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TRANE Tracer ZN517 Unitary Digital Controller Owner's Manual

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Contents

Introduction

The Tracer ZN517 unitary controller provides digital control that is similar to that of a wall thermostat. It supports the following types of heating, ventilating, and air-conditioning (HVAC) equipment:

- 2-heat/2-cool rooftop unit with optional economizer control
- 4-cool rooftop unit with optional economizer control
- 2-stage heat pumps with optional economizer and auxiliary heat control
- Split system The Tracer ZN517 unitary controller can operate as part of a Trane Integrated Comfort system (ICS) or as a standalone device. When it is part of a Trane ICS, the Tracer ZN517 unitary controller enables a building automation system (BAS) to perform functions such as scheduling, trending, alarming, and remote communication. The Tracer ZN517 communicates with both a Tracker and a Tracer Summit BAS by using a LonTalk Comm5 communication link. The Tracer ZN517 can also communicate with other building control systems that are compliant with the LonMark® Space Comfort Controller (SCC) profile. When it is a stand-alone device, the Tracer ZN517 unitary controller can be configured using a Rover service tool through the communication jack of a zone sensor.

Binary inputs (isolated contacts)

- Occupancy or generic
- Fan status

Analog inputs

- Space temperature (10 kΩ thermistor)
- Setpoint input (1 kΩ potentiometer)
- Discharge air temperature (10 kΩ thermistor)
- Universal input (4–20 mA) or generic
- Outdoor air temperature (10 kΩ thermistor) or generic

Binary outputs

- Supply fan
- Cool 1/compressor 1
- Cool 2/compressor 2
- Heat 1/reversing valve/cool 3
- Heat 2/auxiliary heat/cool 4
- Exhaust fan or generic
- Economizer open
- Economizer close

Generic points
Generic points are available for use with a Tracer Summit building automation system:

- Binary input (shared with occupancy)
- Analog inputs (shared with universal input and outdoor air temperature)
- Binary output (shared with exhaust fan)

Features

Easy installation
The controller can be installed in existing Trane and competitive HVAC equipment without major wiring changes, and clearly labeled screw terminals ensure that wires are connected quickly and accurately. A compact enclosure design simplifies installation in minimal space.

Automatic heat/cool mode determination
The Tracer ZN517 unitary controller automatically determines whether heating or cooling is needed to maintain comfort levels, without the need to manually adjust unit controls. The controller measures the zone temperature and setpoint temperature, then uses a proportional/integral algorithm to maintain zone temperature at the setpoint.

Discharge air tempering
In cold weather, outside air brought into a space for ventilation can cause the discharge air to be too cold. Although the overall space may be at the correct temperature, occupants near vents may experience discomfort. Discharge air tempering minimizes this problem by raising the discharge air temperature when:

- The controller is in the heating mode

- Outside air is being used for ventilation

- The discharge air temperature is lower than expected

  Tempering stops when the occupied heating setpoint is exceeded.

Demand control ventilation
Increasing/decreasing the amount of outdoor air based on CO_2 levels is referred to as demand control ventilation. The Tracer ZN517 unitary controller modulates the economizer position in direct response to the CO_2 level, controlling the volume of outside air. The allowable CO_2 threshold is user defined.

