



Owner's Manual

Part Number 33PILOT-01

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SAFETY CONSIDERATIONS

Air-conditioning equipment will provide safe and reliable service when operated within design specifications. The equipment should be operated and serviced only by authorized personnel who have a thorough knowledge of system operation, safety devices and emergency procedures.

Good judgement should be used in applying any manufacturer's instructions to avoid injury to personnel or damage to equipment and property.

GENERAL

The System Pilot (33PILOT-01) is a component of Carrier's 3V™ control system and serves as the user-interface and configuration tool for all Carrier communicating devices. The System Pilot can be used to install and commission a 3V zoning system, linkage compatible air source, universal controller, and all other devices operating on the Carrier communicating network.

Additionally, the System Pilot can serve as a wall-mounted temperature sensor for space temperature measurement. The occupant can use the System Pilot to change set points and cause occupancy overrides. A security feature is provided to limit access of features for unauthorized users.

OPERATION

Power-Up Display — When the System Pilot is powered up, it attaches (initiates communication) to a device that has been designated as the System Pilot's default device. The System Pilot then displays that device's custom Default screen, if such a screen exists. If the System Pilot attaches to an external device that does not have a custom Default screen, the

System Pilot reads that device's first status table and displays it as the Default screen.

→ **DEFAULT DEVICE DESIGNATION** — If the System Pilot is connected to a local bus of a VVT® zone controller (Comm2), the default device is the local zone controller. If the System Pilot is on the Carrier communication bus, the default device is set up by the installer.

The Local or CCN configuration is set up by the installer. When the System Pilot is configured for Local Operation, time and date will not be displayed on the default screens. When the System Pilot is configured for CCN operation, the time and date will be shown on the default screens. This way a service person or operator may easily determine if the device may be used to access devices on the network. The display of the controller name at the top of the screen in the default display is defaulted to off and may be turned on by the installer also.

If the System Pilot is not connected to a local bus and no default device has been configured, the default device is the System Pilot itself. The default device can also be a device that has been designated as the remote attach device. A remote attach device is a designated Carrier network device to which the System Pilot will write space temperature, compute an operating mode for, and monitor and modify set points.

All custom Default screens display the day of week, time, and space or duct temperature. Other contents will vary according to the attached device type. Examples of Default screens for the System Pilot, VVT zone controller, and Bypass Controller are shown in Fig. 1-3.

OAT Display — The System Pilot has an outside air temperature (OAT) software point that can be forced from the Carrier communicating network. If the System Pilot is displaying any default screen and the EXIT and SELECT buttons are pressed together for one second, the System Pilot replaces the default screen with a special screen that shows the OAT variable value. An example of the OAT Display screen is shown in Fig. 4. When the System Pilot is connected to the Zone Controller's local bus (Comm2), the OAT display feature is disabled.

