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TRANE BAS-PRC001-EN Tracer Summit Building Automation System User Manual

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Overview

The Tracer Summit building automation system (BAS) provides building control through a single, integrated system. A building's climate, lighting, scheduling, energy consumption, and other controllable features can all be programmed and managed by Tracer Summit. A Tracer Summit building automation system consists of building control units (BCUs) and PC Workstations with Tracer Summit software. BCUs provide centralized building control through communication to building equipment, such as heating, ventilating, and air-conditioning (HVAC) equipment. A building operator uses either a PC Workstation or the operator display (touch screen) on the BCU to perform system operator tasks. The PC Workstation communicates to BCUs over a dedicated Ethernet (ISO/IEC 8802-3) or ARCNET (ANSI 878.1) local area network (LAN), or on a Transmission Control Protocol/Internet protocol (TCP/IP) compatible network.

Remote access to the system is available using either a modem in the BCU or an Internet connection with a Tracer Summit Web Server. The PC Workstation can communicate using up to one network connection and two dial-up connections simultaneously. Tracer Summit software turns complex requirements into simple, consistent, reliable operations. Tracer Summit can control any type of HVAC equipment, but gives the additional benefits of an Integrated Comfort system when it is linked with Trane HVAC equipment. In addition, Tracer Summit can also connect to other building systems such as fire alarms and lab hood controls. Tracer Summit PC Workstation software is available with three add-on software packages: Tracer 100/Tracker Communications Package, Building Management Package, and Enterprise Management Package. For more information, see PC Workstation additional capabilities on page 10. The following products that are companions to Tracer Summit are also available to meet ever-increasing building management needs: Tracer Summit Energy Services and Tracer Summit Tenant Services. For more information, see Companion products on page 14. To learn more about what Tracer Summit can do for a facility, see System architecture on page 8. See Specifications on page 16 for more product details on Tracer Summit systems.

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Features and benefits

The Tracer Summit system is designed to provide solutions needed by building owners and daily operators. The system can be quickly installed, programmed, and commissioned to run reliably. A tested user interface combined

with a series of pre-engineered system applications makes this possible. The applications work together to maximize the comfort of people in the building, while minimizing energy use.

Ease of operation
The daily operator is the most critical user of the system. Extensive usability testing helps make Tracer Summit PC Workstation software intuitive and easy to use. End-users in a laboratory environment test preliminary software. If software functions prove difficult to use, they are refined until testers can more easily perform daily tasks.

These tasks include:

- Viewing the status of the building
- Changing setpoints
- Viewing and modifying schedules
- Responding to alarms
- Viewing historical report information
- Performing timed overrides

The daily operator accesses these tasks by clicking a toolbar button located at the top of the Tracer Summit system window (see Figure 1).

Online help
PC Workstation software includes a powerful online help system for assistance with system functions and editor and dialog windows.

Tracer Summit Users Network
The Tracer Summit Users Network is a subscription-based Web site designed to assist Tracer Summit system owners and operators. Members log on to **www.tracersummit.trane.com** to learn more about their Tracer Summit system through articles, frequently asked questions (FAQs), and access to GCC technical support resources. Members can also upgrade their system with service packs and version upgrades.

Daily operator training
Daily operators training provides up to four hours of training, complete with user evaluations and certification. This program can be used for offline training and can also be accessed from within Tracer Summit as a user tutorial.

View building status in Tracer Summit
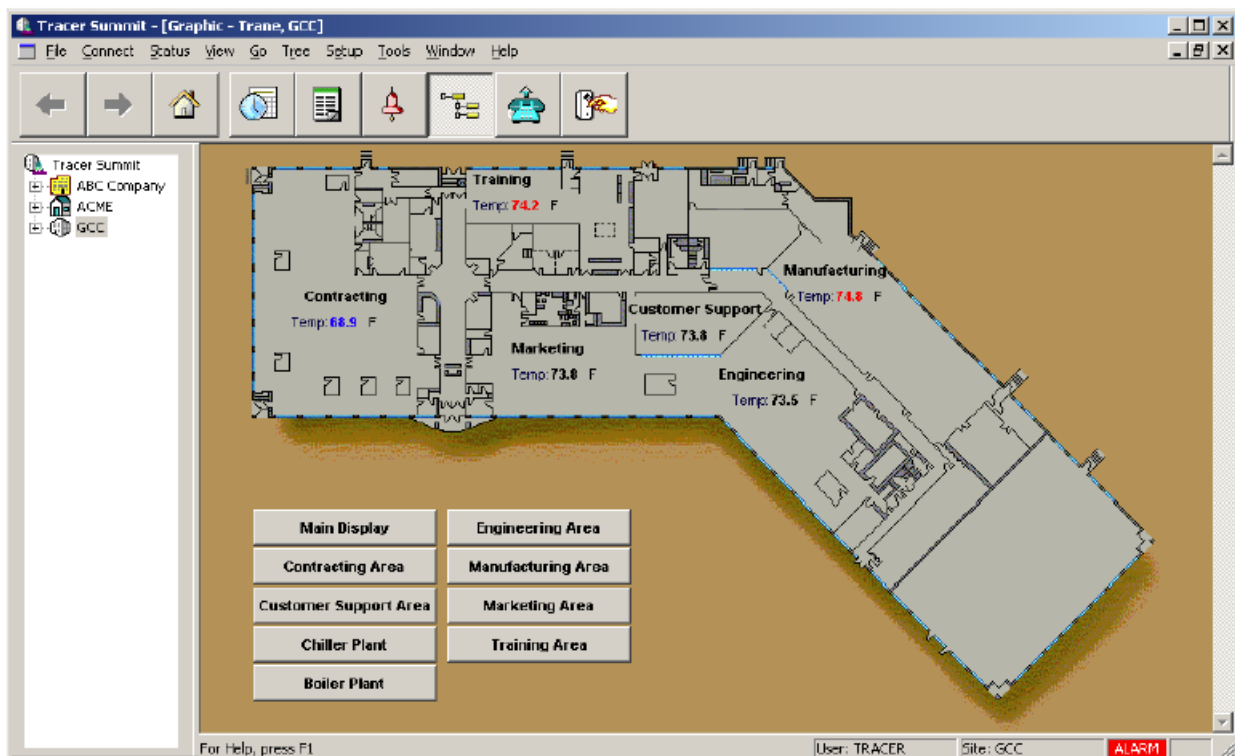
Ease of service

The optional Rover service tool can be launched from Tracer Summit software to identify problems, test functionality, change configuration, create and edit programming, and monitor status information for Comm5 unit controllers on the system. From an operator on site, to a technician several miles away using a remote connection, the combination of Tracer Summit software and a Rover service tool provide the data and functionality required to fully and conveniently service the building automation system.

Chiller plant control

The Tracer Summit chiller plant control application provides intelligent control and comprehensive monitoring of system components, including:

- Multiple chillers
- Related pumps and valves
- Cooling towers and ice tanks

The chiller plant control application balances system efficiency and equipment runtime to optimize system performance. The application also provides status information that can help with troubleshooting. The status information indicates what is happening in the chiller plant as well as what to expect next, based on current operating conditions. The chiller plant control program is suitable for both comfort and industrial applications, as well as control sequences including thermal storage and dual-fuel chiller systems.

Area control

Area control coordinates HVAC equipment and lighting for a specific area of the building.
Unit controllers and binary outputs are assigned as members of a common area, which makes it easy to change setpoints, do scheduling, and perform overrides at the PC Workstation.

