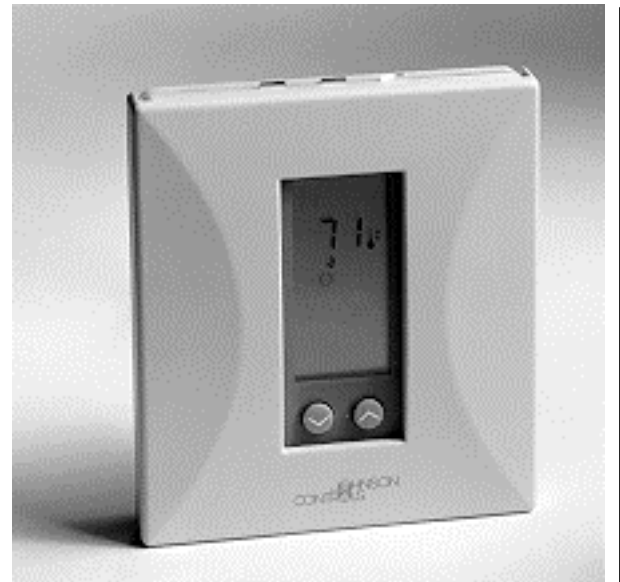# T500 Series Non-Programmable Thermostats

T500 Series Thermostats provide an economical control solution for single-stage, multi-stage, or heat pump systems. Two temperature settings can be selected, as well as heat, cool, automatic changeover, and off modes.

Thermostats are available in the following types: T500HCN-1 (1 heat/1 cool), T500HPN-1 (heat pump, 3 heat, 2 cool), T500MSN-1 (2 heat/2 cool). Each thermostat is packaged with the necessary mounting hardware, and installation is simple and fast for reduced cost.

Figure 1: T500 Series Non-Programmable Thermostats

Features and Benefits	
❑ **Low-Profile Design**	Compliments any decor
❑ **No Batteries Required**	Retains programmed setpoints upon loss of power
❑ **Lockable Access Cover and Keypad Lockout**	Prevents unauthorized changes
❑ **Full Function Liquid Crystal Display (LCD)**	Makes controls easy to read, easy to use
❑ **Fuzzy Logic Control**	Optimizes control performance

Introduction

The T500 thermostats use an adaptive control routine, based on fuzzy logic, to determine the heating or cooling load of the controlled space. The routine calculates load by evaluating recent room conditions, and room reactions to heating and cooling. This load is used to determine the cycle rate of the equipment, giving optimal control of the space.
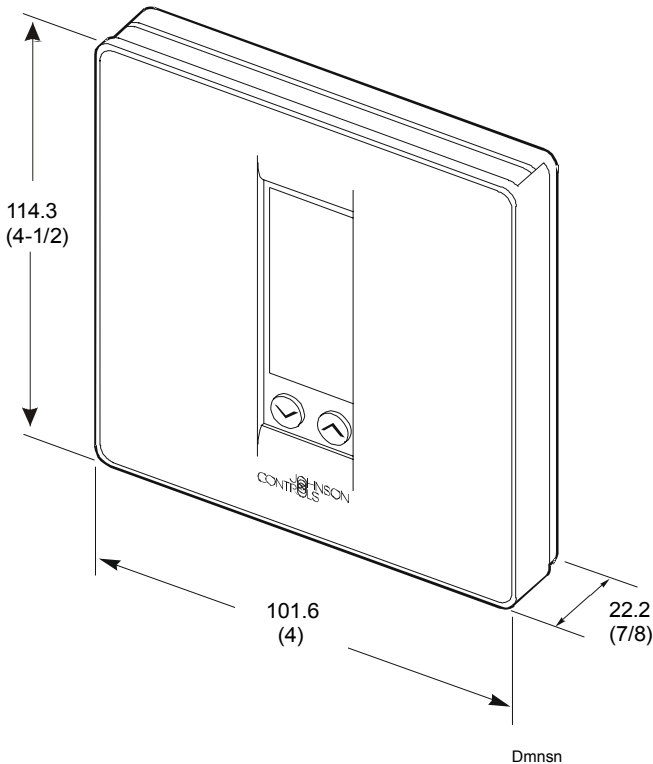

114.3
(4-1/2)

101.6
(4)

22.2
(7/8)

Dmnsn

Figure 2: T500 Dimensions, mm (in.)

Supplies Needed

- drill
- 4.7 mm (3/16 in.) drill bit
- 3 mm (1/8 in.) flat-blade screwdriver
- hammer
- marking pencil
- wire stripper

Location Considerations

Locate T500 thermostats as follows:

- on a partitioning interior wall, and approximately 1.5 m (5 ft) above the floor in a location of average temperature

- away from direct sunlight or radiant heat, outside walls or behind doors, air discharge grills, stairwells, or outside doors

- away from steam or water pipes, warm air stacks, unheated/uncooled areas, or sources of electrical interference

> ⚠ CAUTION: **Shock Hazard.**
> Disconnect power supply before wiring connections are made to prevent electrical shock or possible damage to the equipment.
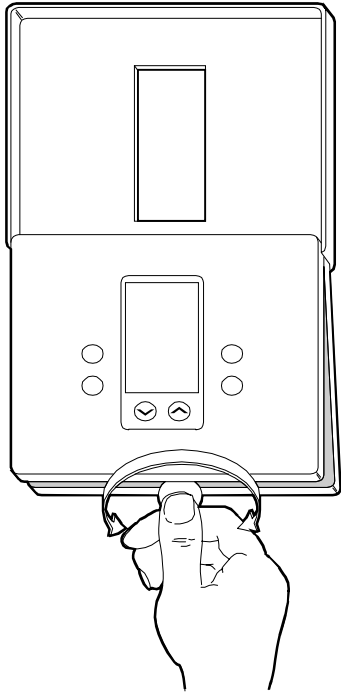
Installation and Wiring

Note: When replacing an existing thermostat, remove and use wire tags to identify terminal designations.
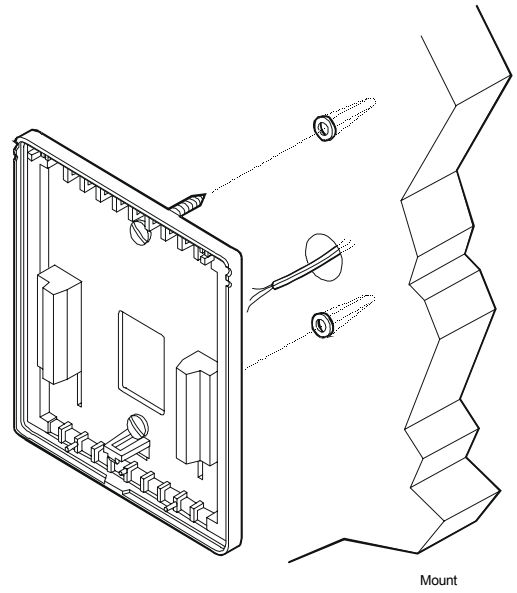
To install and wire the thermostat:

1. Lift the thermostat cover and insert a small coin into the slot located in the bottom center of the thermostat case and twist 1/4 turn. Grasp the base from the bottom two corners and separate from the thermostat. (See Figure 3.)

