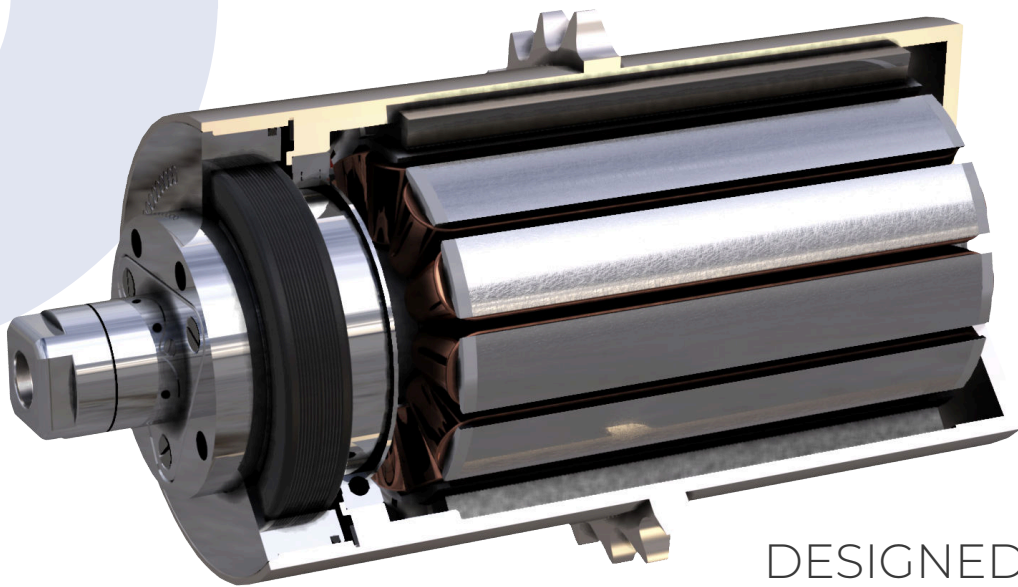




SETUP-TROUBLESHOOTING

INSTRUCTION MANUAL



DESIGNED FOR
IMPROVED PERFORMANCE

Eliminating Downtime and Reducing Costs

BROWSE ONLINE SUPPORT

Scan QR Code for support documentation and
product catalog information

ONE MOTION MAG-DRIVE



MAG-DRIVE SETUP

POWERFLEX 525

Getting Started

Mounting & Wiring

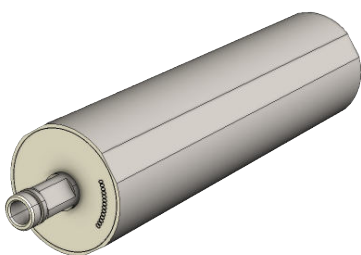
- Mount Motor Securely Before Testing
- Find Suitable VFD (1hp, 3hp, 5hp) / (120v, 480v) Allen Bradley
- Wire Motor to VFD (UVW Terminals)

See AB documentation for full wiring details.

This guide is specific to Allen Bradley PowerFlex 525 AC Drives.

Each Mag-Drive has specific power and tuning requirements.

Search for Technical Specifications using the P/N etched on your Mag-Drive's Shell. You can find technical details & .pf5 files for all parts in the product portal.



Provide your P/N to a support representative if you do not have access to product portal

Select & Load Parameters

Select .pf5 parameter file for P/N

Choose parameter input method:

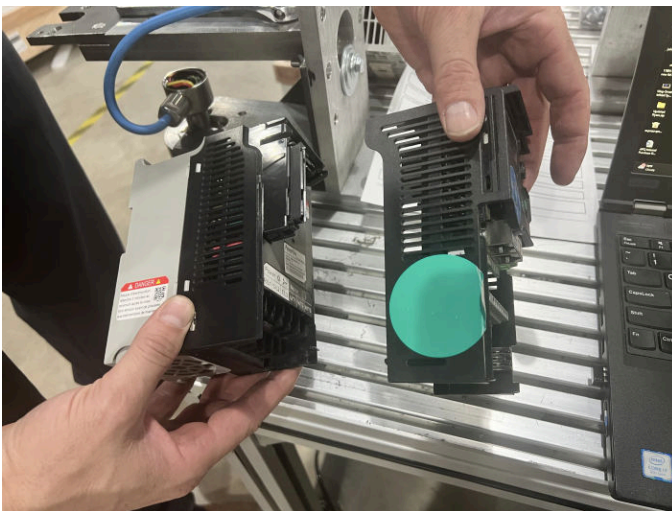
- USB to Faceplate (Recommended)
- AB Connected Components Workbench Software

USB TO FACEPLATE

POWERFLEX 525

You will need:

- Windows PC
- USB-A to USB-B 2.0 Cable
- Allen Bradley PowerFlex 525 AC Drive

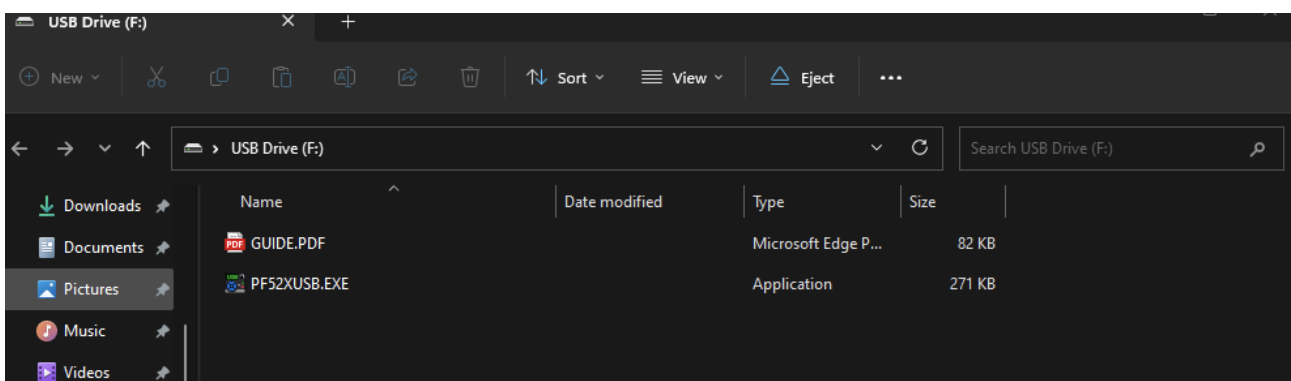


Remove faceplate from VFD base:

- Depress clip on top of faceplate and slide forward
- Twist and rock faceplate away from base.

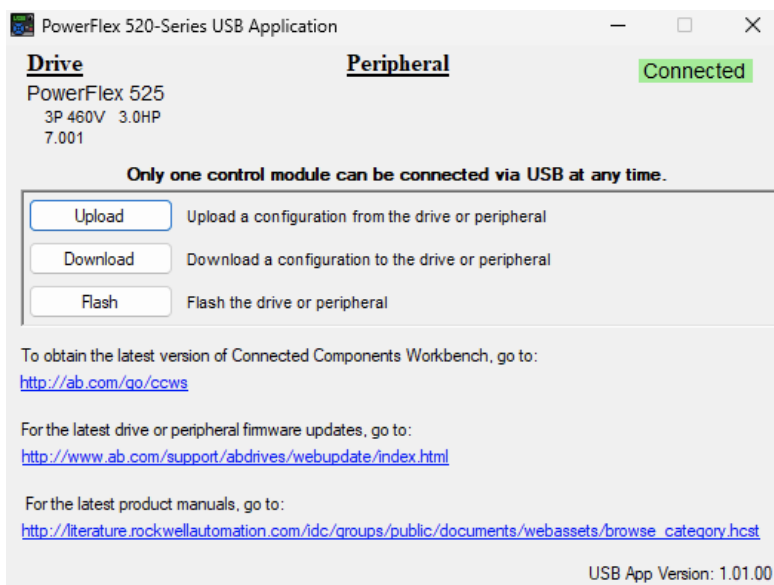
Connect USB To PC

- Faceplate should illuminate and USB folder should popup as shown below.



