

Clean Power VFD Commissioning Guide



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1. Introduction

This guide is targeted to help you to commission the Clean Power VFD to used to control your motor.

2. Disclaimer

Disclaimer

While every effort has been made to ensure the accuracy and completeness of the information contained in this guide, SmartD makes no warranty, expressed or implied, including warranties of merchantability or fitness for a particular purpose. In no event will SmartD be liable to any party for any direct, indirect, special or other consequential damages for any use of this guide.

The user must exercise caution and follow all safety protocols when working with VFDs. This includes, but is not limited to, wearing appropriate personal protective equipment (PPE), disconnecting power before working on equipment, and adhering to all applicable local and national electrical codes.

This guide should not be used as a substitute for professional engineering advice, inspection, or consultation. The user is solely responsible for ensuring that any practices, installations, or actions taken based on this commissioning guide meet all safety and operational requirements.

By using this guide, the user agrees to indemnify and hold harmless SmartD from and against all losses, expenses, damages, and costs, including reasonable attorneys' fees, resulting from any violation of this disclaimer or any activity related to the user's account (including negligent or wrong conduct) by the user or any other person accessing this guide using the user's account.

SmartD reserves the right to make changes to this guide at any time without notice. It is the user's responsibility to ensure they are following the most recent version of this guide.

3. Safety and Installation Regulations & Rules



Before commissioning, installing, operating, or maintaining the equipment, read and understand all applicable safety messages listed in the [user guide](#).

These safety messages contain essential information intended to prevent injury, equipment damage, and unsafe operation.

Do not proceed with commissioning until all relevant safety instructions have been reviewed and understood.

- **Safety and General Precautions:**
 - Please refer to the [User Guide: Installation safety](#)
- **Installation regulations and rules:**
 - Please refer to the [User Guide: Installation regulations and rules](#)
- **Mechanical installation:**
 - Please refer to [Mechanical installation: Safety messages](#).
- **Electrical installation:**
 - Please refer to [Electrical installation: Safety messages](#)
- **Operating the VFD:**
 - [Operating the Clean Power VFD : Safety messages](#)
- **Powering the VFD:**
 - [Powering the Clean Power VFD : Safety messages](#)
- **Maintenance:**
 - [Maintenance: Safety messages](#)

4. Install battery for real-time clock

Insert battery for real-time clock

Reference: [User Guide: RTC battery installation](#)

The Clean Power VFD has a real-time clock (RTC) feature. The Clean Power VFD includes a supercapacitor to keep the time of the real-time clock (RTC) for 24 hours.

To ensure that the Clean Power VFD keeps the date & time required for mobile app pairing and authentication, as well the date & time used in the logs, it is recommended to insert a battery, type CR2032, ensures the clock works when the drive is powered down. The battery is not sold with the Clean Power VFD.

If there is already a CR2032 battery to be replaced:

Push gently on the battery until the spring pushes the battery slightly outside of its slot and then remove it. Please safely dispose the old battery according to your company battery disposal or recycling policies.

Insert new CR2032 battery:

Push gently the new battery face up (+ on top) into the slot until the spring locks it inside the slot.

5. Connect the torque deactivation inputs

Connect the torque deactivation inputs

Reference: [User Guide: Torque deactivation](#)

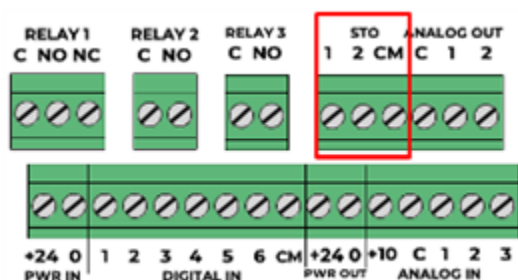
The STO1 and STO2 torque deactivation inputs must be energized with +24 Vdc from CM to allow the drive to generate motor torque. If STO1 and STO2 are not energized, the drive remains inhibited and a “Lockout” condition is displayed.

A factory-installed bridge is already fitted on the STO inputs when the STO function is not used.

Do not use the STO inputs as a normal start command or as the drive enable-to-start function. The start command must be managed separately by the control system.

The STO function may be integrated into a safety circuit, such as an emergency stop circuit or a safety switch used before mechanical work on the motor side, according to the machine risk assessment and the applicable safety requirements.

When the STO function is used as part of the safety system, the user must plan a periodic STO function test, at least once per year, to verify that the safety function still operates correctly. This periodic STO test is not required for the drive itself when the STO function is not used.



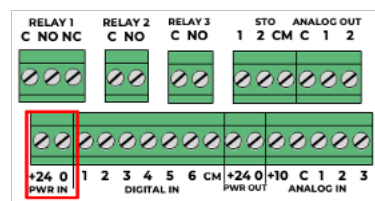
6. Connect auxiliary power (optional)

Connect auxiliary power (optional)

Reference: User Guide: Auxiliary power input

The Clean Power VFD is equipped with an auxiliary DC power input. This auxiliary power input is protected against reverse polarity and overvoltage.

While this input is properly powered, the Clean Power VFD's control functions operate even if the main power line is disconnected, you have access to the HMI, mobile app connectivity, configuration, metrics, logs, alarm management and firmware management.



7. Define the motor control over I/O

Preset I/O Motor Control

Reference: [User Guide: 2-wires, 3-wires preset](#)

There are 2 wiring presets with their configuration selectable by the user, via the mobile application, HMI initial or quick setup: 2-wires mode and 3-wires mode. “2-wires” and “3-wires” refer to two different ways you can wire the start/stop control (and sometimes forward/reverse) inputs for the drive.

