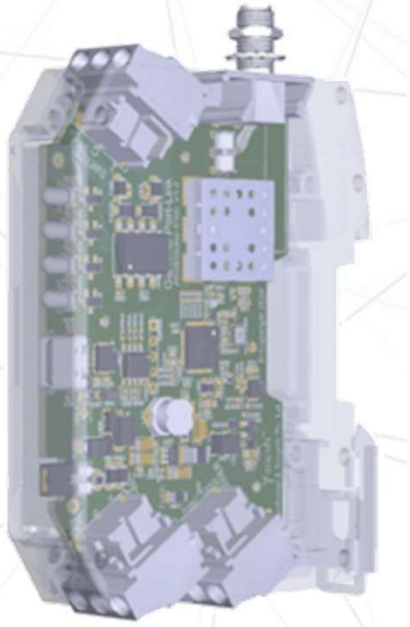
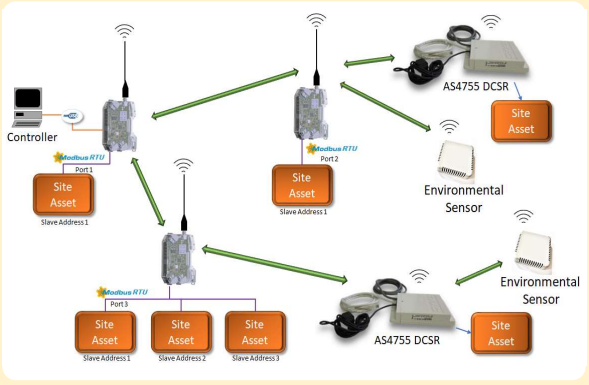
Gamma Port Link

Designed as a radio network access point, either working as a Network Master attached to a controller or as an End Point affixed to a Site Asset, the Gamma Port Link allows remote connectivity of Assets such as Meters and Inverters over long distances without the need for cables. With a key goal of making this device as simple as possible to install and support, the Gamma Port Link requires no device-level configuration, with network connectivity and routing as well as all port-parameters being configured either autonomously or remotely.

- Fully compatible with the next generation γ-mesh® Organic Radio network supporting a longer range with up to 1000 devices.
- Supports AES-128 Encryption for full data transport security.
- Supports either a proprietary Gamma Interface (USB-C) or a MODBUS-RTU Interface (RS-485) to configure and communicate over the Network making it ideal for use in both Edge computing applications with large diverse networks or as a cable replacement for simpler PLC-based applications.
- Can be used with dedicated or communal networks using multiple IoT gateways for full redundancy when connected to a single controller residing in the Cloud.
- RS-485 ports can be remotely configured making it compatible with both MODBUS-RTU and BACnet.
- Provides LoC (Loss of Comms) Fail-safe functionality for placing Site Assets into default states when connection with the controller is lost.
- 12-24V DC Supply with reverse polarity and transient protection.
- Front-panel-accessible jumper to enable/disable RS-485 cable termination (120 Ω).
- Includes an isolated solid-state relay for faster response of Inverters.
- Supports automatic self-test including RS-485 loopback as well as run-time supervision functionality.
- Operator Display with 'At A Glance' device operational status via front-panel LEDs.



*Transparent view for illustration only



All control and port interfaces can be easily configured via the Gamma iController software using a direct USB connection or over the RF network.

Large scale deployments, including those involving many other compatible devices, are also readily supported without the immediate need of network configuration on site. This not only enables quick installation and extensible system deployment but also fast device change-out (if necessary).

The Loss of Communications (LoC) Fail-safe feature allows for automatic entry of attached Assets into a safe state when communications to the controller are lost.

This is achieved by the device transmitting up to four pre-configured data packets at pre-defined intervals over the RS485 interface on detection of an LoC event (typically LoC detection is within 0.5 seconds when configured for high bandwidth).

Alternatively, the device may be configured to send one or more packets once connection has been re-established to ensure a known state.

All data and functional parameters may be configured at any time via software accessible registers, either directly or over the RF network.

Configuration can also be saved to persistent memory to ensure correct operation even in the event of reset or power outage.

