Tracker™

Tracker Version 12
Building Automation System

Introduction

The Tracker Version 12 building automation system (BAS) is a heating, ventilating, and air conditioning (HVAC) energy management system for small- to medium-size buildings. It provides reliable, centralized control for HVAC equipment, managing it for optimal comfort and efficiency.

The Tracker Version 12 BAS includes a controller (Figure 1) with a liquid crystal display (LCD) touch screen. The Tracker BAS also includes optional Windows-based software that can be installed on a PC workstation.

The Tracker Version 12 BAS is LonMark® compliant. It communicates with supported devices over a Trane Comm5 link. The Comm5 link is a communication link that implements LonTalk, an open, industry-standard protocol.

Both the controller and the Tracker PC Workstation (in its recommended hardware configuration) provide modems or optional Ethernet cards for remote access.

The modem enables off-site connections over standard phone lines. It enables remote operation of the Tracker BAS and provides the means to deliver alarms and messages to pagers.

The Ethernet card enables the Tracker controller to reside on an Ethernet/IP network. A Tracker PC Workstation on the network has access to all Tracker controllers on the network. If multiple Tracker workstations and controllers reside on the network, you have the capability to selectively route alarms and diagnostic messages to specified Tracker PC Workstations.

Both the touch screen and the PC provide an easy-to-use visual interface. The interfaces enable an operator to set up and change HVAC operating parameters and collect and display building information.

Figure 1: Tracker controller

LCD touch screen
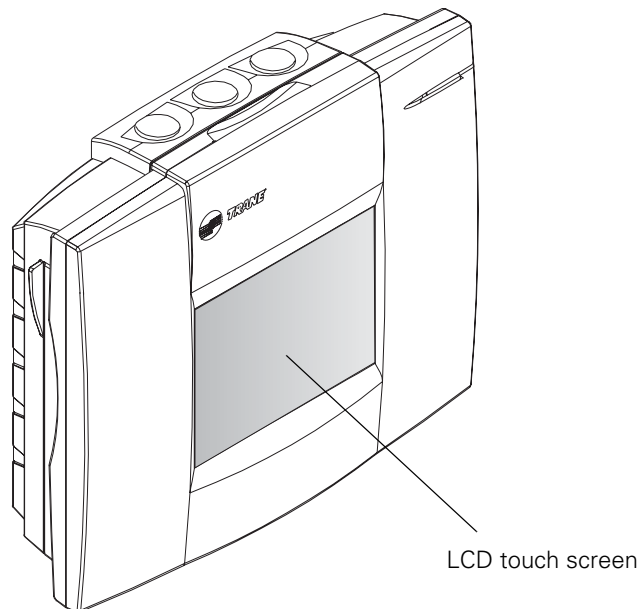
™ ® The following are trademarks or registered trademarks of their respective companies: Comfort Manager, Precedent, ReliaTel, TCM, Tracer, Tracker, Trane, VariTrac, VariTrane, and Voyager from Trane; LonMark, LonTalk, and Neuron from Echelon; Windows from Microsoft.

Contents

Features

The Tracker Version 12 BAS offers the installer and operator features that ensure its ease of use.

Tracker BAS features

Both the controller and the PC software of the Tracker BAS offer these features:

- Intuitive, menu-driven user interface
- 365-day scheduling and 10 schedules
- Capability of including all equipment and devices in one schedule
- Temporary schedule override
- Easy-to-administer security system with two levels of access
- Automatic daylight savings time changeover
- Error and alarm messaging
- Setpoint viewing and editing
- Trend data collection
- Report generation
- Optimal start

Features exclusive to the controller

Several features of the Tracker BAS are exclusive to the controller:

- Auto-configuration
- Pager notification for error and alarm messages
- LCD touch screen
- Real-time receipt of alarm messages from networked controllers

Features exclusive to the PC software

The optional Tracker PC software offers all the features of the Tracker controller and the following features that are not available at the controller:

- Dial-in connection
- Backup and restore capability
- Standard graphics and HTML graphical interface
- Binary output programming capability
- Operator-defined custom alarms capability
- Printer support
- Connection to controllers over shared Ethernet/IP connection
- E-mail forwarding of alarms and messages
- Standard timed override (after hours) usage report
- Standard daily, monthly, and yearly energy reports

Note: The Tracker PC software is not needed to set up and operate a typical building.

System description

The Tracker Version 12 BAS is reliable and can be easily installed, operated, and serviced. It simplifies the work of the building operator and the installing contractor.

Tracker system devices

In addition to the Tracker controller and the optional Tracker PC Workstation, a Tracker system consists of the interconnected devices on the Comm5 link.

Currently, all equipment that makes up a comprehensive Tracker system is available from Trane. In addition to a Tracker BAS, a Tracker system can include the following Trane HVAC components:

- Voyager constant-volume rooftop units (RTUs)
- Precedent constant-volume RTUs with ReliaTel controls
- VariTrac central control panels (CCPs)
- Voyager III variable air volume (VAV) RTU (with CCP)
- Tracer loop controller (TLC)
- Tracer ZN510 and ZN511 zone controllers, ZN517 unitary controller, and ZN524 water-source heat pump (WSHP) controllers
- Tracer MP503 I/O modules

The Tracer I/O modules in a Tracker system are used to monitor and control building equipment such as lights, exhaust fans, ventilation fans, and humidity control equipment

The components of the Tracker network are connected in a daisy chain (Figure 2 on page 4) configuration. Communication wire is twisted (shielded) pair wire.

Tracker applications

The Tracker system goes well beyond accurate temperature control. It provides centralized scheduling and control for multiple RTUs and split systems. It provides multiple-zone control when paired with a VariTrac system. And it provides control for multiple VariTrac systems.

The Tracker BAS is packaged and delivered for use in four major applications:

- Multiple constant-volume rooftop and split single-zone system
- Changeover bypass system
- Variable air volume system
- Water-source heat pump system

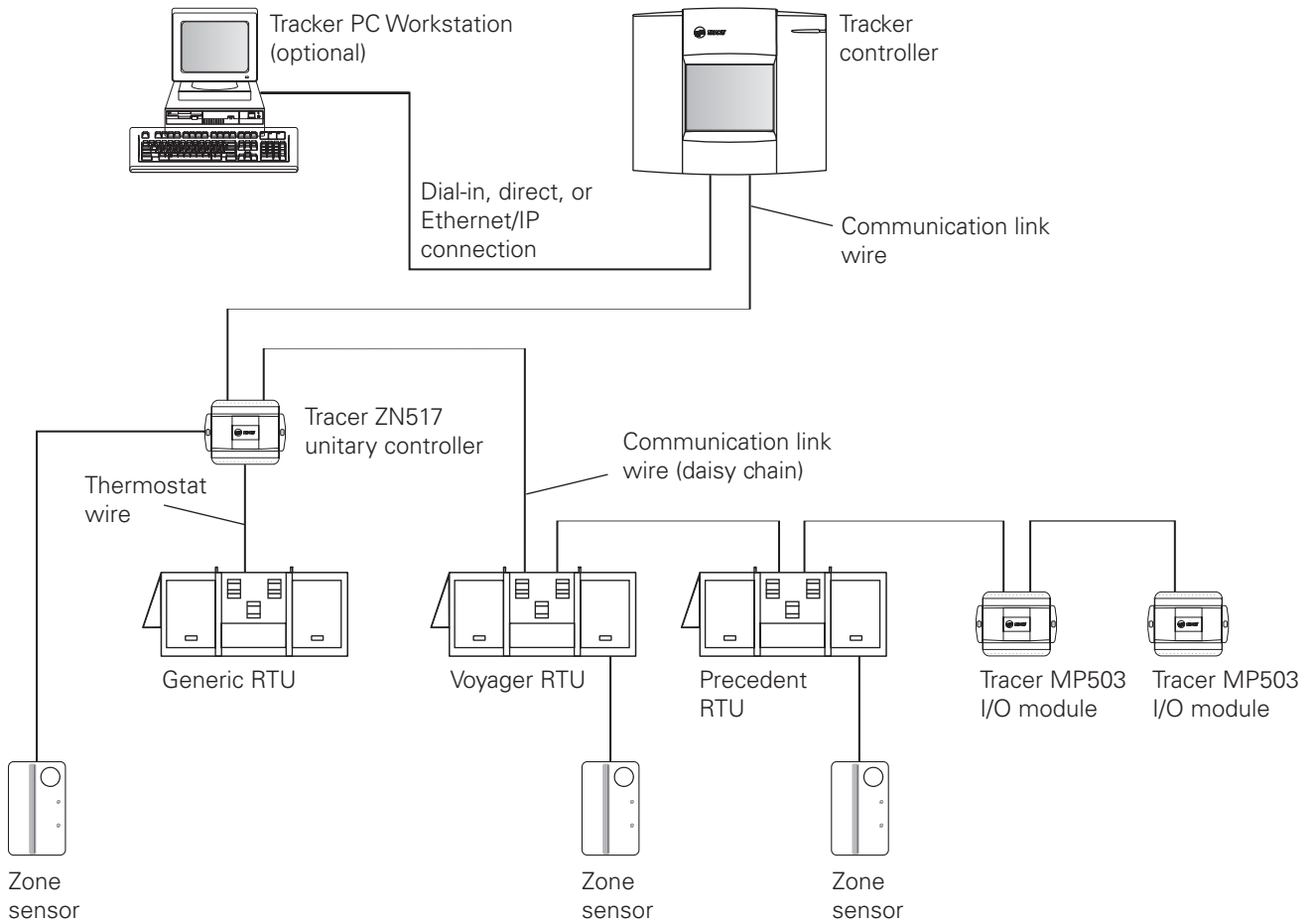## Multiple constant-volume Trane rooftop and split single-zone system

