User's Guide

SR-242

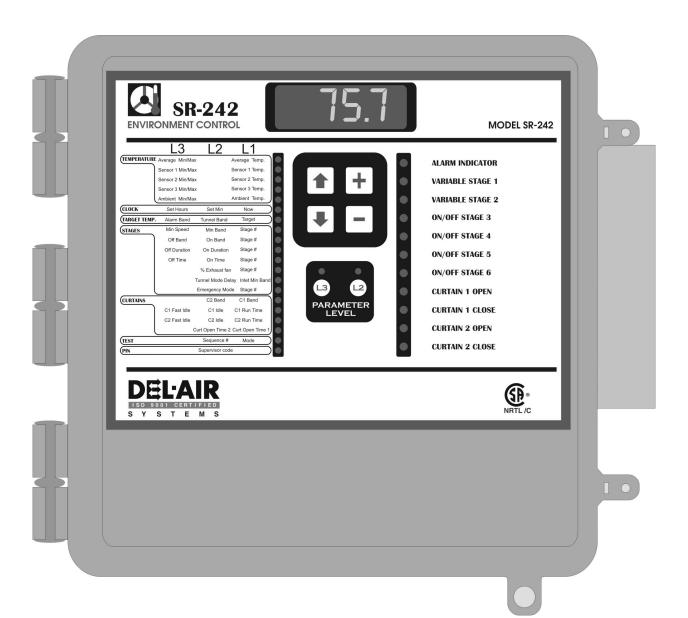


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1. Introduction

The SR-242 is a powerful control which can be programmed to work in many types of situations. By developing a configuration logic, the SR-242 can meet the needs of your specific application. The configuration logic or software is the brain of the control system, and basically makes the relation between the sensor readings, the user adjusted parameters, and the activation or deactivation of outputs. This software is stored in a chip identified with a configuration number, as shown in the title of this document, and as it appears on your left hand side label of your control. Always keep on hand this configuration number when you are contacting your dealer.

To fully understand your SR-242, it is important to read both the SR-242 Installation Guide and this User's Guide. The **Installation Guide** informs you on: how to install the control system, safety issues, warranty and many others characteristics of the SR-242 whereas the **User's Guide** is a document which explains the specific configuration logic. This control also features limited access to parameters for employees (referred to as the user in this document) and gives full access for the supervisor.

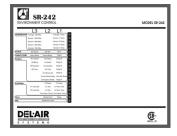
Temperature units in this document are represented in both °F and °C for information purposes only. The temperature unit programmed in your configuration is either in °F or °C and cannot be changed.

2. Faceplate



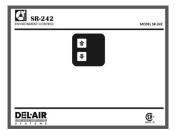
The SR-242's faceplate features a LED Status window, 1 parameter list, 1 outputs list with 11 LEDs, 2 function buttons (L2 and L3), 2 parameter buttons (▶ and ▶) and 2 value setting buttons (▶ and ►). Below is a brief description of all features, from left to right on the faceplate.

2.1 Parameter List



On the left-hand side of the faceplate appears a list of the parameters programmed in the ordered configuration. Due to limited space, not all parameters (with secondary and tertiary functions) are listed.. All parameters that do not show up on the parameter list can be accessed with the arrow parameter buttons (\P and \P).

2.2 Parameter Buttons (**▼** and **▲**)



The parameter buttons are represented by the 2 squares with arrows in them. Pressing the up (\blacksquare) or down arrow(\blacksquare) will move the parameter list up or down.

2.3 Function Buttons (and)



The round section buttons help users to select extra settings which appear on the list with L2 and L3 symbols. These settings may be accessed first by selecting the main parameter with the parameter buttons (and an appear and an appear and appear appear and appear a

the main parameter using the L2 button.

2.4 LED Status Window



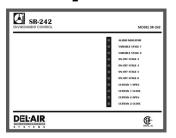
The LED status window features a 5 digit LED readout display of temperature in Fahrenheit or Celsius, or other programmable settings. After a setting is selected, its value appears on the LED display. If the value is flashing, it can be changed with the value setting buttons (and).

2.5 Value Setting Buttons (+ and -)



The value buttons appear as 2 squares with a + and - sign in 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.

2.6 Outputs List With LEDs



On the right-hand side of the faceplate appear 11 LEDs (1 alarm and 10 multi-purpose outputs) next to which is a list of 10 outputs. A LED comes ON whenever the respective output is active, in alarm or in a particular state.

3. Inputs/Outputs Table

Inputs	Qty	Outputs	Qty
Inside temperature	3	Variable Fan stages (can be heaters)	2 to 4
Ambient temperature 1		ON/OFF Fan stages (can be heaters)	4 to 6
		Curtains	2
		Inlets (Optional)	1 to 2
		Alarm	1

4. Equipment

Item	Description	Qty
SR-242	Intelligent Control, 4 inputs / 10 outputs	1
2004-1KLT	Temperature Sensor (-41.8 to 74.4°C) (-43.6 to 166.2°F) blue	4
CI-1/24 ** (Optional)	Cable Inlet (24 volts)	1 to 2
RM-2 (Optional)	Relay module	1
VM-2 (Optional)	Variable Module (10Amps)	1

^{**} CI-1/24 version must be 110b or higher.

5. Configuration Versions

Version	Date	Modification
C0	01/06/14	New. (CheckSum: BDB1673E)
C0(F0)	01/02/10	Modification on output order (CheckSum for C0: 6DF6C6F7,
		CheckSum for F0: 9AEA37CE)
v1	01/11/07	Modification on Curtain #2 logic.
v2	02/01/23	- Supervisor Code added
		- Tunnel Mode Delay added
		- Curtain #2 Open Time added
		- Modification on Sensor Select parameter
		- "Percent Exhaust Fan" logic added for Cable Inlet position
		- Curtains can move in tunnel mode if selected
v3	02/02/04	- Curtains position in Emergency Mode corrected
v4	02/02/08	- Output 7 & 8 on RM-2 or VM-2 Corrected
v5	02/02/20	- Curtains Modes Select changed (1 to 8)
		- Tunnel Mode Delay logic changed
		- Outputs Sensor Select changed
v6	02/04/26	- Stage transition while Tunnel Mode Delay modified
		- Manual mode for curtains corrected
		- Sensor select added for curtains
		- CI-1/24 diagnostic parameter added
v7	02/04/30	- Correction on both curtains in Emergency Mode
		- Curtain positions saved when respective status is "don't move", used to keep position
		when a reset occurs.
		- CI-1/24 diagnostic parameter removed
		- Second CI-1/24 added
		- Supervisor code changed

6. Ventilation System Overview

This configuration was developed for a mechanical, natural, tunnel ventilation building. All output stages can be either heating or cooling. Stages 7 and 8 have an option to be ON/OFF stages or variable stages or an Inlet(s) output (1 to 2). This configuration can run in 4 different modes: Mechanical, Natural, Tunnel, Emergency. This configuration is also equipped with a Test Mode

Modes description:

Mechanical Mode is the default mode when the control is turned ON, curtains close.

