

TTP SIGN USER MANUAL

Version 1.5

HiTech electronic Displays Clearwater, Florida

<http://hitechled.com>

03/15/2004

Revision History

Version 1.0:

The first released version. The Part No. of the controller board PPT-CTRL-A .PCB is 201-0000283-01. There is an error in this version, it cannot be adjusted the time for summer time.

Version 1.1:

Add daylight saving time. The Part No. of the controller board is updated to 201-0000283-02.

Version 1.5:

Add “open” display schedule in a week, temperature sensor error adjustment. In the previous version, temperature cannot be show correctly if the temperature is over 100F or below -10F, and there is a little problem to construct double side sign system. But in the new version, all the bugs were fixed. The Part No. of the controller board is updated to 201-0000295-01.

CONTENT

Introduction	4
Characteristic and Specification	4
How to use the TTP sign	5
The TTP controller board setting	13
How to connect the sign	16
The TTP sign installation	20

Introduction

TTP sign can display **T**ime, **T**emperature, **P**rice and “**O**PEN” alternately. The display interval of info transition can be defined. The range of interval is from 00sec to 99sec. User can schedule for “OPEN” in a week. The TTP Sign can detect 3 levels brightness of environment: night level, dusk level and day level. In order to meet different customer desire, it is allowed customer define 16 levels user display brightness in each environment brightness. The master TTP sign contains GPS time calibration system. As soon as GPS tracks a satellite, it can calibrate the real time. Temperature info is shown as Fahrenheit. Customer can use RF remote controller to modify price, each info display interval, display brightness and so on. Waterproof design is suitable for outdoor using. Note: when GPS cannot track any satellite, customer can use RF remote controller calibrate the time manually.

Characteristic and Specification

Characteristic:

- Display **T**ime, **T**emperature, **P**rice & “**O**PEN” alternately.
- Use RF wireless remote controller to change the parameters of sign.
- Capability of detecting 3 levels brightness of environment. Users can custom 16 levels brightness of display in the every brightness of environment.
- Support Master / Slave network link. A master sign can control 15 slave signs at most. All the signs can be controlled by the RF remote controller.
- Changing any parameter of the sign need verify the password.
- After entering the setting mode, it will be quitted the mode when no key pressed in 10 second.
- Contain EEPROM IC. It stored the parameters of sign when power off.
- Temperature is shown as Fahrenheit.
- User can adjust the offset of temperature sensor linearly.
- Contain GPS time calibration system. It calculates the local time according to time zone when tracking the satellite.
- Contain high precision Real-Time Clock (RTC). It runs accurately although GPS time calibration system is unavailable.
- “OPEN” can be scheduled within a week.
- All the power devices are recognized by UL.

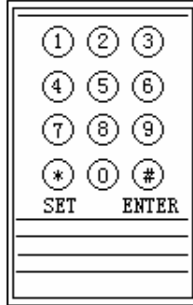
Specification:

- Use voltage: AC: 100V ~ 120V, 50HZ ~ 60HZ
- Display brightness: 16 levels
- Controlled distance: larger than 30 meter
- Display module: 4 digitals

- Range of price: 0.00 ~ 99.99
- Range of measuring temperature: -67F ~ 257F.
- Display of time: 12 or 24-hour mode, and support daylight saving time.

How to use the TTP sign:

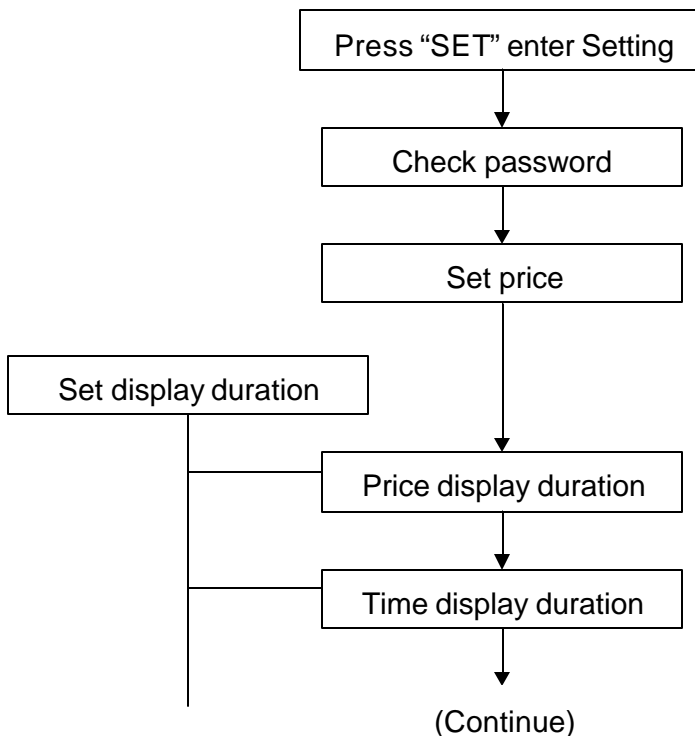
Users can use RF remote controller to change parameters of sign. The remote controller contains “0” --- “9”, “Set”, “Enter”, as follow diagram:

