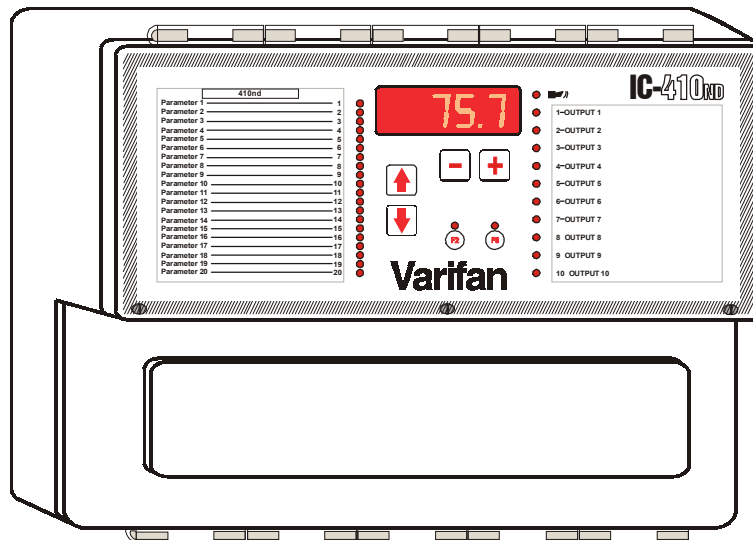


# IC-410ND

## USER'S MANUAL



Although the manufacturer has made every effort to ensure the accuracy of the information contained herein, this document is subject to change without notice due to ongoing product development.

### **WARNING AND PRECAUTIONS**

Equipment, probe failure, blown fuses and/or tripped breakers may prove harmful to the contents of the building. Therefore it is strongly recommended to install backup devices and alarm or warning devices. Spare equipment should also be available at the owner's site. Equipment manufactured by the manufacturer is protected against normal line surges. High surges caused by thunder storms or power supply equipment may damage this equipment. For added security against line voltage surges it is recommended that surge and noise suppression devices be installed at the electrical distribution panel. Use of shielded cable for probes is recommended for protection against lightning. These devices are available from most electrical supply distributors.

### **RECOMMENDATIONS**

The manufacturer recommends that all installation procedures described herein be performed by a qualified electrician or installation technician. Further more the manufacturer recommends to test all the functions and equipment connected to the IC, including the alarm system and backup devices, after installation, after changes to the installation and every month after that.

Fuse verification and replacement, as well as the proper setting of control values shall be the responsibility of the owner of this equipment.

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## **CHAPTER 1 - INTRODUCTION**

### **1. GENERAL**

This document provides you with the necessary information to install and operate the IC-410ND. It is presented as follows:

- Introduction
- Installation
- User's Guide
- Appendix

### **1.1 DESCRIPTION**

Congratulations on your purchase of the IC-410ND ventilation system. You have just acquired one of the safest, most reliable and userfriendly controls on the market. The IC-410ND provides you with full control over temperature, humidity and pressure, resulting in a comfortable environment for your livestock.

The IC-410ND's features are:

- Possibility to connect 4 sensors of the following types: static pressure, relative humidity, potentiometer, in-out temperature, and feed & water
- 8 ON/OFF relays
- 2 MGCB communication port
- Ramping (minimum speed, temperature, humidity, etc)
- High and low temperature recall
- Control & monitoring of feed and water consumption
- Alarm logic: high-low temp., power/control/probe failure, feed & water
- Internal alarm relay with a 5 second time delay
- Cool cell operation and air inlet control
- Time clock for ramping

## ***IC-410ND - Intelligent Control***

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**Enclosure:** Easy access  
Hinged covers  
High and low voltage components separated  
Water-resistant

### **1.1.1 Compatible modules**

The Intelligent Control is considered a “master control unit” and can control and monitor up to 4 of the following modules (1 or 2 per MGCB output):

<b>VSM-2</b>	Variable Speed Module (max. 2), 2 variable stages, 6 Amp. nominal each (0.1A - 6A)
<b>VSM-2/2</b>	Variable Speed Module (max. 2), 2 outputs for one variable stage, 6 Amp. Nominal each (0.1A– 6A)
<b>VPM-1</b>	Variable Speed module, 1 variable stage, 10 Amp. Nominal (0.1A-10A)
<b>VPM-2</b>	Variable Speed Module, 2 variable stages, 10 Amp. nominal each (0.1A - 10A)
<b>CM10-2</b>	Control Module, 2 single speed stages, 10 Amp. each (0.3A - 10A) 1.5 hp @ 220V
<b>CM3-2</b>	Control Module, 2 on/off stages 4 Amp. each (2mA - 4A) 1hp @ 220V
<b>CIM-1</b>	Curtain, Air Inlet or 2 speed motors module (2mA - 4A) 2/3hp @ 220V
<b>CIP-1</b>	Curtain and Air Inlet Positioner (2mA - 3A) 1.5hp @ 220V
<b>SVIM-1</b>	Air Inlet module for 24 volts or 115 volts actuator

### **1.1.2 Other features**

- Manual override capability
- Compatible with the SVPC-40 computer interface

## **CHAPTER 1 - INTRODUCTION**

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### **1.1.3 Configurations**

The IC-410ND contains a microprocessor which memorizes the operational logic programmed in a module that you will install. The operational logic is a software program created for your installation. The logic is inside a small module called "configuration" supplied with the IC-410ND. After the installation of the logic, the program will be located on the bottom main board. Every changes or modification of the board will need a new installation of the module. See the installation procedure at section 3.3 of this manual.

### **1.1.4 Applications**

The IC-410ND control is used for heating, cooling and ventilation equipment in animal confinement buildings or greenhouses. The applications where the IC-410ND can be used include the following systems:

- Multistage ventilation / heating / sprinkler systems
- Combined natural and forced ventilation systems
- Room ventilation systems

## **1.2 DEFINITION OF TERMS**

### **MAIN SET POINT**

The desired room temperature. Other temperature settings on the IC-410ND are relative to the main set point temperature.

### **RELATIVE SET POINT**

A value added to or subtracted from the main set point which results in a new temperature at which a desired action starts or stops.

### **ROOM TEMPERATURE**

The actual temperature of the room.