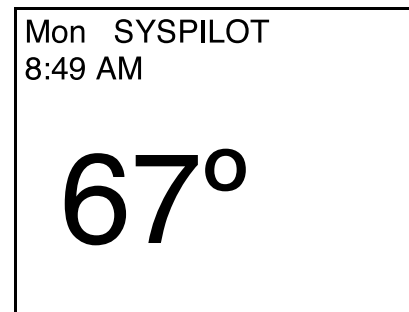


Fig. 1 — System Pilot Default Screen

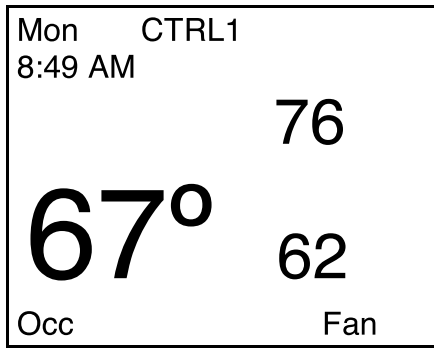


Fig. 2 — Zone Controller Default Screen

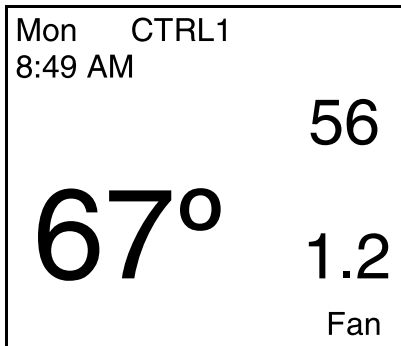


Fig. 3 — Bypass Controller Default Screen

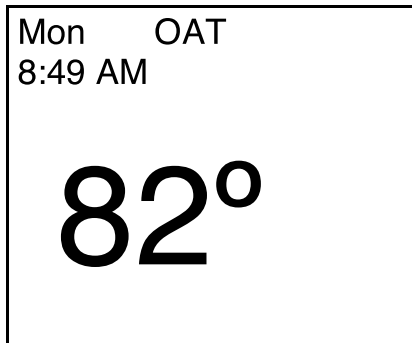


Fig. 4 — OAT Display Screen

User Interface — The System Pilot contains six buttons and two rotary knobs with buttons, which allow the user to navigate through the menus, select the desired options, and modify data. See Fig. 5.

SCROLL UP/SCROLL DOWN — If displaying a table or a list of items, these buttons move the cursor to the next line or previous line in the table or list.

If the System Pilot is displaying a controller Default screen and the SCROLL UP and SCROLL DOWN buttons are pressed together for 3 seconds, the System Pilot changes to Program mode.

Pressing the SCROLL UP button along with the INC/DEC button increases or decreases the contrast on the System Pilot LCD display screen.

PAGE UP/PAGE DOWN — In screens that have more than 7 data lines (Ex: a Table List screen with more than 7 tables, or a table with more than 7 decisions), these buttons replace the

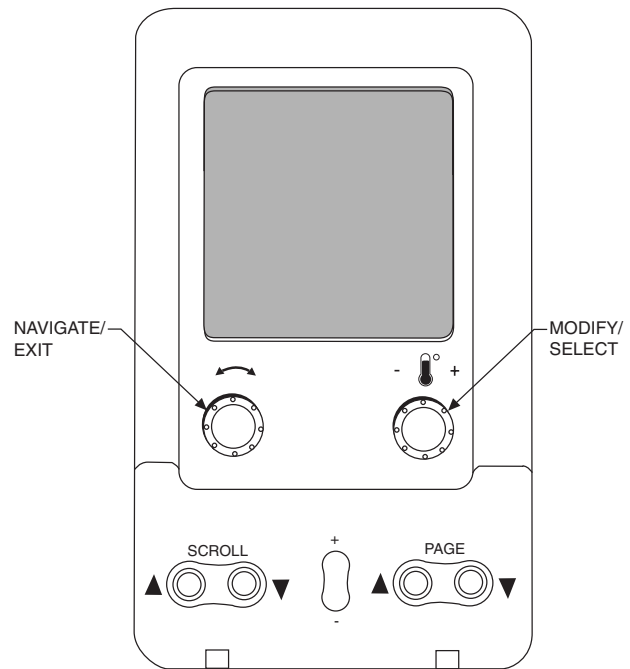


Fig. 5 — System Pilot User Interface

items currently on the screen with the previous or next 7 items from the table or list.

If there is additional data at the end or beginning of a table or list that is not on the screen, the cursor will not advance (move down) past the next-to-last line or up past the second line on the screen.

Linkage Coordinator Zone Controller Bus Scan — Pressing PAGE UP/PAGE DOWN together for 3 seconds from the Default screen of a Linkage Coordinator Zone Controller Default screen will display the Bus Scan screen. Bus Scan allows the user to scan through the linkage coordinator’s zones and display what is found at each address. Refer to Bus Scan section on page 7 for additional information on Linkage Coordinator Zone Controller Bus Scan.

→ **INC/DEC** — The INC and DEC buttons modify the value of the highlighted field within its defined limits.

From the Zone Controller Default screen, the INC/DEC buttons allow the user to modify the set points. Pressing the INC/DEC buttons continuously updates the highlighted field and the rate of change accelerates over time.

