



# Product Data Sheet

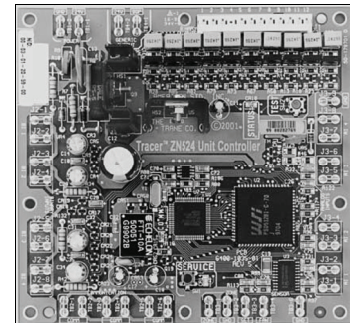
## Tracer™ ZN524

### Unit Controller for Water-source Heat Pumps (WSHP)

The Tracer™ ZN524 unit is a factory-installed, commissioned direct-digital controller (DDC) for either single or dual water-source heat pump systems. It is capable of controlling equipment such as; high-efficiency horizontal and vertical units, premium-horizontal and vertical units, and console water-source heat pumps.

The ZN524 unit controller can be applied as part of the Trane™ Tracer Summit™ system, as part of a Trane Tracer loop controller small building system, a stand-alone device, or as an interoperable LonWorks™ controller.

Each ZN524 circuit board is equipped with features which simplifies servicing, testing, and diagnosing everyday applications.



## Features and Benefits

Features	Benefits
Controller design:	Provides accurate and reliable zone temperature control.
Factory installed:	Configured, commissioned and installed to ensure high quality and reduce installation time.
Factory programmed with occupied, occupied standby, and unoccupied setpoints:	Reduces unit runtime and saves operating costs.
Serviceability:	<ul style="list-style-type: none"><li>• Use of Rover™ Service Tool to configure, monitor, and test.</li><li>• Remote access serviceability via Tracer Summit system.</li></ul>
Built-in protection:	<ul style="list-style-type: none"><li>• Random start to avoid power surges.</li><li>• High/low pressure protection when operating under abnormal conditions.</li><li>• Condensate overflow to prevent water damage.</li></ul>
LonWorks interoperability and flexibility:	The unit to be used as a unit controller on other control systems that support LonTalk™.

## Specifications and Dimensions

Category	Specification/Description
Input power:	18–32 Vac, 50Hz or 60 Hz, 570 mA alternating current (AC)
Operating temperature:	32°F to 140°F (0°F to 60°C)
Storage temperature:	-40°F to 185°F (-40°C to 85°C)
Operating and storage humidity range:	5% to 95% non-condensing
(a)Input/output points:	<ul style="list-style-type: none"> <li>• Four (4) binary inputs: 0 Vac with open contact and 24 Vac with closed contacts</li> <li>• Ten (10) binary outputs: load switching TRIACS</li> <li>• Four (4) analog inputs: 4–20 mA shared with humidity sensor</li> </ul> <p><b>Note:</b> I/Os can be associated with two or more features, can be used with optional features, or that Tracer Summit is required for use.</p>
Transceiver:	<ul style="list-style-type: none"> <li>• Transceiver: Echelon™ FTT-10A free topology, transformer-isolated, twisted-pair transceiver</li> </ul>
Dimensions:	<ul style="list-style-type: none"> <li>• Height: 5.25 in (133.35 mm)</li> <li>• Width: 5.50 in (140 mm)</li> <li>• Depth: 2.25 in (57 mm)</li> </ul>
<b>Agency Compliance</b>	
<ul style="list-style-type: none"> <li>• U.L. and C.U.L 916 Energy Management System</li> <li>• IEC 1000-4-2 (ESD)</li> <li>• IEC 1000-4-4 (EFT)</li> <li>• IEC 1000-4-5- (Surge)</li> <li>• FCC Part 15, Subpart B, Class A</li> </ul>	

(a)Refer to the following tables on pages 3-4 for specific I/O functionality.

