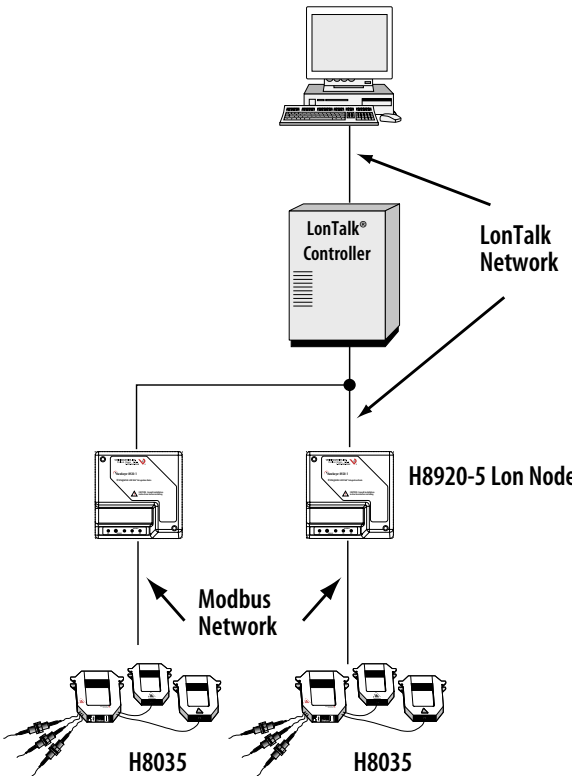# H8920-5

Entegrator Lon Talk®
Integration Node

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H8920-5 Lon Node

Modbus Network

H8035   **H8035**

OPERATION

The Entegrator LON Talk Integration Node allows for the integration of Veris Industries H8035 series Power Meters to a LON Works control/monitoring system. The LON Talk Integration Node converts the 2 power metering values expressed by the H8035 as Modbus protocol to LON Talk. LON® Node can report the data from up to 63 H8035 Enercept power meters which reside on the downstream modbus network. By adjusting an input variable, the Modbus address of the desired meter may be selected. The data can then be recorded before selecting another Enercept. The LON Node can also be dedicated to one H8035 for binding purposes.

Applications

■ Submetering for commercial tenants...allocate costs

■ Energy management and performance contracting

■ Load shedding and demand control

Easy Integration to LON Networks

■ The H8920-5 is pre-configured to accomodate both data points provided by up to 63 H8035 Enercept Meters

■ Easy cost-effective connectivity to Lon Works® systems...makes open connectivity possible

- This product is not intended for life or safety applications.
  This product is not intended for installation in hazardous or classified locations.

- Potential electrocution hazard exists. This is a Class 2 low voltage device. Install only in Class 2 environments.

- Read instructions thoroughly prior to installation
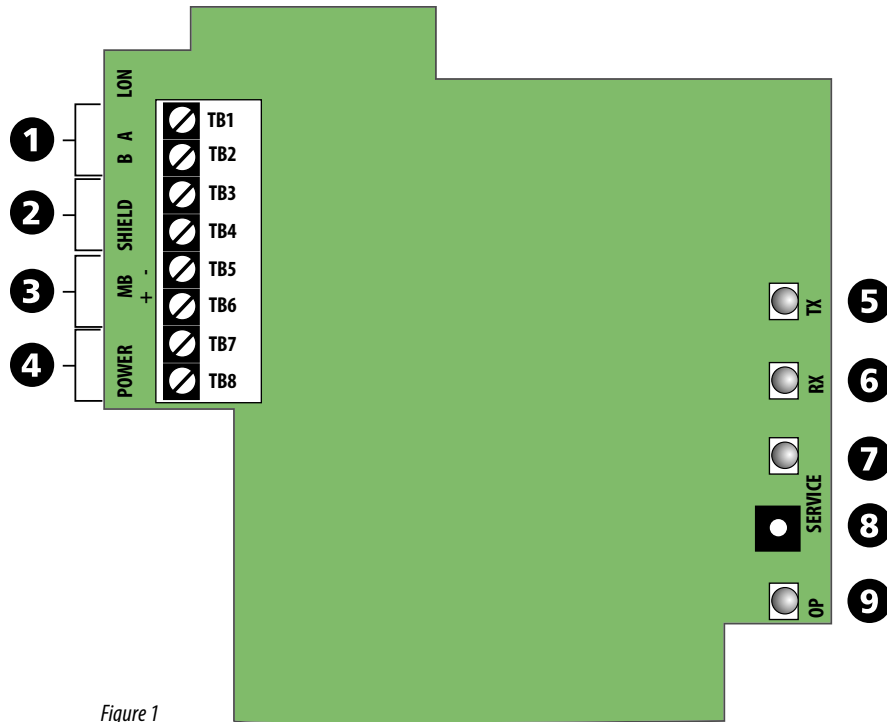
COMPONENT LOCATIONS

Figure 1

1. **LON Talk Terminal Block**
   Make connections to the LON Network at these terminals. Polarity is not important.

