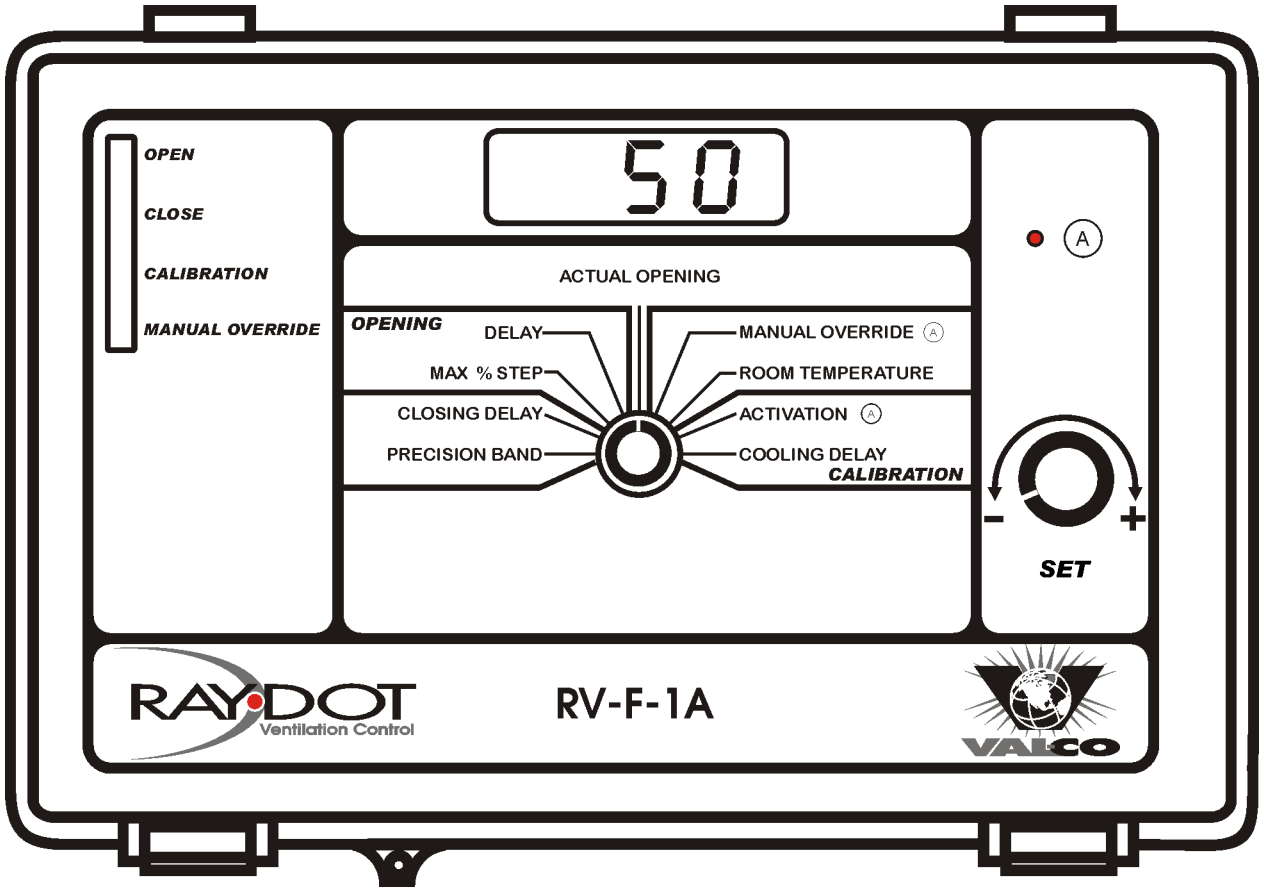
RV-F-1A

Inlet Controller

with potentiometer feedback



User's & Installation Guide

Read this guide carefully before using the controller.

PRECAUTIONS

Inputs and outputs circuitry is protected against overload and overvoltage. However, we recommend installing an additional protection device on the supply circuit as well as an external relay on all ON-OFF stages to prolong the life of the controller.

To avoid exposing the controller to harmful gases or excessive humidity, it is preferable to install it in a corridor.

The room temperature where the controller is located MUST ALWAYS REMAIN BETWEEN –22.0° AND 130.0°F (-30.0° AND 55.0°C).

DO NOT SPRAY WATER ON THE CONTROLLER.

FOR CUSTOMER USE

Enter below the serial number located on the side of the controller and retain this information for future reference.

Model number: RV-F-1A___

Serial number: _____

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FEATURES

The RV-F-1A is an air inlet positioner module for the RV series. The module is connected to a RV series master control and coordinates the inlet positions according to ventilation using a feedback potentiometer for a more precise positioning. The RV-F-1A will receive positions and settings that will be used to adjust the air inlet's position.

Here are the RV-F-1A main features:

Calibration
The RV-F-1A has a very easy to use calibration function. It allows the RV-F-1A to memorize and establish it's own position references during the calibration.

User's settings
Position settings are determined by the master control, which makes the module easy to use. The user can adjust other settings according to the requirements of his installation directly on the RV-F-1A.

Safety features
- If there is loss of communication with the master control, the RV-F-1A will operate the air inlets autonomously by using it's own temperature probe. (If equipped)
- The RV-F-1A will detect problematic situations with the actuator or the feedback potentiometer and will ensure operation until corrections are made.

