

USER'S GUIDE

STE402P+

MULTIPLE PROGRAMMING ELECTRONIC THERMOSTAT





For further information or to consult this guide online, please visit our website at www.stelpro.com

INSSTE402P+0414

🛦 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 electric and building codes effective in your region. Do NOT connect this product to a supply source other than 120 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 vent. Do not install thermostat in a wet place. However, installing it in isolated walls is allowed.

Note:

When a part of the product specification must be changed to improve operability or other functions, priority is given to the product specification itself. In such instances, the instruction manual may not entirely match all the functions of the actual product.

Therefore, the actual product and packaging, as well as the name and illustration, may differ from the manual.

The screen/LCD display shown as an example in this manual may be different from the actual screen/ LCD display.

DESCRIPTION

The multiple programming electronic thermostat STE402P+ can be used to control electric heating units such as electric baseboards, convectors, or aeroconvectors. It keeps the temperature of a room at the requested set point with a high degree of accuracy. This product is designed for installations with electrical current – with a resistive load – ranging from 1.25 A to 16.7 A (120/240 VAC). It possesses a user-friendly interface. Furthermore, it gives you the possibility to control the temperature of a room with great precision.

This thermostat is not compatible with the following installations:

- electrical current higher than 16.7 A with a resistive load (4000 W @ 240 VAC and 2000 W @ 120 VAC);
- electrical current lower than 1.25 A with a resistive load (300 W @ 240 VAC and 150 W @ 120 VAC); and
- · central heating system.

Parts supplied:

- · one (1) thermostat;
- · wall mounting plate located at the back of the thermostat;
- two (2) mounting screws;
- · two (2) solderless connectors suitable for copper wires.

INSTALLATION

Selection of the thermostat location

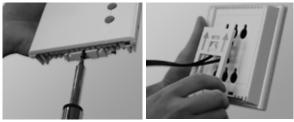
The thermostat must be mounted to a connection box on a wall facing the heating unit, at around 1.5 m (5 feet) above the floor level, on a section of the wall exempt from pipes or air ducts.

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 drafts (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. Using a screwdriver, loosen the screw retaining the mounting base of the thermostat until it is loose (do not completely remove the screw).

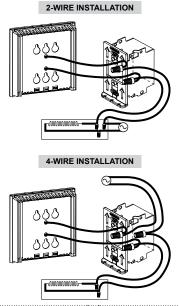


Then, remove the mounting base at the back of the thermostat by pushing it downwards and then towards you.

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



5. Pass the wires from the wall through the opening on the mounting base and connect them using the supplied solderless connectors. When making the connection with aluminum wire, make sure that you are using connectors identified CO/AL. Please note that the thermostat wires do not have polarity. Therefore, the way they are connected is not important.

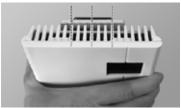


6. Place all the wires into the connection box.

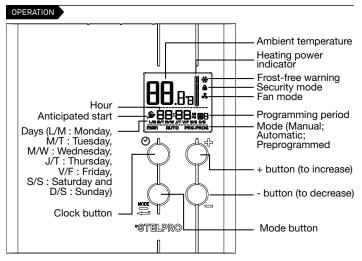


7. Align the little slots located on the top of the thermostat with those on the mounting base and secure the thermostat to the mounting base. Note that you can also position the thermostat on the left or the right side of the junction box. Then, tighten the screw at the bottom of the unit.

Alignment



- 8. Turn on the power.
- 9. Set the thermostat to the desired setting (see the following section).



The multiple programming thermostat has three main operating modes: Manual (**MRN**), Automatic (**AUTO**) and Preprogrammed (**PRE-PROG**). The active mode is displayed at the bottom of the screen. The transition from one mode to another is done by pressing down the **MODE** button, out of any adjustment mode.

Note: it is impossible to change the operation mode when the Security mode is activated.

When first powered up, the thermostat is initially in degrees Celsius, in Preprogrammed mode (preprogramming 5), and the Anticipated start mode is activated. The clock is adjusted to Saturday (12:00) and flashes to indicate that an adjustment is necessary. The preprogramming is effective immediately.