### **ROOM HUMIDITY**

The actual relative humidity level of the room.

### **MINIMUM FAN SPEED**

The desired minimum speed for variable speed fans.

### **RAMPING**

An automatic daily reduction or addition in the main set point and all temperature settings are relative to this.

### **DIFFERENTIAL**

**ON/OFF (relay).** Range of temperature where two conditions are possible. The output depends on whether the temperature was increasing or decreasing when it entered that range.

**VARIABLE. (Bandwidth)** Temperature range where a variable fan speed fan accelerates, as the temperature increase. Minimum value at relative set point and 100% at relative set point + Bandwidth.



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# **CHAPTER 2**

# **INSTALLATION**

## CHAPTER 2 - INSTALLATION

**The manufacturer recommends that the following installation instructions be adhered to as closely as possible, and that all work be performed by a certified electrician. Failure to do so may void the warranty!**

### 2.1 UNPACKING

Unpack the IC-410ND and inspect contents for damage. Should the contents appear to be damaged, contact your local distributor to return the material.

The package should contain the following standard items:

- 1 IC-410ND control
- 2 spare fuses
- 1 Temperature probe
- 1 User's Guide
- 1 Configuration document package including wiring diagrams and appropriate control settings

## **2.2 MOUNTING**

To limit the IC-410ND's exposure to noxious gases, install the unit in a hallway.

Make sure the IC-410ND is properly installed, that is, side up with the cable entry holes facing down (see figure 1).

The IC-410ND operates in a temperature range of 32°F to 122°F (0°C to 50°C).

The enclosure is watertight, but do not spray water or immersion the IC-410ND in the water. Cover it carefully with plastic when cleaning the room.

- Use a screwdriver to remove the 3 screws of the top faceplate and the 3 screws of the access panel. Then, open both faceplates.

**Mounting hardware is not included.**

- Install mounting screw on wall and hang the unit in place by sliding the rear mounting hole of the IC-410ND over the screw (see figure 1).
- Use two more screws to secure the IC-410ND in place using the bottom mounting holes.

## **2.3 CONNECTION PROCEDURE**

For the following connection procedure, refer to figure 2.

### **ELECTRICAL CONNECTIONS**

The installation of the IC-410ND and its connections to the various control modules should be well-planned for optimal performance and ease of use. The following guidelines are given to help establish the best installation configuration for your building and for the overall safety of people and livestock.

#### **2.3.1 Electrical Power.**

Locate the power source of your building and install the IC-410ND in the most convenient location. Protection from electrical surges should be included in the planning of each installation. The IC-410ND electrical power default is a 230 VAC power source. It is also able to run with a 115 VAC power source.

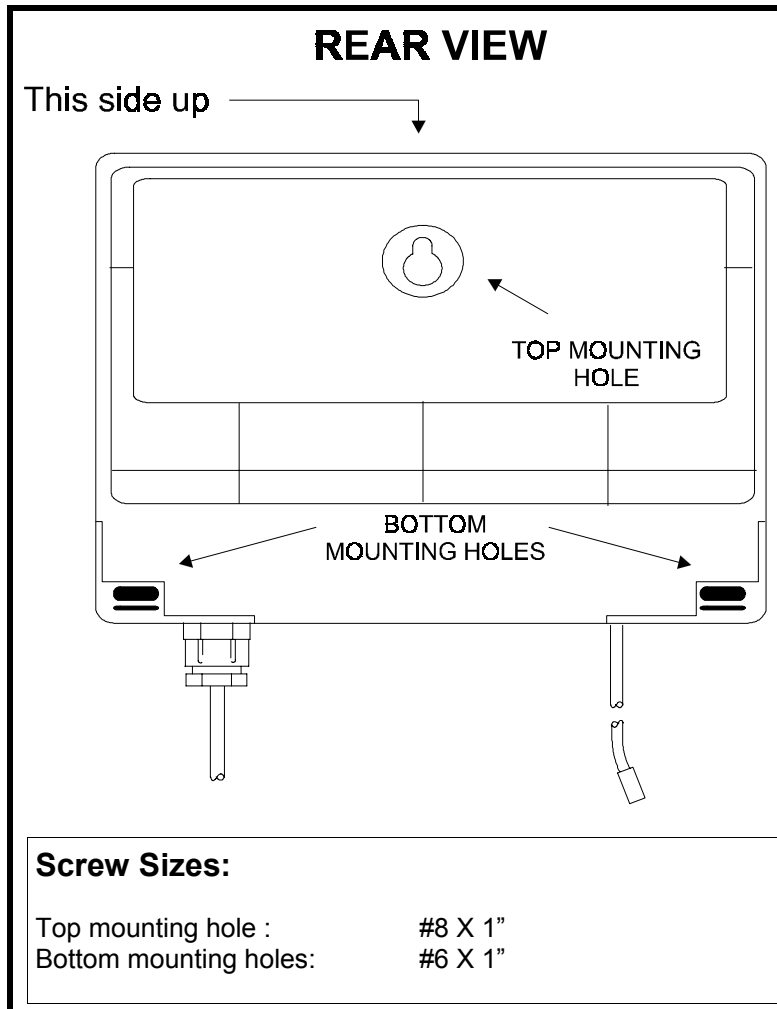
##### **2.3.1.1 - Line Voltage Selector Switch**

230V	This switch is located on the main (bottom) board and is use to select the IC-410ND to 115 VAC or 230 VAC line voltage (see figure 2).
115V	

#### **ATTENTION**

- Set the line voltage switch inside the IC-410ND to the correct value before powering up the Intelligent Control.

**Figure 1- Mounting Position and Devices**



## ***IC-410ND - Intelligent Control***

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### **2.3.2 Electrical Power 3 Phase, 208 VAC/Control Modules**

Control modules which are connected to the IC-410ND (VSM-2, VSM-2/2, CIP-1, VPM-1 and VPM-2) require it is the same phase as the IC-410ND or all other components recommended to use the same phase as the IC-410ND.