Optional Temperature probe
The RV-F-1A can be equipped with an optional temperature probe, which will be used to control the air inlet in the case that the master control loses power or fails to communicate with the module.

Digital display
The five digits LED display the configuration settings and the system's general status (actual position, alarms).

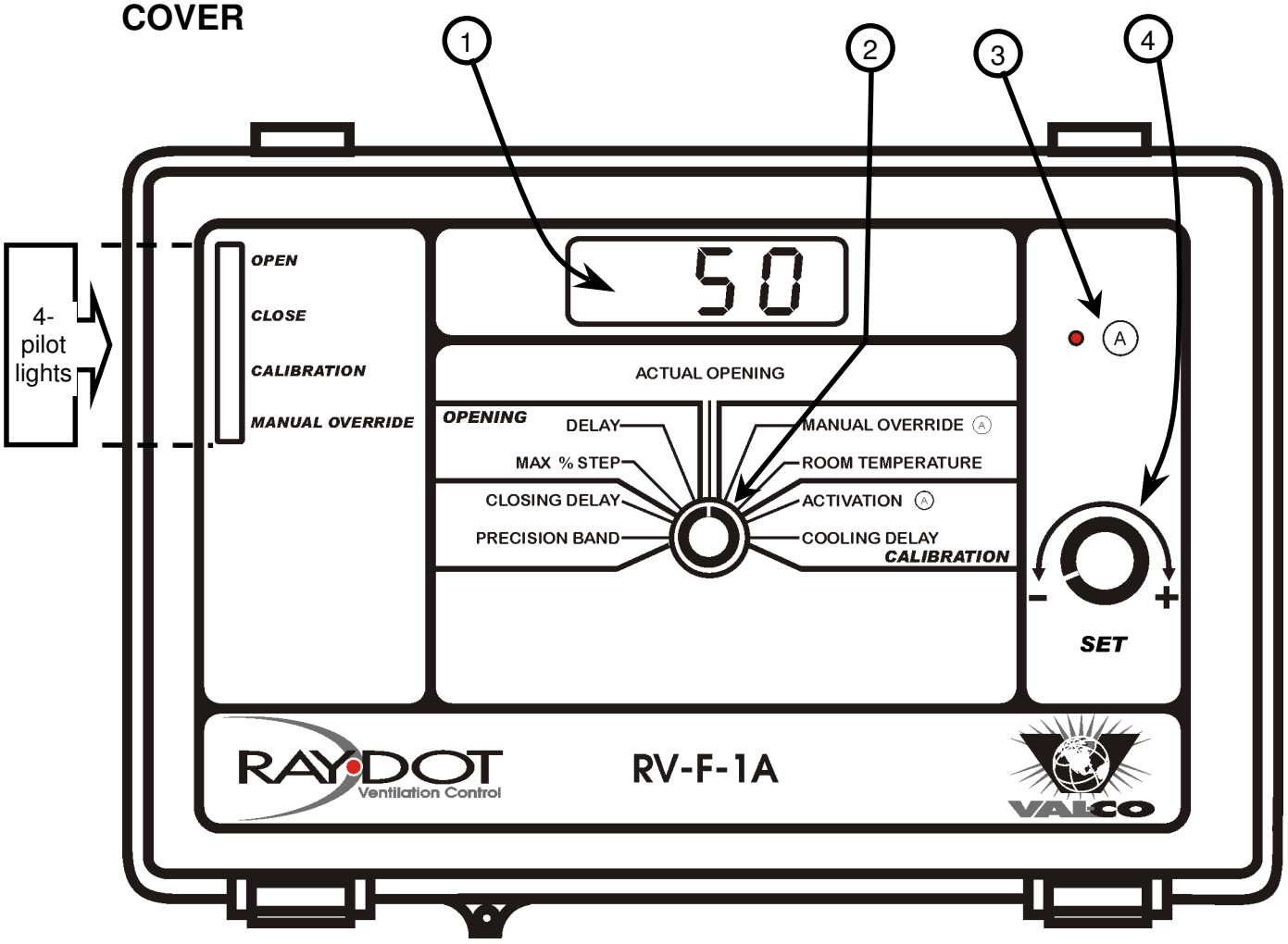
Pilot lights
Pilot lights are used to indicate the status of the RV-F-1A.

Permanent memory
The RV-F-1A will keep its settings even after a power failure.

Overload and over voltage protection
In the case of an overload or over voltage, the RV-F-1A fuses will protect the circuitry.

CONTROL INTERFACE

COVER

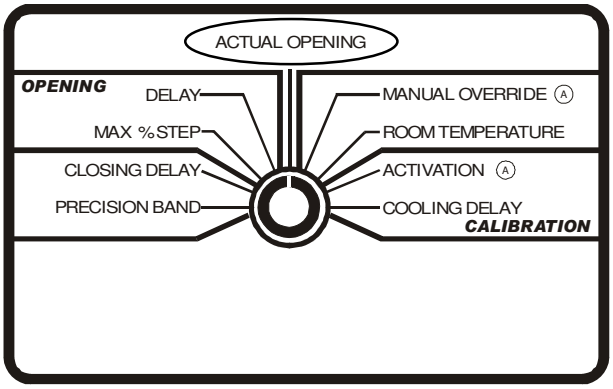


Item	Name	Function
1	Digital display	Displays the value of the parameter selected.
2	Parameter selection knob	Used to select a parameter.
3	Push button	Used to access additional parameters/features.
4	Adjustment knob	Used to adjust the value of the selected parameter.
4 pilot lights	Open	Lights up when the air inlet is opening.
	Close	Lights up when the air inlet is closing.
	Calibration	Lights up when the air inlet is making a calibration.
	Manual Override	Lights up when the air inlet is in manual mode.

