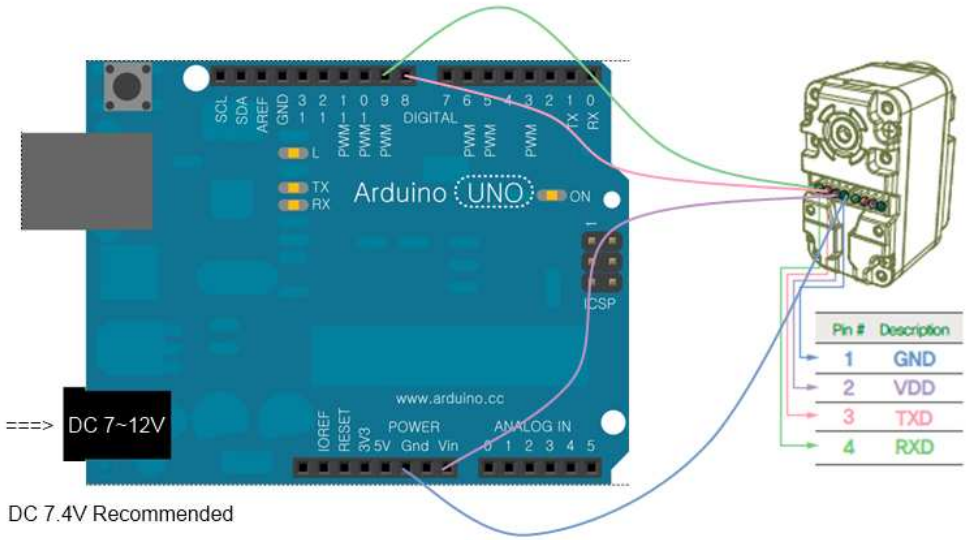
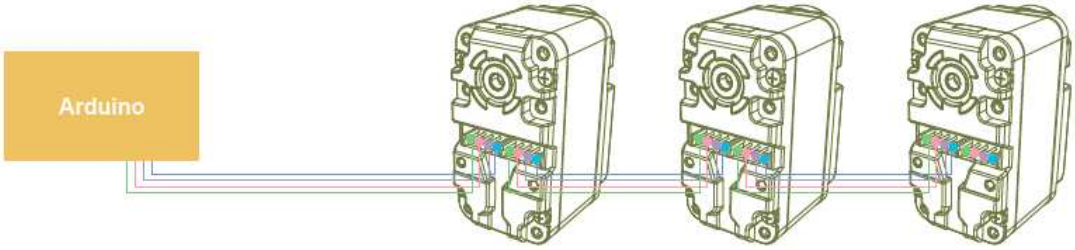
Dongbu Robot HerkuleX (DRS-0101, DRS-0201) Library for Arduino

–ver 0.1(2012.11.08)

