USER MANUAL FOR SVBMBBLED BOOM BARRIER

1. **Main Features**

- Stable and Reliable:

  Equipped with multiple protection functions including overvoltage, undervoltage, reverse polarity, short circuit, overcurrent, and overload protection. These safeguards ensure reliable operation of the switching power supply, motor, and controller.
- Smooth Operation:

  Utilizes advanced servo control technology to achieve smooth acceleration and deceleration, ensuring stable and linear movement of the barrier arm.
- Flexible Interfaces:

  Supports multiple input and output interfaces, making it compatible with a wide range of application scenarios.
- Comprehensive Functionality:

  Incorporates advanced features such as intelligent gate opening count and automatic slow closing after timeout, effectively addressing operational requirements and enhancing user convenience.
- Simple and User-Friendly Setup:

  Parameter configuration is straightforward and easy to understand, enabling quick and efficient system setup and debugging.
- Operation Cycle Recording:

  Capable of recording the total number of operations, providing valuable data for maintenance planning and system reliability assessment.

2. **Specification Parameters**

- Working Voltage: DC 24V
- Operating Temperature: -40°C to +80°C
- Operating Humidity: ≤ 90% RH (non-condensing)
- Motor Power: ≤ 180W

- Static Power Consumption: ≤ 1.2W
- Operating Speed: Adjustable in 100 levels, depending on motor power and reduction ratio

3. Wiring Diagram and Related Explanations

1. All input control signals of this controller—such as anti-crush, ground sensor, open, stop, and close—are active high-level signals.
2. The backlight output interface is an XH2.54-4P socket, with an output voltage of DC 12V and a maximum output current of ≤ 0.2A.
   ⚠ Do not connect high-power loads to this interface.

4. Key Functions

4.1 MENU

- In normal operation mode, press and hold this key for more than 2 seconds to enter the menu mode.
- In menu mode, press and hold this key for more than 2 seconds to exit the menu.
- When setting parameters in a sub-menu, pressing this key will exit without saving the changes.

4.2 UP (+)

- In normal operation mode, this key is used to open the barrier.
- In menu mode, this key is used to navigate upward or increase values:
  - Short press: Increase by 1
  - Long press: Continuous increase

4.3 DOWN (–)

- In normal operation mode, this key is used to close the barrier.
- In menu mode, this key is used to navigate downward or decrease values:
  - Short press: Decrease by 1
  - Long press: Continuous decrease

4.4 ENTER

- In normal operation mode, this key functions as the stop key.
- In menu mode, pressing this key allows entry into the selected sub-menu for parameter configuration.
- When setting parameters, pressing this key will save the changes and exit the sub-menu.

5. Menu Structure

The controller menu is divided into two main categories:

- P Menu (Motion Parameters):
  Used to configure movement-related settings such as speed, position, and operation behavior.
- F Menu (Function Parameters):
  Used to configure functional settings such as automation logic, safety features, and system behavior.

This section provides only a brief overview of the menu structure. For detailed explanations of each parameter, refer to the subsequent sections of this manual.

Movement Parameters Menu (P menu)		value range	default	Setup Instructions
P00	Study Itinerary (Limited)	---	---	**The controller must learn the travel before it can be used normally to adapt the motor and record the maximum range of the barrier arm operation (i.e., the operating range between the upper limit position and the lower limit position) :** Press the confirmation key to enter this menu. After "00*" is displayed, press the UP or DOWN key. The turnstile will automatically run one round trip and display "OFF", indicating that the learning is complete. Under normal circumstances, the itinerary only needs to be learned once. Unless the controller is replaced or a different movement is used, there is no need to repeat the learning journey.

P01	Remote control learning/clearing	---	---	Enter this menu and it will display "00*", which indicates the number of remote controls you have learned. You can learn up to 50 at most. **Learn the first remote control**：After entering this menu, press the "+" key. The first remote control should learn each key in the order of "**on → off → stop**", and each key should be pressed for more than 1 second. At the same time, the digital tube will rotate and prompt you to press the corresponding key. **Learning is not the first remote control:** To learn each remote control, you must first press the "+" key. When the digital tube rotates, press any one of the three on/off keys on the remote control for more than one second. The value on the digital tube will increase by 1, indicating that the learning is successful. If you need to learn more about remote controls, repeat the above operation. **Clear a single remote control:** After pressing the "-" key, when the digital tube rotates, clear any of the on, off, or stop keys on the remote control for more than 1 second as needed. The value on the digital tube will decrease by 1, indicating a successful clearing. **Clear all remote controls:** Press and hold the "-" key for more than 10 seconds. The digital tube value will return to zero, indicating that all remote controls have been cleared.

