



# OWNER'S MANUAL

# Commercial Thermostat

Part Number P274-2100

**IMPORTANT:** Read entire instructions before programming the thermostat.

## GENERAL

The Totaline® 7-day, commercial, programmable thermostats are wall-mounted, low-voltage thermostats which maintain room temperature by controlling the operation of an HVAC (heating, ventilation and air conditioning) system. Separate heating and cooling set points and auto-changeover capability allow occupied and unoccupied programming schedules for energy savings.

All thermostats allow up to 4 time/temperature settings to be programmed per 24-hr period. Each thermostat stores programs for 7 independent days. Batteries are not required. During power interruption the internal memory stores programs for an unlimited time.

## OPERATION

**Thermostat Display** — The thermostat display is located in the top center of the thermostat. See Fig. 1. The following information can be displayed on the screen:

- mode (OFF, EHEAT, COOL, AUTO, or HEAT)
- fan setting (ON or AUTO)
- hold status
- auxiliary heat status
- room temperature
- desired temperature
- clean filter status
- time of day
- day of the week
- schedule period (OC1, UN1, OC2, or UN2)
- outdoor temperature (optional)
- leaving air temperature (optional)

**Thermostat Programming Buttons and Operation** — The thermostat has programming buttons which are used to change the set points of the thermostat, set the modes, and set program schedules. The programming buttons are accessible from underneath the thermostat cover. To access the programming buttons, pull on the hinged thermostat cover. See Fig. 2. The programming buttons are: Copy Previous Day, Program, Mode, Change Day, End, Fan, Set Time/Temp, Occupied, and Hold.

The Up and Down buttons are used to change the current, desired temperature set point and to scroll through programming set points. The Up and Down buttons are accessible from the outside of the thermostat.

The daily schedule can be overridden in 3 ways: pressing the Hold button, pressing the Up and Down buttons to change the temperature set point, or pressing the Occupied button.

**PROGRAMMING BUTTON LOCKOUT** — The thermostat has a lockout feature which will not acknowledge programming buttons until the lockout code is entered. After the

lockout code has been entered, the keypad will remain unlocked until the user has stopped pressing buttons for 2 minutes. The lockout feature is configured by the installer.

**NOTE:** The lockout code sequence is Mode, Copy Previous Day, Set Time/Temp, and Hold.

**NOTE:** During lockout, the Occupied button will not be disabled.

**HOLD BUTTON OPERATION** — Pressing the Hold button disables the time and temperature schedule and holds the current desired temperature set point. When a Hold is active, the HOLD annunciator is displayed on the thermostat screen. To release the Hold, press the Hold button a second time. The Hold will remain active indefinitely.

**FAN BUTTON OPERATION** — The Fan button selects fan operation. When the fan is set to ON, the fan will run continuously for improved air circulation. When the fan is set to AUTO, the fan will run during heating and cooling operation only. During setback mode (UN1, UN2), the fan will always be in AUTO mode, unless programmed for continuous operation by the installer in set up.

**MODE BUTTON OPERATION** — The Mode button selects the operating mode of the thermostat. If OFF is selected, the thermostat will not enter Heating or Cooling mode. If HEAT is selected, the thermostat will only enter Heating mode (if the room temperature is below the heating set point). If COOL is selected, the thermostat will only enter Cooling mode (if the room temperature is above the cooling set point). If AUTO is selected, the thermostat will enter Heating or Cooling mode based on the room temperature and the heating and cooling set points. Units also have an EHEAT selection. If EHEAT is configured by installer, the unit will use the second stage of heating to provide heating if necessary. The annunciator for each selection will be displayed on the thermostat when selected.

**AUTO-CHANGEOVER** — When the thermostat mode is set to AUTO, the thermostat will provide automatic changeover from Heating to Cooling mode and Cooling to Heating mode when required. The thermostat will automatically switch to maintain the desired temperature setting. The thermostat does not need to be manually changed from heating to cooling or cooling to heating operation.

