



Tracer Summit™

Building Automation System





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 a Tracer Summit BAS.

A typical Tracer Summit BAS consists of building control units (BCUs) and PC Workstations that use 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 a PC Workstation and/or the operator display (touch screen) on the BCU to perform system operator tasks. The PC Workstation communicates to BCUs over an Ethernet network. Remote access to the system is available using either a modem in the BCU or an Internet connection with Tracer ES.

Tracer Summit software turns complex requirements into simple, consistent, reliable operations. A Tracer Summit system 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, a Tracer Summit system can also connect to other building systems such as fire alarms, security systems, and lab hood controls.

Add-on packages

Tracer Summit PC Workstation software is available with four add-on software packages: Tracer 100/Tracker Communications Package, Building Management Package, Enterprise Management Package, and Tracer Summit Critical Control System package. For information on the first three packages, see *PC Workstation additional capabilities* on page 10.

The Tracer Summit Critical Control System package is an enhanced version of Tracer Summit software that provides complete environment management for FDA-regulated areas. See the *Tracer Summit Critical Control System* product catalog (BAS-PRC017-EN) for more information.

Companion product

Tracer Summit Energy Services is a companion product to Tracer Summit systems and is available to meet ever-increasing building management needs. For more information, see *Companion product* on page 14.

Specifications

See page 15 for product specifications 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 user-friendly 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
- Viewing trended information
- Performing timed overrides
- Troubleshooting

A daily operator can perform 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.

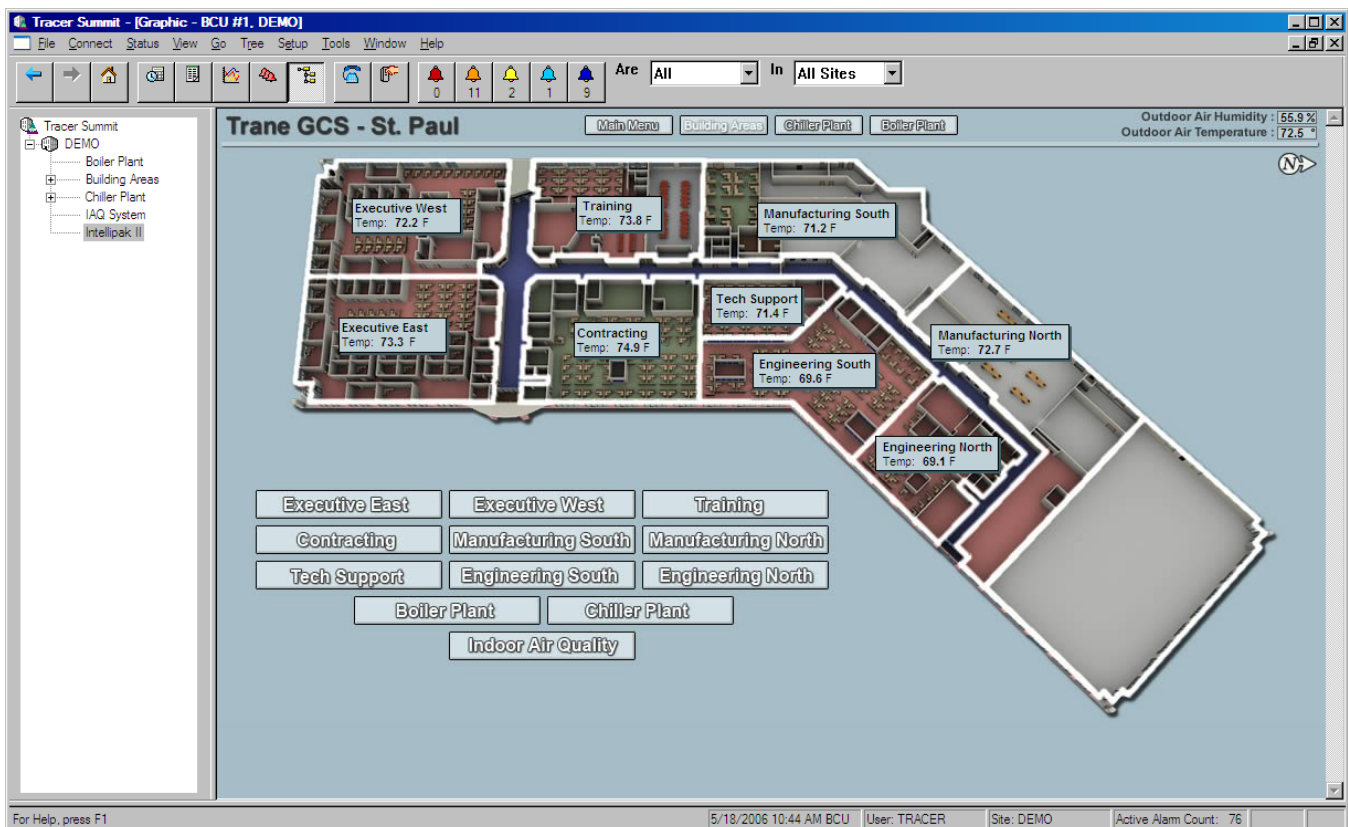
MyTraneControls.com

MyTraneControls.com is a free online Web site designed to assist Tracer Summit system owners and operators. Members log on to www.MyTraneControls.com to learn more about their Tracer Summit system through articles, frequently asked questions (FAQs), webinars, and access to GCS technical support resources and training opportunities. Members can update their system with service packs by downloading them from MyTraneControls.com.

