# Installation and Programming Guide
## Programmable Low Voltage
## Electronic Thermostat
## OTH24-AFR

## PARTS INCLUDED

• One (1) thermostat
• Two (2) 6-32 mounting screws
• Two (2) wall anchors

## ABOUT YOUR THERMOSTAT

The OTH24-AFR programmable low voltage electronic thermostat is designed to control any 24-Vac heating load. It has a terminal to connect a temperature sensor to read the floor temperature. (Floor temperature sensor not included.)

The thermostat has two (2) low-voltage outputs that can be connected using a 24-volt relay and a transformer to control electric baseboard heaters, convectors (short cycle) or forced-air convectors (long cycle), electric heating floors, water pumps and boilers.

The thermostat can run using a single output or two (2) outputs. When two outputs are used, if the first output cannot control the heating system to reach the desired setpoint, then the second output will be activated. This is ideal for rooms where the floor is the main heating element and a second heating element is used for colder days, like a baseboard under the window.

Both outputs control cycle length can be configured separately. For example, the floor heating system could be on a 15-minutes cycle using a mechanical relay and the baseboard would be on a 15-seconds cycle using an electronic relay (SSR).

The thermostat can also be used in proportional mode, where it applies a fixed duty cycle to its output.
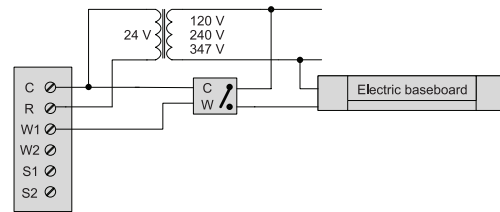
## INSTALLATION

As you are a valuable Ouellet Canada Inc. customer, we ask that you please cut the power to the heating system from the main power panel to avoid any risk of electric shocks.
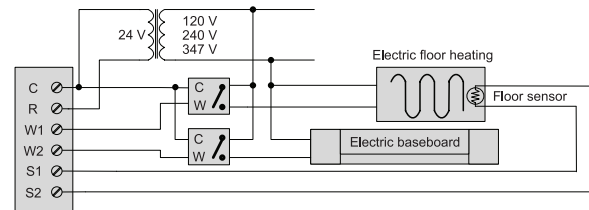
Using a square or flat screwdriver, loosen the screw a quarter turn and separate the thermostat faceplate.
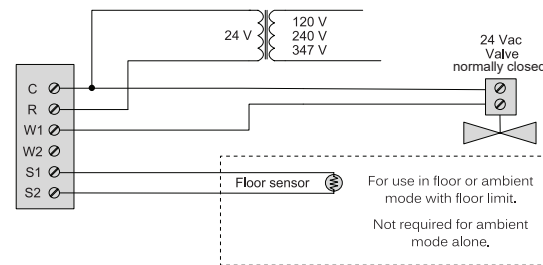
## CONNECTING YOUR THERMOSTAT

Insert each wire into its terminal according to the heating system and screw firmly. (See connection layouts outlined below.)
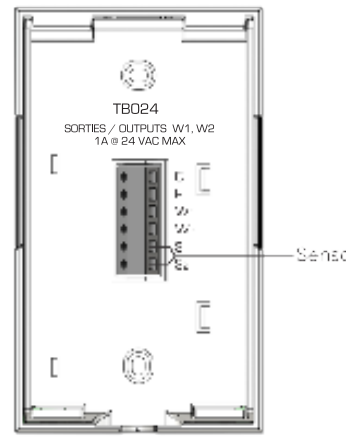
*Connection layout for an electric baseboard*

*Connection layout for an electric floor heating with electric baseboard on the 2nd heating stage*
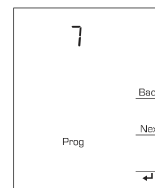
*Connection layout for a hot water valve*

*Connection of the floor sensor (optional)*

## MAIN CONFIGURATION MENU FOR INSTALLER

1. Press simultaneously the Menu button and the second-to-last button **(Next)** and hold for 5 seconds to access the installer settings.
2. Press **Up** or **Down** to change the setting displayed.
3. Press **Next** to go forward or **Back** to go back.
4. **Return** ⏎ to exit the configuration menu.