Load Parameter File

Run setup .EXE File



- Locate desired .pf5 file on your pc.
- Click “Download” in the PowerFlex App
- Navigate to .pf5 file location
- Select .pf5 File in App and Continue

Once .pf5 file is successfully installed disconnect USB and reattach to PowerFlex base.

Power On / Start Up

After loading parameters to your PowerFlex VFD you can safely power on your Mag-Drive.

Press the “Green Power Button” on the PowerFlex VFD and wait for the Mag-Drive to start.

If Mag-Drive fails to start, follow our simple troubleshooting guide.

ETHERNET SOFTWARE

Parameter Entry

POWERFLEX 525

Getting Started

You will need:

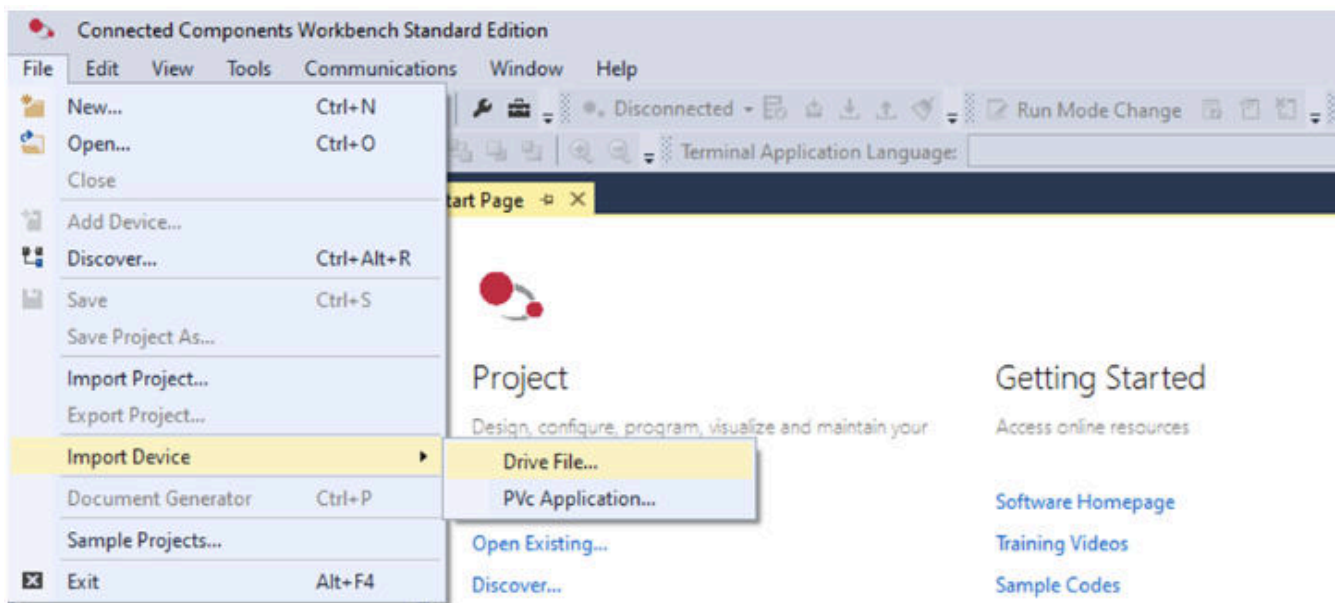
- Windows PC
- Allen Bradley PowerFlex 525 AC Drive Ethernet Cable
- CCW Software Installed

Connect Ethernet to PC & VFD

Open CCW Software

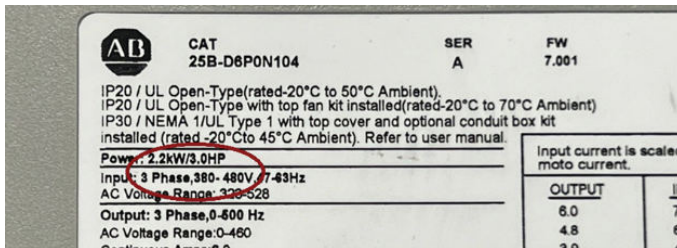
Select .pf5 file based on P/N.

