WALL-MOUNTED VFD

⚠ **WARNING: Disconnect power to the installation locations before installing the fan and controller.**

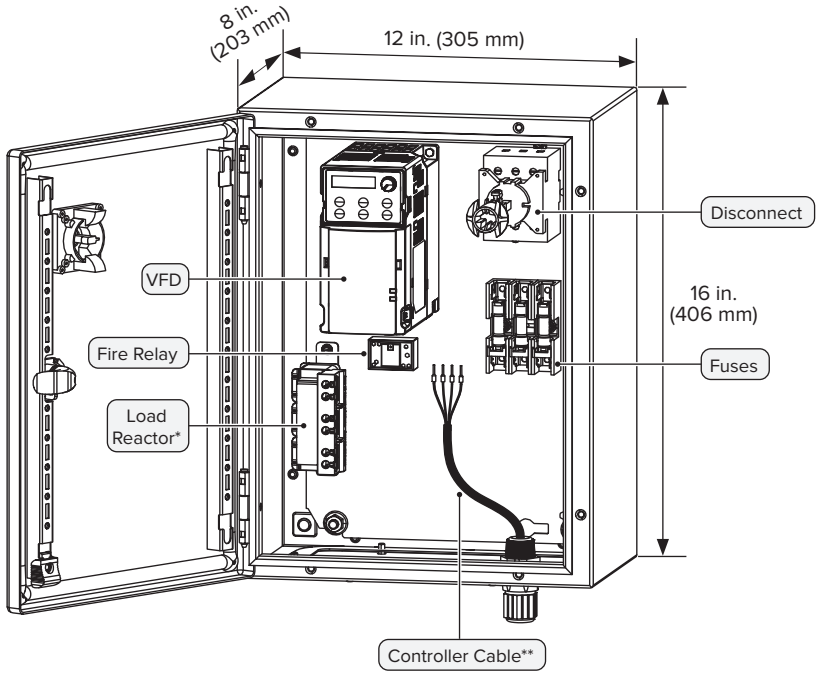
⚠ **WARNING: The fan VFD contains high voltage capacitors which take time to discharge after removal of mains supply. Before working on the VFD, ensure isolation of main supply from line inputs at the VFD or fan controller's disconnect. Wait three minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication of safe voltage levels.**

1. MOUNT VFD ENCLOSURE

If replacing an existing VFD, disconnect motor output wiring, AC input wiring, controller cable, and fire relay wiring (if applicable) from VFD. Remove VFD enclosure from wall or remove onboard VFD from fan mounting post (optional).

Punch or drill knockouts in VFD enclosure for conduit connectors. Position knockouts where conduit can most accessibly exit enclosure. Use appropriately rated connectors to maintain enclosure's environmental rating. Mount enclosure to wall using suitable hardware (not provided).

- Mount enclosure to a flat surface that is readily accessible, free from vibration, and away from foreign objects or moving equipment.
- Make sure enclosure is visible from fan and that door has enough clearance to fully open.
- Do not mount enclosure adjacent to or above a heat source or heat-producing equipment or in direct sunlight.
- Ambient temperature: 14–122°F (-10–50°C). Relative humidity: 0–95% (non-condensing).



