PURE™ Humidifier

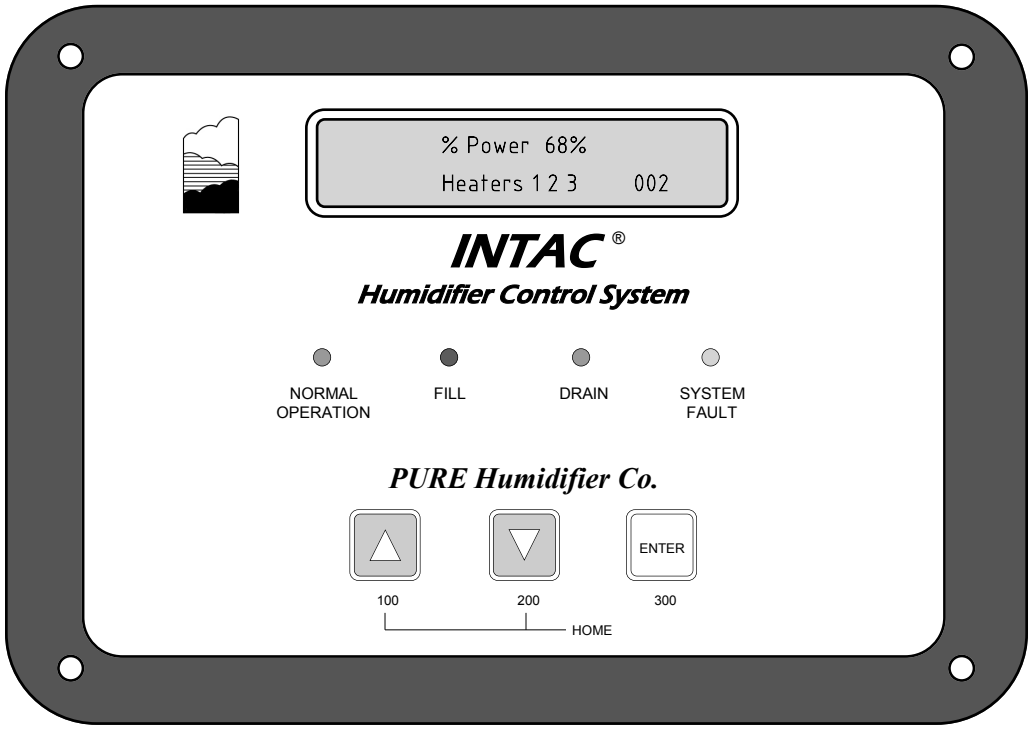
READ AND SAVE THESE INSTRUCTIONS

INTAC®

Microprocessor Humidifier Controller

Installation Instructions

Operation and Maintenance Manual



Our results are comforting

Form No: INOM-12-19

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INTAC® Specifications

Specifications

Supply Voltage: 24VAC ± 20% at 50/60 Hz, ± 1HZ, 9.33VA max.

Current Input Impedance: 93 Ohms

Voltage Input Impedance: 5000 Ohms

Minimum Output Voltage Impedance: 1kOhm

Maximum Output Current Impedance: 800 Ohm

Termination: Removable screw terminal block

Screw Termination Wire Size: 16-gauge maximum

Maximum wire length to Tri-Probe: 50 feet*

Thermocouple Wire for Tank Temp Sensor When Used: Type K

Ambient Temperature Range: -67ºF to 130ºF

Relative Humidity: 0 to 90% RH, non-condensing.

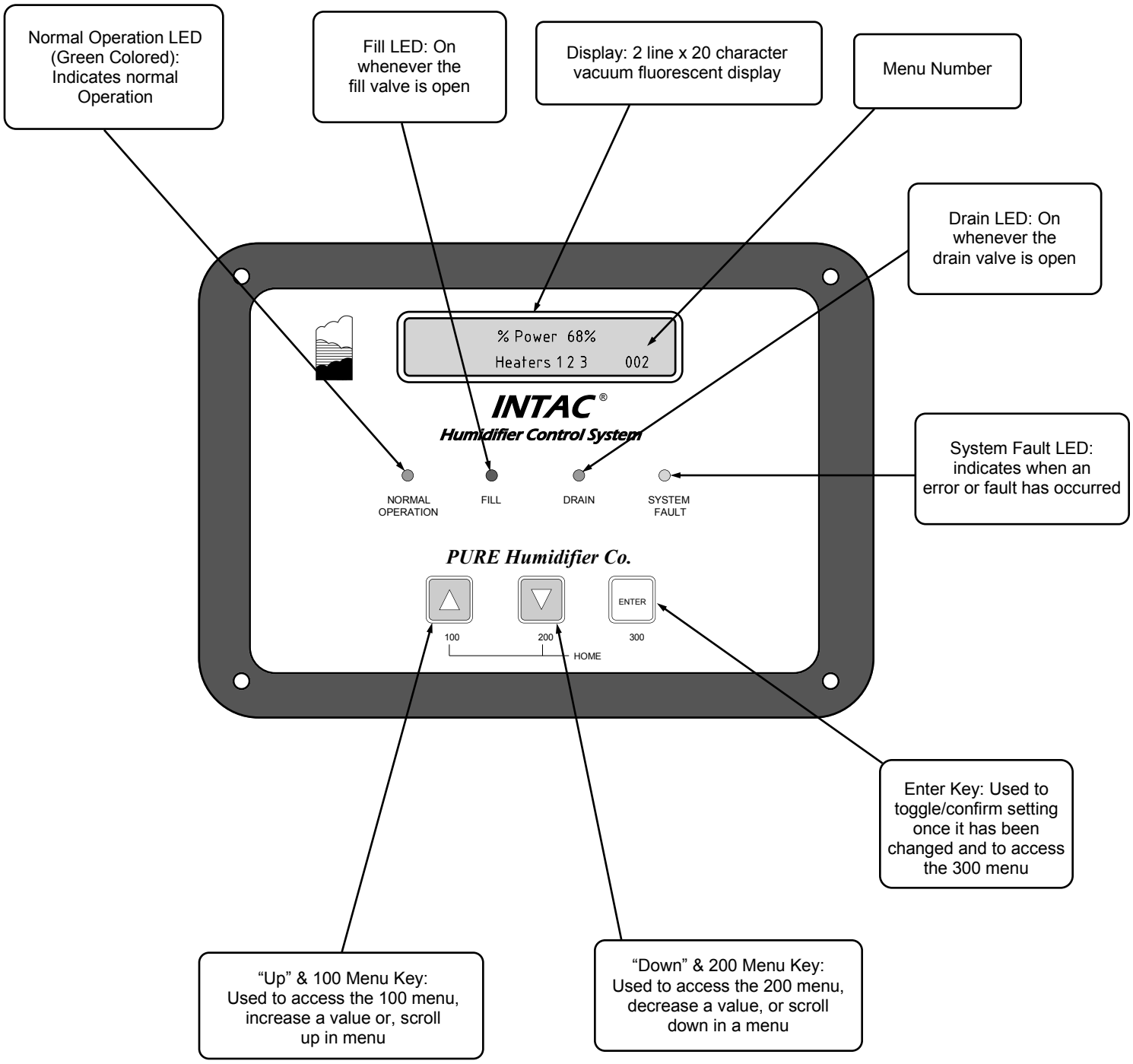
Vibration: 2g., 10 to 150 HZ., applied in any one of three axes.

Storage Temperature: -40ºF to 158ºF

Limits, Ranges, Accuracy: Calibration accuracy and sensor conformity: ± 1% of Span, ± 1 LSD at 77ºF ±5ºF at rated line voltage ± 10 %

***For standard water units only**. The Tri-Probe level sensor wiring is susceptible to interference from wire-to-wire capacitance and wire-to-ground capacitance. For remotely mounted panels with less than 20 feet of wire length for the Tri-Probe wires 18-gauge thermostat wire may be sufficient. For distances up to 50 feet it is best to use individual stranded 20-gauge THHN wire with a minimum insulation thickness of 0.030 inches run in a nonmetallic conduit. This conduit shall contain the three Tri-Probe wires only. The tank ground wire that terminates on plug J2 terminal #7 and all other low voltage wiring shall be run separate from the Tri-Probe wires. Unshielded TIA Category 6 networking cable may alternately be used, provided that the cable is not run inside a metal conduit or parallel to and within 2 inches of a metal conduit or pipe for more than 10 feet. Furthermore, only one conductor of each twisted pair is used for the probe wiring and the ground wire is also run separate from this wire bundle. The other 5 wires in the bundle shall be cut and taped off on both ends so they do not short to one another or to ground.

INTAC® Keypad Features



100, 200, 300 KEYS ARE USED TO ACCESS CORRESPONDING MENU
DEPRESS 200 & 300 KEYS SIMULTANEOUSLY TO ACCESS THE 500 MENU

The Home Display is accessed by depressing the 100 & 200 keys simultaneously
(Home=Home Display)

INTAC® Menus Overview

HOW TO NAVIGATE:

Press  **and**  **simultaneously to exit any menu and reach the home display at any time.**

Press  **or**  **to move up or down through the home display or menu screens.**

To access a menu, press and hold the corresponding numbered menu key for three (3) seconds. To access the 500 Menu, press and hold the

and 

simultaneously for three (3) seconds.

Press 

to activate a menu prompt. The prompt will begin to blink.

