



Tracer™ Controls

Tracer MP501 Controller



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BAS-PRC008-EN



Introduction

The Tracer MP501 controller is a configurable, multi-purpose controller used to provide direct-digital control for heating, ventilation, and air conditioning (HVAC) equipment.

The controller can operate as a stand-alone device or as part of a building automation system (BAS).

Communication between the controller and a BAS occurs via a LonTalk Comm5 communication link.

The Tracer MP501 provides a single control loop with the following output types: 2-stage, tri-state modulating, and 0–10 Vdc analog. The controller can be configured in two possible modes: Space Comfort Controller (SCC) or generic.

In SCC mode, the Tracer MP501 conforms to the LonMark SCC profile and controls space temperature to an active setpoint.

SCC mode supports the following applications:

- Heating control loop
- Cooling control loop
- Two-pipe heat/cool automatic changeover using a communicated water loop temperature

In generic mode, the Tracer MP501 provides control flexibility in a variety of applications that do not necessarily follow a LonMark profile. The control loop accepts inputs of the following types: temperature, pressure, flow, percent, or parts per million (ppm).

Generic mode supports many applications including:

- Fan speed control based on duct static pressure
- Pump speed control based on water differential pressure or flow
- Humidifier control based on space or duct relative humidity

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Inputs and outputs

Tracer MP501 inputs and outputs include:

- **Analog inputs:**
SCC mode: zone temperature, zone temperature setpoint
Generic mode: 4–20 mA input
- **Binary inputs:**
SCC mode: occupancy
Generic mode: enable/disable
- **Outputs:** 2-stage, tri-state modulation, or 0–10 Vdc analog
SCC mode: fan on/off
Generic mode: interlock device on/off (follows the enable/disable binary input)

- **Generic point** for use with a Tracer Summit building automation system: binary input (shared with occupancy/enable)

Generic inputs pass information to the building automation system. They do not directly affect the operation of the Tracer MP501 outputs.

Features

Easy installation

The Tracer MP501 is suitable for indoor mounting in a variety of locations. Clearly labeled screw terminals ensure that wires are connected quickly and accurately. A compact enclosure design simplifies installation in minimal space.

Flexible control

Using a single proportional, integral, and derivative (PID) control loop, the Tracer MP501 controller controls an output based on a measured input value and a specified setpoint. The output can be configured as a 2-stage, a tri-state modulating, or a 0–10 Vdc analog signal to control to the active setpoint.

Adjustable PID loop

The Tracer MP501 provides a single control loop with adjustable PID control parameters, which allows control to be customized for a variety of applications.

Interoperability

In SCC mode, the Tracer MP501 conforms to the LonMark SCC profile. In generic mode, the controller does not conform to a specific LonMark profile, but supports standard network variable types (SNVTs). Both modes communicate via the LonTalk protocol. This allows the Tracer MP501 to be used with a Trane Tracer Summit system as well as other building automation systems that support LonTalk.

Occupied and unoccupied operation

Available in SCC mode only, the occupancy input works with a motion (occupancy) sensor or a time clock. A communicated value from a building automation system can also be used. The input allows the controller to use unoccupied (setback) temperature setpoints.

Control interlock

Available in generic mode only, the interlock input works with a time clock or other binary switching device to enable or disable the controller process. When disabled, the control output is driven to a configurable (0–100%) default condition.

Continuous or cycling fan operation

Available in SCC mode only, the fan can be configured to run continuously or cycle on and off automatically during occupied operation. The fan will always cycle in unoccupied mode.

Timed override

Available in SCC mode only, the timed override function for after-hours operation allows users to request unit operation by the touch of a button on the zone temperature sensor. The override timer is configurable with a range of 0–240 minutes. 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 exercises all of the outputs in sequence. This feature is an invaluable troubleshooting tool that does not require a PC-based service tool.

