User·Guide

mSpider

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I、 ⚠Equipment necessary before

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   ②. Assemble Instruction V1.1 20150704

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   a. Necessary software
   ⬇ mDraw
   ⬇ Inksape
   B. Software possibly required
   ⬇ Arduino IDE
   ⬇ Makeblock main board drive *(Note: If Mac OS system is used, click hyperlink to load and install the drive)*

3. Download software and detained information package

   http://learn.makeblock.cc/mdrawbot/

Hint 1

    4 assembly modes are used for mDrawBot, the assembly of all movable parts *has assembly accuracy requirement, install and finely adjust the robot strictly as required by the assembly description,* especially adjustment of shaft and rotating part, steering engine and rudder arm, machine levelness.

Hint 2

    The material object may differ from the picture provided in the specification, so the specification is only for reference, and specification and software may be changed without prior notice. Please assess the website for detailed change: http://learn.makeblock.cc/mdrawbot/

II、 Product description

1. mDrawBot

mDrawBot is advanced drawing kit designed based on Makeblock open platform and may be constructed to four types: mScara, mSpider, mEggBot and mCar. In addition to specially designed hardware structure, we specially equip mDrawBot software – **mDraw**.
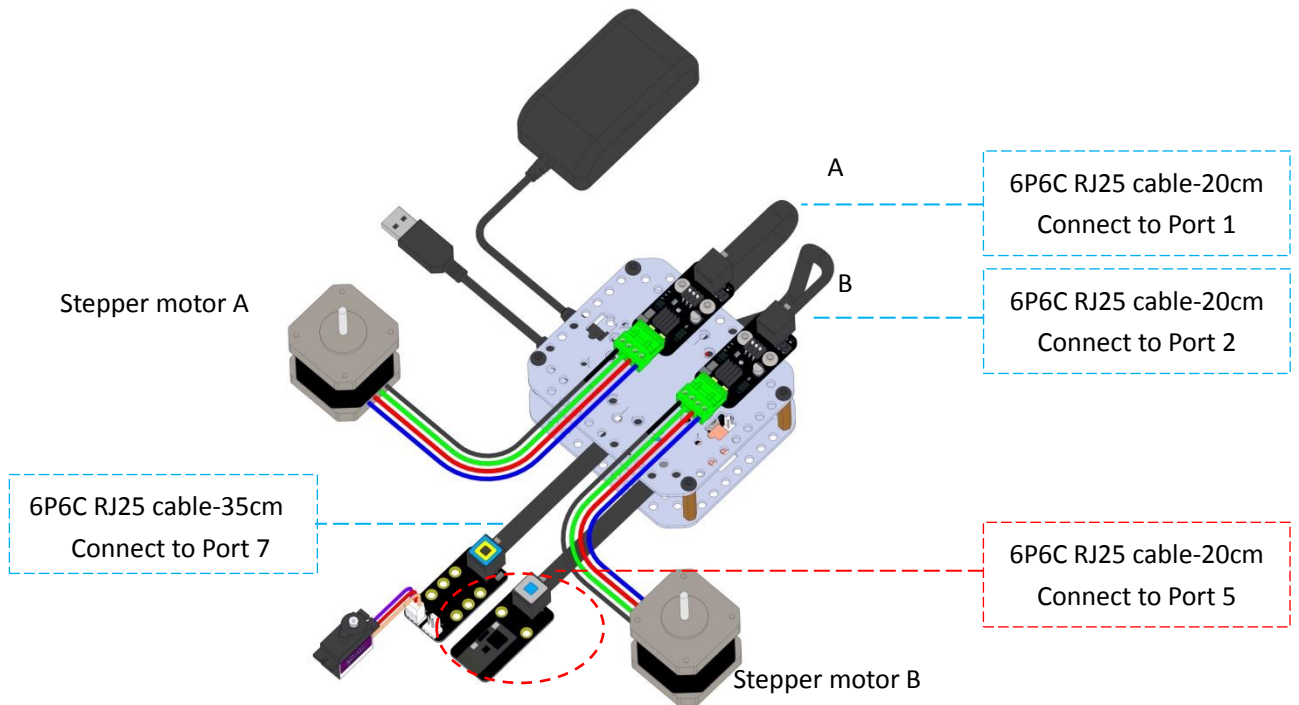
A. mSpider

