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)

구성 🔻 🎁 열기	라이브러리에 포함 🔻 공유 대상 🔻 굽기	새 졸더	850 •	
🚖 즐겨찾기	이름	수정한 날짜	유형	크기
🚺 다운로드	\mu drivers	2012-08-03 오전	파일 콜더	
🔜 바탕 화면	🌲 examples	2012-08-03 오전	파일 볼더	
💹 최근 위치	🍶 hardware	2012-08-03 오전	파일 폴더	
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👌 음악	🧔 arduino.exe	2012-05-21 오후	응용 프로그램	3
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	🚳 libusb0.dll	2012-05-21 오루	응용 프로그램 확장	
🖳 컴퓨터	📄 revisions.txt	2012-05-21 오후	텍스트 문서	
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3. Open the example code on Arduino Tool

```
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
                            // Connected with HerkuleX TX Pin
                 8
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
      // Open SoftwareSerial with 57600 baudrate
16:
17:
      // To set up HerkuleX servo baudrate, See. the library manual
18:
      HerkuleX.begin(57600, RX, TX);
      delay(10);
19:
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
      if (HerkuleX.getStatus(MOTORID) != HERKULEX_STATUS_OK) {
29:
         HerkuleX.clear(MOTORID); // If there is an error dectected, clear it
30:
31:
      }
32:
33:
      if (Serial.available() > 0) { // If Serial(with PC) is available
        incomingbyte = Serial.read(); // Reading a byte from PC
34:
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:	<pre>// Get current HerkuleX angle and send it to PC</pre>
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
HERKUL	EX_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&boardCo de=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.

🛃 장치 관리자	
파일(F) 동작(A) 보기(V) 도움말(H)	
	USB Serial Port(COM7) 속성 ▲ 일반 포트 설정 드라이버 자세히 비트/초(B): [115200 • 네이터 비트(D): 8 • 패리티(P): 없음 • 정지 비트(S): 1 • 호를 제어(F): 없음 • 고급(A) 기본값 복원(F) 확인 취소

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

🖞 HerkuleX Man	lager:	- 🗆 ×
COM7	Setting	× raph Setting
HerkuleX	Set-up	
	Com set-up Port Baud Rate Stop Bit Parity Flow Control	ם
	COM7 ▼ 115200 ▼ 1 None None ● Initialization set-up	p
	Servo Motor EEP Initialize Reset	
	Other set-up User classification O Beginner Advanced	
Check all motor	Help 💿 Used 💿 Not Used	
Status St	eor (Code Value) CHKSUM Error CMD Code Error ADDR Error GBG Detect Error Moving	Inpos MTR_ON
tor Not Connect	ted	

(3) Connecting HerkuleX Servo

HerkuleX Manager	Standard set-up Motor test i Detailed set-up i Drivers estrop Deliving Graph Setting
TodaleY [ID : 000] DRS-0101	HerkuleX Manager (Basic Information)
	Current Version : Ver. 1.3 This is the latest version
	HerkuleX Manager
Check all motors	 Click the 'Connect' button to connect to the selected Com port and use the 'ID Scan' to scan and view information on scanned motor. When 'Cancef' button is cicked during the 'D Scan', only the scanned motors will be shown in the motor list Selecting the 'Servio Motor' from the list will renew the information
Broadcast Hex View	Win Error Position Limit Error Temp Error Packet Error Overload Error Driver Error EEP Error
Clear (Code Valu	e) CHKSUM Error CMD Code Error ADDR Error GBG Detect Error Moving Inpos MTR_ON

(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)

HerkuleX				_	-					Consideration of the second se	
[ID : 000] DRS-0101	EEP R	egiste	r Map	Re	fresh		RAM	Regist	er Map	Ref	resh
	Addr	Value	Description	_			Addr	Value	Description	_	
	00	01h	Model No1	01h			00	00h	ID	00h	<u>^</u>
	01	01h	Model No2	01h			01	01h	ACK Policy	01h	
	02	00h	Version1	00h	1		02	7Fh	Alarm LED Policy	7Fh	
	03	90h	Version2	90h			03	35h	Torque Policy	35h	
	04	22h	Baud Rate	34		RAM 2 EEP	04	00h	-	00h	
	05	00h	-	00h		_	05	DEh	Max. Temperature	DEh	
	06	00h	ID	00h			06	5Bh	Min: Voltage	5Bh	
	07	01h	ACK Policy	01h			07	89h	Max. Voltage	89h	
	08	7Fh	Alarm LED Policy	7Fh			08	19h	Acceleration Ratio	19h	
	09	35h	Torque Policy	35h			09	2Dh	Max. Acceleration	2Dh	
	10	00h		00h	+		10	00h	Dead Zone	00h	-
Check all motors											
ID Scan	Tomo	ADC	8Eb Mode 0	06	POS	205h PM	M D	Ob G	PIO 0 01b GP	10.1	116
🔄 Broadcast 🛛 👻 Hex View	Temp	nuo	orn mode o		100	20011 1 1		on e			

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.

