H8830

H8830

Wireless Modbus/Pulse Transceiver

Installer's Specifications

Input Power	110 to 120 VAC
Processor	ARM
Firmware	Field-upgradeable
Inputs	Pulse (2x dry contact), Modbus RS-485
Modbus Input	2-wire RS-485 (9600 or 19200 baud)
LED	2x RF, 2x RS-485, 2x pulse, Alive, Alarm
Radio Frequency	900 MHz ISM band
Radio Output Power	1 mW (optional 150 mW, consult factory)
Radio Max Range	1500 ft. (457 m) per hop

QUICK INSTALL

1. Set the Modbuss address and system switches.

2. Connect the pulse and Modbus hookups.

3. Attach the antenna.

4. Connect power to the H8830.

DIMENSIONS
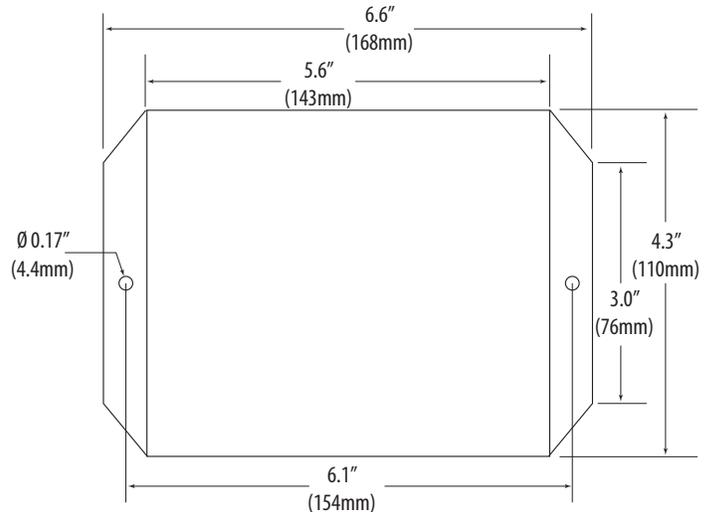
⚠ DANGER ⚡

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

• Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
• This equipment must only be installed and serviced by qualified electrical personnel.
• Read, understand and follow the instructions before installing this product.
• Turn off all power supplying equipment before working on or inside the equipment.
• Use a properly rated voltage sensing device to confirm power is off.
  DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION
• Only install this product on insulated conductors.

Failure to follow these instructions will result in death or serious injury.

NOTICE

• This product is not intended for life or safety applications.
• Do not install this product in hazardous or classified locations.
• The installer is responsible for conformance to all applicable codes.
• Mount this product inside a suitable fire and electrical enclosure.

FCC PART 15 INFORMATION
NOTE: This equipment has been tested by the manufacturer and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications to this product without the express authorization of Veris Industries nullify this statement.

PRODUCT IDENTIFICATION

MODEL	DESCRIPTION
H8830	Wireless Modbus/Pulse Transceiver

OPERATION

The H8830 wireless Modbus®/pulse transceiver from Veris Industries is perfect for submetering commercial and industrial facilities and adding Modbus devices to any network without the need for costly communications wiring. The input port on the H8830 easily connects to new or existing Modbus and pulse devices (meters, sensors, etc.) to automatically detect the optimum route for reliable and timely data communications. Data from each H8830 passes from one transceiver to another to reach its ultimate destination. This self-managed mesh network allows the system to function with high reliability where other wireless systems fail due to short- or long-term interference from radio signals

INSTALLATION

1. **Modbus Address:** Every Modbus device in the system must have a unique address. This includes each H8830 and every attached RS-485/Modbus device. Select an address and set the DIP switches to match. The sum of the value of the switches is the address. In the example to the right, set address 52 by placing switch 4, 16, and 32 to the ON position.

2. **System Switches:** For most systems, set all of the system switches to the "OFF" position. The only required switch is the RS-485 baud rate option. Set this to "OFF" for 19200 or to "ON" for 9600. The example below is a default configuration for 9600 baud on the RS-485 connection.
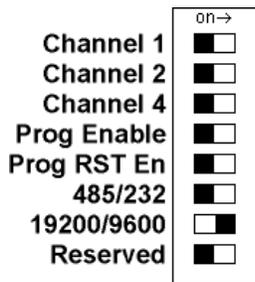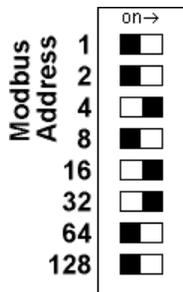
3. **Pulse Hookup:** Attach any dry contact pulse output meters to the pulse input terminals as shown in the wiring diagram to the right. The H8830 can support two pulse devices.

