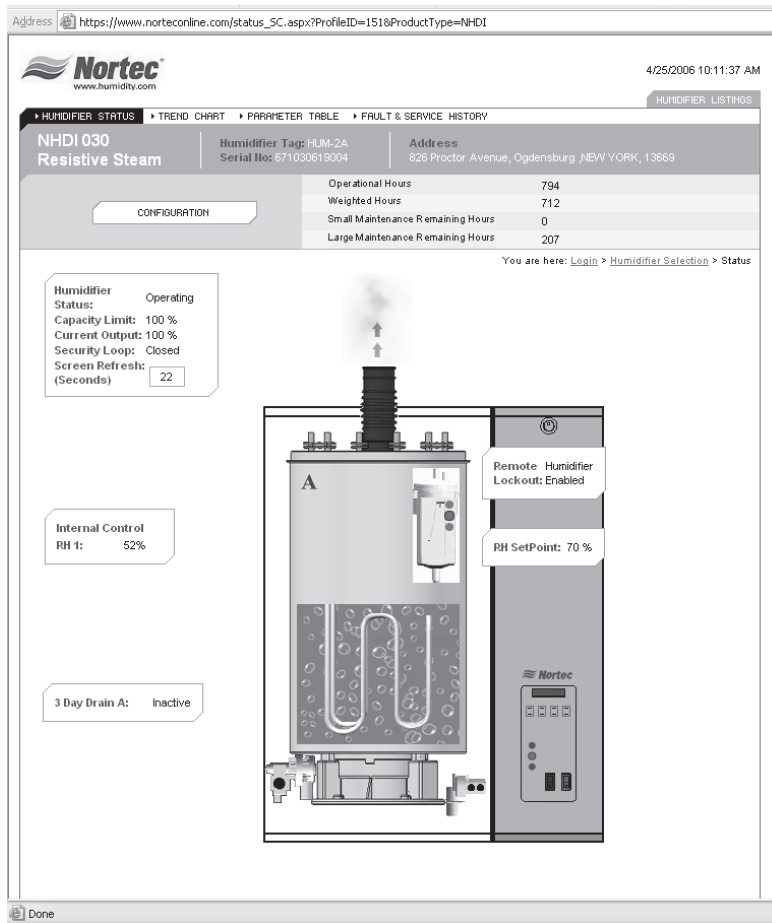


Installation Instructions



Address: https://www.norteconline.com/status_SC.aspx?ProfileID=151&ProductType=NHDI

4/25/2006 10:11:37 AM

Nortec
www.humidity.com

Humidifier Selection > Status

NHDI 030
Resistive Steam

Humidifier Tag: HUM-2A
Serial No: 671030619004

Address
826 Proctor Avenue, Ogdensburg, NEW YORK, 13669

Operational Hours	794
Weighted Hours	712
Small Maintenance Remaining Hours	0
Large Maintenance Remaining Hours	207

CONFIGURATION

You are here: [Login](#) > [Humidifier Selection](#) > [Status](#)

Humidifier Status: Operating

Capacity Limit: 100 %

Current Output: 100 %

Security Loop: Closed

Screen Refresh: (Seconds)

Internal Control RH 1:

3 Day Drain A: Inactive

Remote Humidifier Lockout: Enabled

RH SetPoint: 70 %

Done

IMPORTANT: Read and save this guide for future reference. This guide to be left with equipment owner.

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OVERVIEW

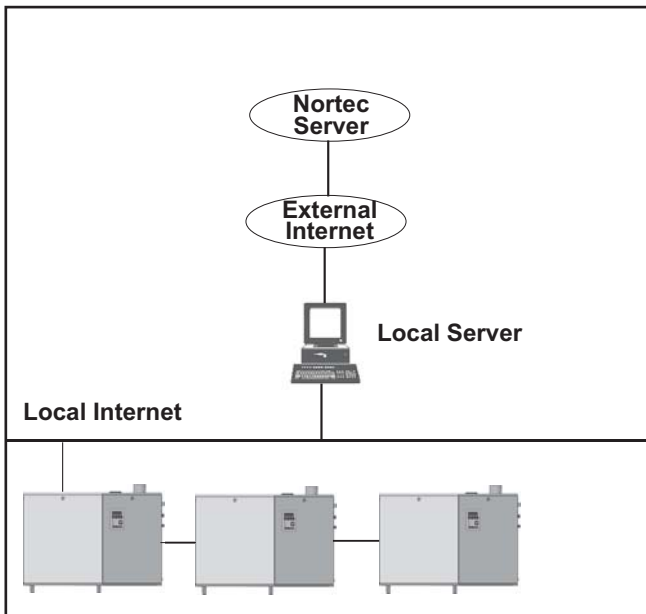
The Nortec OnLine Option provides a TCP/IP-based remote monitoring capability to equipped NHSC or NHDI series humidifiers. The Nortec OnLine option operates in conjunction with a centralized server based at Nortec's facilities. This server allows the user to monitor and control various aspects of the humidifier operation. If a fault or service warning is detected the Nortec server will send an email response to three user-specified personnel. Nortec OnLine also provides Nortec with the ability to diagnose the humidifier's performance remotely, ensuring quick response to customer inquiries.

Nortec OnLine provides the advantages of immediate notification and quick diagnosis of humidifier fault conditions, should they arise. Nortec OnLine also provides a BMS-like interface when a dedicated Building Management System is not available or unfeasible. All that is required for Nortec OnLine's operation is either a Ethernet connection, an external phone line or a wireless network connection.

