

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Dayton® LCD Programmable Wireless Thermostat

Description

The RF Remote Control Programmable Thermostat has LCD display; 5-1-1 (Mo-Fr, Sa, Su) programming with 4 time zones for each program. Programmed temperature range from 41°F to 95°F, in step of 0.5°F.

Unpacking

1. Remove all packing items applied to thermostat for shipment.
2. Remove all items from carton.
3. Check all items for shipping damage. If thermostat is damaged, promptly inform dealer where you purchased thermostat.

Features

- Voltage supply – 3.0 VDC; AA alkaline batteries (2).
- Temperature measuring – 32° to 99°F (0° to 39.5°C); Resolution: 1°F (0.5°C)
- LCD display for Day, Time, Real Temperature/Control Temperature.
- LCD display for HEAT/COOL/ AUTO/OFF control. Fan ON/AUTO.
- 5-1-1 (Mon-Fri, Sa, Su) with 4 time zone programming.
- Temporary Override of a running Program temperature until next program time meets.
- Permanent Override maintains room temperature at a specific temperature for long-term period.
- Defrost indicator for room temperature below 41°F (5°C).
- Low battery indicator for battery level at or below 2.6 V.
- Transmit indicator stays on when RF signal is being transmitted.
- 12/24 selectable.
- Span +2/-1°F (+1/-0.5°C) for HEAT/COOL/AUTO mode.
- Dual Set point control in AUTO mode.
- Up to 512 addresses can be chosen by the user.
- Filter Over-use Alert – FILTER indicator will flash automatically when the fan/blower is operated over a specific value.
- Usage Alert – USAGE indicator will flash automatically when the heater/ cooler is operated over a specific value.

Operation

USER INTERFACE

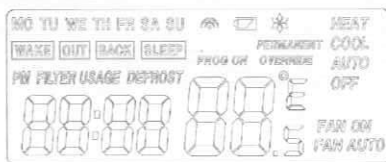


Figure 1 – LCD

PUSH BUTTONS

Description	Symbol
Up	▲
Down	▼
System	SYS
Fan	FAN
Day/Time	D/T
Program	PROG
On/Off	ON/OFF
Return	RTN
Reset	RST

DIP SWITCHES

- Long Cycle Delay is approximately 4 – 5 minutes and Short Cycle Delay is approximately 5 – 10 seconds.
- Switch 1 – To select °C or °F temperature (On: °F, Off: °C)
- Switch 2 – To select between Electrical Heating System and Gas Heating System (On: HG, Off: HE)
- Switch 3-11 – To set the Transmitter address
- Switch 12 – No use

DEFAULT SETTING AFTER RESET

1. Real temperature: °F/°C; Real Temperature will be displayed after ~5 seconds.
2. Control Temperature: Degree : 70°F (21°C) (HEAT); 75°F (24°C) (COOL).
3. Normal Time: 12:00 AM/MO (12 HR display format).
4. Default Control Mode: System Off Mode.
5. Default Fan Mode: Auto Mode.
6. Default Program Mode: Program OFF.

NORMAL TIME MODE (NT)

After reset or battery replacement, the controller enters the NT mode with real temperature, current time (default: 12:00 AM & MO) displayed at the LCD; "System" set at OFF; "Fan" set at FAN AUTO.

DAY/TIME SETTING MODE

TIME AND DAY SETTING

1. At Normal Time mode, press [D/T] key to enter Day/Time setting mode.
2. "HH:MM" starts flashing. Press [▲/▼] to change current minutes. Hold for 10-minute fast advance changes.
3. Press [D/T] again, current "Day" is flashing. Press [▲/▼] to change current day. Hold for faster changes.
4. Press RTN to return to Normal Time Mode.
5. Auto-return to Normal Time Mode if no key input for 10 sec.

12-HOUR OR 24-HOUR SYSTEM

Press [D/T] key for 2 seconds in Normal Time mode to toggle between 12-hour and 24-hour system.

PROGRAM SETTING MODE

See chart below for default program settings.

	MO-FR (HEAT/COOL)	SA (HEAT/COOL)	SU (HEAT/COOL)
WAKE	06:00 am 70°F/75°F (21°C/24°C)	08:00 am 70°F/75°F (21°C/24°C)	08:00 am 70°F/75°F (21°C/24°C)
OUT	08:00 am 62°F/83°F (17°C/28°C)	10:00 am 62°F/83°F (17°C/28°C)	10:00 am 62°F/83°F (17°C/28°C)
BACK	06:00 pm 70°F/75°F (21°C/24°C)	06:00 pm 70°F/75°F (21°C/24°C)	06:00 pm 70°F/75°F (21°C/24°C)
NIGHT	10:00 pm 62°F/78°F (17°C/26°C)	11:00 pm 62°F/78°F (17°C/26°C)	11:00 pm 62°F/78°F (17°C/26°C)

MODIFYING THE PROGRAM SETTINGS

1. At Normal Time mode, press [PROG] key to enter Program Setting mode.
2. The first program slot will be displayed. Icons "MO TU WE TH FR" & "WAKE" will be on, "HH:MM" will flash.
3. Press [▲/▼] to change program minutes. The program minutes is set in increments of 10 minutes. Hold for fast advance changes. Press "PROG" to select. Control Temperature and HEAT icon will flash.
4. Press [▲/▼] to change control temperature for heat. Hold for faster changes. Press [SYS] to toggle the Control Temperature for cool (COOL icon will flash).

