EMTK-OG-8
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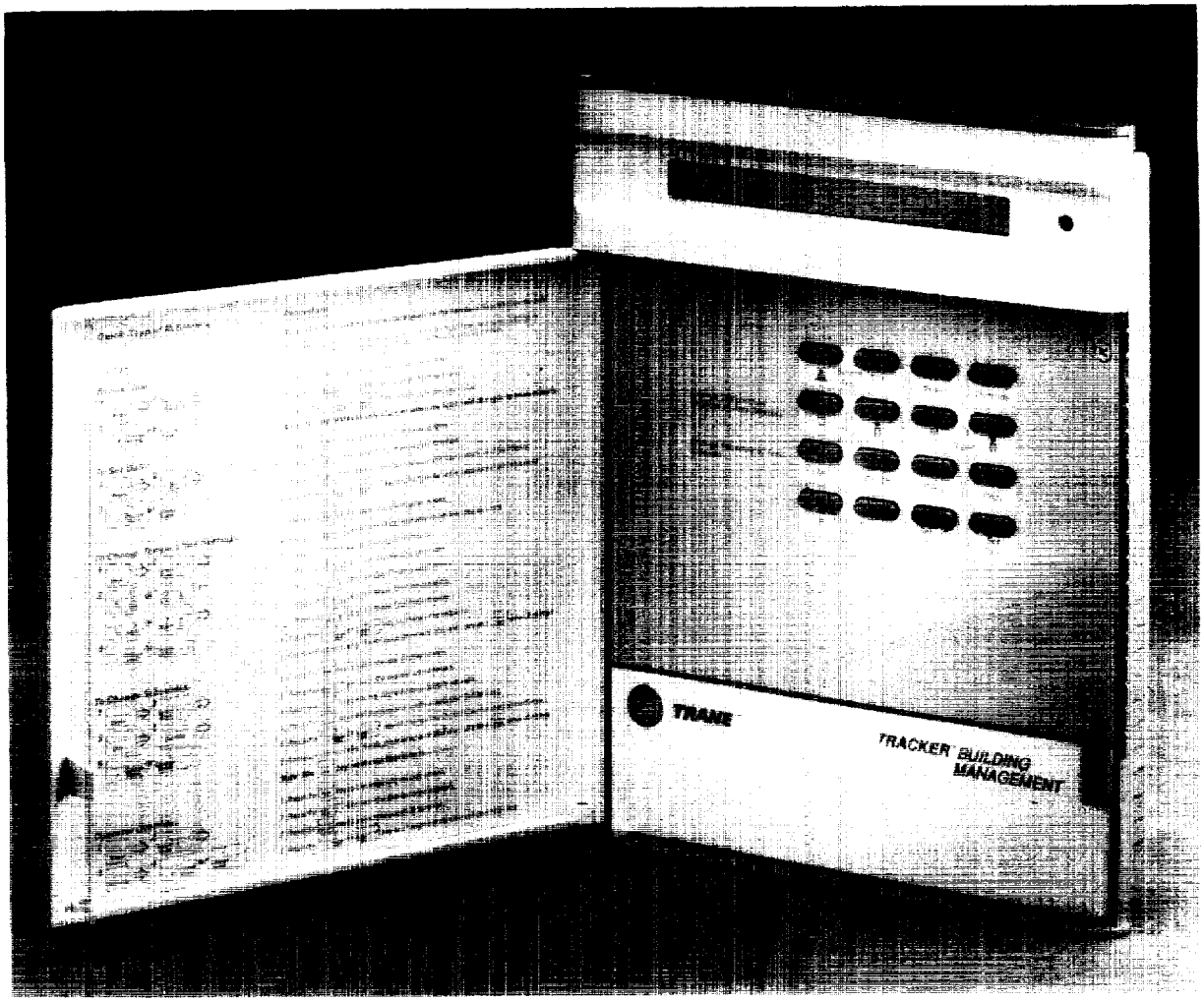
TRANE™

Tracker™

Building Management System

Operator's Guide



Software Version 6.0

Includes Trackers used with:

- Thermostat Control Modules™
- Voyager™ Rooftop Units
- VariTrac™ II Central Control Panels

TABLE OF CONTENTS

About This Manual

Contents

This manual describes the steps required to properly install, set up, and operate the Tracker building management system. Sections in this manual are as follows:

- Software Change History: A chronology of version changes to Tracker software.
- Operation Overview: Information that applies to Tracker operation from both the front panel and remote (RS-232) interface.
- Operation from the Front Panel: Information and procedures for operating the Tracker from the front panel.
- Operation from the Remote (RS-232) Interface: Information and procedures for operating the Tracker from the remote (RS-232) interface (a CRT or PC with terminal emulation software). Includes status, setup, and scheduling menus.

Tracker Naming Conventions

The use of the name *Tracker* in this manual implies Stat 7 and Stat 16. In any case where information is unique to one model, the model is specified.

Warnings and Cautions

Where appropriate, cautionary statements are used to signal procedures or conditions that require particular attention. A WARNING alerts installing contractors and service personnel to potential hazards that could result in personal injury or death. A CAUTION alerts the user to the risk of equipment damage. Your personal safety and the proper operation of these systems depend upon the strict observance of these precautions.

Related Literature

The following literature is referred to or pertains to equipment referred to in this manual.

- Tracker Installation Guide
- Tracker Quick Reference Guide
- Thermostat Control Module Installation/Operation/Maintenance
- Voyager Service Literature
- VariTrac II Central Control Panel Service Literature
- Building Management Network Operator's Guide

Software Change History

New software versions are developed to add capabilities and improve existing software operation. Each new software version includes all of the features in prior versions. Only the latest software version is shipped in new Tracker units. Existing units may have a previous version.

The following traces the history of version changes made to Tracker software.

Version 1.3

- Initial release of Tracker CM.

Version 2.0

- Ability to communicate via direct connection or modem with Building Management Network.
- Ability to configure custom alarms.
- Support for Comfort Manager I+ (with Voyager).
- Auto-naming of Comfort Managers.
- Password security for RS-232 port.
- Ability to set up, monitor, and display kW pulse meter data.
- Trend Log time intervals expanded to include 1, 5, 10, 15, 30, and 60 minutes.
- Includes other minor, miscellaneous changes to Version 1.3.

Version 2.1

- Support for CV models.
- Support for modem communication with Building Management Network software.
- Ability to configure Slave binary outputs as either *open contact = ON* or *open contact = OFF*.
- Ability to trend outdoor air temperature.
- Range for Voyager minimum damper position expanded to allow numbers from 0 to 100 percent.
- Range on analog Custom Alarm high limit expanded to -300 to +300.
- Additional standard UCM diagnostic *Powerfail*.

Version 2.2

- Ability to edit Voyager UCM during an active Timed Override.
- Automatic Logoff of an operator upon disconnection from the modem port while at the Main Menu.
- Restore operation reflects baud rate, outdoor temperature sensor, and kW meter without requiring power cycle.

Version 2.3

- Minimum alarm dial out time reduced to two minutes.
- Voyager default occupied setpoints changed to 74/71 degrees.
- Ability to alarm on a TCM binary input; three additional indexes for TCM custom alarms.

- Download operation clears the RS-232 password; prevents downloading an unknown password.

Version 2.4

- Alarm log entries for "12:00 midnight" appear in the alarm log as *12:01 AM*.
- Includes other minor, miscellaneous changes to Version 2.3.

Version 2.5

- Minor, miscellaneous changes to Version 2.4.

Version 3.0

- Support for two Slave TCMs.
- Demand Limiting.
- Support for Fahrenheit and Celsius temperature units.
- Ability for system to "look back" a day to determine last requested control state.
- Ability to log trends on kW readings.
- Automatic naming of VariTrac I Comfort Manager UCMs.
- Ability to alarm on Fan Fail and Dirty Filter for Voyagers.
- Ability to set system time using individual hours and minutes fields.
- When changing setpoints from front panel display, a message indicates when local setpoints are being used for equipment.
- Front panel area displays indicate when area is in Timed Override or Demand Limiting.
- Ability to specify day, week, and month of start and end for Daylight Savings time.
- Full Voyager status through a VariTrac I Comfort Manager.

Version 4.0

- Support for S7 model.
- Model CV eliminated.
- Automatic configuration of slave TCM binary outputs.
- Optimal Start defaults to ON.
- Slave TCM status screens show custom names for all points as edited.
- Ability to set up custom alarms for occupied times only.

Version 4.1

- Minor, miscellaneous changes to Version 4.0.

Version 4.2

- Ability to use Voyager local minimum position potentiometer.

Version 5.0

- Support for VariTrac II Central Control Panel.
- Option to display front panel and edit terminal screens in French.
- Factory default front panel password.
- Ability to enable and disable Optimal Start from the front panel.

- Ability to edit holiday dates from front panel.
- Ability to enable and disable Daylight Saving Time from the front panel.
- Former model CM becomes Stat 16.
- Former model S7 becomes Stat 7.

Version 5.1

- Adds Communication Loss as a custom alarm option for all devices.
- Supports Timed Override CANCEL from sensors with that option.
- Ability to toggle the occupied fan mode for TCM and Voyager from ON to AUTO from the front panel.
- Ability to toggle the setpoint mode for TCM and Voyager from LOCAL (sensor thumbwheel) to EDITED (panel).
- Ability to change temperature units from the front panel (Fahrenheit, Celsius).
- Ability to change languages from the front panel (English, other).
- Option to display front panel and edit terminal screens in Spanish.
- New default TCM name format.
- Support for VariTrac II Central Control Panel Version 2.0.
- Support for Voyager commercial units (constant volume only).
- Voyager damper position is now driven to zero in the unoccupied mode.

Version 6.0

- Elimination of Comfort Manager support to allow for expanded support of VariTrac II Central Control Panels.
- Naming and other changes to allow Tracker to become the functional replacement for ComforTrac.
- Added 24-hour and 35-day energy consumption history to trend logs.
- Ability to dial out custom alarms via a modem to a remote PC or printer without special software.

Operation Overview

Operator Interface

The operator interface to Tracker communications is both a 16-key front panel keypad with a two line by 40 character display, and a full access edit terminal port to be used to directly connect to a "dumb" terminal display (ASCII terminal) device. *The Tracker panel can be installed without the use of an edit terminal device for setup.*

Additionally, an optional modem port can be connected to a telephone line for remote access. Remote access via modem can be accomplished through a PC with terminal emulation or Building Management Network software.

The Tracker is shipped with pre-programmed default values that include automatically assigned default point names for undefined connected devices.

Note: *Although the Tracker automatically assigns most device names, an RS-232 device is required to change the names; this cannot be done from the front panel keypad.*

With pre-programmed default values, the connected devices operate in standalone modes without Tracker override control. Refer to the device communications information in this guide and individual device (Thermostat Control Module, Voyager, and VariTrac II Central Control Panel) operation manuals for details on standalone and communication loss operation.

The operator interfaces with the Tracker via:

- A 16-key front panel keypad with a two line by 40 character display
- An RS-232 communications port that is connected to a "dumb terminal" display device
- A modem

The dumb terminal can be either a CRT terminal or a personal computer operating in a dumb terminal emulation mode. All setup and status information is available via this terminal.

An optional telephone modem communication port can be connected directly to a telephone line for remote access. Refer to page 29, *Operation from the Remote (RS-232) Interface* for details on setting up and using communications with the Tracker.

Note: *The front panel keypad, RS-232 port, and the modem port cannot be used concurrently. Only one communication port can be active at one time. If access through another port is attempted during communications with one port, the message "COMMUNICATING WITH OTHER OPERATOR" appears on the display.*

To allow another operator immediate access to another communication port, you must log off from the active port. To do this:

- Press Begin from the front panel keypad to return to the idle display.
- Press the Escape key (Esc) from the RS-232 or modem port to return to the Tracker Main Menu.

Capabilities Accessible from Interface Options

The capabilities and information available to the Tracker operator differ depending on the interface option used. Many Tracker capabilities can be accessed using exclusively the 16-key keypad and two-line display. A full screen edit device can be used to access additional Tracker capabilities.

The following information summarizes the capabilities accessible using the different Tracker interfaces:

- Front panel LCD and keypad
- Remote (RS-232) Interface (edit terminal)
- Modem port

Capabilities accessible from the front panel

The Tracker front panel LCD and keypad provide simple monitoring and control of a Tracker area, including the following functions:

- View outside air temperature and kW (if equipped).
- Change system time and date.
- View alarm log, which displays alarm occurrence, time, date, and the "return to normal" condition.
- Change an area's cooling or heating setpoint.
- Edit time of day schedules.
- Copy an area's daily schedule to another day(s).
- Copy an area's weekly schedule to another area.
- Initiate or cancel a timed override.
- Enable or disable optimal start.
- Enable or disable Daylight Saving Time.
- Edit holiday dates.
- Change languages for screen displays (English, alternate language).
- Change temperature unit displays (Fahrenheit, Celsius).
- Toggle occupied fan mode for TCM and Voyager between ON and AUTO.
- Toggle setpoint mode for TCM and Voyager between LOCAL and EDITED.

Capabilities accessible using the remote (RS-232) interface

The Tracker remote (RS-232) interface allows access to all Tracker equipment setup, status and setpoint information and software functions, including the following capabilities:

- All the capabilities and information available via the front panel LCD and keypad are also available via the RS-232 port, except timed override and weekly schedule copying from one area to another.
- Modify the Tracker system configuration, which includes: name, page length, baud rates, holiday dates, time, and date.
- Set up Tracker custom alarm assignments.
- Set up and view trend logs and energy history.
- Set up Tracker security levels and passwords.
- View and edit status, setpoints, and setup information, including all schedules, for: TCM, Slave TCM, Voyager Rooftop, VariTrac II Central Control Panel Unit Control Module (UCM), and VariTrac II Central Control Panel.
- Set up Demand Limiting function (Stat 16 only).

Capabilities accessible using the modem port

All remote (RS-232) interface functions are available from the modem port, plus the following functions:

- System save (BMN software required).
- System restore (BMN software required).
- Alarm dial out.
- Dial in for monitoring and editing.

Security Overview

Tracker allows a variety of security options to be configured for front panel LCD and keypad users. Security options must be configured via the edit terminal or modem port. Access through these ports is also controlled by a password. The RS-232 password is selected from the Tracker System Menu.

Front panel security supports one password with a two-level system. Operators will be prompted for a password if one is required. Refer to *Security Setup* later in this manual for more information about password setup.

In addition, the front panel door can be secured closed using a Phillips screw. Refer to the *Mounting* information in the Tracker Installation Guide for details about the front panel door screw.

Time of Day Scheduling Overview

Time of Day Scheduling provides time of day start/stop and optimal start. The Tracker ships with a default set of pre-programmed comfort parameters, and thus requires a minimum amount of operator editing at system start-up. Daily start and stop times can be edited from the front panel keypad or using the remote (RS-232) interface. Using the Optimal Start feature, the Tracker determines when each unit should turn on to reach setpoint at the specified times.

VariTrac zones, Voyager Rooftops, Thermostat Control Modules and slave Thermostat Control Module binary outputs can be scheduled ON/OFF (Day/Night or Occupied/Unoccupied) through the Tracker Time of Day Schedules. The schedule for each area consists of two ON and two OFF times per day. Each area (per device) has separate daily schedules to follow for Monday through Sunday, plus one holiday and one exception schedule, as defined below.

Note: *Exception schedules have priority over all schedules, and holiday schedules have priority over daily schedules. Daily schedules have the lowest priority.*

Daily Schedule

Each connected device can be configured with a different schedule for each day of the week (Monday through Sunday). For instance, an office that is open Monday through Friday can follow different schedules on the weekend. Daily schedules can be edited from the front panel keypad or from a remote interface.

Holiday Schedule

A holiday schedule can be configured for each device. Using the front panel keypad or a remote editing device, up to 24 dates can be designated as holidays. On a specified holiday date, each piece of equipment or slave TCM binary output load follows its own holiday schedule, reverting to the normal daily schedule the next day.

Exception Schedule

An exception schedule is a one-time-only, "throw away" schedule. An exception schedule can be configured for each device for a specific date. After that date, each piece of equipment reverts to its normal daily schedule. For example, a school may use an exception schedule for a snow day shutdown or a meeting in the cafeteria.

or a retail space may use an exception schedule for an inventory day. The exception schedule and date can be edited from the front panel keypad or from a remote interface.

Day-to-Day Program Continuity

After a communications loss or power failure, a device is controlled to its last specified state for the current day. If no action is found for the current day, the Tracker "looks back" one day to the previous day's schedule to determine the last specified control action. If no action is found on either day, the device defaults to its ON (occupied) state. To ensure control continuity upon power loss, the schedule for each device should contain at least one control action on each day. For days that contain no other scheduled action, a simple way to accomplish this is to enter a First START or First STOP, as desired, at 12:01 a.m. For example, an area may be scheduled off on Friday at 5:00 p.m., and on again Monday at 7:00 a.m. This area should then be scheduled so both Saturday and Sunday have a First STOP at 12:01 a.m.

Device Communications

The Tracker communicates with individual Thermostat Control Modules, VariTrac II Central Control Panels, and Voyager Micro Rooftops for the purpose of collecting and distributing device operating parameters. VariTrac zone dampers communicate via the VariTrac II Central Control Panel.

Functional Differences Between Models

There are two primary differences between the Stat 7 and Stat 16 models:

1. The Stat 16 can communicate with a greater number of equipment units than the Stat 7.
2. The Stat 16 contains the Demand Limiting function; the Stat 7 does not.

Table 1 lists the total device counts for each Tracker model.

Table 1
Device Counts for Tracker Models

Stat 16	12	12	0	8	2
Stat 7	7	7	0	4	2

Note: *Total device count on a Stat 16 may not exceed 16 plus 2 Slave TCMs. Total device count on a Stat 7 may not exceed 7 plus 2 Slave TCMs.*

Device communication includes uploading and downloading day/night heating and cooling setpoints, day/night time of day schedules, and device status/setup data.

When communications are established, each TCM, VariTrac II Central Control Panel, VariTrac zone damper (VAV UCM), and Voyager Rooftop is automatically named by the Tracker. Binary outputs on a slave TCM are also automatically named. Refer to Table 2 for the default names. The names can be changed in the setup menus using a remote (RS-232) interface. All these names, except VariTrac II Central Control Panel names, appear on the front panel display.

Each device that represents a temperature-controlled space (Thermostat Control Module, Voyager Rooftop, or VariTrac zone damper) is automatically assigned to a Tracker "area." Slave TCM analog and binary inputs can be assigned to areas (for status and alarms), and slave TCM binary outputs are assigned to areas (for time of day scheduling) by using a remote interface. An Equipment Worksheet is provided in Appendix A at the end of this manual to help with customizing equipment names.

Note: *Areas are assigned automatically by the Tracker when a device is given a name. These areas provide the platform for Tracker to report and receive information from the front keypad for each connected device.*

Note: *Each VariTrac zone damper (VAV UCM) connected to a VariTrac II Central Control Panel represents a Tracker area. Because it is the VariTrac II Central Control Panel group that is actually scheduled, modifying a VAV UCM schedule also modifies all other VAV UCMs assigned to the same Central Control Panel group. The Central Control Panel has four group schedules.*

Default Operation Mode

After initial installation, the Tracker is ready to operate using default "*comfort*" setpoints. Even before the unit is programmed for its specific building, it controls zones and areas to general comfort temperatures. The default schedules for TCMs, Slave TCMs, Voyagers, and VariTrac II Central Control Panels are "occupied" (ON) 24 hours a day. The Daylight Saving Time and Optimal Start functions default to ON. A front panel password is set at the factory.

Table 2
Default Device Names Assigned By Tracker

Thermostat TCM	Slave TCM (Binary Outputs)	Voyager	VariTrac II Central Control Panel	VariTrac II Central Control Panel UCM
TCM AC UNIT 1	SLAVE 1 BOP 1	ROOFTOP V1	VARITRAC 2 CCP 1	V2-CCP 1 UCM 01
TCM AC UNIT 2	SLAVE 1 BOP 2	ROOFTOP V2	VARITRAC 2 CCP 2	V2-CCP 1 UCM 02
TCM AC UNIT 3	SLAVE 1 BOP 3	ROOFTOP V3	VARITRAC 2 CCP 3	V2-CCP 1 UCM 03
TCM AC UNIT 4	SLAVE 1 BOP 4	ROOFTOP V4	VARITRAC 2 CCP 4	V2-CCP 1 UCM 04
TCM AC UNIT 5	SLAVE 1 BOP 5	ROOFTOP V5	VARITRAC 2 CCP 5	V2-CCP 1 UCM 05
TCM AC UNIT 6	SLAVE 1 BOP 6	ROOFTOP V6	VARITRAC 2 CCP 6	V2-CCP 1 UCM 06
TCM AC UNIT 7	SLAVE 2 BOP 1	ROOFTOP V7	VARITRAC 2 CCP 7	V2-CCP 1 UCM 07
TCM AC UNIT 8	SLAVE 2 BOP 2	ROOFTOP V8	VARITRAC 2 CCP 8	V2-CCP 1 UCM 08
TCM AC UNIT 9	SLAVE 2 BOP 3	ROOFTOP V9	—	V2-CCP 1 UCM 09
TCM AC UNIT 10	SLAVE 2 BOP 4	ROOFTOP V10	—	V2-CCP 1 UCM 10
TCM AC UNIT 11	SLAVE 2 BOP 5	ROOFTOP V11	—	V2-CCP 1 UCM 11
TCM AC UNIT 12	SLAVE 2 BOP 6	ROOFTOP V12	—	V2-CCP1 UCM12
—	—	—	—	V2-CCP1 UCM13
—	—	—	—	V2-CCP1 UCM14
—	—	—	—	V2-CCP1 UCM15
—	—	—	—	V2-CCP1 UCM16

Notes:

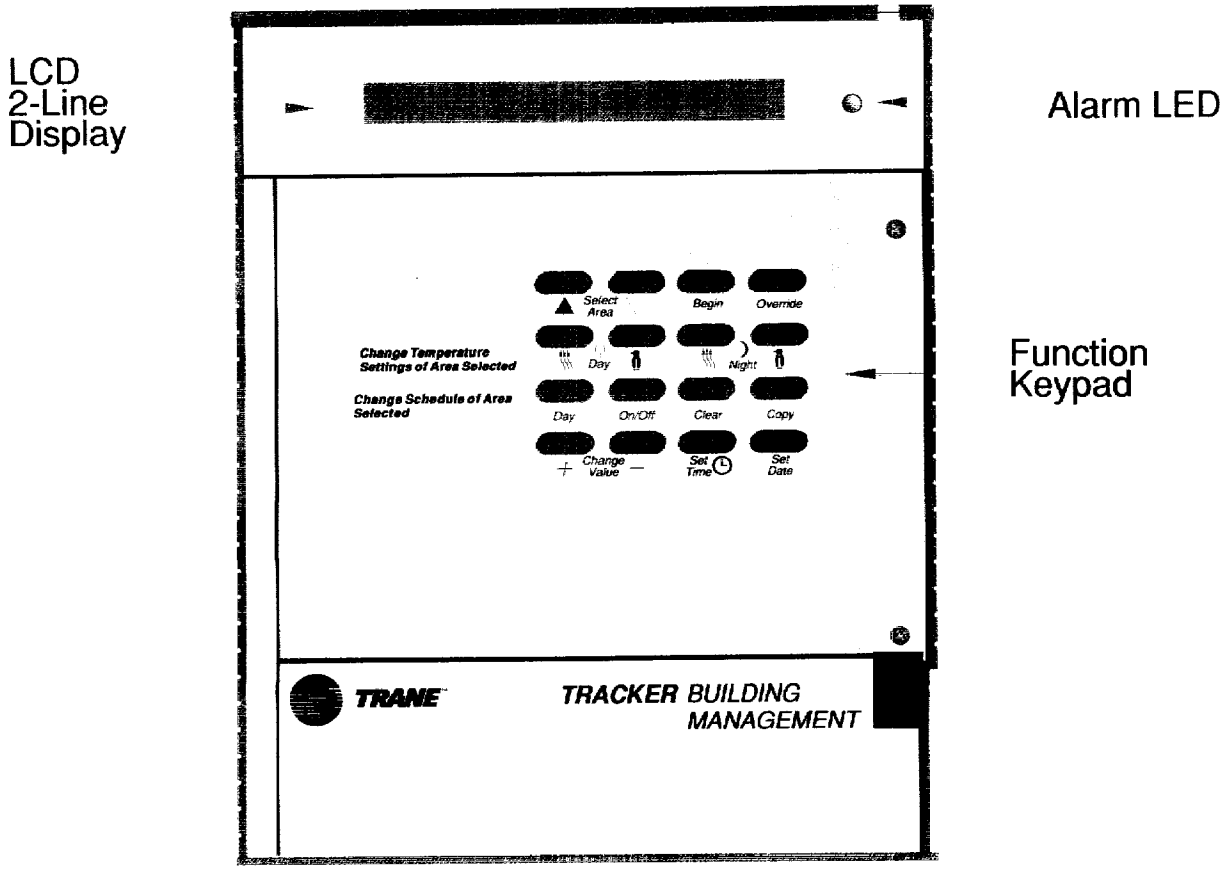
1. *The default names for VariTrac II Central Control Panel UCMs include the number of the Central Control Panel. For instance, VAV #9 on Central Control Panel #2 is named* ***V2-CCP 2 UCM 09.***

Operation from the Front Panel

The Tracker front panel contains 16 keys and a two line by 40 character LCD for display. This interface allows you to change commonly used parameters and to view status information. The Tracker front panel is shown in Figure 1. The following functions are available from the Tracker front panel:

- Setting time and date
- Editing time of day schedules
- Editing holiday dates
- Changing day and night cooling and heating setpoints
- Copying schedules
- Initiating or canceling operator timed override
- Enabling or disabling Optimal Start
- Enabling or disabling Daylight Saving Time
- Changing temperature units from Fahrenheit to Celsius.
- Changing language display from English to an alternate language.
- Toggling the occupied fan mode for TCM and Voyager from ON to AUTO.
- Toggling the setpoint mode for TCM and Voyager from LOCAL to EDITED.
- Viewing the alarm log

Figure 1
Tracker Front Panel



Front Panel Operator Security

Access to editable items on the Tracker is protected by two levels of keypad security. The first level of security (Level 0) does not require a password, while the second level of security (Level 1) does require a password. The password can be entered using keys on the front panel keypad.

The following default password is set at the factory. Press these keys in this order:

The default password can be changed using an edit terminal only. For information on editing the password or security levels, refer to *Tracker System Setup* in the section on Operation from the Remote (RS-232) Interface.

When an editable item requires a password, the following message appears on the display:

PLEASE ENTER PASSWORD

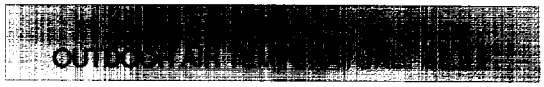
If the password is entered incorrectly, the Tracker returns to the previous screen and asks again for the password. The Tracker automatically logs off after five minutes if no keys are pressed.