**NOTE:** It is recommended that auto-changeover mode not be used if the outdoor temperature is consistently lower than 50 F or greater than 80 F. In these cases, select heating or cooling mode only.

**SMART RECOVERY (HEATING MODE)** — The smart recovery function is designed to save energy by gradually adjusting temperatures to meet scheduled set points. The thermostat has 2 schedule modes, normal occupied mode and setback mode (a time when the space is unoccupied). The Smart Recovery function begins 1 to 1.5 hours before the scheduled occupied mode and gradually adjusts room temperature so the temperature is at the occupied mode set point when the occupied time period begins. This is more efficient than

making the system run at full capacity until the desired temperature is met.

NOTE: Smart recovery does not apply to cooling operation.

**Set Current Day** — The Change Day button will change the day shown on the thermostat display to the next day. If a schedule has been entered, the thermostat will follow the schedule of the new selected day.

**Set Current Time** — The Set Time/Temp button allows the user to change the time displayed on the thermostat. Press the Set Time/Temp button. The TIME annunciator will flash. Press the Up and Down buttons until the correct time is shown. Hold down the buttons to quickly move through the time display. The AM and PM annunciators will automatically change. To ensure the schedules are properly followed, make sure that AM or PM is correct for the time chosen. When the correct time is shown, press the End button to exit the Set Time mode.

**Reset Filter** — The Reset Filter function is initiated by pressing the Hold and Occupied buttons simultaneously. The Reset Filter function is used to clear the “Clean Filter” icon on the display screen. The “Clean Filter” icon reminds the user when it is time to change or clean the filter of the unit.

**Unoccupied Override** — The Occupied button is only active during unoccupied periods. The Occupied button is inactive during occupied periods. If the thermostat is in unoccupied mode and the user presses the Occupied button, the set points are changed to the OC1 set points for heating and cooling. The OC1 icon will flash to show the user that the thermostat is in override.

The thermostat will remain in override until the next scheduled time period or for the number of allowed override hours programmed in the thermostat configuration (Option 18) whichever comes first.

NOTE: If the set point is changed during unoccupied override, the thermostat will change the unoccupied 1 (UN1) set point.

**Programming Thermostat Schedules** — Before programming the thermostat, plan the thermostat daily schedule. The schedule is divided into 7 days (Monday through Sunday). Each day has 4 time periods (OC1, UN1, OC2, UN2). Each time period has a start time, heating set point, and cooling set point. Fill in Table 1 below as an aid to programming the daily schedules.

When choosing the times for OC1, UN1, OC2, and UN2, the following rules must be followed:

- The maximum number of hours allowed from OC1 to UN1, or from OC2 to UN2 is 12 hours. For example, if OC1 has a value of 6:00 AM and UN1 had a value of 5:00 PM, this would be acceptable. If however, OC1 has a value of 6:00 AM and UN1 has a value of 7:00 PM, this would not be acceptable because the difference is greater than 12 hours.

- The value of UN2 must be greater than or equal to the value of OC2, while the value of OC2 must be greater than or equal to the value of UN1, and the value of UN1 must be greater than or equal to OC1. For example, acceptable values would be:

OC1	UN1	OC2	UN2
6:00 AM	5:00 PM	5:00 PM	10:00 PM

In the example above, the thermostat will be occupied from 6:00 AM to 10:00 PM. However, if the following values were entered, the thermostat would not be occupied as one may expect:

OC1	UN1	OC2	UN2
6:00 AM	7:00 PM	6:00 PM	12:00 AM

In the new example, the thermostat will display UN2 from 12:00 AM to 6:00 AM, then OC1 from 6:00 AM to 6:00 PM, then OC2 from 6:00 PM to 7:00 PM, then UN1 from 7:00 PM to 12:00 AM. The thermostat, in this example, would be occupied from 6:00 AM to 7:00 PM because OC2 has a value less than the value of UN1.

