ACUMESH - WIRELESS MODBUS-RTU OVER RS485

The AcuMesh wireless RS485 solution is designed to deliver wireless communications to energy meters or other devices that use Modbus-RTU over RS845. AcuMesh eliminates the need for the installation of traditional, hard-wired communication lines, saving money, time, and labour while also reducing the challenges of retrofit installations.

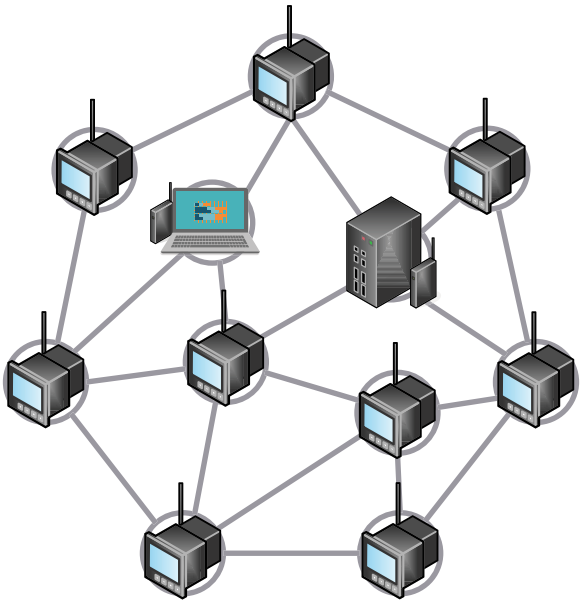
ACUMESH

WIRELESS RS485 NETWORK

KEY FEATURES

All devices are connected automatically upon powering up without configuration, no software required.

- Designed for devices with an RS485 port running Modbus-RTU protocol.
- Highly secure communication with 128 bit Advanced Encryption Standard (AES).
- Advance configuration available for complex network setup with free software.
- Field upgradeable firmware.
- Long-range communication: 1000 ft (305m) indoor / 4 Miles (6.5km) outdoor in a single hop.
- "Mesh" network structure allows each transceiver to act as extension points for the network, allowing for a longer range of communication.
- Point to multi-point communication enabled with "mesh" structure.
- Automatic self-healing and optimizing communication pathway with reliable "mesh" network structure.
- Available in 900MHz and 868MHz frequency, Compatible for most countries and regions.
- Available in DIN Rail, Wall mount or Surface mount form factor.



ACUMESH - CONVENIENT, MULTI-POINT DATA COLLECTION

A connected AcuMesh transceiver wirelessly transmits data from energy meters and other devices with an RS485 port, enabling remote communications and providing a convenient way to gather crucial data from multiple locations within a building or across multiple buildings in a campus environment.

AcuMesh communications work out of the box - no set-up is required when first connecting to a meter or other Modbus-RTU device. The self-healing, self-optimizing network automatically allows AcuMesh transceivers to find the best pathway for communication where other wireless methods, such as WiFi or Zigbee, fail to work.

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ACCUENERGY

KEY SPECIFICATIONS

	AcuMesh-K Wireless Transceiver Kit		AcuMesh-L Wireless Transceiver Kit
Part Number	AcuMesh-K	AcuMesh-L-868	AcuMesh-L-900
Compatible Countries/Regions	North and South America, Oceania, part of Asia. International Telecommunication Union Region 2 and 3	Europe, Middle East, Africa, part of Asia. International Telecommunication Union Region 1	North and South America, Oceania, part of Asia. International Telecommunication Union Region 2 and 3
Connection	RS485 screw terminal, USB mini-B (power supply and/or configuration)		
Serial Baud Rate Range	9600 - 230400		
	RF Properties		
Operating Frequency Band	902 to 928 MHz (900 Mhz ISM Band)	868 to 870 Mhz Configuration Band	902 to 928 MHz (900 Mhz ISM Band)
Number of Channels	64	30 channels,	64
Spread Spectrum	Frequency Hopping	Listen Before Talk (LBT) + Automatic Frequency Agility (AFA)	Frequency Hopping
Transmit Power Output	24 dBm (250 MW)	14 dBm (50 mW)	24 dBm (250 MW)
Receiver Sensitivity	-101 dBm		
Indoor/Urban Range	Up to 1000' (305 m)	Up to 275' (84 m)	Up to 1000' (305 m)
Outdoor RF Line-of-Sight Range	Up to 4 miles (6.5 km) with 2.1 dB dipole antennas	Up to 2.6 miles (4.2km) with 2.1 dBi antenna	Up to 4 miles (6.5 km) with 2.1 dB dipole antennas
RF Data Rate	Up to 200 kb/s	Up to 80 kb/s	Up to 200 kb/s
	Antenna		
Impedance	50 ohms unbalanced		
	Networking and Security		
Supported Network Topologies	Mesh, point-to-point, point-to-multipoint, peer-to-peer		
Addressing Options	Personal Area Network Identifier (PAN ID) and 64-bit MAC add addresses		
Encryption	128 bit Encryption Standard (AES)		
Power Requirements	Power supply included		Power supply included in kit
Power Supply	7-30 Vdc		24Vdc DIN-Rail Mount
Power Supply Range	7-30VDC power		
Receive Current	0.54W		
Transmit Current	1.26W		
	Physical Properties		
Size	4.5 x 2.75 x 1.125 in. (11.4 x 7.0 x 2.9 cm)		3.54 x 2.1 x 1.26 inch (9 x 5.3 x 3.2 cm)
Weight	150g		80g
Mounting	Surface Mount		DIN-Rail or Wall Mount
Includes	Transceiver, Antenna, Power Supply		
Certification	United States (FCC Part 15.247) Industry Canada (IC) Australia C-Tick	ETSI (Europe)	United States (FCC Part 15.247) Industry Canada (IC) Australia C-Tick