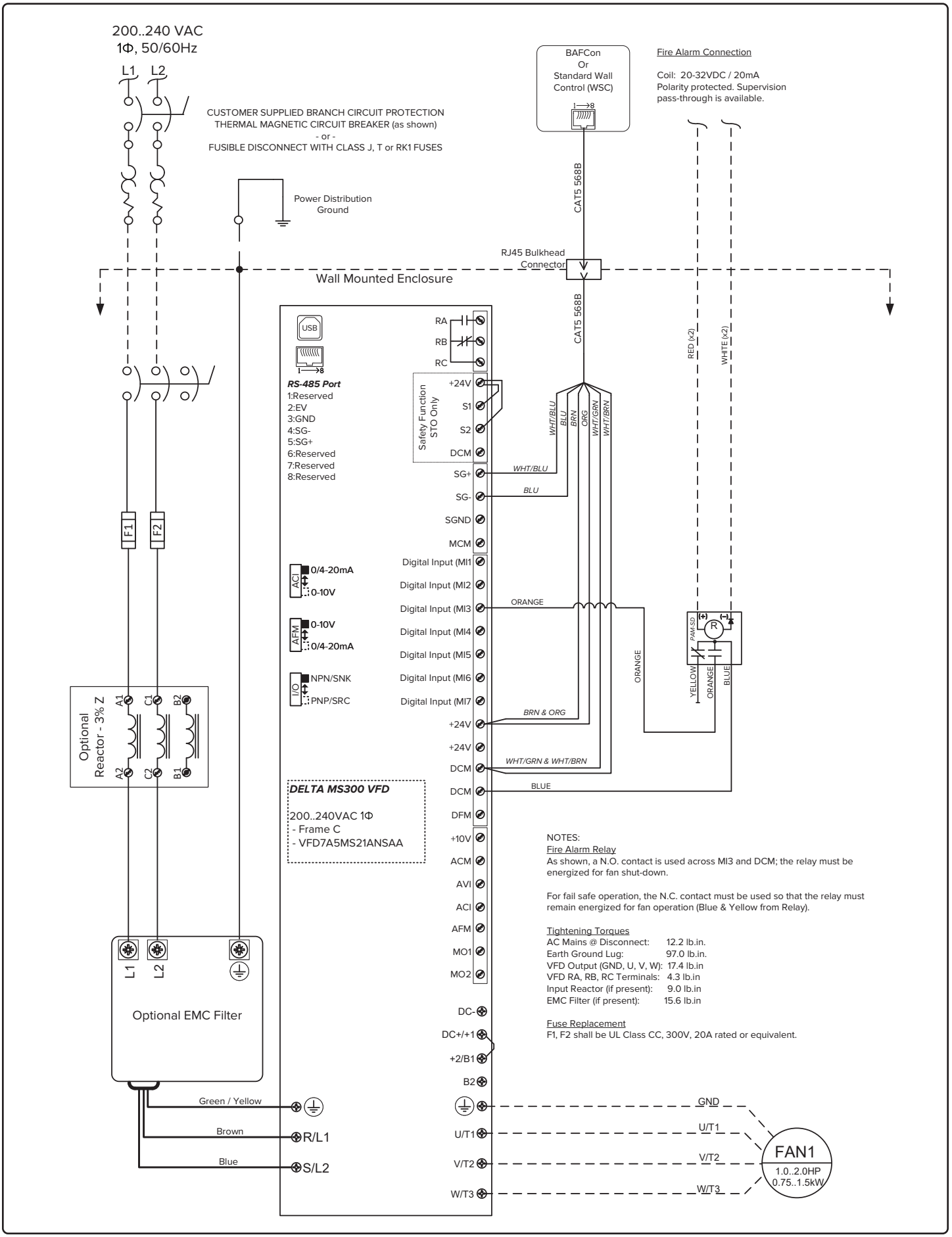
*Included in 400–480 VAC and 575–600 VAC enclosures only.
**Cable and connector provided loose inside enclosure.

2. WIRE AND TEST VFD

Route motor output wiring, AC input wiring, controller cable, and fire relay wiring (if applicable) to VFD. Install provided controller cable and connector (provided loose inside enclosure) into enclosure knockout. Wire VFD according to appropriate diagrams in *VFD Wiring* and *Motor Wiring* sections. Apply power and test VFD.

