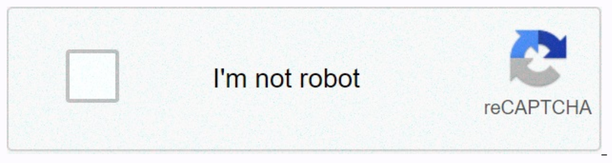

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Adafruit motor shield library v2

Adafruit Motor Shield V2 Arduino Library #include <Adafruit_MotorShield.h> Adafruit_MotorShield (uint8_t addr=0x60) Create the Motor Shield object at I2C, default value is 0x60. More... (uint16_t freq=1600, TwoWire *theWire=NULL) Initialize initialize the I2C hardware and PWM driver, then turn off all pins. More... Adafruit_DCMotor * getMotor (uint8_t n) Mini factory that returns the pointer to an object that has already Adafruit_DCMotor allocated. Initialize the DC motor and turn off all the power switches. More... Adafruit_StepperMotor * getStepper (uint16_t steps, uint8_t n) Mini factory, which returns the pointer to an already reserved Adafruit_StepperMotor object for a specific step per rotation. It then initializes the stepper motor and turns off all the keytobs. More... void setPWM (uint8_t pin, uint16_t) Helper that sets the PWM output on one tap and handles all on or off more... void setPin (uint8_t pin, boolean val) Helper that sets the PWM output on a tap as if it were a GPIO. More... Class Adafruit_DCMotor Let DCMotors control the shield. An object that controls and protects the state of the entire engine shield. Use it to create DC and stepper motor objects! ◆ Adafruit_MotorShield() Adafruit_MotorShield::Adafruit_MotorShield (uint8_t addr = 0x60) Create the Motor Shield object at I2C, the default value is 0x60. Parameters addrElectable I2C address if you've changed ◆ begin() void Adafruit_MotorShield::begin (uint16_t freq = 1600, TwoWire * theWire = NULL) Initialize the I2C hardware and PWM driver, then turn off all pins. Parameters freqA driver PWM frequency used for speed control and micro-stairs. By default, we use 1600 Hz, which is a little audible but effective. theWireA pointer to an optional I2C interface. If not specified, you can use wire or Wire1 (due date) ◆ getMotor() Adafruit_DCMotor * Adafruit_MotorShield::getMotor (uint8_t num) Mini factory, which returns the pointer to an already allocated Adafruit_DCMotor object. Initialize the DC motor and turn off all the power switches. Parameters numThe DC engine port you want to use: 1 via 4 valid ReturnsNULL if something is broken or a pointer from a Adafruit_DCMotor ◆ getStepper() Mini factory, which returns the pointer to an already reserved Adafruit_StepperMotor object for a specific step per rotation. It then initializes the stepper motor and turns off all the keytobs. Parameters steps: Number of steps per revolution (used to calculate the RPM) The stepper port, which you want to use: only 1 or 2 valid ReturnsNULL if something is broken or an indicator with a Adafruit_StepperMotor ◆ setPWM() void Adafruit_MotorShield::setPWM (uint8_t pin, uint16_t value) Helper that sets the PWM output on a pin and handles all on or off Parameters PWM output from the driver that you want (0-15) We want to set the 12-bit PWM value (0-4095) - 4096 is a special all on value setPin() void Adafruit_MotorShield:setPin (uint8_t pin, logical value) Helper that sets the PWM output to a pin as if it were a pin </Adafruit_MotorShield.h> </Adafruit_MotorShield.h> Parameters PWM output is the driver that you want to check (0-15) valueHIGH or LOW depending on what value you want! The class documentation comes from the following files: Adafruit_MotorShield.h Adafruit_MotorShield.cpp an old acquaintance of the community manufacturer is the DC engine. It is present in several projects, mainly carts. Dc motor is a DC motor, also called a DC motor. In this article I will teach you how to use the DC engine Arduino UNO, as well as the Adafruit Motor Shield. The Shield of Adafruit Motorshield is an extremely useful shield developed by Adafruit Industries. This is a practical and fast way to get the servo motors and dc and stair motors. Here are some shield specifications: 2 connection servo motors 5V;4 Bridges-H (TB6612 comes from 1.2A per bridge); Up to 4 two-way DC motors; Up to 2-step engine; Terminal block with large connectors for easy connection of wires; Compatible with arduino UNO, Leonardo, ADK/ Mega R3, Diecimila and Duemilanove. Figure 1: BOM. Precision key set (1); Arduino UNO (2); Adafruit Motorshield (3); Jumpers (4); DC motor (5); USB CABLE AB (6). Hardware preparation First install the Shield motor into the UNO Arduino (Fig. 2). Then connect the Arduino to your computer via the USB cable. A green LED lights up (Fig. 3). Figure 2: Motor Shield embedded in the Arduino. Figure 3: Connect with a USB cable. 