TG009C-D
Infrared Single Axis Controller Instruction

This model controller can achieve automatic tracking of uniaxial sun, and can be through the infrared remote control and liquid crystal display, parameter settings and status display.

**Packing includes:**

Controller by the silicon detector head, controller, infrared remote control and other components

1. main controller
2. infrared remote control
3. sun azimuth detection head
4. power input (red positive black negative)
5. Fuse
6. motor output
Test head installation:

The detection head must be firmly installed on the platform with the platform action, pay attention to the east and west direction to correspond to the geometric direction.

Azimuth detection head with M6 bolts fixed on the platform, pay attention to the identification of things on the head should correspond to the direction of geography east-west.
Controller Installation:
The controller is installed in the fixed position near the platform, pay attention to the outlet hole down. Avoid sunshine and rain. The control box is fixed with two M3 screws, the screw spacing is 96mm.

Product parameter:
Operating voltage: 12-24V DC
Rated current: Max 6A
Applicable motor type: DC brush motor (requires limited bit function)
Remote control type: Infrared six key remote control
Remote distance: Up to 8 meters
Waterproof performance: Waterproof shower
Requirements for the platform:

Platform for single-axis flip, DC brush motor control, the motor current is less than 5A, the device requires a limit function, if your motor does not limit function, you can refer to the following figure to do the limit.

Pre-boot check:

1. Is the test head installed correctly?
2. Is the controller installed?
3. Is the motor limit function normal?
4. Is the motor properly connected to the terminal?
5. Is the remote controller installed with a battery?
6. After confirming the correctness, connect the power supply.
**How to use the controller?**

1. Power on and show the display model interface, LCD backlight 5 seconds after the extinguished.

![Display Model Interface](image)

2. Press the remote control QUIT key for five seconds, you can control the LCD backlight back and off.

![Hold (QUIT) 5's Light ON/OFF](image)

3. Short press the remote control SET button once, you can enter the manual operation interface.

![Manual Operation Interface](image)

4. Short press the remote control E, W key, you can control the platform east and west mobile. (If the direction of the action is reversed, the motor is switched)

![Manual Operation Interface (east-west)](image)

5. Short press the remote control E +, W + key, you can control the platform to move east and west. Press again to stop.

![Manual Operation Interface (east-west lock)](image)

6. Press and hold the remote control SET button for more than 5 seconds, then enter the parameter setting interface.

![Parameter Setting Interface](image)
7. The first page is the voltage value that shows the silicon value of the detection head, and the calculated reference ratio X0 (the current detector head voltage is divided by the east voltage, which is referred to later when the X0 parameter is set).


9. TX stands for automatic tracking, after waiting for the sun, waiting for the next track of the intermittent time. (In seconds)

10. T3, T4 on behalf of the wind to smooth the implementation of the action time, when the wind speed overrun, the first time to the west of T3, and then the implementation of T4 time east. (In seconds)

11. T7 for the wind to calm the action of the follow-up self-locking time, when the wind calm action after the implementation of the delay time T7 time to exit. (In seconds)

12. T8 is cloudy delay time, when the loss of sunlight, the device will wait in place, when the time has not been the sun, the control platform to perform night homing action. (In seconds)
13. T9, T10 for the night or cloudy homing action execution time, when the implementation of homing action, the first implementation of T9 time west, and then the implementation of T10 time east. (In seconds)

14. V2 is the wind speed threshold setting, when the wind speed sensor signal voltage exceeds this value, the implementation of wind speed flattening action. (Unit: volts)

15. V3 for the cloudy sunny day to determine the threshold, when the detection of things on both sides of the silicon voltage above this value, then determine the sunny into the automatic tracking. (Unit: volts)

XO is the detection head calibration parameters, when the difference between the East and West parameters, there will be tracking results and the actual location of the deviation, in which case you need to set the calibration parameters, the correction method is to use the manual function of the platform at the sun, Enter the first page of the parameter settings page to see the X0 calculated value, and then turn to this page to set up.

