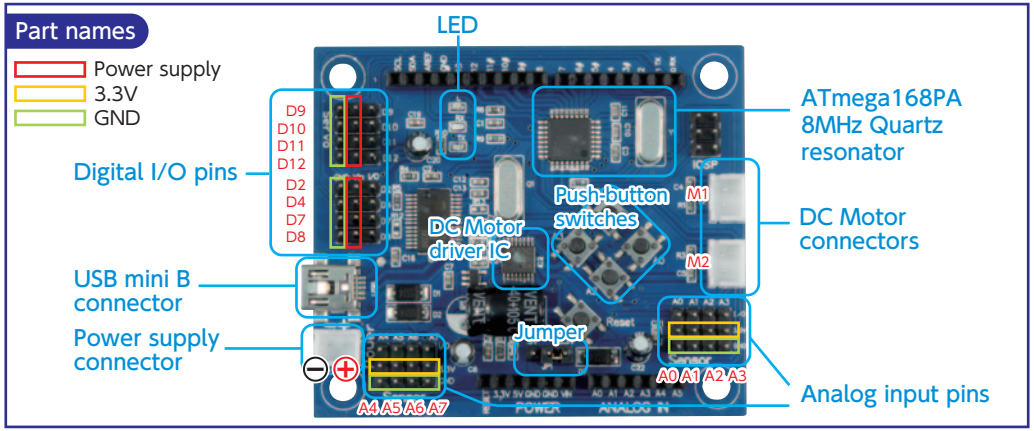
151610

Studuino

Instructions

- Studuino is a microcontroller board mounted with an AVR microcontroller, DC Motor drivers, and push-button switches as well as Servomotor, DC Motor and sensor connectors.
- This single circuit board allows you to create programs that control Servomotors, DC Motors, and sensors.
- Studuino is an ideal resource for learning about programming, electronics, and robot creation.

Part names



It is necessary to install a USB device driver on your PC before connecting Studuino to your PC USB port.

★ When installing the device driver, log in to your PC as an Administrator.

● Visit Artec's website at **http://www.artec-kk.co.jp/en/studuino** to download the device driver. Download **PL2303_Prolific_DriverInstaller_v1.8.19.zip** for Windows (XP, Vista, 7, 8) or **md_PL2303_MacOSX-10.6up_v1.5.1.zip** for Mac (OS X 10.6, 10.7, or 10.8).
Decompress the file and double click on the installer file to run it.
Follow the instructions as the installation program proceeds.

● For Windows Vista, 7, and 8 PCs with an Internet connection
Connect your Studuino to the USB port on your PC (Windows Vista, 7, 8).
A message will pop up, saying **"Installing device driver software."**
When the message **"Your device is ready to use"** appears, the software is installed.

★ During the process, UAC warnings may appear. If that happens, choose "Allow" and proceed with installation.

To program using Arduino IDE, the pre-loaded file in the microcontroller needs to be overwritten.

Follow the process below.

(1) Download **boards.zip** from **http://www.artec-kk.co.jp/studuino** and save it somewhere you can find it, such as your desktop. Decompress the zip file.

(2) Replace the **boards.txt** file in your Arduino folder with the file you have downloaded. Users with Windows PCs can find it in **\\arduino-1.0.x\hardware\arduino.** Mac users will find it in **/Applications/Arduino.app/Contents/Resources/Java/hardware/arduino/boards.txt.**

(3) To edit the program using Arduino IDE, choose **Studuino** during the microcontroller selection process.

Board specification

MCU		ATmega168PA
FlashROM		16 KB (includes 0.5 KB for boot loader)
SRAM		1 KB
EEPROM		512 B
Digital I/O pins (14 total)		DC Motor driver: D2, D3, D4, D5, D7, D8 Servomotor driver: D2, D4, D7, D8, D9, D10, D11, D12
Analog input pins (8 total)		Push-button switches: A0, A1, A2, A3 Sensors: A0, A1, A2, A3, A4, A5, A6, A7
Clock frequency		8 MHz
Operating voltage		3.3V
DC Motor driver IC		TB6552FNG (max. 1A)
USB serial IC		PL2303TA
Power supply	USB	5V
	External power source	3.6V-16V (required when using Servomotor and DC Motor)
LED light	For power	Red
	For D13	Green
	For TX/RX	Yellow
Push-button switches		Shared with connectors A0, A1, A2, A3

Caution

● Use Arduino-1.0.1 and later to use Arduino IDE.

● The push-button switches on this board do not have pull-up resistors. Whenever you use the push-button switches, configure the pull-up settings in the microcontroller.
Example) Code when using A0 push-button switch:

```
pinMode(A0, INPUT_PULLUP);
```

● The maximum output current of the DC Motor driver IC is 1A.

● Refer to the following chart to see which DC Motor driver and microcontroller pins correspond to each other.
D2, D3, and D4 cannot be used for other purposes while using DC Motor 1. Likewise, D5, D7, and D8 cannot be used when using DC Motor 2.

	DC Motor 1 (connector M1)			DC Motor 2 (connector M2)		
TB6552FNG	AIN1	AIN2	APWM	BIN1	BIN2	BPWM
Microcontroller	D2	D4	D3	D7	D8	D5

● When using commercially available shields with Servomotors or sensors at the same time, use a pin socket between Studuino and the shield to make room for connectors.

● Choose which power supply to use by switching the on-board jumper. Select either 3.3V or 5V (USB). Use 3.3V for regular operation.

● The external power supply should be inserted in the correct polarity. Failing to insert the power supply correctly can damage the circuit board.

http://www.artec-kk.co.jp/studuino

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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