Press  **or**  **to change a prompt value.**

Press 

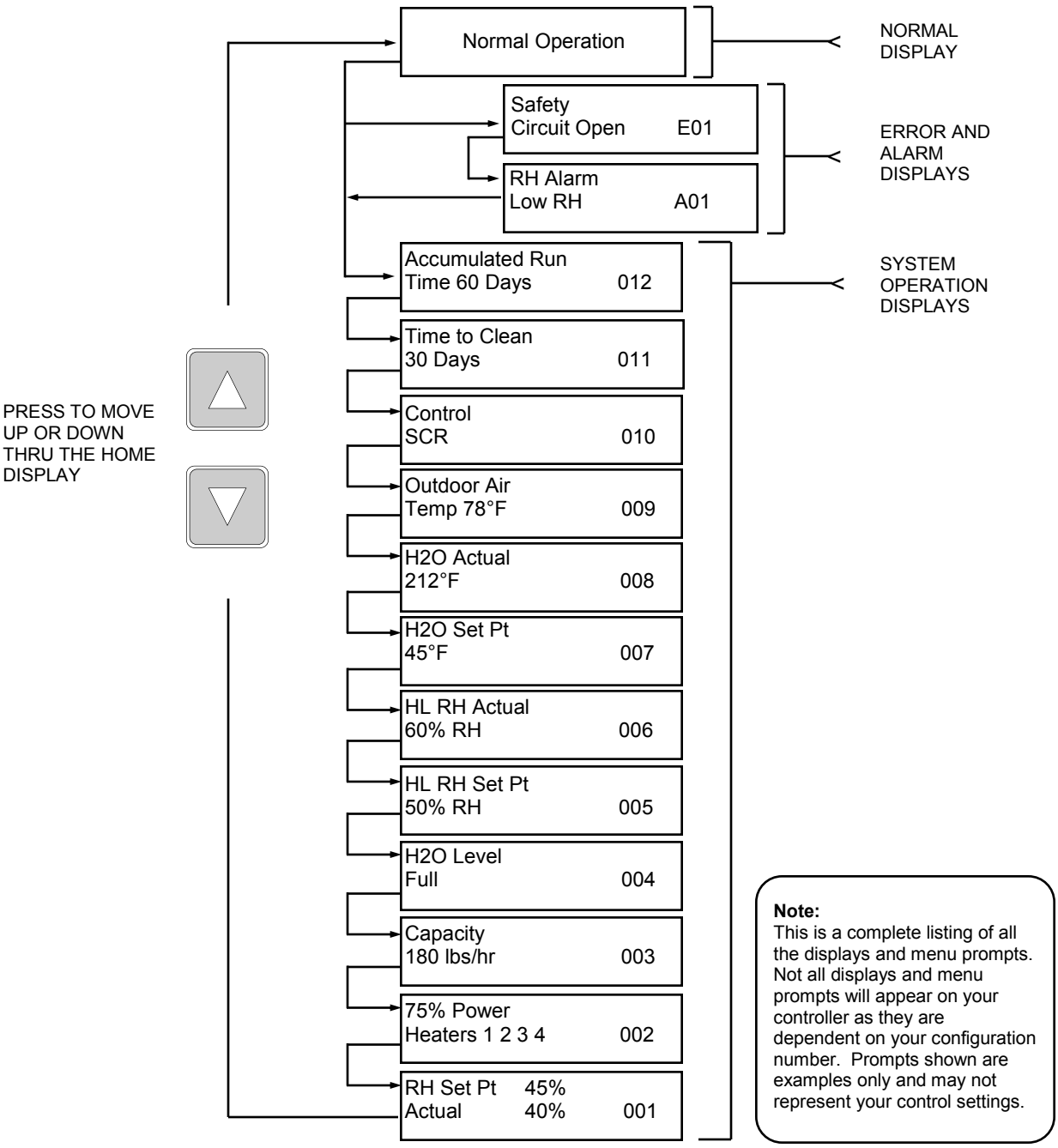
to confirm a prompt value.

Notes:

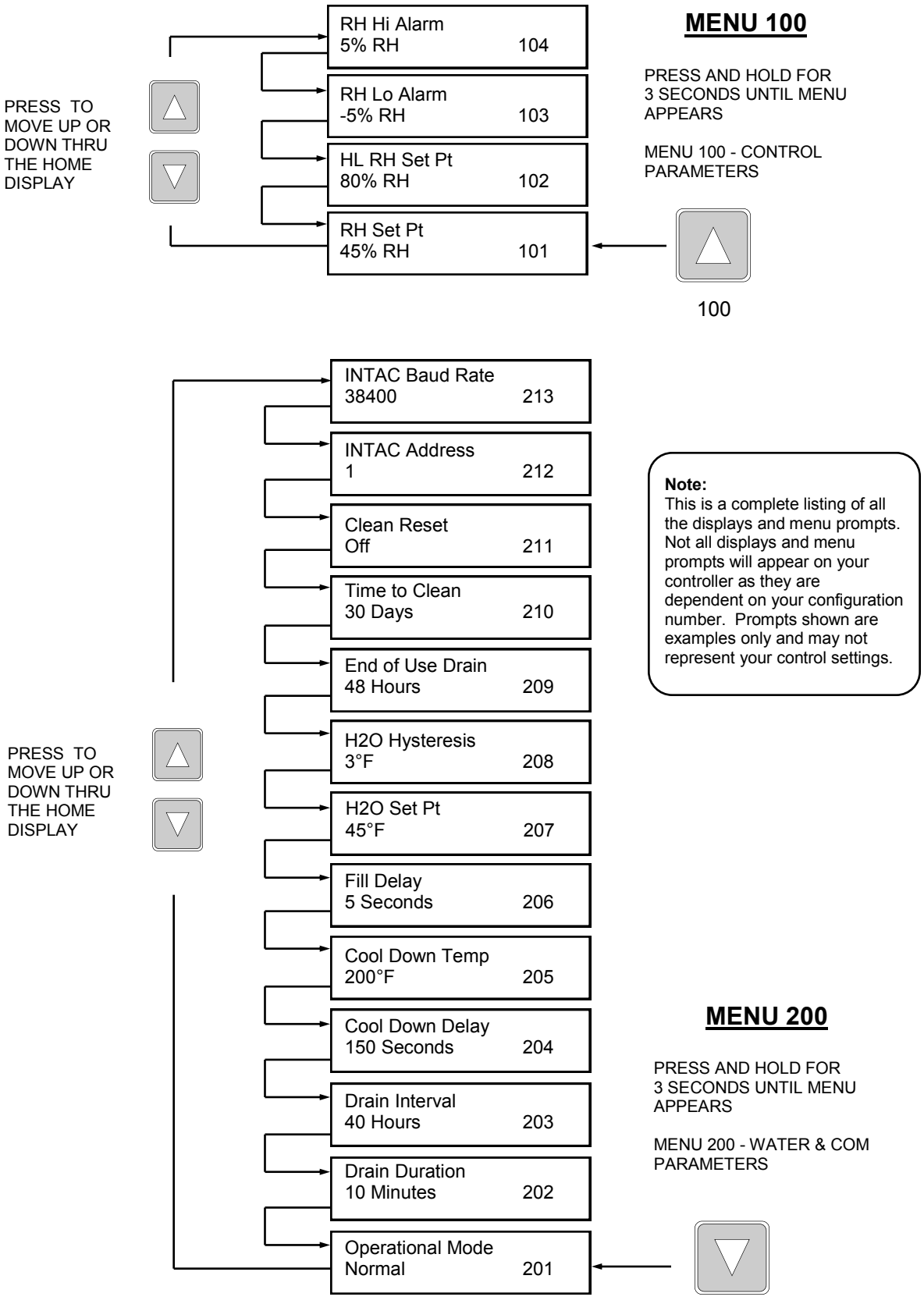
> Menus can only be accessed from the home display. Press  and  simultaneously to exit any menu and reach home display.

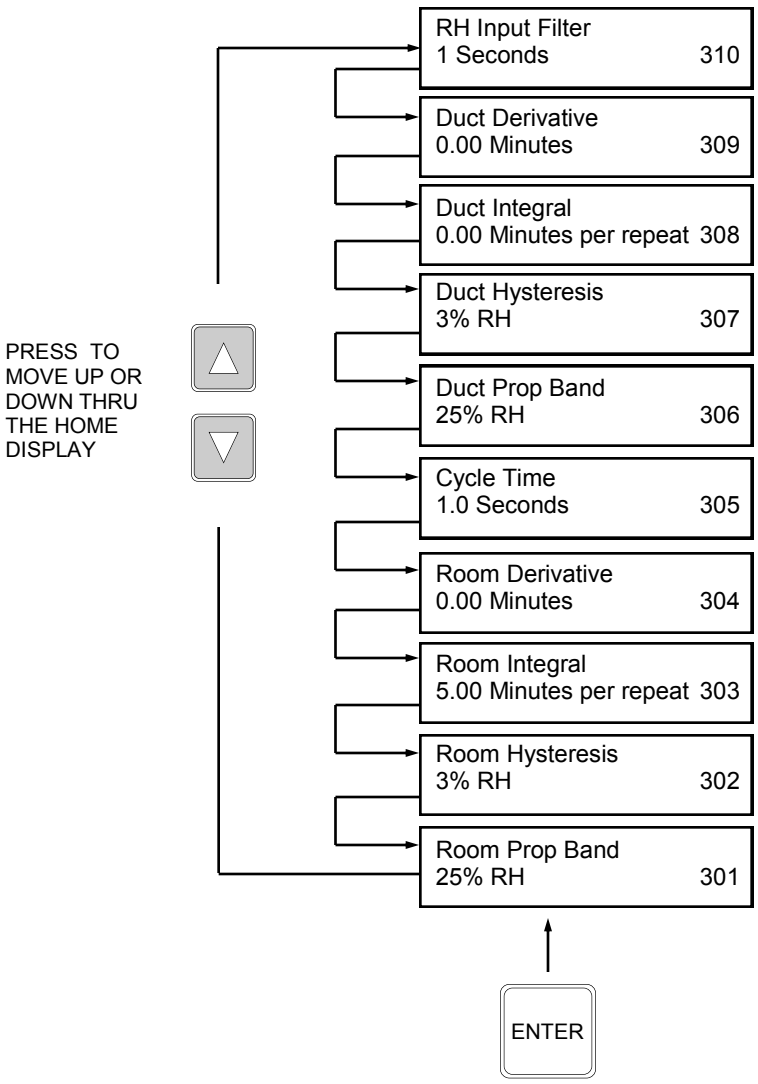
100 200

HOME DISPLAY



Note:
This is a complete listing of all the displays and menu prompts. Not all displays and menu prompts will appear on your controller as they are dependent on your configuration number. Prompts shown are examples only and may not represent your control settings.


