

Getting started with Clean Power VFD





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1. Clean Power VFD First Implementation Workflow

Clean Power VFD First implementation



This workflow is a simplified visual summary.

It does not replace the complete Clean Power VFD User Guide.

Always consult the full user guide before installation, configuration, commissioning, or operation.



2. Getting started with Clean Power VFD

Clean Power VFD First Implementation Guide

Use this guide when you implement a Clean Power VFD for the first time. It gives the minimum field sequence to verify the installation, configure the drive, run auto-tuning when required, and perform the first motor run.

This guide does not replace the complete Clean Power VFD user guide. For wiring diagrams, torque values, ratings, parameter details, and advanced troubleshooting, use the complete documentation.

Who should use this guide

Use this guide only if you are qualified to install, wire, configure, or commission electrical drive equipment according to your local regulations and site procedures.

You need:

- Clean Power VFD model number and nameplate information
- Motor nameplate data
- Application supply voltage and line frequency
- Wiring diagram for the selected control method
- Clean Power VFD mobile app or access to the HMI
- Site lockout/tagout procedure
- A safe way to run the motor unloaded, when possible

DANGER Do not open the Clean Power VFD when it is powered. Do not touch the terminals when the drive is powered. The STOP function and the Torque Off function do not remove dangerous voltage from the drive, motor, or connected power terminals.

WARNING When the Clean Power VFD is powered, an active run command can start the motor. Before power-up, make sure all run commands are OFF and the speed reference is at minimum or zero. This is especially important when 2-wire control is used.

CAUTION Do not use a line-side contactor as the normal start/stop method. Use drive control commands for routine motor operation. Use the contactor only for isolation, emergency power removal, or section control according to the site design.

1. Confirm the VFD and motor match the application

1. Read the Clean Power VFD model number.
2. Confirm that the VFD input voltage rating matches the power supply.
3. Confirm that the motor voltage is compatible with the VFD output voltage.
4. Confirm that the motor current is within the VFD output current capability.
5. Record the motor nameplate data before configuration.

Minimum motor data to collect:

Motor data	Use during setup
Nominal voltage	Confirms motor/VFD voltage compatibility
Nominal current	Used for motor protection and control setup
Nominal frequency	Defines the rated operating frequency
Nominal speed	Used for velocity display and motor calculations
Motor power	Helps confirm motor and drive sizing
Power factor, if available	Supports more accurate motor setup
Number of poles, if available	Supports motor speed validation

NOTE Use the motor nameplate values, not estimated values. Incorrect motor data can cause poor control behavior, incorrect motor protection, nuisance alarms, or motor overheating.

2. Verify the installation before power-up

Before applying power, complete these checks.

Check	Verification
☐	The VFD is mounted in an environment that complies with the product specifications.
☐	The upstream short-circuit protection is installed according to the applicable regulations and product documentation.
☐	The input power cables are connected to R/L1, S/L2, T/L3 .
☐	The motor cables are connected to U/T1, V/T2, W/T3 .
☐	The protective earth connection is installed correctly.
☐	The motor ground wire is connected to the VFD PE terminal as specified in the user guide.
☐	Power wiring and control wiring are separated.
☐	Control wiring uses the recommended cable type.

Check	Verification
☐	Cable shields are connected to protective earth as recommended.
☐	STO1 and STO2 are wired according to the safety circuit design.
☐	Terminal screws are tightened to the specified torque.
☐	No loose strands, stripped wire ends, copper pieces, tools, or foreign objects remain in or around the drive.

DANGER Never connect the input line power cables to output terminals **U/T1, V/T2, W/T3**. The power supply must be connected to **R/L1, S/L2, T/L3**. Incorrect wiring can damage the drive and create a hazardous condition.

CAUTION If the installation uses multiple motors on one Clean Power VFD, verify that each motor has appropriate external overload protection according to the application design and local requirements.

3. Power the Clean Power VFD

1. Make sure all run commands are OFF.
2. Make sure the speed reference is at minimum or zero.
3. Make sure personnel are clear of the motor and driven equipment.
4. Apply power using the upstream breaker or power supply.
5. Check that the HMI and status indicators turn ON.
6. Wait for the drive to complete its boot sequence.
7. Confirm that the drive is ready for configuration.
8. Resolve any active fault or lockout condition before continuing.

