



BlueJay FJ User Guide

WARNING

- **Modifying the Motor Controller parameters can damage equipment, property and cause INJURY/DEATH to yourself/others.**
- **Modifications may VOID your WARRANTY**
- **Factory/Dealer settings should only be performed by trained technicians**

Questions? Feedback? Send email to: support@bluejaytuning.com

Table of Contents

WARNING.....	1
What BlueJay Does.....	3
Getting Started.....	4
Speed.....	4
Acceleration/Deceleration.....	4
Everything Else (The Kitchen Sink).....	4
Settings.....	5
Trouble Shooting.....	6
BlueJay can't identify controller.....	6
Can't edit a parameter.....	6
Won't load backup.....	6
Won't load profile.....	6
Something Else.....	6
FAQs.....	7
Why isn't BlueJay free?.....	7
Where can I find the latest BlueJay version?.....	7
Where can I find a list of reported bugs?.....	7
Will you give me personal support to tune my controller?.....	7
Fanji Technology (FJ) Tuning.....	8
Speed.....	10
Acceleration/Deceleration.....	11
Torque.....	12
FJ Parameters.....	13
Motor Minimum Speed.....	13
Partition 1 Speed.....	13
Partition 2 Speed.....	13
Partition 3 Speed.....	14
Partition 4 Speed.....	14
Partition 5 Speed.....	14
Partition 6 Speed.....	14
Partition 7 Speed.....	14
P-Forward Acceleration.....	15
P-Maximum Forward Speed.....	15
P-Maximum Reverse Speed.....	15
P-Reverse Acceleration.....	15
S-Maximum Forward Speed.....	15
S-Maximum Reverse Speed.....	16

What BlueJay Does

BlueJay is a DIY performance tuning application for the motor controllers used in electric golf carts and utility vehicles.

BlueJay automatically detects your controller, saves and restores settings, and makes motor tuning simple - even for beginners.

Get the latest version: <https://bluejaytuning.com>

- **Automatic controller detection:** BlueJay queries your connected controller to detect the brand/model/type
- **One application for many controllers.** No manual guesswork of which Chinese OEM tuning application to use
- **Highlights the most important and commonly adjusted tuning parameters**, making them quick and intuitive to edit.
- **Save and Restore:** Snapshot your current configuration or roll back to a known-good one
- **Supports tuning profiles**, including:
 - Sporty and Fast
 - Casual About Town
 - Hill Climber
 - Many other community supported
- Fully **English interface** with simple and clear parameter descriptions

BlueJay works with a wide range of vehicles using compatible AC motor controllers, including Advanced EV, Bintelli, Coleman, Denago, Evolution / HDK, ExCar, EZKruiser, Gotraxx, Gorilla, Moto Electric, Icon, PDG, Racka, Royal, Spartan, Star, Tao, Many others with FJ, EV48-400-C and Tercel/LVTong/JHL controllers!

Getting Started

Look at the BlueJay Quick Start Guide PDF to get up and running fast.