A wall or white board drawing robot dragged by two high strength Dacron ropes. As its structure likes spider, so it is called mSpider. The Dacron ropes are driven by two stepping motors to add gravity for achieving drawing in vertical surface.
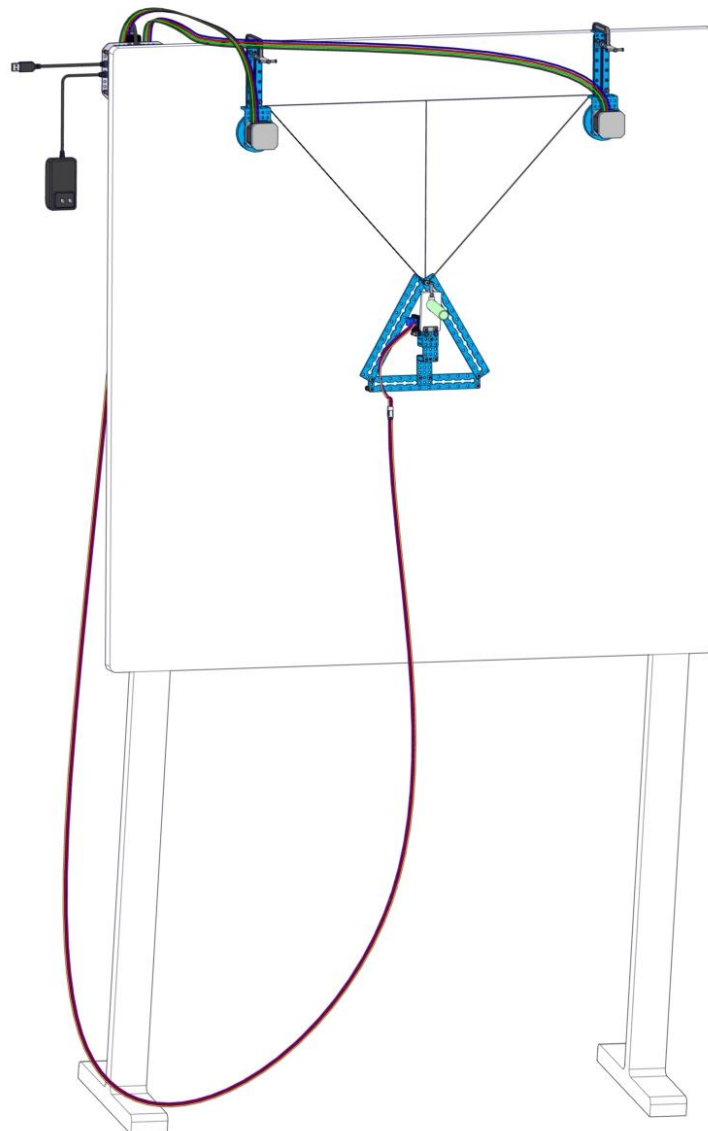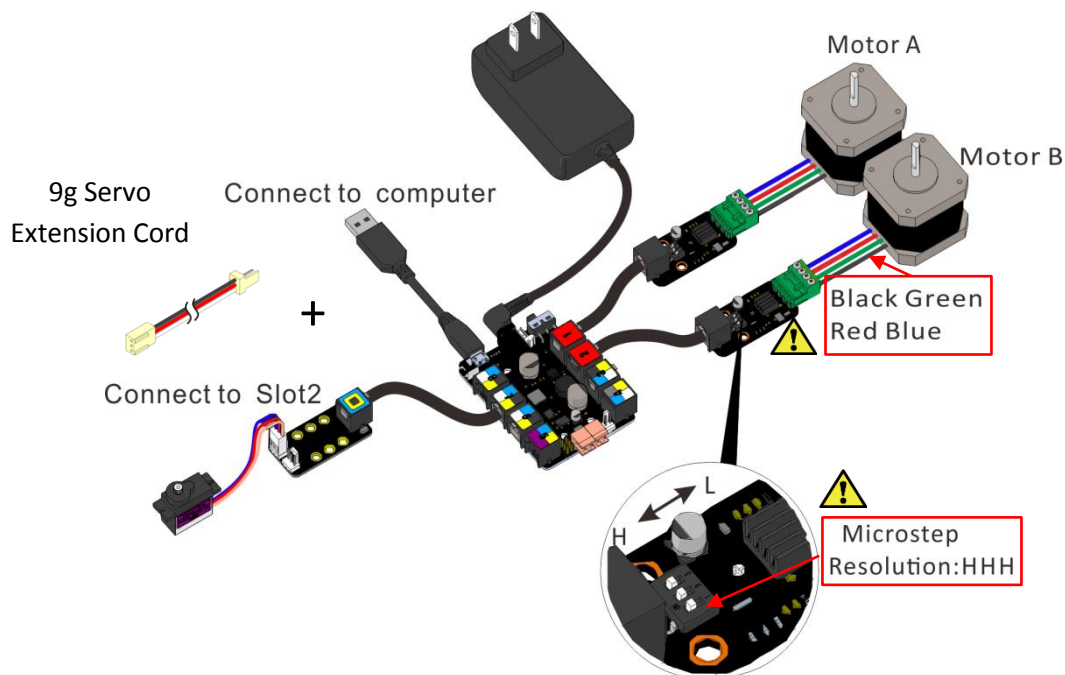

III、 Mechanical assembly (see document mDrawBot instruction V1.1 20150704)

IV、 Recommended wiring diagram (Bluetooth communication for Bluetooth version)

(⚠ Note: When Bluetooth is used as serial port, connect Bluetooth with port 5 OF Makeblock Orion board.

