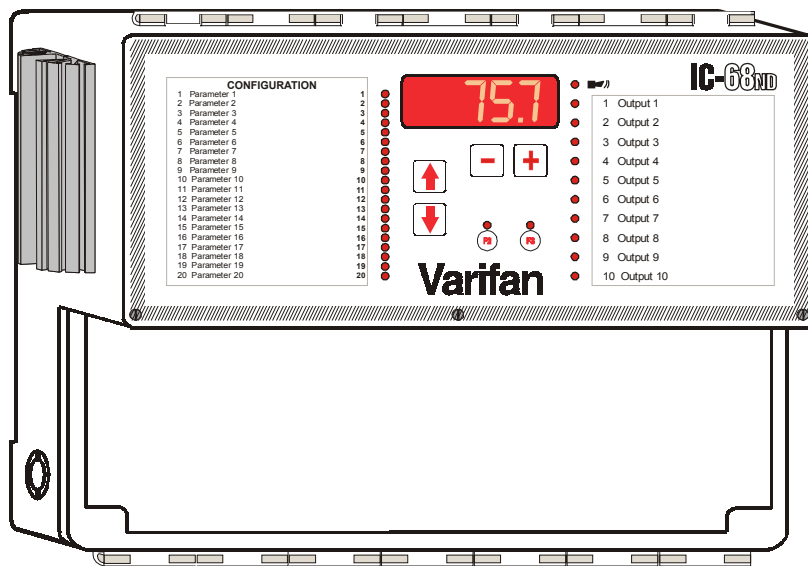


Installation Guide

IC-68_{ND} ***Intelligent Control***



IC-68ND INSTALLATION GUIDE

WARNINGS AND PRECAUTIONS

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.

WARNINGS AND PRECAUTIONS

Defective 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 user'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. Furthermore 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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The purpose of this guide is to fully inform the electrician on proper wiring and installation procedures for the IC-68ND. Full conformity of the Installation and User's Guide will lead to a successful installation and proper functioning of the IC-68ND control .

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

1. Unpacking

Unpack the IC-68ND and inspect contents for damage. Should the contents appear to be damaged, contact your local distributor to arrange for the return of the damaged material.

The package should contain the following standard item :

- 1 IC-68ND
- 1 Temperature probe
- 1 Spare Power Fuse
- 1 Spare FAN 1 and FAN 2 fuse
- 1 Installation Guide
- 1 User's Guide package including list of equipment, wiring diagrams, parameter list, and detailed description of the configuration.

2. Mounting Hardware Required

This is the list of the mounting hardware needed which is not included with the product :

- Shielded two-wire cable, AWG #18 (to extend probes)
- Shielded two-wire low capacitance cable, AWG #18 to #22 (used for communication)
- 3 screws : 1 #8 X 1", 2 #6 X 1" (to hang the unit onto the wall)
- Screwdrivers
- Hammer (to punch out the knock outs)
- Soldering iron kit or approved sealed connectors

3. General installation guidelines

3.1 IC-68ND Control

- It is recommended to install the unit in a hallway to limit the IC-68ND's exposure to noxious gases.
- In order to avoid condensation problems inside the controller, it is recommended to install the IC-68ND on an inside wall. If it is not possible, use spacers to have an air gap between the wall and the IC-68ND.
- It is required to install the IC-68ND side up with the cable entry holes facing down (see figure 1).
- The enclosure is watertight, but not splash proof or immersion proof. DO NOT WATER the control. Cover it carefully with plastic when cleaning the room.
- The IC-68ND should be installed in easy access location but away from damaging elements (heat, cold, water, direct sunlight, ...).
- It is recommended to punch out knock outs by striking them at the bottom near the back of the case (see figure 2).
- Do not drill the face, the side, the top or the underside of the control.
- Do not install the IC-68ND control near high voltage equipment, power supply or transformer.