#### **CAUTION**

**Make sure that both IC-410ND and variable fan(s) power lines are on the same phase. Otherwise the control signal of the IC-410ND will be too early or too late and the fan will not rotate as expected.**

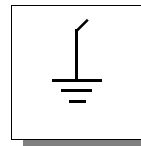
### **2.3.3 Electrical Cables.**



All electrical cables must be installed according to the local wiring code. Each control module must be connected to the master control unit using a two-wire low voltage cable. It is recommended to use a shielded wire cable to interconnect the different modules to the IC-410ND. The shielded wire cable is very efficient to protect the IC-410ND against any electromagnetic interference generated by lightning or nearby operating machinery. This applies especially when the cable is longer than 3,5 meters (10 ft) and for any probe extensions of the same length or longer. See configuration document for wire and cable gauges. **It is prohibited to use overhead cable outside the building.**

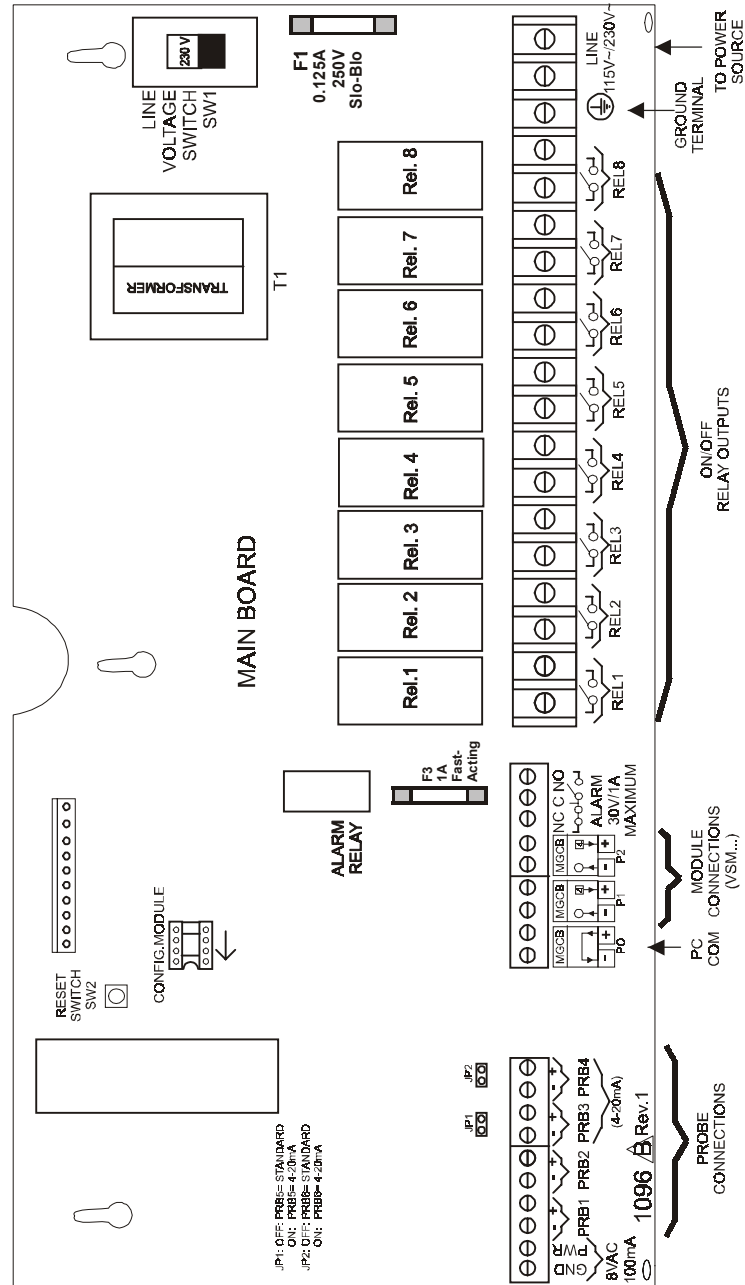
### **2.3.4 Electrical Grounding.**

All cables shields should be connected to the IC-410ND power ground only, except for the cable connected to a PC interface (SVPC-40), where the shield should be connected as instructed in the SVPC-40 manual.



## CHAPTER 2 - INSTALLATION

**Figure 2- IC-410ND Main Board**



## ***IC-410ND - Intelligent Control***

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### **2.3.5 Safety Control Backup.**

A safety control backup is strongly recommended to ensure a safe environment. The use of an alarm, warning device or other backup device, which can detect equipment failure, blown fuses and/or tripped breakers, helps to prevent harm or damage to the building and its contents. The safety control backup wiring, illustrated in figures 3 and 4 and the following guidelines, will help you avoid serious consequences.

- a) **BACKUP POWER SOURCE.** A backup relay (DPDT) connects to the power source 1 in normal operation but will switch to the power source 2 if source 1 is disabled. The backup relay should be selected to ensure it is able to support the required power load (see figure 3).
  
- b) **BACKUP THERMOSTAT.** It is also strongly recommended to put a thermostat to at least one fan parallel to the IC-410ND module output (see figure 4). If the Intelligent Control fails, the backup thermostat will activate the dedicated fan at full speed as soon as temperature reaches the set point of the thermostat. The thermostat should be accessible for adjustment and should be set at 3 to 5 degrees above the fan's relative set point.

### **2.3.6 Terminal Block Connections.**

The IC-410ND terminal block comes with 2 connections for modules: P1 and P2 (see figure 2). Each module must be wired to its own terminal. Refer to the configuration document and wiring diagrams supplied for your equipment.