A — 6P6C RJ25 cable-20cm Connect to Port 1

B — 6P6C RJ25 cable-20cm Connect to Port 2

Stepper motor A

6P6C RJ25 cable-35cm Connect to Port 7

6P6C RJ25 cable-20cm Connect to Port 5

Stepper motor B

V、 Definition of mSpider electronic wiring

Motor A

Motor B

9g Servo Extension Cord

Connect to computer

Connect to Slot2

Black Green Red Blue ⚠

L

H

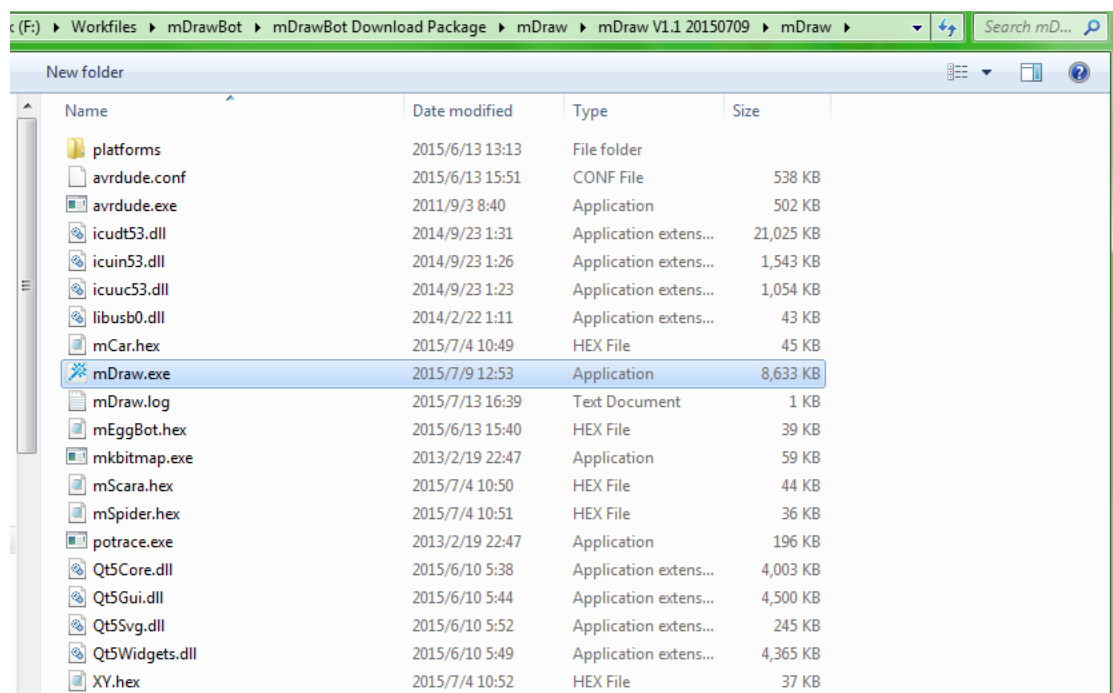⚠ Microstep Resolution:HHH

VI、 mDraw software

1. Description of mDraw functions

mDraw is open source cross-platform software produced by Makeblock and support Windows system, Mac system and Linux system, and perfectly supports four types of mDrawBot such as mSpider, mScara, mEggBot and mCar, and supports the steering engine mode and laser mode of Makeblock XY drawing robot kit V2.0.

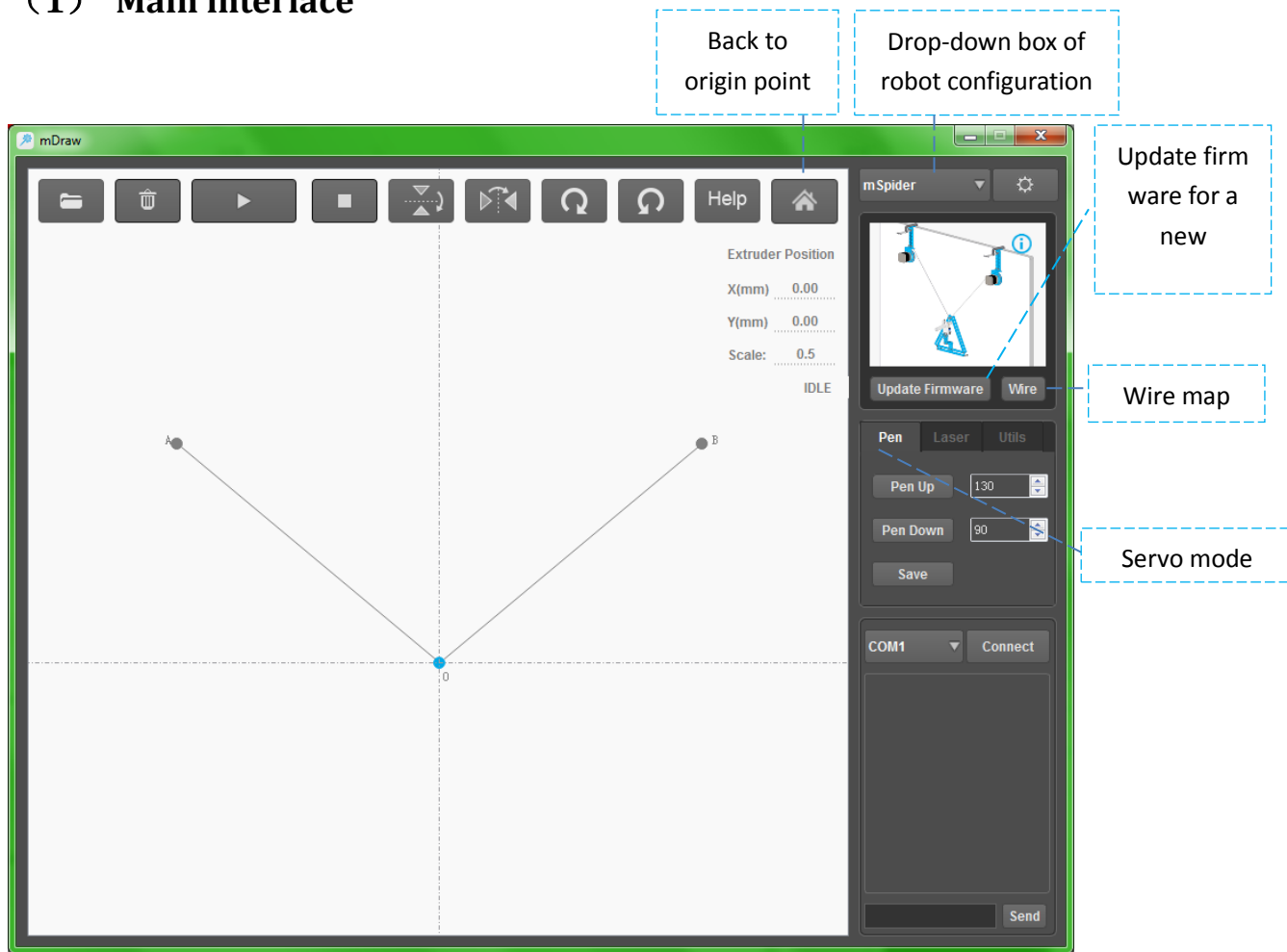Support SVG format, Change BMP to SVG

2. Software installation,

Unzip the downloaded file pack, find and double click the file as show in the figure.