The Tracker BAS is capable of controlling multiple constant-volume Trane rooftop and split single-zone systems (Figure 2 on page 7). The Trane unitary controller enables non-Trane HVAC systems to be easily integrated into the Tracker system.

The Tracker BAS communicates with the unit controllers on the Comm5 network and controls them to temperature setpoints and operating parameters determined by the operator. With established communications, the Tracker BAS receives alarms automatically.

Connecting multiple unit controllers to the Tracker BAS enables the installer and operator to:

- Save installation time and materials costs by reducing the amount of wire used and by requiring only a thermistor in each area rather than a programmable zone sensor
- Schedule all devices from one location, rather than requiring that each device be scheduled independently
- Monitor alarms from one location

![TRANE]

Figure 2: Example Tracker system (models 12 and 24)

Tracker PC Workstation (optional)

Tracker controller

Dial-in, direct, or Ethernet/IP connection

Communication link wire

Tracer ZN517 unitary controller

Communication link wire (daisy chain)

Thermostat wire

Generic RTU

Voyager RTU

Precedent RTU

Tracer MP503 I/O module

Tracer MP503 I/O module

Zone sensor

Zone sensor

Zone sensor

Changeover bypass system

The Tracker BAS is capable of supervising and scheduling a VariTrac VAV system. To do this, Trane VariTrac changeover bypass zoning systems are introduced into the Tracker system.

A Tracker controller is connected to one or more VariTrac CCPs (Figure 3 on page 9). Each CCP is connected to one RTU, bypass dampers, and up to 24 zone dampers.

The Tracker controller provides centralized scheduling and access to CCP alarms. Each CCP monitors its zone sensors and allows each zone to "vote" its needs, which are determined by the schedule and its setpoints. Based on that data, the CCP sets the operating mode (heat or cool) of the HVAC equipment.

In addition, the CCP also maintains a operator-defined static pressure in the ductwork by controlling a bypass damper.

Figure 3: Example changeover bypass system
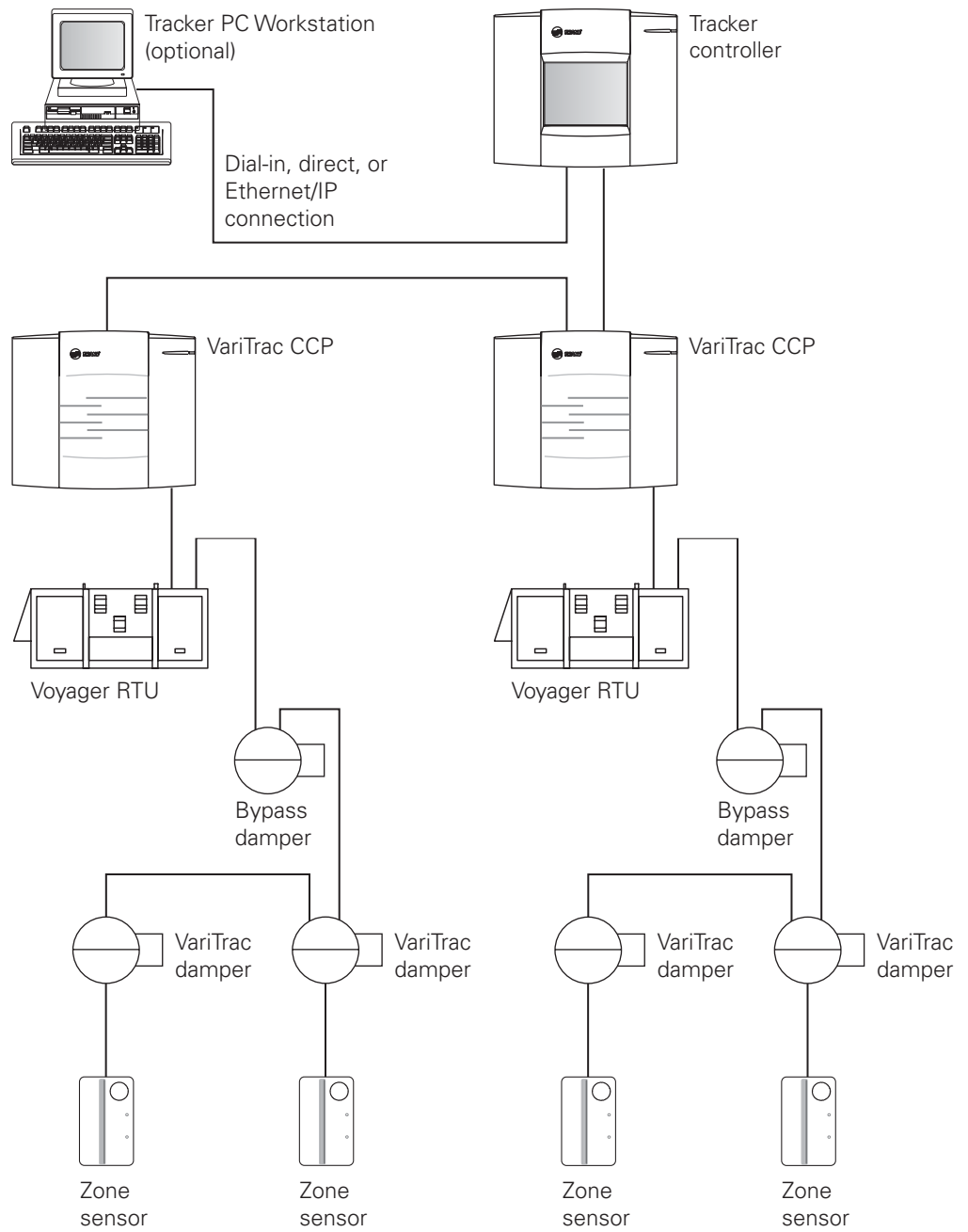
Variable air volume system