- Getting Started -

1. Circuit





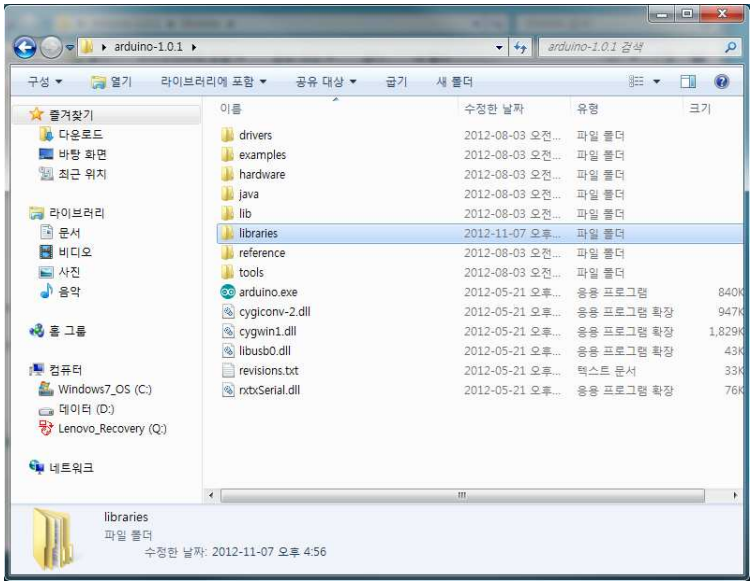
2. Adding HerkuleX library

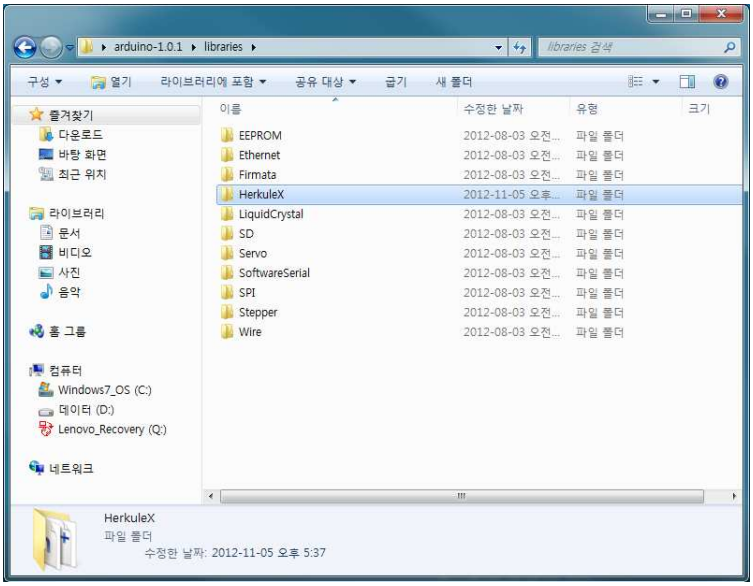
(1) Download HerkuleX library(HerkuleX.zip) file

http::://

(2) Unzip the file and move to HerkuleX folder to your arduino library folder

(ex : \arduino-1.0.1\libraries)