5. Press [▲/▼] to change control temperature for cool. Hold for fast advance changes. Press [PROG] to select.
6. The next program slot will be displayed. Icons "MO TU WE TH FR" and "OUT" will be on, "HH:MM" will flash. Repeat steps 2, 3, 4 to change the program settings for other program slot.
7. If necessary, press [ON/OFF] to disable programming of the current program slot. "--:--" will be seen to indicate current program slot is disabled. Press [ON/OFF] again to enable programming of the current program slot.
8. Press [RTN] to return to Normal Time Mode at any time.
9. Auto-return to Normal Time Mode if no key input for 10 sec.

ACTIVATING PROGRAM ON MODE

At startup, the default program mode is off; that is, the thermostat is in Permanent Override mode. Press [ON/OFF] to toggle between Program On mode and Permanent Override mode.

MANUAL OVERRIDE MODE

1. When program is On and System is at Heat or Cool, press [▲] or [▼] to temporarily override program settings.
2. In AUTO mode, press [▲] or [▼] to modify the heat set point. Press [SYS] to set the cool set point. The minimum difference between HEAT & COOL Set point is preset to 5°F (3°C).
3. Manual override mode maintains until next program time is met.

PERMANENT OVERRIDE MODE

When the room temperature should be maintained at a certain temperature for a long time, Permanent Override Mode should be used. Press [ON/OFF] to toggle between Program On mode and Permanent Override mode.

FILTER AND SYSTEM USAGE

Every time the Fan is activated, the number of running hours is counted. When the counter value reaches the Filter Usage check interval, "FILTER" icon will flash to indicate it is time to check the air filter.

Every time either HEAT or COOL is activated, the number of running hours is counted. When the counter value reaches the System Usage value, "Usage" icon will flash to indicate that the Heating or Cooling system has been run for a certain number of hours.

The value of Filter Usage check period and System Usage can be set from 0-3000 hours, in an interval of 100 hours. (If the value is set to 0 hr, the counter is disabled.) To modify the Filter Usage check period:

1. Hold [PROG] for 2 seconds in normal time mode.
2. "FILTER" icon is shown and "1500hr" (default) flashes on the screen.
3. Press [▲] / [▼] to modify the setting.
4. Press [RTN] to confirm new setting.
5. "Usage" icon is shown and "1500hr" (default) flashes on the screen.
6. Press [▲] / [▼] to modify the setting.
7. Press [RTN] to confirm new setting and return to normal mode.

Hold [FAN] key for 2 seconds, the Filter Usage counter is shown. Release [FAN] key, it returns to the normal mode. Hold [SYS] key for 2 seconds, the system Usage counter is shown. Release [SYS] key, it returns to the normal mode.

LOW BATTERY INDICATOR

For battery voltage level below 2.6 VDC, Low Battery indicator is ON.

Indicator is refreshed every 10 minutes and refreshed after reset.

SYSTEM MODE

SELECT SYSTEM MODE

System mode can be set by pressing [SYS] key in normal time mode. System mode is set in the sequence of:

OFF→HEAT→COOL→AUTO→OFF→ ...

System Mode	
HEAT mode	Heating will be activated when the room temperature is lower than the setting temperature.
COOL mode	Cooling will be activated when the room temperature is higher than the setting temperature.
AUTO mode	Heating or Cooling will be activated according to the Heat and Cool set point. Heat set point and Cool set point must be separated by a 5°F/3°C dead band.
OFF mode	No Heating and Cooling will be activated at any temperature.

SELECT FAN MODE

Fan mode can be set by pressing [FAN] key in normal time mode. Fan mode is set in the sequence of:

FAN AUTO → FAN ON → FAN AUTO → ...

Fan Mode	
Fan auto	Fan turns On whenever Heating or Cooling is On. (Depends on HE/HG setting)
Fan on	Fan stays On all the time.

HE/HG setting:

	HG	HE
Operated at HEAT	FAN ON	FAN OFF
Operated at COOL	FAN ON	FAN ON

TEMPERATURE MEASURING

Take reading at each 10 sec Interval. Accuracy up to ±1°F (+/-0.5°C).

Resolution: 1°F (0.5°C); 32°F to 99°F (0°C to 39.5°C).

For Temperature above 99°F (39.5°C), "--" will be displayed.

For Temperature below 32°F (0°C), "--" will be displayed.

TEMPERATURE CONTROL

When the program is on and specific program time is met, the specified control temperature will be used to determine the temperature control. One can override the control temperature by pressing [▲]/[▼] to desired control temperature.