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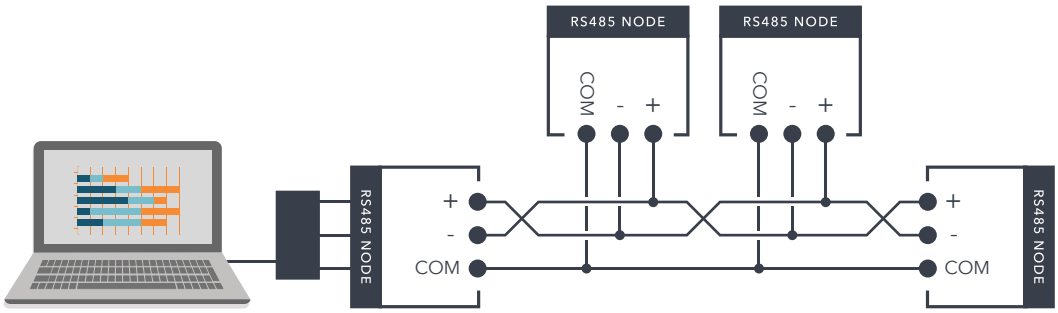
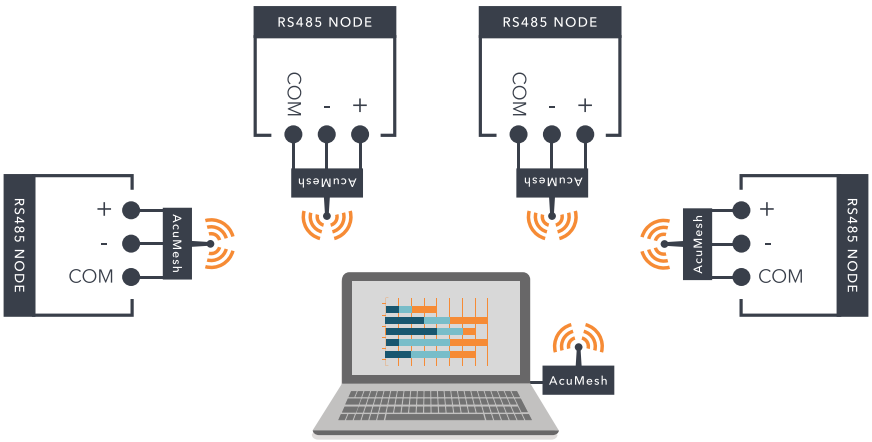
WHAT IS A MESH NETWORK?



TRADITIONAL RS485 NETWORK

In a traditional RS485 network, each device requires three wires, +, - and common (shield). All devices in same network need to be daisy-chained together from the first device to last to form a complete connection. The wiring process is labour-intensive and tends to be a challenge in most retrofit projects.



PC or Any Master Device

WITH ACUMESH

The AcuMesh wireless RS485 network solution completely eliminates the need for RS485 communication wiring. Each device, or group of devices can directly connect to an AcuMesh transceiver, and the job is done. The AcuMesh transceiver transparently runs Modbus-RTU protocol for wireless RS485 transmission of data or commands within the network. The AcuMesh communicates from slave to master, from sensors and meters to data acquisition servers and gateways cost effectively and with minimal challenge

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ACUMESH APPLICATIONS

The AcuMesh was designed to expand the communications capabilities of meters and RS485 devices within any building, facility and infrastructure.

- Retrofit metering in existing buildings.
- Metering in campus
- Metering in commercial buildings.
- Multi-tenant billing and submetering.
- Renewable energy-array, string and inverter metering
- Industrial facilities metering
- Data acquisition from entire infrastructure

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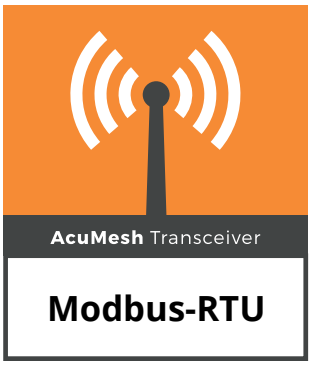
COMPATIBILITY

The AcuMesh transceiver works with any device that is equipped with an RS485 port operating with Modbus-RTU protocol. It can be paired with a Modbus master or Modbus slave and data acquisition gateway, wirelessly connecting the entire network through robust, reliable Mesh communications.

All Accuenergy meters can directly connect with the Mesh transceiver. We also designed the transceiver into a modular form that can directly plug-in to an Acuvim II power and energy meter.



Transparent communication. Compatible with any protocls via RS485.

ACUMESH VS. ZIGBEE & WIFI

The AcuMesh takes advantage of Mesh technology to boost it's communication range.

	AcuMesh	ZigBee	WiFi
Relies on existing IT network range	No	No	Yes
Runs through walls	Yes	No	Yes
Range (Line of Sight)	6437 Meters	20 Meters	100 Meters
Mesh Structure	Yes	Yes	No

ORDERING INFORMATION

The AcuMesh wireless solution comes in a variety of options:

ACUMESH-K

Transceiver with 900MHz Frequency, Surface Mount.

ACUMESH-L-900

Transceiver kit with 900MHz Frequency, DIN-Rail or Wall Mount.

ACUMESH-L-868

Transceiver kit with 868MHz Frequency, DIN-Rail or Wall Mount.

The Wireless transceiver kit includes transceiver, whip antenna and power supply.

ANTENNA-2DB-3M-S

Magnetic mount antenna with 3m extension cable and adhesive cup base

ANTENNA-2DB-WHIP

Whip Antenna that connects with AcuMesh transceiver (AcuMesh-K) or AcuMesh Module (AXM-Mesh)

AcuMesh transceivers can be connected to any device with an RS485 port.

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