**Timed override**

As a part of the Area Control application, the timed override feature enables building occupants and management staff to override HVAC and lighting equipment to an occupancy status. They can perform overrides from the zone sensor, the BCU operator display, the Tracer Summit PC Workstation software, or the Tracer Summit Web Server (see the Timed Override button in Figure 2).

Variable-air-volume air system (VAS)

The Tracer Summit variable-air-volume air system (VAS) control coordinates air-handling units and VAV boxes within a building. VAV units are assigned to the air-handling unit that supplies air to them. A VAS control starts up and shuts down the system to assure proper static pressure control. Energy saving applications, including static pressure optimization and ventilation optimization, are available as standard VAS control features.

Schedule recurring tasks

Figure 2. Schedule recurring tasks
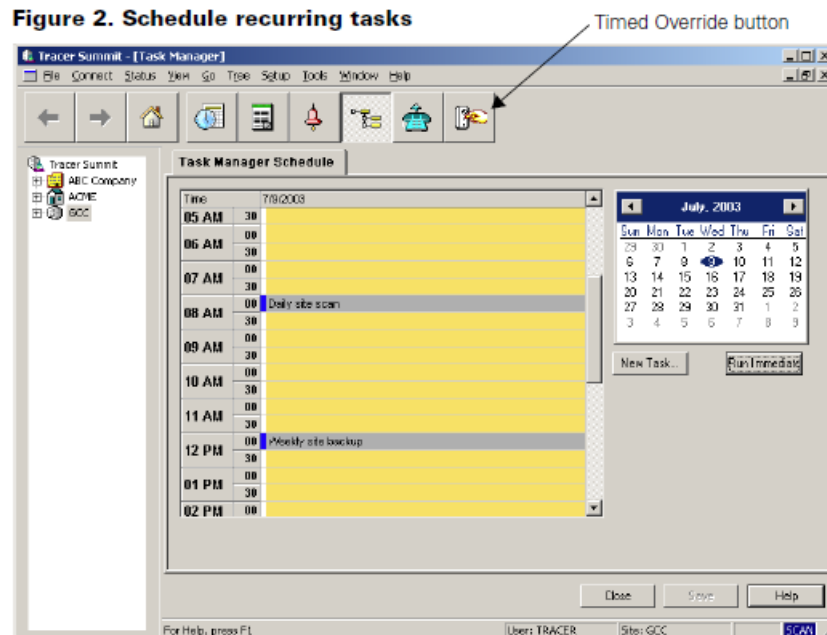
Indoor air quality control

Indoor air quality is an issue of rising importance from the perspectives of comfort as well as governmental regulation and liability. Tracer Summit intelligently monitors and maintains indoor air quality. When used in conjunction with Trane Traq dampers, Tracer Summit can adjust the intake of outdoor air to ensure compliance with ASHRAE standards.

Custom programming

A powerful custom programming language (CPL) allows system customizing for specific applications. Typically, CPL routines are created to sequence equipment, calculate setpoints and values, and perform shutdown sequences.

Managing multiple facilities

To assist in managing multiple facility locations, the Tracer Summit Enterprise Management Package includes utilities that help the daily operator work more efficiently. For example, a typical task is making the same or similar changes to time-of-day schedules across multiple locations. The Enterprise Management Package offers the ability to perform global schedule changes, which means that one simple schedule change can be duplicated across an entire enterprise or group of facilities.

Advanced alarming

With the Building Management Package and the Enterprise Management Package, Tracer Summit also offers a utility to schedule after-hours forwarding of alarms to different persons by e-mail. This utility closely models how an after-hours and weekend call center is scheduled. Once the alarm message has been received, the on-call person can utilize the powerful filtering features of the Tracer Summit alarm and event log to assist in troubleshooting any equipment or system issues with the particular facility in question.

Time-of-day scheduling editor
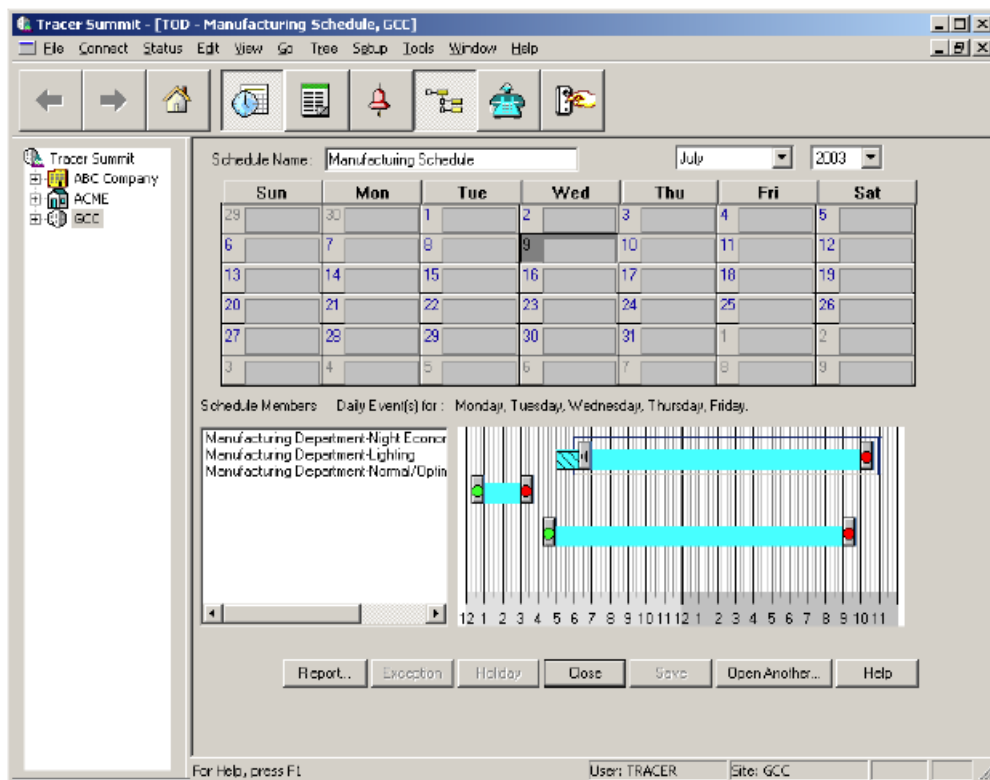
The Building Management Package and the Enterprise Management Package also allow for flexible scheduling of system administrative tasks to occur during times when the normal system operator is not at work, for instance at night. Certain tasks such as gathering report and alarm data from the remote facilities can be scheduled to occur at a convenient time (see Figure 2) or when the telephone rates are the lowest if dial-up connections are used.

Time-of-day scheduling
Time-of-day scheduling is one of a facility's most important energy-saving strategies. Making sure that equipment runs only when it is needed ensures that energy usage is minimized. Schedules for the equipment serving a specific area of the building are accessed by viewing the graphic for that area, and then clicking the Schedule button on the task bar (see Figure 3): Schedules can be used for:

- Keeping the equipment running at minimal energy-use levels on week-ends and holidays
- Creating special schedules for times in which the schedule needs to devi-ate from the normal one, such as for one day; the normal schedule can be returned to the following day
- Performing optimal start and stop of equipment to optimize energy use while maintaining comfort requirements
- Changing setpoints at specific times of day

Engineered smoke control
Tracer Summit software can be used to control an automatic smoke-control system. When used with a fire alarm control panel (provided by other suppliers), Tracer Summit can help protect occupants by controlling the flow of smoke in an emergency. In addition to smoke control, with a firefighter's control panel, the firefighter can see the status of smoke control and implement overrides as required.
Tracer Summit is UL-864-UUKL-listed for this application. For details, see the Engineered Smoke Control System for Tracer Summit applications guide, BAS-APG001-EN.

