

# SubDrive

Tank Drawdown Installation  
Instruction Manual 225770901



**Franklin Electric**

**TANK DRAWDOWN  
INSTALLATION INSTRUCTION MANUAL**

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**Purpose**

The tank drawdown kit uses the system run relay and an additional pressure sensor to allow the use of water stored in the tank during low flow demands.

This setup will allow the drive to control pressure using the regulating sensor to maintain constant pressure when operating normally. Once the system shuts off, it will use the stored water in the tank until the pressure drops to the secondary sensor pressure setting. At that time, the drive will start and regulate to the regulating pressure sensor pressure setting.

**Tools and Hardware Required**

A Philips screwdriver is required to remove the SubDrive access panel. A crimp tool may be required for the ¼" quick connects that will attach the auxiliary device to the relay interface.

For the SubDrive Nema 4 units, excluding the SubDrive300, an Auxiliary Relay Board is required. An Auxiliary Relay Board kit can be purchased with order number 225755901.

**⚠ WARNING**

Serious or fatal electric shock may result from failure to remove electrical power from the SubDrive prior to installing the relay interface. Disconnect power before working on the system. Capacitors inside the SubDrive can still hold a lethal voltage for some time after power has been removed, so allow 10 minutes after removing supply power for dangerous internal voltage to discharge.

**ATTENTION**

This equipment is intended for installation only by technically qualified personnel. Failure to install it in compliance with national and local electrical codes and within Franklin Electric's recommendations may result in electrical shock or fire hazard, unsatisfactory performance, and equipment failure.

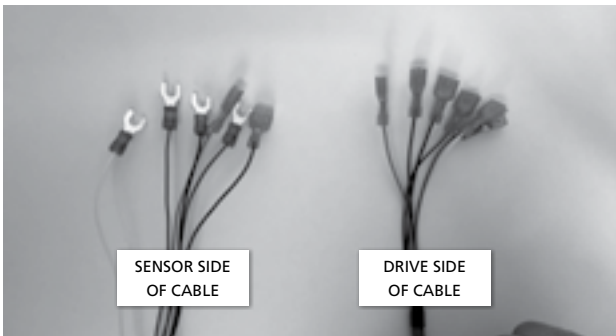


## **SubDrive NEMA 3R Installation Procedure**

1. If the SubDrive is powered, remove power from the drive and wait at least 10 minutes before accessing the drive to ensure that the bus voltage has been given sufficient time to dissipate.
2. Install the additional supplied 25 to 80 psi (1.7 to 5.5 bar) pressure sensor to the system. The pressure setting on the additional sensor must be set below the pressure setting on the regulating sensor and above the tank pre-charge pressure. The pressure can be adjusted once the system is up and running.



3. Remove the drive cover.
4. Use the supplied six conductor pressure sensor cables and connect to the pressure sensors. (See Figure 1, pg. 5 for NEMA 3R Wiring Diagram.)



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5. The drive connection side of the six conductor cables must be modified before connecting to the various drive terminals. The following modifications must be made:

- Remove the piggyback quick connect from the green wire. This end of the green wire should be stripped to expose approximately 1/4" (6 mm) of bare wire.
- Remove the quick connect from the white wire. This end of the white wire should be stripped to expose approximately 1/4" (6 mm) of bare wire.
- Remove the quick connect from ONLY one end of the black jumper wire. This end should be stripped to expose approximately 1/4" (6 mm) of bare wire.



6. Bring the pressure sensor cable into the drive through the small routing hole on the bottom of the drive enclosure. Be sure to follow applicable codes for conduit and sealing requirements. In order to maintain the NEMA 3R rating, a cable gland strain relief or conduit hub must be used.