Control goes in Natural Mode when the CURTAIN #1 SENSOR SELECT has reached TARGET TEMP + CURTAIN #1 BAND. The control returns to Mechanical Mode when CURTAIN #1 SENSOR SELECT is below TARGET TEMP + CURTAIN #1 BAND - 1.0°C and it calculates that both curtains are closed.

Control goes in **Tunnel Mode** when the AVERAGE TEMPERATURE has reached TARGET TEMP + TUNNEL BAND. The control returns to Natural Mode when the AVERAGE TEMPERATURE drops to TARGET TEMP + (TUNNEL BAND / 2), curtains respectively open for a delay equal to CURT 1 OPEN RUNTIME and CURT 2 OPEN RUNTIME parameter.

Note: - To go in **Natural Mode**, Curtain #1 must be enabled for Natural Mode, otherwise no Natural Mode will be possible

- To go in Tunnel Mode, TUNNEL BAND must not be set to OFF, otherwise no Tunnel Mode will be possible

7. Glossary

Throughout this document, the following terminology is used:

Target This is the Temperature goal for the room and it is also the reference temperature

for all relative settings.

On Band Number of degrees relative to the Target where an output will turn ON for relay

stages or reaches 100% for variable stages.

Off Band Number of degrees relative to the Target where an output will turn OFF for relay

stages or turn ON at minimum speed for variable stages until the respective Min Band is reached. If the On Band is higher than the Off Band, the stage will be set

to cooling, otherwise the stage will be set to heating.

Min Band Number of degrees relative to the Target where an output of variable stage

accelerates his speed from Minimum Speed to 100% when the On Band has

been reached.

Minimum Speed This is to control the minimum speed of variable stages when the Off Band has

been reached, until the Min Band has been reached to start acceleration.

Run TimeThis is to set the duration time of a single movement of the curtain whether opening or

closing.

Idle Time This is to set the length of time the control waits before moving the curtains another

movement.

Fast Idle Time This is to set the length of time the control waits before moving the curtains in the

closed direction when the average room temperature is below the Target temperature.

ON/OFF Duration This is to set the timespan the output will be turned ON / OFF on a temperature

demand.

8. Description of Parameters

ATTENTION: Expressions in *ITALICS* are user's parameters whereas expressions in COURIER are supervisor's parameters. Supervisor's parameters are read only or hidden for the user. Expressions in CAPITALS are reading parameters and can not be changed with the interface.

- All the following descriptions refer to the wiring diagram at the end of this document.
- All the timers can have an imprecision of approximately 6 seconds.
- Temperature is measured in Celsius or Fahrenheit.
- Both curtains must be completely closed before downloading configuration.
- Curtain position is saved when respective curtain doesn't move, this feature is used to keep curtain positions when a reset occurs.

Parameter # 1 : AVERAGE TEMPERATURE

This parameter displays the average temperature. The average is made from the 3 inside temperature sensors. Each sensor can be deactivated in this average with the AVG SENSOR SELECT parameter setting. This parameter is displayed to the nearest 0.1° from a minimum display of -41.8°C (-43.6°F) to maximum of 74.4° C (166.2°F).

L2: see Note 1

L3: see Note 2

Parameter # 2 : SENSOR 1

This parameter displays sensor 1 temperature. This sensor can be deactivated with the AVG SENSOR SELECT parameter setting. This parameter is displayed to the nearest 0.1° from a minimum display of -41.8°C (-43.6°F) to maximum of 74.4°C (166.2°F).

L2: see Note 1

L3: see Note 2

Parameter # 3 : SENSOR 2

This parameter displays sensor 2 temperature. This sensor can be deactivated with the AVG SENSOR SELECT parameter setting. This parameter is displayed to the nearest 0.1° from a minimum display of -41.8°C (-43.6°F) to maximum of 74.4°C (166.2°F).

L2: see Note 1

L3: see Note 2

Parameter # 4 : SENSOR 3

This parameter displays sensor 3 temperature. This sensor can be deactivated with the AVG SENSOR SELECT parameter setting. This parameter is displayed to the nearest 0.1° from a minimum display of -41.8° C (-43.6° F) to maximum of 74.4° C (166.2° F).

L2: see Note 1

L3: see Note 2

Parameter # 5 : AMBIENT

This parameter displays the ambient sensor temperature. This parameter is displayed to the nearest 0.1° from a minimum display of -41.8°C (-43.6°F) to maximum of 74.4°C (166.2°F).

L2: see Note 1

L3: see Note 2

Note 1:

This parameter displays the probes which make the average. To access these readings, press L2 and the readings of each probe will show on the LED display.

Note 2:

In addition to the sensor readout, the parameter can record the lowest and highest value reached. To access the Hi/Lo function, press L3 of the respective SENSOR # parameter. To clear the respective Hi/Lo values, after pressing L3, press and hold the + and - buttons until CLR appears on the LED display.

For more information on the Probe parameter, see the Additional Information on Parameters section.

Parameter # 6 : CLOCK

Gives the time in 24h format.

L2: ADJUST MINUTES

Adjust minutes for CLOCK function.

L3: ADJUST HOURS

Adjust hours for CLOCK function.

For more information on the Clock parameter, see the Additional Information on Clock section.

Parameter # 7: TARGET TEMP

This is the temperature goal for the room and it is also the reference temperature for all relative settings. The TARGET TEMP is adjusted in 0.1° increments from a minimum setting of 0.0°C (32.0°F) to maximum setting of 40.0°C (105.0°F).

L2: TUNNEL BAND

This parameter is used to set the bandwidth, which, when exceeded, changes the mode that the control is currently in if this parameter is not set to OFF. The control returns to Natural Mode when the AVERAGE TEMPERATURE drops to ½ of the TUNNEL BAND (if curtain #1 is enabled in natural mode). If there is no natural mode and AVERAGE TEMPERATURE drops to ½ of the TUNNEL BAND, control goes in mechanical mode. The TUNNEL BAND is adjusted in 0.1° increments from a minimum setting of 0.0° to maximum setting of 40.0°. OFF.

L3: ALARM BAND

This parameter is used to set the alarm bandwidth for a high or low temperature alarm. When the AVERAGE TEMPERATURE is below the TARGET TEMP - ALARM BAND, a low temperature alarm will occur. When the AVERAGE TEMPERATURE is above the TARGET TEMP + ALARM BAND, a high temperature alarm will occur <u>unless</u> the AMBIENT is above the TARGET TEMP, in which case the AVERAGE TEMPERATURE needs to be higher than the AMBIENT + ALARM BAND. The ALARM BAND is adjusted in 0.1° from a minimum setting of 0.5° to maximum setting of 40.0°.

Parameter # 8 : STAGE # (1-2, 7-8)

L2: STAGE # MIN BAND

These parameters are used to set the number of degrees from the TARGET TEMP in which the respective output of variable stage will accelerate from its minimum speed to its STAGE # ON BAND (cooling stage) or will keep running at its minimum speed until the STAGE # OFF BAND has been reached (heating stage). These settings must be between respective ON BAND and OFF BAND. These parameters are adjusted in 0.1° increments from a minimum setting of -40.0° to a maximum setting of 40.0°.