Figure 3- Safety Control Backup Wiring 1

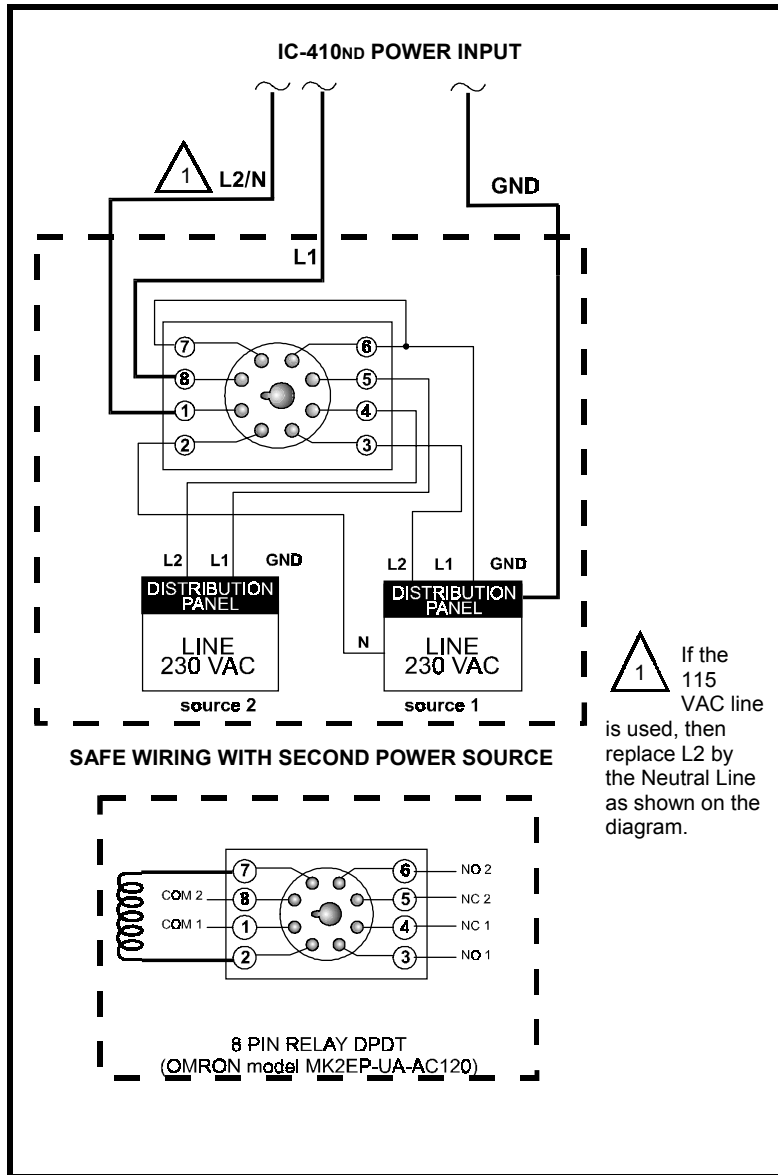
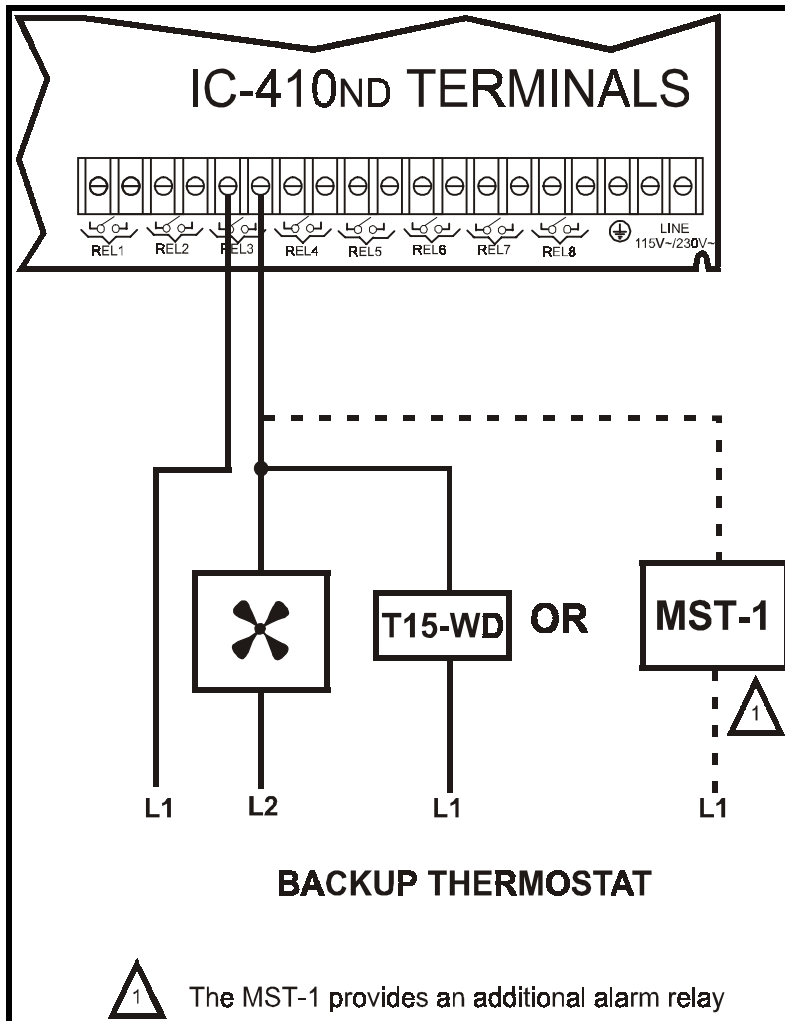


Figure 4- Safety Control Backup Wiring 2



## 2.4 GUIDELINES FOR MODULE AND SENSOR LOCATIONS

**NOTE:**

Temperature probes use a “Class II” low voltage circuit. The cables can extend up to a distance of 500 ft (150 m).

Use shielded cabling for probes. Connect the shields to the GROUND terminal. Failure to do so may result in inaccurate readings.

### **2.4.1 Location of Control Modules.**

The control modules should be placed in easy access locations but away from damaging elements. They can be installed either near the equipment they control, such as fans and curtain machinery, or in a central area close to the IC-410ND.

*(See module manual for recommended distance between control and module)*

### **2.4.2 Inside Temperature Sensor .**

The inside temperature sensor should be located in the area which gives the most accurate temperature reading to achieve optimum ventilation. The sensor should also be connected to the IC-410ND with a shielded two-wire cable. It should be located in an area protected from operating machinery, animal bites, personnel or anything that could damage the sensor.

### **2.4.3 Outside Temperature Sensor .**

The outside temperature sensor should be installed in a location which is not influenced by heat generated from inside the building or direct sunlight. It should also be protected from physical damage.

## ***IC-410ND - Intelligent Control***

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### **2.4.4 Static Pressure Sensor.**

The static pressure sensor should be installed near an outside wall and connected to the IC-410ND with a three-wire cable. Two small flexible vinyl tubes are connected to the sensor to allow sampling of the inside and outside static pressures. Refer to the Static Pressure Sensor manual for installation instructions.