Offering both “2-wires” and “3-wires” modes gives you flexibility in how the drive is controlled—whether by simple maintained contacts (e.g., a PLC output) or by separate momentary push buttons (e.g., start/stop station). The preset configuration is editable by the user during the configuration phase of the Clean Power VFD.

7.1. 3-wires motor control

3-wires Motor Control

In 3-wires mode, the basic controls are:

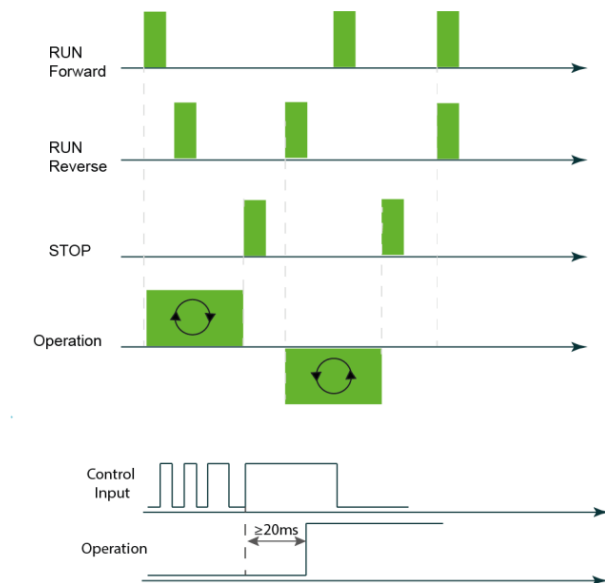
- Run forward (default: Di3 input)
- Run reverse (default: Di4 input)
- Stop (default: Di5 input)

Pressing the run forward or the run reverse button momentarily “latches” the drive into a running state internally.

Pressing the Stop button breaks that latch, causing the drive to stop the motor

The control inputs are managed as pulses of a minimum duration of 20ms.

[Simultaneous activation of run forward and run reverse](#) is managed depending user setting for the priority of spinning direction.



The 3-wire mode can be configured to operate only in the forward direction.

When the single direction is enabled, the preset I/O "Run Reverse" (digital input number 4) is available to be associated with another function such as selecting a preset speed

7.2. 2-wires motor control

In 2 wires mode, the basic controls are run forward and run reverse.

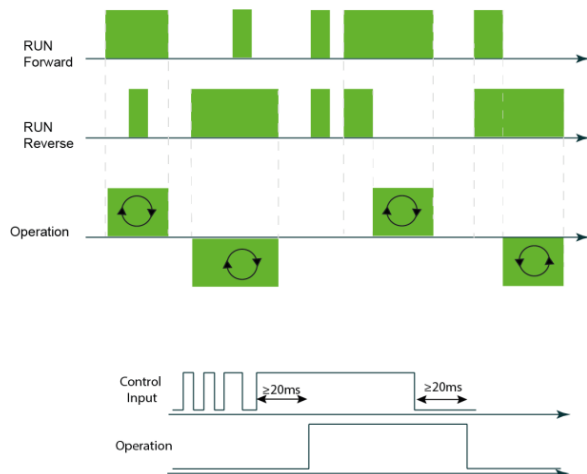
- Run forward (default: Di3 input)
- Run reverse (default: Di4 input)

If none of those inputs is active, the Clean Power VFD stops the motor.

Simultaneous activation of run forward and run reverse is managed depending user setting for the priority of spinning direction.

A digital input is managed as active upon its steady state.

A filter (acting as a delay) of fixed 20ms is enabled on the digital inputs to prevent false triggering of the control.



8. Make sure to have the latest firmware

Software upgrade

Reference: [User Guide: Update software from HMI](#)

It is recommended to get the latest and greatest version of the Clean Power VFD firmware before commissioning the Clean Power VFD for a project.

1. Download the latest available software version

The latest Clean Power VFD firmware file is included in the latest release note. To access it, connect to the [SmartD Helpdesk Portal](#).

On the opened page, click on the release note link, then scroll down until you reach Software Update Package and download the software file.

2. Copy the latest software to USB drive

The software update is only performed via a USB drive. Make sure that the USB drive is formatted in FAT, FAT32, ext3, ext4 or ExFAT.

- Copy the downloaded latest version to the USB drive
- Make sure that the name is: `smartd-vfd-linux-software-update.tar.xz`

NOTE: Make sure the latest software update file does not include a duplicate-number suffix such as “(1)” in the file name. For example, the file name should **not** look like this: `smartd-vfd-linux-software-update (1).tar.xz`

If you are reusing a USB drive that was previously used to update the Clean Power VFD, check the file name before proceeding. When copying the new file from a Windows computer, Windows File Explorer may keep the old file on the USB drive and add a suffix such as “(1)” to the new file instead of replacing the old one.