γ imperium™
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Please see the website for enquiries or contact directly through:

sales@gammaimperium.com

Designed & Manufactured In Australia Supporting Local Industry

Gamma Port Link Specification Brief

3rd April 2025, HW Ver 1.1

Power Supply

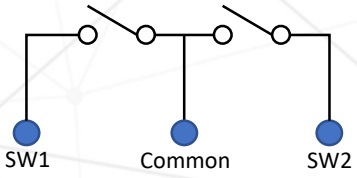
Supply Voltage	**9 – 24 V DC (Max 30V DC)**
Max. Power Consumption	**3.2 W (Typically < 1W)**

Temperature Range

Normal Operation	**-40 to +85° C**
Storage Temperature	**-40 to +85° C**

Solid State Relay

Max. Current	**0.2 A**
Max. Voltage	**35 V AC/DC**
Isolation	**5 kVrms**
Number of channels	**2 (with common Pin 1)**



SOLID STATE RELAY SCHEMATIC

Antenna - Standard

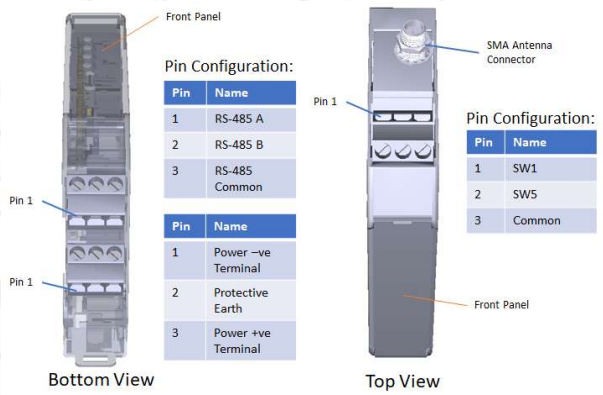
Connector Type	**SMA**
Antenna Impedance	**50 Ω @ 915 MHz**
Gain	**2.7 dBi**
Return Loss	**-10 dB**
Recommended type	**Taoglas Limited FW.95.B.SMA.M**

Mounting and Housing

The Device is designed for DIN-rail mounting within a suitable enclosure.

Terminal Pin Configuration

All terminal pins are designed to protect against unintentional connection of wiring to incorrect terminals.



Pin	Name
1	RS-485 A
2	RS-485 B
3	RS-485 Common

Pin	Name
1	Power –ve Terminal
2	Protective Earth
3	Power +ve Terminal

Pin	Name
1	SW1
2	SW5
3	Common

GAMMA PORT LINK TERMINAL PIN CONFIGURATION

Radio Performance

Operation Frequency	**915 – 928 MHz (Australia)** **902 – 928 MHz (U.S.)**
Modulation	**GMSK (primary)** **DSSS (secondary)**
Carrier 20 dB Bandwidth	**> 564 kHz** **< 15 kHz (5 kbps)**
Transmission Technology	**Hybrid frequency hopping and digital modulation using Sequential Alternating Frame technique.** **See Australian Patent No. 2019206135**
Number of channels	**40 (Australia) / 64 (U.S.)**
Transmission Power	**+26 dBm**
Receiver Sensitivity	**-108 dBm (120 kbps)** **-110 dBm (30 kbps)** **-124 dBm (5 kbps)**
Range per hop (line of site)	**High Speed (120 kbps):** > 580 m (1903 ft) **Medium Speed (30 kbps):** > 850 m (2788 ft) **Slow Speed (5 kbps):** > 1100 m (3608 ft)
Average Transaction Latency (round trip)*	**High Speed (120 kbps):** ~87 ms single hop ~110 ms dual hop **Medium Speed (30 kbps):** ~180 ms single hop ~442 ms dual hop **Slow Speed (5 kbps):** ~945 ms single hop ~1975 ms dual hop
Antenna Protection	**Transient discharge up to 2 kV**

** this is an approximate based on measurements under minimal traffic loads when accessing Gamma Port Link device registers.*

Note: This Device supports an RF MESH network typology compliant to ACMA and FCC rules for 915 MHs ISM bands CFR 15.247 to reduce interference with adjacent systems sharing the same band.

Safety Information

This device is designed to only operate within the voltage limits defined above. CONNECTION TO VOLTAGE SOURCES OUTSIDE OF THOSE SPECIFIED FOR RESPECTIVE TERMINALS MAY CAUSE DAMAGE AND/OR CREATE A RISK OF FIRE.

This device is intended as a communications device for non-critical applications only as it uses unlicensed radio bands that may be subject to regular interference from adjacent networks sharing the same band. AS SUCH THIS DEVICE IS NOT INTENDED FOR USE IN MISSION CRITICAL APPLICATIONS WHERE FAILURE TO OPERATE CORRECTLY IN ANY WAY MAY CAUSE DAMAGE AND/OR INJURY TO PERSONS, PROPERTY OR THE ENVIRONMENT. ANY SUCH USE IS DONE SO AT THE OPERATORS OWN RISK.

There is no guarantee that interference to other devices and networks will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception or to any other device or network, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The placement of the Antenna is vital to the operation and safety of the device. Please refer to the Antenna Installation Guide, see JISSE00303-0301, for more information.