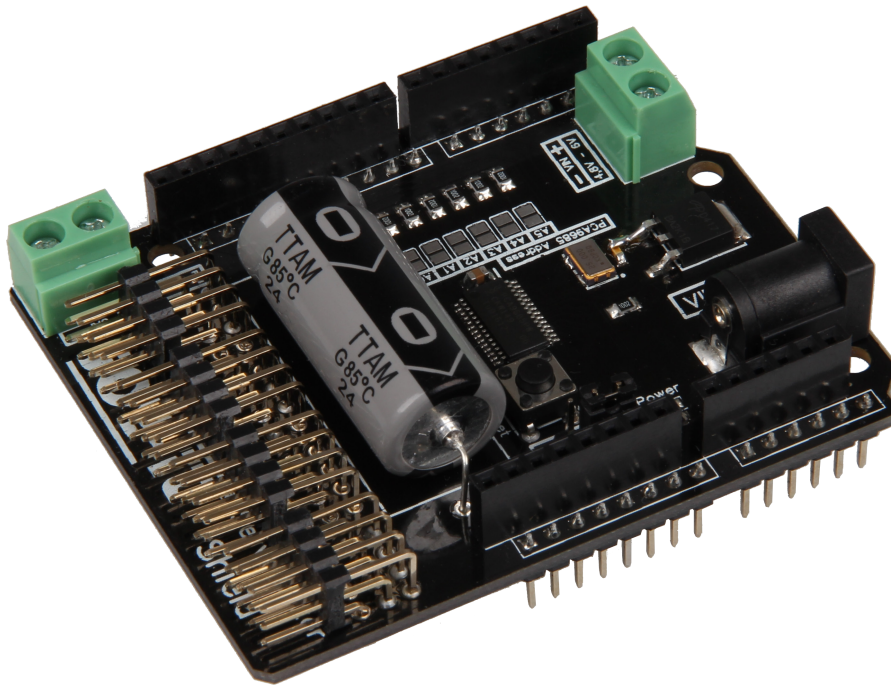


MOTORINO

Motor controll for Arduino



1. GENERAL INFORMATION

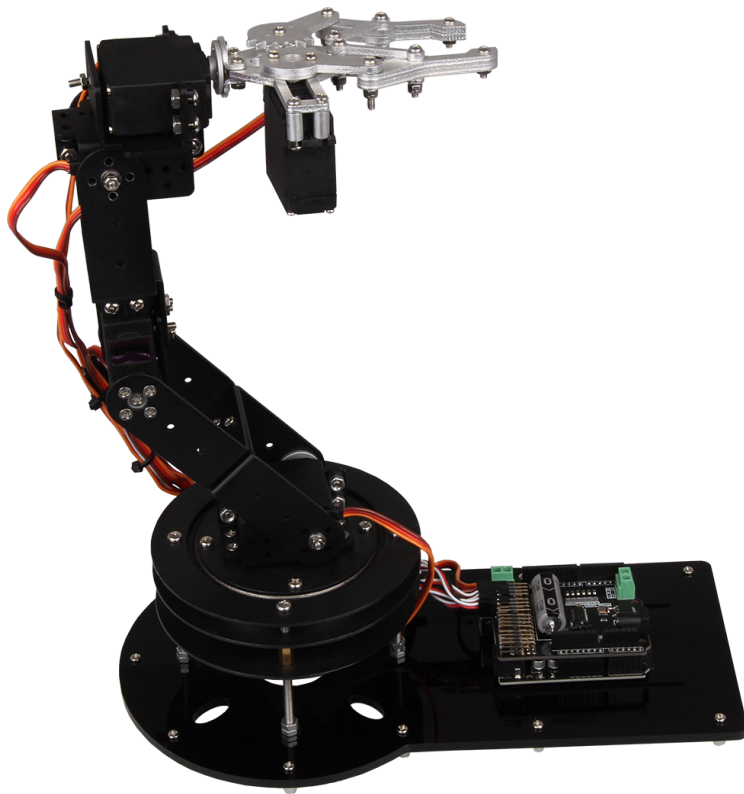
Dear customer,

thank you for choosing our product. In the following, we will show you how to use your product.

