

Robot Operation Tutorial

– Understanding Teach Pendant Button Functions

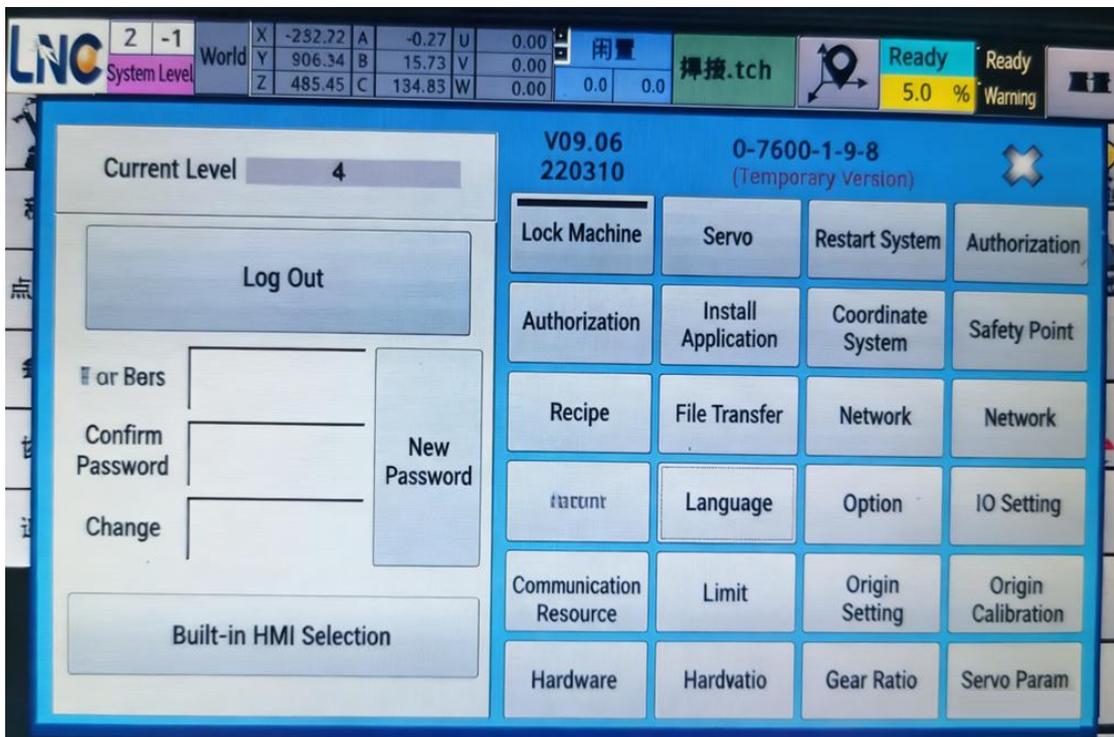
Today, we officially begin our systematic learning of robot operation. To skillfully operate the robot, we must start with the basics and fully understand the function of each button on the teach pendant. Below, we will explain each part in turn, referring to the pictures.