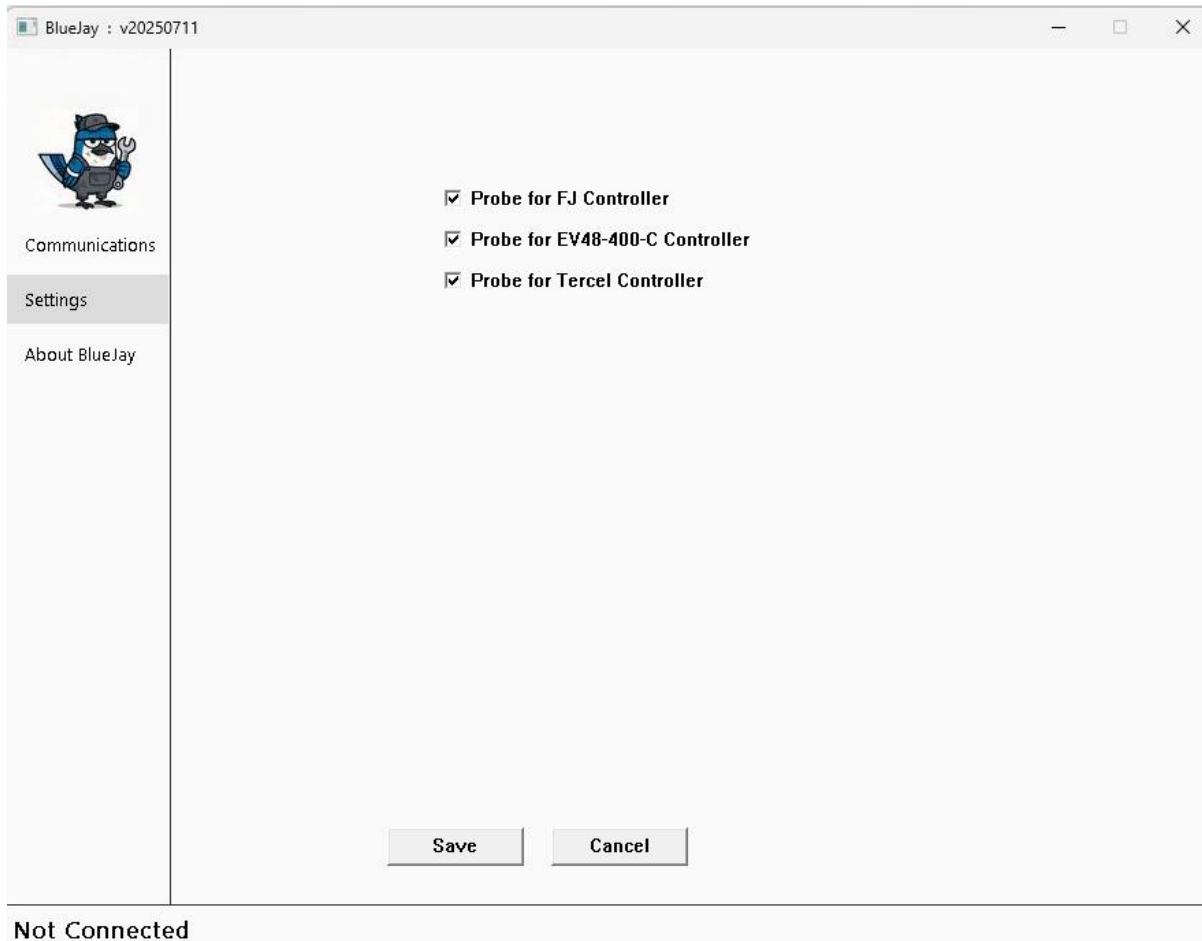
Settings

By default, BlueJay is configured to probe for all supported controllers.

To save time, you may want it look for just your controller brand.

Click the Setting selection on the left side and then check/uncheck the controllers that you want.

Be sure to click Save if you make changes to the settings.



Trouble Shooting

BlueJay can't identify controller

- Make sure your cart is powered on. The controller must have power in order to communicate
- Make sure that you installed your cable's device driver
 - Most cables require a Windows Device Driver to be installed. If you purchased from Cart Cables, go here to find the appropriate driver:
 - <https://www.cartcables.com/pages/drivers>
- Make sure your controller is supported by BlueJay.
 - Identify your controller brand/model/type here:
 - <https://www.cartcables.com/pages/controller-id-guides>

Can't edit a parameter

- Make sure you are double-clicking the “set” cell of the parameter row.
- Grey Parameter rows are read-only and can not be edited.

Won't load backup

- Make sure you are loading the correct controller brand/model/type
- Make sure you haven't hand edited the backup file

Won't load profile

- Make sure you are loading the correct controller brand/model/type
- Make sure you have the parameter named spelled correctly
- Make sure the parameter value is within min/max range

Something Else

- Send email describing issue to: support@bluejaytuning.com

FAQs

An updated list of FAQs can be found at: <https://bluejaytuning.com/faqs.html>

Why isn't BlueJay free?

Since the OEM controller programs like GEF12Host or Fj Programming tool are free, why isn't BlueJay also free?

- Actually those OEMs programs are NOT free. They are licensed applications that have been pirated and copied onto various download sites.
- BlueJay is supported multi-controller application that provides many features that the OEMs applications do not, such as:
 - Save/Restore
 - Profiles
 - User Guide
 - Every common tuning parameter defined and described in the User Guide
 - Email application support, bug fixes, new versions

Where can I find the latest BlueJay version?

- Go to: <https://bluejaytuning.com>

Where can I find a list of reported bugs?