3.2 Electrical Cables

- All electrical cables must be installed according to local wiring codes.
- All cable shields must be connected to the IC-68ND power ground only, except for the cable connected to the optional PC interface (see SVPC-40 guide). The shield is needed to protect the IC-68ND and the modules against any electromagnetic interference generated by lightning or nearby operating machinery.
- Never use the shield as a conductor.
- Connect only one end of the shield to the ground of the IC-68ND.
- Use separate conduit for the low voltage cables (communication and probes) and the high voltage cables. There must be at least 1 foot (30 cm) between low voltage and high voltage conduits.
- If a low voltage cable have to cross over a high voltage cable, make this crossing at 90°.
- All cable connections must be soldered or done with approved sealed connectors.
- Probe cables must be 500 ' (150m) or less.
- Communication cables must be 750 ' (250m) or less.
- It is prohibited to use overhead cables outside the building.

3.3 Electrical Power

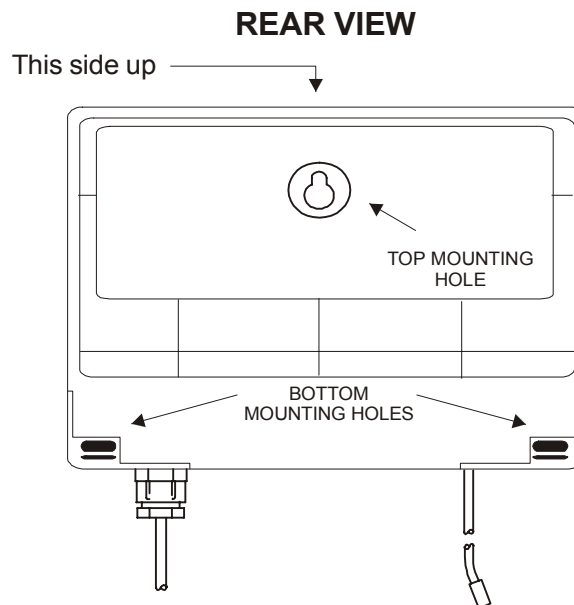
- Protection from electrical surge should be included in the planning of each installation.
- Every module should have a separate breaker to avoid serious consequences.
- Certain control modules (VSM-2, VSM-2/2, VPM-2, VPM-1 and CIP-1) require the same phase and same voltage as the IC-68ND to operate.
- It is strongly recommended to have a backup power source to ensure life-sustaining conditions in case of power failure (see figure 5).
- It is also strongly recommended to put a backup thermostat to sufficient fan and heating system parallel to the IC-68ND module output (see figure 6).
- Backup system and alarm must be thoroughly tested and verified as working properly before using the ventilation system.

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4. Mounting

- Use a screwdriver to remove the 4 screws from the top of the faceplate and the 2 screws on the access panel.
- Open both faceplates.
- Install mounting screw on wall and hang the unit in place by sliding the rear mounting hole of the IC-68ND over the screw (see figure 1).
- Install two more screws to secure the IC-68ND in place using the bottom mounting holes.