Adjustment of the hour and the day

To adjust the hour and the day:

- 1. In any mode (Manual, Automatic or Preprogrammed), out of any adjustment mode, press down the O button and release it.
- 2. The current time mode (24H/12H) is displayed. Press down the = □ or == button to select the desired format. Press down the **MODE** button to confirm your choice.
- 3. The two hour digits flash. Adjust the hours using the hand = buttons. Press down the **MODE** button to confirm your choice.
- 4. The two minute digits flash. Adjust the minutes using the ⊕ and buttons. Press down the **MODE** button to confirm your choice.
- 5. The day of the week flashes. Adjust using the ∰ and buttons. Press down the **MODE** button to confirm your choice.

The adjustment is thus completed and the thermostat returns to normal operation.

It is possible to exit the hour and day adjustment mode at any time:

- By pressing down the 🕑 button.
- · By not pressing down any buttons during 1 minute.

In case of a power failure lasting 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 will blink, indicating that it must be readjusted.

Ambient temperature

The figures displayed above the hour indicate the ambient temperature. It can be displayed in degrees Celsius or Fahrenheit (see "Display in degrees Celsius/Fahrenheit").

To adjust the set point, out of any adjustment mode, press down the $\frac{1}{2}$ button to increase the set point (it will blink), or the — button to decrease it. Set points can only be adjusted by increments of 0.5°C (1°F). To quickly scroll through the set point values, press and hold down the button. The minimum set point is 30°C (37°F), and the maximum set point is 30°C (86°F).

To return to the ambient temperature, do not press down any buttons for 3 seconds or press down both $r_{\rm P}^{\rm J}$ and = buttons simultaneously. You can turn off the thermostat by lowering the set point below 3°C (37°F). The set point value displayed will be -..., and heating system start up will be impossible.

Display in either degrees Celsius/Fahrenheit

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

- In any mode (Manual, Automatic or Preprogrammed), out of any adjustment mode, press down the MODE button for 3 seconds and release it. The various icons and options appear and °C or °F icon flashes.
- 2. Press down the MODE button to confirm your choice.

The adjustment is thus completed and the thermostat returns to normal operation.

It is possible to exit the degrees Celsius/Fahrenheit adjustment mode at any time:

- By pressing down the 🕑 button.
- · By not pressing down any buttons during 1 minute.

In any case, the adjustment is saved.

Manual mode (man)

From the Manual mode, you can manually adjust the thermostat set point by pressing down the $\frac{1}{2}$ or \square button to increase the value, or to decrease it. To quickly scroll through the set point values, press and hold down the button. The standard factory set point adjustment is 21°C. From this mode, the screen displays the temperature, the heating power used, the hour and the day of the week.

Automatic mode (AUTO)

From the Automatic mode, the thermostat adjusts the set points according to the programmed periods. If no data was 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 r_{2}^{-1} or r_{2}^{-1} 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 during the week and 4 periods a day during the weekend, 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 heating power used, the hour, the day of the week and the current programmed period number (P I to P-I; displayed on the right-hand side of the hour).

Programming procedure of the Automatic mode

Programming the Automatic mode can be done in the Automatic mode or the Manual mode.

1. Out of any adjustment mode, press down the button during 3 seconds and release it. It then enters into the programming of period 1 of the 5 days of the week. The 5 days of the week (L/M, M/T, M/W, J/T, V/F), the period 1 (P I) and the associated programming (hours and set point) are displayed. Note that the time displays --- and the set point displays --- if there is no programming for the period.

Note: if no programming is required for the period, simply press down the **MODE** button. It then automatically switches to the next adjustment period.

- 2. The two hour digits of the period flash and can then be adjusted with the \oplus and \square buttons. Confirm the adjustment using the **MODE** button.
- 3. The two minute digits of the period flash. Use the ⊕ and buttons to adjust by intervals of 15 minutes. Confirm the adjustment by pressing down the **MODE** button.
- 4. The set point temperature of the period is flashing. Adjust the set point using the ∰ and buttons. Confirm your selection by pressing down the **MODE** button.
- 5. The programming of this period is over. The programming of the next period is displayed and you return to step 2.
- 6. At the end of the programming of the 4 periods of the week days, you enter into the programming period 1 of the two days of the weekend. The two days of the weekend (S/S, D/S), the period 1 and the associated programming (hours and set point) are displayed. The programming of the weekend periods is made in the same manner as for the periods of the week days (steps 2 to 5).

