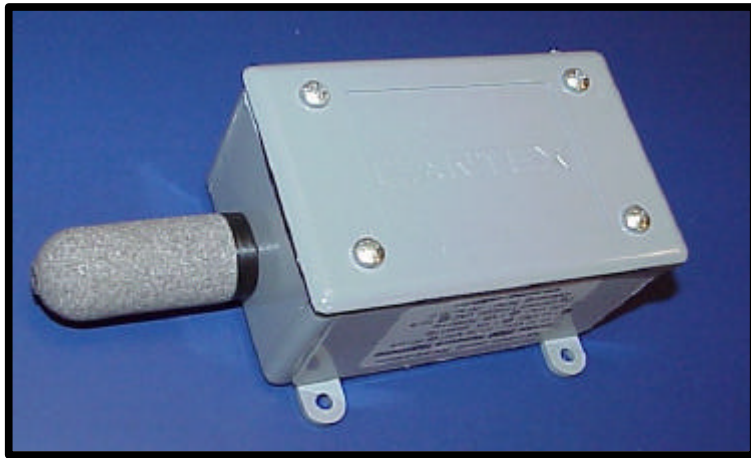


**NETWORK HUMISTAT**

- Compact, self-contained de-humidifier controller.
- 0.5 degrees C accuracy typical. RH sensor is digitally calibrated for 2% accuracy.
- Open communication standard using LonWorks Protocol using Standard Network variable types.
- Can be used for humidity control as well as temperature and humidity monitoring via optional Network Interface Module or two analog voltage outputs.
- 110 VAC, 220 VAC 50/60 Hz., and low voltage AC/DC versions are available.
- On-board 110/220 VAC 10 Amp relay output with arc suppression and LED status indication.
- Mode switch allows testing of output relay function.
- Jumpers allow the humidity setpoint to be changed manually.
- Minimum Cycle Time, Maximum On-Time and Deadband configuration parameters protects the equipment and prevent fast on/off cycling.
- Configuration parameters can be accessed and modified via network.

**DESCRIPTION**

The Model 2500 Network Humistat is a standalone de-humidifier controller. It contains a temperature sensor, humidity sensor, microprocessor, measurement electronics, and an optional network communication interface. The external de-humidifier is controlled via an on-board relay. The relay has a rating of 10 Amps at 110 or 220 VAC.

The temperature and humidity sensors are in a porous filter, away from the electronics. This allows a more accurate measurement of air temperature and humidity for two reasons. One, it isolates the sensors from temperature generated by the electronics. Two, it provides excellent airflow around the sensors.

The sensor and configuration information is communicated to other devices via the LonWorks communication protocol. This allows multiple sensors to be used over a simple four-wire bus installation.

The unit is available in 110 VAC, 220 VAC, or low voltage AC/DC versions.

**WIRING AND INSTALLATION**

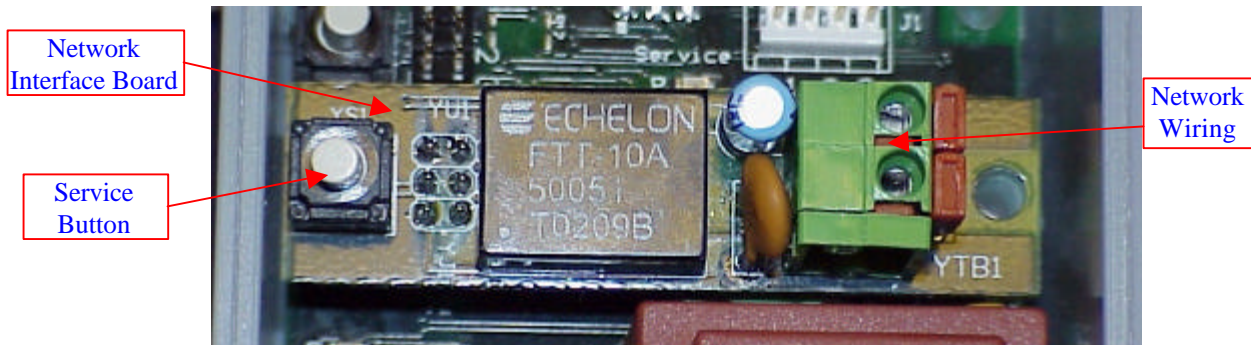
The Model 2500 can be panel or wall mounted via four screws. For best results and accuracy the Model 2500 enclosure should be mounted with the filter horizontal to the ground.



# MODEL 2500

## Installing the Network Interface Module

The Network Interface Module is an optional feature of the Model 2500. It allows temperature and humidity to be digitally monitored as well as allow changes to the factory default configuration parameters is required.



The Network Interface Module can actually be plugged into a unit to configure it and then removed before the unit is put into service. The Model 2500 will retain the configuration parameters even after the Network Interface Module is removed. The interface also includes the Service switch used to install onto a LonWorks network.

