

H8920-3



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LONTalk Integration Node For Use With H8163 Energy 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	Voltage, ØA to Neutral
kW, Real Power	Voltage, ØB to Neutral
kVAR, Reactive power	Voltage, ØC to Neutral
kVA, Apparent power	Amps, Current ØA
Power factor	Amps, Current ØB
Voltage, line to line	Amps, Current ØC
Voltage, line to neutral	Present kW Demand Subinterval
Amps, Average current	Present kW Demand
kW, Power ØA	Peak kW Demand
kW, Power ØB	Present kVAR Demand Subinterval
kW, Power ØC	Present kVAR Demand
Power factor ØA	Peak kVAR Demand
Power factor ØB	
Power factor ØC	
Voltage, ØA to ØB	
Voltage, ØB to ØC	
Voltage, ØA to ØC	

⚠ 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.

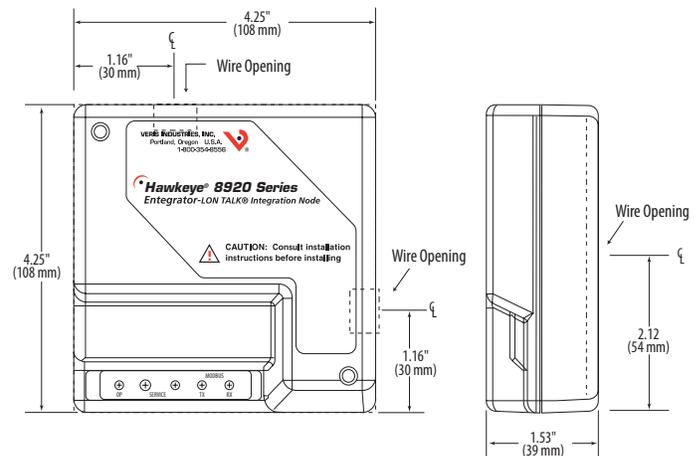
FCC PART 15 INFORMATION

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
H8920-3	H8163 Energy Meter to LonTalk® integration node

DIMENSIONS



OPERATION

The H8920-3 LONTalk Integration Node allows the integration of Veris Industries H8163 Series energy meters with a LON Works control/monitoring system. The H8163 must be equipped with the H8163-CB communication board for this integration to work. The H8920-3 converts the metering data network variables collected by the H8163 as Modbus protocol to LONTalk. Using an indexing technique, the H8920-3 reports the data from up to 63 H8163 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 H8163. The H8920-3 can also be used for binding purposes with a single H8163 meter.

The H8920-3 polls the H8163 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.

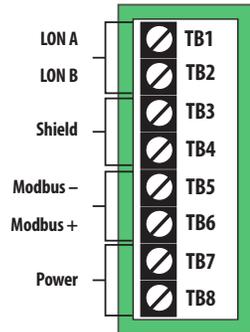
PRODUCT DIAGRAM



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 H8163-CB 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 H8920-3 housing. Lift lid and remove wire guide caps. Set aside with the lid.
2. Bring the H8163-CB 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.
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 H8920-3. The device can be flush mounted to a wall, screw mounted to a 2 or 4s electrical enclosure, or nipple mounted to an existing enclosure. Mount the H8920-3 in a class 2 environment.
8. Refer to the H8163-CB installation instructions for connection of the LON node to the H8163 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 (H8035 instead of H8163-CB), 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 H8163 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 H8163-CB power meter. When employing the indexing method, use addresses 1-63. Please refer to the H8163 Installation Instructions for meter addressing information.

Auto Propagate Feature

The H8920-3 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 H8920-3 will automatically propagate all variables every 10 seconds.