Should you encounter any unexpected problems during use, please do not hesitate to contact us.

The Motorino board is an expansion board for the controll and application of up to 16 PWM controlled 5 V servo motors. The board must be additionally supplied with a voltage from 4.8 to 6 V that the supply of the motors is ensured at any time. That way it is also possible that greater projects can be supplied with enough power.

It is for example perfect to control the JOY-IT robot arm.

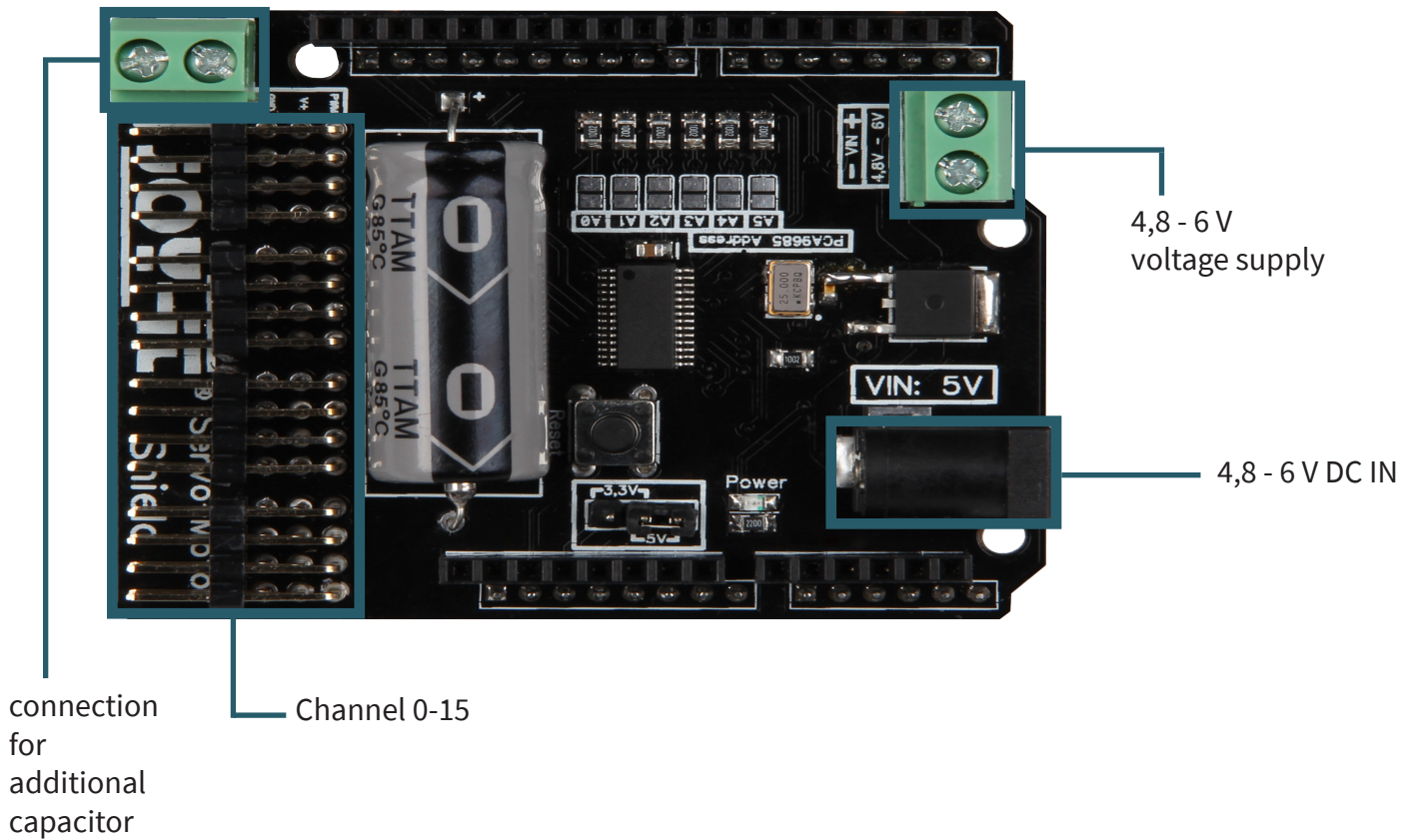
**Art-No.: Robot02**

high-quality robot arm made of aluminium with pivoted rotary plate and accommodation for motor control / singleboard-computer powered by 6 pieces of 20 kilo digital servomotor

2. TECHNICAL DETAILS & SAFETY INSTRUCTIONS

The Motorino expansion board is equipped with 16 channels for 5V-servomotors as well as with a connection possibility for one additional capacitor. The power supply can be either supplied with a coaxial power connector or with a voltage supply, both from 4.8 to 6 V.

The Motorino board possesses additionally a crystal oscillator to refine frequencies as accurately as possible and to minimise deviations as little as possible.



On the backside of the board can be read a numeration of channels.

The 3 PINs of each channel are read bottom-up for the connection of the ground line, voltage line and the signal line [GND | V+ | PWM].

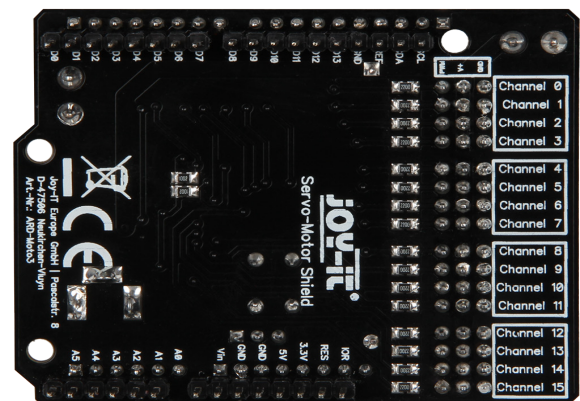
Plug the board on the PINs of your Arduino and the cable of your 5 V servo motors at the channel PINs.

An additional voltage supply via a cable or a 5V coaxial power connector is for the operation **mandatory**.