→ **NAVIGATE** — This rotary knob functions like the SCROLL UP/DOWN buttons, with the same sort of wrap-around. However, it also incorporates a left-right movement. The cursor moves one selectable field with each increment of the rotary knob. Turning the knob clockwise moves the cursor to the right and down. With each increment, the cursor advances to the next field to the right on the current line. If the cursor is on the last field in the line, the cursor advances to the first (left-most) field in the next line. Turning the knob counterclockwise moves the cursor to the left and up in the same manner.

The NAVIGATE rotary knob also functions as the EXIT button when pressed.

EXIT — The EXIT button returns the display to the next higher screen in the hierarchy. If the EXIT button is pressed and the data on the screen cannot be or has not been modified, the System Pilot moves to the next higher screen immediately (no additional prompts).

→ **MODIFY** — Like the INC/DEC buttons, this rotary knob modifies the value of the highlighted field within its defined limits. The value increases or decreases with each increment of the rotary knob. Turning the knob clockwise increases the value. Turning it counterclockwise decreases the value. From the Zone Controller Default screen, the MODIFY knob allows the user to modify the set points.

The MODIFY rotary knob also functions as the SELECT button when pressed.

SELECT — This button function varies according to the screen that is currently displayed and the device to which the System Pilot is attached. In general, the SELECT button processes a user-selected option or initiates a new operation mode for the System Pilot.

Zone Controller Occupancy Override — Pressing the SELECT button for less than 3 seconds from the Zone Controller Default screen while in an unoccupied mode will initiate an occupancy override. While the occupancy status is blinking, the user can use the INC/DEC buttons or the MODIFY rotary knob to adjust the occupancy status.

System Pilot Alternate Maintenance Table — Pressing the SELECT button for at least 3 seconds from the Zone Controller Default screen will display the System Pilot Alternate Maintenance Table (ALT_DISP).

Edit Mode — If the System Pilot is displaying editable data, SELECT allows the user to MODIFY the point that the cursor is positioned on.

If the EXIT button is pressed and the data on the screen has been modified, the System Pilot displays the prompt “Save data?” followed by the following softkeys: YES, NO and ESC. The NAVIGATE rotary knob can be used to move between YES, NO, and ESC (with wraparound). Position the cursor on the desired softkey and press SELECT. Selecting YES causes the System Pilot to write the new data to the controller and then return to the next higher screen. Selecting NO returns the System Pilot to the next higher screen without saving the new data. Pressing Selecting ESCAPE or pressing the EXIT button erases the “Save data?” prompt and causes the System Pilot to remain in the current screen.

→ **ATTACH SCREEN NAVIGATION** — Pressing SCROLL UP and PAGE DOWN together for 3 seconds from any screen will display the Attach screen. If the data on the current screen has been modified, the user will be prompted to save the data as described above. Exiting from the Attach screen without attaching will cause the System Pilot to display the Program screen (not the screen from which the buttons were pushed).

Timeout Feature — If no user input is received for an hour (i.e., if no buttons are pressed and no rotary knobs are turned), the System Pilot reverts to the Default screen for its default device. If connected to another device, the System Pilot will re-attach to the default device.

Program Mode — To enter Program mode and display the Program screen, press the SCROLL UP and SCROLL DOWN buttons together for 3 seconds from the default screen. The System Pilot will display one of the three program screens shown in Fig. 6, depending on the security level that is specified in the System Pilot (PILOTCON) screen.

NOTE: Security level 1 programming is not normally available for the end user and is not shown in this book. For information regarding functions available with Security Level 1, refer to the Installation and Configuration Instructions.

Use the SCROLL UP/SCROLL DOWN buttons or the NAVIGATE knob to step through the options on the Program screen. A description of the highlighted option will appear in the bottom line of the screen and will indicate if the option is not available. Press the SELECT button to select the currently highlighted option.

→ The following program screen options are available:

- ATTACH (all levels)
- Ctlr-ID (all levels)
- ALARM HIST (all levels)
- CONFIG (level 2 only)
- SETPOINTS (levels 2 and 3 only)
- SCHEDULES (level 2 only)
- DETACH (all levels)

→ **ATTACH** — Selecting the ATTACH option from the Program screen displays one of the Attach screens shown in Fig. 7 and 8, according to whether the System Pilot is on the Carrier communicating network or on the local bus.