2. Connect a jumper to each DC motor connector (Fig. 4). Figure 4: Jumpers on dc motor. 3. With the 2.0 mm wrench, unscrep the 5.5: Terminal block connectors. 4. Connect the jumpers to the unscrewed connectors (Fig. 6). Figure 6: Connecting jumpers. 5. Rescre the connectors. 6th Done! The physical part of the project is ready! Important programming: I will use Visual Studio Code with PlatformIO IDE for code programming. To learn how to use the platform, visit this article. To get started, open VSCode and open PIO Home (Figure 7). Figure 7: Opening the platform. 2. Already in the IDE, click Libraries on the left side of the PlatformIO icon (Fig. 8). Figure 8: Libraries. 3. Enter in the Adafruit Motor Shield V2 Library search box. Click the directory, and then click Install (Figures 9 and 10). Figure 9: Select the directory. Figure 10: Install the directory. 4. Then click on home to return to the website. Then click New Project to create a new project. Create one arduino uno(Figure 10). 5. Go to the main.cpp file (in my project I changed the name DCmotor.cpp): Let's start programming (Figure 11)! 6. Let's start with two additional directories besides Arduino.h: Wire.h and Adafruit_MotorShield.h. The first allows communication between i2C devices and the second special use of the shield motor (Figure 11). 7. Now we give the following command to the AFMS: Adafruit_MotorShield AFMS = Adafruit_MotorShield() Adafruit_MotorShield AFMS = Adafruit_MotorShield() and declare the engine with the command Adafruit_DCMotor *Engine = AFMS.getMotor[4]; Adafruit_DCMotor *Engine = AFMS.getMotor [4] ; 4 refers to the location of the board where the jumpers are inserted (Figure 11). 8. Enter void setup(): This command creates the default frequency; in this case, 1.6 Hz. Below we ask the function: It applies to the speed, which can go from 0 to 255. I chose 150 in the case (Figure 11). 9. Shortly after, we insert the following commands: Motor->run(FORWARD); /*the engine will switch to forward/delay (2000); /*wait 2 seconds*/ Engine->run(BACKWARD); /*Engine back*/ Engine->run(RELEASE) /*engine start*/ Engine->run(FORWARD); /*engine forwards*/delay (2000); /*wait 2 seconds*/Engine->run(BACKWARD); /*Engine back*/Motor->run(RELEASE); /*the engine starts*/ 10. Ready! Now just move the programming to the board, click on the section in the lower left corner of the monitor (Figure 11). Figure 11: Programming. #include <Arduino.h>#include #include Adafruit_MotorShield <Wire.h> <Adafruit_MotorShield.h>AFMS = Adafruit_MotorShield(); Adafruit_DCMotor *Engine = AFMS.getMotor [4] ; void setup () { AFMS.begin(); engine->speed [150]); } void loop () { Motor->run(FOWARD); delay(2000); engine-> (RELEASE); delay [2000);18.01.2000) Engine >running (back); delay [2000);18.01.2000) } #include <Adafruit_MotorShield.h>Adafruit_MotorShield AFMS = Adafruit_MotorShield(); Adafruit_DCMotor *Engine = AFMS.getMotor [4] ; Conclusion Now that you have learned how to use DC engines with a Shield Engine, you will be able to combine much better carts arduino and faster. Finally, I would like to remind you that the codes used in this and all my other articles can be found on my Github. Enjoy it and follow me. Learn more about H Bridge bootstrap dc motor drive Step Motor Drive in the MSP430 Device Control Library at the Adafruit Motor Shield V2 arduino. It supports DC motors and steppers with micro-stairs and stacking. Author: Adafruit Maintainer: Adafruit Read the documentation compatibilityThis directory is compatible with all architectures, so you should be able to use all Arduino boards. Editions To use the library, open Library Manager in the Arduino IDE and install it from there. 1.0.11 (latest) 1.0.10 1.0.0 The Adafruit_MotorShield class designates an engine shield and must be stopped before any use of DCMotors or StepperMotors. You need to report a Adafruit_MotorShield all shields in the system. Adafruit_MotorShield (uint8_t addr = 0x60); The constructor specifies the i2c address of the shield with an optional parameter. The constructor's default address (0x60) is the same as the the default address of the tables. If you have more than one shield</Adafurit_MotorShield.h> </Adafurit_MotorShield.h> </Wire.h> </Arduino.h> </Arduino.h> each shield must have a unique address. void begin(uint16_t freq = 1600);begin() must call setup() to initialize the shield. The optional frequency parameter can set a setting other than the default maximum: 1.6 KHz PWM frequency. Adafruit_DCMotor *getMotor(uint8_t n); This function is one of four predefined DC engine