### **2.4.5 Setup**

Once the IC-410ND is properly mounted on the wall, open both faceplates and perform the following steps:

- a) Ensure the flat cable is properly connected.
- b) Connect the cable wiring of each control module and sensor to the terminal blocks. The wiring connections are illustrated in the wiring diagram provided with the configuration document.
- c) When upgrading your system with a new configuration, cut out the faceplate labels supplied with the configuration document and slide them in the front panel. Then, proceed to downloading the configuration (refer to Chapter 3).
- d) Close the front panel and the lower access cover and secure them with the screws previously removed.
- e) Before the adjustment, review Chapter 3 of this manual for the control descriptions of the IC-410ND.

## **2.5 ALARM CONNECTIONS**

The IC-410ND provides a normally open and normally closed dry contact to set off an alarm in case low or high temperature conditions occur. Moreover, this same contact can be used to signal a power failure or other malfunctions. It may be connected to an alarm system or directly to a siren and / or auto-dialer.

Make the normally closed (NC) or normally open (NO) connections as indicated in figures 5 and 6.

The relay will activate about 5 seconds after an alarm is triggered.

Figure 5- Wiring for an Alarm System that Detects a Circuit Opening

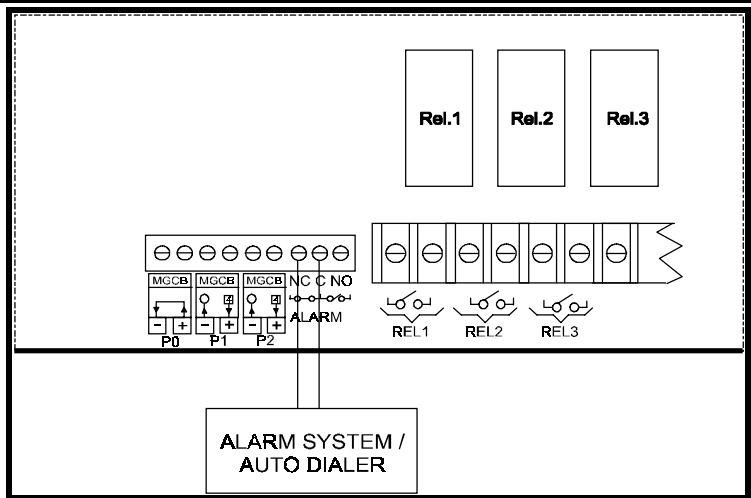
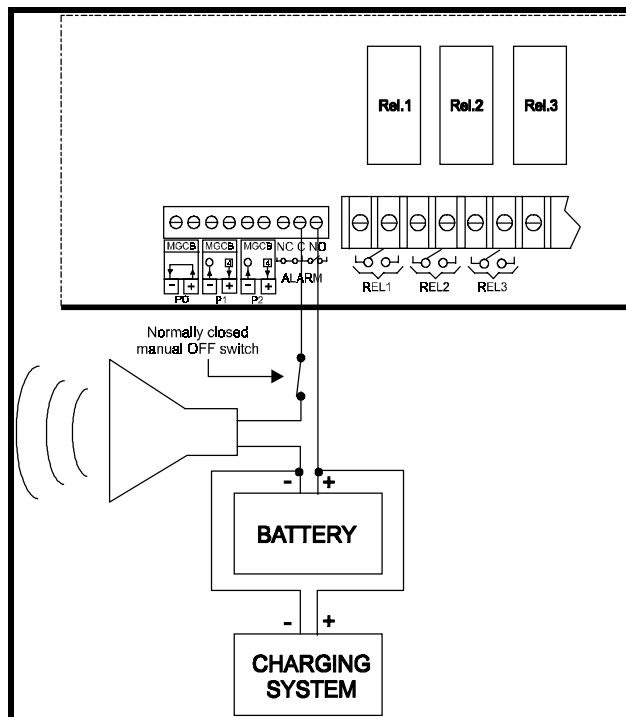


Figure 6- Wiring for the Installation of a Siren

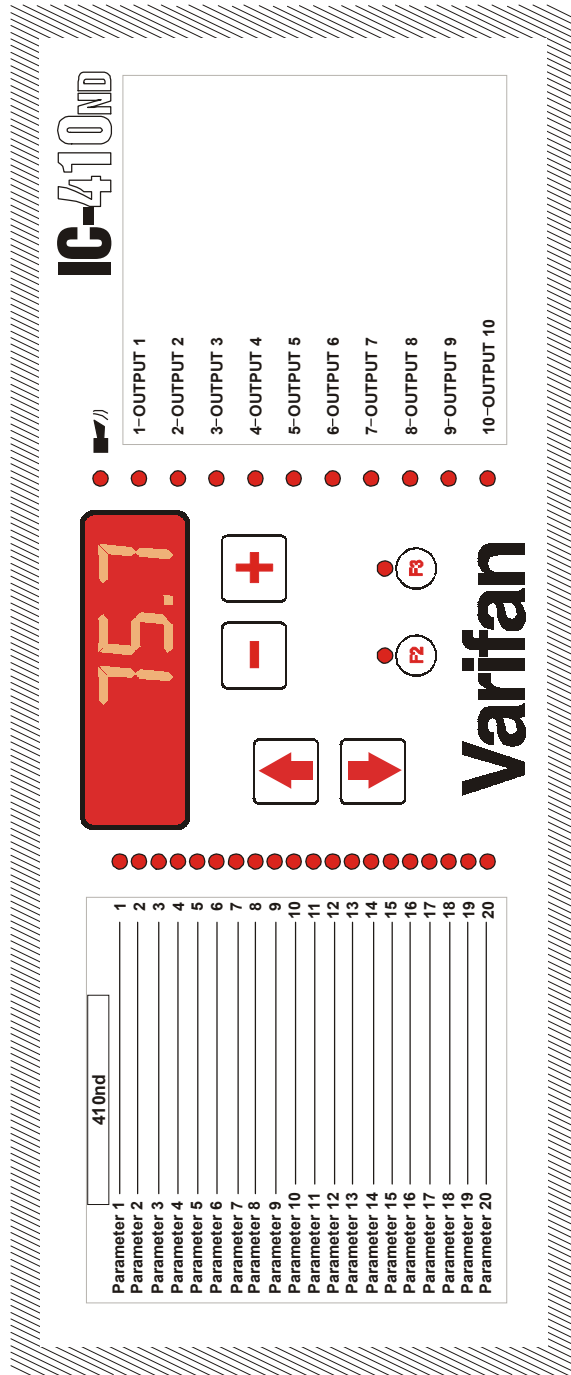


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**CHAPTER 3**

**USER'S GUIDE**





## **CHAPTER 3—USER GUIDE**

### **3.1 FACEPLATE**

The IC-410ND's faceplate, illustrated on the next page, features a LED status window, 1 settings list, 1 outputs list with LEDs, 2 function buttons (F2 and F3), 2 arrow buttons and 2 value setting buttons (+ and -). Below is a brief description of all the features, from left to right on the faceplate.