3. Get Clean Power VFD software version information

The Clean Power VFD has a unique feature allowing it to keep two software versions (active and backup):

- The active version is current running version with its active configuration
- The backup version could be an older software version with its own configuration or the same as the active version

To access the software information:

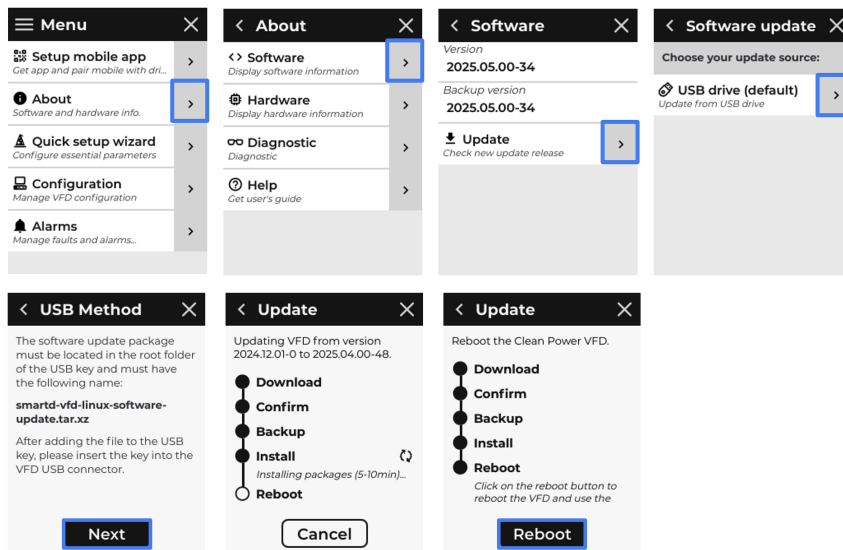
- Access the Menu on the Clean Power VFD, click on About.
- Click on Software
- The active version is displayed as Version (ex: 2025.05.00-34)
- The backup version is displayed as Backup version (ex: 2025.03.00-23)

Save active version to backup version

- If you have two (2) different software versions, it is recommended to save the current active version as the backup version by clicking on Accept button on the right of the active version. This will copy the active software version and the current active configuration.
- If both software versions are identical, the Accept and Revert buttons are not shown.

4. Upgrade to the Clean Power VFD latest software

- Click on the Update > to initiate the software update.
- Insert the USB drive into the Clean Power VFD's USB port, it looks for the software update file: smartd-vfd-linux-software-update.tar.xz.
- Click on the USB drive > to start the update.
- If it is found, then Click on Next.
- The Clean Power VFD downloads and installs it on the active bank.
- Once the installation is complete, the user must Reboot the Clean Power VFD for the update to be effective.



9. Commissioning via HMI

Commissioning via HMI

Reference: [User Guide: Initial Clean Power VFD setup](#)

When the VFD is unconfigured or after a factory reset, the HMI follows a structured setup process to ensure proper configuration and user guidance

The HMI displays choices for configuration methods:

- Initial setup [HMI initial setup](#)
- Configure from USB drive, please refer to [Configure from USB drive](#)
- Configure via Mobile, please refer to [Commissioning via Mobile App](#)

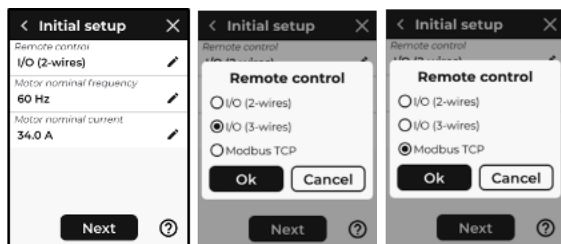
9.1. HMI initial setup

HMI Initial Setup

The HMI prompts the user through the following steps:

1) Confirm or change the remote control mode

By default, the remote control mode is set to the 2-wires preset I/O configuration. If you need to change it, just click on the pencil.



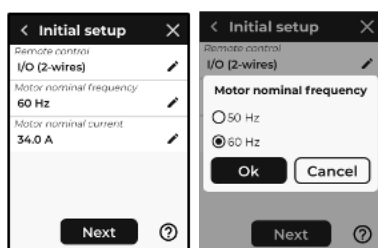
The options are 2-wires preset I/O configuration, 3-wires preset I/O configuration or Modbus TCP.

If you select Modbus TCP, it will prompt you to configure the Ethernet port.

The Clean Power VFD does not actually switch in remote control; it stays in local control until you decide to switch to remote control.

2) Confirm or change the motor nominal frequency

By default, the motor nominal frequency is set to 60Hz. If you need to change it, just click on the pencil.



The options are 60Hz or 50Hz.

The input line frequency is also adjusted accordingly with the motor nominal frequency.

3) Confirm or change the motor nominal current (A)

By default, the motor nominal current is based on the Clean Power VFD model. If you need to change it, just click on the pencil.

< Initial setup X

Remote control

I/O (2-wires)

Motor nominal frequency

60 Hz

Motor nominal current

34.0 A

Next

Motor nominal current [A]

34

1	2	3
4	5	6
7	8	9
+/-	0	.

Clear Del

Ok Cancel

4) Set date & time

Reference: [User Guide: Date & Time](#)

It is important to set the Clean Power VFD date & time to allow the Clean Power VFD mobile application to pair with the Clean Power VFD.

< Date & time configuration X

Automatic time synchronization

Enabled

Timezone

America

New York

Next

< Date & time configuration X

Automatic time synchronization

Enabled

Automatic time synchronizat...

☒ Enabled

☐ Disabled

Ok Cancel

Next

< Date & time configuration X

Automatic time synchronization

Disabled

Current date

2025-12-18

Current time

11:28

Timezone

America

New York

Next

Timezone area

Africa

America

Antarctica

Asia

Atlantic

Ok Cancel

Timezone location

Monterrey

Montevideo

Nassau

New York

Nipigon

Nome

Noronha

Ok Cancel

NOTICE

The mobile and the Clean Power VFD need to have synchronized time/date and time zone to establish a secure connection. But it is only possible when the mobile phone and Clean Power VFD time and date are in range.

By default, when the Clean Power VFD is connected to Ethernet, the Clean Power VFD will try to reach the known NTP server (Network Time Server) on the Internet to retrieve the current date/time. But you still must configure the time zone properly.