- Go to: <https://bluejaytuning.com/downloads.html#issues>
- Report bugs to: support@bluejaytuning.com

Will you give me personal support to tune my controller?

- No, we offer application support via email and bug fix support but we cannot tell you what parameter values to use for tuning your controller.
- Read the user manual for general guidance
 - There is NOT a one size fits all. Use caution and intelligence
- Get community support by posting tuning questions for the various Golf / Utility Cart forums and sites.

Fanji Technology (FJ) Tuning

BlueJay can auto-detect FJ controllers. The FJ S1 series are AC motor controllers used in many commodity golf carts such as Evolution/HDK, Tao, Denago, PDG, EZKruiser, Racka, Coleman, Gotraxx, Gorilla and others.

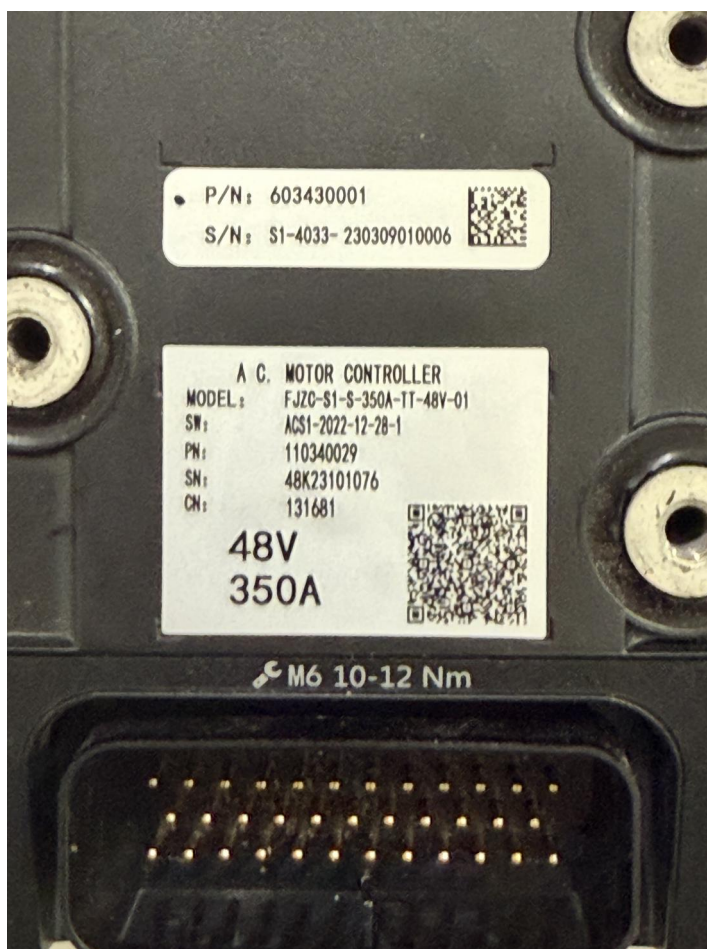


Common models include:

- EV48-400
- EV48-400-A
- FJ 350A
- FJZC-S1-350A
- FJZC-S1-350A-TT-48V-01
- FJZC-S1-001-WHL-48V-06
- etc

The FJ G1 series also are showing up on some carts such as Denago. The G1 controllers have not been examined by us but they do appear to follow the same S1 communication protocol

- FJZC-G1-001-TT-48V-02
- FJZC-G1-001-BK-48V-02
- FJZC-G1-001-BK-72V-01
- etc



A 4-pin square programming port located beneath the fuse block in the battery bay allows for customization and tuning of vehicle settings.

To connect and program the FJ controller, you'll need:

- A programming cable such as the [CartCables](#) CC-CBL-EVO2SE



Tuning is not complicated but it does come with risks that **MUST** be understood and accepted:

- **Modifying the Motor Controller parameters can damage equipment, property and cause INJURY/DEATH to yourself/others.**
- **Modifications may VOID your WARRANTY**
- **Factory/Dealer settings should only be performed by trained technicians**

This section discusses an approach to performance tuning. What values do you want to tune your cart? It depends on what you want. There is not a one size fits all.

- Don't just enter numbers that someone told you about
- Look at your existing values
- Determine your goals
- Make small changes
- Test with caution

Before you make any changes, you should make a backup of the current parameters by clicking the Save button.