Daily operator training

There are many classes available both locally and in St. Paul. Contact Trane's College of Building Automation for specifics on courses, and the dates and locations they'll be offered.

Figure 1. 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 LonTalk 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.

Trend Viewer

The Trend Viewer (see Figure 2) allows the user to track data over time; to overlay alarms, events, and overrides; and to collect trended data that spans

long time periods. Trend data is stored on a database on the PC Workstation.

Note: The PC Workstation must be online and connected to the BCU to capture continuous data from the BCU. The BCU temporarily caches trended values, so if a connection is lost for a short amount of time, no gaps will be seen in the data.

Timed override

As a part of the Area Control application, the timed override feature enables building occupants and management staff to temporarily override HVAC and lighting equipment.

Users can perform overrides from the zone sensor, the BCU operator display, the Tracer Summit PC Workstation software, or Tracer ES.

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 for LonTalk systems.

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. A Tracer Summit system intelligently monitors indoor air quality to make maintaining it easy.

When used in conjunction with Trane Traq dampers, Tracer Summit software can adjust the intake of outdoor air to ensure compliance with ASHRAE standards.

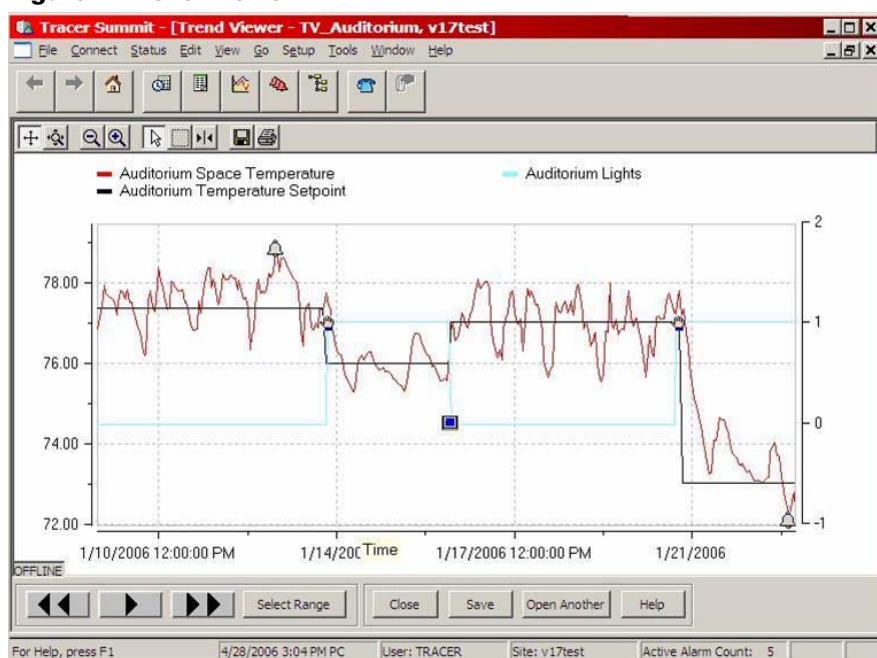
Custom programming

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

Figure 2. Trend Viewer



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

The advanced alarming features of a Tracer Summit system include the following:

- Alarm categories: Five optional, configurable alarm categories have been added. Alarms can be categorized according to their severity, for example. Alarm filtering allows alarms within a category to be viewed at one time. A button appears on the task bar for each category that has been configured. The number of alarms for that category is shown on the button (see Figure 3.)

- Pop-up messaging: Alarm categories can be configured to trigger pop-up messages. Comments can be entered in a pop-up message that show up in the event log.
- Event log: A column has been added to the event log for the new alarm categories and for the comments field. Event log columns can be hidden and widths can be expanded. The event log configuration is automatically saved after set up.
- Cell phone: Text messages can be routed from a Tracer Summit system to a cell phone.

With either the Building Management Package option or the Enterprise Management Package option added to a Tracer Summit system, after-hours forwarding of alarms can be scheduled to be sent to various people by e-mail. This function closely models how an after-hours and weekend call center is scheduled. Once the alarm message has been received, the on-call person can use 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.

