

MSC-10 / POLY-VENT VENTILATION SYSTEM

Configuration#: 10MF05V

2

Inputs/Outputs Table:

Inputs	Qty	Outputs	Qty
Inside temperature	2	Variable speed fan	2
		On/off speed fan	1
		Natural Curtains (Poly-vent)	2
		Cooling stage	1
		Heater	1

Equipment Required:

Item	Description	Qty
MSC-10	Multistage 10 Computer	1
CM3-2	Control Module 3 Amp	2
2004-1k	Temperature Probe	2

Configuration Versions:

Version	Date	Modification
V0	94-03-04	New.
V1	96-03-06	Add natural shut off for fan #1 and #2.
V2	08-10-08	Ridge poly-vent replaced by fan 3 output. Adjustable heater differential added. All outputs follow the 2 probes average.

CONTROL LOGIC DESCRIPTION

CONFIGURATION 10MF05V2

1. GENERAL

1.1 Definition

In the following MSC-10 control logic description, we used the following terminology:

- DRT** → Desired **R**oom **T**emperature. This is the Temperature goal for the room.
- RSP** → **R**elative **S**et **P**oint. Number of degrees relative to the DRT where a function begins.
- Bandwidth** → Temperature range where a fan speeds up as the temperature increases. Minimum speed at RSP and full speed at RSP + Bandwidth.
- Differential** → Range of temperature where two conditions are possible. The output depends on whether the temperature was increasing or decreasing when it enters that range. For example, for a differential of 2°F in heating, if the controller turn on a heater at 70° when temperature decreases, it will shut it off only at 72°.

Every expression in *italics* is control value which can be changed on the control unit.

All the stages are following the average temperature of probe #1 and probe #2.

Refer to the Wiring diagram in attachment for a typical installation.

2. LOGIC DESCRIPTION

2.1 Heating

- The output is activated when the temperature decreases to *DRT + HEATER ON RSP*.
- The output will then shut off when the temperature rises to *DRT + HEATER ON RSP + HEATER DIFFERENTIAL*.

2.2 Variable Fan #1 (Minimum ventilation)

- Below the *DRT + FAN #1 ON RSP*, it runs on a 3 minute timer, at minimum speed.
- The fan accelerates from the RSP to reach its full speed at the end of the bandwidth.
- The fan shuts off when one lower tube deflates and when *FANS #1,#2,#3 NAT. SHUT OFF* is set to 1 (=ON).

2.3 Variable Fan #2

- OFF below the *DRT + FAN #2 ON RSP*.
- The fan accelerates from the RSP to reach its full speed at the end of the bandwidth.
- The fan shuts off when one lower tube deflates and when *FANS #1,#2,#3 NAT. SHUT OFF* is set to 1 (=ON).

2.4 Fan #3

- OFF below the *DRT + FAN #3 ON RSP*.
- Differential = 2.0°F, the fan shuts off when temperature drops to *DRT + FAN #3 ON RSP - 2.0°F*.

2.5 Poly-vent natural curtain

Janair POLY-VENT system is made of 2 sets of tubes that inflates to seal the side wall completely. The MSC-10 controls 2 stages for these POLY-VENT. When first stage temperature is reached, bottom tubes start to deflate. When second stage temperature is reached, top tubes will start to deflate. However, top tube will always deflate at least 1 minute after bottom tube has begun to deflate. Also, top tube will always inflate when bottom tube inflates.

- Both side walls have their own RSP and are operated separately following the two temperature probes average.
- Differential = 2.0°F.

2.6 Cooling

- Runs on a timer, above *DRT + COOLING ON RSP*.
 Ex: If the timer period is set to 10 minutes and cycle at 30%, then the cooling works 3 minutes and waits 7 minutes before it turns on again.
- Differential = 2.0°F.

3. INSTALLATION NOTES

The guidelines in the **Varifan MSC-10 Installation and User's guide** shall be followed for a safe installation. In addition, that manual provides you with more detail on temperature sensor installation and on the power source.

3.1 Minimum/Maximum Load on different outputs

-Refer to the respective module manual to know the minimum and maximum load for the following modules: VSM-2, CM10-2, CM3-2, CIM-1, CIP-1 and ARM-1.