Temperature control range:

System Mode	Fahrenheit	Celsius
HEAT MODE		
Heat Control Set point	41° to 95°	5° to 35°
COOL MODE		
Cool Control Set point	41° to 95°	5° to 35°
AUTO MODE		
Heat Control Set point	41° to 90°	5° to 32°
Cool Control Set point	46° to 95°	8° to 35°

Control resolution is 1°F (0.5°C).

- "System" set at HEAT:
 - SPAN: ±2/-1°F (+1/-0.5°C):
 - Heater ON: Real Temperature ≤ Control Temperature - 1°F (0.5°C)
 - Heater OFF: Real Temperature ≥ Control Temperature + 2°F (1°C)
- "System" set at COOL:
 - SPAN: ±2/-1°F (+1/-0.5°C):
 - Cooler ON: Real Temperature ≥ Control Temperature + 2°F (1°C)
 - Cooler OFF: Real Temperature ≤ Control Temperature - 1°F (0.5°C)
- "System" set at AUTO:

"AUTO" means the system can be switched to "HEAT" or "COOL" automatically according to the control temperature. In the Auto mode, the Cool setting temperature must be higher than the heat setting temperature with 5°F/3°C or above, but it does not restrict to the heat mode and cool mode.

 - SPAN: ±2/-1°F (+1/-0.5°C):
 - Heater ON Automatically: Real Temperature ≤ Heat Control Temperature - 1°F (0.5°C)
 - Cooler ON Automatically: Real Temperature ≥ Cool Control Temperature + 2°F (1°C)
 - Heater and Cooler both off when Real Temperature is inside the off zone (i.e. the minimum distance between the Heat & Cool Set points).

Windmill indicator starts to turn when Heat/Cool/Auto condition & delay condition are both satisfied. The windmill indicator stays on and will not turn unless the delay condition is fulfilled. The windmill indicator disappears when system is off.

Delay for Heat On and Cool On is to prevent short cycling of system.

Setting of delay dip s/w at Controller	No Delay	Delay
"System" operated at HEAT	5-10 sec.	4-5 min.
"System" operated at COOL	4-5 min.	4-5 min.

DEFROST (SYSTEM IS SET AT HEAT/AUTO)

For Real temperature below 41°F (5°C) and sufficient delay time, HEATER is always ON and COOLER is always OFF, regardless of the current control temperature set. LCD DEFROST indicator ON.

UPPER TEMPERATURE LIMIT (SYSTEM IS SET AT COOL/AUTO)

For Real temperature above 95°F (35°C) and sufficient delay time, HEATER is always OFF and COOLER is always ON, regardless of the current control temperature set.

RF COMMUNICATION

TO SETUP WITH THE RECEIVER

- Place batteries in the thermostat controller.
- Ensure the thermostat controller is in the default state (i.e. SYSTEM is set to OFF, FAN is set to AUTO). This is to ensure that the receiver can receive the correct address from the thermostat controller.
- Power up the RF receiver, push the "ON/OFF" dip switch to ON position.
- Set the thermostat FAN to ON:
 - The receiver accepts the message and stores the controller identity.
 - The SETUP and the FAN LED are ON.

The thermostat is now set to send signals to the receiver.

At any time, if you find that the RF receiver gets interference from other wireless thermostat controllers, push the SETUP dip switch of the receiver to OFF position. Then change the address code of the thermostat controller by selecting other settings of the 9 dip switches located at the back of the controller. Then reset it and repeat steps 2-4 for each new setup.
- Setup is completed. You can now set FAN key and SYSTEM key of the thermostat to desired locations.

Up to 512 addresses can be chosen by the user in case of interfering with other wireless thermostat controllers.

Transmit indicator stays on when RF signal is being transmitted. RF signal is transmitted per 10 minutes for update information.

Auto refresh the System & Fan status at the receiver every 10 minutes by RF signal. Toggling relay at receiver side to "ON" will not happen when sufficient delay time is not met.

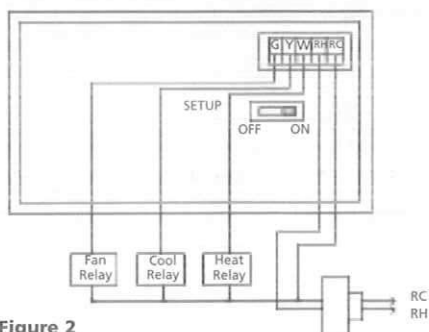


Figure 2

The RF Receiver Module provides 24 VAC control of HVAC equipment when used with the wireless thermostat controller. It can be used with 1H/1C single-zone conventional applications.

NOTE: Before resetting the transmitter, ensure the "ON/OFF" dip switch is set to "OFF" in the receiver. After resetting the transmitter, the "ON/OFF" dip switch in the receiver is set to "ON" and follows the receiver setup instruction.

FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

WARNING Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

LIMITED WARRANTY

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Prompt Disposition. A good faith effort will be made for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date, and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

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