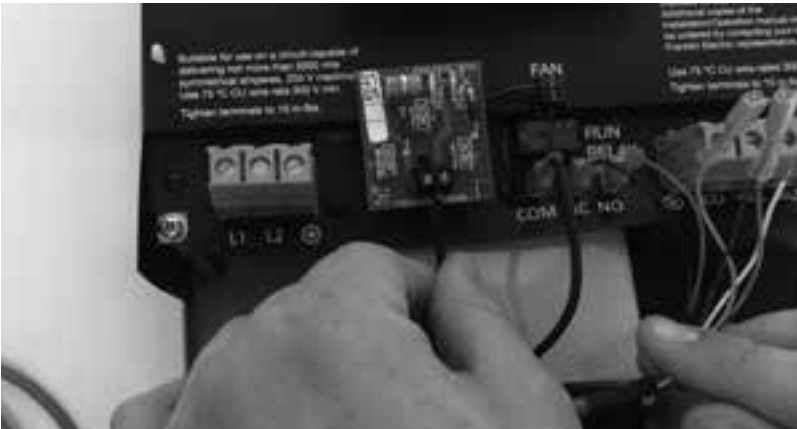
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7. Connect the red wire of the cable to the NO terminal.  
Connect the black wire of the cable to the NC terminal.  
Connect the jumper (quick connect end) to the COM terminal.

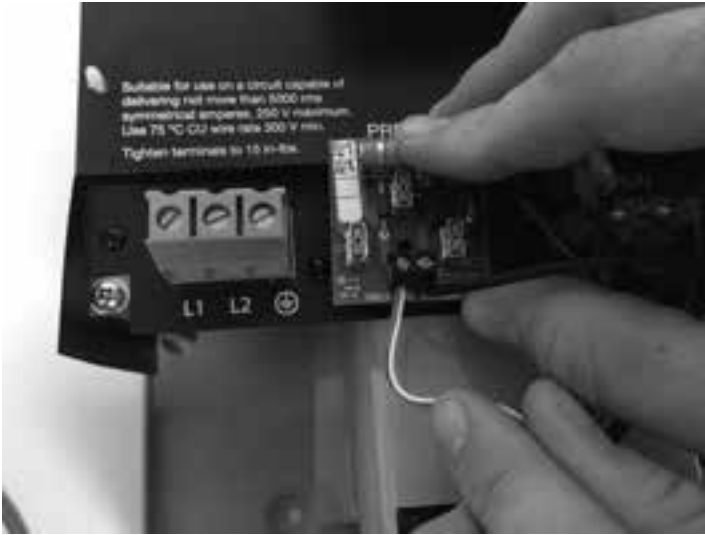


8. Insert the jumper (bare wire end) into the right side of the pressure sensor terminal block and securely tighten the terminal block connection.



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9. Insert both the green and white wires (stripped ends) into the left side of the pressure sensor terminal block and securely tighten the terminal block connection.



10. The orange and blue wires are not used. These terminals can be removed and the wires should be insulated with electrical tape.

11. Verify the connections match the wiring diagram shown below:

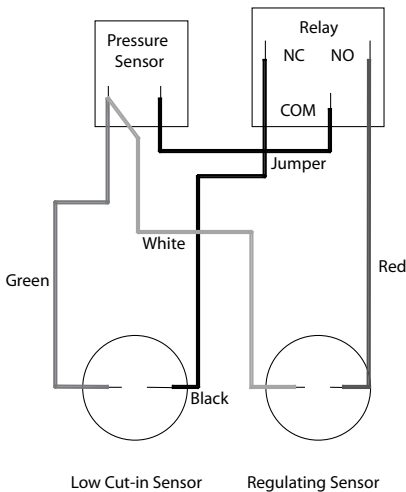


Figure 1: SubDrive NEMA 3R Wiring

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12. Reinstall the drive cover.

13. Reapply power to the drive.

14. Adjust the pressure setting of the low pressure cut-in sensor to achieve the appropriate cut in pressure (off time) for the application. The set point of the lower pressure cut-in sensor must be set below the set point of the regulating sensor and above the pressure tank pre-charge pressure.

## **SubDrive NEMA 4** **Installation Procedure**

1. If the SubDrive is powered, remove power from the drive and wait at least 10 minutes before accessing the drive to ensure that the bus voltage has been given sufficient time to dissipate.
2. Remove the customer access panel.



