Direct Damper Control

User / Installer Manual Model T200WLD and R80DWL

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The Wireless Thermostat, T200WLD, automatically controls airflow into a space wirelessly using a wirelessly controlled, modulating damper installed in the duct supplying airflow to the space. The thermostat maintains the temperature using the system mode and setpoint temperature set by the user, and the space temperature.

- Automatically controls airflow based on selected system mode - Heat, Cool or Off.
- Wireless range is 125' in a home or building.
- 7-day programmable schedule for daytime and nighttime airflow control. Automatically lower airflow on days when a space is not used.
- A home Address can be used when two or more installations are within 300' of one another.
- Dampers are powered by 24VAC transformer. 40VA transformer can power 10 dampers.
- Control airflow to home offices, garages, multi-media rooms or unused bedrooms.
- Control airflow to conference rooms, spare offices or any space that is not used continuously.
- Control airflow to spaces and eliminate overheating and overcooling and provide improved comfort.
- Thermostat is battery operated and requires no wiring.



Model T200WLD Wireless Thermostat

Model R80DWLXX Wireless Control Damper

Caution! Direct Damper Controls are not an alternative to zoning. Installing too many controls on a single HVAC system could cause airflow and pressure problems.



USER Operation

The thermostat communicates with the wireless damper installed in the duct leading to the space. The thermostat monitors the space temperature, the setpoint temperature and System Mode setting.

For most applications, set the System Mode to Off and the Thermostat Mode to Hold. When the room is in use, set the System Mode to Heat or Cool to correspond to the HVAC equipment setting. Adjust the setpoint temperature to automatically adjust the airflow to achieve the desired space temperature. When the room is unoccupied, change the System Mode back to Off so the energy saving Off Airflow Level is used.

Off Operation

The thermostat sets the Airflow to the Off Airflow Level selected in the Installer options.

Heat Operation

If the setpoint temperature is higher than the space temperature, the thermostat makes periodic adjustments to the damper to increase the airflow to provide more heating to the space. If the setpoint temperature is lower than the space temperature, the thermostat makes periodic adjustments to the airflow to provide less heating airflow to the space.

Cooling Operation

If the setpoint temperature is lower than the space temperature, the thermostat makes periodic adjustments to increase the airflow to provide more cooling to the space. If the setpoint temperature is higher than the space temperature, the thermostat makes periodic adjustments to the airflow to provide less cooling airflow to the space.

Select System Mode

There are 3 system modes - Off, Heat or Cool. The System Mode selected by the user needs to correspond to the current system mode of the HVAC equipment.



Press the **SYSTEM** key to display Off, Heat or Cool.

OFF MODE

In Off Mode, the thermostat sets the airflow to the Off Airflow Level set by the installer - Installer Option 10.

HEAT MODE

Ensure that the HVAC equipment is in Heating before setting the system mode to Heat. Not doing so will cause the thermostat to improperly adjust the damper and will result in discomfort in the space.

COOL MODE

Ensure that the HVAC equipment is in Cooling before setting the system mode to Cool. Not doing so will cause the thermostat to improperly adjust the damper and will result in discomfort in the space.

Select Thermostat Mode

There are 2 Thermostat Modes - Hold and Schedule. Hold mode is used in most applications. The Schedule mode may be used for commercial applications.



Press the **MODE** key to display **Hold** or **Schedule**.

HOLD MODE

In Hold mode the thermostat adjusts the airflow based on the setpoint temperature set by the user and System Mode selected, Heat or Cool.

SCHEDULE MODE

In Schedule mode the thermostat uses the factory or user set schedule(s) to adjust the airflow at a specific time to the Nighttime Airflow Level set by the installer - Installer Option 9. The System Mode, Heat or Cool, should correspond to the HVAC equipment system setting.

Overriding the Night or Off Operation



To adjust the temperature during Nighttime operation, press the **UP** or **DOWN** key. After 2 hours, the thermostat returns to Nighttime operation.

Ensure that the system mode selected corresponds to the HVAC equipment setting.

