H8920-5

H8920-5
LONTalk Integration Node
For Use With Enercept H8035 Power Meters

Installer's Specifications

LonWorks® Network	Free topology transceiver, 78 kbps
Modbus Network	RTU 9600 BAUD, 8N1 format
Network Variable Type	Float
Input Power	16-24 VAC/DC, 100mA (max.)
Temperature Range	0 to 60°C (32 to 140°F)
Humidity Range	0 - 95% non-condensing

METER DATA NETWORK VARIABLES

kWh, Consumption
kW, Real Power

⚠ 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.
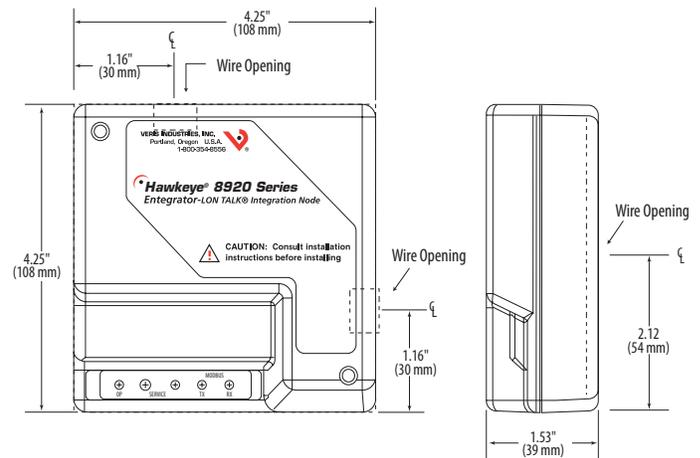
FCC PART 15 INFORMATION

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.

DIMENSIONS

## *PRODUCT IDENTIFICATION*

MODEL	DESCRIPTION
H8920-5	Enercept® H8035 to LonTalk® integration node

OPERATION

The H8920-5 LONTalk Integration Node allows the integration of Veris Industries Enercept H8035 Series power meters with a LON Works control/monitoring system. The H8920-5 converts the 2 power metering data network variables collected by the H8035 as Modbus protocol to LONTalk. Using an indexing technique, the H8920-5 reports the data from up to 63 H8035 Enercept meters on the downstream Modbus network. Adjusting an input variable allows selection of the Modbus address of the desired meter. The data is then recorded before selecting another Enercept. The H8920-5 can also be used for binding purposes with a single H8035 meter.

The H8920-5 polls the H8035 meter for its full data set approximately once per second. All output data network variables are immediately updated with this received data. Data exchanged between the node and the meter are fully checksummed to ensure integrity. If corrupt data is detected, the output network variables are not updated and retain their previous value.

PRODUCT DIAGRAM
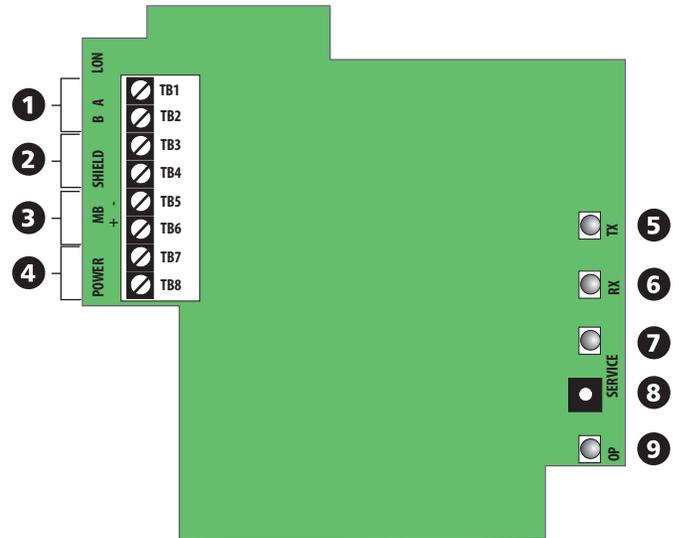
1. **LON Talk Terminal Block**: Connect to the LON network at these terminals. This connection is not polarity sensitive.