FIGURE NO. 1 Mounting Position and Devices



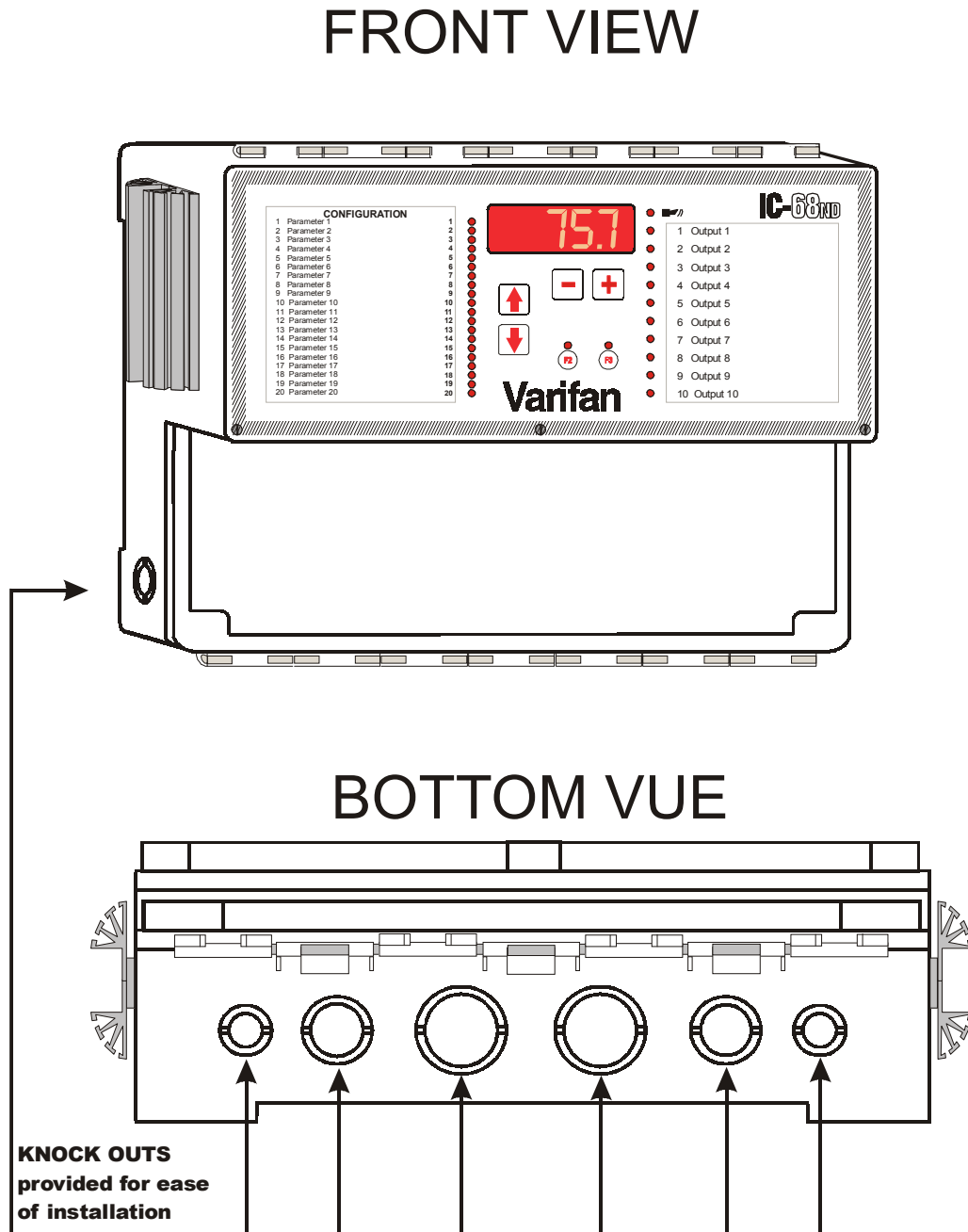
Screw Sizes:

Top mounting hole : #8 X 1"
Bottom mounting holes: #6 X 1"