3. Button function of main software interface
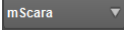
（1） **Main interface**

Back to origin point

Drop-down box of robot configuration

Update firm ware for a new

Wire map

Servo mode

（2） **Button function**

: Open the file

: Delete SVG file

: Begin/ suspend

: Stop

: Up and down mirror image

: Left and right mirror image

: Clockwise rotate at 90°

: Anticlockwise rotate at 90°

: Help link

: Machine returning to initial position

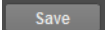: Robot mode switching button: five modes such as mScara, mSpider, mEggBot, mCar, XY

: Setting button, mainly used for setting arm length parameter, operation speed, and front and reverse rotation of motor

Update Firmware: Upgrade firmware button

Wire: Electronic wiring diagram of robot
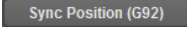
Pen Up 130: Pen lift parameter setting

Pen Down 90: Pen fall parameter setting

Save: Store pen lift and fall parameters on the main board chip

COM1: Select serial port

Connect: Serial port connecting button

Sync Position (G92): Synchronous position

Scale: 0.5: Change drawing scale

（3） Function description of plot area

⚠️ a) After double clicking the main interface, the robot will move with the graph.

Initial Position
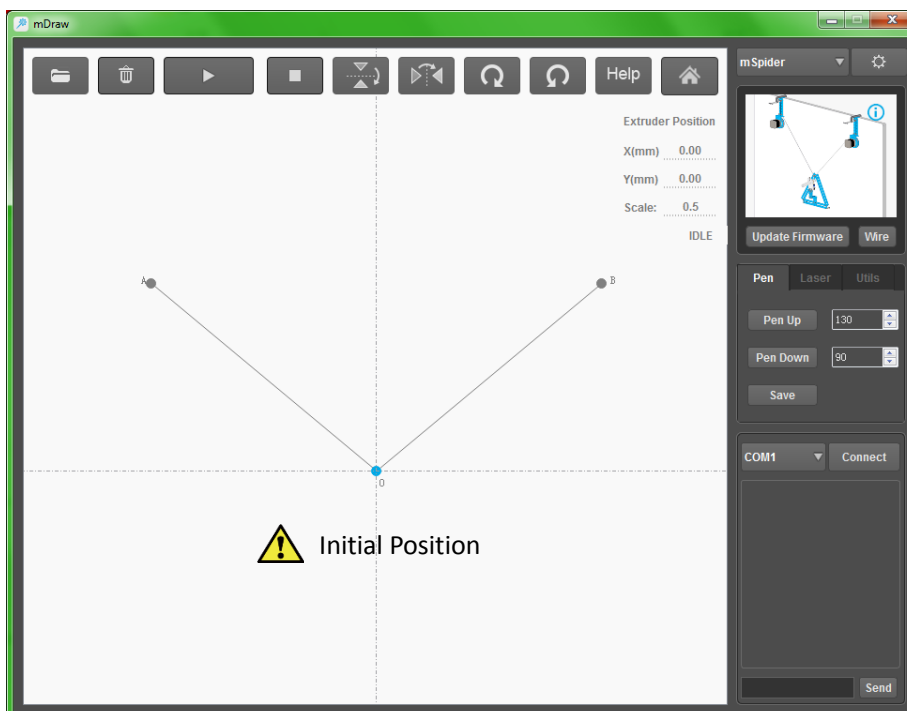
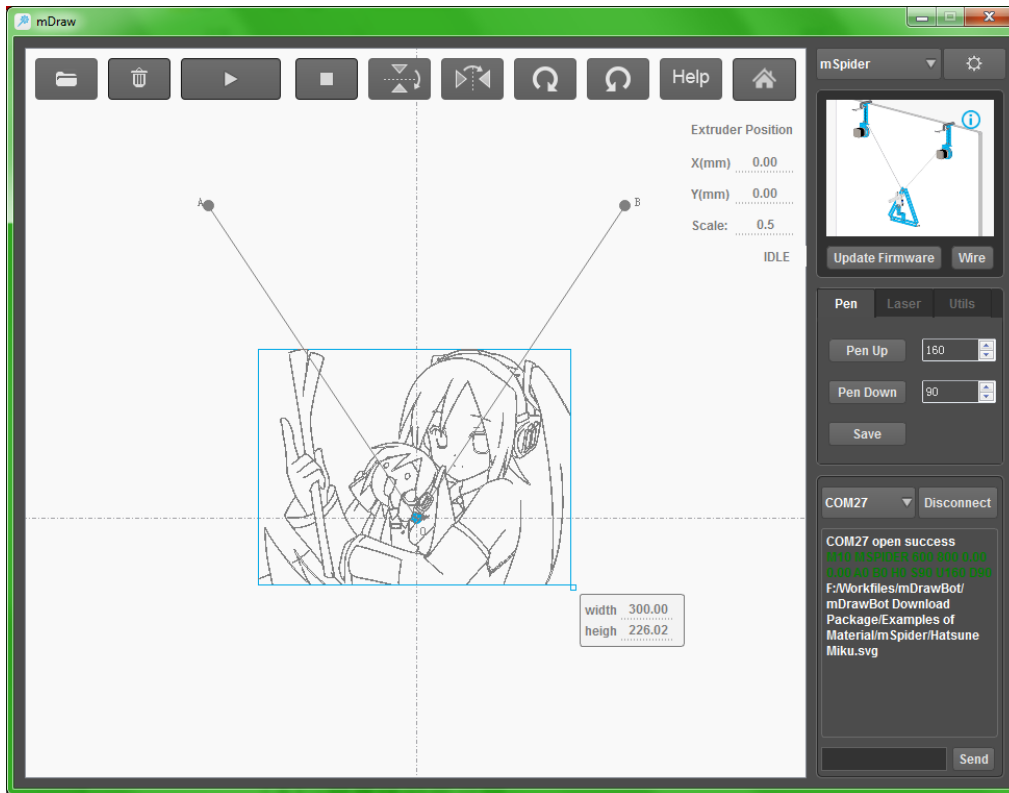b). Drag the led SVG format to change the size and location of the SVG drawing, or change the drawing size by directly entering the digit on the low right of the graph.

c). While leading BMP file, the software automatically pop up SVG file change dialog box, and according to adjustment parameter, change the file to SVG format.

