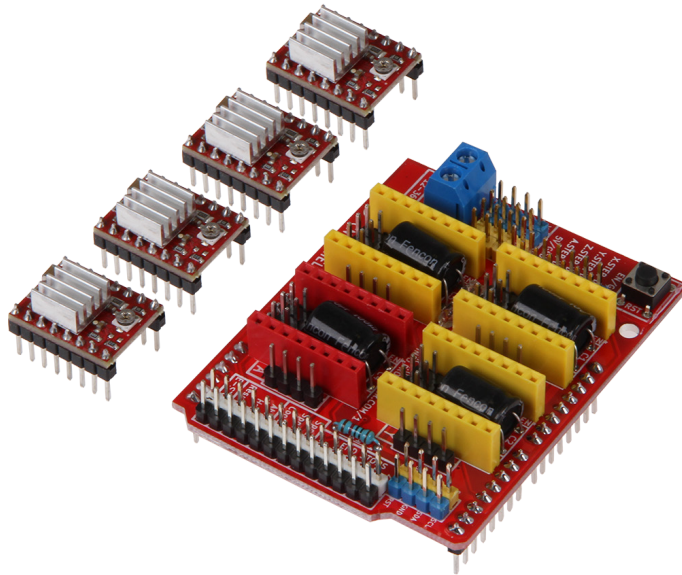


CONTROLLERBOARD CNC

4x A4988 motor driver for Arduino Uno



1. GENERAL INFORMATION & SAFETY INSTRUCTIONS

Dear customer,

thank you for choosing our product. In the following, we will show you what to observe during commissioning and use. Should you encounter any unexpected problems during use, please do not hesitate to contact us.

With this set you lay the foundation for the installation of a customized CNC milling machine. The controller board is suitable for use with the Arduino Uno or Arduino Uno compatible boards and can be operated from 12 to 36 V as needed. With the supplied A4988 motor drivers up to 4 axes can be controlled. The expansion board is easy to control as it is 100% GRBL compatible.

Since this expansion board can control potentially dangerous machines, please note the following safety instructions:

Never reach into the processing room while the machine is running.

Do not remove accumulated chips by hand. Please use a brush or compressed air.

Tools and workpieces must never be changed while the tool spindle is running.

Make sure that the workpieces are sufficiently secured so that during drilling or milling, the workpiece can never be moved out of position.

Never run the machine unattended!

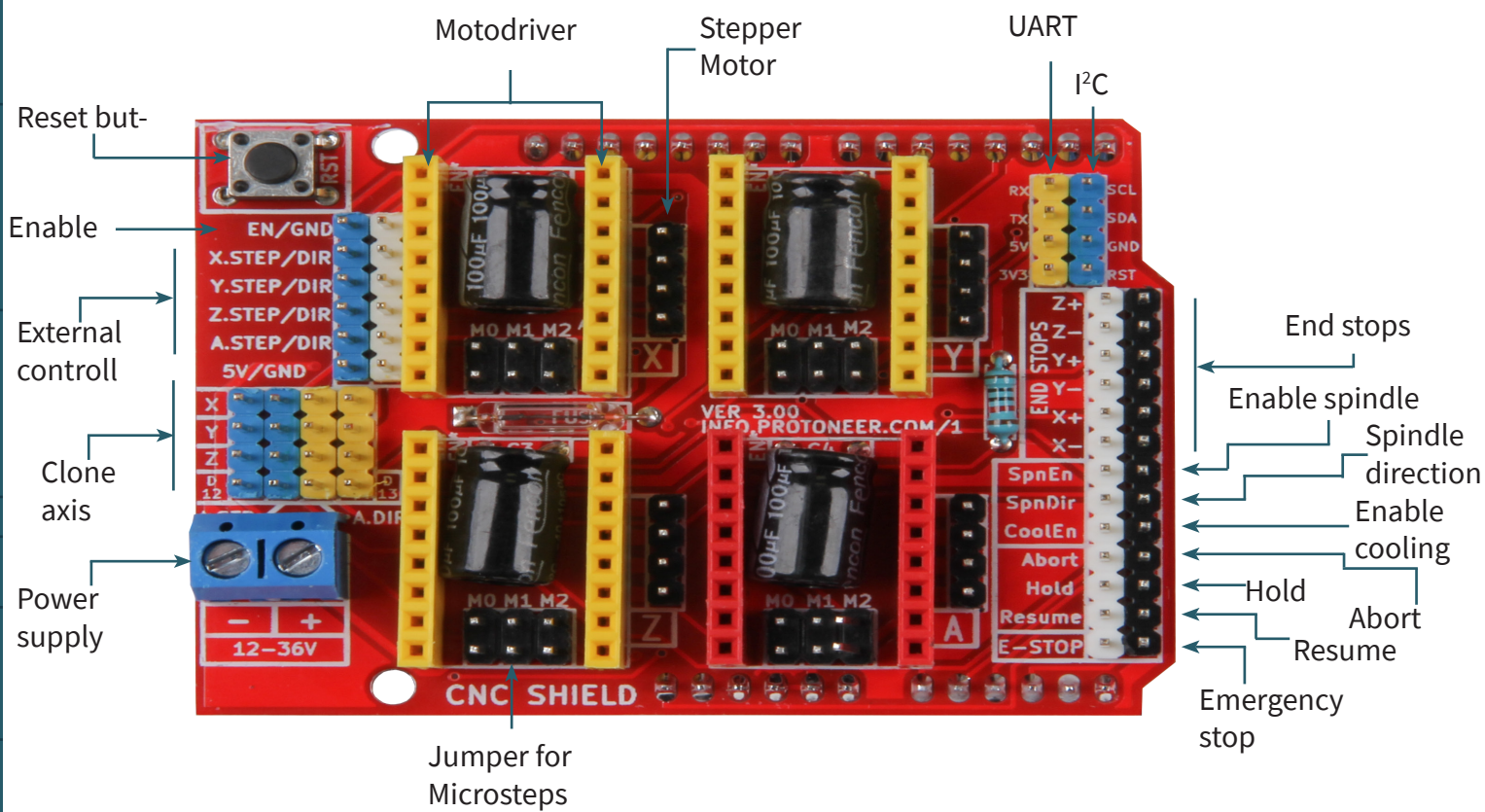
Always maintain sufficient safety distance to the running machine