Peer-to-peer communication

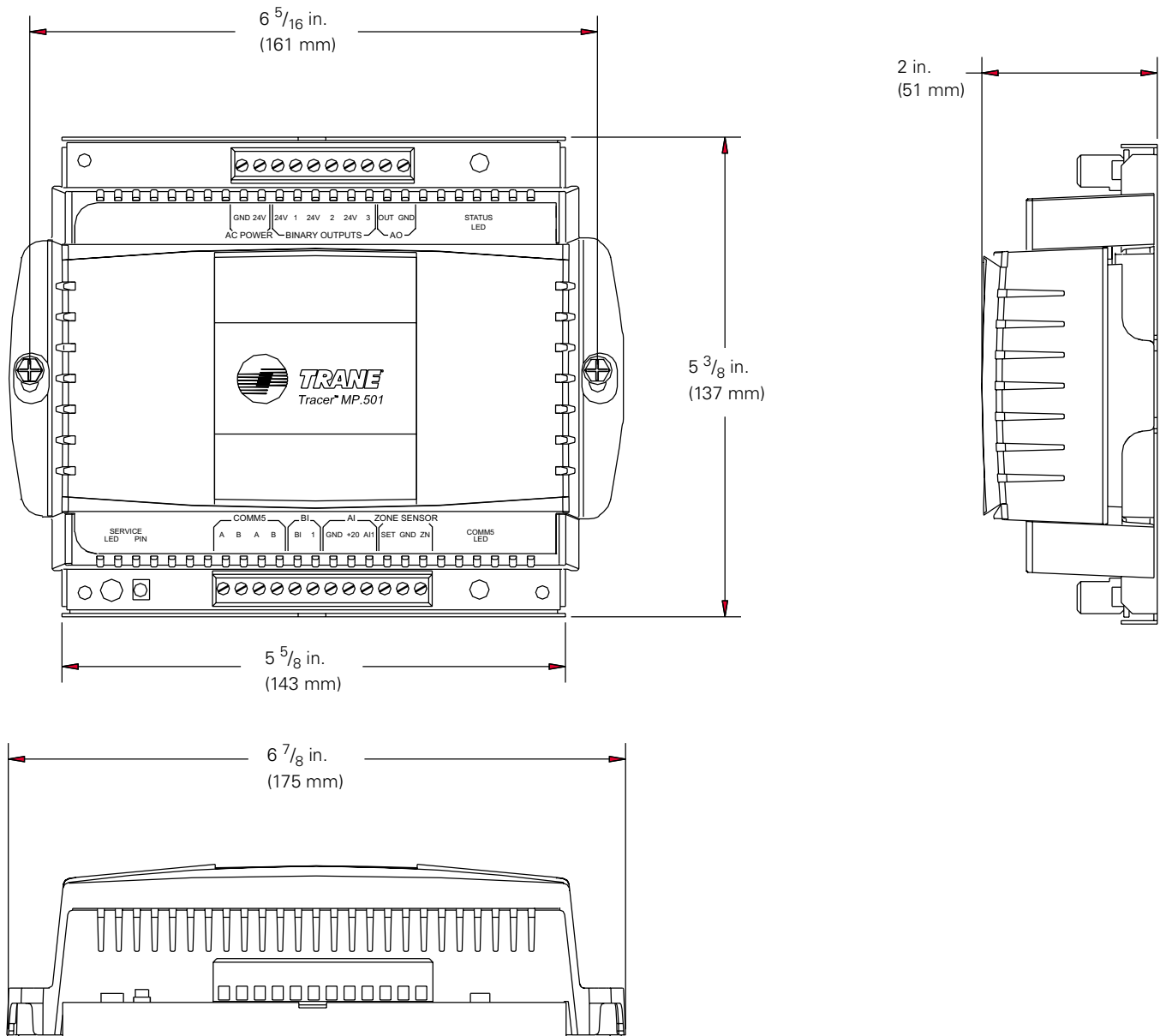
The Tracer MP501 can share data with other LonTalk-based controllers. Several controllers can be bound as peers to share data such as setpoint, zone temperature, and heating/cooling mode. Space temperature control applications having more than one unit serving a single large space can benefit from this feature, which prevents multiple units from simultaneously heating and cooling.



