

User's guide

“STE402P”

Programmable electronic thermostat



For further information or to consult this guide on line,
please visit our Web site.

INSSTE402P0807





WARNING



Before installing and operating this product, the owner and/or installer must read, understand and follow these instructions and keep them handy for future reference. If these instructions are not followed, the warranty will be considered null and void and the manufacturer deems no further responsibility for this product. Moreover, the following instructions must be adhered to in order to avoid personal injuries or property damages, serious injuries and potentially fatal electric shocks. All electric connections must be made by a qualified electrician, according to the electrical and building codes effective in your region. Do NOT connect this product to a supply source other than 120 VAC, 208 VAC or 240 VAC, and do not exceed the load limits specified. Protect the heating system with the appropriate circuit breaker or fuse. You must regularly clean dirt accumulations on the thermostat. Do NOT use fluid to clean thermostat air vents.

1. Description

The electronic thermostat STE402P can be used to control electric heating units such as electric baseboards, convectors, or aeroconvectors. It keeps the temperature of the room at the desired set point with a high degree of accuracy. It has an easy user interface and can manage up to four programming periods a day. This product is designed for installations with electrical current - with a resistive load - ranging from 1.2 A to 16.7 A (150 to 2000 W at 120 VAC, 260 to 3475 at 208 VAC and 300 to 4000 W at 240 VAC).

This thermostat is not compatible with the following installations:

- electrical current higher than 16.7 A with a resistive load (4000 W @ 240 VAC, 3475 W @ 208 VAC and 2000 W @ 120 VAC);
- electrical current lower than 1.2 A with a resistive load (300 W @ 240 VAC, 260 W @ 208 VAC and 150 W @ 120 VAC);
- inductive load (presence of a contactor or a relay); and
- central heating system.

Parts supplied:

- one (1) thermostat;
- two (2) mounting screws; and
- two (2) solderless connectors suitable for copper wires.

2. Installation


Selection of thermostat location

The thermostat must be mounted on a connection box on a wall facing the heating unit, at around 1.5 m (5 feet) above the floor level, on a section of the wall exempt from pipes or air ducts.

Do not install the thermostat in a location where temperature measurements could be altered. For example:

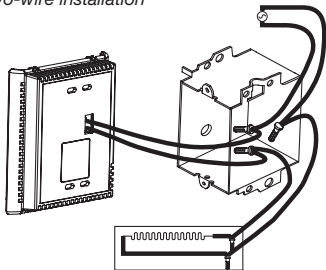
- close to a window, on an external wall, or close to a door leading outside;
- exposed directly to the light or heat of the Sun, a lamp, a fireplace or any other heat source;
- close or in front of an air outlet;
- close to concealed ducts or a chimney; and
- in a location with poor air flow (e.g. behind a door), or with frequent air draft conditions (e.g. head of stairs).

Thermostat mounting and connection

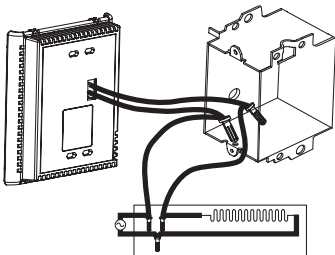
1.  **Cut off power supply on lead wires at the electrical panel in order to avoid any risk of electric shock.**
2. Ensure that the air vents of the thermostat are clean and clear of any obstruction.
3. Make the required connections using the following figures by selecting the proper type of installation (2 wires or 4 wires), and us-

ing solderless connectors. For connections with aluminium wires, you must use CO/ALR connectors. Please note that this thermostat does not have polarity, which means that any wire can be connected to the other.

Two-wire installation



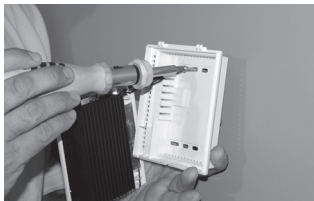
Four-wire installation



4. Using a screwdriver, loosen the screw retaining the mounting base and front part of the thermostat. Remove the front part of the thermostat from the mounting base by tilting it upward.