Set The Time Of Day



Press the **MENU** key to display

Press the UP and Down keys to set the hour and AM or PM.

Press the NEXT key to set the

Press the UP and DOWN keys to set the minute.

Press the **NEXT** key to set the day of the week.

Press the UP and DOWN keys to set the day of the week.

Press the ENTER key to save and return to normal operation.

Changing the Daytime/Nighttime Schedule

Using the Schedule mode and setting a daytime/nighttime schedule specific to your application can save you energy by using the Nighttime Airflow Level.. In Schedule mode the thermostat will use the Nighttime Airflow Level set by the installer may be used in some commercial applications. Follow the steps to set the start time for Daytime Airflow control and the start time for Nighttime Airflow Control. The schedule can then be applied to selected days of the week.



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> Press the **MENU** key twice to display the schedule / daytime start hour.

SET DAYTIME START SCHEDULE



Press the UP and DOWN keys toset the Daytime start hour.

Press the NEXT key to set the minute.

Press the UP and DOWN keys to set the minute (15 minute

Press the **NEXT** key to set the

increments).

Nighttime start hour.

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Changing the Daytime/Nighttime Schedule (Cont)

SET NIGHTTIME START SCHEDULE



Press the UP and DOWN keys to set the Nighttime start hour.

Press the NEXT key to set the minute.



Press the UP and DOWN keys to set the minute (15 minute increments).

Press the NEXT key to set the days of the week for the schedule iust entered.

APPLY SCHEDULE TO DAYS OF THE WEEK



All days are displayed. The number in the upper right corner shows the day of the week being selected or deselected. 1 is Monday, 2 is Tuesday, etc.

Press the NEXT key to move through the days of the week. Stop on the day of the week you would like to deselect.

Press the **DOWN** key to deselect the day. UP key selects the day.

Press the ENTER key to save and return to normal operation.

To program a Daytime and Nighttime Schedule for the days deselected, repeat the steps outlined in Changing the Daytime /Nighttime Schedule and deselect the days that were previously selected. The new schedule will be applied to those days selected.

The factory default schedule

	Start Day Schedule	Start Night Schedule
Monday	7:00AM	9:00PM
Tuesday	7:00AM	9:00PM
Wednesday	7:00AM	9:00PM
Thursday	7:00AM	9:00PM
Friday	7:00AM	9:00PM
Saturday	7:00AM	9:00PM
Sunday	7:00AM	9:00PM

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Calibrating the Temperature Sensor



Press the **MENU** key three times until the temperature is displayed.

Press the **UP** or **DOWN** key to adjust the temperature to the temperature that the user feels is correct.

Press the **ENTER** key to save and return to normal operation.

Displaying Schedule



Press and hold the **MENU** key to display the schedule.

Press the **NEXT** key to display the Day and Night schedule for each day of the week.

Press the **CANCEL** key to return to normal operation.

Low Battery Indication



When battery voltage drops from 3.3V down to 2.5V, the LCD will alternately display "Lo" in place of the Inside temperature, and the LCD backlighting is turned off to extend battery life. The wireless communication continues to operate but the range is reduced.

Batteries should be replaced with AA alkaline or lithium batteries.

Installing Batteries

Slide the battery cover off and install two AA lithium or alkaline batteries. Install the batteries with the positive terminals to the right as shown. Replace the battery cover.



INSTALLER

A CAUTIONS

- Read and follow all instructions carefully.
- Read entire manual before installing products.
- Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes.
- Use cautions when mounting components to surfaces that may have concealed wiring beneath the surface.
- Ensure that the installation process does not alter the damper in a way that will cause interference to the blade moving freely.

Caution! Direct Damper Controls are not an alternative to zoning. Installing too many controls on a single HVAC system could cause airflow and pressure problems.

1) Remove the Subbase Before Installation

Hold the sub-base with one hand, press the case as shown below and pull the bottom of the thermostat from the sub-base.



