

Smart-Vent

Network Panel IOM Instructions

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INSTALLER: Please leave these instructions, wiring diagram & access panel keys with the user.

1.0 Introduction

- 1.1 This booklet provides guidance to identify, handle, install, commission, operate and maintain Dunham-Bush Smart-Vent network panel. The instructions apply to the standard panel only. Please study the instructions carefully before commencing any installation work.
- 1.2 The Smart-Vent network panel is supplied as a single item, to enable complete system control of Smart-Vector units. It is ordered and supplied as a separate accessory to Smart-Vector room units and includes an external air temperature sensor, supplied loose for installation and wiring on-site.



Diagram 1: Smart-Vent network panel.

- 1.3 The panel is fitted with:
- a) touch-screen user control of timeclock schedule settings
 - b) timeclock override button with 1, 2, 3, 4 and 5 hour options
 - c) Pre-Purge enable switch
 - d) Day Time Cooling enable switch
 - e) Night Time Cooling enable switch
- 1.4 Smart-Vent should be connected to individual Smart-Vector master units via their room controllers by a single cable using RS485 polarity dependent protocol.
- 1.5 When operating, Smart-Vent control will override all the control strategy on individual Smart-Vector room controllers.
- 1.6 If the Smart-Vent controller is disabled, disconnected or switched off, Smart-Vector units will continue to operate as stand-alone units, with their room controller strategies activated