Migration
Existing Tracer systems can easily migrate to the current technologies of Tracer Summit. Upgrading a Tracer 100 system provides benefits including network communications, state-of-the-art user interface, and the ability to connect to next-generation controllers. For facilities where system upgrades are prohibitive, Tracer Summit also allows integration of Tracer 100 and Tracker systems. Tracer Summit can communicate with most of the controllers in Tracer 100 and Tracker systems. The integration of legacy systems into the Tracer Summit workstation allows the facility or enterprise operator to manage all facilities with a single workstation.

System integration
Tracer Summit provides open system options that provide the following capabilities:

- Allows easy integration of equipment and auxiliary systems into a single system, or multiple buildings into a single network, which can be oper-ated from a single location.
- Assures competitive bidding for sys-tem additions and modifications.
- Provides an easy method to connect Trane equipment and Tracer Summit systems into other BAS or Supervisory Control and Data Acquisition (SCADA) systems.

The goal of any interoperable system is to provide an economical, reliable, and repeatable solution. By basing Tracer Summit on open standard protocols, this goal is easily accomplished. The native communication between the BCU and PC Workstation is based on BACnet—the ASHRAE/ANSI 135 standard—and ENV-1805-1/ENV-13321-1. Communica-tion to Trane's Comm5 Tracer controllers is based on the EIA-709.1 (LonTalk®) standard. The use of open standard protocols assures long-term support across a broad number of suppliers. Trane has experience in providing integrated, interoperable solutions on thousands of installations. These range from simple HVAC solutions that combine Tracer controllers with variable frequency drives, to sophisticated installations that combine many building sub-systems. For more information, contact a Trane representative. Ask for a copy of the Interoperable Solutions brochure (BAS-SLB004-EN) and the Connections CD (BAS-CMC002-EN).

BACnet support
An open, standard protocol is essential for building control system integration. The Tracer Summit system uses the BACnet protocol to facilitate communication between Tracer Summit BCUs and PC Workstations as well as a means to integrate products and systems, including fire panels, fume hoods, and non-Trane BAS or HVAC equipment. Trane is a member of the BACnet Manufacturers Association. For more details on BACnet, refer to **www.bacnet.org**.

LonTalk® support
The BCU includes native support for LonTalk®-based controllers. The Trane implementation of LonTalk® is referred to as Comm5 and utilizes twisted-pair physical media. In addition to Tracer controllers, any LonTalk®-compatible controller can be included on a Comm5 link. These devices must use FTT-10A transceivers and support LonTalk® standard network variable types (SNVTs). This allows for easy integration of devices such as variable frequency drives, lighting, security, humidifiers, and boilers.

Trane is a sponsor of the LonMark® Interoperability Association. For more details on LonMark,® refer to **www.lonmark.org**.

Other protocol support
While support for open protocols is the preferred method of integrating systems and system components, gateways are another method that can be used for this purpose. A gateway translates one set of communication rules to another, allowing devices that use different protocols to pass data to each other. The use of these gateways is the ideal solution to:

- Interface with controllers such as meters, variable frequency drives, fire alarm systems, and security
- Provide HVAC data out to a proprietary BAS, or to a SCADA system for industrial applications

The Tracer Summit communications bridge is a gateway that enables a wide variety of devices that use the MODBUS RTU protocol to connect to a Tracer Summit building automation system using BACnet. The bridge can also be programmed to interface to other common communication protocols.

System architecture

The Tracer Summit system architecture is highly distributed (Figure 4). Control can occur at the appropriate system level to ensure integrity. The three levels of control are:

- Operator interface
- Building control
- Unit control

A typical example of Tracer Summit system architecture
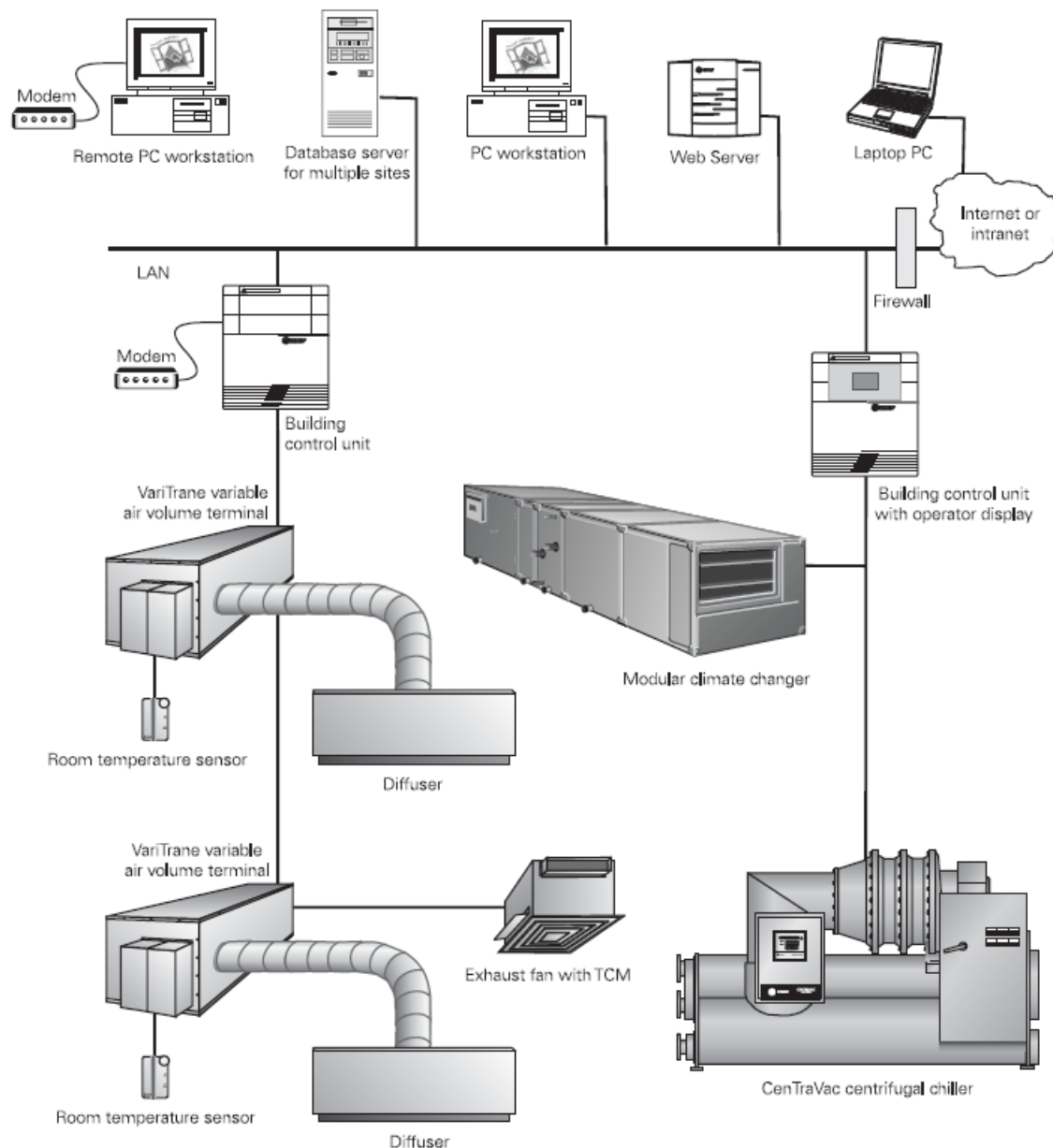
Operator interface