2. Swing the thermostat out from the bottom, and lift up and out of the base. Place the rectangular opening in the base over the equipment control wires protruding from the wall and, using the base as a template, mark the location of the two mounting holes. No leveling is required.

3. Use the supplied anchors and screws for mounting on drywall or plaster. Drill two 4.7 mm (3/16 in.) holes at the marked locations, and tap nylon anchors flush to wall surface and fasten. (See Figure 4.)

4. Connect the wires from the existing system to the thermostat terminals according to the wiring designations in Table 4, Table 5, or Table 6. Push extra wire back into the wall. Wires must be flush to the plastic base. Plug hole with a fireproof material to prevent drafts from affecting the ambient temperature readings.

> ⚠ CAUTION: **Equipment Damage Hazard.** Before applying power, make all wiring connections and check the connections. Short-circuited or improperly connected wires may result in permanent damage to the unit.

Mount

Figure 4: Mounting the Base

Figure 3: **Separating the T500 from the Base**

*I*nstalling the Thermostat Cover Lock

If desired, insert the plastic lock piece into the bottom of the mounted base. The ends of the lock piece should fit snugly under the lock pins extending from the bottom of the mounted base. The tab in the middle of the lock piece should extend downward from the mounted base. (See Figure 5.)

To release the lock, press the lock piece up and into the base while gently prying open the thermostat's cover at the same time. Use caution to avoid cracking the thermostat base or cover.

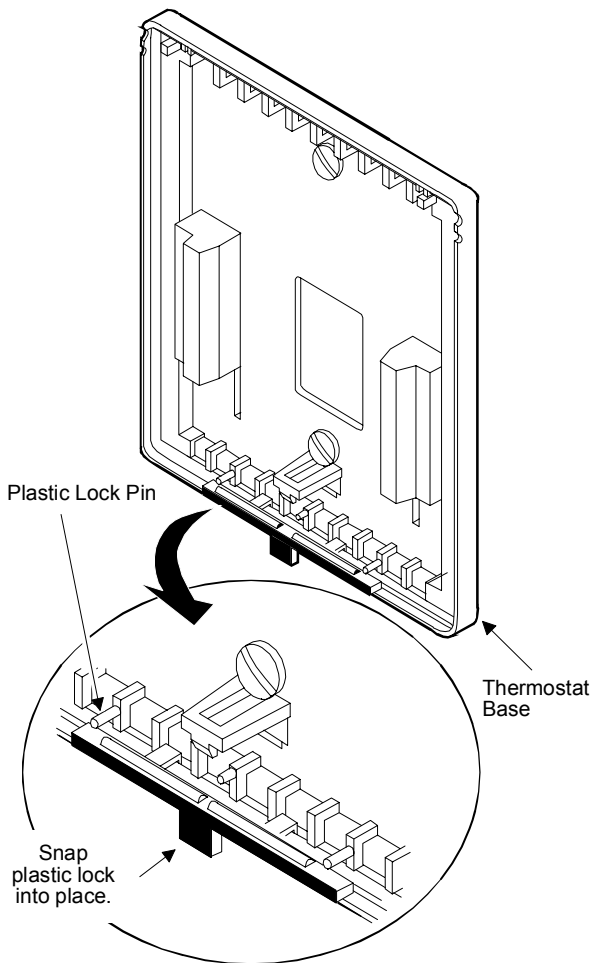**Figure 5**: **Installing the Thermostat Lock**

*R*eattaching the Thermostat and Cover to the Installed Base

1. Position the thermostat inside the cover and attach on the hinged tabs located at the top of the base.

2. Swing the thermostat and cover down, and press on the bottom center edge until they snap in place. (See Figure 6.)
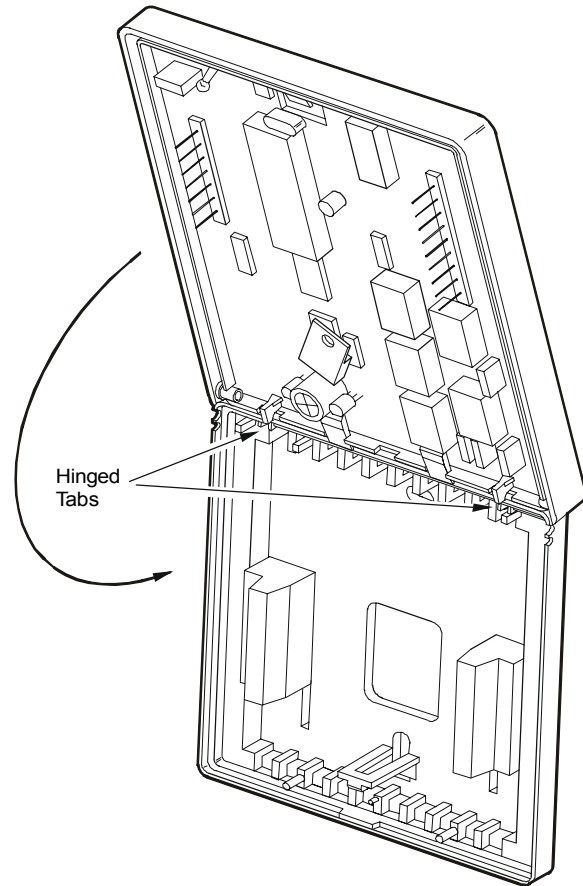

Figure 6: Installing the T500 Thermostat

*D*IP Switch Selections

> ⚠ CAUTION: **Equipment Damage Hazard.**
> Before selecting a minimum
> on/off time, ensure the
> equipment can tolerate the
> following maximum hourly cycle
> rates: 7.5 cycles per hour when
> using 4-minute on/off, or
> 15 cycles per hour when using
> 2-minute on/off.