NETWORKING

It is possible to network up to a maximum of 8 humidifiers, configured for Nortec OnLine, to a single Nortec OnLine Module. This OnLine Module is located internally to the humidifier. When multiple humidifiers are desired, only a single module is required and will be installed inside a 'lead' unit, which can be specified by the user. Since each unit is separately addressed, it is possible to monitor and control each unit independently.

Figure #1
Networking



OFFERINGS

Different networking configurations may be achieved and are mostly dependant on the type of network present at the site. Nortec OnLine has been designed to be used over a variety of network topographies. Simply specify at the time of order, which type of connection type would be preferable and any details that may apply (refer to the configuration form at the back of the manual). Once in the field, a user can differentiate between the different connection types by inspecting a tag adjacent to the OnLine Module. This identifier tag will provide details such as connection type and part number information.

For sites where Network Ethernet connections are readily available, the OnLine Module may be plugged into the Internet through an Ethernet port present on the control board. Nortec OnLine is capable of operating with either a Static IP address or a Dynamic IP address.

The Nortec OnLine Module also comes equipped with a serial port which allows a dial-up modem or a wireless GPRS modem to be connected. All the necessary programming for the connection details will be pre-programmed at the factory.

WIRING

Ethernet Connections

The necessary internal wiring for the Nortec OnLine Module is already present except for the Network connection that can be made internally to the unit. To network multiple humidifiers, configured for Nortec OnLine, simply 'daisy-chain' them to each other at the network terminal strip, provided with the humidifier (Figure #2).

Figure #2
Connecting Multiple Humidifiers to a Lead Humidifier

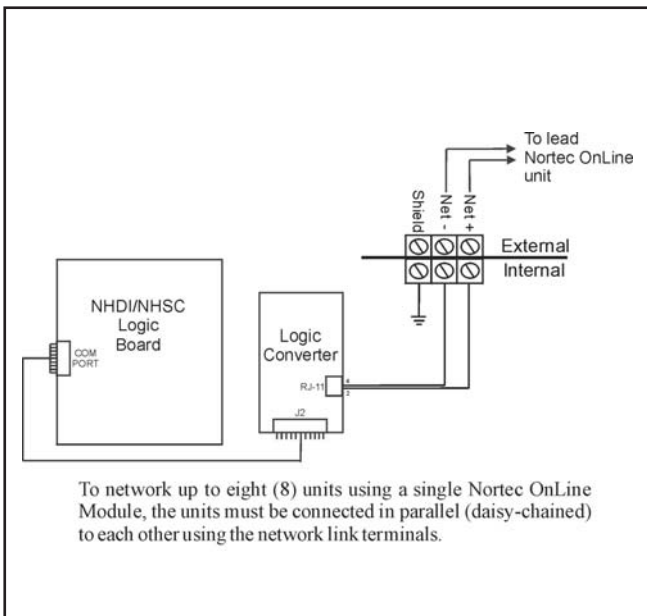


Table #1 refers to the recommended wire types and maximum recommended lengths from the Nortec OnLine Module. Since communication between the humidifiers and Nortec OnLine will always occur via a EIA-485 signal type, Nortec recommends using 18-24 AWG shielded, twisted pair wire between the lead humidifier and each of the secondary humidifiers. Cable runs between the Nortec OnLine Module and the furthest slave humidifier should not exceed 2,600 feet. Signal boosters or repeaters may be necessary for longer wire runs.

The Nortec OnLine Module has been designed and tested to operate with a variety of third-party manufacturers equipment that promote wireless connectivity. Should a user desire to connect the OnLine Module to the internet via a wireless connection such as 802.11b or g class network, Nortec can provide recommendations on which equipment to use.

GPRS or Dial-up Connections

The Nortec OnLine Module is also able to connect with the Nortec Server via a dial-up connection to a local Internet Service Provider or even through a GPRS connection. Should such a connection be desirable Nortec can recommend a variety of third party manufacturers equipment that the Nortec OnLine Module has been proven to work well with.

If a dial-up or GPRS connection is desired it will be necessary to contact Nortec at the time of order to provide information on the required settings.

VARIABLE DEFINITION

Nortec OnLine is capable of monitoring dozens of control variables present in a Nortec humidifier. By providing the data values to these variables on a remote platform, Nortec OnLine simplifies the troubleshooting.

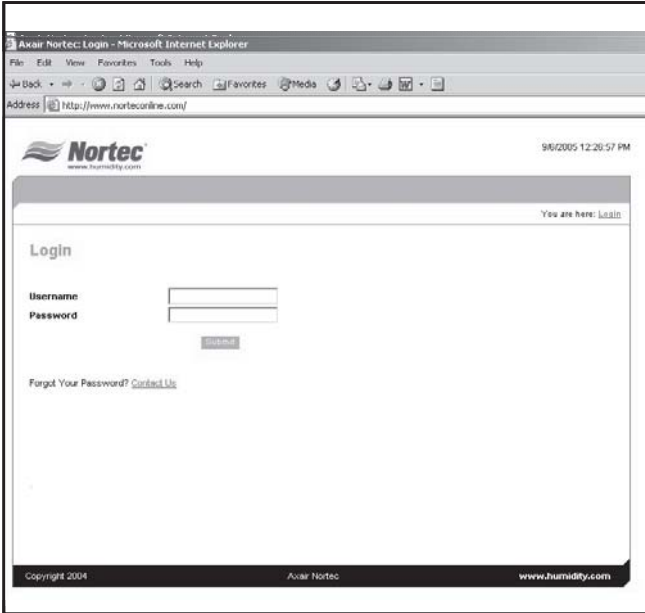
Table #1
Recommended Wire Types and Lengths

Signal Type	Polarity		Recommended Cable	Maximum Recommended Distance from Nortec Module
	A	B		
EIA-485, 2-wire	Net +	Net -	18-24 AWG Shielded, Twisted Pair	2,600 ft.

