



# Eachine Trashcan Review and Setup | Mobula 7 Comparison

The Eachine Trashcan is yet another brushless Tiny Whoop. There is a sea of 2S brushless whoops, I've lost count how many there are and there are more to come I am sure. So this guy is competing against the [Mobula 7](#) among others. It pretty much out specs it on every component. But as we know things written down on paper don't necessarily translate into a better product.

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Micro quads are excellent way to get started into FPV and learn various maneuvers. It's a lot easier to pick up some stick time with small brushless quad where you can't hurt anyone around you while practicing. In the guide we feature [best micro quadcopter fpv](#) that will get you started.

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### **WHAT IS IN THE BOX?**

It comes in this nice box actually, and you get a nice instruction manual. You do get more stuff in the package with the [Eachine Trashcan](#) than you do with the Mobula 7.

We have got a bunch of spare screws which is always nice, spare set of propellers which are black in color, allen key and prop remover.

There is also a jumper so you can fly the Eachine Trashcan as a 1S model.

But I would recommend to get the [US 65 for flying indoors](#). It is 65 millimeters and you can get through gaps in the house better that is just my opinion.

The Eachine Trashcan has a bigger footprint and I find myself bashing into stuff more.

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## SPECIFICATIONS COMPARISON

	Trashcan	Mobula 7	TinyHawk
<b>Motor</b>	0803 15000kv	0802 16000kv	08025 15000kv

	Trashcan	Mobula 7	TinyHawk
<b>Prop Diameter</b>	40mm	40mm	40mm
<b>Weight</b>	48g	44g	42g
<b>Flight Controller</b>	F4 with 2 UARTs	F3 with one UART	F4 with 2 UARTs
<b>Built in RX</b>	FrSky Flysky DSMX	FrSky Flysky DSMX	FrSky
<b>VTX</b>	25mW + 200mW	25mW	25mW
<b>OSD</b>	Yes	Yes	Yes
<b>Smart Audio</b>	Yes	Yes	Yes
<b>Buzzer</b>	No	No	Yes
<b>Battery Connector</b>	PH2.0	PH2.0	PH2.0
<b>Batteries</b>	1s HV 300mah (x2)	1s HV 250mah (x2)	1s HV 450mah

## Frame

There is this upgraded black frame. I actually like the black frame because if you have your camera angle flat and your ducts are white, then the camera will adjust its exposure value to white and it can cause the ground to look very dark. So I like the fact that it has got a dark frame.

It has got some of these struts here that make it feel stronger; Compared to Mobula 7 a lot of people are complaining about braking the frame. But there is a V2 and V3 frame available that is stronger.

I think we have too many expectations from these frames; we're coming from 5" carbon fiber to this tiny thin plastic and expecting the same kind of strength and resilience, we are kidding ourselves.

The Eachine Trashcan frame, when I squeeze it at least it's harder to squeeze compared to the Mobula 7.

## **Motors & ESC**

They are an Eachine branded motors 0803 15000 kV motor against the 0802 16,000 of the Mobula7. The motors are connected with connectors so if you have to replace one then that should be pretty easy to do.

The built in ESC are 6 amps with a 7 amp burst so that beats out the 5 amp and 6 amp burst of the Mobula 7.

## **Flight Controller**

We have got an F4 Flight Controller, it's the Crazybee F4. The Mobula 7 has got the F3 in it, so it's an upgraded version.



## Receiver

This is the FrSky version, you can get it with DSM2/DSMX or the Flysky 2A or with no Rx. The SPI receiver has got the bind button underneath and the boot button underneath.

On Trashcan it is more accessible, you can't access it when the battery is in place.

It's quite difficult to see because it's covered but anyways as it's SPI based then you can just plug it into the USB and then hold it down for a couple of seconds, there's no messing around trying to plug the battery while holding it down.

That's something I really like about the Eachine Trashcan.

