MANUAL

Specifications

Power supply	DC 24V ±10% 10A
Motor Power	Max 150W
Static power	<2W
Arm lifting/lowering speed	1%-100% adjustable
Operating environment temperature	-40℃～80℃
Operating environment humidity	30%～80% (no condensation)

Glossary

Long press: Press and hold the button without releasing it. For example, if you press and hold the button for 3 seconds, press the button for at least 3 seconds until the LED displays the menu item and the buzzer prompts.

Short press: Release immediately after pressing the button, and the button pressing time is less than 0.5 seconds.

Buttons

The controller has 4 buttons, from left to right they are "Arm Lift/+", "Arm Down/-", "Menu/Confirm" and "Stop/Cancel". You can use these 4 keys to control various functions of the controller. parameters to set.

Arm Lift/+": Press this button to lift the arm under normal working conditions. After entering the setting state, you can use this button to add menu items and increase the set value upwards. In the parameter setting state, short press each time to add one. Long press to continue adding to the maximum value and then start increasing from the minimum value. If you press and hold for a long time, continuous acceleration will increase the speed.

"Locking/-": Press this button to lower the arm under normal working conditions. After entering the setting state, you can use this button to reduce menu items and decrease the set value downwards. In the parameter setting state, short press to decrease by one each time. Long press to continuously decrease to the minimum value and then start to decrease from the maximum value. If you press and hold for a long time, continuous reduction will increase the speed.

"Menu/Confirm": This key has 3 functions:

1. In normal working mode, press and hold this button for 3 seconds to enter the menu item selection state. The LED displays "F-XX". At this time, you can press the "Arm Lift/+" and "Arm Down/-" buttons to select the menu item;

2. In the menu item selection state, short press "Menu/Confirm" to enter the parameter setting state;

3. After completing parameter setting, press briefly to save and exit.

"Stop/Cancel": This button has a stop function during normal operation. In the menu item selection state, it exits the setting state. Pressing this button in the parameter setting state will exit this state and return to the menu selection state, that is, return to the previous menu. At the same time The value set is invalid.

If there is no key operation within 60 seconds in the menu selection state and parameter setting state, the controller will return to normal working state after the buzzer beeps once.

- ## Display

The control panel has a four-digit LED display, which can be used to display the working status, parameters, menu items and other information of the barrier arm. After power-on, it runs in low-power mode, and the LED display brightness is dim at this time. Pressing any button will cause the LED display to enter normal working mode, with the LED highlighted. If there is no button, it will enter low power consumption mode after 60 seconds and the LED brightness will dim to reduce power consumption. If no keys are pressed after 30 minutes, the LED display will turn off. Enter the lowest energy consumption state.

- **Parameter settings**

  Press and hold the "Menu/Confirm" button for 3 seconds to enter the parameter setting state, and the LED will display "F-XX". Select the menu item by short pressing or long pressing the "Arm Lift/+" and "Arm Down/-" buttons. Short press once to increase or decrease one, and long press will increase or decrease continuously. When the "F-XX" item displayed by the LED is the parameter that needs to be set, press the "Menu" key again to enter the setting of the specified item, and press "Stop"
  /Cancel" key to return to the previous level or exit the setting. When the specified parameter setting is completed, you must press the "Menu/Confirm" key to confirm it to take effect. Press the "Stop/Cancel" key and the currently set parameters will not take effect. Within 60 seconds If there is no button, the buzzer on the control panel will beep for a long time, exit the setting state, and return to the normal working state.

- **controller command list**

Menu	Function	Default value	Range	Remark
F-00	Arm lifting speed	60	10-100	The larger the value, the faster the arm
F-01	Arm falling speed	60	10-100	The larger the value, the faster the arm
F-02	Arm lift deceleration	70	45-80	The angle at which the arm starts to
F-03	Drop arm deceleration	45	10-60	The angle at which the arm starts to
F-04	Arm lift acceleration time	30	0-255	When lifting the arm, the time it takes to accelerate from 0 to F-00 arm lifting
F-05	Closing arm acceleration time	30	0-255	When the arm is closed, the time it takes to accelerate from 0 to F-01 arm closing speed, unit: 0.01 seconds

F-06	End speed of arm lift	10	1-100	Arm lifting speed
F-07	End speed of arm falling	20	1-100	Drop arm speed
F-08	horizontal position adjustment	6	1-255	Fine-tuning the horizontal position of
F-09	vertical position adjustment	6	1-255	Fine-tuning the vertical position of the
F-10	Automatic closing time without	0	0-255	Automatic arm closing time when no
F-11	Anti-smash	0	0-1	1: Activate the anti-smash function 0:
F-12	Delayed arm closing time for	2	0-255	Delayed braking for passing vehicles,
F-13	Power-on self-learning speed	40	0-80	Find the upper and lower limits at this
F-14	Remote control learning	0	0-60	Learn remote control
F-15	Rebound sensitivity when	10	1-40	Response time when encountering
F-16	Rebound strength when	10	1-40	The larger the value, the greater the
F-17	Motor type/direction of	0	0-3	Motor polarity and barrier rotation
F-18	Locking power	6	0-15	Danger, use with caution! The larger the
F-19	ground sense counting	0	0-10	The ground sense is not counted by
F-20	automatic testing	0	0-255	Automatic test interval, can be used for aging, 0 is normal operation
F-21	reset	0	0-255	5: Clear remote control 10: Restore
F-22	Software version	/	/	
F-23	reserve	/	/	reserve
F-24	reserve	/	/	reserve
F-25	reserve	/	/	reserve
F-26	reserve	/	/	reserve
F-27	Lifting arm priority	2	0-3	In the arm lifting priority mode, opening
F-28	Drop arm low speed running	30	0-45	The starting angle of the low speed
F-29	reserve	/	/	reserve
F-30	reserve	/	/	reserve
F-31	reserve	/	/	reserve
F-32	reserve	/	/	reserve
F-33	reserve	/	/	reserve
F-34	reserve	/	/	reserve
F-35	reserve	/	/	reserve
F-36	reserve	/	/	reserve
F-37	bounce angle	0	0-90	Aging test, the perspective of testing
F-38	Arm lift low speed running	90	45-100	The starting angle of low-speed
F-39	reserve	/	/	reserve
F-40	reserve	/	/	reserve
F-41	Arm lift reversal time	80	10-255	Buffer time from arm lifting to arm
F-42	Arm reversal time	50	10-255	Buffer time from arm lowering to arm
F-43	Open position lock time	0	0-255	The arm is locked for a period of time
F-44	Close position lock time	0	0-255	After closing in place, the arm will lock
F-45	Stop buffering time	50	10-255	The time from receiving the stop command to completely stopping,
F-46	Turn off the sense of ground angle	10	0-45	After closing the arm to the set angle, turn off the ground sensing detection, unit: degree