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파일(F) 동작(A) 보기(V) 도움말(H)
▲ jgahnwin7 ● DVD/CD-ROM 드라이브 IDE ATA/ATAPI 컨트롤러 > Jungo ● USB 7H상과 ● USB 7H/상과 ● USB 7H/상과 ● USB 7H/상과 ● USB 7H/W ● USB 7H/W

(1) Setting up USB2Serial port baudrate 57600

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

🔅 HerkuleX Manager	- 🗆 ×
COM7 🔅 Setting	× raph Setting
HerkuleX	
Set-up	
PEL-CO	
Com set-up	
Port Baud Rate Stop Bit Parity Flow Control	
COM7 v 57600 v 1 None None	
Initialization set-up	
Servo Motor EEP Initialize	
Servo Motor Reset	
• Other set-up	
User classification 🔘 Beginner 😐 Advanced	
Check all motor Help Osed Not Used	
ID S	
Broadcast	
State St	EP Error
Clear (Codie Value) CHKSUM Error CMD Code Error ADDR Error GBG Detect Error Moving Inpos	MTR_ON
Motor Not Connected	

(3) Connecting HerkuleX Servo

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

HerkuleX Manager		
COM7	sconect	Standard set-up Motor test Detailed set-up Drivers
	Ш	Current Version : Ver. 1.3 This is the latest version
	ш	HerkuleX Manager Scanning Motors' ID Parity Flow Control None None
	Ш	Cancel Cick the 'Connect' button to connect to the selected Com port and use the 'ID Scan' to scan and view information on scanned motor.
Check all motors		 When Cancel button is cloked during the 'lo Stan', only the scanned motors will be shown in the motor list Selecting the 'Servo Motor' from the list will renew the information
Broadcast He	00h 00h	Vin Error Position Limit Error Temp Error Packet Error Overload Error Driver Error EEP Error
Cited on		

(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)

COM7 Disconnect	0	Stand	lard set-i.	p Motor test	Detailed	set-up	Drivers			e-STOP Debug	Graph	Se
[ID : 000] DRS-0101		EEP R	egister	Map	Re	fresh		RAM	Regist	er Map	Ref	esh
		Addr	Value	Description	_			Addr	Value	Description	_	
		00	01h	Model No1	01h	l A		00	00h	ID	00h	-
		01	01h	Model No2	01h			01	01h	ACK Policy	01h	
		02	00h	Version1	00h			02	7Fh	Alarm LED Policy	7Fh	
		03	90h	Version2	90h			03	35h	Torque Policy	35h	
		04	22h	Baud Rate	16		RAM 2 EEP	04	00h	-	00h	
		05	00h	•	00h		_	05	DEh	Max. Temperature	DEh	
		06	00h	ID	00h			06	5Bh	Min. Voltage	5Bh	
		07	01h	ACK Policy	01h			07	89h	Max. Voltage	89h	
		08	7Fh	Alarm LED Policy	7Fh			08	19h	Acceleration Ratio	19h	
		09	35h	Torque Policy	35h			09	2Dh	Max. Acceleration	2Dh	
		10	00h		00h	-		10	00h	Dead Zone	00h	-
Check all motors ID Scan Broadcast 🗹 Hex View		Temp	ADC	93h Mode C	00h	POS	206h P¥	/M 00)h G	iPIO0001h GP	101 0	ilh
Status 00h 0	Dh		Vin Error	Position Limit Error	Temp	Error	Packet Erro	r Ow	arload Erro	or Driver Error	EEP E	rror

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.