The Tracker BAS is capable of supervising and scheduling a system comprised of a VariTrac CCP and a Voyager III VAV RTU. In this application, the Tracker controller uses the CCP to coordinate the RTU and its VAV boxes (Figure 4 on page 11). A Tracker controller can be connected to one or more CCPs. Each CCP is connected to one Trane Voyager III variable air volume RTU. The Tracker controller provides centralized scheduling and access to CCP alarms. This configuration can include the following Trane equipment:
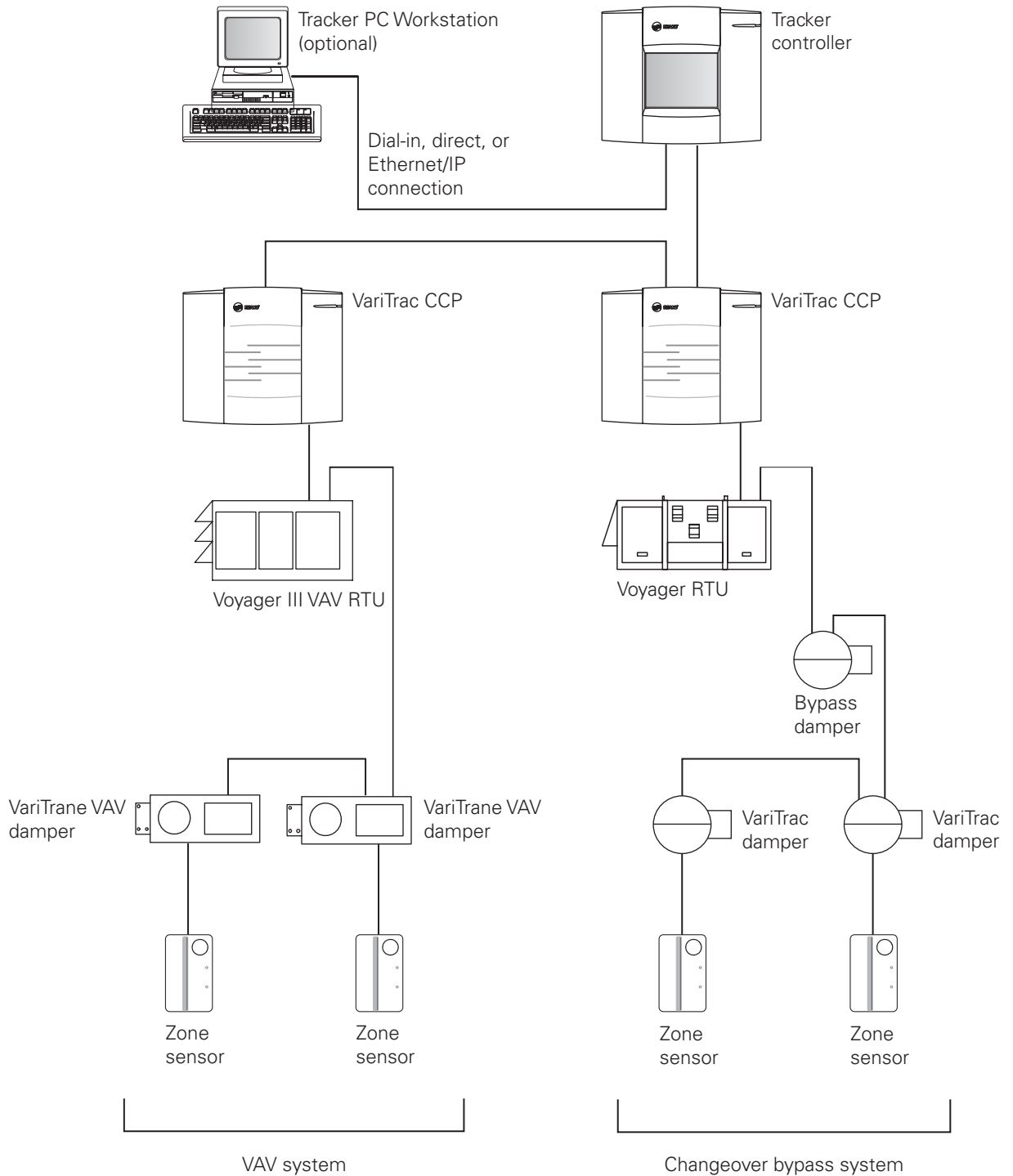
- Tracker BAS
- VariTrac CCP
- Voyager III 27.5-ton to 50-ton RTU
- VariTrac VAV boxes (not shown)
- VariTrane VAV boxes

Since these components are designed to work together, they offer the advantage of "plug and play" ease of installation. The VAV configuration offers these additional advantages:

- Central location of major equipment and controls
- Inexpensive temperature control for a large number of zones
- Simultaneous accommodation of heating and cooling, eliminating the heat/cool contention of the changeover bypass system
- Energy savings through the use of modulating fans and the isolation of unoccupied areas
- Flexibility that enables easy, low cost zoning changes

When power is applied, the VariTrac CCP, like the Tracker BAS, auto-configures all devices and equipment to factory default operating conditions and activates the equipment. The VariTrac CCP automatically determines if the connected system is a changeover bypass or VAV system and controls it appropriately without operator or installer programming. When the CCP is connected to the Tracker BAS, the CCP and Tracker controllers begin to share information.

Figure 4: Example combination VAV system and changeover bypass system

Tracker PC Workstation (optional)

Tracker controller

Dial-in, direct, or Ethernet/IP connection

VariTrac CCP

VariTrac CCP

Voyager III VAV RTU

Voyager RTU

Bypass damper

VariTrane VAV damper

VariTrane VAV damper

VariTrac damper

VariTrac damper

Zone sensor

Zone sensor

Zone sensor

Zone sensor

VAV system

Changeover bypass system

Water-source heat pump system

The Tracker BAS is capable of coordinating the operation of components of a water-source heat pump (WSHP) system (Figure 5 on page 13). When a Tracker BAS is integrated into a WSHP system, it provides centralized scheduling and control. Also, it can perform tasks such as logging alarms, collecting trend data, and generating reports.
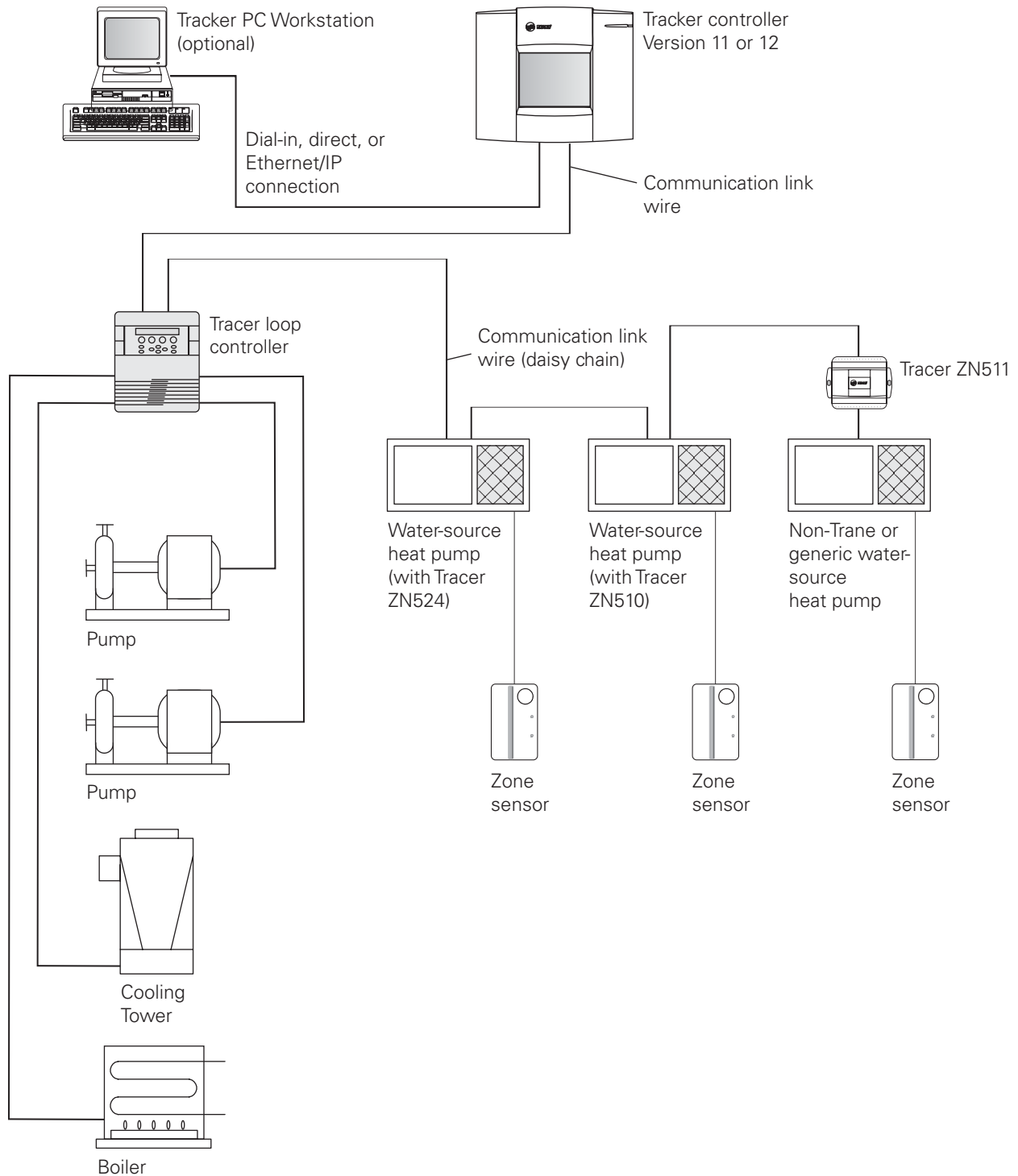
The Tracker BAS communicates directly to a Tracer loop controller (TLC). The TLC manages and optimizes the operation of pumps, valves, boilers, and cooling towers for the WSHP system. The Tracker BAS communicates with up to 100 daisy-chained WSHP controllers.