9.1.1. HMI quick setup

HMI Quick Setup

NOTICE

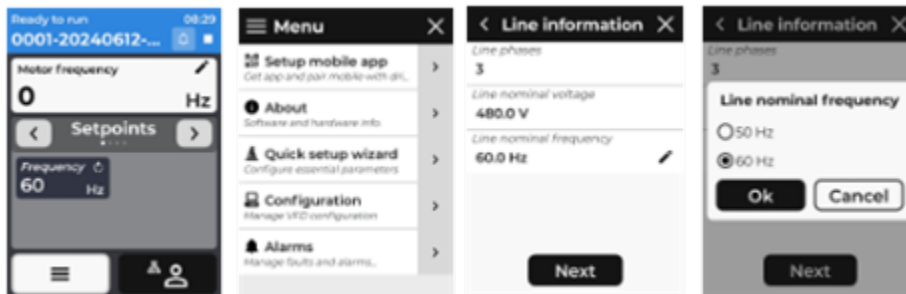
1. The Quick Setup is only available after the HMI Initial Setup has been performed
2. The quick setup will reset all configuration parameters back to default values and only a few parameters are changed: Line frequency, Motor information, Motor control mode, Ramp-up & Ramp-down, Normal stop behavior, and Remote control mode.

Reference: [User Guide: Quick setup wizard](#)

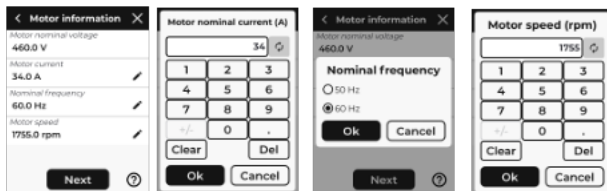
The Quick Setup Wizard allows users to configure the VFD with the minimum required parameters to operate the motor. This setup streamlines the process by focusing on essential settings, making it ideal for rapid deployment.

With the Quick Setup Wizard, you can get your motor running efficiently with minimal effort while maintaining flexibility for advanced configurations later.

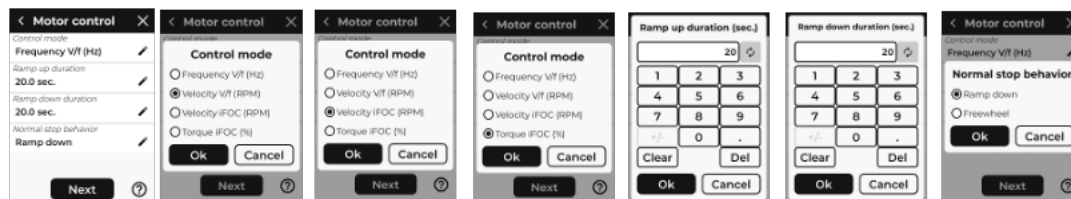
- 1) Access the main menu and select Quick setup wizard.
- 2) Change the line information. Click on the pencil to change the line frequency or Next to the motor information.



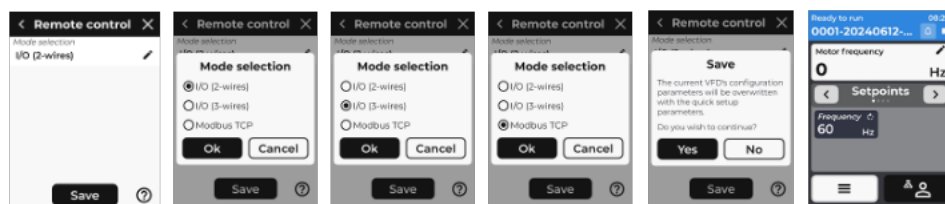
- 3) Change the motor information. Click on the pencil to modify the motor current, nominal frequency and motor speed.



- 4) Change the motor control. Click on the pencil to modify the motor control algorithm, the default acceleration and deceleration ramps and the normal stop behavior.



5) Change the remote control. Click on the pencil to modify the remote control mode.



If you are using Modbus TCP, please remember to setup the network if you didn't previously configure it.

9.2. Configure from USB drive

Configure from USB drive

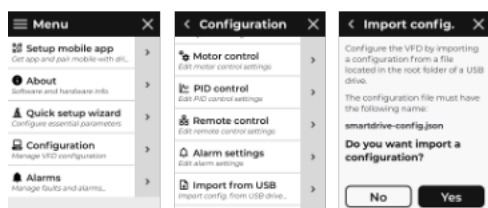
NOTICE

1. The Clean Power VFD is looking for the file name: **smartdrive-config.json**
2. The Clean Power VFD supports the following file system formats for the USB key: **FAT, FAT32, ext3, ext4, and ExFAT.**
3. This action is restricted to hardware compatibility. The configuration file can only be imported onto a VFD with the exact same part number as the source device.

Reference: [User Guide: Export & Import Configuration](#)

You can import a previously exported VFD configuration file (.JSON) using the VFD's USB interface.

- 1) Access the Configuration: Select Menu and click on Configuration
- 2) Import from USB: Click on Import from USB
- 3) Confirm the import: Click Yes once the USB drive containing the file is plugged onto the USB socket of the VFD



9.3. Set date & time

Set Date & Time

If you already configured the VFD using the HMI initial setup or quick setup, you could skip this step.

Reference: [User Guide: Date & Time](#)

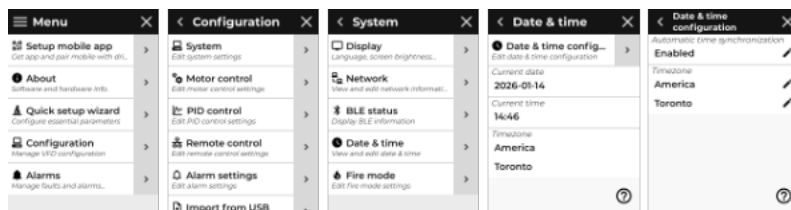
NOTICE

The mobile and the VFD need to have synchronized date/time and time zone to establish a secure connection.