objects controlled by the shield. The parameter specifies the associated engine channel: 1-4. Adafruit_StepperMotor getStepper(uint16_t step, uint8_t n); This function gives you one of the 2 predefined stepper motors controlled by the shield. The first parameter specifies the number of steps per revolution. The second parameter specifies the associated spin channel: 1-2. void setPWM(uint8_t pin, uint16_t val);void setPin(uint8_t pin, boolean val); These are low-level functions to control the pins of the on-board PWM drive chip. These features are for internal use only. The Adafruit_DCMotor class designates a DC motor connected to the shield. All engines on the system must Adafruit_DCMotor the system. Adafruit_DCMotor (insensi) The constructor doesn't make any arguments. The engine object is typically initialized by assigning the engine object from the shield class as follows: // Create the engine shield object with the default I2C address, Adafruit_MotorShield AFMS = Adafruit_MotorShield(); Select which port is M1, M2, M3, or M4. In this case, the M1 Adafruit_DCMotor *myMotor = AFMS.getMotor(1); The M2 Adafruit_DCMotor *myOtherMotor = AFMS.getMotor(2) port can also be used to create another engine; Create the engine shield object with the default I2C address Adafruit_MotorShield AFMS = Adafruit_MotorShield(); Select which port is M1, M2, M3, or M4. In this case, the M1 Adafruit_DCMotor *myMotor = AFMS.getMotor(1); The M2 Adafruit_DCMotor *myOtherMotor = AFMS.getMotor(2) port can also be used to create another engine; The run() function controls the state of the engine. The parameter can have a value of 3: FORWARD - Rotate forward - Rotate in reverse direction RELEASE - Stop rotation Note that forward and backward directions are arbitrary. If these do not match the actual direction of the vehicle or robot, simply replace the engine lines. Also note that RELEASE simply reduces the current of the engine. It's not braking. void setSpeed(uint8_t); The setSpeed() function controls the power level delivered to the engine. The speed parameter is a value between 0 and 255. The actual speed of the engine depends on several factors, including: The engine, power supply and load. The Adafruit_StepperMotor represents the stepper motor connected to the shield. The system shall report a report for Adafruit_StepperMotor stepper motor. The constructor doesn't make any arguments. The stepper motor is usually initialized by assigning a stepper object scanned from the shield in the following way: // Create the motor shield object the default I2C address is Adafruit_MotorShield AFMS = Adafruit_MotorShield(); Connect a top motor with 200 steps per turn (1.8 degrees) #2 (M3 and M4) Adafruit_StepperMotor *myMotor = AFMS.getStepper(200, 2); Create the engine shield object with the default I2C address Adafruit_MotorShield AFMS = Adafruit_MotorShield(); Connect a top motor with 200 steps per turn (1.8 degrees) #2 (M3 and M4) Adafruit_StepperMotor *myMotor = AFMS.getStepper(200, 2); The step() function controls the movement of the step. The first parameter specifies how many steps to move. The second parameter specifies the following direction: FORWARD OR BACKWARD The last parameter specifies the step style: SINGLE, DOUBLE, INTERLEAVED, or MICROSTEP The ste() function is synchronous and does not return until all steps are complete. When finished the engine is still powered to apply handrail torque to maintain its position. void setSpeed(uint16_t); The setSpeed() function controls the speed at which the stepper motor rotates. The speed is specified in the RPM. uint8_t onestep(uint8_t dir, uint8_t style); The oneStep() function is a low-level internal function called by step(). But it may be useful to call for your own implementation of more advanced functions such as acceleration or coordination of simultaneous movement of multiple stepper engines. The direction and style parameters are the same as step(), but the onestep() steps are exactly once. Note: Calling step() 1 is not the same as calling onestep(). The delay in the step function is based on the speed set in setSpeed(). onestep() does not delay. invalid release(null and void); The release() function removes all power from the engine. Call this function to reduce power requirements if you do not need to hold the torque to maintain the position. This guide was first provided on 18 December 2013. Last Updated Jul 20, 2013 10:00AM EDT This page (Library Reference) was last updated December 11, 2020. 2020.

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