Occupied and unoccupied operation
The occupancy input works with a motion (occupancy) sensor or time clock. A communicated value from a building automation system through the Comm5 (LonTalk) link can also be used. The input allows the controllers to use unoccupied (setback) temperature setpoints.
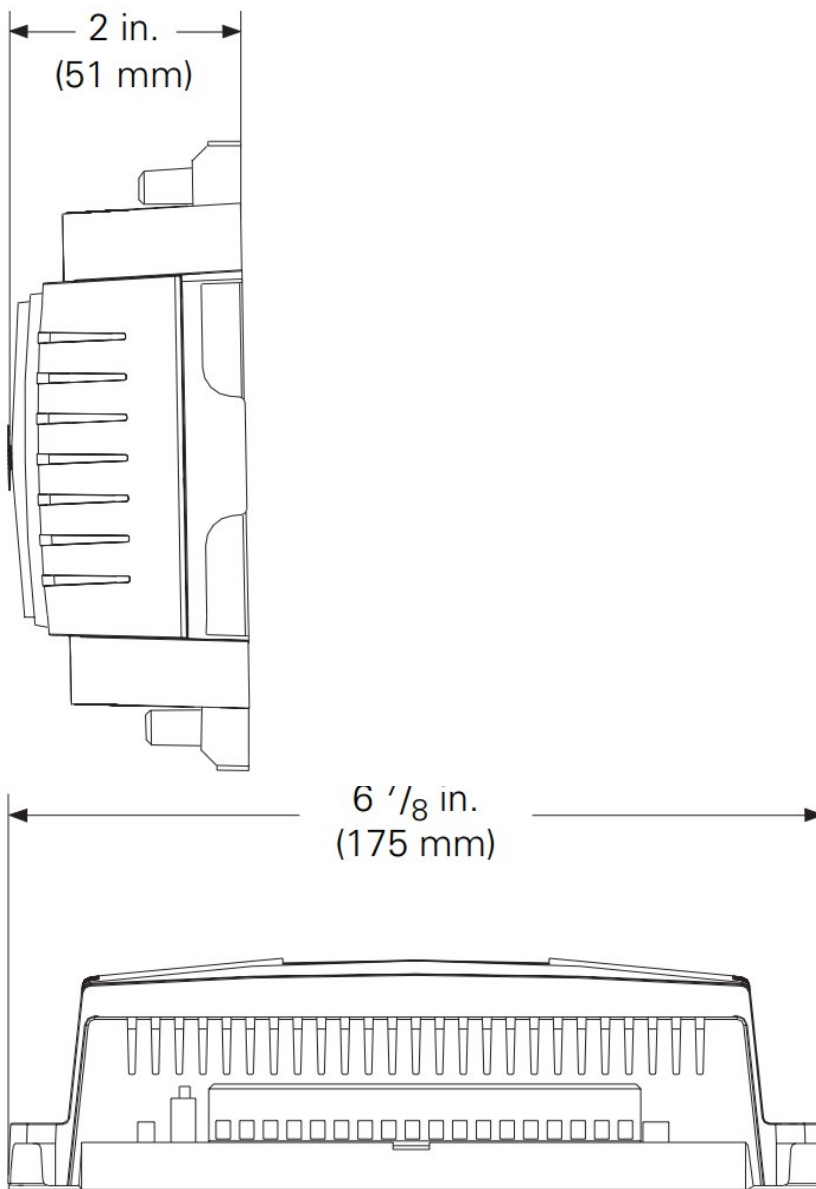
Continuous fan or fan-cycling operation
Fan operation can be configured to either run continuously or cycle on and off automatically.

Equipment protection

- Minimum on/off timer: Extends compressor life by preventing equipment from unnecessary cycling.
- Fan status: The controller can monitor fan status to protect equipment from damage. If airflow is not detected after the fan is commanded on and following a 60-second delay, a diagnostic message is generated and unit operation is disabled.
- Fan off delay: The fan stays on for an additional 30 seconds (adjustable) to allow the residual cooling or heating energy to be circulated through the system.
- Filter maintenance status is based on the cumulative hours of operation of the unit fan. The controller has a timer that can be reset. When the time limit expires, the Tracer ZN517 unitary controller sends a message to

the BAS indicating that unit maintenance is recommended.

Economizing

If outdoor air conditions are suitable for cooling the zone, the Tracer ZN517 will modulate both the outdoor air damper and return air damper (between the active minimum damper position and 100%) to provide economizing or free cooling.

Timed override

The timed override function for after hours operation allows users to request unit operation from a push button on the unit zone sensor. Additionally, users can press the CANCEL button at any time to place the unit back into unoccupied mode.

Manual output test

Pressing the Test button on the controller activates all binary outputs in sequence. The test is used to verify that the outputs are operating properly.

Peer-to-peer communication

Multiple controllers can share data when they are bound together. Shared data can include setpoints, zone temperature, mode, and fan status. Applications having more than one unit serving a single large zone can benefit from this feature, which prevents multiple units from simultaneously heating and cooling.

Interoperability

The Tracer ZN517 unitary controller follows the guidelines of the LonMark® SCC profile and communicates using the LonTalk protocol. This allows the controller to work with other control systems that support LonTalk and the SCC profile.

Dimensions and specifications

Figure 1: Tracer ZN517 unitary controller dimensions

Dimensions (See Figure 1)
Height: 5 3/8 in.(137 mm)
Width: 6 7/8 in. (175 mm)
Depth: 2 in. (51 mm)

Power
19–30 Vac (24 Vac nominal) 50/60 Hz 9 VA and 12 VA maximum per binary output utilized

Operating environment
Temperature: From –40°F to 160°F (–40°C to 70°C) Relative humidity: From 5% to 90% non-condensing

Storage environment
Temperature: From –40°F to 185°F (–40°C to 85°C) Relative humidity: From 5% to 95% non-condensing

Agency listings/compliance
CE—Immunity:
EN50082-2:1995
EN61000-6-2:1999
CE—Emissions:
EN61000-3-2:1995
EN61000-3-3:1995
EN50081-1:1992 (CISPR 22)

EN55011:1998, Class B
UL and C-UL listed:
916, Energy management equipment
UL 94-5V (UL flammability rating for plenum use)
FCC Part 15, Class A, CFR 47

Network architecture

The Tracer ZN517 can communicate with both a Tracker BAS and a Tracker Summit BAS. Figure 2 shows Tracer ZN517 unitary controllers on a Tracker BAS network (left side) and on a Tracker Summit BAS network (right side).