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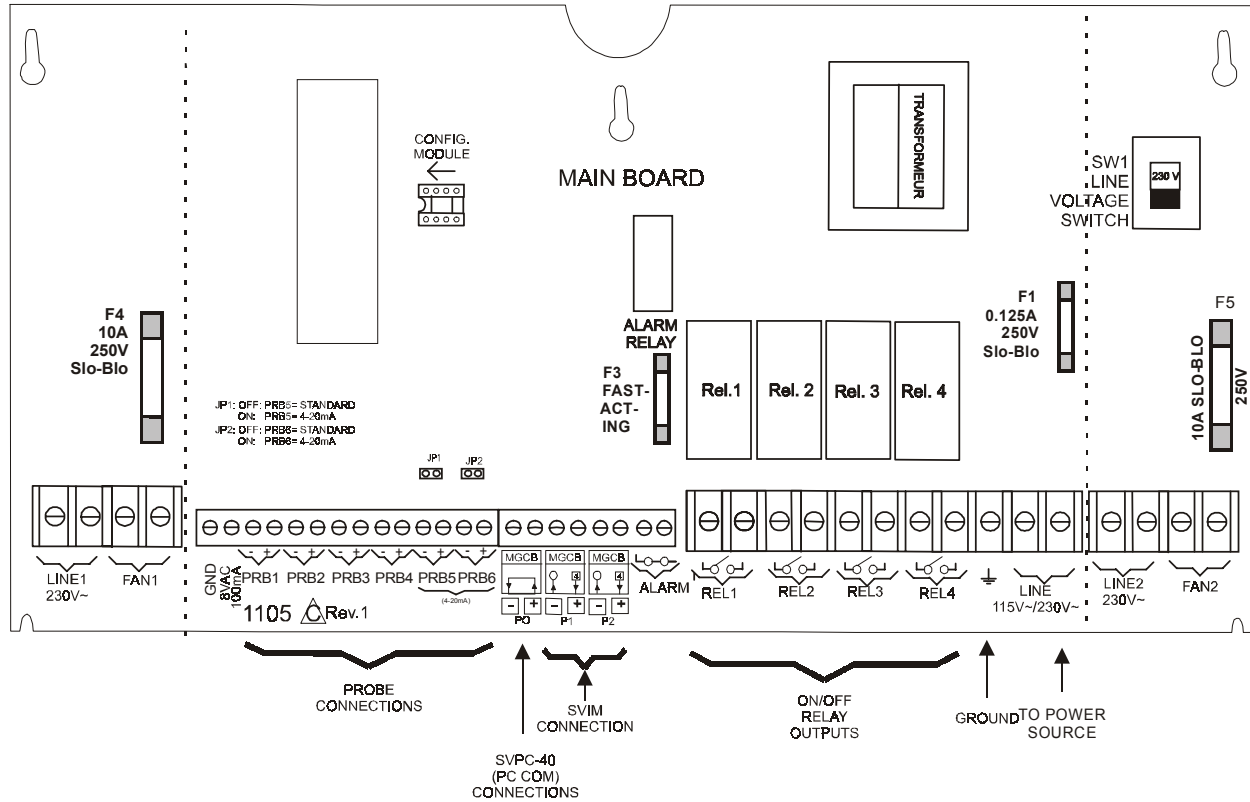
5. Control Description

FIGURE NO. 2 The IC-68ND Control



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FIGURE NO. 3 IC-68ND Electronic Main Board



6. Connection Procedure

6.1 General Wiring Diagram

Since the IC-68ND is a configurable control, the specific wiring diagram comes with the User's Guide particular to this installation.

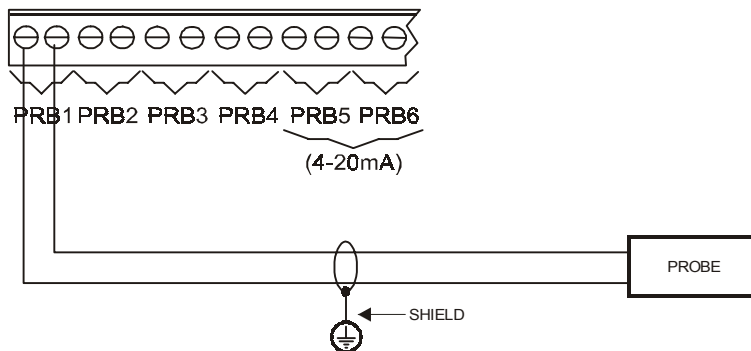
6.2 Detailed Wiring Diagrams

6.2.1 Typical Sensor Wiring for Probes

The inside temperature sensor should be located in the area which gives the most accurate temperature reading to achieve optimum ventilation. It must be located in an area protected from operating machinery, animal or personnel manipulation or anything that could damage the sensor. See also "3. General installation guidelines".

If it is an outside temperature sensor, it must be installed in a location which is not influenced by heat generated by the building or direct sunlight.