In addition, the Tracker BAS provides tested and proven optimization routines that can be enabled. The routines provide loop optimization, pre-cooling, and pre-heating. For efficiency, the routines take advantage of low outside air temperatures.

The following components must be present for the integrated WSHP system to operate:

- Tracker model WSHP
- Tracer loop controller (compressors on the individual heat pumps will not operate unless a TLC is on the communication link reporting water flow and water temperature)
- Up to 100 Tracer ZN510, ZN511, ZN524, or ZN517 controllers, or LonTalk communication interface for Voyager (LCI-V), or LonTalk communication interface for ReliaTel (LCI-R).

Figure 5: Example water-source heat pump system

Tracker PC Workstation
(optional)

Tracker controller
Version 11 or 12

Dial-in, direct, or
Ethernet/IP
connection

Communication link
wire

Tracer loop
controller

Communication link
wire (daisy chain)

Tracer ZN511

Pump

Pump

Water-source
heat pump
(with Tracer
ZN524)

Water-source
heat pump
(with Tracer
ZN510)

Non-Trane or
generic water-
source
heat pump

Zone
sensor

Zone
sensor

Zone
sensor

Cooling
Tower

Boiler

Connection capacities

The Tracker Version 12 BAS is available in five models. Each model is distinguished by its approvals and by the number and type of devices that it can communicate with and control.

Table 1 shows the maximum number of devices with which the new and old Tracker controllers can communicate.

Table 1: Tracker communication capacities

BAS	Software version	Model	Voyager and Precedent RTUs and packaged heat pumps (SCC devices) with LonTalk communication interface (LCI) cards (See notes 1 and 2)	Tracer ZN510/ZN511 zone controllers and ZN517 unitary and ZN524 WSHP controller (SCC device) (See note 2)	New VariTrac III CCP	Tracer MP503 I/O module	Voyager and Precedent RTUs and pack-aged heat pumps (with Trane communication interface [TCI], Thermostat Control Module (TCM)	Slave Thermostat Control Module (TCM)	VariTrac I Comfort Manager (CM)	VariTrac II CCP	Tracer loop controller (TLC) (See note 2)	Maximum Devices (See notes 3 and 4)
Tracker Version 11–12	11.0–12.0	WSHP	100	100	0	4	0	0	0	0	1	105
Tracker Version 10–12	10.0–12.0	12	12	12	5	4	0	0	0	0	0	21
		24	24	24	10	4	0	0	0	0	0	38
Tracker Version 1–6	6.0–6.5	Stat 4	0	0	0	0	4	1	0	2	0	6
		Stat 7	0	0	0	0	7	2	0	4	0	7
		Stat 16	0	0	0	0	12	2	0	8	0	16
	5.0–5.12	Stat 4	0	0	0	0	4	1	2	2	0	6
		Stat 7	0	0	0	0	7	2	2	4	0	7
		Stat 16	0	0	0	0	12	2	8	4	0	16
	4.0–4.2	CM	0	0	0	0	12	2	8	0	0	16
		S7	0	0	0	0	7	2	2	0	0	7
	3.0	CM	0	0	0	0	12	2	8	0	0	16
		CV	0	0	0	0	12	2	0	0	0	16
	2.1–2.5	CM	0	0	0	0	12	1	12	0	0	16
		CV	0	0	0	0	12	1	0	0	0	16
	1.3–2.0	CM	0	0	0	0	12	1	12	0	0	16

Note 1: The RTUs communicating with a Tracker Version 10 or greater controller directly must be constant volume only. To interface a Tracker controller with a Voyager III variable air volume (VAV) RTU having a variable frequency drive or inlet guide vanes you must use a CCP to coordinate the Voyager and the VAV boxes. The Tracker controller can then interface with up to five (model 12) or 10 (model 24) CCPs controlling one Voyager III each.

Note 2: The Tracker water-source heat pump (WSHP) models must detect and coordinate with a TLC to insure water flow before individual water-source heat pump compressors are allowed on.

Note 3: The Tracker model 12 can communicate with a maximum of 21 devices: any combination of up to 12 SCCs, five CCPs, and four I/O controllers. Each Voyager and Precedent RTU must have a Trane unit controller with a Comm5 interface card. The Precedent RTU must be equipped with a ReliaTel unit controller. Each CCP provides control of one RTU and up to 24 VariTrac zones or 32 delivered VAV zones.

Note 4: The Tracker model 24 can communicate with a maximum of 38 devices each: any combination of up to 24 SCCs, 10 CCPs, and four I/O controllers. Each Voyager and Precedent RTU must have a Trane unit controller with a Comm5 interface card. The Precedent RTU must be equipped with a ReliaTel unit controller. Each CCP provides control of one RTU and up to 24 VariTrac zones or 32 delivered VAV zones.

Supported device descriptions

Voyager and Precedent rooftop units

Both the Voyager and Precedent RTUs (Figure 6) are available from the factory as devices that conform to the LonMark® Space Comfort Controller (SCC) device profile. Each is equipped with a factory-installed Trane unit controller and a Comm5 communication interface card. The Comm5 card enables the unit controller to communicate over a LonTalk network. The Tracker Version 10 through 12 controllers can be wired directly to these RTUs (Table 1 on page 14).

Figure 6: Voyager and Precedent rooftop units

Voyager RTU   **Precedent RTU**

VariTrac central control panel

The VariTrac CCP (Figure 7) controls a VariTrac zone control system. Table 1 shows the maximum number of CCPs with which the Tracker controllers can communicate. Table 2 shows the VariTrac CCP communication capacities.

Figure 7: VariTrac central control panel

Note: The Tracker BAS cannot communicate with Trane Comfort Manager HVAC system controllers or Trane VariTrac II CCPs.