（4） Function description of setting area

⚠a). Single click button 🔅 to open the setting interface as shown in the following figure.
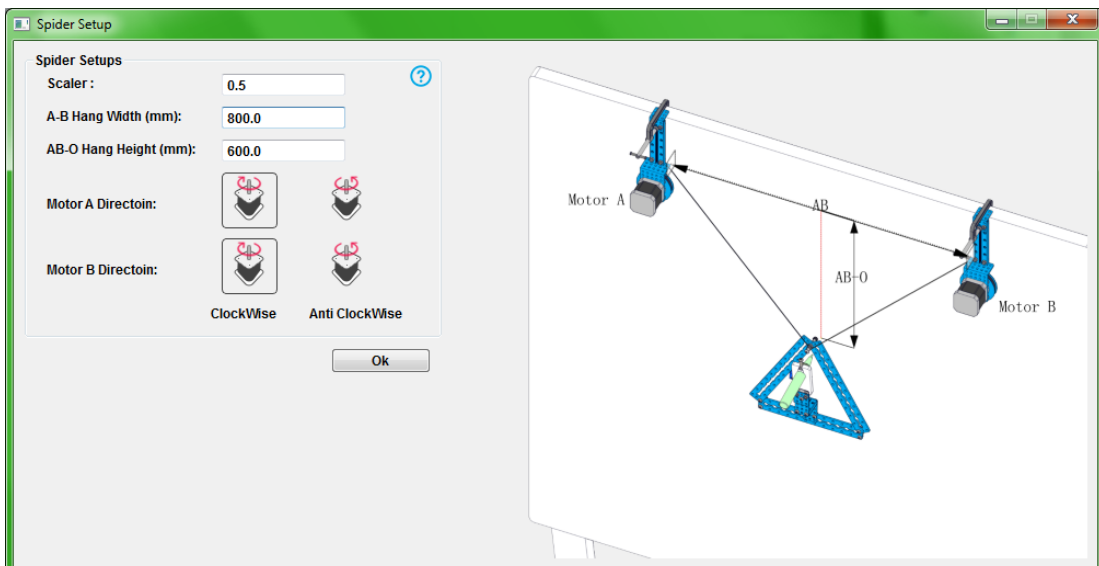
⚠b). AB is the horizontal length of holes, and AB-0 is the distance between the perpendicular bisector of AB and the screws on the top of triangular support. Fill after accurately measuring by paper rule or steel rule. See the figure for meaning.

c). A button is arranged on the back to change the rotation direction of the stepping motor if

the rotation direction is incorrect.

4. Use of mSpider

（1） mSpider

a）. Inspect and confirm that the wire connection is correct (Note: you may click Wire to inspect.). Connect USB with the computer (⚠ Note: if Bluetooth is used, install the Bluetooth drive on the computer)

b）. Select and connect correct COM port and click burning hardware (note: While the robot is switched to other drawing type, you are required to click Update Firmware to upgrade the firmware to ensure The robot can operate in new drawing type.
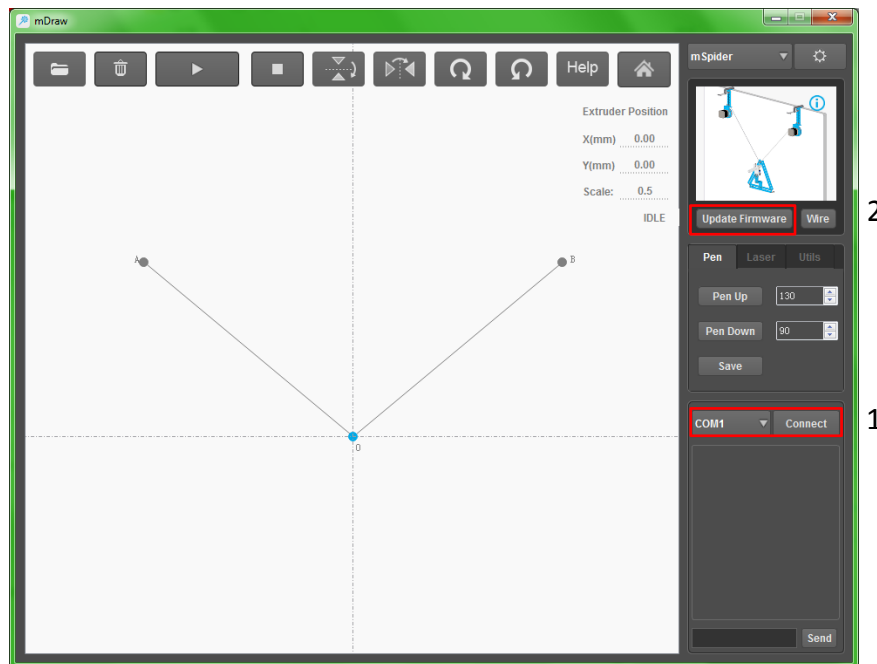
c）.Click icon ☐ to access the setting interface. When it is used first time or the AB of mSpider and AB-O are changed, measure corresponding size and fill it. Before use, measure corresponding length. Click Ok to confirm.