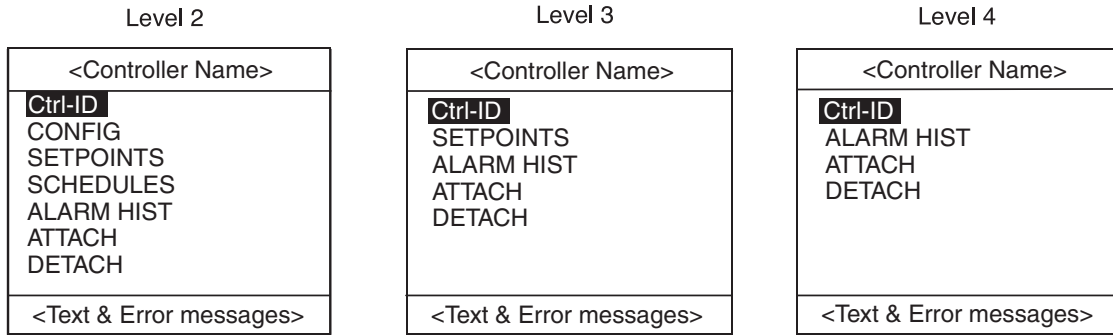
The center portion of the screen shows the 8-character controller name, bus number and element number for the devices to which the System Pilot can attach. The first entry in the list always displays the default device and shows “Default” instead of the actual controller name.

The user can use the SCROLL UP/DOWN, NAVIGATE, or PAGE UP/PAGE DOWN buttons to scroll through the list of devices. To attach to a device, position the cursor on the device and press SELECT.

NOTE: Editing the device list is restricted to security level 1.

If the System Pilot is already attached to the specified address, the System Pilot will display the message “Reattach?” followed by three softkeys displaying YES, NO, and ESC. Use the NAVIGATE rotary knob to move between the soft keys and press SELECT. The user can also press EXIT to erase the prompt and remain in the Attach screen.

If the System Pilot attaches to an un-addressed VVT® Zone Controller, it will display the Zone Controller’s Ctlr-ID screen as an indication to the user that the Zone Controller’s address has not been set. This screen will show the controller element number as 0, even though the controller will actually be at its default element number of 140. The user can press EXIT to exit the System Pilot’s default screen. When the System Pilot attaches to an addressed Zone Controller, the System Pilot will bring up the standard Zone Controller Default screen.



→Fig. 6 — Program Screens

Attach to Controller		
Name	Bus#	Element#
Default	0	12
CTRL1	1	7
CTRL2	10	16
CTRL3	0	125
	0	0
	0	0

<Text & Error messages>

**Fig. 7 — Attach Screen
(System Pilot on Carrier Communicating Network)**

Attach to Controller		
Name	Bus#	Element#
Default	0	12
SYSPILOT	0	235

<Text & Error messages>

**Fig. 8 — Attach Screen
(System Pilot on Local Bus)**

Controller ID	
CTRLNAME	
Generic controller	
CESR123456-99	
Version 7.89	
Bus Number	0
Element Number	123
Baud Rate	9600

< Text & Error messages >

Fig. 9 — Controller ID Screen

→ CTRL-ID — Selecting the Ctrl-ID option from the Program screen displays the Controller ID screen shown in Fig. 9.

The center portion of the screen shows the following information for the controller to which the System Pilot is currently attached. The controller name, device description, software part number, reference number, element number, bus number and baud rate are shown. The device description and reference number will be truncated, if necessary, to fit on the screen. The controller name, device description, address and baud rate are modifiable from security level 1 only.

→ ALARM HIST — Selecting the ALARM HIST option from the Program screen displays the Alarm History screen. See Fig. 10. This screen shows the most recent alarms and alerts generated by the attached device and stored in its Alarm History table.

The top line shows the 8-character device name. The middle of the screen shows the alarms/alerts, displayed one at a time. The bottom line shows the current alarm number and the number of alarms in the table. This line may also display error messages as applicable.