L3: STAGE # MIN SPEED / MIN OPEN

These parameters are used to set the minimum speed of the respective output of a variable stage. If Stage7/8 are used for an inlet(s), this parameter sets their minimum opening when the calculated result of the "% Exhaust Fan" logic for inlet(s) opening is less than the INLET MIN BAND parameter. If Stage 7/8 are not used for an inlet(s) and STAGE # 7 MIN OPEN value setting is under 12%, this parameter will be considerate as OFF. These parameters are adjusted in 1% increments from a minimum setting of 12% (0% for STAGE # 7 MIN OPEN) to a maximum setting of 100%.

Parameter # 9: STAGE # (1 to 8)

Both these settings can be either positive or negative. If STAGE # ON BAND is higher than the respective STAGE # OFF BAND, the respective stage will be set to cooling, otherwise the stage will be set to heating.

L2: STAGE # ON BAND

These parameters are used to set the number of degrees from the TARGET TEMP in which the respective output of a variable stage will reach 100% of their speed or will turn ON for a relay stage. These parameters are adjusted in 0.1° increments from a minimum setting of -40.0° to a maximum setting of 40.0°.

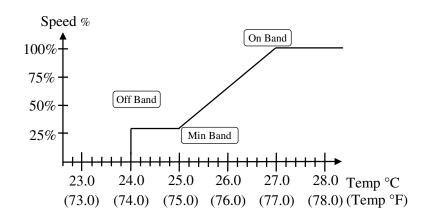
L3: STAGE # OFF BAND

When the stage is set to cooling, for relay stage when temperature decreases to TARGET TEMP + STAGE # OFF BAND the stage will turn OFF, for a variable stage when temperature reaches TARGET TEMP + STAGE # OFF BAND, the stage will turn ON at their minimum speed, if temperature decreases to TARGET TEMP + STAGE # OFF BAND - 0.3° the stage will turn OFF. When the stage is set to heating, for relay stage when the STAGE # OFF BAND has been reached the stage will turn OFF, for variable stage when temperature decreases to TARGET TEMP + STAGE # OFF BAND the stage will turn ON at their minimum speed, if temperature increases to TARGET TEMP + STAGE # OFF BAND + 0.3° the stage will turn OFF. There is a differential of 0.3° for variable stages. These parameters are adjusted in 0.1° increments from a minimum setting of -40.0° to maximum setting of 40.0°.

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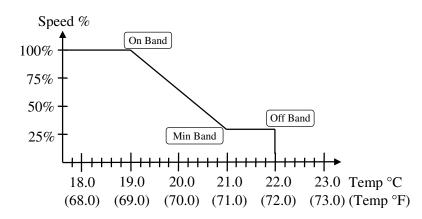
Cooling variable stage

TARGET TEMP = 23.0° C (73.0°F) STAGE # MIN BAND = 2.0° STAGE # OFF BAND = 1.0° STAGE # ON BAND = 4.0° STAGE # MIN SPEED = 30%



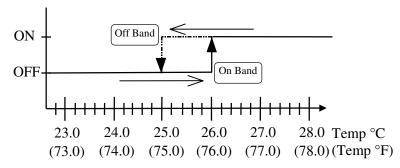
Heating variable stage

TARGET TEMP = 23.0° C (73.0°F) STAGE # MIN BAND = -2.0° STAGE # OFF BAND = -1.0° STAGE # ON BAND = -4.0° STAGE # MIN SPEED = 30%



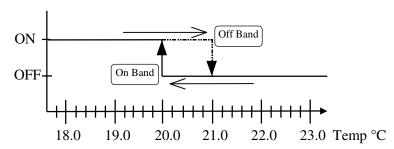
Cooling relay stage

TARGET TEMP = 23.0° C (73.0°F) STAGE # ON BAND = 3.0° STAGE # OFF BAND = 2.0°



Heating relay stage

TARGET TEMP = 23.0° C (73.0°F) STAGE # ON BAND = -3.0° STAGE # OFF BAND = -2.0°



Parameter # 10 : STAGE # (1 to 8)

Theses settings are not applicable for stage 7-8 when inlet(s) is used (see parameter 23).

L2: STAGE # ON DURATION

These parameters are used to set the duration of the delay after which the respective output will be turned ON when TARGET TEMP + STAGE # ON BAND has been reached for a relay stage and TARGET TEMP + STAGE # OFF BAND has been reached for a variable stage. Each stage can be ON continuously if respective STAGE # ON DURATION is set to ON. These parameters are adjusted in 1 second increments from a minimum setting of 00:02 seconds to a maximum setting of 23:59, ON minutes.

L3: STAGE # OFF DURATION

These parameters are used to set the duration delay at which the respective output will be turned OFF when TARGET TEMP + STAGE # ON BAND has been reached for a relay stage and TARGET TEMP + STAGE # OFF BAND has been reached for a variable stage. These parameters are adjusted in 1 second increments from a minimum setting of 00:02 seconds to a maximum setting of 23:59 minutes.

Parameter # 11 : STAGE # (1 to 8)

These settings are not applicable for stage 7-8 when inlet(s) is used (see parameter 23).

If both respective STAGE # ON TIME and STAGE # OFF TIME parameters are equal, the respective output can not turn ON if it has a demand.

L2: STAGE # ON TIME

These parameters are used to establish the time that respective outputs can be activated. When the clock is above this limit, respective output can be turned ON if it has a demand. These parameters are adjusted in 1 minute increments from a minimum setting of 00:00 to a maximum setting of 23:59, ON hours.

L3: STAGE # OFF TIME

These parameters are used to establish the time for which respective outputs have to stay deactivated. When the clock is above this limit, respective output can not turn ON if it has a demand. These parameters are adjusted in 1 minute increments from a minimum setting of 00:00 to a maximum setting of 23:59 hours

Parameter # 12 : STAGE # (1 to 8)

These settings are not applicable for stage 7-8 when inlet(s) is used (see parameter 23).

L2: STAGE # % EXHAUST FAN

These parameters are used to calculate the Inlet(s) position and curtain positions (if respective curtain is enabled in tunnel mode). It is entered as the output's percentage of exhaust ventilation compared with all the exhaust fans' ventilation combined with all the stages enabled in the current mode. If the respective stage is set as an heater, the respective parameter STAGE # % EXHAUST FAN will not be considerate in the calculated result of current exhaust fans' ventilation. These parameters are adjusted in 1% increments from a minimum of 0% to a maximum setting of 100%.

Parameter # 13: INLET MIN BAND

This parameter is used to set the percentage of total exhaust ventilation at which the inlet(s) will start to open. When the control is in a mode that inlet(s) is active and the percentage of exhaust fan ventilation is below this parameter, the inlet(s) will stay at its minimum opening, otherwise inlet(s) will open proportionally with the ventilation. This parameter is adjusted in 1% increments from a minimum of 0% to a maximum setting of 100%.