During the pairing process of the mobile app and the Clean Power VFD, the date and time are set on the Clean Power VFD. Every time the mobile app reconnects with the Clean Power VFD, the date and time are updated on the VFD.

Access to date & time configuration

1) Access the Configuration: Click on Configuration



2) Access System configuration: Click on System.

3) Access Date & Time configuration: Click Date & time.

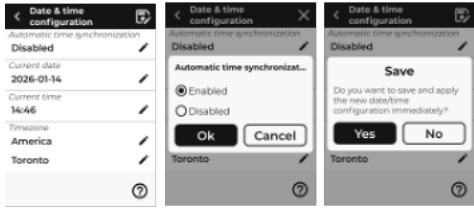
By default, when the Clean Power VFD is connected to Ethernet, the VFD will try to reach the known NTP server (Network Time Server) on the Internet to retrieve the current date/time. To enable the automatic date & time synchronization:

Automatic date & time synchronization

1) Change automatic time synchronization: Click on the pencil.

2) Enable automatic time synchronization: Click on Enabled button.

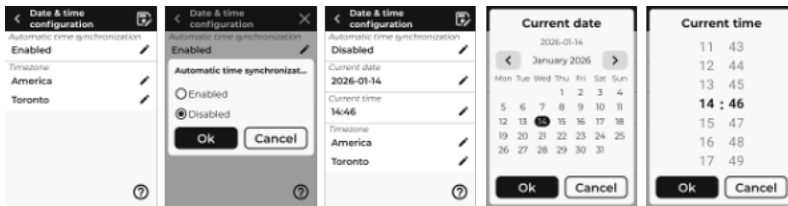
3) Save date & time configuration: Click the Save icon on top or back will prompt you to save the changes, click on Yes.



And you must configure the time zone properly of the Clean Power VFD.

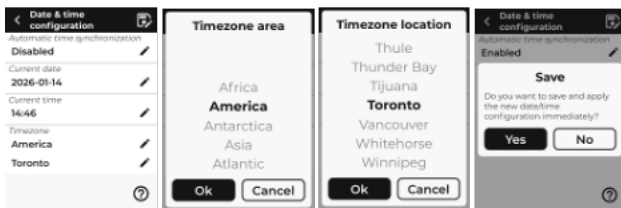
Manual date & time settings

- 1) Disable automatic time synchronization: Click on the pencil and select Disabled button
- 2) Set manually date & time: Click on pencil the Current date and Current time to set the date & time



Set time zone

- 1) Click on time zone region: Click on pencil of the region/area.
- 2) Select the right region: Scroll up or down to select the region.
- 3) Select the location: Scroll up or down to select the city.
- 4) Save date & time configuration: Click the Save icon on top or back will prompt you to save the changes, click on Yes.



10. Commissioning via Mobile App

Commissioning via Mobile App

Download mobile app

Reference: [User Guide: Get mobile app](#)

You need the Clean Power VFD App to configure your Clean Power VFD.

Phone requirements:

- Android phone with firmware version 9 or higher,
- iOS phone with firmware version 13.4 or higher.

On first launch, the Clean Power VFD app will ask for two permissions so it can find and connect to your device over Bluetooth:

- Bluetooth access
- Location (on iOS and older Android) or Nearby devices (on newer Android)

We only use these to enable Bluetooth. We do not track or store your location.

iOS (first launch)

- When asked to “Allow Clean Power VFD to use Bluetooth,” tap OK.
- If you’re also asked for Location, tap Allow While Using App.
- Keep Bluetooth turned On in Control Center/Settings.
- If you tapped “Don’t Allow” by mistake: go to Settings > Clean Power VFD, enable Bluetooth and Location.

Android 12 and newer (first launch)

- When asked to allow Nearby devices, tap Allow.
- Keep Bluetooth turned On (Quick Settings).
- If you denied it: go to Settings > Apps > Clean Power VFD > Permissions, allow Nearby devices.

Android 11 and earlier (first launch)

- When asked to allow Location for Bluetooth scanning, tap Allow.
- Keep Bluetooth turned On (Quick Settings).
- If you denied it: go to Settings > Apps > Clean Power VFD > Permissions, allow Location.

Quick check if pairing fails

- Bluetooth is On and the device is powered/advertising.

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- The required permission is Allowed (see steps above).
- Toggle Bluetooth off/on and retry.

Privacy note: Location/Nearby Devices is requested only because the operating system requires it for Bluetooth discovery. The Clean Power VFD app does not collect or store your location.

QR Codes

The Clean Power VFD Application app can be downloaded by scanning the QR codes below:

iOS device:



Android device:



10.1. Online configuration

Online configuration

Operating the Clean Power VFD mobile app while paired/connected to a physical VFD. In online mode, you can:

- View the current configuration stored in the VFD
- Compare your local configuration with the VFD's configuration
- Transfer (write) your local configuration to the VFD
- Import (read) the VFD's configuration to your mobile device

Mobile pairing

Reference: [User Guide: Pairing over Bluetooth](#) or [User Guide: Pairing over WIFI](#)

When pairing over WIFI, please make sure to connect the VFD to your local network (LAN) and the mobile phone is connected on the same network (LAN).