Operators have three interface options for managing their building automation systems:

- PC Workstation
- Operator display
- Tracer Summit Web Server

PC Workstation

The Tracer Summit PC Workstation software provides a graphical user interface for setting up, operating, and modifying the building automation system. This interface along with the use of Microsoft Windows and Internet Explorer make building operation as easy as surfing the World Wide Web. Tracer Summit PC Workstation software can be run on a PC located at the building site or from a remote location. The software can also be used to connect to and monitor operations for multiple building sites. For example, a user can view the status of a chiller located in the next room, while modifying the schedule for a building that is across the city or around the world. Tracer Summit PC Workstation software runs under Microsoft Windows NT SP4, Windows 98 SE, Windows ME, Windows 2000, or Windows XP operating systems. Operating with Windows offers the flexibility of running other popular applications for communications and office productivity. See Hardware requirements on page 16 for more PC Workstation details. The Tracer Summit PC Workstation is the most common interface for accessing building automation systems. The primary features are described in this section.

Alarm processing and event log

The daily operator must be able to deal effectively with abnormal conditions. When the system detects such a condition, it routes the alarm to the appropriate PC Workstation(s), pagers, and e-mail addresses. At the PC Workstation, alarms and other system events are stored in the alarm and event log. The log can be viewed by clicking a button on the Tracer Summit task bar or selecting a command from the menu. If another application is in use when an abnormal condition occurs, an alarm is indicated in the task bar at the bottom of the screen. The event log displays critical data about the alarm: which building it is from and whether it requires an acknowledgment. Critical alarms can be set up with messages and graphics that can aid in troubleshooting problems. A series of easy-to-use filters can be used to show only desired events: For example, only alarms from certain buildings or alarms received at a certain time can be displayed in the event log.

Graphics

Tracer Summit uses graphics as a means of viewing and moving through the system, much like walking through the building. Graphics show data related to building environments, including climate, lighting, and other controllable operations. Graphics can be used to change setpoints and override equipment operation. Putting graphics in groups makes it possible to move logically from place to place within a building. Target buttons can be added to graphics to provide links to related sources. The navigation tree—a hierarchical, tree-style representation showing the relationship of all graphics for a facility (see Figure 1 on page 4)—provides a way to move between graphics and buildings. The navigation tree is a standard part of every system and can be easily modified while the system is online. Forward, Back, and Home buttons on the menu bar provide another way to move among graphics.

Graphics library and graphics editing

A library of standard graphics representing all Trane equipment and applications is included in the Tracer Summit software. Standard graphics provide a visual representation of equipment along with relevant equipment information. These standard graphics have been tested to provide a consistently high level of quality and usability. Custom graphics can also be created by incorporating visual elements from the building, such as floor plans or exterior views from CAD drawings, into standard graphics. Custom graphics can also include digital photography and animated images such as a rotating fan. These elements can be included on graphics:

- Any data available in the system as a numerical or text value
- Analog values that can change colors based on deviation from a desired value for quick recognition of operational issues
- User-defined static text in a wide choice of fonts and colors
- Animation using binary images, ani-mated GIF, or video (AVI) files
- Hyperlinked text and images that can be added to move between graphics
- Hyperlinks to any Windows-compati-ble files or applications (for example, Adobe Acrobat documents, Excel spreadsheets, and external Web sites)
- Multiple graphic images that conform to the industry standard JPEG, GIF, or BMP formats, in addition to the library of HVAC equipment images included with the Tracer Summit software package
- Charting of historical trends or real-time values
- User controls including push buttons, check boxes, drop-down list boxes, and entry fields

Data, text, setpoint overrides, and other information can be added to graphics by using the Graphics editor that is part of the software package. This editor works while the system is online and allows any user with proper security to create or modify graphics. Tools available in the Graphics editor can align graphical elements, determine which elements appear on top, and perform cut, copy, and paste functions.

Reports and trends
Viewing current as well as previous system operations provides invaluable information. The Tracer Summit reports and trends feature provides this ability. Trends can present a variety of sample data at defined intervals to show at a glance the historical and current status of the facility. These trends can be viewed on the screen, printed out, or stored on disk. Standard reports for each piece of Trane equipment provide a valuable source of record-keeping and troubleshooting data. In addition, standard reports are provided for ASHRAE Guideline 3, Monitoring of large tonnage chillers. Finally, custom reports can be defined for any desired values, such as energy usage or run-time reporting.

PC Workstation system utilities
In addition to operations and configuration, the Tracer Summit PC Workstation software also provides utilities for management of the system.

Save and restore
When connected to a network of BCUs, the PC Workstation software constantly analyzes database status and updates information on the PC hard drive.

Database changes made by other workstations are automatically reflected at each PC without the need for a central server. If a BCU goes offline, the PC Workstation software automatically reloads its database without the need for intervention. The system database can be archived or backed up for local or offsite storage of data in case it is needed for restoring the system in the event of a problem.

Security
A sophisticated password system protects the Tracer Summit system from unauthorized access. Each operator logs on to the system and only has access to selected applications, editors, objects, and properties. An operator with proper security can access all levels of the system and has the ability to alter passwords.

Diagnostics

- Tracer Summit constantly evaluates all of the system parameters and reports problems to the operator. Problems ranging from a communication failure due to a broken wire to the failure of a sensor are automatically detected and reported.

- Network management functions The Tracer Summit PC Workstation software includes field panel reset and restore, abnormal condition monitoring, network routing, and BACnet support.

Configuring controllers

The Tracer Summit PC Workstation software can be used to configure and troubleshoot controllers found on Trane equipment. This setup consists of setpoints, minimum on and off times, and other user-defined parameters.

PC Workstation additional capabilities

Tracer Summit PC Workstation software has three add-on software packages that provide additional capabilities. With the Tracer 100/Tracker Communica-tion Package, the PC Workstation can communicate with, and receive alarms from, Trane's legacy system controllers. The Building Management Package makes it easy to schedule site communication and database back-ups during after-hours operation. This package also allows scheduling of alarms, in the form of e-mail messages, to appropriate personnel. E-mails can be sent to any device that can receive e-mail messages. The Enterprise Management Package includes all of the features of the other two add-on packages and also allows changes to be applied across multiple locations. In addition, the package allows multiple PCs to share data, the event log, and graphics with a central PC.

Operator display

The optional Tracer Summit BCU operator display provides an easy-to-use interface for:

- Viewing equipment and system status information
- Making changes to time-of-day sched-ule
- Changing system setpoints
- Viewing the alarm and event log
- Performing timed overrides

The operator display is an intuitive, touch-screen display that is located on the front of the Tracer Summit BCU. The operator display can also show graphical images indicating the type of equipment or area that is being controlled by the Tracer Summit system. The BCU operator display offers a way to make daily operation changes to the system without the need for a PC Workstation at the facility. For a facility with multiple BCUs, information for the entire Tracer Summit system can be accessed through a single operator display.