L2: TUNNEL MODE DELAY

This parameter is used to set the time allowed for the tunnel inlet(s) to open before the cooling stages enabled in tunnel only operate. For other cooling stages, the TUNNEL MODE DELAY will affect these stages depending if the respective stage was enabled and running in the previous mode or not. If a cooling stage was enabled and running in the previous mode before entering the tunnel mode and not enabled in tunnel mode, this respective stage will run normally until the end of TUNNEL MODE DELAY, for cooling stages that were not enabled in the previous mode and that are enabled for tunnel mode, these stages will wait until the TUNNEL MODE DELAY is finished before starting to run. Finally, for a cooling stage that was enabled and running in the previous mode and enabled in tunnel mode, TUNNEL MODE DELAY will not affect this stage. The tunnel inlet(s) (and tunnel curtains if enabled) opens to the position it will be at when the stages start to run after the delay. This parameter is adjusted in 1 second increments from a minimum of OFF, 00:02 seconds to a maximum setting of 15:00 minutes.

```
STAGE 1 % EXHAUST FAN = 8%, enabled for Mechanical STAGE 2 % EXHAUST FAN = 17%, enabled for Mechanical STAGE 3 % EXHAUST FAN = 25%, enabled for Mechanical and Tunnel STAGE 4 % EXHAUST FAN = 25%, enabled for Tunnel STAGE 5 % EXHAUST FAN = 25%, enabled for Tunnel STAGE 6 % EXHAUST FAN = 25%, output is used for heating
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Since the numbers entered may not equal 100% the control will interpolate the numbers to make them equal 100%. For example if the total is 50% it would use the double of each parameter, if the total equaled 200%, it would use half of each parameter. The control figures out what percentage of the mechanical ventilation is currently running.