3. Verify Auxiliary Relay Board is installed. If not, please refer to the Auxiliary Relay Board Instruction Manual M1604 and follow instructions.





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4. Add a second 25 to 80 psi sensor to the system. The pressure setting on the additional sensor will need to be set below the regulating sensor, but above the tank pre-charge pressure. The pressure can be adjusted once the system is up and running.



5. Use the supplied six conductor pressure sensor cables to attach the sensor cable to the sensor as shown. (See Figure 2, pg 10, for wiring)

6. Bring the sensor cable into the drive via the knockout at the bottom. (Be sure to follow local codes requiring conduit or sealing practices. In order to maintain a NEMA 4 rating, a connector must be used.)



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7. Connect the green wire to the pressure sensor (J11) terminal at the SubDrive. Connect the white wire to the piggyback connector at J11.

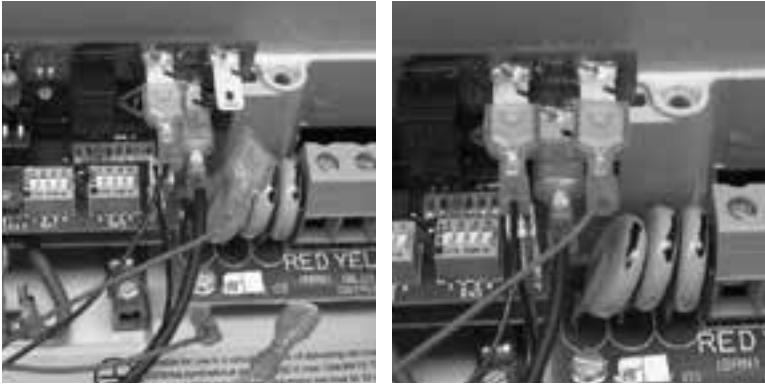


8. Connect the jumper wire to the pressure sensor (J11) terminal and to the Common (COM) terminal of the Auxiliary Relay Board.



9. Connect the black wire from the cut-in pressure switch to the Normally Closed (NC) terminal on the Auxiliary Relay Board. Connect the red wire from the regulating pressure switch to the Normally Open (NO) terminal on the Auxiliary Relay Board.

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10. The orange and blue wires are not used. Remove terminals and use electrical tape to insulate.
11. Re-attach the customer access cover.
12. Re-apply power to the drive.
13. Adjust the pressure setting of the low pressure cut-in switch for the appropriate off time. The pressure setting on the additional sensor will need to be set below the regulating sensor, but above the tank pre-charge pressure.

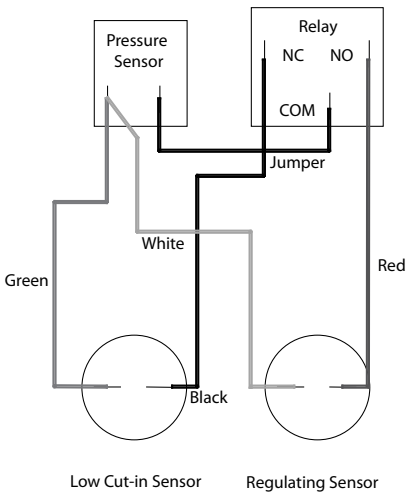


Figure 2: SubDrive NEMA 4 Wiring

## **SubDrive300 Installation Procedures**

1. If the SubDrive is powered, remove power from the drive and wait at least 10 minutes before accessing the drive to ensure that the bus voltage has been given sufficient time to dissipate.
2. Add a second 25 to 80 psi sensor to the system. The pressure setting on the additional sensor will need to be set below the regulating sensor, but above the tank pre-charge pressure. The pressure can be adjusted once the system is up and running.



