BN 2268129

Servo Module PCA9685PW for micro:bit

GB Operating instructions

Latest operating instructions

Download the latest operating instructions at www.conrad.com/downloads or scan the QR code shown. Follow the instructions on the website.

Delivery contents

- Servo Module PCA9685PW for micro:bit

Description

The micro:bit is a powerful, low-cost, fully programmable single board computer developed by the BBC. It was designed to encourage children to actively engage in technical activities such as programming and electronics.

It features a 5x5 LED matrix, two integrated buttons, a compass, an accelerometer and Bluetooth®.

It supports the graphical programming interface PXT (MakeCode). This can be used on Microsoft Windows®, MacOS, iOS, Android™ and many other operating systems without downloading an additional compiler.

If you want to do more with your micro:bit, you can use this additional board to equip your micro:bit with 16 servo channels.

The PCA9685PW (I2C PWM IC) chip installed on the board communicates with the micro:bit single board computer via the I2C interface. The external power supply of the servos takes the load off the micro:bit and the computer's USB port.

The eight additional contacts on the top of the board allow the micro:bit to be connected to your own circuits, sensors and actuators.

Bluetooth® is a registered trademark of Bluetooth SIG, Inc.

Product features

- 16 servo connections, pin strip, 2.54 mm spacing (GND, +5 V/DC, PWM)
- 1x slot for micro:bit single board computer
- Power supply via screw terminal (7 - 12 V/DC)
- Power supply via micro-USB (5 V/DC)
- 8 contacts: GND, +3 V, micro:bit pin P15, P14, P13, P2, P1, P0

Requirements

The following components are required to use the board:

- 1 micro:bit, e.g. Conrad item no.: 2253828
- 1 to 16 servo motors, e.g. Conrad item no.: 275460, 2148502, 2142014
- 1 micro-USB cable

Optional:

1x power supply unit 7 to 12 V/DC, current depends on the number and type of servos used.

Special note

In general, the no-load current of model servos is approximately 220 mA. The maximum current that the micro-USB port can withstand is 2 A.

Note:

If the micro-USB port is used as the power supply, the 16 servos cannot be operated at the same time!

Operation

1. Insert the micro:bit into the slot provided on the circuit board. The 5x5 LED matrix must face the golden contacts, and the micro USB port of the micro:bit must face the servo connections!
2. Connect a servo to servo channel 0 for the demo program. Ensure that the servo is connected in the correct polarity.
   - Black GND (ground)
   - Red +5 V/DC
   - Yellow PWM signal (control signal)

Note:

The "0" marking on the board corresponds to servo 1 in the software.

3. Power the servo board either via USB or via the screw terminals. The servo will not turn if you have not connected a power supply to the servo board!
4. Connect the micro:bit to your computer.

Test program

You can graphically program the code below using the micro:bit MakeCode Editor:

» https://makecode.microbit.org/#editor

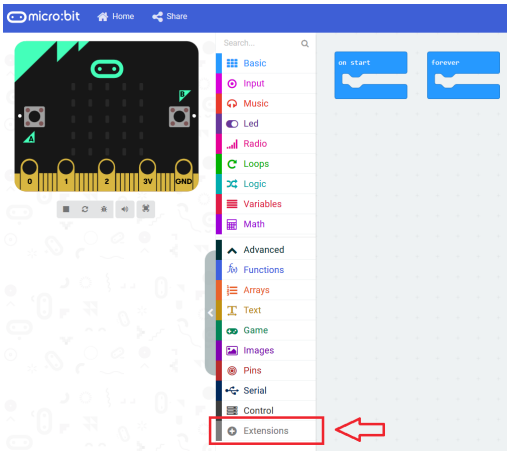
Then download the code and transfer it to the micro:bit. The exact procedure for programming and transferring the program to the micro:bit can be found in the micro:bit manual or online at:

» https://microbit.org

Important:

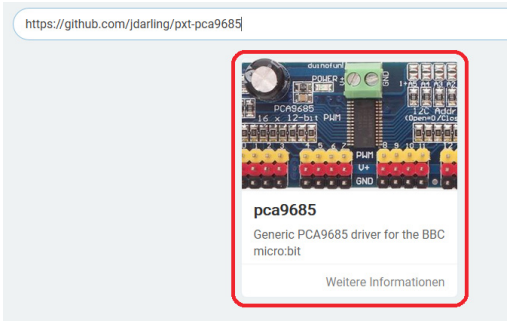
Before you can use the servo board, you must install an extension for MakeCode.

To do this, click "Extensions" in the MakeCode program.

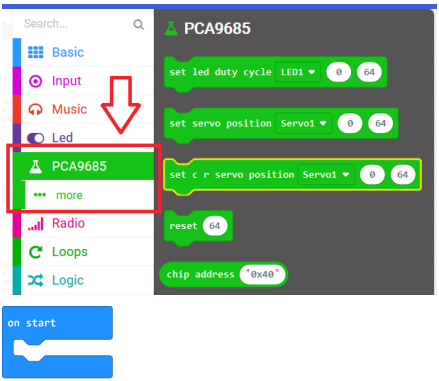


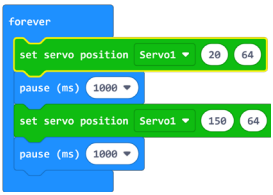
Then enter the following link in the search field and confirm your entry with the Enter key:

» https://github.com/jdarling/pxt-pca9685



Install the extension by left-clicking on the image.





Test

After starting the program, the servo will turn back and forth. The actuating angle is approx. 20° and 150°. This value can vary depending on the servo used. If you want to reach an exact position, you must determine the values beforehand based on the servo used.

Disposal

Electronic devices are recyclable waste and must not be placed in household waste. At the end of its service life, dispose of the product in accordance with the applicable regulatory guidelines.

You thus fulfil your statutory obligations and contribute to protection of the environment.

Technical data

Operating voltage of micro-USB connection	5 V/DC
Operating voltage of screw terminals	7 – 12 V/DC
PWM chip	PCA9685PW
Frequency	40 – 1000 Hz
Dimensions (W x H x D)	43 x 12 x 63 mm
Weight	19 g