3. Open the example code on Arduino Tool

Open \arduino-1.0.1\libraries\HerkuleX\examples\HerkuleXServoTest.ino

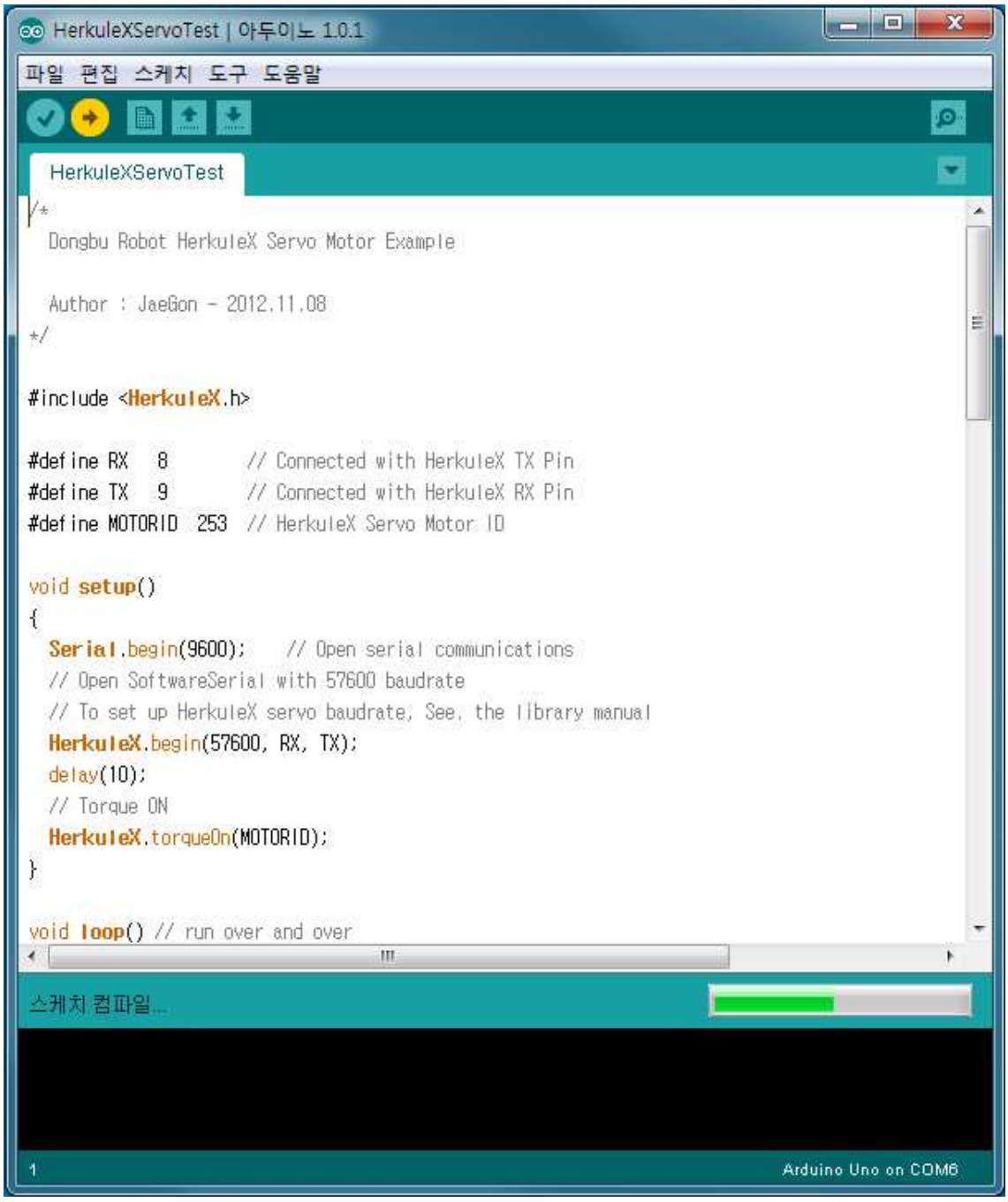
```
1: /*
2:     Dongbu Robot HerkuleX Servo Motor Example
3:
4:     Author : JaeGon - 2012.11.08
5: */
6:
7: #include <HerkuleX.h>
```

```
 8:
 9: #define RX      8               // Connected with HerkuleX TX Pin
10: #define TX      9               // Connected with HerkuleX RX Pin
11: #define MOTORID    253    // HerkuleX Servo Motor ID
12:
13: void setup()
14: {
15:     Serial.begin(9600);       // Open serial communications
16:     // Open SoftwareSerial with 57600 baudrate
17:     // To set up HerkuleX servo baudrate, See. the library manual
18:     HerkuleX.begin(57600, RX, TX);
19:     delay(10);
20:     // Torque ON
21:     HerkuleX.torqueOn(MOTORID);
22: }
23:
24: void loop() // run over and over
25: {
26:     unsigned char incomingbyte = 0;
27:
28:     // Check current HerkuleX status
29:     if (HerkuleX.getStatus(MOTORID) != HERKULEX_STATUS_OK) {
30:         HerkuleX.clear(MOTORID);    // If there is an error dectected, clear it
31:     }
32:
33:     if (Serial.available() > 0) {    // If Serial(with PC) is available
34:         incomingbyte = Serial.read();    // Reading a byte from PC
35:
36:         if (incomingbyte == '1') {
37:             Serial.println("Move angle");
38:             // Move HerkuleX to -30 degree by 112ms, Turn blue LED on.
39:             HerkuleX.moveAngle(MOTORID, -30, 10, HERKULEX_LED_BLUE);
40:         }
41:
42:         if (incomingbyte == 'a') {
43:             Serial.println("Current angle");
```

```
44:             // Get current HerkuleX angle and send it to PC
45:             Serial.println(HerkuleX.getAngle(MOTORID));
46:         }
47:
48:         if (incomingbyte == '2') {
49:             Serial.println("Move pos");
50:             // Move HerkuleX 512, 11.2ms * 200 = 2240ms, Turn red LED on
51:             HerkuleX.movePos(MOTORID, 512, 200, HERKULEX_LED_RED);
52:         }
53:
54:         if (incomingbyte == 'p') {
55:             Serial.println("Current pos");
56:             // Get current position and send it to PC
57:             Serial.println(HerkuleX.getPos(MOTORID));
58:         }
59:
60:         if (incomingbyte == '3')    {
61:             Serial.println("Turn");
62:             // Infinite turn, CCW 600, 112ms, Turn green, blue, and red on
63:             HerkuleX.turn(MOTORID, 600, 10, HERKULEX_LED_GREEN |
HERKULEX_LED_BLUE | HERKULEX_LED_RED);             // 300 CCW, -300 CW
64:         }
65:
66:         if (incomingbyte == 't') {
67:             Serial.println("Turn Speed");
68:             // Get current turn speed and send it to PC
69:             Serial.println(HerkuleX.getTurnSpeed(MOTORID));
70:         }
71:
72:         if (incomingbyte == 'q') {
73:             Serial.println("Finish");
74:             // Torque OFF
75:             HerkuleX.torqueOff(MOTORID);
76:         }
77:     }
78: }
```