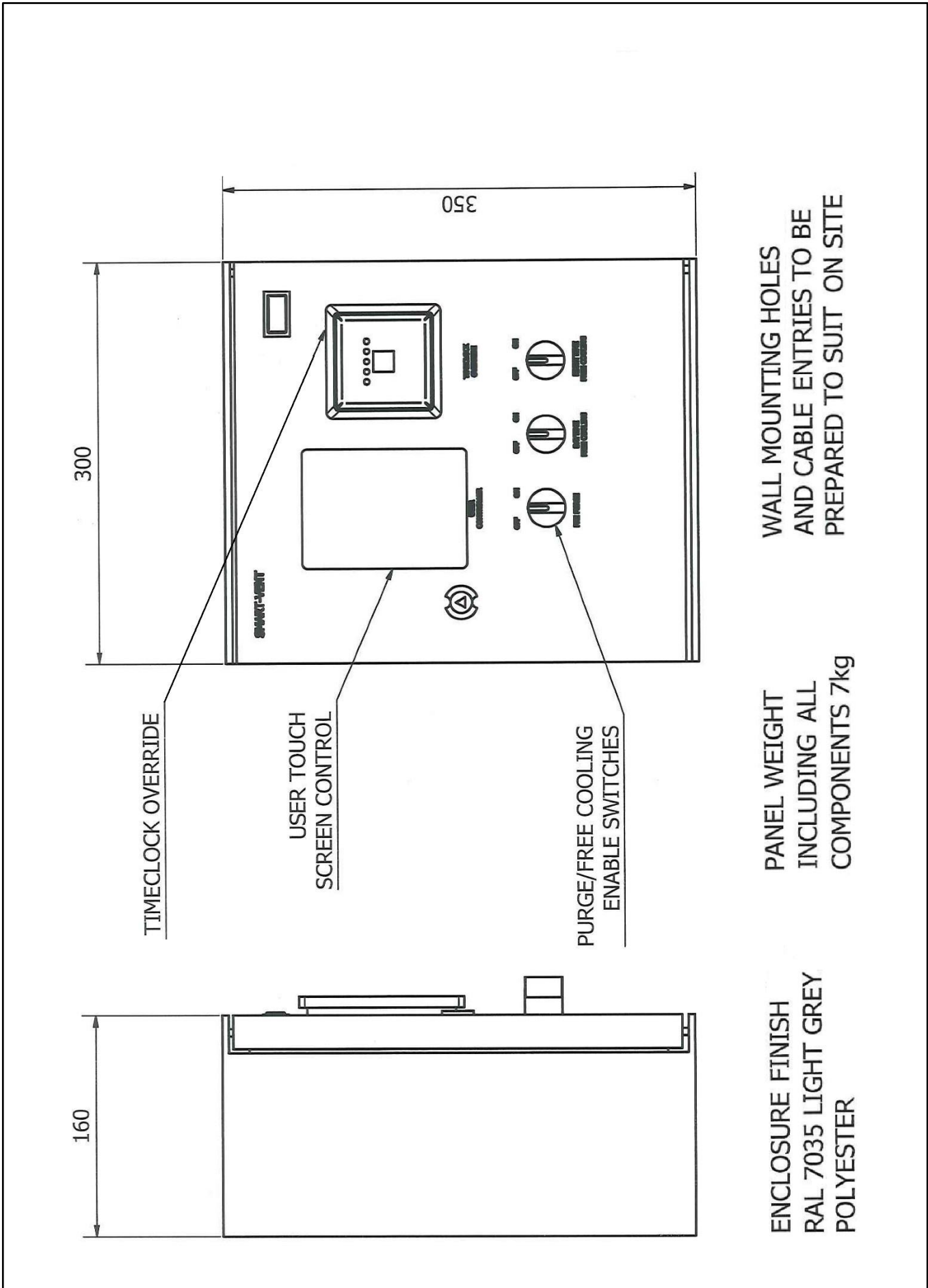


Diagram 2: Smart-Vent network panel dimensions and weight

2.0 Handling, Storage & Preparation

- 2.1 *Handling* - The purchaser is responsible for off-loading. Panels are individually packed and one person can usually handle a single panel. The panel must not be dropped or suffer impact in any circumstances.
- 2.2 *Storage* - The panel should be stored in clean, dry conditions. Any packaging should not be removed until the panel is required for installation and should only be removed if damage is suspected at delivery
- 2.3 *Preparation* - Make proper provision for fixings. The structure to which panel is to be fixed must be fit for purpose and capable of accepting plugs and screws or suitable anchors. Suitable cable entry and glands should be provided and electrical wiring should have been completed as far as possible.

3.0 Installing & Wiring to Smart-Vent Network Panel

- 3.1 See Diagram 2 for panel dimensions and weight. The panel can be fixed to a vertical wall surface, using normal fixings that are suitable for wall construction.
- 3.2 It is recommended that the panel is sited between 1.0 - 1.5m above floor level, in a location away from public access e.g. facilities office, plant room, administration area.
- 3.3 Subject to fixings used, it is recommended that four holes are drilled in the back of the panel. The panel door can be removed, but will require disconnection of the five door-mounted items.
- 3.5 The outside air temperature sensor is supplied loose; it should be fitted to an external wall in a suitable location to measure outside air temperature. It should be site away from windows and other ventilation openings, on a suitably shaded wall surface out of sunlight, typically minimum 2m above ground level.
- 3.4 After fitting panel and air sensor, connect panel to 230VAC mains supply (isolated and fused) and wire the sensor back to the panel. Connect the panel to all room controllers, using a suitable RS-485 screened cable in a daisy chain configuration, observing polarity rules.