#### **3.1.1 Settings List**

On the left-hand side of the faceplate is a list of the settings programmed in the ordered configuration. Due to limited space, some parameter may not appear on this list. All settings that do not show up can be accessed with the arrow buttons.

#### **3.1.2 Function Buttons**

The round function buttons help users to select extra settings which appear on the list with the F2 and F3 symbols. These settings may be accessed first by selecting the main parameter with the arrow buttons. Pressing the appropriate function button (F2 or F3) will then make the second or third function appear on the display. Then, pressing one of the arrow buttons automatically switches the control back to the F1 menu.

#### **3.1.3 LED Status Window**

The LED status window features a 5 digit LED readout display of temperature in Fahrenheit or Celsius, or programmable settings. After a setting is selected, its value appears on the LED display. If the value is flashing, it can be changed with the + and - buttons.

#### **3.1.4 Settings buttons (arrows)**

The settings buttons are represented by 2 squares with arrows on them. Pressing the upper or down arrow will move up or down the main function 1 settings list. To visualize function 2 and 3 settings, locate them on the settings list, then use the settings buttons to select the function 1 number next to which they are listed. Only then, press the function 2 or 3 button.

**3.1.5 Value buttons (+ and -)**

The value buttons appear as 2 squares with a + and - sign on them. They are used to increase or decrease the value on the LED window. Press the button once and release it to increase or decrease the value by one increment. The value may be changed quickly by keeping your finger on either button.

**3.1.6 Output segments**

On the right-hand side of the faceplate appear 11 LEDs vertically aligned, next to which is a list of 11 outputs (1 alarm and 10 multi-purpose outputs). A LED comes on whenever the respective output is active an alarm is triggered.

**3.2 SETTINGS**

The User's Guide contains a description of only a few settings that appear in most configurations, such as: ramping, growth day, alarm. The other settings, which are easier to set, are briefly explained in the configuration document.

**3.2.1 Time of Day (time clock)**

The IC-410ND comes with its own integrated time clock. This feature is appreciated by users who want to know the current time of day. Note that if a power failure occurs, the clock will start back at the time at which the power failure as occurred. However, the time clock's main purpose is to allow ramping and feed & water consumption monitoring, as these events occur every 24 hours or at midnight each day.

The following instructions show how to change the time of day on the control:

- F1:** The time is displayed in a HH:MM format and does not flash. The + and - buttons serve no purposes.
- F2:** Minutes are flashing and can be adjusted with the + and - buttons.
- F3:** Hour are flashing and can be adjusted with the + and - buttons.

**3.2.2 Growth Day**

The Growth Day plays an active part in the ramping setting. With the F2 pushbutton, users can program the current day of a growth curve. Day by day, the relative calendar's value will increase by increment of 1, from a minimum setting of 1 to a maximum setting determined by the configuration.

The following instructions show how to set the Growth Day of a ramping curve:

- F1:** The Growth Day value is displayed and does not flash. The + and - buttons serve no purposes.
- F2:** Parameter's value is flashing. It may be modified with the + and - buttons. The F2 mode is deactivated when the supervisor mode prohibits any modification of the Growth Day. If the Growth Day is OFF, all ramping is deactivated (see section 3.2.3).
- F3:** Not used.

**3.2.3 Ramping**

The Ramping setting automatically changes the value of a setting every 24 hours (or midnight) each day. The amount by which the setting is changed is determined by the ramping curve or growth curve.

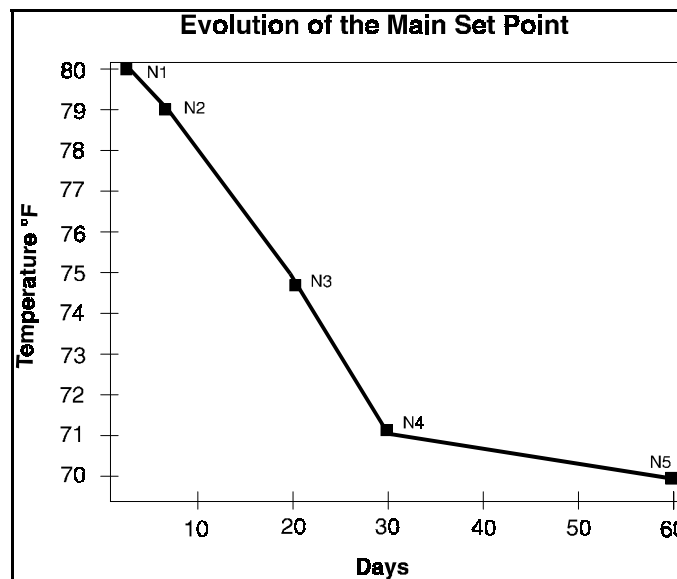
The following instructions show how to program the ramping curve (see also example on next page):

- F1:** Displays the Main Set Point. When Growth Day is OFF, the main set point value flashes. Adjust the parameter's value with the + and - buttons. This value can only be adjusted when flashing.
- F2:** Establishes the days on the ramping curve. The LED display shows NN:DDD. NN represents the number of a point. DDD represents the day corresponding to the N point. When Growth Day is OFF, DDD flashes and can be adjusted with the + and - buttons. Press F2 to go to the next points.

**F3:** Adjusts the values on the ramping curve. The LED display shows NN:VVV. NN represents the point's number whereas VVV represents point N's corresponding temperature value. When Growth Day is OFF, VVV flashes and can be adjusted with the + and - buttons. Press F3 to switch points.