F-47	Remote control to enter	0	0-1	Open the arm with the remote control
F-48	Number of times to retry closing the arm after manually lifting the lever	20	0-255	The number of attempts to close the arm after someone lifted the pole
F-49	Find upper and lower limit modes	0	0-2	0: Search for the upper and lower limits 1: Only search for the upper limit
F-50	Manual learning of upper	/	/	2: Only find the lower limit
F-51	Manual learning upper	/	/	Manually learn the upper and lower limit
F-52	Save/load parameters	/	0-255	Manual mode only learns the upper limit
F-53	The buzzer sounds when the ground sense is effective. Frequency	5	0-20	5: Load parameters 10: Save parameters
F-54	Ground sensing signal stabilization time	15	1-255	0: Buzzer does not sound, 1-20 buzzer sound frequency.
F-55		4	1-20	The time elapsed from the detection of the ground sensing signal to the controller confirming that the ground sensing signal is valid, unit: 0.01 seconds
F-56		15	1-255	The controller starts timing after confirming that the ground sensing signal is valid, and stops timing after the ground sensing signal is invalid. The elapsed time interval must be greater than the "ground sensing signal valid time" before the controller considers it to be a valid ground sensing signal, unit: 0.1 Second
F-57		/	/	The time elapsed from detecting the arm
F-58	Effective time of ground sensing signal	2	0-20	Manually learn the lower limit
F-59		10	0-90	During the arm opening process, if abnormal reversal of the arm is detected,
F-60	Arm opening signal stabilization time	15	0-255	After the barrier arm drops to the set angle, the rebound function fails when encountering resistance.
F-61	Manual learning lower limit	15	0-255	The time elapsed from the detection of the closing signal to the controller confirming that the closing signal is valid, unit: 0.01 seconds
F-62		/	/	The time elapsed from detecting the stop
F-63		/	/	Parameters customized for different
F-64	reverse lock	/	/	reserve
F-65	Rebound failure angle	/	/	reserve
F-67		2	0-10	reserve

- **Detailed explanation of commands：**

F-00 arm lifting speed

Everything involving speed is in percentage of motor power. For example, the maximum power of the motor is 200 watts, and the setting value is
If it's 80, it's running at a maximum of 160 watts. The larger the value, the faster the arm is lifted.

F-01 Arm closing speed

The larger the value, the faster the arm will drop.

F-02 Arm lift deceleration position

Used to set the position where deceleration starts during the arm lifting process. In angle units, when the arm pole is in the horizontal position, it is 0 degrees, and when the arm pole is in the vertical position, it is 0 degrees.
position is 90 degrees. This parameter indicates that the arm lever will start to decelerate when it reaches this angle. If the arm pole shakes when the arm is lifted into place, this parameter can be reduced.

F-03 Arm drop deceleration position

Used to set the position where deceleration starts during the arm closing process. In angle units, when the arm pole is in the horizontal position, it is 0 degrees, and when the arm pole is in the vertical position, it is 0 degrees.
position is 90 degrees. This parameter indicates that the barrier arm rod will start to decelerate when it falls to this angle. If the arm pole shakes when the arm is in place, this parameter can be increased.

F-04 Arm lift acceleration time

Unit: 0.01 seconds, the time for the arm lifting speed to accelerate from 0 to the speed set by the arm lifting speed F-00. This parameter determines the acceleration of the arm lift. The smaller the value, the faster the acceleration.

F-05 Drop arm acceleration time

Unit: 0.01 seconds, the time for the arm speed to accelerate from 0 to the speed set by arm speed F-01. This parameter determines the acceleration of the arm. The smaller the value, the faster the acceleration.

F-06 End speed of arm lift

That is, the speed at which the arm is lifted to the desired position. When the arm is lifted, the arm lift will end at this speed. If it is too small, it will not open in place, and if it is too high, it will cause shaking. If F-38 is set to less than 90 degrees and greater than the speed set by F-02, after the arm is lifted to the angle set by F-38, it will run at the speed set by F-06 until it is fully opened.

F-07 End speed of arm drop

That is, the speed at which the arm is in place. When the arm is closed, it will end at this speed. If it is too small, it will not close in place, and if it is too large, it will cause shaking. If the F-28 command setting is greater than 0, this sets the low speed angle of the arm, and F-28 is within the valid range (F-28 is greater than 0, less than
F-03), it will run at this speed in the low speed constant speed zone until it is closed in place.

F-08 horizontal position adjustment

If the horizontal position of the barrier arm pole is uneven, you can fine-tune it through this parameter. For barrier arms that use a rubber ring as a buffer for the limit, this value needs to be increased to avoid squeezing the rubber ring every time the arm is closed. The set value is only valid when F-49 is 0 (that is, it is set to find the limit mode in the upper and lower directions), otherwise it is only saved and will take effect after F-49 is set to 0 again.

F-09 vertical position adjustment

If the vertical position of the barrier arm pole is not correct, you can fine-tune it through this parameter. For barrier arms that use a rubber ring as a buffer for the limit, this value needs to be increased to avoid squeezing the rubber ring every time the arm is opened. The set value is only valid when F-49 is 0 (that is, it is set to find the limit mode in the upper and lower directions), otherwise it is only saved and will take effect after F-49 is set to 0 again.

