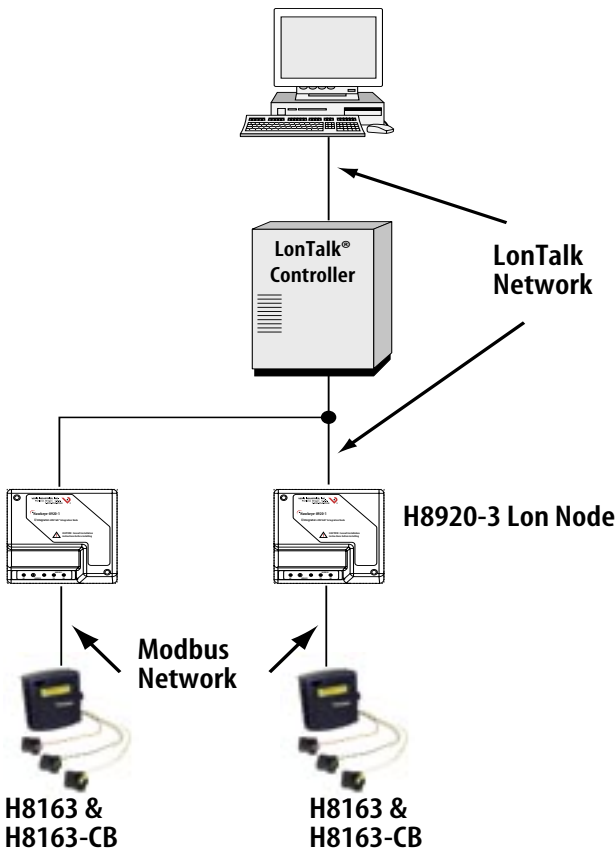


# Installation Instructions

## H8920-3 Entegrator Lon Talk® Integration Node



### VERIS INDUSTRIES



PORTLAND, OREGON USA  
 (503) 598-4564 FAX (503) 598-4664  
 1-800-354-8556

<http://www.veris.com> email: [sales@veris.com](mailto:sales@veris.com)

### OPERATION

The Entegrator LON Talk Integration Node allows for the integration of Veris Industries H8163 series Energy Meters with H8163-CB to a LON Works control/monitoring system. The LON Talk Integration Node converts the metering values expressed by the H8163 as Modbus protocol to LON Talk. Using an indexing technique, the LON® Node can report the data from up to 63 H8163 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 H8163 meter. The LON Node can also be dedicated to one H8163 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 H8920-3 is pre-configured to accommodate the data points provided by up to 63 H8163 Energy Meters with H8163-CB
- 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