The following graph shows a typical ramping curve for the main set point.

**Figure 7 Typical Ramping Curve**



This five point curve may be entered as follows:

## CHAPTER 3 - USER'S GUIDE

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1. Make sure the Growth Day setting is OFF (see section 3.2.2)
2. Select the Main Set Point parameter with the arrow buttons.
3. The value on the LED display should be flashing. If not, it is because the GrowthDay parameter is still ON. Press F2. The LED display will show 1: DDD (the day of the first point of the curve). Set this value to 1 with the + and - buttons.
4. Press F2 again. The LED display will read 2: DDD. The control is asking you to enter the day for the second point of the curve. Set the value to 7.
5. By pressing F2 and adjusting the days for the 3 remaining points on the curve to 20, 30 and 60 you are now ready to enter the temperature values for each point.
6. Once the day for the last point of the curve is entered, press F2. You should now be back to a point where the LED display is flashing a temperature value.
7. Press F3. You may now enter the temperature values for each point on the curve the same way you entered the days. In the example, these values are 80, 79, 75, 71 and 70.
8. The whole ramping curve is now set. To enable temperature ramping, simply set the Growth Day to 1 and the IC-410ND will follow the curve.

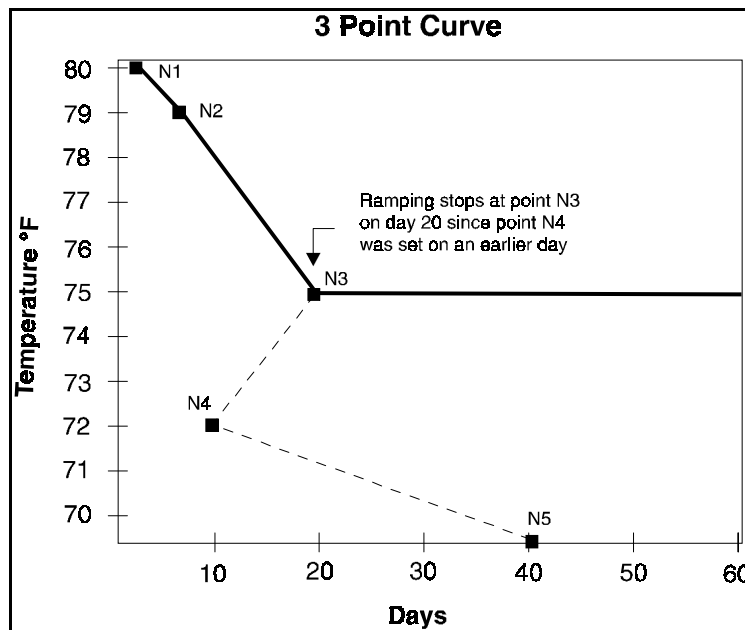
**NOTE:**

**Before the first point**, the set point takes the value entered for the first point. For example, point 1 is at 80°F at day #10. From day #1 to day #10, the set point will be 80°F.

**After the last point**, the growth curve remains operational. While it continues to count the days, the set point does not flash and cannot be changed. For example, the last point (day #40) is set at 70°F. After day #40 the set point remains at 70°F, until ramping is deactivated.

**NOTE:**  
Ramping is interrupted when days fail to respect a chronological order. This characteristic may be useful to users unwilling to use the 5 "preset" ramping points.  
  
The following illustration shows how users can give faulty values to the last 2 points to obtain a 3 point curve.

Figure 8 Three point ramping curve



**3.2.4 Probes**

The following instructions show how to read the current temperature of 1 or more rooms as well as the recorded highs and lows for inside and outside temperatures.

- F1:** The probes' average value is displayed and does not flash. The + and - buttons serve no purposes. If the gap between the recorded values is too great, the *Err* message will be displayed.

**F2:** The probes' individual values are displayed sequentially. After 60 seconds, the F1 menu comes back on.

**F3:** Alternately displays the recorded highs and lows. Press simultaneously the + and -buttons for 2 seconds to clear the highs and lows. The *Clr* message appears for 2 seconds to confirm the clearing. Then, after 60 seconds, the F1 menu comes back on.

### **3.2.5 Supervisor Mode**

The supervisor mode allows users to read or adjust all parameter values by entering a code containing 3 numbers, as indicated in the configuration document.

When the control **is not in supervisor mode**, certain parameters are hidden or locked and can not be modified. However, the flashing ones are not locked and can still be modified.

#### **CODE ENTRY PROCEDURE**

1. Press the lower arrow to access the supervisor mode, which is normally the last parameter. The LED display will show if the mode is ON (Su :ON) or OFF (Su : OFF).
2. To change the status, enter the code first by pressing **F2**. The LED display shows N: for the value number, then flashing 00 indicating the code values.
3. If the supervisor code is : 45, 12, 05, first enter 45, then press **F2** to access the second code number. Then, enter 12, followed by **F2** and enter the third number which is 05.
4. Finally, press **F3** to validate the code.
5. If the entered code is correct, the control will switch to supervisor mode (or switch the mode OFF if it was already ON) and go back to F1.
6. If the entered code is incorrect, the *Err* message will flash during 3 seconds.

## ***IC-410ND - Intelligent Control***

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### **3.2.6 Feed & water Consumption**

The “History” parameter allows to read the feed or water consumption since midnight and also since the last “clear” (total and daily). *Consumption is displayed in a value determined by the IC configuration.*

- F1:** The current day’s consumption (since midnight) is displayed and does not flash. Buttons + and - are not used, except when they are pushed simultaneously to clear the current day’s consumption. Clr is displayed.
- F2:** Total consumption since the last total consumption clear (except the current day) is displayed and does not flash. Press simultaneously on the + and - buttons to clear the total consumption. The display then confirms the clearing operation with the Clr message. Press the F2 button again to return to F1 mode.
- F3:** History of the daily consumption since the last clear of history is displayed in a NN:CCC format, starting with the last day. NN is the day’s number and CCC is the consumption value, in lb or in kg, l, gal ... Press F3 to access the previous . Values do not flash. Press simultaneously on the + and - buttons to clear the history. The display then confirms the clearing operation with the Clr message.