Table 1: T500HCN-1 DIP Switch Selections

DIP Switch	Switch Selection	Description
1	On	Allows 2-minute minimum on/off time for heating or cooling equipment.
	Off	Allows 4-minute minimum on/off time for heating or cooling equipment.
2	On	Locks the keyboard, disabling buttons to prevent tampering. (Only the **Outdoor** and ∨ and ∧ buttons will function. See *Setting the Thermostat, Changing Settings While the Keyboard is Locked* and *Temporary Override While the Keyboard is Locked* in this bulletin.)
	Off	Unlocks the keyboard.
3	On	In heating mode, allows the fan to delay with the plenum switch with a call for heat. However, in cooling mode, allows the fan to operate immediately with a call for cooling.
	Off	In heating or cooling mode, allows the fan to operate immediately with a call for heat or cooling.

Table 2: T500HPN-1 DIP Switch Selections

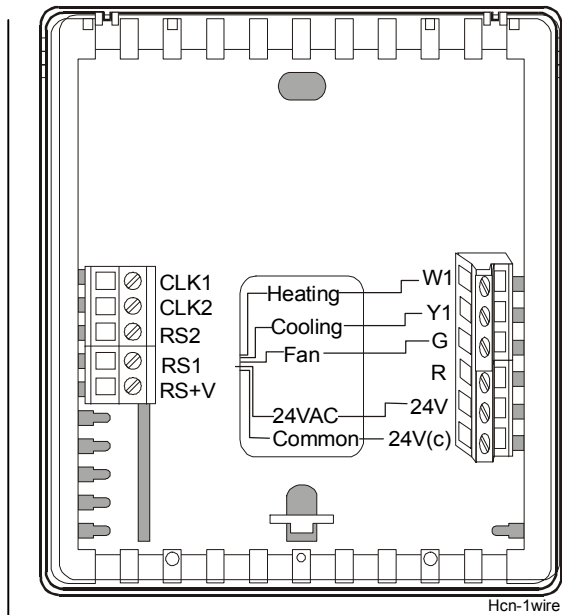| DIP Switch	Switch Selection	Description
1	On	Compressor/Auxiliary Interlocked: Turns off the compressor when the auxiliary heat is on. The compressor will remain off for two minutes after the auxiliary heat is turned off to ensure that the heat pump coil has cooled.
	Off	Compressor/Auxiliary Normal: Allows the compressor and auxiliary heat to be on simultaneously.
2	Not used	Not used. Switch should remain in the off position.
3	On	Allows 2-minute minimum on/off time for heating or cooling equipment.
	Off	Allows 4-minute minimum on/off time for heating or cooling equipment.
4	On	Locks the keyboard, disabling buttons to prevent tampering. (Only the **Outdoor** and ∨ and ∧ buttons will function. See *Setting the Thermostat, Changing Settings While the Keyboard is Locked,* and *Temporary Override While the Keyboard is Locked* in this bulletin.)
	Off	Unlocks the keyboard.
5	On	Minimizes the use of auxiliary heat by disabling the auxiliary heat when the room temperature is within 0.5° of the setpoint and not allowing a forced "On" of the equipment.
	Off	Allows a forced "On" of the equipment by allowing the user to raise the setpoint over 2° above the room temperature.
6	On	Allows multi-stage heating or cooling.
	Off	Allows single-stage heating or cooling.
7	LED 1 icon off/on (See Table 7.)	Optional selection: LCD icon comes on with LED 1.
8	LED 2 icon off/on (See Table 7.)	Optional selection: LCD icon comes on with LED 2.

Table 3: T500MSN-1 DIP Switch Selections

DIP Switch	Switch Selection	Description
1	On	Allows 2-minute minimum on/off time for heating or cooling equipment.
	Off	Allows 4-minute minimum on/off time for heating or cooling equipment.
2	On	Locks the keyboard, disabling buttons to prevent tampering. (Only the **Outdoor** and ∨ and ∧ buttons will function. See *Setting the Thermostat, Changing Settings While the Keyboard is Locked,* and *Temporary Override While the Keyboard is Locked* in this bulletin.)
	Off	Unlocks the keyboard.
3	On	In heating mode, allows the fan to delay with the plenum switch with a call for heat. However, in cooling mode, allows the fan to operate immediately with a call for cooling.
	Off	In heating mode or cooling mode, allows the fan to operate immediately with a call for heat or cooling.
4	On	Allows multi-stage heating or cooling.
	Off	Allows single-stage heating or cooling.
5	LED 1 icon off/on (See Table 7.)	Optional selection: LCD icon comes on with LED 1.
6	LED 2 icon off/on (See Table 7.)	Optional selection: LCD icon comes on with LED 2.

Heat/Cool: 4 Minute Minimum On/Off — Heat/Cool: 2 Minute Minimum On/Off

Keyboard Unlocked — Keyboard Locked

Fan Immediate with Call for Heat — Fan On with Plenum Temperature Switch
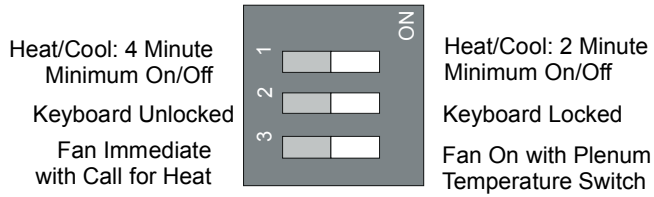
Figure 7: T500HCN-1 Factory-Set DIP Switch Settings (All Off)

Hcn-1wire

Figure 8: T500HCN-1 Wiring Configuration

Table 4: T500HCN-1 Output Terminal Designations

Terminal	Function
W1	Energizes on call for heating
Y1	Energizes on call for cooling
G	Energizes fan on call for heating or cooling or by pressing the **Fan** button
R	Independent switching voltage
24V	24 VAC from equipment transformer
24V(c)	24 VAC (common) from equipment transformer
CLK1 **CLK2**	Connections for remote clock/timer for alternate setpoints
RS2 **RS1** **RS+V**	Connections for outdoor air temperature or indoor remote sensors; refer to instructions included with sensors