F-10 Automatic closing time without ground sensing

Range: 0-255, default: 0, unit: seconds. After the barrier is opened, if the ground sensor does not detect a vehicle passing through after the time set by this parameter, the barrier will be automatically closed. If set to 0, the barrier will remain open until a vehicle passes by or the close button is pressed.

F-11 anti-smash

Range 0-1, default: 1: anti-smash function is valid, 0: anti-smash function is invalid. If set to 1, the controller will lift the arm after detecting a valid signal at the "anti-smash" input terminal during the arm closing process. If the "anti-smash" signal continues to be valid after the barrier arm is opened in place, the barrier arm will remain open. If the "ground sense" signal is detected while the "anti-smash" signal is valid, the controller will start closing the arm when the "anti-smash" signal disappears. If there is no "ground sense" signal while the "anti-smash" signal is valid, the controller will keep the barrier open after the "anti-smash" signal disappears until the "ground sense" detects a valid vehicle passing signal.

F-12 Passing vehicle delayed arm closing time

Range: 0-255, default: 2, unit: 0.1 seconds. After the "ground sense" detects a valid vehicle passing by and the "ground sense" signal disappears, the time set by this parameter is delayed, and then the arm is started.

F-13 Power-on self-learning speed

Range: 0-80, default: 40. This command can set different speeds for finding the upper limit and lower limit. After entering the menu, the first thing to set is the speed for finding the upper limit. The LED displays "1-XX", XX represents the speed for finding the upper limit.
You can press " Lift the arm/+" and "Locking arm/-" buttons to adjust the speed. After the upper limit speed is set, press the "Menu/Confirm" key, the LED will display "2-XX", and XX represents the speed of finding the lower limit. Similarly You can adjust the speed by pressing the "Arm Lift/+" and "Arm Down/-" buttons. Finally, after the upper and lower limit speeds are set, press the "Menu/Confirm" button to save the parameters. If you press " Stop/Cancel" button, the set parameters are invalid.

F-14 remote control learning

After entering the remote control learning menu item, the number of remote controls currently learned is displayed. Learn in the order of on->off->stop. In order to ensure the reliability of learning, each button needs to be pressed and held for one second. After each button is learned, the buzzer will beep once. After the three-button learning is completed, the buzzer will beep for a long time, indicating that a remote control has been learned correctly. At the same time, the LED displays the number of learned remote controls plus one. After learning one remote control, you can continue to learn the next one. If it is a learned remote control, the buzzer will beep three times in succession to indicate that the remote control has been learned. A successfully learned remote control will have a buzzer sound when pressing its buttons in normal working conditions.

Learning the remote control can be simply summarized into the following steps:

1. Enter the F-14 menu, the LED displays the number of remote controls currently learned;

2. Press and hold the buttons on the remote control for 1 second in the order of "on", "off" and "stop", and press and hold each button for 1 second until the buzzer sounds;

3. Repeat step 2 to learn multiple remote controls continuously.

4. After learning is completed, press the "Menu/Confirm" or "Stop/Cancel" key to exit learning.

F-15 rebound sensitivity when encountering resistance

Range 1-40, default: 10, unit: 0.05 seconds. When the strength of resistance exceeds the set value of F-16 rebound strength when encountering resistance, the timer starts. If the set time is exceeded, the arm will rebound.

F-16 rebound strength when encountering resistance

Range 1-40, default 10. The higher the number, the greater the intensity. This parameter, together with the F-15's rebound sensitivity when encountering resistance, determines whether to rebound. If rebound occurs during the normal arm closing process, the two parameters F-15 and F-16 need to be increased.

F-17 Motor type/direction of rotation

Value range: 0-3, default: 1. Due to the different Hall polarity of the motor and the deceleration series of the barrier arm movement, the barrier arm has a left-out rod and a right-out rod. So this parameter is used to be compatible with various types of motors and barriers.

0: Motor positive polarity, reducer rotates forward.

1: Positive polarity of the motor, reverse rotation of the reducer.

2: Motor negative polarity, reducer rotates forward.

3: Negative polarity of the motor, reverse rotation of the reducer.

0 and 1 represent the left and right poles of one motor type, 2 and 3 represent the left and right poles of another motor type. When pressing the "Lift/+" button to lift the barrier, press "Arm down/-" is the direction of arm down, which means the selection of motor type and rotation direction is correct. Chengbang Motor chooses between 0 and 1, Taibang Motor chooses between 2 and 3. If the motor type selected does not match the actual motor used, the controller will display an E-07 error code when starting the barrier.

F-18 Locking power (danger, use with caution)

Range 0-15, default: 6. Setting to 0 will disable the locking function. When the barrier arm is in operation and the stop button is pressed before the barrier is raised or lowered into place, the control panel will lock the motor in order to ensure that the barrier rod does not fall. The current at this time is larger. Locking the arm for a long time will cause the motor and control board to heat up. In severe cases, excessive power settings will cause damage. So you need to be careful during the setup process. It is recommended not to open the advertising arm, that is, set it to 0. During the setting process, it is recommended to adjust a number upward and then test whether the lever can be locked, whichever is better. Don't increment multiple values at once. If set to 0, when the barrier spring tension is large, the barrier rod may be pulled up after pressing the stop button.

F-19 ground sensing counter

Range 0-10, default value: 0. In some application scenarios, the arm opening times need to be consistent with the ground sensing relay closing times before the barrier arm can be closed. This feature can then be enabled. 0 means disable.

F-20 automatic test

Range: 0-255, default: 0, unit: seconds. The time interval of automatic testing, 0 means turning off automatic testing, used for automated testing and burn-in testing. After the test is completed, set this parameter to 0 to cancel the automatic test.

F-21 Restore factory settings

This option has two functions, clearing the remote control and restoring factory settings. In order to prevent misoperation, you need to set a specific value and then press the "Menu" key to complete the operation.

5: Clear the remote control

10: Restore factory settings, restore setting values to default values, and clear the remote control at the same time.

After the operation is completed, the buzzer will beep once to indicate success. If it fails, the buzzer will beep three times. At the same time, the LED will display "E-00" to indicate that the setting failed. The reason is that the setting value is not 5 or 10.