Tracer Summit Web Server
The Tracer Summit Web Server provides the ability to operate a Tracer Summit building automation system (BAS) from any PC using a Web browser, such as Internet Explorer or Netscape Navigator. The Web Server accesses real-time system data from the Tracer Summit system and sends it to the Web browser interface. This allows access to system information from within a facility or from a remote location anywhere in the world using a Web browser rather than Tracer Summit software. With a Web Server installed on a Tracer Summit system, any PC with a Web browser can be used to:

- View graphical information about a facility, change setpoints, and perform overrides
- View and change schedules
- View and acknowledge alarms
- View historical information
- Access graphics that have already been created for a Tracer Summit site

The Web Server can be easily added to a new or existing Tracer Summit installation. It is compatible with Tracer Summit installations Version 13 and higher with Ethernet, Ethernet IP, or ARCNET connections.

Building control

The Tracer Summit BCU is an intelligent field panel that communicates with unit controllers. Unit controllers provide stand-alone control of HVAC equipment. The BCU scans all unit controllers to update information and coordinate building control, including building subsystems such as chiller plants. A site may have multiple BCUs and PC Workstations connected over a local area network (LAN). The LAN allows these varied components to be managed as one system. The BCU is housed in a protective enclosure that allows for easy access to the circuit board (see Figure 5).

Optional communication card slots
Three card slots in the BCU provide the flexibility to configure one or all of the following:

- EIA-232 communication card or modem
- Ethernet or ARCNET node interface card
- ARCNET hub card(s)

BCU housing and component layout
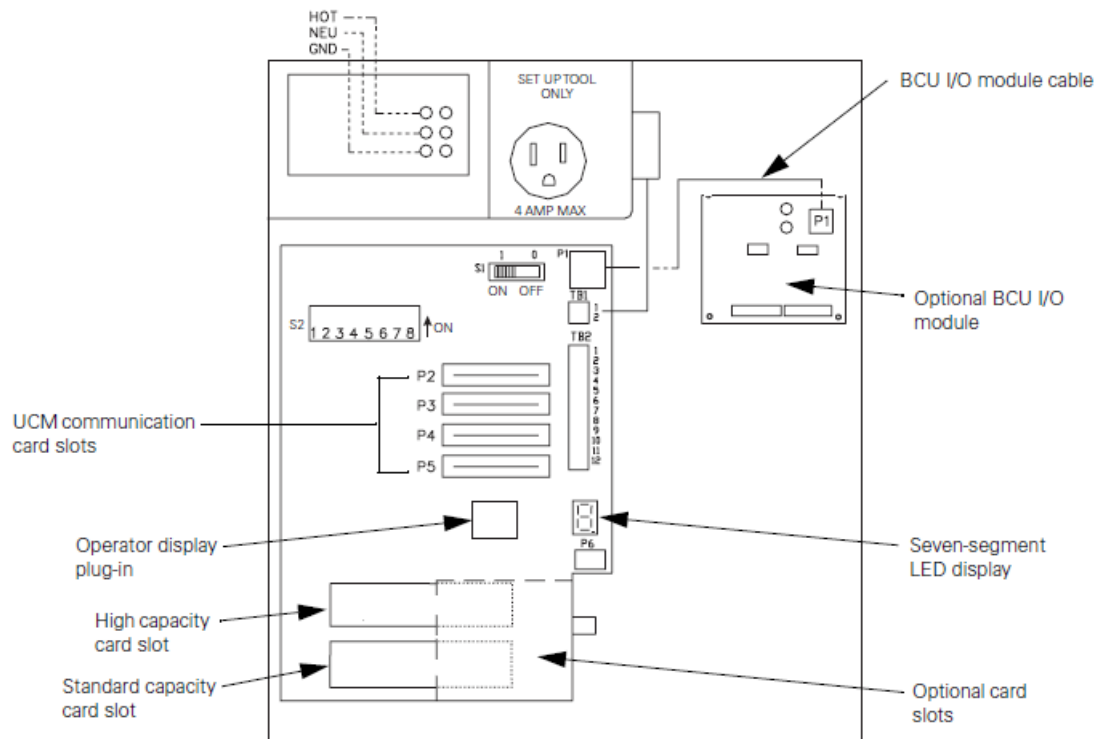
Unit control

The Tracer Summit system provides centralized control for Trane HVAC and other unit-level equipment.

Trane chillers
• CenTraVac chillers with UCP1, UCP2,
or Tracer CH530 controllers
• Series R CenTraVac chillers with
UCP1, UCP2, or Tracer CH530 controllers
• Scroll chillers with IntelliPak, classic,
or Scroll Manager Module (SMM) controllers
• Absorption chillers with UCP2, classic,
or Horizon controllers
• Series R air-cooled and water-cooled
chillers

Trane airside equipment

- VariTrane with Trane variable air volume controls (VAV I, II, III, and IV) or Tracer VV550 VAV controller
- VariTrac II changeover VAV system
- Fan coils with the Trane terminal unit controller (TUC) or Tracer ZN510 or ZN520 controller
- Classroom unit ventilators with Trane terminal unit controller (TUC) or Tracer ZN520 controller
- Air handlers with PCM, UPCM, Tracer MP580, or Tracer AH540 controls

Trane unitary equipment

- Voyager rooftop air-conditioning units
- IntelliPak air-conditioning units
- Water-source heat pumps with Trane terminal unit controller (TUC), Tracer ZN510 controller, or Tracer ZN524

controller

- Precedent rooftop air-conditioning units with ReliaTel controls

Trane field-installed controllers

- Programmable control module (PCM)
- Universal programmable control module (UPCM)
- Thermostat control module (TCM)
- Tracer loop controller
- Tracer MP581 programmable controller
- Tracer MP501 controller (multi-purpose)
- Tracer MP503 input/output module
- Tracer ZN511 zone controller
- Tracer ZN517 zone controller
- Tracer ZN521 zone controller
- Tracer AH541 air-handler controller
- Tracer VV551 VAV controller

Companion products

Tracer Summit Energy Services
Tracer Summit Energy Services is an energy management and advanced reporting software product that is used with the Tracer Summit building automation system. It provides tools to monitor, analyze, trend, benchmark, and allocate both energy consumption and energy costs for your business along with the means to create reports from this data. Its purpose is to help you manage energy operations and expenses more efficiently so that your organization can improve its productivity and profitability. It is designed for both the technical and non-technical user. Figure 6 shows an example of Energy Services software

Two options of Tracer Summit Energy Services are available: Energy Manager and Energy Analyst. Energy Manager provides a basic platform to enable tracking, analysis, cost allocation, benchmarking, and invoicing of energy meters and sub-meters as well as nonenergy points such as weather data. Energy Analyst provides more comprehensive energy management tools to enable in-depth analysis, reporting, and plant analysis. Both the Energy Manager and the Energy Analyst options are available as desktop packages or as enterprise packages, depending on customer requirements. The desktop package is best suited for single-site Tracer Summit applications or multi-site applications that have a central energy manager station. The enterprise package is best suited for multi-site applications or sites with multiple users. For more information, refer to the Tracer Summit Energy Services product catalog (BAS-PRC015-EN).