NETWORK OPTIONS

Node Identification

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

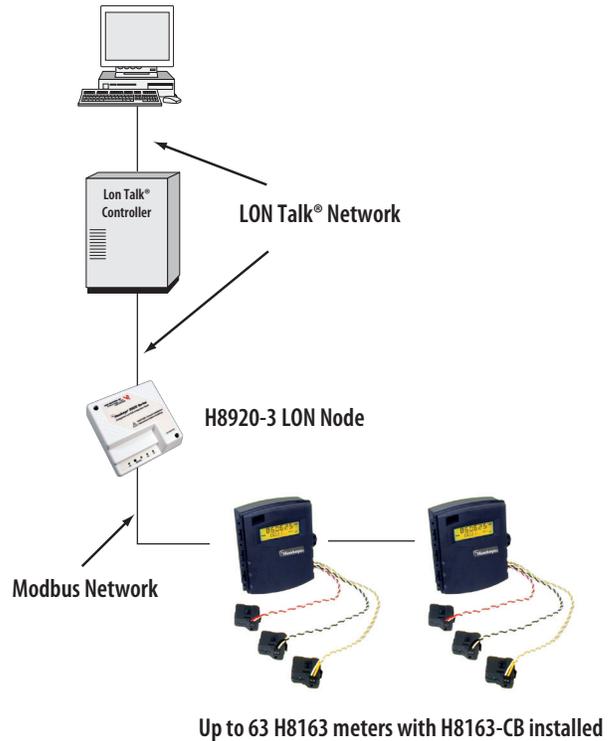
Service Pin: A service pushbutton is provided for this method of identification. (See Product Diagram section).

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.

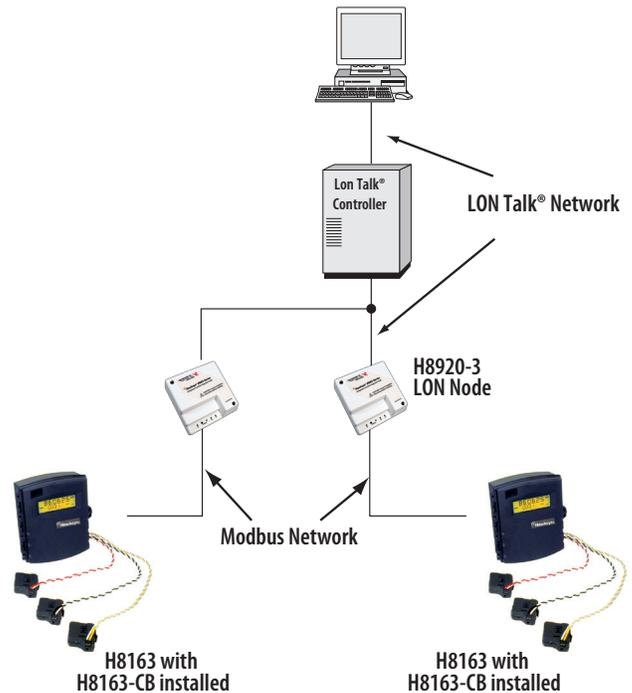
Program ID

The standard program ID for this product is 90:00:14:8A:0F:02:04:01

Indexing Option: Allows the node to access up to 63 H8163 meters for viewing and archiving purposes only



Bound Option: For all applications requiring binding*



*If employing the bound option, address each H8163-CB at 1.

VERIS H8920-3

**MANDATORY
NETWORK
VARIABLE**

Nv2	nvoPower_f	SNVT_power_f
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**MANUFACTURER-
SPECIFIC
NETWORK
VARIABLES**

Nv1	nvoEgyWH	SNVT_elec_whr_f
Nv3	nvoVAR	SNVT_power_f
Nv4	nvoVA	SNVT_power_f
Nv5	nvoPF	SNVT_pwr_fact_f
Nv6	nvoLLVolts	SNVT_volt_f
Nv7	nvoLNVolts	SNVT_volt_f
Nv8	nvoAmps	SNVT_amp_f
Nv9	nvoAPower	SNVT_power_f
Nv10	nvoBPower	SNVT_power_f
Nv11	nvoCPower	SNVT_power_f
Nv12	nvoAPF	SNVT_pwr_fact_f
Nv13	nvoBPF	SNVT_pwr_fact_f
Nv14	nvoCPF	SNVT_pwr_fact_f
Nv15	nvoABVolts	SNVT_volt_f
Nv16	nvoBCVolts	SNVT_volt_f
Nv17	nvoACVolts	SNVT_volt_f
Nv18	nvoANVolts	SNVT_volt_f
Nv19	nvoBNVolts	SNVT_volt_f
Nv20	nvoCNVolts	SNVT_volt_f
Nv21	nvoAAmps	SNVT_amp_f
Nv22	nvoBAmps	SNVT_amp_f
Nv23	nvoCAmps	SNVT_amp_f
Nv24	nvoDmdSubInt	SNVT_power_f
Nv25	nvoCurrDmd	SNVT_power_f
Nv26	nvoPeakDmd	SNVT_power_f
Nv27	nvoRDmdSubIntv	SNVT_power_f
Nv28	nvoRCurrDmd	SNVT_power_f
Nv29	nvoRPeakDmd	SNVT_power_f