Table 2: VariTrac CCP communication capacities

CCP type	HVAC unit (rooftop or split system)	VariTrac zone damper or VariTrane VAV box	Bypass damper
New VariTrac	1 constant-volume Voyager, Precedent, or other RTU	24	1
	1 Voyager III VAV RTU	32	0
Note: The Voyager RTU, Precedent RTU, or other RTU must have either a communication interface card (TCI) or low-voltage relay interface. If a low-voltage relay is used, the CCP must be ordered with the optional relay board.			

Tracer loop controller and water-source heat pump system

The Tracker model WSHP requires a Tracer loop controller (TLC) to enable SCC compressor operation. It also requires water-source heat pumps (WSHPs).

The TLC is a configurable direct digital controller that monitors and controls WSHP systems. It controls and optimizes the boiler, cooling tower, valves, pumps, and individual WSHPs (Figure 8).

Figure 8: Water-source heat pumps (horizontal and vertical)

Using the TLC with the Tracker model WSHP provides time-saving advantages, equipment-saving alarms, and easy-to-use standard applications.

Note: See TLC documentation for input and output descriptions.

Trane WSHPs are available in several sizes and can be purchased with factory-installed, Tracer ZN controls. The WSHP communication link is daisy-chained to the Tracker model WSHP.

The Tracker model WSHP with its TLC can coordinate up to 100 Trane WSHPs. It is designed for easy field installation and commissioning. The system has centralized diagnostic capabilities, proven loop optimization and control, automatic system configuration, cooling tower control, and automatic recovery routines that prevent nuisance alarm calls.

Tracer ZN510/ZN511 controllers

The Tracer ZN510 is a Trane factory-installed, application-specific, direct digital control (DDC) controller configured for WSHP use (Figure 9). The ZN511 is the same controller as the ZN510, but a field-installed version. They communicate on the Comm5 link and are configured to support:

- Single speed fan
- Up to two compressors
- Reversing valve
- Two-position outdoor air damper

Figure 9: Tracer ZN510/ZN511
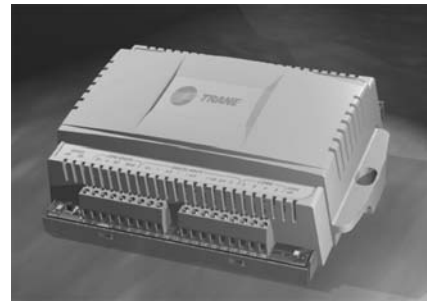
The controllers have three binary inputs for low temperature (freezestat), condensate overflow, and occupancy/generic. Other features include random start, occupied/unoccupied, manual output test, automatic heat/cool determination, smart reset, and peer-to-peer communications.

Table 1 shows the maximum number of Tracer ZN510/511 controllers with which the Tracker controllers can communicate. Table 3 shows the Tracer ZN510/ZN511 I/O capacities.

Table 3: Tracer ZN510/ZN511 I/O capacities

Binary inputs (isolated contacts)	Binary outputs	Analog inputs
• Low temperature detector (freezestat) • Condensate overflow • Occupancy/generic	• Fan • Reversing valve • Compressor 1 • Compressor 2 • Two-position damper actuator	• Zone space temperature • Local setpoint • Fan input mode • Leaving water temperature • Discharge air temperature

Tracer ZN524 water-source heat pump controller

The Tracer ZN524 is a full-featured, factory-installed, DDC WSHP controller (Figure 7). It communicates on the Comm5 link and is configured to support:

• Single speed fan
• Up to two compressors
• Electric heat
• Waterside economizing
• Dehumidification

It is purchased as a card with no enclosure. Features of the Tracer ZN524 include random start, manual output test, automatic heat and cool determination, occupied and unoccupied modes, smart reset, peer-to-peer communications, active dehumidification, waterside economizing, electric/boilerless heat.

Table 1 shows the maximum number of Tracer ZN524 WSHP controllers with which the Tracker controllers can communicate. Table 4 shows the Tracer ZN524 I/O capacities.

Figure 10: Tracer ZN524

Table 4: Tracer ZN524 I/O capacities

Binary inputs (isolated contacts)	Binary outputs	Analog inputs
• Low temperature detector (freezestat) • Condensate overflow • Occupancy/generic • Fan status	• Fan • Reversing valve • Compressor 1 • Compressor 2 • Two-position damper actuator • Reheat/electric reheat • Isolation valve 1 • Isolation valve 2 • Waterside economizer	• Zone space temperature • Local setpoint • Fan input mode • Leaving water temperature • Discharge air temperature • Entering water temperature • Outside air temperature • Relative humidity

Tracer ZN517 unitary controller

The Tracer ZN517 unitary controller (Figure 11) is a stand-alone HVAC controller. When connected to a Tracker controller, the Tracer ZN517 unitary controller becomes a communicating LonMark®-compliant device with an SCC profile. The Tracker controller, through the Tracer ZN517, can then communicate with and control the equipment.

Figure 11: Tracer ZN517

Devices controlled by the Tracer ZN517 unitary controller include electro-mechanically controlled 2-heat/2-cool (2H/2C) or 4-cool (4C) rooftop units, heat pumps, and split systems. The Tracer ZN517 controls temperature and other comfort-related conditions. Connecting a Tracker controller to it enables an operator to schedule, route alarms, and monitor the entire system.

Table 1 shows the maximum number of Tracer ZN517 unitary controllers with which the Tracker controllers can communicate. Table 5 shows the Tracer ZN517 I/O capacities.

Table 5: Tracer ZN517 I/O capacities

Binary inputs (isolated contacts)	Binary outputs	Analog inputs
• Enable/Disable or Occupancy • Status: Fan or Generic	• Supply fan • Cool 1/Compressor 1 • Cool 2/Compressor 2 • Heat 1/Reversing Valve/Cool3 • Heat 2/Auxiliary Heat/Cool 4 • Exhaust Fan • Economizer Open/Close	• Space temperature from Trane thermistor • Setpoint input from Trane zone sensor (0–1K Ω) • Discharge air temperature from Trane thermistor • Universal input from an outside air temperature/ generic temperature Trane thermistor, RH, or CO_2 sensor
Note: Each output is rated for a maximum of 1 A at 24 Vac. One normally open (Form A) relay contact will be provided. 24 Vac will be wired in common to one side of all relay contacts.		

Tracer MP503 I/O module

The Tracer MP503 input/output module (Figure 12) accepts electrical signals from a variety of sensors. Also, it controls the state of binary outputs by energizing and de-energizing relays. Changing the state of a relay enables the I/O module to turn a device on or off.

Figure 12: Tracer MP503

The Tracer MP503 provides four universal inputs and four binary outputs.

The universal inputs can receive and interpret binary (on/off), and analog (range) values. Connecting to the module enables the Tracker controller to monitor Trane temperature, relative humidity (RH), and CO_2 sensors.

Using the Tracker PC software, the binary outputs can be programmed to energize and de-energize the relays in response to system conditions and schedules.

Table 1 shows the maximum number of Tracer MP503 I/O modules with which the Tracker controllers can communicate. Table 6 shows the Tracer MP503 I/O module capacities.

Table 6: Tracer MP503 I/O capacities

Universal inputs (4) (isolated contacts)	Binary outputs (4)
• Thermistor (10K Ω at 77°F [25°C]) • Trane CO_2 sensor (0 to 10 Vdc) • Trane relative humidity (RH) sensor (4 to 20 mA) • Binary input	Each output is rated for a maximum of 1 A at 24 Vac. One normally open (Form A) relay contact will be provided. 24 Vac will be wired in common to one side of all relay contacts.

Comm5 communication

The Tracker Version 12 BAS controller is a Comm5 device. Comm5 is the fifth generation Trane communication architecture. It implements LonTalk, an open, industry-standard protocol.

The RTUs, CCPs, unitary controllers, and I/O controllers that the Tracker controller communicates with reside on a LonTalk FTT-10A network. They provide data using LonMark® standard network variable types (SNVTs, pronounced *sniv-its*) and configuration properties.