-Refer to the following table for the remaining outputs of the MSC-10, if the min load is not respected the device may not work as expected:

OUTPUTS	Type	Minimum Load	Maximum Load
OUT1 and OUT2	Variable, Triac	150 mA, AC only	10 A, AC only
OUT3- OUT6	Relay	50 mA, AC or DC	10 A, AC or DC

ATTACHMENTS

- Setting table
- Labels
- Wiring Diagram

MSC-10 CONTROL SETTINGS

DESCRIPTION		CONTROL VALUES						
		MIN	MAX	PRESET				
1. TEMP. PROBE #1	°F	41.5	111.0	*****	*****	*****	*****	*****
2. TEMP. PROBE #2	°F	41.5	111.0	*****	*****	*****	*****	*****
3. DESIRED ROOM TEMP	DRT	41.5	111.0	70.0				
4. HEATER ON	RSP	-15.0	-2.0	-4.0				
5. HEATER DIFFERENTIAL	°F	0.5	5.0	1.0				
6. LOWER SIDE WALL	RSP	0.0	30.0	4.0				
7. UPPER SIDE WALL	RSP	0.0	30.0	6.0				
8. FAN #1 ON	RSP	-10.0	30.0	0.0				
9.FAN #1 MIN SPEED	%	12	100	30				
10.FAN #1 CYCLE (3 min)	%	0	100	100				
11.FAN #2 ON	RSP	-10.0	30.0	2.0				
12.FAN #2 MIN SPEED	%	12	100	30				
13.FANS #1 & 2 BANDWIDTH	°F	0.0	15.0	2.0				
14.FAN #3 ON	RSP	-10.0	30.0	2.0				
15.FANS #1,#2,#3 NAT. SHUT OFF		0(OFF)	1(ON)	1				
16.COOLING ON	RSP	0.0	30.0	10.0				
17.COOLING CYC	%	0	100	10				
18.COOLING PERIOD	min	1	20	10				
19.LO TEMP. WARNING	DRT	41.5	111.0	60.0				
20.HI TEMP. WARNING	DRT	41.5	111.0	90.0				

NOTES: -The PRESET values are factory set are downloaded with the configuration.

-Use the blank spaces for your personal values.

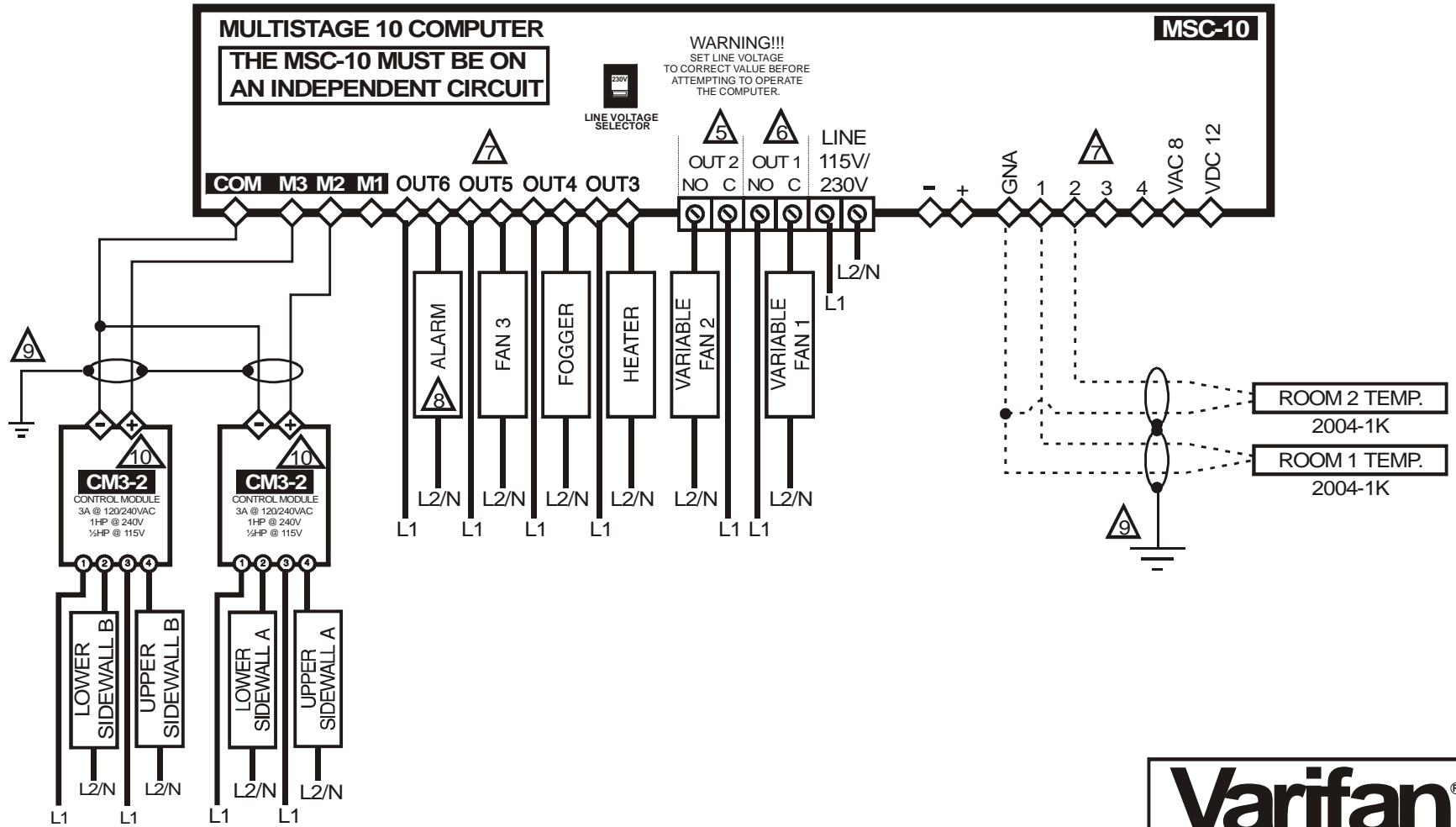
-Differential = 2.0°F.