Example of Tracer Summit Energy Services software
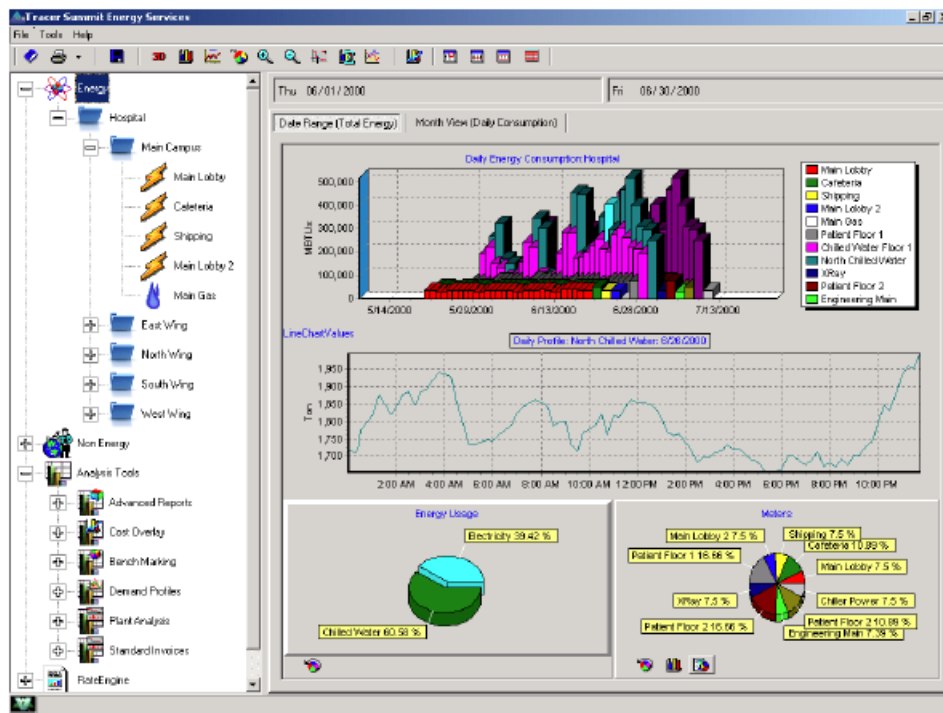
Tracer Summit Tenant Services

The Tracer Summit Tenant Services system is a full-time energy management tool specifically engineered for tenant-occupied buildings. Tenant Services software is delivered pre-installed on a dedicated PC. The system is ready 24 hours a day to respond to tenant requests for afterhours control of heating, ventilating, and air conditioning (HVAC) and lighting for specific building areas. It enables a property or facility manager to:

- Reduce energy consumption
- Track after-hours use
- Bill tenants for after-hours use

See Figure 7 for an example of Tenant Services software. Tenant Services provides an easy-to-use telephone interface that enables a tenant to call in and request after-hours control of lighting only or HVAC and lighting. Three scheduling options for requests are provided:

- Immediate override request
- Standing (ongoing) override request
- Future (scheduled) override request

After receiving an after-hours control request, the Tenant Services system will interface with Tracer Summit to provide comfort control and lighting for the requested area only for the time period specified by the user. For more information, refer to the product catalog (BAS-PRC002-EN) Tracer Summit Tenant Services system.

Example of Tracer Summit Tenant Services software
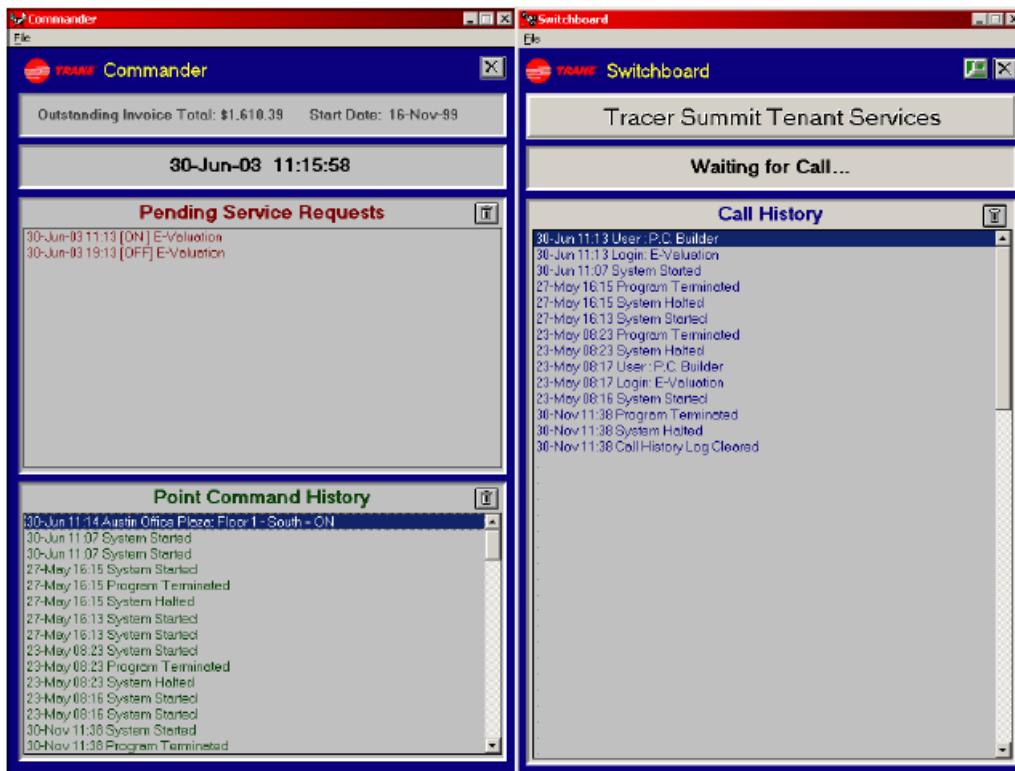
Specifications

PC Workstation

Hardware requirements

Tracer Summit for Windows software runs on a PC. For Tracer Summit standard software, the Tracer 100/ Tracker Communications Package, and the Building Communications Package, the PC must have the following minimum hardware and software:

- Pentium 233 MHz processor
- 32 MB RAM for Windows 98 SE/ME or 128 MB for Windows NT SP4/2000/ XP
- 300 MB hard drive storage
- 4X CD-ROM drive for Windows 98 SE/ ME/2000, 8X CD-ROM for Windows NT SP4/XP, or 32X CD-ROM to run Tracer Summit Online Tutorial
- 15-inch super video graphics adaptor (SVGA) monitor, 800 × 600 resolution, 16-bit color
- Mouse
- Keyboard
- Parallel port for printer
- 16-bit sound card with speakers
- Windows 98 SE, NT 4.0 SP4 (Energy Services requires SP6), 2000 Professional, ME, or XP Professional
- Internet Explorer Version 4 or higher
- Microsoft Data Access Components (MDAC) Version 2.5 or higher

In addition, at least one of the following is required for establishing a connection:

- One PCI or ISA slot (for Ethernet or ARCNET network adapter)
- One internal or external 14.4 K baud modem for remote workstation

For the Enterprise Management Package, the PC must have the following minimum hardware. All other components are as listed for Tracer Summit standard software.

