TrolMaster

VFD-1

Variable Frequency Drive Station

For Hydro-X Control System

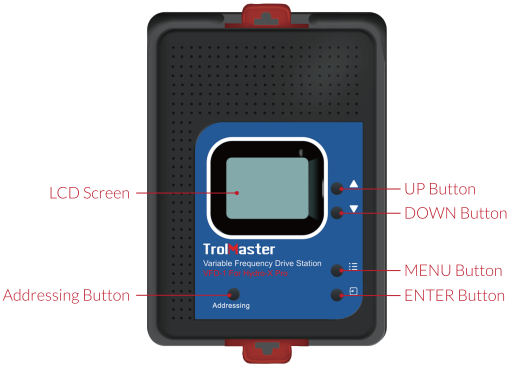
Overview

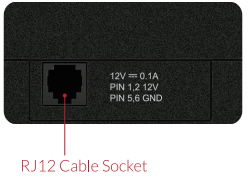
Thank you for purchasing TrolMaster's VFD-1 Variable Frequency Drive for use with the Hydro-X Pro controller. It is specifically designed to control Inverters including TECO E510, DELTA ME300, ABB ACS355 (with an FMBA-01 module) etc. for the purpose of controlling and adjusting the speed of industrial fans in your application.

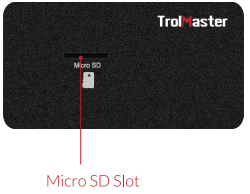
There is no need to provide power supply for the VFD-1 unit. It can be connected to the Hydro-X Pro with a simple RJ12 phone cable. After power-on and entering the setting menu, the LCD screen of the VFD-1 will display the VFD model options (upper part) and a box to enter Maximum Frequency (lower part). Percentage on the main interface can be adjusted to change the fan speed.

Features

- No Extra Power Needed
- LCD Display, Easy Operation
- Micro-SD for Firmware Updates
- Seamless Connectivity with Hydro-X Pro
- Connect with inverter to control industrial fans







Installation

DELTA ME300

Plug in an RJ-45 T-568B, which consists of 8 color signal wires, to the DELTA ME300. Then peel off the outer sheath of all wires on the other end to reveal the copper wires, and insert the bare wires into VFD-1 on the back panel while pressing the button of the terminal designation at the same time. Release the button to clamp the wire in each terminal. Verify wire is firmly secured by gently pulling on wire.

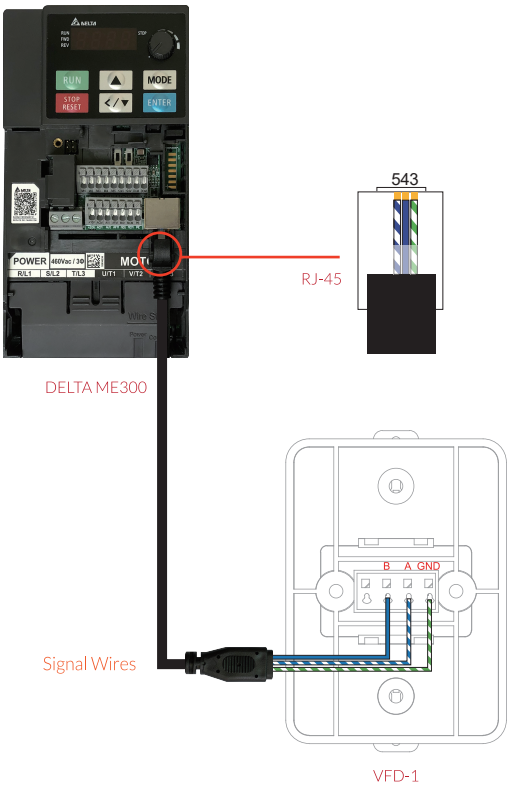
Connect the BLUE wire to VFD-1's B terminal, BLUE-WHITE wire to A terminal, GREEN-WHITE wire to GND terminal.

For the VFD-1 unit to start operating properly, parameter values on the inverter MUST be , changed (as listed in the table below) in accordance with your needs.

Reference:

Parameter (No.)	Value	Description
00-20	1	RS-485 Communication
00-21	2	RS-485 Communication Input
09-04	12	8N1 (RTU)

Please refer to the manual of DELTA ME300 for more detailed instructions.



TECO E510

Plug in an RJ-45 T-568B, which consists of 8 color signal wires, to the TECO E510. Then peel off the outer sheath of all wires on the other end to reveal the copper wires, and insert the bare wires into VFD-1 on the back panel while pressing the button of the terminal designation at the same time. Release the button to clamp the wire in each terminal. Verify wire is firmly secured by gently pulling on wire.