## **Video Transmitter**

The VTX on the Eachine Trashcan is a 40-channel which is actually the same as the Mobula 7 but it is switching up to 200 milliwatts. Now I'm not actually sure that is needed for a tiny whoop, certainly not indoors anyways, because I have found that when I fly the [EMAX Tiny Hawk](#) indoors I get loads of multipathing and I think the Mobula 7 is actually producing genuine 25 milli watt.

If you go up to 200 milliwatt and are flying indoors you will get reflections back. 25 milliwatt is much better for indoors but people are flying these outdoors. I'm mostly going to be flying it outdoors as well.

There is a button on the side of the VTX and its two layered compared to the Mobula 7, but with smart audio I wouldn't bother

messing with buttons anymore unless it's just a pain.

## **Antennas**

Something else that is different is that, the linear antenna is on a micro UF file. I don't like micro UF files unless they are stuck down with electrical tape or some other form of adhesive that is heat resistant.

However there is nothing and it is free to move. If you have a crash and it pops off it could destroy your VTX so I would get some liquid electrical tape on there as a modification straight away.

## **Camera**

It is the CADDX EOS2 - the 16:9 version and there's no option to choose the 4:3 version.

I mainly fly with 4:3 goggles and when you have a 16:9 camera and use 4:3 goggles then it stretches on the vertical axis and it distorts the image.

You can do it the other way around so if you've got a 4:3 camera and 16:9 goggles it stretches on the horizontal and I find that fine to

fly with. But not the other way around so I'm gonna have to use some 16:9 goggles for Eachine Trashcan.

It's mounted in exactly the same way as the Mobula 7 in fact it's pretty much the same shape.

## **LED**

At the back we have got some LEDs, connected to the DIN so you can control them. They are set up out of the box like a Knight Rider sort of style thing.

The antenna for the receiver is just underneath there so we'll have to see what the range is like.

## **Batteries**

The batteries are Eachine branded with 300 mAh, high volt and it says 40C to 80C. We've got a charger as well. You can charge at 4.2 volts per cell or 4.35.

I charge it 4.2 because when you start overcharging it can start destroying the chemistry of the [lipo batteries](#) and they end up puffed and squishy that's because there's a load of oxygen in there that shouldn't be.

You should be able to use a bigger capacity battery but of course then you may get diminishing returns especially at this weight and size.

We have got two pads to hold the batteries, because they are loose. It could be a good although, as you could potentially place a bigger battery in there.

Anyways I wouldn't stick the pads just use them to hold the batteries tight. Otherwise if you ever need to access the bind button or the boot loader button again then you would have to unstuck them. But these fit pretty snug with those pads in so that's quite nice.

## **Weight**

Speaking of the weight this guy weighs 49 grams with its battery and the Mobula 7 weighs 42 grams with its battery.

So quite a difference there this size but you have to bear in mind the change in Stata size as a result, we have got a bigger capacity battery and even though that makes the copter heavier it can provide more amps than the smaller batteries that come with the Mobula 7.

## **BETAFLIGHT CONFIGURATION**

The Eachine Trashcan needed a little bit of tweaking in Betaflight so I will take you through that. I'm gonna try and be as quick as possible with this bit because people who already know Betaflight generally don't like this part.

But I think this is a model that is gonna get people into the Hobby despite what I say about it so maybe this part will help them out setting it up.

## **CLI**

Let's first check the version so you see the full name there. So it's Crazybee F4 and it's version 4.0 and that is all of the settings.



## Ports

So this is the port's tab and we don't need any serial RX selected because it's an SPI based receiver so it's built into the flight controller. We have TBS smart audio selected on the UART 1 that is set like that out of the box and we have the UART2 spare that is currently disabled so if you want to add anything you'll have to refer to the manual where to solder things up to.

## Configuration

In the configuration tab the motor direction is set reversed, this is commonly known as props out and some people say that it helps with the washouts that tiny whoops can suffer from. We'll see in the flight later if that makes a difference.

Out of the box the ESC motor protocol is set as DSHOT600 now with the Mobula 7 DSHOT 300 tended to work better so I'll have to see if DSHOT600 works okay with this model. Of course it's a different flight control so maybe it will.