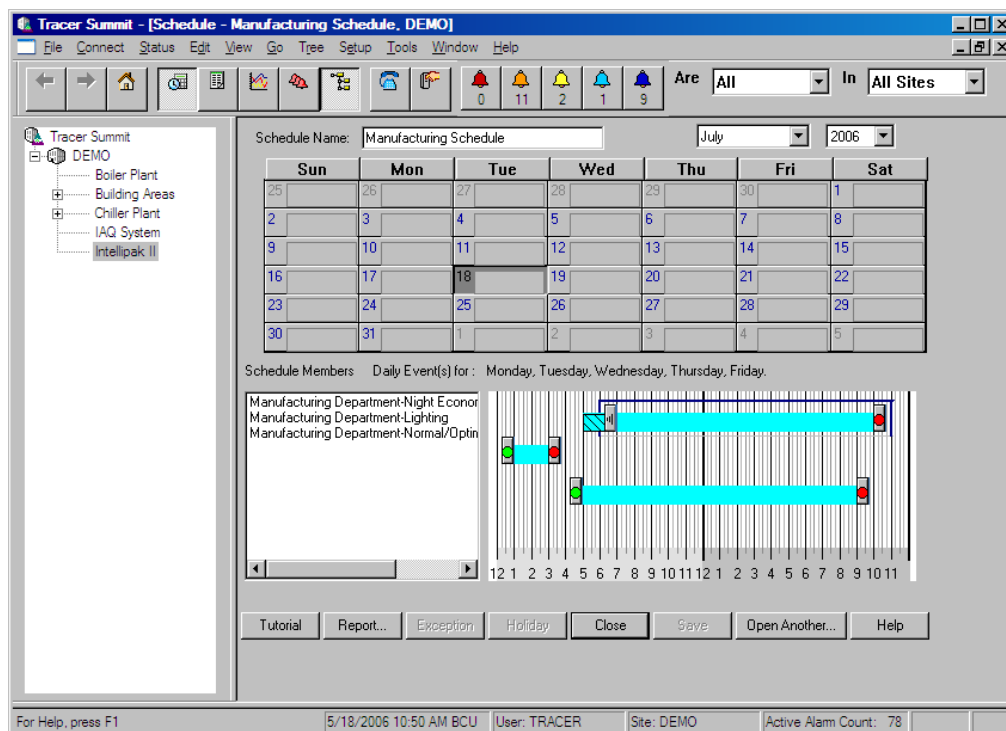
The Building Management Package and the Enterprise Management Package allow flexible scheduling of system administrative tasks to occur during times when the normal system operator is not at work, for instance, at night. Certain tasks such as gathering report and alarm data from the remote facilities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

Time-of-day scheduling

Time-of-day scheduling (see Figure 3) 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 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.

Figure 3. Scheduling editor



Schedules can be used for:

- Keeping the equipment running at minimal energy-use levels on week-ends and holidays
- Creating exception schedules for times in which the schedule needs to deviate from the standard one
- 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 software 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.

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 systems. Upgrading a Tracer 100 system provides benefits including network communications, state-of-the-art user interface, and the ability to connect to multiple generations of controllers.

For facilities where system upgrades are prohibitive, Tracer Summit systems also allows integration of Tracer 100 and legacy Tracker systems. A Tracer Summit system 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 systems 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 operated from a single location.
- Assures competitive bidding for system 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 technology on open standard protocols, this goal is easily accomplished. 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, see 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 utilizes twisted-pair physical media. In addition to Tracer controllers, any LonTalk-compatible controller can be included on a LonTalk link. These devices must use FTT-10A or FT-X1 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 standard 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

