



www.icshvac.com

TS820 Touchscreen Programmable Thermostat 100121

Installation, Mounting:

CAUTION:

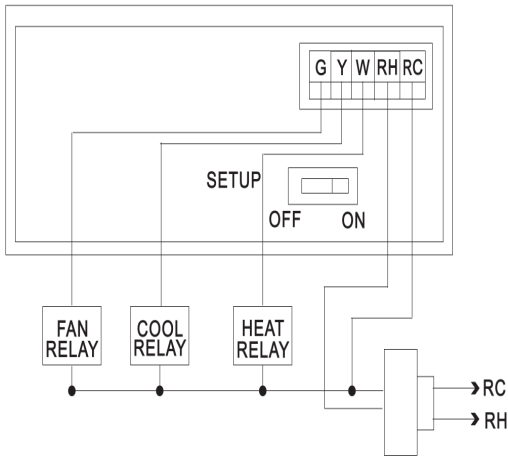
1. Turn off TS820 electronic source and the electrical devices (e.g. heater, cooler) which will be connected before installation and maintenance.
2. The installer must be a trained service engineer.

1. Installation Location:

The thermostat should be mounted on an inner wall 60" above the floor in position where it is readily affected by changes of the general room temperature with freely circulating air. Prevent direct exposure to sunlight; dripping or splashing area. Do not place this unit at a location where air circulation is low, or where it has great temperature changes (e.g. near door). Do not place the thermostat near heat generating sources (radiators, hot air vents, TV or lights).

2. Wiring:

For Heating, Cooling

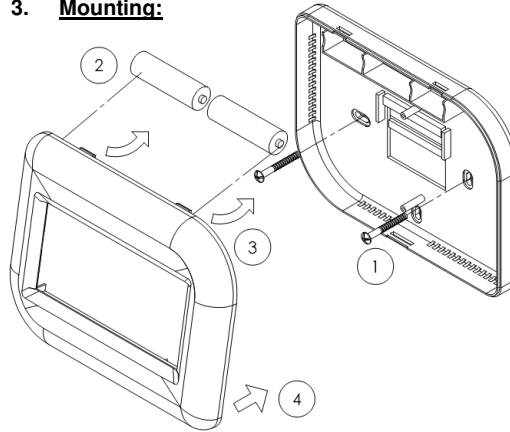


Caution:

- TURN OFF any electrical devices before wiring.
- There are 5 terminals. Connect RH and RC to power supply. Connect terminals G, Y and W as shown in the figure above for Fan, Cooling and Heating. Push all cables back into wall prior to fixing to avoid trapping wires.

- Do not use metal conduit or of cable provided with a metal sheath.

3. Mounting:



1. Base housing
 - Adjust the base on the wall or junction box and ensure the base is at surface level and cover the junction box comfortably
 - If necessary, pull the cables out at the middle hole of the base
 - Place the 2pcs of wall anchors at the wall if necessary.
 - Fasten the base with the 2pcs of long screws
2. Insert the 2XAA batteries into the thermostat battery case (Beware of wrong battery poles)
3. Hold the thermostat on the base. Align the screw blocks with the pins at the back of the thermostat.
4. Push the thermostat straight onto the base until snaps into place.

Feature list:

- Battery powered (2 "AA" alkaline batteries)
- 7 days programs (Mon to Sunday). 4 separate time and temperature settings for each program
- Temperature display in °F or °C
- Temperature Measurable Range: 32 – 99 °F / 0 – 40 °C
- Program Copy for fast programming
- EEPROM stores heat and cool program settings
- Program Override mode (Temporary or Permanent)
- Real clock in 12hr/ 24hr
- Adjustable Check Filter Interval time
- Adjustable Energy Usage Check time
- Adjustable Temperature Control Span
- LCD Backlighting
- Counter for counting Filter, Energy, UV lamp Usage
- Energy Usage Counter
- Calculation for Energy Saving Index
- Defrost Function
- Cleaning screen mode
- Calendar
- Security mode

Communication Setup

1. Power on the receiver
2. Push the slide switch of the receiver to ON
3. Select the communication address at the transmitter
4. Power on the transmitter
5. Receiver's SETUP LED should light up.

In case you find that the RF receiver is interfered by other wireless thermostat controllers, push the slide switch to OFF to clear the address code stored. Redo the above steps with another address to reestablish a communication with the receiver.

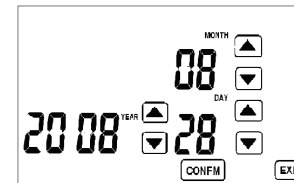
System Setup mode

There are 8 settings in the setup mode:

1. Calendar
2. 24/12 hours selection
3. C/F display selection
4. Fan HE/HG selection
5. Span Selection
6. Delay/ Long delay selection
7. DST (Daylight savings time) selection
8. Screen lock selection

Hold "SYSTEM" for 5 seconds to enter the setup mode. In setup mode, press "EXIT" to return the normal mode and any changes made to the current setting will not be saved. Press "CONFIRM" to save the current setting and move forward to the next setting.