In addition, a Phillips screw can be used to secure the closed front panel door to avoid tampering. Refer to the section on *Mounting instructions* in the Tracker Installation Guide for details on the front panel door screw.

Displays

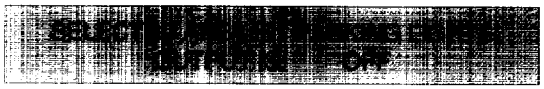
Idle Display

The information that is shown on the LCD when it is not in use is called the Idle Display. This includes time, date, outdoor air temperature (if a sensor is installed), and kW (if a pulse weight is defined in the Demand Limiting System Setup). The Idle Display can be brought back at any time during panel operations by pressing the Begin key. Here is an example of the Idle Display:

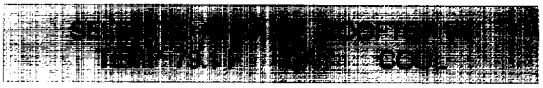


Equipment Status Displays

Status displays for slave TCM analog inputs, binary inputs, and binary outputs indicate the point name and status/value. Here is an example of a slave TCM status display:



The status displays for Voyagers Rooftops, VariTrac II UCMs, and TCMs indicate the equipment name, space temperature, occupied or unoccupied mode, and heating or cooling mode. Here is an example of a Voyager Rooftop status display:



Here is an example of a VariTrac II Central Control Panel UCM status display:

Here is an example of a TCM status display:

Operator Display Messages

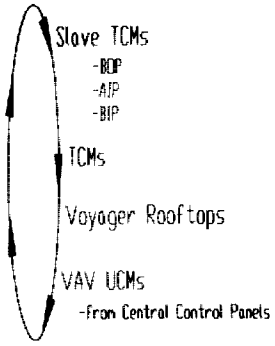
Some operator messages displayed on the front panel are accompanied by the phrase "Please wait." Simply wait for the display to clear and the screen to return before pressing any keys. This helps avoid further display delays.

Zone Display Sequence

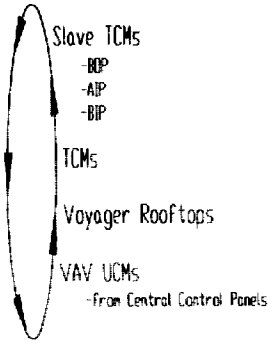
When performing functions such as schedule editing and copying from the front panel display, you can scroll through the list of available zones. Zone types are displayed in the following order:

- Slave TCMs
- TCMs
- Voyager Rooftops
- VAV UCMs

The display is a "circular" queue, through which you can scroll up or down. For example, when scrolling *down* using the Area Down key, the Slave TCMs are displayed first, followed by TCMs, Voyager Rooftops, and VAV UCMs. After the last VAV UCM is displayed, the next zone to be displayed is the first Slave TCM:



When scrolling *up* using the Area Up key, after the first Slave TCM is displayed, the next zone to be displayed is the last VAV UCM:



Zone/Area Naming Conventions

Climate controlled zones and slave TCM inputs and outputs are referred to as *areas* on the Tracker LCD. Voyagers and Thermostat mode TCMs are defined in the Tracker as each serving a *zone* (or area). VariTrac II Central Control Panel zone dampers (UCMs) are defined as each serving a *zone* (area). Because a Central Control Panel can have up to 16 VAV UCMs connected to it, up to 16 *areas* (comfort zones) per Central Control Panel can be displayed on the Tracker.

Each binary output, binary input, and analog (temperature) input on a TCM in the slave mode can be displayed as an *area* on the Tracker LCD. The inputs on a slave TCM must be named, using an edit terminal, for them to appear as an area on the LCD.

Areas that can be displayed on the LCD are as follows:

LCD Areas

Voyager	(Constant Volume)
Thermostat Control Module (TCM)	(Constant Volume)
VariTrac II Central Control Panel VAV UCM	(Variable Volume)
Slave TCM Binary Outputs	
Slave TCM Binary Inputs	
Slave TCM Temp. (Analog) Inputs	

Areas that refer to comfort zones, Voyagers, TCMs, or VAV UCMs can also be called *zones*.

Checking Model and Version Number

To check the model and version number from the Tracker front panel, press the Override key at the Idle Display.

Setup of VariTrac Panels

VariTrac II Central Control Panels are not displayed at the front panel. Because of this, an edit terminal is recommended to set up Central Control Panels.

Setting Time and Date

Use the following procedure to set the Tracker time and date from the front panel:

1. Press 

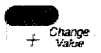
   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Use this key to select the *set time* function.

3. Press 

   Press this key again to position the cursor under one of the two time fields (hours or minutes).

4. Press  or 

   Press either of the above keys. The Change Value + key increases the value and the Change Value - key decreases the value. Hold down the key to make the value change at a faster rate.

5. Press 

   Use this key to select the *set date* function.

6. Press 

   Pressing this key again positions the cursor under one of the three date fields (day, month, year).

7. Press  or 

   The Change Value + key increases the value of the field, while the Change Value - key decreases the value of the field. The day of the week automatically changes when the date is changed.

6. Press the Begin key to return to the Idle Display.

Editing Time of Day Schedules

(Weekday, Holiday, and Exception Schedules)

Use the following procedure to edit Time Of Day Schedules from the front panel:

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing this key selects an area: TCM, VariTrac II Central Control Panel UCM (group), Voyager Rooftop, or Slave TCM binary output. The Select Area Up key can be pressed any time after the first area has been selected.

3. Press 

   Pressing the Day key selects the desired day, holiday, or exception schedule to be edited or viewed.

Note: *To change the exception schedule date, select the exception schedule. Press the Set Date key, then press the Change Value + or Change Value - key.*

Note: *If no Holiday schedule is configured for an area and the Tracker panel goes into a holiday date, the area remains in the state to which it was last controlled.*

4. Press 

Pressing the On/Off key switches between the different ON/OFF fields. Two start and two stop times are available for each area. Each time this key is pressed, the cursor moves to the next start or stop time.

5. Press 

or 

Pressing the Change Value + or Change Value - keys changes the times. To reset all fields to -:-, press the Clear key. To toggle between the hours and minutes fields, press the Set Time key.

The Tracker can be configured to provide optimal start operation for all temperature control devices. Optimal start automatically adjusts the starting time of HVAC equipment so that the occupied setpoints are achieved at the scheduled time. For further details on this function, refer to the section on *Enable/Disable Optimal Start* on page 20.

Note: *The first time the + or - key is pressed to edit a scheduled time, the following message appears as a reminder for VariTrac II Central Control Panel UCMs:*

THIS CHANGE MAY AFFECT OTHER AREAS (PLEASE WAIT).

Wait until the message clears, then resume editing.

Note: *Times must be entered on the appropriate day. For example, if equipment is to turn ON Monday at 9:00 p.m. and OFF four hours later at 1:00 a.m. Tuesday, the OFF time must be on Tuesday's schedule.*

6. Press the Begin key to return to the Idle Display.

Note: *Exception schedules have priority over all schedules, and holiday schedules have priority over daily schedules. Daily schedules have the lowest priority.*

Note: *After a communications loss or power failure, a device is controlled to its last specified state for the current day. If no action is found for the current day, the Tracker "looks back"* ***one*** *day to the previous day's schedule to determine the last specified control action. If no action is found on either day, the device defaults to its ON (occupied) state. To ensure control continuity upon power loss, the schedule for each device should contain at least one control action on each day.* ***For days that contain no other scheduled action,*** *a simple way to accomplish this is to enter a First Start or First Stop, as desired, at 12:01 a.m. For example, an area may be scheduled off on Friday at 5:00 p.m., and on again Monday at 7:00 a.m. This area should then be scheduled so both Saturday and Sunday have a First Stop at 12:01 a.m.*

Copying Daily Schedules

Once a schedule is entered for a particular day in an area, it can be copied to other days within that same area. All four times are copied to the desired day(s). Use the following procedure to copy daily schedules:

1. Press 

The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

Pressing the Select Area Down key selects an area: TCM, VariTrac II Central Control Panel UCM (group), Voyager Rooftop, or slave TCM BOP. The Select Area Up key can be pressed any time after the first area has been selected.

3. Press 

Continue pressing the Day key until the desired day to be copied appears on the display.

4. Press 

Pressing the Copy key selects the *copy* function. The display shows the possible days to *Copy To*.

5. Press 

Continue pressing the Day key until the cursor is located under the desired day to *Copied To*.

6. Press 

Press this key to copy the schedule.

7. Continue copying schedules in the selected area or press the Begin key to return to the Idle Display.

Copying Area Schedules

Once a schedule is entered for all of the days in a particular week, it can be copied to other areas. All four times for each day are copied to the selected area. Use the following procedure to copy area schedules:

1. Press 

The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

Pressing the Select Area Down key selects the weekly schedule that is used as the source ("copy from") schedule. The Select Area Up key can be used any time after the Select Area Down key is initially pressed.

3. Press 

   Pressing the Copy key initiates the copy function.

4. Press 

or 

   Continue pressing either the Select Area Up or Select Area Down key to select the area to which the schedule is copied.

5. Press 

   Pressing the Copy key copies the schedule to the selected area.

6. Continue copying schedules to selected areas or press the Begin key to return to the Idle Display.

Enable/Disable Optimal Start

The Tracker can be configured to provide optimal start operation for all temperature control devices. Optimal start automatically adjusts the starting time of HVAC equipment so that the occupied setpoints are achieved at the scheduled time. If a device is scheduled ON at 6:00 a.m., the device turns ON sometime prior to 6:00 a.m. in order to bring that area's temperature up to setpoint by 6:00 a.m. (Slave Thermostat Control Module binary outputs are not affected by optimal start.) The following devices can be optimally started:

- Voyager Micro Rooftops
- Thermostat Control Modules (TCMs)
- VariTrac II Central Control Panel Groups

Note: *The maximum optimal start time for a device is two hours.*

The optimal start calculation begins with a 6° per hour recovery rate. This rate is adjusted daily or at each start time based on the previous day's start time performance.

For example, if a zone is optimally started with a recovery rate of 6° per hour and the area temperature is 6° from the DAY setpoint, the Tracker "starts" the controlled device one hour before the edited ON time. If the area fails to meet the DAY setpoint in one hour, the rate decreases to 5° per hour. This causes the device to start earlier the next day, if the same temperature conditions exist.

Note: *If the device is a VariTrac II Central Control Panel group, the lowest numbered member UCM temperature and setpoints are used.*

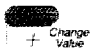
Use the following procedure to enable or disable Optimal Start from the Tracker front panel.

1. Press 

The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press  

   Pressing the Override key *twice* selects the *optimal start* function.

3. Press  or 

   Pressing the Change Value + key enables Optimal Start. Pressing the Change Value - key disables Optimal Start.

4. Press the Begin key to return to the idle display.

Changing Heating and Cooling Setpoints

Tracker allows you to edit a set of setpoints for each temperature control device. The set includes occupied (day) and unoccupied (night), heating and cooling setpoints. Refer to the individual controller's operation manual for details on temperature control sequences. Occupied (day) and unoccupied (night) heating and cooling setpoints can be changed from the Tracker front panel as follows:

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Press the Select Area Down key to select a zone: Thermostat Control Module, VariTrac II Central Control Panel UCM (group), or Voyager Rooftop. The Select Area Up key can be pressed any time after the Select Area Down key is initially pressed.

3. Press  or 

    or 

   When one of these keys is pressed, the display shows the name of the zone and the selected setpoint (Day Heating, Day Cooling, Night Heating, or Night Cooling).

4. Press  or 

   Use the Change Value + or Change Value - keys to change the value of the setpoint.

5. Press the Begin key to return to the Idle Display.

Note: *The Occupied (Day) setpoints shown at the front display are the edited setpoints for the area selected. If the area is using thermostat or wall-mounted setpoints and the area is occupied, then the setpoints displayed and editable at the front panel are not active setpoints. The following message appears on the bottom line of the display: DEVICE USING LOCAL SETPOINTS. See Changing Setpoint Mode on page 26 for further information.*

Initiating Timed Override

Timed Override is used to change equipment from the unoccupied (night) mode to the occupied (day) mode for a limited period of time. This is typically used to enable comfort conditioning while someone stays late in the area.

Each area controlled by the Tracker, including Slave TCM binary outputs, can be overridden from night setpoints back to day setpoints at the front panel. Slave TCM binary outputs are overridden from Off to On. The zones have a default timed override period that can be changed at the front panel from 0 to 4 hours in 15-minute intervals. If zero is selected, the override period is canceled. Use the following procedure to initiate timed override and/or change the time period from the front panel.

1. Press 

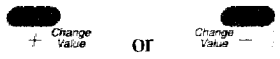
   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Select Area Down key selects an area: TCM, VariTrac II Central Control Panel UCM (group), Voyager Rooftop, or Slave TCM BOP. The Select Area Up key can be pressed any time after the Select Area Down key is initially pressed.

3. Press 

   Pressing the Override key selects the *override* function. The displayed override time is the default time. The factory default time is 2 hrs. (The *default* time can be changed using a remote (RS-232) interface; refer to *Tracker System Setup* on page 87.)

4. Press 

   Press the Change Value + or Change Value - key to change the duration of the override time period. Each time a "+" or "-" key is pressed, the time period is changed by 15 minutes.

Canceling Timed Override

To cancel the timed override, set the override time to 0 (zero) or press the Clear key to set the fields to -:-.

5. Press the Begin key to return to the idle display.

Note: *Timed override can also be initiated and canceled using occupant override ON and CANCEL switch options on Trane zone sensors. If using a zone sensor*

with an override switch, press the ON button and hold momentarily. This initiates the timed override for that area. To cancel the override, press the CANCEL button and hold momentarily. The override is displayed at the front panel.

Enable/Disable Daylight Saving Time

The Tracker automatically implements Daylight Saving Time changes in the Spring and Fall. The Daylight Saving Time function can be disabled from the front panel for locations where it is not used.

Do not confuse enabling the Daylight Saving Time function with enabling the time change. When the function is enabled, the Tracker automatically adjusts the system time for the time change; there is no need to manually adjust the system time.

The Tracker uses the first Sunday in April and the last Sunday in October as default days for the time change. These days can be changed using an edit terminal (refer to the section on *Operation from the Remote (RS-232) Interface* on page 29 for details about changing the date).

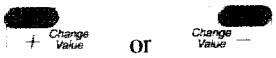
Use the following procedure to enable or disable the Daylight Saving Time function from the front panel.

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Override key *three times* selects the *Daylight Saving Time* function.

3. Press 

   The Change Value + enables the Daylight Saving Time function. The Change Value - key disables the Daylight Saving Time function.

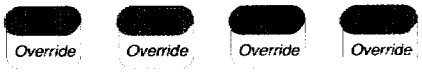
4. Press the Begin key to return to the idle display.

Editing Holiday Dates

Up to 24 dates can be specified as holiday dates from the front panel keypad. Any area with a defined holiday schedule follows that schedule on designated holiday dates. Use the following procedure to enter holiday dates from the front panel.

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Override key *four times* selects the *holiday dates* function.

3. Press  or 

   Pressing the Select Area Up or Select Area Down key selects the desired date to edit. Dates are numbered Holiday Date 01 through Holiday Date 24.

4. Press 

   Pressing the Set Date key moves to the date field. Press this key repeatedly to move to the date, month, or year.

5. Press  or 

   Pressing the Change Value + key or the Change Value - key either increases or decreases the value of the field. Hold down the key to make the value change at a faster rate. If you need to edit another holiday date, return to Step 3.

Clearing a Holiday Date

To clear a holiday date, press the Clear key to set the fields to 00-000-00.

6. Press the Begin key to return to the idle display.

Viewing the Alarm Log

When an alarm is reported to the Tracker, the red LED to the right of the LCD display is lit. The alarm condition is stored in the Tracker alarm log. When an alarm LED appears on the Tracker, the LED can be extinguished by viewing the alarm log. After viewing, the alarm condition remains in the Tracker view-only alarm log.

Alarms stored in the alarm log also contain the time and date that the alarm condition occurred. Refer to Alarms in the section on *Operation from the Remote (RS-232) Interface* on page 29 for details of the Tracker alarming capability.

Use the following procedure to view the alarm log from the Tracker front panel:

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Select Area Up key displays the Alarm Log.

3. Press  or 

   Either press the Select Area Up or Select Area Down key to scroll through the last 32 alarms recorded in the Alarm Log. The latest alarm appears first in the alarm log.

4. Press the Begin key to return to the Idle Display.

Changing Temperature Units

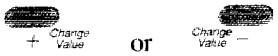
As set at the factory, the Tracker displays all temperatures at the front panel in Fahrenheit units. You can change the units to Celsius using the following procedure.

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Override key *five times* selects the temperature units function.

3. Press 

   Pressing the Change Value + changes the units to Celsius. Pressing the Change Value - key changes the units to Fahrenheit.

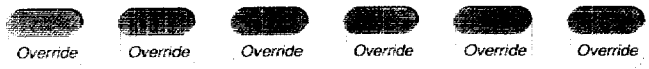
4. Press the Begin key to return to the idle display.

Changing Language Display

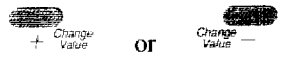
As set at the factory, the Tracker displays all screens at the front panel in English. You can choose to display screens in an alternate language using the following procedure.

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Override key *six times* displays the language selection screen.

3. Press 

   Pressing the Change Value - key changes the display to English. Pressing the Change Value + changes the display to the alternate language.

4. Press the Begin key to return to the idle display.

Changing Fan Mode

The TCM and Voyager occupied fan mode is set at the factory to ON. You can toggle the occupied fan mode between ON and AUTO using the following procedure.

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Press the Select Area Down key to select a TCM or Voyager area. The Select Area Up key can be pressed any time after the first area has been selected.

4. Press 

   Press the On/Off key to display the occupied fan mode selection screen.

5. Press 

or 

   Pressing the Change Value + key changes the occupied fan mode to ON. Pressing the Change Value - key changes the occupied fan mode to AUTO.

4. Press the Begin key to return to the idle display.

Changing Setpoint Mode

The Tracker can obtain setpoints for TCM and Voyager areas from two different sources:

- The thumbwheel on a zone sensor (LOCAL)
- Values edited at the Tracker panel (EDITED)

The TCM and Voyager setpoint mode is set at the factory to LOCAL. You can toggle the setpoint mode between LOCAL and EDITED using the following procedure.

1. Press 

   The display shows the time, day of the week, date, the outdoor air temperature and kW meter value (if used).

2. Press 

   Pressing the Select Area Down key selects a TCM or Voyager area. The Select Area Up key can be pressed any time after the first area has been selected.

3. Press 

or 

Pressing the Day Heat key or Day Cool key selects either Day Heat or Day Cool.

4. Press 

Pressing the On/Off key displays the setpoint mode selection screen.

5. Press 

or 

Pressing the Change Value + key changes the setpoint mode to LOCAL. Pressing the Change Value - key changes the setpoint mode to EDITED.

6. Press the Begin key to return to the idle display.

Note: *When you change the setpoint mode from LOCAL to EDITED on a TCM operating in the thermostat mode, the setpoint values will be at the limit defaults of 40°F (4.4°C) cooling and 95°F(35.0°C) heating. You must return to the Day Heat and Day Cool setpoint screens and edit these values to acceptable Occupied Setpoints.*

When you change the setpoint mode from EDITED to LOCAL on a TCM operating in the thermostat mode, the previously edited setpoint values function as the heating high limit and cooling low limit for the local setpoint knob. You should return to the Day Heat and Day Cool setpoint screens and change these values to the desired limits for the setpoint knob.

Operation from the Remote (RS-232) Interface

Using Remote Interface Menus

The Remote Interface communicates to the Tracker via command-based menus. Communication uses a set of one-key commands. Table 3 lists the keys that can be used in the menus to program the Tracker.

Example: Here is an example using the List and Select commands. To display the Tracker System Menu:

- Press **L** to list the Main Menu. System Setup is choice #3 on the Main Menu.
- Type **3**, then press **S** to select the choice.
- Press **L** to list the System Menu.

Table 3
CRT/Terminal Keys Used for Programming the Tracker

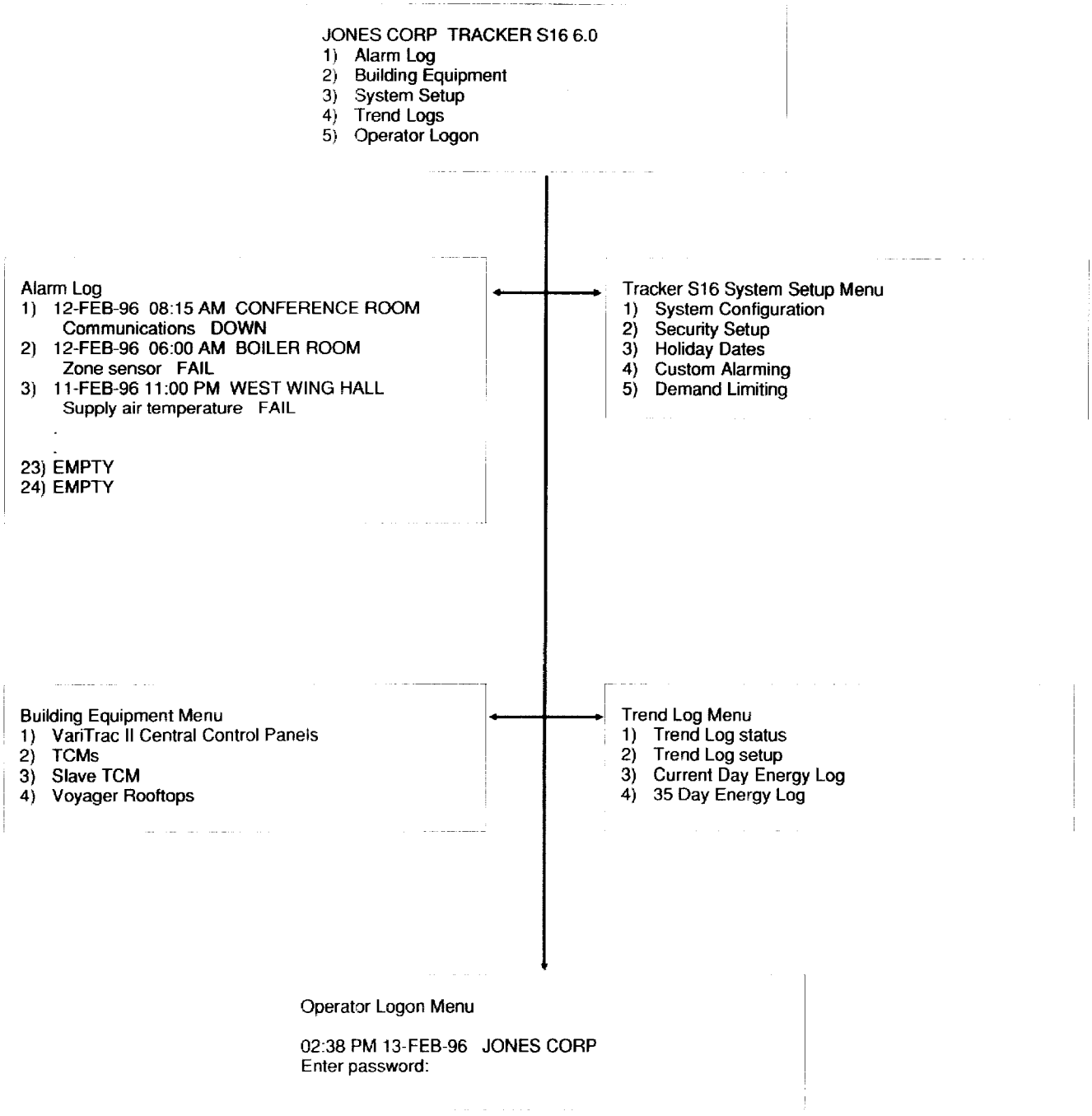
M (Note 3)	Menu	Press M to restore the top of the previous menu or list to the display. Press M repeatedly to return to Tracker Main Menu.
L	List	Press L to display all items in the current menu or list.
S	Select	Press S to select an item on a menu or list. If the cursor is on a menu line, press the corresponding number and S to select that item from the list. If the cursor is on a menu item line, simply press S to select that item.
N (Note 3)	Next	Press N to sequentially advance from one menu item or line to the next. When the last item is displayed, pressing N simply redisplays that item.
P (Note 3)	Previous	Press P to sequentially back up from one menu item or line to the previous one. When the first item is displayed, pressing P simply redisplays that item.
RETURN or ↵ ENTER	Enter	Press RETURN or ↵ ENTER to enter typed data into the system. Pressing either key without first typing data has the same effect as pressing N.
DELETE or ← BACKSPACE	Correct Errors	Press DELETE or ← BACKSPACE to correct typing errors by removing characters before data is entered; that is, before pressing any of the keys listed above.
+	+ or Yes	During programming, press + to choose the + descriptor or to answer YES to YES/NO program entries.
–	– or No	During programming, press – to choose the – descriptor or to answer NO to YES/NO program entries.
0 through 9	0 through 9	Use to enter numerical values.
.	. (Decimal Point)	Typically used for decimal point entries, but can sometimes be used instead of a hyphen (-) or colon (:).
-	- (Hyphen)	Use to properly format date entries (e.g., DD-MMM-YY).
:	: (Colon)	Use to properly format time entries (e.g., HH:MM).
' (Note 2)	' (Single Quote)	Must precede all alphanumeric program entries (e.g., point names).
ESC	Escape	Press ESC to return to Tracker Main Menu from any menu or list.

Notes:

1. ***All letter keys must be entered as capitals.*** *Whenever using the terminal to communicate with Tracker, ensure that the* ***CAPS LOCK*** *function is* ***ON****.*
2. *To delete alphanumeric data press the single quote (') key, then press* ***RETURN*** *or* ***↵ ENTER***
3. *Preceding* ***M****,* ***N****, or* ***P*** *with a number is equivalent to pressing M, N, or P that number of times. For example, pressing 5N is the same as pressing N five times.*

Tracker Menu Tree

The following menu tree illustrates the Tracker Main Menu and the first level of menus accessible from the Main Menu. Each of these menus is described in order in the following text.



Tracker Main Menu

Figure 2 shows the Tracker Main Menu. This menu appears on the display when the Tracker is initially powered up.

Figure 2
Tracker Main Menu

```
JONES CORP  TRACKER S16 6.0
 1) Alarm Log
 2) Building Equipment
 3) System Setup
 4) Trend Logs
 5) Operator Logon
Type number, press S to select
```

Each of the Tracker Main Menu selections is described in order.

Alarms

Tracker has the capability to annunciate alarms from connected devices. Alarm conditions that exist cause a red light (LED) to turn on. This LED is located on the upper right corner of the Tracker front panel. **Viewing the alarm log at the front panel is the only way to extinguish the alarm light on the panel.** Viewing the alarm log via an RS-232 edit device does not clear the alarm log or extinguish the alarm light on the front panel.

