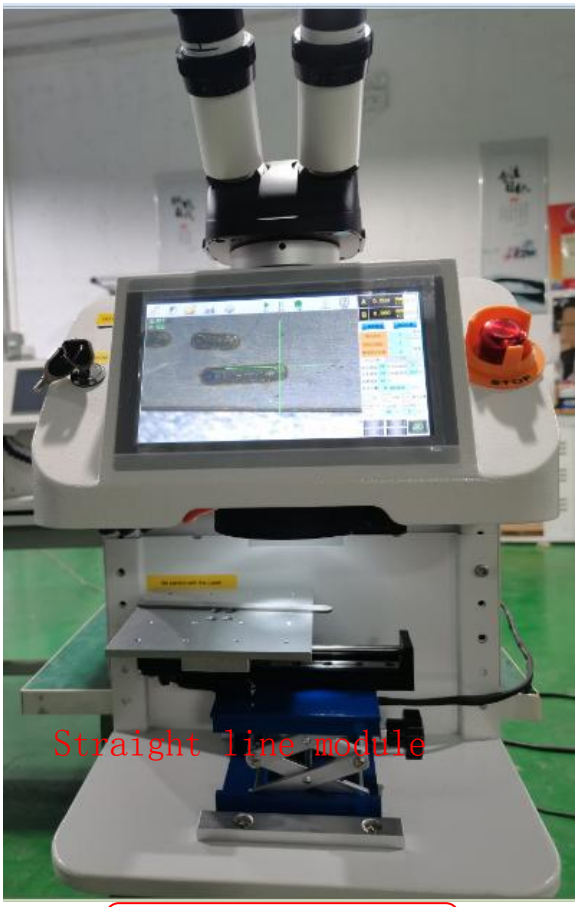
Mini Laser Welding Machine Motion control

Operation Manual

V1.0

Version history:

Version No.	Update the content	Update time
V1.0	First release	2023-1-10



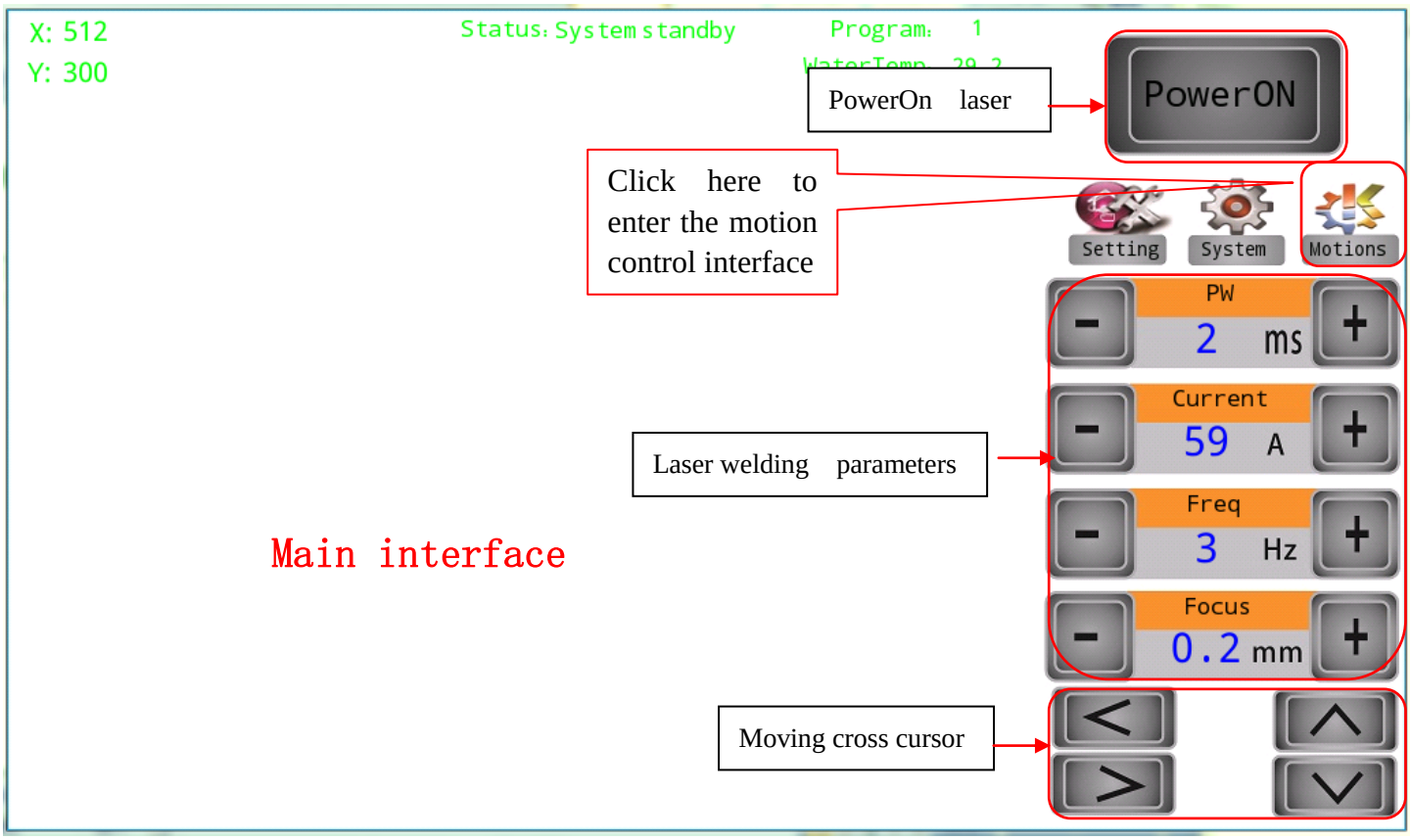
Straight welding

Circular welding

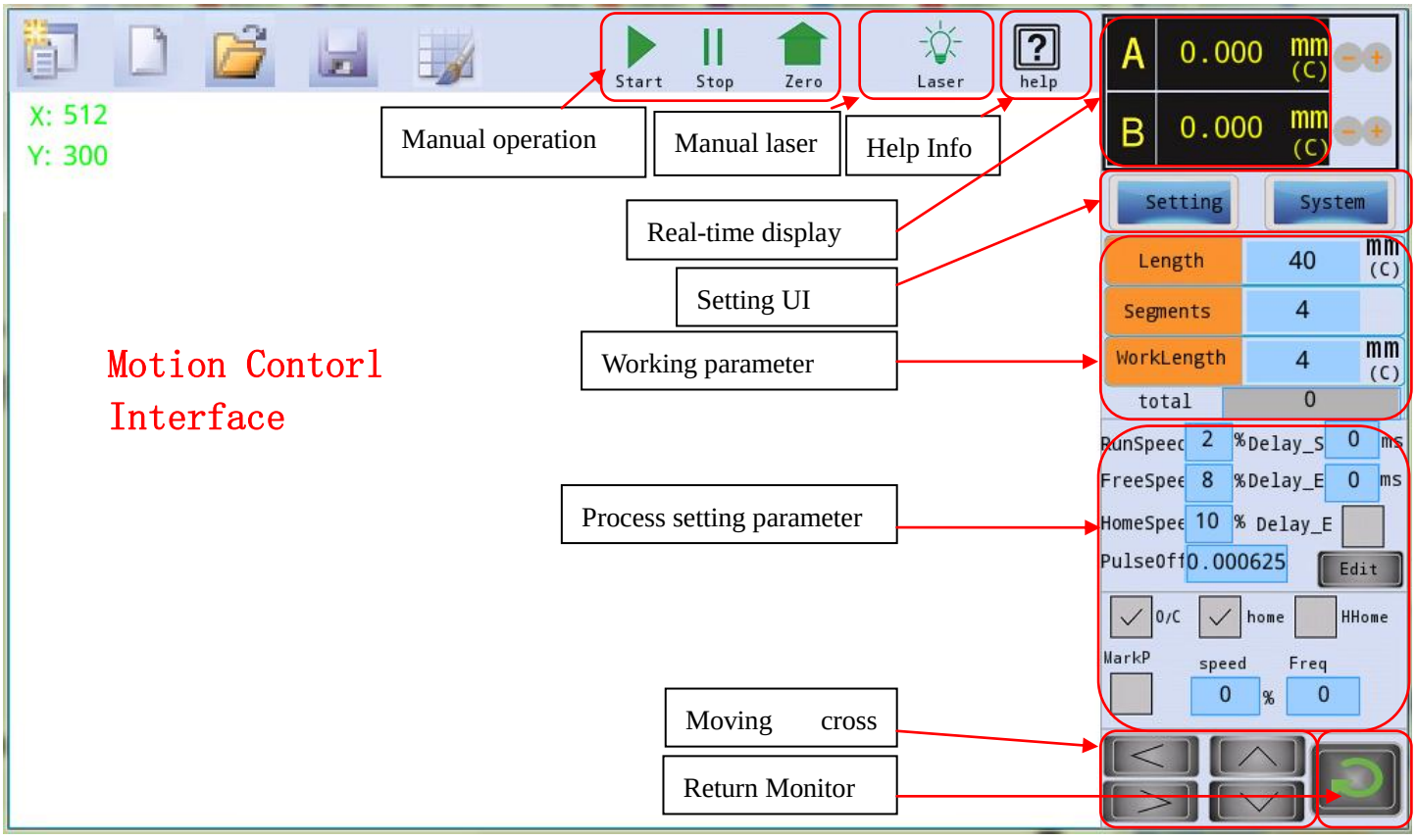
(This drawing is for reference only, the appearance of the equipment is subject to the real object)