MENU 100
PRESS AND HOLD FOR 3 SECONDS UNTIL MENU APPEARS
MENU 100 - CONTROL PARAMETERS
PRESS TO MOVE UP OR DOWN THRU THE HOME DISPLAY
RH Hi Alarm 5% RH 104
RH Lo Alarm -5% RH 103
HL RH Set Pt 80% RH 102
RH Set Pt 45% RH 101
100
INTAC Baud Rate 38400 213
INTAC Address 1 212
Clean Reset Off 211
Time to Clean 30 Days 210
End of Use Drain 48 Hours 209
H2O Hysteresis 3°F 208
H2O Set Pt 45°F 207
Fill Delay 5 Seconds 206
Cool Down Temp 200°F 205
Cool Down Delay 150 Seconds 204
Drain Interval 40 Hours 203
Drain Duration 10 Minutes 202
Operational Mode Normal 201
Note:
This is a complete listing of all the displays and menu prompts. Not all displays and menu prompts will appear on your controller as they are dependent on your configuration number. Prompts shown are examples only and may not represent your control settings.
PRESS TO MOVE UP OR DOWN THRU THE HOME DISPLAY
MENU 200
PRESS AND HOLD FOR 3 SECONDS UNTIL MENU APPEARS
MENU 200 - WATER & COM PARAMETERS
200

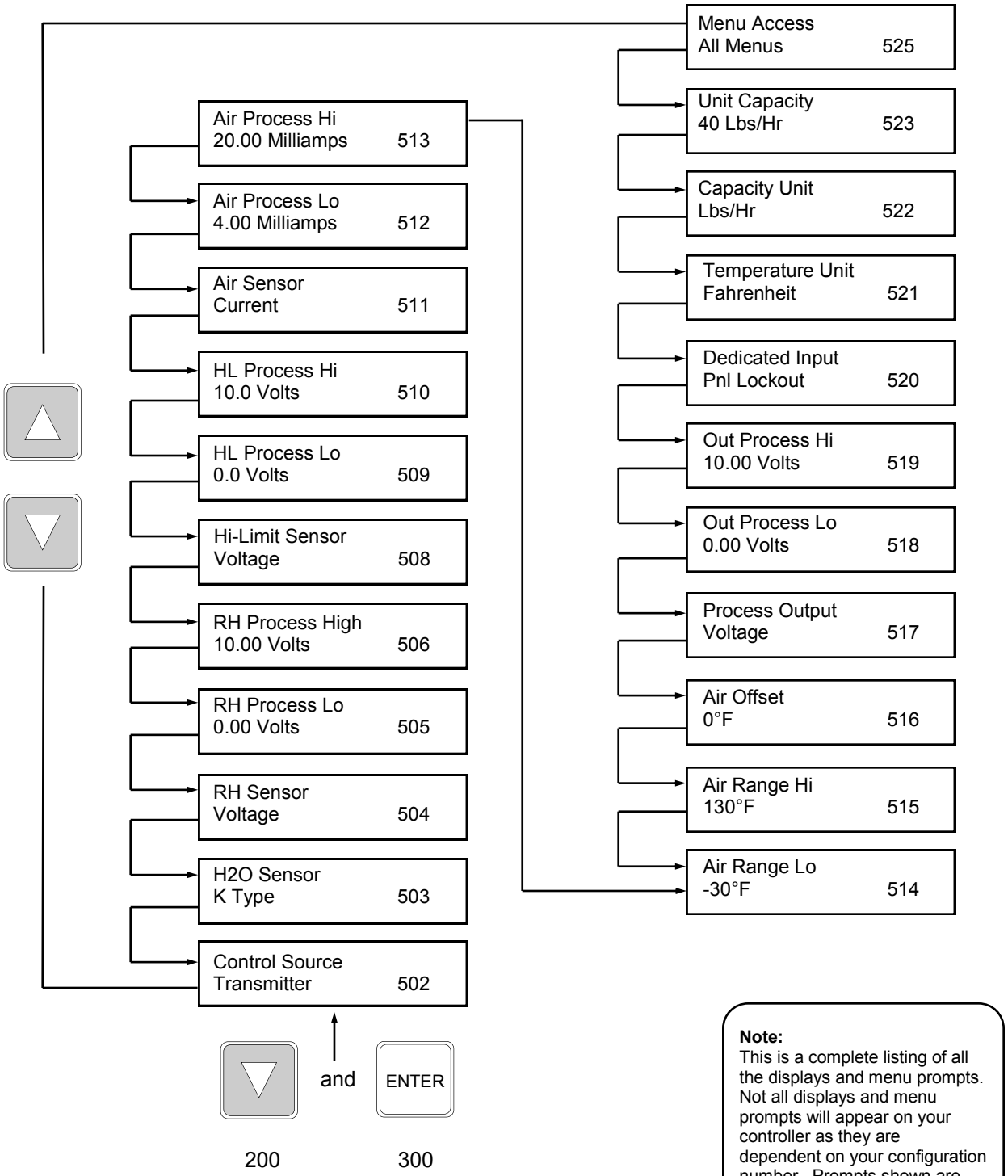


Note:
This is a complete listing of all the displays and menu prompts. Not all displays and menu prompts will appear on your controller as they are dependent on your configuration number. Prompts shown are examples only and may not represent your control settings.

MENU 300

PRESS AND HOLD FOR 3 SECONDS UNTIL MENU APPEARS

MENU 300 - PID (PROPORTIONAL, INTEGRAL & DERIVATIVE)



Note:
This is a complete listing of all the displays and menu prompts. Not all displays and menu prompts will appear on your controller as they are dependent on your configuration number. Prompts shown are examples only and may not represent your control settings.

MENU 500

PRESS AND HOLD SIMULTANEOUSLY FOR 3 SECONDS UNTIL MENU APPEARS

MENU 500 - INSTALLATION

MODES OF OPERATION DESCRIPTION

The INTAC® controller is preprogrammed at the factory for modulation control. The INTAC® will use the analog input on plug J2 terminals 1 and 3 for voltage inputs and J2 terminals 2 and 3 for current inputs. When programmed for "transmitter" mode on menu 502 a second modulating high-limit input may also be used on plug J4 terminals 5 and 7 for voltage inputs and J4 terminals 6 and 7 for current inputs.

ELECTRIC HUMIDIFIERS

SCR

The fastest acting mode of modulation available is SCR control. SCR stands for silicon-controlled rectifier. Two SCRs are employed back-to-back in a device called a solid state relay (SSR). The SSRs are used to switch the power on and off to each heating element on a very short time scale. The INTAC® will send a pulse to each SSR according to the control signal for a percentage of the cycle time of one second (field adjustable). For example at 50% power the SSR will be on for ½ a second and off for ½ a second. This type of modulation is designed to provide extremely accurate control of the humidifier output. For a three phase humidifier, each set of heating elements within the humidifier evaporating chamber will be modulated to provide 0-100% modulating control of the humidifier output (capacity).

GAS AND STEAM-TO-STEAM HUMIDIFIERS

STEAM

Steam mode is used when the INTAC® is used to control a steam-to-steam heat exchanger humidifier type. Pressurized steam is introduced through a steam control valve into a heat exchanger submerged in water. The valve modulation is controlled by an electric actuator. The INTAC® will control the electric actuator with an analog control signal to modulate the amount of steam entering the heat exchanger which will in turn control the amount of steam production on the outside of the heat exchanger. Up to 3 heat exchangers can be used in one humidifier. The control valves on multiple heat exchanger units are typically set to run in parallel.

Steam mode can also be used for direct steam injection type humidifiers. The water tank related controls are disabled when used for direct steam injection applications.

GAS

Gas mode is used when the INTAC® is used to control a natural gas or propane burner that is fired into a heat exchanger submerged in water. The INTAC® will send a modulating analog signal to an actuator that is mechanically linked to dampers that control the fuel and air entering the gas burner. The amount of heat produced by the burner is modulated to control the amount of steam produced by the heat exchanger. Up to 3 heat exchangers can be used in one humidifier. In a three heat exchanger humidifier only the first burner modulates while the second and third burners are staged on and off.