## INSTALLER SETTINGS DISPLAY ORDER

1. User interface selection:
   Programmable 7 days (7), Programmable 5/2 days (5/2), or Non programmable (NP) (Default: 7 days).

*IMPORTANT: If the "Non programmable" interface is selected in the installer settings, the time and programming schedule menus will no longer be available.*

2. Keypad lock activation (Default: Off). If the keypad is not locked, skip to Step 6.
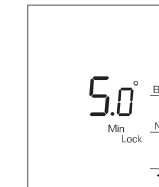
Three (3) options possible:
• **OFF:** No lock.
• **INST:** Installer menu locked, but all other functions are accessible and the setpoint is limited by lock min/max.
• **ALL:** Keypad is fully locked.

*IMPORTANT: When the lock option is activated, all thermostat functions are deactivated except temperature adjustments within the range allotted in the installer menu. The word "LOCK" appears briefly onscreen when a button is pressed. In lock mode it is impossible to access the installer menu without the 4-digit code.*

3. If lock mode is activated, you will need to enter a 4-digit code.

4. In lock mode only:
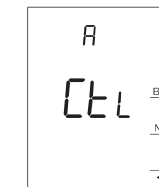   Low temperature limit for heated floor only (Default: 5 °C).

5. In lock mode only:
   High temperature limit for heated floor only (Default: 36 °C).

6. Thermostat control mode, choose between 3 modes:
   A (Air) controls using the built-in air sensor of the thermostat, F (Floor) controls using the optional floor sensor and P (proportional) controls using a fixed duty cycle without using the temperature sensors. (Default: A).

7. Main output cycle length
   Select the cycle length according to the connected load 15 seconds, 5, 10, 15, 20, 25, 30 minutes.

   The 15-seconds cycle should only be used if an electronic relay (SSR) activates the load (Default: 15 minutes).
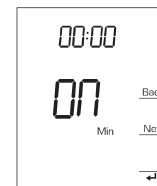
8. Second output cycle length
   Select the cycle length according to the connected load OFF, 15 seconds, 5, 10, 15, 20, 25, 30 minutes.

   The 15-seconds cycle should only be used if an electronic relay (SSR) activates the load (Default: OFF).

9. Minimum Time ON
   Defines the minimum time for which the output can be turned ON
   Used for gaz or oil system with a purge. The ON time should not be shorter than the purge time.
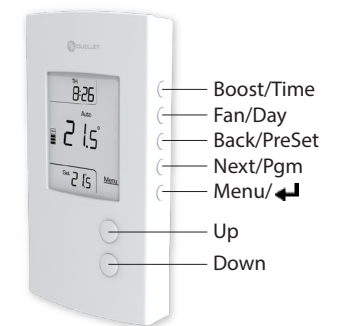   0, 30 seconds, 1, 2, 3, 4, 5 minutes (Default: 0).

10. Minimum Time OFF
    Defines the minimum time for which the output can be turned OFF
    0, 30 seconds, 1, 2, 3, 4, 5 minutes (Default: 0).

## MAIN USER CONFIGURATION MENU

Boost/Time
Fan/Day
Back/PreSet
Next/Pgm
Menu/⏎
Up
Down

### Same programming for all modes

1. Press and hold **Menu** for 5 seconds to access user settings.
2. Press **Up** or **Down** to change displayed setting.
3. Press **Next** to go forward or **Back** to go back.
4. Press **Return** ⏎ to exit the configuration menu.

*Note: The thermostat will automatically save all changes and return to the regular display if no button is pressed for 1 minute.*
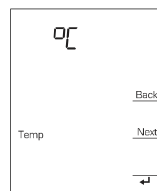
## MAIN USER CONFIGURATION MENU (cont.)

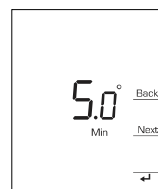**Settings display order**
A Mode: 1, 2, 3, 7, 8, 9, 10, 11, 12.
F Mode : 1, 4, 5, 6, 9, 10, 11, 12.

1. Temperature display format: °C or °F (Default: °C).



*Note : When the temperature is displayed in °C, the time is displayed in 24 hr. format. When the temperature is displayed in °F, the time is displayed in 12 hr. format.*

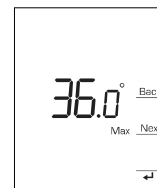2. Minimum ambient air temperature setpoint (Default: 5 °C).