Please use the ARD-CNC-Kit1 only in dry environments.

When using components from other manufacturers, please inform yourself about their safety regulations and observe them.

We are not liable for damage caused by improper use.

2. PINOUT



3. USAGE

The ARD-CNC-Kit1 supports the Arduino Uno and Arduino Uno compatible boards.

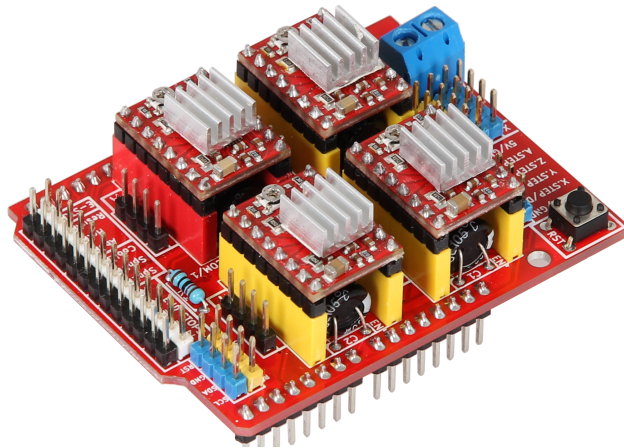
The CNC extension board needs an additional power supply between 12 V and 36 V.

If you have connected the motor drivers the stepper motors and the Arduino the extensionboard is ready to go.

CAUTION!!!

Please pay attention to the correct alignment of the A4988 motor drivers, otherwise they will be damaged.

Please connect them like in the picture below.



4. MICROSTEPPING

Jumper positioning for microsteps:

M0	M1	M2	Microsteps
-	-	-	Full steps
+	-	-	1 / 2 steps
-	+	-	1 / 4 steps
+	+	-	1 / 8 steps
+	+	+	1 / 16 steps

+ = Jumper set

- = Jumper not set

5.CODE EXAMPLE

On the following two sites you can see an easy example code for testing your CNC Kit.

CAUTION!!!

No End Stop detection. Motors won't stop automatically.

```
#define EN 8 /* enable pin for all stepper outputs */
#define X_DIR 5 /* direction-pin for X-axis */
#define X_STEP 2 /* step-pin for X-axis */
#define Y_DIR 6 /* direction-pin for Y-axis */
#define Y_STEP 3 /* step-pin for Y-axis */
#define Z_DIR 7 /* direction-pin for Z-axis */
#define Z_STEP 4 /* step-pin for Z-axis */
#define A_DIR 13 /* direction-pin for A-axis */
#define A_STEP 12 /* step-pin for A-axis */

int Count = 0; /* counter to count number of steps made */
boolean Direction = LOW; /* rotational direction of stepper motors */

void setup()
{
    Serial.begin(9600);
    /* configure the stepper drive pins as outputs */
    pinMode(EN, OUTPUT);
    pinMode(X_DIR, OUTPUT);
    pinMode(X_STEP, OUTPUT);
    pinMode(Y_DIR, OUTPUT);
    pinMode(Y_STEP, OUTPUT);
    pinMode(Z_DIR, OUTPUT);
    pinMode(Z_STEP, OUTPUT);
    pinMode(A_DIR, OUTPUT);
    pinMode(A_STEP, OUTPUT);
    digitalWrite(EN, LOW); //low to enable
}

void loop()
{
    /* count one step */
    Count++;
    /* if reached 500 steps then change the stepper direction and reset the counter */
    if (Count >= 500)
    {
        Direction = !Direction;
        digitalWrite(X_DIR, Direction); // Low = CW
        digitalWrite(Y_DIR, Direction); // Low = CW
        digitalWrite(Z_DIR, Direction); // Low = CW
        digitalWrite(A_DIR, Direction); // Low = CW
        Count = 0;
    }
}
```

```
/* Step the X, Y, Z, and A Motoren */  
digitalWrite(X_STEP, HIGH);  
delay(1);  
digitalWrite(Y_STEP, HIGH);  
delay(1);  
digitalWrite(Z_STEP, HIGH);  
delay(1);  
digitalWrite(A_STEP, HIGH);  
delay(1);  
digitalWrite(X_STEP, LOW);  
delay(1);  
digitalWrite(Y_STEP, LOW);  
delay(1);  
digitalWrite(Z_STEP, LOW);  
delay(1);  
digitalWrite(A_STEP, LOW);  
delay(1);  
}
```

6. SUPPORT

We also support you after your purchase. If there are any questions left or if you encounter any problems please feel free to contact us by mail, phone or via our ticket support system on our website.

E-Mail: service@joy-it.net

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

Telefon: +49 (0)2845 98469 – 66 (10 - 17 Uhr)

Visit our website for more information:

www.joy-it.net