To prevent abrupt voltage drops is the board equipped with a capacitor. But should this in special exceptions not be sufficient enough then an additional capacitor can be connected in parallel at the provided connection.

Your power supply must be adjusted of its performance at your connected motors because insufficiently dimensioned power supplies can be recognized that the motors are jerking instead of a flowing movement. We recommend the application of our 4.8A power supply which offers a continuous output of 24W.

After you plugged in the expansion board on your Arduino, the connection of an additional power supply and the connection of servo motors, the board is ready to use.



safety instruction:

To prevent a reverse polarity, note the identifiers on the board of each inputs (+ and - symbol). A reverse polarity can cause damage to your board, the connected Arduino and other peripherals!

The connected motors and their generated movement can be a danger. We recommend of having adequate safety distance or rather to take measures that no one encounters moving parts.

3. ESTABLISHMENT OF THE ARDUINO

After you plugged in the expansion board on your Arduino Uno, the connection of an additional power supply and the connection of servo motors, the board is ready to use.

It can be used as the power supply a 5 V coaxial power connector as well as a voltage from 4.8 up to 6 V from the provided input.

The software example from chapter 4 shows the fundamental functions and applications of the servo motors with the Motorino. The servo motors can be connected with an arbitrary channel. The example controls each channel one after another and uses the exhaustive range of motion of the servo motors. As a matter of course is it possible to adjust and change the example after your purposes and requirements.

Upload the complete sample code on your Arduino.