Use the SCROLL UP/DOWN or PAGE UP/DOWN buttons or the NAVIGATE knob to scroll through the alarms/alerts one at a time. If the EXIT button is pressed, the System Pilot will return to the Program screen.

<Controller Name>
Alarm6 14:30 04/23/03 Communication failure - Zone Controller 141
Alarm 1 of 10

Fig. 10 — Alarm History Screen

→ **CONFIG AND SETPOINT TABLES** — If the CONFIG or SETPOINTS table option is selected from the Program screen, and if there is more than one entry in the corresponding table list, then the System Pilot displays a Table List screen. If there is only a single table, the System Pilot displays the contents of the table.

Only two types of configuration tables will be available in Security Level 2, Holiday Configuration tables and Occupancy tables (if attached to a device with an occupancy schedule).

NOTE: The CONFIG function is not available if the System Pilot is set to Security Levels 3 or 4. The SETPOINTS function is not available if the system is set to Security level 3.

The top line of the Table List screen shows the table type that was selected. The bottom line shows text and error messages, as applicable. The center portion of the screen shows the table list. This consists of the table names from the specified list, arranged in alphabetical order.

Use the SCROLL UP/DOWN buttons or the NAVIGATE knob to scroll through the list. Press the SELECT button to display the highlighted line.

If a table type with multiple table entries was selected, the System Pilot will display a Multiple Table List screen with all of the table names associated with that table type.

If it is a table type with a single table entry, the System Pilot will display a Standard Table screen.

Multiple Table List Screen — If multiple tables of a selected type are available, or if SCHEDULE is selected from the Program screen and there are multiple schedules, the System Pilot will display a Multiple Table List screen with all of the table names associated with that table type.

The top line shows the name of the table that was selected. The bottom line shows text and error messages, as applicable. The center portion of the screen lists the associated tables in alphabetical order. If the list has more than 7 tables, then the first 7 tables will be displayed.

Use the SCROLL UP/DOWN buttons or the NAVIGATE knob to scroll through the list. If there are more than 7 tables, pressing PAGE UP/DOWN will display the previous or next 7 names from the list. Press the SELECT button to read the highlighted table from the attached device and display an appropriate screen. A Time Schedule screen is displayed if the table is a time schedule, or a Standard Table screen is displayed for any other table. Pressing the EXIT button causes the System Pilot to return to the Table List screen.

Standard Table Screen — If a table type with a single table entry is selected from a Table List screen, or a table (other than a schedule) is selected from a Multiple Table List screen, the System Pilot displays a Standard Table screen.

The top line shows the 8-character table name. The center portion of the screen shows the table data.

Configuration and set point data is read from the attached device once, when the table is first selected and displayed. There will be one point/decision per line. If there are more than seven decisions/points, the first seven will be displayed. The bottom line displays text and error messages, as applicable.

Use the SCROLL UP/DOWN buttons or the NAVIGATE knob to scroll through the data. If there are more than 7 decisions/points, pressing PAGE UP/DOWN will display the previous or next 7 decisions/points. As the user scrolls through the table, the System Pilot will highlight the current decision/point and if there is an associated point name, the 24-character descriptor will be displayed on the bottom line. If there is no associated point name, the System Pilot will display the 24-character descriptor in the center portion of the screen.

If the SELECT button is pressed and the current point is editable, the System Pilot allows the user to modify the point.

If the EXIT button is pressed, the System Pilot exits to the next higher screen.

SCHEDULE — Selecting the SCHEDULE option from the Program screen and then selecting a Time Schedule table displays the Time Schedule screen as shown in Fig. 11. This example shows all 8 of the time schedule periods, even though only the first 6 (plus the header line) will actually be shown on the System Pilot when this screen is entered.

NOTE: This function is not available if the System Pilot is set to Security Levels 3 or 4.

The top line shows the 8-character schedule name. The bottom line displays text and error messages, if applicable. The center portion of the screen shows the schedule data which are the occupied and unoccupied times for each period and the days to which the period applies. The time is displayed with a 24-hour clock with colon (00:00 to 24:00). The day flags are displayed as 8 bits (0 or 1), for Monday through Sunday plus holiday. The times and day flags are modifiable. The period numbers and the header line are fixed. Each of the day flags is treated as a separate field, therefore, there are 12 modifiable fields per line.