3. Maximum ambient air temperature setpoint (Default: 36 °C).
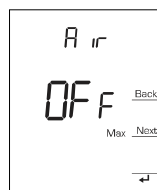


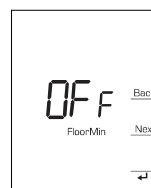4. Minimum floor temperature setpoint (Default: 5 °C).

5. Maximum floor temperature setpoint (Default: 36 °C).



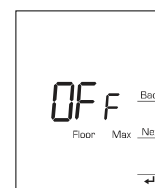6. Ambient temperature limit maximum: 5 °C to 36 °C (Defaut: OFF).



7. Floor temperature limit minimum: 5 °C to 36 °C (Default: OFF).

8. Floor temperature limit maximum: 5 °C to 36 °C (Default: OFF).



Note: *A floor sensor must be installed to access the minimum and maximum floor temperature limits.*
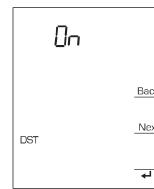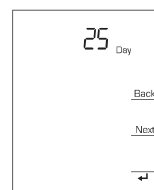
9. Automatic standard/daylight saving time adjustment (Default: Deactivated).
*Note: When the daylight saving time function is activated, the thermostat automatically switches to daylight saving time the second Sunday in March and to standard time the first Sunday in November.*

The correct date must be entered to use this function.



*If DST (daylight saving time) is activated, you can enter the year, month, and date by pressing Next (Day button is not activated).*

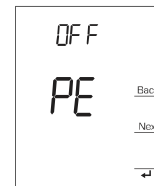Enter the year, followed by the month and day.



10. Backlighting (Default: AUTO—activates for 12 seconds after a button is pressed).



11. Pump exercise OFF / ON (Default: OFF)
If this feature is set to ON, the thermostat will activate its main output for 1 minute every 24hr. This can prevent a pump or water distribution system to seize.
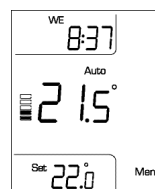


13. Early Start: OFF / ON (Default: OFF)
When activating the early start function, the thermostat will calculate how much it is needed to reach the desired temperature when running the schedule.



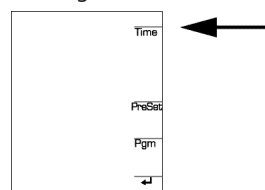## PROGRAMMING MENU
**Same programming for all modes.**

1. Press **Menu** button to access the configuration menu.
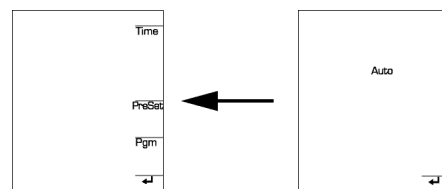


2. Setting time and date.
Press **Time** and either press **Time** again to set the time or press **Day** to set the date.
Press **Up** or **Down** to change time or date settings.



3. To access operating modes, choose **Preset.**
Then select the operating mode by pressing **Up** or **Down.** Once you have selected the mode, you can go back by hitting **Return ↵** .



**The thermostat has 4 operating modes:**
- **No freeze:** Sets temperature setpoint at 5 °C (41 °F). Perfect for a second home or cottage during prolonged absences.
- **Manual:** In this mode, all settings must be adjusted manually.
- **Automatic:** In this mode, the thermostat automatically changes the temperature settings at specific times of day. You can program it to activate up to 4 times a day.

The thermostat features 2 different programming methods (For information on choosing a programming method, see the installer settings):
5-2: One program for weekdays (Monday to Friday) and one for the weekend.
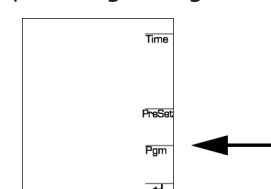7: A different program for every day of the week.