FIGURE NO. 4 Typical Temperature Probe Wiring



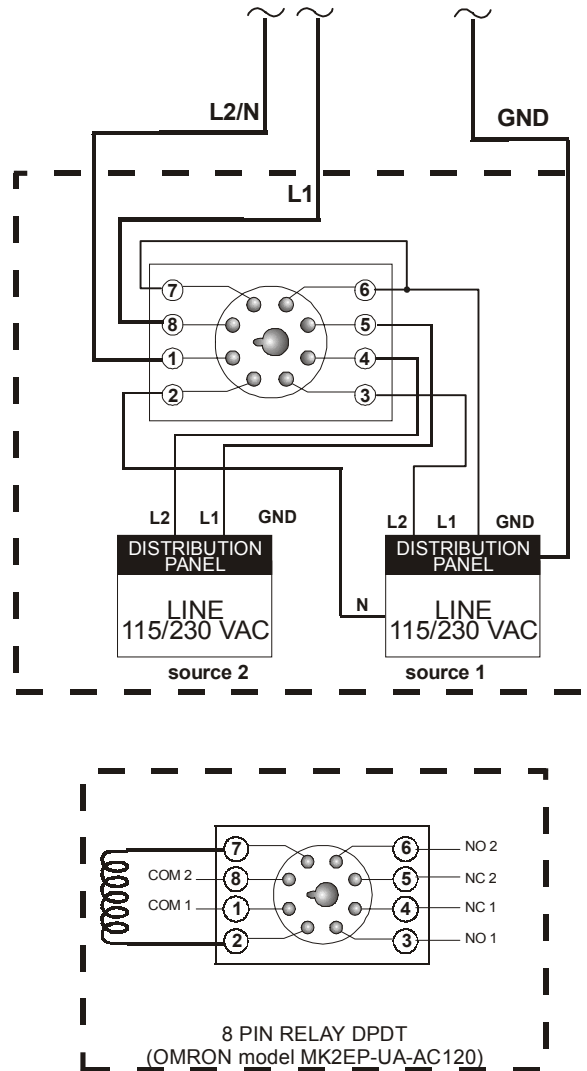
TYPICAL SINGLE PROBE WIRING

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6.2.2 Typical Power Backup Wiring

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 must be selected to ensure it is able to support the required power load.

FIGURE NO. 5 Typical Power Backup Wiring

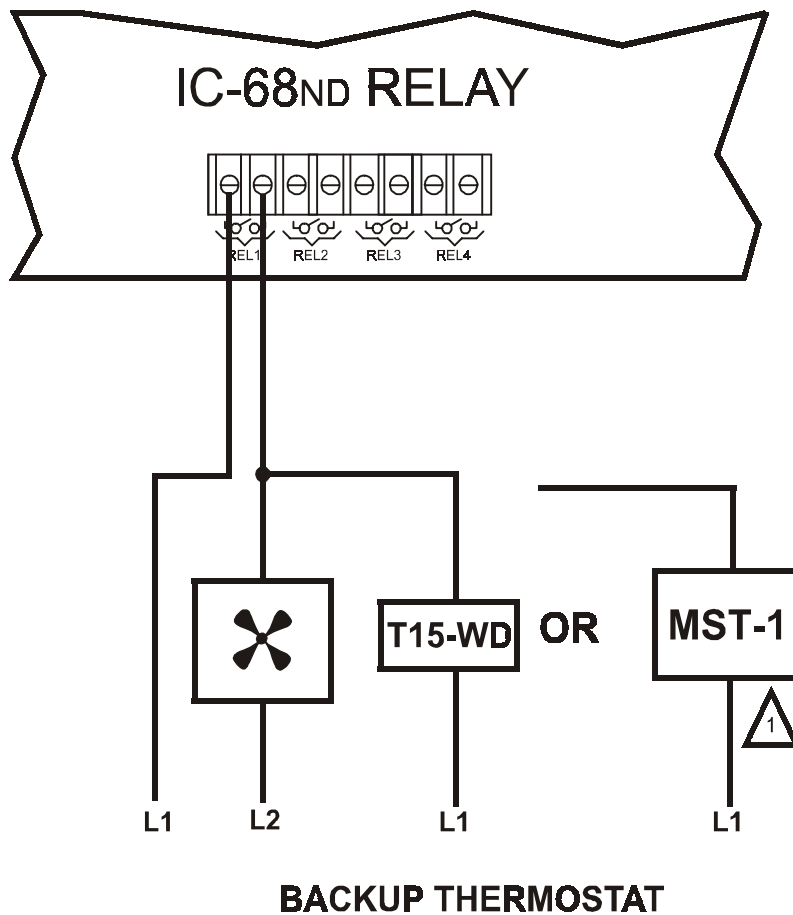


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6.2.3 Typical Thermostat Backup Wiring