Dimensions

The Tracer MP501 dimensions are shown in Figure 1.

Figure 1: Tracer MP501 dimensions



Network architecture

The Tracer MP501 can operate on a Tracer Summit building automation system (see Figure 2), on a peer-to-peer network (see Figure 3), or as a stand-alone device.

The Tracer MP501 can be configured using the Rover service tool for Tracer

controllers or any other PC-based service tool compliant with the EIA/CEA-860 standard. This tool can be connected to a communication jack on a zone temperature sensor or at any accessible location on the LonTalk Comm5 communication link.

Figure 2: Tracer MP501 controllers as part of a building automation system

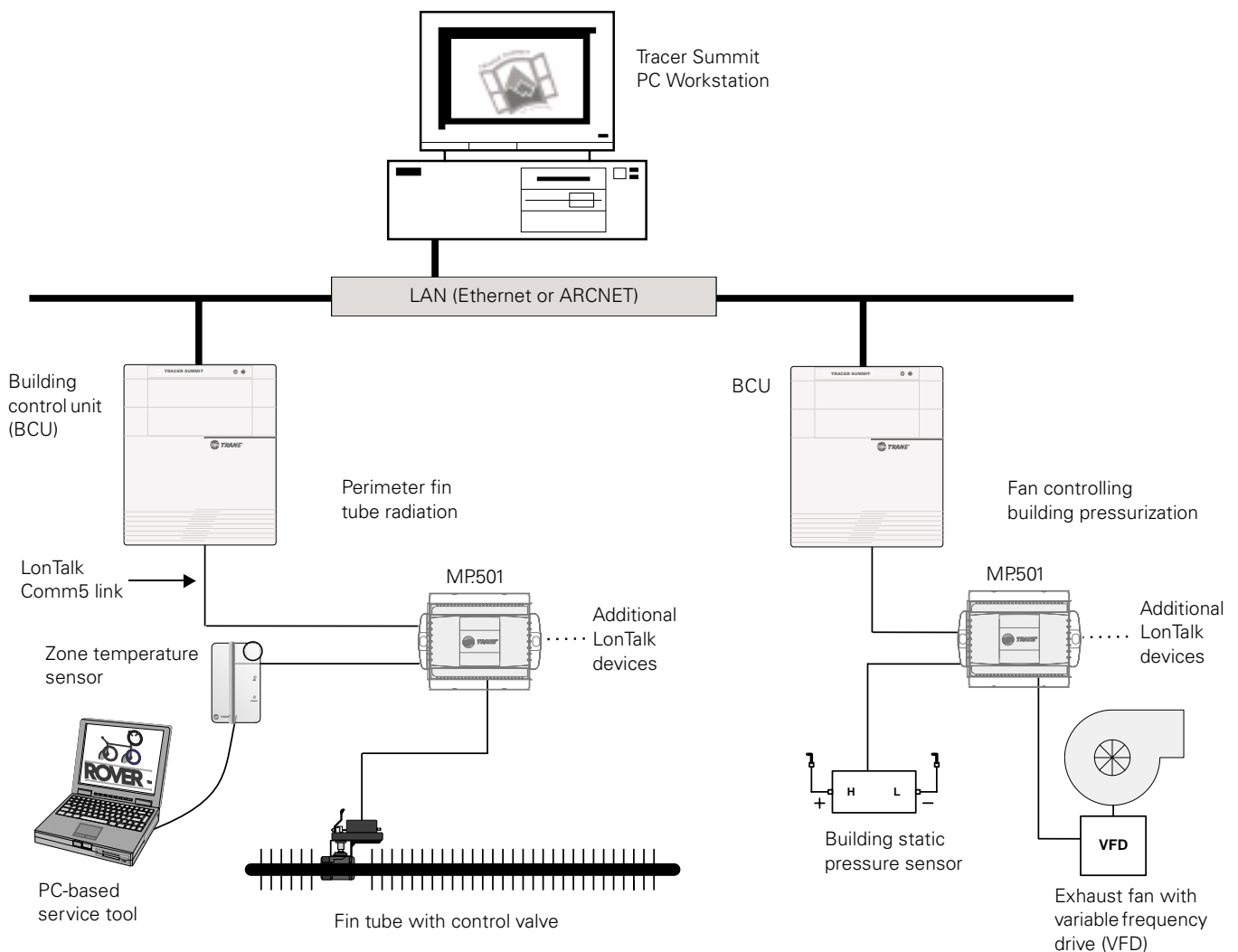
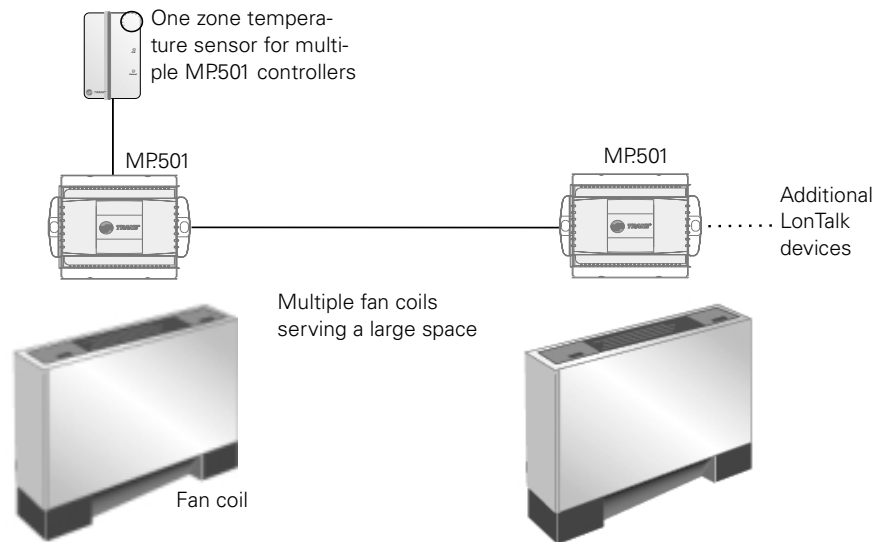