USER WEBPAGE INTERFACE

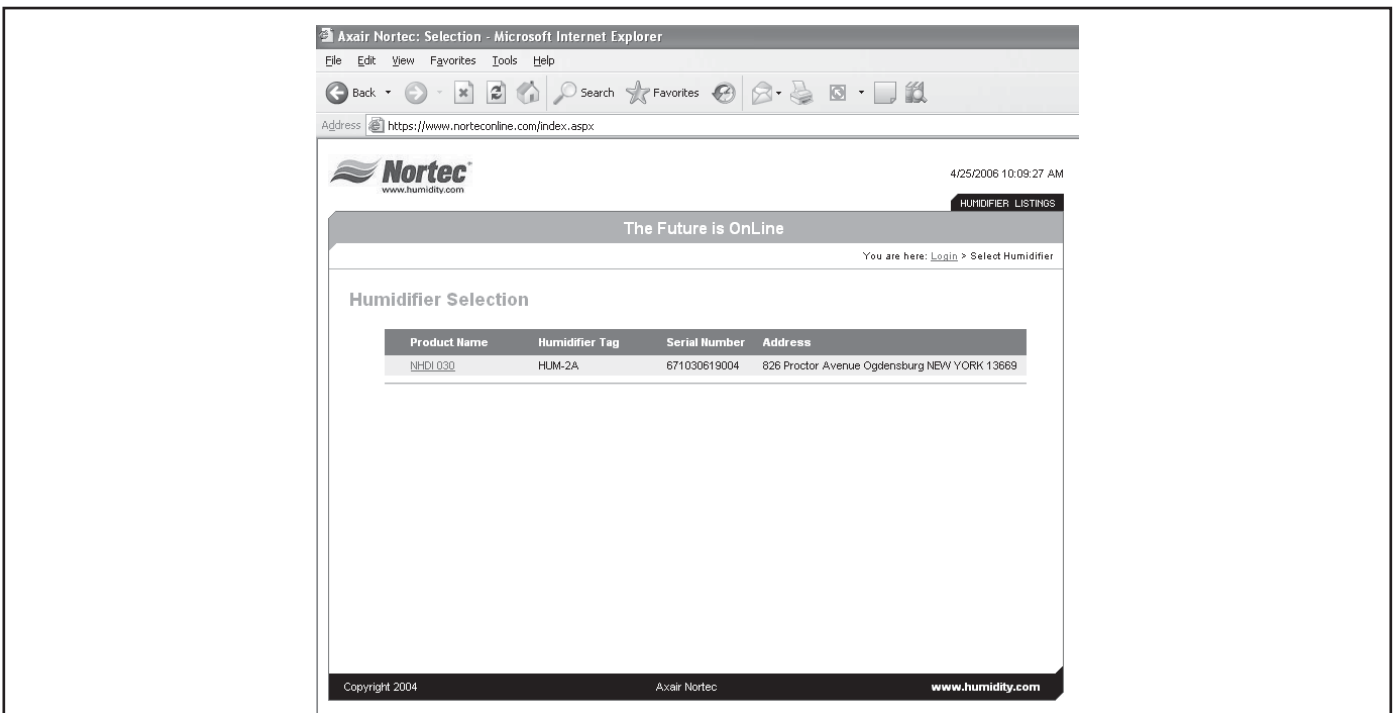
The Nortec OnLine web page can be accessed via the internet address www.norteconline.com.

Figure #3
Nortec OnLine Homepage



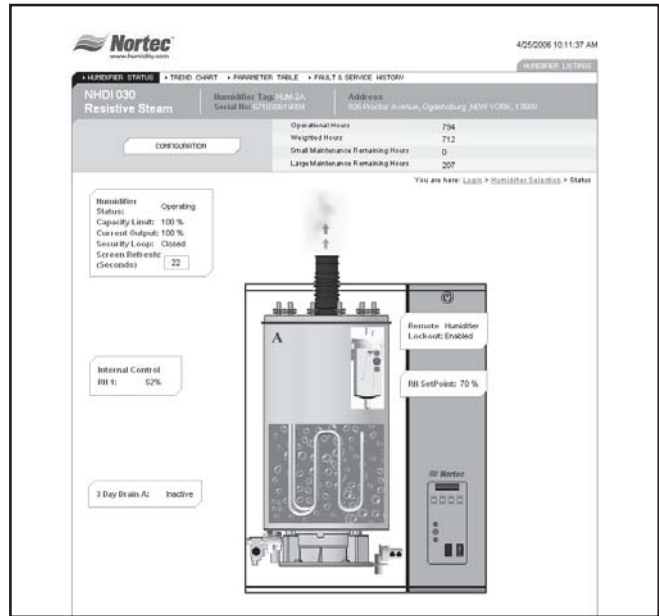
After initially logging into the Nortec OnLine server the user will be presented with a list of humidifiers currently registered with the Server program. Each humidifier will be listed with a unit type identifier, a serial number and an address descriptor.