Connect the GREEN wire to VFD-1's B terminal, ORANGE-WHITE wire to A terminal, BROWN wire to GND terminal.

For the VFD-1 unit to start operating properly, parameter values on the inverter MUST be , changed (as listed in the table below) in accordance with your needs.

*Note: No need to set the parameters if using DELTA-1 instead, the default setting is ready to use.

Reference:

Parameter (No.)	Value	Description
00-02	2	Communication
00-05	5	Communication Setting Frequency

Please refer to the manual of TECO E510 for more detailed instructions.

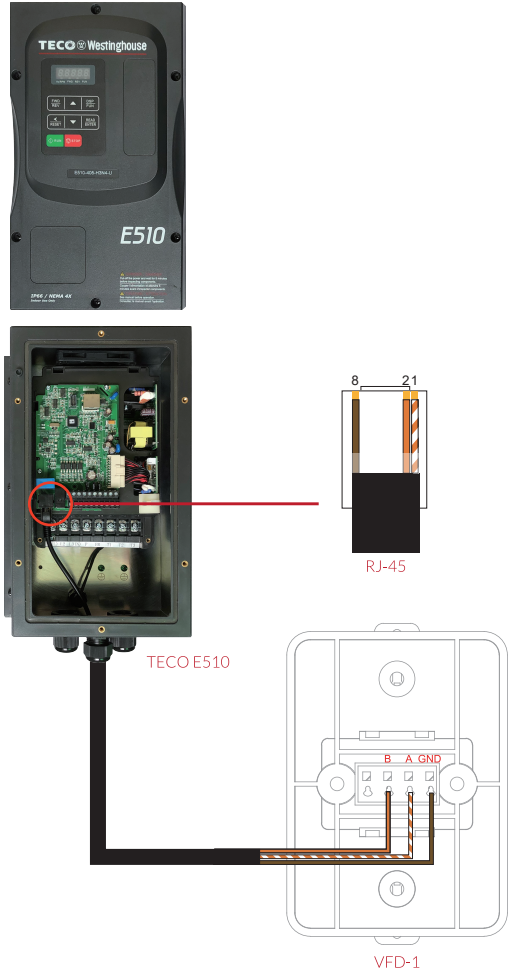


ABB ACS355

Plug in a Modbus Adapter Module FMBA-01 to the ABB ACS355. Then peel off the outer sheath of all wires on the other end to reveal the copper wires, and insert the bare wires into VFD-1 on the back panel while pressing the button of the terminal designation at the same time. Release the button to clamp the wire in each terminal. Verify wire is firmly secured by gently pulling on wire.

Connect the wire NUMBER 3 to VFD-1's B terminal, wire NUMBER 2 to A terminal, wire NUMBER 4 to GND terminal.

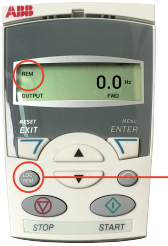
For the VFD-1 unit to start operating properly, parameter values on the inverter MUST be , changed (as listed in the table below) in accordance with your needs.

Reference:

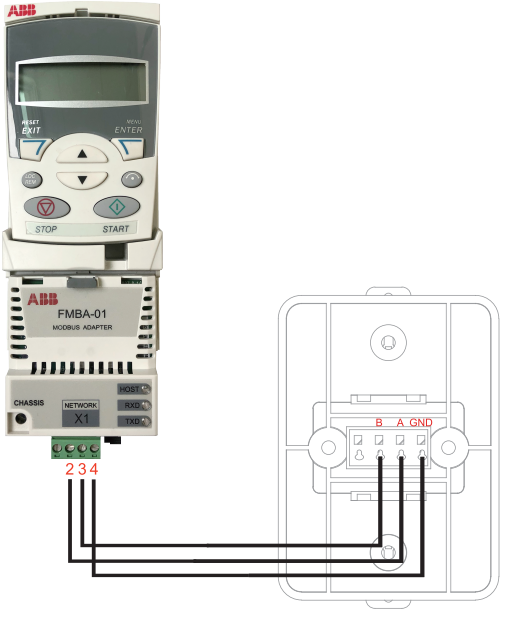
Parameter (No.)	Value	Description
9802	1	STD MODBUS Embedded fieldbus. Interface: EIA-485 provided by optional FMBA-01 Modbus adapter connected to drive terminal X3.
1001	10	COMM Fieldbus interface as the source for the start and stop commands, ie, Control word 0301 FB CMD WORD 1 bits 0...1. The Control word is sent by the fieldbus controller through the fieldbus adapter or embedded fieldbus (Modbus) to the drive.
1103	8	COMM Fieldbus reference REF1
1102	0	EXT1 EXT1 active. The control signal sources are defined by parameters 1001 EXT1 COMMANDS and 1103 REF1 SELECT.
5305	2	ABB DRV FULL ABB drives profile

Please refer to the manual of ABB ACS355 for more detailed instructions.