- Minimum Circuit Size
  - 20 A @ 200–240 VAC, 1 Φ
  - 15 A @ 200–240 VAC, 3 Φ
  - 10 A @ 400–480 VAC, 3 Φ
  - 10 A @ 575–600 VAC, 3 Φ
  - All VFDs produce three-phase output power regardless of input phase configuration.
- VFD output circuit cannot share conduit with any other fan controller's input or output circuits or with input circuit to same VFD.
- VFD output circuit to motor: Use 600 V rated THHN stranded wire in conduit or VFD rated tray cable where required. Do not use Metal Clad (MC) cable or any type of solid core wire between VFD and motor.
  - Motor leads for 576–600 V applications must not exceed 100 ft (30 m) if using VFD rated tray cable (e.g. Belden 29501 or similar) or 200 ft (61 m) if using THHN in metallic conduit.
  - Motor leads for 400–480 V applications must not exceed 150 ft (46 m) if using VFD rated tray cable (e.g. Belden 29501 or similar) or 300 ft (91 m) if using THHN in metallic conduit.
  - Non-metallic conduit is not permitted for motor leads in any application (200–240 V, 400–480 V, 575–600 V).
- The PWM output frequency setting on the VFD must not exceed 4 kHz. If audible noise is a concern for the fan application, a 200–240 V fan system is recommended. The PWM setting can be much higher on lower voltage systems.

VFD WIRING: 200–240 VAC, 1 Φ, 2 HP



NOTES:

Fire Alarm Relay

As shown, a N.O. contact is used across MI3 and DCM; the relay must be energized for fan shut-down.

For fail safe operation, the N.C. contact must be used so that the relay must remain energized for fan operation (Blue & Yellow from Relay).