**PROGRAMMING MODE** — To program the daily schedules, perform the following procedure:

1. Enter programming mode by pressing the Program button. The PROGRAMMING annunciator will appear on the thermostat display. The current day of the schedule will be displayed and the current programming time period of that day will be displayed. The TIME annunciator will flash.

NOTE: If a programming button is not pushed for 2 minutes, the thermostat will exit programming mode and any changes made will be saved.

2. Press the Up and Down buttons to set the start time for the schedule day and period shown.
3. Press the Set Time/Temp button once the correct time is shown. The TIME annunciator will stop flashing and the HEAT annunciator will flash.
4. The heating and cooling set points can now be programmed. The HEAT and COOL annunciators will flash for the heating and cooling set points respectively. The Set Time/Temp button is used to toggle between the time, heating, and cooling set points. Use the Up and Down buttons to raise and lower the temperature set points.

NOTE: There must be at least 2 degrees difference between the cooling and heating set points. The thermostat will automatically change any set points closer than 2 degrees.

5. Press the Program button to advance to the next time period.
6. Perform Steps 2 through 5 until the times and temperature set points have been entered for the entire day. Press the Change Day button to move to the schedule for the next day.

Table 1 — Daily Schedule Planner

DAY OF THE WEEK	SCHEDULE			
	OC1 Time / Heat / Cool	UN1 Time / Heat / Cool	OC2 Time / Heat / Cool	UN2 Time / Heat / Cool
Monday	/ / /	/ / /	/ / /	/ / /
Tuesday	/ / /	/ / /	/ / /	/ / /
Wednesday	/ / /	/ / /	/ / /	/ / /
Thursday	/ / /	/ / /	/ / /	/ / /
Friday	/ / /	/ / /	/ / /	/ / /
Saturday	/ / /	/ / /	/ / /	/ / /
Sunday	/ / /	/ / /	/ / /	/ / /

NOTE: The cooling temperature set point must be at least 2 degrees higher than the heating temperature set point.

7. Repeat Steps 2 through 6 to program the remaining schedule days. The Copy Previous Day button can be used to copy the previous day's schedule if the schedules are the same.
8. After all the times and set points for each day have been entered, press the End button to finish entering the schedule.

NOTE: The thermostat will continue to follow the schedule until a new one is entered. The schedule may need to be updated for different seasons or prolonged changes in temperature.

**Overriding the Schedule** — The schedule can be overridden in 3 ways: the Hold button can be pressed to lock in the current temperature setting, the Up or Down buttons can be pressed to change the desired temperature, or the Occupied button can be pressed to change the unoccupied set points to OC1. The thermostat will use new set point until the next scheduled time period starts. Once the HOLD button is

pressed, the HOLD will last indefinitely until the HOLD button is pressed again. The occupied override can be used to force the thermostat into Occupied mode.

**Display Outdoor-Air or Leaving-Air Temperature** — When the Up and Down buttons are pressed at the same time, the display will show the temperature of the sensor wired to the thermostat. The temperature is displayed for 4 seconds with the letters "od" or "LA" (outdoor sensor or leaving air sensor, respectively). The display then returns to normal. If a sensor is not connected, the thermostat has been configured for use with a remote room sensor, or the reading is out of range, then "--" is displayed.

The valid temperature range for the outdoor-air sensor is -38 to 145 F. The valid temperature range for the leaving-air sensor is -38 to 145 F.