Chapter 1. System interface description

➢ Main interface

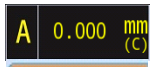


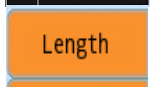
➢ Motion Contorl Interface



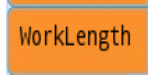
Chapter 2. Parameter setting

1. Working parameter:

- 

Real-time display: the length of real-time walking during machining, mm/C
- 

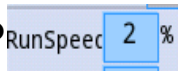
total length: the work length of the workpiece to be processed, mm or C, according to the actual application setting
- 

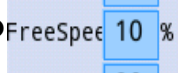
Average segments: 1 - N segments
- 

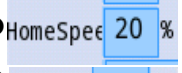
work length: Set the length of a single section to be processed according to the average number of sections
- 

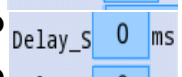
counter: total processing counter (available in "System Settings" -> Clear count, clear zero)

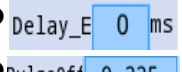
2. Process setting parameter:

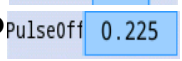
- 

Welding speed(1-100%)
- 

Free speed(1-100%)
- 

Home speed ,return zero speed (1-100%)
- 

Start delay, ms
- 

End delay, ms
- 

Pulse offset: The motor travels the length of a pulse (pulse/mm)

Line: Pulse offset =screw pitch / Subdivision, (ex: Subdivision =1600, screw pitch 2mm, Pulse offset =2/1600=0.00125)

Circle: Pulse offset =360/ Subdivision, (ex: Subdivision =1600, Pulse offset =360/1600=0.225)
- 

Welding track:After this item is selected, the system will process according to this path parameter, and the processing parameter of the main page will not work. Edit machining parameters through "Process editing"
- 

Welding/Free select: Free, no laser output, Simulated runing; Welding: Run the laser at the same time
- 

Home select: Non home/home;

Non home: Do not return to the starting point (or mechanical zero) after welding, stop at the end point position

home: Automatically return to the starting point after welding (or mechanical zero)
- 

Hard Home: Hardware home/software home select; When choosing hardware to return to zero, the motor should be connected with zero sensor, otherwise the motor will always run, will not stop
- 

marke piont select; According to the set number and speed of the dots, the dots should be tapped once before welding (the average dots of the total work piece),

and then welding

- 

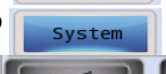
Start key: Manually Runing
- 

Stop key: Manually stop
- 

home key: manually reset to zero (if the hardware home , the sensor will automatically stop when the motor finds the zero)
- 

Laser on key: manual laser output
- 

help: Open the help window
- 

Settings: open the Settings window
- 

System: open the System window
- 
Adjust the position of the reticle

- 
Return main interface

Chapter 3. Use procedure

1: Use procedure:

1) On the main interface, press PowerON the key, turn on the laser, and set the appropriate welding parameters (current, pulse width, frequency, spot).

2) Set pulse offset, the subdivision default value of the step motor driver inside is 1600, which can be modified by the user. The setting method refer to the above description

3) According to the application, set the total length、Average segments、wolk length and the appropriate processing speed, empty speed, back to zero speed

4) First, do not select welding O/C , Run the simulation to see if the rotary table or linear module runs normally. If not, check the parameters or hardware lines

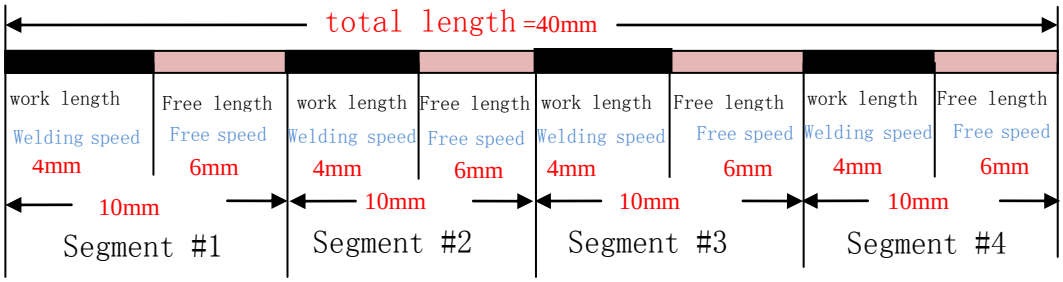
5) Simulation is ok, then selected O/C , and can start welding

6) According to the actual welding effect, return to the main interface to adjust the laser power to achieve the best welding effect

2: Welding parameter example:

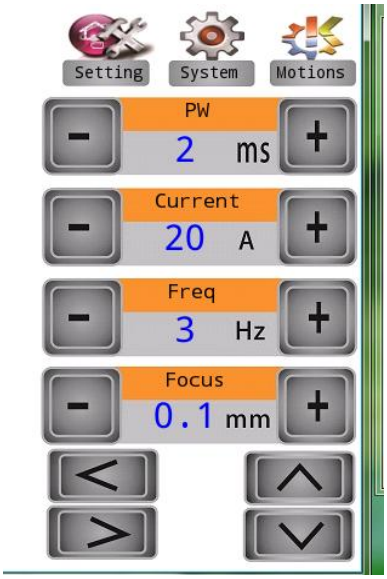
For example:

1) **line welding:** the total length =40mm、 average segments =4(each segment is 10mm)、 work length=4mm (to be welded, and the free length=6mm)



The parameters are set as follows:

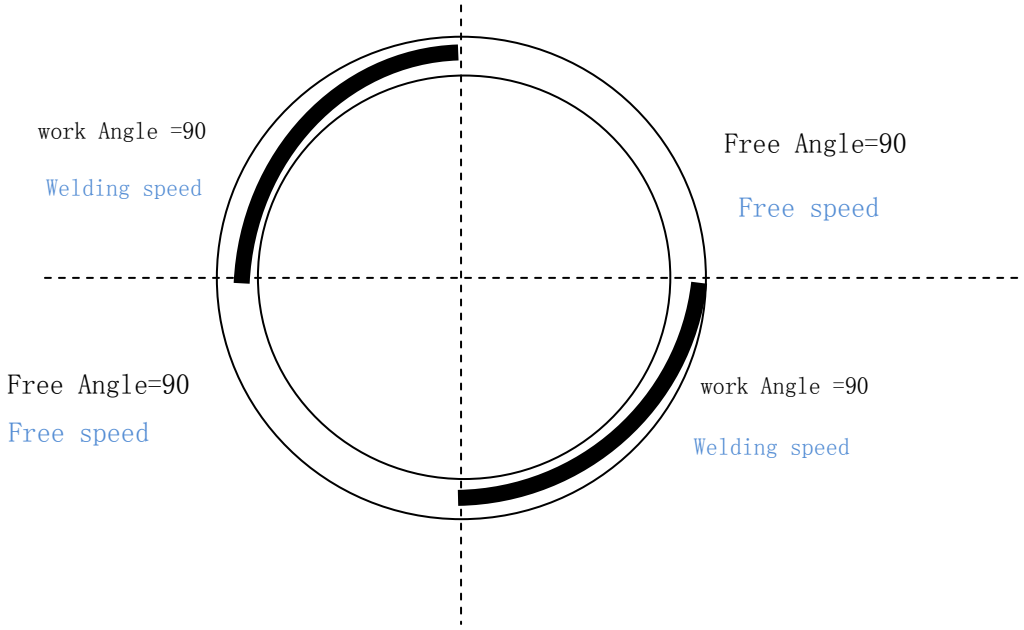
Working parameter



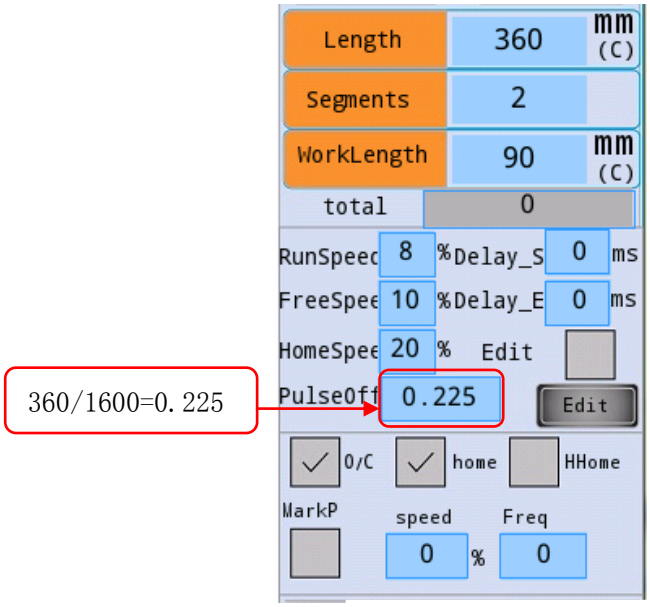
Lser Welding parameter

After setting the above parameters, clamp the workpiece, step on the foot switch, it will be automatic welding, automatic return to zero after welding

2) **Circle welding:** total Angle =360、 average segments =2(each segment is 180)、 work Angle =90 (to be welded,and the free Angle =90)



The parameters are set as follows:



Working parameter

Lser Welding parameter