At the end of the programming period 4 of the weekend, the programming is completed and the thermostat returns to normal operation.

It is possible to exit the Automatic mode's programming at any time:

- By pressing down the 𝒴 button.
- · By not pressing down any buttons during 1 minute.

In any case, all programming is saved.

Erasing of the programming

When programming the Automatic mode, it is possible to delete a programming period.

1. Enter into the programming of the Automatic mode and reach the period, as described in the previous section.

- 2. When the period is displayed, simultaneously press down the 🖞 and 📼 buttons to erase the programming. The time of the period displays --:-- and the set point displays --.- to indicate that the programming is erased.
- 3. Then, exit the programming mode as described in the previous section.

Preprogrammed mode (PRE-PROG)

The Preprogrammed mode allows a quick and easy programming of the thermostat. 18 preprogrammings (01 to 18) are defined in factory and easily accessible. This mode gives you the possibility to quickly program the thermostat using commonly used preprogrammings.

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 hour, the day of the week and the number of the preprogramming period (P | to P4; displayed on the right-hand side of the hour).

This mode is initially activated when the power is turned on for the first time, with the programming #5.

Selection of the preprogramming

See section 5 (**Preprogrammings**) to choose one of the 18 preprogrammings. The *Quick selection* section allows a choice based on 3 criteria: the number of hours you sleep, the time you wake up and the time you come home. The *Detailed preprogrammings* section gives a detailed schedule of all preprogrammings.

To select the preprogramming :

- Access the Preprogrammed mode (if required) by pressing down the MODE button until the display shows PRE-PROG.
- Out of any adjustment mode, press down the O button during 3 seconds until the preprogramming number (01 to 18) blinks at the right-hand side of the hour.
- 3. Choose the preprogramming number by pressing down the ∰ and buttons. Confirm by pressing down the **MODE** button.

It is possible to exit the selection of the preprogramming at any time:

- By pressing down the 𝔄 button.
- · By not pressing down any buttons during 1 minute.

In any case, the selection is saved.

View of the preprogramming

It is possible to view the current preprogramming. However, it is impossible to modify a preprogramming.

- Access the Preprogrammed mode (if required) by pressing down the MODE button until the display shows PRE-PROG.
- 2. Out of any adjustment mode, simultaneously press down the 🕑 and MODE button and release.
- 3. The period 1 icon (P I) flashes and the days of the week are displayed to indicate that you are visualizing the days of the week's period 1. Press down the and buttons to select the period to view.

It is possible to exit the view of the preprogramming at any time:

- By pressing down the 𝔄 button.
- · By not pressing down any buttons during 1 minute.

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. The $\frac{2}{2}$ icon will blink when the anticipated start of the next period will begin.

If the set point is changed manually when this mode is in progress, the anticipated start of the next period is canceled.

To activate or deactivate the anticipated start:

- 1. In any mode (Manual, Automatic or Preprogrammed), out of any adjustment mode, press down the **MODE** button for 3 seconds and release it. The various icons and options appear and °C or °F icon flashes.
- 2. Press down the ⊕ or ⇔ button to select the ℬ icon (indicated by its flashing). Press down the **MODE** button to confirm your choice.
- 3. All icons disappear except the ⊯ icon that continues to flash. Press down the ⊕ or == button to activate or deactivate the Anticipated start (indicated by the icon that turns on or off). Press down the **MODE** button to confirm your choice.

The adjustment is thus completed and the thermostat returns to normal operation.

It is possible to exit the Anticipated start adjustment mode at any time:

- By pressing down the 𝒴 button.
- · By not pressing down any buttons during 1 minute.

Frost-free warning *****

The **≭** 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.

Security mode

It is possible to impose minimum and maximum temperature set points by activating this mode. Then, it becomes impossible to exceed the maximum set point and go below the minimum set point, regardless of the current mode. When the Security mode is activated, any change in operation mode (Manual, Automatic or Preprogrammed) or any change in programming (Automatic mode) or preprogramming (Preprogrammed mode) is impossible.

