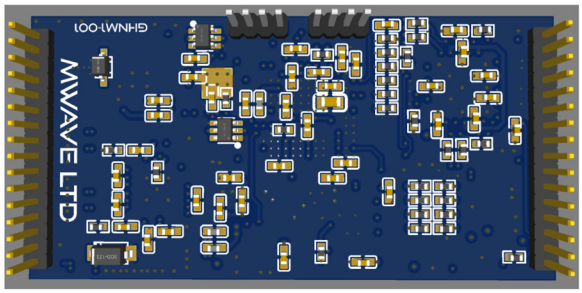
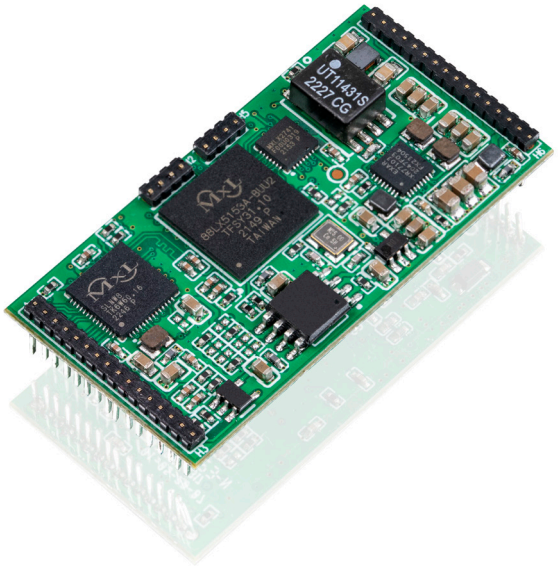
G.hn SISO PCB Module

G.hn Enabling High Speed Connectivity over existing wiring





G.hn is opening the door to new opportunities within the Industrial sector, low latency and reliable connectivity are vital to keep Machine - Machine communications and operations running smoothly. Without it, downtime or a degradation of service will be unavoidable. G.hn acts as essential time-critical and safety-critical infrastructure, with its robust capabilities allowing for mission critical communications and the ability for the network to self-heal. It allows for fast installation and works seamlessly through existing wiring to provide the low latency connectivity upon which industrial applications rely. G.hn topologies provide the IIoT backbone network for high speed and multi-hop point to multipoint (P2MP) connectivity for up to 250 nodes.

The G.hn SISO PCB module is designed in the UK by MWave and optimised to allow cost effective implementation within a wide variety of environments. The G.hn module can be embedded in a wide range of products, IP cameras, alarm systems, fibre access solutions, EV chargers etc.