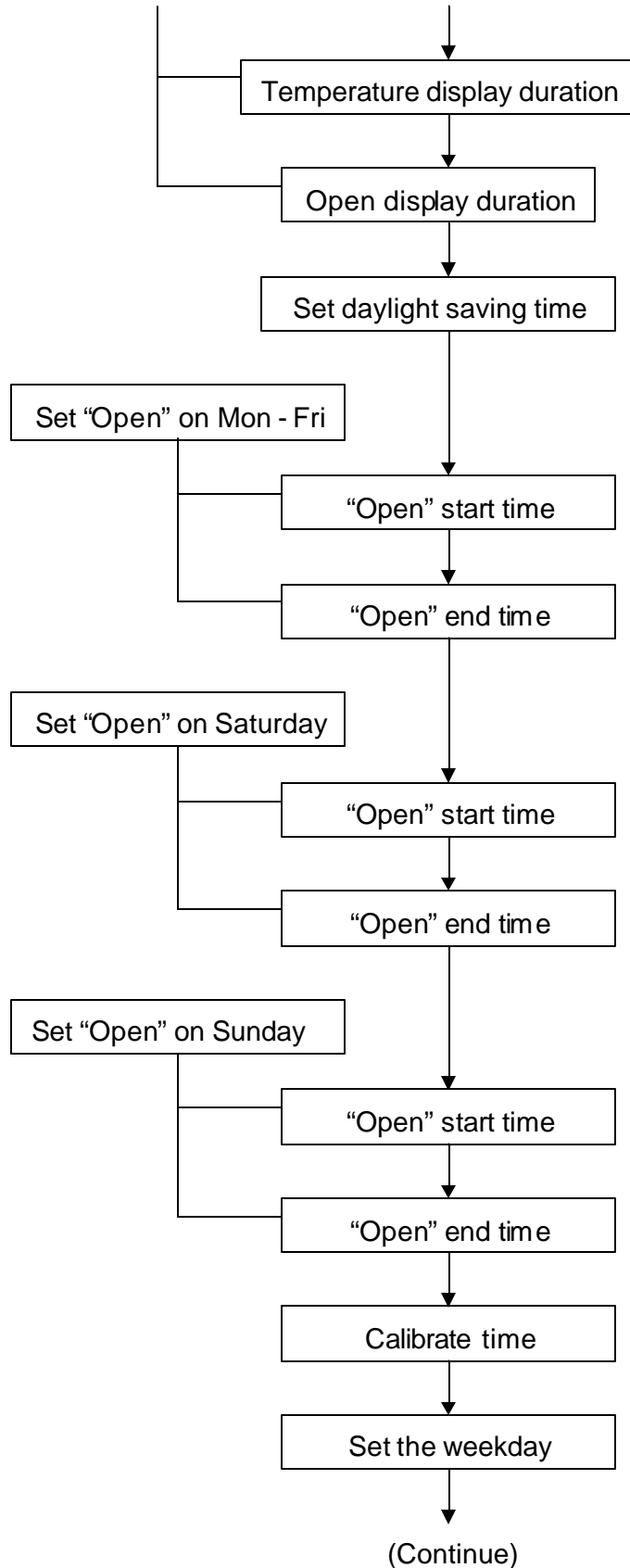


Wireless Remote Controller

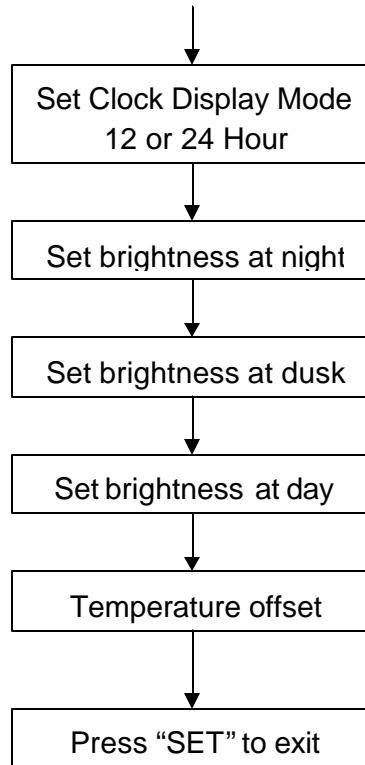
- Use the number “0” --- “9” to change figure directly.
- Use “Set” to enter or quit the setting mode without saving the parameters.
- Use “Enter” to confirm and save the parameters.

The TTP sign setting flowchart:





Caution: The slave sign don't appear the setting menu below the "Open display duration".

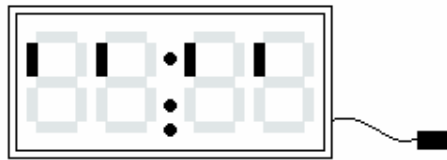


The operation of setting the TTP sign:

- (1) When power on, the sign will enter self-test mode and duration 8 sec. After self-test mode, the sign will return to normal. If press "Set" in this mode, the master sign will prompt the user to enter password creation mode. Till you have pressed six digits password or press "Set" once again, the sign will exit the self-test mode and enter normal display.

For example: If you want to set the password as "789012", complete the following:

1. In self-test mode, the sign show as:



TTP SIGN

2. Press "Set", the sign enter password creation mode, shown as:

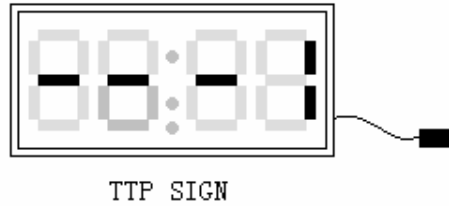
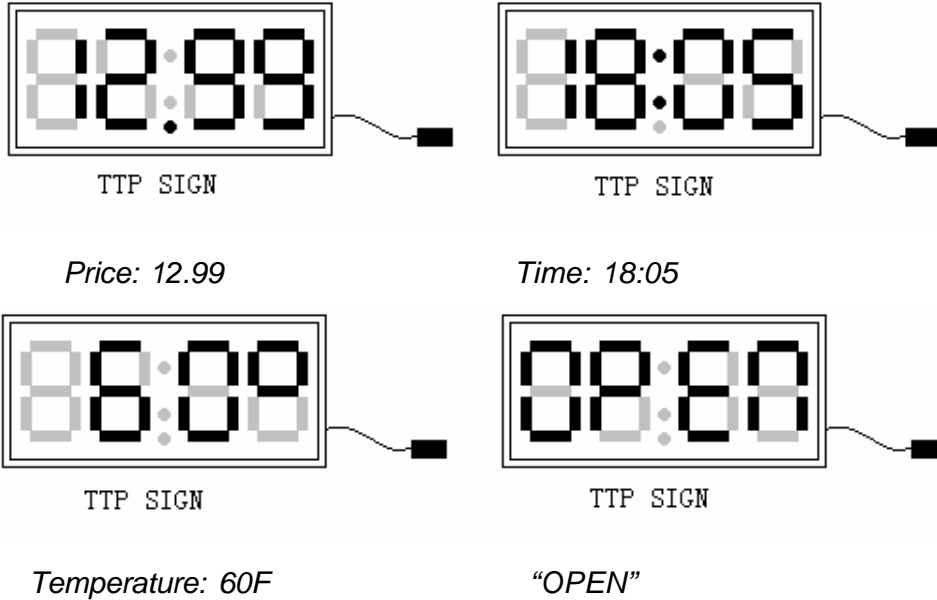


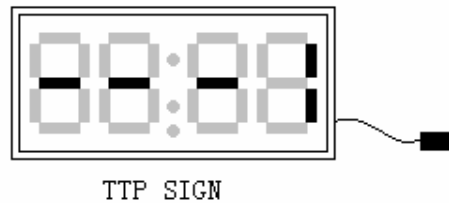
Figure "1" flash means you press the first digit of the new password. After pressing "7", figure "2" flashing replaces figure "1".