Figure #4
List of Humidifiers



By clicking on the humidifier name, the user will then be brought to a status screen with an image of the selected humidifier. (Refer to Figure #5).

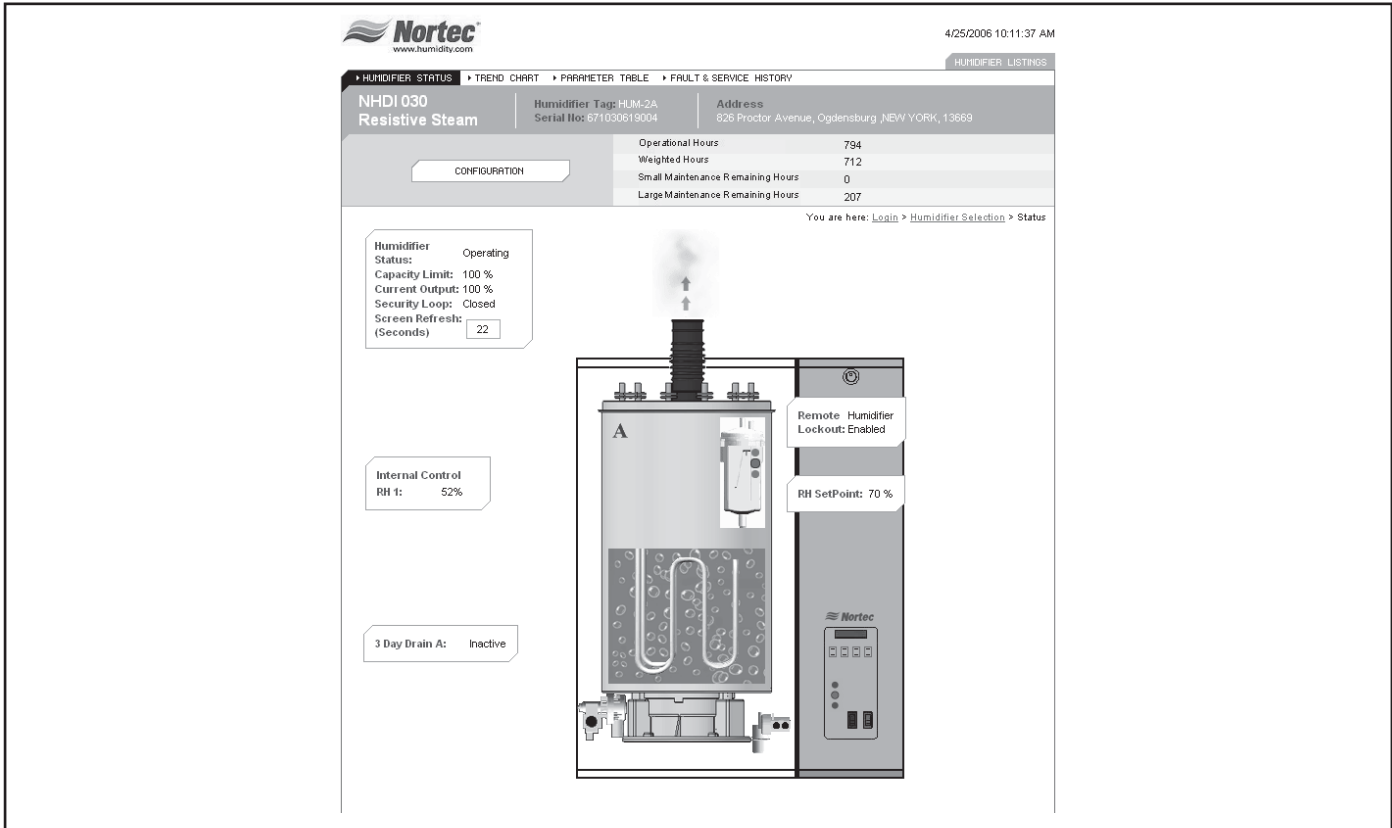
Figure #5
Status Screen



The status screen (Refer to Figure #6) provides the user with a quick reference to the unit's operation.

Several key status values can be gathered at a glance. Refer to Table #2 for a description of the variables displayed on the status screen.

**Figure #6
Status Screen**



**Table #2
Status Screen Variables**

Variable Name	Displayed Information	Description	Product Line	
			NHSC	NHDI
3 Day Drain	On/Off Chart Item	Indicates if the three day tank drain feature is enabled.	X	X
Capacity Limit	0-100% Chart Item	Indicates the current value for the capacity limit set point (adjustment) on the humidifier.	X	X
Channel 1 Demand/%RH	0-100% Chart Item	Indicates the current Demand or %RH signal being supplied to Channel 1 of the humidifier from a connected sensor.	X	X
Channel 1 Setpoint	0-100% Chart Item	Shows current value for the setpoint of channel 1. This value is only applicable when unit is set to respond to a %RH signal.	X	X
Channel 2 Demand/%RH	0-100% Chart Item	Indicates the current Demand or %RH signal supplied to Channel 2 of the humidifier from a connected sensor.	X	X
Channel 2 Setpoint	0-100% Chart Item	Shows current value for the setpoint of channel 2. This value is only applicable when unit is set to respond to a %RH signal and configured for dual channel.	X	X
Drain Valve Status	On/Off Animated	Indicates when the tank drain has been activated and the unit is draining water.	X	X
Fault Indicator	On/Off Lamp Indicator	Provides current fault status. The red fault light is lit when a fault is detected.	X	X
Fill Valve Status	On/Off Animated	Indicates if the humidifier is filling the water tank.	X	X