TRI-PROBE OPERATION

Humidifier models that run on tap water will use the dissolved mineral content and associated conductivity of the water to sense the water at discrete levels near the top of the tank. The Tri-Probe water detect circuit is based on the level detection of a 6KHZ (approximately) square wave with nominal Vpp of 1.0 volts. The voltage is applied to the probe so that when a probe tip is in contact with the water a circuit is completed through the water to tank ground and a resistance value can be calculated. If a probe is not in contact with the water then the circuit is not complete and the controller sees a high resistance. Similarly when the water level being sensed is free of minerals, and therefore nonconductive, the controller will measure a large resistance and will not "see" the water level. The water in the tank must have a resistance of less than 13 kOhm/cm in order for the controller to logically say "yes" there is water at this probe level.

The three probes are used to control the fill valve and heaters in the following manner
1) The water level falls as steam is generated
2) The middle probe eventually loses contact with the water
3) The fill valve is energized
4) The water level rises up to the top probe
5) After 5 continuous seconds (fill delay) of water contact with the top probe the fill valve closes
6) If at anytime the bottom probe is not in the water the heaters are de-energized and will remain off

Humidifier models that use reverse osmosis or deionized water will use a float switch as a low water cutout and a mechanical float valve for controlling the makeup water.

AUTOMATIC DRAIN CYCLE

Humidifier models that run on tap water will accumulate minerals in the water as the water is boiled away . Sometimes immediately but always eventually the dissolved minerals will reach saturation and begin to precipitate out of the water. For this reason it is necessary to drain the tank down periodically to reduce the accumulation of minerals and extend the time period between cleanings. The process the *INTAC*® goes through to accomplish this is called the Automatic Timed Drain.

By default the humidifier begins counting run time whenever the humidifier output is greater than 0%. The time it must count up to before starting the cycle is called the Drain Interval (MENU 203). When the Drain Interval time is reached the humidifier will enter the cool down phase where the fill valve turns on for a specified amount of time (MENU 204) or until a certain tank temperature is reached (MENU 205).

When the cool down phase ends the drain valve is energized and will remain energized for the Drain Duration (MENU 202). When 3/4 of the Drain Duration time has expired, the fill valve will turn on to stir the minerals on the tank bottom. When the drain duration time elapses, the drain valve will turn off and the fill valve will remain on until the tank is refilled. The Drain Duration (MENU 202) is factory set to the amount of time it typically takes for the tank to completely drain down. The Drain Interval (MENU 203) should be adjusted to minimize observed mineral accumulation.

Alternately the Automatic Timed Drain can be controlled with an external switch or relay if it is desired to control the timing of this feature. Consult the factory to receive instructions on how to change the factory menu settings.

PID CONTROL LOOP TUNING

For most humidification applications, the parameters in a humidifier control loop that are based off of a room humidity sensor or return air humidity sensor should be set so that the % demand signal changes relatively slowly. This is due to the high thermal inertia involved with boiling water. There is an appreciable lag between the moment heat is applied to water to the moment it reaches a steady state of steam production. Additionally, it takes typically 10-30 seconds for an increase or decrease of the steam injected in the duct to be sensed by the space or return air humidity sensor. In most applications the amount of outside air is not dramatically changed from one minute to the next. The ambient moisture of the outside air does not change radically either. All of these reasons lend to a relatively slow room control response.

Conversely, a supply air modulating high-limit sensor control loop should be set to react quickly to prevent the supply air from being saturated while still allowing reduced modulation of the humidifier. The supply air humidity sensor's purpose is to prevent wetting. The supply control loop is there to override the room/return air control until typical operating conditions return. This can happen on VAV systems where the amount of total airflow is changed abruptly. It can also happen when units are first turned on or when rotating units in redundant setups.
The PID (**P**roportion, **I**ntegral and **D**erivative) terms all affect the way a control signal will react to a change in the process variable, which in this case is the relative humidity. The actual analog (0-10 VDC or 4-20 mA) signal from a typical humidity sensor will vary at the 0.1% level even when the room temperature and relative humidity are held constant. An example of this is that if one looked at a reading from a humidity sensor on a second-by-second basis in a stable environment, the readings would be 50.0, 50.1, 49.8, 50.1, etc. Unless the raw value of this signal is filtered (by time averaging with menu 310 RH Input Filter) the derivative term (MENU 304) should not be used because it will add instability to the control loop. Similarly the proportion band (MENU 301) should be wide enough (small proportion gain) so that the control signal does not bounce up and down due to this small fluctuation of the raw humidity reading. The proportion term will generally be between 10% to 25%. With the proportion band set the speed of the control loop can now be adjusted by increasing or decreasing the integral term (MENU 303). Increasing the integral term will slow down the rate the power increases when the humidity is below set point.

One final note about the room control loop and the supply air high-limit control loop is that the two loops have different functions and therefore should behave differently. The supply air high-limit is exactly as its name suggests, a limit type of control. It is trying to keep the relative humidity **below** a particular value. Conversely, the room/return control loop's goal is to maintain **around** a particular value.

OPTIONAL FEATURES

MODULATING HIGH-LIMIT FOR VARIABLE AIR VOLUME AHU'S (VAV)

When the *INTAC*® is set to transmitter mode (menu 502) a modulating high-limit sensor (menu 508) may be used in addition to the main room or return air humidity sensor. This sensor is located in the supply air downstream of the steam injection tubes. It is used by the INTAC® to gradually reduce the humidifier output to limit the supply air relative humidity below saturation. It is typically set to a lower RH value than the on/off mechanical safety humidity high-limit that is wired to the J6 plug terminals 5 and 6. The benefit to using this modulating sensor is that humidification is maintained without tripping the safety high-limit humidistat when the supply air temperature or volumetric flow are change abruptly. The *INTAC*® is always comparing the room/return air humidity and the supply air humidity and choosing control loop the results in the lowest power level. The setpoint of modulating high-limit should be above the corresponding dew point of the main room/return air sensor so that eventually the control power will revert back to being controlled by the room/return air. For example, with a 40%RH setpoint at 70°F room temp your supply air high-limit setpoint needs to be above 66%RH at 55° F. If not the *INTAC*® will be controlling based on the supply air humidity. Resulting in poor control over the room/return air RH.

FREEZE PROTECTION/STANDBY WATER TEMP

Using a type K thermocouple probe the *INTAC*® senses the temperature of the tank water and will turn the power to the heating source on if there is no call for humidity and the tank temperature is below the value set on MENU 207

OUTDOOR AIR TEMPERATURE SETBACK OPTION

As outside air temperature decreases, it may be desirable to reduce the humidifier output proportionately to reduce the risk of wetting interior surfaces and windows within a structure. With the optional outdoor air temperature setback feature, the user is able to select a point at which the humidifier output will begin to decrease or setback. The factory default is at 32°F and is user-adjustable from 32°F to 92°F.

Applicable settings:
First, it is necessary to know the temperature range of the sensor, which are the minimum and maximum values. (Example: for the MAMAC Systems® TE-211Z-B-B-2-1-E-3, the range is –30°F to +130°F with a corresponding output current of 4 to 20mA.)

Next go to:

MENU 511	Air Sensor	Select "Current" (Corresponds to the type of output)
MENU 512	Air Process Lo	Select "4.0" (Corresponds to current range Low)
MENU 513	Air Process Hi	Select "20.0" (Corresponds to current range High)
MENU 514	Air Range Lo	Select "-30°F" (Corresponds to temp range Low)
MENU 515	Air Range Hi	Select "+130°F" (Corresponds to temp range High)
MENU 516	Air Offset	Select "0°F" (Offset from 32°F)

Note: when selecting AIR OFFSET, this refers to an offset from 32°F. For example: if you wish the humidifier setback to begin at 32°F, then the Air Offset amount should be left at 0°F. If you wish the humidifier setback to begin at 45°F, then the Air Offset amount should be set at 13°F. If you wish the humidifier setback to begin at 55°F, then the Air Offset should be set at 23°F, and so on. Also, remember that the above settings are for the given example and may be different for other temperature sensors.

WHERE TO LOCATE SENSOR

Locate the air temperature sensor in the outside air intake duct to the humidifier.