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

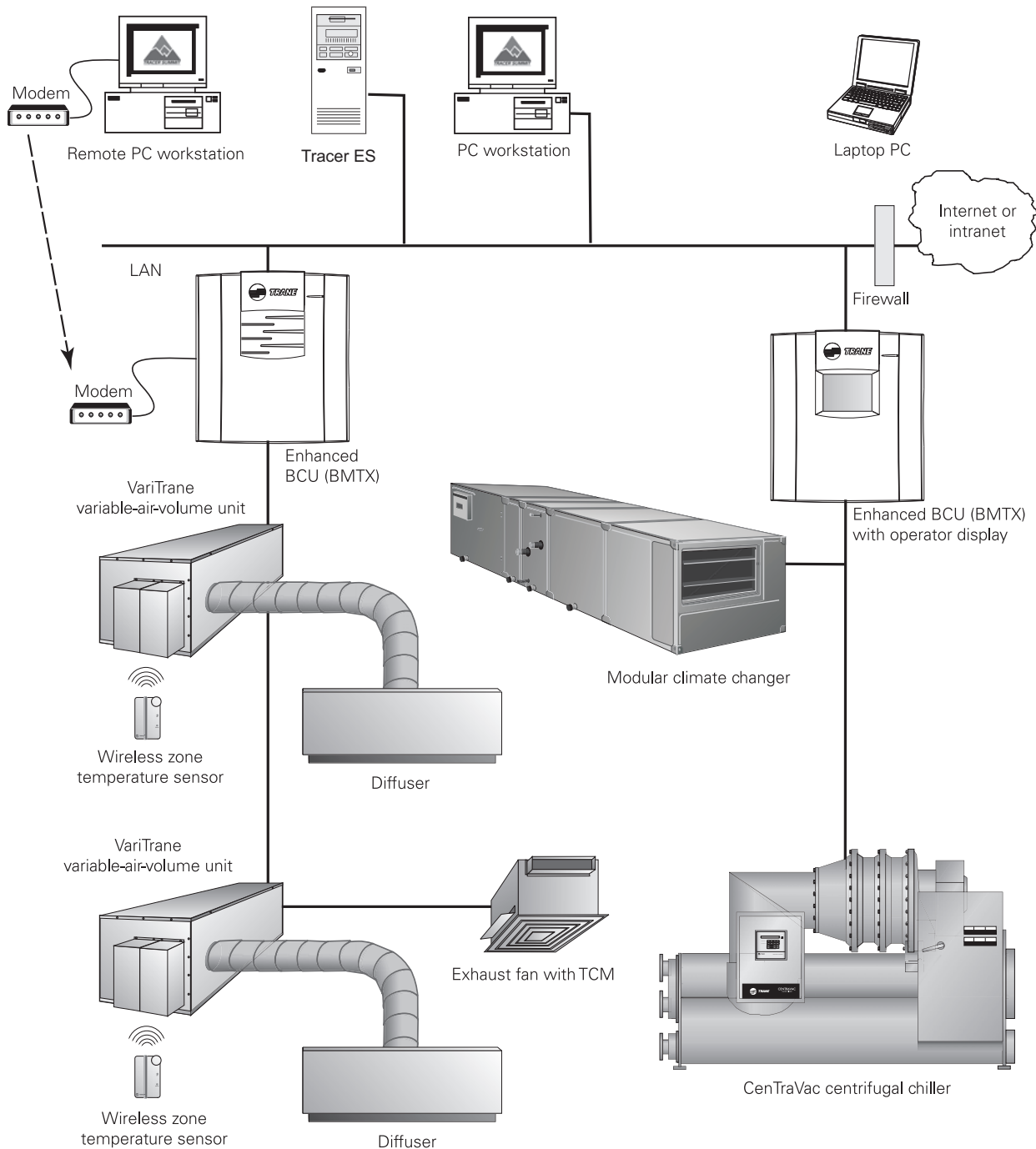
System architecture

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

Figure 4. A typical example of Tracer Summit system architecture



Operator interface

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

- PC Workstation
- Operator display
- Tracer ES

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 with Microsoft Windows Vista Business or Windows XP Professional operating systems. Operating with Windows offers the flexibility of running other popular applications for communications and office productivity. See *Hardware requirements* on page 15 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, cell phones, and e-mail addresses.

At the PC Workstation, alarms and other system events are stored in the alarm and event log. The alarm and event log have five optional, configurable alarm categories that can be used to filter and sort the alarms. Sorting can be based, for example, on severity level.

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. Pop-up messages can also be associated with alarms, to alert the user of the abnormal condition.

The event log displays critical data about the alarm including which building it is from, whether it requires an acknowledgment, and any comments that may have been entered in the pop-up dialog box.

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, a filter can be used to view alarms only from a specific building, to view alarms received only at a specific time, or only alarms from a specific alarm category.

Graphics

Tracer Summit software uses graphics as a means of viewing and navigating 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.

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. In addition, standard 3D graphics provide a better 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.

Graphics can include the following elements:

- 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 images to represent binary and analog values, animated GIF, or video (AVI) files
- Hyperlinked text and images that can be added to move between graphics
- Hyperlinks to any Windows-compatible 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
- A hand icon appearing on override buttons when controls are overridden
- Representation of equipment status, for example, a thermal storage tank at 40% of its capacity

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 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 data samples at defined intervals to show at a glance the historical and current status of the facility. These trends can be graphically viewed on the screen, printed out, and stored on disk.

To create a new trend, the user right-clicks on a status or control point (for example, space temperature) on a graphic, and then selects Create Trend Viewer. Additional points can be added to the trend in a similar manner.

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 147, *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 has access to only the applications, editors, objects, and properties to which access rights are assigned.

An operator with proper security can access all levels of the system and has the ability to alter passwords.

- Diagnostics

Tracer Summit software constantly evaluates all of the system parameters and reports abnormal conditions 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 four add-on software packages that provide additional capabilities.

With the Tracer 100/Tracker Communication 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.

The Tracer Summit Critical Control System package is an enhanced version of Tracer Summit software that provides complete environment management for FDA-regulated areas, from research to distribution. For more information, see the *Tracer Summit Critical Control System* product catalog (BAS-PRC017-EN).

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 schedule
- 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.

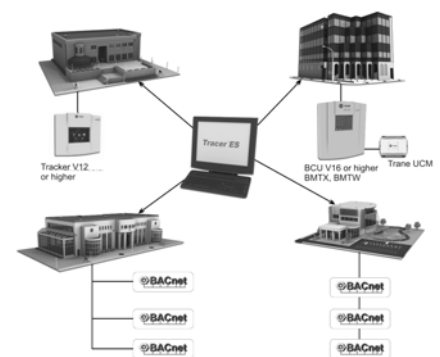


Tracer ES

Tracer ES is web-based, building automation software that works seamlessly with existing Tracer Summit systems. It dramatically simplifies managing and operating multiple facilities, letting owners and operators have an enterprise management view of all of building control systems. Tracer ES allows access to information about any building from any secure PC that is connected to the Internet.

Tracer ES provides easy integration and compatibility with a Tracer Summit system:

- Easily connects with existing IT infrastructure
- Runs on a central server with SQL database
- Scalable to work economically for small sites or efficiently with multiple sites
- Seamlessly works with an existing Trane Tracer Summit system
- Integrates with any qualified and non-qualified BACnet building system



