



## ***FUNCTIONAL SPECIFICATION***

### **SPTS-H/L-TH TRANSMITTER**

#### Revision History

Rev. 0: Initial Release. M.R. 5/26/2011.

Rev. 1: Clarified cycling between settings when in Day/Time and Program Setup modes (wait 5-seconds) and clarified Time setting sequence (advance in 1-minute increments, hour advances every 60 minutes, AM/PM cycle every 12-hours). M. Rogers 6/1/2011.

Rev. 2: Updated Touch-Screen LCD and Button layout graphic. Changed MODE Button to MODE/SET Button, added use of MOD/SET Button to accept setting adjustments, increased automatic acceptance time from 5 to 15 seconds. Separated hour and minute time settings with addition of SET button. Added MODE/SET button to Program mode deactivation. Changed temperature unit type selection to two button press (UP and DOWN) to agree with other model transmitters, clarified SWING temperature setting and display. Changed MAIN flame displays to FLAME-A Icon & clarified FLAME Zone display under Program ON operation. Removed references to FLAME Icon in MODE Zone display. Changed SET TEMP to 2-second automatic. M. Rogers 6/13/2011.

Rev. 3: Added specific model number. M. Rogers 12/19/2011.

Rev. 4: Clarified Low Battery Indicator voltage limit (5.0V), removed Manual OFF from communication safety feature. M. Rogers 12/20/2011.

Rev. 5: Added factory default thermostat SET TEMPERATURE, Clarified LCD display in Flame-A adjustment mode, clarified backlight requirement during Child-Lock operation. M. Rogers 12/21/2011.

Rev. 6: Clarified Program ON flame zone display (THERMO ON vs THERMO OFF). M. Rogers 12/27/2011.

Rev. 7: Added Thermostat Disable Feature & Room Temperature Limit Feature. M. Rogers 3/22/2012.

Rev. 8: Clarified Thermostat Disable Feature (TX must be in MANUAL OFF Mode to activate/deactivate feature. M. Rogers 3/27/2012