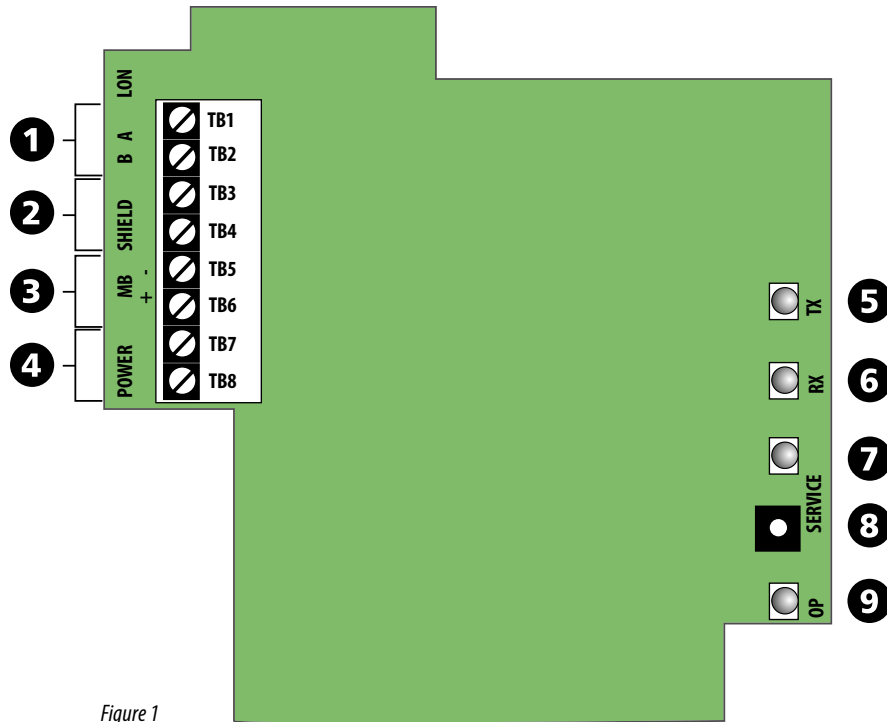


Figure 1

1. **LON Talk Terminal Block**  
Make connections to the LON Network at these terminals.
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.
4. **12-24 VAC/VDC Power**  
Two wire system power terminal block.
5. **TX LED**  
Indicates reception of Modbus network data
6. **RX LED**  
Indicates transmission 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 incorrectly wired. See the Operation section on page 3 for further details.

## PHYSICAL INSTALLATION

1. Remove screws from the lid of the H8920-3 housing. Lift lid and remove wire guide caps. Set to the side with the lid.
2. Bring the H8163-CB 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 H8920-3. 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. The H8920-3 must be mounted 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 even X050XXX or DC power supplies such as PS24-7.5, 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.

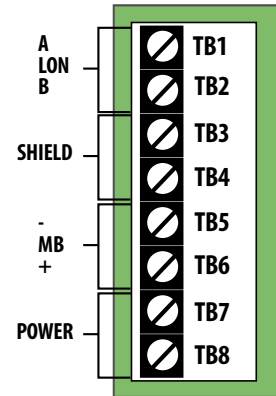


Figure 2

## OPERATION AND CONFIGURATION

### H8163-CB Communications Board

The H8920-3 communicates on the Modbus network at 9600 BAUD, no parity, with a 2-wire physical connection. Refer to the H8163-CB installation instructions to configure the H8920-3 to these same parameters.

### Operation

The H8920-3 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 checksummed 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 commissioned), 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 (H8035 instead of H8163-CB), 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 `nviMeterIndex`, 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 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 `nviMeterIndex` to the desired meter.
- 2) Wait for `nvoMeter Index` to change to the same value as `nviMeterIndex`. Do not read data from the unit until this occurs: You will not be able to determine which meter the data corresponds to until `nvoMeterIndex=nviMeterIndex`. Do not use "time-delays" to wait for the new data to be valid.
- 3) Once `nvoMeter Index=nviMeterIndex`, 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 H8163-CB if binding is required. When employing the indexing method addresses 1-63 can be used. Please refer to the H8163-CB installation instructions for meter addressing information.

### Auto Propagate Feature

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

### 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).

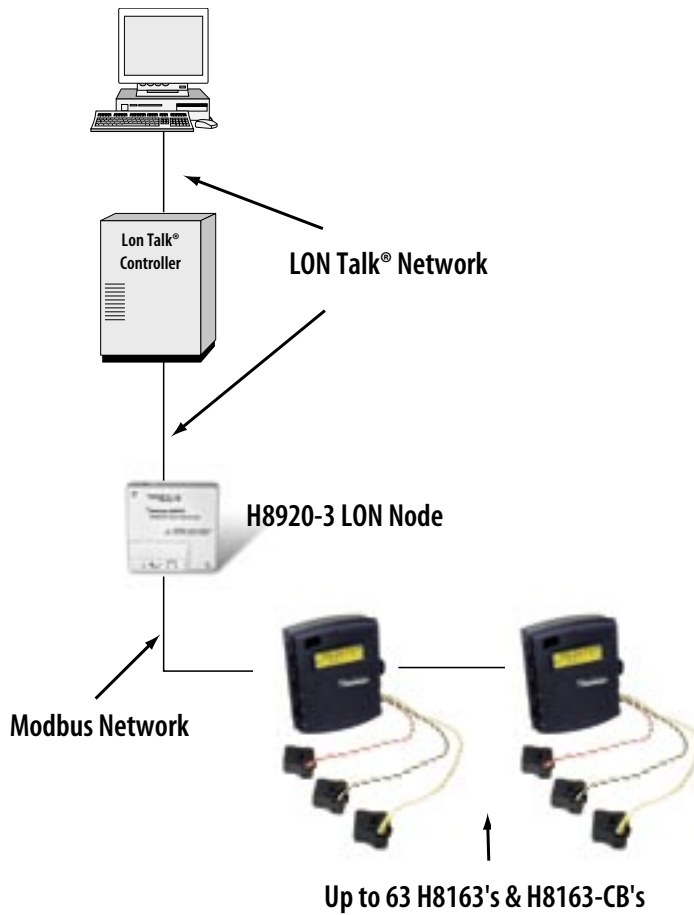
Neuron ID: The Neuron ID is located on a label on the back of the device. It can be written down or peeled off as a removable sticker with bar code for easy insertion to your network.