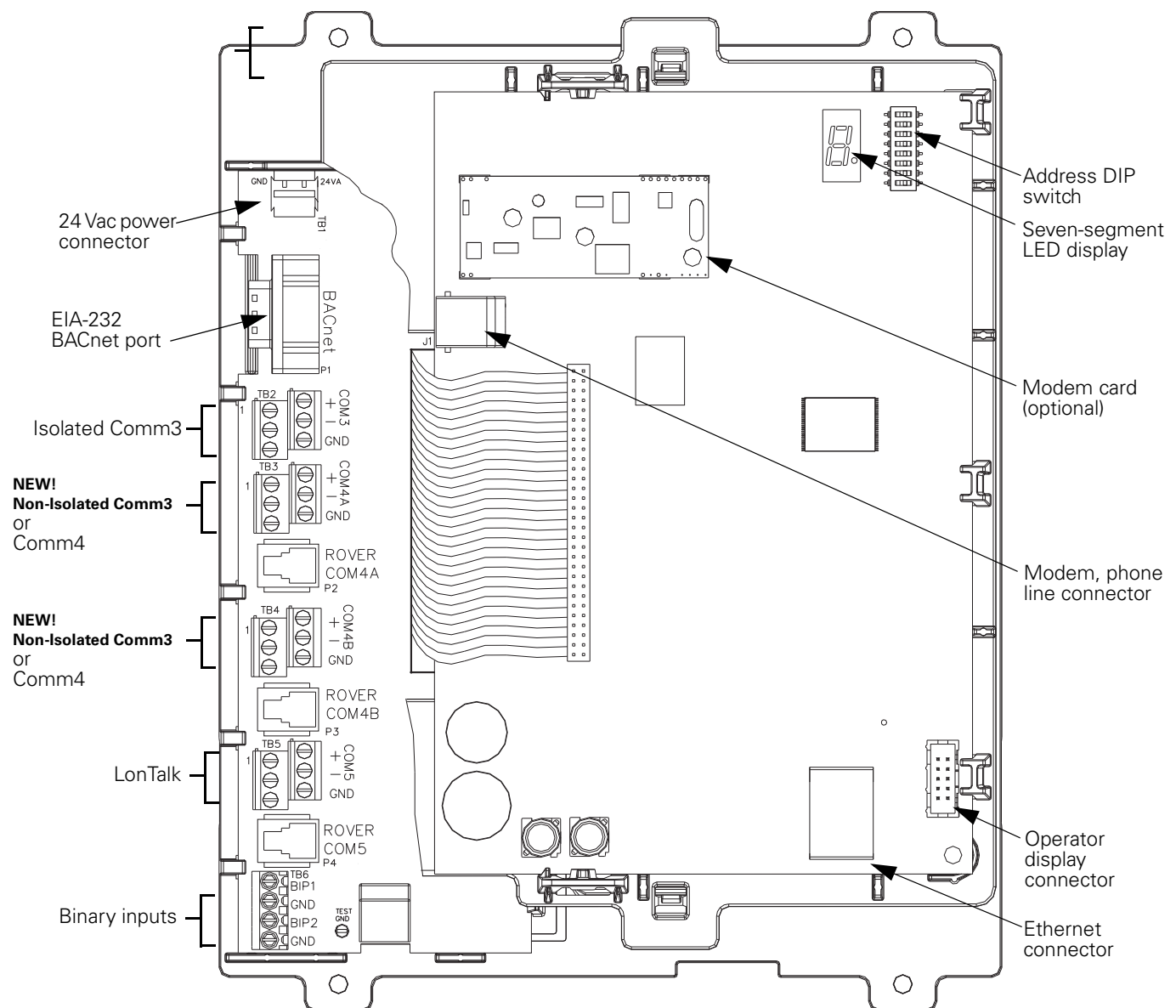
Building control

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 can 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 termination and main circuit boards (see Figure 5).

Figure 5. BMTX BCU board components



Unit control

The Tracer Summit system provides centralized control for Trane HVAC and other unit-level equipment. Tracer Summit software supports the following Trane equipment:

Trane chillers

- CenTraVac chiller with a UCP2 or a Tracer CH530 chiller controller
- Series R CenTraVac chiller with a UCP2 or a Tracer CH530 chiller controller
- Scroll chiller with an IntelliPak, classic, or Scroll Manager Module (SMM) controller
- Absorption chillers with a UCP2, classic, or Horizon controller
- Series R air-cooled and water-cooled chillers

Trane airside equipment

- VariTrane with a Trane variable-air-volume controller (VAV I, II, III, and IV) or Tracer VV550 VAV controller
- VariTrac II changeover VAV system
- Fan coil with a Trane terminal unit controller (TUC) or Tracer ZN510 or ZN520 controller
- Classroom unit ventilator with a Trane terminal unit controller (TUC) or Tracer ZN520 controller
- Air handler with a PCM, UPCM, Tracer MP580, or Tracer AH540 controller

Trane unitary equipment

- Voyager rooftop air-conditioning unit
- IntelliPak air-conditioning units
- Water-source heat pump with a 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)
- Trane terminal unit controller (TUC)
- Tracer loop controller
- Tracer MP581 programmable controller
- Tracer MP501 multi-purpose controller
- Tracer MP503 input/output module
- Tracer ZN511 zone controller
- Tracer ZN517 zone controller
- Tracer ZN521 zone controller
- Tracer ZN523 zone controller
- Tracer ZN524 zone controller
- Tracer AH541 air-handler controller
- Tracer VV551 VAV controller
- Tracer CH531 chiller controller

Companion product

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.