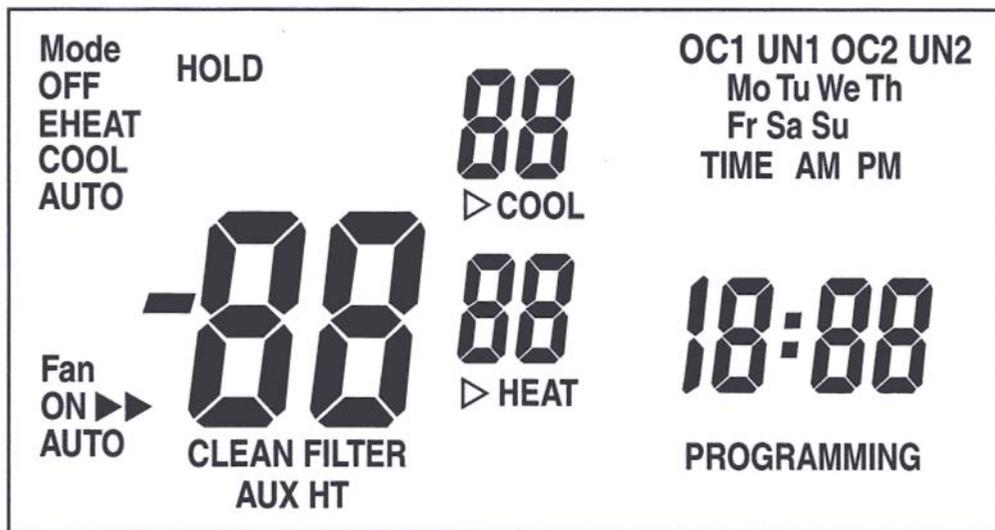


Fig. 1 — Thermostat Liquid Crystal Display

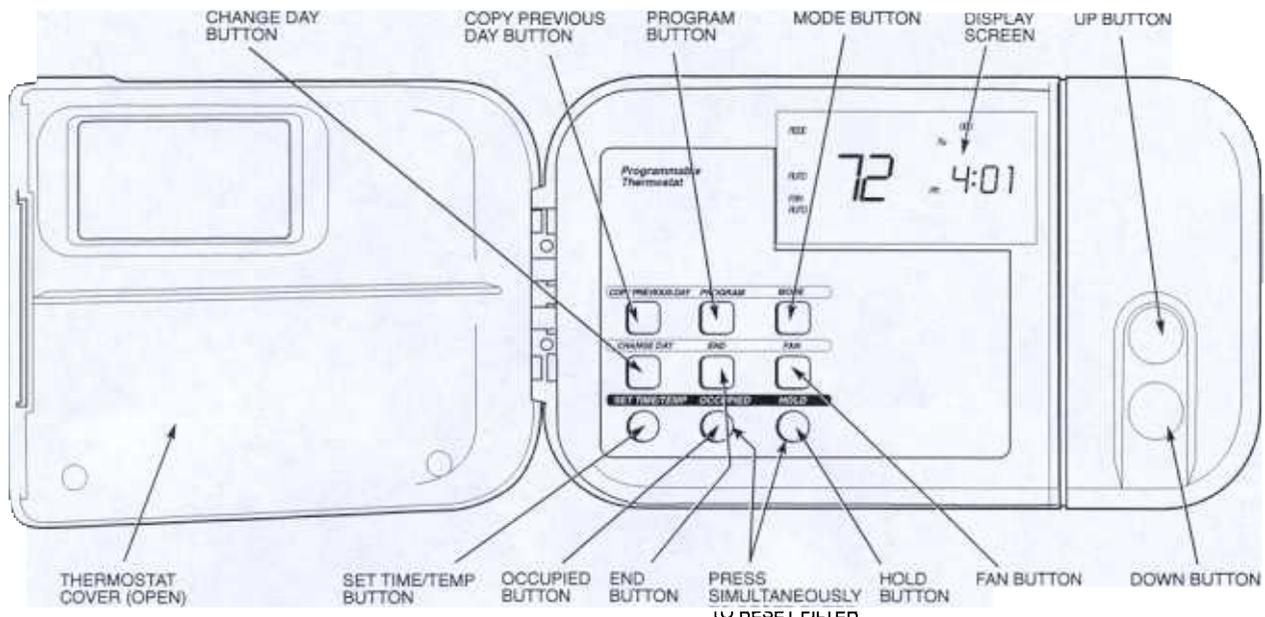


Fig. 2 — Thermostat Display and Programming Buttons

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