5. Align and secure the mounting base to the connection box using the two screws supplied.

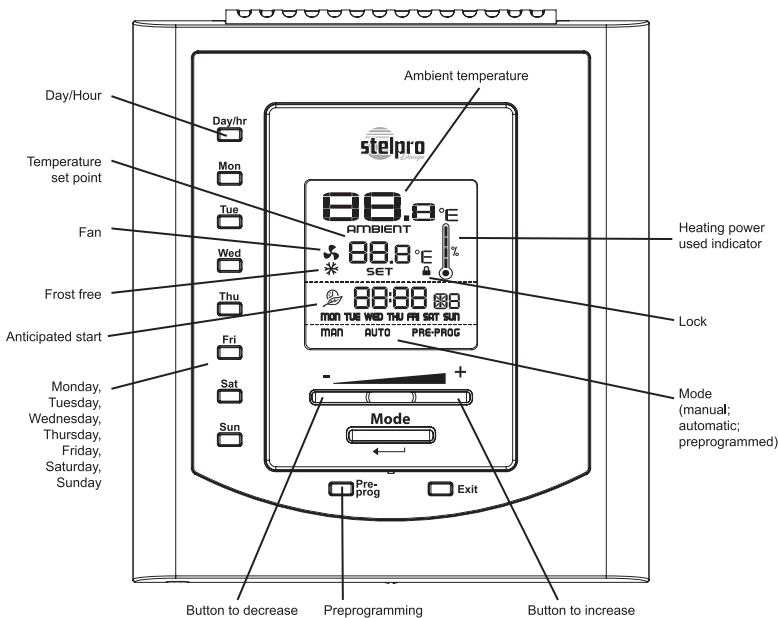


6. Reinstall the front part of the thermostat on the mounting base and tighten the screw at the bottom of the unit.



7. Turn on the power.
8. Set the thermostat to the desired setting (see the following section). **Important:** you must activate the Fan mode when the heating unit is equipped with a fan; failure of the heating unit could occur if not doing so.

3. Operation



Ambient temperature

The figures displayed above the word “AMBIENT” indicate the ambient temperature, \pm 0.5 degree. Temperature can be displayed in degrees Celsius or Fahrenheit (see “Display in degrees Celsius/Fahrenheit”).

Temperature set point

The figures displayed above the word “SET” indicate the temperature set point. It can be displayed in degrees Celsius or Fahrenheit (see “Display in degrees Celsius/Fahrenheit”).

Out of any adjustment mode, press down the + button to increase the set point, or the - button to decrease it. Set points can only be adjusted by increments of 0.5 degree. To quickly scroll through the set point values, press and hold down the button. The minimum set point is 3°C (37°F), and the maximum set point is 30°C (86°F).

Adjustment of the hour and the day of the week

Adjustment procedure of the hour and the day of the week:

1. press down the Day/Hr button, whether it is from Man, Auto or Pre Prog mode;
2. at this moment, the SET icon and the day of the week start to blink and you can adjust the day of the week using the + or - button and confirm your choice by pressing down the Mode or the Day/Hr button. You

can also press down the day of the week button desired without using the + or - button and confirm your choice using the Mode or Day/Hr button;

3. the two figures indicating the hour blink. You must adjust them using the + or - button and confirm your choice by pressing down the Mode or Day/Hr button;
4. the two figures indicating the minutes blink. You must adjust them using the + or - button and confirm your choice by pressing down the Mode or Day/Hr button. The adjustment is then completed and the thermostat returns to the previous mode.

At any time, you can exit the adjustment mode of the day and the hour using one of these 2 methods.

- 1- Press down the Exit button.
- 2- Press and hold down the Mode button.
- 3- Do not press down any button during 1 minute.

The adjustment of the hour and the day of the week can be done from any of the three modes. In case of a power failure, the thermostat is self-sufficient for 2 hours. If the failure lasts less than 2 hours, the thermostat saves the adjustment of the hour and the day of the week. When the power is restored after an extensive failure, the hour and the day of the week are recovered, but you must update them.

Display in degrees Celsius/Fahrenheit

The thermostat can display the ambient temperature and the set point in degrees Celsius (standard factory setting) or Fahrenheit.