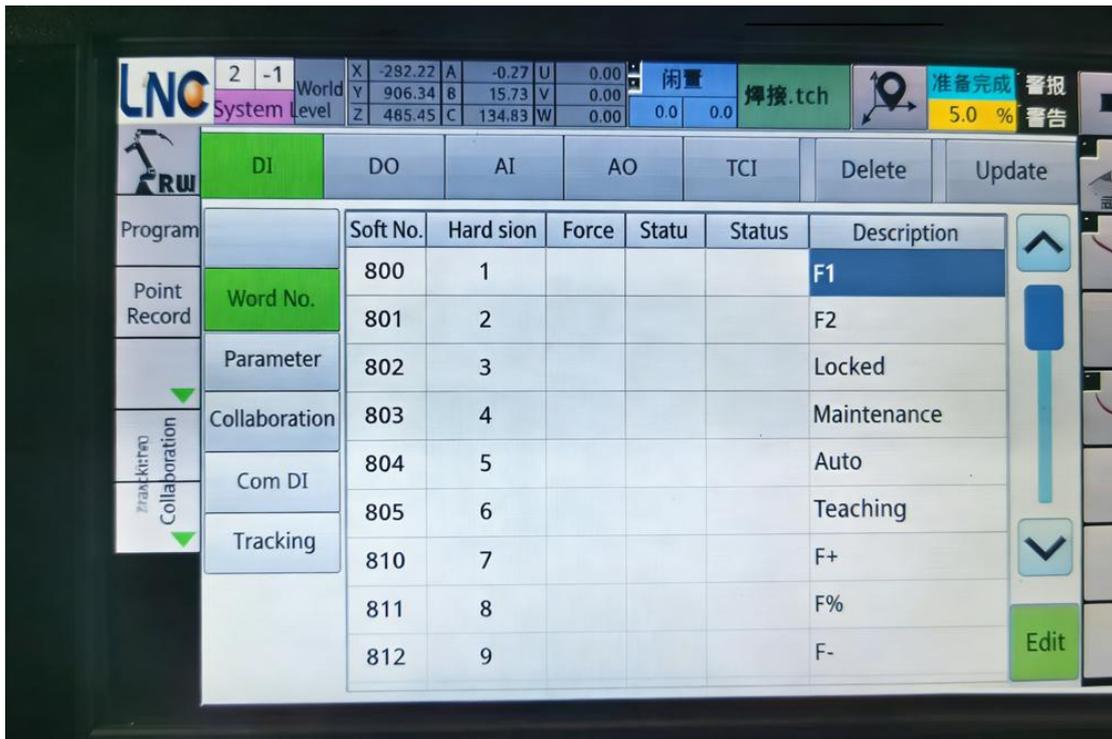
1: F1、F2:



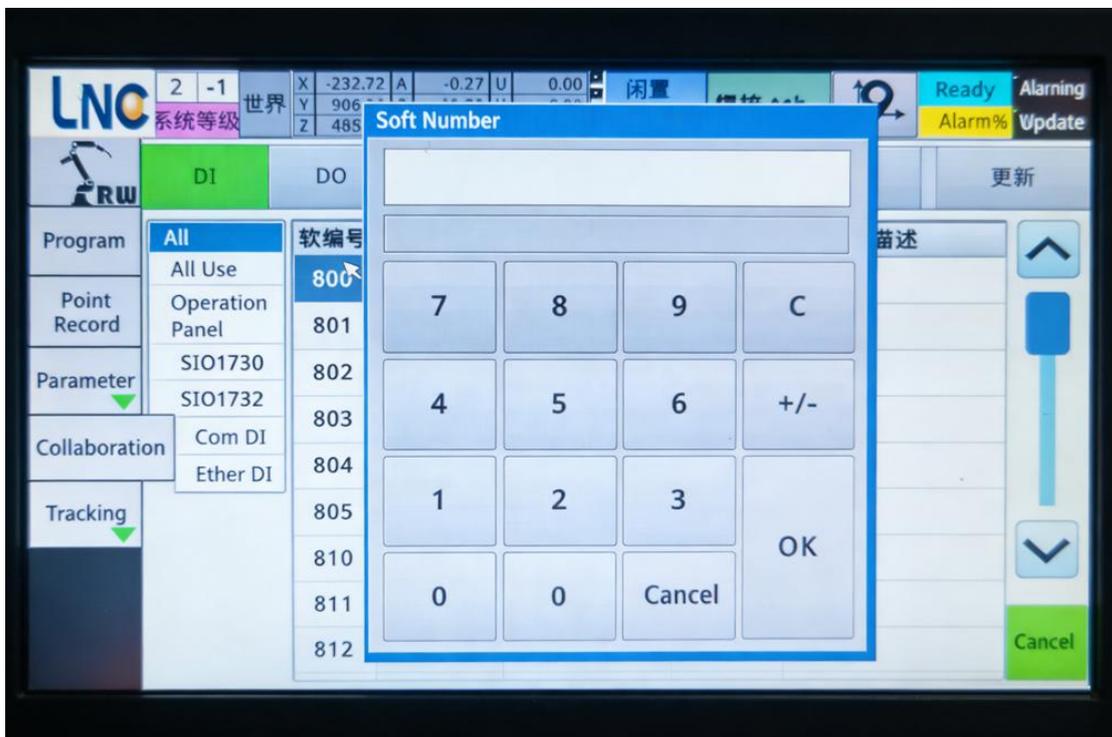
These two buttons are user-defined buttons based on later needs. The specific operation is as follows: First step: Find IO settings in system permissions.