2) Installing the Subbase

The thermostat can be installed on any interior wall approximately 5 feet above the floor. To insure accurate reading of the space temperature, the thermostat should not be in direct sunlight.

Install the subbase using two #8 or #6 sheet metal screws with wall anchors where required. Level the thermostat for appearance.



3) Installing the Batteries

Slide the battery cover off and install two AA lithium or alkaline batteries. Install the batteries with the positive terminals to the right as shown. Replace the battery cover.



INSTALLER OPTIONS

Option	Description	Default
01	Zone number Range 1 to 8	1
02	Home Address number Range 1 to 8	1
03	Dead-band Differential Range 1 to 5 ^o F	1ºF
04	Update interval Range 5 to 30 minutes	10 minutes
05	LCD back-light control Range 0- On with key	On with key stroke
06	High setpoint limit Range 60 to 90 ^o F	80°F
07	Low setpoint limit Range 55 to 80ºF	65°F
08	Damper factor Range 0- 8%/F 1-16%/F	0- 8%/F
09	Night airflow Range 0 to 100%	50%
10	Off airflow Range 0 to 100%	50%

Accessing Installer Options

Access installer options by pressing and holding the unmarked key below the System key for seven seconds. The LCD will display Option 01 for setting the Zone number.

Press or hold the **NEXT** key to advance to the next option. The LCD will advance to Option 10 and return to Option 01. Press the **CANCEL** key to exit the option selections. Press the **ENTER** key to save all options.



Press and hold the unmarked key for seven seconds to access the installer options.

Option 01 will be displayed.

02 Changing the Home Address Number

The Home address is used when two or more installations are within 300' of one another. This allows neighbors, different departments or floors to use the wireless thermostats and not interfere with each other. Skip to Option 04 if no other user groups are nearby.

Press the **UP/DOWN** keys to set the Home Address number for the thermostat from Home 1 to 8. If multiple departments are installing wireless thermostats, each department should use a



different Home number to insure the Damper in another department is not inadvertently changed.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit the installer options, or press the **CANCEL** key to exit installer options without saving.

03 Setting Deadband Temperature

The difference between the setpoint and room temperature must exceed the deadband temperature before the thermostat makes an adjustment to the airflow. If the deadband is set for 1 degree, the room temperature must be more than 1 degree warmer or cooler than the setpoint temperature before the damper position is changed

Press the **UP/DOWN** keys to set the Deadband Temperature. Range is 1 to 5 degrees.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit



the installer options, or press the **CANCEL** key to exit installer options without saving.

04 Set Update Time Interval

The Update Time Interval determines how often the thermostat sends data to the wireless damper actuator. Shorter times will use more battery life and provide faster response to temperature



changes. The default setting of 10 minutes is a good compromise in battery life and responsiveness.

Press the **UP/DOWN** keys to set the Update Time from 5 to 30 minutes.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.



01 Changing Zone Number

If only one wireless thermostat is used in the installation, the default Zone 01 and Home Address 01 can be used. Skip to Option 03. If multiple wireless thermostats are used, each thermostat and damper have to be programmed with a unique Zone number. The first thermostat can use the factory set Zone 01 and Home Address 01.

Press the **UP/DOWN** keys to set the Zone number for the thermostat from Zone 1 to 8.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit



the installer options, or press the **CANCEL** key to exit installer options without saving.

05 LCD Backlight

Skip this option. The LCD uses LEDs to light the display. Battery operated thermostats light the LCD only when a key is pressed to maintain battery life. This option is set to 00 and cannot be changed.



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CANCEL NEXT

Option

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Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.

06 Set High Setpoint Limit

The High Setpoint Limit is the highest setpoint temperature the user can set.



Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.

07 Set Low Setpoint Limit

The Low Setpoint Limit is the lowest setpoint temperature the user can set.

Press the **UP/DOWN** keys to set the Low Setpoint Limit from 55 to 80 degrees.



Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.

08 Set Damper Factor

The Damper position is adjusted proportional to the differential between setpoint and room temperatures. The Damper Factor is the percent change in damper position or airflow for one degree of temperature differential.