⚠ *Meaning of initial position view and software parameter*
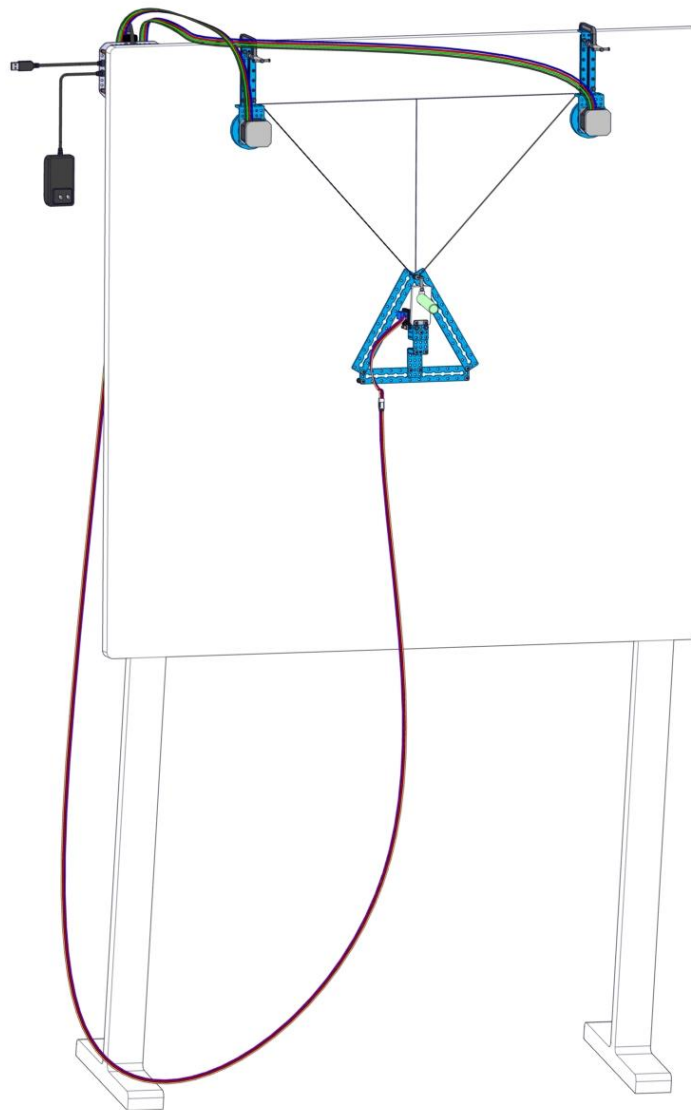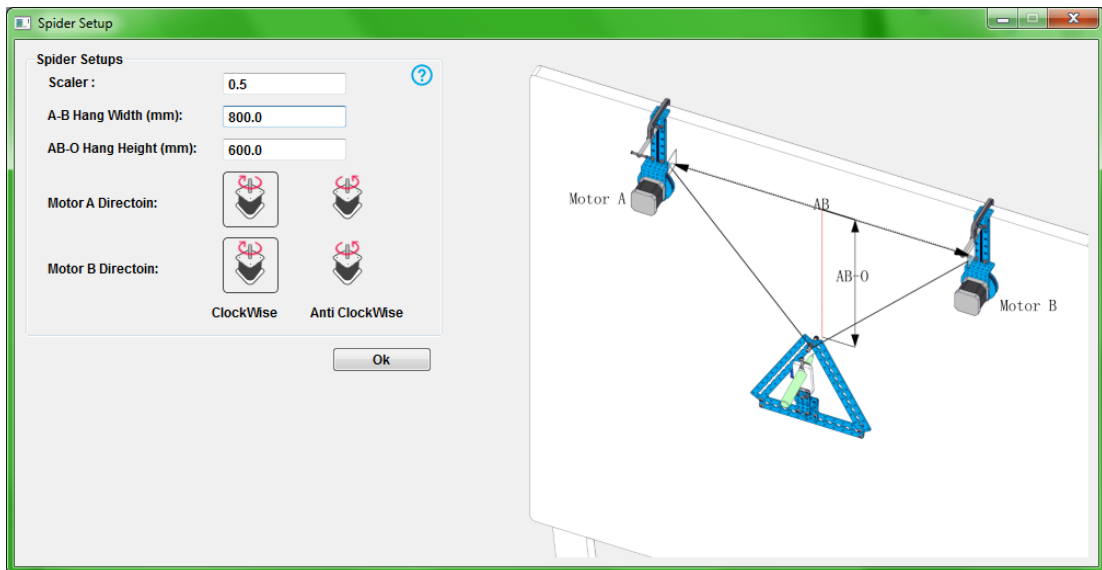
d）. Setting of steering engine pen lift and fall parameter

As shown in the figure, respectively enter the value by Pen up and Pen Down of the software,

click PenUp and PenDown. When the following effect is observe and obtained, it is possible to set pen lift mechanism of the steering engine (note: If the rudder arm of the steering engine does not have the following angle, remove the rudder arm by a cross screwdriver to adjust installation angle, the rubber band is adjusted for degree of tightness according to requirement, and pendown is subject to just contact with the paper.