Use the SCROLL UP/DOWN buttons or the NAVIGATE knob to scroll through the table one line at a time. If the SELECT button is pressed, the System Pilot allows the user to modify the data on the current line (starting with Occupied hour). Use the NAVIGATE knob to move within the line. As each field is highlighted, the truncated 24-character descriptor is displayed on the message line. Use the INC/DEC buttons or the MODIFY rotary knob to adjust the highlighted value. If the EXIT button is pressed, the System Pilot will return to the Program screen or the Multiple Table List screen.

DETACH — Select this option from the Program screen to disconnect from the device to which the System Pilot is currently attached. The System Pilot will attach to itself and display the System Pilot default screen.

→ **Modifying Set Points** — The VVT® zone controller default screen displays two set points. The Remote Attach Default screen will display up to two set points. The user can modify the displayed set points by turning the MODIFY rotary knob or pressing the INC/DEC buttons. The displayed set points will blink.

NOTE: This function is not available if the System Pilot is set to security level 4.

The System Pilot will modify a set point subject to the limits read from the controller. If there are two set points, the System Pilot will modify them simultaneously and will preserve the difference between them subject to the limits read from the controller.

The System Pilot has configurable high and low limits for set points, as defined in the System Pilot Configuration Table and the System Pilot remote attach configuration table. On a Remote Attach Default screen, the limits will be applicable to

OCCPC01S			
Per	Occ	Unoc	DOW
1	07:00	08:00	0111 1000
2	08:00	17:00	0111 1100
3	09:00	15:00	10000011
4	00:00	00:00	00000000
5	00:00	00:00	00000000
6	00:00	00:00	00000000
7	00:00	00:00	00000000
8	00:00	00:00	00000000
< Text & Error messages >			

Fig. 11 — Time Schedule Screen

the set points if the set point units are degrees, otherwise, they will be ignored.

The System Pilot's internal limits will not affect the display. The System Pilot reads the set points from the device and displays them as read, even if they are outside the configured System Pilot limits.

Pressing SELECT while a set point is blinking sends the new set point to the controller. Before sending the new set point to the device, the System Pilot will clamp the set point to its own internal limits and will display the clamped set point on the screen. If clamping a set point results in a value that is outside the limits read from the device, the System Pilot will display an error indication ("LIMIT") and will not write the set point to the device.

Pressing EXIT while a set point is blinking will cause the System Pilot to revert to the original set point. Changing the set point without pressing SELECT or EXIT for 15 seconds will also cause the System Pilot to write the new set point to the controller.

The System Pilot will not write set points to the controller unless they have been changed from their original values.

Occupancy Override — To initiate an override from the Zone Controller Default Screen (if the Zone Controller's occupancy status is UNOC), press the SELECT button for less than 3 seconds. The occupancy status will begin to blink. While the occupancy status is blinking, use the INC/DEC buttons or the MODIFY rotary knob to adjust the occupancy status. If the occupancy status is changed to OCC and then SELECT is pressed, the System Pilot sends the occupancy override to the Zone Controller.

If the occupancy status has been changed and the user does not press SELECT or EXIT within 15 seconds, the System Pilot will send the occupancy override to the controller and the occupancy status will stop blinking. If the occupancy status has not been changed, the System Pilot will not send occupancy status.

If the user presses EXIT while the occupancy status is blinking, the System Pilot will revert to the UNOC status. The System Pilot will not change the Zone Controller's occupancy status.

If communication to the Zone Controller fails, the System Pilot will display "COMFAIL" on the bottom line for 5 seconds.

NOTE: An occupancy override from the System Pilot will be summed into the Tenant Billing Option's accumulation of override times. The occupancy override function is not available if the System Pilot is set to security level 4.

Alternate Maintenance Table — To display the System Pilot Alternate Maintenance Table (ALT_DISP), press the SELECT button for at least 3 seconds from the Zone Controller Default Screen. The System Pilot will display the Linkage Coordinator or zone controller Alternate Maintenance Table shown in Fig. 12, depending on whether or not the attached Zone Controller has been designated as a Linkage Coordinator (in the Zone Controller's Linkage Configuration [LINKAGE] Table).