```
Total Mechanical Exhaust Fans = 50%, (8\% + 17\% + 25\%), Stage 1 is running at 100%, stage 2 is running at 50% and stage 3 is off. Mechanical exhaust ventilation for stage 1 = 8%, (100\% * 8\%), Mechanical exhaust ventilation for stage 2 = 8.5%, (50\% * 17\%), Mechanical exhaust ventilation for stage 3 = 0%, (0\% * 25\%), Total mechanical exhaust ventilation running = 33%, (((8\% + 8.5\% + 0\%) / 50\%) * 100) (16.5\% / 50\%) * 100 (0.165 / 0.5) * 100 0.33 * 100
```

Parameter # 14 : STAGE

These settings are not applicable for stage 8 when inlet(s) is used (see parameter 23).

L2: STAGE # EMERGENCY MODE

These parameters are used to establish if the respective output is enabled to run when control is in emergency mode. If sensors 1 to 3 on the control are defective, the control will go into Emergency Mode. When Emergency Mode is entered, curtains open at their respective position, inlet(s) opens at position set in parameter STAGE #7 EMERGENCY MODE and then turns ON the outputs chosen here. Parameters for stages 1, 2, 7, 8, 9 and 10 (STAGE #9 EMERGENCY MODE and STAGE #10 EMERGENCY MODE are respectively curtain #1 and curtain #2) are adjusted in 1% from a minimum setting of OFF, 12% to a maximum setting of 100%. Parameters for stages 3 to 6 can be set to OFF or ON.

Parameter # 15 : CURTAIN #1 BAND

This parameter is used to set the number of degrees from the TARGET TEMP that the control change from Mechanical Mode to Natural Mode. When TARGET TEMP + CURTAIN #1 BAND has been reached, curtain 1 will open 1 time during CURTAIN #1 RUNTIME, after that opening, if AVERAGE TEMPERATURE stays within TARGET TEMP + CURTAIN #1 BAND - 1.0° and TARGET TEMP + CURTAIN #1 BAND + 1.0°, curtain doesn't move. When CURTAIN #1 SENSOR SELECT reaches TARGET TEMP + CURTAIN #1 BAND + 1.0°, curtain 1 (and 2 if TARGET TEMP + CURTAIN #2 BAND has already been reached) will open on a respective cycle. The CURTAIN #1 BAND is adjusted in 0.1° from a minimum setting of 0.0° to a maximum of 40.0°.

L2: CURTAIN #2 BAND

This parameter is used to set the number of degrees from the TARGET TEMP that the curtain 2 will follow CURTAIN #1 BAND for open or close on its respective cycle. This mean that when TARGET TEMP + CURTAIN #2 BAND has been reached, when CURTAIN #1 SENSOR SELECT is equal or higher than TARGET TEMP + CURTAIN #1 BAND + 1.0°, curtain 2 opens on a cycle, when AVERAGE TEMPERATURE is equal or less than TARGET TEMP + CURTAIN #1 BAND - 1.0°, curtain 2 closes on a cycle, otherwise curtain 2 doesn't move. The CURTAIN #2 BAND is adjusted in 0.1° from a minimum setting of 0.0° to a maximum setting of 40.0°.

Parameter # 16: CURTAIN #1 RUNTIME

This parameter is used to set the running time to open or close curtain 1. When control is in Natural Mode and there is a cycled closing demand, curtain 1 will close during CURTAIN #1 RUNTIME and will wait for a period of time (CURTAIN #1 IDLE or CURTAIN #1 FAST IDLE) before it restarts to close curtain 1. Similar logic is used for a cycled opening demand, curtain 1 will open during CURTAIN #1 RUNTIME and will wait for a period of time before it restarts to open curtain 1. Curtain 1 can open or close continuously if this parameter is set to OFF. The CURTAIN #1 RUNTIME is adjusted in 1 second from a minimum setting of OFF, 00:03 seconds to a maximum setting of 15:00 minutes.

L2: CURTAIN #1 IDLE

This parameter is used to set the time that the curtain 1 waits during a cycled opening or closing demand if AVERAGE TEMPERATURE is above TARGET TEMP. The CURTAIN #1 IDLE is adjusted in 1 second from a minimum setting of 00:00 second to a maximum setting of 15:00 minutes.

L3: CURTAIN #1 FAST IDLE

This parameter is used to set the time that the curtain 1 waits during a cycled closing demand if AVERAGE TEMPERATURE is below TARGET TEMP. The CURTAIN #1 FAST IDLE is adjusted in 1 second from a minimum setting of 00:00 second to a maximum setting of 15:00 minutes.

Parameter # 17: CURTAIN #2 RUNTIME

This parameter is used to set the running time to open or close curtain 2. When control is in Natural Mode and TARGET TEMP + CURTAIN #2 BAND has been reached and there is a cycled closing demand, curtain 2 will close during CURTAIN #2 RUNTIME and will wait for a period of time (CURTAIN #2 IDLE or CURTAIN #2 FAST IDLE) before it restarts to close curtain 2. Similar logic for a cycled opening demand, curtain 2 will open during CURTAIN #2 RUNTIME and will wait for a period of time before it restarts to open curtain 2. Curtain 2 can open or close continuously if this parameter is set to OFF. The CURTAIN #2 RUNTIME is adjusted in 1 second from a minimum setting of OFF, 00:03 seconds to a maximum setting of 15:00 minutes.

L2: CURTAIN #2 IDLE

This parameter is used to set the time that the curtain 2 waits during a cycled opening or closing demand if AVERAGE TEMPERATURE is above TARGET TEMP. The CURTAIN #2 IDLE is adjusted in 1 second from a minimum setting of 00:00 second to a maximum setting of 15:00 minutes.

L3: CURTAIN #2 FAST IDLE

This parameter is used to set the time that the curtain 2 waits during a cycled closing demand if AVERAGE TEMPERATURE is below TARGET TEMP. The CURTAIN #2 FAST IDLE is adjusted in 1 second from a minimum setting of 00:00 second to a maximum setting of 15:00 minutes.

Parameter # 18: CURT 1 OPEN RUNTIME

This parameter is used to set the total time it takes to fully open the curtain #1 from a closed position. This setting is used to fully open curtain #1 during a delay equal to this parameter when control changes modes from Tunnel Mode to Natural Mode. The CURT 1 OPEN RUNTIME is adjusted in 1 second from a minimum setting of 00:00 second to a maximum setting of 23:59 minutes.

L2: CURT 2 OPEN RUNTIME