PARAMETER DESCRIPTION

ACTUAL OPENING

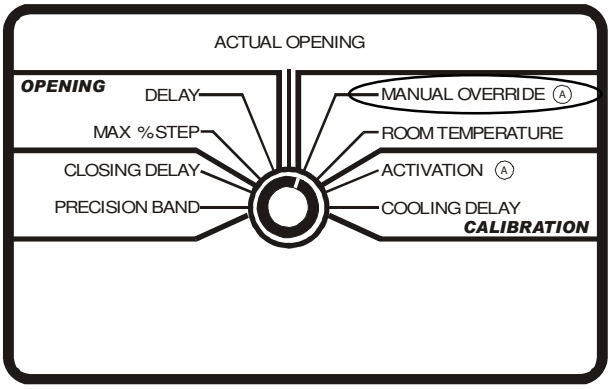
This parameter displays the exact current air inlet position. The position is displayed from CLO, 1% to 99%, OPEN. When the air inlet is performing a calibration cycle, the message "CALib" will be displayed.



MANUAL OVERRIDE

This parameter allows the user to set the air inlet use to manual or automatic mode.

To select manual mode, bring **parameter knob** to the MANUAL OVERRIDE position. "AUTO" will be blinking on the LED display. Press the **push button** to switch to manual mode. The value of the required position flashes. The position is now manually adjustable with the **adjustment knob**. If this parameter is set to halt, the inlet will stop moving until a close, open or a position is set.



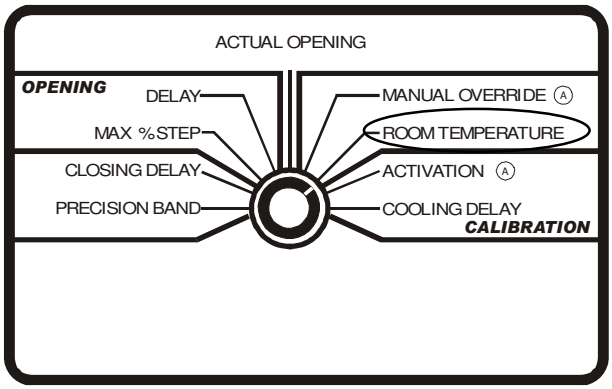
To return to auto mode, bring **parameter knob** to the MANUAL OVERRIDE position. The value of the desired position will flash, then press the **push button** to switch back to auto mode.

If the air inlet is in calibration mode, "CALib" will be displayed on the LED display and the MAN/AUTO option will be locked.

The **Manual Override** can be adjusted from Halt, Close, 1 to 99, Open, Halt.

ROOM TEMPERATURE (t.Prob)

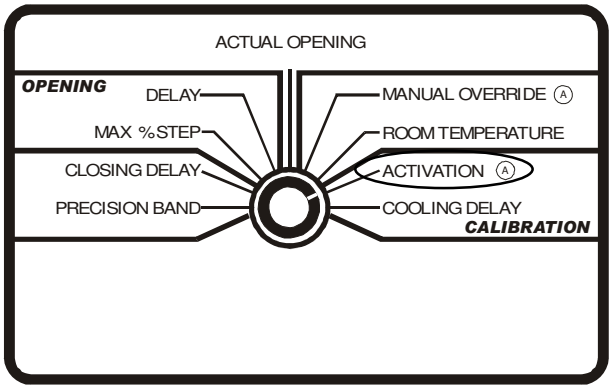
This parameter displays the actual temperature read by the optional inside temperature probe. The temperature probe is activated when the dip switch #4 is ON and deactivated if OFF. The message "-----" will be displayed if temperature is OFF. The temperature is displayed either in °C or °F according to the master control.



The **Room Temperature** is displayed to the nearest 0.5° from –3.5°F to 121.0°F (-19.5°C to 49.5°C).

ACTIVATION (CALib)

This parameter allows the user to calibrate the air inlet. Selecting ACTIVATION with the **parameter knob** and pressing the **push button** when the message "CALib" is flashing activates a calibration cycle.



Pressing the **push button** when on the ACTIVATION parameter will interrupt the calibration cycle. If the calibration cycle is interrupted by any means, the module will safely resume its operations with the last saved calibration value.

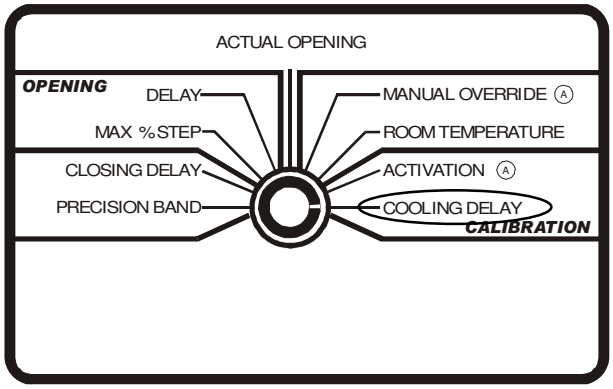
For more information on calibration, see the calibration section (page 10).

