Honeywell

SmartVFD Two Contactor Bypass Assemblies

APPLICATION

Two Contactor Bypass
The SmartVFD Two Contactor Bypass Assemblies channel electrical power either through or around the variable frequency drive (VFD).

INSTALLATION

When Installing This Product
1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions, Honeywell SmartVFD manual and on the product to make sure the product is suitable for your application.
3. Verify bypass model is correct; no damage has been incurred; no screws, connections, terminations are loose.
4. Installer must be a trained, experienced service Technician, with VFD operation experience.
5. After installation is complete, check out product operation as provided in these instructions.

WARNING
Can Cause Serious Injury or Death.
1. Installation requires work with voltages that may cause serious injury or death.
2. This instruction manual is intended as a guide only. End user is responsible for proper application of this assembly, insuring proper conformance, directives, intended use and maintaining all safety practices as described in Honeywell SmartVFD manual, local codes, local safety authorities.
3. Disconnect power supply before installation, and before any servicing.

CAUTION
Equipment Damage Hazard.
Can short equipment circuitry.
Disconnect power supply before installation.

Location and Mounting
Locate the device in a clean, dry, well-ventilated area with an ambient temperature below 104°F (40°C).
Refer to SmartVFD manual Installation chapter for free air space requirements above and to the sides of SmartVFD's.
Ensure proper branch/short circuit protection is provided.

WIRING

IMPORTANT
All wiring must agree with applicable codes, ordnances and regulations.
Variable frequency drive can store energy. Refer to VFD manual for safe work practices and appropriate wait times before servicing after equipment power has been de-energized.
All safety, warning and caution information located in Honeywell SmartVFD manual must be read, understood and followed.
Before proceeding, make sure proper branch/short circuit protection has been provided (see SmartVFD manual).

1. Ensure that bypass panel voltage corresponds with that of the power supply.
2. To access the bypass panel wiring compartment:
a. Ensure the customer supplied main disconnect handle or circuit breaker is in the OFF position.
b. Open the cover.
c. Test for power.
3. Refer to SmartVFD manual “Cabling and Connections” for proper power and control wire sizing information.
5. Terminate three phase motor wiring to motor terminals “T1”, “T2”, “T3”. Refer to bypass panel schematic.
6. Terminate all VFD control wiring to the proper terminals in the bypass panel. Refer to bypass panel schematic.
7. Leave jumper J1 on bypass panel terminals 1 & 3 if fire/smoke/safety shutdown is not uses. If this shutdown is used, remove jumper J1 and terminate to bypass panel terminals 1 & 3.
Refer to schematic for typical wiring.
IMPORTANT
Use only copper wire with 167°F (75°C) minimum.

OPERATION

1. Make sure bypass panel and motor are properly grounded.
2. Make sure all connection points are tight, including all bypass panel connection points.
3. Make sure all safeties (customer option) are connected and in working order.
4. Double check correct voltage is being applied and power and motor wiring are terminated in the correct place.
5. Verify motor FLA does not exceed VFD output amp rating and bypass starter overload relay setting dial.
6. Set bypass starter overload relay adjustment dial to motor FLA.
7. Verify building automation system is ready for start, stop, speed command; all wires are terminated in the correct location.
8. Make sure all personnel, debris, etc are clear.

Before applying power verify customer supplied main input disconnect handle or circuit breaker is in the “OFF” position; “Bypass/Off/VFD” selector switch is in the “OFF” position.

1. Apply input power.
2. Check three phase voltage on line terminals: “L1”, “L2”, “and “L3”.
   b. If motor is rotating backwards in VFD mode, shut down power, lock out power source, test incoming voltage on incoming line power wiring on line terminals “L1”, “L2”, “L3”. Once it is established that power is shut down, swap incoming wires on terminals “L1” and “L2”. Re-energize power and check rotation again.

   a. If motor is rotating backwards in Bypass mode, shut down power, lock out power source, test incoming voltage on incoming line power wiring on line terminals “L1”, “L2”, “L3”. Once it is established that power is shut down, swap incoming wires on terminals “L1” and “L2”. Re-energize power and check rotation again.

Bypass panel “Bypass/Off/VFD” selector switch has three operating positions:
1. VFD: Device directs power to VFD first, then to the motor. VFD controls the motor as it would without the bypass panel.
2. OFF: Device stops power. Power reaches neither the motor nor the VFD.
3. BYPASS: Device directs power to motor only. No power reaches the VFD. The motor operates at full speed with full power.

Operation Using the VFD
(VFD Position)

To set bypass panel to use VFD to control the motor as it would without the bypass panel:
1. Stop the motor.
2. Wait five seconds.
3. Rotate switch to VFD.
4. Start the VFD (see VFD instructions for details).

VFD Bypass

To set bypass panel to direct power only to motor:
1. Rotate switch from VFD to OFF.
2. Wait five seconds.

IMPORTANT
Swiching the bypass panel to BYPASS can immediately turn the motor on.

3. Rotate switch to BYPASS.
Fig. 1. 2 Contactor Wiring Diagram.

- **Contactor Wiring Diagram**
- **Main Fused Disconnect or Circuit Breaker**
- **Branch Circuit Protection**
- **Wiring Diagram**
- **SMART VFD Two Contactor Bypass Assemblies**
- **All Panels Shipped with VFD Default Programming Parameters. Set DIP Switches as Needed.**
- **If Customer Safety Interlock is Used, Remove J1.**
- **TS1, Enclosure Fan1 Standard on all NEMA 3R Panels.**
- **Enclosure Fan2 on 25HP and Larger at 480V. Heater is Optional on all NEMA 3R Panels.**
- **DIP Switches Located Behind Cover, Right Side of Keypad.**
- **RS485**
- **A01**
- **AI1**
- **AI2**
- **Off On**
- **Voltage Current Voltage Current Voltage Current**
- **U1 V1 W1**
- **U2 V2 W2**
- **2 1 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19**

- **All wiring use copper wire only suitable for min 75 deg C. Field Wiring.**
- **Motor and Feeder Wire Size must be in accordance with NEC.**
- **Field Wiring Inside C/P: Option.**
Table 1. SmartVFD Two Contactor Bypass.

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