Figure 2: Tracer ZN517 unitary controllers on BAS networks

Tracker BAS network
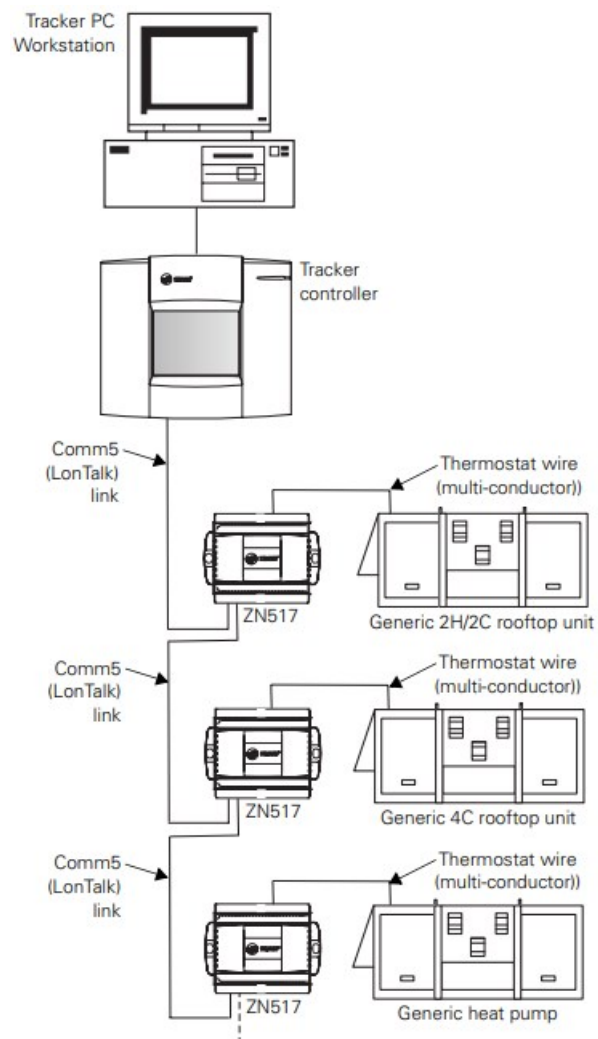
Tracker Summit BAS network
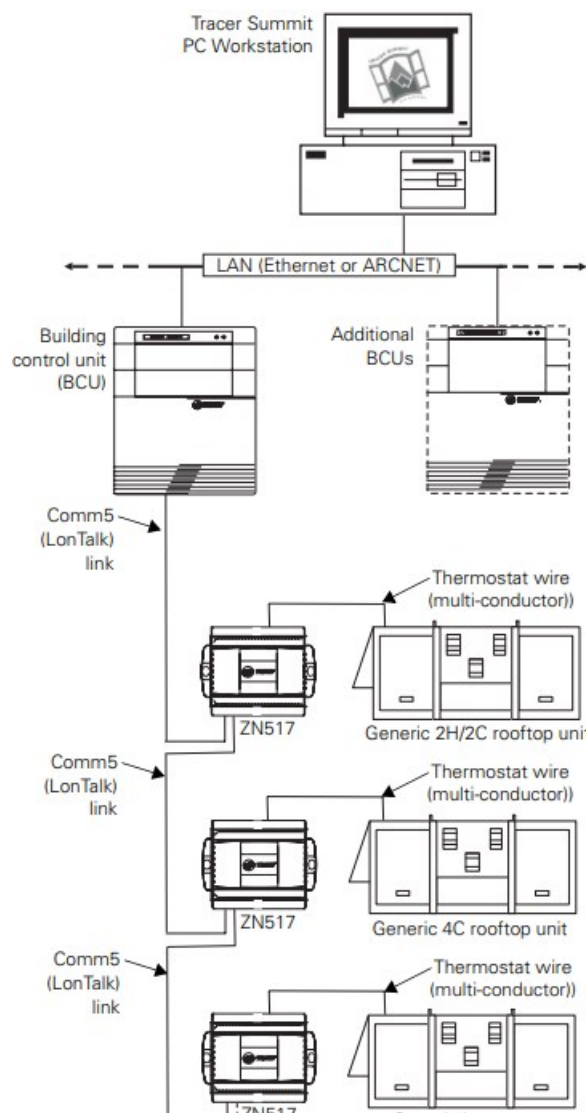
Zone sensor options

A variety of zone sensors are available for use with Tracer ZN517 unitary controllers. Table 1 describes the features of a few of the zone sensors that can be used with Tracer ZN517 unitary controllers. Contact your Trane sales office for information about other compatible zone sensors.