I have turned MOTOR\_STOP off, but I'm using air mode so that doesn't really make a difference. I've up the digital idle speed to 6 percent to stop flips of death from occurring or death rolls whatever you want to call them.

So if we come down here I've got the gyro update frequency and the PID loop frequency set to 8kHz 8kHz this is an F4 flight controller so it's capable of higher processing and that you can see here the CPU load is low so it can handle it. I think it was a 8Khz 2Khz out of the box that I think make pretty much copied the Mobula 7 settings.

We've got the accelerometer turned on there and I'd recommend that for stability mode when flying indoors that's just my preference.

The maximum arm angle is set to 180 degrees that is my risk that I take. If you set it at 180 degrees it means that you can arm the copter at any angle. I think the stock value is 25 and it's in case you've got the copter plugged in and you are carrying it and you accidentally arm it and it doesn't chop you up.

But it's a tiny whoop so you know it's not going to chop you up anyway so I set it to 180

We've got the personalization as trashcan.

The receiver is SPI RX support and then the SPI bus receiver provider settings Frsky\_D. With FrSky\_X I had some problems with loosing signal mid-air.

If you have the EU LBT version you have to use the FrSky\_D and then select D8 mode in your transmitter. Then you can bind to it you just won't get the telemetry or you won't be able to do Lua scripts and things like that.

Down here, dynamic filter was turned on and so was antigravity and on screen display. Air mode wasn't turned on and then LED strip was turned on and telemetry was also turned on.

The RX lost an Rx set was turned off you're going to want to turn these ON because this model doesn't have a buzzer so if you lose it then it uses DSHOT commands to make the motors twitch, you'll be able to find it if you lose it so that's an important one to have on.

## **Power and Battery**

It does have a current meter and the voltage meter but I don't have a battery plugged in as you can see so we'll have to see on the flight how accurate it is.

I've changed the minimum cell voltage to 2.9 and the warning cell voltage to 3 but just because I don't like any warnings coming up on the screen and I like to monitor the voltage myself.

I haven't touched any of this scaling. Although they've done something to the scaling there for the current meter, so as I say we'll see how that performs on the flight.

## **PID Tuning**

PID tuning: They have got custom rates in there which I'm leaving the only thing I've added is RC Expo that gives a nice stick feel in the Center.

I've also turned on VBAT PID compensation that was turned off. I've got the I Term Relax ON, I think item rotation was already turned on and Anti-gravity mode was set to smooth and the Gain was 5. I think I've upped the TPA to 20, it was 10.

## **Receiver**

In the receiver tab, the channel Map is ARET1234 for Tarranis. I've set the RC and Yaw deadband to 5, that is just for smoothness in the center of the stick. Then everything else is stock there.

We've got the RSSI disabled but because it is again SPI on the receiver it feeds through anyways, so you want to keep that as disabled.

## **Modes**

In the modes tab; I have got Arming on AUX1. The angle mode on the AUX2 and Acro.

The beeper on the AUX3 which will be the DSHOT commands. On the same AUX channel is FLIP OVER AFTER CRASH.

## **OSD**

On screen display is pretty much identical to the Mobula 7. I've just turned on the VTX channel, but other than that I quite like the placement of these things here so I have left everything there.

## **LED Strip**

It is for your custom Night Rider thing so if you want to upgrade be a flyer at any point then you might want to take a dump of the CLI and the LED settings.

## **FLIGHT TEST**

It's got slightly more power compared to Mobula 7 at full punch.

I would bet that's down to just as much the battery capacity being bigger as it is the motor slightly bigger as well but anyways that is the difference between the two in terms of power.

Seems to be flying in acro nicely.



On a range test the RSSI value is going into the 30s, I turned around and didn't get a fail-safe so we're looking at about a 100 meter range with this guy. Which is probably okay for a tiny whoop.

I would say that the 25 milli watt setting on the VTX is probably more producing 10 to 13 milli watt which is not bad thing really when flying indoors, because it means you will get less reflections.

I'm going to update after more stick time on the Trashcan. So far I'm really impressed by the performance of the whoop micros. Both Mobula 7 and the Trashcan.

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