4. Running HerkuleX Servo on your Arduino

(1) Upload



(2) Test

Open Serial window,

1 – Move angle

a – Get current angle

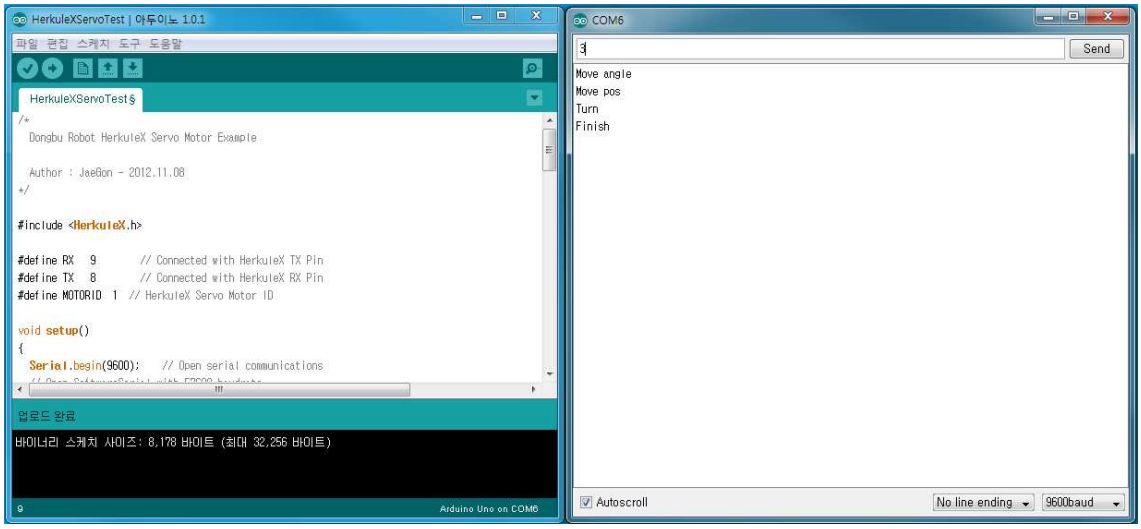
2 – Move pos

p – Get current position

3 – Turn

t – Get current turn speed

q – finish



5. Useful Tip

The default buadrate for HerkuleX servos is 115200.

When you connect HerkuleX servo to your Arduino device, the baudrate must be same between two devices and this means that you may need to adjust baudrate of HerkuleX servos to utilize it with Arduino device. **Especially, in case of Arduino Uno, we recommend you to set up 57600 baudrate to Arduino Uno SoftwareSerial and HerkuleX servos.**

(Arduino Mega and Due are recommended with baudrate 115200)