WARNING Do not power the drive until the installation is complete and ready for operation. Powering an incomplete installation can create electric shock, fire, motion, or equipment damage hazards.

4. Select the configuration method

When the VFD is unconfigured or after a factory reset, the HMI offers setup choices.

Select one method:

Method	Use when
Configure via Mobile	You want to configure the drive using the Clean Power VFD mobile app.
Initial setup from HMI	You want to enter the minimum settings directly on the HMI.
Configure via USB	You already have a valid configuration file for the same VFD hardware.

For most first implementations, use either the **mobile app** or the **HMI initial setup**.

CAUTION Avoid configuring the same VFD from the HMI setup wizard and the mobile app at the same time. Complete one configuration method, save it, and then verify the final parameters before running the motor.

5. Connect the mobile app, if used

Skip this section if the drive is configured only from the HMI.

1. Install the Clean Power VFD app from the App Store or Google Play.
2. Enable the required phone permissions:
 - Bluetooth access
 - Location or Nearby Devices permission, when required by the phone operating system
3. Select the connection method:
 - **Bluetooth/BLE**, when supported by the drive
 - **Ethernet/local network**, when Bluetooth is not used or not available
4. In the app, select **Add a VFD**.
5. Follow the pairing sequence shown by the app and HMI.

For Bluetooth pairing:

1. Open the HMI menu.
2. Select Set up mobile App.
3. Select **Pair**.
4. Scan the QR code displayed on the HMI.
5. Complete the pairing steps in the mobile app.

For Ethernet pairing:

1. Connect the VFD to the local network.
2. Connect the phone to the same local network.
3. Follow the app pairing sequence.

NOTE When Bluetooth pairing is active, the QR code must be scanned during the pairing time window. If the window expires, restart the pairing sequence from the HMI.

6. Log in for the first time

For first login from the mobile app:

1. Use the username **admin**.
2. Use the VFD serial number as the first password.
3. Enter the serial number with hyphens in the required format.
4. Change the password when prompted. To meet cybersecurity requirements, the default password must be changed during the first login. Use a strong password that complies with the site cybersecurity policy.
5. Store the new password according to the site procedure.

NOTE If the password is lost, restoring access may require a factory reset. Export the configuration before performing a reset when the configuration must be preserved.

7. Enter the minimum configuration

Configure only the required items first. Advanced features can be configured after the first safe motor run.

7.1 Line parameters

1. Confirm the line voltage displayed by the drive.
2. Check the nominal line frequency: **50 Hz** or **60 Hz**.

7.2 Motor nameplate parameters

Enter the motor nameplate values:

1. Nominal voltage
2. Nominal current
3. Nominal frequency
4. Nominal speed
5. Motor power
6. Other motor values required by the selected control mode

7.3 Motor control parameters

Configure:

1. Motor control mode
2. Acceleration ramp time
3. Deceleration ramp time
4. Normal stop behavior
5. Minimum and maximum frequency or speed limits, when required

7.4 Control source and speed reference

Configure how the drive receives commands:

1. Select the Local/Remote behavior.
2. Select the remote command source, such as 2-wire I/O, 3-wire I/O, Modbus TCP, or BACnet IP.
3. Select the speed reference source, such as Analog Input, HMI, mobile app, preset speed, or network command.
4. Verify that the selected control preset matches the actual wiring.

WARNING Do not assume that the active command source is the one physically wired in the panel. Verify Local/Remote mode, source selector, run command source, stop input, and speed reference source before the first start.

8. Save and apply the configuration

1. Review the configuration summary.
2. Correct inconsistent values before saving.
3. Save the configuration.
4. Transfer or apply the configuration to the Clean Power VFD.
5. Confirm that the drive returns to a ready state after the configuration is applied.
6. Export or document the configuration if required by the site procedure.

NOTE Keep a copy of the final configuration after commissioning. This makes replacement, troubleshooting, and future comparison easier.

9. Run auto-tuning when required

Run auto-tuning according to the selected motor control mode and application needs.