2. **Shield Terminal Block:** Communications shielding for both the LONTalk and Modbus communications networks.

3. **Modbus Terminal Block:** Connect to the Enercept Modbus network. This connection is polarity sensitive; ensure correct polarity.

4. **16-24 VAC/DC Power:** Two-wire system power terminal block.

5. **TX LED:** Indicates transmission of Modbus network data

6. **RX LED:** Indicates reception of Modbus network data

7. **Service LED:** Standard LON Works Service LED. Used in concert with the Service Switch to locally view the commissioning status of the device. LED status after the service switch is pushed:

   ON, then OFF solid = Device has been commissioned by a network tool.

   BLINK at 1/2 Hz rate = Device has not been commissioned by a network tool.

   ON, OFF, then solid ON = Device does not have an application.

8. **Identification Service Switch:** Standard LonWorks Service Switch. Used in concert with the Service LED to locally view the commissioning status of the device.

9. **OP LED:** Normally on. The OP LED will blink off when there is an incomplete data exchange between the meter and the LON node. If this LED is always off, then the meter is not responding to data requests (i.e., the meter is disconnected, unpowered, or incorrectly wired).

INSTALLATION

1. Remove screws from the lid of the H8920-5 housing. Lift lid and remove wire guide caps. Set aside with the lid.

2. Bring the H8035 RS-485 network cable to the Modbus terminal block marked +MB-. Thread wires through wire guide before terminating. Connect the (+) to TB6. Connect the (-) wire to TB5. Connect the shield wire to TB4.

3. Bring the LON Works network cable to the terminal block marked BA LON. Thread wires through wire guide before terminating. Connect the A wire to TB1. Connect the B wire to TB2. Connect the LON network shield wire to TB3.

LON A	TB1
LON B	TB2
Shield	TB3
	TB4
Modbus –	TB5
Modbus +	TB6
Power	TB7
	TB8

4. Connect the 16-24 VAC/DC power wires to TB7 and TB8. The power terminals are not polarity sensitive. This power source must be separate and isolated from other circuits to prevent unwanted "ground loops."*

5. Thread wires through the most convenient openings in the housing.

6. Re-attach the lid and snap wire guides into place. Replace screws to hold the housing together.

7. Mount the H8920-5. The device can be flush mounted to a wall, screw mounted to a 2 or 4s electrical encosure, or nipple mounted to an existing enclosure. Mount the H8920-5 in a class 2 environment.

8. Refer to the H8035 installation instructions for connection of the LON node to the H8035 power meter.
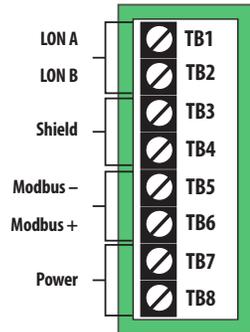
Veris transformers such as X020xxx, X040xxx or X050xxx or DC power supplies such as PS-24-7.5, 15, or 30 fulfill these requirements. If the installation only has non-isolated 24 VAC available, then a Veris transformer such as X020ADA can provide the necessary isolation.

CONFIGURATION

1. Upon powering up, the OP-LED is lit.

2. During operation, the OP-LED turns off if either of the following occurs:

    a) No Modbus requests are generated by the unit for 10 seconds. This occurs with new units (which have yet to be commissioned) or any units which are in "Unconfigured," "Off-Line" or "Disabled" LonTalk states. Under these conditions, the neuron chip will not generate requests to the Modbus network.

    b) No response or an error response from the Modbus network (e.g. no meter attached, wrong type of meter (H8036 instead of H8035), broken RS-485 wires, etc.).

3. If the OP-LED is OFF for any reason covered in step 2 above, it will be re-lit when a correct response is received from the Modbus network.

4. Under Condition 2b above, the floating-point SNVT data will be replaced with floating-point-not-a-number (NaN,0x7FC00000), indicating to the remote user that the data is no longer valid.

