

# DC servo axis controller (Mammut) user's guide

## What is Mammut?

Mammut is CNCdrive's 2nd generation DC servomotor controller, it is the higher power and voltage version of Whale2 servo drive.

In this documentation explained the connectors, pinouts, indicator LEDs, electric parameters and mechanical dimensions.

## Introduction

The controller panel is capable of driving 1 DC brushed servomotor. The control method is closed-loop, you need an incremental encoder with A and B channels to provide position feedback to the controller.

The controller input signals must be step and directions signals, recommended PC controller softwares are MACH2 – 3 , KCAM4.

## Electronic properties

Electronic properties	Min.	Max.	Unit
Digital supply voltage	18	28	V DC
Motor supply voltage	15	180	V DC
Digital supply required current	-	200	mA/controller
Motor current continuous	0	40	A
Stepping frequency	-	400	kHz
Encoder resolution	2X	4X	1
PWM frequency	20	20	kHz
Case temperature automatic shut down	63	68	°C

## Software features:

Electronic properties	Min.	Max.	Unit
Setable Servo error limit	2	20000	Encoder counts
PID parameters	16	16	bits
PID algorithm	32	32	bits
Setable current limit	0	40	A
Setable PID sampling time	1	65535	*60usec
Step response viewer via USB port	-	-	-
Servo error viewer via USB	-	-	-

## Some details

Setable overcurrent. 0..40A.

Configuration via USB port.

Automatic and/or manual PID controller tuning.

Step/dir, digital supply connection via RJ45 ,ETHERNET connector.

Connect any number of controllers together with one error-wire.

Sign LEDs.

Diagnostic and error detection software.

Configurable maximum allowed error from 2 to 20000

Built-in overtemperature safety circuit shuts down the controller above 65°C.

## Mechanical details

Width: 115 mm

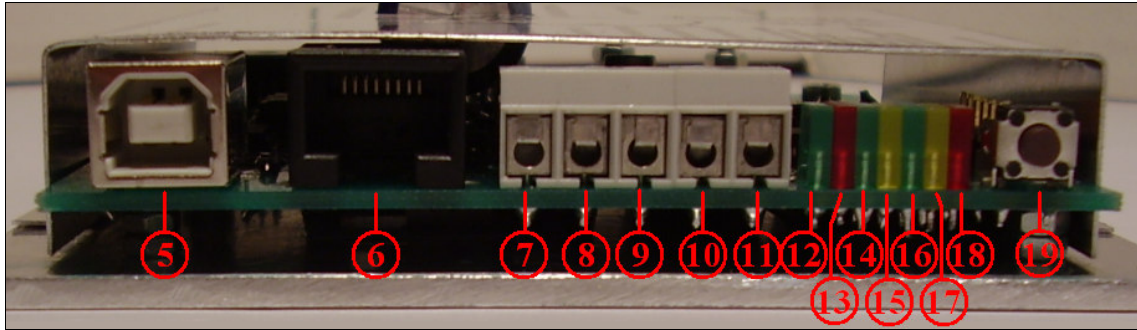
Length: 105 mm

Height: 22.5 mm

Weight: 120 gramm



## Connectors and pinouts



### Screw terminal connectors:

- 1.) Motor arm 1.
- 2.) Motor arm 2.
- 3.) Motor power supply GND.
- 4.) Motor power supply positive terminal.
- 7.) **ERROR in/output**  
It is a common signal with the RJ45 connector's error signal. See below.
- 8.) Encoder 5Volts. (output!)
- 9.) Encoder A channel.
- 10.) Encoder GND.
- 11.) Encoder B channel.

### LED indicators:

- 12.) Digital power supply indicator.
- 13.) Error limit override LED.
- 14.) Controller running LED.  
Flashing indicates normal operation.
- 15.) Motor moving CW indicator.
- 16.) Motor moving CCW indicator.
- 17.) Overtemperature ( $t > 65^{\circ}\text{C}$ ) indicator.
- 18.) Current limiting active indicator.