COOLING DELAY (d.CooL)

This parameter is used to adjust the delay the air inlet will wait before performing the next step of the calibration cycle.

This delay will reduce the risk of overheating the actuator during a calibration cycle.

The **Cooling Delay** is adjusted in 1 minute increments from OFF, 1 minute to 10 minutes.

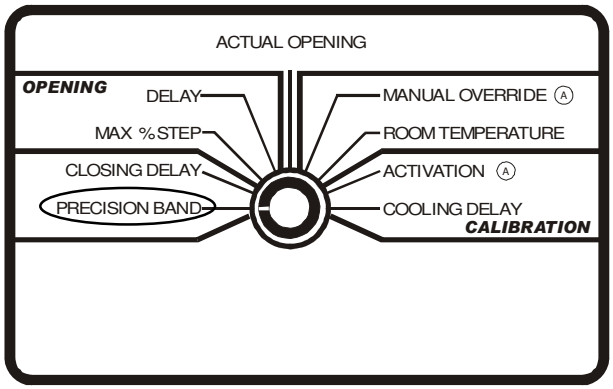


PRECISION BAND (bAnd)

This parameter allows the user to adjust the precision level of the feedback potentiometer in order to prevent inlet oscillations.

If the inlet oscillates, adjust the value of this parameter by incrementing the value until feedback potentiometer stability is obtained.

The **Precision Band** is adjusted in 1 step increments from 1 to 15.

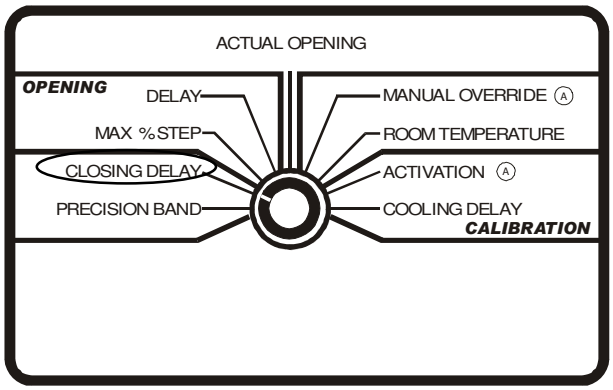


CLOSING DELAY (d.CLOS)

This parameter is used to adjust the time that the air inlet will wait before closing when it receives a closing signal. This will prevent the motor from overheating.

During this delay, the closing pilot light will flash.

The **Closing Delay** is adjusted in 1 second increments from OFF to 254 seconds.

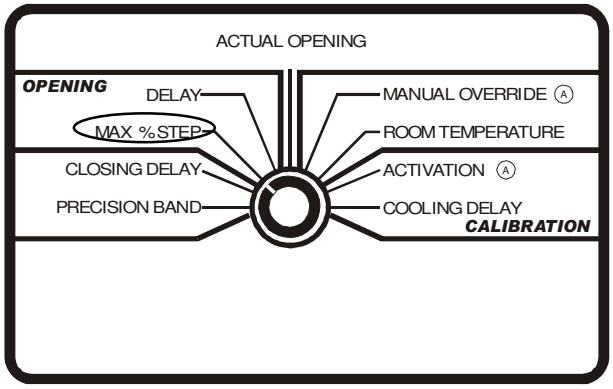


MAX % STEP (P.OPEn)

This parameter is used to slow the opening of the air inlet by limiting the actuators opening movement to max % step so that the movement is elapsed on a bigger period of time.

This parameter cannot be set to a lower value that the PRECISION BAND. Setting this parameter to 100% deactivates the MAX % STEP.

The **Max % Step** is adjusted in 1% increments from **Precision Band** to 100%.

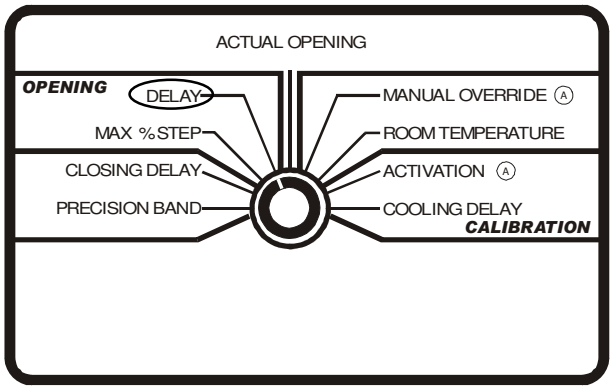


OPENING DELAY (d.OPEn)

This parameter is used to adjust the time that the air inlet will wait before opening when it receives an opening signal. This will prevent the motor from overheating.