**Table #2
Status Screen Variables - CONTINUED**

Variable Name	Displayed Information	Description	Product Line	
			NHSC	NHDI
Full Tank Blowdown	On/Off Chart Item	Indicates if the full tank blowdown feature is enabled or disabled. Feature is toggled by dip-switch on mainboard.	X	X
Keep Warm [Keep Warm used on status screen not Keep Warm.]	On/Off Chart Item	Indicates if the water tank keepwarm feature is enabled or disabled. Feature is toggled by dip-switch on mainboard	X	X
Operational Hours	Hours Chart Item	Displays the amount of the time the humidifier has been in operation.	X	X
Remaining Service Hours. Hours to next Service.	Hours Chart Item	Displays the number of operational hours left until the next suggested service period is due.	X	X
Serial Number	Alpha-Numeric String	Indicates the Humidifiers Serial Number for quick reference.	X	X
Service Indicator	On/Off Lamp Indicator	Provides current service status. The yellow service light is lit when service is due.	X	X
Software Version	Numerical Chart Item	Indicates the software version installed on the Humidifiers mainboard	X	X
Steam Production	On/Off Animated	Indicates that the humidifier is producing steam in response to a demand signal.	X	X
System Demand Correct Output	0-100% Numerical Data	Displays the humidifier's current demand output	X	X
Unit Address	Mailing Address Chart Item	Provides details on the Humidifier's location.	X	X
Unit Model	Unit Identifier Chart Item	Indicates the model type & size of the selected Humidifier.	X	X
Unit Status	On/Off Lamp Indicator	Indicates if unit has responded to a demand signal. The green LED is on when a demand signal is present.	X	X
Water Level High	On/Off Lamp Indicator	Yellow light is on if water is at a high level. Light combinations are possible for mid-state water levels.	X	X
Water Level Mid-Range	On/Off Lamp Indicator	Green light is on if water is at optimal level. Light combinations are possible for mid-state water levels	X	X
Water Level Low	On/Off Lamp Indicator	Red light is on if water is at a low level. Light combinations are possible for mid-state water levels.	X	X
Weighted Hours	Hours Chart Item	Equivalent operating hours convelated to 100% steam production, e.g. Weighted hours = 2 hours at 50% demand.	X	X

Configuration Screen

By selecting the Configuration button (see Figure #7 & Figure #8) located near the top of the webpage, the user is able to adjust control parameters for the humidifier.

Table #3 provides a description of the control variables provided to the user.

Figure #7
Configuration Button

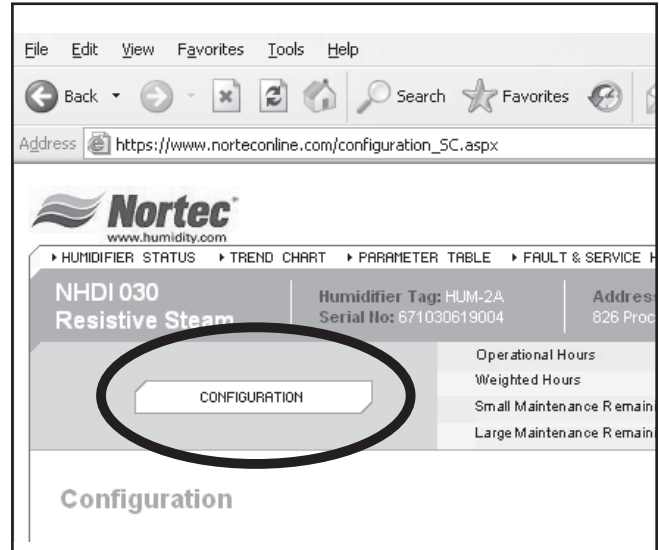
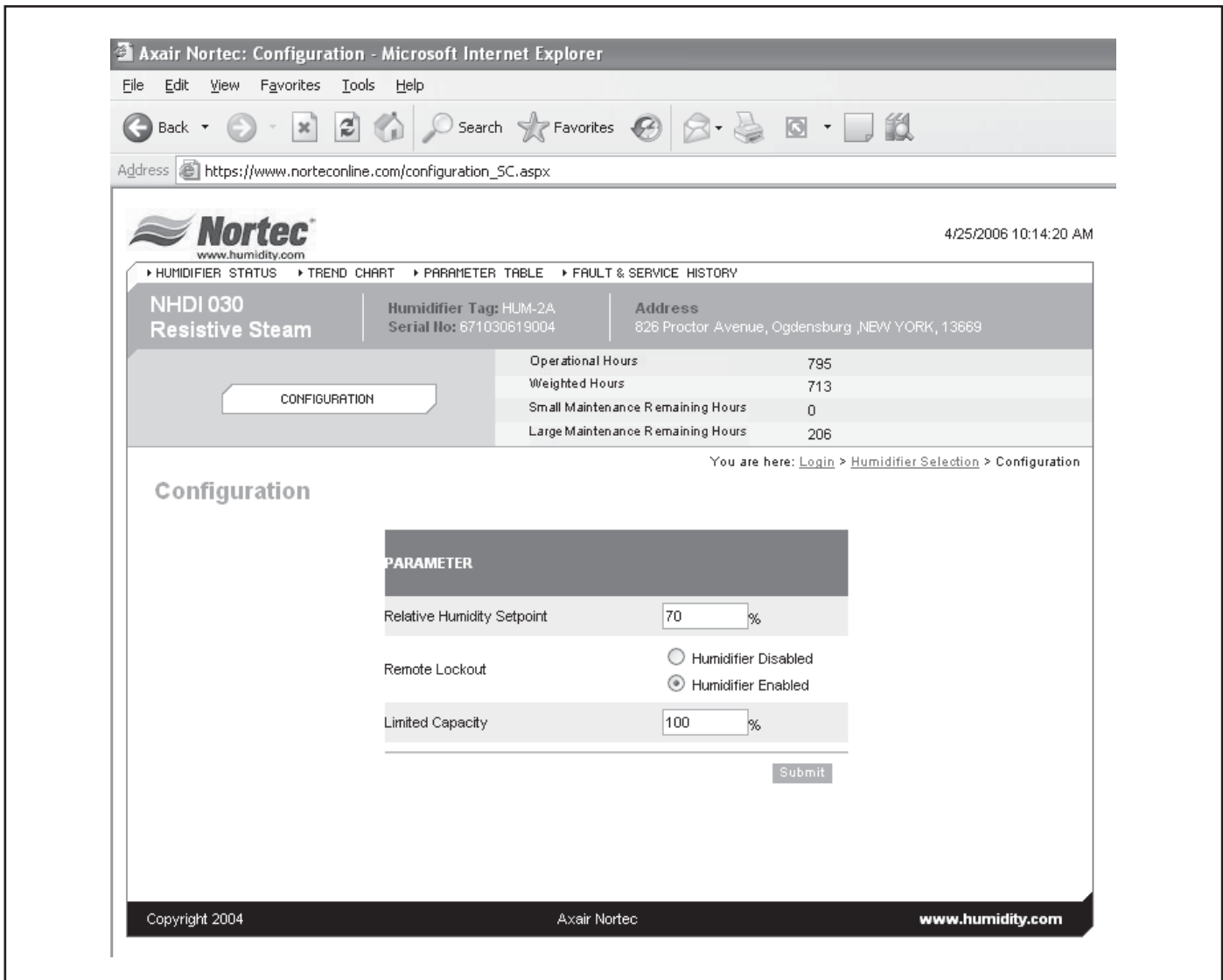