Cut along dash lines

+ 10MF05v2 Configuration +	
Input 1	TEMP. PROBE #1 °F <23 character wide
2	TEMP. PROBE #2 °F
3	DESIRED ROOM TEMP. °F
4	HEATER ON RSP
5	HEATER DIFF. °F
6	LOWER SIDE WALL RSP
7	UPPER SIDE WALL RSP
8	FAN #1 ON RSP
9	FAN #1 MIN SPEED %
10	FAN #1 CYCLE (3min) %
11	FAN #2 ON RSP
12	FAN #2 MIN SPEED %
13	FANS #1&2 BANDWIDTH °F
14	FAN #3 ON RSP
15	FANS #123 NAT.SHUT OFF
16	COOLING ON RSP
17	COOLING CYCLE %
18	COOLING PERIOD min
19	LOW TEMP WARNING °F
20	HIGH TEMP WARNING °F

output 1	HEATER ON
2	COOLING ON
3	FAN #3
4	NO HI/LO TEMP ALARM
5	LOWER SIDWALL A INFLATE
6	UPPER SIDWALL A INFLATE
7	LOWER SIDWALL B INFLATE
8	UPPER SIDWALL B INFLATE
9	VAR FAN #1
10	VAR FAN #2

WIRING DIAGRAM CONFIGURATION 10MF05V2



MULTISTAGE 10 COMPUTER
THE MSC-10 MUST BE ON AN INDEPENDENT CIRCUIT

MSC-10

WARNING!!!
 SET LINE VOLTAGE TO CORRECT VALUE BEFORE ATTEMPTING TO OPERATE THE COMPUTER.



SEE NOTES ON NEXT PAGE

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WIRING DIAGRAM

16/10/08	CONFIGURATION 10MF05V2	WIR	REV 0
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10MF05V2

Electrician's notes

wiring tips and hints (see guide for details)

1 ----- (PROBE WIRING) SHIELDED WIRE AWG #18 WITH 16/30 STRANDING, 492ft (150m) MAXIMUM LENGTH. (Ex.: DECA 73-310)
For other probe, refer to specific probe manual for appropriate maximum length and wire size or use AWG #18, 492ft (150m) MAXIMUM LENGTH.

2 ————— (COMMUNICATION WIRING) SHIELDED LOW CAPACITANCE WIRE, (Capacitance between conductors @ 1Khz = 24pF/ft), TWISTED PAIR (8 twist/ft), AWG #18 TO 22, 820ft (250m) MAX LENGTH. (Ex.: BELDEN 8761)

3 ————— HIGH VOLTAGE WIRE INSTALLED ACCORDING TO LOCAL WIRING CODE.

4 INSTALL LOW VOLTAGE WIRES (PROBES, COMPUTER LINK OR POTENTIOMETER WIRES) AT LEAST 12in. (30cm) AWAY FROM HIGH VOLTAGE WIRES (120/230VAC, 24VDC). ALWAYS CROSS HIGH AND LOW VOLTAGE WIRES AT A 90-DEGREE ANGLE.



THE CURRENT SHALL NOT EXCEED 10A AT EACH OUTPUT (OUT 1-6).



MAXIMUM 2 WIRES OF SAME SIZE PER BLACK TERMINAL, NO BIGGER THAN AWG #12, NO SMALLER THAN AWG #22.



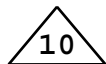
1 WIRE ONLY PER GREEN TERMINAL. USE WIRE CONNECTOR IF YOU WANT TO CONNECT MORE THAN 1 WIRE, NO BIGGER THAN AWG #12, NO SMALLER THAN AWG #28.



CHECK INSTALLATION GUIDE FOR ALARM WIRING.



USE SHIELD FOR SHIELDING PURPOSE ONLY. CONNECT THE SHIELD TO THE CONTROL CIRCUIT COMMON END ONLY⊕. NEVER LEAVE THE SHIELD UNCONNECTED AT BOTH ENDS. NEVER CONNECT BOTH ENDS OF THE SHIELD TO COMMON⊕. THE USE OF A SHIELD FOR ALL PROBES AND POTENTIOMETERS IS MANDATORY.



THESE MODULES MUST BE ON SAME POWER PHASE AND LINE VOLTAGE AS THE CONTROLLER.