3. The sign saves the new password "789012" and Enter normal after you have pressed "8", "9", "0", "1", "2" in turn.

- (2) The sign displays Price, Time, Temperature (TTP) & "OPEN" alternately in normal operation.



- (3) Before altering the parameters of sign, the sign needs to verify password. Press "Set", the master sign automatically enters the password verification mode. In password verification mode, the sign shows "---1", and the last figure "1" flash, it means to now input the 1st digit of password.



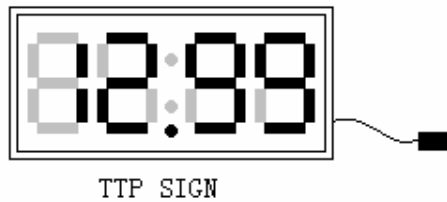
After you press the digit, it show "2" flash instead of "1", till you have pressed

the six digit password, the sign exits the password verification mode. If you key in the correct password, you can alter the parameters directly using the RF remote controller.

- (4) The master sign contains some parameters to be set, while a slave sign contains much less parameters to set. You must set the master sign at first. After you key the right password in, one figure of the master sign begins to flash with the frequency of one time a second. At this time, pressing "0 — 9" will change the figure of flashing position and the flash move to next figure automatically. Pressing "Enter" enters the setting of next parameter. Repeat the operation as above to set other parameter. Until you have modified all parameters of the master sign, the sign will return to normal mode or enter the setting of next sign automatically if there is another slave sign needing setting. If you don't want to set the sign, pressing "Set" will exit the setting without saving the parameter, and return to normal or enter the setting of slave sign if the system contains slave signs.

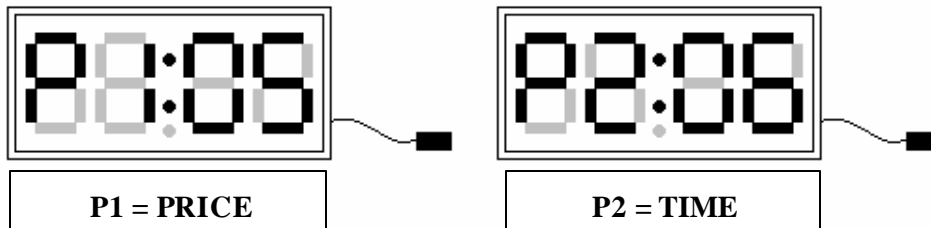
The details of the setting menu and steps:

- a. Setting the price.



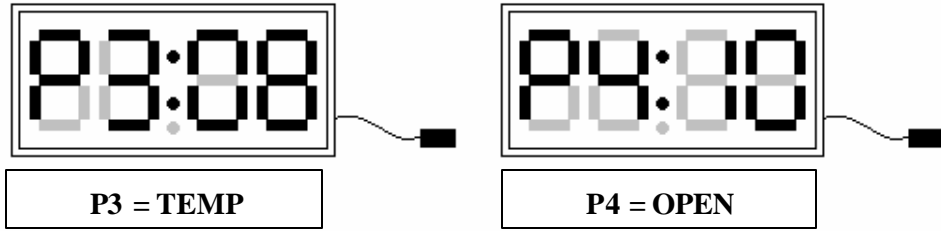
You can press "0" to "9" to modify the price from 0.00 to 99.99. For instance, you want to change price "12.99" to "13.58". Press "Set", and verify the password. After you key the right password, the 1st figure "1" flashes, you may press "1", and the 2nd figure "2" flashes, you may press "3", and the 3rd figure "9" flashes, you may press "5", and the 4th figure "9" flashes, you may press "8", at last you press "Enter" to save the price. If you want to set another parameters, continue setting, otherwise you may press "Set" to exit the setting and return to normal.

- b. Defining the display duration.



Price display duration: 5 seconds.

Time display duration: 6 seconds.

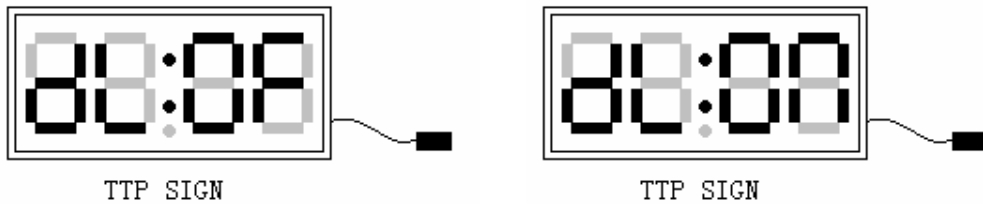


Temperature display duration: 8 seconds.

“Open” display duration: 10 seconds.

You can define the duration from 00 second to 99 seconds. 00 second means the sign doesn't show the info. If you want to black the sign, you can set all the intervals to 00 second.

c. Set daylight saving time



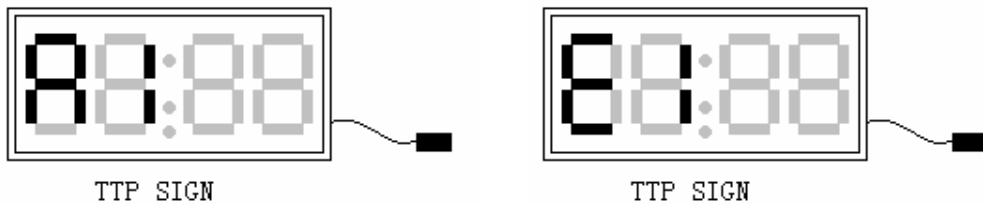
Daylight saving time is invalid (OFF).