The Tracker alarming capability consists of two different types of alarms:

- **Standard Alarms**
  A predefined set of standard Voyager Rooftop, VariTrac II Central Control Panel and Thermostat Control Module device-specific alarms which automatically trigger an "into alarm" or "restore to normal" entry in the Tracker alarm log.

- **Custom Alarms**
  A set of 24 custom alarms can be configured for applying day and night limits, time delays and dial-out instructions to selected analog and binary information from VariTrac systems, Voyagers, TCMs and Slave TCMs. Custom alarms are selected from a list of Voyager Rooftop, TCM, VariTrac II Central Control Panel and Slave TCM device-specific alarms. In addition, other Tracker points can be configured to be custom alarms.

Alarm Log

The Tracker has an alarm log that maintains a historical record of the last 32 alarms. The alarm log records both "alarm" and "restore to normal" messages. The device name, alarm description, date, and time of occurrence are also displayed.

When a critical custom alarm dials out to a modem receiving device or a PC with Building Management Network software, all standard alarms that have accumulated in the alarm log since the last dialout are transmitted to the receiving device.

The alarm log is not maintained through a power failure, and all alarms are cleared. A "RESTORE TO NORMAL" message is not generated when power is restored.

To clear the alarm log, cycle the power on the Tracker panel.

Figure 3 shows an example of the alarm log.

Figure 3
Alarm Log

```
                                                    Operator Entry
JONES CORP    TRACKER  S16 6.0                            1S

Alarm Log:
1)  12-FEB-96  08:15 AM  CONFERENCE ROOM
      Communications   DOWN
2)  12-FEB-96  06:00 AM  BOILER ROOM
      Zone sensor   FAIL
3)  11-FEB-96  11:00 PM  WEST WING HALL
      Supply air temperature   FAIL
.
31) EMPTY
32) EMPTY
```

Standard Alarms

Standard alarms are predefined in the Tracker. When a standard alarm occurs, the alarm is sent to the alarm log. Standard alarms don't dial out, but are sent along with the custom alarm to an external receiving device when a custom alarm dials out.

Table 4 defines the standard alarming capabilities for each type of Tracker device. These alarms do not automatically dial out.

Table 4
Standard Alarm Descriptors Text and Pairs

	Alarm Descriptor Text	Alarm Descriptor Pair
TCM	Communications	UP/DOWN
	Analog Input 1 (Zone Temp Sensor)	NORMAL/FAIL
	Analog Input 2 (Zone Temp Setpoint)	NORMAL/FAIL
	Analog Input 3	NORMAL/FAIL
Slave TCM	Communications	UP/DOWN
Voyager	Communications	UP/DOWN
	Zone Temp Sensor	NORMAL/FAIL
	Supply Air Temp Sensor	NORMAL/FAIL
	Return Air RH Sensor	NORMAL/FAIL
	Return Air Temp Sensor	NORMAL/FAIL
	Outdoor Air RH Sensor	NORMAL/FAIL
	Outdoor Air Temp Sensor	NORMAL/FAIL
	Defrost Control Input	NORMAL/FAIL
	Zone Cooling Setpoint	NORMAL/FAIL
	Zone Heating Setpoint	NORMAL/FAIL
	Minimum Position Pot	NORMAL/FAIL

Table 2
Standard Alarm Descriptors Text and Pairs (cont.)

	Alarm Descriptor Text	Alarm Descriptor Pair
Voyager	Supply Fan	NORMAL/FAIL
	Heat High Limit	NORMAL/ALARM
	High Temp Input	NORMAL/ALARM
	Dirty Filter	NORMAL/ALARM
	Compressor 1 Lockout	NORMAL/ALARM
	Compressor 2 Lockout	NORMAL/ALARM
	Compressor 1 LPC	NORMAL/ALARM
	Compressor 2 LPC	NORMAL/ALARM
	CC1 Control Circuit	NORMAL/ALARM
	CC2 Control Circuit	NORMAL/ALARM
	Power	NORMAL/FAIL
	Communications	UP/DOWN
VariTrac II Central Control Panel	Supply Air Temp Sensor	NORMAL/FAIL
	Velocity/Pressure Sensor	NORMAL/FAIL
	EEPROM	NORMAL/FAIL
	Priority Shutdown	NORMAL/FAIL
	Power	NORMAL/FAIL
VariTrac II Central Control Panel UCM	Zone Temp Sensor	NORMAL/FAIL
	Zone Temp Setpoint	NORMAL/FAIL
	EEPROM	NORMAL/FAIL

If the VariTrac II Central Control Panel is communicating directly to a Voyager, the following alarms also apply:

Alarm Description Text	Alarm Descriptor Pair
Supply Air Temp Sensor	NORMAL/FAIL
Return Air RH Sensor	NORMAL/FAIL
Return Air Temp Sensor	NORMAL/FAIL
Outdoor Air RH Sensor	NORMAL/FAIL
Outdoor Air Temp Sensor	NORMAL/FAIL
Defrost Control Input	NORMAL/FAIL
Zone Cooling Setpoint	NORMAL/FAIL
Zone Heating Setpoint	NORMAL/FAIL
Minimum Position Pot	NORMAL/FAIL
Supply Fan	NORMAL/FAIL
Heat High Limit	NORMAL/ALARM
High Temp Input	NORMAL/ALARM
Dirty Filter	NORMAL/ALARM
Compressor 1 Lockout	NORMAL/ALARM
Compressor 2 Lockout	NORMAL/ALARM
Compressor 1 LPC	NORMAL/ALARM
Compressor 2 LPC	NORMAL/ALARM
CC1 Control Circuit	NORMAL/ALARM
CC2 Control Circuit	NORMAL/ALARM

The following briefly explains the standard alarms.

TCM Standard Alarms

Communications - Indicates that communication between the Tracker and the TCM has failed. Likely causes are faulty communication link wire (twisted pair) or power loss to the TCM.

Analog Input 1 (Zone Temp Sensor) - Indicates the TCM is not receiving a valid input from the zone temperature sensor thermistor. Likely causes are faulty wiring between the sensor and the TCM, poor sensor location, or a defective sensor.

Analog Input 2 (Zone Temp Setpoint) - Indicates the TCM is not receiving a valid temperature setpoint from the zone sensor. Likely causes are faulty zone sensor wiring or remote sensor failure.

Analog Input 3 - The device is indicating the TCM is not receiving a valid input from the thermistor device attached to analog input 3. Likely causes are faulty sensor wiring or sensor failure.

Slave TCM Standard Alarm

Communications - Indicates that communication between the Tracker and the Slave TCM has failed. Likely causes are faulty communication link wire (twisted pair) or power loss to the Slave TCM.

Voyager Standard Alarms

Communications - Indicates that communication between the Tracker and the Voyager UCP has failed. Likely causes are faulty communication link wire (twisted pair), or power loss to the Voyager UCP.

Zone Temp Sensor - Indicates the Voyager is not receiving a valid input from the zone temperature sensor. Likely causes are faulty wiring between the sensor and the Voyager, poor sensor location, or a defective sensor.

Supply Air Temp Sensor - Indicates the Voyager is not receiving a valid value from the supply air temp sensor. Likely causes are faulty sensor wiring or a sensor failure.

Return Air RH Sensor, Return Air Temp Sensor, Outdoor Air RH Sensor, Outdoor Air Temp Sensor - Indicates the Voyager UCP is not receiving a valid value for the sensor. Likely causes are faulty sensor wiring or a sensor failure.

Defrost Control Input - Indicates that input into the Voyager UCP for defrost control has failed. Likely causes are faulty sensor wiring or a failed defrost module.

Zone Cooling Setpoint, Zone Heating Setpoint - Indicates the Voyager UCP is not receiving a valid cooling/heating setpoint. Likely causes are faulty zone sensor wiring or a setpoint failure.

Minimum Position Pot - Indicates the Voyager UCP is not receiving a valid input from the economizer minimum position potentiometer on the Unitary Economizer Module (UEM). Likely causes may be a wiring failure from the UEM to the UCP, or a UEM board failure.

Supply Fan - Indicates the supply fan is not providing adequate air flow. This input is provided by an air pressure differential switch across the supply fan inlet and discharge.

Heat High Limit - Indicates the Voyager unit's supply air has tripped the high temperature limit switch (TCO2). This alarm occurs on gas heat units only. A likely cause is airflow through the unit is lower than design.

High Temp Input - Indicates the high temperature input connected to the Trane Communications Interface (TCI) has opened. This causes the entire Voyager unit to shut down.

Dirty Filter - Indicates the Voyager unit's air filters are dirty and need to be replaced. This input is provided by an air pressure differential switch across the filters.

Compressor 1 Lockout, Compressor 2 Lockout - Indicates the Voyager's compressor contactor control circuit has opened (a high pressure control, if installed, or possibly a burned out compressor contactor coil), **OR** the Voyager's low pressure control has opened during the three minute minimum "ON" time on four consecutive compressor starts. This is a latching alarm that requires a manual reset. The compressor lockouts can be manually reset from the Tracker Voyager Status Screen. If the Voyager is connected to a VariTrac II Central Control Panel, Compressor Lockout may be manually reset from the AHU Status screen. See page 51 for reset information.

Compressor 1 LPC, Compressor 2 LPC - Indicates the Voyager's low pressure cutout control has opened due to adversely low refrigerant pressure (see wiring diagram in service literature for individual units).

CC1 Control Circuit, CC2 Control Circuit - Indicates the Voyager's compressor contactor circuit has opened. Depending upon the Voyager unit type, this condition may result from:

- Compressor contactor coil failure
- Exceeding high pressure control limit
- Exceeding discharge temperature limit
- Exceeding winding temperature limit
- Compressor circuit breaker

Power - The device is indicating a power loss, which has now returned to normal.

VariTrac II Central Control Panel Standard Alarms

Communications - Indicates that communication between the Tracker and the VariTrac II Central Control Panel has failed. Likely causes are faulty communication link wire (twisted pair) or power loss to the Central Control Panel.

Supply Air Temp Sensor - Indicates the VariTrac II Central Control Panel is not receiving a valid value for the sensor. Likely causes are faulty sensor wiring or a sensor failure.

Velocity/Pressure Sensor - Indicates the VariTrac II Central Control Panel is not receiving a valid input from the air velocity or pressure transducer. Likely causes are faulty wiring between the transducer and VariTrac II Central Control Panel, poor velocity sensor location, or a defective transducer.

EEPROM - Indicates the system is detecting an EEPROM failure, which may activate a system shutdown. After receiving an EEPROM error, the control board should be replaced.

Priority Shutdown - Indicates the VariTrac II Central Control Panel has detected a failed air supply sensor and has shut down the system. Likely causes are supply air temperature sensor failure or a high temp input if connected to a Voyager.

Power - The device is indicating a power loss, which has now returned to normal.

Note: If the VariTrac II Central Control Panel is communicating directly to a Voyager, the Voyager Standard alarms also may display.

VariTrac II Central Control Panel UCM Standard Alarms

Zone Temp Sensor - Indicates the VariTrac II Central Control Panel UCM is not receiving a valid value for the sensor. Likely causes are faulty sensor wiring or a sensor failure.

Zone Temp Setpoint - Indicates the VariTrac II Central Control Panel UCM is not receiving a valid value from the sensor setpoint thumbwheel. Likely causes are faulty wiring between the sensor and the UCM, poor sensor location, or a defective sensor.

EEPROM - Indicates the system is detecting an EEPROM failure, which may cause a system shutdown. After receiving an EEPROM error, the control board should be replaced.

Custom Alarming

A set of 24 custom alarms can be configured for applying day and night limits, time delays and dial-out instructions to selected analog and binary information from VariTrac systems, Voyagers, TCMs and Slave TCMs. Custom alarms are selected from a list of Voyager Rooftop, TCM, VariTrac II Central Control Panel and Slave TCM device-specific alarms. In addition, other Tracker points can be configured to be custom alarms.

Custom alarms can be configured to dial out via modem to a PC with Building Management Network software or to a modem receiving device. This device could be a modem configured to auto-answer, with a serial printer or PC running terminal emulation software attached to the modem. When a custom alarm occurs, the alarm is entered in the alarm log, as well as dialed out to the specified phone number. When a custom alarm is dialed out, all standard alarms that have accumulated in the alarm log since the last dial out are also transmitted. Phone numbers are specified in the Custom Alarming Menu, and the dial-out function is enabled and disabled in the Custom Alarm Setup Menu.

The Tracker always attempts to dial out to Phone number 1 first. If the Tracker receives no response or a busy signal from Phone number 1, it waits five minutes, then attempts to send the alarm to Phone number 2, if one is specified. If Phone number 2 is dialed and a modem device does not answer or it is busy, Tracker waits five minutes and then attempts to send the alarm to phone number 1 again. It continues to toggle between the phone numbers in this manner until a modem device answers.

Once an alarm is commanded to dial out, it is retransmitted until a modem device actually receives it. Looking at the alarm log does not stop the alarm dial-out procedure. Also, if the alarm returns to normal, the alarm continues to be dialed out until a device receives the alarm.

The Custom Alarming Menu is accessible through the Tracker System Setup Menu. Figure 4 illustrates the Custom Alarming Menu.

Figure 4
Custom Alarming Menu

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                      3S
TRACKER S16 System Menu                           4S

Custom Alarming Menu:
1)  Phone number 1                  [1 800 555 1212   ]
2)  Phone number 2                  [0000000000000000]
3)  Alarm setup
4)  Custom Alarming                               OFF
Type number, press S to select
```

The entries for the Custom Alarming Menu are described as follows:

1) Phone number 1
Enter the primary phone number to which the Tracker should send an alarm. The phone number must be to a remote PC with Building Management Network or other modem receiving device.

Note: When entering a phone number, be sure to type a single quote (') before entering the digits. If the single quote key is not pressed first, the Tracker does not allow the phone number to be entered. You may use spaces, dashes and

parenthesis when entering phone numbers. A comma initiates a 1-second delay in the dialing sequence.

2) Phone number 2
Enter the secondary phone number to which the Tracker should send an alarm. The phone number must be to a remote PC with Building Management Network or other modem receiving device. This phone number is only dialed if Tracker is unable to connect to phone number 1.

***Note:** When entering a phone number, be sure to type a single quote (') before entering the digits. If the single quote key is not pressed first, the Tracker does not allow the phone number to be entered. You may use spaces, dashes and parenthesis when entering phone numbers. A comma initiates a 1-second delay in the dialing sequence.*

3) Alarm setup
From the Custom Alarming Menu, press 3S to access the Custom Alarm Setup Menu. Then select a specific alarm number to access the setup entries for that alarm. Figure 5 illustrates the Custom Alarm Setup Menu.

4) Custom Alarming
Enter + to enable the Custom Alarming capability, which sends alarm messages to the alarm log and enables modem dial outs. Enter - to disable the Custom Alarming capability. When disabled, no custom alarm messages that are not also standard alarm messages are sent to the alarm log and no custom alarms are dialed out via the modem.

***Note**: When editing custom alarms, make sure Custom Alarming is set to OFF in the Custom Alarming Menu. After editing custom alarms, set custom alarming to ON to activate custom alarming and the custom alarming modifications.*

Figure 5
Custom Alarm Setup Menu

```
                                                    Operator Entry
JONES CORP  TRACKER S16  6.0                                   3S
TRACKER System Menu                                            4S
Custom Alarming Menu                                           3S

Custom Alarm Setup Menu:
  1) Custom Alarm  1          ZONE SENSOR
  2) Custom Alarm  2           AIR TEMP SUPPLY
  3) Custom Alarm  3          0000000000000000
  4) Custom Alarm  4          0000000000000000
  5) Custom Alarm  5          0000000000000000
  6) Custom Alarm  6          0000000000000000
  7) Custom Alarm  7          0000000000000000
  8) Custom Alarm  8          0000000000000000
  9) Custom Alarm  9          0000000000000000
 10) Custom Alarm 10          0000000000000000
 11) Custom Alarm 11          0000000000000000
 12) Custom Alarm 12          0000000000000000
 13) Custom Alarm 13          0000000000000000
 14) Custom Alarm 14          0000000000000000
 15) Custom Alarm 15          0000000000000000
 16) Custom Alarm 16          0000000000000000
 17) Custom Alarm 17          0000000000000000
 18) Custom Alarm 18          0000000000000000
 19) Custom Alarm 19          0000000000000000
 20) Custom Alarm 20          0000000000000000
 21) Custom Alarm 21          0000000000000000
 22) Custom Alarm 22          0000000000000000
 23) Custom Alarm 23          0000000000000000
 24) Custom Alarm 24          0000000000000000
Type number, press S to select

Custom Alarm 1 Setup Menu:
  1) Custom alarm name                    [ZONE SENSOR]
  2) Device type VAV2                                 5
  3) Device number                                    1
  4) Central Control Panel UCM number                 1
  5) Device index                                     1
  6) Dial out if alarm                               NO
  7) Time delay before alarm                      0 MIN
  8) Alarm state is                                  ON
Type number, press S to select

Custom Alarm 2 Setup Menu:
  1) Custom alarm name                 SUPPLY AIR TEMP]
  2) Device type  CCP                                 4
  3) Device number                                    1
  4) Device index                                     6
  5) Dial out if alarm                              YES
  6) Time delay before alarm                     15 MIN
  7) Low limit                                  40.0 F
  8) High limit                                140.0 F
  9) Alarm during Occupied times only?              YES
Type number, press S to select
```

The entries for the Custom Alarm Setup Menu are described as follows:

1) Custom alarm name
Enter a descriptive name for the custom alarm. This name is used only for the custom alarm list in the Custom Alarm Setup Menu. This is not the name shown on alarm dialout or in the alarm log. The name shown is the value from the Custom Alarming Device Index Numbers tables and the user-edited UCM name.

The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters of the name. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

2) Device type **(default 0000)**
Specify the index number of the device that contains the alarm point. Table 5 lists the possible device numbers.

Table 5
Device Type Numbers

Device	Select Number
None	0
TCM	1
Voyager Rooftop	2
Slave TCM	3
VariTrac II Central Control Panel	4
VariTrac II Central Control Panel Unit Control Module (UCM)	5

3) Device number **(default 0)**
Specify the number of the device selected for line 2) Device type. For example, if four Voyager Micro Rooftops are communicating to the Tracker, and the alarm is for Voyager Rooftop number 2, this entry should be 2.

4) Central Control Panel UCM number **(default 0)**
"CENTRAL CONTROL PANEL UCM NUMBER" displays if 5 is selected for line 2) "DEVICE TYPE." Specify the number of the Central Control Panel UCM.

5) Device index **(default 0)**
Specify the number of the point on which to alarm. Refer to Tables 6 through 10 for device index numbers.

6) Dial out if alarm
Specify if the Tracker should dial out to a remote telephone number and send the alarm information when an alarm occurs. Enter + for YES or - for NO.

7) Time delay before alarm **(default 0)**
Specify the number of minutes (0 to 60) that the alarm must remain in effect before the alarm is dialed out.

8) Alarm state is **(default OFF)**
This entry specifies the state of the binary device index that generates the alarm. This line is displayed only for binary indexes. Specify + for ON or - for OFF. The

alarm state must be ON to alarm for all device indexes except slave TCM binary input states and Voyager low pressure cutout. The slave TCM state depends on each application. If a VariTrac II Central Control Panel is directly connected to a Voyager, or a Voyager is directly connected to a Tracker, the alarm state must be OFF for low pressure cutout.

Low limit
This line is only displayed when an analog device index is selected. Enter the desired alarm low limit. If the analog value exceeds the limit, an alarm condition exists.

High limit
This line is only displayed when an analog device index is selected. Enter the desired alarm high limit. If the analog value exceeds the limit, an alarm condition exists.

9) Alarm during occupied times only? (default NO)
This line appears for analog alarm values on Voyagers, VariTrac II Central Control Panels and TCMs in heat pump or thermostat mode. Enter YES in this field if this alarm is to be activated during occupied (day) times only. The schedule for the respective device determines the occupied times that the alarm is active. Enter NO if this alarm is to be activated 24 hours a day.

Note: *To set up an analog alarm with both day and night alarm limits, you need to set up two custom alarms. One custom alarm should be set up to alarm during occupied times only, and the alarm low and high limits should correspond to daytime limits. The second alarm should be set up to alarm 24 hours a day (Alarm during occupied times only = NO). It should use alarm low and high limits that correspond to night time limits.*

Table 6
Voyager Rooftop Device Index Numbers

Index Number	Value
1	Return Air Relative Humidity Sensor Failure
2	Return Air Temp Sensor Failure
3	Outdoor Air Relative Humidity Sensor Failure
4	Supply Air Temp Sensor Failure
5	Outdoor Air Temp Sensor Failure
6	Zone Temp Sensor Failure
7	Defrost Control Input Failure
8	Zone Cooling Setpoint Failure
9	Zone Heating Setpoint Failure
10	Minimum Position Potentiometer Failure
11	Dirty Filter
12	Heat High Limit
13	High Temp Input
14	Defrost Default Mode
15	Supply Fan Failure
16	Zone Temp Value
17	Supply Air Temp Value
18	Return Air Temp Value
19	Return Air Relative Humidity Value
20	Damper Position
21	Compressor 1 Lockout
22	Compressor 2 Lockout
23	Compressor 1 Low Pressure Cutout
24	Compressor 2 Low Pressure Cutout
25	Compressor 1 Contactor Control Circuit Open
26	Compressor 2 Contactor Control Circuit Open
27	Off Line/Power Failure
28	Communication Loss

Table 7
Slave TCM Device Index Numbers

Index Number	Value
1	Binary Input 1 State
2	Binary Input 2 State
3	Binary Input 3 State
4	Analog Input 1 Value
5	Analog Input 2 Value
6	Analog Input 3 Value
7	Communication Loss

Table 8
TCM Device Index Numbers

Index Number	Value
1	Analog Input 1 Failure
2	Analog Input 2 Failure
3	Analog Input 3 Failure
4	Analog Input 1 Value
5	Analog Input 2 Value
6	Analog Input 3 Value
7	Binary Input 1 State
8	Binary Input 2 State
9	Binary Input 3 State
10	Communication Loss

Table 9
VariTrac II Central Control Panel Device Index Numbers

Index Number	Value
1	Supply Air Temp Sensor Failure
2	Velocity/Pressure Sensor Failure
3	EEPROM Failure
4	Priority Shutdown
5	Off Line/Power Failure
6	Supply Air Temp Value
7	System Air Flow Value
8	Return Air Relative Humidity Sensor Failure
9	Return Air Temp Sensor Failure
10	Outdoor Air Relative Humidity Sensor Failure
11	Supply Air Temp Sensor Failure
12	Outdoor Air Temp Sensor Failure
13	Zone Temp Sensor Failure
14	Defrost Control Input Failure
15	Zone Cooling Setpoint Failure
16	Zone Heating Setpoint Failure
17	Minimum Position Potentiometer Failure
18	Dirty Filter
19	Heat High Limit
20	High Temp Input
21	Defrost Default Mode
22	Supply Fan Failure
23	Compressor 1 Lockout
24	Compressor 2 Lockout
25	Compressor 1 Low Pressure Cutout
26	Compressor 2 Low Pressure Cutout
27	Compressor 1 Contactor Control Circuit Open
28	Compressor 2 Contactor Control Circuit Open
29	Communication Loss

***Note**: Indices 8-28 apply only to a VariTrac II Central Control Panel that is communicating directly with a Voyager Rooftop unit.*

Table 10
VariTrac II Central Control Panel UCM Device Index Numbers

Index Number	Value
1	Zone Temp Sensor Failure
2	Zone Temp Setpoint Failure
3	Auxiliary Temp Sensor Failure
4	Cooling Flow Sensor Failure
5	EEPROM Failure
6	Zone Temp Value
7	Auxiliary Temp Value
8	Communication Loss

Building Equipment Menu

Figure 6 shows the Building Equipment Menu. This menu is used to select the type of equipment for programming.

Figure 6
Building Equipment Menu

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                    2S

Building Equipment Menu:
 1)  VariTrac II Central Control Panels
 2)  TCMs
 3)  Slave TCM
 4)  Voyager Rooftops

Type number, press S to select
```

Each of the Building Equipment Menu selections is described in order.

VariTrac II Central Control Panel Communications

The Tracker Stat 16 communicates with up to eight VariTrac II Central Control Panels, and Stat 7 communicates with as many as four. Each Central Control Panel coordinates control of up to 16 VAV units and an air conditioner. Operating parameters for the VAV UCMs and the air conditioning unit can be viewed by selecting the appropriate Central Control Panel display from the Tracker.

VariTrac II Central Control Panels are automatically named by the Tracker when communication is established. The default names, which correspond to the address configured by the Central Control Panel address DIP switch block, are in the form VARITRAC 2 CCP 1, VARITRAC 2 CCP 2, etc.

VariTrac II Central Control Panel UCMs are also automatically named by the Tracker when communication is established. The default names correspond to the number of the Central Control Panels and the address of the UCM. Default names are in the form V2-CCP X UCM 01, V2-CCP X UCM 02, V2-CCP X UCM 03, etc., where X is the number of the Central Control Panel.

The VariTrac II Central Control Panel names appear under the VariTrac II Central Control Panel Menu as device references. Central Control Panel names do not appear on the front panel display. The Central Control Panel name can be edited in the Central Control Panel Setup Menu.

Important: VariTrac II Central Control Panel zone dampers' Unit Control Modules (UCMs) that communicate with the Central Control Panel are automatically named by the Tracker. The zone damper names appear on the front panel display as area names and in the Tracker edit terminal under the Central Control Panel UCM Menu. These names can be edited using from the UCM Setup Menu.

If communication between Tracker and the VariTrac II Central Control Panel is lost (no communication for 5 minutes), the Central Control Panel continues to operate in standalone mode, according to Table 11. This table also displays the control functions of the Central Control Panel during normal operation with Tracker.

For additional details on VariTrac II Central Control Panel operation, refer to the VariTrac II Central Control Panel literature.

Table 11
VariTrac II Central Control Panel Operating Mode Table

[illegible]	[illegible]	[illegible]	[illegible] Fan Operation
DAY (OCCUPY)	Note 5	Note 2	Note 1
NIGHT (UNOCCUPY)	Note 5	unoccupied	Auto
DEMAND LIMIT	Note 4	Note 2	Note 1
Communication Loss (DEFAULT)	Note 5	Note 2	Note 3

Note 1: *Occupied fan mode can be selected ON or AUTO from the VariTrac II Central Control Panel setup line "OCCUPIED FAN MODE."*
Note 2: *Occupied setpoints are the Tracker edited setpoint values only if the "ZONE SENSOR THUMBWHEEL FUNCTIONS" is edited to NO. If "ZONE SENSOR THUMBWHEEL FUNCTIONS" is edited to YES, the local thumbwheel setpoint is used during occupied (day) times.*
Note 3: *If a communication loss occurs (no communications for 5 minutes), the Central Control Panel mode reverts to its local binary input control states. Without binary inputs, the Central Control Panel defaults to its occupied mode, with no overrides. The operating parameters (setup and setpoints) are stored in non-volatile memory.*
Note 4: *The number of cooling or heating stages enabled during the demand limit mode is defined on the Central Control Panel Setup screen.*
Note 5*: The number of cooling or heating stages enabled is determined by the Central Control Panel (up to two).*

To program the Tracker for VariTrac II Central Control Panel, select 1 from the Building Equipment Menu to access the VariTrac II Central Control Panel Menu. Figure 7 shows an example of the VariTrac II Central Control Panel Menu, from which status and setup options can be chosen for each Central Control Panel and each UCM.