Step 2: Click [DI] -> [Operation Panel] -> [Edit] to enter the function editing of the F1 and F2 buttons.



Next, click the soft number corresponding to F1 and F2, and enter the soft number of the function you want to implement. (ps: If the entered soft number is already used by another function, it may cause the button with that function to become ineffective. Therefore, it is recommended to communicate thoroughly with professionals; the function of the soft number needs to be edited and implemented using a PLC.)

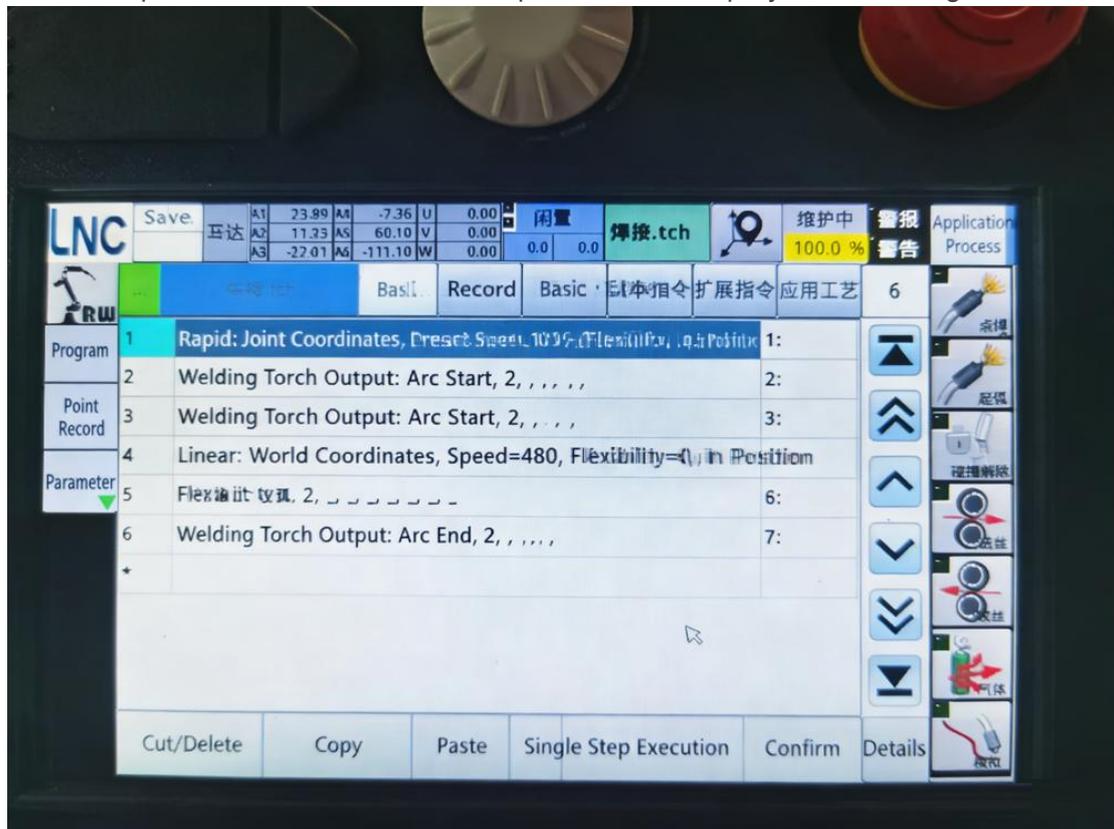


2: Lock:



Screen Lock Function

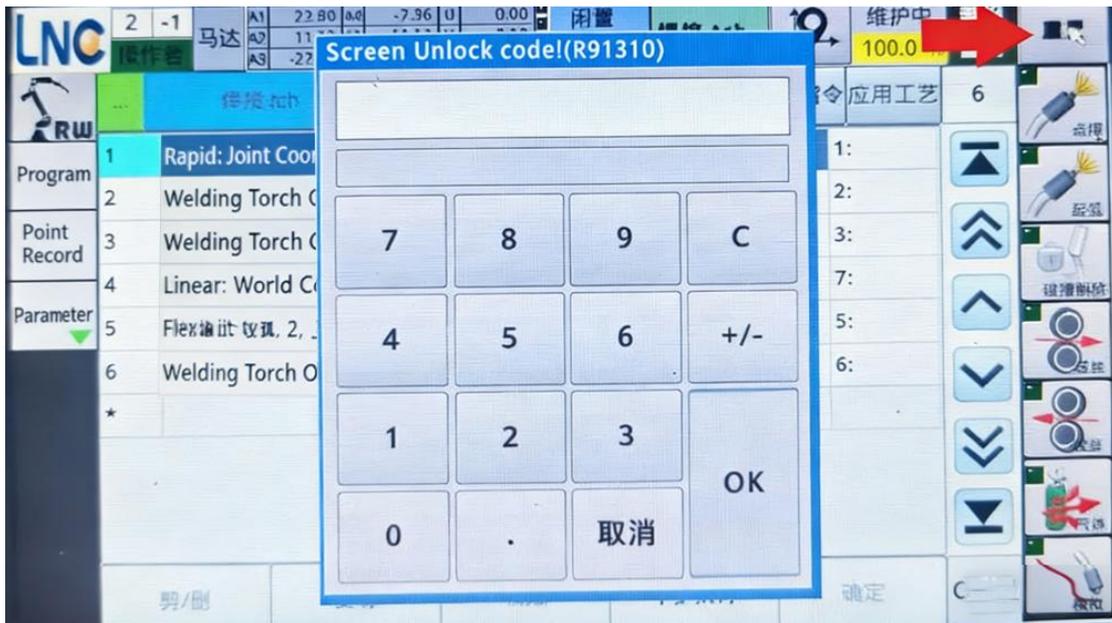
When we press this button, the teach pendant will display the following screen.



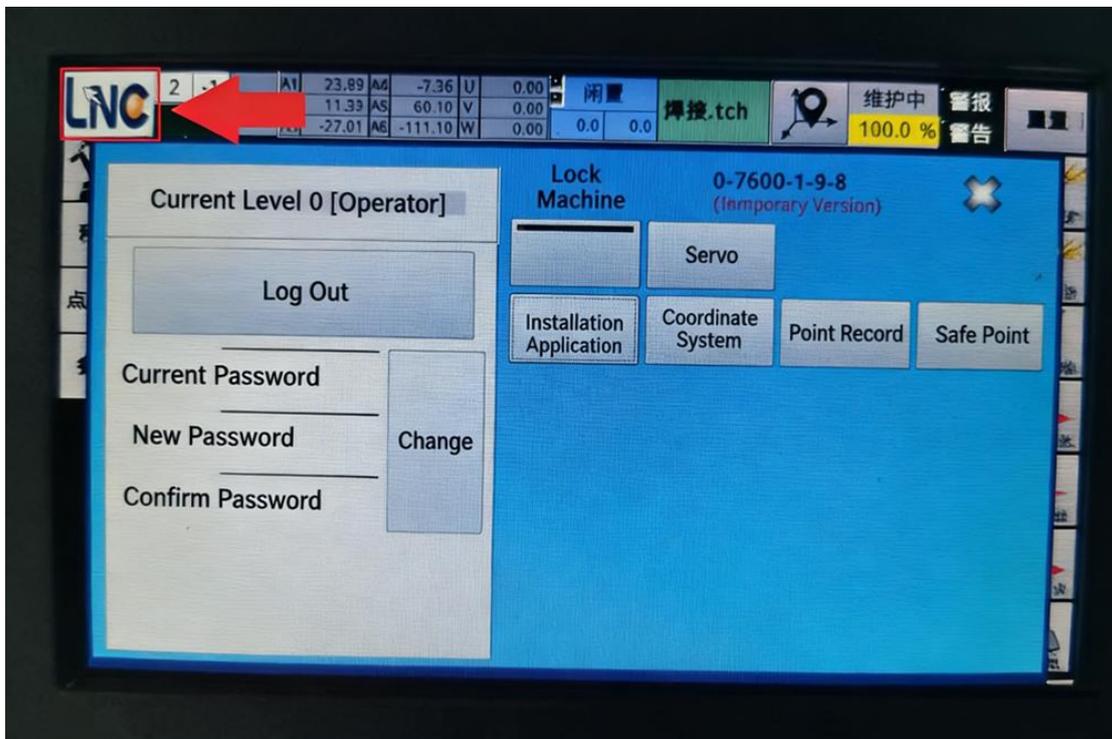
The original system permission level in the upper left corner will revert to the initial operator permission, and a red prohibition icon will appear in the upper right corner. At this time, no operation can be performed on the teach pendant.