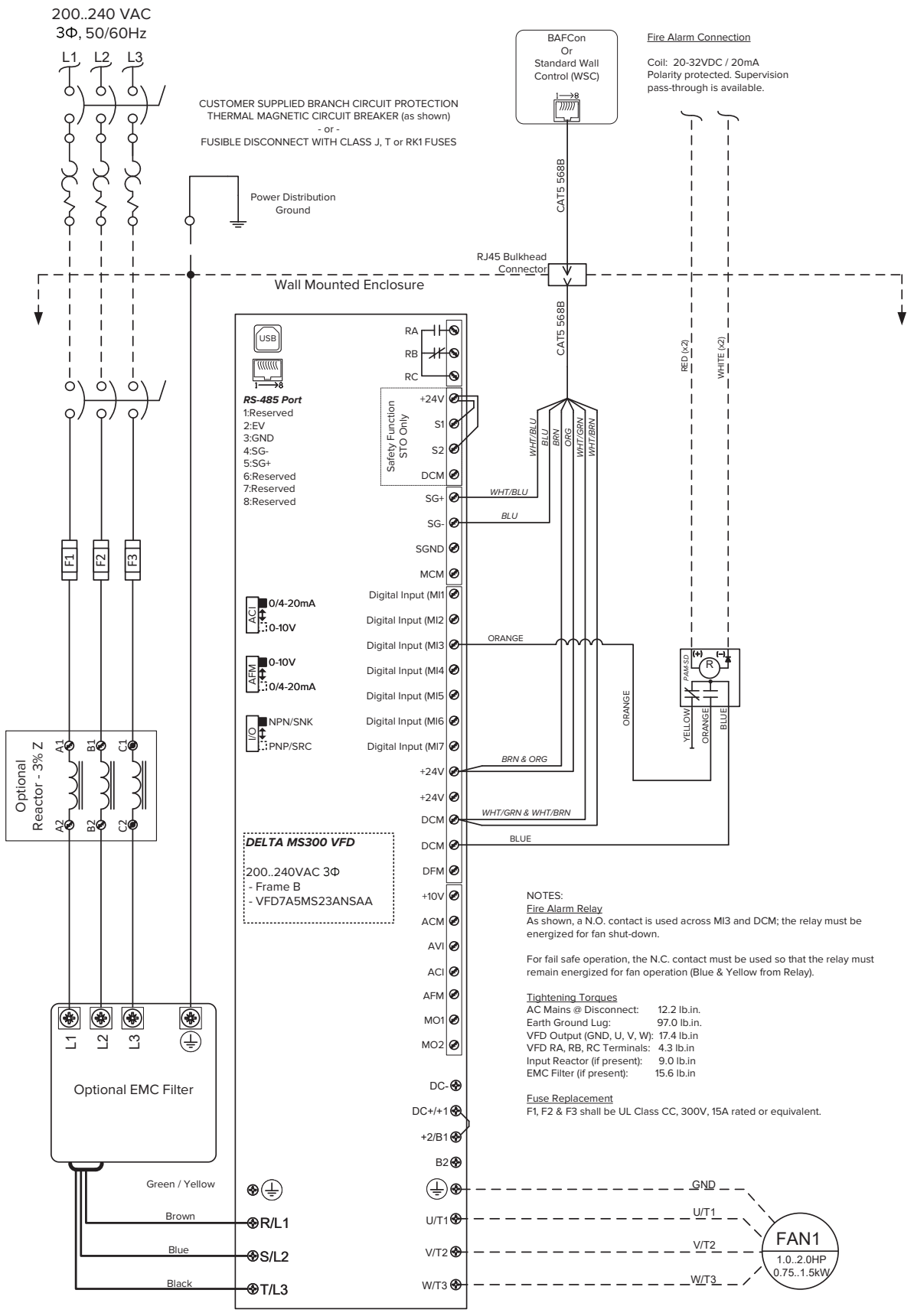
Tightening Torques

AC Mains @ Disconnect:	12.2 lb.in.
Earth Ground Lug:	97.0 lb.in.
VFD Output (GND, U, V, W):	17.4 lb.in
VFD RA, RB, RC Terminals:	4.3 lb.in
Input Reactor (if present):	9.0 lb.in
EMC Filter (if present):	15.6 lb.in

Fuse Replacement

F1, F2 shall be UL Class CC, 300V, 20A rated or equivalent.

VFD WIRING: 200–240 VAC, 3 Φ, 2 HP



NOTES:

Fire Alarm Relay

As shown, a N.O. contact is used across MI3 and DCM; the relay must be energized for fan shut-down.

For fail safe operation, the N.C. contact must be used so that the relay must remain energized for fan operation (Blue & Yellow from Relay).