Adjustment procedure for degree Celsius/Fahrenheit display

1. To switch from the degrees Celsius to the degrees Fahrenheit, and conversely, simultaneously press down the + and - buttons for more than 3 seconds until the SET icon starts to blink.
2. Press down the + button to switch from the degrees Celsius to the degrees Fahrenheit, and conversely. The degree Celsius or Fahrenheit symbol will be displayed.
3. When the adjustment is completed, press down the Exit button, hold down the Mode button or do not press down any button during 1 minute to exit the adjustment function.

N.B. *This adjustment can be done from any of the three principal modes. From the adjustment mode, the figures displayed at the top of the screen are only useful for the manufacturer. It is not the ambient temperature.*

Manual mode (Man)

From the Manual mode, you can manually adjust the thermostat set point by pressing down the + or - button to increase the value, or to decrease it. To quickly scroll through the set point values, press and hold down the button. The set points can range between 3 and 30°C and can only be adjusted by increments of 0.5°C (from 37 to 86°F; by increments of 1°F from the Fahrenheit mode). The thermostat will turn off if the set point is lowered below 3°C, and the set point value displayed will be OFF. The standard factory set point adjustment is 21°C. From this mode, the screen displays the temperature, the set point, the heating power used, the hour and the day of the week.

This mode is initially activated when the power is turned on for the first time. You must adjust the hour (as describe in the section “Adjustment of the hour and the day of the week”) before switching to other modes by pressing down the Mode or Pre Prog button.

Automatic mode (Auto)

To switch from the Manual mode to the Automatic mode, and conversely, press down the Mode button. The Man or Auto icon will be displayed at the bottom of the screen as applicable.

From the Automatic mode, the thermostat adjusts the set points according to the programmed periods. If no data were entered, the thermostat acts the same way as from the Manual mode and the standard factory set point adjustment is 21°C. It is always possible to manually adjust the set point using the + or - button. The selected set point will be effective until one period is programmed, which represents an hour and a day of the week. Note that if the set point is lowered to OFF, the programming will not be effective. It is possible to program 4 periods a day, which means that the set point can change automatically up to 4 times a day. The period order is not important.

From this mode, the screen displays the temperature, the set point, the heating power used, the hour, the day of the week and the current programmed period number (1 to 4; displayed on the right-hand side of the hour).

Programming procedure of the Automatic mode

1. To access the Programming mode, press down the day of the week button that you want to program (Mon to Sun). Once you release the button, the selected day of the week is displayed, the SET icon blinks and the period number 1 blinks too.

2. Select the period number (1 to 4) that you want to program using the + or - button. For each period, the hour and the set point are displayed. The hour displays --:-- and the set point displays -- if there is no programming for the period. You must confirm the period by pressing down the Mode button.
3. The two figures representing the hour blink to indicate that you can adjust them (from 00 to 23) using the + or - button. You must confirm the adjustment by pressing down the Mode button.
4. After confirmation, the figures representing the minutes (the last 2 figures) blink and you can adjust and confirm them in the same manner as described above (point 3). It should be noted that the minutes can only be adjusted by increments of 15 minutes.
5. The period set point blinks and you can adjust it using the + or - button.
6. After set point confirmation, the programming is completed. The period number increased by 1 and blinks. For example, if the previously programmed period was 1, period 2 blinks. It is then possible to continue the programming of this period by pressing down the Mode button. You can also select another period using the + or - button.
7. At the end of the period 4 programming, you automatically exit the Programming mode.

At any time, you can exit the Programming mode using one of the 3 following methods.


- 1-Press down the button of the day that you are adjusting.
- 2-Press down the button of another day to program it.
- 3-Press down the Exit button.

Moreover, if you do not press down any button for more than 1 minute, the thermostat will exit the Programming mode. In all cases, the programming is saved.

Anticipated start

This mode enables the room to reach the selected temperature at the programmed hour. In fact, the thermostat estimates the delay required to reach the set point of the next period at the programmed hour. This delay is obtained by the observation of the temperature variations in the room and the results obtained during the preceding anticipated starts. That way, the results should be increasingly precise day after day. From this mode, the thermostat displays at any time the set point (SET) of the current period. The “anticipated start” icon will blink when the anticipated start of the next period will begin.