Before auto-tuning:

1. Confirm that the motor is correctly wired.
2. Confirm that the motor nameplate parameters are correct.
3. Confirm that the drive is ready to run.
4. Confirm that the motor is stopped.
5. Confirm that the speed reference and auto-tuning settings are appropriate.
6. Confirm that motor rotation is safe if dynamic auto-tuning is selected.

Start the selected auto-tuning procedure and wait until the drive reports that the motor parameters were stored successfully.

WARNING Dynamic auto-tuning can rotate the motor. Before starting dynamic auto-tuning, secure the machine and make sure motor movement cannot create a hazardous condition.

CAUTION If auto-tuning fails, do not continue with the first run without checking the motor data, wiring, selected control mode, and alarm information.

10. Perform the first unloaded test run

When possible, perform the first run with the motor uncoupled from the mechanical load.

1. Confirm that the run command is OFF.
2. Confirm that the speed reference is at minimum or zero.
3. Place the drive in the intended control mode.
4. Start the motor.
5. Increase the speed reference slowly.
6. Check that the motor accelerates smoothly.
7. Check the motor rotation direction.
8. Check that the displayed speed or frequency follows the reference.
9. Check that the output current is reasonable for an unloaded motor.
10. Decrease the speed reference gradually.
11. Stop the motor.
12. Confirm that the motor decelerates or stops according to the configured stop behavior.

WARNING If the motor rotates in the wrong direction, stop the motor immediately. Correct the rotation using the appropriate drive setting or by changing the motor phase connection only after power has been removed and the DC bus has fully discharged.

11. Validate control and safety behavior

Before connecting the motor to the process or releasing the equipment for operation, validate the functions used by the application.

At minimum, verify:

1. Start command
2. Stop command
3. Direction command, if used

4. Speed reference response
5. Acceleration and deceleration ramp behavior
6. Local/Remote mode behavior
7. Fault reset behavior
8. Alarm display on the HMI and/or mobile app
9. STO behavior, if STO is used

If STO is used:

1. Run the motor at low speed in a safe test condition.
2. Open STO1/STO2 according to the safety circuit design.
3. Confirm that the drive output is deactivated.
4. Confirm that the motor cannot restart while STO is active.
5. Restore the STO circuit.
6. Confirm the expected reset and restart behavior according to the safety design.

WARNING STO prevents the drive from producing torque, but it does not remove dangerous voltage from the drive, motor, or power terminals. Use proper isolation and lockout/tagout before electrical work.

12. Connect the motor to its mechanical load

After the unloaded test is successful:

1. Stop the drive.
2. Isolate the equipment according to the site procedure.
3. Couple the motor to the load.
4. Restart the drive at low speed.
5. Increase speed gradually.
6. Monitor motor current, speed, vibration, process response, and alarms.
7. Adjust ramps, speed limits, stop behavior, and control settings as required by the application.
8. Save the final configuration.
9. Export or document the final configuration according to the site procedure.

CAUTION Do not release the system for normal operation until the motor direction, current, stop behavior, safety circuit behavior, and process response have been verified.

Basic troubleshooting during first implementation

Symptom	Check first
Mobile app cannot find the VFD	Confirm Bluetooth or local network connection, phone permissions, and pairing sequence.
Pairing fails	Restart the pairing sequence and scan the QR code within the pairing time window.
Login fails	Confirm username, serial-number password format, and the updated password if it was changed.

Symptom	Check first
Drive does not start	Check active faults, STO status, Local/Remote mode, run command source, stop input, and speed reference.
Motor rotates in the wrong direction	Stop immediately. Use the drive setting or correct motor phase wiring only after safe power removal.
Motor does not follow the speed reference	Check speed reference source, analog input wiring, analog scaling, Local/Remote selection, and min/max limits.
Fault appears at power-up	Resolve the fault before operation. Check wiring, supply voltage, grounding, and configuration consistency.
Motor current is higher than expected	Check motor nameplate data, wiring, mechanical load, control mode, ramps, and auto-tuning result.
Stop behavior is not as expected	Check normal stop behavior, ramp-down time, active command source, and any safety or fault action.

Related topics

- Installation overall procedure
- Check list: Before starting the Clean Power VFD
- Initial Clean Power VFD Setup
- Get the mobile app
- Pairing with Bluetooth
- First-time authentication
- Motor nameplate
- Auto-tuning
- Test run
- Control source