The default parameters of the control panel can meet most scenarios, if improper settings occur during the setting process. You can use the factory reset function.

F-22 Software version

Software version number.

F-27 lift arm priority

Range: 0-3, default: 2. 0: If you press OFF or STOP during the process of lifting the arm, it will be processed as OFF and STOP.
1: Pressing OFF or STOP during the process of lifting the arm is invalid. It must be opened in place and then closed to be effective. During the arm closing process, press stop to switch to open.

2: During the process of lifting the arm, closing is invalid and stopping is valid. The stop is valid during the arm closing process.

3: During the process of raising the arm, if the vehicle has passed through the ground, the arm will be closed immediately instead of waiting until the arm is opened in place.

F-28 Low speed running angle of falling arm

Range: 0-45, default: 30, unit: degrees. This parameter sets a low-speed uniform speed zone during the arm closing process. During the arm closing process, after reaching this angle, it will run at the F-07 arm closing end speed until it is completely closed. If this parameter is set to 0 or is set to a value greater than the value set by F-03 arm deceleration angle, this function will be invalid.

F-37 rebound angle

Range: 0-90, default: 0. This function is only valid in the automatic test mode and is used to test the mechanical performance of the barrier arm. If it is 0, the rebound function will be turned off. Once the value is not 0, during the closing process, the arm will lift immediately after reaching the rebound angle set angle. If F-37 is an even number, it will close normally next time. If F-37 is an odd number, the arm will only close to the angle set by F-37 each time and then rebound, and so on. Used to test whether the mechanical properties of the barrier meet the requirements.

F-38 Arm lift low speed running angle

Range: 45-100, default: 90, this parameter is invalid if it is greater than or equal to 90 degrees or less than or equal to F-02 arm lift deceleration angle. A low-speed area is set during the arm lifting process. When the arm lifting angle reaches the angle set by F-38, it will run at the arm lifting end speed of F-06 until the arm lifting is in place.

F-41 Arm lift reversal time setting

Range: 10-255, default 80, unit: 0.01 seconds. This parameter is used to set the buffer time from when the controller receives the arm closing command to when the arm closing button is pressed during the arm lifting process. When applied to advertising arms, this parameter can be increased to make the arm's reversal softer and prevent mechanical damage.

F-42 Arm reversal time setting

Range 10-255, default 50, unit: 0.01 second. This parameter is used to set the buffer time from when the controller receives the arm lift command to when the arm lift button is pressed during the arm closing process. When applied to advertising arms, this parameter can be increased to make the arm's reversal softer and prevent mechanical damage.

F-43 Open position lock time

Range: 0-255, default: 0, unit: second, 0 means not locking the arm, 255 means locking the arm all the time, 1-254 is the number of seconds for locking the arm, after the arm is opened in place, the arm will be locked for a period of time according to the set value. Release the lock arm after the timer expires. Some arms need to be opened and then locked for a period of time so that the arm rod does not shake after being opened in place. This parameter is used to set the locking time. The power of the locking arm is set by parameter F-18. This parameter needs to be used with caution, because a large current flows through the motor and controller when the arm is locked. If the time is too long, the motor and controller will heat up. In extreme cases, the motor or controller may be burned. So try to avoid the situation where the F-43 is set to 255 and the F-18 is set to maximum.

F-44 Close position lock time

Range: 0-255, default: 0, unit: second, 0 means not locking the arm, 255 means always locking the arm, 1-254 is the number of seconds for locking the arm, after closing in place, the arm will be locked for a period of time according to the set value. Release the lock arm after the timer expires. Some barrier arms need to be closed for a period of time and then locked for a period of time so that the barrier rod does not shake after it is closed in place. This parameter is used to set the duration of the barrier lock. The power of the barrier arm is set by parameter F-18. This parameter needs to be used with caution, because a large current flows through the motor and controller when the arm is locked. If the time is too long, the motor and controller will heat up. In extreme cases, the motor or controller may be burned. So try to avoid the situation where the F-44 is set to 255 and the F-18 is set to maximum. For barrier arms without springs, F-44 can be set to 255, which can prevent the barrier rod from sagging after it is closed in place.

F-45 Stop buffer time

Range: 10-255, default: 50, unit: 0.01 seconds. Press the stop button during the process of raising or lowering the arm. In order to ensure that the arm stops smoothly, a buffer time is set. This time is the time from when the barrier arm receives the stop command to when the barrier arm completely stops. Different sizes can be set according to different types of barrier arms.

F-46 Close ground sensing angle

Range: 0-45, default: 10, unit: degrees. Solve the problem of the ground sensor mistakenly detecting a car during the arm closing process. You can use this command to set the barrier to not detect ground sensing after closing to a specified angle. If it is 0, it means that the ground sensing signal is always detected during the closing process.

F-47 remotely controlled to enter convoy mode

Range: 0-1, default: 0. If this parameter is 1, it means that you will enter the convoy mode directly after opening the arm with the remote control. At this time, the ground sense is invalid until the arm is closed. Both the station control and the remote control can exit the convoy mode. Opening the arm through Taiwan control will not enter the fleet mode.

F-48 Number of retries to close the arm after manually lifting the lever

Range: 0-255, default: 20. When the barrier is in a closed state and the angle of the pole lift exceeds 5 degrees, if this parameter is not 0, the controller will automatically apply force to close the barrier. At the same time, when the relay output mode F-29 is set to 1, the relay is closed between "open position" and "common" for 15 seconds. For external alarm output. This parameter sets the number of times to retry closing the arm.

F-49 Find upper and lower limit modes

Range 0-2, default: 0. After the barrier arm is powered on, it is necessary to find the limit of the barrier arm before it can enter the normal working mode during the initial operation. The controller supports three limit search modes:

0: Both the upper limit and the lower limit need to be found. Press the button to lift the arm lever. After the upper limit is found, the motor stops. Press the OFF button to lower the barrier, and the motor will stop after finding the lower limit. After the upper and lower limits are found, the barrier arm controller enters the normal working mode.

