

40W POWER LINE COMMUNICATIONS SMART LED POWER DRIVER



LES-040-GP11X Digital Power Supply

Overview

gridComm offers a state-of-the-art module consisting of a 40W LED power driver integrated with Power Line Communications (PLC) functionality (as shown above). It is ideal for Smart Street Light control, transforming traditional street lighting into energy-aware, remotely managed monitored networks. The core elements in the design are gridComm's proven robust OFDMA (Orthogonal Frequency Division Multiple Access) PLC GC8800 module (Figure 1), which is based on gridComm GC2200 PLC transceiver chip, and the patented digital power supply technology. This complete unit, **known as LES-040-GP11X Digital Power Supply (DPS)**, is housed within a compact waterproof enclosure.

Other components from gridComm that complement the LES-040-GP11X DPS are the Master Light Controller, and the backend Street Light Management Software (SLMS) that together form a complete Smart Street Light control and management system. The complete Smart Street Light system enables real-time control and automatic scheduling of switching on and off, and dimming levels of individual lights from a central location. This enables the delivery of appropriate lighting levels based on predetermined schedules according to the time of day, seasons, and weather conditions or in response to emergencies. Key accident black

spots on roads can have their lighting tailored to ensure optimal lighting for maximum road user safety.

The LES-040-GP11X DPS also provides metering functions for real-time monitoring of operational status, power consumption, current, voltage, and power factor of individual street lights. This tremendously increases efficiency by reducing the need for manual checking of lights, and facilitates the timely repair of faulty lights.

Field proven for its acclaimed robustness and reliability, gridComm's PLC streetlight solution serves as the cornerstone in the building of a Smart City with a reduced carbon footprint.

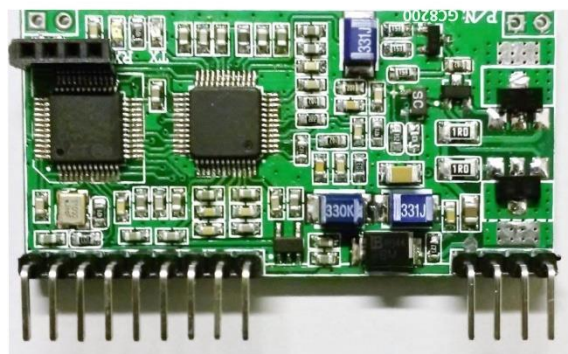


Figure 1 - PLC Module, GC8800

Benefits

gridComm's streetlight solution comprising the SLMS, the Master Light Controller and the intelligent LES-040-GP11X DPS delivers key benefits including:

- Less energy usage by using automatic lighting schedules, hence reducing the carbon footprint
- Savings in operating and maintenance costs
- Efficient remote monitoring system, thus doing away with using surveillance vehicles to check for faulty lights
- Flexibility in mixing different lamp types and technologies
- Scalability and extendibility to support other applications such as traffic, weather, and motion monitoring
- Display of street light locations on a map for real-time control and monitoring.
- Auto Power Factor Correction: >0.95
- Electronics Protection: Short-Circuit, Over-Voltage, Over-Current Over-Heating, Over-Loading, Electrostatic protection
- IP66 protection for outdoor and indoor
- Unique PHY_ID address to correspond with GIS information of streetlight on GUI map
- Support real-time data read-back such as power consumption, current, voltage, light status
- Support sending of system alerts to central management system
- Highly reliable compliant with worldwide lighting standards- CE, CCC
- Three-year warranty
- PLC Rx Sensitivity: -60dBV
- PLC Tx Signal Voltage Level under 1 ohm load: 2~ 8V
- Transparent PLC protocol
- Self-adaptive link, auto-routing PLC network topology

Features

Digital Power Supply LES-040-GP11X:

- Direct LED light driver
- Wide Input Power Voltage: 90 VAC~ 305 VAC

- Operating temperature range- -40 to 60 degrees Celsius
- Lightning protection- 4KV surge

Dimensions

The overall dimensions of LES-040-GP11X are shown in Figure 2, which are 167mm L x 68.5mm W.

