Manual for ESC with F3A Governor V2.2

Specifications

- **Voltage:** 5–12s LiPo (max 50.4V)
- **Current:** Up to 120A with proper cooling
- **Weight:** 85g with 150mm long battery and motor 12AWG cables
- **Features:** Real OPTO isolation (no ferrite ring needed), programming interface

Limitations

This is a compact Electronic Speed Controller (ESC) with a small heatsink. It must not be hidden deep inside the fuselage. You need to ensure direct airflow to the heatsink. The best practice is to place the ESC just behind the air intake (2–5 cm), positioned perpendicularly to the airflow. With adequate cooling, this ESC can handle up to 120A. Without direct cooling, it may overheat and fail at just 50A.

Important: Do not cut additional venting holes in the heat shrink tube! You can shorten cables if necessary, but always keep them as short as possible.

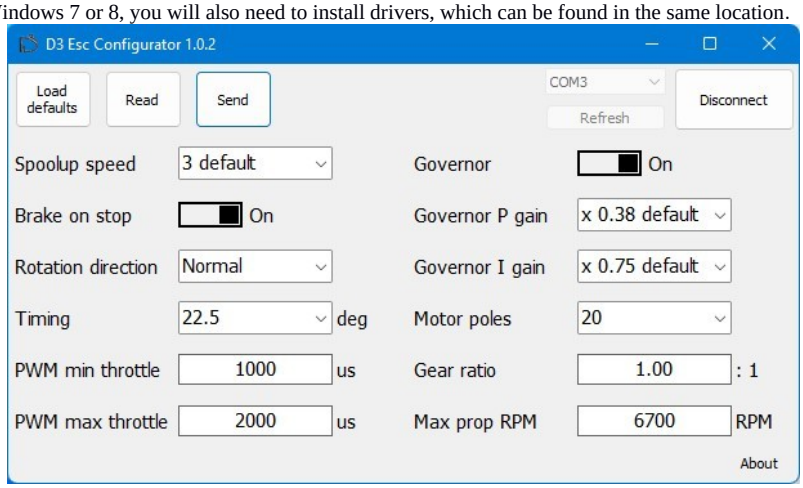
Settings

The ESC is preconfigured for the Plettenberg Advance 30-10 motor. For other motors, you will need to update the configuration using a USB programming interface, available as an accessory. The required software is **D3EscConfigurator**, which can be downloaded from:

https://www.d3motors.com/pages/download

After downloading, manually unpack the program and create a shortcut on your desktop.

If you are using Windows 7 or 8, you will also need to install drivers, which can be found in the same location.



Spoolup Speed This setting adjusts the motor's response speed to new throttle positions. Be cautious: the fastest setting may overstress the drive during abrupt acceleration or braking.

Brake on Stop Allows you to disable motor braking when the throttle is at zero.

Rotation Direction Sets the motor rotation to normal or reversed.

Timing Enables adjustment of motor timing settings for optimal performance.

PWM Min/Max Throttle Allows changes to the default throttle signal values for fully closed or fully open throttle.

Governor Can be turned off, for instance, if you want to measure the maximum in-flight RPM using external telemetry.

Governor P and I Gain If you are unsure about this setting, leave it at the default values.

Motor Poles Defines the number of motor poles, a value required for governor calculations.

Gear Ratio Specifies the drive's gear ratio. For direct drive, set it to 1.00:1.

Max Prop RPM Sets the maximum in-flight RPM of the propeller.

Connecting Procedure

1. Ensure you have a PC running Windows 7, 8, 10, or 11 to use the **D3 ESC Configurator**.
2. Plug in the USB programming interface. In Device Manager, it should appear as a **USB-SERIAL CH340 COM** device. Note the COM port number (e.g., COM1, COM2, or COM3).
3. Run the **D3 ESC Configurator**. There's no need to install the program—just unpack it and launch it. If this is your first time running the application, Windows might warn you about an unknown source. Click "More details," then "Run."
4. Select the appropriate COM port from the dropdown menu.

Safety Precautions

- **Remove propellers** or disconnect any two cables between the ESC and the motor.
- Use a short cable to connect the ESC to the USB programming interface (the long cable is for RX connections).
- Turn off the RX or disconnect the long cable.

