

SMALL FORM-FACTOR POWER LINE COMMUNICATIONS MODULE

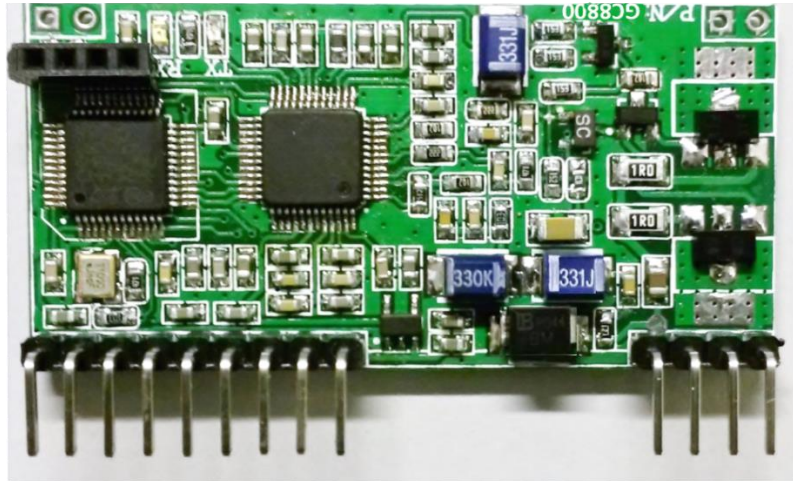


Figure 1- PLC Module, GC8800

Overview

The intelligent small form-factor GridComm Power Line Communication (PLC) module, GC8800, is a complete hardware and software networking solution. The module works with an external coupling circuitry installed on the base board and when powered with a DC15~18V@300mA power supply, it functions as a full system-level PLC modem. In Auto-Routing mode, the software automatically self-adapts to varying conditions on the power lines with the most optimal data routing paths, output power, channel frequencies and redundancy. The PLC module utilizes the industry-leading gridComm GC2200 IC chip: an OFDMA (Orthogonal Frequency Division Multiple Access) Power Line Communication Transceiver.

The GC8800 module supports PWM and Digital Outputs that are controllable remotely, and ADC values and Digital Inputs that may be read remotely from the Master Node. These control and monitoring packets uses gridComm Network Management commands that are communicated through the UART/RS-485/RS-232 of the Master Node. *For more information on PWM, Digital I/Os and ADC, please contact gridComm.*

The PLC module is designed to serve as a slave node for use in small and tight enclosures especially for applications such as Smart Lighting Control, Automated Meter Reading (AMR),

Industrial/Home Automation, Alternative Energy and M2M. It is first used and deployed in gridComm's MJX-100-X-P Digital Power Supply.

Benefits

- Tackles signal variations that are commonly present in power line applications due to signal attenuation, impulsive noise, and changes in line impedance
- Allows selection of carrier frequencies to suit the operating environment
- Automatically forms a multi-tier network to reach otherwise non-contactable nodes
- Maintains optimal routes between nodes
- Supports UART, I/Os, PWM and ADC via a transparent protocol
- Factory set for operation on CENELEC A, B, C, & D, or FCC/ARIB bands.
- Low-cost small form factor design, can be easily integrated into a target system
- Built-in AFE to work with external coupling circuit on target system

Dimensions

The pin-out information and the overall dimensions of GC8800 PLC module are shown in Figure 2. The dimensions are 52mm L x 26mm W.

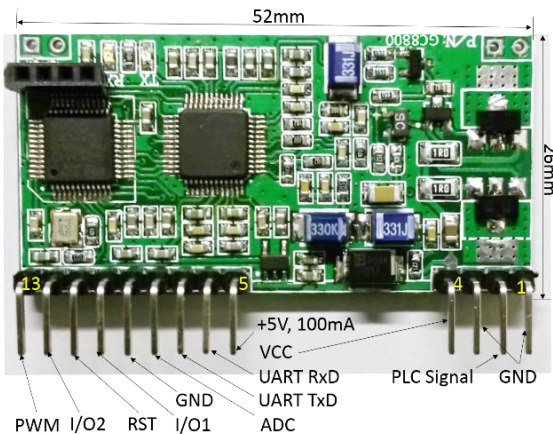


Figure 2 – GC8800 PLC Module Dimensions and Pin Locations

Pins Descriptions

The pin locations are shown in Figure 2.