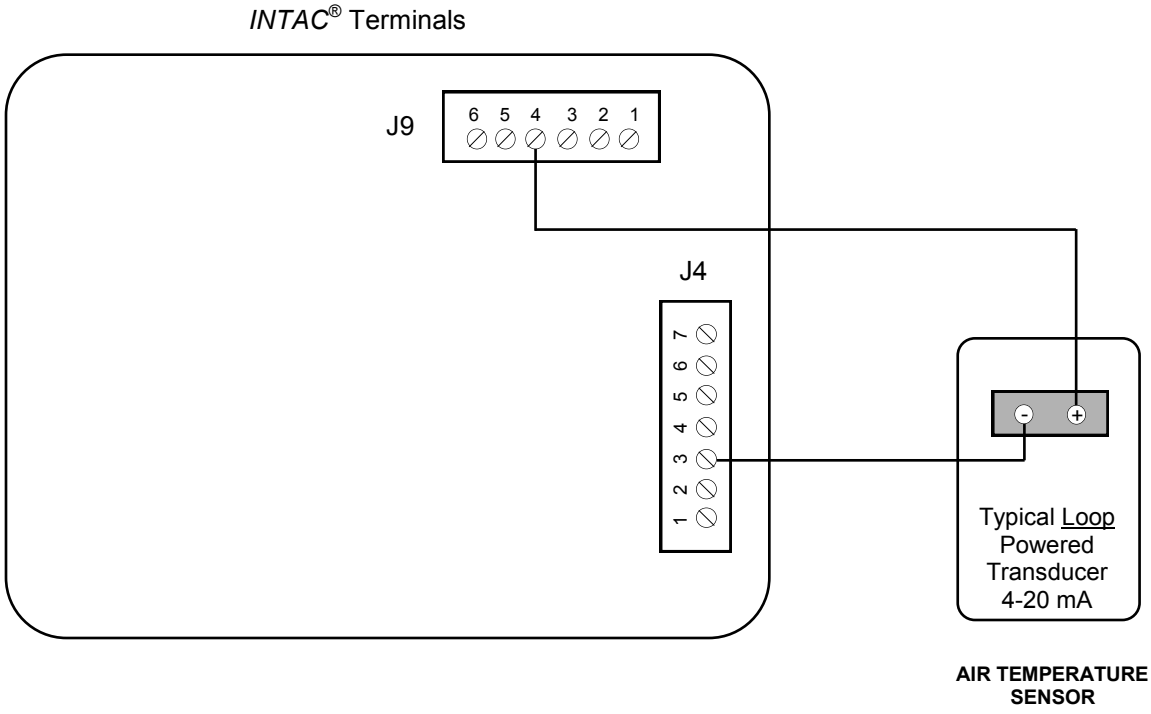
HOW TO CALIBRATE AIR TEMPERATURE SENSOR

The air temperature sensor is factory calibrated and calibration should not be necessary if the High and Low range limits are set correctly. If a slight calibration is desired, proceed as follows:

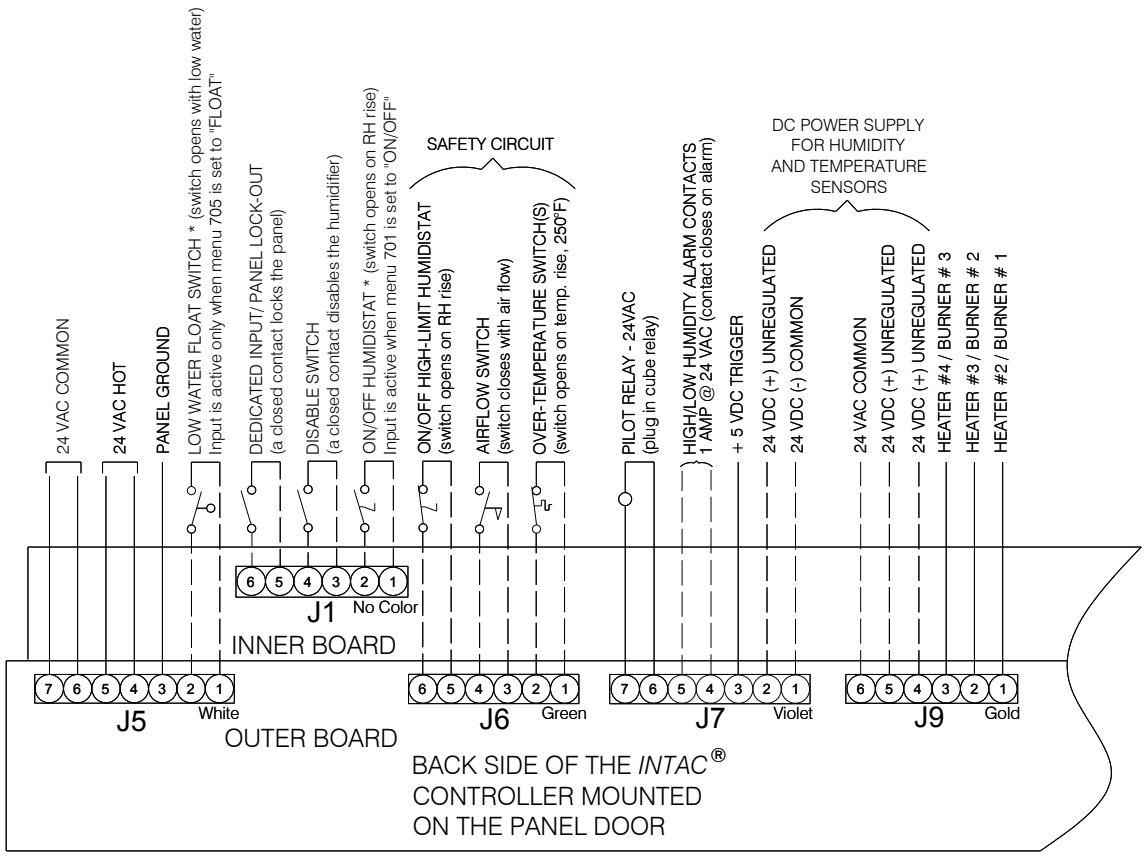
First, determine if the INTAC® indication is too high or too low and by how many degrees. This can be checked by using a probe-type thermometer located near the air temp sensor and comparing the readings.

If, for example, the indicated reading is 2°F too high, a linear calibration shift can be accomplished by adjusting both Menu 514 and 515 down 2°F. If the indicated reading is 2°F too low, adjusting both Menus 514 and 515 up 2°F will correct the error. A differential that is too large may indicate a defective temperature sensor which should be replaced.