1: You only need to find the upper limit to enter the normal working mode. After the controller is powered on and pressed for the first time, the barrier arm lifts up. After the upper limit is found, the barrier controller enters the normal working mode and the motor stops. If you press OFF after powering on for the first time, the barrier arm will lift up. After finding the upper limit, the barrier controller will enter the normal working mode, and then close the barrier in the normal working mode.

2: You only need to find the lower limit to enter the normal working mode. After the controller is powered on, press OFF for the first time and the barrier will drop. After finding the lower limit, the barrier controller enters the normal working mode. If you press open for the first time after powering on, the barrier arm needs to be lowered first to find the lower limit, and then raised in normal working mode.

Notice:

1. If the mode is set to 1, you need to use F-51 for learning before first use. Or when changing the controller to other arms, you also need to use F-51 for learning first.

2. If the mode is set to 2, you need to use the F-57 command to learn before using it for the first time, or when changing the barrier controller to another barrier, you also need to use F-57 to learn first.

F-50 manual learning upper and lower limits

In order to make adjusting the up and down position of the barrier arm more intuitive and simple. You can use this command to manually set the up and down position of the barrier arm pole.

After entering the F-50 command, the LED will display L-00. At this time, the controller starts the barrier to close. After the barrier finds the lower limit position, the buzzer will sound "beep" and the LED will change to L-01, indicating that the lower limit has been found. Bit. Then the controller will automatically lift the arm. After finding the upper limit, the buzzer will beep and the LED will change to L-02, indicating that the upper limit has been found. At this time, the barrier will enter the stop state. At this time, it is necessary to manually learn the vertical and horizontal positions of the arm pole. First, press and hold the "Barrier Drop/-" button without releasing it, and move the barrier arm rod in the direction of barrier arm lowering until the barrier barrier rod is in the required vertical position. Press the "Menu" key to confirm the vertical position. At this time, the LED displays L-03, indicating that the vertical position learning of the arm pole is completed. Continue to press and hold the "arm/-" button until the arm pole is at the required horizontal position. Press the "Menu" button to confirm the horizontal position, and the buzzer will beep once to indicate the completion of learning. The arm controller returns to normal working status.

If you do not reach the required position when learning the up and down position of the arm pole, you can use "Lift Arm/+" and "Lower Arm/-" to make adjustments. If you continue to hold down the button after reaching the upper and lower limits during the adjustment process, The controller will stop the motor and make the buzzer sound a continuous beep sound.

If the F-49 is in Mode 0, it can be used normally after manual learning is completed. If F-49 is at 1, the parameters after manual learning will only be saved. Only when F-49 is set to 0, the position parameters obtained through manual learning will take effect.

The parameters learned using the F-50 command will affect F-08 and F-09. After the learning is completed, the adjustment values of the horizontal position and vertical position can be observed through F-08 and F-09.

Using the F-50 command to learn the vertical and horizontal positions of the barrier has the same effect as setting the F-08 parameters and F-09 parameters, except that using the F-50 command is more intuitive.

F-51 manual learning upper limit

After entering the F-51 command, the LED will display L-00. At this time, the controller starts the barrier lift lever. After the barrier finds the upper limit position, the buzzer will make a beep sound and the LED will change to L-01, indicating that it has been found. The upper limit is reached and the arm stops. At this time, it is necessary to manually learn the vertical and horizontal positions of the arm pole. First, press and hold the "Locking/-" button without releasing it, and move the barrier rod in the direction of lowering the barrier until the barrier rod is in the required vertical position. Press the "Menu" button to confirm the vertical position. At this time, the LED displays L-02, indicating that the vertical position learning of the arm pole is completed. Continue to hold down the "arm/-" button until the arm pole is at the required horizontal position. Press the "Menu" button to confirm the horizontal position. The buzzer will beep once to indicate the completion of learning, and the barrier controller will return to normal working status.

If the vertical or horizontal position of the barrier arm pole is learned and the required position is not reached, you can use "arm lift/+" and "arm drop/-" to adjust. If you continue to press the button after reaching the upper and lower limits during the adjustment process, Press and hold the button, the controller will stop the motor and make the buzzer sound a continuous beep sound.

If the F-49 is in Mode 1, it can be used normally after manual learning is completed. If F-49 is at 0, the parameters after manual learning will only be saved and will only take effect when F-49 is set to 1.

F-52 Save/load parameters

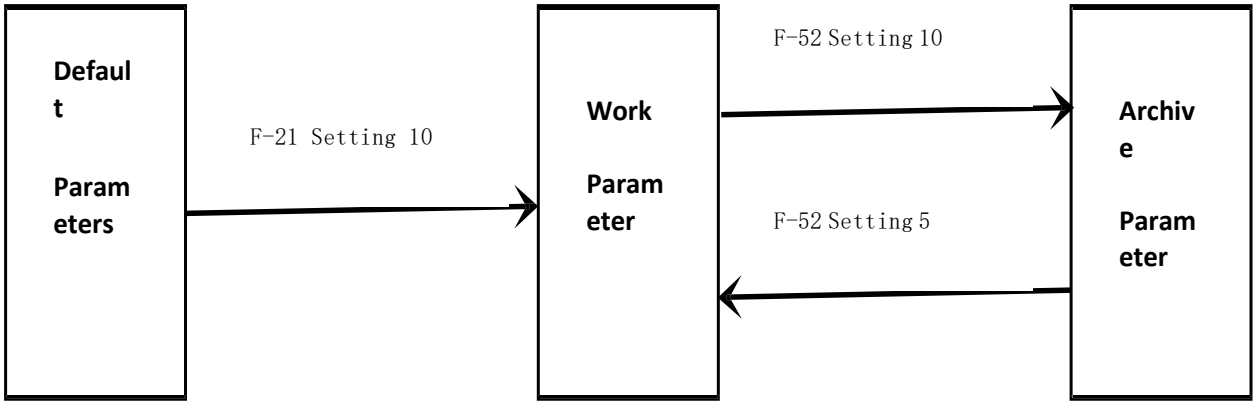
This command can save/load the set parameters and reload the saved parameters when needed. In order to ensure no misoperation, two parameters are set to save and load parameters:

5: Load

10: Save

The user can set the required working parameters, and then use the F-52 command to set it to 10 to save the set working parameters to the controller. When you need to call the archived parameters, you can use the F-52 command set to 5 to load the parameters saved by the controller into the working parameter area.