If the Intelligent Control or a module fails, the backup thermostats will activate the dedicated fan or heater as soon as temperature reaches the set point of the thermostat. The thermostat must be accessible for adjustment and must be set at 3 to 5 degrees above the fan's relative set point or 3 to 5 degrees under the heater relative set point.

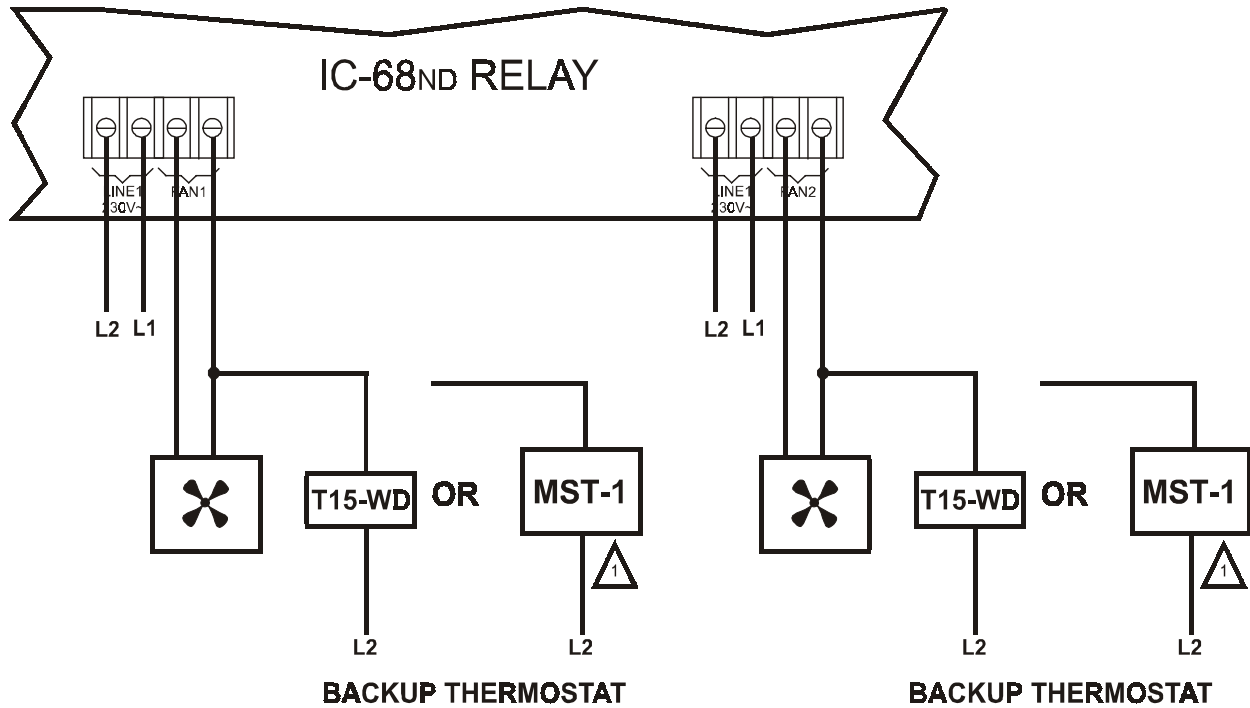
FIGURE NO. 6 Typical Thermostat Backup Wiring on ON/OFF stage



The MST-1 contains an extra alarm relay

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FIGURE NO. 7 Typical Thermostat Backup Wiring on variable stage