For example, if the requested temperature between 8h00am and 10h00pm is 22°C and between 10h00pm and 8h00am is 18°C, the set point (SET) will indicate 18°C until 7h59am and will switch to 22°C at 8h00am. Thus, you will not see the progression carried out by the anticipated start, but only the desired result.

To activate or deactivate the anticipated start, the thermostat must be in the Auto or Pre Prog mode. Then, you must press down the MODE button for at least 5 seconds. The anticipated start icon () will appear or disappear to indicate the activation or the deactivation of the mode. This modification will apply to the Auto as well as the Pre Prog mode. If you modify the temperature set point manually when these modes are activated, the anticipated start of the next period will be cancelled.

N.B. *Please note that the anticipated start is initially activated when you enter the Automatic or Preprogrammed mode. Thus, you must deactivate it following the above procedure if needed.*

Copy of the programming

You can apply the programming of one day of the week to other days by copying the programming one by one or in block.

To copy the programming one by one, you must:

1. press down the source day button (*day to be copied*);
2. hold down this button and press down the destination days one by one. The screen displays the selected days as you select them. If an error occurs when you are choosing a day, press down the erroneous day again to cancel the selection;
3. after all selections are completed, release the source day button. Then, the selected days have the same programming as the source day.

To copy the programming in block, you must:

1. press down the source day button and then the button of the last day of the block to be copied;
2. hold down these two buttons during 3 seconds. After this time, the destination days are displayed indicating that the copy in block is activated;
3. release the buttons. The days of the block are not displayed anymore and the current day is displayed.

N.B. *The block order is always increasing. For example, if the source day is Thursday and the destination day is Monday, the copy will only include Friday, Saturday, Sunday and Monday.*

Erasing of the programming

You must proceed as follows to erase a programming period.

1. Access the Programming mode as described previously by pressing down the day of the week button to modify. The period number will blink and you must adjust it using the + or - button in order to select the period to be erased.
2. It is not necessary to press down the Mode button to confirm the period selection, but you can do it.
3. Simultaneously press down the + and - buttons during 2 seconds to erase the period programming. The hour displays --:-- and the set point displays -- to indicate that the pro-

gramming is erased.

4. The erased period number blinks and you can select another period to be erased or exit the Programming mode following one of the 3 methods described in the previous page.

Preprogrammed mode

The Preprogrammed mode allows an automatic programming of the thermostat. Up to 252 preprogrammings (A0 to Z1 and 0 to 9; see appendix 1 attached) are defined in factory and easily accessible. This mode gives you the possibility to quickly program the thermostat using commonly used preprogrammings without having to do it manually.

As from the Automatic mode, it is possible at any time to manually adjust the set point. This set point will be effective until the next set point change anticipated by the preprogramming. Note that if the set point is lowered to OFF, the programming will not be effective.

From this mode, the screen displays the temperature, the heating power used, the set point, the hour, the day of the week and the letter and the current number of the pre-programming (A0 to Z1 and 0 to 9; displayed on the right-hand side of the hour; see appendix 1 attached).

Choice of the preprogramming

You can only access the Preprogramming mode when the thermostat is out of any programming function or adjustment.

You must proceed as follows to access the Preprogramming mode:


1. press down the Pre Prog button;
2. the Pre Prog icon is then displayed and the saved selected preprogramming is displayed as well. This preprogramming can range between 0 and Z1;
3. from the Pre Prog mode, you can choose the first 10 preprogrammings by pressing down the Pre Prog button and release it successively. Each time you press down the button, the preprogramming switch from 0 to 9. Once you have reach 9, you come back to 0;
4. to choose the advanced preprogrammings, (see appendix 1), press down the Pre Prog button during 5 seconds. Then, the letter indicator blinks and you can adjust it by pressing down the + or - button successively or by holding them down. Once the letter is chosen, you must validate your choice by pressing down the Mode button. Then, the letter ceases to blink and the figure starts to blink. The choice of the figure is made in the same way as that of the letter; using the + or - button. Once the figure is selected, you must validate your choice by pressing down the Mode button.