Daylight saving time is valid (ON).

The sign will add an hour automatically.

Press “0” to “9” to turn daylight saving time “ON” or “OFF”. This will only need to be used if the GPS does not update the time for the time zone.

d. Schedule for “OPEN” in a week



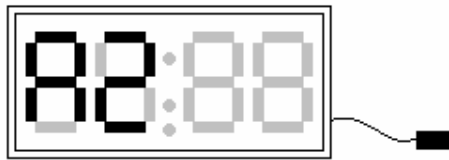
The start time of showing
“OPEN” in Mon-Fri

The end time of showing
“OPEN” in Mon-Fri

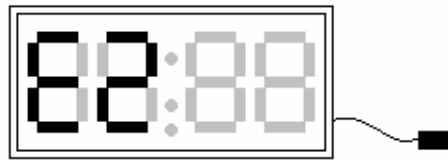
User can set the time within a day that decides the sign whether to show the “OPEN”.

For instance, you want to set “OPEN” show from 8am to 4pm in Mon-Fri. Before entering the setting the start time in Mon-Fri, the sign will indicate “A1” for one to two second, and then you may key the time “08:00” that you need. When finishing setting the start time, the sign will enter to set the end time in Mon-Fri, and you may key the time “16:00” in 24-hour mode.

Caution: The time must be input in 24-hour mode.



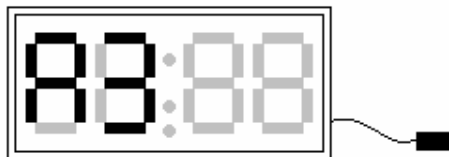
TTP SIGN



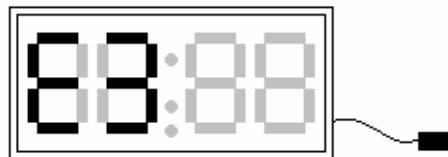
TTP SIGN

*The start time of showing
"OPEN" in Saturday*

*The end time of showing
"OPEN" in Saturday*



TTP SIGN

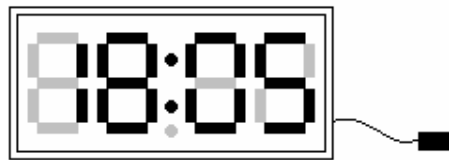


TTP SIGN

*The start time of showing
"OPEN" in Sunday.*

*The end time of showing
"OPEN" in Sunday.*

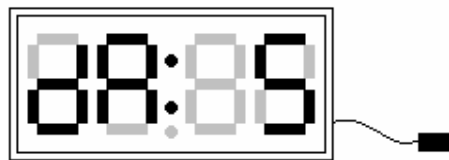
e. Calibrating the time



TTP SIGN

Caution: You must use 24-hour manner to calibrate the time, the calibration range from 0:00 to 23:59. If the GPS module can track a satellite, the display time will synchronization with it. And your manual calibration will be ineffective

f. Set the weekday



TTP SIGN

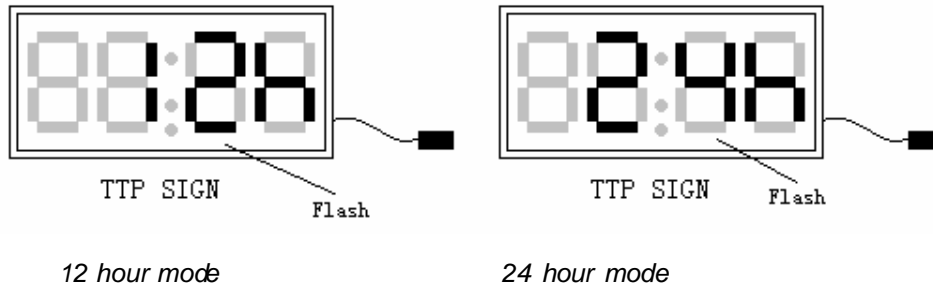
Friday

You can set the day from Monday (1) to Sunday (7).

For example: Press "1" if it's Monday, and Press "7" if it's Sunday.

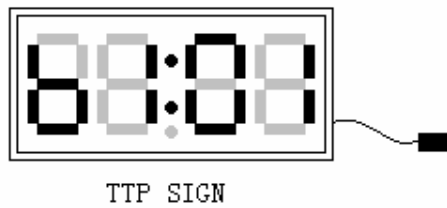
Caution: The GPS cannot calibrate the weekday, you must set it manually.

g. Switch 12/24-hour time mode

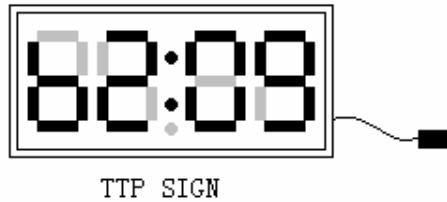


Press "0" to "9" to switch 12/24-hour mode.

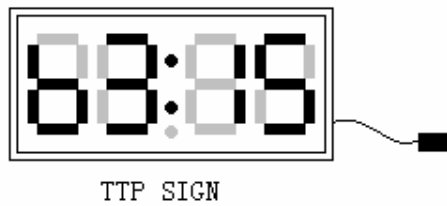
h. Adjusting the display brightness.



Set the display brightness when the sign at night.



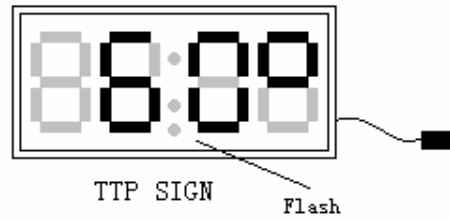
Set the display brightness when the sign at dusk.



Set the display brightness when the sign at day.