				Learn about different remote controls:If you want to learn a remote control with the same frequency but different key definitions, you need to operate it in the "P27" menu in the way you learned the first remote control.
P02	Motor Rotation	0～1	0	When the running direction of the barrier arm is opposite to the control direction, change this parameter value.
P03	Vertical position of the barrier arm	---	---	After entering this menu, briefly press the "+" or "-" key to adjust the barrier arm to the appropriate position (you can also adjust the barrier arm position by turning the motor handle), and then press the "ENTER" key to save the Settings.
P04	Horizontal position of the barrier arm	---	---	
P05	Gate opening speed	0～100	75	The smaller the value, the slower the speed; the larger the value, the faster the speed.
P06	Gate closing speed	0～100	75	
P07	The Angle of deceleration when opening the brake	0～75	30	All take the end position as the reference zero degree. The larger the value, the greater the Angle of the deceleration area (i.e., the longer

P08	The Angle of deceleration when closing the brake	0～75	45	the deceleration stroke), the smoother the deceleration, and the more stable the operation.
P09	The speed at the end of the gate opening	0～100	0	The smaller the value, the slower the speed at the end of the operation and the smoother the operation. If the deceleration is too rapid, this value can be appropriately increased.
P10	The speed at the end of the gate closing	0～100	0	
P11	The force at the end of the gate opening	0～100	2	The smaller the value, the less force will be applied when reaching the end point. If the operation is sluggish and weak before the pole is in place, increase the force. If the pole is in place and the impact and shaking are significant, reduce the force.
P12	The force at the end of the gate closing	0～100	2	
P13	Open to the proper buffer Angle	0～75	0	Set the low-speed slow running Angle before the barrier arm is in place. The larger the value, the greater the buffer Angle and the slower the speed. Generally do not need to set this parameter, only to set up fast and reach the designated position shaking a lot, just may need to set this parameter, the lever in place before the appropriate buffer, to stop slowly.
P14	Close the buffer Angle properly	0～75	0	
P15	The response speed for opening the gate	0～10	5	The larger the value, the faster the accelerated response.
P16	Response speed for gate closing	0～10	5	

P17	The smoothness of the gate opening operation	0～2	0	**Make corresponding adaptations based on the characteristics of different movements to ensure smoother operation:** 0-Applicable to all-gear movements and common small reduction ratio worm gear movements; 1-Applicable to heavy-duty worm gear and worm m ovements with large reduction ratios. 2-Reserved parameters.
P18	Smoothness of gate closing operation	0～2	0	
P19	Emergency stop buffer time	0～30	0	The larger the value, the smoother the emergency stop.
P20	Change (limit) speed	0～50	50	The larger the value, the faster the zeroing speed.
P21	The speed of closing the gate beyond the time limit	0～50	1	The larger the value, the faster the gate will close.
P22	Rated operational current	1～15	8	Set the rated working current of the turnstile during operation. This set value should be ≤ the rated current of the switching power supply.
P23	Resistance sensitivity	0～30	10	The larger the value, the faster the response when encountering an obstruction and the more sensitive the rebound after opening the gate.
P24	Reserved menu			

P25	Zero point (origin) setting	0～1	0	Set the zero point position of the turnstile. The limit above 0 is zero. The limit below 1 is zero point (applicable to places with height restrictions)。
P26	Lock the gate properly (use with caution)	0～2	0	Applicable to movements without mechanical limits or to prevent forced lifting of the rod by external force: 0- Not enabling this function: When the turnstile is fully closed, if the barrier is forcibly lifted by external force, the turnstile will be forcibly closed to the lower limit position. 1-When the turnstile is fully closed, if there is an external force attempting to deviate the turnstile from its current position, the turnstile will apply appropriate force to keep the turnstile at its current position (fully closed position) all the time. 2-When the gate is fully closed, if there is an external force attempting to move the gate bar from its current position, the gate will apply additional force to keep the gate bar as close to its current position (fully closed position) as possible. When the external force exceeds the preset force of the gate, the gate will forcibly close to the lower limit position.
P27	Learn different types of remote controls	---	---	If you are learning a remote control with the same frequency but different key definitions, please refer to the learning method of the first remote control. For each remote control, you need to learn each key in the order of "on → off → stop".

P28	Manual learning itinerary	---	---	It is suitable for use in situations where there is only a single-sided mechanical limit movement or the position in a certain direction is restricted. 1)First, make sure the correct zero point position (P25 menu) has been set; 2)After entering the P28 menu, first long press the "+" or "-" key to move the barrier to the zero position. Then, press the key or manually adjust to move the barrier to a suitable position in the other direction. After completion, press the confirmation key to save.