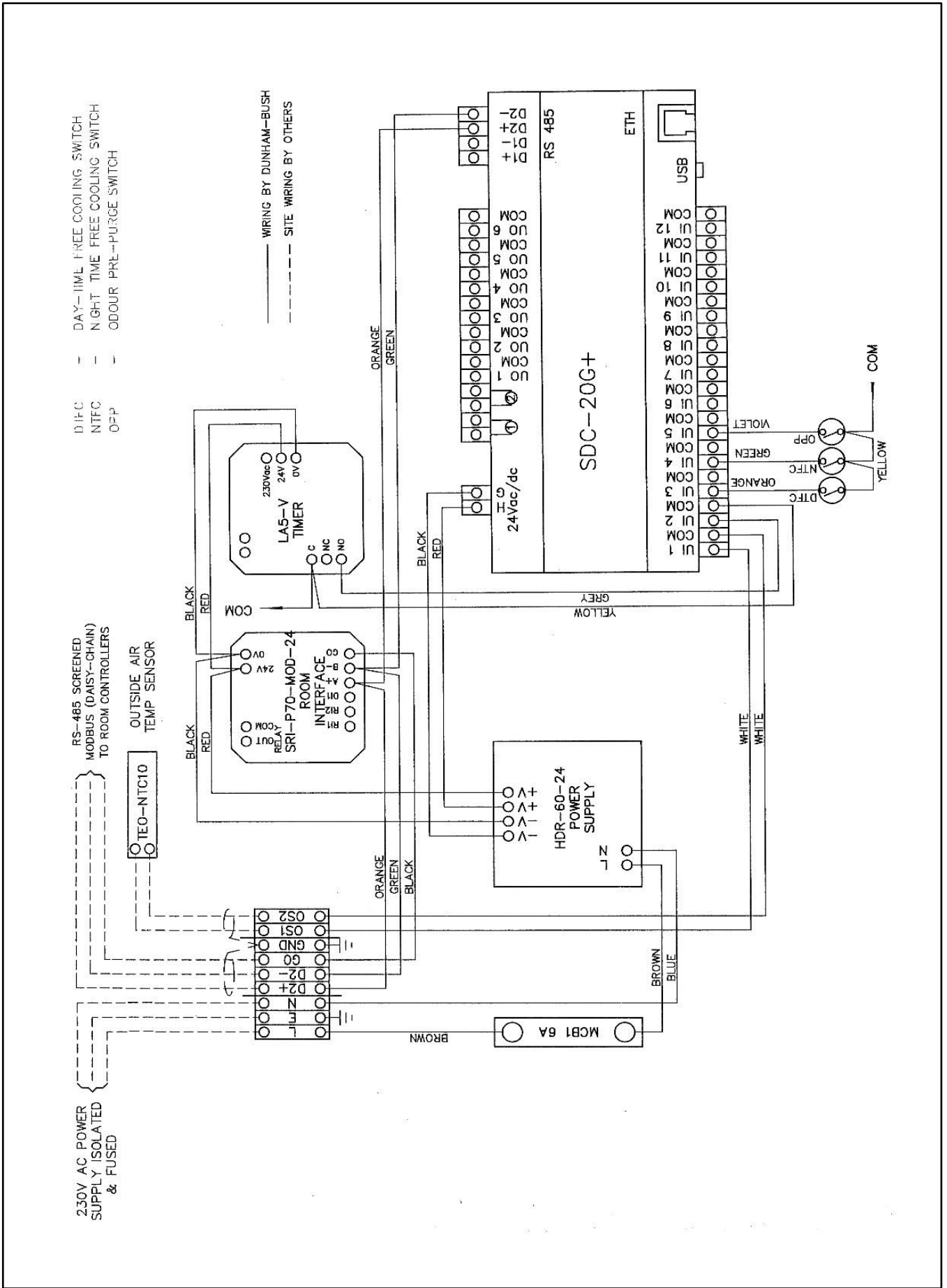


Diagram 3: Typical wiring diagram for Smart-Vent network panel.
NOTE: ALWAYS USE WIRING DIAGRAM ENCLOSED WITH THE PANEL

4.0 Configuring Smart-Vector Room Controllers



Diagram 4: Smart-Vector Room Controller fascia



Diagram 5: Location of binary "bit" switches

- 4.1 Before Smart-Vent network panel can be used, each room controller must be configured with a network address, using the binary "bit-switches" on each room controller. A maximum of 20 addresses can be configured with the switches.
- 4.2 Carefully remove the room controller fascia, by prising and unclipping it from the bottom.
- 4.3 The binary switches are located below the controller display, numbered 1 to 8 (See diagram 4). A switch is on in the "up" position.
- 4.4 Switch nos. 1-5 are used to set the network address; switch no. 6 is not used; switch nos. 7 and 8 are used to set the baud rate at 19200
- 4.5 Set the network address (room or controller number) and the baud rate using the table below