TYPICAL FIELD WIRING CONNECTIONS

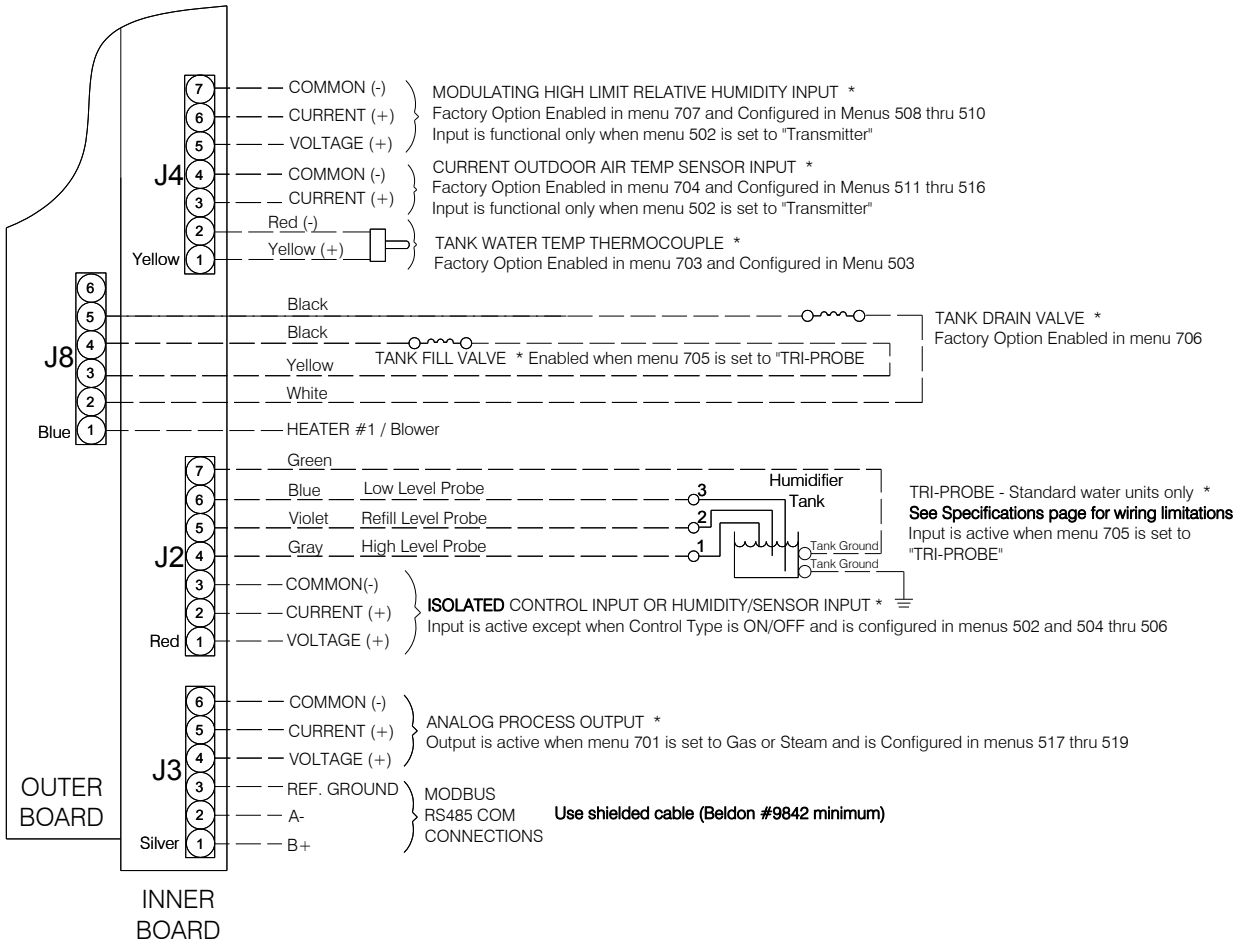


INTAC® Terminal Board Connections



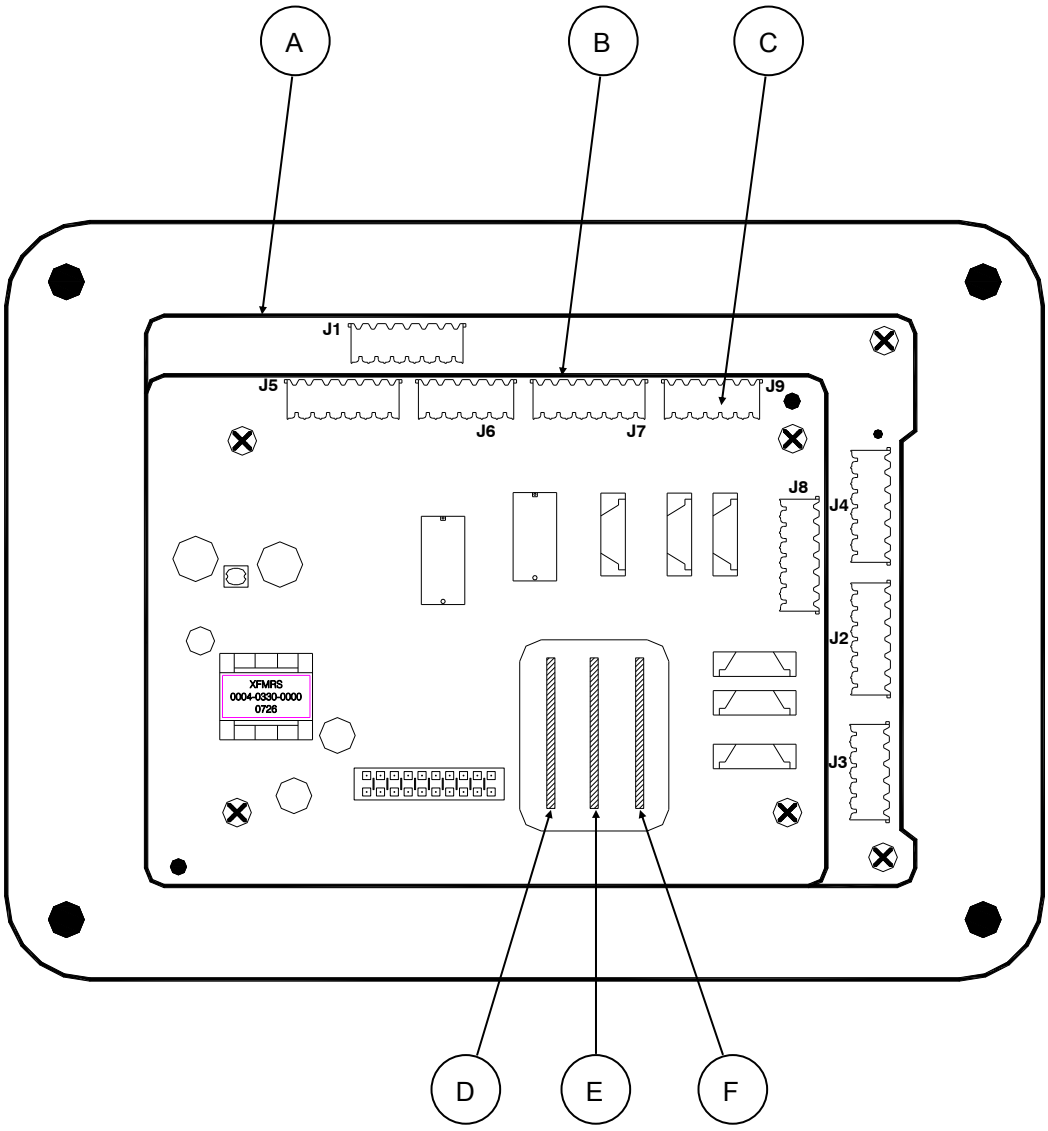
* Factory Option - This is a fixed value and can not be field modified. Factory set option only.

For job specific wiring diagram please reference the materials packet or control panel shipped with the equipment.



* Factory Option - This is a fixed value and can not be field modified. Factory set option only.

INTAC® Hardware Layout (HC Model Shown)



KEY	
A	Inner Circuit Board
B	Outer Circuit Board
C	Terminal Strips
D	DCLMB - Dual Control Loop Module B
E	WLCM - Water Level Control Module
F	DCLMA - Dual Control Loop Module A

INTAC® Modbus Map

Modbus Register Number	*INTAC®* Number	Menu Number	Menu Title	Description
852	851	012	Accumulated Run Time	0-365 days
55	54	009	Outdoor Air Temp Actual	-1000-10,000 implied tenths
53	52	008	Water Temp Actual	-130- 2660, implied tenths
51	50	006	High Limit RH Actual	0-1000, implied tenths
823	822	none	%Power Heater #1 or Combustion Blowers	0-100
824	823	none	%Power Heater #2 or Burner #1 Enable	0-100
825	824	none	%Power Heater #3 or Burner #2 Enable	0-100
826	825	none	%Power Heater #4 or Burner #3 Enable	0-100
853	852	002	Total Power Output	0-100
49	48	001	Actual Humidity	0-1000, implied tenths
857	856	E01	Interlock Input Open	0=safety circuit open(error condition), 1=Safety circuit closed (safeties satisfied)
858	857	E02	Dedicated Input	0=open contact, 1=closed contact
50	49	E03	Control RH Sensor	0=No Error, 1= Under range, 2= Over range, 3=Underflow, 4=Overflow
52	51	E04	High Limit RH Sensor	0=No Error, 1= Under range, 2= Over range, 3=Underflow, 4=Overflow
56	55	E05	Outdoor Air Sensor	0=No Error, 1= Under range, 2= Over range, 3=Underflow, 4=Overflow
54	53	E06	Water Sensor(temp)	0=No Error, 1= Under range, 2= Over range, 3=Underflow, 4=Overflow
831	830	E07	Water Level	0=No error, 1=bad Tri-Probe, 2=Fill fault, 3= Refill fault, 4=Low float, 5=Low, 6=Drain fault
847	846	E08	Internal Module #1 I/O Error	0=no, 1=yes
848	847	E08	Internal Module #2 I/O Error	0=no, 1=yes
849	848	E08	Internal Module #3 I/O Error	0=no, 1=yes
102	101	101	RH Set Point	0 to 1000, implied hundredths
103	102	102	High Limit Set point	0 to 1000
104	103	103	RH Low Alarm	(-1) to -1000, implied tenths
105	104	104	RH High Alarm	1 to 1000, implied tenths
202	201	201	Operation Mode	0=Standby, 1=Normal, 2=Flush, 3=Forced Drain
203	202	202	Drain Duration Timer	0 to 120 minutes
204	203	203	Drain Interval timer	1 to 500 hours
205	204	204	Cool Down Delay	0 to 150 seconds
206	205	205	Cool Down Temp	800-2120 def F, implied tenths
207	206	206	Fill Delay Timer	0-15
208	207	207	Water Temp Set Point	400-2000 deg F, implied tenths
209	208	208	Water Temp Hysteresis	10-500 deg F, implied tenths
210	209	209	End of Use Drain Timer	0-168 hours
211	210	210	Time to Clean Timer	0-365 days
212	211	211	Clean Reset	0=off, 1=on
213	212	212	*INTAC®* Address	1-247 modbus (read only)
214	213	213	*INTAC®* Baud Rate	0=9600, 1=19200, 2=38400
302	301	301	Room Prop band	0 to 1000, implied hundredths
303	302	302	Room hysteresis	1 to 500, implied hundredths
304	303	303	Room Integral	0 to 6000, implied hundredths
305	304	304	Room Derivative	0 to 999, implied hundredths
306	305	305	Cycle Time	1 to 10 for SCR
307	306	306	Duct Prop Band	0 to 1000, implied hundredths
308	307	307	Duct Hysteresis	1 to 500, implied hundredths
309	308	308	Duct Integral	0 to 999, implied hundredths
310	309	309	Duct Derivative	0 to 999, implied hundredths
311	310	310	RH Input filter	0-60

*Modbus parameters: Holding register(16 bit), Signed, 38400 Baud, Character format: 8 data, No Parity, One stop

**All parameter are available via communications but only some parameters are active in certain configurations.

INTAC® Error Code Summary

E01 Safety Circuit Open

An open circuit exists in the Safety Circuit. Check the following:

Terminals J6-5 & J6-6 High Limit Humidistat
Terminals J6-4 & J6-3 Air Flow Switch
Terminals J6-2 & J6-1 Over-Temp Switch*

Continuity MUST exist across these terminals to clear alarm

* SX and SXDDR models *do not* have an Over-Temp Switch

E02 Dedicated Event Circuit Open

An open circuit exists in the Dedicated Event Circuit. Check the following:
Terminals J1-5 & J1-6 Dedicated Event
Continuity MUST exist across these terminals to clear alarm
(Configuration Menu 520 turns this feature ON or OFF)

E03 Control RH Under Range

CHECK FOR THE FOLLOWING CONDITIONS:
1) Lost input signal from primary humidistat or Building Management System
2) Input signal below 6% RH (below 4 mA DC)
3) Input signal between 100% and 105%

Verify that Menus 502, 504, 505, & 506 match the type of input. Check signal at the input terminals:

Terminal J2-1 = Voltage (+) Input
Terminal J2-3 = Voltage (-) / Current (-) Input
Terminal J2-2 = Current (+) Input

E03 Control RH Over Range

CHECK FOR THE FOLLOWING CONDITIONS:
1) Input signal between 100% and 105% (process control circuits only)