Navigate to File > Import Device > Drive File



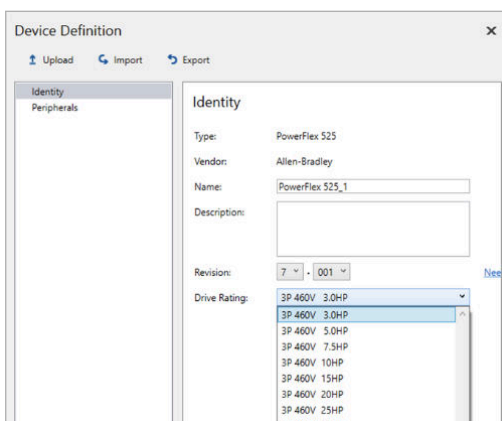
Select Device Details

Configure Software For VFD Type



- Look at your drive details label on your PowerFlex and input relevant information the Device Definition "Identity" Fields

Select VFD Type



- Select information in the drop-down that corresponds to your VFD specifications.
- Once you have your settings selected click "ok"

Configure IP Connection

Configure IP Settings on PC & VFD

- Now you need to update your IPv4 settings to the correct IP address for communicating with your VFD

You are trying to set your PC's LAN to something in the same range as your VFD.

Example: My VFD has an IP of 192.168.1.25, I want to set my PC's LAN to 192.168.1. (something other than 25)

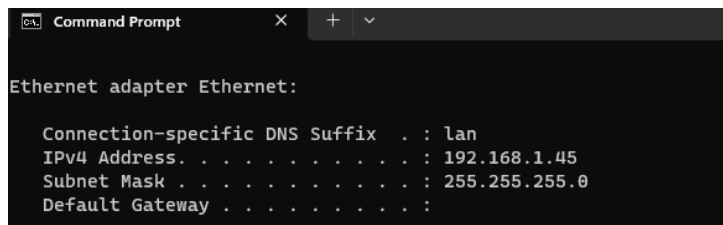
VFD IP Setup

Check / Update VFD LAN Settings if Needed.

- On your PowerFlex faceplate manually navigate to the following parameters to view/update IP Settings.
- C128 must be set to **"1-Parameters"**
- C129, C130, C131 must match the IP values of YOUR PC's IPv4 Settings (**Ex. 192.168.1.x**)
- C132 must be set to **something unique**.
- C133, C134, C135, C136 relates to "Subnet Settings", configure subnet parameters to **255.255.255.0**

PC IP Setup

Select information in the drop-down that corresponds to your VFD specifications.



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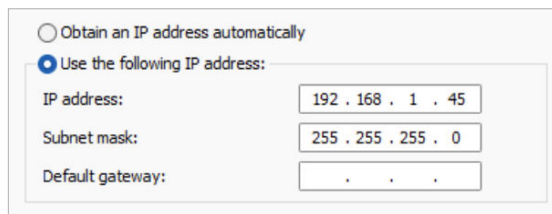
Command Prompt

Ethernet adapter Ethernet:

Connection-specific DNS Suffix  . : lan
IPv4 Address. . . . . : 192.168.1.45
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
  
```

- To Quickly View your IP Settings on PC.
- Open Command Prompt: (Select "Windows Key" > Type "CMD")
- Type "ipconfig"

Update PC LAN Settings if Needed.



☐ Obtain an IP address automatically
☒ Use the following IP address:

IP address:
 Subnet mask:
 Default gateway:

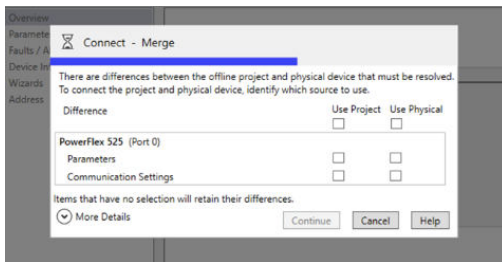
- Navigate to Network Connection Settings" in Windows.
- Right Click Ethernet Connection
- Select Properties
- Select "Internet Protocol Version 4"
- Select Properties
- Toggle to "Use the Following IP address"
- Enter Desired IP Address

Connect To VFD

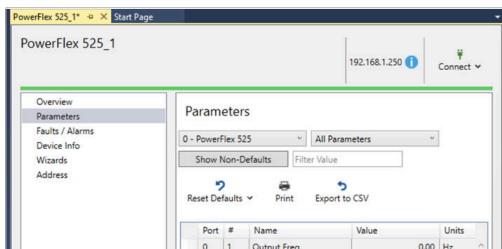
Connect CCW Software To VFD

- Once you have your IP settings configured you can click “Connect”,
- Allow ethernet devices to populate in the connection window.
- Then Select AB_ETHIP-1, Ethernet to link to Drive.
- Select the plus icon under “AB_ETHIP-1 , Ethernet” and your Powerflex device should Be selectable.
- Click Connect

Select Device Settings



- Select “Use Project” for “Parameters”
- Select “Use Physical” for “Communication Settings Click “Continue”



- When successful you will see the green connection line appear at the top of the box

Now you are connected, parameters are loaded and can be managed in real time. For troubleshooting select and modify parameters as needed.

Power On / Start Up

After loading parameters to your PowerFlex VFD you can safely power on your Mag-Drive.

Press the “Green Power Button” on the PowerFlex VFD and wait for the Mag-Drive to start.

If Mag-Drive fails to start, follow our simple troubleshooting guide below.

TROUBLESHOOTING

POWERFLEX 525

Manual Parameter Tuning

There are four main parameters on the PowerFlex 525 that will solve most startup or performance issues.

- Parameter A531 – Start Boost (0-25%)
- Parameter A532 – Break Voltage (0-100%)
- Parameter P041 - Acceleration Time (Seconds)
- Parameter P042 - Deceleration Time (Seconds)

Here are important parameters to monitor.

- Parameter B003 - (Output Current) - Real time amperage draw of motor.
- Parameter P034 - (P/N FLA) - Full Load Amperage of motor.

There are four protection parameters that should NEVER be modified

- Parameter A486 - Shear Pin 1 Level (Max Safe Amperage)
- Parameter A487 - Shear Pin 1 Time (Over FLA for 10 Seconds)
- Parameter A488 - Shear Pin 2 Level (Overload Current)
- Parameter A489 - Shear Pin 2 Time (Above OL for 3 Seconds)

Always start tuning with A531, A532 should be tuned if motor “pulses” or “oscillates”.

Before tuning verify there are no mechanical interference or binding issues.

Torque Boost Tuning (Parameter A531 – Start Boost)

You will need:

- P/N Technical Details Sheet
- P/N FLA Value

Tuning Instructions:

1. Set Starting Value to 7% (Rarely is this value below 6% or above 9%)
2. Set Speed to 0Hz. Commanded frequency for tuning.
3. Start motor & Monitor Parameter B003 (Output Current of drive)
4. Adjust parameter A531 up or down by values of 1 until B003 (Output Current of drive) is equal to 60% of parameter P034 (P/N FLA)

(Example: Your FLA is 2.2 Amps, so $2.2A * .6 = 1.32A$. So, you want your B003 to be around 1.3 amps)

Once these parameters are dialed in, rerun Power On / Start Up procedures.

If performance issues persist, move on to Break Voltage Tuning.

Break Voltage Tuning (Parameter A532 – Break Voltage)

You will need:

- P/N Technical Details Sheet

Note: You only need to adjust this parameter if the motor doesn't operate correctly, after you have changed the A531 parameter.