Switch No.	Binary Value	Network	Room / Controller No.																				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1	1	Set all switches off	ON		ON		ON		ON		ON		ON		ON		ON		ON		ON		
2	2			ON	ON			ON	ON			ON	ON			ON	ON			ON	ON		
3	4					ON	ON	ON	ON					ON	ON	ON	ON					ON	
4	8									ON	ON	ON	ON	ON	ON	ON							
5	16																	ON	ON	ON	ON	ON	
6	32		Switch Not Used																				
7	n/a																						
8	n/a		ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

- 4.6 When switches are set, replace the room controller cover.

5.0 Setting Day Time (Occupied) and Night Time Schedules

- 5.1 Timeclock schedules for day and night time can be set via 3.5" touchscreen display. The Main Screen is shown in Diagram 6.
- 5.2 Select the room temperature display to enter the Menu Screen (See Diagram 9).



Diagram 6: Home Screen

- 5.3 Select the gearwheel icon at the bottom of the screen to enter Admin Settings Screen (Diagram 7). Select System Menu enter the password as requested (default 6666)
- 5.4 Check the following settings
 - Baud rate is 19200*
 - Modbus address is 100*If required, select the setting and enter these settings.
- 5.5 Select Return to return to Main Screen



Diagram 7: Admin Settings

- 5.6 Select the calendar icon to enter the Calendar Schedule
- 5.7 Select the first day and set the times that rooms are to be occupied.
- 5.8 To copy the occupied times to another day, select Copy and the source day to be copied. The source day will highlight in red.
- 5.9 Select the target days which will highlight in white.
- 5.10 Select Copy again to copy the occupied times to the required days.
- 5.11 Select Return to return the Main Screen.

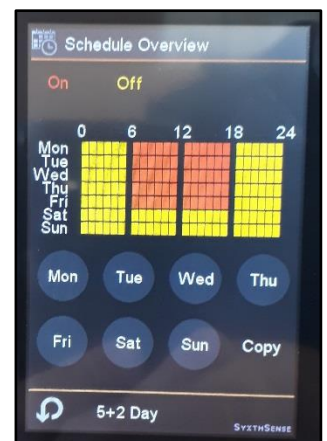


Diagram 8: Calendar Schedule

5.0 Setting Day Time (Occupied) and Night Time Schedules cont.

- 5.12 To change the system date and time, select the clock icon.
- 5.13 Check and revise the system date and time.
- 5.14 Select the Return button to return to the Main Screen.
- 5.15 To clean the touchscreen, select Clean Screen. The touchscreen will be disabled for 30 seconds to allow the screen to be cleaned.
- 5.16 Diagram 9 shows the Menu Screen and relevant icons.