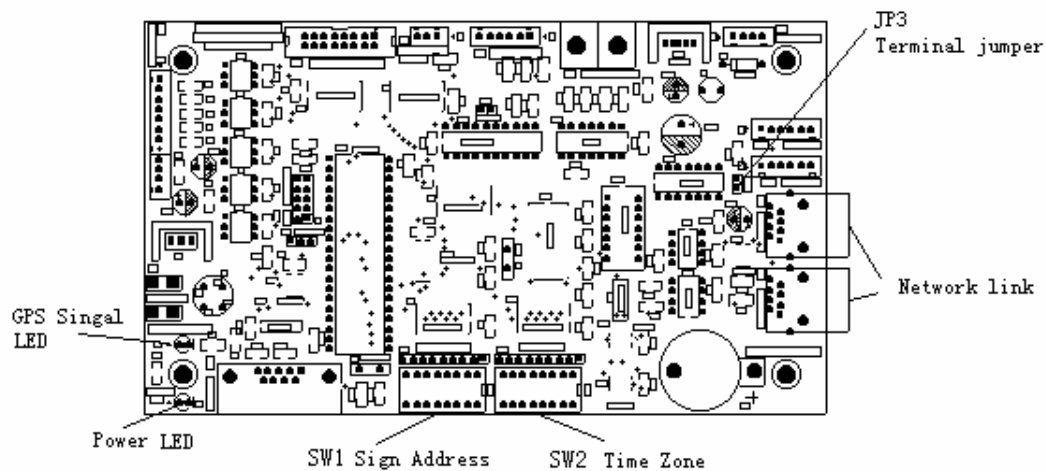
You can adjust the display brightness from 00 to 15. Brightness 00 is the darkest, and brightness 15 is the lightest.

i. Adjust the offset of temperature sensor



Press “8”, the temperature that is show on the sign will be plus one, and press “0”, it will be minus one. You can decrease the error between the measured temperature and the actual temperature.

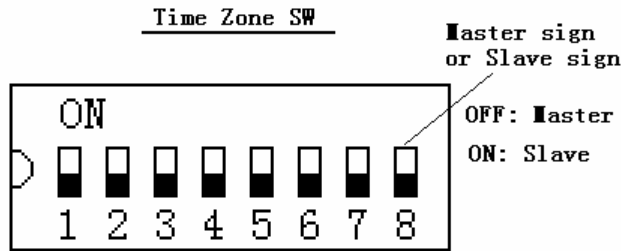
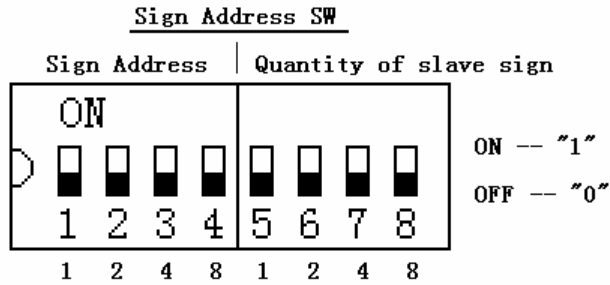
The TTP controller board setting:



1. The mas ter sign must install RF wireless remote receiver, and the slave sign needn't.
2. Each system only contains one master sign. Set the sign as master / slave through **the 8th bit of Time Zone SW**.
3. The address of master sign is “0”, and slave sign address are from “00” to “14”. Set the address of the sign through **low 4bit of Sign Address SW** on the control board.
4. Must set the quantity of slave sign correctly. The address of slave sign starts from "00" according to the numeral order to establish its address. Otherwis e, it can't work normally. Set the quantity of slave sign also through **high 4bit of Sign Address SW** on the control board .
5. If only one group, the system has only one master sign, the other signs are slave. The master sign's address is “00” and the slave sign's address is from “00” to “14” . In the system, if the double side signs show the same rate, they must set a same address.

6. Both terminal rate signs on the network **MUST** set JP3 "Close", and the other rate signs set JP3 "Open".
7. If system is group signs, every group signs show the same rate, and their addresses are same each other.
8. You must set the local time zone correctly.

(1) How to set the sign address:

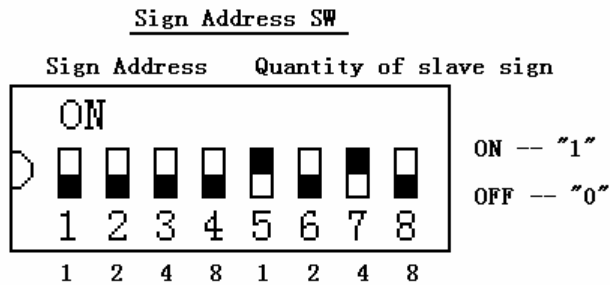


Sign Address SW FUNCTION (Master sign)

BIT1	BIT2	BIT3	BIT4	BIT5	BIT6	BIT7	BIT8	Mean
0	0	0	0	Quantity of slave sign				Normal
1	1	1	1	1	1	1	1	Self-Test

For example:

The master sign controls 5 slave signs. The quantity of slave sign is 1 + 4 = 5. The Sign Address SW is 00001010. And the 8th bit of Time Zone SW is OFF.

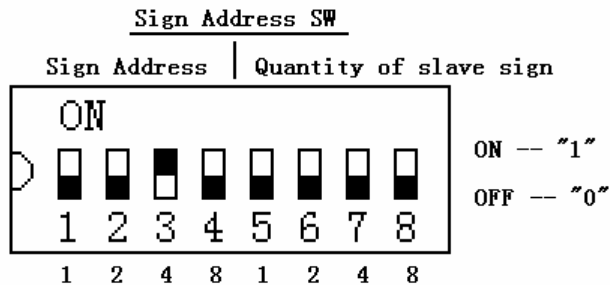


Sign Address SW FUNCTION (Slave sign)

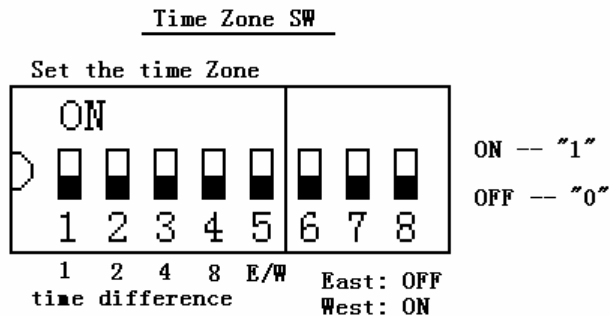
BIT1	BIT2	BIT3	BIT4	BIT5	BIT6	BIT7	BIT8	Mean
The address of slave sign is from 0000 to 0111				0	0	0	0	Normal
1	1	1	1	1	1	1	1	Self-Test

For example:

The slave sign address is 4. The Sign Address SW is 00100000. And the 8th bit of Time Zone SW is ON.