If the Zone Controller is not a Linkage Coordinator, the ALT_DISP table will simply display the zone controller's Points Display Table (POINTS) values. If the Zone Controller is a Linkage Coordinator, the ALT_DISP table will display the zone controller's Points Display Table values followed by the Master Zone Maintenance Table (MZNMAINT) values.

NOTE: The user will not be able to force any values from this table regardless of whether the same point is forcible from any other table.

Use the SCROLL UP/DOWN, NAVIGATE, or PAGE UP/PAGE DOWN buttons to scroll through the table. Pressing the EXIT button causes the System Pilot to return to the Zone Controller Default screen.

Zone Controller

ALT_DISP	
MODE	VENT
TYPE	SNGLDUCT
CNTSP	78.0°F
SPT *	11.0°F
DMPPOS	50% OPE
SAT	0.0°F
Terminal Mode	

Linkage Coordinator

ALT_DISP	
NEXTMODE	VENT
LINKMODE	HEAT
AIRSOURCE	YES
BYPASS	YES
REF_DMD	15.0°F
REF_ZONE	4
Desired System Mode	

Fig. 12 — System Pilot Alternate Maintenance Tables

Bus Scan — If the PAGE UP and PAGE DOWN buttons are pressed at the same time for 3 seconds and if the attached device is a Linkage Coordinator, then the System Pilot will display the Bus Scan screen. See Fig. 13.

NOTE: If the attached device is not a Linkage Coordinator, the System Pilot will ignore this button combination.

Approximately every sixty seconds, the Linkage Coordinator attempts to communicate with its associated Zone Controllers, optional Bypass Controller, and optional Air Source. The status of this communication attempt is shown in the Bus Scan screen.

The top line shows the title "3V Bus Scan: NNN," where NNN is the bus number of the attached device. The next line is the data header, which is shaded gray. The rest of the screen shows the following data from the scanned devices: device address (Addr), device type (DevType), alarm flag (Alm) and status (Stat).

The alarm flag will be Yes if there are outstanding alarms in the device's alarm history table and No otherwise. The status column will display Zone Controller's space temperature, Bypass Controller's duct temperature, or "Fail" if the Linkage Coordinator is unable to communicate with the device. The alarm flag and status will be dashes ("----") for non-3V devices. Temperatures will be displayed with one decimal place. Values of -40.0 and 245.0 F will be displayed for open and shorted sensors.

Use the SCROLL UP/DOWN, NAVIGATE or PAGE UP/PAGE DOWN buttons to scroll through the list of devices.

3V Bus Scan: 123			
Addr	DevType	Alm	Stat
129	Bypass	No	72.6
128	Master	Yes	72.3
127	Zone	No	Fail
126	Zone	No	-40.0
125	Zone	Yes	73.1
124	Other	----	----
<Text & Error messages>			

Fig. 13 — 3V™ Bus Scan Screen

Pressing the EXIT button causes the System Pilot to return to the Master Zone Controller (Linkage Coordinator) Default screen.

Holiday (HOLDYxxS) Configuration Table —

The Holiday Configuration Table is shown in Table 1. The System Pilot has 30 configurable Holiday tables (HOLDY01S – HOLDY30S). An explanation of each configuration decision follows.

START MONTH — Use this decision to indicate the month of the year in which the holiday will begin.

Start Month: Allowable Entries 1 to 12
Default Value 1

START DAY — Use this decision to indicate the day of the month on which the holiday will begin.

Start Day: Allowable Entries 1 to 31
Default Value 1

DURATION — Use this decision to indicate the number of consecutive days that the holiday will last. If you enter 0 in this decision, the holiday schedule will be disabled.

Duration: Allowable Entries 0 = Disable or 1 to 365
Default Value 0

Table 1 — Holiday Configuration (HOLDYXXS)

DESCRIPTION	DISPLAY	POINT	RANGE	DEFAULT
Start Month	XX	MONTH	1-12	1
Start Day	XX	DAY	1-31	1
Duration	XXX	DURATION	0-365	0

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