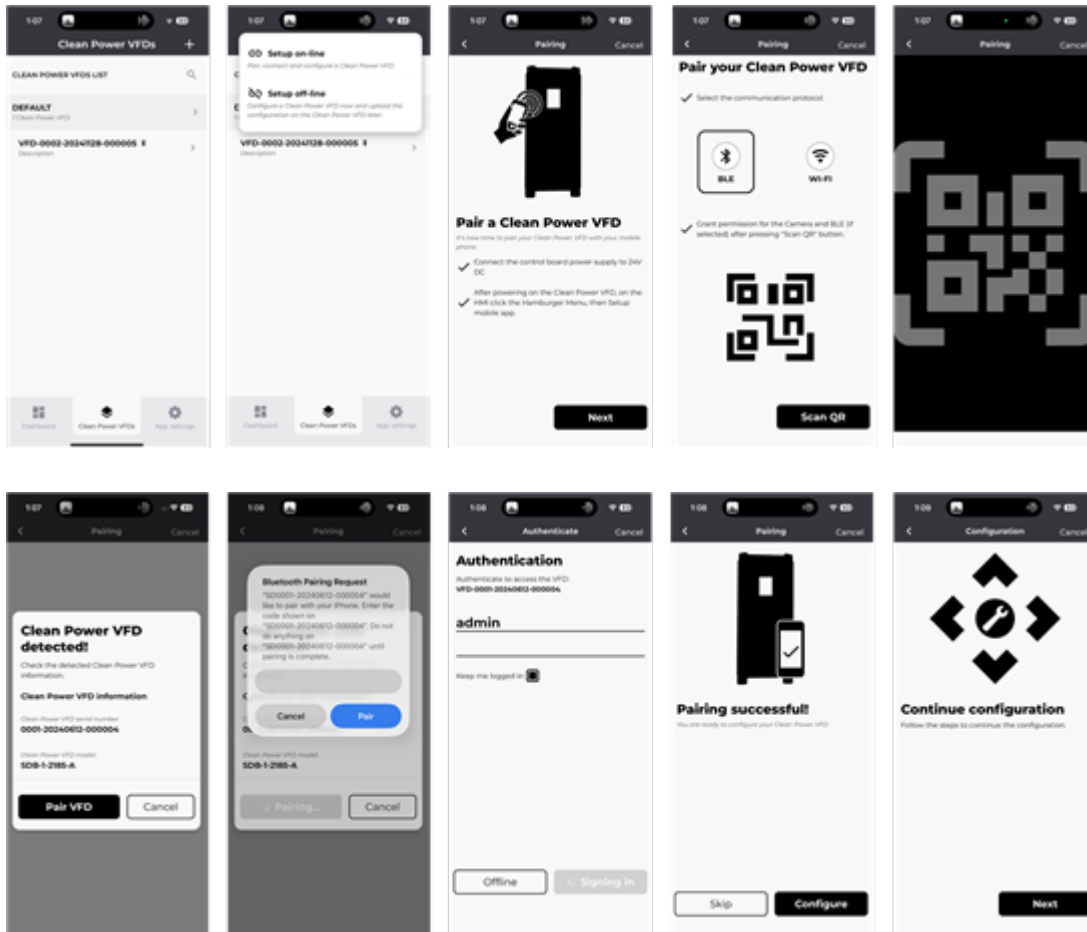
1) Setup mobile app on the HMI

- On the HMI, access the menu and select Setup mobile app
- Click on Pair and Scan



2) Scan the QR code with Clean Power VFD mobile app

- Open the Clean Power VFD mobile app, click on the Clean Power VFDs at the bottom of the screen.
- Select Setup on-line, click Next and select with BLE (Bluetooth) or WI-FI
- Use the camera to scan the QR code



Make sure to enter the 6-digit code displayed on the HMI to pair with the Clean Power VFD mobile app. Once you pair successful with the VFD, you could access to the configuration of the VFD.

NOTICE

Mobile pairing issues

The VFD uses date & time to authenticate and authorize the mobile app to connect to the VFD. If there is a date & time mismatch, the mobile app will display an error message: “Failed to pair ”

Make sure that the VFD date & time are correctly set and in the same time zone as the mobile. Please remember that you need to reboot the VFD after changing the time zone in the VFD to make it effective

Make sure to that user grants Bluetooth access for the VFD mobile application

After a reset to factory, the mobile app needs to pair again to the VFD. And the Clean Power VFD must be removed from the known Bluetooth devices (forget this device)

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Please note that if the VFD is not connected to the network, it is strongly recommended to use a CR2032 battery to keep the RTC of the VFD in case of power failure, this will avoid the need to manually verify and set the date & time after a long power failure. The VFD can keep the date & time for 24 hours without power.

More details:

[BLE authentication fails after changing the VFD date/time on a closed LAN](#)

[Bluetooth pairing issue](#)

Configuration wizard and Advanced configuration

Please see the [configuration wizard](#) section to use the step-by-step configuration.

Please see the [advanced configuration](#) to access to the full VFD configuration.

10.2. Offline configuration

Offline configuration

Operating the mobile app without being connected to a physical VFD. In offline mode, you can:

- Create new configurations
- Edit existing saved configurations
- View and manage locally stored configuration files

Configuration wizard and Advanced configuration

Please see the [configuration wizard](#) section to use the step-by-step configuration.

Please see the [advanced configuration](#) to access to the full VFD configuration.

10.3. Configuration wizard

Configuration wizard

Reference: [User Guide: Application menu](#)

The configuration wizard is a step-by-step wizard to guide you the Clean Power VFD. It guides you to the different configuration chapters below:

Device information (mandatory)

The device information allows you to specify:

- A user-friendly name to the Clean Power VFD, easy to distinguish from other VFDs.
- The Clean Power VFD model.
- Optional, the VFDs group that it belongs to (could be location, address, equipment, etc....).
- Optional, additional notes.