Figure 7
VariTrac II Central Control Panel Menu

```
                                        Operator Entry
JONES CORP TRACKER S16 6.0                      2S
Building Equipment Menu                         1S

VariTrac II Central Control Panel Menu:
1)  VariTrac II Central Control Panel 1   FIRST FLOOR EAST
2)  VariTrac II Central Control Panel 2   FIRST FLOOR WEST
3)  VariTrac II Central Control Panel 3   0000000000000000
4)  VariTrac II Central Control Panel 4   0000000000000000
5)  VariTrac II Central Control Panel 5   0000000000000000
6)  VariTrac II Central Control Panel 6   0000000000000000
7)  VariTrac II Central Control Panel 7   0000000000000000
8)  VariTrac II Central Control Panel 8   0000000000000000

VariTrac II Central Control Panel 1 Menu:
1)  UCM data
2)  Group data
3)  AHU status
4)  VariTrac II central control panel setup
5)  VariTrac II central control panel control inputs
6)  Service summary
```

VariTrac II Central Control Panel Service Summary

The Service Summary provides a status summary of UCM data and other information. This status display is for viewing only; no editing is available. To access the Service Summary, follow these steps:

1. From the Tracker Main Menu select ***Building Equipment (2S)***.
2. Select ***VariTrac II Central Control Panel (1S)*** from the Building Equipment Menu.
3. Select a control panel from the VariTrac II Central Control Panel menu.
4. Select ***Service Summary (6S)*** from the VariTrac II Central Control Panel Menu.

Figure 8
Service Summary Report

	Operator Entry
JONES CORP TRACKER S16 6.0	2S
Building Equipment Menu	1S
VariTrac II Central Control Panel Menu	1S
VariTrac II Central Control Panel 1 Menu	6S

Service Summary	
Supply air temp	73.0 F
Operating status	HEAT
Bypass position	0 %
Number of cool requests	1
Number of heat requests	0
Present mode worst deviation	.0 F
Duration of deviation	0 MIN
Changeover allowed in	0 MIN

UCM Name	GRP	POS	MIN	MAX	TEMP	DEV		
1 UCM 01	1	100%	10%	100%	80.3	6.3	CLOSED	No Vote
2 UCM 02	1	41%	41%	66%	78.6	8.6	MIN	
3 UCM 03	1	100%	43%	46%	74.0	.0	OPEN	
4 UCM 04	1	100%	95%	100%	——	——	OPEN	No Vote

Each of the entries is described in order in the following text.

Supply Air Temp
The temperature being read by the supply air temperature sensor. If the sensor has failed, FAILED displays instead of the temperature.

Operating Status
This is the current heat/cool state of the system.

Bypass Position
This is the percent of valve/damper open.

Number of Cool Requests
This displays the number of cooling callers in the system.

Number of Heat Requests
This displays the number of heating callers in the system.

Present Mode Worst Deviation
This displays information used in the tagging process. The UCM with the worst deviation is the UCM farthest from its setpoint. Only UCMs that are in the same mode (operating status) as the system is in are considered.

Duration of Deviation
This displays information used in the tagging process. The duration of deviation indicates how long the UCM has been the UCM with the worst deviation.

Changeover Allowed In
This displays the time left before an automatic changeover can occur.

UCM
This column displays the UCM number.

Name
This is the name assigned to the UCM.

Group
This displays the number of the group of which the UCM is a member.

POS
This displays the position of the unit's damper as a percentage.

MIN
This is the current minimum damper position used by the UCM.

MAX
This displays the edited maximum damper position for the unit.

TEMP
This displays the zone temperature for the unit. If a UCM is not supplied with a valid zone temperature, "-" displays on this line.

DEV
This displays the UCM's deviation from setpoint. If the zone temperature is below the active heating setpoint, the deviation is a negative value. If the zone temperature is between the heating and cooling setpoints, the deviation is zero. If the zone temperature is above the active cooling setpoint, the deviation is a positive value. If a UCM is not being supplied a valid zone temperature, a "-" displays.

The following messages may also display on this screen

- "NO VOTE" - UCM has been edited to have no heat/cool vote.
- "TAG" - The UCM has been tagged by the Control Panel.
- "OPEN," "CLOSE," "MIN," or "MAX" - The UCM is being flow overridden.

AHU Status

AHU Status provides a status summary of VariTrac II Control Panel-specific data. This status display is for viewing purposes only; no editing is available.

To access the AHU Status display, follow these steps:

1. From the Tracker Main Menu select ***Building Equipment (2S)***.

2. Select ***VariTrac II Central Control Panel (1S)*** from the Building Equipment Menu .
3. Select the desired VariTrac II Control Panel from the VariTrac Menu.
4. Select ***AHU Status (3S)*** from the VariTrac II Central Control Panel Menu.

Figure 9 displays an example of an AHU Status display.

Figure 9
AHU Status (without Voyager)

```
                                        Operator Entry

JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         1S
VariTrac II Central Control Panel Menu          1S
VariTrac II Central Control Panel 1 Menu        3S

AHU Status
    Operating mode                          OCCUPY
    Operating status                        COOL
    CCP supply air temp                     58.4 F
    AHU air flow                            71 %
    Bypass position                         23 %
    AHU fan                                 ON
    Cool 1                                  ON
    Cool 2                                  OFF
    Heat 1                                  OFF
    Heat 2                                  OFF
    Spare output  (VENT)                    OFF
```

Figure 10 displays an example for a VariTrac II Central Control Panel that is communicating directly to a Voyager Rooftop.

Figure 10
AHU Status (with Voyager)

```
                                        Operator Entry

JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         1S
VariTrac II Central Control Panel Menu          1S
VariTrac II Central Control Panel 1 Menu        3S

AHU Status
Operating mode                              OCCUPY
Operating status                            COOL
CCP supply air temp                         58.4 F
AHU air flow                                71 %
Bypass position                             23 %
Unit Type:  Gas Heat, economizer
Diagnostics:  Normal
Active modes:  COOL 1
Voyager supply air temp                     56.1 F
Supply fan status                           ON
Compressors      1      ON,     2           OFF
Heat outputs     1      OFF,    2           OFF
Exhaust fan                                 OFF
OK to economize                             NO
Reference enthalpy                          22 BTU/LBM
Minimum damper position                     10 PCT
Current damper position                     10 PCT
Outside air temperature                     78.3 F
OA Relative humidity                        81PCT
RA Relative humidity                        56 PCT
Condenser fans:  A      ON,     B           ON
```

Note: If a compressor is locked out, the message " '+ ENTER' TO RESET COMPRESSOR LOCKOUTS/FAN FAILURE" displays at the bottom of the AHU Status screen (with Voyager).

VariTrac II Central Control Panel Control Inputs

VariTrac II Central Control Panel control inputs can be displayed as follows. This screen is for viewing purposes only; fields can not be edited.

1. From the Tracker Main Menu select ***Building Equipment (2S).***
2. Select ***VariTrac II Central Control Panel (1S)*** from the Building Equipment Menu.
3. Select a control panel from the VariTrac II Central Control Panel menu.
4. Select ***VariTrac II Central Control Panel Control Inputs (5S)*** from the VariTrac II Central Control Panel Menu.

The VariTrac II Central Control Panel Control Inputs screen displays (Figure 11).

Figure 11
VariTrac II Central Control Panel Control Inputs

	Operator Entry
JONES CORP TRACKER S16 6.0	2S
Building Equipment Menu	1S
VariTrac II Central Control Panel Menu	1S
VariTrac II Central Control Panel 1 Menu	5S
VariTrac II Central Control Panel	Control Inputs
Binary Inputs:	
1) OCCUPY	
2) HEAT	
3) AUTO	
DIP switch inputs:	
Unit type	2H2C
Compressor lockout?	NO
Bypass control	VELOCITY
Test mode?	NO
ICS control parameters:	
ICS control?	YES
Auto/manual input	AUTO
Heat/cool input	HEAT
Aux heat	ENABLE
Compressor lockout?	NO
Priority shutdown?	NO
Heat stages enabled	2
Cool stages enabled	2
OA multiplier	1.0
Spare binary output	OFF

The binary inputs portion of the Control Inputs Menu display the current states of the VariTrac II Central Control Panel's three binary inputs.

The DIP switch inputs portion of the Control Inputs Menu displays the inputs that are determined by the DIP switches. The DIP switches are located on the VariTrac II Central Control Panel board.

The ICS control parameters portion of the Control Inputs Menu indicates whether the VariTrac II Central Control Panel is communicating with the Tracker panel. If

it is, information pertaining to the state of the ICS is displayed. These parameters are set by the Tracker and can not be edited.

VariTrac II Central Control Panel Setup

VariTrac II Central Control Panels connected to the Tracker can be set up through the interface as follows:

1. From the Tracker Main Menu select ***Building Equipment (2S)***.
2. Select ***VariTrac II Central Control Panels (1S)*** from the Building Equipment Menu.
3. Select a Central Control Panel from the VariTrac II Central Control Panel Menu.
4. Select ***VariTrac II Central Control Panel Setup (4S)*** from the VariTrac II Central Control Panel Menu.

The VariTrac II Central Control Panel Control Setup Menu displays (Figure 12).

Figure 12
VariTrac II Central Control Panel Control Setup

```
                                                Operator Entry
JONES CORP  TRACKER S16  6.0                              2S
Building Equipment Menu                                   1S
VariTrac II Central Control Panel Menu                    1S
VariTrac II Central Control Panel 1 Menu                  4S

VariTrac II Central Control Panel                      Setup:
1)  System name                          [MARKETING DEPT   ]
2)  Supply temp high limit                             130 F
3)  Supply temp low limit                               40 F
4)  Supply temp/calib offset                        58.4/  .0 F
5)  Minimum supply flow                                 70 %
6)  Static pressure setpoint                           140 %
7)  Static pressure control band                        20 %
8)  Min opposite calls to changeover                     2
9)  Min opp strong calls to changeover                   2
10) Min time to changeover                              15 m
11) Occupied fan mode                                   ON
12) Fan turn off delay                                  90 s
13) Number of compressors                                2
14) Auxiliary heat                                    ENABLE
15) Priority local heat?                                YES
16) Spare output control                              VENT 0
17) Is Voyager cooling only?                            NO
18) Voyager OA damper pos pot?                          YES
19) Voyager min damper pos                              10 %
20) Bypass actuator drive time                          58 s
21) Fail-safe bypass damper min pos                     25 %
22) UCM tagging                                       DISABL
23) Demand limit number of stages                        0
```

1) System Name

Enter a descriptive name for the VariTrac II Central Control Panel UCM. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters of the name. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the

Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.

Tip: An Equipment Worksheet is provided at the end of this manual to help with customizing equipment names.

2) Supply Temp High Limit **(default 130°F)**
Used to enforce supply air temperature limits to avoid such things as equipment damage and space discomfort. This limit is enforced by disabling heating stages based on the relationship between the supply air temperature and the heating limit. Values can range from 90-200°F (32.3 - 93.3°C).

3) Supply Temp Low Limit **(default 45°F)**
Used to enforce supply air temperature limits to avoid such things as equipment damage and space discomfort. This limit is enforced by disabling cooling stages based on the relationship between the supply air temperature and the cooling limit. Values can range from 40-70°F (4.4 - 21.1°C).

4) Supply Temp/Calib Offset **(default 0)**
This value calibrates the temperature read by the supply air temperature sensor connected to the VariTrac II Central Control Panel. It does not affect the supply air temperature that is reported by a Voyager.

The supply air temperature, with the offset applied, is also displayed on this line. If the temperature sensor has failed, a "-" displays instead of a temperature value. Values for the offset range from -10 to 10°.

5) Minimum Supply Flow **(default 70%)**
This value is a bypass setpoint (10 to 95%) that defines minimum desired system air flow based on the air flow measurement taken with all VAV dampers driven to maximum. The VariTrac II Central Control Panel regulates bypass dampers to maintain system airflow at or above the edited minimum supply flow. This setpoint value is used if the Velocity method of bypass control is selected. See the VariTrac II Central Control Panel Operating Guide for more information.

6) Static Pressure Setpoint **(default 140%)**
7) Static Pressure Control Band **(default 20%)**
These parameters are used to describe bypass control. Values range from 90 to 250% for the static pressure setpoint and 5 - 100% for the static pressure control band. Bypass control determines the allowable percent one valve/damper may be open to protect air handler components from excessively low air flow and high duct static pressure. The system must be calibrated to perform bypass control. The static pressure setpoint value is used if static pressure method of bypass control is selected. See the VariTrac II Central Control Panel Operating Guide for more information.

8) Min Opposite Calls To Changeover **(default 1)**
Enter the number of opposite callers (1 to 4) required to change the system over from the current heat or cool mode to the opposite mode. All current mode callers must be satisfied and the "MINIMUM TIME TO CHANGEOVER" (line 10) must be expired before changeover is allowed.

9) Minimum Opposite Strong Calls to Changeover **(default 2)**
VAV zones that are more than 2°F away from their setpoint are considered to be strong callers. Enter the total number of strong callers (1 to 4) required to force the system to change over to the opposite mode. All current mode callers do not have

to be satisfied, but the "MINIMUM TIME TO CHANGEOVER" (line 10) must be expired before changeover is allowed.

Note: This applies only when the system is in the occupied mode. The minimum opposite strong calls to changeover in the unoccupied mode is always one.

10) Minimum Time To Changeover **(default 15 m)**
Enter the amount of time (10 to 60 minutes) the system delays before allowing changeover from one mode to the other. Requests for changeover result from lines 8 and 9 above.

11) Occupied Fan Mode **(default ON)**
Enter + to turn ON or - to turn OFF. This parameter determines the system fan mode if any UCM is occupied. If this parameter is edited to AUTO, the fan is cycled on and off with stages of heat and cool. If it is edited to ON, the fan stays on.

12) Fan Turn Off Delay **(default 90s)**
Enter the amount of time (2 to 240 seconds) the fan must wait to turn off after the last stage of heating or cooling has been de-energized. This is applied to intermittent fan operation in the unoccupied mode, and to intermittent (auto) fan operation in the occupied mode.

13) Number of Compressors **(default 2)**
Enter the number of compressors (1 to 2) in the unit.

14) Auxiliary Heat **(default ENABLE)**
Enter + to ENABLE or - to DISABLE auxiliary heat. If this field is edited to DISABLE, auxiliary heat in heat pump configurations is not used.

15) Priority Local Heat? **(default YES)**
Enter + to enable (YES) or - to disable (NO). If priority local heat is edited to NO, the UCMs control local heat to 2° below the heat setpoint. If priority local heat is set to YES, the UCMs control their local heat to the heat setpoint.

16) Spare Output Control **(Default Vent 0)**
This controls the manner in which the spare binary output is to be controlled, if it is installed. The control scheme is selected by entering one of the index numbers below:

Index	Spare Output Control
0	Vent - outside air damper control with morning warm-up
1	H/C - control based on the heat/cool state of the panel
2	ICS - controlled by occupied/unoccupied state of the VariTrac II Central Control Panel The ICS determines the output.

17) Is Voyager Cooling Only? **(default NO)**
This line is used only if a Voyager is directly connected to a VariTrac II Central Control Panel. Enter YES if the Voyager Rooftop is a cooling-only unit. Enter NO if the Voyager Rooftop is a cooling/heating unit.

18) Voyager OA Damper Pos Pot **(default YES)**
This line is used only if a Voyager is directly connected to a VariTrac II Central Control Panel via twisted pair wiring. YES allows the Voyager to use its local minimum position potentiometer to determine OA damper minimum position. NO allows the Voyager to use the value edited in line 17, "VOYAGER MIN DAMPER POS," to determine OA damper minimum position.

19) Voyager Min Damper Pos **(default 10%)**
This line is used only if a Voyager is directly connected to a VariTrac II Central Control Panel via twisted pair wiring. Enter the percentage (0 to 50%) that is the minimum damper setting of the outdoor air damper that is needed to provide the required ventilation for the building. This item applies only to units equipped with outdoor air dampers.

20) Bypass Actuator Drive Time **(default 58s)**
This value (30 to 200 seconds) is determined by the type of air valve used and whether the unit is running in a 50 or 60 Hz mode. This drive time is not automatically changed based on the power line frequency.

21) Fail-safe Bypass Damper Min Pos **(default 25%)**
This is the percentage (10 to 100%) at which the bypass damper is not allowed to go below if the velocity/pressure sensor fails.

22) UCM Tagging **(default DISABL)**
Enter + to ENABLE or - to DISABLE UCM tagging. This feature allows for enabling the tagging feature, which is a way of preventing problem zones from influencing heat/cool changeover and staging decisions. A UCM is tagged if it is currently 3.0 or more degrees from setpoint and for an hour and the following conditions exist:

- The UCM is receiving its desired air
- The UCM is the farthest from setpoint of all the UCMs that are calling and receiving their desired air
- The UCM has been calling the whole time

When this line is edited to DISABLE, all existing UCM tags are cleared.

23) Demand Limit Number of Stages **(default 0)**
Enter the number (0 to 2) of heating or cooling stages that the VariTrac II Central Control Panel is permitted to use when it is in the demand limit mode.

UCM Data

Each UCM can be monitored and controlled by the Tracker. Status, setup and setpoint information is available on the appropriate Tracker menu. The following sections discuss these menus.

UCM Status

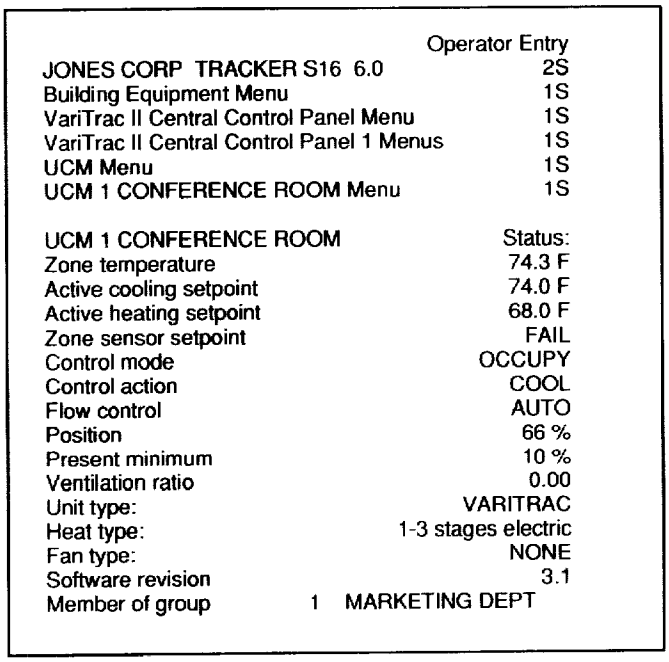
The VariTrac II Central Control Panel UCM Status display provides a status summary of a selected UCM. This status display is for viewing only; no editing is available.

To access a VariTrac UCM Status display, follow these steps:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select a VariTrac II Central Control Panel from the VariTrac II Menu.
4. From the desired VariTrac II Menu, select ***UCM Menu*** (*1S*).
5. Select the desired UCM from the UCM Menu.
6. Select ***UCM Status*** (*1S*).

The current operating parameters are then displayed for the selected UCM. Figure 13 shows an example of a VariTrac II Central Control Panel UCM Status display.

Figure 13
VariTrac II UCM Status Display



Note: If certain conditions exist, "UCM MEMORY FAILURE" and "CALIBRATING" may display under the "ACTIVE HEATING SETPOINT" line. UCM Memory Failure indicates that the UCM's EEPROM has failed. Calibrating indicates that the UCM is calibrating.

Note: "AUXILIARY TEMP" may display under the "PRESENT MINIMUM" line. Auxiliary Temp displays the temperature read from an auxiliary temperature sensor, if one is installed.

UCM Setup

UCMs connected to the VariTrac II Central Control Panel can be set up through the remote interface as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Central Control Panel.
4. Select ***UCM Menu*** from the desired VariTrac II Central Control Panel Menu (*1S*).
5. Select the desired UCM from the UCM Menu.
6. Select ***UCM Setup*** (*3S*).

Refer to the VariTrac II Central Control Panel service literature for further details on programming UCMs.

Figure 14 shows the VariTrac II UCM Setup Menu.

Figure 14
VariTrac II UCM Setup Menu

```
                                                    Operator Entry
JONES CORP  TRACKER S16  6.0                              2S
Building Equipment Menu                                   1S
VariTrac II Central Control Panel Menu                    1S
VariTrac II Central Control Panel 1 Menu                  1S
UCM Menu                                                  1S
UCM 1 CONFERENCE ROOM Menu                                3S

UCM 1 CONFERENCE ROOM Setup Menu:
 1) Name                              [ CONFERENCE ROOM ]
 2) Unit type                                VariTrac  3
 3) Heat type                                   NONE  0
 4) Fan type                                    NONE  0
 5) Unit size                            300  CFM  0
 6) Zone sensor thumbwheel functions            ENABLE
 7) Heat/cool vote?                                YES
 8) Parallel fan control                             —
 9) Include in group/system calculations?          YES
10) Output 1 normally                             OPEN
11) Output 2 normally                             OPEN
12) Output 3 normally                             OPEN
13) Max hot water override?                         —
14) Flow override                                AUTO  0
15) Current flow:      0 CFM,  Calib factor: 1.00     Measured flow:
16) Aux temp/calibration offset                  —/  .0 F
17) Wired temp/calibration offset              72.1/ 1.3 F
18) Wired setpoint/calibration offset          74.7/  .0 F
```

1) Name
Enter a descriptive name for the VariTrac II Central Control Panel UCM. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-). If an unnamed UCM starts to communicate with the Central Control Panel, the UCM is given the name "V2-CCP X UCM XX," where X is the number of the Central Control Panel and XX is the number of the UCM.

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters of the name. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

2) Unit type **(default 3)**
The possible types and their indexes are:

Index	Unit Type
0	VariTrane C
1	VariTrane D
2	VariTrane E
3	VariTrac
4	Generic
5	VariTrane Dual Duct
6	Generic Dual Duct

Refer to the VariTrac II Central Control Panel Operating Guide for setup information.

3) Heat Type
The heat type assignment identifies what kind of heat control algorithm is used by the UCM. Entries 0-5 designate the following:

0 = None - No Heat Available
1 = 1-3 stages electric
2 = Fast pulse width modulation - Electric (2 sec. time base)
3 = Slow pulse width modulation - Electric (3 min. time base)
4 = Prop hot water and aux output
5 = 1-3 stages hot water/perimeter

4) Fan Type **(default 0)**
Fan type identifies the fan control algorithm to be used by the UCM. Entries 0-2 designate one of the following:

0 = None
1 = Series
2 = Parallel

5) Unit Size
The unit's size is selected by entering an index number. The size associated with the index number is determined by Table 12, Unit Size Data for VariTrac.

Table 12
Unit Size Data for VariTrac

Size Index	Size (CFM)	Flow Constant	Drive Time (Seconds) 60 Hz	Drive Time (Seconds) 50 Hz
0	300	83	57	68
1	500	68	57	68
2	800	66	57	68
3	1200	68	57	68
4	1600	66	57	68
5	2000	60	57	68

The unit size index, which is stored in the UCM's EEPROM, calculates actual CFM values from the percentages used by the UCM. Refer to the VariTrac II Central Control Panel Operator's Guide for more setup information.

6) Zone Sensor Thumbwheel Functions **(default ENABLE)**
Enter + to ENABLE or - to DISABLE zone sensor thumbwheel functions. When this entry is disabled, the following features of the UCM zone sensor modules are disabled:

- Setpoint (adjustment at sensor)
- Ability to generate a drive to max command
- Ability to generate a go unoccupied command

7) Heat/Cool Vote **(default YES)**
Enter + to enable (YES) or - to disable (NO). When this entry is edited to NO, the UCM has no influence on staging or changeover decisions made by the VariTrac II Central Control Panel.

8) Parallel Fan Control
This entry determines if a parallel fan is controlled based on zone temperature or on flow conditions. If parallel fan control is edited to DEG, the fan control offset is set to 2. If it is changed to FLOW, the fan control point is set to 15%. The data field on this line displays "-" if the unit does not have a parallel fan.

9) Include in Group/System Calculations? (default YES)
Enter + to enable (YES) or - to disable (NO). If NO is entered on this line, the UCM's values are not included in the minimum, maximum, average and other calculations that the VariTrac II Central Control Panel does on a group and system basis. See Group Status on page 64.

10-12) Output 1-3 Normally (default OPEN)
These lines can only be edited for the following heat types:

Proportional hot water and aux output - Only output 3 is editable.
1-3 stages hot water/perimeter - Outputs 1-3 are editable.

If the unit has a fan, Output 3 is not editable. Also, if the unit's heat type is changed, all outputs are set to Normally Open. If the unit's fan type is edited, Output 3 is set to Normally Open.

13) Max Hot Water Override?
A YES answer forces the UCM to turn on all of its hot water outputs or drive open its proportional hot water valve, which may be handy for water balancing. Only units with the following heat types are affected:

1-3 stages hot water/perimeter - All three heat outputs are energized, even if they control electric heat devices. If the unit has a fan, Output 3 is not affected.

Proportional hot water and aux output - The hot water valves connected to outputs 1 and 2 are driven open. Output 3 is turned on, even if it controls an electric heat device. If the unit has a fan, Output 3 is not affected.

The UCM maintains the maximum hot water override condition over power failures. The only way to cancel maximum hot water overrides is by editing this line to NO. If the unit does not have "1-3 stages hot water/perimeter" or "proportional hot water and aux output," this field displays "-."

***Note**: Unit heat must be enabled in order for the maximum hot water override to work.*

14) Flow Override (default AUTO)
The valued entered on this line has the highest priority of all the flow overrides. Enter a value of 0 to 4 to reflect the following:

0 = Auto
1 = Open
2 = Closed
3 = Min
4 = Max

15) Current Flow 0 CFM, Calib factor: 1.00, Measured Flow:
This field displays the calibration factor being used and the current flow being reported by the UCM with the calibration factor applied. This field does not affect VariTrac units.

16) Aux Temp/Calibration Offset **(default 0.0° F)**
Enter an offset value (-10 to 10°F, -23.3 to -12.2°C) that the VariTrac II Central Control Panel uses to allow a temperature calibration offset to be entered for the auxiliary temperature. The calibration offsets are stored at the UCM. The UCM adds the offset to the value being read by the UCM's temp sensors. For example, if the auxiliary sensor is indicating that the temperature is 74.0°F and the calibration offset is -1.5°F, the actual temperature used by the UCM and reported to the Central Control Panel is 72.5°F.