Procedures to activate the Security mode

To activate the Security mode, you must be in the desired mode (Manual, Automatic or Preprogrammed), and you must have completed the programming (Automatic mode) or selected the desired preprogramming (Preprogrammed more).

- In any mode (Manual, Automatic or Preprogrammed), out of any adjustment mode, press down the MODE button for 3 seconds and release it. The various icons and options appear and °C or °F icon flashes.
- 3. All icons disappear except the ▲ icon that continues to flash. Press down the ⊕ or button to activate the Security mode (indicated by the icon that turns on). Press down the MODE button to confirm your choice.
- 4. L___ is displayed instead of the hours and the adjustment of the minimum set point flashes. Press down the ⁴P or ⇔ button to adjust the minimum set point temperature. The adjustment can range from --- (Heating off) to 30°C by intervals of 0.5°C (or 86°F by intervals of 1°F). Press down the MODE button to confirm your selection.
- 5. H⁻⁻⁻ is displayed instead of the hours and the adjustment of the maximum set point flashes. Press down the ⁴/₂ or □ button to adjust the maximum set point temperature. The adjustment will be between the minimum set point previously selected and 30°C by intervals of 0.5°C (or 86°F by intervals of 1°F). Press down the **MODE** button to confirm your selection.

The activation of the Security mode is thus completed and the thermostat returns to normal operation.

It is possible to exit the Security mode adjustment at any time:

- By pressing down the 🕑 button.
- · By not pressing down any buttons during 1 minute.

Note: if the adjustment of minimum and maximum set points is not completed, Security mode will not be activated.

Procedures to deactivate the Security mode

- 1. To deactivate the Security mode, start by cutting off the thermostat power at circuit breaker and wait at least 30 seconds.
- 2. Turn the thermostat power back on and the 🔒 icon will blink for a maximum of 5 minutes.
- 3. Press down the **MODE** button for 3 seconds and release it. The various icons and options appear and °C or °F icon flashes.
- 5. All icons disappear except the ▲ icon that continues to flash. Press down the ⊕ or button to deactivate the Security mode (indicated by the icon that turns off). Press down the **MODE** button to confirm your choice.

The deactivation of the Security mode is thus completed and the thermostat returns to normal operation.

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 not activated by default.

The status of this mode is indicated on the display by the 🖧 icon.

To activate or deactivate the Fan mode and / or adjust the minimum operating time:

- 1. In any mode (Manual, Automatic or Preprogrammed), out of any adjustment mode, press down the **MODE** button for 3 seconds and release it. The various icons and options appear and °C or °F icon flashes.
- Press down the -^C₂ or c→ button to select the S icon (indicated by its flashing). Press down the MODE button to confirm your choice.
- 3. All icons disappear except the 💲 icon that continues to flash. Press down the 🖧 or 📼 button to activate or deactivate the Fan mode (indicated by the icon that turns on or off). Press down the **MODE** button to confirm your choice.

- 4. If the Fan mode is deactivated, the thermostat returns to normal operation. If it is activated, the minimum operating time in seconds blinks (90 seconds by default).

It is possible to exit the Fan mode adjustment at any time:

- By pressing down the 𝔄 button.
- · By not pressing down any buttons during 1 minute.

In any case, the adjustment is saved.

Parameters saving and power failures

The thermostat saves some parameters in a non-volatile memory to be able to recover them after being shut off (a power failure, for example). These parameters are the operation modes (Manual, Automatic or Preprogrammed), the programming of the Automatic mode, the preprogramming selection, the current set point, the Celsius/Fahrenheit display, the Fan mode, the minimum operating time in Fan mode, the Security mode, the minimum and maximum set points in Security mode, the Anticipated start, the time mode (24h/12h), the day, the hour and the Nightlight mode.

Backlight

By default, the backlight turns on when pressing down a button and turns off after 15 seconds of inactivity.

Nightlight mode

You can activate the Nightlight mode to permanently turn on the backlight. To activate or deactivate this mode, you must simultaneously press both r_{P}^{-} and racconstants buttons for 3 seconds until the backlight blinks. Release the buttons. The Nightlight mode will be activated (or deactivated if it was previously activated).

