avoid permanent damage. Normal constant-current or voltage-stabilizing operation resumes immediately once the short circuit is removed.
- Overload / underload protection: Designed for constant-current operation, the output current remains stable when the load is within the rated range. The unit activates overload/underload protection when the load exceeds or falls outside the design range.
- Battery overcharge protection: The controller implements voltage-limited constant-current charging. It switches to trickle charging when the voltage of each battery cell reaches 1.42V.
- Battery overdischarge protection: The controller automatically cuts off the output power when the single-cell voltage drops to a preset point in the 0.9V–1.1V range.
- Battery reverse-connection protection: The controller will not be damaged if the battery is connected with reversed polarity. Simply reconnect the battery with correct polarity to restore operation.
- Dielectric Withstand Voltage:
1500V±10% / 5mA / 1min / 50Hz between main power input terminals and housing
500V±10% / 5mA / 1min / 50Hz between external live terminals and housing
- Insulation Resistance:
≥50MΩ between main power input terminals and housing
≥20MΩ between insulated external live terminals and housing
- External LED status indicator: Red LED, rated voltage 1.9V–2.2V
Indicator stays ON during normal AC mains supply to show charging status.
Indicator flashes evenly under emergency mode (battery power supply).
Indicator turns off after emergency operation ends.

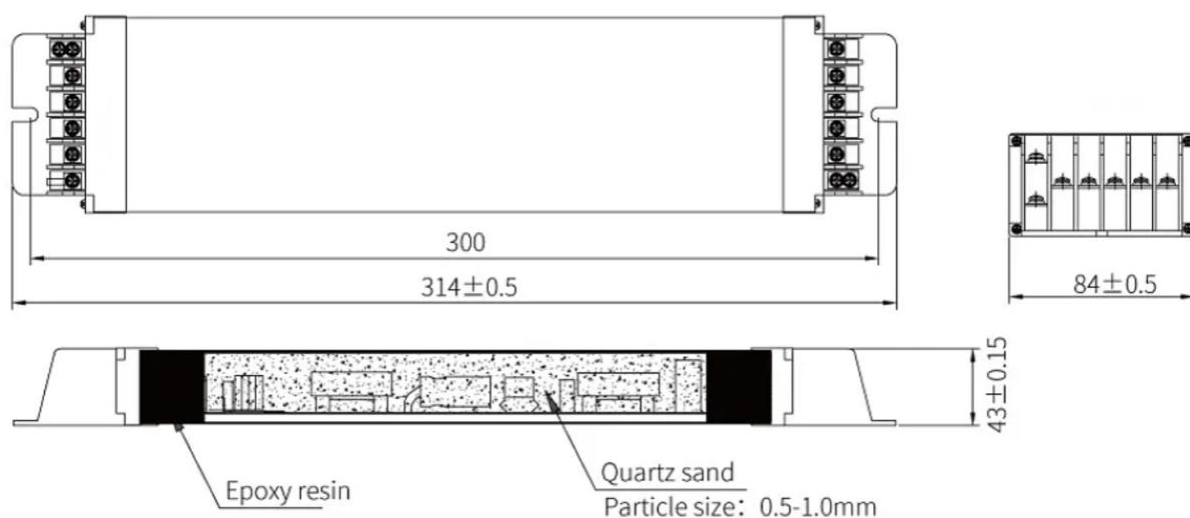
- Explosion-proof Structure: The internal free space is filled with quartz sand and partially sealed with silicone. PCB and electronic components comply with explosion-proof standards.