How to unlock this state?

First, click the prohibition icon in the upper right corner; the following screen will appear.



Enter 0 and click OK to unlock the teach pendant and proceed to the next step.



Click the system permissions selection in the upper right corner, then click "Logout," and select the corresponding permission level as needed.

3: Maintenance Mode, Automatic Mode, and Teach Mode:



a: Maintenance Mode: Controls the operation of a single motor. The motor rotates, and operation continues even before preparation is complete. If the axis exceeds its limits, it can still move in a direction away from those limits. Typically used during machine setup.

b: Automatic Mode: Used to start a program or operate specific actions on various pages. In this mode, the robot moves according to the type of coordinate system. Automatic mode cannot be entered before preparation is complete.

c: Teach Mode: Used for operating the robot during programming. Movement can be referenced to the [World], [Work], [Tool], or [Joint] coordinate systems.

4: +, F%, -, Start, Pause, End:



a: +, F%, -: Speed percentage settings. Adjusts the speed percentage during automatic operation in automatic mode. "+": Increases the machine's percentage speed; "-": Decreases the machine's percentage speed; "F%": Half of the current speed percentage, i.e., 0.5% for 1%, 5% for 10%, and 50% for 100%.

b: Start, Pause, End: In automatic mode, starts, pauses, and ends the running program.

5: Joints, Tools, Work, World:



The coordinate system selection button will cause different machine motion trajectories depending on the button used. Select the appropriate coordinate system as needed:

a: Joint coordinate system: Determined by the direction of joint rotation.

b: Tool coordinate system: Determined by the direction of movement of the assembled tool (fixture).

c: Working coordinate system: Determined by the working surface required by the external workpiece.

d: World coordinate system: Determined by the direction of tool movement with the machine base as the central origin.

6: Handwheel:



After being turned on, the machine's movement can only be controlled by rotating the handwheel on the teach pendant. In maintenance and teach pendant modes, the brake behind the teach pendant needs to be held; this is not required in automatic mode. (Note: The handwheel mode is used to prevent machine collisions during operation; it is recommended to operate the machine using the handwheel.)

7: Continuous (Long On):



The machine operates continuously without interruption; when not powered on, in non-manual wheel mode, pressing the button once moves the machine a short distance, the distance depending on the speed multiplier; in manual wheel mode, it rotates one increment at a time.

8: X1, X10, X100:



Speed multiplier; different multipliers result in different machine speeds and durations. When X1 is selected, the maximum percentage of speed displayed in the upper right corner of the teach pendant is 1%, as shown in the image:



When X10 is selected, the maximum percentage of speed displayed in the upper right corner of the teach pendant is 10%, as shown in the figure:



When X100 is selected, the maximum percentage of speed displayed in the upper right corner of the teach pendant is 100%, as shown in the figure:

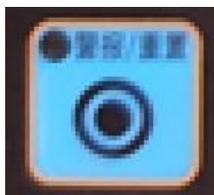


9: rZ+~X+, rZ-~X-:



Machine action buttons: When the button indicator light is on, it means the button is active when pressed; when it's off, it's inactive. In different modes, each button represents a different machine movement trajectory. (ps: You can distinguish them by button color. For example, the joint coordinate system button is black. When the joint coordinate system button is lit, it means the black J1~J6 buttons are active. Pressing these buttons will cause the machine to move according to the motor's movement.)