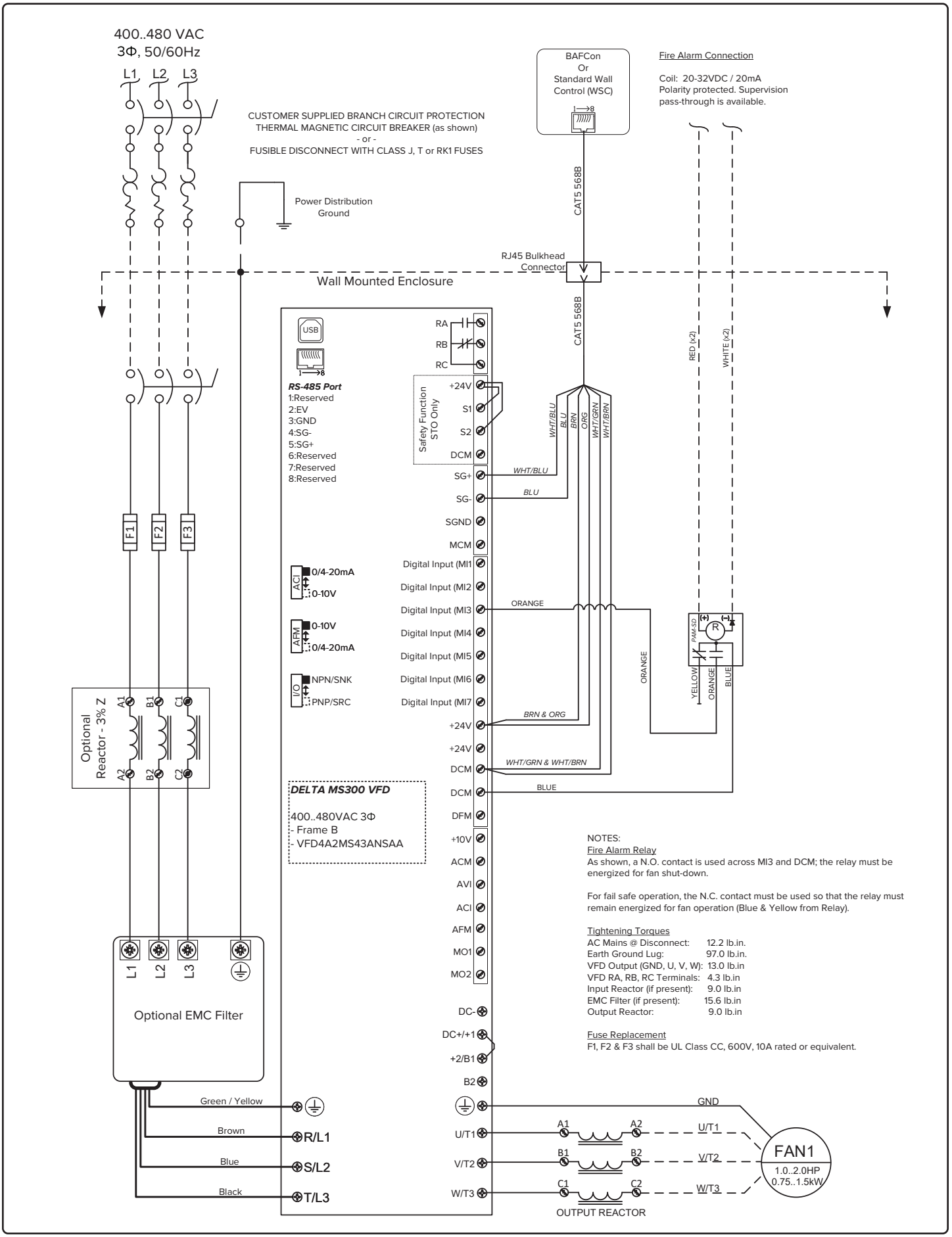
Tightening Torques

AC Mains @ Disconnect:	12.2 lb.in.
Earth Ground Lug:	97.0 lb.in.
VFD Output (GND, U, V, W):	17.4 lb.in
VFD RA, RB, RC Terminals:	4.3 lb.in
Input Reactor (if present):	9.0 lb.in
EMC Filter (if present):	15.6 lb.in

Fuse Replacement

F1, F2 & F3 shall be UL Class CC, 300V, 15A rated or equivalent.

VFD WIRING: 400–480 VAC, 3 Φ, 2 HP



NOTES:

Fire Alarm Relay

As shown, a N.O. contact is used across MI3 and DCM; the relay must be energized for fan shut-down.

For fail safe operation, the N.C. contact must be used so that the relay must remain energized for fan operation (Blue & Yellow from Relay).