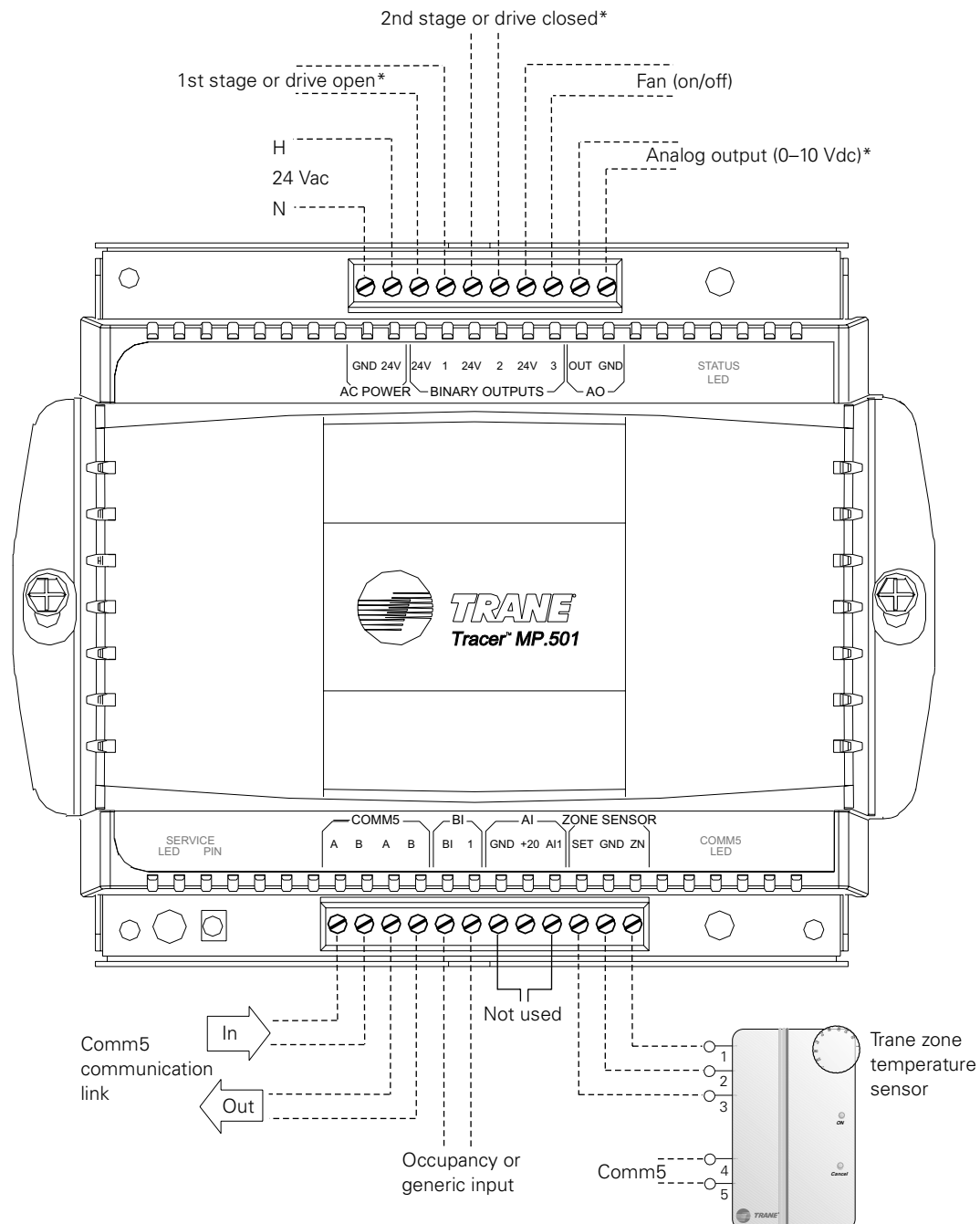
Figure 3: Tracer MP501 controllers on a peer-to-peer network