The current temperature, with the offset applied, is displayed on the line with the offset. If a temperature sensor has failed or it is not installed, "-" displays instead of the temperature. It may take 20 seconds after a new offset is entered before it is factored into the temperature.

17) Wired Temp/Calibration Offset **(default 0.0° F)**
Enter an offset value (-10 to 10°F, -23.3 to -12.2°C) that allows a temperature calibration offset to be entered for the wired zone sensor temperature. The calibration offsets are stored at the UCM. The UCM adds the offset to the value being read by the UCM's temp sensors. For example, if the auxiliary sensor is indicating that the temperature is 74.0°F and the calibration offset is -1.5°F, the actual temperature used by the UCM and reported to the VariTrac II Central Control Panel is 72.5°F.

The current temperature, with the offset applied, is displayed on the line with the offset. If a temperature sensor has failed, "-" displays instead of the temperature. It may take 20 seconds after a new offset is entered before it is factored into the temperature.

18) Wired Setpoint/Calibration Offset **(default 0.0° F)**
Enter the calibration offset (-10 to 10°F, -23.3 to -12.2°C) to be applied to the wired zone sensor's setpoint. It may take 20 seconds for the entered offset to be factored into the setpoint. This line also displays the setpoint being supplied by the wired zone sensor, with the offset applied. The following may display instead of a setpoint:

"-" displays if the setpoint fails.

MAX displays if the zone sensor is overridden to maximum.

UNOCC displays if the zone sensor is overridden to unoccupied.

UCM Control Constants

UCMs connected to the VariTrac II Central Control Panel can be set up through the remote interface as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Central Control Panel.
4. Select ***UCM Menu*** from the desired VariTrac II Central Control Panel Menu (*1S*).
5. Select the desired UCM from the UCM Menu.
6. Select ***UCM Setup*** (*3S*).
7. Type + and press Enter to activate the Control Constants Menu.

Refer to the VariTrac II Central Control Panel service literature for further details on programming UCMs.

Figure 15 shows the Control Constants Menu.

Figure 15
Control Constants Menu

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         1S
VariTrac II Central Control Panel Menu          1S
VariTrac II Central Control Panel 1 Menu        1S
UCM Menu                                        1S
UCM 1 CONFERENCE ROOM Menu                      3S
UCM 1 CONFERENCE ROOM Setup Menu                + [Enter]

UCM 1 CONFERENCE ROOM Control Constants Menu:
1)  Water valve drive time                    125 s
2)  Air valve drive time                       57 s
3)  Sensor flow constant                       83
4)  Air flow Kp                           20   1
5)  Air flow reset time                   500  1
6)  PWM heat Kp                           20   1
7)  PWM heat reset time                   500  1
8)  Air valve gain                        .07  1
```

1) Water Valve Drive Time **(default 125s)**
Enter the drive time as determined by the type/manufacturer of the hot water valve and the power frequency supplied to the unit. The drive time is always displayed and is editable even though it applies to units with proportional hot water heat. Values range from 0 to 255 seconds.

Note: Whenever the water valve drive time is edited, a Reset command is sent to the UCM.

2) Air Valve Drive Time **(default 57s)**
This value is automatically generated based on the Trane unit's type, size and by the power line frequency that were selected. This is not an editable field for Trane UCMs. Refer to the VariTrac II Central Control Panel for more information.

3) Sensor Flow Constant **(default 83)**
This constant is automatically determined for the Trane unit type or size. This field is not editable for Trane UCMs. Leave this value at the default. Refer to the VariTrac II Central Control Panel for more information.

4) Air Flow Kp **(default 1)**
Air flow Kp should be left at the factory default. This field is not editable for Trane UCMs. Leave this value at the default. Refer to the VariTrac II Central Control Panel for more information.

5) Air Flow Reset Time **(default 1)**
Air Flow Reset Time should be left at the factory default. This field is not editable for Trane UCMs. Leave this value at the default. Refer to the VariTrac II Central Control Panel for more information.

6) PWM Heat Kp **(default 1)**
PWM heat Kp should be left at the factory default. This field is not editable for Trane UCMs. Refer to the VariTrac II Central Control Panel for more information.

7) PWM Heat Reset Time **(default 1)**

PWM heat reset time should be left at the factory default. This field is not editable for Trane UCMs. Refer to the VariTrac II Central Control Panel for more information.

8) Air Valve Gain **(default 1)**

Air valve gain should be left at the factory default. This field is not editable for Trane UCMs. Refer to the VariTrac II Central Control Panel for more information.

UCM Setpoints

Setpoints for UCMs connected to the VariTrac II Central Control Panel can be edited through the remote interface as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Control Panel.
4. Select ***UCM Menu*** from the desired VariTrac II Control Panel (*1S*).
5. Select the desired UCM from the UCM Data Menu.
6. Select ***UCM Setpoints*** (*2S*).

Refer to the VariTrac II Central Control Panel service literature for further details on programming UCMs.

Figure 16 shows the UCM Setpoints Menu.

Figure 16
VariTrac II UCM Setpoints Menu

	Operator Entry
JONES CORP TRACKER S16 6.0	2S
Building Equipment Menu	1S
VariTrac II Central Control Panel Menu	1S
VariTrac II Central Control Panel 1 Menu	1S
UCM Menu	1S
UCM 1 CONFERENCE ROOM Menu	2S
UCM 1 CONFERENCE ROOM Setpoints Menu:	
1) Active cooling setpoint	74.0 F
2) Active heating setpoint	68.0 F
3) Occupied cooling setpoint	74.0 F
4) Occupied heating setpoint	68.0 F
5) Unoccupied cooling setpoint	85.0 F
6) Unoccupied heating setpoint	60.0 F
7) Cooling setpoint low limit	45 F
8) Heating setpoint high limit	100 F
9) Zone sensor heating setpoint offset	2 F
10) Control offset	0 F
11) Parallel fan control offset	—
12) Maximum position	100 %
13) Cooling minimum position	10 %
14) Heating minimum position	10 %
15) Occupied outside air requirement	0 %
16) Unoccupied outside air requirement	0 %

1) Active cooling setpoint

This is the current cooling setpoint being used by the UCM. The active cool setpoint cannot be changed through the Tracker, but it represents the actual setpoints being used by the UCM.

If "ZONE SENSOR THUMBWHEEL FUNCTIONS" in the UCM Setup Menu has been edited to ENABLE and the system is in the occupied mode, this is the zone sensor setpoint. If "ZONE SENSOR THUMBWHEEL FUNCTIONS" has been edited to DISABLE and the system is in the occupied mode, this is the occupied cooling setpoint. If the system is in the unoccupied mode, this value reflects the unoccupied cooling setpoint. Zone sensor setpoints are ignored in the unoccupied mode.

2) Active heating setpoint
This is the current heating setpoint being used by the UCM. The active heat setpoint cannot be changed through the Tracker, but it represents the actual setpoints being used by the UCM.

If the "ZONE SENSOR THUMBWHEEL FUNCTIONS" in the UCM Setup Menu has been edited to ENABLE and the system is in the occupied mode, this is the zone sensor setpoint. It is 2° below the active cooling setpoint when the "ZONE SENSOR THUMBWHEEL FUNCTIONS" is set to ENABLE.

If "ZONE SENSOR THUMBWHEEL FUNCTIONS" is edited to ENABLE and the system is in the occupied mode, this is the occupied heating setpoint. If the system is in the unoccupied mode, this value reflects the unoccupied heating setpoint. Zone sensor setpoints are ignored in the unoccupied mode.

3) Occupied cooling setpoint (default 74°F)
If the zone sensor thumbwheel functions is disabled, enter the cooling setpoint (40 to 95°F, or 4.4 to 35.0°C) to be used by the UCM in the occupied mode.

4) Occupied heating setpoint (default 71°F)
If the zone sensor thumbwheel functions is disabled, enter the heating setpoint (40 to 95°F, or 4.4 to 35.0°C) to be used by the UCM in the occupied mode.

5) Unoccupied cooling setpoint (default 85°F)
Enter the cooling setpoint (40 to 95°F, 4.4 to 35.0°C) to be used by the UCM in the unoccupied mode.

6) Unoccupied heating setpoint (default 60°F)
Enter the heating setpoint (40 to 95°F, 4.4 to 35.0°C) to be used by the UCM in the unoccupied mode.

7) Cooling setpoint low limit (default 45°F)
Enter a temperature between 40 to 95°F (4.4 - 35.0°C). The VariTrac II Central Control Panel does not send a cooling setpoint to the Voyager Rooftop that is lower than this value. This limit applies to the local setpoint adjustment, as well as the Tracker setpoint during occupied times only.

8) Heating setpoint high limit (default 100°F)
Enter a temperature between 40 to 95°F (4.4 - 35.0°C). The VariTrac II Central Control Panel does not send a heating setpoint to the Voyager Rooftop that is higher than this value. This limit applies to the local setpoint adjustment, as well as the Tracker setpoint during occupied times only.

9) Zone Sensor Heating Setpoint Offset (default 2°F)
When a zone sensor setpoint is used, the cooling setpoint equals the zone sensor setpoint and the heating setpoint number equals the zone sensor setpoint minus the zone sensor heating setpoint offset. The offset always displays and is always editable even if a zone sensor setpoint is not used. The range is from 2 to 10°F (-16.7 to -12.2°C).

10) Control Offset **(default 0°F)**
This feature is not utilized with the Tracker system.

11) Parallel Fan Control Offset
Enter a value to determine when a parallel fan is turned on and off. This is not used with VariTrac dampers.

12) Maximum Position **(default 100%)**
The value at which the UCM does not drive its position above under normal operating conditions. The maximum must be greater than or equal to the minimum cooling and minimum heating values. Values range from 10 to 100%.

13) Cooling Minimum Position **(default 10%)**
The value at which the UCM does not drive its position below under normal operating conditions while in the cool mode. The minimum cool value must be less than or equal to the maximum value. Values range from 0 to 100%.

14) Heating Minimum Position **(default 10%)**
The value at which the UCM does not drive its position below under normal operating conditions while in the Heat mode and while it is using terminal heat. The minimum heat value must be less than or equal to the maximum value. Values range from 0 to 100%.

15) Occupied Outside Air Requirement
This feature is not utilized with the Tracker system.

16) Unoccupied Outside Air Requirement
This feature is not utilized with the Tracker system.

Group Data

The VariTrac II Central Control Panel allows groups of UCMs to be controlled and monitored independently. UCMs can be defined into four groups. A group can have up to 16 members, or UCMs. UCMs 1-4 are automatically assigned to Group 1, UCMs 5-8 are assigned to Group 2, UCMs 9-12 are assigned to Group 3 and UCMs 13-16 are assigned to Group 4. All UCMs must be assigned to a group for proper operation.

Group Status

The VariTrac II Central Control Panel Group Status display provides a status summary of group data. This status display is for viewing only; no editing is available.

To access a VariTrac II Central Control Panel Group Status display, follow these steps:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Control Panel from the VariTrac II Menu.
4. From the desired VariTrac II Menu, select ***Group Menu*** (*2S*).
5. Select the desired group from the Group Menu.
6. Select ***Group Status*** (*1S*).

The current operating parameters are then displayed for the selected group. Figure 17 shows an example of a VariTrac II Central Control Panel Group Status display.

Figure 17
VariTrac II Group Status Display

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         1S
VariTrac II Central Control Panel Menu          1S
VariTrac II Central Control Panel 1 Menu        2S
Group Menu                                      1S
Group 1 MARKETING DEPT                          1S

Group 1 MARKETING DEPT                      Status
Control mode                                OCCUPY
Flow control                                  AUTO
Unit fan                                    ENABLE
Unit heat                                   ENABLE
Total flow                                    .0 CFM
Average temp                                74.1 F
Minimum temp                                72.6 F  UCM  2 OFFICE 1
Maximum temp                                77.9 F  UCM  1 CONFERENCE ROOM
Max deviation                               - 3.2 F  UCM  1 CONFERENCE ROOM
Max position                                100 %  UCM  1 CONFERENCE ROOM
Critical vent ratio                         0.00
Max position exists
```

***Note**: If certain conditions exist, "VENT MODE ACTIVE," "MAX FLOW EXISTS," "MAX POSITION EXISTS," and/or "ZONE TEMPERATURE SENSOR FAILURE EXISTS" may display. Vent Mode Active indicates that at least one member of the group is currently in vent mode. Max Flow Exists indicates that at least one member of the group has a flow sensor that is at or above its maximum flow setpoint. Max Position Exists indicates that at least one member of the group is at or above the set max position setpoint. Zone Temperature Sensor Failure Exists indicates that at least one member of the group has a failed zone temp sensor.*

Group Member List

The Group Member List provides a brief summary of each group member (Figure 18). The following is displayed for each member:

- UCM number
- UCM name
- Active cooling and heating setpoints
- Current zone temperature - This value is displayed as "-" if the UCM is not being supplied with a valid zone temperature from any of its zone sensor modules.
- Control action (heat/cool)
- Damper position
- Diagnostic letters, if certain conditions exist

The characters in the Member List represent the following:

T - The UCM is not being supplied with a valid zone temperature from any of its zone sensor modules.

F - The UCM's flow sensor has failed or doesn't exist.

S - The UCM is not being supplied with a valid setpoint from its zone sensor.

To access a VariTrac II Central Control Panel Group Member List display, follow these steps:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Control Panel from the VariTrac II Menu.
4. From the VariTrac II Menu, select ***Group Data*** (*2S*).
5. Select the desired Group from the Group Menu.
6. Select ***Group Member List*** (*2S*).

Figure 18
Group Member List Display

```
                                                    Operator Entry
JONES CORP  TRACKER S16 6.0                              2S
Building Equipment Menu                                  1S
VariTrac II Central Control Panel Menu                   1S
VariTrac II Central Control Panel 1 Menu                 2S
Group Menu                                               1S
Group 1 MARKETING DEPT Menu                              2S

Group 1 MARKETING DEPARTMENT Menu    Member List:
1) # 1  CONFERENCE ROOM      Cl/Ht 74.7/72.7 Temp 77.9 COOL Pos 100% F
2) # 2  OFFICE 1             Cl/Ht 73.2/71.2 Temp 72.9 COOL Pos  10% F
3) # 3  OFFICE 2             Cl/Ht 72.4/70.4 Temp 73.9 COOL Pos  69% F
4) # 4  MARKETING ASSIST      Cl/Ht 74.0/71.0 Temp 73.1 COOL Pos  47% F
```

***Note**: If a group has no members, the system displays "THIS GROUP HAS NO MEMBERS."*

***Note**: Access to the member's Status, Setpoint and Setup Menus are available by selecting that member from the member list.*

Group Setup

Groups can be set up through the VariTrac II Central Control Panel as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Control Panel from the VariTrac II Menu.
4. From the VariTrac II Menu, select ***Group Data*** (*2S*).
5. Select the desired Group from the Group Menu.
6. Select ***Group Setup*** (*3S*).

Figure 19 shows a VariTrac II Central Control Panel Group Setup Menu.

Figure 19
VariTrac II Group Setup Menu

```
                                              Operator Entry
JONES CORP  TRACKER S16  6.0                          2S
Building Equipment Menu                               1S
VariTrac II Central Control Panel Menu                1S
VariTrac II Central Control Panel Menu                2S
Group Menu                                            1S
Group 1 MARKETING DEPT Menu                           3S

Group 1 MARKETING DEPT                      Setup Menu:
1) Name                          [MARKETING DEPT    ]
2) Control mode                                AUTO  0
3) Flow override                               AUTO  0
4) Energy saver mode                           ENABLE
5) Ventilation mode                            DISABL
6) Unit fan                                    ENABLE
7) Unit heat                                   ENABLE
8) Enforce min while unoccupied                   YES
9) S - select for member definition

Group 1  MARKETING DEPT          Member Definition:
1)  Group 1 member  1  CONFERENCE ROOM          1
 2)  Group 1 member  2  OFFICE 1                2
 3)  Group 1 member  3  OFFICE 2                3
 4)  Group 1 member  4  MARKETING ASSIST        4

⇩  ⇩                                           ⇩

15) Group 1 member 15                           0
16) Group 1 member 16                           0
```

1) Name
Enter a descriptive name for the VariTrac II Central Control Panel UCM. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters of the name. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

Tip: An Equipment Worksheet is provided at the end of this manual to help with customizing equipment names.

2) Control Mode **(default 0)**
Enter an index number to select a group control mode. If either index number 1 or 2 is selected, the group control mode overrides the control of the ICS (the system is no longer controlled based upon its schedules). For example, if the group control mode is occupy (1), the system is always in the occupied mode. If index number 0 (Auto) is selected, the system is controlled via the ICS based upon its schedules. The following lists the control modes that may be selected:

Index	Control Mode
0	Auto
1	Occupy
2	Unoccupy

3) Flow Override **(default 0)**

Enter the group flow override as an index number. Entries 0-4 reflect the following:

Index	Control Mode
0	Auto
1	Open
2	Closed
3	Min
4	Max

4) Energy Saver Mode **(default ENABLE)**

Enter + to ENABLE or - to DISABLE energy saver mode. When energy saver mode is enabled, the VariTrac II Central Control Panel sends a command to certain group members that allow them to close below their minimum positions. This command is sent only to occupied members of the group that are either in the cooling mode and have a zone temperature that is less than the active heating setpoint, or are in the heating mode and have a zone temperature that is greater than the active cooling setpoint.

5) Ventilation Mode **(default DISABL)**

Enter + to ENABLE or - to DISABLE ventilation mode. When Ventilation Mode is enabled, the group is occupied, and the system has been in a zero energy state for more than 4 minutes, the VariTrac II Central Control Panel does not allow the group's minimum flow/position multiplier to fall below 2.0. A zero energy state shall be any period when the system fan is on and no stages of heat or cool are on.

6) Unit Fan **(default ENABLE)**

Enter + to ENABLE or - to DISABLE the unit fan. This command allows you to disable the parallel fans of the group members.

7) Unit Heat **(default ENABLE)**

Enter + to ENABLE or - to DISABLE unit heat. When this is disabled, the UCM heating outputs and the auxiliary outputs of the group members are disabled.

8) Enforce Min While Unoccupied? **(default YES)**

Enter + to enable (YES) or - to disable (NO). If NO is entered on this line, the unoccupied members of the group are allowed to close below their minimum positions.

9) S - select for Member Definition

This menu allows for definition of the group members. Members are defined by entering the UCM number on the desired member line. If the entered UCM is already in another group, the following message is generated:

"UCM XX ALREADY IN GROUP Y; " + ENTER" TO REASSIGN"

If a + is entered on this line, the UCM is reassigned to this group.

Group ICS Control Summary

The VariTrac II Group ICS Control Summary provides a summary of the ICS Control. Information such as whether the ICS is currently communicating with the VariTrac II Central Control Panel, whether the ICS is in control of the Central Control Panel, what control mode the ICS is in, and whether the unit fan and heat are enabled displays. This status is for display purposes only; no editing is available. Figure 20 displays the ICS Control Summary screen.

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Control Panel from the VariTrac II Menu.
4. From the VariTrac II Menu, select ***Group Data*** (*2S*).
5. Select the desired group from the Group Menu.
6. Select ***ICS Control Summary*** (*4S*).

Figure 20
ICS Control Summary Screen

```
JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         1S
VariTrac II Central Control Panel Menu          1S
VariTrac II Central Control Panel 1 Menu        2S
Group Menu                                      1S
Group 1 MARKETING DEPT Menu                     4S

Group 1 MARKETING DEPT      ICS Control Summary
ICS control?                                YES
Control mode                              OCCUPY
Flow override                               AUTO
Unit heat                                 ENABLE
Unit fan                                  ENABLE
Unit reset?                                 NO
Control offset                            DISABL
Minimum flow multiplier                      1.0
```

***Note**: Lines below and including "CONTROL MODE" are displayed only if an ICS is in control of the VariTrac II Central Control Panel; they are not displayed if the "ICS CONTROL?" is NO.*

Group Schedules

VariTrac II Central Control Panel Group Schedules (two start and two stop times per day) can be set up through the Tracker as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***VariTrac II Central Control Panel*** from the Building Equipment Menu (*1S*).
3. Select the desired VariTrac II Control Panel from the VariTrac Menu.
4. Select ***Group Data*** (*2S*).
5. Select the desired group.
6. Select ***Group Schedules*** (*5S*).
7. Select the desired day to assign the schedule. Refer to the *Time of Day Scheduling Overview* on page 9 for information about daily, holiday and exception schedules.
8. Add the desired start and stop times.

*Note: Times **must** be entered on the appropriate day. For example, if equipment is to turn ON Monday at 9:00 p.m. and OFF four hours later at 1:00 a.m. Tuesday, the OFF time **must** be on Tuesday's schedule.*

*Note: After a communications loss or power failure, a device is controlled to its last specified state for the current day. If no action is found for the current day, the Tracker "looks back" **one** day to the previous day's schedule to determine the last specified control action. If no action is found on either day, the device defaults to its ON (occupied) state. To ensure control continuity upon power loss, the schedule for each device should contain at least one control action on each day. **For days that contain no other scheduled action,** a simple way to accomplish this is to enter a First Start or First Stop, as desired, at 12:01 a.m. For example, an area may be scheduled off on Friday at 5:00 p.m., and on again Monday at 7:00 a.m. This area should then be scheduled so both Saturday and Sunday have a First Stop at 12:01 a.m.*

Figure 21 shows the Group Scheduling Menu.

Figure 21
VariTrac II Group Scheduling Menu

	Operator Entry
JONES CORP TRACKER S16 6.0	2S
Building Equipment Menu	1S
VariTrac II Central Control Panel Menu	1S
VariTrac II Central Control Panel 1 Menu	2S
Group Menu	1S
Group 1 MARKETING DEPT Menu	5S

Group 1 MARKETING DEPT	Schedules:
1) Group 1	MONDAY schedule
2) Group 1	TUESDAY schedule
3) Group 1	WEDNESDAY schedule
4) Group 1	THURSDAY schedule
5) Group 1	FRIDAY schedule
6) Group 1	SATURDAY schedule
7) Group 1	SUNDAY schedule
8) Group 1	HOLIDAY schedule
9) Group 1	EXCEPTION schedule

MONDAY Schedule Menu:	
1) First START time	6:00 AM
2) First STOP time	6:00 PM
3) Second START time	—:— AM
4) Second STOP time	—:— AM
5) Copy MONDAY'S schedule to:	1

EXCEPTION Schedule Menu:	
1) First START time	06:00 AM
2) First STOP time	11:00 PM
3) Second START time	—:— PM
4) Second STOP time	—:— PM
5) Copy EXCEPTION'S schedule to:	9
6) Exception date	02-FEB-96

Thermostat Control Module Communications

The Tracker Stat 16 communicates with up to 12 Thermostat Control Modules and Stat 7 communicates with up to 7 to upload and download current operating parameters. This information can be viewed by selecting the appropriate TCM display.

In addition to communicating with up to 12 TCMs, Tracker also communicates with two slave TCMs. A slave TCM provides 3 analog inputs, 3 binary inputs and 6 binary outputs. The inputs can be set up for monitoring and alarming. The binary outputs can be set up for ON/OFF control of devices via the time of day schedules.

Thermostat Control Modules are automatically named by the Tracker when communications are established. The default names, which correspond to the addresses configured by the TCM address dip switch block, are in the form TCM AC UNIT 1, TCM AC UNIT 2, TCM AC UNIT 3, etc.

The TCM names appear in the Tracker's LCD front panel (Area Menu) as area references, and in the Tracker edit terminal (Building Equipment Menu) as device references. A Thermostat Control Module name can be edited in the TCM setup menu using an edit terminal.

Important: Slave TCM inputs are not automatically named by the Tracker. Slave TCM inputs and outputs, when named, appear on the Tracker front panel LCD area menu as area references. If Slave TCM inputs are not configured via the Tracker edit terminal or modem ports, the areas that the Slave TCM inputs and outputs represent do not appear in the Tracker LCD Area Menu. Slave BOPs are automatically named.

If communications between the Tracker and the TCM are lost (no communication for 15 minutes), the TCM continues to operate in standalone mode according to Table 13. This table also displays the control functions of the TCM during normal operation with Tracker.

For additional details of the TCM operation, refer to the Thermostat Control Module Installation-Operation-Maintenance Manual.

A slave TCM that loses communications with Tracker de-energizes all binary outputs after 15 minutes.

Table 13
TCM Operating Mode Table

Tracker/TCM Operating Modes	TCM Control		
	Setpoints	Setpoint Offsets	Fan Operation
DAY (OCCUPY)	Note 3	No	Note 1
NIGHT (UNOCCUPY)	Unoccupied	No	Note 2
DEMAND LIMIT	—	Yes	—
Communication Loss (DEFAULT)	Note 4	No	Note 1

Note 1: *Occupied fan mode can be selected* ON *or* AUTO *from the TCM setup line "OCCUPIED FAN MODE."*
Note 2: *In the unoccupied mode, the supply fan operates in the AUTO mode while cooling, and depends on the entry for the TCM Setup line "FAN ON WITH HEAT" (YES or NO) while heating.*
Note 3: *Occupied setpoints are the Tracker edited setpoint values only if the TCM setup menu line "LOCAL SETPOINT ADJUST" is edited to NO.*
Note 4: *If "LOCAL SETPOINT ADJUST" is NO, the TCM uses the occupied cooling and heating setpoints. If "LOCAL SETPOINT ADJUST" is YES, the TCM uses the installed setpoint adjuster.*

TCM Status

The TCM Status display provides a status summary of each Thermostat Control Module. This allows you to view all connected TCM inputs and outputs.

To access a TCM Status display, perform the following steps:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***Thermostat Control Module*** from the Building Equipment Menu (*2S*).
3. Select the desired Thermostat Control Module from the Thermostat Control Module Menu.
4. From the desired Thermostat Control Module Menu, select ***TCM Status*** (*1S*). The current operating parameters are then displayed for the selected Thermostat Control Module. Figure 22 shows an example of a TCM Status display.

Figure 22
TCM Status Display

```
                                                    Operator Entry
JONES CORP  TRACKER S16  6.0                              2S
Building Equipment Menu                                   2S
TCM Menu                                                  1S
TCM 1 PACKING DEPT Menu                                   1S

TCM 1      Status Menu
Unit type                          2H2C
Operating mode                     OCCUPY
Active setpoint                    74.5 F
Operating status                   COOL
Thermostat control                 NORMAL
Local program                      NORMAL
Zone temperature                   75.5 F
Temperature 2                      74.5 F
Temperature 3                      55.0 F
Binary inputs       OFF,    OFF,    OFF
Supply fan                                            ON
Cool 1                ON,       2                     OFF
Heat 1                OFF,      2                     OFF
Binary output  6                                      OFF
```

Note: Binary Output 6 cannot be individually scheduled. In the occupied mode or during TOV, BOP 6 is de-energized. In the unoccupied mode, BOP6 is energized.

The following illustrates the various Thermostat Control Module setup screens. For details on Thermostat Control Module setup requirements, refer to the Thermostat Control Module Installation-Operation- Maintenance manual.