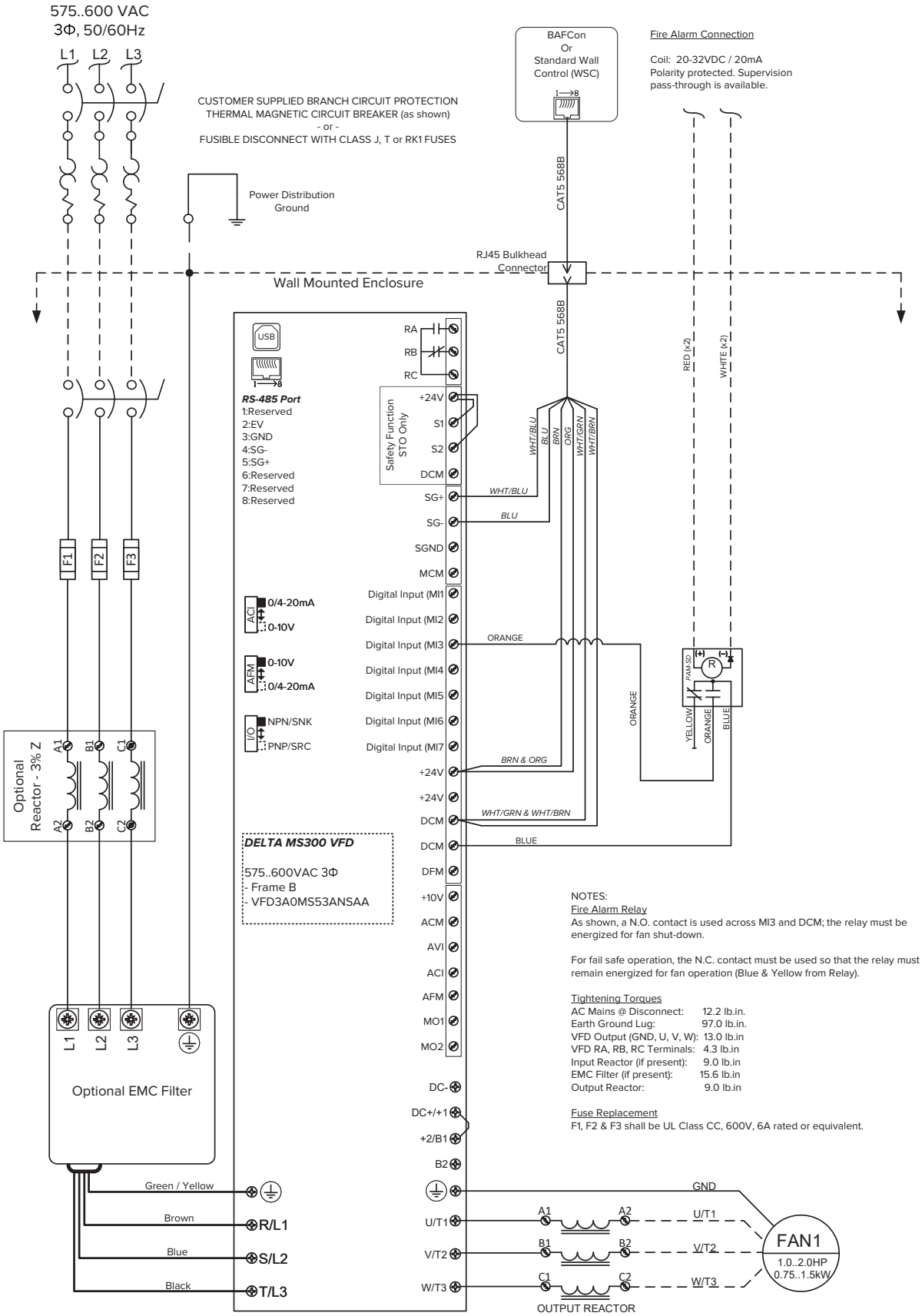
Tightening Torques

AC Mains @ Disconnect:	12.2 lb.in.
Earth Ground Lug:	97.0 lb.in.
VFD Output (GND, U, V, W):	13.0 lb.in
VFD RA, RB, RC Terminals:	4.3 lb.in
Input Reactor (if present):	9.0 lb.in
EMC Filter (if present):	15.6 lb.in
Output Reactor:	9.0 lb.in

Fuse Replacement

F1, F2 & F3 shall be UL Class CC, 600V, 10A rated or equivalent.

VFD WIRING: 575–600 VAC, 3 Φ, 2 HP



NOTES:

Fire Alarm Relay

As shown, a N.O. contact is used across MI3 and DCM; the relay must be energized for fan shut-down.

For fail safe operation, the N.C. contact must be used so that the relay must remain energized for fan operation (Blue & Yellow from Relay).

Tightening Torques

AC Mains @ Disconnect:	12.2 lb.in.
Earth Ground Lug:	97.0 lb.in.
VFD Output (GND, U, V, W):	13.0 lb.in
VFD RA, RB, RC Terminals:	4.3 lb.in
Input Reactor (if present):	9.0 lb.in
EMC Filter (if present):	15.6 lb.in
Output Reactor:	9.0 lb.in

Fuse Replacement

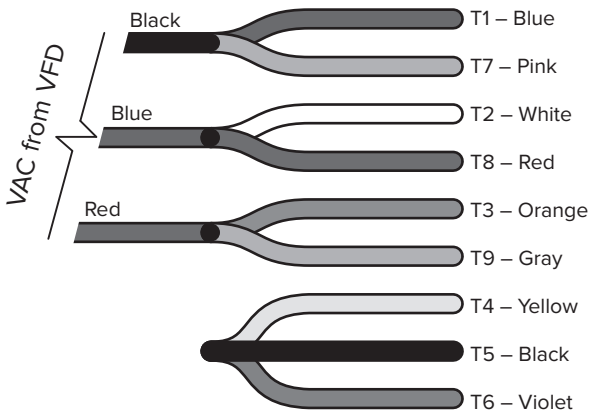
F1, F2 & F3 shall be UL Class CC, 600V, 6A rated or equivalent.