The HVAC equipment controllers employ SCC profiles, as defined by LonMark® Interoperability Association. Table 7 shows the devices with which the Tracker controller can communicate and the LonMark® profiles that the devices use.

Note: Ancillary sensors (such as temperature and humidity sensors) that are hard-wired to the terminals on the Tracker, CCP, and I/O module are standard resistive-type sensors and do not communicate using LonTalk. They only provide analog or binary inputs and outputs.

LonTalk devices from other manufacturers will be tested for compatibility with the Tracker BAS. Devices that are compatible will be approved for inclusion in the Tracker system. Necessary support documentation for approved devices will be released, when completed.

Table 7: Comm5 network devices

Comm5 device	LonMark® profile

SCCs:
    Voyager RTU (with a LonTalk communication interface [LCI] card)
    Precedent RTU (with a ReliaTel LCI [RLCI])
    Tracer ZN517 unitary controller
	SCCs:
	    Generic (85.00) with unit type HVT_ROOFTOP
	    Generic (85.00) with unit type HVT_GENERIC
	    Generic (85.00) with unit type HVT_HEAT_PUMP

New VariTrac CCP	Custom profile (82.06)
Tracer MP503 I/O module	Custom profile (82.08)
Tracer loop controller	Custom profile (82.01)

Installation

The Tracker Version 12 BAS controller is designed for easy installation. Its three-module configuration (Figure 13) enables the termination module to be mounted on a wall, and the main module and display module to be stored for their protection until the site is ready for the controller to be fully assembled.
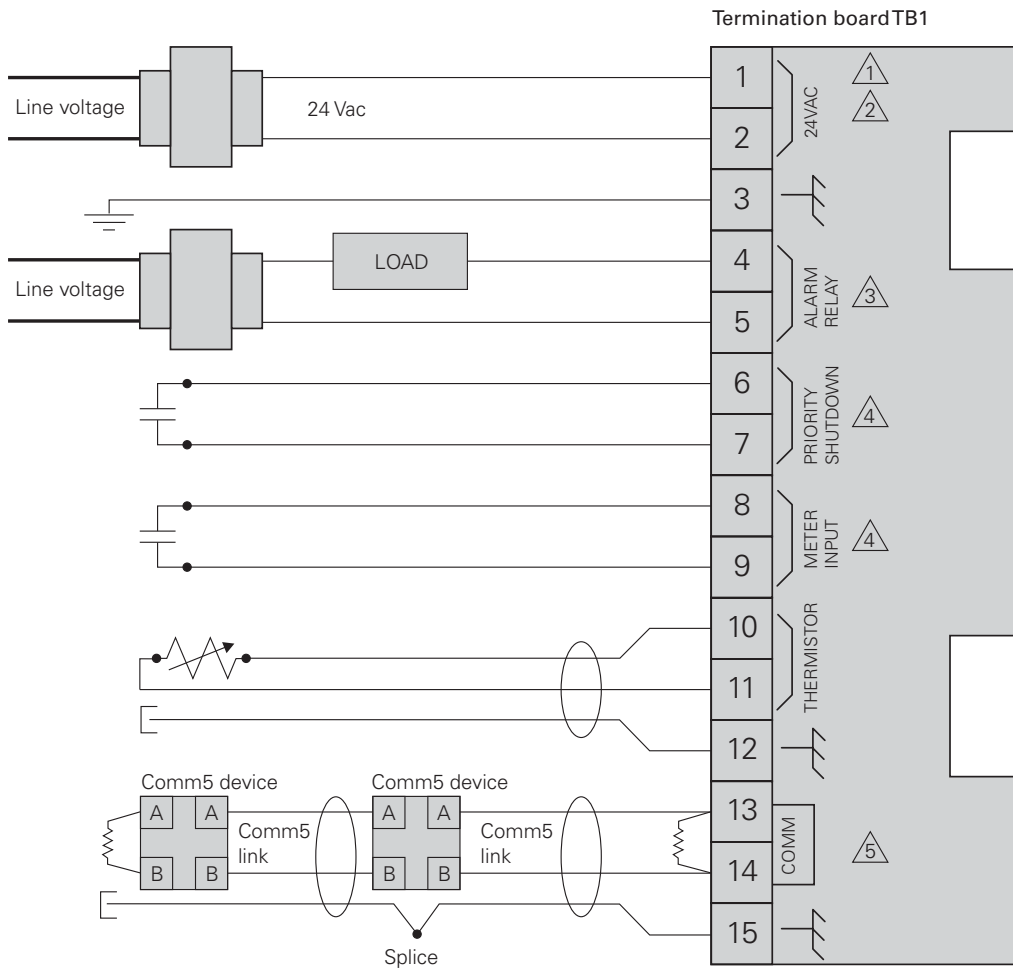
Figure 13: Three modules
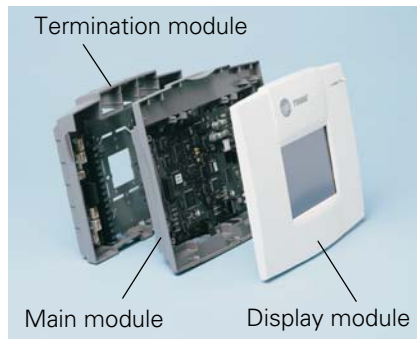
The termination module contains the termination board, which accepts all electrical connections for the controller. The main module contains the main logic board. The display module contains the touch screen, which enables the operator to interact with the controller.

Install the termination module

The first step in the Tracker installation procedure is to select a location and mount the termination module on a wall (Figure 14).

Figure 14: Installed termination module

It can be mounted directly to the wall or it can be mounted on a conduit box. Since the Tracker controller is distributed in an international market, the termination module is designed to fit on all standard conduit boxes.

## Wire the termination board

Once the termination module is mounted on the wall, the installer can make all electrical input and output connections, UCM connections, and 24 Vac power connections to the termination board (Figure 15 on page 24). The termination board inputs and outputs connect devices such as an alarm relay, a priority shutdown input, a pulse meter, and an outside air temperature sensor. The 24 Vac power must come from a dedicated transformer.

The module is designed to provide ample room to insert wire into the terminals. The termination screws are fully exposed and are more than 2 in. (5 cm) from the sides of the module.

When wiring is complete, the shipping container can be slipped back over the module to protect it from construction debris until the installer is ready to complete the installation.

Figure 15: Field wiring connections

Termination board TB1

Legend

▭	= Transformer	⬡	= Twisted pair, shielded wire per Trane specifications	⏚	= Earth ground
•⟋⟍⟍•	= Thermistor device per Trane specifications	⊏	= Shield termination	⊣	= Shield ground
⟋⟍⟍	= Termination resistor	⟘	= Contact points	△	= Figure note

Note 1: All customer wiring must be in accordance with national, state, and local electrical codes.
Note 2: Trane recommends a dedicated transformer for 24 Vac power.
Note 3: Alarm relay circuit must not exceed 24 Vac, 1 A.
Note 4: Do not apply voltage to the priority shutdown or meter inputs.
Note 5: See product literature for Comm5 wire connection details.

Install the main and display modules

The main module and display module can be installed with power applied to the termination module. The main module snaps onto the termination module (Figure 16) and the display module snaps onto the main module (Figure 17).

Figure 16: Main module installation

Figure 17: Display module installation

Connect the PC workstation

If the site requires the optional PC software, the installer connects the RJ-11 (modem connection) or RJ-12 (direct connection) cable to the appropriate connector on the underside of the controller.

Install the optional PC software

To install the optional PC software, the installer inserts the Tracker CD into the PC CD-ROM drive and follows the self-prompting installation wizard.

Auto configuration

When Trane Comm5 devices are used as a system and power is applied to the controller, the Tracker BAS automatically configures itself. It is no longer necessary to program the building management system. During auto configuration, the controller:

- Discovers all devices on the communication link
- Loads all devices into a non-erasable memory database
- Turns to On or Occupied all discovered HVAC equipment except the binary output relays of the Tracer MP503 I/O module, which remain de-energized (Off)

After auto configuration, the building is under the control of the Tracker controller and its factory defaults. At this point, the controller can run the building with no further involvement of personnel.