10: Alarm/Reset:

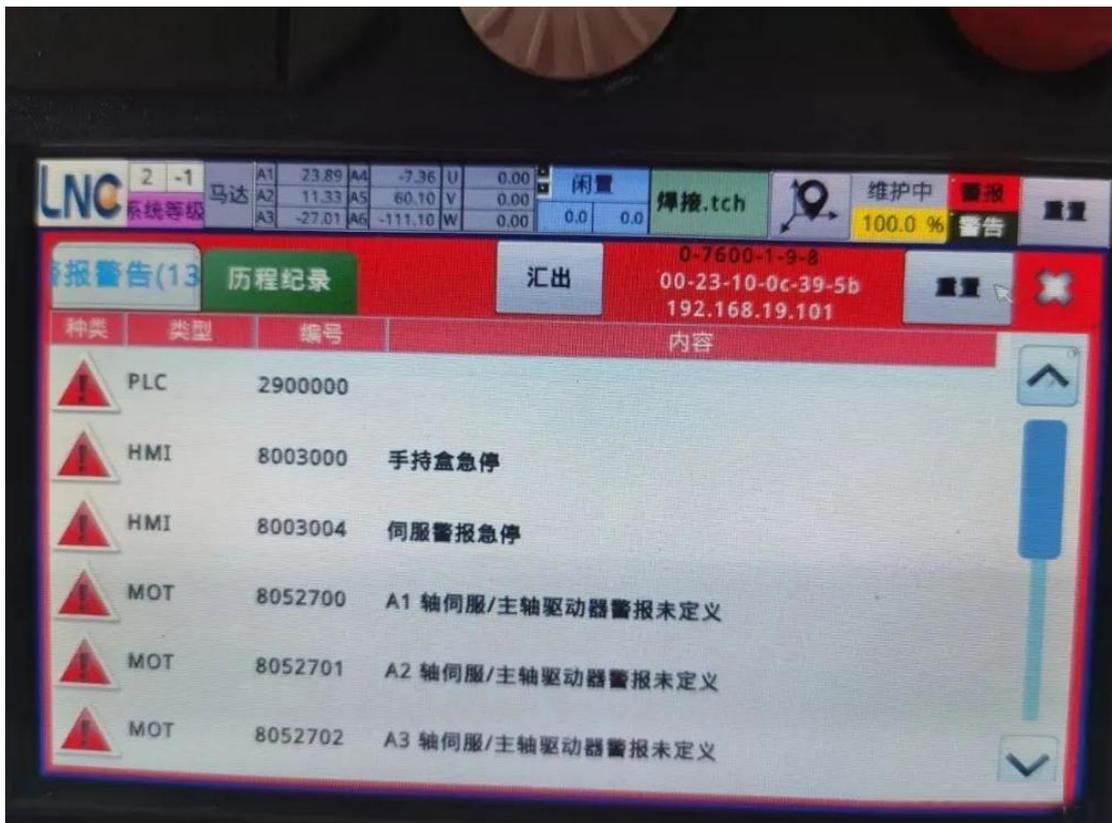


The indicator light is on, indicating that there is an alarm. Pressing this button will reset the system and clear the alarm.

11: Red Emergency Stop Button:

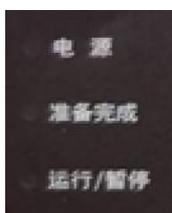


Pressing this button will put the machine into alarm mode. This button is used to protect the machine in case of emergencies or when it is turned off. After pressing this knob, the teach pendant screen will display the image below.



The machine is currently in emergency stop mode. To release it, simply rotate the emergency stop knob gently.

12: Signal Indicator Lights:



Used to display the current status of the machine.

The [Power] light indicates that the machine is powered on.

The [Ready to Run] light indicates that the machine is ready to run, used in automatic mode to show whether various parts of the machine are functioning properly.

The [Run/Pause] light indicates the current operating status of the machine.

The above is an introduction to robot operation instruction, specifically the button recognition section. If you have any questions, please consult JUGAO engineers.