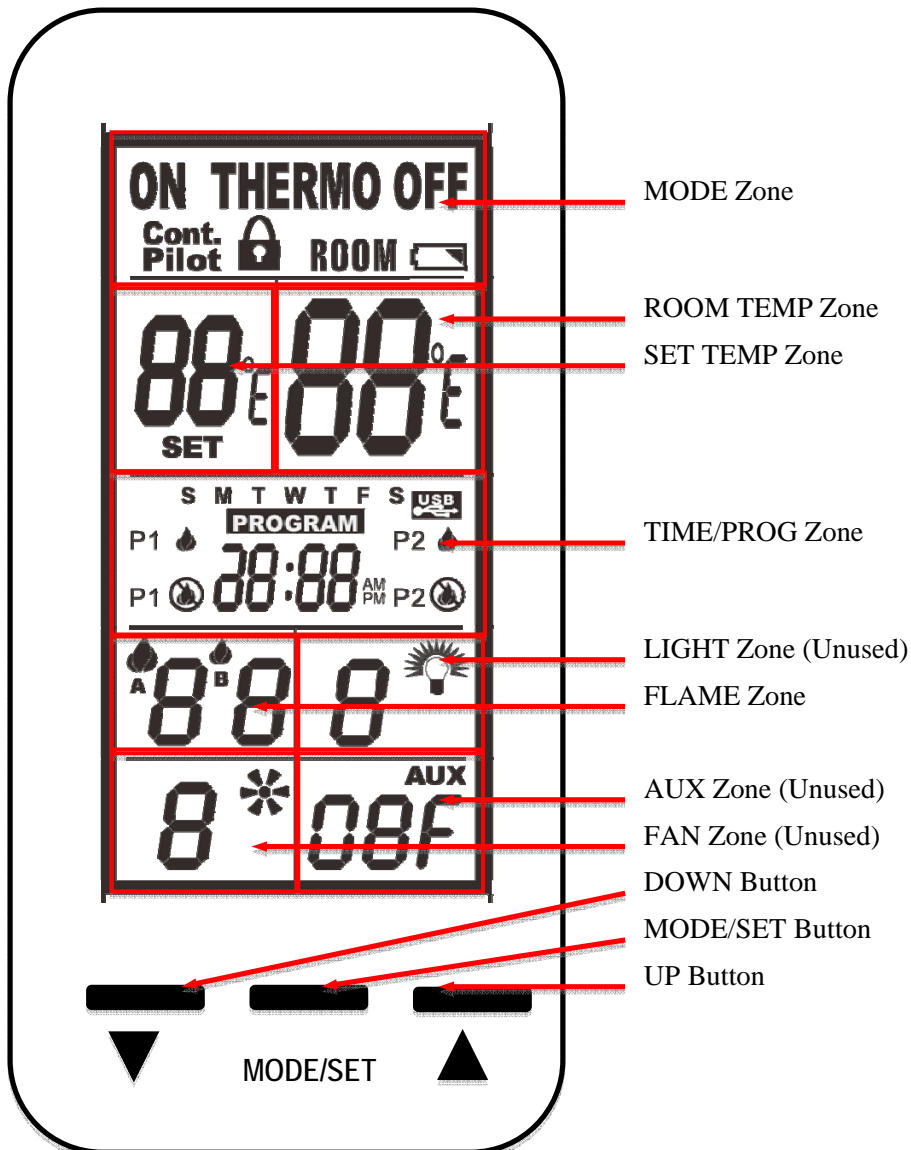
### Objective

Define basic construction, touch-screen LCD & button layout, and operational parameters for a wireless transmitter to operate the AF-4000MOD-1 ignition control module.

### Basic Construction

- Transmitter body should be the same construction as current production model SKY-5301P.
- Touch-Screen LCD and three push buttons will allow input from users.
- LCD screen will provide system status & input feedback to user.
- Blue Backlight will illuminate LCD screen for 5 seconds after any user input.
- Powered via four AAA sized batteries (6V nominal) with LOW BATTERY INDICATOR (5.0V).

### Touch-Screen LCD and Button Layout



### **Functional Description**

*Note: All function adjustments will be automatically accepted 15-seconds after pressing a given touch zone or button. The user may press the MODE/SET button to immediately accept the adjustment manually.*

#### **Day and Time Display**

- The current day of week and time of day will be continuously displayed in the TIME/PROG Zone (except during Setup operations).
- The day of week will be displayed as one of the following: S, M, T, W, T, F, S
- The time of day will be in 12-hour AM, 12-hour PM format. Midnight will be displayed as 12:00am.
- Day/Time Setup:
  - Press and hold the MODE Zone or the MODE/SET Button for 5 seconds to enter Day/Time Setup.
  - Press the UP or DOWN Buttons to adjust the day of week (press the MODE/SET Button or wait for 15 seconds for adjustment to be accepted, then enter hour of day adjustment).
  - Press the UP or DOWN Buttons to adjust the hour of the day. The time will advance in 1-hour increments; AM and PM will change when the hour advances to 12:00 midnight and 12:00 noon respectively (press the MODE/SET Button or wait for 15 seconds for adjustment to be accepted, then enter minute of hour adjustment).
  - Press the UP or DOWN Buttons to adjust the minute of the hour. The time will advance in 1-minute increments (press the MODE/SET Button or wait for 15 seconds and the transmitter will exit Day/Time Setup and return to normal operation).
  - LCD Displays – when in Day/Time Setup:
    - MODE Zone: Blank
    - ROOM TEMP Zone: Blank
    - SET TEMP Zone: Blank
    - LIGHT Zone: Blank
    - FAN Zone: Blank
    - TIME/PROG Zone: Day of Week, or Time of Day will Flash
    - AUX Zone: Blank
    - FLAME Zone: Blank

#### **Modes of Operation**

Operation modes:

- MANUAL OFF
- MANUAL ON
- THERMOSTAT

The modes may be cycled in the order above by pressing the MODE Zone or the MODE/SET Button.