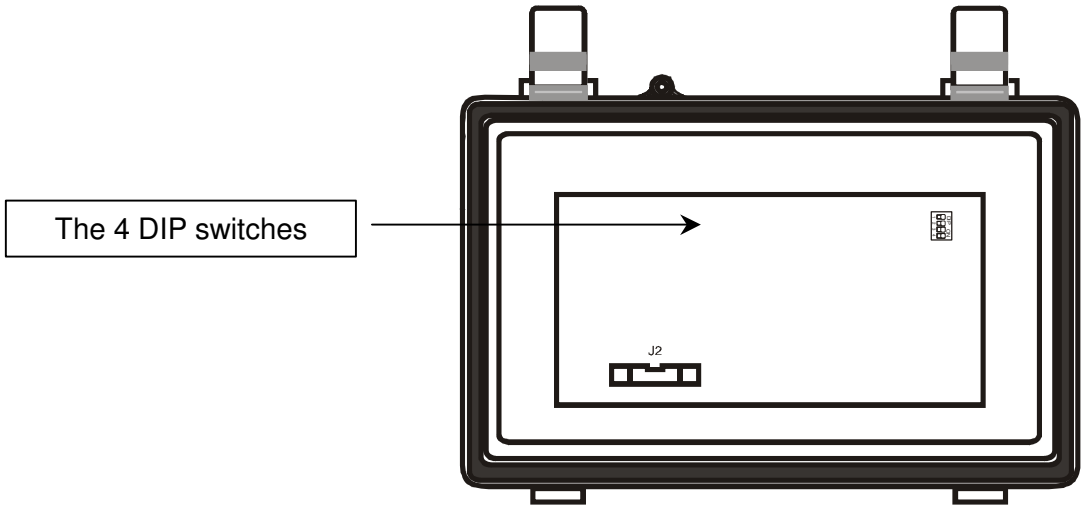
During this delay, the Opening pilot light will flash.

The **Opening Delay** is adjusted in 1 second increments from OFF to 254 seconds.



DIP SWITCHES

These internal switches, located on the electronic card attached to the bottom of the box, are used to set the operating modes described in the table below. When the controller is shipped from the factory, all the switches are set to off.



DESCRIPTION	DIP SWITCH NO.	POSITION	OPERATING MODE
Reserved	1		Reserved
Reserved	2		Reserved
Reserved	3		Reserved
Inside probe	4	ON OFF	Activated Deactivated

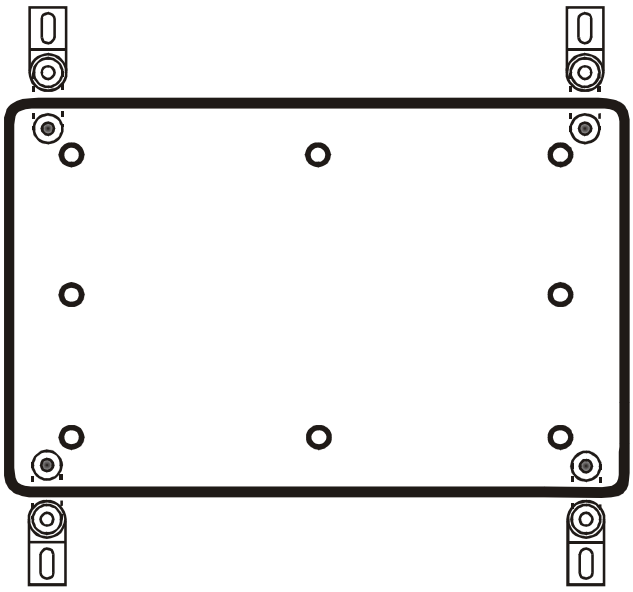
INSTALLATION

MOUNTING INSTRUCTIONS

The enclosure must be mounted in a location that will allow the cover to be completely opened right up against the wall.

Fasten the four brackets to the four mounting holes on the back of the enclosure, using the four screws provided with the brackets. Then mount the enclosure on the wall by inserting screws through the brackets' adjustment slots, into the wall. Make sure to position the enclosure so that the power supply cord extends out of the bottom section of the enclosure.

The bracket slots also serve to adjust the position of the controller. Once you have adjusted the controller position, tighten the four mounting screws.



CONNECTIONS

To connect the controller, refer to the wiring diagram enclosed with this installation manual.

1. Set the voltage switch to the appropriate line voltage.

2. Drill access holes on the bottom of the enclosure only. Do not drill holes on the side or the top of the enclosure.

ALL WIRING MUST BE DONE BY AN AUTHORIZED ELECTRICIAN AND MUST COMPLY WITH APPLICABLE CODES, LAWS AND REGULATIONS. BE SURE POWER IS OFF BEFORE DOING ANY WIRING TO AVOID ELECTRICAL SHOCKS AND EQUIPMENT DAMAGE.

CALIBRATION

The RV-F-1A needs to be calibrated the first time it is powered. This calibration will allow the air inlet to fully open and close in order to save the maximum and minimum positions for the air inlet operations.

The air inlet calibration is done in two steps:

Step 1: Set the **parameter knob** to the ACTIVATION parameter.

Step 2: When the message "CALib" flashes on the digital display, press the **push button**. At this point, the calibration pilot light will light up and the calibration cycle will begin.