N.B. *From this mode, if you do not press down any button during more than 1 minute, the thermostat exits the adjustment function and saves the choice in progress. Then, the icons cease to blink and the selected value remains displayed.*

Anticipated start

This mode enables the room to reach the selected temperature at the programmed hour. In fact, the thermostat estimates the delay required to reach the set point of the next period at the programmed hour. This delay is obtained by the observation of the temperature variations in the room and the results obtained during the preceding anticipated starts. That way, the results should be increasingly precise day after day. From this mode, the thermostat displays at any time the set point (SET) of the current period. The “anticipated start” icon will blink when the anticipated start of the next period will begin.

For example, if the requested temperature between 8h00am and 10h00pm is 22°C and between 10h00pm and 8h00am is 18°C, the set point (SET) will indicate 18°C until 7h59am and will switch to 22°C at 8h00am. Thus, you will not see the progression carried out by the anticipated start, but only the desired result.

To activate or deactivate the anticipated start, the thermostat must be in the Auto or Pre Prog mode. Then, you must press down the MODE button for at least 5 seconds. The anticipated start icon () will appear or disappear to in-

dicating the activation or the deactivation of the mode. This modification will apply to the Auto as well as the Pre Prog mode. If you modify the temperature set point manually when these modes are activated, the anticipated start of the next period will be cancelled.

N.B. Please note that the anticipated start is initially activated when you enter the Automatic or Preprogrammed mode. Thus, you must deactivate it following the above procedure if needed.

View of the preprogramming

The view of the selected preprogramming is made in a way similar to the Auto mode programming. However, it is impossible to modify the preprogramming.

You must proceed as follows:

1. press down the day of the week button that you want to view (buttons Mon to Sun). When the selected day of the week is displayed, the SET icon blinks and the period number 1 blinks too;
2. choose the period number (1 to 2) to view using the + or - button. For each period, the hour and the set point are displayed. You can also press down the Mode button to increase the period number. If you press down the Mode button when period 2 is displayed, you exit the View mode.

At any time, you can exit the View mode us-

ing one of these 3 methods.

- 1- Press down the button of the day that you are viewing.
- 2- Press down another day to view it.
- 3- Press down the Exit button.

If you do not press down any button during 1 minute, the thermostat exits the view mode. At any time, it is possible to change the day to be viewed by pressing down the desired day button.

Fan mode

When the thermostat is used to control a heating system equipped with a fan, the Fan mode **MUST** be activated. This mode prevents the system to continuously start and stop, which could cause fan failure. The Fan mode is by default deactivated at the factory. The status of this mode is indicated on the display by the Fan icon.

You can activate the Fan mode in a similar way to the adjustment of the degrees Celsius/Fahrenheit.

Adjustment procedure for the Fan mode

1. Simultaneously press down the + and - buttons for more than 3 seconds, until the SET icon starts to blink.
2. Press down the - button to activate or deactivate the Fan mode. The Fan icon will be displayed or not, as applicable.
3. When the adjustment is completed, press down the Exit button, hold down the Mode button or do not press down any button dur-

ing 1 minute to exit the adjustment function.

N.B. *This adjustment can be done from any of the three principal modes. From the adjustment mode, the figures displayed at the top of the screen are only useful for the manufacturer. It is not the ambient temperature.*

Frost-free warning *

The Snowflake icon is displayed when the temperature set point is between 3°C (37°F) and 5°C (41°F). A minimum temperature will be maintained to ensure frost control.

Lock option

It is possible to impose a maximum temperature set point by activating this mode. Then, it becomes impossible to exceed this set point, regardless of the mode. However, it is still possible to lower the set point at your discretion. The programming of the Auto and Pre Prog modes also adhere to this maximum temperature set point.

Locking procedure

- 1.Exit any adjustment mode and manually adjust the set point at the desired maximum value.
- 2.Simultaneously press down the + and - buttons during 10 seconds (note that after 3 seconds, the SET icon starts to blink and the version numbers and the software date are displayed. Hold down these buttons, if not, you will enter in the degrees/fan adjustment mode). After 10 seconds, the Lock icon is

displayed indicating that the lock option is activated. Then, release the buttons.