This parameter is used to set the total time it takes to fully open the curtain #2 from a closed position. This setting is used to fully open curtain #2 during a delay equal to this parameter when control changes modes from Tunnel Mode to Natural Mode. The CURT 2 OPEN RUNTIME is adjusted in 1 second from a minimum setting of 00:00 second to a maximum setting of 23:59 minutes.

Parameter # 19 : TEST MODE (0 = Pause)

This parameter is used to test each output. If this parameter is set to ON, control will test each output by cycling sequences starting at sequence set in TEST MODE SEQUENCE # parameter. If this parameter is set from OFF to 0, control will continuously test the sequence set in TEST MODE SEQUENCE #, if it is set from ON to 0, control will pause the sequence where the control was cycling. When Test Mode is cycling, control will test sequences from 1 to 16 for a delay of 10 seconds, for the curtains sequences (17 to 24), control will test these sequences for a delay of 20 seconds. The TEST MODE can be set to OFF, 0 (Pause) or ON.

L2: TEST MODE SEQUENCE

This parameter is used to set the sequence number to start cycling test mode or to continuously test if TEST MODE is set from OFF to 0. After changing this setting, wait for about 5 seconds for the change to take effect before testing new sequence. This parameter can be set from 1 to 24.

Test Mode sequences:

1)	Alarm ON	13) Stage 5 (Relay) ON	
2)	Alarm OFF	14) Stage 5 (Relay) OFF	
3)	Stage 1 (Variable) at 40%	15) Stage 6 (Relay) ON	
4)	Stage 1 (Variable) ON	16) Stage 6 (Relay) OFF	
5)	Stage 1 (Variable) OFF	17) Curtain 1 Open (20 sec	.)
6)	Stage 2 (Variable) at 40%	18) Curtain 1 Stop (20 sec	.)
7)	Stage 2 (Variable) ON	19) Curtain 1 Close (20 sec	.)
8)	Stage 2 (Variable) OFF	20) Curtain 1 Stop (20 sec	.)
9)	Stage 3 (Relay) ON	21) Curtain 2 Open (20 sec	.)
10)	Stage 3 (Relay) OFF	22) Curtain 2 Stop (20 sec	.)
11)	Stage 4 (Relay) ON	23) Curtain 2 Close (20 sec	.)
12)	Stage 4 (Relay) OFF	24) Curtain 2 Stop (20sec.)

Parameter # 20 : SUPERVISOR MODE (ACCESS TO PROTECTED PARAMETER)

When the supervisor mode is ON, this means that the user has full access (SUPERVISOR ON) to all adjustable parameters. In other words, all parameters which are adjustable by the user, including the protected parameters, will be visible and flashing.

When the supervisor mode is OFF, this means that the user does not have full access (SUPERVISOR OFF) to all adjustable parameters. In other words, if certain parameters are hidden in the supervisor mode, they will remain invisible to the user, and the parameters protected by the supervisor code will not flash, indicating that no modification can be performed on these parameters.

Su: ON = SUPERVISOR ON Su: OFF = SUPERVISOR OFF

To alter the supervisor mode, follow the code entry procedure indicated below:

SUPERVISOR CODE: <u>1 1 1</u>

- 1. The LED display of this parameter show if the supervisor is SUPERVISOR ON (Su: ON) or SUPERVISOR OFF (Su: OFF).
- 2. To change the state of the supervisor mode, press L2 button. The LED display will shows "1: 00", at this moment, enter the **first** number of the supervisor code;
- 3. press L2 again, the LED display will shows "2: 00", at this moment, enter the **second** number of the supervisor code;
- 4. press L2 again, the LED display will shows "3: 00", at this moment, enter the **third** number of the supervisor code;
- 5. finally, press L3 to valid the code entered.
- 6. If the code entered is incorrect, "ERR" will appear on the LED display. At this point, verify the supervisor code and retry the code entry procedure.

Parameter # 21 : STAGE

L2: STAGE # MODES

These parameters are used to establish the modes that respective output is enabled to run in. The modes are Mechanical, Natural and Tunnel. Respective output will only run if the temperature, timer and clock was in state to run and the mode was set to the current mode the control is operating in. These parameters can be set from 1 to 8.

Modes:

- 1) Enabled to run in Mechanical Mode only *
- 2) Enabled to run in Natural Mode only
- 3) Enabled to run in Tunnel Mode only
- 4) Enabled to run in Mechanical and Natural Modes *
- 5) Enabled to run in Mechanical and Tunnel Modes *
- 6) Enabled to run in Natural and Tunnel Modes
- 7) Enabled to run in All modes *
- 8) Disabled

^{*} These settings are not applicable for both curtains, if a curtain mode select is set to these options, then the respective curtain mode select will be considerate as Disabled.

Parameter # 22 : STAGE

L2: STAGE # SENSOR SELECT

These parameters are used to establish the temperature that controls respective output. These parameters can be set from 1 to 9. STAGE # 9-10 SENSOR SELECT are settings for curtain 1 and curtain 2 respectively.

Outputs Sensor Select Modes:

- 1) SENSOR 1
- 2) SENSOR 2
- 3) SENSOR 3
- 4) SENSOR 1 & 2
- 5) SENSOR 1 & 3
- 6) SENSOR 2 & 3
- 7) ALL SENSORS
- 8) AVERAGE TEMPERATURE
- 9) AMBIENT SENSOR

Parameter # 23: STAGE 7/8 OPTION

This parameter is used to establish the output type for stages 7 and 8. Stages 7 and 8 can be either relay or variable stages, output can also be used for an inlet(s). If this parameter is set to 0 then stages 7 and 8 will be used as ON/OFF stages. If this parameter is set to 1 then stages 7 and 8 will be used as variable stages. If this parameter is set to 2 then outputs will be used for inlet(s).

L2: AVG SENSOR SELECT

This parameter is used to establish the temperature that controls AVERAGE TEMPERATURE parameter. This parameter can be set from 1 to 7.

Average Temperature Sensor Select Modes:

- 1) SENSOR 1
- 2) SENSOR 2
- 3) SENSOR 3
- 4) SENSOR 1 & 2
- 5) SENSOR 1 & 3
- 6) SENSOR 2 & 3
- 7) ALL SENSORS

Parameter # 24 : SOFTWARE VERSION

This parameter is used to display the configuration version.

9. Alarm

