

# TrolMaster

## VFD-1 / Multiple fan control

**Connecting multiple fan motors to a single VFD drive so that all of the motors will operate at the same speed from a single VFD-1 control module.**

A single VFD-1 module and a variable frequency drive (VFD) may control up to 4 fan / motors at a time which will provide equal speed control for all of the fans connected. The motors must have the same amperage / capacity and operate at the same speed.

The variable frequency drive parameters must be set to accommodate the total amperage of all of the fans that will be connected. If using 4 fans that are 2 amps each, the variable frequency drive current limit must be set to 8 amps (2 amps x 4 motors). If there are any settings on the VFD that are meant for a single motor being connected, those settings should be turned off. For example slip compensation / vector control should be set to off in multi-motor control situations.

If multiple motors are connected to a single VFD, each fan **MUST** have its own overload protection. For example, with the VFD current limit set to 8-amps, if (4) fans / motors were operating with a load of about 2 amps each, and if one of the 4 motors failed, the amp draw on the failed motor would need to surpass 8-amps before the VFD would shut down power to the motors. Separate overload protection (fuses or circuit breakers / overloads) must be installed on each of the 4 motors to be connected. If any motor fails, the overload will disconnect that motor from the VFD, which will protect the VFD and continue to operate the other motors.

When connecting multiple motors on a single VFD, certain conditions, considerations and safety must be met, here are few guidelines you should follow to avoid failures.

- The VFD should be at least rated for at least 20% more power than the total amperage of all of the motors combined.
- Set the variable frequency drive to V/F mode, do not use Vector Control.
- Select the correct maximum current setting based on the amperage of all of the motors connected to the drive combined.
- Don't perform Auto tuning on the VFD.
- Install the proper overload protection on each of the motors being connected.

\* Note: Some overload modules provide auxiliary N/C contacts to use. The N/C contacts of each overload can be connected in series back to the VFD to disable the drive if any overload is triggered.

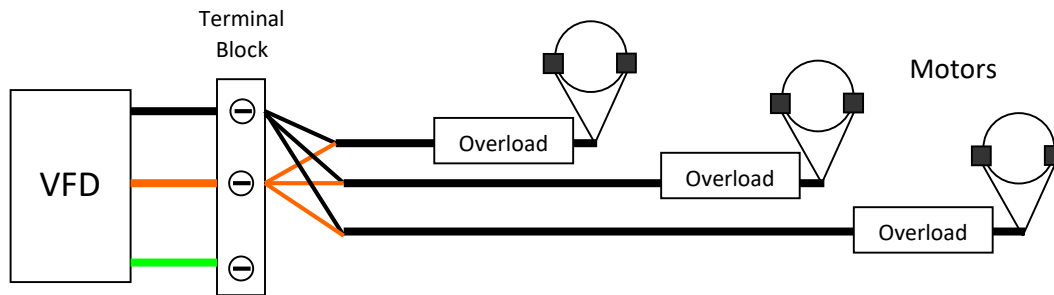
**If you are still having problems, call TrolMaster Tech Support @ 877-420-9876**

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**There are two acceptable wiring methods to connect multiple fans to a single VFD drive. Direct home runs and modified home runs.**

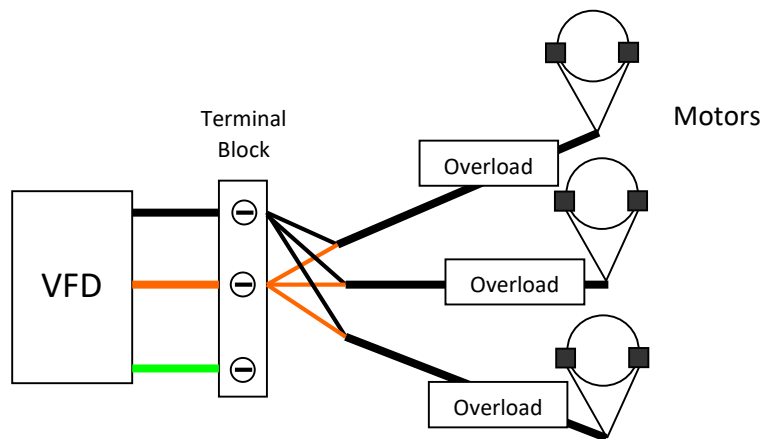
**Direct home runs** require the installer to use a main terminal strip positioned as close as possible to the VFD drive connections. (Within 3 ft) Then individual cables of varying length can be run to each of the motors / fans that will be connected from that main terminal block.

\*Recommend a maximum cable length for ALL cables use of about 350 ft.



*\*Note: Direct home runs require a main terminal block mounted within 3ft of the VFD. The cables connecting each fan / motor to the terminal block can then be of different lengths.*

**Modified home runs** require the installer to also use a main terminal strip, located in a central location to all of the motors that will be connected. That connection from the VFD to that terminal strip can be any length. However, from that main terminal block, EQUAL length cables must be installed to connect to each of the motors. If unequal lengths of cable are used, some or all of the fans may not operate correctly, make noise and or fail entirely. \*Recommend a maximum cable length for ALL cables use of about 350 ft.



*\*Note: Modified home runs can have the terminal block located in a centralized location away from the VFD. The cables connecting each fan / motor to the terminal block MUST be the same length.*

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