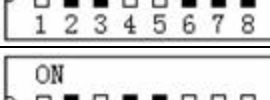



(2) How to set the time zone:



Because the received time of satellite is GMT (Greenwich Mean Time), if you want to get the correct local time, you must set the **Time Zone SW** correctly. The whole world has been divided into 24 time zones, while America take up 6 time zones, which located in the west. The 5th bit of the **Time Zone SW** is ON. The 1st to the 4th bit of the **Time Zone SW** are used to set the time difference.

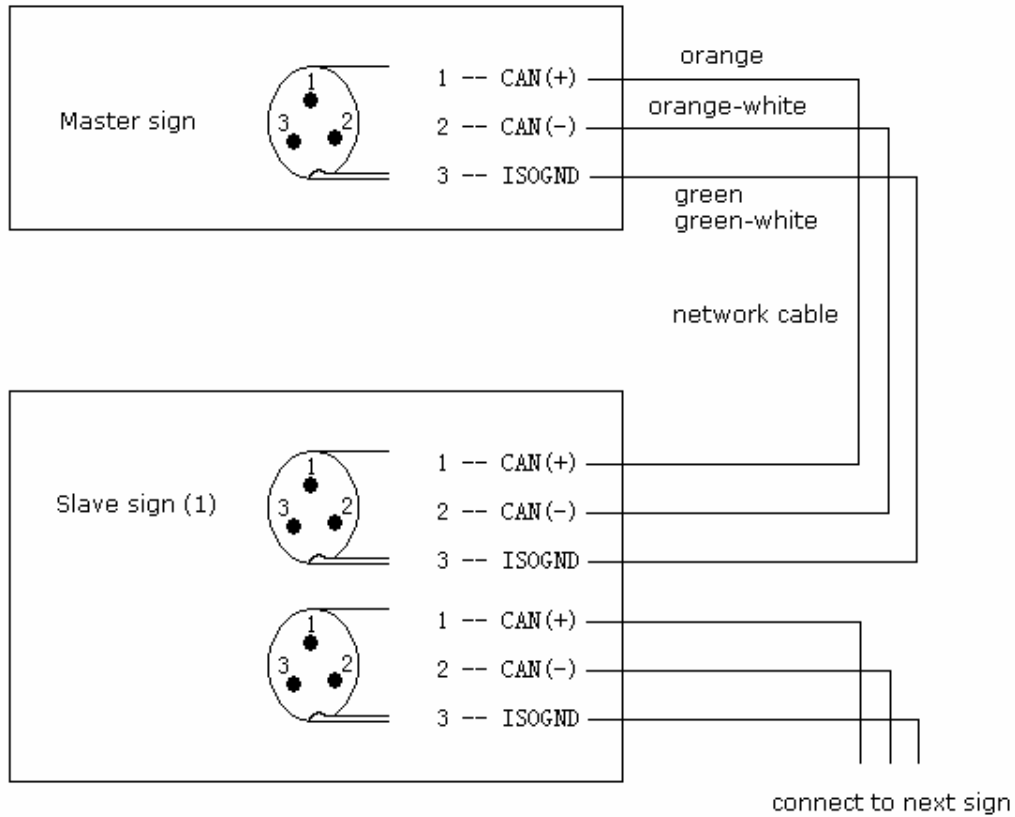
Time Zone	Time Zone SW	State in U.S.
Eastern Time GMT – 5hr		Michigan, Indiana, Ohio, Kentucky, Georgia, New York, Pennsylvania, West Virginia, Virginia, North Carolina, South Carolina, Florida, Washington DC, New Jersey, Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine.

<p>Central Time GMT – 6hr</p>		<p>Parts of North Dakota, South Dakota and Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, Louisiana Wisconsin, Illinois, Tennessee, Mississippi, Alabama.</p>
<p>Mountain Time GMT – 7hr</p>		<p>Montana, Wyoming, Idaho, Utah, Colorado, Arizona, New Mexico and parts of North Dakota, South Dakota and Nebraska.</p>
<p>Pacific Time GMT – 8hr</p>		<p>Washington, Oregon, Nevada, California.</p>
<p>Alaska Time GMT – 9hr</p>		<p>Alaska</p>
<p>Hawaii Time GMT – 10hr</p>		<p>Hawaii</p>

Note: not daylight saving time.

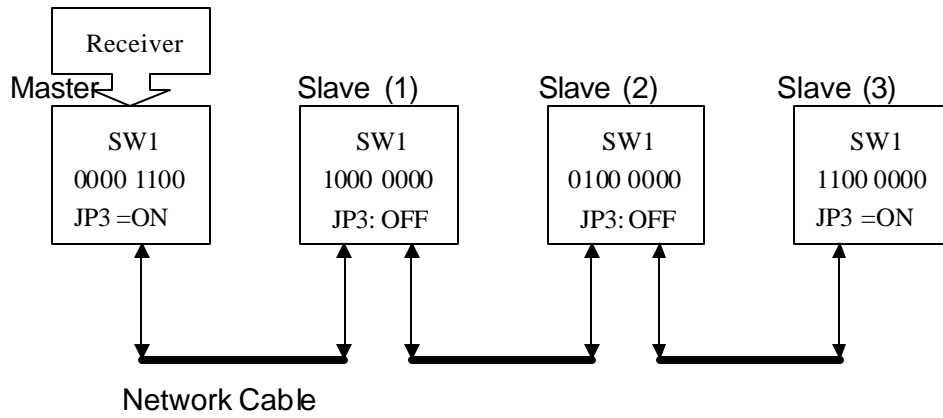
How to connect the sign:

The master sign must have the wireless receiver module installed, the slave signs don't. Only the master sign can respond to the remote control, check the brightness of surrounding environment, measure the temperature and receive the GPS time. All signs in the system are connected in a CANBUS system, and link from master sign to slave signs, and use network cable.