Figure #8
Configuration Screen



**Table #3
Control Variables**

Variable Name	Setting Range	Description	Product Line	
			NHSC	NHDI
Limited Capacity	0-100%	Allows the user to adjust the total steam output the unit will be able to produce at 100% demand.	X	X
Relative Humidity Setpoint	0-100%	Sets the Channel 1 Setpoint. This feature is only enabled when the humidifier is set to operate with an RH signal.	X	X
Relative Humidity Setpoint 2	0-100%	Sets the Channel 2 Setpoint. This feature is only enabled when the humidifier is set to operate with an RH signal.	X	X
Remote Lockout	Humidifier Enabled / Humidifier Disabled	Forces the humidifier into a lockout state where steam production is halted and the unit will not respond to any demand input.	X	X

At the top of the screen the user is presented with options for three different screens (see Figure #9).

One option will provide a trending graph (See Figure #10) that monitors points such as %RH/Demand and setpoint settings for channel 1 and channel 2 as well as the current humidifier's output. This trend graph is capable of keeping historical data for each particular unit.

Figure #9
Three Screen Options

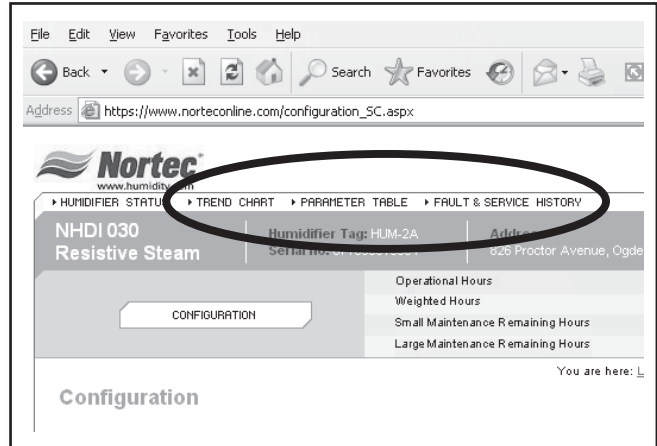
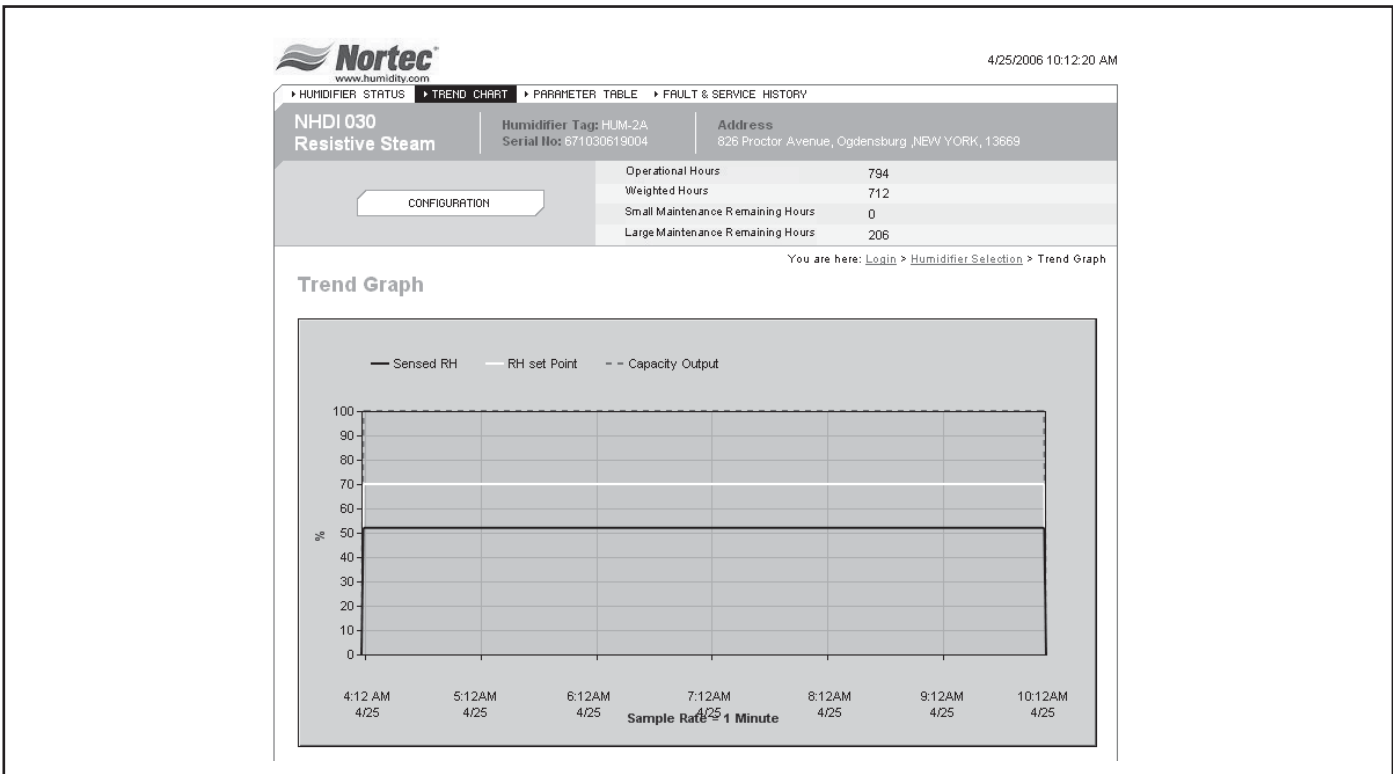