Pen Up   Pen Down

Rudder
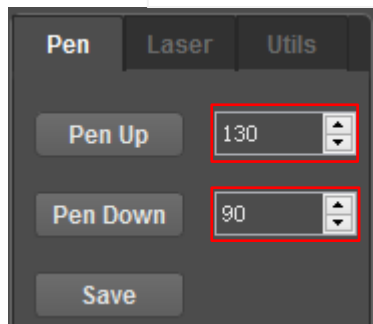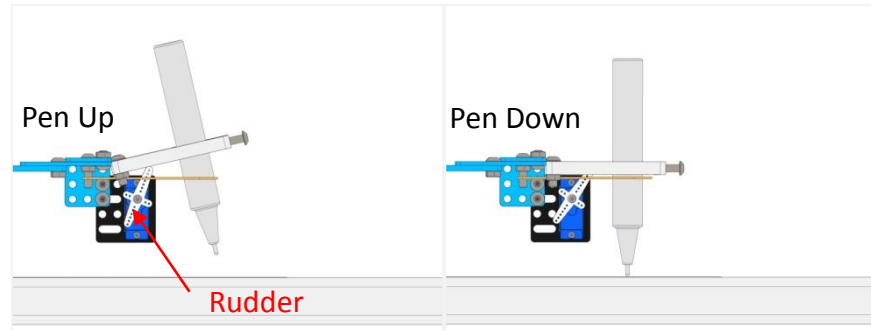
⚠ Note： Software default value is here, and the value is subject to the value set during debugging during use.

e）. The graph is led in the imaginary line box as much as possible, and in case of excess of the range, it is possible to cause drawn graph abnormal. Lead the following test graph, …mDrawBot Download Package\Examples of Material\Test\Square.svg for effect test. (⚠ If the graph is deformed or not closed, 1. Inspect AB and AB-O are correct. 2. Adjust the tightness of the screw, calibrate levelness and so on. 3. Inspect whether 9g Servo Extension Cord blocks drawing during drawing. 4. See FAQs for details)
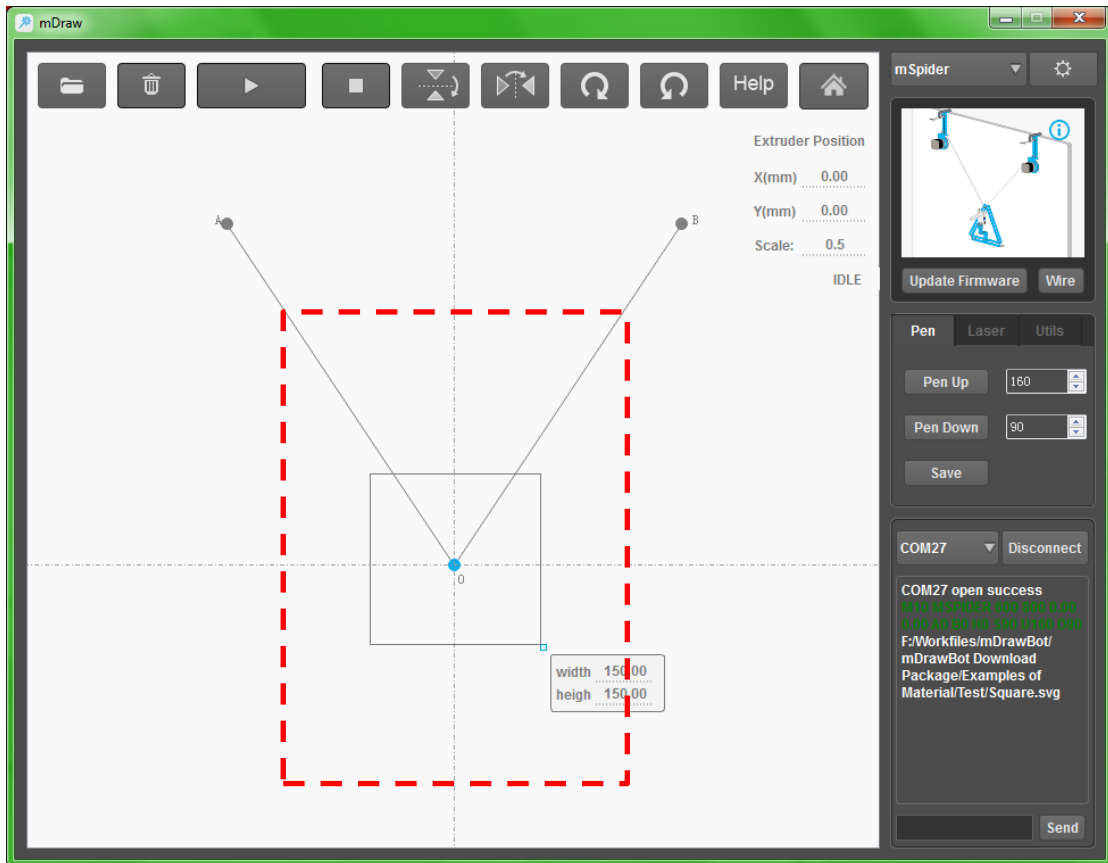
f）. After setting the parameters, turn off the power switch on the main board, manually reset mSpdier to initial position, turn on the power switch on the main board, and click the button ▶.