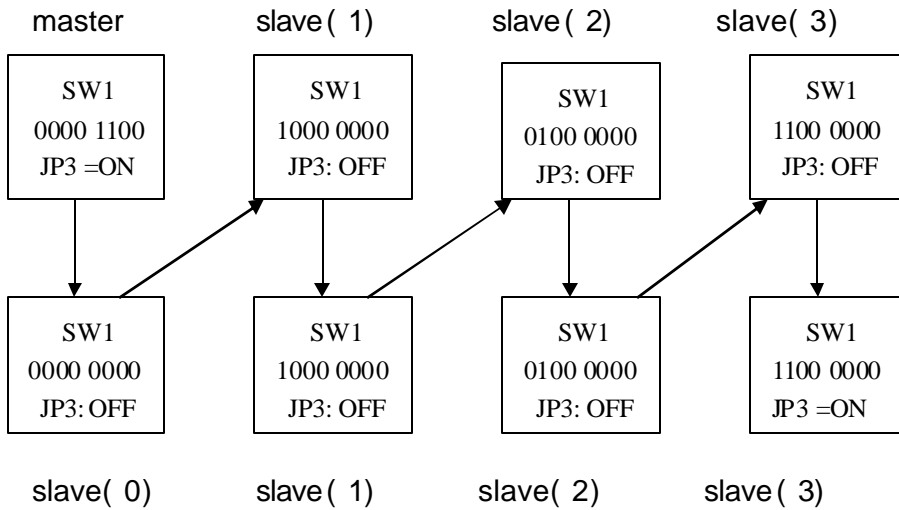
Use the network cable link the master sign to the slave sign each other, as follow diagram. Both terminal rate signs on the network MUST set JP3 "Close", and the other rate signs set JP1 & JP2 "Open".

(1) Single side signs link as follow diagram



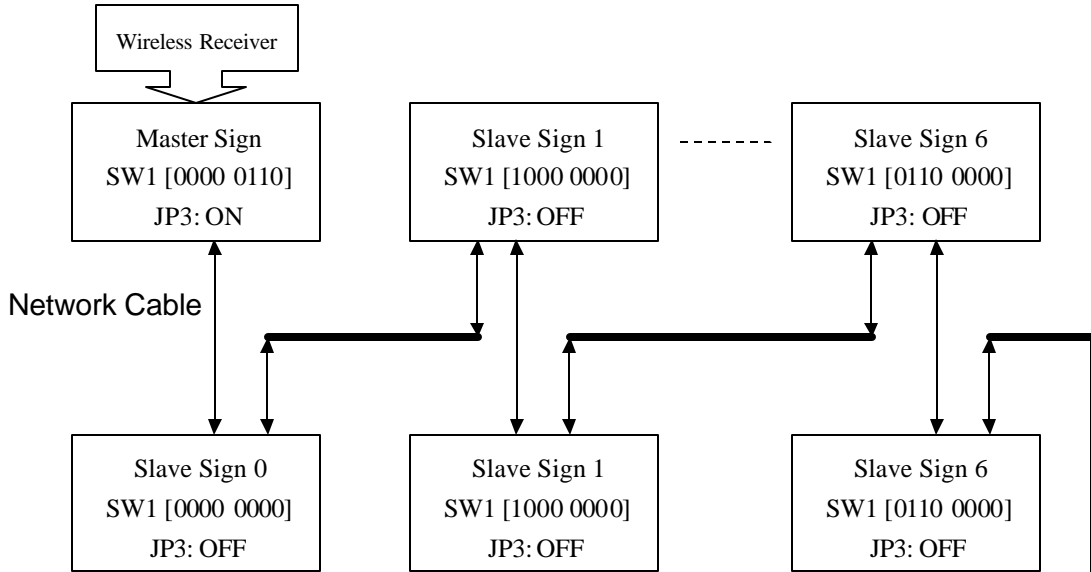
(2) Double side signs link as follow diagram

Include a master sign and 3 slave signs each side.

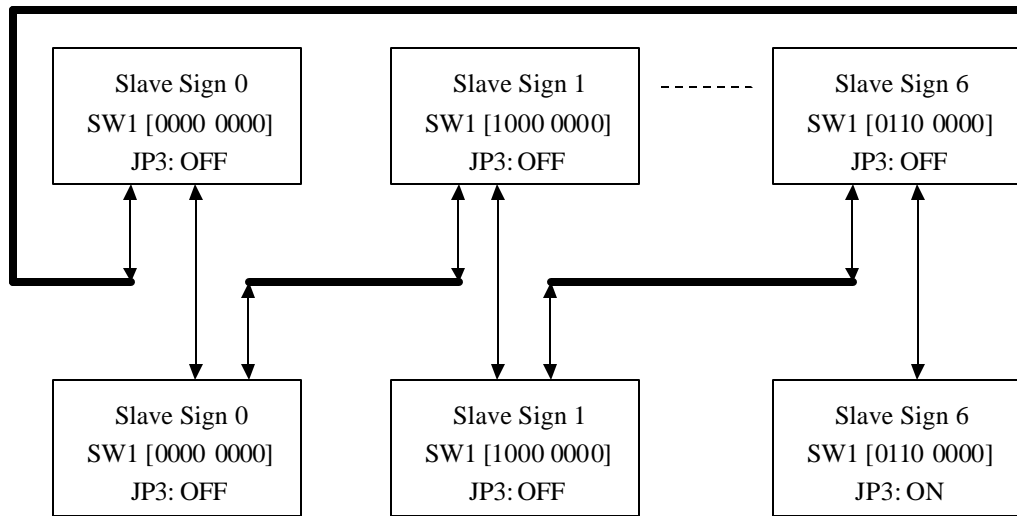


(3) Multi group and double side signs link as follow diagram

Group"1":