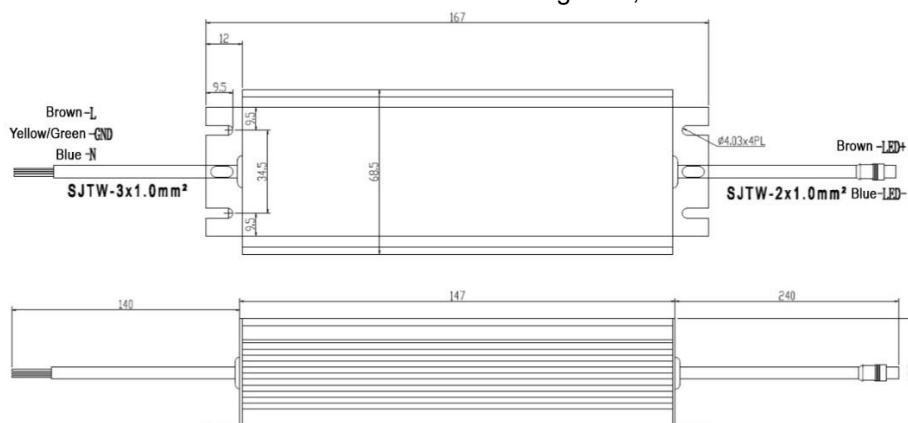
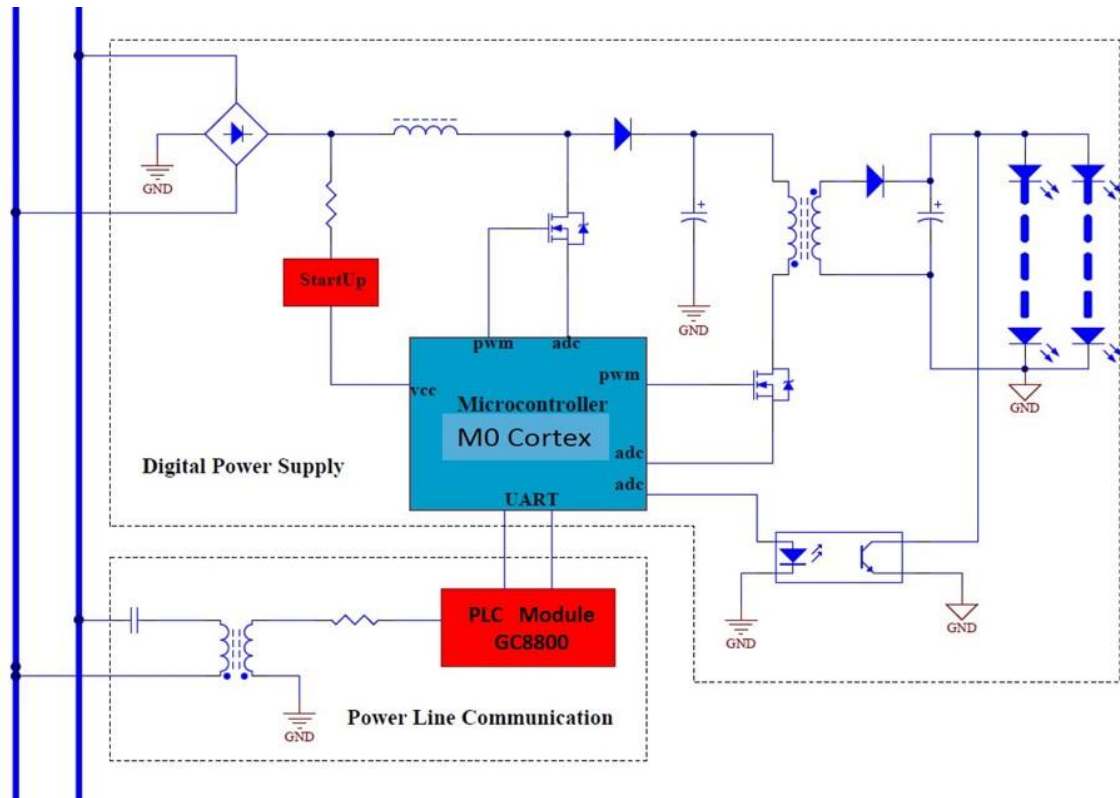