The controller has three parameter areas: default parameter area, working parameter area, and archive parameter area. The default parameter area cannot be modified, and the working parameter area can be changed according to the user's needs. The archive parameter area can save the content changed by the user. The relationship between these three parameter areas is shown in the figure below:



F-53 Buzzer sound frequency when ground sensing is effective

Range: 0-20, Default: 5, Unit: Hertz. When the ground sense is valid, set the buzzer on the controller to continuously beep at a certain frequency. If it is 0, the buzzer will not sound.

F-54 Ground sensing signal stabilization time

Range: 1-255, default: 15, unit: 0.01 seconds. This parameter can effectively remove the interference of the ground sense. The time elapses from the detection of the ground sense signal to the controller confirming that the ground sense signal is valid, so the effective time of the ground sense signal must be greater than the time set by this parameter.

Note: This parameter is an advanced feature, and you need to fully understand the purpose of the parameter before modifying it.

F-55 ground sensing signal valid time

Range: 1-255, default: 0, unit: 0.01 seconds. The controller starts timing after confirming that the ground sensing signal is valid, and stops timing after the ground sensing signal is invalid. The elapsed time interval must be greater than the time set by this parameter before the controller considers the ground sensing signal to be a valid ground sensing signal. Otherwise it will be considered as interference signal.

Both parameters F-54 and F-55 are used to remove interference from the ground sense. There is a difference between them. If the ground sensing signal is detected during the arm closing process and continues to exceed the time set by F-54, the arm will switch from arm closing to arm lifting. F-55 starts timing after the time of F-54 has passed, and stops timing after the ground sense becomes invalid. If this time is less than the time set by F-55, it is considered that the effective time of ground sense is too short, and it may be an interference signal. If the barrier arm is in the fully opened state, it will not drop.

Note: This parameter is an advanced feature, and you need to fully understand the purpose of the parameter before modifying it.

F-56 Arm opening signal stabilization time

Range: 1-255, default: 15, unit: 0.01 seconds. This parameter can remove the interference of the arm opening signal. The time elapsed from when the arm opening signal is detected to when the controller confirms that the arm opening signal is valid.

Note: This parameter is an advanced feature, and you need to fully understand the purpose of the parameter before modifying it.

F-57 manual learning lower limit

After entering the F-57 command, the LED will display L-00. At this time, the controller starts the barrier lifting rod. After the barrier finds the lower limit position, the buzzer will sound "beep" and the LED will change to L-01, indicating that it has been found. At the lower limit, the arm stops. At this time, it is necessary to manually learn the horizontal and vertical positions of the arm pole. First, press and hold the "Arm Lift/+" button without releasing it, and move the barrier rod in the direction of raising the barrier until the barrier rod is at the required horizontal position. Press the "Menu" button to confirm the horizontal position. At this time, the LED displays L-02, indicating that the horizontal position learning of the arm pole is completed. Continue to hold the "Lift/+" button until the barrier pole is in the required vertical position. Press the "Menu" button to confirm the vertical position, and the buzzer will beep once to indicate the completion of learning. The arm controller returns to normal working status.

If you do not reach the required position when learning the up and down position of the arm pole, you can use "Lift Arm/+" and "Lower Arm/-" to make adjustments. If you continue to hold down the button after reaching the upper and lower limits during the adjustment process, The controller will stop the motor and make the buzzer sound a continuous beep sound.

If the F-49 is in Mode 2, it can be used normally after manual learning is completed. If F-49 is at 0 or 1, the parameters after manual learning will only be saved and will only take effect when F-49 is set to 2.

F-58 reverse lock arm

Range: 0-20, default: 2. During the arm lifting process, due to reasons such as a broken spring, the arm controller detects abnormal reversal of the arm and locks the motor. 0: No detection, 1-20: The controller detects that the motor has reversed for the specified number of turns. locking.

F-59 rebound failure angle when encountering resistance

Range: 0-90, default: 10. During the arm closing process, when the barrier reaches the set angle, the rebound function will fail when encountering resistance. If set to 0, the bounce function will always be valid when encountering obstacles. When set to 90, the bounce function will always be disabled.

F-60 Arm closing signal debounce time

Range: 0-255, default: 15. Unit: 0.01 seconds, the time required from detecting the closing signal to confirming it as a valid signal. If set to 0, the closing signal will not be processed.

F-61 Stop signal debounce time

Range: 0-255, default: 15. Unit: 0.01 seconds, the time required from detecting the stop signal to confirming it as a valid signal. If set to 0, stop signals are not processed.

F-62 customized parameters

F-66 ground sensitivity

Range 0-10, default: 2, onboard vehicle detector sensitivity, 0 means turning off the onboard ground sensing function, 1-10 means sensitivity, the smaller the value, the higher the sensitivity. If the sensitivity setting is too high, and severe on-site interference may lead to false detection, and no vehicle is detected as the presence of a vehicle, the sensitivity can be reduced by increasing this value.

Lifting rod alarm function

The controller has a pole-raising alarm function. After the arm is closed in place, the relay mode is in the advertising light mode. If the pole is artificially raised beyond a certain angle, the "open" end and "common" end relays are closed and the alarm is activated. At the same time, the arm will be started and closed to prevent artificial lifting of the pole.

Fleet mode: In fleet mode, the controller does not process ground sensing signals. There are three ways to enter convoy mode:

1. After the barrier is fully opened, you can press and hold the open button on the remote control for more than 4 seconds. When the barrier enters the fleet mode, the buzzer will sound for 2 seconds. If the open button is pressed when the arm is already in convoy mode, the buzzer will sound for 2 seconds. Pressing OFF will cancel the convoy mode and the arm will be closed.