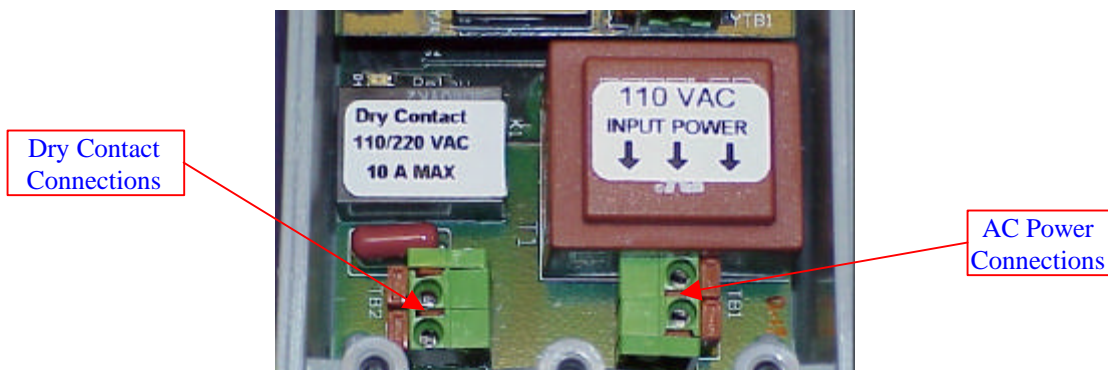
**Make sure power is removed from the Model 2500 before plugging the Network Interface Module.**

## Connecting Power

Input power for the Model 2500 comes into a two position terminal block labeled TB1. The terminals are not polarity sensitive.

### WARNING

Externally fuse the AC input using a ½ Amp rated fuse.  
Please wire the AC input **before** applying electrical power.  
Failure to do so may result in electrical shock.



## Connecting The Relay Output

The dry contact or relay output is provided on the terminal block labeled TB2. The terminals are not polarity sensitive. However, any device switched via the Model 2500's relay should be externally fused at 10 Amps or less.

### WARNING

Externally fuse any device switched by the on-board relay using 10 Amps rated fuse.  
Please wire the relay output **before** applying electrical power.  
**Failure to do so may result in electrical shock.**

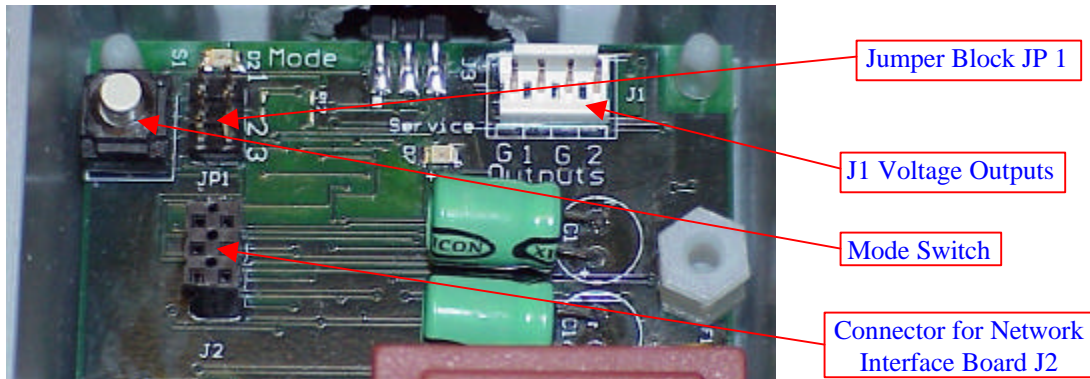
## Operating Modes and Testing Output Relay

The Model 2500 has two operating modes: Auto and Test. The Mode LED is green and is on when in Test Mode. The default mode on power-up is Auto. When in Auto Mode, the Model 2500 executes its control function.

To toggle between Test and Auto Mode, hold the Mode Switch for 10 seconds and then release. While in Test Mode, you can test the function of the output relay as well as attached equipment by pressing and releasing the Mode Switch. To go back into Auto Mode, hold the Mode Switch for 10 seconds and release.

## The Humidity Setpoint

The Humidity Setpoint can be set either by three on-board jumpers between 20 and 80% in 10% increments or via the network. With the network option, the Humidity Setpoint can be changed between 0 and 100% with a resolution of 0.05%.



Jumpers 1-3 on jumper block JP1 take priority over the network Humidity Setpoint, nciRHSetpoint. The jumpers are used as follows:

# MODEL 2500

JP1-1	JP1-2	JP1-3	Humidity Setpoint
OFF	OFF	OFF	Network Humidity Setpoint nciRHSetpoint is used. Factory default is 40%
ON	OFF	OFF	20%
OFF	ON	OFF	30%
ON	ON	OFF	40%
OFF	OFF	ON	50%
ON	OFF	ON	60%
OFF	ON	ON	70%
ON	ON	ON	80%

If the network interface is installed, the actual setpoint used can also be read via the nvoRHSetpoint variable. If nvoRHSetpoint does not equal the nciRHSetpoint, it implies that the jumpers are being used.