Verify that Menus 502, 504, 505, & 506 match the type of input. Check signal at the input terminals:

Terminal J2-1 = Voltage (+) Input
Terminal J2-3 = Voltage (-) / Current (-) Input
Terminal J2-2 = Current (+) Input

E03 Control RH AD Underflow-AD Overflow

Check for REVERSE polarity or EXCESSIVE SIGNAL on the input terminals:

Terminal J2-1 = Voltage (+) Input
Terminal J2-3 = Voltage (-) / Current (-) Input
Terminal J2-2 = Current (+) Input

E03 Control RH Calibration

Input not calibrated properly

E04 High Limit RH Under Range

Check for lost signal from the Hi-Limit Humidistat or Building Management System. Verify that Menus 502, 508, 509, & 510 match the type of input
Check signal at the input terminals:

Terminal J4-5 = Voltage (+) Input
Terminal J4-7 = Voltage (-) / Current (-) Input
Terminal J4-6 = Current (+) Input

E04 High Limit RH Over Range

Input signal is greater than menu 510 value

E04 High Limit RH Calibration

Input not calibrated properly

E04 High Limit AD Underflow - AD Overflow

Check for REVERSE polarity or EXCESSIVE SIGNAL on the input terminals:

Terminal J4-5 = Voltage (+) Input
Terminal J4-7 = Voltage (-) / Current (-) Input
Terminal J4-6 = Current (+) Input

E05 Outdoor Air AD Underflow

Air temperature sensor circuit open. Check for correct polarity.
Check signal at the input terminals:

Terminal J7-2 = Current (-) Input
Terminal J4-3 = Current (+) Input

E05 Outdoor Air AD Overflow

Input signal is greater than 20 mA

E05 Outdoor Air Over Range

Input signal is greater than menu 513 value

E05 Outdoor Air Under Range

Input signal is less than menu 512 value

E05 Outdoor Air Calibration

Input not calibrated properly

E06 H2O Temperature Over Range

Water temperature is above 260°F

E06 H2O Temperature Under Range

Water temperature is below –13°F

E06 H2O Temperature Calibration

Input is outside of calibration

E06 H2O Temperature AD Underflow - AD Overflow

Water temperature sensor circuit open. Check for correct polarity. Thermocouple RED wire (-) must connect to terminal J4-2 (negative). Check signal at the input terminals:

Terminal J4-1 (+) Thermocouple Yellow Wire
Terminal J4-2 (-) Thermocouple Red Wire

Check to see that the thermocouple wire corresponds to the type set in menu 503

Note: to check operation, a temporary jumper installed across terminals J4-1 & J4-2 should clear Error E06. Warning: This defeats the water temperature measuring feature, and only ambient air temp will be indicated.

E07 H2O Level-Low Float

DDR applications only. Low water float switch is open, check terminals:

Terminals J5-1 & J5-2 Float Switch

E07 H2O Level-Fill Fault

Tri-Probe application only. Check connections to the Tri-Probe Assembly.

Terminal J2-4 = Short Probe (Gray Wire)
Terminal J2-5 = Medium Probe (Violet Wire)
Terminal J2-6 = Long Probe (Blue Wire)
Terminal J2-7 = Tank Ground (Green Wire)

Occurs when the fill valve has been on continuously for 2 hours following an:

- Auto Drain
- Initial power up
- Coming out of End of Season

Check water source supply. Verify that water is actually filling the tank to the TOP water level probe.

Note: To reset this alarm message, momentarily switch the power off and on to the INTAC® Controller.

E07 H2O Level-Low

Tri-Probe application only
Water level is low

If Fill light is **NOT** on

The unit is being disabled on J1-3 and J1-4 or Menu 201 is set to Standby.
If unit is disabled, enable it.
If unit is in Standby set Menu 201 to Normal and wait for tank to fill

If Fill light is on

If Fill light is on AND the fill valve is energized AND water is available, wait for tank to fill and the fault will clear automatically.

E07 H2O Level-Bad Tri-Probe

Tri-Probe application only. Check connections to the Tri-Probe Assembly.

Terminal J2-4 = Short Probe (Gray Wire)
Terminal J2-5 = Medium Probe (Violet Wire)
Terminal J2-6 = Long Probe (Blue Wire)
Terminal J2-7 = Tank Ground (Green Wire)

Note: To check operation, temporarily install three (3) jumpers across terminals J2-4, J2-5, J2-6, and J2-7. This should clear Error Code E07. **WARNING**: This procedure defeats the low water safety circuit. Ensure there is an adequate amount of water in the humidifier tank before proceeding. If this procedure clears the error code, check the Tri-Probe Assembly and its associated wiring. Verify tank grounding to terminal J2-7. Refer to specifications page for wiring limitations.

E07 H2O Level-Refill Fault

Tri-Probe application only. Check connections to the Tri-Probe Assembly.

Terminal J2-4 = Short Probe (Gray Wire)
Terminal J2-5 = Medium Probe (Violet Wire)
Terminal J2-6 = Long Probe (Blue Wire)
Terminal J2-7 = Tank Ground (Green Wire)

Occurs when fill valve has been on continuously for 1 hour

Check water source supply. Verify that water is actually filling the tank to the TOP water level probe.

Note: To reset this alarm message, momentarily switch the power off and on to the INTAC® Controller.

E07 H2O Level-Drain Fault

Unit did not drain properly during drain cycle. Check for sediment blockage in drain valve and drain line. The drain duration may not be set long enough. The water level must read “Low” during the auto drain or this fault will occur.

E08 Module I/O Error - DLCM #1

It is likely the controller has been damaged and needs replacement

E08 Module I/O Error - DLCM #2

It is likely the controller has been damaged and needs replacement

E08 Module I/O Error - WLCM

It is likely the controller has been damaged and needs replacement

A01 RH Alarm-Low RH

The actual RH is below the limit set in Configuration Menu 103

A01 RH Alarm-High RH

The actual RH is above the limit set in Configuration Menu 104

INTAC® Configuration Codes Complete Listing

INTAC® MENU	DISPLAY	OPTIONS	MFG DEFAULT	DESCRIPTION
101	RH Set Pt	RANGE: 0% to 100% RH	45%	Space or return air humidification setpoint
102	HL RH Set Pt	RANGE: 0% to 100% RH	80%	Supply air high-limit setpoint
103	RH Lo Alarm	RANGE: -100% to -1% RH	-5%	Low humidity alarm activates when actual RH is below setpoint
104	RH Hi Alarm	RANGE: 1% to 100% RH	5%	High humidity alarm activates when actual RH is above setpoint
201	Operation Mode	Normal	x	Normal operation mode
		Stand-by		Output of humidifier shut off while in Stand-by mode
		Forced Drain		Drain valve output energized, humidifier output shut off
		Flush		Fill valve and drain valve outputs are energized, humidifier output shut off
202	Drain Duration	RANGE: 0 to 120 minutes	Varies	Time drain valve is energized (in minutes) during Auto-drain cycle
203	Drain Interval	RANGE: 1 to 500 Hours	40	Time between Auto-drain cycles in hours of operation
204	Cool Down Delay	RANGE: 0 to 150 Seconds	150	The fill valve is energized for this time period to allow colder makeup water to cool the tank before the Auto-drain cycle begins.
205	Cool Down Temp	RANGE: 80° to 212°F	140	The tank water temperature must be below this value before the drain valve is energized during an Auto-drain cycle. The fill valve is energized to allow colder makeup water to cool the tank. Used in place of cool down delay when an optional tank thermocouple is installed
		RANGE: 27° to 100° C	60	Same description as above except for Celsius units are used
206	Fill Delay	RANGE: 0 to 15 Seconds	5	Water overfill time delay to help flush surface minerals down the tank overflow on each refill cycle
207	H2O Set Pt	RANGE: 40° to 200° F	40	If there is no call for humidification the heating source will be turned on to maintain this temperature. This can be used for freeze protection (40°) or stand-by water temperature (160°)
		RANGE: 4° to 93°C	4	Same description as above except for Celsius units are used
208	Water Hysteresis	RANGE: 1° to 50°F	3	Accuracy of water temperature control or deadband
		RANGE: 1° to 28°C	2	Same description as above except for Celsius units are used
209	End of Use Drain	RANGE: 0 to 168 Hours	48	When there is no call for humidification for this many consecutive hours the tank will drain completely.
210	Time to Clean	RANGE: 0 to 365 Days	30	Used to set a reminder to clean the tank after an adjustable time period of run time. The humidifier will continue to operate even after the "Time to Clean the Tank" message is displayed.
211	Clean Reset	Off	x	Time to clean timer is accumulating run time
		On		Select "On" to reset the accumulated run time