Press the $\ensuremath{\text{UP/DOWN}}$ keys to set the Damper Factor from 8% to 16%.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.

09 Set Nighttime Airflow

The Nighttime Airflow is the airflow level that is automatically set when using the scheduled nighttime setback. The lower airflow reduces energy consumption.



Press the **UP/DOWN** keys to set the Nighttime Airflow from 0% to 100%.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.

10 Set Off Airflow Level

The Off Airflow is the airflow level that is automatically set when the System is set to Off. The lower airflow reduces energy consumption.



Press the **UP/DOWN** keys to set the Off Airflow from 0% to 100%.

Press the **NEXT** key to go to the next option. Or, press the **ENTER** key to save and exit installer options, or press the **CANCEL** key to exit installer options without saving.

1) Damper Installation

The damper or dampers controlling airflow to the space should be installed in the supply duct providing airflow to the space. In commercial installations the damper can be installed into the supply diffuser.

The dampers should be mechanically supported and sealed after installation. Although the dampers can be installed in any orientation, it is desirable to install them where the LED indicators on the damper actuators can be seen to verify they are opening and closing.

2) Damper Wiring

The dampers are factory set for Zone1 and Address 1.

The dampers are powered by 24VAC and require only 2.8VA when operating and only 1VA when holding.

A 40VA transformer can power up to 10 dampers.



Damper Wiring (Continued)

- Solid green LED indicates open damper position.
- Solid red LED indicates closed damper position.
- Green and red LEDs blinking indicates damper is in a modulated position.
- Power Failure When power is restored, the damper will go to a fully open position and resume communication with the Remote Control.

The Remote Control will automatically refresh the position of the dampers every 15 minutes to the last set airflow provided the Remote Control is powered and within 125' of the damper.

3) Testing Communication

Use the steps below to test the installation to insure the dampers are wired and set properly.

- 1. Turn power On to the actuator and observe the dampers go to the fully open position and the Green LED turns On.
- 2. Press the System key to display Heat. Press the Down key until the setpoint temperature is several degrees lower than the Inside Temperature. The damper goes to the closed position and the Red LED is On.
- 3. Press the **Up** key until the setpoint temperature is several degrees higher than the Inside Temperature. The damper goes to the fully open position indicated by the Green LED on or a modulated position indicated by the Green and Red LEDs blinking.

Changing the Damper Zone Number

The dampers are factory set for Zone1 and Address 1 and only need to be changed when more than one thermostat is used in an installation.

> Push button switch

1. Press and hold the pushbutton switch and the green LED blinks once, pauses and blinks twice, pauses and blinks three times, etc. Release the switch after the number of blinks corresponding to the Zone number to be set.

The zone number can be reset at any time.



Green LED

Changing the Damper Home Address

The dampers are factory set for Address 1 and only need to be changed when two or more installations are within 300' of one another.



Red LED

The Address number can be reset at any time.

1. Turn power Off to the actuator.

2. Press and hold the pushbutton

once, pauses and blinks twice,

Release the switch after the number of blinks corresponding to

the Address to be set.

pauses and blinks three times, etc.

Setting Bypass

The R80DWL Damper actuator has a Close position limit that can be used to insure minimum airflow even when the damper has been set to 0% Airflow. The minimum Close Position can be set from about 50% closed to fully closed.



Set the damper to the fully open position by applying 24VAC to 24VAC terminals.

Loosen the set screw and rotate the Close Cam clockwise and gently tighten the set screw. With the cam set in the fully counter clockwise position, the damper will completely close. In the fully clockwise position, the damper will close to about 50% closed allowing some air to pass even when the user sets the damper to fully closed. Replace the cam cover.



Limited 5-Year Warranty

The 5-year warranty is limited to the repair or replacement of defective product due to parts failure or defective workmanship. 26072 Merit Circle #110 / Laguna Hills, CA 92653 949-916-0945 Fax 949-458-8502 www.eControlsUSA.com