Electrical Characteristics

Parameter		Symbol	Condition	Min	Rated	Max	Unit
Rated Supply Voltage (AC)		Uin	25℃	-	220	-	Vrms
Operating Voltage Range (AC)		Uinr	25℃	100	-	277	Vrms
Operating Voltage Range (DC)		Uinr	25℃	200	-	250	Vrms
Main Supply Frequency		fin	25℃	-	50/60	-	Hz
Adapted Light	110600200017	P	25℃	-	LED14*2	-	W
Source Power	110600200037				LED28*2		
Input Current	110600200017	Ain	25℃	-	0.14	-	A
	110600200037				0.28		
Input Power	110600200017	Fin	25℃, normal condition	-	30	-	W
	110600200037				58		
Power Factor		PF	25℃, normal condition	-	0.95	-	-
Conversion Efficiency		-	25℃, normal condition	85	-	-	%
Total Harmonic	110600200017	THD	25℃, normal condition	-	-	18	%
Distortion	110600200037					15	
Output Voltage		Vout	25℃, normal condition	33*2	-	41*2	Vrsm
No-load Voltage		Ocv	25℃, normal condition	-	-	55*2	Vrsm
Output Current	110600200017	Iout	25℃, normal condition	330*2	350*2	370*2	MA
	110600200037			627*2	660*2	693*2	
Backup Battery		-	Ni-MH	-	7.2	-	V/Ah
Battery	110600200017	-	25℃	-	3	-	Ah
Capacity	110600200037				4		
Charging No-load Voltage		-	25℃	-	-	10.2	V
Charging Current		-	25℃	-	-	300	MA

Trickle Charging Current	-	25℃	-	-	220	MA
Emergency Operating Current (Light source)	110600200017	25℃, Emergency condition	-	116	-	MA
	110600200037			180		
Emergency Duration	-	25℃, Emergency condition	120	-	-	Minute
Charging Time	-	25℃	-	24		Hour
Switching Voltage	-	25℃	10	-	50	Vrsm
Mode Switching Time	-	25℃	-	-	0.5	S
Operating Ambient Temperature	ta	25℃	-20	-	55	℃

Dimension Drawing

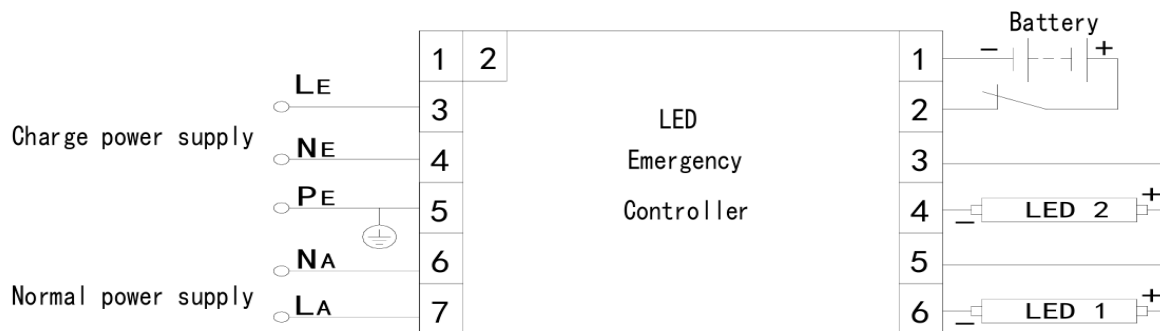


Unit (mm)

Dimensions (L × W × H)

110600200017	314 x 84 x 43 mm
110600200037	314 x 84 x 43 mm

Wiring Diagram



Precautions for Use and Installation Instructions

Precautions for Use:

- The input voltage shall be within the specified operating voltage range of AC100V-277V.
- The product shall be used under the rated ambient temperature, and the power supply shall be provided with proper heat dissipation space and environment.

Installation Instructions:

- Connect the power supply to the mains power source with protective earth connection to ensure operator safety.
- Wire strictly in accordance with the terminal markings on the housing surface. Make secure connections. Ensure input and output wires are not reversed, and battery positive/negative terminals are correctly connected without polarity reversal.
- Connect the power supply only after verifying that the load specifications fully match those of the power supply system.

Abnormal Phenomena and Corresponding Troubleshooting

- If the unit fails to light up or shows other abnormalities after the initial electrical connection, disconnect the AC input, check whether wiring is correct, and verify loose contacts at the output or AC input terminals.
- If the LED indicator lights up after electrical connection but the output is abnormal, disconnect the AC input and check for overloading or underloading at the DC output side.