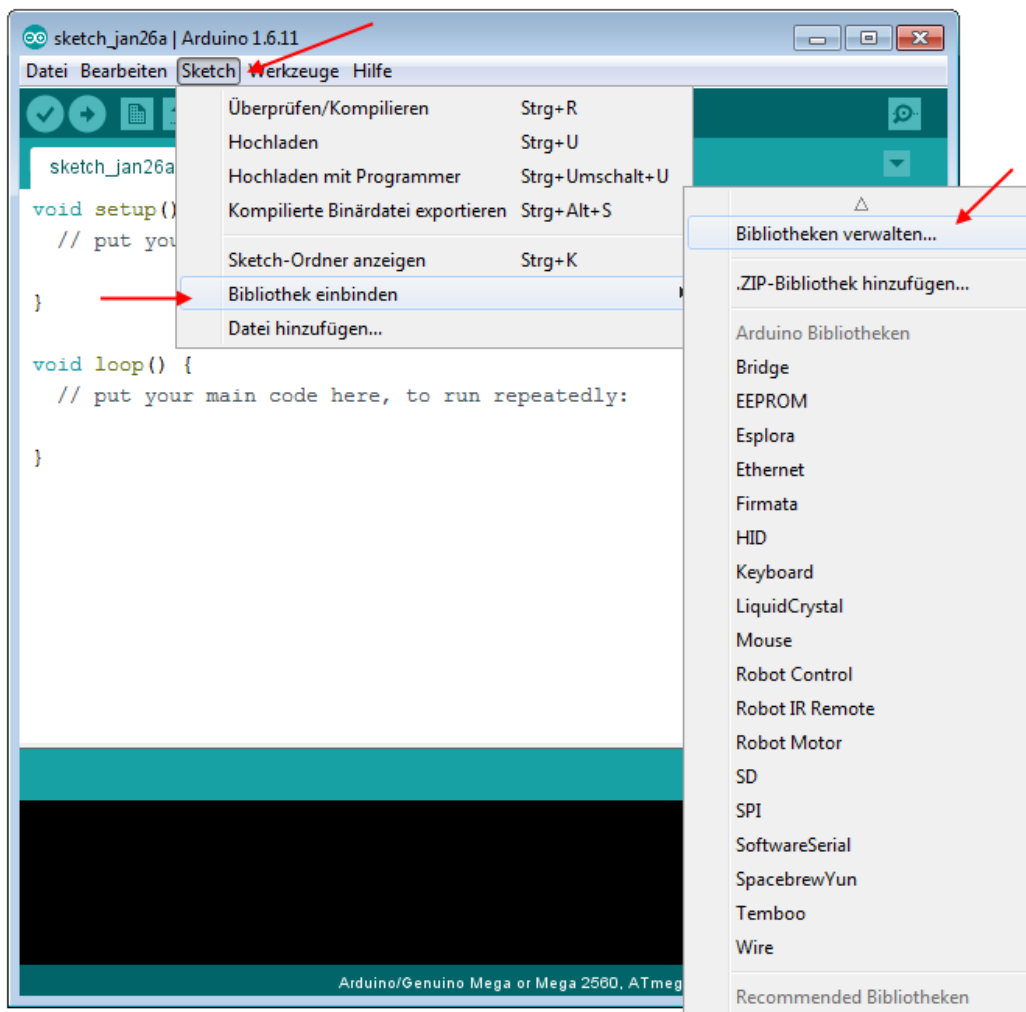
Note that you have to download the additional libraries first into your Arduino library management. The necessary steps can you read in the following. Also note that for the application of the example it has to be downloaded the additional library **Wire** from the library data base.

Because our Motorino board is equipped with an additional crystal oscillator for which is a special library needed as well. This is based on the Adafruit-PWM-Servo-Driver-Library, which is particular adjusted at your board.