Compressor/Auxiliary Normal	1	Compressor/Auxiliary Interlocked
Not Used	2	Not Used
Heat/Cool: 4 Minute (Minimum On)	3	Heat/Cool: 2 Minute (Minimum On)
Keyboard Unlocked	4	Keyboard Locked
Economy	5	Comfort
Single Stage	6	Multi-stage
LED 1 Icon Off	7	LED 1 Icon (Filter)
LED 2 Icon Off	8	LED 2 Icon (Wrench/Fault)
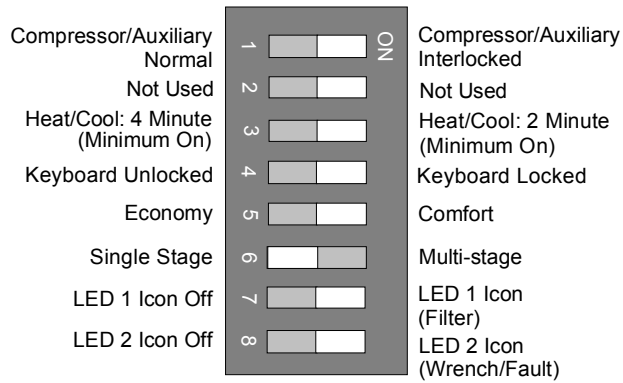
Figure 9: T500HPN-1 Factory-Set DIP Switch Settings
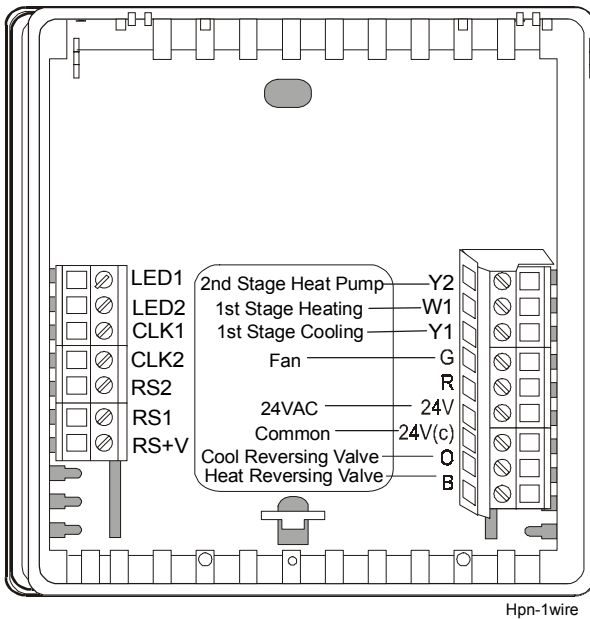
Hpn-1wire
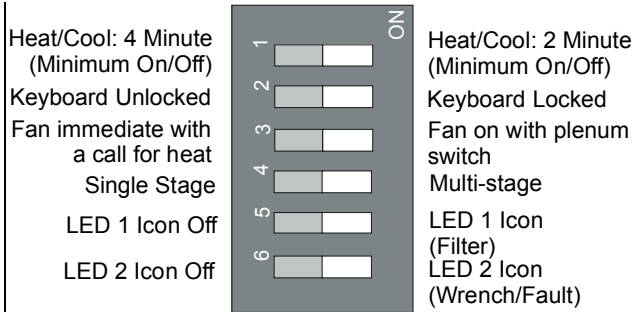
Figure 10: T500HPN-1 Wiring Configuration

Table 5: T500HPN-1 Output Terminal Designations

| Terminal	Function
Y2	Energizes compressor No. 2 on a call for second-stage heating or cooling
W1	Energizes auxiliary stage heat as third-stage heating or emergency heat
Y1	Energizes compressor No. 1 on a call for second-stage heating or cooling
G	Energizes fan on a call for heating or cooling or by pressing **Fan** button
R	Independent switching voltage
24V	24 VAC from equipment transformer
24V(c)	24 VAC (common) from equipment transformer
LED 1 **LED 2**	Input connection that energizes LED 1 or LED 2 from remote status device (See Figure 10 and Table 7.)
CLK1 **CLK2**	Connections for remote clock/timer for alternate setpoints
RS2 **RS1** **RS+V**	Connections for outdoor air temperature or indoor remote sensors; refer to instructions included with sensors
O	Energizes reversing valve in the cooling mode
B	Energizes reversing valve in the heating mode

Figure 11: T500MSN-1 Factory-Set DIP Switch Settings

Heat/Cool: 4 Minute (Minimum On/Off) — Heat/Cool: 2 Minute (Minimum On/Off)
Keyboard Unlocked — Keyboard Locked
Fan immediate with a call for heat — Fan on with plenum switch
Single Stage — Multi-stage
LED 1 Icon Off — LED 1 Icon (Filter)
LED 2 Icon Off — LED 2 Icon (Wrench/Fault)
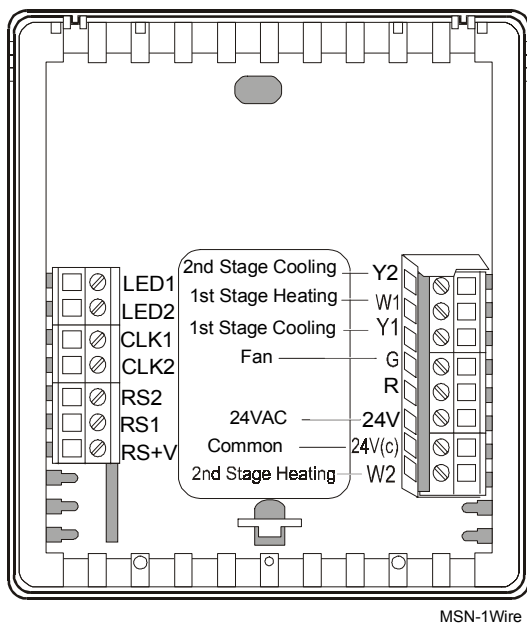
Figure 12: T500MSN-1 Wiring Configuration

2nd Stage Cooling — Y2
1st Stage Heating — W1
1st Stage Cooling — Y1
Fan — G
— R
24VAC — 24V
Common — 24V(c)
2nd Stage Heating — W2