ABB ACS355



Please ensure that REM mode is selected on the ABB ACS355. The REM mode can be set by pressing the LOC/REM button to toggle between two modes: REM and LOC.

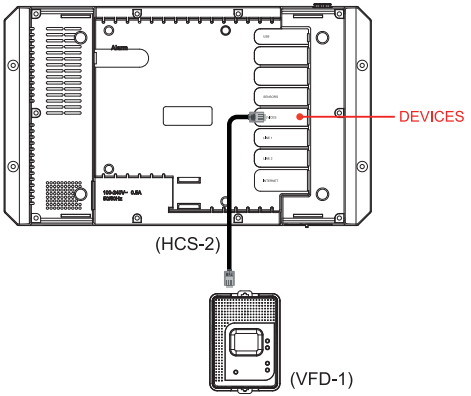


VFD-1

Operation Instructions

1.Connection to Hydro-X Pro

After the signal wires are successfully connected to the VFD-1 unit, connect the VFD-1 to the Hydro-X Pro with an RJ12 cable through the DEVICES port on the bottom of Hydro-X Pro. See below connection diagram for reference.

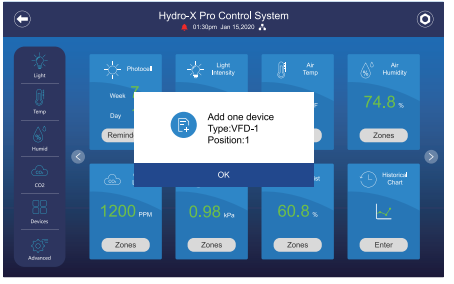


After power-on, the LCD screen of VFD-1 will show "Please press Addressing Key" accordingly when the VFD-1 is connected correctly.

2. Address Assignment

Press the Addressing button on the VFD-1 unit so that the Hydro-X Pro will assign an address such as VFD to the VFD-1 unit accordingly. The LED screen of Hydro-X Pro will display "Add one device// Type: VFD-1// Position: 1".

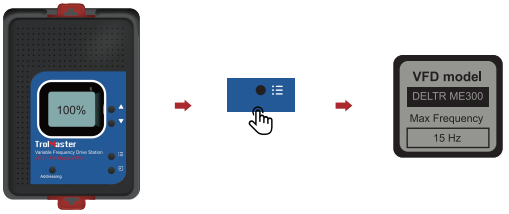
LCD screen of VFD-1



LCD screen of Hydro-X Pro

3. VFD setting

Press the Menu button to enter the menu setting page, where you can choose the correct VFD Model (upper part) and the Maximum Frequency (lower part) you desire. The maximum frequency you entered will be the highest frequency output from the inverter when it is set as 100% on Hydro-X Pro.



*NOTE: Max Frequency of ABB ACS355 cannot be set on VFD-1, it has to be set on the inverter itself.

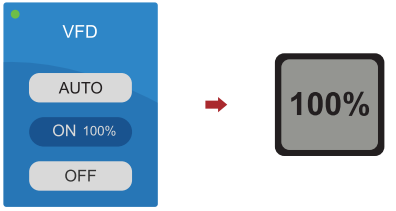
4. Firmware Upgrade

Press and hold the "Addressing" button while replugging the RJ12 cable, the upgrade process will be done automatically.

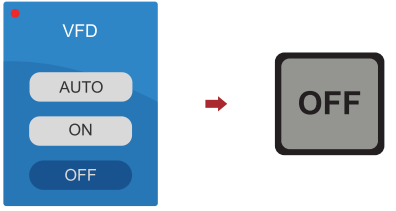
Functions

i) Manual Control on Hydro-X Pro

The default setting will be "off" on the Hydro-X Pro, and the LCD screen of VFD-1 will display "OFF" initially. To turn on the fan, press "on" on the Hydro-X Pro, and the LCD screen of VFD-1 will show "100%" on the main interface, which is the default setting of when the VFD-1 is on at the outset. Then you can adjust the percentage within the range of 0-100 from Hydro-X Pro.