Pin No.	Name	Functionality
1	GND	Ground
2	PLC Signal	PLC Signal
3	GND	Ground
4	VCC	15~18V@300mA Max. Power In
5	+5V, 100mA	DC Power In
6	RxD	UART (3.3V TTL)
7	TxD	UART (3.3V TTL)
8	ADC	Analog-Digital Converter
9	GND	Ground
10	I/O1	Input/Output 1

11	RST	Reset
12	I/O2	Input/Output 2
13	PWM	Pulse-Width Modulation

Specifications

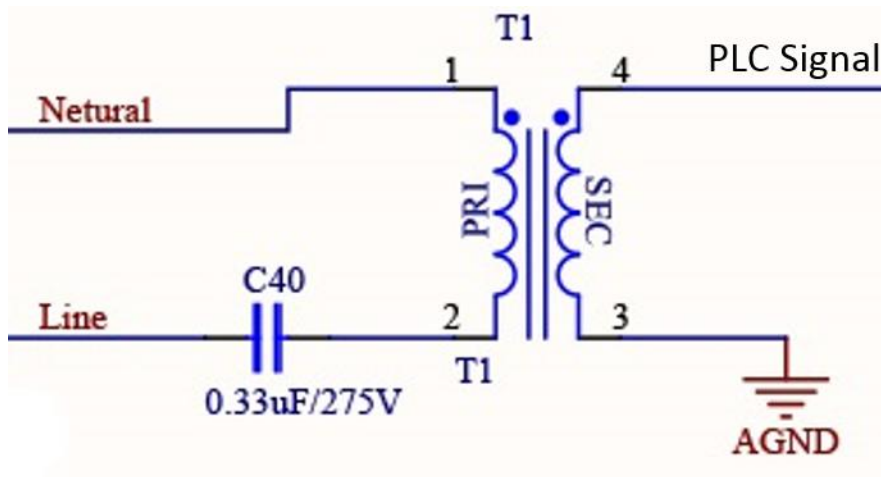
- 18 independent channels operating with up to 54 out of 100 pre-configured carrier frequencies between 5 kHz to 500 kHz.
- 3QPSK, 3BPSK, or 1BPSK modulation schemes with up to 18 levels of redundancy
- Raw data rates between 1.22 Kbps to 7.32 Kbps depending on power line conditions
- 32-bit addressing scheme
- Four operation modes: Point-to-Point, Simple Broadcast, Auto-Routing, and Broadcast-Routing
- One Master node supports up to 240 Slave nodes in Auto-Routing and Broadcast-Routing modes (GC8800 is designed to be used as a slave node and not a master node. GC9200 or GC8101 can be used as a master node.)
- Options for operation on CENELEC A, CENELEC B, CENELEC C, CENELEC D, FCC or ARIB bands.
- UART input/output with preset COM Port settings: 115200 Baud rate, No Parity Bit, 8 Data Bit and 1 Stop Bit
- Supports user packet size of up to maximum of 512 bytes
- Single Power Supply: DC15~18V @ 300mA with within $\pm 10\%$ tolerance limit and $\pm 5\%$ maximum permissible ripple
- Normal Power Consumption- Receiving (Rx) Mode: 15~18V@42mA
- Tx Power Consumption- Maximum up to 15~18V@210mA and support continuous Tx Send at minimum 0.5 sec. interval over

1ohm load

depends on power line conditions

- Rx Sensitivity: -75 dBm
- Distance: Up to 3km- the actual distance
- Operating Temperature -40°C to +85°C

Reference External Coupling Circuit Design



❖ For contacts of T1 transformer, please contact gridComm.

Contact Information

For more information regarding the GC8800 PLC Module including reference design, pricing and ordering please contact:

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