TCM Setup

The Thermostat Control Module can be set up through the Tracker remote interface as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***TCMs*** from the Building Equipment Menu (*2S*).
3. Select the desired TCM.
4. Select ***TCM Setup*** from the desired Thermostat Control Module Menu (*2S*).

Figure 23 shows the Thermostat Control Module Setup Menu. Each of the entries on the TCM Setup Menu is described in order in the following text.

Figure 23
TCM Setup Menu

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         2S
TCM Menu                                        1S
TCM  1 PACKING DEPT    Menu                     2S

TCM 1 Setup Menu:
 1)  Unit name                  [PACKING DEPT    ]
 2)  Occupied fan mode                        ON
 3)  Fan on with heat                        YES
 4)  Local setpoint adjust                   YES
 5)  Number of compressor stages               2
 6)  Cool low limit                       69.0 F
 7)  Heat high limit                      75.0 F
 8)  Unoccupied cool setpt                85.0 F
 9)  Unoccupied heat setpt                55.0 F
10)  Cool setpoint offset                  3.0 F
11)  Heat setpoint offset                  2.0 F
12)  Analog input 1 adjust                -1.2 F
13)  Analog input 2 adjust                00.0 F
14)  Analog input 3 adjust                01.5 F
```

1) Unit name
Enter a descriptive name for the TCM. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

Tip: An Equipment Worksheet is provided at the end of this manual to help with customizing equipment names.

2) Occupied fan mode **(default ON)**
Enter + for ON or - for AUTO. If ON is selected, the unit fan operates continuously. If AUTO is selected, the TCM turns the unit fan ON whenever a stage of cooling or heating is turned on. The fan remains on until the last stage of cooling or heating is turned off.

Note: *On units with an air conditioning thermostat used in the auto fan mode, the fan does not operate during heating unless the "FAN ON WITH HEAT" entry is YES.*

3) Fan on with heat **(default YES)**
Enter + for YES or - for NO (units with air conditioning thermostat used in auto fan mode only). If YES is selected, the unit fan operates during the heating mode. If NO is selected , the unit fan does not operate during the heating mode.

4) Local setpoint adjust **(default YES)**
Enter + for YES or - for NO. If YES is selected, the TCM controls temperature based on the value of the zone sensor-mounted setpoint knob. If NO is selected, the TCM controls temperature based on the Occupied/Unoccupied setpoints that are entered in the Tracker.

Note: If setpoint adjustment is used, the "COOLING LOW LIMIT" and "HEATING HIGH LIMIT" entries are used to limit the setpoint adjustment range. If the TCM's local setpoint adjustment should fail, the TCM uses non-editable values of 71° F heating setpoint and 74° F cooling setpoint.

5) Number of compressor stages **(default 2)**
Enter the number (1 or 2) of available compressor stages for the unit that this TCM is connected to.

6) Cool low limit/Occupied cool setpoint **(default 40.0°F)**
If the entry for "LOCAL SETPOINT ADJUST" is YES, this line is labeled "COOL LOW LIMIT." When this line is labeled "COOL LOW LIMIT," the TCM does not allow a cooling setpoint lower than this edited value.

If the entry for the "LOCAL SETPOINT ADJUSTMENT" is NO, this line is labeled "OCCUPIED COOL SETPOINT." Enter the desired cooling setpoint (40.0 to 95.0°F, 4.4 to 35.0°C), which is used during the occupied mode. The factory default for the occupied cooling setpoint is 74.0°F.

7) Heat high limit/Occupied heat setpoint **(default 95.0°F)**
If the entry for "LOCAL SETPOINT ADJUST" is YES, this line is labeled "HEAT HIGH LIMIT." When this line is labeled "HEAT HIGH LIMIT," the TCM does not allow a heating setpoint higher than this edited value.

If the entry for "LOCAL SETPOINT ADJUSTMENT" is NO, this line is labeled "OCCUPIED HEAT SETPOINT." Enter the desired heating setpoint (40 to 95°F, 4.4 to 35.0°C), which is used during the occupied mode. The factory default for the occupied heating setpoint is 71.0°F.

8) Unoccupied cool setpt **(default 85.0°F)**
Enter the desired cooling setpoint (40 to 95°F, 4.4 to 35.0°C), which is used during unoccupied times.

9) Unoccupied heat setpt **(default 60.0°F)**
Enter the desired heating setpoint (40 to 95°F, 4.4 to 35.0°C), which is used during unoccupied times.

10) Cool setpoint offset **(default 0.0°F)**
Enter an offset value (0.0 to 20.0°F, -17.8 to -6.7°C) that the TCM uses to increase the occupied cooling setpoint when in the demand limiting mode.

11) Heat setpoint offset **(default 0.0°F)**
Enter an offset value (0.0 to 20.0°F, -17.8 to -6.7°C) that the TCM uses to decrease the occupied heating setpoint when in the demand limiting mode.

12-14) Analog input 1 -3 adjust **(defaults 0.0°F)**
Enter a value (-5.0 to 5.0°F, -20.6 to -15°C) to use to calibrate each of the three TCM analog input sensors.

TCM Schedules

Thermostat Control Module schedules (two start and two stop times per day) can be set up through the Tracker as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***TCMs*** from the Building Equipment Menu (*2S*).
3. Select the desired TCM.
4. Select ***TCM Schedules*** for the selected TCM (*3S*).
5. Select the desired day to assign the schedule. Refer to the *Time of Day Scheduling Overview* on page 9 for more information about daily, holiday or exception schedules.
6. Add the desired start and stop times.

Note: *Times* ***must*** *be entered on the appropriate day. For example, if equipment is to turn ON Monday at 9:00 p.m. and OFF four hours later at 1:00 a.m. Tuesday, the OFF time* ***must*** *be on Tuesday's schedule.*

Note: *After a communications loss or power failure, a device is controlled to its last specified state for the current day. If no action is found for the current day, the Tracker "looks back"* ***one*** *day to the previous day's schedule to determine the last specified control action. If no action is found on either day, the device defaults to its ON (occupied) state. To ensure control continuity upon power loss, the schedule for each device should contain at least one control action on each day.* ***For days that contain no other scheduled action,*** *a simple way to accomplish this is to enter a First Start or First Stop, as desired, at 12:01 a.m. For example, an area may be scheduled off on Friday at 5:00 p.m., and on again Monday at 7:00 a.m. This area should then be scheduled so both Saturday and Sunday have a First Stop at 12:01 a.m.*

Figure 24 shows the Thermostat Control Module Scheduling Menu.

Figure 24
TCM Scheduling Menu

```
                                          Operator Entry
JONES CORP  TRACKER S16  6.0                      2S
Building Equipment Menu                           2S
TCM Menu                                          1S
TCM  1 PACKING DEPT     Menu                      3S

TCM 1 Schedule Menu:
 1) TCM  1                          MONDAY schedule
 2) TCM  1                         TUESDAY schedule
 3) TCM  1                       WEDNESDAY schedule
 4) TCM  1                        THURSDAY schedule
 5) TCM  1                          FRIDAY schedule
 6) TCM  1                        SATURDAY schedule
 7) TCM  1                          SUNDAY schedule
 8) TCM  1                         HOLIDAY schedule
 9) TCM  1                       EXCEPTION schedule

MONDAY   schedule Menu:
 1)  First START time                          07:00 AM
 2)  First  STOP time                          03:00 PM
 3)  Second START time                         05:00 PM
 4)  Second STOP time                          10:00 PM
 5)  Copy    MONDAY'S schedule to:                  1

EXCEPTION   schedule Menu:
 1)  First START time                          06:00 AM
 2)  First  STOP time                          03:00 PM
 3)  Second START time                         06:00 PM
 4)  Second STOP time                          11:00 PM
 5)  Copy  EXCEPTION'S schedule to:                9
 6)  Exception date                          29-OCT-94
```

Slave TCM Communications

The Tracker Stat 16 and Stat 7 communicates with up to two Slave Thermostat Control Modules each to upload and download current operating parameters. This information can be viewed by selecting the appropriate Slave TCM display.

The Slave Thermostat Control Module Setup Menu allows you to assign names to the slave TCM inputs and outputs.

Slave TCM inputs ***must*** be assigned names before the Tracker automatically assigns the input or output to an area. Once an input is named and assigned to an area, it can be viewed through the Tracker front panel LCD and keypad area menu. Slave TCM binary outputs are assigned default names by the Tracker.

The inputs can be set up for monitoring and alarming. The binary outputs can be set up for control via the time of day schedules.

Note: *Analog inputs on slave Thermostat Control Modules can be only thermistor device temperature sensors.*

Refer to the Thermostat Control Module Installation-Operation-Maintenance manual for details on input and output requirements.

Slave TCM Status

The Slave TCM Status display provides a status summary of each slave Thermostat Control Module input/output point. This allows you to view all connected TCM inputs and outputs.

To access the Slave TCM Status display, perform the following steps:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***Slave Thermostat Control Module*** from the Building Equipment Menu (*3S*).
3. Select the desired Slave TCM.
3. Select ***Slave Thermostat Control Module Status*** (*1S*).

The current operating parameters are then displayed for the Slave Thermostat Control Module. Figure 25 shows an example of the Slave TCM Status display.

Figure 25
Slave TCM Status Display

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                    2S
Building Equipment Menu                         3S
Slave TCM Menu                                  1S
Slave 1 TCM Menu:                               1S

Slave TCM Status Menu:
Local program                 NORMAL
COMPUTER ROOM TEMP            72.9 F
OUTDOOR AIR TEMP              74.3 F
0000000000000000000           -300.0 F
ENTRY DOOR ALARM              OFF
BINARY INPUT 2                OFF
BINARY INPUT 3                OFF
PARKING LIGHTS                OFF
OUTDOOR LIGHTS                ON
SALES LIGHTS                  OFF
OFFICE LIGHTS                 OFF
 SLAVE 1 BOP 5                OFF
 SLAVE 1 BOP 6                OFF
```

Note: *Temperature 1, 2 and 3 (analog inputs 1, 2 and 3) displays -300.0 if the temperature sensor is open, or 300.0 if it is shorted.*

Slave TCM Setup

The Slave Thermostat Control Module can be set up through the Tracker remote interface as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***Slave TCM*** from the Building Equipment Menu (*3S*).
3. Select the desired Slave TCM.
4. Select ***Slave TCM Setup*** from the desired Slave TCM Menu (*2S*).

Figure 26 shows the Slave TCM Setup Menu.

Figure 26
Slave TCM Setup Menu

```
                                        Operator Entry
JONES CORP TRACKER S16  6.0                        2S
Building Equipment Menu                            3S
Slave TCM Menu                                     1S
Slave TCM 1 Menu                                   2S

Slave TCM setup Menu
 1) Binary output  1                  [PARKING LIGHTS]
 2) Open contact means                             OFF
 3) Binary output  2                  [OUTDOOR LIGHTS]
 4) Open contact means                             ON
 5) Binary output  3                    [SALES LIGHTS]
 6) Open contact means                             ON
 7) Binary output  4                    [OFFICE LIGHTS]
 8) Open contact means                             OFF
 9) Binary output  5                    [ SLAVE 1 BOP 5]
10) Open contact means                             OFF
11) Binary output  6                    [ SLAVE 1 BOP 6]
12) Open contact means                             OFF
13) Binary input 1                     [ENTRY DOOR ALARM]
14) Binary input 2                     [0000000000000000]
15) Binary input 3                     [0000000000000000]
16) Analog input 1                  [COMPUTER ROOM TEMP]
17) Analog input 2                     [OUTDOOR AIR TEMP]]
18) Analog input 3                     [0000000000000000]
19) Analog input 1 adjust                          1.1
20) Analog input 2 adjust                         -2.2
21) Analog input 3 adjust                          .0
```

The entries on the Slave TCM Setup Menu are described in order in the following text.

Binary output 1-6
Enter a descriptive name for the binary output, which displays on the slave TCM status display and the LCD front panel display. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.

Open contact means
Enter + for ON or - for OFF to describe the state of the binary (relay) output when the normally open contact is open. For example, if Binary Output #1 is edited to "OPEN CONTACT MEANS - OFF" the relay is de-energized in the Unoccupied mode.

Binary input 1-3
Enter a descriptive name for the binary input, which displays on the slave TCM status display and the LCD front panel display. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the

Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.

Analog input 1-3
Enter a descriptive name for the analog input, which displays on the slave TCM status display and the LCD front panel display. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

Analog input 1-3 adjust **(defaults 0.0 °F)**
Enter a value (-5.0 to +5.0°) to use to calibrate each of the three analog input sensors.

Slave TCM Schedules

Slave Thermostat Control Module binary output schedules (two start and two stop times per day) can be set up through the Tracker as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***Slave TCM*** from the Building Equipment Menu (*3S*).
3. Select the desired Slave TCM.
4. Select ***Slave TCM Schedule*** (*3S*).
5. Select the desired binary output schedule.
6. Select the desired day to assign the schedule. Refer to *Time of Day Scheduling Overview* on page 9 for information about daily, holiday and exception schedules.
7. Add the desired start and stop times.

Note: *Times* ***must*** *be entered on the appropriate day. For example, if equipment is to turn ON Monday at 9:00 p.m. and OFF four hours later at 1:00 a.m. Tuesday, the OFF time* ***must*** *be on Tuesday's schedule.*

CAUTION: *The Tracker default is to control slave TCM binary outputs to its energized state. Therefore, it is important to initiate an ON or OFF, as desired, for each scheduled device on the day of system startup and daily, if possible.*

Note: *After a communications loss or power failure, a device is controlled to its last specified state for the current day. If no action is found for the current day, the Tracker "looks back"* ***one*** *day to the previous day's schedule to determine the last specified control action. If no action is found on either day, the device defaults to its ON (occupied) state. To ensure control continuity upon power loss, the schedule for each device should contain at least one control action on each day.* ***For days that contain no other scheduled action,*** *a simple way to accomplish this is to enter a First Start or First Stop, as desired, at 12:01 a.m. For example, an area may be scheduled off on Friday at 5:00 p.m., and on again Monday at 7:00 a.m. This area should then be scheduled so both Saturday and Sunday have a First Stop at 12:01 a.m.*

Figure 27 shows the Slave TCM Scheduling Menu.

Figure 27
Slave TCM Scheduling Menu

	Operator Entry
JONES CORP TRACKER S16 6.0	2S
Building Equipment Menu	3S
Slave TCM Menu	1S
Slave TCM 1 Menu	3S
Slave TCM Schedule Menu	1S
PARKING LOT LIGHTS BOP 1 Schedule Menu	
1) BOP 1	MONDAY schedule
2) BOP 1	TUESDAY schedule
3) BOP 1	WEDNESDAY schedule
4) BOP 1	THURSDAY schedule
5) BOP 1	FRIDAY schedule
6) BOP 1	SATURDAY schedule
7) BOP 1	SUNDAY schedule
8) BOP 1	HOLIDAY schedule
9) BOP 1	EXCEPTION schedule
MONDAY schedule Menu:	
1) First START time	05:00 AM
2) First STOP time	08:00 AM
3) Second START time	05:00 PM
4) Second STOP time	11:00 PM
5) Copy MONDAY'S schedule to:	1
EXCEPTION schedule Menu:	
1) First START time	06:00 AM
2) First STOP time	10:00 AM
3) Second START time	05:00 PM
4) Second STOP time	10:00 PM
5) Copy EXCEPTION'S schedule to:	9
6) Exception date	29-FEB-96

Voyager Communications

The Tracker Stat 16 communicates with up to 12 Voyager Rooftops and Stat 7 communicates with up to seven to upload and download current operating parameters. This information can be viewed by selecting the appropriate Voyager display.

Voyager Rooftops are automatically named by the Tracker when communications are established. The default names, which correspond to the addresses configured by the Voyager address DIP switch block, are in the form ROOFTOP V1, ROOFTOP V2, ROOFTOP V3, etc. The Voyager Rooftop names appear in the Tracker's LCD front panel (Area Menu) as area references, and in the Tracker edit terminal (Building Equipment Menu) as device references. A Voyager name can be edited in the Voyager Setup Menu.

If communications between Tracker and Voyager are lost (no communication for 15 minutes), the Voyager continues to operate in the standalone mode according to Table 14. This table also displays the control functions of the Voyager during normal operation with Tracker.

For additional details on Voyager control, refer to the Voyager Operation manual.

Table 14
Voyager Operating Mode Table

Tracker/Voyager Operating Modes	Voyager Control			
	Setpoints	Setpoint Offsets	Supply Fan Operation	Minimum O.A. Damper Position
DAY (OCCUPY)	Note 1	No	Note 3	Note 4
NIGHT (UNOCCUPY)	Unoccupied	No	Auto	0
DEMAND LIMIT	—	Yes	—	—
Communication Loss (DEFAULT)	Note 2	No	On	Note 5

Note 1: *Occupied setpoints can be either as edited, or as set by local setpoints thumbwheel if the Voyager setup line "USE LOCAL SETPOINTS" is YES.*
Note 2: *Unless the Voyager is equipped with a local setpoints thumbwheel, the cooling setpoint is 74°F and the heating setpoint is 71°F following a communication loss.*
Note 3: *Fan mode can be Auto or On, depending on the Voyager setup line "OCCUPIED FAN MODE."*
Note 4: *"MINIMUM DAMPER POSITION" can be edited in the Voyager Setup Menu, or as set by the Voyager potentiometer if the Voyager Setup line "USE LOCAL MIN POSITION POT" is YES.*
Note 5: *If communication is lost, the minimum damper position is determined by the minimum position potentiometer on the unit.*

Voyager Rooftop Status

The Voyager Rooftop Status display provides a summary of the rooftop unit status. This status display is mainly for viewing. The only editing available is reset of the compressor lockouts.

To access a Voyager Rooftop Status display, follow these steps:

1. From the Tracker Main Menu, select ***Building Equipment*** (***2S***).
2. Select ***Voyager Rooftop*** (***4S***) from the Building Equipment Menu.
3. Select the desired Voyager Rooftop from the Voyager Menu.
4. From the desired Voyager Rooftop Menu, select ***Voyager Status*** (***1S***).

Figure 28 shows an example of a Voyager Rooftop Status display.

Figure 28
Voyager Rooftop Status Display

```
                                        Operator Entry
JONES CORP   TRACKER S16 6.0                    2S
Building Equipment Menu                         4S
Voyager Menu                                    1S
Voyager 1 ROOFTOP V1   Menu                     1S

Voyager 1 Status Menu:
Unit type:  Heat pump, economizer
Diagnostics: LPC 2 input open
             Zone temp sensor   fail
Operating Status:  HEAT 1,   OCCUPY
Unit mode:
Active cooling setpoint          75.0 F
Active heating setpoint          71.0 F
Zone temperature                 69.5 F
Supply air temperature           107.4 F
Supply fan mode                  AUTO
Supply fan status                ON
Condenser Fan  A  ON,  B  ON
Compressors:  1  ON,  2  OFF
Heat outputs:  1  OFF,  2  OFF
Cooling                          ENABLE
Heat     ENABLE,  Aux heat       ENABLE
Outside air temperature          82.6 F
OA relative humidity             58.0 %
Return air temperature           70.0 F
RA relative humidity             46.0 PCT
Local cooling setpoint           78.0 F
Local heating setpoint           75.0 F
Minimum damper position          20 %
Current damper position          30 %
Exhaust fan                      ON
OK to economize                  NO
Damper     AUTO,   Economizer    AUTO
"+ enter" to reset cmprsr lockouts
```

***Note:** Lines below and including "OUTSIDE AIR TEMPERATURE" are displayed only if their status is NORMAL; they are not displayed if their status is FAIL.*

***Note:** The lines "MINIMUM DAMPER POSITION," "CURRENT DAMPER POSITION," "OK TO ECONOMIZE," "DAMPER" and "ECONOMIZER" are displayed only if an economizer is present.*

***Note:** If the Voyager supply air temp sensor fails, "MINIMUM DAMPER POSITION" and "CURRENT DAMPER POSITION" displays FAIL.*

Diagnostics

The following are possible diagnostics. Refer to Voyager Rooftop MICRO-M-2C for troubleshooting information.

Zone Temp Sensor Fail - Indicates a failure in the zone sensor wiring. The unit does not cool or heat and the supply fan is On.

***Note:** This diagnostic does not apply to Voyagers directly connected to a VariTrac II Central Control Panel.*

Dirty Filter - The Voyager unit's air filters are dirty and need to be replaced. This input is provided by an air pressure differential pressure across the filters.

Supply Fan Fail - The supply fan is not providing adequate air flow. This input is provided by an air pressure differential switch across the supply fan inlet and discharge.

Heat Fail Limit Open - The TCO2 switch (high limit) has opened. This applies to gas heat units only. Heat is turned OFF, and the indoor fan motor is forced ON.

Note: *The Voyager does not report a diagnostic or alarm on ignition module lockout. An ignition module lockout can only be reset through Tracker by adjusting the heating setpoint to halt the current heat call.*

High Temp Input Open - The high temperature input connected to the Trane Communications Interface (TCI) has opened. This causes the entire Voyager unit to shut down within one minute.

Defrost Default Mode - Indicates a problem with the demand defrost on the heat pumps. Default defrost cycles are 10 minutes or defrost after 30 minutes of accumulated compressor run time.

Defrost Hi Delta - Indicates that the difference in temperature between the coil and the outside air temperature is too high. Possible causes are outdoor fan failure or ice blockage.

Defrost Lo Delta - Indicates that the difference in temperature between the outdoor coil and the outside air temperature is too low. Possible causes are low refrigerant charge or an inoperative compressor.

Defrost Timeout - Indicates the defrost cycle has terminated due to the ten minute limit instead of a temperature limit for the past ten cycles. Possible causes are sever ice blockage, high wind, fan operation during defrost or an inoperative compressor.

Compressor 1 lockout, Compressor 2 lockout - The Voyager's compressor contactor control circuit has opened (a high pressure control, if installed, or possibly a burned out compressor contactor coil), **or** the Voyager's low pressure control has opened during the three minute minimum ON time on four consecutive compressor starts. This is a latching alarm that requires a manual reset. The compressor lockouts can be manually reset from the Tracker Voyager Status screen. If the Voyager is connected to a VariTrac II Central Control Panel, compressor lockout may be manually reset from the AHU Status screen. See page 51 for reset information.

LPC 1 Input Open, LPC 2 Input Open - Indicates the compressor disable circuit has opened. Example: Low Pressure Cutout Switch.

CC1 Control Circuit Open, CC2 Control Circuit Open - The Voyager's compressor contactor circuit has opened. Depending upon the Voyager unit type, this condition may result from:

- Compressor contactor coil failure
- Exceeding high pressure control limit
- Exceeding discharge temperature limit
- Exceeding winding temperature limit
- Compressor circuit breaker

Unit Type Mismatch - Indicates that a unit configuration mismatch has occurred between a VariTrac II Central Control Panel and the Voyager. This diagnostic is only used when the Voyager is communicating through a VariTrac II Central Control Panel.

Resetting Voyager Compressor Lockout

The last line on the Voyager Status Menu indicates the procedure to use to reset a Voyager compressor lockout. At the Voyager Status Menu for the Voyager with the compressor lockout, simply type +, then press Enter.

CAUTION: Recurring Voyager Rooftop compressor lockouts may indicate a problem with the Voyager unit. Contact your Trane service representative.

The Voyager Rooftop Setup screens are discussed in the following text.

Voyager Rooftop Setup

The Voyager can be set up through the Tracker remote interface as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***Voyager Rooftop*** from the Building Equipment Menu (*4S*).
3. Select the desired Voyager Rooftop.
4. Select ***Voyager Setup*** from the desired Voyager Menu (*2S*).

Figure 29 shows the Voyager Setup Menu.

Figure 29
Voyager Setup Menu

	Operator Entry
JONES CORP TRACKER S16 6.0	2S
Building Equipment Menu	4S
Voyager Menu	1S
Voyager 1 ROOFTOP V1 Menu	2S
Voyager 1 setup Menu:	
1) Unit name	[ROOFTOP V1]
2) Occupied fan mode	ON
3) Supply air tempering	DISABL
4) Use local setpoints	YES
5) Use local MIN position pot	YES
6) Minimum damper position	25 PCT
7) Occupied heat setpoint	66.0 F
8) Occupied cool setpoint	70.0 F
9) Unoccupied heat setpoint	66.0 F
10) Unoccupied cool setpoint	70.0 F
11) Heat high limit	85.0 F
12) Cool low limit	65.0 F
13) Exhaust fan installed?	YES
14) Demand limit cooling offset	1.0 F
15) Demand limit heating offset	2.0 F
16) Is Voyager cooling only?	YES

Each of the entries in the Voyager Setup Menu is described in order in the following text.

1) Unit name
Enter a descriptive name for the Voyager. The name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space," "#," single quote ('), and dash (-).

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

Tip: An Equipment Worksheet is provided at the end of this manual to help with customizing equipment names.

2) Occupied fan mode **(default ON)**
Enter + for ON or - for AUTO. If ON is selected, the unit fan operates continuously during the occupied mode. If AUTO is selected, the Voyager Rooftop turns the unit fan ON whenever cooling or heating stages are required. The fan remains on until all cooling and heating stages are turned off. The fan is always in the AUTO mode during scheduled unoccupied periods.

3) Supply air tempering **(default DISABLE)**
Enter + for ENABLE or - for DISABLE. Supply air tempering (if enabled) energizes a stage of heat to warm the ventilation discharge air if that air temperature falls 10° below the occupied heating setpoint. The stage of heat is de-energized when the ventilation discharge air temperature rises 10° above the occupied heating setpoint.

Note: *This option applies only to units equipped with an economizer. The Voyager mixed air sensor must be relocated in the supply air downstream of the heat exchanger for this feature to be used.*

4) Use local setpoints **(default YES)**
Enter + for YES or - for NO. If YES is selected, the Voyager UCP uses its local setpoints for operation. If NO is selected, the Tracker determines the setpoints sent to the Voyager for operation.

5) Use local MIN position pot **(default YES)**
Enter + for YES or - for NO. If YES is selected, the Voyager UCM uses its local minimum position pot to determine OA damper minimum position. If NO is selected, the Tracker uses the value in line 6) "MINIMUM DAMPER POSITION," to determine OA damper minimum position. If this entry is edited as YES and the Voyager's minimum position pot fails, the Voyager uses the Tracker's edited minimum.

6) Minimum damper position **(default 10%)**
Enter a percentage (0 to 50), which is the minimum damper setting of the outdoor air damper that is needed to provide the required ventilation for the building. This item applies only to units equipped with outdoor air dampers. The Voyager's local control potentiometer (pot) is overridden.

Note: *The Voyager's Minimum damper position remains at zero during the Unoccupied mode. The damper is allowed to open to the minimum position during the Optimal Start period.*

7) Occupied heat setpoint **(default 71°F)**
If "USE LOCAL SETPOINTS" is set to NO, enter the desired heating/cooling setpoint (55-95°F, 12.8-35.0°C) for use during occupied (day) conditions.