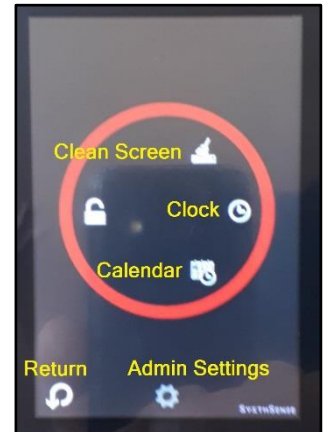


Diagram 9: Menu Screen

6.0 User Controls

- 6.1 User controls allow the day time (occupied) and night time settings to be overridden, using the controls described below.
- 6.2 *Timeclock Override Button*
This button enables the daytime schedule to be extended up to five hours. Press the button to cycle through the override periods (1h, 2h, 3h, 4h, 5h). A green LED will indicate the selected override period; to return to normal timeclock schedule, press the button to cycle through the periods until no LED is lit.
- 6.3 *Pre-Purge Switch.*
When enabled, all Smart-Vector units are run at full speed for 30 minutes prior to start of daytime (occupied) schedule. On all Smart-Vector units, the fresh air dampers fully open and fans run to purge treated spaces with fresh air. Individual units are fitted with frost protection thermostats, which may override fresh air dampers to circulate room air only
- 6.4 *Day Time (Occupied) Cooling mode*
When enabled, all Smart-Vector units will provide “free-cooling” by running at full speed with fresh air dampers open, if room air temperature is more than 1K above outside air temperature *and* above temperature setpoint. Timeclock schedule for day time is user-programmable via the touch screen and room temperature setpoint is user-adjustable via Smart-Vent room controllers, with +/- 3K user adjustment
- 6.5 *Night Time Cooling mode*
When enabled, all Smart-Vector units will provide “free-cooling” by running at full speed with fresh air dampers open, if room air temperature is more than 1K above outside air temperature. Timeclock schedule for night time is user-programmable via the touch screen and room temperature setpoint is user-adjustable via Smart-Vent room controllers, with +/- 3K user adjustment.



Diagram 10: Timeclock Override Button

7.0 System Tests

7.1 Input the times from this table to ensure Smart -Vent is working correctly. Replace the outside temperature sensor with a potentiometer to simulate outside air temperature.
(NOTE: Smart-Vent should be to powered off during air sensor change-over).

7.2 Adjust the following settings to carry out the required test:

OAT	Outside Air Temperature; adjust using the potentiometer
PP	Pre-Purge; enabled using the switch
DTFC	Daytime Free-Cooling; enabled using the switch
NTFC	Night-time Free-Cooling; enabled using the switch
CO ₂	Use a CO ₂ spray or breathe on the sensor on Smart-Vector room controller
SETPOINT	Adjust on the Smart Vector Controller

Test	Time	SETTINGS						Expected Results	
		OAT	Pre-Purge	DTFC	NTFC	CO ₂	SETPOINT	Fan(s)	Damper
Pre-Purge	05:28	MID	ON	OFF	OFF	LOW	MID	OFF	CLOSED
	05:32	MID	ON	OFF	OFF	LOW	MID	ON	OPEN
	05:45	MID	OFF	OFF	OFF	LOW	MID	OFF	CLOSED
DTFC	05:45	MID	OFF	ON	OFF	LOW	LOW	OFF	CLOSED
	06:15	MID	OFF	ON	OFF	LOW	LOW	ON	OPEN
	06:15	MID	OFF	OFF	OFF	LOW	LOW	OFF	CLOSED
	06:15	MID	OFF	ON	OFF	LOW	HIGH	OFF	CLOSED
NTFC	17:15	MID	OFF	OFF	ON	LOW	LOW	OFF	CLOSED
	18:15	MID	OFF	OFF	ON	LOW	LOW	ON	OPEN
	18:15	MID	OFF	OFF	OFF	LOW	LOW	OFF	CLOSED
	18:15	MID	OFF	OFF	ON	LOW	HIGH	OFF	CLOSED
CO ₂	06:15	MID	OFF	OFF	OFF	LOW	MID	OFF	CLOSED
	06:15	MID	OFF	OFF	OFF	HIGH	MID	ON	OPEN
OAT	05:32	LOW	ON	ON	ON	LOW	MID	OFF	CLOSED
	06:15	LOW	ON	ON	ON	LOW	MID	OFF	CLOSED
	18:15	LOW	ON	ON	ON	LOW	MID	OFF	CLOSED
	06:15	LOW	ON	ON	ON	HIGH	MID	ON	OPEN

Note:

- Where the OAT is Low it requires to be less than 10°C
- Tests above assume day time (occupied) times are 06:00 – 18:00, adjust to suite timeclock schedule
- Reconnect outside air sensor when tests are complete
- Return timeclock schedule to its desired settings

SPARES/SERVICE

PLEASE WRITE THE DETAILS OF THE UNIT HERE.

These details will be required when ordering spares for you Dunham-Bush Smart-Vector network panel

UNIT TYPE AND MODEL INFORMATION

SERIAL NUMBER

DATE OF INSTALLATION

Spare parts/service - Please contact our office, contact information shown on page 1
Manufacturer reserves the right to change any product specification without notice