To change a parameter, double-click on the the “set” cell of the parameter row. Make sure your change is between the valid min and max for that parameter. After editing, the “set” cell will highlight in yellow to show that it has changed.

Changes are not written to the connected controller until you click the Write button.

If you want to discard changes before writing, click the Reset button.

You can return to a previous saved state by clicking the Load button and choosing a previously saved file for the connected controller. After loading, differences from the current state and the loaded files will be highlighted in yellow. Be sure to review both the Tuning and Sink tables to see changes. Changes are not actually written to the controller until you click the Write button.

Common tuning areas are:

- Speed
- Acceleration
- Regen/Deceleration

Note:

- BlueJay’s Tercel parameter names might be slightly different than the OEM name in an attempt to simply/clarify the parameter’s purpose.

Speed

Speed tuning controls how fast the golf cart can travel under various conditions. This involves adjusting the maximum motor RPM, forward RPM in Low and High gear, reverse RPM in Low and High gear.

In the Tuning tab, set "P Maximum Forward Speed (RPM)" to whatever safe max RPM you want up to 6000 RPM.

Your FJ controller will have its "gear mode" system parameter set to "partition". This means that you tune 7 "partitions"/"zones" related to speed, acceleration, deceleration and torque.

- After an edit to the "P Maximum Forward Speed (RPM)", BlueJay will auto scale the 7 partitions linearly. You can edit these if you want different values.

If you want to edit these partitions differently: In the 1-7 speed partition entries, enter a max rpm desired at each "zone".

You want this to be mostly linear so the speed ramps up smooth and continuous. An easy method is divide your divide "P Maximum Forward Speed (RPM)" by 7 and enter the multiples something like:

	Partition 1	Partition 2	Partition 3	Partition 4	Partition 5	Partition 6	Partition 7
Max RPM 4000	571	1143	1714	2286	2857	3429	4000
Max RPM 4500	643	1286	1929	2571	3214	3857	4500
Max RPM 5000	714	1429	2143	2857	3571	4286	5000
Max RPM 5500	786	1571	2357	3143	3929	4714	5500
Max RPM 6000	857	1714	2571	3429	4286	5143	6000

Example Partition Values for Various Max RPMs

Now that you defined the max rpm in each speed partition, you'll want to set a plan on how to get there by adjusting the acceleration partitions.

Acceleration/Deceleration

The acceleration partitions tells the controller how quickly in rpm/s that you want to get from one partition to the next.

Acceleration and deceleration tuning determine how quickly the cart speeds up or slows down. This is managed by ramp rate settings in the controller. A smoother, slower acceleration may be ideal for comfort and safety, while a sharper ramp gives a snappier, sportier feel.

Deceleration tuning can also affect how aggressively the cart slows down when throttle is released - important for both driving feel and regenerative braking behavior (if supported).

Torque is the rotational force that the motor produces to turn the shaft. Think of it like how hard you twist a wrench - torque is that "twisting" force. Torque tuning affects how well the cart can climb hills, carry loads, or launch from a stop. Torque can be mapped across multiple ranges (low-RPM vs. high-RPM) or split between driving torque and regenerative torque. Adjusting torque levels can help balance power, hill climbing, efficiency, and battery life.

Set your Acceleration partitions as mild or aggressive as you want:

IMPORTANT!

- Do NOT start with large numbers. Take your existing values and add 10-50 to a partition slowly and test.
- **Too large of values will make your cart dangerous and out of control.**
- Go slow, test.

Example:

- If you set the partitions apart by ~714 RPMs (as in the figure “*Example Partition Values for Various Max RPMs*” above for 5000 max rpm)
 - If you set an acceleration partition to 100 rpm/s, it would take roughly $714/100 = 7.14$ seconds to get up to speed in that partition.
 - Or if you set the acceleration partition to 350 rpm/s, it would take $714/350 = 2.04$ seconds to get up to speed in that partition

Torque

The torque partition is the “muscle” behind your acceleration plan. Each torque partition value limits or defines the force the motor can use to achieve the acceleration plan.

Torque is the rotational force that the motor produces to turn the shaft. Think of it like how hard you twist a wrench - torque is that "twisting" force. Torque tuning affects how well the cart can climb hills, carry loads, or launch from a stop. Adjusting torque levels can help balance power, hill climbing, efficiency, and battery life.