Default program

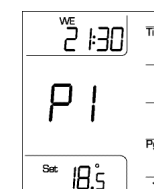| Period | | Monday to Friday | | Saturday & Sunday | |
|---|---|---|---|---|---|
| | | Start | Temperature | Start | Temperature |
| 1 | Wake | 6:00 | 21 °C (70 °F) | 6:00 | 21 °C (70 °F) |
| 2 | Leave | 8:00 | 16 °C (61 °F) | - | - |
| 3 | Return | 18:00 | 21 °C (70 °F) | - | - |
| 4 | Sleep | 22:00 | 16 °C (61 °F) | 22:00 | 16 °C (61 °F) |

- **Off:** Sleep mode. If no heating is required (e.g., summertime, cottage, etc.), you can put the thermostat in Sleep mode. Please note when this mode is activated the heater will not operate, regardless of the room or setpoint temperature.

4. To change the schedule in automatic mode, follow these steps:

In the main menu, press **Program (Pgm).**
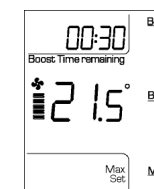


You are now in the Programming menu.



- Press **Day** to set the day.
- Press **Up** or **Down** to select the day.
- Press **Pgm** to set the period.
- Press **Up** or **Down** to select the period.
- Press **Time** to select the time.
- Press **Up** or **Down** to set the clock.
- Press **Set** to select the setpoint.
- Press **Up** or **Down** to adjust the setpoint.
- Repeat steps 3 to 10 for each period you wish to change.
- Press **Return ↵** to return to the normal display.

To copy a period and set it for every day, press and hold **Day** for 5 seconds.

To delete a period, set the setpoint below the minimum or set the time between 11:45 p.m. and 00:00.

*Note: The thermostat will automatically save all changes and return to the regular display if no button is pressed for 1 minute.*

**Boost mode functionality**
**Boost mode screen**



- The **Boost** mode is only available in Ambient mode and proportional mode.
- The **Boost** button allows you to set the heater connected through auxiliary contact to its maximum for a specific time period.
- **Boost** mode is available only in A mode.
- Every time you press the **Boost** button, the Boost mode duration increases as follows: 10 min., 20 min., 30 min., 1 hr., 2 hr., 3 hr., 4 hr., 5 hr., 6 hr., 7 hr., 8 hr.
- At the end of **Boost** mode, the thermostat returns to the previous temperature control mode. You can cancel **Boost** mode at any time by pressing **Return (Back).**

## POWER FAILURE

*Note: The following description applies only if the thermostat was running for at least 2 hours before the power failure.*

In the event of a power failure, the screen will turn off and your settings will be saved. However, if the failure exceeds 8 hours, you will have to reset the time and date. When power is restored, the thermostat will return to the operating mode in effect prior to the failure.

## TROUBLESHOOTING

**Error codes**
**E1:** The thermostat temperature sensor is defective (open).
**E2:** The thermostat temperature sensor is defective (short circuit).
**OL:** The thermostat is overheated; make sure the load is less than 15 amperes.
**HH:** The thermostat temperature sensor has detected a temperature above the setpoint range (too hot).
**LL:** The thermostat temperature sensor has detected a temperature below the setpoint range (too cold).
**E1F:** The floor temperature sensor is defective or not connected (open).
**E2F:** The floor temperature sensor is defective (short circuit). Make sure there is no short circuit in the sensor connector.
**HHF:** The floor temperature sensor has detected a temperature above the setpoint range (too hot).
**LLF:** The floor temperature sensor has detected a temperature below the setpoint range (too cold).

## TECHNICAL DATA SHEET

Voltage: 24 Vac, 50/60 Hz
Maximum load: 1 A per output
Temperature control range: 5 °C to 36 °C (41 °F to 97 °F)
Temperature display range: 0 °C to 70 °C (32 °F to 158 °F)
Resolution: 0.5 °C or 1 °F
Storage Temperature: -20 °C to 50 °C (-4 °F to 122 °F)

**This product must be installed with the floor sensor provided by the manufacturer.**

## WARRANTY
**Three (3) year limited warranty**
The manufacturer warrants the components of the product against defects in material and workmanship for a three (3) year period from the date of purchase, under normal use and service, when proof of purchase of such is provided. The obligation of the manufacturer is limited to replacement of the product (device) only and in no way whatsoever includes the cost of connecting or installing the device or replacement parts.

**CUSTOMER SERVICE**
If you have any questions about this product, please contact our technical support team:

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