2. After the arm is fully opened, keep "start" and "ground" in a short-circuit state. This can be achieved by using the buttons on the station control or closing the camera's relay. In this mode, the remote control and ground sensor are invalid, and the fleet mode cannot be exited until the "start" and "ground" signals are disconnected. This function can be implemented in the parking system management software to achieve remote operation.

3. Set F-47 to 1, use the "Open" button on the remote control to open the barrier arm, and enter the fleet mode after the barrier arm is opened in place.

Error Code When the controller detects an exception, an error code is displayed to indicate the type of error. details as follows:

Error code	Wrong Cause
E-00	When clearing the remote control and restoring factory settings, you need to set the correct confirmation value. If the confirmation value is incorrect,
E-01	reserve
E-02	reserve
E-03	Possible reasons for the arm lifting to be blocked: the arm spring is broken, the arm lifting speed is too small, and the arm lifting end speed
E-04	Possible reasons for the locked rotation of the arm: the arm spring is too tight, the arm rod is not hung, the arm speed or the end speed of the arm is too small. Check whether the spring is too tight, whether it is hung on
E-05	The arm lift timed out because the arm lift time exceeded 15 seconds. The

E-06	The arm closing timeout occurred because the arm closing time exceeded 15
E-07	The motor type selection is wrong. You can change it to the correct type
E-08	During the process of lifting the arm, the spring is broken, causing the motor
E-09	The remote control has already been learned and needs to be learned again.
E-10	The number of remote controls learned exceeds the maximum number
OC-XX	The system current is too large. The possible reason is that the spring is too loose or too tight, or the spring is broken. The controller model used

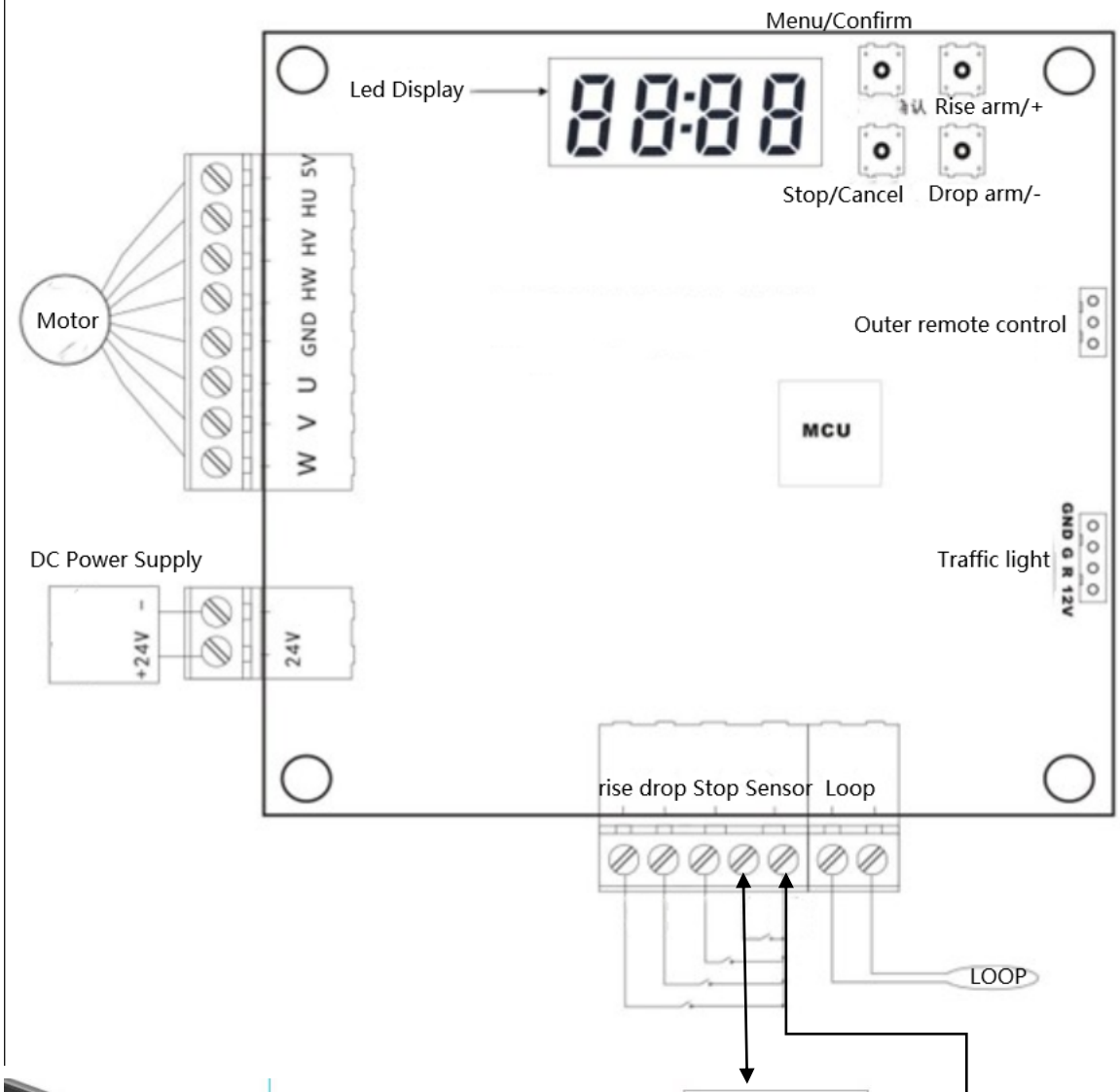
The meaning of LED display information

Content	meaning
IDLE	The motor is not connected, or the motor Hall is
STOP	The arm is in place
CLOS	The arm is closing
OPEN	The arm is opening
HOLD	The arm is open
LOCK	Arm is locked