- Arduino Uno SoftwareSerial

```
HerkuleX.begin(57600, RX, TX);
```

- HerkuleX Servo

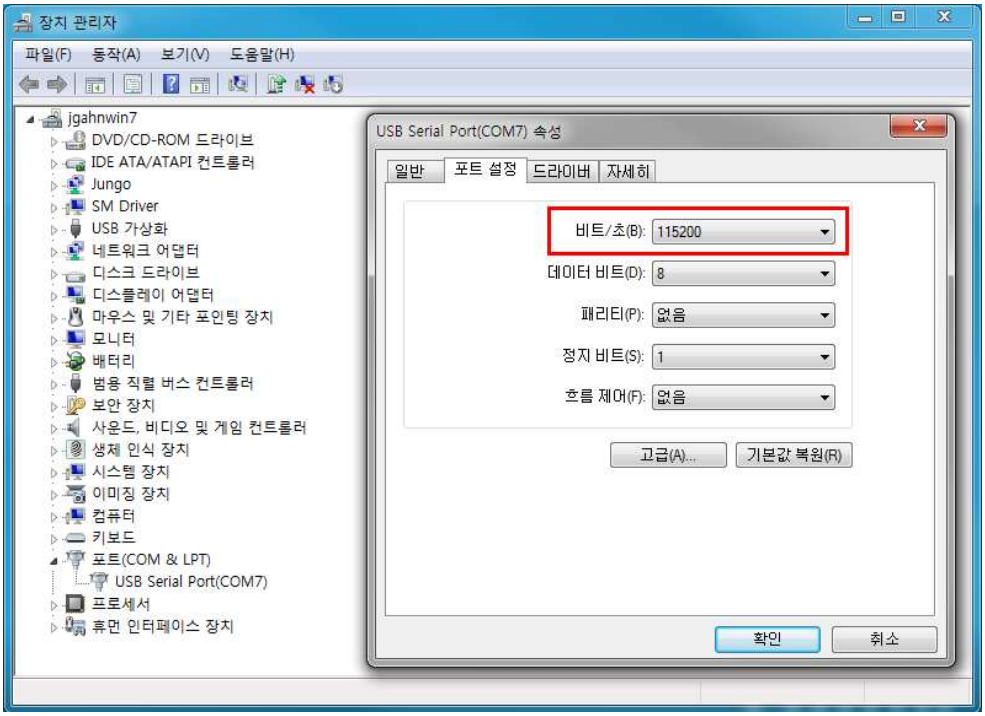
To set up baudrate to HerkuleX servos, you can use HerkuleX Manager S/W.

HerkuleX Manager Download :
http://www.dongburobot.com/jsp/cms/view.jsp?code=100703&isSkin=Y&cmd=view&boardCode=100171&bseq=5222

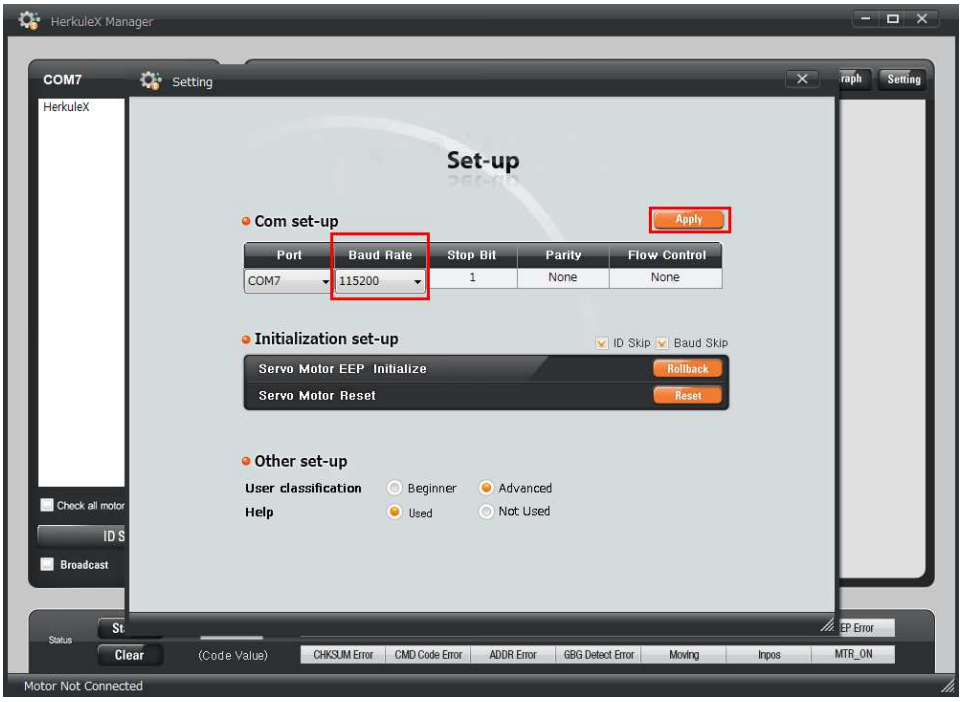
HerkuleX Manager is only compatible with Windows environment, If you use other OS like linux or Mac, You make your own packet to control servo's baudrate. You can also modify this HekruleX Arduino library to set up baudrate to HerkuleX.