LED1
LED2
CLK1
CLK2
RS2
RS1
RS+V

MSN-1Wire

Table 6: T500MSN-1 Output Terminal Designations

| Terminal	Function
W2	Energizes on a call for second-stage heat
Y2	Energizes on a call for second-stage cooling
W1	Energizes on a call for first-stage heat
Y1	Energizes on a call for first-stage cooling
G	Energizes fan on call for heating or cooling or by pressing the **Fan** button
R	Independent switching voltage
24V	24 VAC from equipment transformer
24V(c)	24 VAC (common) from equipment transformer
LED 1 **LED 2**	Input connection that energizes LED 1 or LED 2 from remote status device (See Figure 12 and Table 7.)
CLK1 **CLK2**	Connections for remote clock/timer for alternate setpoints
RS2 **RS1** **RS+V**	Connection for outdoor temperature sensor and/or indoor remote sensor option; refer to instructions included with sensors

*W*iring Diagrams

If the transformer (T2) is to power all of the loads R and 24V must be connected by inserting jumper JP1 located above the relays. If a separate 24V transformer (T1) is to be used, remove the jumper JP1 to disconnect R and 24V(c).
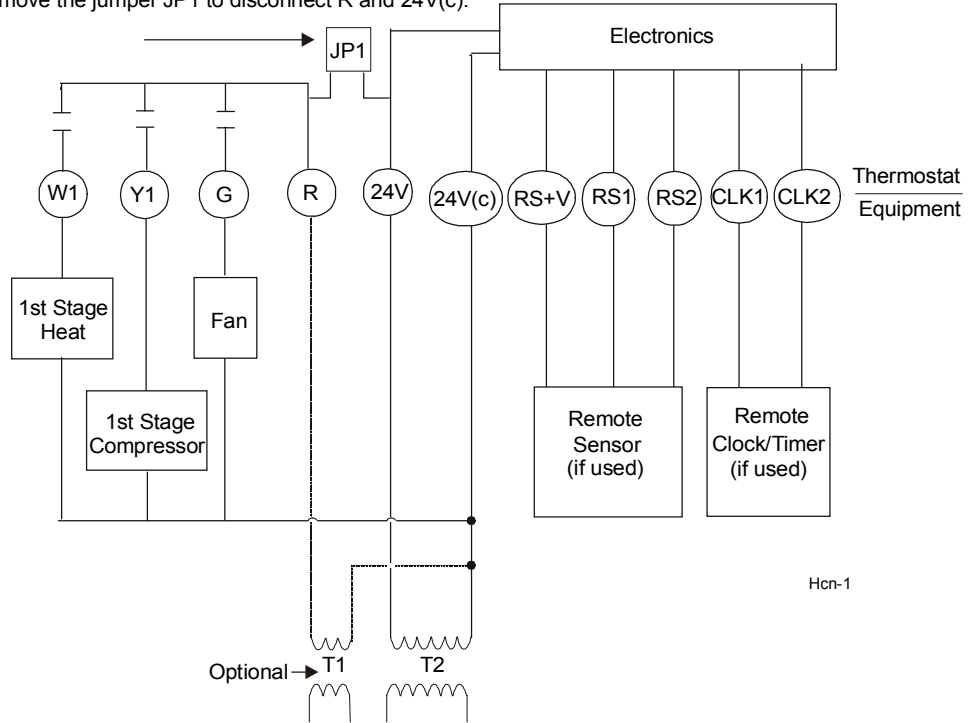
Figure 13: T500HCN-1 Wiring Schematic

If the transcriptformer (T2) is to power all of the loads
R and 24V must be connected by inserting jumper JP1
 located above the relays. If a separate 24V transformer
(T1) is to be used remove the jumper JP1 to disconnect R and 24V(c).
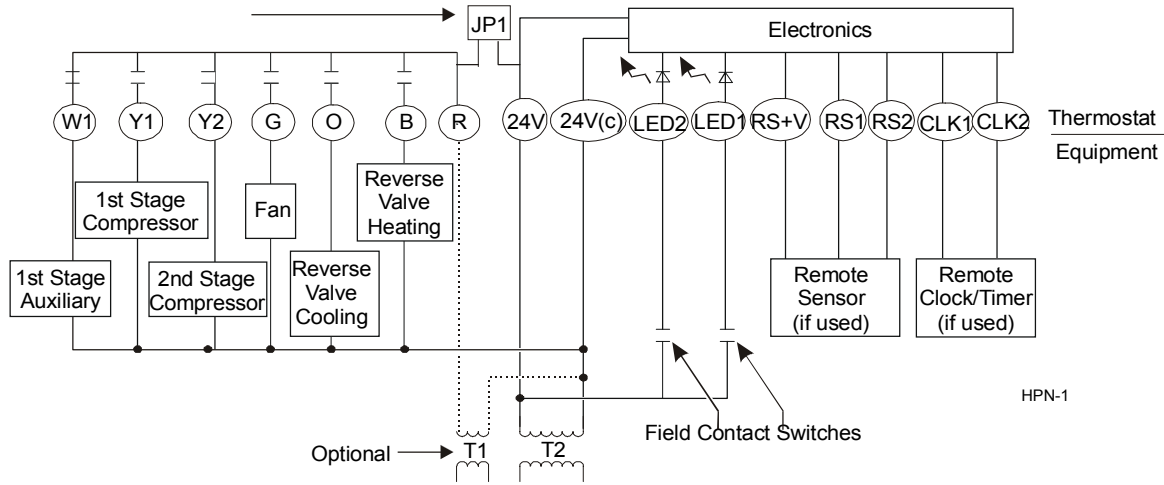
Figure 14: T500HPN-1 Wiring Schematic