Tuning Instructions:

1. Set parameter A532 to 30% - Starting Value (rarely is this value below 20% or above 50%)
2. If the drive trips from over - current, this value can be decreased by 5%
3. If the motor doesn't start/run in a constant forward motion, increase this by 5%

Changing break voltage settings usually won't increase current, In some cases it does, and may cause issues. Proceed with caution.

Acceleration Time (Parameter P041)

In the event of oscillation or pulsing you may want to increase this to a longer ramp up time in seconds. This is dependent on your application's requirements. (This value is measured in seconds)

Deceleration Time (Parameter P042)

In some situations you may want to adjust deceleration time to allow for application needs. This is dependent on your application's requirements. (This value is measured in seconds)

Param Name	Alterability	Description
31 Motor NP Volts	Drive Specific	Drive determines this value
32 Motor NP Hertz	Motor Specific	60 Hz - Rated Frequency
33 Motor OL Current	Motor Specific	Peak Current/Maximum Current
34 Motor NP FLA	Motor Specific	Full Load Current - Max amps continuous run @
35 Motor NP Poles	Motor Specific	Number of motor poles
36 Motor NP RPM	Motor Specific	RPM of motor. Determined by # of poles & freq.
37 Motor NP Power	Motor Specific	Power(watts) = Volts * Amps
39* PM Mode	Every Motor!	Permanent magnet mode setting on drive!!
41 Accel Time 1	Customer specific	Longer accel time = less current needed
42 Decel Time 1	Customer specific	Longer decel time = less current needed
486* Shear Pin1 Lvl	Motor Specific!	Above FLA but below OL amps for P487 sec.
487 Shear Pin 1 Time	Permenant Magnet Setting	Determines cutoff seconds for P486
488 Shear Pin2 Level	Permenant Magnet Setting	Over OL current for P489 seconds
489 Shear Pin 2 Time	Permenant Magnet Setting	Determines cutoff seconds for P488
501 PM IR Voltage	Motor Specific	Voltage across the stator resistance
502 PM IXd Voltage	Motor Specific	Voltage across the d-axis stator inductance
503 PM IXq Voltage	Motor Specific	Voltage across the q-axis stator inductance
504 PM BEMF Voltage	Motor Specific	Back electromotive force (generator effect)
517 PM DC Inject Cur	Permenant Magnet Setting	Max DC current to reset stator position
518 PM Align Time	Permenant Magnet Setting	Magnetic pole reorientation time
527 PM FWKn 1 Kp	Permenant Magnet Setting	gain for performance in field weakening region
528 PM FWKn 2 Kp	Permenant Magnet Setting	gain for robustness step load weakening region
530 Boost Select	Permenant Magnet Setting	Sets A531 (% of P031[NP Volts]) & V/Hz curve
531 Start Boost	Customer specific	Sets boost Volts(% of P031 NP Volts)
532 Break Voltage	Customer specific	Sets voltage (in % of base freq) @ A533
533 Break Frequency	Advanced customer specific	Sets freq where A532(Break Voltage) is applied
580 Current Loop BW	Permenant Magnet Setting	Current feedback loop
583 PM Stable 1 Kp	Permenant Magnet Setting	% of gain for stabilization loop
584 PM Stable 2 Kp	Permenant Magnet Setting	Gain for stabilization loop
585 PM Stable Brk Pt	Permenant Magnet Setting	% of P037 NP Power for gain of A584
586 PM Stepload Kp	Permenant Magnet Setting	gain for robustness under step load @ low speed
587 PM 1 Efficiency	Advanced customer specific	Efficiency control when motor is loaded
588 PM 2 Efficiency	Advanced customer specific	Efficiency control when motor is not loaded

This is a breakdown of parameter functions.

Green - Safe to Modify

Yellow - Use Caution

Red, Blue & Orange - Do Not Modify

Contact Information

For advanced support:

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