- Pentium 700 MHz processor
- 128 MB RAM
- 2 GB hard drive storage
- 56 K baud modem

Optional hardware

- Additional memory and disk capacity
- Network card for ARCNET or Ethernet
- Parallel printer
- System backup hardware (such as a tape drive or CD-RW drive)

Tracer Summit PC Workstation software

- Workstation software on CD
- Library of graphic images and routines
- Documentation for the installer, daily user, and programmer

BCU

Power requirements

- **Nominal rating**: 120/240 Vac; 50 or 60 Hz; 1 pH
- **Voltage utilization range:**
    - **120 Vac, nominal**: From 98 to 132 Vac
    - **240 Vac, nominal**: From 196 to 264 Vac
- **Maximum current**: 6.0 A at 120 Vac dedicated circuit breaker

Operating environment

- **Temperature**: From 32°F to 120°F (0°C to 50°C)
- **Relative humidity**: From 10% to 90%, non-condensing

Storage environment

- **Temperature**: From –50°F to 150°F (–46°C to 66°C)
- **Relative humidity**: From 10% to 90%, non-condensing

Enclosure
NEMA-1

Dimensions
19 in. high × 16 in. wide × 6 in. long (482 mm × 406 mm × 152 mm) See Figure 8 on page 17.

Weight

- Without operator display 20 lb (9.1 kg) shipping 15 lb (6.8 kg) net (hanging)
- With operator display 22.5 lb (10.2 kg) shipping 17.5 lb (7.9 kg) net (hanging)

Mounting
Wall-mounted with ¼ in. hardware

Clearances (recommended minimum)

- 12 in. (30 cm) at top, bottom, and sides
- 36 in. (91 cm) in front
- 46 in. (1.2 m) above floor (for wallmounted BCU)

UL listing

- UL-916-PAZX—energy management
- UL-864-UUKL—engineered smoke control
- CUL-C22.2—energy management— Canada

Processor
Motorola MC68340

Memory

- Standard capacity FLASH 2 MB EEPROM 256 KB RAM 1 MB
- High capacity FLASH 4 MB EEPROM 516 KB RAM 2 MB

Battery
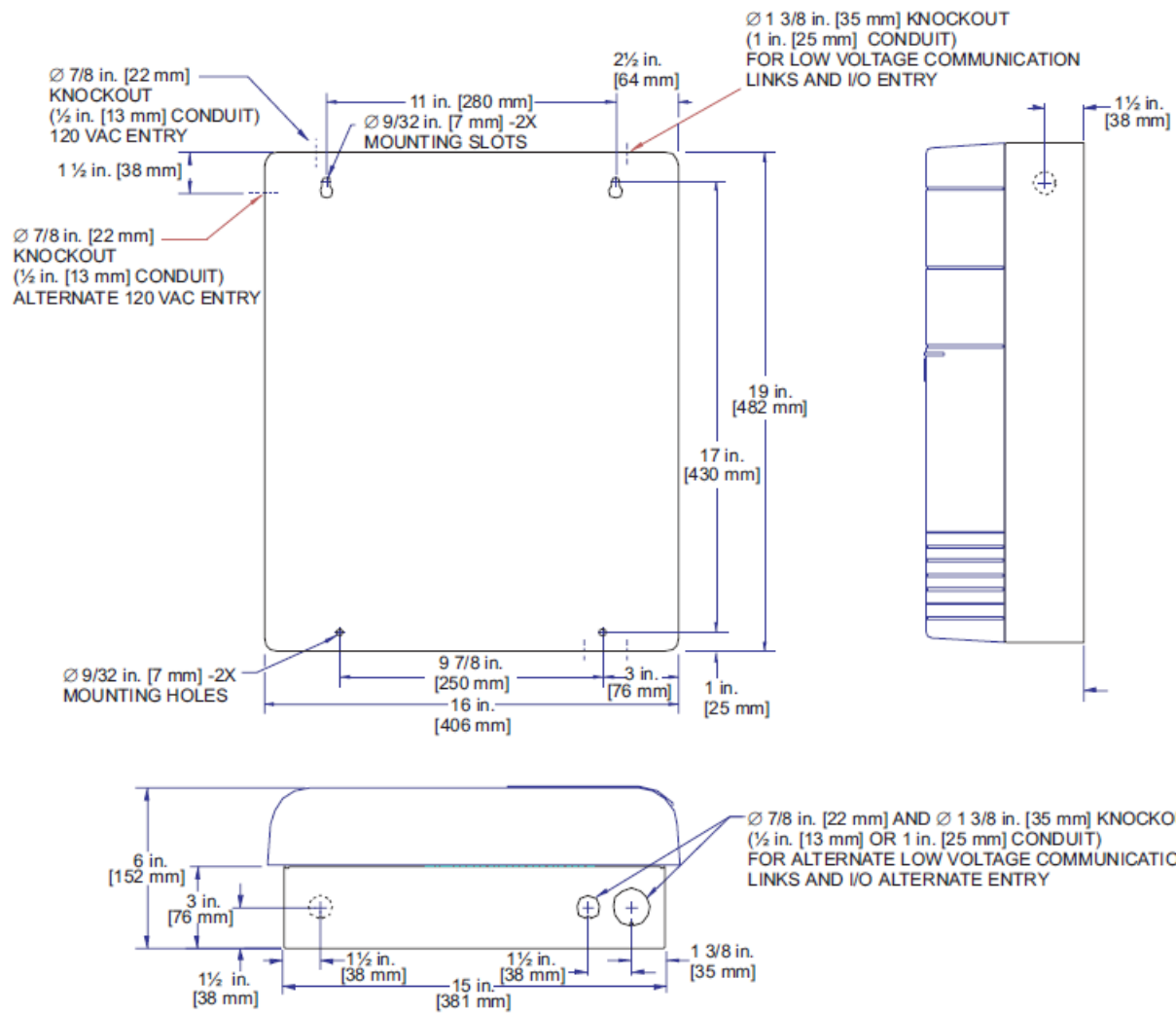No battery is required. The clock is maintained for a minimum of three days by the super capacitor. All other programs are backed up by nonvolatile memory.
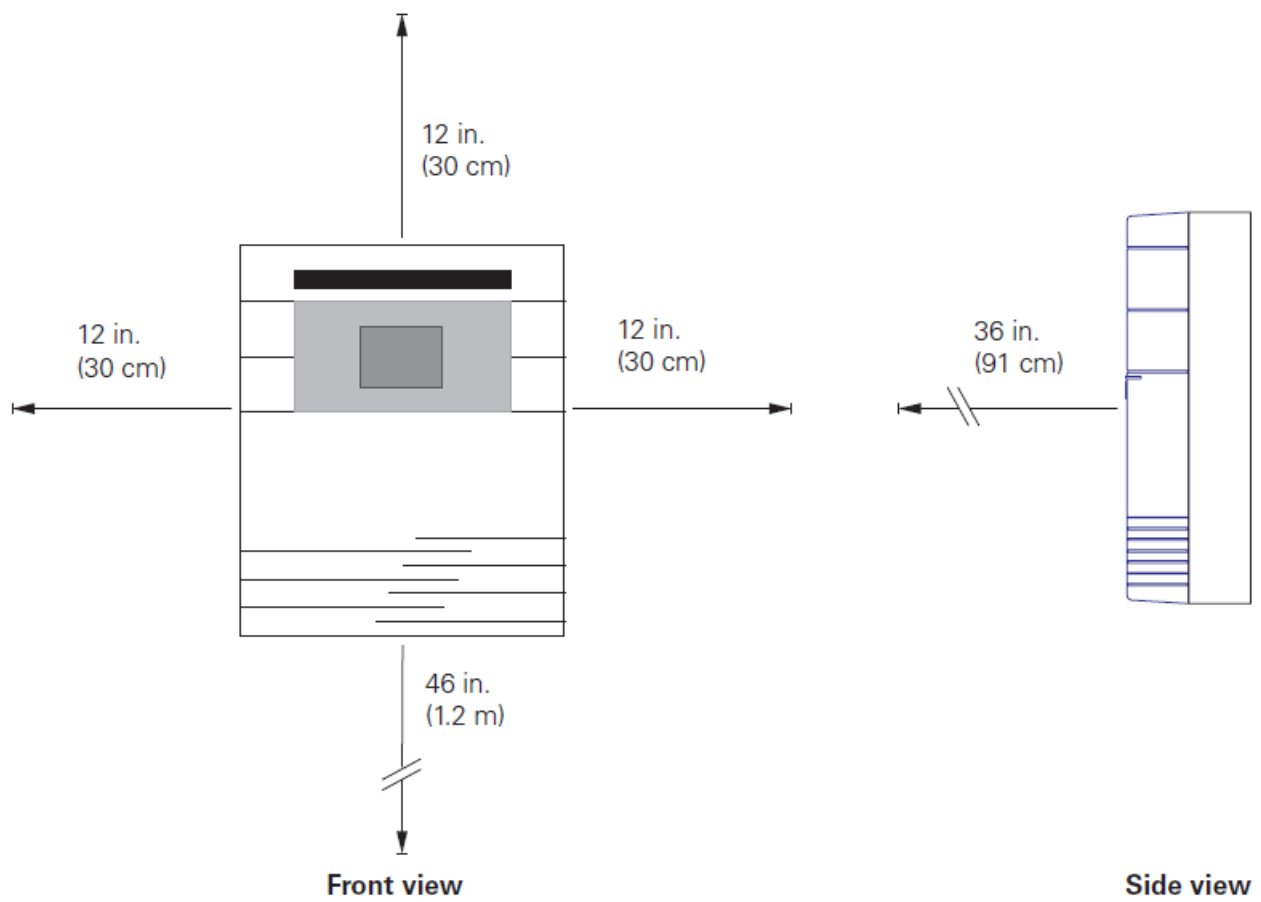
Operator display (optional)
¼ video graphics adapter (VGA) backlit liquid crystal display (LCD) with touch screen 4.5 in. × 3.4 in. (115.2 mm × 86.4 mm) 5.7 in. (144.8 mm) diagonal Resolution of 320 × 240 pixels