2. **Shield Terminal Block**
   Share this terminal block to provide communications shielding for both the LON Talk and Modbus communications networks.

3. **Modbus Terminal Block**
   Make connections to the Enercept Modbus network here.
   Ensure correct polarity.

4. **12-24 VAC/VDC 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 whenever there is an incomplete data exchange between the meter and the LON node. An always off indication means that the meter is not responding to data requests. This will occur if the meter is disconnected unpowered or is incorrectly wired. See the Operation section on page 3 for further details.

PHYSICAL INSTALLATION

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

2. Bring the H8035 RS-485 network cable to the Modbus terminal block marked -MB+. Be sure to 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. Be sure to 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.

4. Connect the 12-24VAC/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. The H8920-5 must be mounted 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 even XO50XXX or DC power supplies such as PS 24-7.5, 15, or 30 will fulfill the requirements. If the installation only has 24VAC available, then a Veris 12 to 24VAC isolation transformer such as X020ADA can provide the necessary isolation.
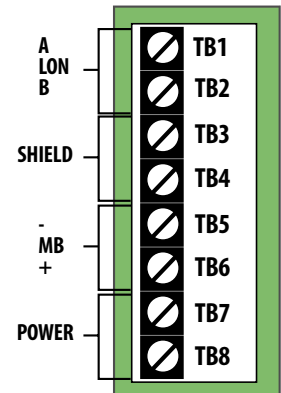

Figure 2

OPERATION AND CONFIGURATION

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

1. Upon power-up, the OP-LED will be lit.
2. During operation, the OP-LED will be turned off if any 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 comissioned), or any units which are in "Unconfigured," "Off-Line" or "Disabled" LonTalk states. Under these conditions, the Neuron chip will not generate any requests to the Modbus network.
   b) No response or an error response from the Modbus network (eg. no meter attached, wrong type of meter (H8036 instead of H8035), broken RS485 wires, etc.)
3. If the OP-LED is turned OFF for any reason covered in 2) above, it will be re-lit when a correct response is received from the Modbus network.
4. Under Condition 2)b) 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 NVO's 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 elimi-nates 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
Modbus address 1 must be used for the H8035 power meter if binding is required. When employing the indexing method addresses 1-63 can be used. Please refer to the H8035 Installation Instructions for meter addressing information.

Auto Propagate Feature
The H8920-5 can automatically propagate all network variables. If nciMaxSendTg is set above zero (default is zero) all variables will be 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.

Resetting the Energy Accumulator
The Energy Accumulator nvoEgyWH may be reset to zero by using the input network variable nviEgyClr using the following 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.

Once cleared,the meter will continue to count kWH from zero until another reset is commanded.

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 figure 1).
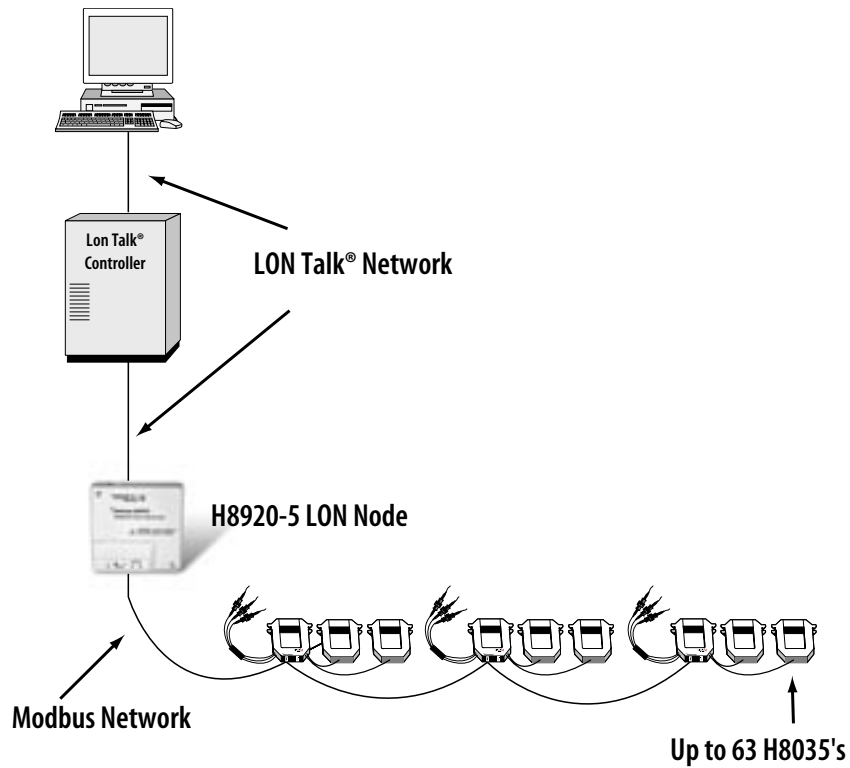
Neuron ID: The Neuron ID is located on a label on the back of the device. It can be written down or peeled off as a removable sticker with bar code for easy insertion to your network.