Tip 1. HerkuleX Servo Baudrate 115200 -> 57600

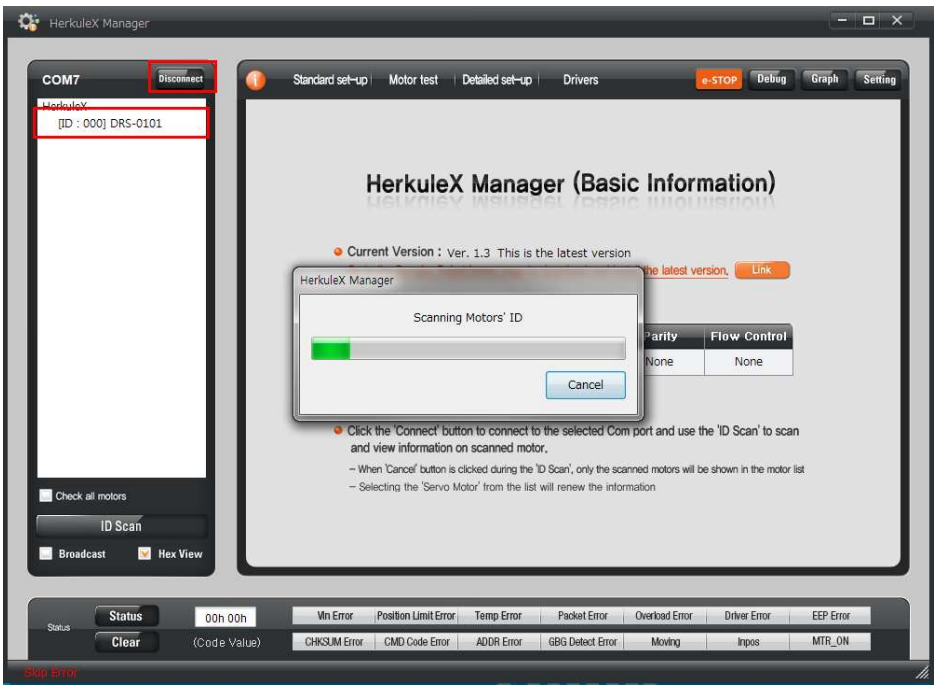
(1) Setting up USB2Serial port baudrate 115200.