MANUAL OFF Mode:

- Transmits flame OFF command.
- LCD Displays:
  - MODE Zone: OFF is displayed
  - ROOM TEMP Zone: Measured temperature is displayed

- SET TEMP Zone: Blank
- LIGHT Zone: Blank
- FAN Zone: Blank
- TIME/PROG Zone: Current day indicator and current time is displayed
- AUX Zone: Blank
- FLAME Zone: Blank

#### MANUAL ON Mode:

- Transmits flame ON command
- LCD Displays:
  - MODE Zone: ON is displayed
  - ROOM TEMP Zone: Measured temperature is displayed
  - SET TEMP Zone: Blank
  - LIGHT Zone: Blank
  - FAN Zone: Blank
  - TIME/PROG Zone: Current day indicator and current time is displayed
  - AUX Zone: Blank
  - FLAME Zone: the FLAME-A Icon is displayed

#### THERMOSTAT Mode:

- Will cycle flame on and off based on room and set temperatures. Will transmit ON command if SET TEMP (+SWING) is higher than ROOM TEMP and will transmit OFF command if SET TEMP (-SWING) is lower than ROOM TEMP.
- Built-in thermostat will measure room temperature.
- All programming should be written for deg. F scale and converted to deg. C when selected.
- Temperatures may be displayed in degrees F (factory default) or degrees C. Press the UP and DOWN Buttons simultaneously to change between degrees F and C.
- SET TEMP: While in THERMOSTAT mode, press the UP or DOWN Button to change the SET TEMP (45-99 deg. F, 7-37 deg. C); the new set temperature will automatically be accepted after 2 seconds. The factory default SET TEMP is 45 deg. F.
- SWING Temperature:
  - Factory default is 2 degrees F (1 deg. C).
  - Press and hold the SET TEMP Zone for 5 seconds to enter SWING Adjustment, and press the UP and DOWN Buttons to adjust the SWING temperature from 3 degrees F (2 degrees C) or to 1 deg. F (still 1 deg. C) (press the MODE/SET Button or wait for 15 seconds for the new setting to be accepted).
  - LCD Display - When in SWING Adjustment:
    - MODE Zone: Blank
    - ROOM TEMP Zone: Blank
    - SET TEMP Zone: S1, S2, or S3 (number equals swing temperature) in place of the SET temperature
    - LIGHT Zone: Blank
    - FAN Zone: Blank
    - TIME/PROG Zone: Blank
    - AUX Zone: Blank
    - FLAME Zone: Blank
- THERMOSTAT OFF LCD Displays:
  - MODE Zone: THERMO and OFF is displayed
  - ROOM TEMP Zone: Measured temperature is displayed
  - SET TEMP Zone: SET TEMP is displayed
  - LIGHT Zone: Blank

- FAN Zone: Blank
- TIME/PROG Zone: Current day indicator and current time is displayed
- AUX Zone: Blank
- FLAME Zone: Blank
- THERMOSTAT ON LCD Displays:
  - MODE Zone: THERMO and ON are displayed
  - ROOM TEMP Zone: Measured temperature is displayed
  - SET TEMP Zone: SET TEMP is displayed
  - LIGHT Zone: Blank
  - FAN Zone: Blank
  - TIME/PROG Zone: Current day indicator and current time is displayed
  - AUX Zone: Blank
  - FLAME Zone: The FLAME-A Icon is displayed

#### Thermostat Disable Feature

- The Thermostat Mode (described above) may be disabled for applications where a thermostat is not allowed or undesirable. When Thermostat Mode is Disabled:
  - The Modes of operation will cycle between MANUAL ON and MANUAL OFF (omitting THERMO).
  - Program Operation (described below) is also disabled.
  - The SET TEMP zone will be blank.
  - The room temperature will still be measured & displayed in the ROOM TEMP Zone.
  - The TIME/PROG zone will continue to display the Clock and Day of week, but none of the icons associated with Program Mode will be displayed.
- To disable or re-enable the Thermostat, the transmitter must be in MANUAL OFF Mode, then press and hold the SET TEMP Zone and the DOWN Button simultaneously for 10-seconds. The entire contents of the LCD screen will flash 3-times (0.5-seconds OFF, 0.5-seconds ON) to indicate the change has been made.