16. After all the parameters are set, press the remote control QUIT key to save and exit. The device will enter the automatic operation according to the sensor signal and the set parameters.
Automatic operation description:

1. In the automatic operation state, if there is a sun, and the solar radiation to the detector head on any side of the silicon voltage value exceeds the set V3 value, then enter the sunny delay.

2. If the sun continues to reach five seconds, then enter the automatic tracking status.
At this point the controller according to the detection of both sides of the wafer voltage to determine the value and control the motor east or west to the action.

3. When the sun is aligned, the motor is stopped and enters the intermittent wait time, and the waiting time ends and the tracking alignment is performed again.

4. If the solar radiation in the detection of silicon on both sides of the voltage on the wafer below V3, then enter the cloudy delay.

5. If the persistent cloudy days to reach the T8, then the implementation of cloudy night homing action. This action is west T9 time, then east T10 time, should be reasonably set the value of the parameter to allow the platform to reach the desired location. (Usually flat or east)
6. After the homing action is completed, enter the night lock state. Waiting for the next day sunshine.

![Image showing night lock state]

7. If the wind speed sensor signal voltage exceeds the set value V2, then enter the wind speed homing state. At this point the first time T3 to the west, and then the implementation of T4 time east, should be a reasonable set of parameters to allow the platform to achieve the desired location. (Usually centered)

![Image showing wind homing state]

8. After the homing action is completed, enter the wind speed lock delay. In T7 time, will keep the platform in this state.

![Image showing wind lock state]

9. If the T7 time is over, it is already cloudy or night, then enter the wind speed + night lock state. In this state, the night homing action will no longer be performed.

![Image showing night lock state]
Characters mean

<table>
<thead>
<tr>
<th>Character</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Automatic tracking status</td>
</tr>
<tr>
<td>MT</td>
<td>Manual control status</td>
</tr>
<tr>
<td>FS</td>
<td>Wind speed start state</td>
</tr>
<tr>
<td>SL</td>
<td>Cloudy state</td>
</tr>
<tr>
<td>SET</td>
<td>Parameter setting status</td>
</tr>
<tr>
<td>F</td>
<td>Wind speed sensor voltage value</td>
</tr>
<tr>
<td>G</td>
<td>Check both sides of the voltage and value</td>
</tr>
</tbody>
</table>

Suggested parameter values:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>TX</td>
<td>180</td>
</tr>
<tr>
<td>T3</td>
<td>Platform from east to west full time * 1.2</td>
</tr>
<tr>
<td>T4</td>
<td>The time required for the platform from the west to the middle</td>
</tr>
<tr>
<td>T7</td>
<td>600</td>
</tr>
<tr>
<td>T8</td>
<td>1200</td>
</tr>
<tr>
<td>T9</td>
<td>With T3</td>
</tr>
<tr>
<td>T10</td>
<td>With T4</td>
</tr>
<tr>
<td>V2</td>
<td>According to the configuration of the wind speed sensor manual</td>
</tr>
<tr>
<td>V3</td>
<td>1.5</td>
</tr>
<tr>
<td>X0</td>
<td>1</td>
</tr>
</tbody>
</table>

Please attention:

1. The probe should be mounted on the south or north side of the platform at the higher edge of the location, the installation should be strong and reliable.
2. Should be used battery power, cannot use solar panels directly power supply.
3. Control box should be installed in the sun and rain is not easy to position.
4. The motor used by the device requires a limited bit function. The motor voltage and current should be within the range required by the controller.
5. After using the manual function, if you need to switch to automatic, you need to exit the manual cannot, do not forget to leave and let the device stay in the manual state.
6. In the strong radiation of the cloudy weather or haze sunny, the tracking accuracy will be reduced.
7. Regularly clean the dirt on the test head, keep the head clean surface can improve the tracking accuracy.