Figure #10
Trend Data



The Fault and Service History link (See Figure #11) provides a list of up to 18 fault or service errors that the humidifier has experienced. This can provide valuable troubleshooting information when faced with a recurring problem.

The Parameter link (See Figure #12) provides an in-depth view of all the variables available through Nortec OnLine. From the parameter listings a user can determine if the proportional coefficient for the PI band on channel 1, or even what version of software the unit is currently operating with.

**Figure #11
Fault and Service History**

4/25/2006 10:13:32 AM

Nortec
www.humidity.com

► HUMIDIFIER STATUS ► TREND CHART ► PARAMETER TABLE ► **FAULT & SERVICE HISTORY**

NHD1 030
Resistive Steam

Humidifier Tag: HUM-2A
Serial No: 671030619004

Address
826 Proctor Avenue, Ogdensburg, NEW YORK, 13669

Operational Hours: 795
Weighted Hours: 713
Small Maintenance Remaining Hours: 0
Large Maintenance Remaining Hours: 206

CONFIGURATION

You are here: [Login](#) ► [Humidifier Selection](#) ► [Fault & Service History](#)

Fault History

Month/Date/Year Time	Fault Message	Tank	Description Of Fault	Troubleshooting
4/24/2006 3:03:11 PM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
4/24/2006 1:51:30 PM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 11:56:08 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 11:51:38 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 11:09:56 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 10:58:21 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 9:13:43 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 9:13:43 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.
3/22/2006 9:11:43 AM	Max. drain time exceeded	B	Allowed drain time expires between two levels.	Connect or replace drain pump. Inspect outlet lead from unit, replace if necessary. Clean water outlet lead and siphon. Clean or replace hoses.

**Figure #12
Parameter Link**

4/25/2006 10:12:52 AM

Nortec
www.humidity.com

► HUMIDIFIER STATUS ► TREND CHART ► **PARAMETER TABLE** ► FAULT & SERVICE HISTORY

NHD1 030
Resistive Steam

Humidifier Tag: HUM-2A
Serial No: 671030619004

Address
826 Proctor Avenue, Ogdensburg, NEW YORK, 13669

Operational Hours: 794
Weighted Hours: 712
Small Maintenance Remaining Hours: 0
Large Maintenance Remaining Hours: 206

CONFIGURATION

You are here: [Login](#) ► [Humidifier Selection](#) ► [Parameters](#)