Function Parameter Menu (F menu)		value range	default	Setup Instructions
F00	Parameter backup	0～1	---	1-Back up all current parameters.
F01	Parameter loading	0～10	---	1-Parameter loading 2-Load the default function parameters (F menu parameters); 10-Load all default parameters (P menu and F menu parameters).
F02	Turn off the remote control function	0～1	0	0-Enable the remote control function; 1- Turn off the remote control function.
F03	Turn off the buzzer	0～1	0	0-Turn on the buzzer 1- Turn off the buzzer.
F04	Check the version and the number of runs	0～1	---	0-Check the version number (select 0 after entering the menu and press the confirm key to display the version number); 1-Check the number of runs (when the number of runs is below 999, the unit is times; when the number of runs exceeds 999, the decimal point is displayed and the unit becomes ten thousand times).
F05 ～ F15	Reserved menu			
F16	Test mode selection	0～90	0	The following parameters are measured in seconds for time and degrees for Angle. 0-Turn off the test mode; 1～5：Each time it will be fully opened and closed, and the value represents the duration of stay in place. 6～10：The multi-angle automatic cycle test is conducted from 5 degrees to 90 degrees. The value after subtracting 5 from the set value is the duration of stay in place. 11～20：Reserved parameters; 21～90：Fixed-angle automatic test, with values indicating the Angle setting and the duration of stay in place.

F17	Selection of power supply mode	0～3	0	0-Normal power supply: Power supply voltage ≥24V; 1-Power-off circuit breaker opening: After the normal power supply is disconnected, if there is a backup power supply connected, the circuit breaker can be automatically opened. 2-Backup power supply: The voltage of the backup power supply needs to be ≥12V. 3-The circuit breaker opens automatically after power is cut off and closes automatically after power is restored: The circuit breaker opens automatically after power is cut off and closes automatically after power is restored.
F18	Ground sensor anti-crush method	0～1	0	0：When the barrier is lowered and a vehicle is detected, the barrier is immediately opened. 1：Stop immediately when a vehicle is detected when lowering the barrier.
F19	Fleet mode selection	0～3	0	0-Disable. 1-Press and hold the remote control brake opening button for more than 3 seconds to enter the fleet mode. 2-Press and hold the remote control lock button for more than 3 seconds to enter the fleet mode. 3-Press and hold the remote control stop button for more than 3 seconds to enter the fleet mode (this mode is recommended).
F20	Display mode selection	0～1	0	0-Display angle. 1-isplay running time (speed).
F21	Memory mode for opening the gate	0～20	0	0-Disable. 1-Intelligent memory: This mode is recommended; 2-Ordinary memory: The barrier will automatically lower only when the number of times the barrier is opened is consistent with the last number of vehicles passing through the ground sensor. 3-10：reserved 11-20：The time for clearing the gate opening memory is set by subtracting 10 from the set value.

F22	No vehicle, time exceeded, gate closed.	0～180	0	0-Do not enable the timeout shutdown function; 1～180：Set the duration of the gate shutdown due to timeout (unit: seconds). After the gate is fully opened, if no vehicles have passed through the ground sensor for a long time (it is recommended to set the time to more than 60 seconds), and the ground sensor detects that there are no vehicles, the gate will automatically close at a slow speed.
F23	The traffic light has reached the delay closing phase.	0～100	0	0-Do not enable the delayed gate closing function; 1～100：Set the delay in closing the barrier after the vehicle leaves the ground sensor. The duration is the set value multiplied by 0.1 seconds.
F24	Reserved menu			
F25	Reserved menu			
F26	Shielding of the anti-theft sensor angle	0～60	10	Solve the problem where advertising barrier poles, fence poles, etc. are detected by ground sensors or radar when they are about to be fully closed, resulting in the inability to close the barrier normally or the situation where they are fully opened and then immediately closed.
F27	Reserved menu			
F28	The valid duration of the gate opening signal	2～30	12	Only when the duration of the opening or closing signal is longer tha the set duration can it be regarded as a valid signal, with the duration bein the set value x10ms.
F29	The valid duration of the gate closing signal	2～30	12	
F30	Reserved menu			
F31	Reserved menu			
F32	Reserved menu			