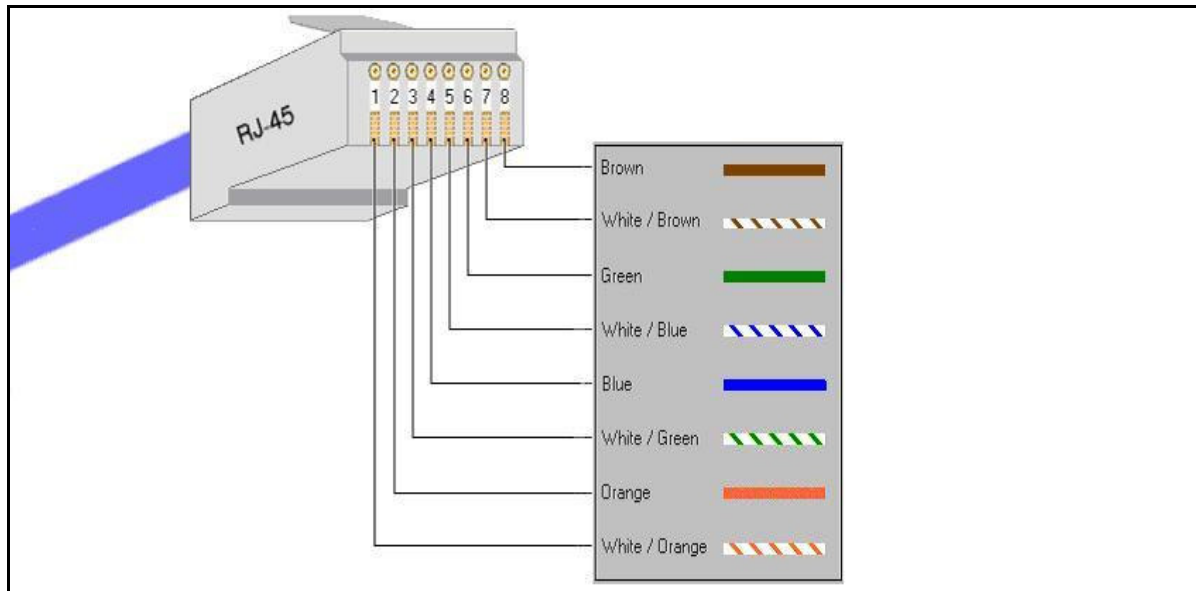
## Connectors:

19.) **USB-B config connector.**

Standard USB-A – USB-B connector can be used to connect the controller to the PC. This connection is only needed for tune the controller.

20.) **RJ45 connector.**

Which can be connected into the controller's RJ45 socket.



1.) **Step signal.**

2.) **Direction signal**

3.) **GND for step and direction signals.**

4.) **N/C No Connection**

5.) **Master reset.**

Resets the controller if pulls down to GND. You can reset all the connected controllers by pulling this line to GND.

6.) **Error signal.**

In case of error, the controller pulls this line to GND potential. Connect controllers together with this line. If one of the controllers generates error signal then all controllers will be stopped which is connected together.

Because this line is an in/output it can be pulled down by external logic also.

7.) **Digital supply +18..28 V.**

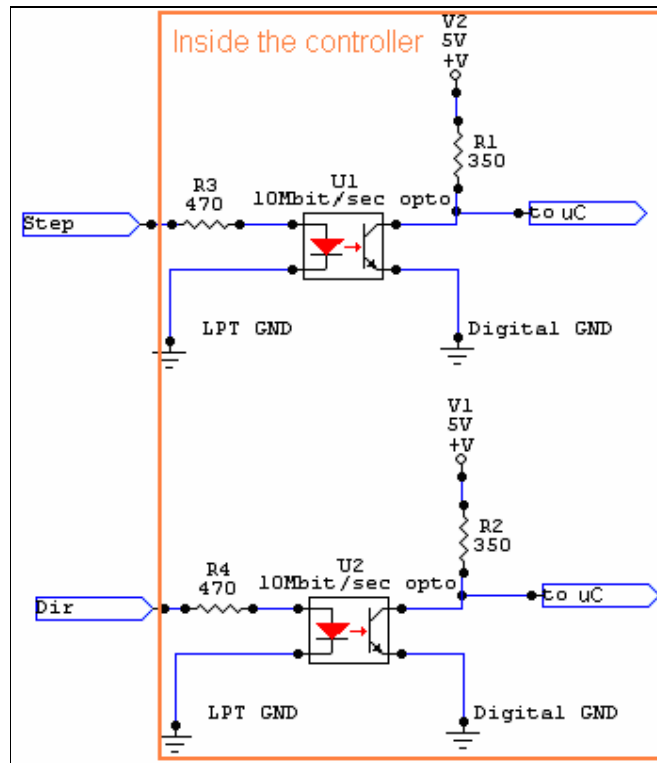
8.) **Digital supply GND.**

## Buttons:

21.) **Reset Button.**

You can restart the controller pushing this button when it stops in case of error.

**STEP/DIR Inputs (the picture shows the controller's optical isolation):**



**Encoder inputs:**

Encoder channel A and B are pulled to high (5 Volts) with 10kOhm resistors inside the controller.

Push-pull or Open-collector output type incremental encoders can be used with the controller.

5V power supply for the encoder is generated by the controller from digital power supply.

## **Warranty**

**We give 12 months replace/repair warranty for our servo controllers, if device failed caused by manufacturing fault not from user's fault! Users who cannot make the controller work or not satisfied with performance can ship back controllers within 15 days from delivery to user's address, in this case we refund the device's price to customer. User must pay shipping costs in the second case!**

## **Safety warning!**

**The device can operate with low(0..50V) and medium (50..180V) voltages. Above 50 Volts the controller's metal case must be connected to safety ground!**

**More information at: <http://www.cncdrive.com>**