Connection Steps

1. Connect a 4S–12S LiPo battery to the ESC power plug.
2. Click **Connect** in the program.
3. Update the settings to match your motor type (refer to "Most Popular Drive Settings").
4. Click **Send** to save the changes.
5. Disconnect all connections once finished.

TX Setting

Proper transmitter setup is critical:

- The receiver should output a pulse width of **1000 µs** for closed throttle and **2000 µs** for full throttle.
- For transmitters like **Graupner MZ**, set ATV to **125%**. For Futaba set ATV to **125-130%**
- For **Jeti** transmitters, set ATV to **100%**.
- On **Futaba** transmitters, the throttle channel must be reversed.
- Use tools like **JetiBox** or similar to confirm the receiver's pulse width output.

IMPORTANT: Remove the propellers before proceeding!

Initialization Steps

1. Connect the ESC to the receiver and motor.
2. Ensure the throttle is fully closed, then power up the receiver.
3. Connect the motor battery.

Beep Indicators:

- **3 beeps**: The ESC has received power.
- **1 low beep**: The ESC is connected to a working receiver.
- **1 high beep**: The ESC detects a closed throttle position (pulse width of 1000 µs).

If the final (fifth) beep does not occur:

- Increase ATV (reduce pulse width).
- Adjust throttle trim to a lower setting.
- Ensure the throttle is fully closed.

Final Adjustments

- Open the throttle to start the motor.
- Check the motor's rotation direction. If it's running backward, disconnect the battery and swap any two wires between the ESC and the motor.

Throttle Curves

You need to set different throttle curves for various conditions:

Condition	Idle rpm (throttle stick full low)	Mid stick rpm	Full throttle rpm
Ground (arming, takeoff, after landing)	0	3100-3300	Max
Normal flight	1300-1500	3100-3300	Max
Spin	300	3100-3300	Max
Landing	100-200	3100-3300	Max

Cruise and Maximum RPM

The cruise and maximum RPM are consistent across all throttle curves. For a contra-rotor setup, I set the cruise RPM to **3100–3300** and maximum RPM to **100%**. A simple 3-point throttle curve is sufficient.

For a single-propeller setup, such as the Plettenberg Advance or Hacker Q80, both idle and mid-stick RPM are higher. In these cases:
Cruise RPM: **4400–5000**
Idle RPM: **2500**

How to Measure RPM

I use a Jeti telemetry system connected directly to the motor cables to measure RPM. Alternatively, you can use an ordinary optical tachometer after removing one of the propellers. The RPM will remain the same even with one propeller removed. Note that this method is not applicable for Brenner contra-rotor setups.

Caution

This ESC is extremely powerful. It can:

- Stop the propellers from full power almost instantly.
- Reach full power just as quickly.

Handle with care to ensure safe operation.

Most popular drive settings

Drive	Pole number	Gear ratio	Max RPM	Timing
Plettenberg Advance 30-10	20	1:1	6300-6700	22.5-30
Adverrun contra with pyro 650	10	4:1	4100-4400	22.5
Adverrun contra with Kondor	14	4:1	4100-4400	15-22.5
Adverrun contra with Egodrift	10	4:1	4100-4400	7.5
Adverrun single drive pyro 650	10	4.33:1	6300-6700	22.5
AKBAircraft A-200 pyro 650	10	4,05:1	6300	22.5
AKBAircraft CGB pyro 650	10	4.66:1	4100-4400	22.5
Dualsky motors	14	1:1	6300-6700	22.5-30
Hacker C50 with original drive	2	6,7:1	6300-6700	0
Hacker C54 with original drive	4	6.7:1	6300-6700	7.5
Hacker Q80	20 or 28, you need to check your motor	1:1	6300-6700	30
Brenner V4 with pyro 600	10 (or sometimes 14, you need to check your motor)	7,08:1	4100-4400	22.5
VLV	10	4.77:1	4200	15
Dualsky contra	14	4.77:1	4200	15

You can use D3 ESC V2.2 with other drives as well.

D3 ESC use modified BLHeli software. You can learn more at: https://github.com/bitdump/BLHeli and https://github.com/d3adam/BLHeli

Please let me know if you have any questions. I hope you will love this ESC as much as I do :))

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