During auto configuration, the Tracker controller assigned a default name to each detected device. You can choose, now or later, to replace the default device names with descriptive names. You can also change the building heating and cooling schedule.

Operation

An operator can set up and change HVAC operating parameters and collect and display building information at either the Tracker controller or the PC workstation. Each location provides access to an easy-to-use user interface.

Tracker controller operation

The LCD touch screen, combined with an intuitive menu-driven user interface, provides access to the Tracker system from the controller.

Using the controller user interface

The user interface Home screen (Figure 18) is the entry point to the Tracker system. The screen displays five function buttons: View, Alarm, Schedule, After Hours, and Advanced.

Pressing a function button opens the function. Once open, buttons on the user interface screens enable the operator to navigate to specific data display and data entry screens.

For example, to view status, the operator presses the View function button. On the Building Information screen that displays (Figure 19) is a button for each building area or piece of equipment in the building. Each button shows current status (such as, temperature, status of an analog input, or state of a binary output).
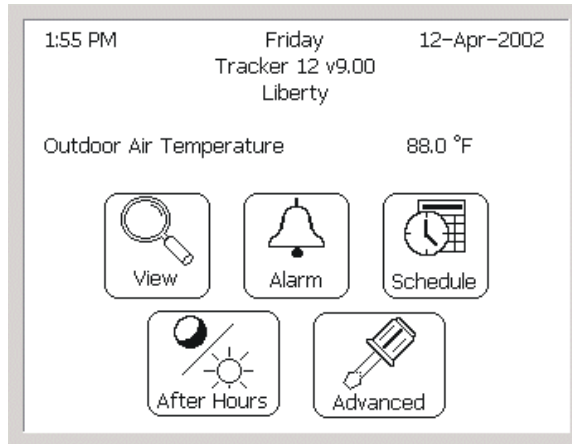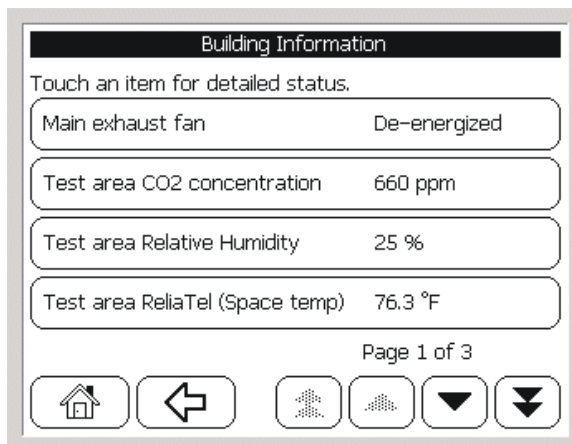
Figure 18: Controller Home screen

Figure 19: Building Information screen

Subsequent selections enable the operator to navigate to screens that provide additional detail. For example, the operator has only to press the appropriate area or equipment button at the Building Information screen and a screen with more detail displays. From the Building Information screen, the operator can navigate to any status in one to three steps.

Controller operator support

Beyond its ease of use, the user interface provides additional operator support:

- It informs the operator of changes that are about to be made and asks for confirmation before making those changes.
- Its alarm buttons, when pressed, can display instructions and notes on how to best handle the problem.
- Its service and alarm messages help to protect HVAC equipment. They enable the operator to ward off future problems and correct current problems, so tenant comfort can be maintained.

A printed user guide containing all the procedures that can be performed with the user interface is provided with the Tracker controller. There is also an electronic copy of the user guide on the Tracker PC software CD.

PC software operation

A personal computer running Tracker PC software provides local (direct connection) or remote (dial-in or LAN) access to the Tracker controller.

The PC operator can access all functions that the controller operator can access. In addition, the PC operator has access to functions that are not available to the controller operator: Binary Output Programming, Custom Alarming, and Print.

Using the PC user interface

The user interface Home screen (Figure 20), which displays in the workspace area, is the entry point to the Tracker system from the PC software.

A tree displays to the left of the workspace area. The tree shows all devices in the Comm5 network.

Clicking a function button or menu item opens the function. Once inside, buttons, lists, and tabs enable the operator to navigate to specific data display screens and data entry screens.

For example, to view the status of an RTU, the operator clicks the device on the tree. The selected device then displays in the workspace area (Figure 21).

Tabs at the top of the workspace area enable the operator to easily access and view the parameter settings and current status of the selected device.

PC operator support

Beyond its ease of use, the PC software user interface provides operator support that is similar to that of the controller. In addition:

- It provides online help, which contains all the procedures that can be performed with the user interface.
- It provides printer support, which enables the operator to print operating procedures.

The Tracker PC software CD case contains printed installation instructions for the PC software. It also contains instructions on how to access the online help. The Tracker CD contains an electronic copy of all printed user documentation.
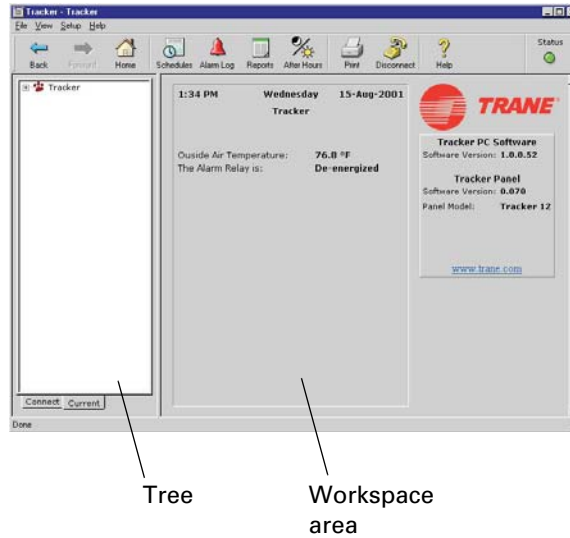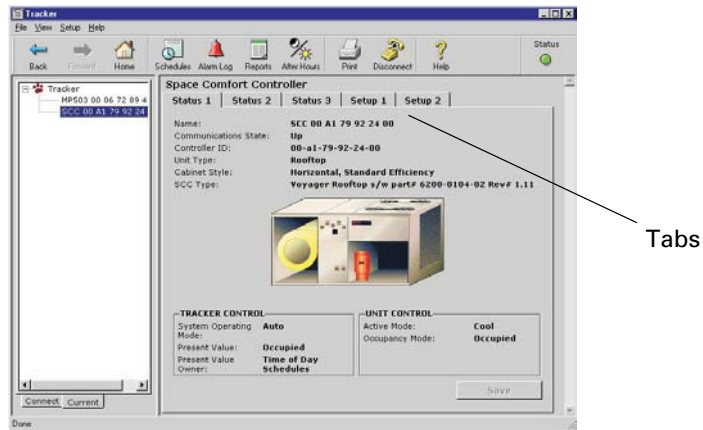
Figure 20: Workstation Home screen

Tree   Workspace area

Figure 21: SCC screen

Tabs

Scheduling

Running a building as efficiently as possible means using the HVAC system only when needed. Most often, the need is based on the occupancy of the building, or better yet, the occupancy of specific areas of the building.

The Tracker BAS simplifies scheduling. It is no longer necessary to create a separate occupancy schedule for each HVAC device. The operator can create a schedule and attach several devices (members) to it. From 1 to 10 schedules may be created. Grouping devices in a schedule means that changes to the building schedule are no longer a time-consuming, labor-intensive effort. Figure 22 shows a scheduling screen from the controller user interface. Figure 23 shows a scheduling screen from the PC software user interface.

Building occupants can easily override unoccupied areas to provide comfort for predetermined lengths of time by pressing the On button on the zone sensor or by using the Tracker controller or PC user interface.