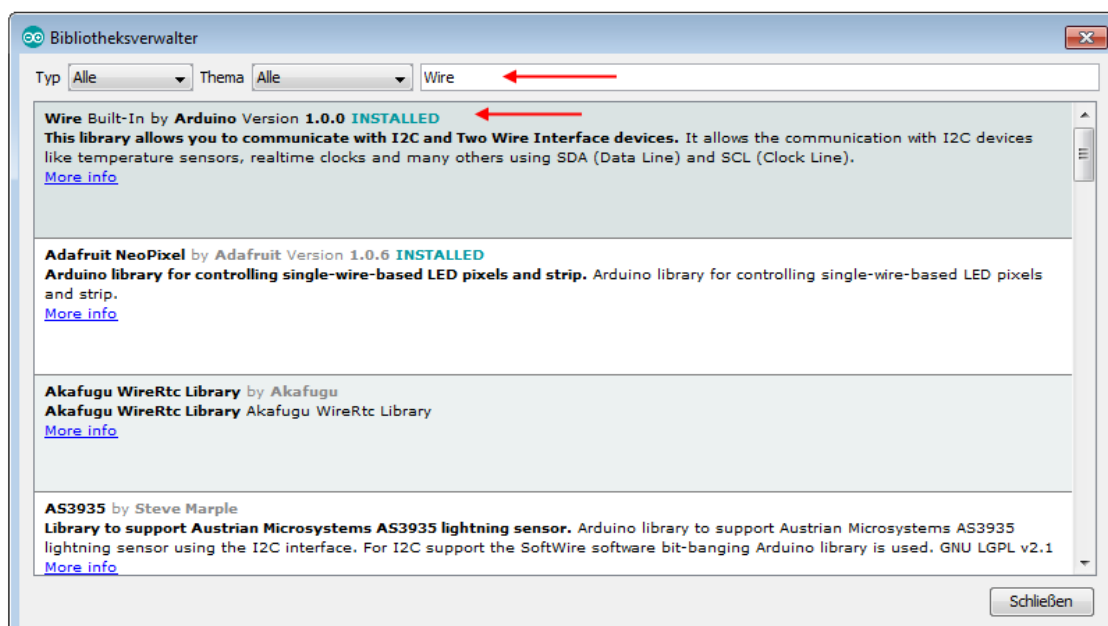
We recommend using only our modified library.

This library can be downloaded [here](#).

Open like in the following picture the Arduino library management to install the Wire library.



After that the library management opens, search for Wire library and install it.



Next step is to add the modified library after you already downloaded it. Unzip first the downloaded archive and copy it in the file Adafruit-PWM-Servo-Driver-Library-master in the following register:

C:\Users\[**your user name**]\Documents\Arduino\libraries

The libraries are now installed completely.