Heating Power Indicator

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:

4 bars = 76% to 100% 3 bars = 51% to 75% 2 bars = 26% to 50% 1 bar = 1% to 25% 0 bar = no heat

TROUBLESHOOTING

PROBLEM	DEFECTIVE PART OR PART TO CHECK
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 turn on.	 Check if the thermostat is properly connected. Refer to the installation section. Check the power supply at the electrical panel. Check if 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 opened due to overheating. Check if the heating unit is in good condition of operation and that clearance around the unit 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, E2, E3 or E4	Faulty thermostat. Contact the customer service.
Weak luminosity of the display.	 Possibility of a bad contact. Check thermostat wiring. Refer to the installation section.

N.B. If you are unable to solve the problem after having verified these points, please communicate with our customer service. Consult our website for the phone numbers.

PREPROGRAMMINGS

Quick selection

8 hours of sleep					
Wake up time:		6am	7am	8am	
Hour at which you come back from work:	4pm	1	4	7	
	5pm	2	5*	8	
	6pm	3	6	9	

9 hours of sleep					
Wake up time:		6am	7am	8am	
Hour at which you come back from work:	4pm	10	13	16	
	5pm	11	14	17	
	6pm	12	15	18	

* preprogramming by default

Detailed preprogrammings

8 hours of sleep

	Monday-Friday				Saturday-Sunday	
N°	P1	P2	P3	P4	P1	P2
pre-prog	(Wake up)	(Leaving time)	(Come back time)	(Sleep)	(Wake up)	(Sleep)
1	6am	8am	4pm	10pm	6am	10pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
2	6am	8am	5pm	10pm	6am	10pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
3	6am	8am	6pm	10pm	6am	10pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
4	7am	9am	4pm	11pm	7am	11pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
5	7am	9am	5pm	11pm	7am	11pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
6	7am	9am	6pm	11pm	7am	11pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
7	8am	10am	4pm	0am	8am	0am
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
8	8am	10am	5pm	0am	8am	0am
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
9	8am	10am	6pm	0am	8am	0am
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C

9 hours of sleep

	Monday-Friday				Saturday-Sunday	
N°	P1	P2	P3	P4	P1	P2
pre-prog	(Wake up)	(Leaving time)	(Come back time)	(Sleep)	(Wake up)	(Sleep)
10	6am	8am	4pm	9pm	6am	9pm
10	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
11	6am	8am	5pm	9pm	6am	9pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
12	6am	8am	6pm	9pm	6am	9pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
13	7am	9am	4pm	10pm	7am	10pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
14	7am	9am	5pm	10pm	7am	10pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
15	7am	9am	6pm	10pm	7am	10pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
16	8am	10am	4pm	11pm	8am	11pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
17	8am	10am	5pm	11pm	8am	11pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C
18	8am	10am	6pm	11pm	8am	11pm
	21°C	16.5°C	21°C	16.5°C	21°C	16.5°C

TECHNICAL SPECIFICATIONS

Supply voltage:

120/208/240 VAC, 50/60 Hz

Minimum electrical current with a resistive load:

1.25 A 150 W @ 120 V 260 W @ 208 V 300 W @ 240 V

Maximum electrical current with a resistive load:

16.7 A 2000 W @ 120 VAC 3475 W @ 208 VAC 4000 W @ 240 VAC

Temperature display range:

3°C to 40°C (37°F to 99.5°F)

Temperature display resolution:

0.5°C (0.5°F)

Temperature set point range: 3°C to 30°C (37°F to 86°F)

Temperature set point increments:

Increment

0.5°C (1°F)

Storage temperature:

-40°C to 50°C (-104°F to 122°F)

LIMITED WARRANTY LIMITED WARRANTY LIMIT

LIMITED WARRANTY

This unit has a 3-year warranty. If at any time during this period the unit becomes defective, it must be returned to its place of purchase with the invoice copy, or simply contact our customer service department (with an invoice copy 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.

> E-mail: contact@stelpro.com Web site: www.stelpro.com

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