

THE HIGH SPEED NARROW-BAND POWER LINE COMMUNICATION SOLUTION



LQFP48

Overview

GC2200 is a next generation OFDMA (Orthogonal Frequency Division Multiple Access) power line communication transceiver designed for networking applications. The GC2200 contains a complete packet data modem with a simple physical layer protocol. When combined with a microcontroller (MCU) it provides a cost effective solution for data links for point-to-point, star or ad hoc networks. Interface to the MCU is a 10MHz serial peripheral interface (SPI) and interrupt request output. The MCU and software can scale to application for the most cost effective and versatile OFDMA PLC product. GC2200 has been designed with an emphasis on Advanced Metering Infrastructure (AMI) and Automated Meter Reading (AMR) applications where its low cost and high performance features are very attractive.

Benefits

- OFDMA transceiver with a choice of 54 frequencies (from a list of 100 factory preset frequencies) grouped into 18 independent channels with a 175kbps maximum data rate
- No embedded user microprocessor allows for power line communications at lower costs and the ability for the user to choose their own MCU
- User selectable between BPSK modulation for higher carrier voltages and higher noise immunity and QPSK modulation for higher data rate
- Independently programmable carrier

transmission voltages in 3dB steps with power regulation

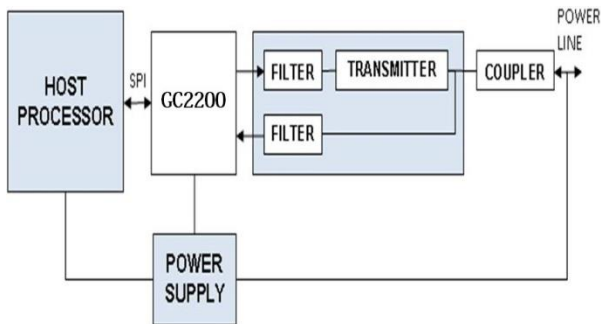
- Brute force mode to send the same data on all carriers for redundancy.
- Transmission voltage can be adjusted so that the voltage level can be set above the noise level of a frequency

Features

- Next generation OFDMA transceiver with 175kbps maximum data rate
- 54 carriers grouped into 18 independent OFDM channels allowing frequency division
- BPSK/QPSK selectable modulation
- Narrow band emulation and low frequency mode putting channels in CENELEC frequency range
- Carrier frequency of 5 kHz to 500kHz
- Peak to average ratio minimization with changing carrier frequencies
- Programmable band in use (BIU) threshold for noise avoidance
- Channel in-band noise estimating
- Received packets contain a RSSI (Receive Signal Strength Indication)
- Independently programmable carrier transmission voltages in -3dB steps with power regulation
- Brute force transmission method
- Inbuilt packet duplicate detection
- Error correction and packets protected with ECC
- Power down option reduce power consumption
- Selectable address filtering frees SPI bus and masking to allow routing
- Uses 100ppm crystals for lower cost
- 2 integrated OpAmps

- Operating Temperature -40°C to +85°C

Typical Application Diagram



Applications

These are a number of applications that the GC2200 is ideally suited for:

- Advanced Metering Infrastructure (AMR)
- Automated Meter Reading (AMI)
- Smart metering and smart grid
- Street lighting control
- Smart energy home area networking
- Home automation (HA)
- Building automation (BA)
- SCADA (Supervisory Control And Data Acquisition)

As can be seen in the diagram above a SPI and an interrupt are used to interface the GC2200 to a MCU in order to add communications connectivity to existing or new products. The advantage of the GC2200 is that these communications will leverage the existing power line infrastructure for the communications channel. This leads to a cost reduction for a system implementation of one of the above examples compared to other communication solutions.

The GC2200 and the analogue front end are all that has to be added to an existing design for the implementation of power line communications. This also means that devices and products that contain an existing MCU can leverage high speed power line communications at a very low cost. This is an advantage in cost sensitive areas such as metering.

Contact Information

For more information regarding the GC2200 including technical data sheets, application notes, sample enquiries, demonstration modules, pricing and ordering please contact:

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Revision (051-06)

Version	Description	Date
0.1	Draft	30/07/2010
1.01	Initial Release	12/10/2010
1.02	Added new Numbering System	12/11/2010
1.03	Updated format	24/11/2010
1.04	Updated block diagram	23/11/2010
1.05	Updated format	03/02/2011
1.06	Added Operating Temperature to the Features	02/05/2011