8) Occupied cool setpoint **(default 74°F)**
If "USE LOCAL SETPOINTS" is set to NO, enter the desired cooling setpoint (55-95°F, 12.8-35.0°C) for use during occupied (day) conditions.

9) Unoccupied heat setpoint **(default 55°F)**
Enter the desired heating setpoint (55-95°F, 12.8-35.0°C), which is used during unoccupied (night) conditions.

10) Unoccupied cool setpoint **(default 85°F)**
Enter the desired cooling setpoint (55-95°F, 12.8-35.0°C), which is used during unoccupied (night) conditions.

11) Heat setpoint high limit **(default 85°F)**
Enter a temperature between 55°F and 95°F (12.8-35.0°C). The Tracker does not send a heating setpoint to the Voyager Rooftop that is higher than this specified value. This limit applies to the local setpoint adjustment, as well as the Tracker setpoint during occupied times only.

12) Cool setpoint low limit **(default 65°F)**
Enter a temperature between 55°F and 95°F (12.8-35.0°C). The Tracker does not send a cooling setpoint to the Voyager Rooftop that is lower than this value. This limit applies to the local setpoint adjustment, as well as the Tracker setpoint during occupied times only.

13) Exhaust fan installed? **(default NO)**
This line is used for status only. If YES, the "EXHAUST FAN" status line displays on the equipment status menu.

14) Demand limit cooling offset **(default 0°F)**
Enter an offset value (0 to 20°F, -17.8 to -6.7°C) that the Voyager uses to increase the active cooling setpoint when in the demand limiting mode.

15) Demand limit heating offset **(default 0°F)**
Enter an offset value (0 to 20°F, -17.8 to -6.7°C) that the Voyager uses to decrease the active heating setpoint when in the demand limiting mode.

16) Is Voyager cooling only? **(default NO)**
Enter + (YES) if the Voyager Rooftop is a cooling-only unit. Enter - (NO) if the Voyager Rooftop is a cooling/heating unit.

Voyager Rooftop Schedules

Voyager Rooftop schedules (two start and two stop times per day) can be set up through the Tracker as follows:

1. From the Tracker Main Menu, select ***Building Equipment*** (*2S*).
2. Select ***Voyager Rooftop*** from the Building Equipment Menu (*4S*).
3. Select the desired Voyager.
4. Select ***Voyager Schedules*** for the selected Voyager (*3S*).
5. Select the desired day to assign the schedule. Refer to *Time of Day Scheduling Overview* on page 9 for information about daily, holiday and exception schedules.
6. Add the desired start and stop times.

Note: *Times* ***must*** *be entered on the appropriate day. For example, if equipment is to turn ON Monday at 9:00 p.m. and OFF four hours later at 1:00 a.m. Tuesday, the OFF time* ***must*** *be on Tuesday's schedule.*

Note: *After a communications loss or power failure, a device is controlled to its last specified state for the current day. If no action is found for the current day, the*

Tracker "looks back" ***one*** *day to the previous day's schedule to determine the last specified control action. If no action is found on either day, the device defaults to its ON (occupied) state. To ensure control continuity upon power loss, the schedule for each device should contain at least one control action on each day.* ***For days that contain no other scheduled action,*** *a simple way to accomplish this is to enter a First Start or First Stop, as desired, at 12:01 a.m. For example, an area may be scheduled off on Friday at 5:00 p.m., and on again Monday at 7:00 a.m. This area should then be scheduled so both Saturday and Sunday have a First Stop at 12:01 a.m.*

Figure 30 shows the Voyager Scheduling Menu.

Figure 30
Voyager Scheduling Menu

```
                                                Operator Entry
JONES CORP  TRACKER S16  6.0                              2S
Building Equipment Menu                                   4S
Voyager Menu                                              1S
Voyager 1 ROOFTOP V1 Menu                                 3S

ROOFTOP V1   Schedule Menu:
1)  Voyager 1                              MONDAY schedule
2)  Voyager 1                             TUESDAY schedule
3)  Voyager 1                           WEDNESDAY schedule
4)  Voyager 1                            THURSDAY schedule
5)  Voyager 1                              FRIDAY schedule
6)  Voyager 1                            SATURDAY schedule
7)  Voyager 1                              SUNDAY schedule
8)  Voyager 1                             HOLIDAY schedule
9)  Voyager 1                           EXCEPTION schedule

MONDAY schedule Menu:
1)  First START time                                10:00 AM
2)  First STOP time                                 11:00 AM
3)  Second START time                               12:01 PM
4)  Second STOP time                                01:00 PM
5)  Copy    MONDAY'S schedule to:                          1

EXCEPTION schedule Menu:
1)  First START time                                08:00 AM
2)  First STOP time                                 11:00 AM
3)  Second START time                               01:00 PM
4)  Second STOP time                                05:00 PM
5)  Copy EXCEPTION'S schedule to:                          9
6)  Exception date                                29-FEB-96
```

Tracker System Setup

The Tracker System Menu is only accessible through the RS-232 and optional modem ports. Figure 31 shows an example of the Tracker System Menu.

Figure 31
Tracker System Menu

```
                                                Operator Entry
JONES CORP   TRACKER  S16 5.0                             3S

TRACKER S16 System Menu:
1)  System Configuration
2)  Security Setup
3)  Holiday Dates
4)  Custom Alarming
5)  Demand Limiting
```

Each of the entries on the System Menu is discussed in order in the following text.

System Configuration

From the Tracker System Menu, press 1S to access the System Configuration Menu. Figure 32 is an example of the Tracker System Configuration Menu.

Figure 32
Tracker System Configuration Menu

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                    3S
TRACKER S16  System Menu:                       1S

System Configuration Menu:
  1) System name                        [JONES CORP  ]
  2) Current time                             03:01 PM
  3) Current date                           28-FEB-96
  4) Page length                                   20
  5) Baud rate                                   9600
  6) Default TOV period                         2 HRS
  7) Optimal start                             DISABL
  8) Temperature units                     FAHRENHEIT
  9) Language                                 ENGLISH
 10) Daylight start month                           4
 11) Daylight start day                             7
 12) Daylight start week                            1
 13) Daylight end month                            10
 14) Daylight end day                               7
 15) Daylight end week                              5
 16) Daylight savings                          ENABLE
 17) Outdoor air temperature                 68.0 F
```

The entries for the Tracker System Setup Menu are described in order in the following text.

1) System Name
Enter a descriptive name for the Tracker system. This name can contain a maximum of 18 characters, including spaces. The valid characters are the numbers 0 through 9, the letters A through Z, "space", "#", single quote ('), and dash (-).

Note: When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.

2) Current time
Enter the correct time of day into the Tracker, for example 03:01 p.m..

3) Current date
Enter the correct date into the Tracker in the format DD-MMM-YY, for example 04-NOV-94.

4) Page length **(default 20)**
Enter a number between 1 and 30 to indicate the number of lines on the CRT terminal or PC. A CRT terminal typically displays 24 lines per page.

5) Baud rate **(default 9600)**
Specify the baud rate of the RS-232 port on the Tracker. Valid entries are 300, 1200, 2400, 4800, or 9600. The baud rate of the CRT connected to the RS-232 port ***must*** match the baud rate selected in the Tracker System Setup Menu. The baud rate input here does not affect the modem port baud rate.

6) Default TOV period **(default 2 hours)**
Specify the amount of time (0, 1, 2, 3, or 4 hours) that may be used for the default timed override period. This value can be accessed from the local front panel LCD and keypad and adjusted for each scheduled area when initiating a timed override.

Enter 0 to disable timed override. When disabled from the RS-232 edit device, Time Override cannot be enabled or adjusted from the front panel.

7) Optimal start **(default ENABLE)**
Specify + (ENABLE) or - (DISABLE). If this entry is enabled, the Tracker optimal start capability determines the ON time for the scheduled temperature control devices communicating on the Tracker communication link. If this entry is DISABLE, the scheduled ON time for the devices is not adjusted. Refer to the Operation section of this guide for details on the optimal start capability.

8) Temperature units **(default FAHRENHEIT)**
This entry determines the units used for all temperature readings on RS-232 and front panel displays. Specify + for CELSIUS units or - for FAHRENHEIT units. All temperature readings from all connected devices are converted to the units chosen here.

9) Language **(default ENGLISH)**
This entry determines which language the program displays. Specify - for ENGLISH or + for the alternate language.

***Note**: Alternate language translation is not provided for VariTrac II Central Control Panel devices.*

10) Daylight start month **(default 4)**
Specify the number that corresponds to the month in which daylight savings starts. The month is in the spring. Valid month numbers are:

1 January	5 May	9 September
2 February	6 June	10 October
3 March	7 July	11 November
4 April	8 August	12 December

11) Daylight start day **(default 7)**
Specify the number that corresponds to the day of the week on which daylight savings starts. This is typically a Sunday. Valid days are:

1 Monday	5 Friday
2 Tuesday	6 Saturday
3 Wednesday	7 Sunday
4 Thursday	

12) Daylight start week **(default 1)**
Specify the week of the month in which daylight savings starts. Valid week numbers are:

1 - First week of the month
2 - Second week of the month
3 - Third week of the month
4 - Fourth week of the month
5 - *Last* week of the month

13) Daylight end month **(default 10)**
Specify the number that corresponds to the month in which daylight saving time ends. The month will be in the fall. Valid month numbers are:

1 January	5 May	9 September
2 February	6 June	10 October
3 March	7 July	11 November
4 April	8 August	12 December

14) Daylight end day **(default 7)**
Specify the number that corresponds to the day of the week on which daylight saving time ends. This is typically a Sunday. Valid day numbers are:

1 Monday	5 Friday
2 Tuesday	6 Saturday
3 Wednesday	7 Sunday
4 Thursday	

15) Daylight end week **(default 5)**
Specify the number of the week in the month when daylight saving time ends. Valid week numbers are:

1 - First week of the month
2 - Second week of the month
3 - Third week of the month
4 - Fourth week of the month
5 - *Last* week of the month

16) Daylight Savings **(default ENABLE)**
Enter + to ENABLE or - to DISABLE daylight savings time. If daylight saving time is disabled, the system does not calculate for the time differential.

17) Outdoor air temperature
This line displays the current outdoor air temperature. This is a status-only line. The temperature is displayed in the units as chosen in line 8) "TEMPERATURE UNITS." If no outdoor sensor is installed, this line does not display.

Security Setup

This line must be selected from the Tracker System Menu to access an additional screen of entries for Security Setup.

1. From the Tracker Main Menu, select ***System Setup (3S)***.
2. From the Tracker System Menu, select ***Security Setup (2S)***.

Figure 33 illustrates the Security Setup Menu.

Figure 33
Security Setup Menu

```
                                        Operator Entry
JONES CORP    TRACKER S16 6.0                   3S
TRACKER S16 System Menu:                        2S

Security Setup Menu:
1) Level 0 keypad options
2) Level 1 keypad options
3) Keypad password                          [+-TD]
4) RS232 password                               0
```

The entries for the Security Setup Menu are described as follows:

1) Level 0 keypad options **(default: all options NO)**
Level 0 capabilities are those available to keypad operators who **are not** logged on. When operating the system, *no password is required* to access level 0 options. Selecting 1) Level 0 keypad options displays a Security Setup Menu, which lists a set of capabilities available for that level. Each capability can be assigned YES or NO. This entry does not apply to RS-232 operation.

Figure 34 is an example of the Keypad Security Setup Menu.

2) Level 1 keypad options **(default: all options YES)**
Level 1 capabilities are those available to keypad operators who **are** logged on using a password. When operating the system, *a password is required* to access level 1 options.

Selecting 2) "LEVEL 1 KEYPAD OPTIONS" displays a Security Setup Menu, which lists a set of capabilities available for that level. Each capability can be assigned YES or NO. This entry does not apply to RS-232 operation.

Figure 34 is an example of the Keypad Security Setup Menu.

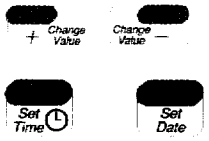
Figure 34
Keypad Security Setup Menu

```
Security Level 0 setup Menu:
1)  Allow timed override?                NO
2)  Allow setpoint changes?              NO
3)  Allow schedule changes?              NO
4)  Allow time and date changes?         NO

Security Level 1 setup Menu:
1)  Allow timed override?                YES
2)  Allow setpoint changes?              YES
3)  Allow schedule changes?              YES
4)  Allow time and date changes?         YES
```

***Note**: If all Level 0 and Level 1 entries are edited to NO, access is denied to all keypad operations. Operations can still be performed via the RS-232 edit terminal.*

3) Keypad password **(default +-TD)**
Specify the log on password for front panel keypad operation. The only keys on the front panel keypad that can be used for the password are:



The password must be a four-key combination of these keys. A key can be used more than once in the sequence.

To define the password in the Security Setup Menu, enter it by first pressing the single quote key ('). Then press the combination of keys from the set (+, -, T, D) that represents the password:

- Use the "+" key to specify

- Use the "-" key to specify

- Use the "T" key to specify

- Use the "D" key to specify

Important: Do not configure a front panel password that contains a string of three + keys (+++).

Note: *To clear the keypad password field and disable the keypad password security, select 3) "KEYPAD PASSWORD" from the Security Setup Menu. Press the single quote key (') followed by the Enter key. The entry is then* ***[0000]****, which indicates that no password is specified, and therefore no password is required to use the system.*

4) RS232 password **(default 0)**

Specify the logon password for RS-232 communications with the Tracker. Valid entries are numbers from 1 to 32,767. An entry of 0 disables security for RS-232 and modem port communications.

When RS-232 security is disabled (password set to 0), all operators can view and edit any RS-232 screen.

When RS-232 security is enabled, (password edited to a number from 1 to 32,767), the password is required to view status and edit any RS-232 screen.

Note: *RS-232 security does not follow the Level 0, Level 1 structure found in front panel security.*

Setting Password After Data Restore

When a Tracker panel data set is restored using Building Management Network software, the RS-232 password is automatically cleared. Therefore, after restoring a database, the RS-232 password needs to be reconfigured, if desired.

Holiday Dates

The Holiday Dates Menu can be used to specify the dates on which the system should follow holiday schedules.

1. From the Tracker Main Menu, select ***System Setup*** ***(3S)***.
2. From the Tracker System Menu, press 3S to access the Holiday Dates Menu.

Up to 24 dates can be entered as holidays. Enter the holiday date in the format DD-MMM-YY, for example 24-FEB-96.

Figure 35 shows the Holiday Dates Menu.

Note: *To clear a holiday date from the menu, type (0) followed by the Enter key.*

Figure 35
Holiday Dates Menu

```
                                          Operator Entry
JONES CORP    TRACKER S16 6.0                    3S
TRACKER S16  System Menu:                        3S

Holiday Dates Menu:
  1) Holiday  1                          01-JAN-96
  2) Holiday  2                          25-OCT-95
  3) Holiday  3                          04-JUL-95
  4) Holiday  4                          07-SEP-95
  5) Holiday  5                          26-NOV-95
  6) Holiday  6                          25-DEC-95
  7) Holiday  7                          00-000-00
  8) Holiday  8                          00-000-00
  9) Holiday  9                          00-000-00
 10) Holiday 10                          00-000-00
 11) Holiday 11                          00-000-00
 12) Holiday 12                          00-000-00
 13) Holiday 13                          00-000-00
 14) Holiday 14                          00-000-00
 15) Holiday 15                          00-000-00
 16) Holiday 16                          00-000-00
 17) Holiday 17                          00-000-00
 18) Holiday 18                          00-000-00
 19) Holiday 19                          00-000-00
 20) Holiday 20                          00-000-00
 21) Holiday 21                          00-000-00
 22) Holiday 22                          00-000-00
 23) Holiday 23                          00-000-00
 24) Holiday 24                          00-000-00
```

Custom Alarming

A set of 24 custom alarms can be configured for connected devices.

Refer to the *Alarms* section on page 37 for more information about custom alarms.

Demand Limiting (Stat 16 Only)

Demand Limiting is available on Stat 16 only.

The Tracker demand limiting function reduces peak power demand by turning off certain electrical loads when demand exceeds a specified limit. Maximum off times and temperature limits ensure continued occupant comfort.

The Tracker limits the electrical demand of a building by turning off (shedding) equipment that is controlled by the Tracker. The Tracker can shed up to 24 loads defined by the user.

In defining the sheddable loads, the user is required to select the priority of the loads to be shed and the estimated kW draw of each piece of equipment. Maximum off and minimum on timers can also be specified for each sheddable load.

A system demand limit value must then be defined for the Tracker to use when controlling equipment. Separate system demand limits can be specified for summer and winter periods to take advantage of lower demand rates offered by utilities during the off season (winter). Once the demand limiting function has been enabled, the Tracker attempts to keep the system electrical demand under the defined operating limits.

The Tracker begins shedding loads when the 5 minute average kW exceeds the operating limit. The amount of loads shed is determined by the difference between the current 1 minute average kW demand and the operating limit. The loads are shed and restored on a priority basis. Loads with the lowest priority number are shed first and restored last. Loads with identical priority levels are shed using a round robin sequence to ensure that all loads are shed an equal number of times.

Voyager Rooftops and Thermostat Control Modules (TCMs) are shed by widening their cooling and heating setpoints by a user-defined offset. The setpoint offsets are defined in the TCM and Voyager Setup Menus.

Tracker also disables all stages of heating and cooling in a Voyager Rooftop during the first one minute of the demand shed cycle for that unit. This is to insure an immediate reduction in instantaneous kW consumption. The Voyager then resumes space temperature control using the new offset setpoints.

Loads that are controlled by binary outputs on TCMs in the slave mode are simply turned off when shed. VariTrac II Central Control Panels are shed by reducing the stages of cooling and heating to a user-defined level. The number of stages of cooling/heating that are allowed for a Central Control Panel during the demand limit mode is defined in the VariTrac II Central Control Panel Setup Menu.

The demand limiting feature of Tracker is a powerful and flexible tool to control electrical demand. Because occupant comfort must also be kept in mind when setting up a demand limiting function, a realistic demand operating limit must be used. If an operating limit is too low, the sheddable loads are consistently shed for long periods of time, at the expense of maintaining building comfort. If possible, loads that are not providing air conditioning or heating should be shed first.

Demand Limiting Menu

The setup and operation of the Tracker demand limiting function starts at the Demand Limiting Menu. To access the Demand Limiting Menu, follow these steps:

1. From the Tracker Main Menu, select ***System Setup*** (***3S***).
2. Select the ***Demand Limiting Menu*** (***5S***).

Figure 36 shows the Demand Limiting Menu.

Figure 36
Tracker Demand Limiting Menu

```
                                        Operator Entry
JONES CORP    TRACKER S16 6.0                  3S
TRACKER S16 System Menu                        5S

Demand Limiting Menu:
1)  Demand limiting program status
2)  Sheddable loads
3)  Demand limiting system setup
4)  Demand limiting application  DISABL
```

Sequence

For demand limiting to operate, the demand limiting system setup information must be completed and at least one sheddable load must be defined before enabling the demand limiting function.

The items on the Tracker Demand Limiting Menu are described in order in the following text.

Demand Limiting Program Status

Once demand limiting has been set up and enabled, a status screen is available to view current information about the demand limiting program.

To view the Demand Limiting Status screen, follow these steps:

1. From the Tracker Main Menu, select ***System Setup*** (***3S***).
2. Select ***Demand Limiting Menu*** (***5S***).
3. Select ***Demand Limiting Program Status*** (***1S***).

Figure 37 shows a typical Demand Limiting Status screen. Each of the entries on the Status screen is described in order.

Figure 37
Demand Limiting Program Status Screen

```
                                        Operator Entry
JONES CORP    TRACKER S16 6.0                  3S
TRACKER S16 System Menu:                       5S
Demand Limiting Menu:                          1S

DEMAND LIMITING PROGRAM STATUS
Present KW  51,   1 min ave  51,   5 min ave  51
Operating limit  80,   15 min actual demand  49,   Peak demand  49

                  TIMERS      SHED    LOAD
LOAD              OFF   ON    COUNT   RATING  PRIORITY   STATUS
ROOFTOP #1        20    5     0       12      6          DOWN/OCCUPY/RSTD
Loading Dock Fan  0     0     0       8       2          UP/ON/RSTD
```

Present kW - This value is the kW demand that is calculated from the pulse meter input. This value is calculated every 30 seconds.

1 Min Avg
The 1 Minute average is the average kW demand in the last minute. It is calculated using the last two meter readings.

5 Min Avg
The 5 minute average is the average kW demand in the last five minutes. It is calculated using the last five 1 minute averages. The 5 minute average is calculated once every minute.

Operating Limit
This is the summer or winter operating kW limit that the Tracker is currently using as the demand limit.

15 (or 30) Min Actual Demand
The 15 (or 30) minute demand is a moving window. It is calculated using the last 15 (or 30) 1 minute averages. This is an *estimate* of the demand being monitored by the electric utility to determine monthly and yearly demand charges. The 15 or 30 minute Demand is dependent upon the user input for the utility demand interval on the Demand Limiting System Setup Menu.

Peak Demand
This value is the greatest 15 (or 30) minute demand that has occurred since the demand limiting function has been enabled. When the demand limiting function is enabled, the previous peak is cleared and the new peak is displayed.

LOAD
This is the name of the sheddable load as specified in the Sheddable Loads Menu.

TIMERS: OFF
If the load has been shed and a maximum off time has been defined for the load in the Sheddable Loads Menu, this value shows the time remaining on the "maximum off timer" before the load is restored.

TIMERS: ON
After a load has been restored, if a minimum on time has been defined for the load in the Sheddable Loads Menu, this value shows the time remaining before the load can be shed again.

SHED COUNT
The shed count indicates the number of times that the load has been shed since demand limiting has been enabled. This value is cleared when demand limiting is disabled.

LOAD RATING
This is the estimated kW rating for the load as edited in the Sheddable Loads Menu.

PRIORITY
This is the shed priority for the load as edited in the Sheddable Loads Menu.

STATUS
Three pieces of status information are displayed:

1. The first descriptor indicates whether communications are UP or DOWN for the specific load.

2. The second descriptor indicates whether the load is in the occupy or unoccupy mode for Voyagers, TCMs and VariTrac II Central Control Panels, or ON or OFF for binary outputs on slave TCMs.
3. The third descriptor indicates whether the load is currently shed (SHED) or restored (RSTD).

Sheddable Loads

The Tracker must be told the loads it can shed when the electrical demand limit is being approached. The Demand Limiting function has the capability of shedding up to 24 electrical loads controlled by the Tracker, including:

- Voyager Micro Rooftops
- Thermostat Control Modules (TCMs)
- Binary outputs of slave TCMs
- VariTrac II Central Control Panels

***Note**: A unit or load must be in the occupied or on mode in order to be shed.*

***Note:** When a binary output is shed, it is turned off, whether the contact is open or closed (this is configured in the setup menu). When a Voyager or TCM is shed, the demand limiting setpoint offsets are applied to the active cooling and heating setpoints. When a VariTrac II Central Control Panel is shed, the number of cooling and heating stages are limited to the number defined by the user.*

The Demand Limiting Program Worksheet can help structure the equipment sheddable load schedule.

To define a sheddable load, follow these steps:

1. From the Tracker Main Menu, select ***System Setup*** (*3S*).
2. Select ***Demand Limiting Menu*** (*5S*).
3. Select ***Sheddable Loads Menu*** (*2S*).
4. Select a particular load to define.

Figure 38 shows the Sheddable Loads Menu for a specific load. Each menu entry is described in order.

Figure 38
Demand Limiting Sheddable Loads Menu

```
                                        Operator Entry
JONES CORP    TRACKER S16 6.0                   3S
System Setup                                    5S
Demand Limiting Menu                            2S
Sheddable Loads Menu                            7S