If the transformer (T2) is to power all of the loads R and 24V
must be connected by inserting jumper JP1 located above
the relays. If a separate 24V transformer (T1) is to
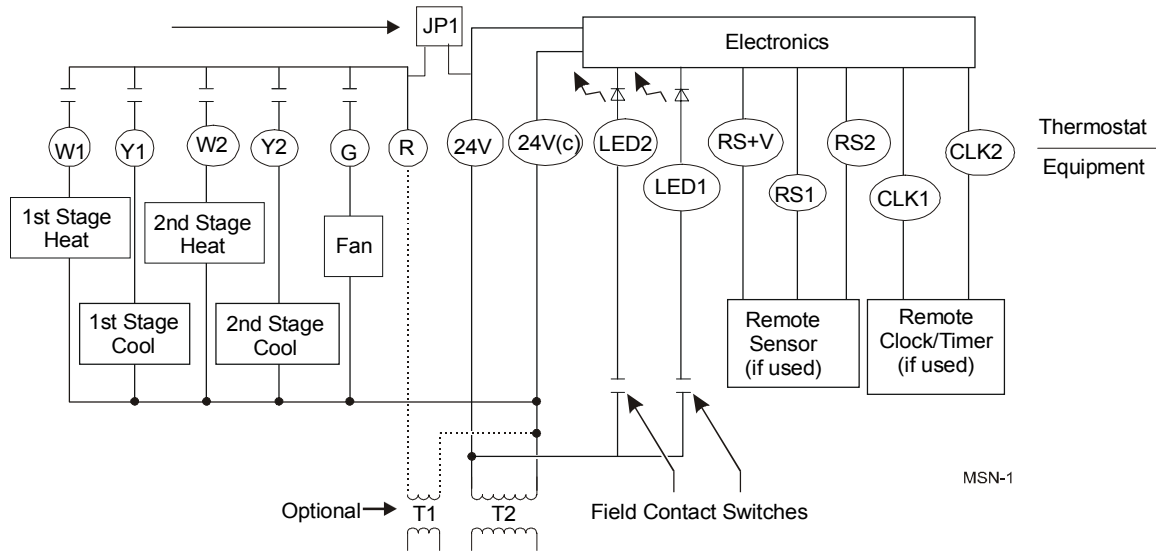be used, remove the jumper JP1 to disconnect R and 24V(c).

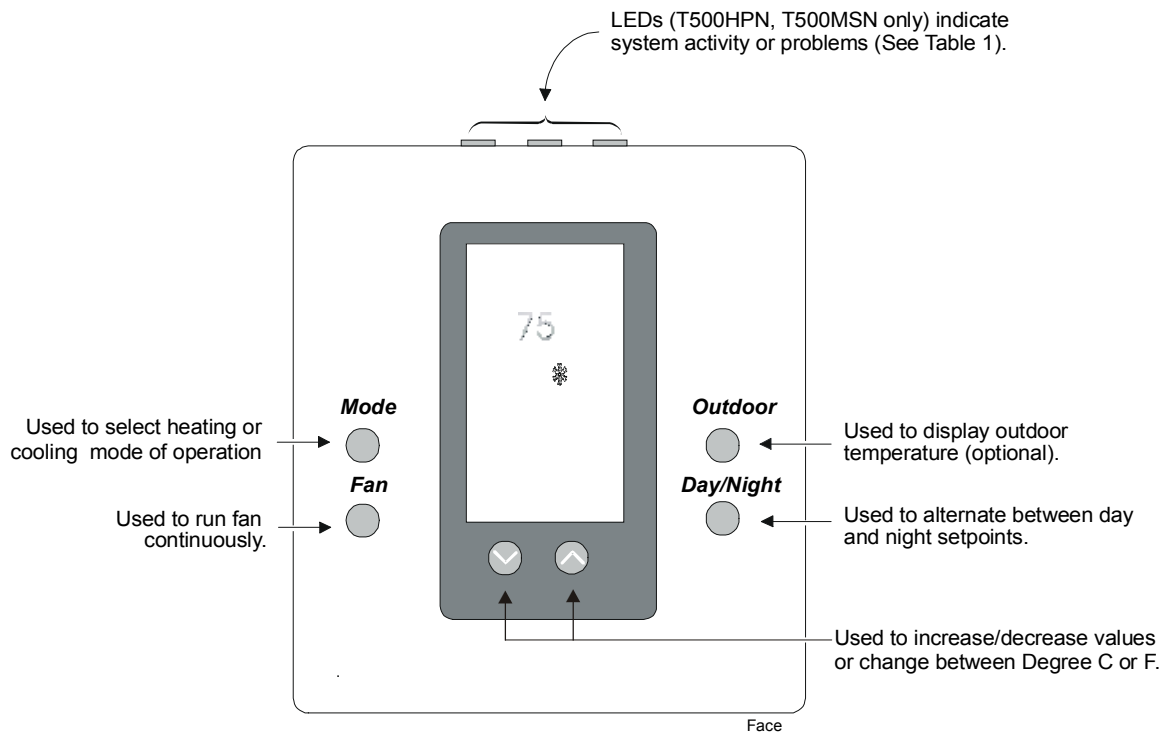**Figure 15: T500MSN-1 Wiring Schematic**

Commissioning

The thermostat normally displays room temperature and mode of operation (whether cooling ❄ or heating ♨ is currently on).

Table 7: LED Indicators (T500MSN-1, T500HPN-1 only)

LED Position	Function
Left	Indicates filter needs changing. Controlled by external switch on LED 1. Display of the filter symbol can be enabled; see Table 2 and Table 3.
Center	(T500HPN-1 only) Indicates when highest stage heat is activated. Internally controlled.
Right	Indicates a fault. Controlled by external switch on LED 2. Display of the wrench symbol can be enabled; see Table 2 and Table 3.

Thermostat Operation Overview

LEDs (T500HPN, T500MSN only) indicate system activity or problems (See Table 1).

Mode Used to select heating or cooling mode of operation

Fan Used to run fan continuously.

Outdoor Used to display outdoor temperature (optional).

Day/Night Used to alternate between day and night setpoints.

Used to increase/decrease values or change between Degree C or F.

Face

Figure 16: T500 Non-Programmable Pushbuttons

Mode

Repeated pressing of the **Mode** button allows selection from four modes of operation (five for the T500HPN-1/Heat Pump model):

- When the **Snowflake** symbol ❅ and the word **COOL** are displayed, the thermostat is in the cooling mode. When the thermostat is calling for cooling, the snowflake will flash.

- When the **Flame** symbol ♨ and the word **HEAT** are displayed, the thermostat is in the heating mode. When the thermostat is calling for heating, the flame will flash.

- When the **Flame** symbol ♨ and **E Ht** (emergency heat) are displayed, the thermostat will control using the emergency heat with the compressor locked out. (T500HPN-1/Heat Pump only.)

- When the **Snowflake** ❅ and the **Flame** ♨ symbols and word **AUTO** are displayed, the thermostat will automatically change over between heating and cooling.

Note: The thermostat never allows less than a 1°C (2°F) difference between cooling and heating setpoints.

