



- Integrated temperature sensor, measurement electronics and communication interface housed in a rugged stainless steel body offering excellent corrosion protection. Electronics are sealed for environmental durability and reliability.
- Typical temperature accuracy is 0.2 degrees C. Please see graphs under Specifications section for more details. Each sensor is individually and digitally calibrated for accuracy.
- ½” NPT thread at sensor end allows duct mounting using a flange.
- ½” NPT thread at wiring end allows use of standard junction boxes.
- Wiring is via flying leads requiring no special connectors or cable assemblies.
- Multiple sensors multiplexed on same wires
- Real-time data and configuration information is exchanged using the LonWorks open communication standard over an **isolated Free Topology, FT-10 Interface**.
- **Operates from 12 VDC, 24VDC, 48VDC and 24VAC power supply rails. Power input is not polarity sensitive**

DESCRIPTION

The Model 1105 is a temperature that is completely self contained. The electronics are sealed for long-term resistance to moisture. The sensor and configuration information is communicated to other devices via the LonWorks communication protocol.

The Model 1105 contains a very flexible power supply input and a robust LonWorks Free Topology, FT-10, communication interface. The network and power inputs are isolated from each other.

Power Supply

The Model 1105 features an exceptionally flexible switching power supply. It allows the Model 1105 to be easily integrated into building automation, industrial automation, telecommunication and remote telemetry type systems. It operates from 12 VDC, 24 VDC, 48 VDC and 24 VAC power supply rails with a design margin better than +/-25% to allow for installation variations. A main advantage of the on board power supply is low power consumption. The unit draws 5 mA

Please see the Specification section for more details.

NOTE

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at 24 VDC. This makes it ideal for low cost battery backup systems if one is desired.

The power supply is well protected against over voltage spikes via solid state transient voltage suppressors. It is additionally protected against over current conditions via fuses on both voltage input lines. On board thermal fuses do not have to be replaced. They will simply recover when the fault condition is corrected. Input voltage is polarity insensitive.

High and Low Temperature Alarms

The Model 1105 has high and low temperature alarm setpoints, which trigger output network variables for communicating the alarm conditions to other LonWorks products. Alarm deadbands, nciTempAlmDb, and nciRhAlmDb implement hysteresis on temperature and humidity alarm setpoints respectively.

The nvoTempHiAlm is set to ON when nvoTemp is larger or equal to nciTempHiAlmSp and turn off when nvoTemp is below $\text{nciTempHiAlmSp} - \text{nciTempAlmDb}$.

LonWorks Physical Interface

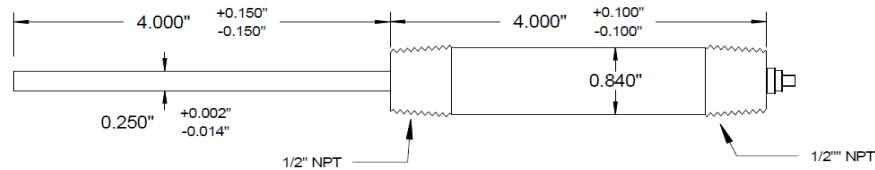
The physical communication interface is implemented using an isolated Free Topology LonWorks transceiver, FT-10,. The LonWorks communication lines are isolated from the power supply input lines. Connection to the LonWorks network is via 2 wires that are not

nvoTempHiAlm is set to NUL if hardware problems are detected.

The nvoTempLoAlm is set to ON when nvoTemp is lower or equal to nciTempLoAlmSp and turn off when nvoTemp is above $\text{nciTempLoAlmSp} + \text{nciTempAlmDb}$. nvoTempLoAlm is set to NUL if hardware problems are detected.

polarity sensitive. The network interface has DC blocking capacitor so it can also be directly connected to LPT-10 networks. For maximum protection, the network input has additional external clamps relative to each other to limit surge voltages.

WIRING AND INSTALLATION



Probe tip with sealed sensor

Features / Dimensions

Power and Isolated FT-10 LON Communication Service Sw and LED

The Model 1105 may be mounted in a large variety of ways. In its most basic form the entire probe can be simply fastened into any 1/2 inch NPT port with access to the process being measured. The probe can also be used with an optional flange for duct mounting or suspended from a conduit box fastened at the wiring end. For outdoor applications please consider our Model 40A which is a rain and sun guard. While the Model 1105 is sealed, the Model40A reduces error introduced by direct sunlight. Otherwise outdoor temperature accuracy can be enhanced by mounting in a shaded location.

WARNING	For serviceability and protection, the Model 1105 should NOT be inserted directly into a liquid environment or stream. The use of a thermo well is necessary.
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The Model 1105 is supplied with four flying leads to connect to the LonWorks network and power supply. The table below defines the connections by wire color. Power and network connections are NOT polarity sensitive.