*Example: Values displayed in F3 mode:*

```
05:785      <- Last Day
04:695
03:750
02:740
01:790      <-First Day
```



## **3.3 CONFIGURATION**

### **3.3.1 Downloading a new configuration**

Below is the procedure to download a new configuration  
In the IC-410ND:

- a) Remove the faceplate screws and lift up the cover.
- b) Insert the configuration chip (CM-8) into the socket of the main board (see figure 3). Make sure the arrow of the configuration chip (CM-8) is pointing in the same direction as illustrated on the main board.
- c) Press on the reset switch situated on the main electric board (see figure 2). The display on the front panel should indicate *dnld* for approximately 5 seconds. If *dnld* is not displayed, try one more time. If *dnld* is still not displayed, remove and replace the configuration chip (CM-8). Make sure the arrow of the configuration chip (CM-8) is pointing the same direction as on the main board.
- d) When the downloading procedure is complete, remove the configuration chip (CM-8) and place it in the bottom part of the enclosure or in another safe location.
- e) Cut out the faceplate labels supplied with the User's Guide and slide them in the front panel.

**NOTE :**

If the configuration chip (CM-8) is not removed after the downloading procedure, the control will reload the factory set values each time it is reset or each time the power is turn off and back on, erasing the values entered by the user.

### **3.4 ABBREVIATIONS**

<b>dnLd</b>	Download
<b>DPDT</b>	Double Pole Double Throw
<b>Hz</b>	Hertz
<b>LED</b>	Light Emitting Diode (Red)
<b>mA</b>	Milliampere
<b>VAC</b>	Volts of Alternating Current
<b>VDC</b>	Volts of Direct Current

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# APPENDIX

**TROUBLESHOOTING**

<b>SYMPTOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Temperature probe reads <i>LO</i>	<ul style="list-style-type: none"><li>– Temperature is below -6°F (-21°C).</li><li>– Probe is disconnected or defective.</li></ul>	<ul style="list-style-type: none"><li>– Check all connections. If the problem persists, and the temperature is within normal range, replace the probe.</li></ul>
Temperature probe reads <i>HI</i>	<ul style="list-style-type: none"><li>– Temperature is above 168°F (76°C).</li><li>– Probe is short circuited or defective.</li></ul>	<ul style="list-style-type: none"><li>– Check all connections. If the problem persists, and the temperature is within normal range, replace the probe.</li></ul>
Temperature average reads <i>Err</i>	<ul style="list-style-type: none"><li>– Temperature readings of the probes used in the average are too different and the control is unable to calculate a proper average.</li></ul>	<ul style="list-style-type: none"><li>– Make sure all the probes are working properly. If so, contact your local distributor.</li></ul>
Displays are blank	<ul style="list-style-type: none"><li>– Voltage selector setting is inaccurate.</li><li>– IC-410<sub>ND</sub> is not powered.</li><li>– Ten pin flat cable between the main and the top boards of the IC-410<sub>ND</sub> is disconnected.</li></ul>	<ul style="list-style-type: none"><li>– Make sure the control is powered.</li><li>– Make sure the line voltage selector switch is properly set.</li><li>– Make sure the 10 pin flat cable is connected.</li></ul>
Display reads 8.8.:8.8.8. and <i>Err</i> continuously	<ul style="list-style-type: none"><li>– Configuration memory integrity has been compromised.</li></ul>	<ul style="list-style-type: none"><li>– Download the configuration once again (refer to chapter 3).</li></ul>

<b>SYMPTOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Variable speed fans hooked to a VSM or VPM make humming noises (in auto mode) but do not work properly.	<ul style="list-style-type: none"><li>- Fan are not connected on the same phase as the IC-410ND.</li></ul>	<ul style="list-style-type: none"><li>- Make sure the IC-410ND is on the same phase as the variable speed fans.</li></ul>
Ramping is interrupted.	<ul style="list-style-type: none"><li>- Ramping curve was improperly set or has reached the last day.</li></ul>	<ul style="list-style-type: none"><li>- Reset the curve (points and days) in chronological order.</li></ul>

**SPECIFICATIONS**

<b>DESCRIPTION</b>	<b>VALUE</b>
<b>Input Power</b>	- 12 W max
<b>Power Source</b>	- 115/230 VAC, -20%, +10% - 50/60 Hz
<b>Power Fuse</b>	- 0.125A, 250V, Slo-Blo
<b>Output (Relays 1 to 8)</b>	- 10 A; 250VAC resistive - Motor 1 HP @ 250 VAC - Motor 1/2HP @ 120 VAC - Minimum load 25mA @ 50/60Hz
<b>Alarm Relay</b>	- 30 VDC, 1 A

Storage temperature: -4°F to 131°F (-20°C to 55°C)

Operating temperature: 32°F to 122°F (0°C to 50°C).

Temperature range: -6° to 168°F (-21°C to 76°C)

Weight: 6 lb (2.72 Kg)

Size: 12<sup>5</sup>/<sub>8</sub>"X11<sup>1</sup>/<sub>4</sub>"X4<sup>3</sup>/<sub>4</sub>"  
(32X28.5X11.5 cm)

### **Limited Warranty**

The manufactured equipment and supplied components have gone through rigorous inspection to assure optimal quality of product and reliability. Individual controls are factory tested under load, however the possibility of equipment failure and/or malfunction may still exist.

For service, contact your local retailer or supplier. The warranty period shall be for two years from manufacturing date. Proof of purchase is required for warranty validation.

In all cases, the warranty shall apply only to defects in workmanship and specifically exclude any damage caused by over-voltage, short circuit, misuse, acts of vandalism, fortuitous events, acts of God, flood, fire, hail, lightning or any other natural disaster. Any unauthorized work, modification or repair on this product automatically voids the warranty and disclaims the manufacturer from all responsibility.

The manufacturer assumes only those obligations set forth herein, excluding all other warranties or obligations. This warranty stipulates that in all cases the manufacturer shall be liable only for the supply of replacement parts or goods and shall not be liable for any personal injury, damages, loss of profits, interrupted operations, fine contravention of the law or damages to the production of the PURCHASER and the PURCHASER shall take up the defense and hold the manufacturer faultless regarding any legal or extra legal proceedings, notice, or claim by the customer or by a third party, and regarding any legal and extra legal expenses and fees brought forward on by such damages.

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