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

NETWORK OPTIONS

Indexing Option: Allows the node to access up to 63 H8035's for viewing and archiving purposes only.

Lon Talk® Controller

LON Talk® Network

H8920-5 LON Node

Modbus Network

Up to 63 H8035's

Bound Option: For all applications requiring binding.

Lon Talk® Controller

LON Talk® Network

H8920-5 LON Node

* **H8035**

H8035 *

Modbus Network
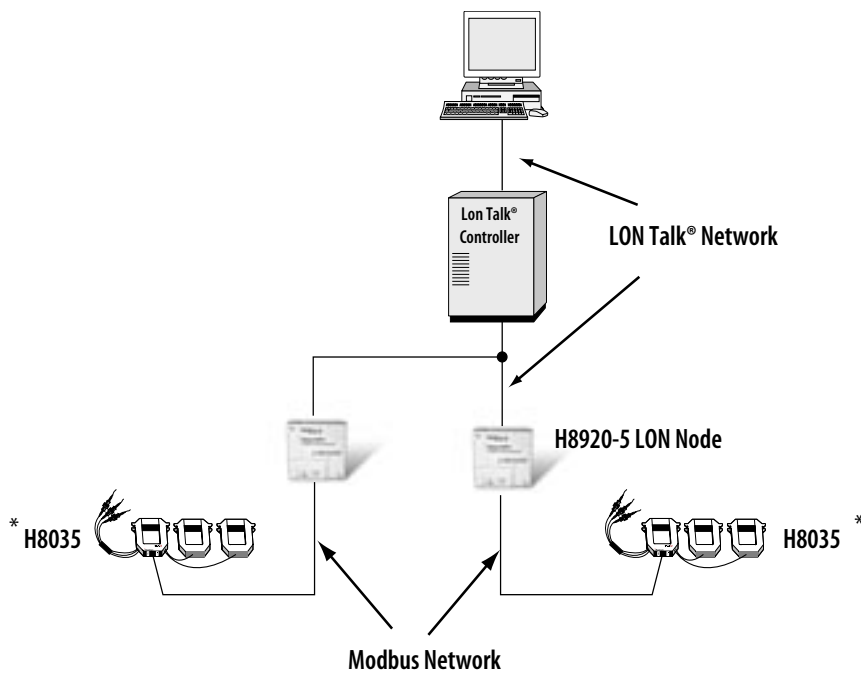
*If the bound option is employed each H8035 must be addressed at 1.

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	0-1e38W	kW Real Power
nv3	nviEgyClr	See text	Used to reset nvoEgykWH to zero
nv4	nviMeterIndex	1-63	Used to select 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 which 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).

DIMENSIONS
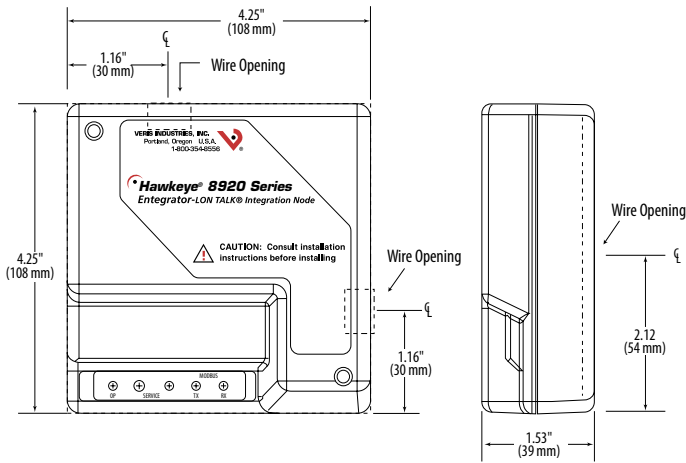
SPECIFICATIONS

LonWorks® Network ....Free topology transceiver, 78 kbps
Modbus Network ....RTU 9600 BAUD, 8N1 format
Meter Data Network Variables ....kWh, Consumption
                                                                               kW, Real Power

Network Variable Type ....Float
Power ....12-24 VAC/DC<100mA isolated source
Temperature Range...0 to 60º C
Humidity Range ....0 - 95% non-condensing