Calibration steps are:

- The air inlet closes completely to establish the minimum position.
- The air inlet opens completely to establish the maximum position.
- Cooling Delay (if activated) starts. Calibration pilot light flashes during this delay.
- The air inlet closes completely.
- Cooling Delay (if activated) starts. Calibration pilot light flashes during this delay.
- The air inlet opens in steps.
- Cooling Delay (if activated) starts. Calibration pilot light flashes during this delay.
- The air inlet closes in steps.

It is possible to cancel a calibration cycle by pressing the **push button** while on the ACTIVATION parameter and in a calibration cycle.

After the calibration cycle is completed, the air inlet will be ready for normal operation.

The user may test the RV-F-1A separately from the master control:

- Set the RV-F-1A to manual override (page 4)
- Rotate the **adjustment knob** to change the air inlets position by opening or closing it.

Refer to the troubleshooting section on the next page if the air inlet is not moving or an error message appears on the digital display.

TROUBLESHOOTING

SYMPTOMS	CAUSES and SOLUTIONS
The display is blank	- The circuit breaker at the service panel is OFF or tripped - There may be a wiring problem - Check if the F3 fuse is blown - Verify that the ten-pin flat cable joining the main board and the faceplate board is connected at both ends.
The room temperature displayed shows sudden variations	- A variation in the resistance is induced on the sensor connected to the RV-F-1A *Be sure that the sensor is dry and move it away from drafts and from any source of radiant heat* - There is electrical noise near the cable of the sensor connected to the RV-F-1A *Do not run the sensor cable next to other power cables. When crossing other power cables, cross at 90°*
Open or close lights light up but the actuator does not move	- The actuator is completely opened or closed - The F1 fuse is blown. Replace with a fuse of the same type. - The actuator's thermal protection switch is open - There may be a wiring problem - The actuator is defective - The RV-F-1A has never been calibrated
The air inlet moves the wrong way, closes when open pilot light lights up.	- The actuator's motor is connected backwards. Invert the + and - wires of the right hand side of the terminal. (Refer to the wiring diagram at pages 13)
AL-1 is displayed	- The actuator is jammed - The calibration of the RV-F-1A has been lost - The F1 fuse is blown - There may be a wiring problem - The actuator's thermal protection switch is open
AL-2 is displayed (during the calibration process)	- The feedback potentiometer is hooked up backwards or OPEN and CLOSE wires are inverted
AL-3 is displayed	- The module receives an odd signal from the actuator's feedback potentiometer. For safety reasons, the actuator will still try to position itself. The error message will disappear when the operation returns to normal. If the error message appears often, it is recommended to verify the electric connections or the actuators feedback potentiometer.
AL-4 is displayed	- There is a faulty or missing temperature probe - Faulty settings of normal or backup operating mode
AL-5 is displayed (during the calibration process)	- The opening time is too short to obtain a precise positioning
AL-6 is displayed	- The RV-F-1A has not communicated successfully with the master control for 20 seconds.

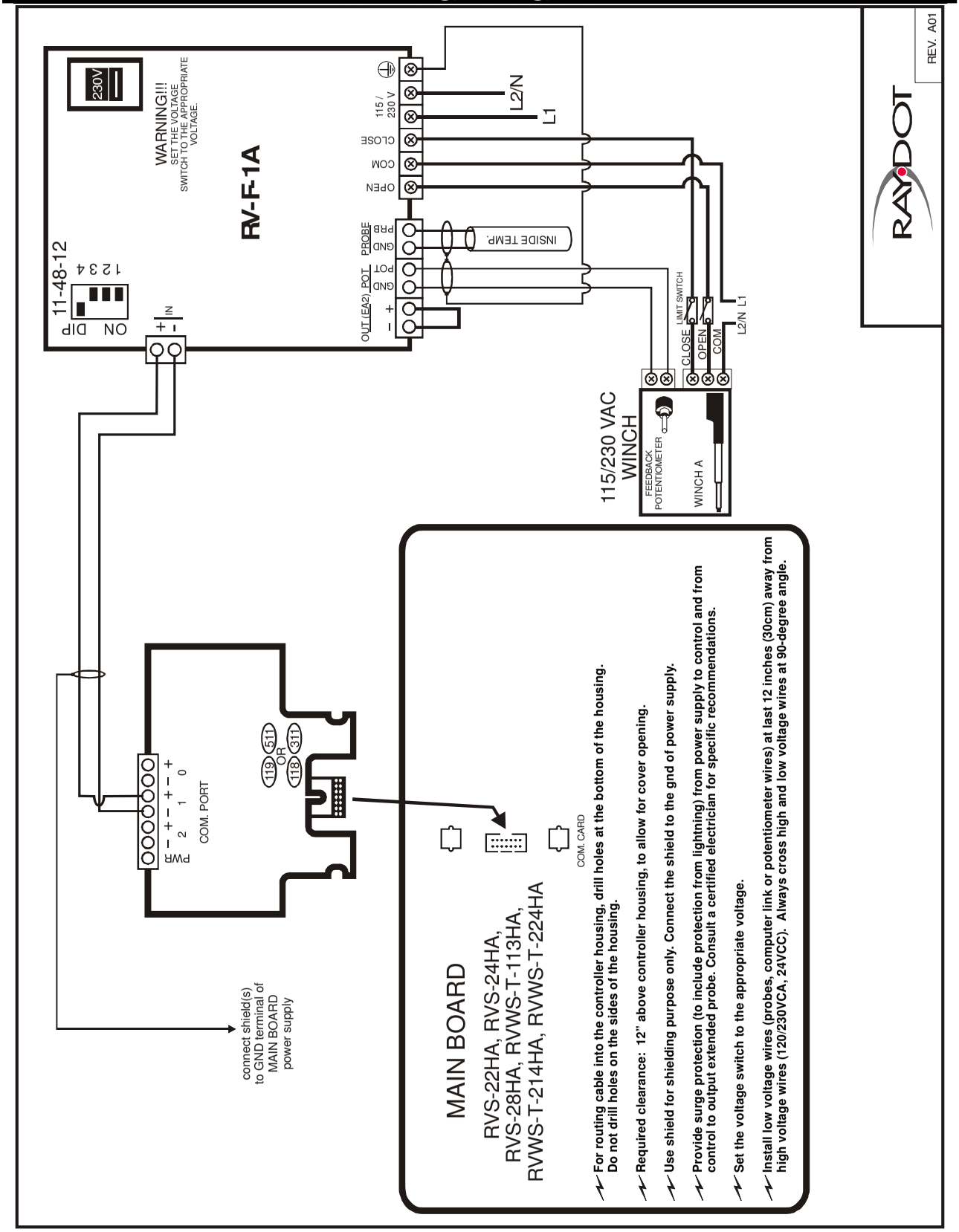
TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input power	12 W
Power source (line)	115/230 VAC, -20%, +10%, 50/60 Hz
Storage temperature	-22.0°F to 130.0°F (-30.0°C to 55.0°C)
Operating temperature	32.0°F to 122.0°F (0.0°C to 50.0°C)
Probe Temperature range	-3.5°F to 121.0°F (-19.5°C to 49.5°C)
Weight	3.4 lbs. (1.5 kg)
Dimensions	11" X 7" X 6" (27.9 X 17.8 X 15.2 cm)
Air inlet	¼ HP @ 115/230 VAC; 3 A @ 30 VDC