Figure 2 – LES-040-GP11X Dimensions and Wire identifications

Block Diagram of Streetlight DPS



Specifications

Part Number		LES-040-GP111	LES-040-GP112	LES-040-GP113	LES-040-GP115	LES-040-GP116	LES-040-GP117
Output	Rated Output Voltage	20V	24V	30V	36V	42V	48V
	Rated Output Current	2A	1.67A	1.33A	1.1A	0.95A	0.85A
	Rated Output Power	40W	40W	40W	40W	40W	40W
	Output Voltage Ripple	300mVp-p	190mVp-p	200mVp-p	220mVp-p	250mVp-p	280mVp-p
	Current Regulation Range	0.3~2A	0.3~1.67A	0.32~1.33A	0.2~1.1A	0.1~0.95A	0.1~0.85A

	Voltage Accuracy	±3%	±2%	±2%	±2%	±2%	±1%
	Line Regulation	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	Load Regulation	±2%	±1%	±1%	±1%	±1%	±1%
Input	Voltage Range	90~305V					
	Frequency Range	47~63Hz					
	Power Factor (Typical)	PF>0.98/115V, PF>0.95/230V, PF>0.93/270V					
	Efficiency (Typical)	83%	84%	85%	85%	86%	86%
	AC (Typical)	0.53A/115VAC, 0.3A/230VAC, 0.25/277VAC					
	Surge Current	Cold Start 50A/230V					
Protection	Over-Current	95%~105%, constant current restricted mode, auto-recovery					
	Short-Circuit	Auto-recovery					
	Over-Voltage	23~30V	28~32V	34~38V	40~46V	46~53V	52~64V
	Over-Temperature	85℃±10%, shut-down output, auto-recovery					
Environment	Operating Temperature	-40~+60℃					
	Operating Humidity	20~95%					
	Storage Temperature Humidity	-40~+80℃, 10~95%RH					

	Temperature Coefficient	$\pm 0.03\%/^{\circ}\text{C}$ (0~60 $^{\circ}\text{C}$)
	Anti-vibration	10~500Hz, 5G 12min/cycle, X, Y & Z axis each 72 min
Safety and EMC	Safety compliance	UL60950-1, TUV EN60950-1, IP66
	Maximum Voltage	I/P-O/P:3.75KVAC, I/P-FG:2KVAC, O/P-FG:0.5KVAC
	Insulation Impedance	I/P-O/P, I/P-FG, O/P-FG:100M Ω /500VDC/25 $^{\circ}\text{C}$ /70%RH
	Electro-magnetic Interference	Compliant to EN55015, EN55022
	Electro-magnetic Susceptibility	Compliant to EN61000-4-2, 3, 4, 5, 6, 8, 11, EN55024, Class A Industry Standard (Surge 6KV)
Streetlight DPS Functions	Control Functions	ON/OFF, Dimming from 10% to 100%
	Monitored Parameters	Input Voltage, Input Current, Input Power, Power Factor, Output Voltage, Output Current, Temperature, Power Consumption
	Alerts and Protection Parameters	Input Voltage Protection, Input Current Protection, Output Voltage Protection, Output Current Protection, Temperature Protection, DPS Malfunction Protection, Lamp Hood Malfunction Protection, Input Power Protection
Others	Dimensions	167mm*68.5mm*45.5mm
	Weight	900g

Contact Information

For more information regarding the LES-040-GP11X including reference design, pricing, and ordering please contact:

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