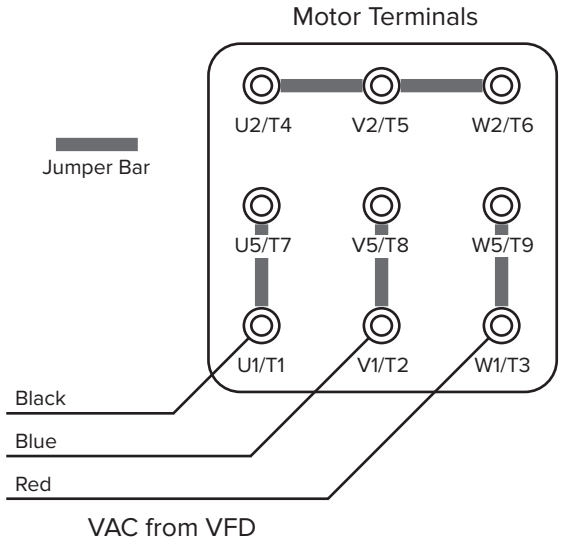
MOTOR WIRING

Diagrams include L2 and L3 swap to yield proper motor rotation. Motors with terminal blocks require ring terminals and a 7 mm nut driver for termination. Consult motor nameplate and/or wiring placard for verification of required wiring connections.

Low Voltage

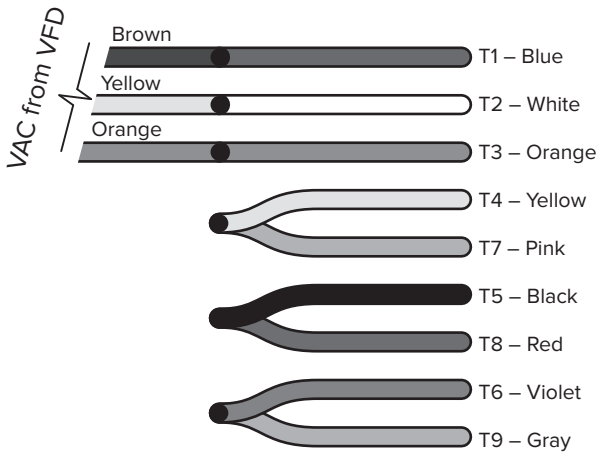
200–240 VAC, 50–60 Hz

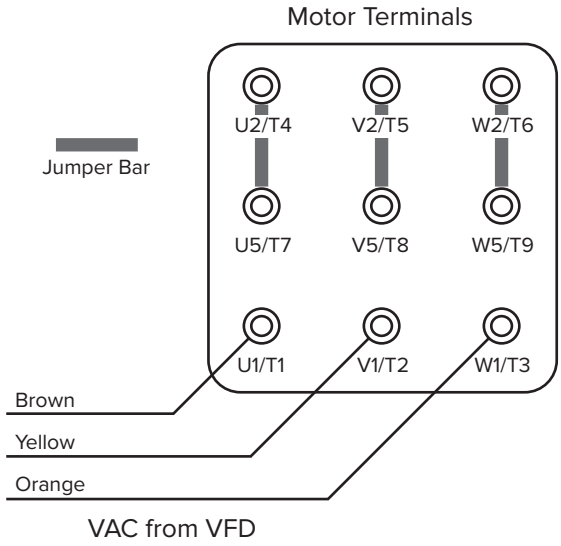




High Voltage

400–480 VAC, 50–60 Hz | 575–600 VAC, 50–60 Hz





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