## Controlling Humidity

The Model 2500 de-humidification algorithm controls humidity by turning on an external de-humidifier when the humidity rises above the Humidity Setpoint. The de-humidifier is turned on for a minimum period of nciMinCycleTime. The de-humidifier is turned off for a minimum period of nciMinCycleTime when the humidity drops below the Humidity Setpoint minus the nciRHDeadband. nciRHDeadband defaults to 3% and nciMinCycleTime defaults to 150 seconds.

An additional parameter, nciMaxOnTime, ensures that the de-humidifier is never on for more than a specified period of time before it is turned off for a period of nciMinCycleTime. By default, nciMaxOnTime is set to 0, which disables the nciMaxOnTime function.

## Voltage Outputs

The Model 2500 has two analog voltage outputs available at connector labeled J1. This allows remote monitoring of temperature and humidity without using the Network Interface Module. To protect the electronics, the outputs have high output impedance. They are over voltage and short circuit protected.

For maximum accuracy, use measuring devices with input impedance of 500K Ohms or above. This is common on most digital multi-meters and high quality analog input modules.

The connector J1 has four positions labeled, G, 1, G, 2. The terminals labeled G are ground references. The terminals labeled 1 and 2 output a voltage as follows:

Output (J1)	Function	Range	Comments
1	Humidity	0 – 4 volts represents 0 – 100% humidity	Multiply voltage output by 25 to get the percent humidity. Example, 2 volts equals 50% humidity. A value of 5 volts indicates an error condition.
2	Temperature	0 – 4 volts represents -50 to 150 C	Multiply meter reading by 50 and subtract 50 to get the temperature in C. Multiply by 90 and subtract 58 to get temperature in F. Example, 1.5 volts is 25C or 77 F. A value of 5 volts indicates an error condition.

## NETWORK INTERFACE

### Configuration Network Variables

Name	Type	Default	Description
nciTempOffset	SNVT_temp_p	0	Offset for calibrating nvoTemp if needed
nciRHOffset	SNVT_lev_percent	0	Offset for calibrating nvoRH if needed.
nciTempDelta	SNVT_temp_p	0.3C	Change of nvoTemp before a new value is sent
nciRHDelta	SNVT_lev_percent	5%	Change of nvoRH before a new value is sent
nciMinSendT	SNVT_time_sec	5 seconds	Minimum amount of time between updates to nvoRH, nvoTemp, and nvoRHSetpoint
nciMaxSendT	SNVT_time_sec	5 seconds	Maximum amount of time between updates to nvoRH, nvoTemp, and nvoRHSetpoint
nciRHSetpoint	SNVT_lev_percent	40%	Humidity setpoint. This value is used only if all jumpers on JP1 are off.
nciMinCycleTime	SNVT_time_sec	150 seconds	Minimum amount of time the output relay will be turned off and on.
nciMaxOnTime	SNVT_time_sec	0 seconds	Maximum amount of time the output relay will be energized. Set to 0 to disable maximum on-time function.
nciRHDeadband	SNVT_lev_percent	3%	The output relay is turned off when the humidity drops below the Humidity Setpoint minus nciRHDeadband.

### Output Network Variables

Name	Type	Description
nvoTemp	SNVT_temp_p	Measured temperature
nvoRH	SNVT_lev_percent	Measured humidity
nvoRHSetpoint	SNVT_lev_percent	Actual humidity setpoint used.

# MODEL 2500

## GENERAL SPECIFICATIONS

### Temperature

Sensing Element	Solid State
Accuracy	+/- 0.5 C typical 15 C to 55 C : +/- 1.0 C typical entire operating range
Temperature Range	-20 to 70 C
Resolution	0.1 C

### Relative Humidity

Sensing Element	Solid State Capacitive
Accuracy / Resolution	+/- 2% RH, 5-95% RH, 0-50C - +/-3% RH 0 to 70C - Resolution is 0.04%
Maintenance	No routine maintenance required
Sensor Stability	+/-1% RH typical at 50% RH in 5 years

### Voltage Outputs

RH Voltage Output	0 to 4 volts represents 0 – 100%. 5 volts indicates fault condition. Resolution is 0.5%, accuracy is 1%
Temperature Voltage Output	0 to 4 volts represents –50 to 150C. 5 volts indicates fault condition. Resolution is 1 C, accuracy is 2 C.
Temperature / RH Voltage output impedance	1500 Ohms. Should be read with a device that has a minimum input impedance of 500,000 Ohms.