- When **OFF** is displayed, the equipment will not operate.

Note: Use caution when using the **OFF** mode in extremely cold weather.

Celsius/Fahrenheit

Press the ∨ and ∧ buttons simultaneously to alternate between Celsius and Fahrenheit display.

Fan ☀≈

If continuous fan is not selected, the fan will operate automatically and the fan symbol will be off. To select continuous fan operation, press the **Fan** button. The Fan symbol ☀≈ will be displayed. (See Figure 17.)
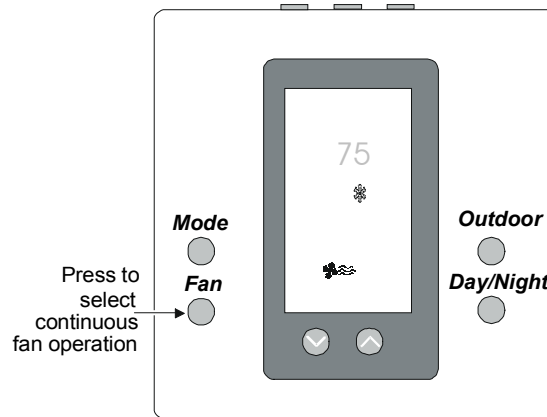

Figure 17: Selecting Continuous Fan Operation

Outdoor Button

When an outdoor temperature sensor (order separately) is connected to the T500 thermostat, you can display the current outdoor temperature by pressing the **Outdoor** button. If the sensor option is not connected, the thermostat will display "— —".

See the *Ordering Information* section.

Day/Night Button ☼ ☾

When the T500 thermostat is first installed or after a power loss, the display will show the **Day** symbol ☼, the temperature, and the mode. To select an alternate or **Night** ☾ temperature:

- Press the **Day/Night** button, **or**

- Install a time clock using the CLK1 and CLK2 terminals, to activate the thermostat's night mode. (The T500 Thermostat will remember the night mode setpoint.) See *Options: Clock Terminals CLK1 - CLK2.*

Setting the Thermostat

1. Press the **Day/Night** button until ☼ is displayed.

2. Set the mode to cooling ❄.

3. Select the desired temperature for equipment to maintain while in the cooling mode using the ∨ or ∧ buttons. The cooling setpoint range is 16 to 40°C (60 to 108°F).

4. Set the mode to heat 🔥.

5. Select the desired temperature for equipment to maintain while in the heating mode using the ∨ or ∧ buttons. The heating setpoint range is 5 to 30°C (38 to 88°F).

6. Press the **Day/Night** button until ☾ is displayed and repeat Steps 2 through 5.

Changing Settings While the Keyboard is Locked

To change settings while the DIP switch is set to lock the keyboard:

1. Open the thermostat and switch the DIP switch to unlock the keyboard. (See Table 1, Table 2, and Table 3). Close the thermostat.

2. Make the necessary changes.

3. Open the thermostat and switch the DIP switch to lock the keyboard again. Close the thermostat.

Temporary Override While the Keyboard is Locked

To alter the setpoint while the DIP switch is set to lock the keyboard, press the ∨ or ∧ buttons to alter the setpoint ± 3°C or ± 6°F. This will temporarily change the setting for 1 hour. If the setpoint is altered while in night mode, the thermostat will change to the day mode setting.

Sensor Calibration (Fan/10 Seconds)

The internal and remote sensors can be calibrated to eliminate wire resistance errors or to match another reference.

1. Press and hold the **Fan** button for 10 seconds.

2. Adjust the temperature with the ∨ or ∧ buttons. The temperature is shown on the lower display to the hundredths place. For example, 72°F on the large display is shown as 72 13.

Options

Clock Terminals CLK1 - CLK2

The T500 thermostat has a contact closure for a clock/timer to allow the use of alternate heating and cooling setpoints.

When the contact is open, the day symbol ☼ is displayed and the thermostat controls to the day setpoint. When the contact is closed, the **Night** symbol ☾ is displayed and the thermostat controls to the night setpoint.

Pressing the **Day/Night** button when the thermostat is in night mode will switch the thermostat to the day mode, even if a clock/timer is used. The CLK contacts on the thermostat are parallel with the thermostat contacts and will change to the next command given by the clock. Therefore, if the thermostat is in night mode (contacts closed) and the thermostat is switched to the day mode (contacts open), then at the next clock control time the thermostat will stay in the day mode.

Remote Sensor

The indoor remote sensor allows the T500 to be mounted away from the controlled space, and allows use of multiple sensors for temperature averaging. Order separately. See *Table 10: Optional Accessories*.

Outdoor Sensor

Order separately. See *Table 10: Optional Accessories*.

Power Failures

In the event of a power failure, the thermostat will retain setpoints. When power is restored, it will continue normal operation and will not require resetting unless power was lost when the thermostat was in the night mode, in which case it will return to the day mode.

*F*uzzy Logic Control

Over time, the T500 learns how long it takes the system to meet the load. If the system can change the room temperature quickly, the T500 allows the thermostat to drift further from setpoint before starting the equipment. If the system takes a longer period of time to change the room temperature, it will not allow the temperature to drift as far from setpoint. The T500 also takes into account the minimum On/Off times.

The 2-minute On/Off time allows the equipment to cycle more frequently at smaller differentials than the 4-minute On/Off time.

For multi-stage applications, the T500 does not bring on the next stage of cooling or heating if it knows that the system can change the temperature by 6 degrees in 1 hour, or 1 degree in 10 minutes. To verify thermostat operation, force the next stage on by changing the setpoint by more than 2 degrees.

*V*erification

To verify proper functioning of the thermostat:

1. Press the **Mode** button to select the heat or cool mode. (See Figure 18.)

2. Press the ∨ or ∧ buttons to raise the setpoint above or below the current ambient temperature. The thermostat should call for either heating or cooling, and should activate the fan.

If the equipment does not come on, proceed to the *Troubleshooting* section.