Parameters

ITEM	PARAMETER NAME	SETTING / STATUS	DESCRIPTION
1	Operational Status (Panel green LED)	On	On indicates actively humidifying in response to a control demand.
2	Humidifier Demand	100 %	Indicates the total humidifier demand as a percentage based on Humidity Controls demand.
3	Limited Capacity (Manual)	100 %	Displays the setting of the maximum output limit (10-100%), adjustable on the humidifier keypad or through the 'Configuration' link above.
4	Humidity Control Type	Relative Humidity Sensor Proportional and Integral	Relative Humidity Sensor - used when a sensor/transducer is connected to the humidifier and the internal humidity control functions (Set point, P-Band, and Integral) are used. Demand Signal - used when a control signal representing capacity demand (typically from a Building Management Control System) is connected to the humidifier. Does NOT utilize the internal Humidity control functions.
5	Channel 1 Control Signal Demand/Sensed Relative Humidity (RH)	52 %	This field displays the Modulation demand input, channel 1, typically from a Building Management Control System.
6	Relative Humidity Setpoint 1	70 % RH	This parameter adjusts the desired humidity setting typically in the space. Adjustment range from 10-100% RH.
7	Fault Indicator (Panel LED)	Normal	Refer to Fault Service history (Tab above) for detail. Indicates Fault Condition. If a Fault is detected, humidifier shuts down and an e-mail is automatically generated to pre-programmed addresses.
8	Service Status (Panel LED)	Normal	Indicates Service is required or a Warning condition exists. When active e-mails are automatically generated to pre-programmed addresses.
9	Unit Warning Status	Normal	Indicates that a warning condition exists. Note: Warning conditions may be created by by an open security loop.
10	System Status	Operating	Indicates Unit operational status where: OPERATING - means humidifying FAULT - indicates the humidifier has a fault condition. STANDBY - indicates the humidifier does not have a demand signal.

NORTEC ONLINE START-UP CHECKLIST

Wiring:

Humidifier-to-Humidifier Connection:

- Each individual Humidifier linked to lead Unit
- Connection can be direct or daisy-chained to other units

Network Connection:

- Lead Unit wired to Local Network (Ethernet, GPRS, Dial-up) :
- Network activity verified

Controls Wired:

- Directly to humidifiers:

Start-Up Procedure:

- Ensure power is being supplied to the humidifier and Nortec OnLine Module.
- Verify power to Nortec On-Line Module (Power LED should be lit).
- After power-up, verify network communication.
- Verify variable operation after mapping is complete.
- Perform regular humidifier start-up check.

Troubleshooting:

Nortec OnLine Module Indicator Lights:

The OnLine Module has four status indicator LEDs that provide a quick-reference for troubleshooting communication faults with the Nortec OnLine option. Table 2 provides a description of each LEDs function.

Table #4
Nortec OnLine Module Status LED Description

LED Name	Color	Function
Module Status	Off	Indicates that the OnLine Module is not receiving power.
	Green	Indicates the OnLine is operating normally.
	Orange	Indicates that the OnLine is loading the firmware installed on the module.
Serial Link Status	Flashing Green	Indicates that the OnLine is receiving a network packet from an serial connection.
	Flashing Red	Indicates that the OnLine is transmitting a network packet on a serial connection.
	Orange	Displayed when the OnLine is booting.
Ethernet Activity / Collision	Flashing Green	Indicates that the OnLine is receiving a network packet from an Ethernet connection.
	Flashing Red	Indicates that the OnLine is transmitting a network packet on a Ethernet connection.
Network Link	Off	No network connection is present.
	Green	The OnLine has detected the presence of a 10Mbps network.
	Orange	The OnLine has detected the presence of a 100Mbps network.

Table #5
Troubleshooting Communication Problems

Problem	Solution
1. The Nortec OnLine server cannot read/write any information to any of the networked humidifiers.	<p>Verify that the network connection is made and is connected properly.</p> <p>Verify that the correct network settings are being used. The Nortec OnLine Module may need to be restarted to load the new settings.</p> <p>Check the Ethernet Link (if Ethernet enabled) or Serial Link (if modem enabled) communication LED's to determine if there is any network traffic being sent or received by the Nortec OnLine Module from the Nortec OnLine Server.</p> <p>Verify proper connections to networked humidifiers.</p> <p>Turn the Nortec OnLine Module off for several seconds then switch it back on to reload the control program. Allow for some time for the network variables to be polled.</p>
2. The Nortec OnLine Server network can see some of the networked humidifiers but not others.	<p>Ensure proper connections to the humidifiers.</p> <p>Disconnect all of the humidifiers from the Nortec OnLine Module except for the unit that is not responding to the network. Disconnect power to the Nortec OnLine Module, wait a moment, then reconnect power. Check Serial Link LED transmit/receive lights to see if the module can talk to the humidifier.</p>

SPARE PARTS

Part Number	Item	Description
1509602	Nortec OnLine Module - Dial-up Config	Spare part for Nortec OnLine Module with dial-up settings.
1509603	Nortec OnLine Module - GPRS Configuration	Spare part for Nortec OnLine Module with dial-up settings.
1509604	Nortec OnLine Module - Static IP Configuration	Spare part for Nortec OnLine Module with wired ethernet and static IP settings.
1509605	Nortec OnLine Module - DHCP Configuration	Spare part for Nortec OnLine Module with wired ethernet and dynamic IP settings.
2520669	Y-Adapter Cable	OnLine Module to Converter.
2520670	Header Cable	Converter to humidifier cable.
2520727	RS 232/485/TTL Converter	

LIMITED WARRANTY

AXAIR NORTEC INC. and/or AXAIR NORTEC LTD. (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years from date of shipment, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted, are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

THE COMPANY's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. THE COMPANY's factory, providing the defective part(s) is returned freight prepaid by the customer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to THE COMPANY until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of THE COMPANY.

THE COMPANY's limited warranty on accessories, not of AXAIR NORTEC's manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of humidifier.

THE COMPANY makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by THE COMPANY to install such equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment.

THE COMPANY retains the right to change the design, specification and performance criteria of its products without notice or obligation.

AxAir Nortec

a WMH Company

- www.humidity.com -

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CANADA - AxAir NORTEC Ltd. 2740 Fenton Road, Ottawa, ON, K1T 3T7

1-(866) NORTEC-1 Fax - (613) 822-7964



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