The alarm relay is normally activated, but it will deactivate 26 sec or more after one of the following events occurred:

- a. SR-242 loses its power or is defective.
- b. The AVERAGE TEMPERATURE exceeds the limits ALARM BAND (other conditions, see parameter 7).
- c. A sensor in is unplugged or defective.

Note: If an inside temperature sensor becomes defective (open / short circuit or unplugged), the control will not compute this sensor for average temperature and the readout of this sensor will be ERR.

10. Additional Information on Parameters

The following is a more detailed description of general purpose parameters which may or may not be included in your configuration. The other parameters, which are easier to set, are briefly explained in the section "Description of Parameters".

10.1 **Clock**

The SR-242 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 keep the time at which the failure occurred. However, the time clock's main purpose is to allow ramping and feed and 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:

The time is displayed in HH:MM format and does not flash. The 🛨 and 🖃 buttons serve no purposes.

L2: Minutes are flashing and can be adjusted with the • and • buttons.

10.2 **Probe**

The following instructions show how to read the current sensor readings as well as the recorded high and low.

The probe's average value is displayed and does not flash. The \blacksquare and \blacksquare buttons serve no purposes. If the gap between the recorded values is too great, the Err message will be displayed.

- **L2:** Display a probe individual value. If there is more than one sensor, another sensor is displayed every second. After 60 seconds, the parameter returns to the average.
- **L3:** Display the recorded high and low. Press simultaneously the

 → and
 → buttons for 2 seconds to clear the high and low. The *Clr* message appears for 2 seconds to confirm the clearing. Then, after 60 seconds, the parameter returns to the average.

11. Supplementary Information on CI-1/24

The air inlet(s) is equipped with a CI-1/24. A system with a CI-1/24 offers features such as:

-capability of self-operating the inlet(s) if the CI-1/24 loses contact with SR-242. Equipped with an inside temperature probe, the CI-1/24 uses a range of preset temperature and a temperature-inlet(s) position curve in order to control the openings. For this configuration, CI-1/24 will operate the inlet(s) or curtains in backup as follow:

- below TARGET TEMP + STAGE 7 MIN, inlet(s) will open at position STAGE 7 MIN OPEN. (TARGET TEMP and STAGE 7 MIN OPEN is given by SR-242 before the failure)
- equal to or above TARGET TEMP, inlet(s) will modulate from the STAGE 7 MIN OPEN to 100%.

-can be used in either a time mode or in a potentiometer mode. If potentiometer mode has been chosen, and the feedback is defective, the CI-1/24 automatically switches to time mode, thus allowing normal operation until the problem is solved.

The following is a list of conditions that generate CI-1/24 malfunction:

- CI-1/24 temperature probe is defective,
- feedback potentiometer is either open or short circuit,
- Inlet(s) is moving the wrong way,
- Inlet(s) is blocked and/or miscalibrated.

If one of these conditions occurs for more than 5 minutes, **no alarm will sound**. The CI-1/24 will try to continue to operate normally.

The following is a list of conditions that make the CI-1/24 to fall on backup mode:

- Communication link between SR-242 and the CI-1/24 is open,
- SR-242 is not powered.

If one of these conditions occurs for more than 5 minutes, **no alarm will sound**. The CI-1/24 will fall on backup mode 30 seconds after the condition has occured.

Notes: - To completely close the inlet(s) in backup mode, the user must use the manual mode of the CI-1/24.

- If the CI-1/24 has never correctly communicated with the SR-242 since its first power up, the backup mode won't work correctly.
- The CI-1/24 must be correctly calibrated before using this configuration. (refer to CI-1/24 for the calibrating procedures).

12. Parameter Table

DESCRIPTION			CONTRO	L VALUES		
		*Restriction	MIN	MAX	PRESET	
1. AVERAGE TEMPERATURE	°C(°F)	6	-41.8 (-43.6)	74.4 (166.2)	****	****
L2: Sensor	°C(°F)		-41.8 (-43.6)	74.4 (166.2)	PRB 2-3-4	****
L3: Hi/Lo	°C(°F)	CLR	-41.8 (-43.6)	74.4 (166.2)	****	****
2. SENSOR 1	°C(°F)	©	-41.8 (-43.6)	74.4 (166.2)	****	****
L2: Sensor	°C(°F)		-41.8 (-43.6)	74.4 (166.2)	PRB 2	****
L3: Hi/Lo	°C(°F)	CLR	-41.8 (-43.6)	74.4 (166.2)	****	****
3. SENSOR 2	°C(°F)	©	-41.8 (-43.6)	74.4 (166.2)	****	****
L2: Sensor	°C(°F)		-41.8 (-43.6)	74.4 (166.2)	PRB 3	****
L3: Hi/Lo	°C(°F)	CLR	-41.8 (-43.6)	74.4 (166.2)	****	****
4. SENSOR 3	°C(°F)		-41.8 (-43.6)	74.4 (166.2)	****	****
L2: Sensor	°C(°F)		-41.8 (-43.6)	74.4 (166.2)	PRB 4	****
L3: Hi/Lo	°C(°F)	CLR	-41.8 (-43.6)	74.4 (166.2)	****	****
5. AMBIENT	°C(°F)	©	-41.8 (-43.6)	74.4 (166.2)	****	****
L2: Sensor	°C(°F)		-41.8 (-43.6)	74.4 (166.2)	PRB 1	****
L3: Hi/Lo	°C(°F)	CLR	-41.8 (-43.6)	74.4 (166.2)	****	****
6. CLOCK	, ,		00:00	23:59	00:00	
L2: Adjust Minutes	min	Ŷ	00	59	00	
L3: Adjust Hours	hr	•	00	23	00	
7. TARGET TEMP	°C(°F)	•	0.0 (32.0)	40.0 (105.0)	20.0 (70.0)	
L2: Tunnel Band	°C(°F)	•	0.0	40.0, OFF	OFF	
L3: Alarm Band	°C(°F)	•	0.5	40.0	10.0 (20.0)	
8. STAGE #						
L2(1): Stage #1 Min Band	°C(°F)	•	-40.0	40.0	0.5	
L3(1): Stage #1 Min Speed	%	•	12	100	35	
L2(2): Stage #2 Min Band	°C(°F)	•	-40.0	40.0	2.5	
L3(2): Stage #2 Min Speed	%	•	12	100	35	
L2(3-6): N/A						
L3(3-6): N/A						
L2(7): Stage #7 Min Band	°C(°F)	•	-40.0	40.0	5.5	
L3(7): Stage #7 Min Speed / Min Open	ı %	•	0	100	35	
L2(8): Stage #8 Min Band	°C(°F)	•	-40.0	40.0	6.5	
L3(8): Stage #8 Min Speed	%	₹	12	100	35	

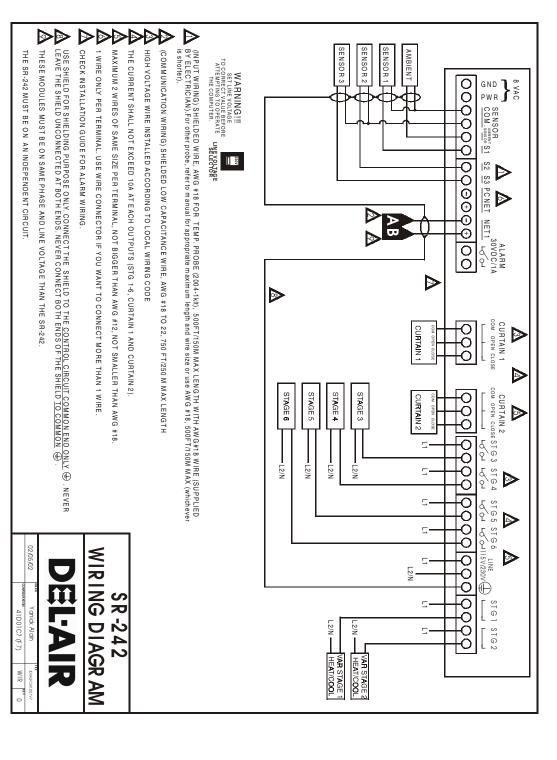
DESCRIPTION				CONTRO	L VALUES	
		*Restriction	MIN	MAX	PRESET	