VII、 Example of completely using mDraw software

1. When the test is passed as described above, mSpder can operate smoothly. You may draw complex graph.

2. Automatically or manually reset mSpder to initial position. (⚠ ensure that the serial port is properly connected, the parameter of the pen lift mechanism is correctly set, and the power supply is properly connected.
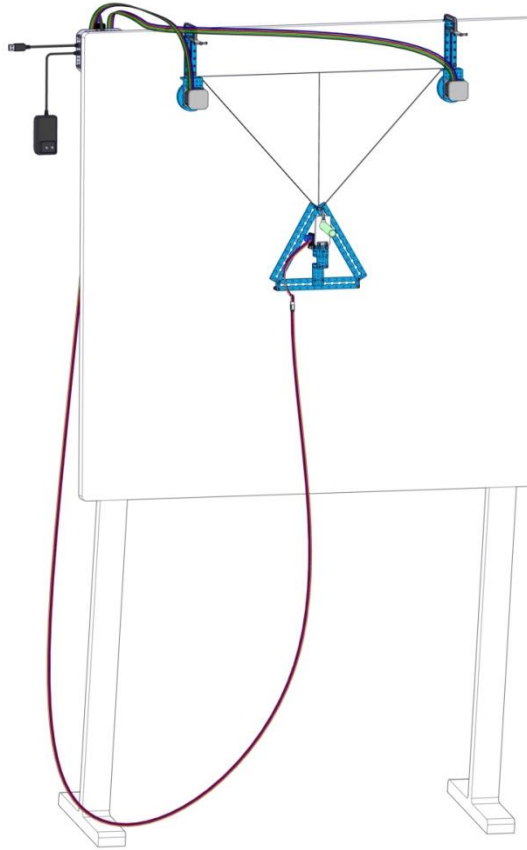
3. Lead SVG graph, for example, ···\mDrawBot Download Package\Examples of Material\mSpider\Hatsune Miku.svg, as shown in the following figure.
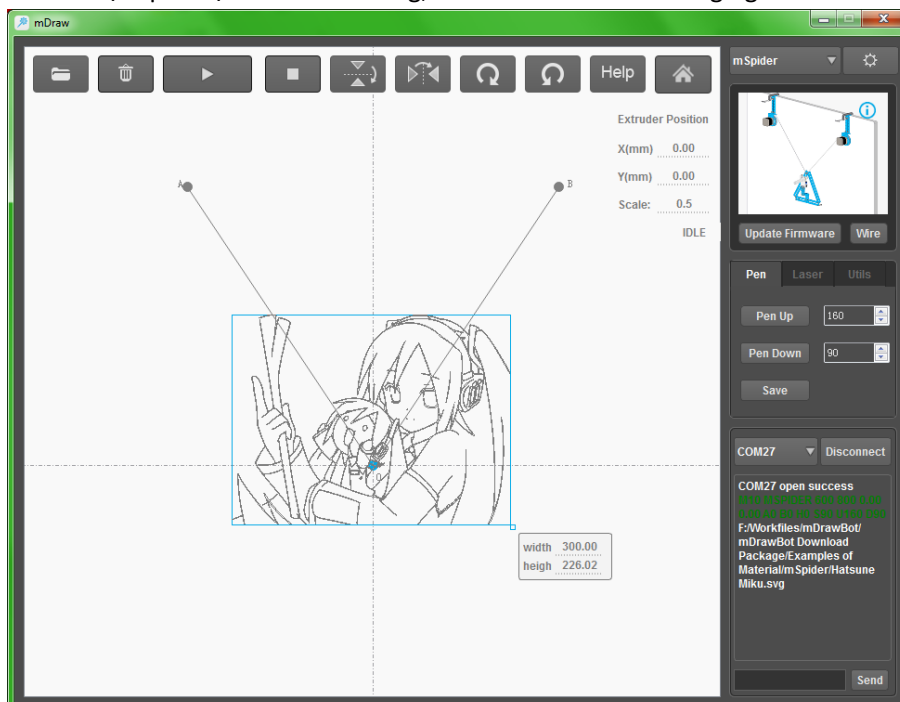
4. Click the button [►] of mDraw software mSpder beings to operate. When the machine stops operation, the graph has been drawn. The drawing effect is shown below:
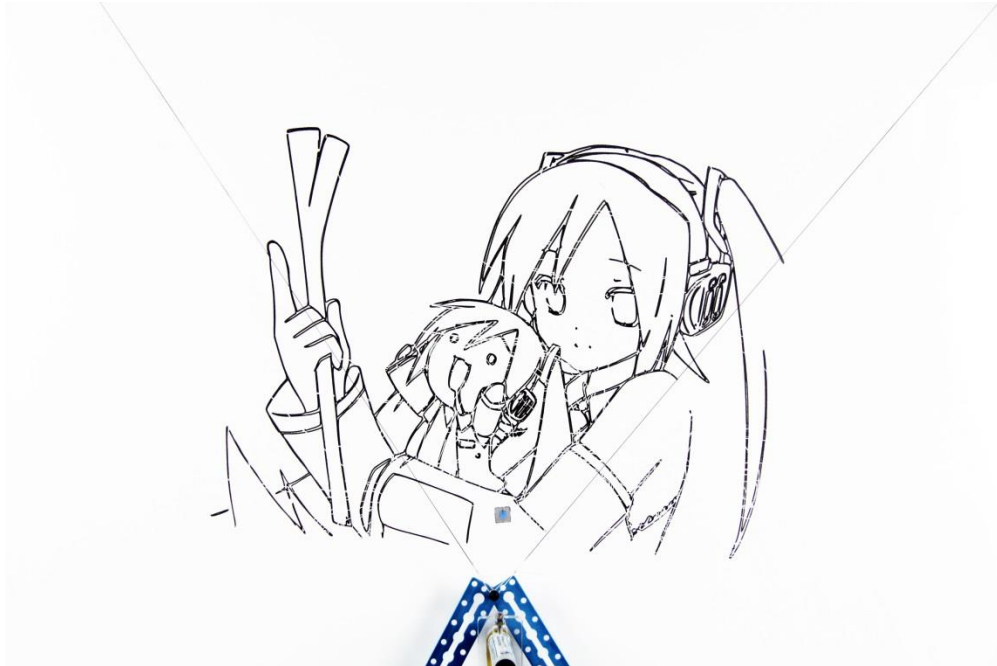
VIII、 See "[How to use inkscape+corelDRAW software](#)" for generator of SVG graph.

IX、   Please refer to [mDrawBot FAQs - V1.3(English)](#) for FAQs.

X、   Contact us:

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