Index Feature

By adjusting the network input variable nviMeter Index, the Modbus address used to populate all of the NVOs can be changed. This option is used to view and archive data from a Modbus network of up to 63 H8035 power meters. Using this feature eliminates the possibility of binding any points from the node. If the application requires binding, the LON node can only view one meter.

Using the Meter-Index function

To ensure that the data read from the unit corresponds to the correct meter, follow this algorithm:

    1. Change nviMeter Index to the desired meter.

    2. Wait for nvoMeter Index to change to the same value as nviMeter Index. Do not read data from the unit until this occurs: You will not be able to determine which meter the data corresponds to until nvoMeter Index=nviMeter Index. Do not use "time-delays" to wait for the new data to be valid.

    3. Once nvoMeter Index=nviMeter Index, you may poll values with the assurance that the data corresponds to the desired meter.

Power Meter Configuration

If binding is required, use Modbus address 1 for the H8035 power meter if binding is required. When employing the indexing method, use addresses 1-63. Please refer to the H8035 Installation Instructions for meter addressing information.

Auto Propagate Feature

The H8920-5 automatically propagates all network variables. If nciMaxSendTg is set above zero (default is zero), all variables are propagated periodically. Units are in tenths of a second. For example, if nciMaxSendTg is set to 100, the H8920-5 will automatically propagate all variables every 10 seconds.

NETWORK OPTIONS

Resetting the Energy Accumulator

To reset the Energy Accumulator nvoEgyWH, use the input network variable nviEgyClr and follow this procedure:

1. Ensure that nviEgyClr.state > 0 & nviEgyClr.value > 0. Default is {1,1}.

2. Set nviEgyClr.state = 0 & nviEgyClr.value = 0.

3. Set nviEgyClr.state = 1 & nviEgyClr.value = 1.

At step 3, the H8920-5 issues an energy accumulator reset command to the H8035. Once cleared, the meter will continue to count kWh from zero until another reset is commanded.

Resetting the Average/Minimum/Maximum Power Variables

Reset the power variables (nvoAvePower, nvoMinPower, and nvoMaxPower) to instantaneous power by following this procedure:

1. Ensure that nviPwrClr.state > 0 & nviPwrClr.value > 0Default is {1,1}.

2. Set nviPwrClr.state = 0 & nviPwrClr.value = 0.

3. Set nviPwrClr.state = 1 & nviPwrClr.value = 1.

The H8920-5 issues the Clear Power Variables command to the H8035 in Step 3. Once cleared, the meter will monitor min/max/average power until another reset is commanded. Note that all three variables are cleared in one command.

Node Identification

Wink: The LON Node will light its service LED for 5 seconds in response to a WINK command.

Service Pin: A service pushbutton is provided for this method of identification. (See Product Diagram section).

Neuron ID: The Neuron ID is located on a label on the back of the device. It can be written down or peeled off as a removable sticker with bar code for easy insertion to your network.
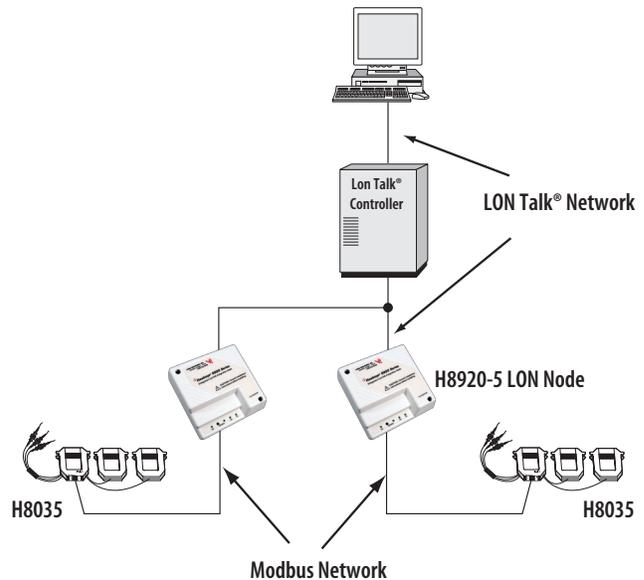
Program ID