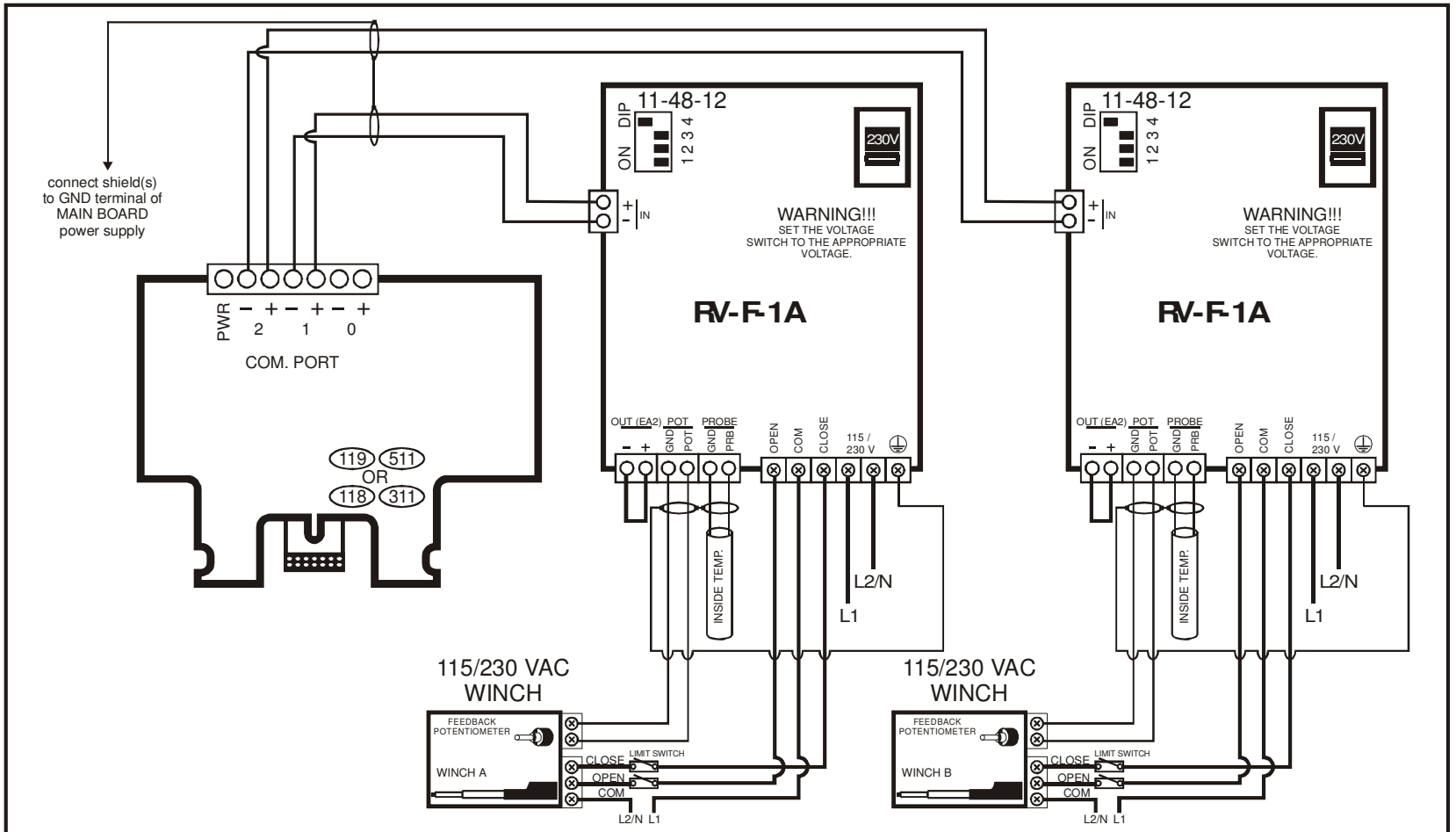
FACTORY SETTINGS

	Position	Unit	Factory Setting	Range of Values
Actual Opening	1	%	—	Close, 1 to 99, Open
Manual Override	2	%	AUTO	AUTO, Halt, Close, 1 to 99, Open, Halt
Room Temperature	3	°F (°C)	—	-3.5°F to 121.0°F (-19.5°C to 49.5°C)
Activation	4	—	—	—
Cooling Delay	5	Seconds	OFF	0 to 9
Precision Band	6	%	1	1 to 15
Closing Delay	7	Seconds	OFF	OFF, 1 to 254
Max % Step	8	%	100	**Precision Band** to 100
Opening Delay	9	Seconds	OFF	OFF, 1 to 254

WIRING DIAGRAM



WIRING DIAGRAM WITH 2 WINCHES



- **For routing cable into the controller housing, drill holes at the bottom of the housing. Do not drill holes on the sides of the housing.**
- **Required clearance: 12" above controller housing, to allow for cover opening.**
- **Use shield for shielding purpose only. Connect the shield to the gnd of power supply.**