#### Program Operation

- Press the TIME/PROG Zone to activate or deactivate Program Operation. Pressing the MODE Zone or the MODE/SET Button will also deactivate Program Operation. When Program Operation is deactivated, the transmitter will return to MANUAL OFF Mode.
- Program Operation will cycle fireplace ignition ON and OFF based on time settings (2 weekend periods and 2 weekday periods) and thermostat settings. Reference program operation for current production model 5301P for complete description of operation and factory defaults. Press the MODE/SET Button or wait for 15 seconds to advance to each subsequent program setting.
- To enter Program Setup, press and hold the TIME/PROG Zone for 5 seconds.
- Program OFF LCD Displays:
  - MODE Zone: OFF
  - ROOM TEMP Zone: Measured temperature is displayed
  - SET TEMP Zone: Blank
  - LIGHT Zone: Blank
  - FAN Zone: Blank
  - TIME/PROG Zone: Current day indicator, current time, and Program status (P1-OFF or P2-OFF) is displayed
  - AUX Zone: Blank
  - FLAME Zone: Blank

- Program ON LCD Displays:
  - MODE Zone: THERMO and either ON or OFF is displayed
  - ROOM TEMP Zone: Measured temperature is displayed
  - SET TEMP Zone: SET TEMP is displayed
  - LIGHT Zone: Blank
  - FAN Zone: Blank
  - TIME/PROG Zone: Current day indicator, current time, and Program status (P1-ON or P2-ON) is displayed
  - AUX Zone: Blank.
  - FLAME Zone:
    - If Thermostat is ON, the Flame-A Icon is displayed.
    - If Thermostat is OFF, display is blank.

#### Flame Adjustment

- Transmits either a HI command or a LO command to the control module to adjust the flame height.
- While in MANUAL ON, THERMOSTAT ON, or PROGRAM ON modes, press the FLAME Zone to enter Flame Adjustment, then press the UP or DOWN buttons to raise and lower the flame. This command is transmitted at the same time the user is pressing the UP or DOWN Button.
- LCD Displays: When in Flame-A adjustment mode, the Flame-A icon will flash in the FLAME zone; when actually adjusting the flame, the direction of adjustment (HI or LO) will be displayed:
  - When raising the flame height with the UP button, the FLAME-A Icon and HI will flash in the FLAME Zone.
  - When lowering the flame height with the DOWN button, the FLAME-A Icon and LO will flash in the FLAME Zone.

#### Continuous Pilot Operation

- To activate or deactivate the Continuous Pilot Feature, press and hold the MODE/SET and UP Buttons simultaneously for 5 seconds.
- LCD Display: When activated, CONT. PILOT will be displayed in the MODE Zone.

#### Child-Lock Operation

- Child-Lock operation prevents any user input to the transmitter. No mode of operation or feature may be adjusted when Child-Lock is activated. All automatic functions (thermostat, program, etc.) will continue normally.
- To activate or deactivate the Child-Lock feature, press and hold the MODE/SET and DOWN Buttons simultaneously for 5 seconds.
- LCD Display:
  - When activated, the LOCK icon will appear in the MODE Zone.
  - If any touch-zone or button is pressed when activated, the LCD backlight will illuminate and the LOCK icon will flash for 5 seconds in the MODE Zone.

#### Communication Safety

- In manual ON, thermostat and program modes of operation, the transmitter will send a communication safety transmission every 15-minutes. This signal is further processed by the ignition control module to verify the transmitter is communicating properly.

#### Room Temperature Limit

- The Room Temperature Limit Shutdown feature will operate in MANUAL ON, THERMOSTAT ON mode, and PROGRAM ON modes. If the room temperature reaches 95 deg. F or greater, the transmitter will automatically change to MANUAL OFF mode and send a MANUAL OFF command to the control module. If the user turns the control back ON and the room temperature is still 95F or greater, the transmitter will switch to back manual OFF and send another OFF command the next time the transmitter reads & updates the room temperature (2-minute update interval).

#### Notice

This device complies with Part 15 of 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 not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.