Note: If you are using the T500HPN-1 and DIP switch number 5 is in the "on" position, the auxiliary heat will not come on when the setpoint is raised more than two degrees above room temperature (See Table 2.) Move the switch to the "off" position to force on the auxiliary heat when the setpoint is raised.
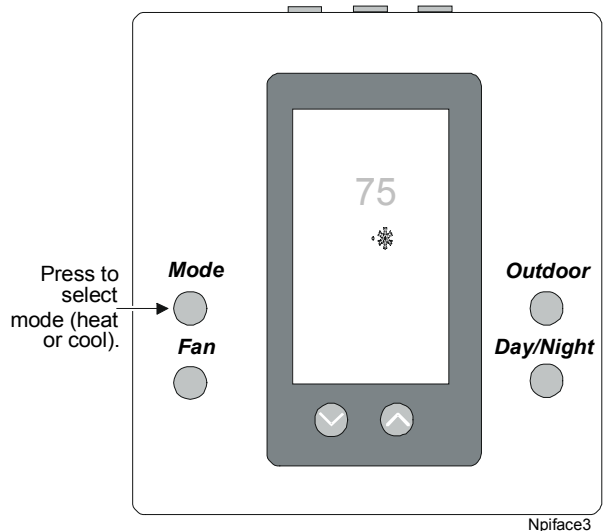
Figure 18: Verifying Proper Operation

*T*roubleshooting

Table 8: Troubleshooting

Symptom	Possible Cause	Corrective Action
No display/faint display ...	Supply voltage incorrect	Use a voltmeter to check the voltage between the 24V and 24V(c) terminals. Voltage should be between 20-30 VAC. If voltage is less than 20 VAC, disconnect the thermostat and check the voltage between 24V and the other system wires; see possible causes below. If voltage is greater than 30 VAC, troubleshoot the power source and replace the thermostat.
	System transformer weak or overloaded	Check and/or replace with a suitable 24V transformer.
	Thermostat damaged because system voltage was greater than 30 VAC	Replace with new thermostat, and ensure new thermostat is isolated from the system using suitable relays and a transformer of the proper rating.
Keyboard inoperative ...	Keyboard locked	Switch the keyboard DIP switch to the unlocked position.
Thermostat will not call for heat ...	Short cycle delay still in progress	Wait 4 minutes, equipment short cycle protection in progress.
	Thermostat setpoint is satisfied	Raise the heating setpoint using the ∧ button.
	T500HPN-1 ONLY: If DIP switch number 5 is in the "on" position, the auxiliary heat will not come on when the setpoint is raised more than two degrees above room temperature. (See Table 2.)	Move the switch to the "off" position to force on the auxiliary heat when the setpoint is raised.
Thermostat will not call for cooling ...	Short cycle delay still in progress	Wait 4 minutes, equipment short cycle protection in progress.
	Thermostat setpoint is satisfied	Lower the cooling setpoint using the ∨ button.
Fan does not turn on with the system ...	Fan failure	Place a jumper between Terminals R and G. Fan should come on. If it does not, troubleshoot the fan system. If fan does come on, replace the thermostat.
"AC" is displayed on the LCD ...	20-30 VAC absent from R and C terminals	Using a voltmeter, measure voltage between the 24V and 24V(c) terminals. If the reading is less than 20 VAC, check system transformer. If the voltage is between 20-30 VAC, replace the thermostat. * The Non-Programmable T500 Thermostats do not have a supercap back up. The "AC" on the LCD will therefore never flash.
LCD shows missing or extra segments ...	LCD failure	Replace the unit.

*O*rdering information

Table 9: Ordering Information

Item	Product Code Number
Non-programmable Thermostat, Single-stage, 1 Heat, 1 Cool	T500HCN-1
Non-programmable Thermostat, Multi-stage, 2 Heat, 2 Cool	T500MSN-1
Non-programmable Thermostat, Heat Pump, 2 Compressors with Auxiliary Heat	T500HPN-1

*A*ccessories

Table 10: Optional Accessories (including mounting hardware)

Item	Product Code Number
Remote Indoor Air Temperature Communication Module with Integral Sensor	SEN-500-1
Outdoor Air Temperature Communication Module with Outdoor Air Sensor	SEN-500-2
Outdoor Air Temperature Communication Module with Duct Mount Sensor	SEN-500-3

*R*eplacement and Repair Parts

The SEN-500 series of products allows for easy replacement of the sensor. For a replacement sensor, contact the nearest Johnson Controls branch office or wholesale distributor and order using the information from *Table 10: Optional Accessories* and *Table 11: Replacement Parts*.

Table 11: Replacement Parts

Item	Product Code Number
Replacement Outdoor Air Temperature Communication Module	SEN-500-603
Replacement Outdoor Air Temperature Sensor (includes mounting hardware)	SEN-500-604
Replacement Duct Mount Temperature Sensor (includes mounting hardware)	SEN-500-605

Table 12: Repair Parts

Item	Product Code Number
3 in. Sensor Probe (use with outdoor air sensor)	SEN-500-601
8 in. Sensor Probe (use with duct mount sensor)	SEN-500-602

Notes

Specifications

Product	T500HCN-1, T500MSN-1, T500HPN-1
Power Requirements	20-30 VAC, 50/60 Hz, 24 VAC nominal
Relay Contact Rating	Maximum Inductive: 1 ampere with surges to 3 amperes, 24 VAC Class 2 Maximum Resistive: 1 ampere, 24 VDC (2000 VA Maximum for all outputs) Minimum: 10 uA for 24 VAC circuit; 10 mA for 24 VDC circuit
Recommended Wire Size	24-18 gauge
Thermostat Measurement Range	0 to 48°C (28 to 124°F)
Outdoor Air Temperature Indication Range	-48 to 48°C (-50 to 124°F)
Control Range	Heating: 5 to 30°C in 1° steps; 38 to 88°F in 1° steps Cooling: 16 to 40°C in 1° steps; 60 to 108°F in 1° steps
Display Resolution	1C or 1F
Minimum Deadband	1°C or 2°F between heating and cooling
°C/°F Conversion	20°C = 68°F, each Celsius degree above or below 20°C = 2°F
Ambient Operating Conditions	0 to 55°C (32 to 131°F), 5 to 90% RH non-condensing
Ambient Storage Conditions	-34 to 55°C (-30 to 131°F)
Dimensions (H x W x D)	114.3 x 101.6 x 22.2 mm (4 1/2 x 4 x 7/8 in.)
Shipping Weight	0.171 kg (0.37 lb)
FCC Compliance	This equipment has been tested and found to comply with the limits for a Class A digital device and verified to Class B pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products

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This device complies with Class A Part 15 of the FCC rules. It was also verified to Class B. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.
This Class A digital apparatus meets all of the requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numerique de la Classe A respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

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