Calendar



Press ▼ / ▲ to change the year, month and year

24/12 hours

Press ▼ / ▲ to choose either 12h (12 hours) or 24h (24 hours) representation.

C/F display

Press ▼ / ▲ to change temperature unit to display in °C/°F

Span Selection



"P" represents Span setting and will be displayed in either °C or °F

depending on the previous temperature unit setting. Press ▼ / ▲ to change span setting. The selectable values are 0.5°C(1°F) / 1.0°C(2°F) / 1.5°C(3°F).

Fan HE/HG

	Heat On	Cool On
HE	Fan On	Fan On
HG	Fan Off	Fan On

Delay/ Long delay

Press ▼ / ▲ to change Delay/ Long delay selection. Delay for Heat on and Cool on is to prevent short cycling of system.

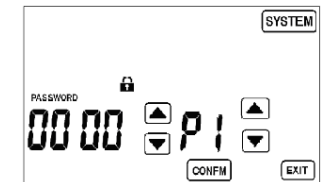
	Delay	Long delay
Heat mode	5~10sec	4~5 min
Cool mode	4~5 min	4~5 min

DST (Daylight savings time)

Press ▼ / ▲ to turn on or off DST function. If the date is in the DST period, the clock will be auto activated. Remark: The DST bases on the USA time zone.

Security lock

Press ▼ / ▲ to turn on/off the screen lock function. When "On" is selected, a 4-digit password is required.



The screen shows a 4-digit password. Press ▼ / ▲ on the left to change the password number. P1 represents the 1st digit password (read from left), which is selected. After setting all 4 digits, press "CONFIRM" to activate the security mode and it will return to normal mode automatically. When security mode is activated, "P" is shown on the LCD and all keys are disabled except "SYSTEM".

Disable the security mode.

1. Press "SYSTEM" and enter the correct password.
2. If the password is correct, security mode will be deactivated. Otherwise the security mode remains activated.

Calendar Read

1. Press the Weekday to show current date.
2. Press the "EXIT" to return the normal mode or it will automatically return to normal mode after idling for 20 seconds

Clock setting

1. Press "CLOCK" to enter the clock setting mode.
2. Firstly, the hour is shown. Press \blacktriangledown / \blacktriangle to change the hour. Press "CONFM" to save the setting.
3. Then, the minute is shown. Press \blacktriangledown / \blacktriangle to change the minute. Press "CONFM" to save the setting and return the normal.

Fan Setting

When FAN is in AUTO, fan will be turned on according to relay status and HE/HG selection. If ON is selected, then it is always turned on regardless to system status.

Cleaning screen mode

1. Press "CLEAR" to enter the cleaning screen mode
2. There is a 20 seconds count down.
3. During counting, all keys are disabled.
4. When the counting is done, press "EXIT" to return to normal mode or press "CLEAR" to repeat the count down.

Usage

TS820 can record the Filter Usage, UV usage and energy usage. The counters count in hour. Each counter is 4-digital long (0~9999). Filter usage starts counting when the fan is turned on. UV usages start counting as long as TS820 is turned on. Energy usage counts when either Heat or Cool is on. When the counts reach the set interval, the corresponding usage icons will be shown.

1. Press "USAGE" to enter the usage mode.
2. Filter counter, UV counter and Energy counter are shown alternatively by pressing "USAGE"
3. Press "CLEAR" to clear the counts.
4. Press "EXIT" to exit the usage mode.

Adjusting Usage Interval Time

1. Hold the "USAGE" for 5 seconds during the usage mode.
2. Press \blacktriangledown / \blacktriangle to change the internal time (0~9999).
3. Press "CONFM" to save the setting
4. Press "EXIT" to exit the interval setting.

Clear the usage counter

Press "CLEAR" to clear USAGE counter.

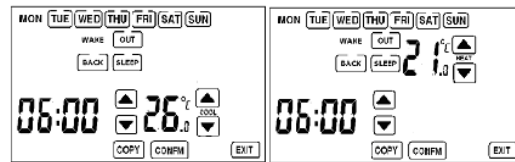
Defrost

When the room temperature is below or equal to 5°C / 40°F, HEATER will always be turned ON and COOLER will always be turned OFF irrespective to the current control temperature set. ❄️ defrost indicator will be shown.

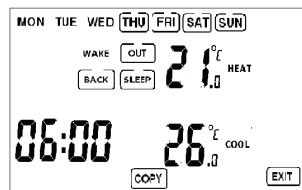
Program mode

1. Press "PROG" to enter the program mode.
2. Default start from "MON" and "WAKE".
3. Current program of setting is without \square
4. Press \blacktriangledown / \blacktriangle to change the time, heat/cool setting temperature.

5. Press "EXIT" to back to normal mode
6. Press "CONFM" to save setting and return to normal mode
7. Press "COPY" to copy the program.



8. During the copying process, the heat/cool setting temperatures can be checked by pressing "WAKE", "OUT", "BACK" and "SLEEP"
9. Press other days with \square which you want to copy the program to. Days that are selected will have no \square shown on the LCD.