Load 1 ROOFTOP #1 Menu:
1)  Load name: ROOFTOP #1
2)  Load priority                               1
3)  Load KW rating                          12 KW
4)  Maximum OFF time                        20 MIN
5)  Minimum ON time                          5 MIN
```

1) Load Name
This line displays the name of the selected load.

When line 1) "LOAD NAME" is selected, a list of all equipment (loads) connected to the Tracker displays.

To define one of the listed loads as sheddable, type in the number that corresponds to the desired load and press Enter.

Once a particular load has been selected from the equipment list, it does not appear on the list again until it has not been defined as a sheddable load. To cancel the "sheddable" definition for a load, type 0 (zero) for the Load Name and press Enter. The load then returns to the equipment list.

Only those devices that have been configured for each particular Tracker are displayed on the equipment list. If a particular load does not appear on the sheddable load list, check to make sure that the load has been given a name under the Building Equipment Menu. Refer to the Setup section for the appropriate equipment earlier in this manual for information on naming.

2) Load Priority
This line is used to assign a priority for the load. Valid entries are 0 (lowest priority) through 8 (highest priority).

The load with the lowest priority number is shed first and restored last. When two or more loads have the same priority number, they have equal priority within the system and are shed in a "round robin" sequence: the first load shed is the first restored and the last load shed is the last restored. To avoid compromising building comfort, loads not providing air conditioning or heating should be shed first, if possible.

3) Load kW Rating
Enter the average reduction in demand (from 0 to 500 kW) that occurs when the load is shed. This is normally less than the maximum kW draw of the load. If 0.0 is entered for the kW rating, the load is skipped in the demand shed cycle. Enter this value as accurately as possible for the Demand Limiting program to function properly. See the Load kW Rating section on page 101 for formulas and examples.

4) Maximum OFF Time
Enter the maximum amount of time (from 0 to 240 minutes) that a load can remain OFF after it has been shed by demand limiting. If a zero is entered, Tracker does not use a maximum off time.

5) Minimum ON Time
Enter the minimum amount of time (from 0 to 240 minutes) that a load has to remain ON after being restored by demand limiting. If a zero is entered, Tracker does not use a minimum on time.

Demand Limiting System Setup

The Demand Limiting Program Worksheet can help structure the setup information.

To enter the Demand Limiting System Setup information, follow these steps:

1. From the Tracker Main Menu, select ***System Setup*** (*3S*).
2. Select ***Demand Limiting Menu*** (*5S*).
3. Select ***Demand Limiting System Setup*** (*3S*).

Figure 39 shows the Demand Limiting System Setup Menu. Each menu entry is described in order.

Figure 39
Demand Limiting System Setup Menu

	Operator Entry
JONES CORP TRACKER S16 6.0	3S
System Setup	5S
Demand Limiting Menu	3S
Demand Limiting System Menu:	
1) Utility demand interval	15 MIN
2) Winter to summer date	15-MAR
3) Summer operating limit	80 KW
4) Summer to winter date	15-OCT
5) Winter operating limit	80 KW
6) KW meter pulse weight	20 WH/PULSE

1) Utility Demand Interval
The Demand Limiting function has the capability to monitor and control electrical demand based on either 15- or 30-minute demand intervals. This demand interval is dictated by the electrical power supplier.

To select a 30-minute demand interval, type "+" , then press Enter. To select a 15-minute demand interval, type "-", then press Enter.

2) Winter to Summer Date
Enter the date (in the format DD-MMM) when Tracker switches from using the winter kW operating limit to the summer operating limit. This date is in the spring.

3) Summer Operating Limit
Enter the electrical demand limit (0-1000 kW) to be used during the summer period.

4) Summer to Winter Date
Enter the date (in the format DD-MMM) on which Tracker switches from using the summer operating limit to the winter operating limit. This date is in the fall.

5) Winter Operating Limit
Enter the electrical demand limit (0-1000 kW) to be used during the winter period.

6) kW meter pulse weight **(0-10,000 WH/pulse)**
This entry determines whether the kW meter value is shown on the idle display. If a pulse meter is connected to the binary input, enter the watt-hours per pulse (WH/pulse) on this line to enable the display. A value of 0 in this line disables the display. This valve is determined by the pulse meter and is critical for proper demand limiting operation.

For information about calculating pulse weight, refer to Appendix B.

Demand Limiting Application

(Enable and Disable)

This line is used to enable and disable the Demand Limiting, DML, function.

To enable the Demand Limiting function, type "+", then press Enter. To disable the Demand Limiting program, type "-", then press Enter.

Note: *For the Demand Limiting function to operate, the Demand Limiting System Setup information must be completed and at least one sheddable load must be defined before enabling the Demand Limiting function.*

Demand Limiting Application Notes

The Tracker demand limiting program can be an effective tool, when applied properly, to assist in the management of building electrical demand.

Because the DML program setup is flexible and building dynamics vary from building to building, there are situations that may arise in which the DML program is unable to maintain the specified electrical demand operating limit. Morning warm-up or cool-down operations could create a situation where the electrical demand would exceed the DML program operating limit.

Be aware that these situations may exist. This helps in deciding how to set up the demand limiting program and other building operating parameters. Two situations are discussed below.

Morning Warmup/Cool down

The Voyager Rooftops and Thermostat Control Modules (TCMs) are demand limited by widening the setpoints (raising the cooling and lowering the heating).

If the difference between the unoccupied (night) cooling setpoint and occupied (day) cooling setpoint is greater than the demand limit cooling setpoint offset, Voyagers and TCMs may not respond to a demand limit request when changing from unoccupied to occupied operation. The demand limit program could request that equipment be shut off during morning cool down if the electrical demand approached the operating limit. This may occur if all the equipment is scheduled on at the same time and full capacity cooling is required to cool the space from the unoccupied to the occupied cooling setpoint.

If, at the time of a demand limit request, the space temperature is still above the occupied cooling setpoint plus the demand limit offset, the unit does not shut off. Thus the Tracker demand limiting program has no effect on the electrical demand of the building. This situation could also occur in the morning warm-up mode if electric heat is used.

There are several precautions that can be taken to help avoid this situation. First, enable the optimal start capabilities of Tracker. Optimal start may stagger the equipment start times enough so as to not have all the equipment start (change from unoccupied to occupied setpoints) at the same time. Second, stagger the respective equipment start times with the time of day schedules to further prevent simultaneous equipment startups.

Operating Limit Set Too Low

If the electrical demand operating limit is set too low, the DML program may run out of loads to shed in an attempt to maintain the kW limit. There is no simple method to determine the operating limit the Tracker should try to maintain.

If the Tracker is installed in an existing building, past utility bills offer an insight into the building's past electrical demand. The prior demand can be used to determine an operating limit that Tracker tries to uphold.

To maintain a degree of comfort, an operating limit of 10-20% less than the prior building peak demand could be used as a starting point. If tenant comfort is not of high concern, a more aggressive DML operating limit can be used. Keep in mind that minimum on and off times for each piece of equipment may also have an effect on the DML program's ability to maintain a specified electrical demand.

For new buildings, a starting point for the operating limit can be 10-20% less than the design kW draw of the building. As with any new Tracker installation, when the building electrical demand starts to approach the operating limit, the Tracker system should be monitored closely to make any required adjustments in the DML program.

If the demand limiting program has satisfactorily shed loads to maintain the operating limit, a more aggressive limit could be used. Conversely, if the DML program could not maintain the limit, the operating limit may need to be raised or the DML program setup altered to allow more loads to be shed.

Calculating Load kW Rating

For the demand limiting program to function properly, the load KW ratings need to be calculated and entered as accurately as possible. Load ratings can be calculated by using equipment operating ratings from the unit rating nameplate and applying the following formulas:

KW for 3 phase loads:

$$kW = \frac{volts \times amps \times 1.732 \times power factor}{1000}$$

KW for single phase loads:

$$kW = \frac{volts \times amps \times power factor}{1000}$$

Note: *If actual power factor is unknown, use .80. When selecting AMPS from the nameplate rating, use the actual running amps for the device. This may be referred to as Running Amps, Rated Load Amps(RLA) , or Full Load Amps(FLA). Do not use the Locked Rotor Amps(LRA) rating.*

Example

The following calculation represents how the Load kW rating for a compressor in a 10-ton Voyager Rooftop unit on a building supplied with 208 volts, 3-phase power. Below is the Voyager Rooftop rating nameplate:

Model	YC*120B3
Rated Volts/PH/Hz	208 - 230/3/60
Compressor	
Number Used / HP	2 / 5.0
Volts / Ph / Hz	200 - 230 / 3 / 60
R. L. Amps	19.0 @ 208 Volts
L. R. Amps	118.0

The Load kW rating is calculated as follows:

$$kW = \frac{208\,volts \times 19.0\,amps \times 1.732 \times .80\,power\ factor}{1000}$$

$$kW = 5.475 \,/\, per\ compressor$$

The Load KW Rating is entered as a single digit. The load KW for this example is conservatively entered as 5 KW / per compressor.

When Voyager units or TCMs are included in the demand limit program, they are demand shed by widening heating and cooling setpoints by the amount of offset specified in the Setup menu. The load kW rating for the example above is entered in the demand limiting program as either 5 kW or 10 kW depending on the number of compressors typically running when the unit was shed. This is affected by how closely the equipment is sized to the actual cooling load, and how aggressive the demand program peak kW setpoint for the building was entered.

When VariTrac systems and loads connected to Slave TCM relays are entered in the demand program, the actual compressor or load is turned off directly by the program. The Load KW rating can be entered directly as calculated.

Demand Limiting Program Worksheet

Use the Demand Limiting Program Worksheet to help with DML system setup and sheddable loads setup. Keep the worksheet as a record of setup entries. The Demand Limiting Program Worksheet is on the next page.

Demand Limiting Program Worksheet (Stat 16)

System Setup

Setup Item	Valid Entries	Program Entry
Utility Demand Interval	15 or 30 minutes	
Winter to Summer Date	Format: DD-MMM	
Summer Operating Limit	0–1000 kW	
Summer to Winter Date	Format: DD-MMM	
Winter Operating Limit	0–1000 kW	

Sheddable Loads Setup

Load #	Name	Load Priority (1–8)	Load kW Rating (0–500 kW)	Max Off Time (0–240 Mins)	Min On Time (0–240 Mins)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Optimal Start

The Tracker can be configured to provide optimal start operation for all temperature control devices. *Optimal start* means that if a device is scheduled ON at 6:00 a.m., the device turns ON some time prior to 6:00 a.m. in order to bring that area's temperature up to setpoint by 6:00 a.m. (Slave Thermostat Control Module binary outputs are not affected by optimal start.) The following devices can be optimally started:

- Voyager Micro Rooftops
- Thermostat Control Modules (TCMs)
- VariTrac II Central Control Panel *Groups*

Note: *The maximum amount of optimal start time for a device is two hours.*

The Tracker optimal start calculation begins with a 6° per hour recovery rate. This rate is adjusted daily or at each start time based on the previous day's start time performance.

For example, if a zone is optimally started with a recovery rate of 6° per hour and the area temperature is 6° from the DAY setpoint, the Tracker "starts" the controlled device one hour before the edited ON time. If the area fails to meet the day setpoint in one hour, the rate decreases to 5° per hour. This causes the device to start earlier the next day, if the same temperature conditions exist.

Tip: The current recovery rate for a zone may be viewed using the edit terminal or modem by pressing the **C** key on the "COPY XXXX'S SCHEDULE TO: X" line of any daily schedule for that zone.

Note: *If the device is a VariTrac II Central Control Panel Group, the lowest numbered member UCM temperature and setpoints are used.*

Optimal Start can be enabled and disabled from the Tracker System Setup Menu (see Figure 40). *The Tracker Optimal Start function defaults to ON.*

Figure 40
Optimal Start Entry on System Configuration Menu

```
                                        Operator Entry
JONES CORP    TRACKER S16 6.0                   3S
TRACKER S16  System Menu                        1S
System Configuration Menu                       7S
   :
7)  Optimal start                            ENABLE
   :
```

Enter + to ENABLE Optimal Start. Enter - to DISABLE optimal start.

Trend Logs

The Tracker can trend log up to eight area temperatures or Thermostat Control Module analog inputs. The trend log maintains a historical record of up to 24 entries. The oldest entry scrolls off of the log as a new entry is presented. The frequency at which each trend log "samples" temperatures can be selected for 1, 5, 10, 15, 30, or 60 minutes.

Note: *A trend log must have a start time specified for proper operation.*

Trend Log Setup

The following section explains the Tracker setup requirements for generating Trend Logs.

To access the Trend Log Setup Menu, follow these steps:

1. From the Tracker Main Menu, select ***Trend Logs (4S)***.
2. Select ***Trend Log Setup*** from the Trend Log Menu (***2S***).
3. Select the desired Trend Log from the Trend Log Setup Menu.

Figure 41 illustrates the Trend Log Setup Menu.

Figure 41
Trend Log Setup Menu

```
                                              Operator Entry
JONES CORP  TRACKER S16  6.0                            4S
Trend Log Menu                                          2S

Trend Log Setup Menu:
1)  Trend Log  1                              KITCHEN TEMP
2)  Trend Log  2                  0000000000000000000
3)  Trend Log  3                  0000000000000000000
4)  Trend Log  4                  0000000000000000000
5)  Trend Log  5                  0000000000000000000
6)  Trend Log  6                  0000000000000000000
7)  Trend Log  7                  0000000000000000000
8)  Trend Log  8                  0000000000000000000

Trend Log  1 Setup Menu:
1)  Trend name                                [KITCHEN TEMP]
2)  Trend time interval                               30 MIN
3)  Start time                                        6:00 AM
4)  Stop time                                         4:00 PM
5)  Device type  (VAV2)                                     5
6)  Device number                                           1
7)  Central Control Panel UCM number                        1
8)  Device index                                            1
```

The entries for the Trend Log Setup Menu are described as follows:

1) Trend name
Enter a descriptive name for the Trend Log.

Note: *When entering a name into the Tracker, be sure to enter a single quote (') before entering the characters. If the single quote (') key is not pressed first, the Tracker does not allow the name to be entered. To clear a name from the Tracker, type a single quote, then press Enter. Entering all zeros in the name field does not clear the unit name from the Tracker's memory.*

2) Trend time interval **(default 0)**
Specify the interval at which samples of the trend value are to be taken by the Tracker. Valid entries are 1, 5, 15, 30, or 60 minutes. An entry of 0 disables trending of that trend log.

3) Start time
Specify the time that the Trend Log should begin logging entries. Enter the time in the format HR:MN AM (or p.m.), for example 11:00 p.m.

4) Stop time
Specify the time that the Trend Log should stop logging entries. Enter the time in the format HR:MN AM (or p.m.), for example 11:00 p.m.

Note: If a stop time is not specified, the device continuously updates the trend log.

5) Device type **(default 0000)**
Specify the number that represents the type of device from which the Tracker is to obtain the value to be trended. Table 15 defines the valid entries.

Table 15
Device Type Numbers

None	0
TCM	1
Voyager Rooftop	2
Slave TCM	3
System	4
VariTrac II Central Control Panel	5
VariTrac II Central Control Panel Unit Control Module (UCM)	6

6) Device number **(default 0)**
Specify the number of the device selected for line 5) "DEVICE TYPE." For example, if four Voyager Rooftops are communicating to the Tracker, and this trend log is to log a value from Voyager Rooftop number 2, this entry should be "2."

7) UCM number
"CENTRAL CONTROL PANEL UCM NUMBER" displays if 6 is selected for line 5) "DEVICE TYPE." Specify the number (1-16) of the VariTrac II Central Control Panel UCM.

8) Device index **(default 0)**
Specify the analog value from the device (line 5) and device number (line 6) that is to be trended. Refer to Tables 19 through 20 for device index numbers.

Table 16
Voyager Rooftop (VOY) Device Index Numbers

1	Outdoor Air Temperature
2	Zone Temperature
3	Supply Air Temperature
4	Return Air Temperature
5	Outdoor Air Relative Humidity
6	Return Air Relative Humidity
7	Damper Position

Table 17
Slave TCM (SLV) or TCM Device Index Numbers

1	Analog Input 1 Value
2	Analog Input 2 Value
3	Analog Input 3 Value

Table 18
System (SYS) Device Index Number

1	Outdoor Air Temperature
2	1 min Average KW
3	5 min Average KW
4	15 min Average KW
5	30 min Average KW
6	60 min Average KW

Table 19
VariTrac II Central Control Panel (CCP) Device Index Numbers

1	Maximum Temp
2	Minimum Temp
3	Maximum Valve/Damper Position
4	Total Valve Flow
5	Average Temp
6	Supply Air Temperature
7	System Air Flow
8	Bypass Position

Table 20
VariTrac II Central Control Panel UCM (VAV2) Device Index Numbers

1	Zone Temperature
2	Auxiliary Temperature

Trend Log Status

The trend logs are viewed through the RS-232 or optional modem ports.

To view the Trend Log Status screen, follow these steps:

1. From the Tracker Main Menu, select ***Trend Logs (4S)***.
2. Select ***Trend Log Status*** from the Trend Log Menu (***1S***).
3. Select the desired trend log from the Trend Log Status Menu.

Figure 42 shows a typical Trend Log Status Menu.

Figure 42
Trend Log Status Menu

```
                                                    Operator Entry
JONES CORP TRACKER S16 6.0                                    4S
Trend Log Menu                                                1S

Trend Log Status Menu:
1)  Trend Log 1                  KITCHEN TEMP
2)  Trend Log 2                  0000000000000000
3)  Trend Log 3                  0000000000000000
4)  Trend Log 4                  0000000000000000
5)  Trend Log 5                  0000000000000000
6)  Trend Log 6                  0000000000000000
7)  Trend Log 7                  0000000000000000
8)  Trend Log 8                  0000000000000000

Trend Log 1 KITCHEN TEMP Status
    1)   5:30 PM                                          68.0 F
    2)   5:00 PM                                          68.0 F
    3)   4:30 PM                                          68.0 F
    4)   4:00 PM                                          68.0 F
    5)   3:30 PM                                          69.0 F
    6)   3:00 PM                                          69.5 F
    7)   2:30 PM                                          70.0 F
    8)   2:00 PM                                          71.0 F
    9)   1:30 PM                                          72.0 F
    10)  1:00 PM                                          72.0 F
    11) 12:30 PM                                          72.0 F
    12) 12:00 PM                                          72.0 F
    13) 11:30 AM                                          71.5 F
    14) 11:00 AM                                          71.5 F
    15) 10:30 AM                                          71.5 F
    16) 10:00 AM                                          71.0 F
    17)  9:30 AM                                          70.0 F
    18)  9:00 AM                                          70.0 F
    19)  8:30 AM                                          71.0 F
    20)  8:00 AM                                          70.0 F
    21)  7:30 AM                                          69.5 F
    22)  7:00 AM                                          69.0 F
    23)  6:30 AM                                          69.0 F
    24)  6:00 AM                                          69.0 F
```

Note: *If the trend is logging values in °C, the Trend Log fills with* ***-17°C*** *upon power up, until the lines fill with active trended data. If the trend is logging values in °F, the Trend Log fills with* ***0°F*** *upon power up, until the lines fill with active trended data.*

Current Day Energy Log Menu

The Current Day Energy Log is an hourly record of the electrical consumption and demand peaks for the current day. This information is gathered from the pulse meter input being utilized by the demand limiting program. A description of each log item is listed below.

To view the Current Day Energy Log screen, follow these steps:

1. From the Tracker Main Menu, select ***Trend Logs (4S)***.
2. Select ***Current Day Energy Log*** from the Trend Log Menu (*3S*).

Figure 43 shows a typical Current Day Energy Log display.

Figure 43
Current Day Energy Log Menu

```
                                        Operator Entry
JONES CORP  TRACKER S16  6.0                     4S
Trend Log Menu                                  3S

Current Day Energy Log Menu:
Current total KWH                               .0
Total minutes shed                              0
Demand peak of          0 KW occurred at 12:00 AM

HOUR OF DAY             PEAK KW
 07:00 AM                  0
 06:00 AM                  0
 05:00 AM                  0
 04:00 AM                  0
 03:00 AM                  0
 02:00 AM                  0
 01:00 AM                  0
 12:00 AM                  0
```

Current total kWH
This value is the total electric consumption in kilowatt hours accumulated between midnight and the present time.

Total minutes shed
This is the number of minutes the Demand Limit Program has shed loads to remain under the current operating limit. The value is the total accumulated minutes from midnight to the present time.

Demand peak of KW occurred at -:- AM/PM
This is the highest demand peak that has occurred between midnight and the present time, along with the time of occurrence. This demand peak is the highest 15 minute or 30 minute sliding average peak, depending on which Utility Demand Interval you selected during setup. The 15 minute or 30 minute sliding average is re-calculated once a minute.

Hour of day Peak kW
The hourly peak kW log is a history of the hourly peaks between midnight and the present time. The hourly peak is the highest one minute average peak that occurred during the previous hour.

Note: *The current day energy history is stored in volatile memory. If a power failure occurs or the power is cycled to the Tracker panel, the energy history between midnight and the time of occurrence is lost. This is indicated in the energy log with zeros entered under PEAK KW up until the time of occurrence.*

35 Day Energy Log

The 35-day energy log captures the peaks and totals from the daily energy log and stores them for future reference. A description of each entry follows the example.

To view the 35 Day Energy Log screen, follow these steps:

1. From the Tracker Main Menu, select ***Trend Logs (4S)***.
2. Select ***35 Day Energy Log*** from the Trend Log Menu (***4S***).

Figure 44 shows a typical 35 Day Energy Log display.

Figure 44
35 Day Energy Log Menu

Operator Entry
JONES CORP TRACKER S16 6.0 4S
Trend Log Menu 4S

35 Day Energy Log Menu:

DATE	TOTAL KWH	MINUTES SHED	DEMAND PEAK	TIME OF PEAK	
26-NOV-95	153.0	12	93	12:00 AM	
25-NOV-95	221.0	76	96	12:00 AM	
24-NOV-95	267.0	87	97	12:00 AM	
23-NOV-95	331.0	100	120	12:00 AM	
22-NOV-95	318.0	121	127	12:00 AM	
21-NOV-95	412.0	21	76	12:00 AM	T
20-NOV-95	276.0	76	98	12:00 AM	
19-NOV-95	260.0	90	105	12:00 AM	
18-NOV-95	221.0	131	121	12:00 AM	
17-NOV-95	214.5	5	60	03:32 PM	T
00-000-00	.0	0	0	12:00 AM	T
00-000-00	.0	0	0	12:00 AM	T
00-000-00	.0	0	0	12:00 AM	T
00-000-00	.0	0	0	12:00 AM	T
00-000-00	.0	0	0	12:00 AM	T

DATE
The date the energy history was gathered.

TOTAL KWH
This value is the total electric consumption in Kilowatt hours accumulated during the 24-hour period.

MINUTES SHED
This is the number of minutes the Demand Limit program has shed loads to remain under the current operating limit. The value is the total accumulated minutes during the 24-hour period.

DEMAND PEAK
This is the highest demand peak that has occurred during the 24-hour period. This demand peak is the highest 15-minute or 30-minute sliding average peak, depending on which Utility Demand Interval you selected during setup. The 15 or 30-minute sliding average is re-calculated once a minute.

TIME OF PEAK
This is the time the highest demand peak was recorded.

T
The T indicates that the log entry for this particular day may not be accurate due to loss of data. The current day energy history is stored in volatile memory. If a power failure occurs or the power is cycled to the Tracker panel, the energy history between midnight and the time of occurrence is lost. Since the data recorded in the 35-day history log is gathered from the daily record, the loss of data affects the accuracy of the entries for this date. The information for this date only reflects energy data gathered after the power interruption on that day.

Timed Override Indicators

The Tracker front panel LCD and keypad timed override capability allows you to temporarily extend a time of day schedule for an area. (Refer to the section on *Operation from the Front Panel* on page 13 for more information on initiating a Timed Override from the front panel.)

When an area is in Timed Override, the status menus for the equipment controlling that area indicate the override as shown in Table 21.

Table 21
Unit Timed Override Indicators

Voyager	Voyager Status Menu	Operating Status	OCCUPY/TOV
TCM	TCM Status Menu	Operating Mode	OCCUPY/TOV
VariTrac II Central Control Panel	Group Status Menu	Control Mode	OCCUPY/TOV
VariTrac II Central Control Panel UCM	UCM Status Menu	Control Mode	OCCUPY/TOV

Timed override can also be initiated and canceled using occupant override On and Cancel switch options on Trane zone sensors. If using a zone sensor with an override switch, press the On button and hold momentarily. This initiates the timed override for that area. To cancel the override, press the CANCEL button and hold momentarily.

Note: *The Timed Override function cannot be activated via the RS-232 ports.*

Operator Logon/Logoff

When security has been set up to require an RS-232 password, you must enter the password from the Operator Logon Menu to access displays beyond the Main Menu. At the prompt, type the password to logon, then press Enter.

Passwords are configured in the Tracker System Setup Menu. Refer to *Tracker System Setup* on page 87 for details about configuring a password. Figure 45 illustrates the Operator Logon Menu.

Figure 45
Operator Logon Menu

```
                                    Operator Entry
JONES CORP TRACKER S16 6.0                      5S

02:38    13-FEB-96    JONES CORP
Enter password:
```

The Operator Logon Menu can also be used to log off. From this menu, type 0 (zero), then press Enter to log off the system.

Note: *The front panel keypad, RS-232 port and modem port cannot be used simultaneously. Therefore, to be able to immediately use the front panel keypad or*

modem port, the remote operator must log off the system either from the Operator Logon Menu or by pressing the Escape key (Esc).

Automatic Logoff

If no edit terminal keys are pressed for five minutes, the Tracker automatically logs off the operator.

Appendix A: Equipment Worksheet

Thermostat Control Module

TCM Number	Default Name	Device Name
1	TCM AC Unit 1	
2	TCM AC Unit 2	
3	TCM AC Unit 3	
4	TCM AC Unit 4	
5	TCM AC Unit 5	
6	TCM AC Unit 6	
7	TCM AC Unit 7	
8	TCM AC Unit 8	
9	TCM AC Unit 9	
10	TCM AC Unit 10	
11	TCM AC Unit 11	
12	TCM AC Unit 12	

Slave Thermostat Control Module

Slave TCM Number	Sensor/Output
1	Analog Input 1
	Analog Input 2
	Analog Input 3
	Binary Input 1
	Binary Input 2
	Binary Input 3
	Binary Output 1
	Binary Output 2
	Binary Output 3
	Binary Output 4
	Binary Output 5
	Binary Output 6
2	Analog Input 1
	Analog Input 2
	Analog Input 3
	Binary Input 1
	Binary Input 2
	Binary Input 3
	Binary Output 1
	Binary Output 2
	Binary Output 3
	Binary Output 4
	Binary Output 5
	Binary Output 6

Voyager Rooftop

Voyager Rooftop Number	Name in Voyager	Description
1	Rooftop V1	
2	Rooftop V2	
3	Rooftop V3	
4	Rooftop V4	
5	Rooftop V5	
6	Rooftop V6	
7	Rooftop V7	
8	Rooftop V8	
9	Rooftop V9	
10	Rooftop V10	
11	Rooftop V11	
12	Rooftop V12	

Appendix A: Equipment Worksheet

VariTrac II Central Control Panel

1	VariTrac 2 CCP 1
2	VariTrac 2 CCP 2
3	VariTrac 2 CCP 3
4	VariTrac 2 CCP 4
5	VariTrac 2 CCP 5
6	VariTrac 2 CCP 6
7	VariTrac 2 CCP 7
8	VariTrac 2 CCP 8

VariTrac II Central Control Panel UCM

1	V2-CCP _ UCM 01
2	V2-CCP _ UCM 02
3	V2-CCP _ UCM 03
4	V2-CCP _ UCM 04
5	V2-CCP _ UCM 05
6	V2-CCP _ UCM 06
7	V2-CCP _ UCM 07
8	V2-CCP _ UCM 08
9	V2-CCP _ UCM 09
10	V2-CCP _ UCM 10
11	V2-CCP _ UCM 11
12	V2-CCP _ UCM 12
13	V2-CCP _ UCM 13
14	V2-CCP _ UCM 14
15	V2-CCP _ UCM 15
16	V2-CCP _ UCM 16

Appendix B: Calculating Pulse Weight

Calculating Pulse Weight

The Tracker binary input contact is used to read pulses from an electrical demand meter. This pulse is then used to calculate an instantaneous electrical demand. This, in turn, can be used by the Tracker demand limiting program to manage building electrical demand.

The pulsed input must meet certain specifications for the Tracker to calculate an accurate electrical demand. The binary input must have an isolated and ungrounded contact. The minimum contact dwell time for the pulsed input must not be less than 1/5 of a second (200 milliseconds). The pulse should not be faster than 5 pulses/second. If the Tracker receives no pulse for a two-minute period, the calculated kW demand value is set to zero. When setting up the meter, the optimum pulse rate is one pulse per two seconds at pkW.

Formula for Electrical Demand

The following is the formula that the Tracker uses to calculate electrical demand:

$$electrical\ demand\ (kW) = actual\ pulse\ rate \times pulse\ weight \times constant$$

where:
actual pulse rate = pulses/second
pulse weight = watt-hours/pulse
constant = 3.6

Example:
pulse weight = 300 watt-hours/pulse
actual pulse rate = 0.2 pulses/second

$$kW = .02 \times 300 \times 3.6 = 216\ kW$$

How to Calculate the Pulse Weight

1. The pulse weight must be entered in units of watt-hours/pulse. If the demand meter pulse weight is given in terms of kilowatt-hours/pulse, multiply the pulse weight by 1,000 for watt-hours/pulse:

$$\frac{watt-hours}{pulse} = \frac{kilowatt-hours}{pulse} \times 1000$$

2. If you are receiving a pulse from a three-wire (K, Y, Z) demand meter, you need to multiply the pulse weight by 2 before entering it into the Tracker:

$$Tracker\ entered\ pulse\ weight = meter\ pulse\ weight \frac{watt-hours}{pulse} \times 2$$

Example:
For a three-wire demand meter, the given pulse weight = 0.3 kilowatt-hours/pulse. Therefore, the pulse weight that should be entered into the Tracker is:

$$0.3 \frac{kWH}{pulse} \times 1000 \times 2 = 600 \frac{watt\text{-}hours}{pulse}$$

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