4. INSTALLATION OF THE MODULE

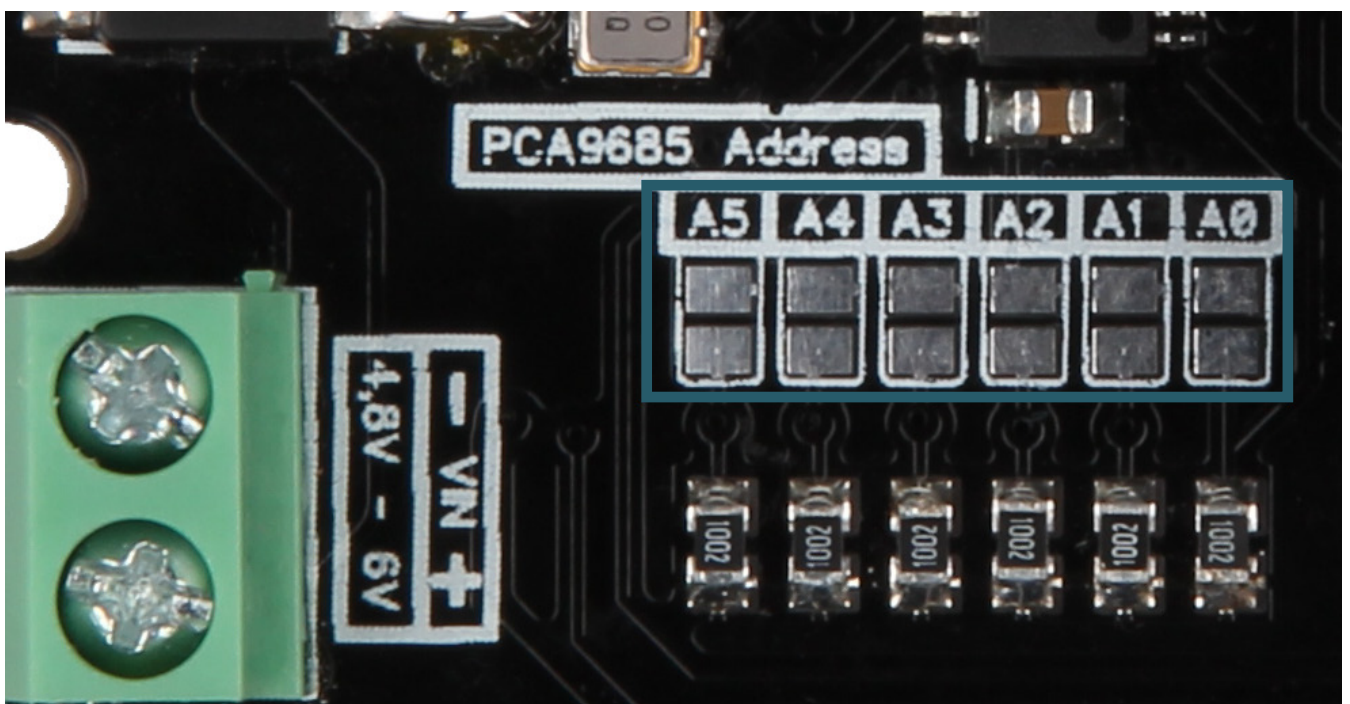
Now you can execute the example file to test the Motorino board. You can find this file in the following register:

C:\Users\[**your user name**]\Documents\Arduino\libraries\Adafruit_PWM_Servo_Driver_Library\examples\servo

Open the there the file with your Arduino programm and transfer it fully to your Arduino. The example program will activate all servo channales one after another.

5. ESTABLISHMENT OF THE I2C-ADRESS

It is also possible to connect various Motorino boards. In doing so, you have to note that each board needs its own I2C address. To configurate this , the jumper can be soldered. A open jumper means therefore a 0 in the address and a closed jumper an 1.



6. FURTHER INFORMATION

Our information and redemption obligation according to the electro-law (ElektroG)



Symbol on electrical and electronic products :

This crossed-out bin means that electrical and electronic products do **not** belong into the household waste. You must hand over your old appliance to a registration office. Before you can hand over the old appliance, you must remove used batteries and accumulators which are not enclosed by the device.

Return options :

As the end user, you can hand over with the purchase of a new device your old appliance (which has essentially the same functions as the new one) free of charge for disposal. Small devices which do not have outer dimensions greater than 25 cm can be submitted independently of the purchase of a new product in normal household quantities.

Possibility of restitution at our company location during our opening hours :

Simac GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn

Possibility of restitution nearby :

We send you a parcel stamp with which you can send us your old appliance free of charge. For this possibility, you must contact us via e-mail at service@joy-it.net or via telephone.

Information about packaging:

Please package your old appliance safe during transport. Should you not have a suitable packaging material or you do not want to use your own material, you can contact us and we will send you an appropriate package.



7. SUPPORT

If any questions remain open or problems arise after your purchase, we are available by e-mail, telephone and with a ticket support system to answer these.

E-Mail: service@joy-it.net

Ticket-System: <http://support.joy-it.net>

Telephone: +49 (0)2845 98469 – 66 (10 - 17 o'clock)

For further information visit our website:

www.joy-it.net