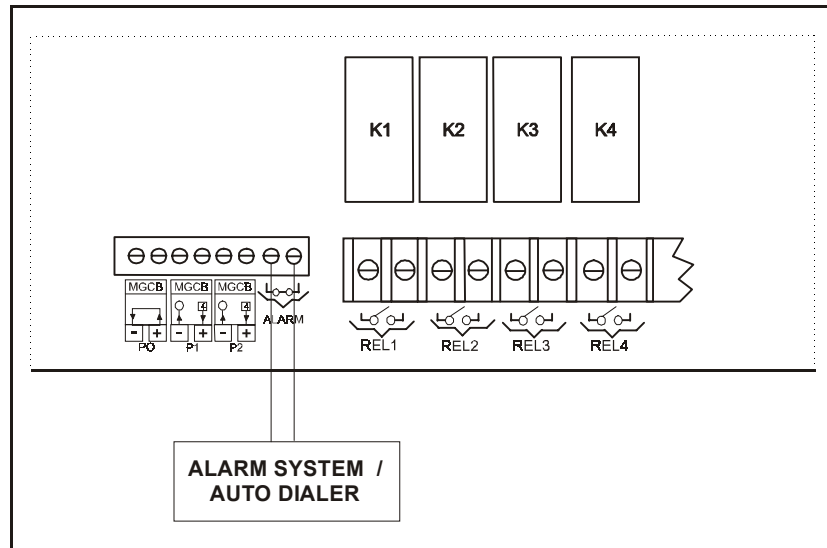
The MST-1 contains an extra alarm relay

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Typical Alarm Connection Wiring

The IC-68ND provides a normally close dry contact to set off an alarm (high or low temperature, power or control failure, ...). Is strongly recommended to connect the alarm relays to an alarm system or an auto-dialer.

FIGURE NO. 8 Typical Alarm Connection Wiring



6.2.4 Communication Port Connection

Always connect the IC-68ND positive communication port terminal block with the module positive communication port terminal block. Do the same with the negative communication port.

Certain control modules (VSM-2, VSM-2/2, VPM-2, VPM-1 and CIP-1) require the same phase and same voltage as the IC-68ND to operate.

7. Powering Up Procedure

7.1 Adjust the Line Voltage Selection Switch

This switch is located on the bottom electronic board (see figure 3) and adapts the IC-68ND to 115 VAC or 230 VAC line voltage.

Set the line voltage switch (115VAC/230VAC) inside the IC-68ND to the correct value before powering up the Intelligent Control.

7.2 Verify all Connections

Once the IC-68ND is properly mounted on the wall and all modules and sensors connected to the terminal block, perform the following steps :

- 1) Ensure the flat cable between the bottom electronic board and the faceplate electronic board is properly connected.
- 2) Seal all cable entry holes.

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7.3 Download the Configuration (if necessary)

When upgrading your system with a new configuration, you will have to download the configuration.

- a) Ensure the power source of the IC-68ND is OFF (flip the circuit breaker on the distribution panel).
- b) Remove the faceplate screws and lift up the cover.
- c) 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.
- d) Switch on the power source. 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.
- e) 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.

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 customer.

- f) Cut out the faceplate labels supplied with the User's Guide and slide them in the front panel.

7.4 Hermetically Close the IC-68ND

Close the front panel and the lower access cover and secure them with the screws previously removed.

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7.5 Troubleshooting

SYMPTOM	CAUSE	REMEDY
Temperature probe reads LO	Temperature is below -6°F (-21°C). Probe is disconnected or defective.	Check all connections. If the problem persists, and the temperature is within normal range, replace the probe.
Temperature probe reads HI	Temperature is above 168°F (76°C). Probe is short circuited or defective.	Check all connections. If the problem persists, and the temperature is within normal range, replace the probe.
Temperature average reads Err	Temperature readings of the probes used in the average are too different and the control is unable to calculate a proper average.	Make sure all the probes are not near a source of heat or cold and working properly. If so, contact your local distributor.
Displays are blank	Voltage selector setting is inaccurate. IC-68ND is not powered. Ten pin flat cable between the main and the top boards of the IC-68ND is disconnected.	Make sure the line voltage selector switch is properly set. Make sure the control is powered. Make sure the 10 pin flat cable is connected.
Display reads 8.8.:8.8.8. and Err continuously	Configuration memory integrity has been compromised.	Download the configuration once again (see section 7.3).
Variable speed fans hooked to a VSM or VPM make humming noises in auto mode, but they work correctly in manual mode.	Variable fans hooked to a VSM or VPM module are not connected on the same phase and tension as the IC-68ND.	Make sure the IC-68ND is on the same phase and the same tension as the variable speed fans that are hooked up to a VSM or VPM module.