10. Press "COPY" again to finish the copy mode and return to program setting mode. Default program settings are shown as below:

Heat mode

	Wake	Out	Back	Sleep
Mon	6:00 (21°C /70°F)	8:00 (16°C /61°F)	18:00 (21°C /70°F)	22:00 (16°C /61°F)
Tue	6:00 (21°C /70°F)	8:00 (16°C /61°F)	18:00 (21°C /70°F)	22:00 (16°C /61°F)
Wed	6:00 (21°C /70°F)	8:00 (16°C /61°F)	18:00 (21°C /70°F)	22:00 (16°C /61°F)
Thu	6:00 (21°C /70°F)	8:00 (16°C /61°F)	18:00 (21°C /70°F)	22:00 (16°C /61°F)
Fri	6:00 (21°C /70°F)	8:00 (16°C /61°F)	18:00 (21°C /70°F)	22:00 (16°C /61°F)
Sat	6:00 (21°C /70°F)	10:00 (16°C /61°F)	18:00 (21°C /70°F)	23:00 (16°C /61°F)
Sun	6:00 (21°C /70°F)	10:00 (16°C /61°F)	18:00 (21°C /70°F)	23:00 (16°C /61°F)

Cool mode

	Wake	Out	Back	Sleep
Mon	6:00 (26°C /79°F)	8:00 (29.5°C /85°F)	18:00 (26°C /79°F)	22:00 (28°C /82°F)
Tue	6:00 (26°C /79°F)	8:00 (29.5°C /85°F)	18:00 (26°C /79°F)	22:00 (28°C /82°F)
Wed	6:00 (26°C /79°F)	8:00 (29.5°C /85°F)	18:00 (26°C /79°F)	22:00 (28°C /82°F)
Thu	6:00 (26°C /79°F)	8:00 (29.5°C /85°F)	18:00 (26°C /79°F)	22:00 (28°C /82°F)
Fri	6:00 (26°C /79°F)	8:00 (29.5°C /85°F)	18:00 (26°C /79°F)	22:00 (28°C /82°F)
Sat	6:00 (26°C /79°F)	10:00 (29.5°C /85°F)	18:00 (26°C /79°F)	23:00 (28°C /82°F)
Sun	6:00 (26°C /79°F)	10:00 (29.5°C /85°F)	18:00 (26°C /79°F)	23:00 (28°C /82°F)

Override mode

1. Press $\text{PERMANENT OVERVERRIDE PROGRAM}$ to select permanent override, temporary override and program.
2. Default heat and cool setting temperature for override and permanent override mode is 26°C / 79°F
3. Press \blacktriangledown / \blacktriangle to change the override setting temperature in heat and cool mode respectively.

Temporary override returns to program mode when matches next program setting time.

System setting

In Normal mode, press "SYSTEM" to enter System mode. System mode is set in the sequence of: HEAT→ COOL→ OFF→ HEAT...

System Mode	
HEAT MODE	Relay will be turned on when the room temperature is lower than the setting temperature
COOL MODE	Relay will be turned on when the room temperature is higher than the setting temperature
OFF MODE	Relay will always be turned off at any temperature.

"LO" will be shown when room temperature is below 0°C / 32°F
 "HI" will be shown when room temperature is above 40°C / 99°F

When the relay is turned on, "HEAT" or "COOL" icons are shown.

Cool mode:

Relay is turned on:

Measured temperature \geq Setting temperature + Span

Relay is turned off:

Measured temperature \leq Setting temperature - Span

Heat mode:

Relay is turned on:

Measured temperature \leq Setting temperature - Span

Relay is turned off:

Measured temperature \geq Setting temperature + Span

For override mode, the operation is the same.

Energy saving index:

In the system mode, the energy saving index uses the program setting temperature for calculating the energy saving and the energy saving index, which is displayed on the LCD.

Daily energy saving index is calculated by the daily difference in setting temperature and standard temperature. Combine all 7 days daily energy saving index will give the weekly energy saving index, which is the value shown on the LCD.

The standard temperature is 21°C / 70°F in winter and the standard temperature is 26°C / 79°F in summer. If the setting temperature is higher than standard temperature (in winter) or lower (in summer), then the saving becomes a loss
 If the net weekly saving is positive, the saving percentage is displayed with the <SAVE>.
 If the net weekly saving is negative, the saving percentage is displayed with the <LOSE>.

There is no energy saving index in off mode.

If the energy saving index is larger than 99%, <HI> is displayed with <SAVE> / <LOSE>.

Low battery

If the voltage batteries drop below 2.7V, BATT icon will be on.

The battery is detected every hour.

Electrical Interface

Temperature measurement: 0~40°C / 32~99°F
 Control temperature range: 5~35°C / 41~95°F
 Temperature resolution: 0.5°C / 1°F
 Temperature accuracy: $\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{F}$
 Transmitter input voltage: 2 X AA alkaline battery
 Receiver Input voltage: 24 Vac 50/60Hz
 Relay contact Current: 1A Max
 Operating Temperature: 0 ~ 50°C
 Storage Temperature: -10 ~ 60°C