3. Remove the outside cover.
4. Use the supplied six conductor pressure sensor cables to attach the sensor cable to the sensor. (See Figure 3, pg 14, for wiring.)
5. Bring the sensor cable into the drive via the knockout at the bottom. (Be sure to follow local codes requiring conduit or sealing practices. In order to maintain a NEMA 4 rating, a connector must be used.)

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6. Connect the green wire to the pressure sensor (J12) terminal at the SubDrive. Connect the white wire to the piggyback connector at J12.



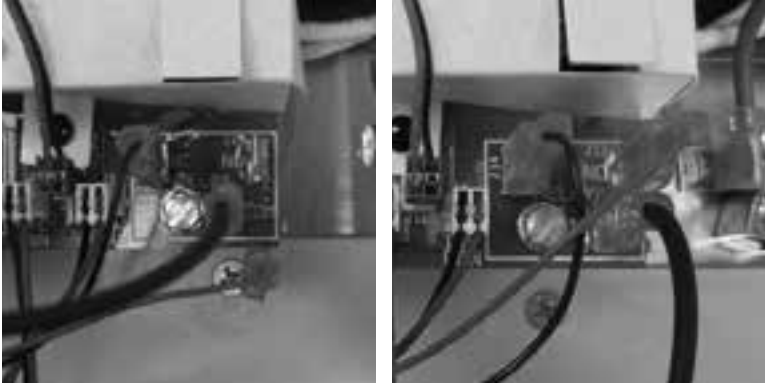
7. Connect the jumper wire to the pressure sensor (J11) terminal and to the Common (COM) terminal.



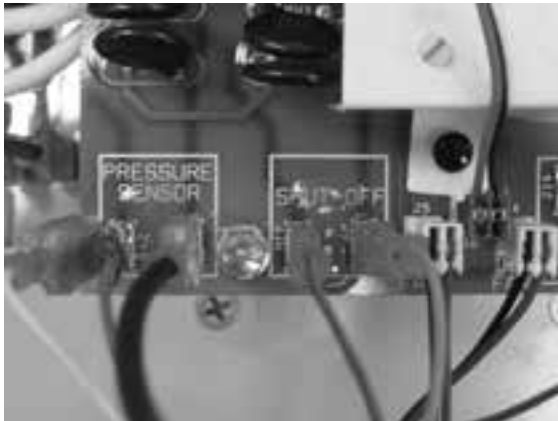
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8. Connect the black wire from the cut-in pressure switch to the Normally Closed (NC) terminal. Connect the red wire from the regulating pressure switch to the Normally Open (NO) terminal.



9. Connect the orange and blue wires to the shut-off terminals.



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10. Re-attach the access cover.



11. Re-apply power.

12. Adjust the pressure setting on the low pressure cut-in switch for the appropriate off time. The pressure setting on the additional sensor will need to be set below the regulating sensor, but above the tank pre-charge pressure.

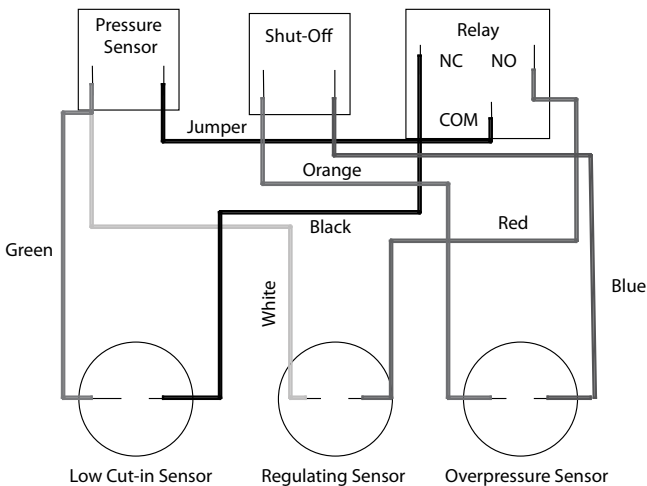


Figure 3: SubDrive300 Wiring

**TOLL-FREE HELP FROM A FRIEND**  
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**800-348-2420**



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