### Electronics

Operating Environment	-20 to 70C, 0-95% RH non-condensing
CPU	3120 Neuron
Input Power (Low Voltage AC/DC version)	15 to 32 VDC or 12 to 26 VAC at 50 mA typical
Input Power (110 VAC version)	110 VAC +/- 15% 50/60 Hz. at 1 VA. Must be externally fused using 0.5 Amp fuse.
Input Power (220 VAC version)	220 VAC +/- 15% 50/60 Hz. at 1 VA. Must be externally fused using 0.5 Amp fuse.
Power Transformer (110/220 VAC versions)	UL / VDE rated Sealed, 4000 VAC isolation
Input Power Protection	Low voltage ac/dc input power is fused and transient voltage protected. (Fuses do not need to be replaced). 110 / 220 VAC versions must be fused using an external 0.5 Amp fuse.
Dry Contact / Relay Output	110/220 VAC at 10 Amp maximum or 30 VDC @ 10Amp. 2500 VAC isolation. Service life 20 million operations minimum. Contact resistance is 30 milliohm. UL and CSA rated for 250 VAC, 10 A, general purpose at 100,000 cycles Relay contacts have arc suppression. Output must be fused using an external 10 Amp fuse or less.
Network Transceiver Type	Echelon FTT-10A transceiver at 78 kbps. DC blocking capacitor for LPT10 network.
Terminal Blocks	Screw-less terminal blocks. Accepts up to 16 GA wire. Input power is polarity insensitive. Network wiring is polarity insensitive. Relay output is polarity insensitive.

### Dimension and Materials

Overall Dimensions	2.8" W x 6.8" L x 2.25" H
Mounting Holes	4 holes on a 3.25" square grid
Housing Material	ABS Plastic

# MODEL 2500

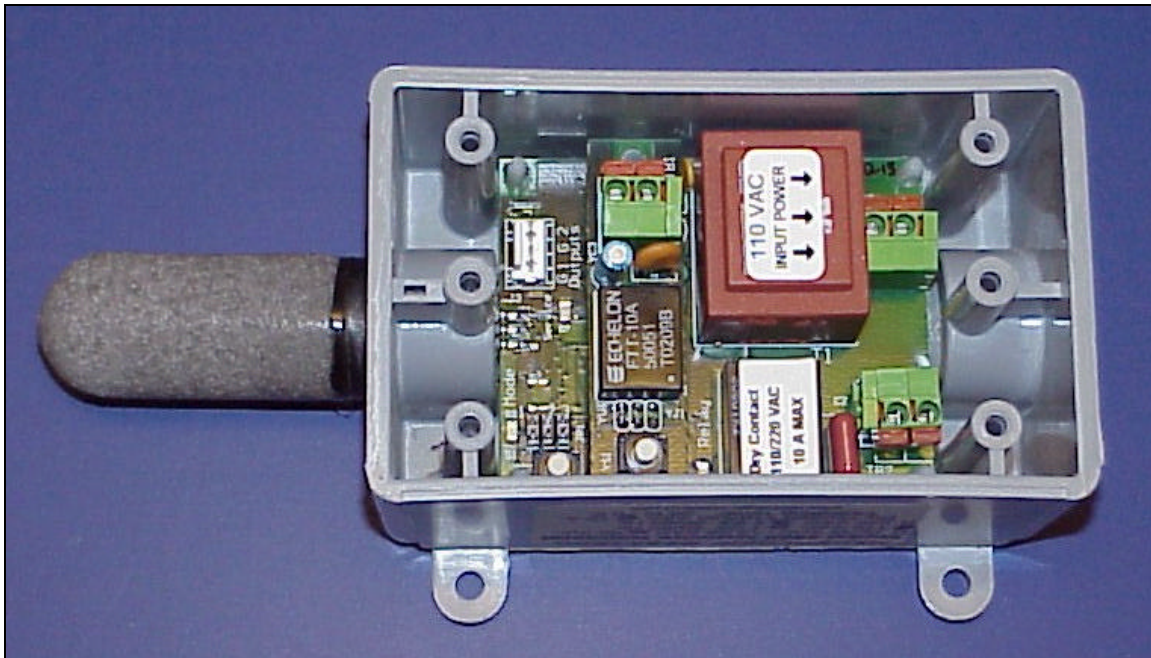
## ORDERING INFORMATION

2500	Model 2500 Network Humistat
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Code	Network Transceiver Option
-0	TP/FTT-10A Network Interface Module
-1	No Network Interface

Code	Input Power Option
-0	Low Voltage AC/DC Model
-1	110 VAC 50/60 Hz.
-2	220 VAC 50/60 Hz.

2500	-0	-1	Model 2500 Network Humistat with FTT-10 Network Interface Module and 110 VAC power input option.
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