## Binary Input Summary

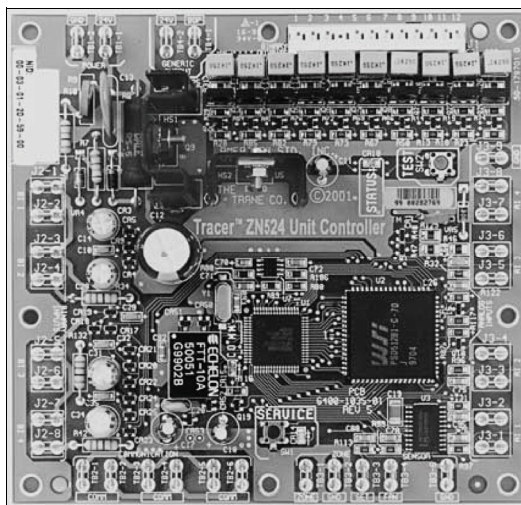
Binary Inputs	Pin Locations	Function	Configuration	Valid Range
BI1	<ul style="list-style-type: none"> <li>J2-1</li> <li>J2-2</li> </ul>	24 Vac Input	Low evaporation temperature	<ul style="list-style-type: none"> <li>Normally open</li> <li>Normally closed</li> </ul>
BI2	<ul style="list-style-type: none"> <li>J2-3</li> <li>J2-4</li> </ul>	24 Vac Input	Condensate overflow	<ul style="list-style-type: none"> <li>Normally open</li> <li>Normally closed</li> </ul>
BI3	<ul style="list-style-type: none"> <li>J2-5</li> <li>J2-6</li> </ul>	24 Vac Input	Occupancy/generic	<ul style="list-style-type: none"> <li>Normally open</li> <li>Normally closed</li> </ul>
BI4	<ul style="list-style-type: none"> <li>J2-7</li> <li>J2-8</li> </ul>	24 Vac Input	Fan status or not used	<ul style="list-style-type: none"> <li>Normally open</li> <li>Normally closed</li> </ul>

## Binary Output Summary

Binary Outputs	Pin Locations	Function	Valid Range	Output Rating	Load Energized	Load De-energized
BO1	J1-1	Fan	NA	12 VA	1 Vac RMS	24 Vac RMS
BO2	J1-2	Reversing Valve	NA	12 VA	1 Vac RMS	24 Vac RMS
BO3	J1-3	Electric Heat or Reheat	NA	12 VA	1 Vac RMS	24 Vac RMS
	J1-4	Key	NA	12 VA	1 Vac RMS	24 Vac RMS
BO4	J1-5	Compressor 1	<ul style="list-style-type: none"> <li>Normally open</li> <li>Normally closed</li> </ul>	12 VA	1 Vac RMS	24 Vac RMS
BO5	J1-6	Compressor 2	NA	12 VA	1 Vac RMS	24 Vac RMS
BO6	J1-9	Isolation valve 1	<ul style="list-style-type: none"> <li>Normally open</li> <li>Normally closed</li> </ul>	12 VA	1 Vac RMS	24 Vac RMS
BO7	J1-10	Isolation valve 2	NA	12 VA	1 Vac RMS	24 Vac RMS
BO8	J1-11	Economizer valve	NA	12 VA	1 Vac RMS	24 Vac RMS
BO9	J1-12	Outdoor air damper	NA	12 VA	1 Vac RMS	24 Vac RMS
BO10	TB4-1/TB4-2	Generic output	NA	12 VA	1 Vac RMS	24 Vac RMS

## Analog Input Summary

Analog Inputs	Pin Locations	Function	Range
AI1	<ul style="list-style-type: none"> <li>J3-1</li> <li>J3-2</li> </ul>	<ul style="list-style-type: none"> <li>Entering water temperature</li> <li><b>OR</b></li> <li>Outside air temperature</li> </ul>	-40°F to 212°F (-40°C to 100°C)
AI2	<ul style="list-style-type: none"> <li>J3-3</li> <li>J3-4</li> </ul>	Discharge air temperature	-40°F to 212°F (-40°C to 100°C)
AI3	<ul style="list-style-type: none"> <li>J3-5</li> <li>J3-6</li> </ul>	Leaving water temperature	-40°F to 212°F (-40°C to 100°C)
AI4	<ul style="list-style-type: none"> <li>J3-7</li> <li>J3-8</li> <li>J3-9</li> </ul>	<ul style="list-style-type: none"> <li>Universal</li> <li>Humidity</li> <li>CO<sub>2</sub></li> </ul>	<ul style="list-style-type: none"> <li>4–20 mA</li> <li>0%–100%</li> <li>0–2,000 ppm</li> </ul>
Analog Inputs (Zone Sensor) Description	Terminals	Function	Range
Zone	TB3-1	Space temperature	5°F to 122°F (-15°C to 50°C)
Ground	TB3-2	Analog ground	NA
Set	TB3-3	Local setpoint	40°F to 115°F (4.4°C to 46.1°C)
Fan	TB3-4	Fan switch	<ul style="list-style-type: none"> <li>OFF</li> <li>AUTO</li> <li>HIGH</li> </ul>
Ground	TB3-6	Analog ground	NA



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