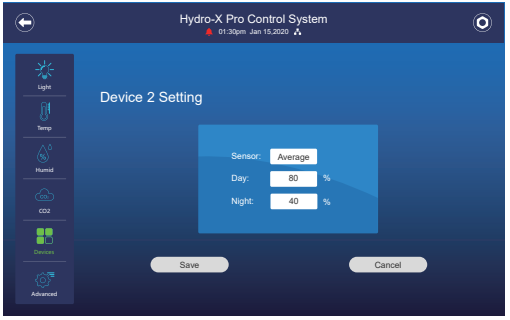
LCD screen of Hydro-X Pro | LCD screen of VFD-1



LCD screen of Hydro-X Pro | LCD screen of VFD-1

ii) Auto Control on Hydro-X Pro

The Day & Night Setting is available in the 'Auto Mode', allowing you to customize your fan power separately for both day and night. To activate the 'Auto Mode', simply press the 'Auto' button and adjust the settings to your desired preference for both day and night. Once you have saved your settings, they will be applied automatically.

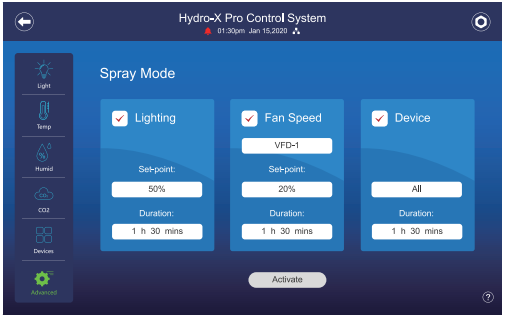


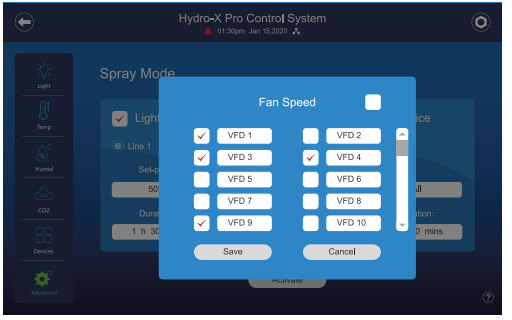
iii) Automatic Shut-off under Fire Alarm

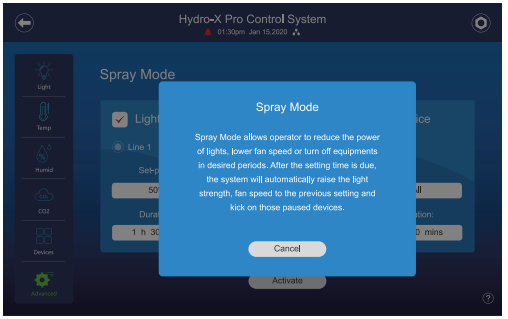
With the VFD-1 and Hydro-X Pro, you can now control your industrial fans easily. To meet the fire safety regulation, the VFD-1 will turn off the fans automatically when smoke is detected by the smoke sensor and a fire alarm is on.

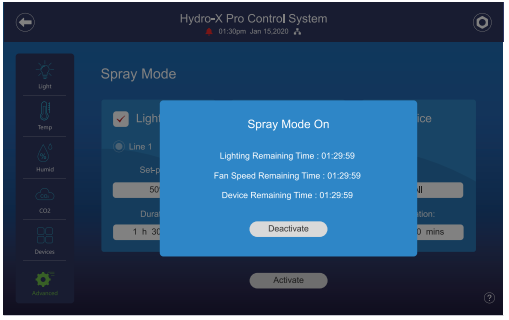
iv) Spray Mode

When conducting foliar feeding/ spraying, you will have to turn off or slow down the fan and turn it back on to the previous setting after a period of time after the nutrients are well absorbed. The spray mode mitigates the risk of human error of forgetting to turn the fan back on after spraying.









GENERAL INFORMATION

a) Please use TrolMaster's components for better performance.

b) In the case of defects of the Variable Frequency Drive, the Variable Frequency Drive will either be replaced or repaired using new or reconditioned products or parts by TrolMaster within three-year warranty from the original date of purchase. For service, return the Variable Frequency Drive in good packaging to our agent with the original sale receipt.

c) Non-professionals DO NOT open the cabinet to prevent electric shock or damage to the Variable Frequency Drive.

WARNING

DO NOT allow the Variable Frequency Drive to be exposed to water or excessive heat. DO NOT open or attempt to repair or disassemble the Variable Frequency Drive, as there are no user-serviceable parts inside. Opening the controller will void the warranty.

1 . If the surface of the Variable Frequency Drive is dirty, wipe it with a dry towel.

2 . For safety, it's necessary to connect the ground wire. If a short circuit did occur, the current would flow through the ground wire, causing a blown fuse or tripped circuit breaker.

3 . The Variable Frequency Drive should be positioned in a place where it can be easily pulled out when a fault occurs.

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