Motor information (recommended)

The motor information chapter allows you to specify the motor information below from the motor's nameplate.

- *Optional, the motor brand.*
- *Optional, the motor reference.*
- Mandatory, the motor nominal voltage. The default value is based on the Clean Power VFD model: 460V for 480V or 575V for 600V.
- Mandatory, the motor nominal current. The default value is based on the Clean Power VFD model.
- Mandatory, the motor nominal power (kW or HP). The default value is based on the Clean Power VFD model.
- Mandatory, the motor nominal frequency. The default value is 60Hz.
- Mandatory, the number of poles. The default value is 4 poles.
- Mandatory, the motor synchronous speed. The default value is computed from nominal frequency and number of poles.
- Mandatory, the minimal motor frequency. The default minimal frequency is 1Hz.
- Mandatory, the maximum motor frequency. The default maximum frequency is the motor nominal frequency.
- *Optional, to allow phase reversal. The default is disabled.*
- *Optional, the motor power factor. The default value is 0.85.*

BETA AI feature: You could use the Beta AI feature filling in the motor information from the motor nameplate directly from the camera or a picture on your mobile phone.

Line parameters (optional)

The line parameters chapter allows you to specify:

- Optional, the incoming power supply's number of phases. The only value available is 3 phases.
- Mandatory, the line nominal voltage. The default value is based on the Clean Power VFD model.
- Mandatory, the line nominal frequency. The default value is 60Hz.

Motor controls (recommended)

The motor controls chapter allows you to specify:

- Mandatory, the motor control algorithm. The default value is frequency V/f (Hz).
- Optional, the motor direction settings:
 - Allow reverse. When enabled, the Clean Power VFD can run the motor both forward and reverse directions. When disabled, the VFD will only run the motor in forward direction.
 - Seamless direction change. When enabled, the Clean Power VFD will decelerate and acceleration in the opposite direction without the need to go to a full stop.
- Optional the normal stop behavior. By default, the normal stop behavior is to decelerate (ramp down) to a full stop.
- Recommended, the acceleration ramp (type and duration). The default ramp type is a single acceleration ramp of 20 seconds.
- Recommended, the deceleration ramp (type and duration).
- Optional, the preset frequencies or speeds. By default, there is no preset values.

PID#1 configuration (optional)

The PID configuration allows you to specify:

- Enable/disable PID
- If enabled:
 - Engineering unit
 - Minimum setpoint value
 - Maximum setpoint value
 - Default setpoint value
 - Ramp up
 - Ramp down

- Proportional gain (Kp)
- Integral time (Ti)
- Derivative time (Td)
- Control mode
- Minimum PID output
- Maximum PID output
- PID output loss compensation
- Deadband range
- Forced output value
- Sleep threshold
- Wake-up threshold

I/O settings (conditional)

The Clean Power VFD can be controlled via I/Os, this configuration chapter allows you to specify:

- The use of 2-wires preset I/Os configuration (run forward, run reverse)
- The use of 3-wires preset I/Os configuration (run forward, run reverse & stop)
- A user-defined custom I/Os configuration

Modbus/TCP (conditional)

The Modbus TCP configuration chapter allows you to enable/disable Modbus TCP communication.

BACnet IP (conditional)

The BACnet IP configuration chapter allows you to enable/disable BACnet IP communication. If enable, you can specify:

- Mandatory, the BACnet device id. The default value is 100.
- Mandatory, the unique device name. The default name is VFD 1.
- Optional, the BACnet port. The default value is 47808.

Remote controls (conditional)

The remote control configuration chapter allows you to specify:

- The remote source 1 (main). The default value depends on your I/Os, Modbus TCP and BACnet IP configuration.

- The remote source 2 (alternative). The default value depends on your I/Os, Modbus TCP and BACnet IP configuration.
- The source selection (local or remote). The default value is Local (HMI).

Advanced parameters (optional)

The advanced parameters allow you to specify:

- Overmodulation (reference: [User Guide: Over modulation](#))
- Zero speed behavior (reference: [User Guide: Zero speed behavior](#))

10.4. Advanced configuration

- [Advanced configuration](#)
- [System](#)
- [Device information \(mandatory\)](#)
- [Motor information \(recommended\)](#)
- [Line parameters \(optional\)](#)
- [Motor controls \(recommended\)](#)
- [PID#1 configuration \(optional\)](#)
- [I/O settings \(conditional\)](#)
- [Modbus/TCP \(conditional\)](#)
- [BACnet IP \(conditional\)](#)
- [Remote controls \(conditional\)](#)
- [Advanced parameters \(optional\)](#)
- [Motor & process tuning \(recommended\)](#)
- [Dynamic auto-tuning configuration](#)
- [Alarms](#)

Advanced configuration

Reference: [User Guide: Application menu](#)

The advanced configuration allows to access to all configuration parameters of the Clean Power VFD. Most of the configuration parameters are already available through the [Configuration wizard](#).

System

The System configuration allows you to specify:

- [Device information \(see below\)](#)
- [Emergency fire mode](#) (*reference:* [User Guide: Emergency Fire Mode](#))
 - [Enable/Disable](#). If enabled, the action when the emergency fire mode is activated. The default action is Stop freewheel.
 - If the action is Run at preset speed is selected, specify the motor run direction and the preset frequency or speed.