Each torque partition is a value from 10-100 which is the % of max available torque

If you set a high acceleration but a low torque, you might notice the vehicle feels sluggish or lags when climbing or starting under load.

If you set high torque but low acceleration, you’ll have more pulling power, but the controller will deliberately slow down how fast you ramp up.

Be conservative at low speed to avoid jerky starts, higher torque at higher speeds when needed for hills or carrying load.

IMPORTANT!

- Do NOT start with large numbers. Take your existing values and add 5-10 to a partition slowly and test.
- **Too large of values will make your cart dangerous and out of control.**
- Go slow, test.

Deceleration partitions are used to slow down the vehicle when the throttle is released. Larger values (rpm/s) represent faster response (strong deceleration feeling), small values (rpm/s) represent slower response (soft deceleration feeling).

Its recommended to adjust the 1-7 partition deceleration value synchronously otherwise the deceleration process may not be smooth, **you may experience uncomfortable deceleration and eat the windshield.**

FJ Parameters

This section describes all FJ parameters that BlueJay supports. Refer to the above Fanji Technology (FJ) Tuning section for discussion on an approach to performance tuning.

If you feel that there are needed parameters that are missing, send us an email.

BlueJay presents tuning parameters into 4 tuning tabs.

- Just because a parameter is in these tabs does NOT mean you need to adjust.
- Only change what you need to.
- Change in small increments and test. Go slow, be careful, be smart.

The most common tuning parameters are in the Speed, Accel or Regen tabs. The Sink tab (aka ‘the ‘kitchen sink’) are other important tuning parameters that may be useful to advanced/experienced tuners.

Note:

- BlueJay’s FJ parameter names might be slightly different than the OEM name in an attempt to simply/clarify the parameter’s purpose.

These are listed in alphabetical order.

Motor Minimum Speed

- Lowest allowed RPM
- Range: 0-6000 RPM

Partition 1 Speed

- Maximum forward RPM in Partition 1.
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

Partition 2 Speed

- Maximum forward RPM in Partition 2.
- Range: 0-6000 RPM
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

Partition 3 Speed

- Maximum forward RPM in Partition 3.
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

Partition 4 Speed

- Maximum forward RPM in Partition 4.
- Range: 0-6000 RPM
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

Partition 5 Speed

- Maximum forward RPM in Partition 5.
- Range: 0-6000 RPM
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

Partition 6 Speed

- Maximum forward RPM in Partition 6.
- Range: 0-6000 RPM
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

Partition 7 Speed

- Maximum forward RPM in Partition 7.
- Range: 0-6000 RPM

- “Partition 7 Speed” parameter should match or be ~5% RPM lower than “P-Maximum Forward Speed”.
 - If going downhill, heavy load, strong tailwind, slight overrun, the motor can momentarily spin up and attempt go beyond the Motor Maximum Speed limit and then fault out.
 - Some controllers don’t handle hitting their max rpm very gracefully and can trigger "Over-speed Protection" faults or cause sudden motor braking.
 - Unless you are soaking every RPM out of the controller, consider putting Partition 7 Speed about ~5% less than “P-Maximum Forward Speed” value.
- See above Speed paragraph for a discussion on partition and how to calculate values in partitions 1-7

P-Forward Acceleration

- Maximum forward acceleration in High gear
- Range: 100-2000 RPM/S

P-Maximum Forward Speed

- Maximum forward RPM in High gear.
 - This is the Motor Maximum Speed.
 - You are never allowed to spin faster than this no matter what.
 - “Partition 7 Speed” parameter should match or be ~5% RPM lower than this value.
- Range: 0-6000 RPM
- See “Partition 7 Speed” parameter below for more words.

P-Maximum Reverse Speed

- Maximum reverse RPM in High gear.
- Range: 0-6000 RPM

P-Reverse Acceleration

- Maximum reverse acceleration in High gear
- Range: 100-2000 RPM/S

S-Maximum Forward Speed

- Maximum forward RPM in Low gear.
- Range: 0-6000 RPM

S-Maximum Reverse Speed

- Maximum reverse RPM in Low gear.
- Range: 0-6000 RPM

Comments, questions, corrections? Send email to: support@bluejaytuning.com