7. Display Code Information Description

Display Code	Error Cause	Handling Method
E01	**Meet resistance:** □ Excessive load or malfunction of the mechanical transmission part; □ Poor contact of the phase (thick) wire or terminal of the motor; □ The wiring sequence of the motor is incorrect. □ Controller failure; □ Motor or movement failure.	□ First, check the spring matching to see if there is any situation of excessive load. Then, when the power is off, shake the motor handle to see if the operation is smooth and if there is any jamming. □ Check whether the motor wiring is in good condition and if there is any looseness. Check whether the motor terminal blocks and pin sockets have poor contact or are burnt and blackened. □ If the controller or motor is newly replaced, it is necessary to check whether the wiring sequence of the motor is correct. □ If the above checks show no issues but the fault persists, replace the controller with a new one for testing. If the fault persists after testing, it is necessary to consider whether there is a fault with the switching power supply or the motor.
E02	**Hall signal failure:** □ The connection of the Horxin signal line of the motor is poor. □ The Hall switch inside the motor is faulty. □ Controller failure.	□ First, check whether the five signal lines (thin wires) of the motor are properly connected, whether the motor terminals are properly inserted, and whether there is any poor contact. □ If no problem is found and the fault persists, replace the controller with a new one for testing. If the fault persists after testing, it is necessary to consider whether the Hall switch of the motor is damaged and a new motor may need to be replaced.
E03	**Over current:** □ The motor is overloaded. □ The motor phase line is short-circuited. □ The wiring sequence of the motor is incorrect. □ Controller failure.	□ First, check the spring matching to see if there is an excessive load. □ Then check whether there is a short circuit between the motor phase lines (thick lines) □ If the controller or motor is newly replaced, it is necessary to check whether the wiring sequence of the motor is correct. □ If the above checks show no issues but the fault persists, replace the controller with a new one for testing.

E05	**Unstudied itinerary:** □ No study itinerary; □ No study itinerary;	□ If the new controller is used for the first time, the stroke needs to be learned in the P00 menu to automatically match the motor type and learn the stroke. □ If it is on-site after-sales service to replace different types of motors, it is necessary to first check whether the wiring sequence of the motor is correct; otherwise, the travel learning may not be completed.

E06	The remote control doesn't match.	If the E06 code is displayed when learning the remote control in the P01 menu, it indicates that the key sequence definition of the newly added remote control is different or the type does not match that of the originally used remote control. You need to add the remote control in the P27 menu following the learning method of the first remote control.
E07	Remote control matching repetition	It indicates that the current remote control has already been matched and there is no need to match it again.
E08	Low power supply voltage	It indicates that the current input voltage is lower than the normal operating voltage, and there might be a power supply fault.
E09	The backup power supply voltage is low	It indicates that the current input backup power supply voltage is lower than the normal backup power supply voltage.
E10	The pole is forcibly lifted by external force	□ If the brake lever shut in place not dead, is located in the four bar linkage is easy to spring up, once the offset Angle, the controller will judge as forced lifting rod, thus will strength will brake lever to switch off to a level or lower limit, and display the E10 code; □ If the lever is forcibly lifted by human or external force, the controller will also handle it in the manner described in the previous article.
NUL	No zero point found	□ The controller has just been powered on and this code is displayed before the zero point is found (which is a normal situation). □ If the power supply always restarts when seeking the zero point, it may be that the rated current setting is too high or there is a fault with the switching power supply. You need to set the value lower in the P22 menu or replace it with a new switching power supply.

Appendix 1: Common Problems and Solutions

Common Problem	Relevant Reasons	Handling Method
The digital tube is not lit	The controller has a screen-off energy- saving function: if there are no buttons within 3 minutes, the display on the digital tube will dim. Five minutes later, if there is still no key press, the digital tube will turn off the display.	In the screen-off energy-saving mode, all functions are normal except for no display. To restore the display, simply press the "Menu Key" lightly.
The barrier cannot be normally opened and closed in place or encounters obstruction and returns after being in place.	The original recorded stroke of the newly replaced controller is inconsistent with the actual stroke of the movement.	Relearn the itinerary through the P00 menu.
The switching power supply always restarts when the controller is seeking zero	➢ Switching power supply failure; ➢ The power of the switching power supply is too small.	➢ Replace the new switching power supply; ➢ In the P22 menu, reduce the rated current to lower the output of the switching power supply.
The running direction of the turnstile is opposite to that of the controller	The motor direction setting is incorrect	Change the motor direction through the P02 menu
Each time the barrier is opened or closed in place, it will nod its head	The horizontal position of the barrier arm is set incorrectly	Through the P04 menu, adjust the horizontal position to the dead center (the lowest point) of the four -bar linkage mechanism.
The buzzer keeps ringing, but the gate does not operate when you press the switch button	There are signals such as switch switches or ground sensors constantly being input.	Disconnect all external input signals (wiring) and check each short circuit and short-circuit fault point one by one.
The remote control distance is too short or not sensitive	There is interference in the remote control signal.	Change to a high-power remote control.
	The battery voltage of the remote control is low.	replace battery

The barrier arm is unstable when it stops	The speed setting is too fast.	Set the speed to a lower level in the P05 / P06 menu
	The deceleration Angle is set too small.	Set the deceleration Angle to a larger size in the P07 / P08 menu