- HMI configuration: Language and screensaver (*reference: [User Guide: HMI configuration](#)*)
- Mobile configuration (*reference: [User Guide: VFD control by Mobile App](#)*)
- Network (*reference: [User Guide: Network settings](#)*)
- Bluetooth (*reference: [User Guide: BLE status](#)*)

Device information (mandatory)

The device information allows you to specify:

- A user-friendly name to the Clean Power VFD, easy to distinguish from other VFDs.
- The Clean Power VFD model.
- Optional, the VFDs group that it belongs to (could be location, address, equipment, etc....).
- Optional, additional notes.

Motor information (recommended)

The motor information chapter allows you to specify the motor information below from the motor's nameplate.

- *Optional, the motor brand.*
- *Optional, the motor reference.*
- Mandatory, the motor nominal voltage. The default value is based on the Clean Power VFD model: 460V for 480V or 575V for 600V.
- Mandatory, the motor nominal current. The default value is based on the Clean Power VFD model.
- Mandatory, the motor nominal power (kW or HP). The default value is based on the Clean Power VFD model.
- Mandatory, the motor nominal frequency. The default value is 60Hz.
- Mandatory, the number of poles. The default value is 4 poles.
- Mandatory, the motor synchronous speed. The default value is computed from nominal frequency and number of poles.
- Mandatory, the minimal motor frequency. The default minimal frequency is 1Hz.
- Mandatory, the maximum motor frequency. The default maximum frequency is the motor nominal frequency.
- *Optional, to allow phase reversal. The default is disabled.*
- *Optional, the motor power factor. The default value is 0.85.*

BETA AI feature: You could use the Beta AI feature filling in the motor information from the motor nameplate directly from the camera or a picture on your mobile phone.

Line parameters (optional)

The line parameters chapter allows you to specify:

- Optional, the incoming power supply's number of phases. The only value available is 3 phases.
- Mandatory, the line nominal voltage. The default value is based on the Clean Power VFD model.
- Mandatory, the line nominal frequency. The default value is 60Hz.

Motor controls (recommended)

The motor controls chapter allows you to specify:

- Mandatory, the motor control algorithm. The default value is frequency V/f (Hz).
- Optional, the motor direction settings:
 - Allow reverse. When enabled, the Clean Power VFD can run the motor both forward and reverse directions. When disabled, the VFD will only run the motor in forward direction.
 - Seamless direction change. When enabled, the Clean Power VFD will decelerate and acceleration in the opposite direction without the need to go to a full stop.
- Optional the normal stop behavior. By default, the normal stop behavior is to decelerate (ramp down) to a full stop.
- Recommended, the acceleration ramp (type and duration). The default ramp type is a single acceleration ramp of 20 seconds.
- Recommended, the deceleration ramp (type and duration).
- Optional, the preset frequencies or speeds. By default, there is no preset values.

PID#1 configuration (optional)

The PID configuration allows you to specify:

- Enable/disable PID
- If enabled:
 - Engineering unit
 - Minimum setpoint value
 - Maximum setpoint value
 - Default setpoint value
 - Ramp up
 - Ramp down

- Proportional gain (Kp)
- Integral time (Ti)
- Derivative time (Td)
- Control mode
- Minimum PID output
- Maximum PID output
- PID output loss compensation
- Deadband range
- Forced output value
- Sleep threshold
- Wake-up threshold

I/O settings (conditional)

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- The source selection (local or remote). The default value is Local (HMI).

Advanced parameters (optional)

The advanced parameters allow you to specify:

- Overmodulation (*reference: [User Guide: Over modulation](#)*)
- Zero speed behavior (*reference: [User Guide: Zero speed behavior](#)*)

Motor & process tuning (recommended)

Reference: [User Guide: Static auto-tuning](#)

The motor & process tuning configuration allows you to specify:

- Stator resistance (Ω)
- Rotor resistance (Ω)
- Magnetizing inductance (mH)
- Leakage inductance (mH)
- Moment of inertia (kg m^2)

Dynamic auto-tuning configuration

Reference: [User Guide: Dynamic auto-tuning](#), [User Guide: Dynamic auto-tuning warning](#)

The auto-tuning configuration allows you to specify:

- Minimum speed (%). The default value is 30%.
- Maximum speed (%). The default value is 70%.
- Maximum torque (%). The default value is 70%.
- Rise & fall times (s). The default value is 0.5s.

Alarms

The alarms configuration allows you to specify:

- Motor monitoring – Motor overload alarm (*reference: [User Guide: Motor overload](#)*)
- Motor monitoring – Motor underload alarm (*reference: [User Guide: Motor underload](#)*)
- Motor monitoring – Motor overtemperature (*reference: [User Guide: overheating protection](#)*)

- Motor monitoring – Motor under speed (reference: [User Guide: Motor speed alarms](#))
- Motor monitoring – Motor overspeed (reference: [User Guide: Motor speed alarms](#))
- Motor monitoring – Encoder speed error (reference: [User Guide: Encoder speed error](#))
- Motor monitoring – Motor thermal overload (reference: [User Guide: Motor thermal overload](#))
- PID – PID 1 low process value (reference: [User Guide: PID process value alarms](#))
- PID – PID 1 high process value (reference: [User Guide: PID process value alarms](#))
- Damper control – Damper open timeout (reference: [User Guide: External start-stop feedback timeout](#))
- Damper control – Damper close timeout (reference: [User Guide: External start-stop feedback timeout](#))
- Control – Modbus communication loss (reference: [User Guide: Modbus comm loss](#))
- Control – Motor temperature sensor shorted (reference: [User Guide: PTC sensor health](#))
- External alarms – Critical, major, medium and minor (reference: [User Guide: External alarms](#))