Unlocking procedure

- 1.To deactivate the lock option, cut off the power supply of the thermostat at circuit breaker and wait at least 30 seconds.
- 2.Restore the power supply of the thermostat. The Lock icon will blink during at least 5 minutes, indicating that you can deactivate the Lock option.
- 3.Simultaneously press down the + and - buttons during more than 10 seconds. The Lock icon will then disappear indicating that the lock option is deactivated.

Temperature control

The thermostat controls the temperature of a room with a high degree of accuracy.

The level of power used to maintain the temperature at the set point is expressed as a percentage indicated by the number of bars in the thermometer displayed. The heating power used is displayed as follows:



- 0 bar = no heating
- 1 bar = 1% to 25%
- 2 bars = 25% to 50%
- 3 bars = 50% to 75%
- 4 bars = 75% to 100%

Power failure

The thermostat can detect a power failure. In such a case, the adjustments are automatically saved and recovered when power is restored. Then, the thermostat enters in a very low consumption mode and only displays the hour and the day of the week. All the other functions are deactivated.

If the power failure lasts less than 2 hours, the thermostat thus saves the adjustment of the hour and the day of the week. When power is restored after an extensive failure (more than 2 hours), it recovers the last mode (Man/Auto/PreProg) as well as the various adjustments that was effective when the failure occurred. The hour and the day of the week are also recovered. The set point will be the same as what was active when the failure occurred.

N.B. *During the first half hour of the failure, the hour and the day of the week are displayed. After half an hour, the screen turns off in order to ensure an energy saving.*

4. Troubleshooting

| Problem | Solution |
|--|---|
| The thermostat is hot. | In normal operating conditions, the thermostat housing can reach nearly 40°C at maximum load. That is normal and will not affect the effective operation of the thermostat. |
| Heating is always on. | Check if the thermostat is properly connected. Refer to the installation section. |
| Heating does not run even if the thermostat indicates it is on. | Check if the thermostat is properly connected. Refer to the installation section. |
| The display does not come on. | Check if the thermostat is properly connected. Refer to the installation section. Check the power supply at the electrical panel. Ensure that the heating unit has a switch. If so, ensure that this switch is turned on. |
| The display turns off a few minutes and then turns on again. | The thermal protection of the heating unit has deactivated the unit due to overheating. Ensure that the heating unit is in good condition of operation and that clearance around the appliance is according to the manufacturer's specifications. |
| The display has low contrast when heating is on. | The load is lower than the minimum load. Install a heating unit that is within the load limits of the thermostat. |
| The displayed ambient temperature is incorrect. | Check the presence of an air stream or a heat source near the thermostat, and correct the situation. |
| The display indicates E1 or E2. | Faulty thermal sensor. Contact the customer service. |
| Weak luminosity of the display. | Possibility of a bad contact. Check thermostat wirings. Refer to the installation section. |

5. Technical specifications

Supply voltage:

120/208/240 VAC, 50/60 Hz

Minimum electrical current with a resistive load:

1.2 A

300 W @ 240 VAC

260 W @ 208 VAC

120 W @ 120 VAC

Maximum electrical current with a resistive load:

16.7 A

4000 W @ 240 VAC

3475 W @ 208 VAC

2000 W @ 120 VAC

Range of temperature:

0°C to 40°C (32°F to 99°F)

Temperature display resolution:

0.5°C (0.5°F)

Range of the temperature set points:

3°C to 30°C (37°F to 86°F)

Temperature set point increments:

0.5°C (1°F)

Storage:

-20°C to 50°C (-4°F to 120°F)

Certification:

cCSAus



Limited warranty

This unit has a **3 years** warranty. If at any time during this period the unit becomes defective, it must be returned to its place of purchase with a copy of the invoice, or simply contact our customer service department (with a copy of the invoice in hand). In order for the warranty to be valid, the unit must have been installed and used according to instructions. If the installer or the user modifies the unit, he will be held responsible for any damage resulting from this modification. The warranty is limited to the factory repair or the replacement of the unit, and does not cover the cost of disconnection, transport, and installation.

Customer service

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