9. STAGE #						
L2(1): Stage #1 ON Band	°C(°F)	•	-40.0	40.0	2.0	
L3(1): Stage #1 OFF Band	°C(°F)	•	-40.0	40.0	-40.0	
L2(2): Stage #2 ON Band	°C(°F)	•	-40.0	40.0	3.5	
L3(2): Stage #2 OFF Band	°C(°F)	•	-40.0	40.0	2.5	
L2(3): Stage #3 ON Band	°C(°F)	•	-40.0	40.0	4.0	
L3(3): Stage #3 OFF Band	°C(°F)	•	-40.0	40.0	3.5	
L2(4): Stage #4 ON Band	°C(°F)	•	-40.0	40.0	5.0	
L3(4): Stage #4 OFF Band	°C(°F)	•	-40.0	40.0	4.5	
L2(5): Stage #5 ON Band	°C(°F)	Ŷ	-40.0	40.0	8.0	
L3(5): Stage #5 OFF Band	°C(°F)	Ŷ	-40.0	40.0	7.0	
L2(6): Stage #6 ON Band	°C(°F)	Ŷ	-40.0	40.0	-1.0	
L3(6): Stage #6 OFF Band	°C(°F)	Ŷ	-40.0	40.0	0.0	
L2(7): Stage #7 ON Band	°C(°F)	Ŷ	-40.0	40.0	6.0	
L3(7): Stage #7 OFF Band	°C(°F)	Ŷ	-40.0	40.0	5.0	
L2(8): Stage #8 ON Band	°C(°F)	Ŷ	-40.0	40.0	7.0	
L3(8): Stage #8 OFF Band	°C(°F)	Ŷ	-40.0	40.0	6.0	
10. STAGE #						
L2(1): Stage #1 ON Duration	mm:ss	•	00:02	23:59, ON	ON	
L3(1): Stage #1 OFF Duration	mm:ss	₽	00:02	23:59	05:00	
L2(2): Stage #2 ON Duration	mm:ss	•	00:02	23:59, ON	ON	
L3(2): Stage #2 OFF Duration	mm:ss	Ŷ	00:02	23:59	05:00	
L2(3): Stage #3 ON Duration	mm:ss	•	00:02	23:59, ON	ON	
L3(3): Stage #3 OFF Duration	mm:ss	Ŷ	00:02	23:59	05:00	
L2(4): Stage #4 ON Duration	mm:ss	•	00:02	23:59, ON	ON	
L3(4): Stage #4 OFF Duration	mm:ss	•	00:02	23:59	05:00	
L2(5): Stage #5 ON Duration	mm:ss	P	00:02	23:59, ON	ON	
L3(5): Stage #5 OFF Duration	mm:ss	P	00:02	23:59	05:00	
L2(6): Stage #6 ON Duration	mm:ss	P	00:02	23:59, ON	ON	
L3(6): Stage #6 OFF Duration	mm:ss	•	00:02	23:59	05:00	
L2(7): Stage #7 ON Duration	mm:ss	P	00:02	23:59, ON	ON	
L3(7): Stage #7 OFF Duration	mm:ss	P	00:02	23:59	05:00	
L2(8): Stage #8 ON Duration	mm:ss	•	00:02	23:59, ON	ON	
L3(8): Stage #8 OFF Duration	mm:ss	T	00:02	23:59	05:00	

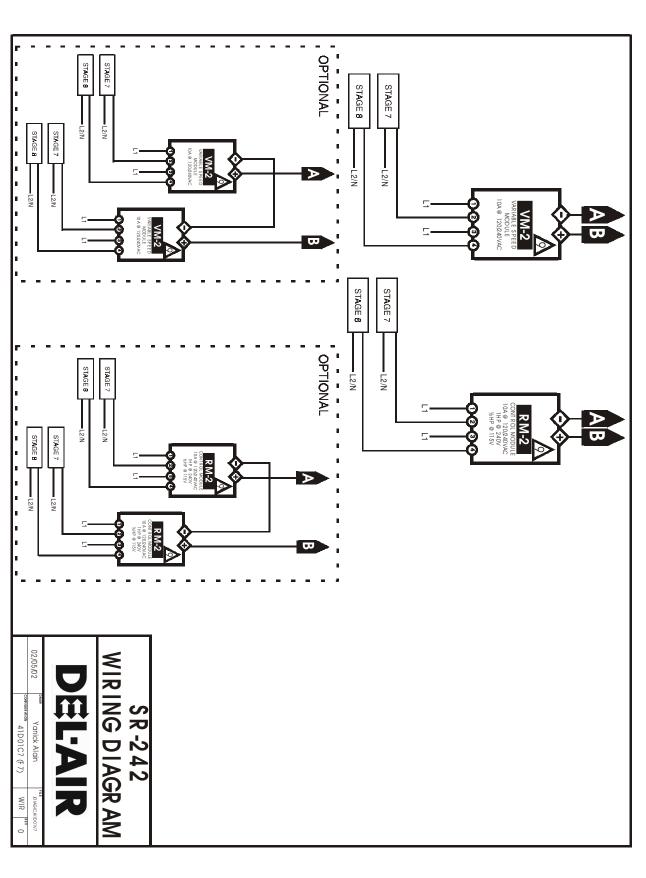
DESCRIPTION			CONTROL VALUES			
		*Restriction	MIN MAX PRESET			
11. STAGE #						
L2(1): Stage #1 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(1): Stage #1 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(2): Stage #2 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(2): Stage #2 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(3): Stage #3 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(3): Stage #3 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(4): Stage #4 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(4): Stage #4 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(5): Stage #5 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(5): Stage #5 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(6): Stage #6 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(6): Stage #6 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(7): Stage #7 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(7): Stage #7 OFF Time	hh:mm	•	00:00	23:59	12:00	
L2(8): Stage #8 ON Time	hh:mm	•	00:00	23:59, ON	ON	
L3(8): Stage #8 OFF Time	hh:mm	•	00:00	23:59	12:00	
12. STAGE #						
L2(1): Stage #1 % Exhaust Fan	%	•	0	100	3	
L2(2): Stage #2 % Exhaust Fan	%	•	0	100	7	
L2(3): Stage #3 % Exhaust Fan	%	•	0	100	10	
L2(4): Stage #4 % Exhaust Fan	%	•	0	100	16	
L2(5): Stage #5 % Exhaust Fan	%	•	0	100	0	
L2(6): Stage #6 % Exhaust Fan	%	•	0	100	0	
L2(7): Stage #7 % Exhaust Fan	%	•	0	100	32	
L2(8): Stage #8 % Exhaust Fan	%	•	0	100	32	
13. INLET MIN BAND	%	•	0	100	0	
L2: Tunnel Mode Delay	mm:ss	•	OFF, 00:02	15:00	4:00	
14. STAGE #						
L2(1): Stage #1 Emergency Mode		•	OFF, 12	100	50	
L2(2): Stage #2 Emergency Mode		•	OFF, 12	100	OFF	
L2(3): Stage #3 Emergency Mode	ON/OFF	•	OFF	ON	ON	
L2(4): Stage #4 Emergency Mode	ON/OFF		OFF	ON	OFF	
L2(5): Stage #5 Emergency Mode	ON/OFF		OFF	ON	OFF	
L2(6): Stage #6 Emergency Mode	ON/OFF	•	OFF	ON	OFF	
L2(7): Stage #7 Emergency Mode		•	0	100	100	
L2(8): Stage #8 Emergency Mode		•	OFF, 12	100	100	
L2(9): Curtain #1 Emergency Mode		•	0	100	100	
L2(10): Curtain #2 Emergency Mode		P	0	100	100	
15. CURTAIN #1 BAND	°C(°F)	Ŷ	0.0	40.0	4.0	
L2: Curtain #2 Band	°C(°F)	•	0.0	40.0	5.5	

DESCRIPTION		CONTROL VALUES				
		*Restriction	MIN	MAX	PRESET	
16. CURTAIN #1 RUNTIME	mm:ss	•	OFF, 00:03	15:00	00:30	
L2: Curtain #1 Idle	mm:ss	•	00:00	15:00	02:00	
L3: Curtain #1 Fast Idle	mm:ss	•	00:00	15:00	00:30	
17. CURTAIN #2 RUNTIME	mm:ss	•	OFF, 00:03	15:00	00:30	
L2: Curtain #2 Idle	mm:ss	•	00:00	15:00	02:00	
L3: Curtain #2 Fast Idle	mm:ss	•	00:00	15:00	00:30	
18. CURT 1 OPEN RUNTIME	mm:ss	•	00:00	23:59	08:00	
L2: Curt 2 Open Run Time	mm:ss	•	00:00	23:59	08:00	
19. TEST MODE (0 = Pause)	ON/OFF	•	OFF	0, ON	OFF	
L2: Test Mode Sequence #		P	1	24	1	
20. SUPERVISOR CODE			See parame	eter description	on for details	
21. STAGE #						
L2(1): Stage #1 Modes		•	1	8	7	
L2(2): Stage #2 Modes		•	1	8	7	
L2(3): Stage #3 Modes		P	1	8	7	
L2(4): Stage #4 Modes		P	1	8	7	
L2(5): Stage #5 Modes		P	1	8	7	
L2(6): Stage #6 Modes		P	1	8	7	
L2(7): Stage #7 Modes		•	1	8	7	
L2(8): Stage #8 Modes		•	1	8	7	
L2(9): Curtain #1 Modes		•	1	8	2	
L2(10): Curtain #2 Modes		•	1	8	2	
22. STAGE #						
L2(1): Stage #1 Sensor Select		•	1	9	8	
L2(2): Stage #2 Sensor Select		•	1	9	8	
L2(3): Stage #3 Sensor Select		•	1	9	8	
L2(4): Stage #4 Sensor Select		•	1	9	8	
L2(5): Stage #5 Sensor Select		•	1	9	8	
L2(6): Stage #6 Sensor Select		•	1	9	8	
L2(7): Stage #7 Sensor Select		•	1	9	8	
L2(8): Stage #8 Sensor Select		•	1	9	8	
L2(9): Curtain #1 Sensor Select		•	1	9	8	
L2(10): Curtain #2 Sensor Select		•	1	9	8	
23. STAGE 7/8 OPTION		P	0	2	2	
L2: Avg Sensor Select		P	1	7	7	_
24. SOFTWARE VERSION			7	7	7	

* Restriction legend					
none Parameter adjustable by the user or the supervisor					
Read only to the user when Setup mode OFF					
Follow a growth curve when ramping function ON					
Can not be changed					
CLR	Press • simultaneously to clear				

13. Wiring Diagram

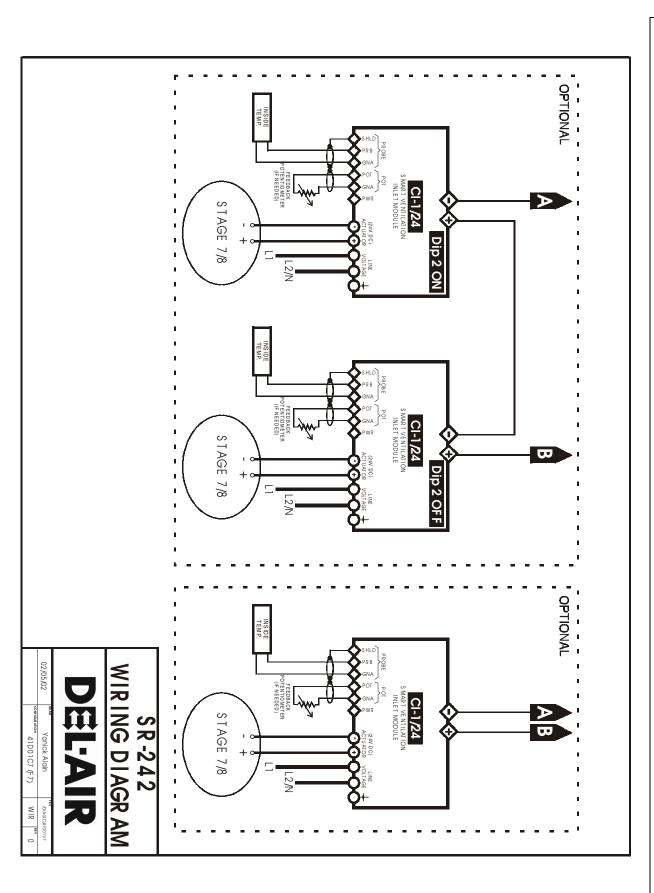




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