BCU dimensions and cable access

Ø 7/8 in. [22 mm]
KNOCKOUT
(½ in. [13 mm] CONDUIT)
120 VAC ENTRY

1 ½ in. [38 mm]

Ø 7/8 in. [22 mm]
KNOCKOUT
(½ in. [13 mm] CONDUIT)
ALTERNATE 120 VAC ENTRY

11 in. [280 mm]
Ø 9/32 in. [7 mm] -2X
MOUNTING SLOTS

2½ in. [64 mm]

Ø 1 3/8 in. [35 mm] KNOCKOUT
(1 in. [25 mm] CONDUIT)
FOR LOW VOLTAGE COMMUNICATION
LINKS AND I/O ENTRY

1½ in. [38 mm]

19 in. [482 mm]

17 in. [430 mm]

Ø 9/32 in. [7 mm] -2X
MOUNTING HOLES

9 7/8 in. [250 mm]

3 in. [76 mm]

16 in. [406 mm]

1 in. [25 mm]

6 in. [152 mm]

3 in. [76 mm]

Ø 7/8 in. [22 mm] AND Ø 1 3/8 in. [35 mm] KNOCKOUTS
(½ in. [13 mm] OR 1 in. [25 mm] CONDUIT)
FOR ALTERNATE LOW VOLTAGE COMMUNICATION
LINKS AND I/O ALTERNATE ENTRY

1½ in. [38 mm]

1½ in. [38 mm]

1½ in. [38 mm]

15 in. [381 mm]

1 3/8 in. [35 mm]

BCU clearances

12 in.
(30 cm)

12 in.
(30 cm)

12 in.
(30 cm)

36 in.
(91 cm)

46 in.
(1.2 m)

Front view

Side view

BACnet PICS—BCU

Basic information

Vendor name	Trane BAS
Product name	Tracer Summit BCU
Product description	Tracer Summit Building Control Unit

BACnet standard application services supported

Application service	Initiate	Execute
CreateObject	X	X
DeleteObject	X	X
ReadProperty	X	X
ReadPropertyMultiple	X	X
WriteProperty	X	X
WritePropertyMultiple	X	X
ConfirmedPrivateTransfer	X	X
UnConfirmedPrivateTransfer	X	X
ReinitializeDevice		X
TimeSynchronization	X	X
Who-Has		X
I-Have	X	
Who-Is	X	X
I-Am	X	X

Standard object types supported

Object types	Support
Analog input	Creatable Deletable
Analog output	Creatable Deletable
Binary input	Creatable Deletable
Binary output	Creatable Deletable
Device	Supported

Data link layer object

ARCNET, coax star
ARCNET, coax bus
ARCNET, fiber star
Ethernet (ISO/IEC 8802.3), 10-BASE-2
Ethernet (ISO/IEC 8802.3), 10-BASE-T
Ethernet (ISO/IEC 8802.3), 10-BASE-FL
Point to point, EIA-232

Special functions

Maximum APDU size in octets	474
Segmented requests supported, window size	1
Segmented responses supported, window size	1

Character sets supported

ANSI, X3.4

BACnet PICS—PC Workstation

Basic information

Vendor name	Trane BAS
Product name	Tracer Summit PC Workstation
Product description	Tracer Summit PC Workstation

BACnet standard application services supported

Application service	Initiate	Execute
CreateObject	X	
DeleteObject	X	
ReadProperty	X	
ReadPropertyMultiple	X	
WriteProperty	X	
WritePropertyMultiple	X	X
ConfirmedPrivateTransfer	X	X
UnConfirmedPrivateTransfer	X	
ReinitializeDevice	X	
TimeSynchronization	X	
Who-Is	X	X
I-Am	X	X

Standard object types supported

Object types	Support
Device	Supported

Data link layer object

ARCNET, coax star
ARCNET, coax bus
ARCNET, fiber star
Ethernet (ISO/IEC 8802.3), 10-BASE-2
Ethernet (ISO/IEC 8802.3), 10-BASE-T
Ethernet (ISO/IEC 8802.3), 10-BASE-FL
Point to point, EIA-232

Special functions

Maximum APDU size in octets	474
Segmented requests supported, window size	1
Segmented responses supported, window size	1

Character sets supported

ANSI, X3.4

- Literature Order Number BAS-PRC001-EN
- File Number PL-ES-BAS-000-PRC001-0803
- Supersedes BAS-PRC001-EN-0802
- Stocking Location Inland

Trane An American Standard Company **www.trane.com**

For more information contact your local district office or e-mail us at **comfort@trane.com**

Since Trane has a policy of continuous product and product data improvement, it reserves the right to change design and specifications without notice

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Documents / Resources

TRANE BAS-PRC001-EN Tracer Summit Building Automation System [pdf] User Manual
BAS-PRC001-EN Tracer Summit Building Automation System, BAS-PRC001-EN, Tracer Summit Building Automation System, Building Automation System, Automation System

References

- 🔥 **Fire Alarm Resources | Download fire alarm documents**
- 🔵 **BACnet Committee – Website of the BACnet Committee (ASHRAE SSPC 135)**
- 🔴 **Trane Heating & Air Conditioning**