Figure 3 shows two types of Trane zone sensors.

Table 1: Some Trane zone sensor options for the ZN517 unitary controller

BAS order number	Zone		Timed override buttons		Comm jack
	Setpoint thumb wheel	Temperature sensor	On	Cancel	
4190 1086	x	x	x		
4190 1087		x			
4190 1088		x	x	x	x
4190 1089		x	x		
4190 1090	x	x	x	x	x
4190 1094	x	x			x
4190 7015(stainless steel wall plate)		x			

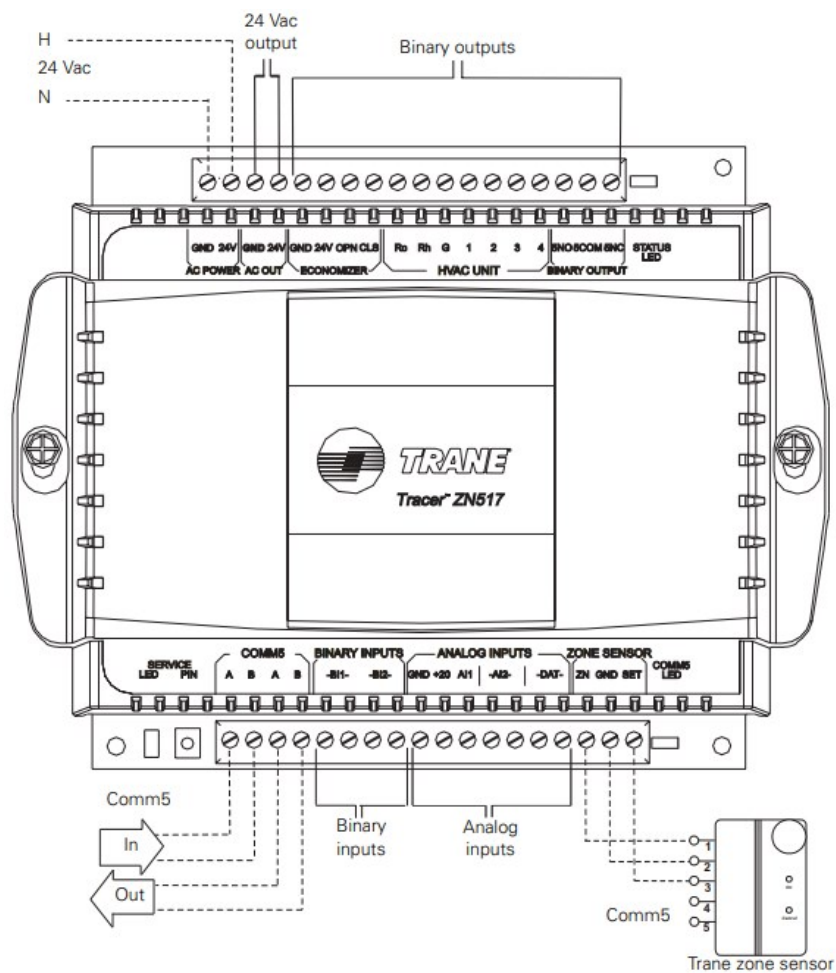**Figure** 3: Two types of Trane zone sensors

Wiring diagram

Figure 4 shows a general wiring diagram for the Tracer ZN517 unitary controller.

Figure 4: Tracer ZN517 wiring diagram

- **Literature Order Number** BAS-PRC012-EN
- **File Number** PL-ES-BAS-000-PRC012-0403
- **Supersedes** BAS-PRC012-EN July 2002
- **Stocking Location** La Crosse

Trane

A business of American Standard Companies **www.trane.com** For more information, contact your local Trane office or e-mail us at **comfort@trane.com**

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

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Documents / Resources

	TRANE Tracer ZN517 Unitary Digital Controller [pdf] Owner's Manual Tracer ZN517 Unitary Digital Controller, Tracer ZN517, Unitary Digital Controller, Digital Controller, Controller

References

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- 🔴 **Trane Heating & Air Conditioning**