### Program ID

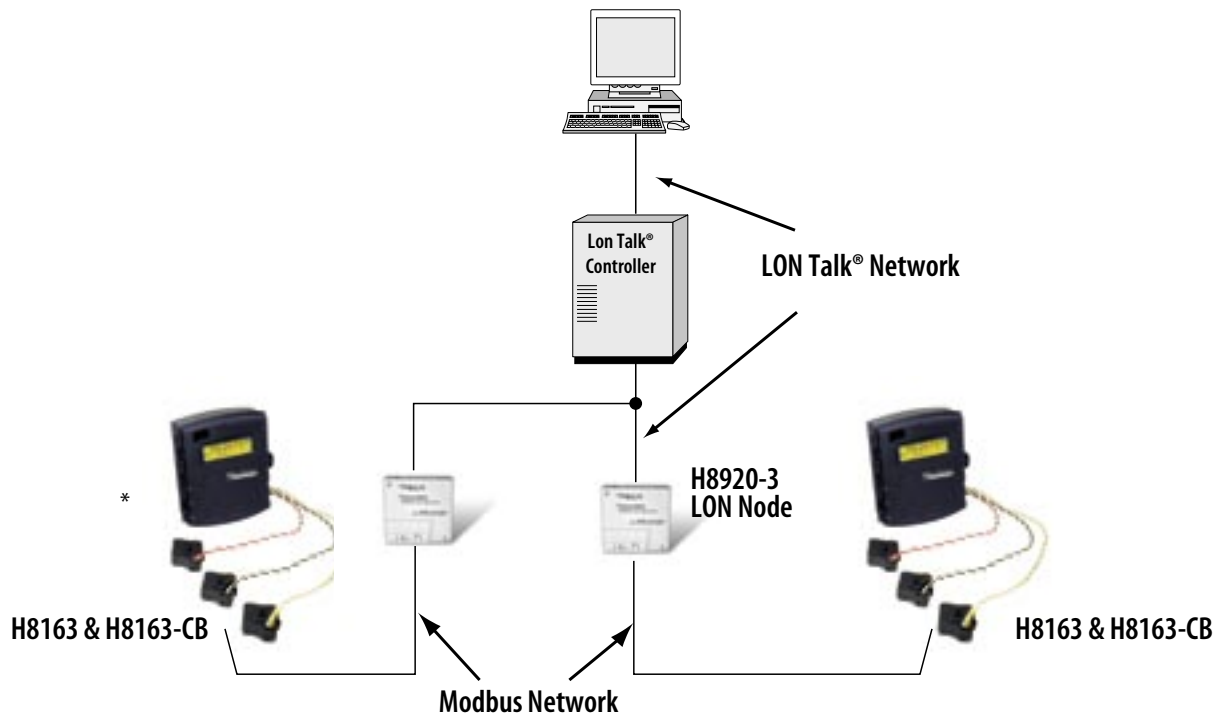
The standard program ID for this product is 90:00:14:8A:0F:02:04:01

# NETWORK OPTIONS

*Indexing Option: Allows the node to access up to 63 H8163's with H8163-CB for viewing and archiving purposes only.*