(2) Run HerkuleX Manager and setting up baudrate as 115200

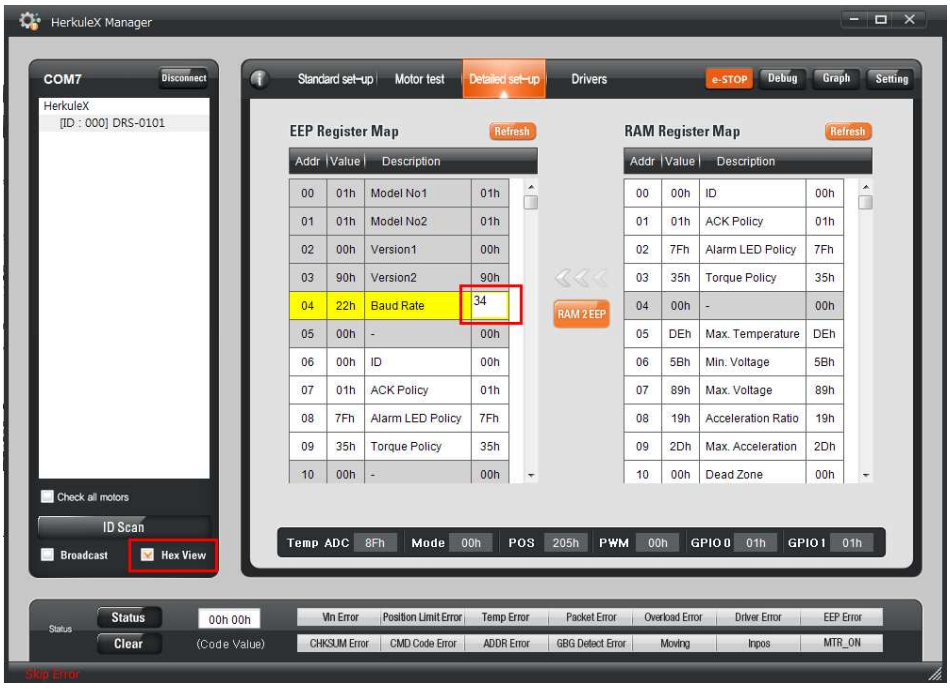


(3) Connecting HerkuleX Servo



(4) Detailed set-up, EEP Register Map Addr 4, 34 (57600, 0x22)

(If you can not see Detailed set-up, Setting > Other set-up > user classification > Advanced)

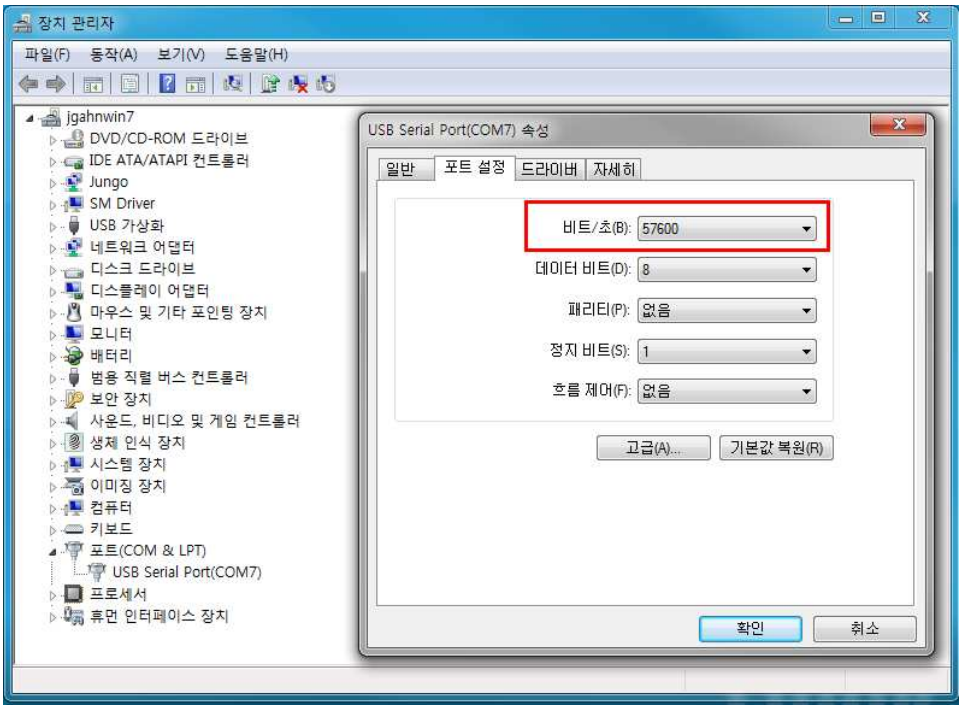


After turn off and on your servo, click ID Scan button. If you can not see the motor in left window of the software, the servo baudrate has been changed correctly.

Tip 2. . HerkuleX Servo Baudrate 57600 -> 115200

In case you need to return baudrate of Herkulex servo to 115200, please follow instructions below.