Nv30	nviSubIntLen	SNVT_count
Nv31	nviNumSubInts	SNVT_count
Nv32	nviCommand	SNVT_count
Nv33	nviMeterIndex	SNVT_count

Nv34	nvoMeterIndex	SNVT_count
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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	Total Accumulated Energy
nv2	nvoPower	0-1e38kW	Power
nv3	nvoVAR	0-1e38kW	Reactive Power
nv4	nvoVA	0-1e38kW	Apparent Power
nv5	nvoPF	0-1	Power Factor
nv6	nvoLLVolts	0-1e38V	Voltage, Line to Line
nv7	nvoLNVolts	0-1e38V	Voltage, Line to Neutral
nv8	nvoAmps	0-1e38A	Amps
nv9	nvoAPower	0-1e38kW	Power, Phase A
nv10	nvoBPower	0-1e38kW	Power, Phase B
nv11	nvoCPower	0-1e38kW	Power, Phase C
nv12	nvoAPF	0-1	Power Factor, Phase A
nv13	nvoBPF	0-1	Power Factor, Phase B
nv14	nvoCPF	0-1	Power Factor, Phase C
nv15	nvoABVolts	0-1e38V	Voltage, Phase A to Phase B
nv16	nvoBCVolts	0-1e38V	Voltage, Phase B to Phase C
nv17	nvoACVolts	0-1e38V	Voltage, Phase A to Phase C
nv18	nvoANVolts	0-1e38V	Voltage, Phase A to Neutral
nv19	nvoBNVolts	0-1e38V	Voltage, Phase B to Neutral
nv20	nvoCNVolts	0-1e38V	Voltage, Phase C to Neutral
nv21	nvoAAmps	0-1e38A	Amperage, Phase A
nv22	nvoBAmps	0-1e38A	Amperage, Phase B
nv23	nvoCAmps	0-1e38A	Amperage, Phase C
nv24	nvoDmdSubInt	0-1e38kW	Present Real Subinterval Demand
nv25	nvoCurrDmd	0-1e38kW	Current Real Demand
nv26	nvoPeakDmd	0-1e38kW	Peak Real Demand
nv27	nvoRDmdSubInt	0-1e38kW	Present Reactive Subinterval Demand
nv28	nvoRCurrDmd	0-1e38kW	Current Reactive Demand
nv29	nvoRPeakDmd	0-1e38kW	Peak Reactive Demand
nv30	nviSubIntLen	0-65535	* Length of Subinterval multiplied by 5 sec.
nv31	nviNumSubInts	0-6	* Number of Subintervals per Demand
nv32	nviCommand	0-65535	* Command Register
nv33	nviMeterIndex	1-63	Selects Modbus address
nv34	nvoMeterIndex	1-63	Reports selected Modbus address
nc49	nciMaxSendT	0.0-6553.4 sec	Maximum time between nvoPower updates. Default is 0 sec (disabled).
nc52	nciMinSendT	0.0-6553.4 sec	Minimum time between nvoPower updates. Default is 15 sec.
nc88	nciMinDelta	0.0-100.0%	Percent change in nvoPower that will force an nvoPower update. Default is 5%. Set to 0.0% to disable.
nc49	nciMaxSendTg	0.0-6553.4 sec	Maximum time between updates to all network variables. Default is 0 sec (disabled).

* See H8163-CB documentation for further details. Do not bind to these meter configuration variable, because demand calculation restarts each time the meter writes these variables, and bound variables are re-written at regular intervals.