

FIGURE 1. J-MESH LR RS-485 DEVICE.

1 Features

- Fully compatible with the J-MESH™ version 2 Organic Radio MESH network supporting the Provincia™ Advanced Functional Objects Model.
- Number of MESH hops: up to 8.
- Supports AES-128 Encryption of data transported over the Network.
- 12-24V DC Supply.
- RS-485 with cloud configurable port settings.
- Front-panel-accessible removable jumper to enable/disable RS-485 cable termination (120 Ω).
- Supports MODBUS-RTU and BACnet device connections.
- Provides independent solid-state relay control.
- May be used with dedicated or communal networks using multiple IoT gateways.
- Operator Displays with ‘At A Glance’ device operational status.
- Supports automatic Self-test and Run-Time Supervision functionality.
- Provides LoC (Loss of Comms) Fail-safe functionality.

2 Product Overview

Designed as an end point device intended for interfacing towards Meters and Inverters, the J-MESH™ LR RS-485 Device provides easy to install connectivity towards Site Assets. Designed to be conveniently installed with no Device-level

configuration necessary, this device will make service and maintenance of your systems a breeze.

Using the J-MESH™ network supporting the Provincia™ Advanced Objects Framework, connectivity to the device is ensured with not only the ability to automatically adapt MESH network routing when a network node fails, but also with the capability of automatically attaching to adjacent networks of the same type, when enabled, creating Gateway redundancy.

3 Node Configuration

The RS-485 port parameters of the J-MESH™ LR RS-485 are automatically configured through when the Device is included in the configuration of the Provincia™ Node Software as a virtual pipe, see Figure 2 below. This enables easy change-out, if necessary, avoiding the need for device-level configuration.

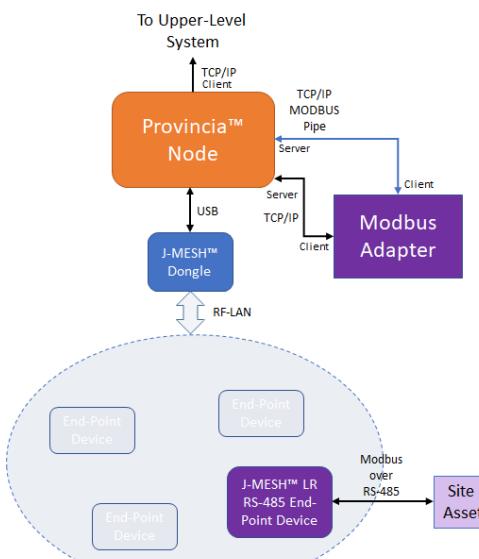


FIGURE 2. TYPICAL FUNCTIONAL ABSTRACTION OF SYSTEM USING J-MESH LR RS-485 DEVICE.

The pipes provided by the Node may be used by the Provincia™ Modbus Adapter software that can support all Sunspec-compliant Assets as well as generic Assets using custom model files. This software will represent each connected Asset as a generic device in the system where it may then be accessed to set registers and/or report readings it takes from selected registers according to its configuration file.

4 LoC Fail-Safe Functionality

The Loss of Communications (LoC) Fail-safe functionality allows for the automatic entry of attached Assets into a safe state when Radio communication is lost.

This functionality operates by transmitting up to four pre-configured data packets at pre-defined intervals once it detects an LoC event (typically LoC detection is within 0.5 seconds). Alternatively, the functionality may also be configured to send one or more packets as soon as connection has been re-established if this is required by the system to ensure a known state.

This functionality, as well as the data contained in the packets to be sent, may be configured at any time through the setting of appropriate registers accessible by the Upper-Level System through the Provincia™ Node application.

Configuration of this functionality is always stored in persistent memory and will be retained in the case of a reset or momentary power outage.

5 Performance

5.1 Power Supply

Supply Voltage	12 – 24 V DC
Power Consumption	< 2W

5.2 Operational Temperature

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

5.3 Solid State Relay

Max. Current	0.5 A
Max. Voltage	60 V AC/DC
Isolation	5,000 Vrms
Number of channels	2 (With common Pin 1)

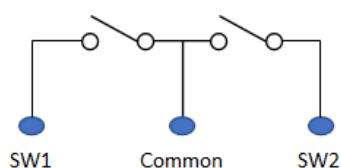


FIGURE 3. SOLID STATE RELAY SCHEMATIC.

5.4 Radio Performance

Operation Frequency	915 – 928 MHz (Australia) 902 – 928 MHz (U.S.)
Modulation	GMSK (primary), DSSS (secondary)
Carrier 20 dB Bandwidth	> 564 kHz
Frequency Hopping	Hybrid frequency hopping and digital modulation.
Number of channels	40 (Australia)/ 64 (U.S.)
Transmission Power	+26 dBm
Receiver Sensitivity	- 112 dBm
Range (line of site)	> 250m (820 ft)
Primary Data Rate	240 kbps
Frame Latency	25 ms

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

5.5 Antenna - Standard

Connector Type	SMA
Antenna Impedance	50 Ω @ 915 MHz
Gain	2.7dBi
Return Loss	-10dB

6 Mechanical Design

6.1 General

The Device is designed to be DIN-rail mounted within a suitable enclosure.

6.2 Terminal Pin Configuration

The pin configuration is as follows:

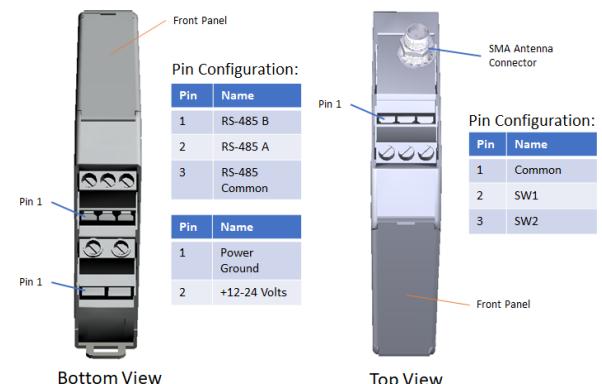


FIGURE 4. J-MESH LR RS-485 TERMINAL PIN CONFIGURATION.

7 Contact Details

All general enquiries regarding this product or its associated technology may be forwarded to:

Julius Industrial & Scientific Pty. Ltd.
7 Gretel Drive, Beachmere, QLD 4510.

Phone: 0488 228 082

Or email to: damian.miller@juliusis.com.au



THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, 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.