The standard program ID for this product is 90:00:14:8A:0D:02:04:02

Indexing Option: Allows the node to access up to 63 H8036 meters for viewing and archiving purposes only

Lon Talk® Controller

LON Talk® Network

H8920-5 LON Node

Modbus Network

Up to 63 H8035s
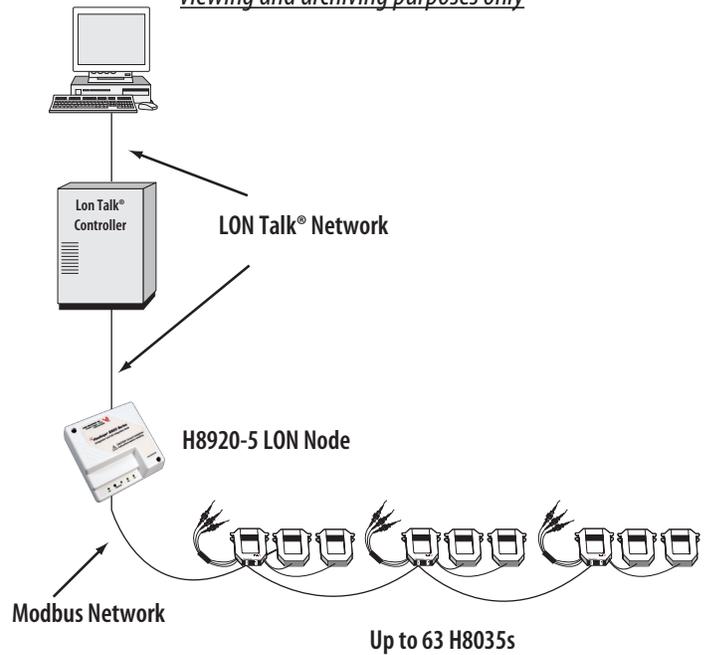
Bound Option: For all applications requiring binding*

Lon Talk® Controller

LON Talk® Network

H8920-5 LON Node

H8035

H8035

Modbus Network

*If employing the bound option, address each H8035 at 1.

VERIS H8920-5

MANDATORY NETWORK VARIABLE

| nv2 | nvoPower_f | SNVT_power_f |

MANUFACTURER-SPECIFIC NETWORK VARIABLES

| nv1 | nvoEgyWH | SNVT_elec_whr_f |

| nv3 | nviEgyClr | SNVT_switch |

| nv4 | nviMeterIndex | SNVT_count |

| nv5 | nvoMeterIndex | SNVT_count |

CONFIGURATION PROPERTIES

nc49	nciMaxSendT	SNVT_time_sec
nc52	nciMinSendT	SNVT_time_sec
nc88	nciMinDelta	SNVT_lev_cont
nc49	nciMaxSendTg	SNVT_ time_sec

NETWORK VARIABLE DETAILS

Name	Type	Range	Description
nv1	nvoEgyWH	0-1e38kWH	kWh Consumption
nv2	nvoPower_f	0-1e38kW	kW Real Power
nv3	nviEgyClr	See text	Resets nvoEgykWH to zero
nv4	nviMeterIndex	1-63	Selects Modbus address
nv5	nvoMeterIndex	1-63	Reports selected Modbus address
nc49	nciMaxSendT	0.0-6553.4s	Maximum time between nvoPower updates. Default is 0 (disabled).
nc52	nciMinSendT	0.0-6553.4s	Minimum time between nvoPower updates. Default is 15 secs.
nc88	nciMinDelta	0.0-100%	Percent change in nvoPower that will force an nvoPower update. Default is 5%. Set to 0.0% to disable.
nc49	nciMaxSendTg	0.0-6553.4s	Maximum time between updates to all network variables. Default is 0 (disabled).