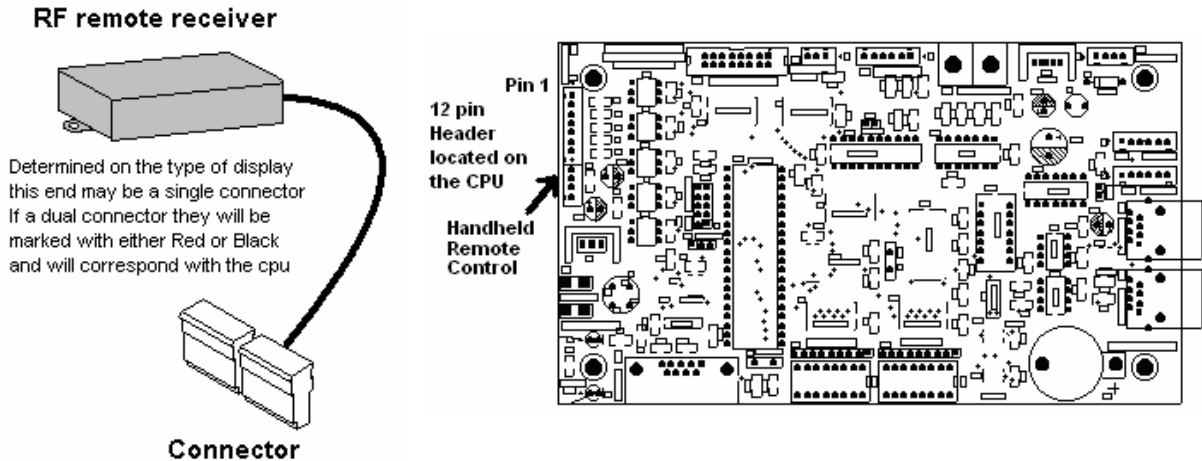
Group"2":



The TTP sign installation:

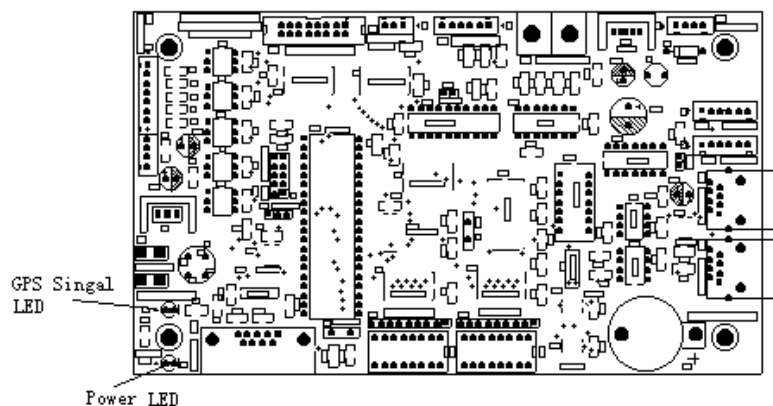
1. The RF remote receiver installation:

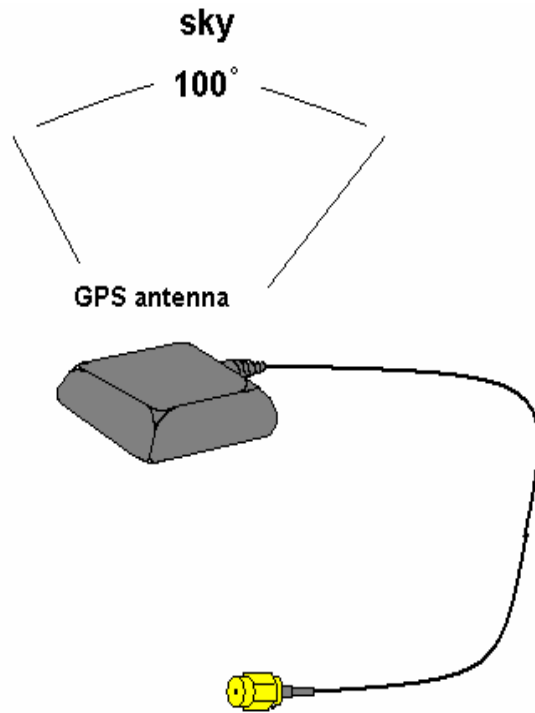
The RF wireless receiver module is fixed outside the case. If the case is installed on the wall, the receiver module cannot be fixed behind the case. Otherwise, it will affect the control distance.



2. The GPS antenna installation:

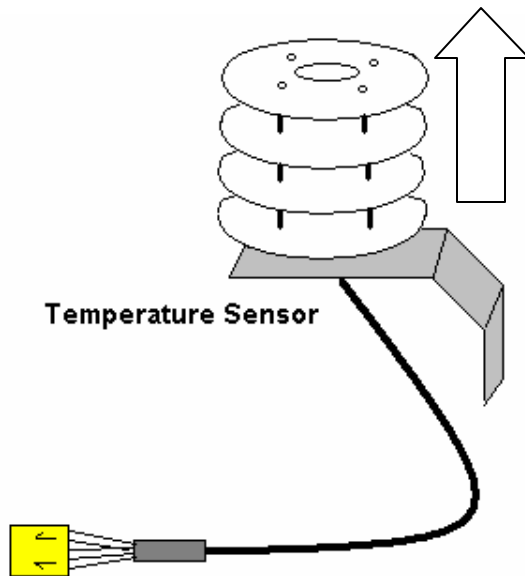
If the GPS module can't receive the satellite signal, the time of the sign will not synchronize with the satellite. So the GPS antenna must install at the position where GPS module can receive one satellite signal at least. When the GPS module receive satellite signal, the GPS signal LED will light "ON". The GPS antenna must skyward, and orientation angle must large than 100° to the sky.





3. The temperature sensor installation:

In order to reduce the offset of temperature, the temperature sensor must be installed at the position where it has less heat radiation. And it isn't closeto the sign case.



Connect Temperature Sensor