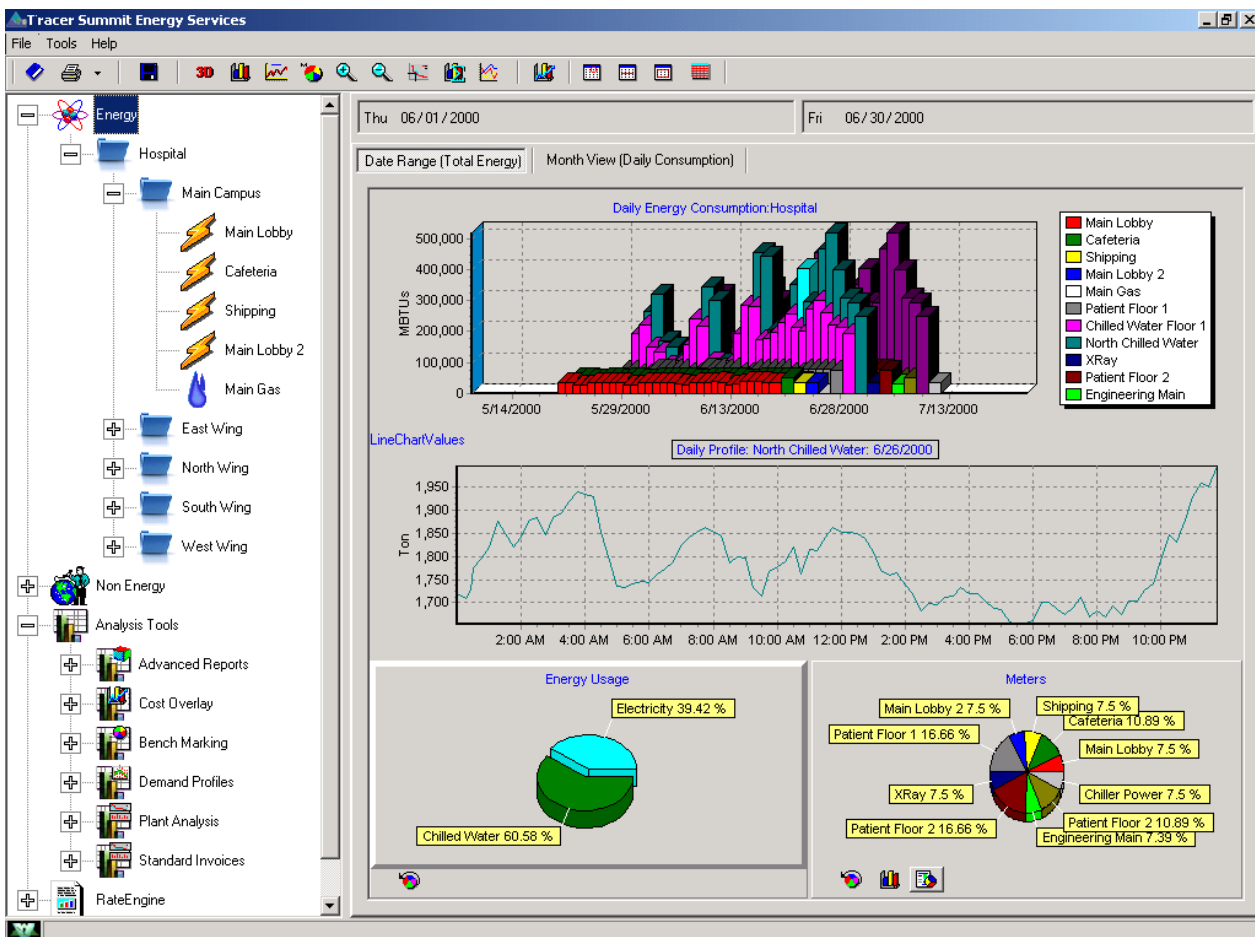
Two options of Tracer Summit Energy Services are available: Energy Manager and Energy Analyst. Energy Manager provides a basic platform to enable tracking, analysis, cost allocation, benchmarking, and invoicing of energy meters and sub-meters as well as nonenergy points such as weather data. Energy Analyst 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).

Figure 6. Example of Tracer Summit Energy Services software



Specifications

PC Workstation Requirements

The following sections specify hardware and software requirements and recommendations for the PC Workstation. The hardware requirements vary depending upon which add-on packages are included with Tracer Summit software.

Desktop PC for Tracer Summit Workstation Software

The specifications listed below are for the PC Workstation currently being recommended to run Tracer Summit by itself, or along with the optional Tracer 100/Tracker Communications Package or the Building Communications Package. If using something other than the model shown below, it must have the same capabilities.

Hardware:

- **OptiPlex 760 Desktop:** OptiPlex 760 Desktop Standard PSU
- **Operating System(s):** Genuine Windows Vista Business Downgrade, XP Professional SP2
- **Processors:** Intel® Core™ 2 Duo Processor E7500 (2.93 GHz, 3M, 1066 MHz, FSB)
- **Memory:** 1 GB DDR2 non-ECC SDRAM, 800 MHz, (1 DIMM)
- **Video Cards:** Integrated Video, Intel® GMA 4500
- **Mouse:** Dell USB Optical Mouse with Scroll, All Black Design
- **Keyboard:** Dell USB Keyboard, No Hot Keys
- **Monitor:** No Monitor
- **Thermal:** Heat Sink for Intel Celeron Core 2 Duo Processors, Desktop
- **Modem:** Modem (56 Kbaud) for remote workstation
- **Power Supply:** OptiPlex 760 Desktop Standard Power Supply
- **Energy Smart Options:** Dell Energy Smart Power Management Settings Enabled
- **Boot Hard Drives:** 80 GB SATA 3.0 Gb/s and 8 MB DataBurst Cache™
- **Floppy Drive Options:** 1.44 MB 3.5 Inch Floppy Drive
- **Removable Media Storage Device:** 16X DVD +/-RW SATA, Data Only

Software Requirements

The PC Workstation must have the following software installed:

- Genuine Windows Vista® Business SP1 or higher, or XP Professional SP2
- Internet Explorer Version 6 or 7

Tracer Summit Enterprise Management Package

The Tracer Summit Enterprise Management Package software is installed on one or more PCs for end-user access to the workstation software. The Tracer Summit database, however, is installed on a server with Microsoft SQL Server Database software installed. If running the Tracer Summit Enterprise Management Package, use the following server hardware and Microsoft SQL Database specifications:

Server:

- **Base Unit:** PowerEdge T110 Chassis with up to 4 Cabled Hard Drives
- **Processor:** SHIPT110,NO,NO,DAO
- **Memory:** 4 GB Memory (4x1GB), 1066 MHz, Single Ranked UDIMM
- **Memory:** Memory for 1 CPU Platform
- **Video Card:** X3460 Xeon Processor, 2.8 GHz 8M Cache, Turbo, HT
- **Video Card:** PowerEdge T110 Heat-sink
- **Hard Drive:** 160 GB 7.2k RPM Serial ATA 3 Gbps 3.5-in Cabled Hard Drive-Entry
- **Hard Drive Controller:** No Controller
- **Operating System:** Windows Server 2008 R2, Standard Edition, Includes 5 CALS
- **NIC:** On-Board Dual Gigabit network Adapter
- **Modem:** Baseboard Management Controller
- **CD-ROM or DVD-ROM Drive:** DVD-RW, SATA, Internal
- **CD-ROM or DVD-ROM Drive:** MOD, CBL, SATA ODD, MB, T110

- **Documentation Diskette:** MOD, MEDIA, DVD, DOM, PET110
- **Feature:** Onboard SATA, 1-4 Hard Drives connected to onboard SATA Controller - No RAID

SQL Database:

- Windows Server 2008 (32 bit) or Windows Server 2003 (32 bit)
- SQL Server 2005 (32 bit), or SQL Server 2008 (32 bit)

BCU

Power requirements

Nominal rating: 120/230 Vac; 50 or 60 Hz; 1 pH

Maximum current: 1.0 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

Weight

15 lb (7 kg)

Mounting

Wall-mounted with #10 (5 mm) screws
Mounting surface must be able to support 60 lb (28 kg)

UL listing

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

FCC

FCC part 15, Class A

CE

Emissions	EN61326:1998 Class B
Immunity	EN61326:1998 Commercial
Safety	EN61010-1:2001



Processor

Motorola MCF5272 Cold Fire

Memory

FLASH 16 MB
EEPROM 512 KB
SRAM 1 MB
SDRAM 8 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)

1/4 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

Communications

BACnet

Tracer Summit systems communicate with devices that support:

- Communications based on the BACnet ASHRAE/ANSI 135 standard
- ENV-1805-1/ENV-13321-1
- 10BASE-T/100BASE-TX dedicated Ethernet (ISO/IEC 8802-3) or Transmission Control Protocol/Internet Protocol (TCP/IP) compatible network

LonTalk

Tracer Summit systems communicate with devices that support:

- Communications based on the EIA-709.1 (LonTalk) standard
- LonTalk standard network variable types (SNVTs)
- FTT-10A or FT-X1 transceivers
- Twisted-pair physical media

MODBUS

Tracer Summit systems communicate with devices that support the MODBUS Remote Terminal Unit (RTU) protocol using a variety of Trane integration tools.