*Bound Option: For all applications requiring binding.*



*\*If the bound option is employed each H8163-CB must be addressed 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

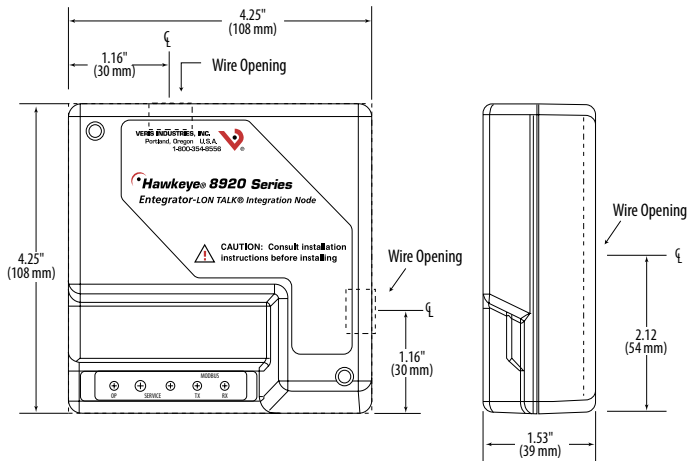
nc49	nciMaxSendT	SNVT_time_sec
nc52	nciMinSendT	SNVT_time_sec
nc88	nciMinDelta	SNVT_lev_cont
nc49	nciMaxSendTg	SNVT_time_sec

## H8920-3 NETWORK VARIABLE DETAILS

NAME	TYPE	RANGE	DESCRIPTION
nv1	nvoEgyWH	0-1e38KWH	Total Accumulated Energy
nv2	nvoPower	0-1e38W	Power
nv3	nvoVAR	0-1e38W	Reactive Power
nv4	nvoVA	0-1e38W	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	0-1e38W	Power, Phase A
nv10	nvoBPower	0-1e38W	Power, Phase B
nv11	nvoCPower	0-1e38W	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	Amps, Phase A
nv22	nvoBAmps	0-1e38A	Amps, Phase B
nv23	nvoCAmps	0-1e38A	Amps, Phase C
nv24	nvoDmdSubInt	0-1e38W	Present Real Subinterval Demand
nv25	nvoCurrDmd	0-1e38W	Current Real Demand
nv26	nvoPeakDmd	0-1e38W	Peak Real Demand
nv27	nvoRDmdSubInt	0-1e38W	Present Reactive Subinterval Demand
nv28	nvoRCurrDmd	0-1e38W	Current Reactive Demand
nv29	nvoRPeakDmd	0-1e38W	Peak Reactive Demand
nv30	nviSubIntLen	0-65535	*Length of SubInterval
nv31	nviNumSubInts	0-6	*Number of SubIntervals per Demand Interval
nv32	nviCommand	0-65535	*Command Register
nv33	nviMeterIndex	1-63	Used to select Modbus Address
nv34	nvoMeterIndex	1-63	Used to report 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	0.0-100.0%	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).

\*See H8163-CB documentation for further details.

## 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
	kVAR, Reactive power
	kVA, Apparent power
	Power factor
	Average power
	Minimum power
	Maximum power
	Voltage, line to line
	Voltage, line to neutral
	Amps, Average current
	kW, Power ØA
	kW, Power ØB
	kW, Power ØC
	Power factor ØA
	Power factor ØB
	Power factor ØC
	Voltage, ØA to ØB
	Voltage, ØB to ØC
	Voltage, ØA to ØC
	Voltage, ØA to Neutral
	Voltage, ØB to Neutral
	Voltage, ØC to Neutral
	Amps, Current ØA
	Amps, Current ØB
	Amps, Current ØC
	Present Demand Sub-Interval
	Present Demand (kW)
	Peak Demand
	Present kVAR Demand Sub-Interval
	Present kVAR Demand
	Peak kVAR Demand
Network Variable Type .....	Float
Power .....	12-24 VAC/DC<100mA isolated source
Temperature Range.....	0 to 60° C
Humidity Range .....	0 - 95% non-condensing