In addition, the Tracker BAS can be set up to override a schedule based on the input of occupancy sensors. The heating and cooling setpoints for the area are automatically adjusted to standby settings when the area is not occupied and to occupied settings when people are detected.
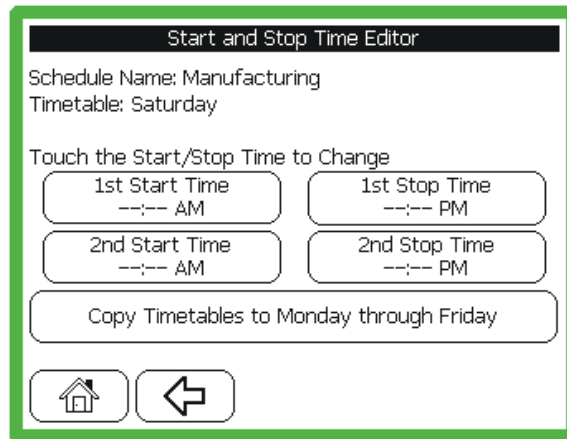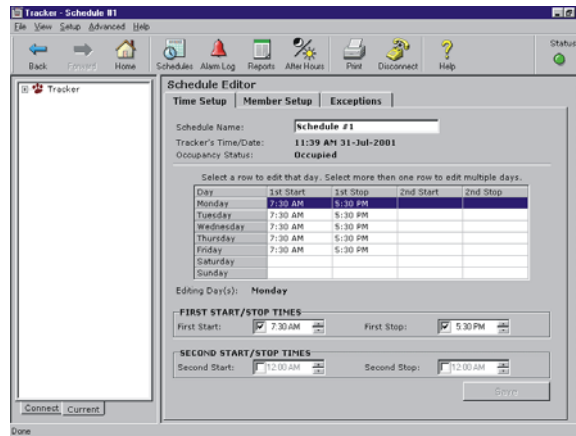
Figure 22: Controller scheduling screen

Figure 23: PC software scheduling screen

Controller specifications

Power requirements
24 Vac nominal (19–30 Vac)
50/60 Hz, 1 phase 40 VA minimum
Class 2 transformer required

Operating environment
Temperature:
    From 32°F to 122°F (0–50°C)

Humidity:
    From 10% to 90% relative humidity,
    non-condensing

Storage environment
Temperature:
    From –40°F to 185°F (–40°C to 85°C)

Humidity:
    From 5% to 95% relative humidity,
    non-condensing

Cabinet
NEMA 1 resin enclosure
Plenum rated

Mounting
Flat wall surface with a conduit box that
is either:
    Recessed, 2 in. × 4 in. (5 cm × 10 cm)
    Recessed, 4 in. × 4 in. (10 cm × 10
    cm)

Dimensions
See Figure 24 on page 31 for a depiction
of the controller dimensions:

Height: 8.75 in. (22.38 cm)
Width: 10.25 in. (26.04 cm)
Depth: 2.75 in. (6.99 cm)

Minimum clearances
Top: 12 in. (30 cm)
Bottom: 12 in. (30 cm)
Left: 12 in. (30 cm)
Right: 12 in. (30 cm)
Front: 36 in. (91 cm)

Weight
2.5 lb. (1.13 kg)

Analog input
Thermistor:
    10KW at 77°F (25°C)
    From –50°F to 200°F (–46°C to 93°C)

Binary inputs
Utility pulse meter
    User-supplied dry contacts only
    Tracker-supplied voltage: 12 Vdc
    nominal (10–14 Vdc), 12 mA nominal
    (10–14 mA)

Priority shutdown
    User-supplied dry contacts only
    Tracker-supplied voltage: 12 Vdc
    nominal (10–14 Vdc), 12 mA nominal
    (10–14 mA)

Binary output
Alarm relay
    Tracker-supplied relay
    Single-pole single-throw (SPST) dry
    contact rated at 24 Vac, 1 A maximum

Memory backup
At power loss, the Tracker controller
backs up memory and stores all data for
seven days; after seven days, alarms are
not retained

Approvals
UL and C-UL listed:
    916, Energy management equipment

Flammability rating:
    UL 94-5V (UL flammability rating for
    plenum use)

FCC:
    FCC Part 15, Class A, CFR 47

CE:
    Approvals for Models 12, 24, and
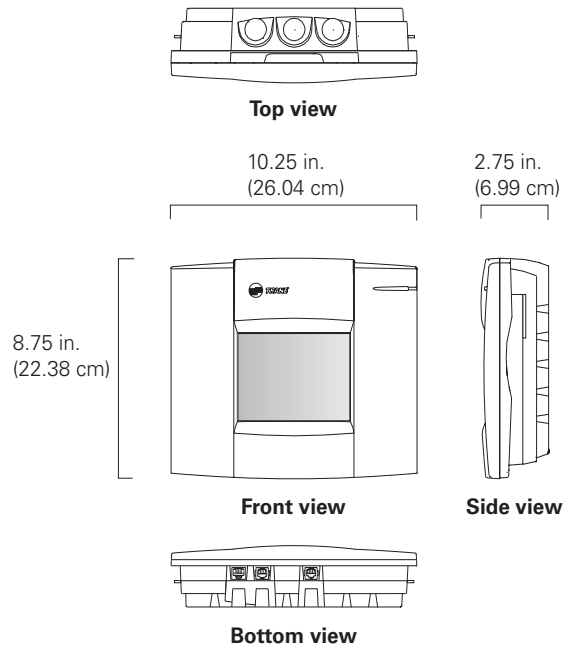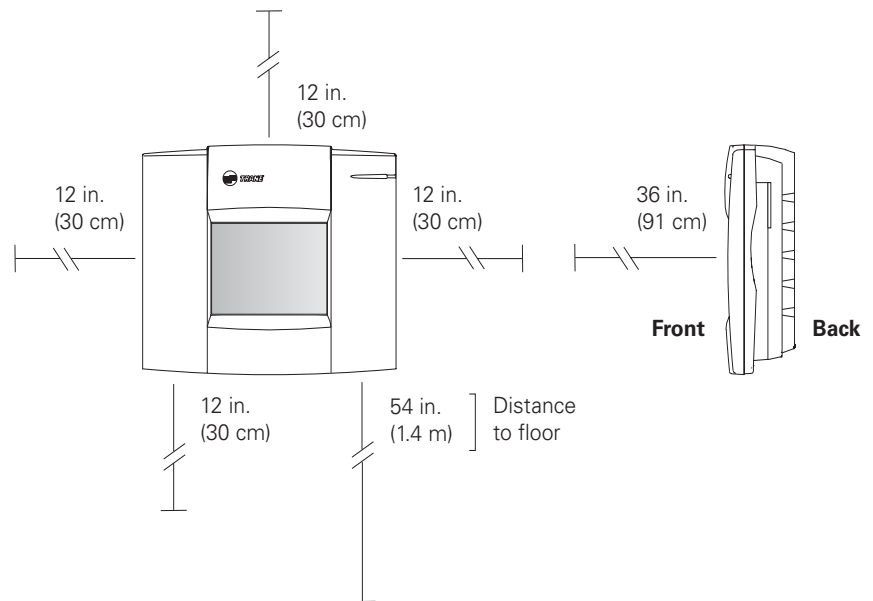   WSHP

Figure 24: Controller dimensions

Top view

10.25 in.
(26.04 cm)

2.75 in.
(6.99 cm)

8.75 in.
(22.38 cm)

Front view

Side view

Bottom view

Figure 25: Controller minimum clearances

12 in.
(30 cm)

12 in.
(30 cm)

12 in.
(30 cm)

36 in.
(91 cm)

Front   Back

12 in.
(30 cm)

54 in.
(1.4 m)

Distance
to floor

TRANE ®

Literature Order Number	BAS-PRC010-EN
File Number	PL-ES-BAS-000-PRC010-0503
Supersedes	BAS-PRC010-EN November 2002
Stocking Location	Inland

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