The H8830 can be attached to many types of pulse output meter. Power, water, gas, etc. For "KYZ" type power meters, use the normally open contacts, usually labeled "K and Z".
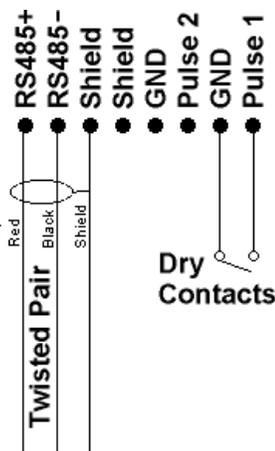
4. **Modbus Hookup:** Attach any Modbus slave or master devices to the RS-485 terminals as shown in the wiring diagram. Multiple Modbus devices may be attached to each H8830.

Note: When attaching Modbus devices, it is not necessary to specify if the device is a master (H8820, PLC, etc) or a slave device (power meter, sensor, etc). The H8830 will automatically detect the master and handle it appropriately.

5. **Attach the Antenna:** Attach the antenna to the side of the H8830. The antenna should be finger tight and be placed in a vertical position.

6. **Power up the H8830:** Attach the power brick to the power jack on the H8830. The device should power up and be ready in a few seconds. The LEDs should blink in the following manner.

- The Alive LED should start to blink about once per second.
- The Alarm LED will blink if transmission errors occur.
- The RF TX/RX LEDs will blink when the radio is receiving or transmitting data.
- The RS-485 LEDs will blink for local Modbus activity.
- The Pulse input LEDs will light when the corresponding pulse input terminals are closed.

REGISTER FUNCTIONS

1. Pulse Count: The pulse count is stored as an unsigned 32-bit integer. This allows for 2^{32} pulses (4.2 billion) to be counted before rollover. On Modbus systems that do not allow you to read 32-bit values, you can calculate the pulse count as follows:

count = MSW * 65535 + LSW

2. Instantaneous Pulse Rate: The pulse rate values for instantaneous, minimum, and maximum rates are calculated based on the time between arriving pulses. For example, if InstPulse1 = 30 and InstPulse count size = 5, then the average rate for the last 5 pulses is 6 sec/pulse. To convert the register values (in seconds) to a rate value, use the following formula:

Rate/hour = (N * 60 * 60 / InstRegister)

where InstRegister is any of the 6 register values 4 through 9, and N is the instantaneous pulse count size at offset 10.

3. Min/Max Pulse Rate: These 4 registers are calculated from the instantaneous pulse rate. These latching registers are updated whenever the minimum or maximum rate fields are exceeded by the instantaneous rate. These four registers may be cleared by writing a zero to the register. Writing to one min./max. register clears all four min./max. registers.

REGISTER LISTING

Offset	Point	Type	Description
0	40001	UINT32	Pulse count 1 MSW
1	40002	UINT32	Pulse count 1 LSW
2	40003	UINT32	Pulse count 2 MSW
3	40004	UINT32	Pulse count 2 LSW (same format as pulse count 1)
4	40005	UINT16	InstPulse 1 time (seconds)
5	40006	UINT16	InstPulse 2 time (seconds)
6	40007	UINT16	(R/W) min. pulse 1 time (seconds) (write clears min./max.)
7	40008	UINT16	(R/W) min. pulse 1 time (seconds)
8	40009	UINT16	(R/W) max. pulse 2 time (seconds)
9	40010	UINT16	(R/W) max. pulse 1 time (seconds)
10	40011	UINT16	(R/W) InstPulse count size (default = 5)
100	40101	UINT16	Serial number (bytes 1, 2)
101	40102	UINT16	Serial number (bytes 3, 4)
102	40103	UINT16	Serial number (bytes 5, 6)
103	40104	UINT16	Firmware version (e.g. v1.03, high byte = major; low byte = minor; 0x8000 flag set for Beta)
104	40105	UINT16	Boot count
105	40106	UINT32	Mfg date MSW
106	40107	UINT32	Mfg date LSW
107	40108	UINT16	Radio group ID setting (0-6)
108	40109	UINT16	Alarm flags (0x01 = boot from watchdog)
109	40110	UINT16	Max. packet buffers used
110	40111	UINT32	Radio up time (seconds) MSW
111	40112	UINT32	Radio up time (seconds) LSW