Wiring diagrams

Figure 4 shows a general wiring diagram for the Tracer MP501 controller in SCC mode.

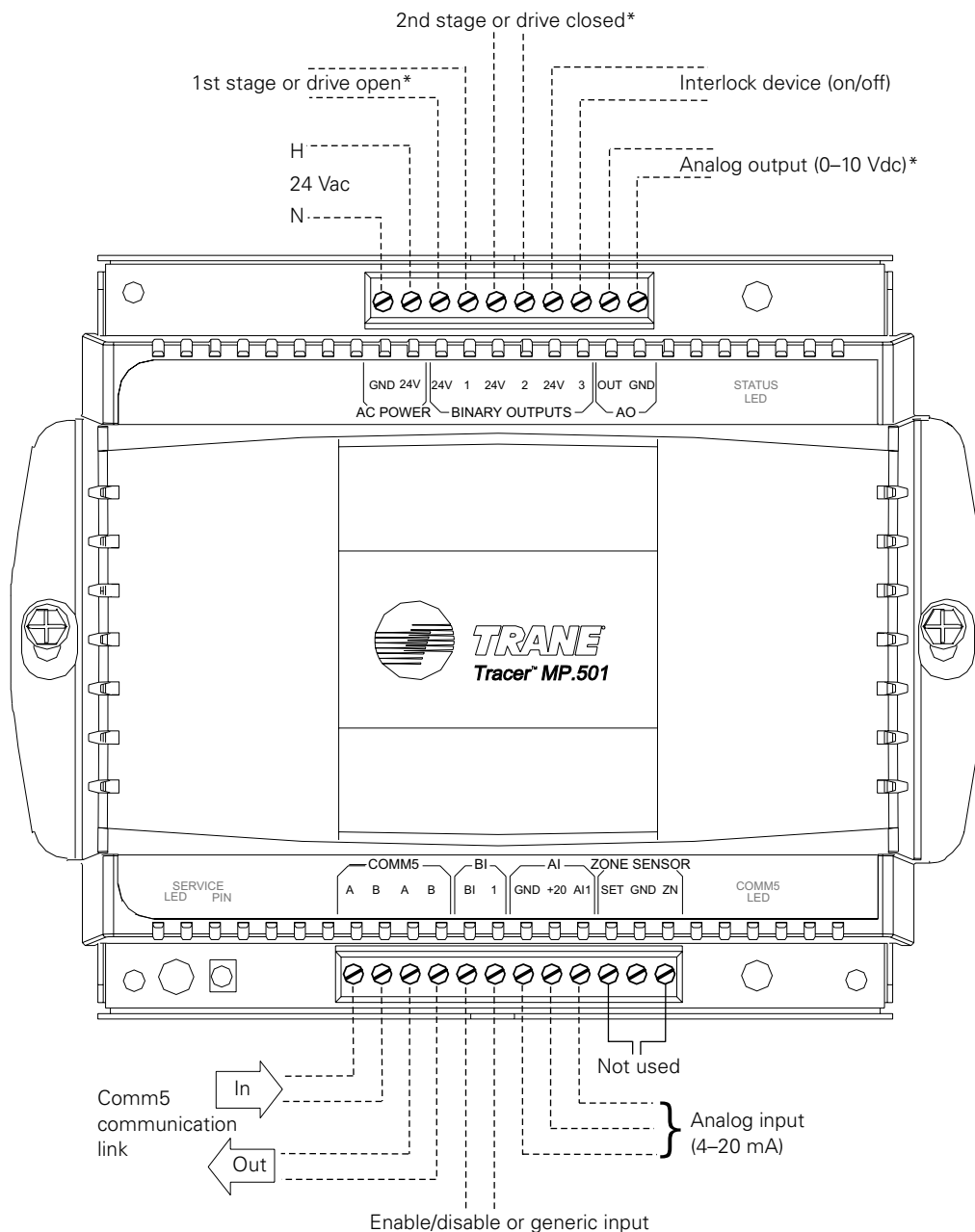
Figure 4: Tracer MP501 controller wiring diagram (SCC mode)



* Only one type of output can be used at one time (2-stage, tri-state modulation, or analog)

Figure 5 shows a general wiring diagram for the Tracer MP501 controller in generic mode.

Figure 5: Tracer MP501 controller wiring diagram (generic mode)



* Only one type of output can be used at one time (2-stage, tri-state modulation, or analog)

Specifications

Power

Supply: 21–27 Vac (24 Vac nominal) at 50/60 Hz

Consumption: 10 VA (70 VA at maximum utilization)

Dimensions

6 ⁷/₈ in. L × 5 ³/₈ in. W × 2 in. H
(175 mm × 137 mm × 51 mm)

Operating environment

Temperature: 32 to 122°F (0 to 50°C)

Relative humidity: 10–90% noncondensing

Storage environment

Temperature: -4 to 160°F (-20 to 70°C)

Relative humidity: 10–90% noncondensing

Agency listings/compliance

CE—Immunity:

EN 50082-1:1997

CE—Emissions:

EN 50081-1:1992 (CISPR 11) Class B

EN 61000-3-2, EN 61000-3-3

UL and C-UL listed:

Energy management system

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

FCC Part 15, Class A



TRANE

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