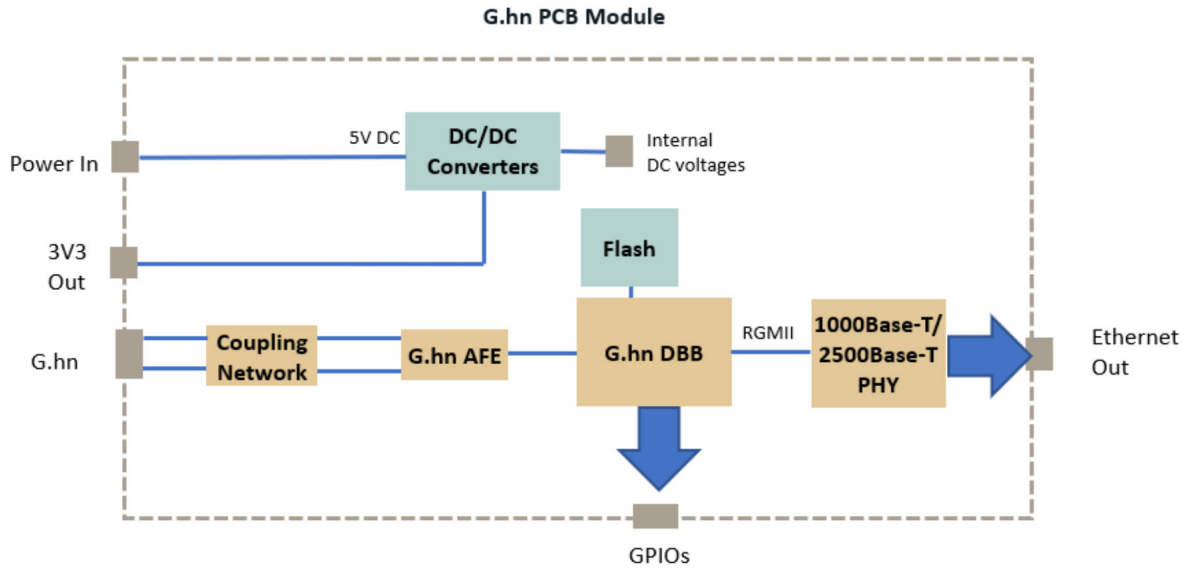
The SISO module provides 1.7Gbits/s throughput over existing wiring infrastructure: twisted pair; coax cable etc. MWave's G.hn SISO module utilises the 2-200MHz frequency range, and allows the user to customise carrier frequencies within this range to enable maximum flexibility and enable signals with different frequencies to co-exist on the same cables. The module utilises Maxlinear's latest Wave-2 chipset and ships using tried and tested Spirit Firmware , this can be configured to support different transmission media , co-ax, twisted pair or powerline. It can also be configured for different network topologies, Point to Point , Point to Multipoint and MESH supporting up to 14 nodes or grid supporting up to 256 nodes.

Enabling connectivity: The PCB Module is configured to be integrated into a wide variety of products, enabling connectivity over existing cables, (co-ax-twisted pair, AC or DC power cables). It allows up to 2-256 nodes to be connected to form a Network. This topology and node count will cover many applications. The Module has a 2.5Gbit/s Ethernet Interface which will satisfy the most demanding requirements. A lower cost 1Gbit/s PHY option is also available.
The module can also be optionally supplied with a heatsink fitted for thermal management. Alternatively, a custom thermal management solution can be implemented in the customer's finished product.

Module Block Diagram

G.hn: One Technology, Multiple Connectivity

The illustration below shows the array of Network Topologies that G.hn technology can support through Firmware and hardware optimisation. The technology offers optimum solutions for most Industrial IoT Connectivity challenges.



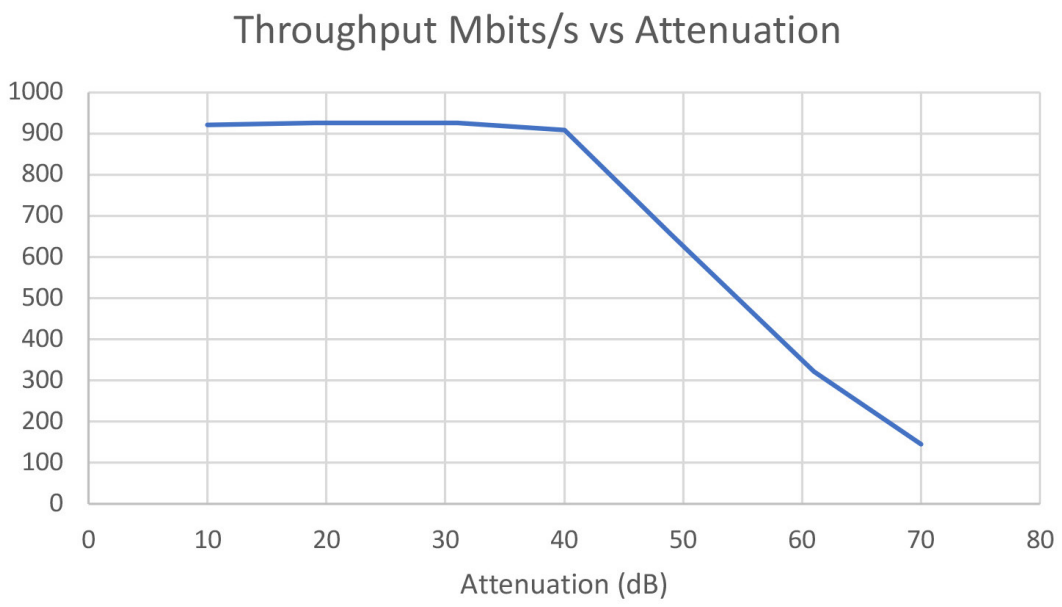
Segment	Carrier Fiber Extender	Consumer & Carrier Home Networking	Phone-line Carrier Access	Coax Carrier Access & Li-Fi	Industrial & Enterprise IoT
Software	Spirit HN	Spirit HN	Spirit Gigawire/ G.now	Spirit P2MP	Spirit Grid
Network Topology		Full-visibility Mesh	Point-to-Point	Point-to-Multipoint	Large scale Multi-hop network