- **Provide surge protection (to include protection from lightning) from power supply to control and from control to output extended probe. Consult a certified electrician for specific recommendations.**
- **Set the voltage switch to the appropriate voltage.**
- **Install low voltage wires (probes, computer link or potentiometer wires) at last 12 inches (30cm) away from high voltage wires (120/230VCA, 24VCC). Always cross high and low voltage wires at 90-degree angle.**

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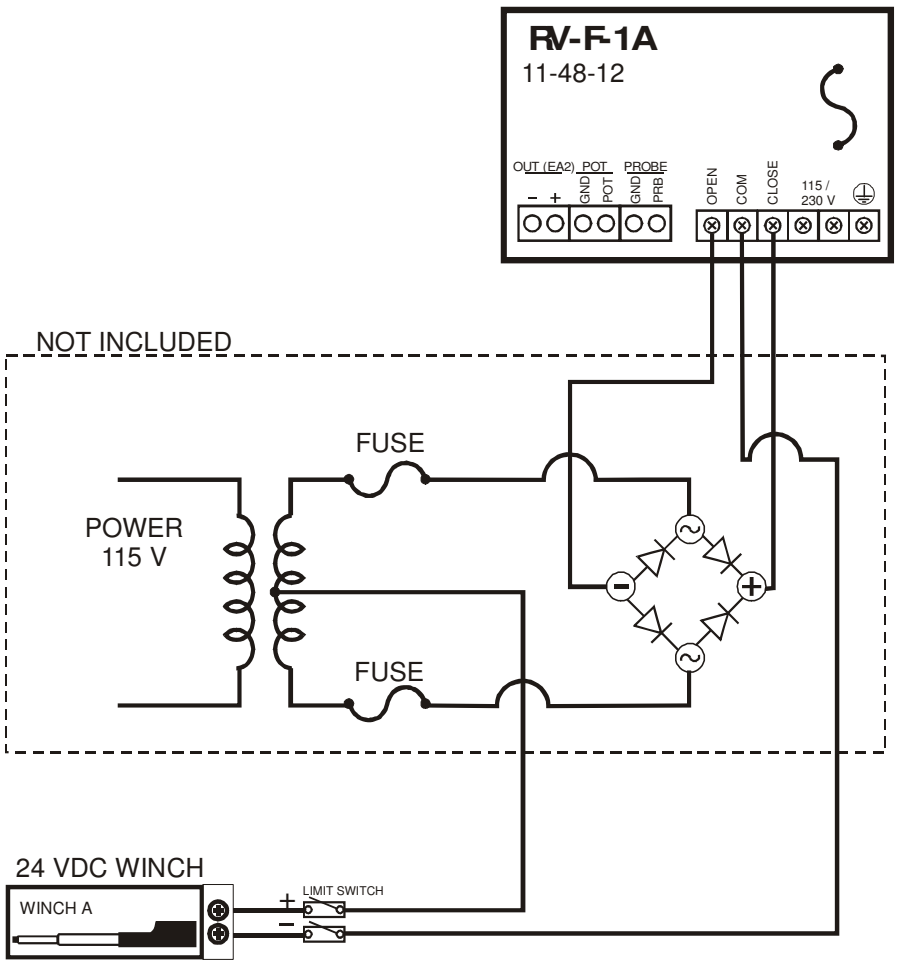
WIRING DIAGRAM WITH WINCH 24 VDC



FUSE
(slow-blow)
5 A, 250 V

- **For routing cable into the controller housing, drill holes at the bottom of the housing. Do not drill holes on the sides of the housing.**
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