

## AcuMesh Support on AcuLink 810

### What is RS485 and wireless RS485 communication?

RS485 is a standard that is commonly used in serial communication system. Because of its characteristics of effective long distance communication and anti-electromagnetic interference capability, RS485 is widely used in commercial buildings and industrial environment for energy management and building automation applications. RS485 standard is often used in a master-slave arrangement. When one device, the master, initiates all communications activity, and controls the slave devices connected to it.

Many manufacturers have developed the wireless RS485 communication, which helps users implement applications without the expense or disruption associated with wiring, and allows technicians to easily and quickly install the systems. The wireless RS485 communication is developed based on the Mesh networking and radio waves. Instead of using the RS485 cables to connect between the master and slaves, one receiver and transceivers need to be connected with the master and slaves respectively. The transceiver and receiver will act as a signal converter which converts the electrical RS485 signal to the radio signal and communicates with each other wirelessly.

### What is AcuMesh?

AcuMesh is a wireless RS485 communication solution provided by Accuenergy, which enables wireless communication between energy meters and other devices via the Modbus RS485 and DNP3.0 protocol. AcuMesh is a cost-effective solution without the need to install communication lines, which helps users save the premium time, labour, and reducing the challenges of retrofit applications.

Each transceiver in the AcuMesh wireless communication system forms the Mesh network structure and acts as an extension point in the network, allowing the long-distance and reliable communication between devices. When the distance between devices is far apart, AcuMesh can also be used as an intermediate unit to enhance the communication. Communication using this mesh arrangement allows for point-to-multipoint communication. This solution enables self-healing to optimize the communication path, thereby achieving more reliable communication.

### What is AcuLink 810?

The AcuLink 810 is an intelligent data acquisition server and gateway that supports the Modbus TCP/RTU and BACnet IP/MSTP communications via serial and Ethernet connection, which allows users to collect data from Accuenergy meters, sensors and other third-party devices. Acuilink supports the data log function that stores the time-stamped data in non volatile memory. When AcuLink is connected to the network via Ethernet, it can be used to push and poll the data using



HTTP and FTP protocols as well as pushing data to different web-based energy management systems or any front end software platform. AcuLink has its own web based interface to configure and settings and view the data.

#### **How does AcuLink 810 support AcuMesh?**

AcuLink 810 supports the Modbus RTU protocol and can connect up to 32 external devices with the baud rate 9600 to 115200 bps. AcuLink 810 also integrates the mesh network into its hardware, which means it can also communicate with the Modbus devices wirelessly as a master transceiver. When users want to connect the AcuMesh devices to AcuLink 810, they will need to select the protocol as AcuMesh when adding the new Modbus device. For the stable AcuMesh connection, AcuLink 810 has its second antenna in addition to the WiFi antenna to receive the signal from AcuMesh. It also has six LEDs which are related to the AcuMesh status. The LEDs indicate the signal strength, power and communication status, and whether the transceiver is receiving data or transmitting data.