Figure 8. Minimum clearances for the BMTX BCU enclosure

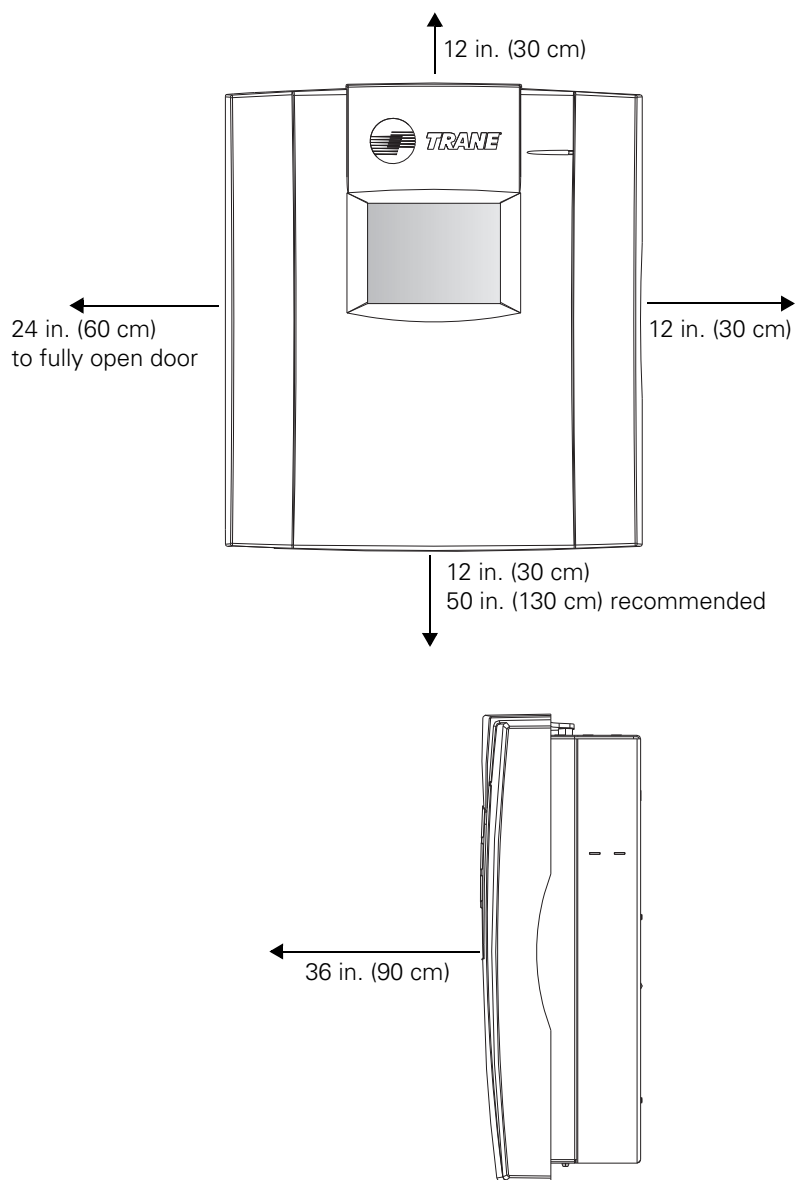
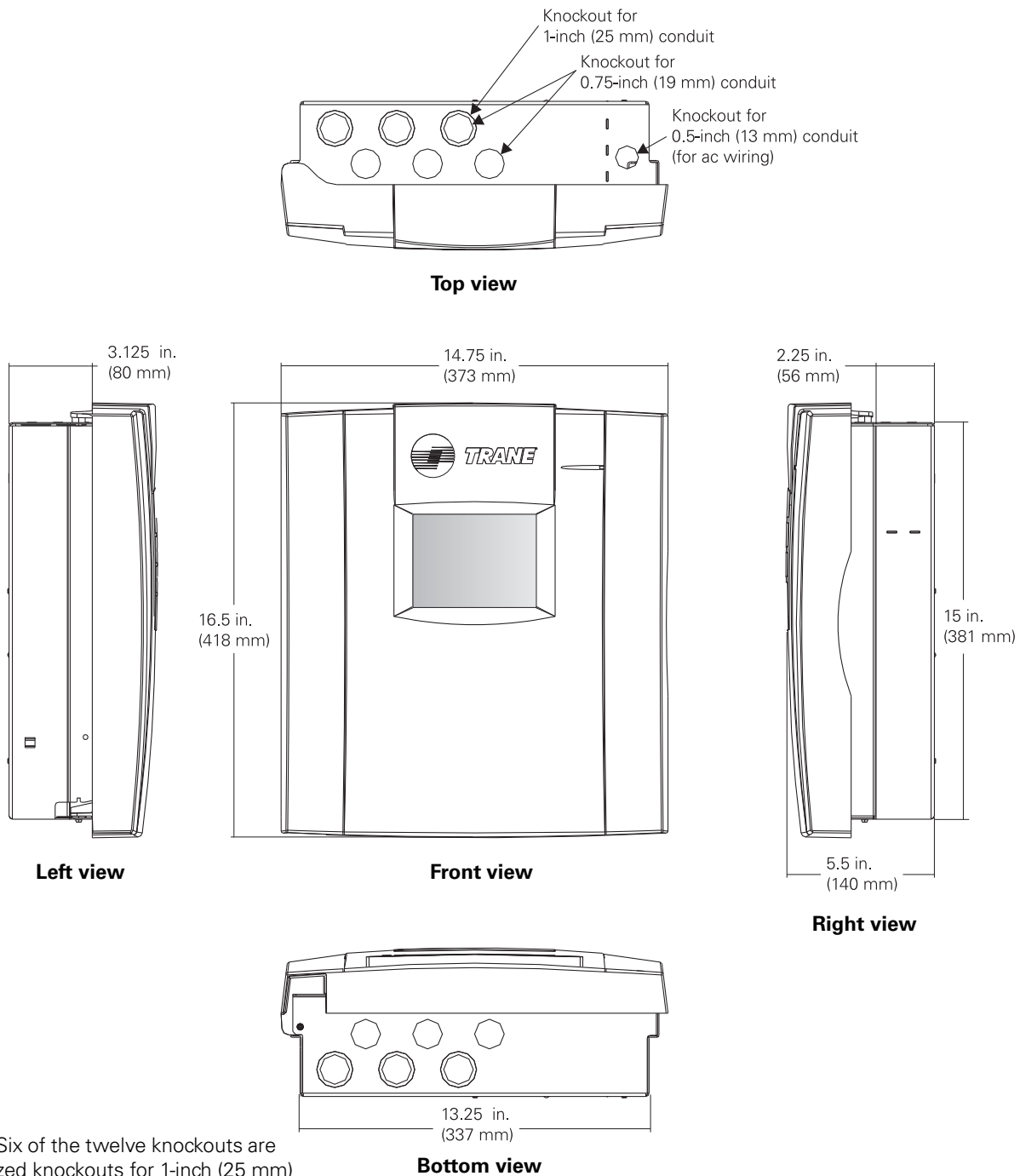


Figure 9. BMTX BCU enclosure dimensions



BACnet PICS—BCU

Basic information

Vendor name	Trane
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 option

BACnet/IP (Annex J)
Ethernet (ISO/IEC 8802.3), 10-BASE-T
Ethernet (ISO/IEC 8802.3), 100-BASE-TX
Point to point, EIA-232

Other

BACnet/IP (Annex J)
BBMD
Supports foreign device registration

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
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	
ConfirmedPrivateTransfer	X	X
UnConfirmedPrivateTransfer	X	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 option

Ethernet (ISO/IEC 8802.3), 10-BASE-T
Ethernet (ISO/IEC 8802.3), 100-BASE-TX
Point to point, EIA-232

Other

BACnet/IP (Annex J)
BBMD
Supports foreign device registration

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



TRANE®

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

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