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7.6 IC-68ND Compatible Probes

This is the list of all compatible probes that can be connected with IC-68ND control with a short description of their function.

- **Temperature probe 2004-1K (red cap)**
Temperature probe with a temperature range of -6 to 168.7 °F (-21.1 to 76 °C).
- **Temperature probe 2004-1KLT (blue cap)**
Temperature probe with a temperature range of -43 to 165.7 °F (-41.7 to 74.4 °C).
- **Probe averaging box PAB-4**
Connection box to easily connect 4 temperature probes to obtain an average.
- **Static pressure probe SPS-1**
Static pressure probe with a measuring range of -0.200 to 0.200 " (-50 to 50 Pa) of water column.
- **Relative humidity probe RHP-1**
Relative humidity probe with a measuring range of 10 to 90 %.
- **Relative humidity probe RH-3**
Universal relative humidity probe with a measuring range of 0 to 100 %.
- **After market probe (Non Varifan probes)**
The IC-68ND is compatible with resistive type (potentiometer, on/off switch), voltage type, 4 to 20 mA type (you have to put on jumper JP1 for PRB5 or JP2 for PRB6) and pulse type (water and feeder counter).

7.7 IC-68ND Compatible Modules

This is the list of all compatible modules that can be connected with IC-68ND control with a short description of their function.

ON/OFF modules

- CM10-2 (2 ON/OFF stages of 10 amperes)
- CM3-2 (2 ON/OFF stages of 4 amperes)

Variable speed module

- PM-1 (1 advanced variable stage with RPM feedback, backup probe, wind compensation...)
- VSM-2 (2 variable stages of 10 amperes with manual override)
- VSM-2/2 (1 variable stage with 2 output of 10 amperes with manual override)
- VPM-2 (2 variable stages of 10 amperes)
- VPM-1 (1 variable stage of 10 amperes)

Actuator and air inlet modules

- SVIM-1 (Advanced curtain and air inlet module working in time or potentiometer mode)
- CIP-1 (Curtain and air inlet module working in time mode)
- CIM-1 (Curtain and air inlet module working in open/close mode)

Communication modules

- SVPC-40 (PC computer interface)
- SVS-10 (Communication port multiplier)
- PMB-4 (Connection box to easily connect up to 4 PM-1 on one communication port).

Replacement Parts

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- The 8 Relay Board uses an 1126A board
- The Typical ON/OFF Outputs Board uses an 1120A board
- The Toggles For Inlets uses an 1121A board

8. Specifications

DESCRIPTION	VALUE
Input Power	12 W max
Power Source (line)	115/230 VAC, -20%, +10% 50/60 Hz
Power Fuse	0.125 A @ 250 V, Slo-Blo, 5x20mm
Relays 1 to 4	10 A @ 250 VAC 1 HP @ 250 VAC Minimal Charge 25 mA @ 50/60Hz
FAN 1 and FAN 2	10 A @ 250 VAC, Slo-Blo
Alarm Relay	1 A @ 30 VDC
Fan1 and Fan2 Power source(LINE1 and LINE2)	230 VAC, -20%, +10% 50/60 Hz
Fan1 and Fan2 Fuse	10 A @ 250 VAC, Slo-Blo
Storage temperature	-22°F à 130°F (-20°C à 55°C)
Operating temperature	32°F à 120°F (0°C à 50°C)
Temperature range	-6°F à 168°F (-21°C à 76°C)
Weight	6 lb (2.72 Kg)
Dimensions	12¼"X11"X4¾" (32X28.5X11.5 cm)

9. 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, lightning, fortuitous events, acts of God, flood, fire, hail 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, fines for infringement 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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