GigaWire™

Summary of Features

- Connectorised PCB Module enabling G.hn functionality to be easily implemented.
- Uses existing copper wiring infrastructure e.g., Coax or twisted pair cables
- Supports aggregated network data throughput up to 1.7Gbps
- Extremely robust in noisy environments with Advanced Powerline Noise Mitigation Techniques
- Security of the network protected with data encryption - AES 128K Bit
- Scalable, ideal for point-to-point and supporting networks with multiple nodes
- Quick to install/roll-out; solution can be repurposed
- Cost-effective, mass-production solution
- Compact – PCB-optimised design
- Long reach - up to 1km negating need for repeaters in point-to-point applications
- The Module is based on Maxlinear's industrial temperature range Wave-2 G.hn transceiver chipset
- MWave is a HomeGrid forum member.

Performance - Coax profile



Electrical

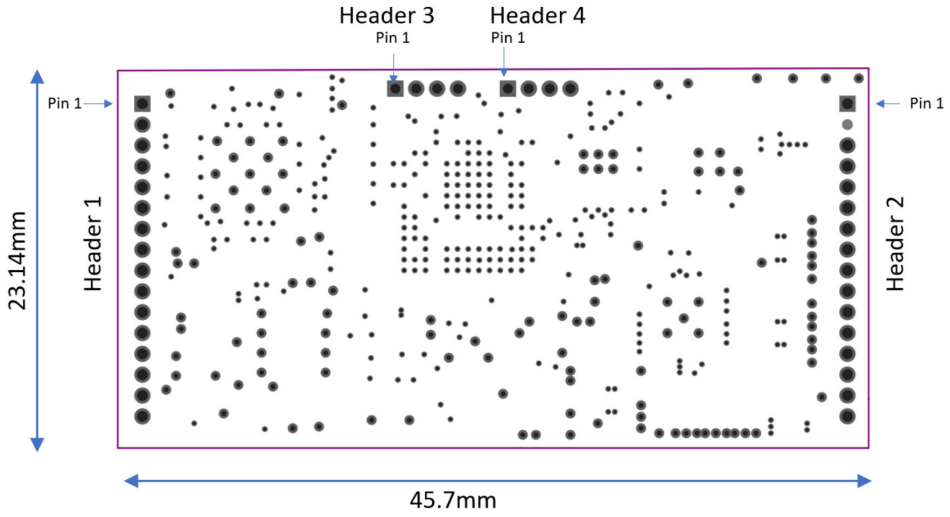
Electrical Parameters

Parameter	Min	Typ	Max	Note
1.1 Input Voltage Range (V)	4.75		5.25	Applied to
1.2 Power Consumption (W)		2.3		(1.3W in standby)
1.3: G.hn Transmission frequency Range (MHz)	2		200	Up to 4096 carriers
1.4 Current Draw from 3V3 outputs (mA)			200	Aggregate from all outputs

Environmental

Parameter	Min	Typ	Max	Note
2.1 Operating Temp Range (deg C)	-20		65	
2.2 Storage Temperature Range (deg C)	-40		100	

Physical Outline



For further information please contact:

enquiries@mwave-ltd.com or visit www.mwave-ltd.com