Power & LonWorks, FT-10 Communication Wiring	
(2) White Wires	Polarity insensitive power supply connection
(2) Blue Wires	Polarity insensitive LonWorks Network connection.

Before the Model 1105 can be used, it must first be installed into a LonWorks network. This procedure is slightly different for each system. It often involves telling the system to add a new device. The system will then ask the user to press the Service switch on the device. When pressed, the Model 1105 will transmit its unique physical Neuron ID. The System then assigns a logical address to the unit and then data from the device is available. The Service switch and LED are located at the wiring end of the Model 1105.

NETWORK DATA INTERFACE

The sensor data and configuration is available using Standard Network Variable formats that have been defined by the LonMark Association. The Model 1105 has self documentation of the network interface enabled and it can be uploaded by the installation tool. Additionally, an XIF is also attached to this PDF datasheet.

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Configuration Network Variables

Configuration network variables are input network variables that are non-volatile and retained when power is lost. If using the Echelon LonMaker software, simply use the Browser to view and edit the following values.

Network Variable	Format	Default	Description
nciTempOffset	SNVT_temp_diff_p	0.0 C	Offset for temperature calibration. This value is added to nvoTemp
nciTempDelta	SNVT_temp_diff_p	0.3 C	Minimum change required temperature network output update.
nciMinSendT	SNVT_time_sec	5.0 seconds	Minimum time between temperature network output updates even if nciTempDelta is met.
nciMaxSendT	SNVT_time_sec	30.0 seconds	Maximum time between network variable updates whether or not changes occur. This is sometimes called heartbeat.
nciSwMinSendT	SNVT_time_sec	0.5 seconds	Minimum time between alarm and switch related output network variables whether or not a change occurred. Applies to both switch inputs
nciTempHiAlmSp	SNVT_temp_p	100.0 C	High temperature alarm setpoint.
nciTempLoAlmSp	SNVT_temp_p	-100.0 C	Low temperature alarm setpoint.
nciTempAlmDb	SNVT_temp_diff_p	1.0 C	Temperature alarm deadband. Controls temperature and Dew Point Temperature alarm hysteresis.

Output Network Variables

The Model 1105 firmware is designed to control output network variable traffic for integration into large LonWorks networks. On power up the unit randomizes the start of network updates. The nciMaxSendT configuration network variable is the send heartbeat for the entire device. Output network variables will be transmitted at least once every nciMaxSendT. To disable this, set nciMaxSendT to 0.

The output network variables nvoTemp, nvoFixPtTemp, and nvoFloatTemp are only transmitted if there is a minimum of nciTempDelta change from the last transmitted value. However, output network variables are only transmitted if nciMinSendT has elapsed since last update. nciMinSendT acts as a throttle to minimize traffic even if the data is changing rapidly.

The nciMinSwSendT is the throttle for nvoTempHiAlm, and nvoTempLoAlm output network variables.

Network Variable	Format	Description
nvoTemp	SNVT_temp_p	Temperature output 0.01 C resolution. Set to 327.67 C on any hardware errors.
nvoFixPtTemp	SNVT_temp	Temperature output. 0.1 C resolution. Set to 6279.5 C on any hardware errors.
nvoFloatTemp	SNVT_temp_f	Temperature in floating point format. Set to 1E38 on any hardware error.
nvoTempHiAlm	SNVT_switch	High temperature alarm output status. Set to ON when alarm is active, OFF when inactive, and NUL on any hardware error.
nvoTempLoAlm	SNVT_switch	Low temperature alarm output status. Set to ON when alarm is active, OFF when inactive, and NUL on any hardware error.

SPECIFICATIONS

Temperature

Sensing Element	Solid state
Model 1105 Accuracy	<p>Typical accuracy is +/- 0.2 C 10 to 60 C</p>
Temperature Range	-40 to 85C
Resolution	0.01 C

Electronics

Operating Environment	-40 to 85C
Input Voltage Operating	9 to 55 VDC or 18 to 39 VAC at 0.25W maximum.
Input Voltage Maximum	65 VDC / 45 VAC. Please note at this voltage the unit will start to draw more current and may trip the internal thermal fuses but will not be damaged. Normal operation resumes when voltage returns to operationg range.
Input Power Protection	Input power is fused and transient voltage protected. (Fuses do not need to be replaced)

Dimension and Materials

Housing Material	Body and extension tube is 304 stainless steel
Duct Mounting Insertion Depth	4 inches
Dimension	<p>The technical drawing shows a side view of the transmitter with the following dimensions and tolerances:</p> <ul style="list-style-type: none"> Extension tube length: 4.000" (+0.150", -0.150") Body length: 4.000" (+0.100", -0.100") Body diameter: 0.840" Threaded section length: 0.250" (+0.002", -0.014") Thread specifications: 1/2" NPT (on both ends)

ORDERING INFORMATION

1105	Model 1105 LonWorks Temperature Transmitter
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