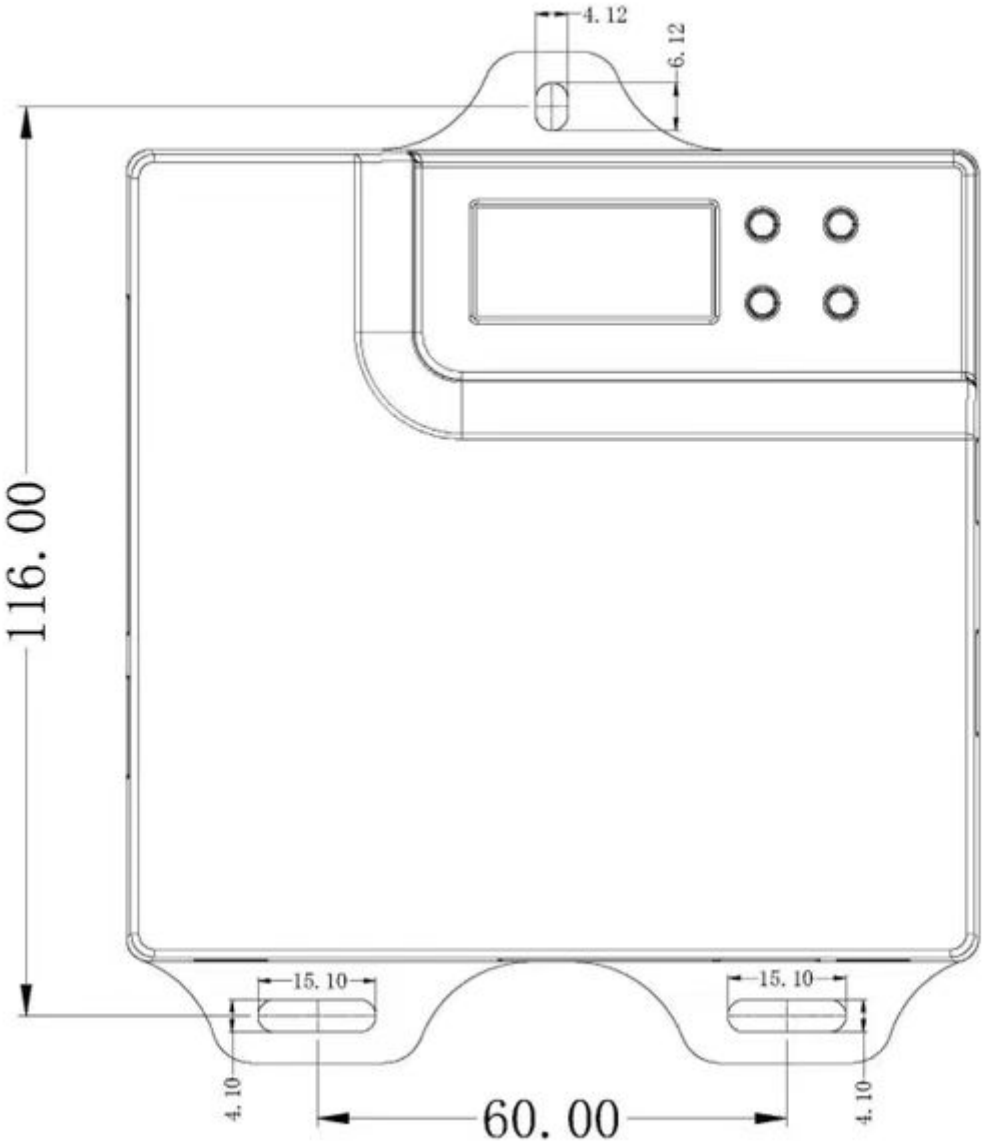
- **Shortcuts**

In normal working mode, long press the "Stop/Cancel" button to quickly enter the remote control learning menu commands.

- **Wiring diagram**



- **Hole diagram**



Appendix: Common faults and solutions

Fault phenomenon	Possible cause	Solution
According to the switch key, the operating direction of the arm is in accordance with the actual opposite direction	Arm direction setting is wrong	Use F-17 parameter to set correct direction
Display E-03/E-04	Arm lifting speed/arm lowering speed is too small	Enlarge F-00/F-01
	Structural lag	Check whether there is any foreign matter stuck in the structure
	spring too tight	Adjust spring tightness
Display E-05/E-06	Arm raising/lowering timeout	Enlarge F-00/F-01
E-07 error code appears at the barrier	Wrong motor type	Use F-17 to set the correct motor class

	The motor is missing a phase, the possible cause is electrical	Retighten the wire
	Machine wire connection is loose	Rewire in the correct wiring order
Controller displays IDLE	Hall wire wiring sequence is wrong	Retighten the motor wires
	Motor wiring is loose	Replace motor
The controller resets when the barrier arm is running	Motor Hall sensor failure	Replace motor
	Motor short circuit	Replace high-power power supply
	Insufficient power supply	Replace controller
	Arm controller failure	Enlarge F-15 and F-16
	Bounce strength and bounce sensitivity settings too small	Reduce ground sensitivity
		Make the F-46 bigger
Automatically rebound during the arm closing process	Ground sensor detects arm pole	Reduce F-06
		Reduce F-02
	The opening speed is high	Can reduce both F-06 and F-02
	The deceleration angle is larger when the arm is lifted	Reduce F-07
Remote control distance is close	Close speed is high	Enlarge F-03
		It is possible to reduce F-07 and increase F-03 at the same time
	The deceleration angle of the arm is small	The remote control receiving antenna must be placed in the chassis
	The remote control receiving antenna is placed inside the chassis	Outside
	Remote control battery voltage is too low	Replacement battery
Remote control learning failed	The remote control is damaged	Replace remote control

	Remote control receiving antenna and remote control frequency	Replace the remote control with one that matches the frequency or

	The remote control has been learned	No processing required
	The remote control sequence is learned incorrectly	Clear the remote and relearn it
The barrier arm rod is not level after it is closed in place.	The axis of the barrier arm is too offset	Adjust the mechanical structure so that the shaft is in a reasonable position
	The horizontal position value of the barrier arm controller is set improperly	Adjust the value of F-08 of the barrier arm controller
The barrier arm rod is not vertical after it is fully opened.	The axis of the barrier arm is too offset	Adjust the mechanical structure so that the shaft is in a reasonable position
	Vertical position value setting of barrier arm controller	Adjust the value of F-09 of the barrier arm controller