INTAC® MENU	DISPLAY	OPTIONS	MFG DEFAULT	DESCRIPTION
212	INTAC Address	RANGE: 1 to 247	1	Modbus Address for external RS-485 network
213	INTAC Baud Rate	9600		
		19200		
		38400	x	
301	Room Prop Band*	RANGE: 0% to 100% RH	25%	Space or return air proportional band
302	Room Hysteresis*	RANGE: 1 to 50	3	When menu 301=0 this sets the dead band for on/off control
303	Room Integral*	RANGE: 0.00 to 60.00	5.00	Space or return air integral term in units of minutes/repeat: Increasing reduces ramp rate.
304	Room Derivative*	RANGE: 0.00 TO 9.99	0.00	Space or return air derivative term in units of minutes: 0 is the recommended value
305	Cycle Time*	RANGE: 1 to 240 Seconds	1 or 60	Default is set at 1 second for SCR control
306	Duct Prop Band*	RANGE: 0% to 100% RH	25%	Supply air Hi-Limit proportional band
308	Duct Integral*	RANGE:0.00 to 9.99	0.00	Supply air Hi-Limit integral term in units of minutes/repeat: Increasing reduces ramp rate
309	Duct Derivative*	RANGE: 0.00 to 9.99	0.00	Supply air Hi-Limit derivative term in units of minutes: 0 is the recommended value
310	RH Input Filter*	RANGE: 0 to 60 seconds	1	For attenuating a noisy humidity signal this averages the humidity inputs over a set time period to increase the stability of the output
502	Control Source	Transmitter	Varies	Controller receives analog relative humidity signal from a wall or duct type humidity sensor
		Process Signal	Varies	Controller receives an analog % demand/power level signal from building management system or a separate humidity controller. The *INTAC*® will only use the main analog input on plug J2.
503	Water Sensor	K Type	Option	Standard type K thermocouple used in all applications
		J Type		Type J thermocouple
		T Type		Type T thermocouple
		None		No water sensor input available
504	RH Sensor	Current	Varies	Used when an external demand signal or a humidity sensor is a mA current type of signal on plug J2 terminal 2 and 3
		Voltage	Varies	Used when an external demand signal or a humidity sensor is a VDC type of signal on plug J2 terminal 1 and 3

* See Page 18 for PID tuning instructions

INTAC® MENU	DISPLAY	OPTIONS	MFG DEFAULT	DESCRIPTION
505	RH Process Lo	RANGE: 0.0 to 20.00 mA	4.00	Low range in milliamps for signal on plug J2 terminal 2 and 3
		RANGE: 0.00 to 10.00 VDC	0.00	Low range in Volts for signal on plug J2 terminal 1 and 3
506	RH Process Hi	RANGE: 0.00 to 20.00 mA	20.00	High range in milliamps for signal on plug J2 terminal 2 and 3
		RANGE: 0.0.0 to 10.0 VDC	10.00	High range in Volts for signal on plug J2 terminal 1 and 3
508	Hi-Limit Sensor	None	Option	No High Limit input available (set with menu 707)
		Current	Option	Used when a supply air high-limit humidity sensor is a mA current type of signal on plug J4 terminal 6 and 7
		Voltage	Option	Used when a supply air high-limit humidity sensor is a VDC type of signal on plug J4 terminal 5 and 7
509	HL Process Lo	RANGE: 0.00 to 20.00 mA	4.00	Low range in mA for humidity signal on plug J4 terminal 6 and 7
		RANGE: 0.00 to 10.00 VDC	0.00	Low range in volts for signal on plug J4 terminal 5 and 7
510	HL Process Hi	RANGE: 0.00 to 20.00 mA	20.00	High range in mA for humidity signal on plug J4 terminal 6 and 7
		RANGE: 0.00 to 10.00 VDC	10.00	Low range in volts for humidity signal on plug J4 terminal 5 and 7
511	Air Sensor	None	Option	No air temperature sensor input available (set with menu 704)
		Current	Option	Current input for outside air temperature sensor
512	Air Process Lo	RANGE: 2.00 to 20.00 mA	4.00	Low range in mA for outside air temp signal on plug J4 terminal 3 and 4
513	Air Process Hi	RANGE: 2.00 to 20.00 mA	20.00	High range in mA for outside air temp signal on plug J4 terminal 3 and 4
514	Air Range Lo	RANGE:-100° to +1000°C	0.0	Low range scale for outside air temperature sensor in °C
		RANGE:-100° TO +1000°F	-30	Low range scale for outside air temperature sensor in °F
515	Air Range Hi	RANGE:-100° to +1000°C	55	High range scale for outside air temperature sensor in °C
		RANGE:-100° TO +1000°F	130	High range scale for outside air temperature sensor in °F
516	Air Offset	RANGE : 0° to +60°F	0	Offset to calibrate temperature sensor to outside air temp in degrees Fahrenheit
		RANGE: 0° to +33°C	0	Offset to calibrate temperature sensor to outside air temp in degrees Celsius
517	Process Output	Current		Output signal (mA DC) for device or actuator—INTAC® Plug J3 terminal 5 and 6
		Voltage	x	Output signal (VDC) for device or actuator—INTAC® Plug J3 terminal 4 and 6
518	Out Process Lo	RANGE:0.00 to 8.00 mA	4.00	Process output signal—Low range in Milliamps
		RANGE: 0.00 to 3.00 VDC	0.00	Process output signal—Low range in Volts

INTAC® MENU	DISPLAY	OPTIONS	MFG DEFAULT	DESCRIPTION
519	Out Process Hi	RANGE: 10.00 to 20.00 mA	20.00	Process output signal—High range in Milliamps
		RANGE: 3.00 to 10.00 VDC	10.00	Process output signal—High range in Volts
520	Dedicated Input	Not Used	x	Dedicated input turned off
		Dedicated Event		INTAC® terminals J1-5, J1-6 *OPEN*; humidifier output shuts off
		Hi Limit Open		Used to display when supply air humidity is above the safety high limit setpoint. Connect high limit to terminals J1-5, J1-6
		Auto Drain		Closed contact will start an auto drain
		Pnl Lockout		INTAC® terminals J1-5, J1-6 *CLOSED*; all menus LOCKED including menu 520
521	Temp Units	Fahrenheit	x	All temperatures in all screens and menus are in °F
		Celsius		All temperatures in all screens and menus are in °C
522	Capacity Units	Lbs/Hr	x	All capacities in all screens and menus are in lbs/hr
		Kgs/Hr		All capacities in all screens and menus are in kgs/hr
523	Unit Capacity	RANGE: 2 to 9999	Varies	Unit capacity in lbs/hr
		RANGE: 2 to 9999	Varies	Unit capacity in kgs/hr
525	Menu Access	All Menus	x	No menus are blocked from changing configurations
		100 & 200 Menus		All menus VIEW ONLY except menus 100, 200, and 500
		100 Menu		All menus VIEW ONLY except menus 100 and 500
		No Menus		All menus VIEW ONLY except menu 500
701	Control Type	SCR	Varies	Solid state relay output offers the best modulating control
		Steam		Modulating VDC or mA DC output signal to operate valve actuator
		Gas		For use with up to 3 gas burners
702	Active Heaters	1	Varies	One active heater
(Factory option only)		2		Two active heaters
		3		Three active heaters
		4		Four active heaters

INTAC® MENU	DISPLAY	OPTIONS	MFG DEFAULT	DESCRIPTION
703	Water Enable	Off	Option	Water temperature sensor for cool down or water pre-heating OFF
(Factory option only)		On		Water temperature sensor for cool down or water pre-heating ON
704	Air Enable	Off	Option	Outside air temperature sensor for setback control OFF
(Factory option only)		On		Outside air temperature sensor for setback control ON
705	Level Sensor	Tri-Probe	Varies	Humidifier tank level controlled by electronic Tri-Probe
(Factory option only)		None		No tank level control available
		Float		Humidifier tank level controlled by mechanical level controller
706	Drain Type	Automatic	Varies	Humidifier tank drains automatically per menu 202 & 203 configurations
(Factory option only)		Manual		Humidifier tank must be drained manually via hand valve
		None		No tank drain available
707	Hi-Limit Enable	Off	Option	Modulating Hi-Limit sensor input OFF
(Factory option only)		On		Modulating Hi-Limit sensor input ON (INTAC® plug J4 terminals 5,6 and 7)
708	Clean Time	Accum Time	x	Auto drain timer counts down when heater output is on
(Factory option only)		Elapsed Time		Auto drain timer counts down always
		On Demand		INTAC® does not time auto drain. Auto drain can only be started through the dedicated input when 520 = Auto Drain
709	Gas Burners	RANGE: 1 to 3	Varies	Number of burners used on humidifier
(Factory option only)				
710	Low Fire Set Pt	RANGE: 5 to 100	Varies	% power at which burner #1 turns on
Factory option only)				
711	Low Fire Hys	RANGE: 1 to 99	3%	% power below Low Fire Set Point at which burner #1 turns
(Factory option only)				
712	Burner 2 Set Point	RANGE: 5 to 100%	Varies	% power at which burner #2 turns on
(Factory option only)				
713	Burner 2 Hys	RANGE: 1 to 99%	3%	% power below Burner #2 set point at which burner #2 turns off
(Factory option only)				

INTAC® MENU	DISPLAY	OPTIONS	MFG DEFAULT	DESCRIPTION
714	Burner 3 Set Point	RANGE: 5 to 100%	75%	% power at which burner #3 turns on

(Factory option only)

715	Burner 3 Hys	RANGE: 1 to 99%	3%	% power below Burner #3 set point at which burner #2 turns off

(Factory option only)

716	Post Purge Time	RANGE: 5 to 999 seconds	30 seconds	Time the combustion fans will run after the burners turn off

(Factory option only)

717	VFD Intensity	RANGE: 1 to 8	4	Adjusts the intensity of the display panel

(Factory option only)

718	Range Checking	Off		Input error checking is off
(Factory option only)		On	x	Input error checking is on

719		RANGE: 0-15 seconds	5	Time after a low water state is sensed that the heater output will be maintained

(Factory option only)

Notes

Action Performed	Date	By

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