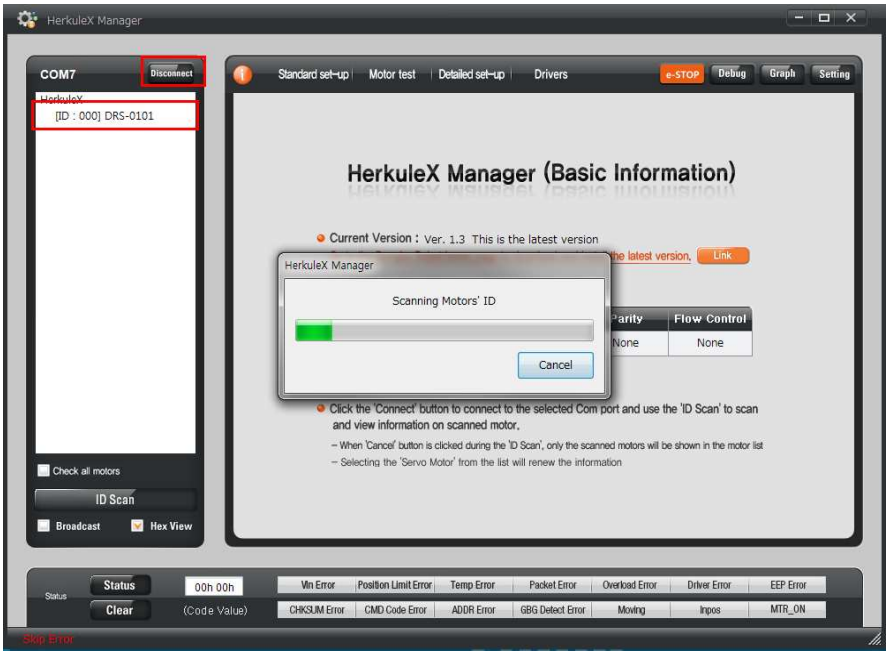
(1) Setting up USB2Serial port baudrate 57600



(2)) Run HerkuleX Manager and setting up baudrate as 57600

(3) Connecting HerkuleX Servo

DRC can not recognize 57600 baudrate servos. Instead of DRC, use DRI-0001(HerkuleX Manager Kit).



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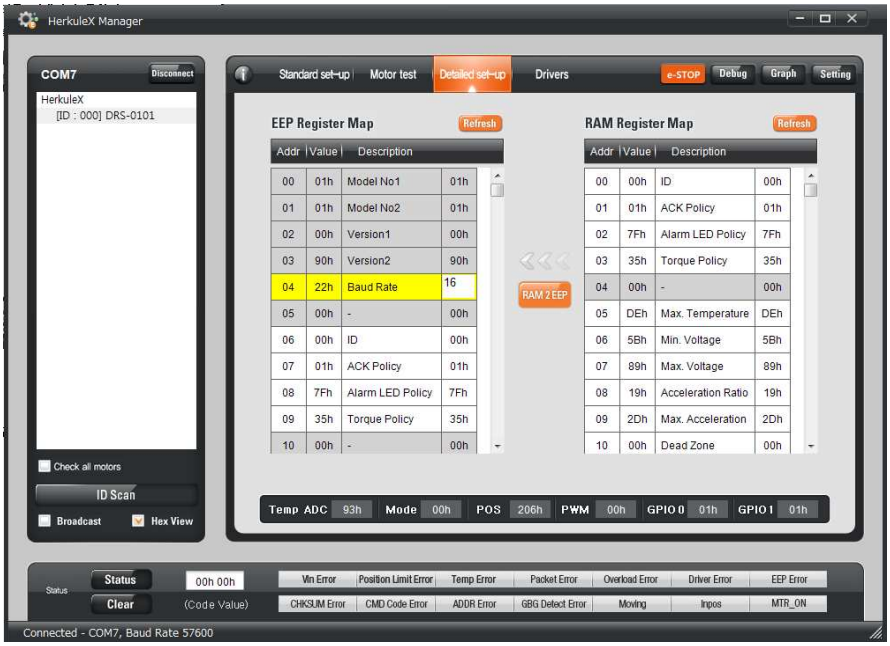

After turn off and on your servo, click ID Scan button. If you can not see the motor in left window of the software, the servo baudrate has been changed correctly.