SubDrive CONNECT

(1) CONFIGURATION DIP SWITCHES

DIP Switch Bank 1 **SW1**
DIP SW1 contains basic drive configuration switches.

SW1-1: FE Connect DIP Switch
If this DIP switch is DOWN (OFF), the drive will use the settings from the available DIP switches and potentiometer knobs. If this switch is UP (ON), the drive will use the settings configured using the FE Connect mobile app for any setting that has a physical switch or potentiometer knob. This switch does NOT control the wireless radio signal. Advanced settings in the FE Connect app that do not have a physical switch or potentiometer knob can be configured with the mobile app regardless of this switch's position.

SW1-2: SubDrive/MonoDrive Switch
If this switch is DOWN (SD), the drive will be configured as a SubDrive and set for a three-phase or single-phase, 2-wire motor. If this switch is UP (MD), the drive will be configured as a MonoDrive and set for a single-phase, 3-wire motor. **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app.**

SW1-3: Motor Frequency Switch
If this switch is DOWN (60 Hz), the drive will be configured to operate a 60 Hz motor (North America). If this switch is UP (50 Hz), the drive will be configured to operate a 50 Hz motor (International). **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app.**

SW1-4: 2-Wire Motor Select
If this switch is DOWN (OFF), the drive will be configured for the motor and application type configured on SW1-2 and SW1-6. If this switch is UP (2W), the drive will be configured for single-phase 2-wire motors. **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app**.

SW1-5: Pressure Sensor Switch
If this switch is DOWN (XDCR), the drive is configured to operate using the 4-20 mA 100 psi transducer that was included with the drive. This setting works in conjunction with the pressure set point potentiometer knob to select the desired system pressure (see item 8). If this switch is UP (PS), the drive is configured to operate using the traditional SubDrive pressure sensor ("Hobbs-style" switch). **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app**

SW1-6: Application Select
If this switch is DOWN (SUB), the drive is configured to work with a submersible pump. If this switch is UP (CEN), the drive is configured to work with a surface pump. **If SW1-1 is UP, this switch is ignored and the setting is taken from the mobile app.**

SW1-7: Motor Type Select
If this switch is DOWN (IND), the drive is configured to work with a standard induction motor (three-phase or single-phase motor). If this switch is UP (PM), the drive is configured to work with a MagForce permanent magnet motor. **If SW1-1 is UP, this switch is ignored and the setting is taken from the mobile app.**

(2) MOTOR HP DIP SWITCHES

DIP Switch Bank 2 **SW2**
If SW1-6 is set to DOWN (SUB) for submersible application, DIP SW2 is used to set the motor hp rating. Only one (1) switch needs to be set. **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app.**

(CEN) SURFACE PUMP SETTINGS
If SW1-6 is set to UP (CEN) for surface pump application, DIP SW2 is used to set the motor overload current. (SW3-1 and SW3-2 offer additional motor overload current settings.) The motor overload current should be set to the value that is equal to or less than the motor nameplate. **If SW1-1 is UP, the switch is ignored by the drive and the setting is taken from the mobile app.**

(3) PUMP HP DIP SWITCHES

DIP Switch Bank 3 **SW3**
If SW1-6 is set to DOWN (SUB) for submersible application, DIP SW3 is used to set the pump hp rating. Only one (1) switch needs to be set. **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app.**

(CEN) SURFACE PUMP SETTINGS
If SW1-6 is set to UP (CEN) for surface pump application, DIP SW3 is used to set the motor overload current, system response, and minimum frequency. SW3-1 and SW3-2 offer motor overload current settings in additional to those found on DIP switch bank SW2. The motor overload current should be set to the value that is equal to or less than the motor nameplate.
SW3-3 through SW3-5 are used to set the system response to FAST, MED, or SLOW. Only one (1) switch may be set. If no selection is made the system will default to SLOW.
SW3-6 is used to enable a minimum frequency of 15 Hz rather than 30 Hz. This is only valid for surface pump (CEN) applications. **If SW1-1 is UP, the switch is ignored by the drive and the setting is taken from the mobile app.**

(4) COMMON FAULT CODES

This table lists several of the common diagnostic fault codes the user may see. The remainder of the diagnostic fault codes and their descriptions can be found in the Diagnostic Fault Code section of the SubDrive/MonoDrive Connect owner's manual.

(5) DC BUS ACCESS

This connector allows for measurement of the internal DC bus voltage and can be used when troubleshooting a drive.

(6) NEW DIP SWITCHES

DIP switches have been updated and are now larger and easier to use.

(7) UNDERLOAD SENSITIVITY POTENTIOMETER KNOB

This knob is used to make adjustments to the sensitivity of the underload protection. Factory default is set to 65% of SFA (based on FE motor currents tied to the motor hp selection). In cases of deep or shallow sets, the sensitivity level can be adjusted within the range of 20% to 95% of SFA. **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app.**

(8) PRESSURE SET POINT POTENTIOMETER KNOB

This knob is used to make adjustments to the desired system set point pressure. Factory default is set to 50 psi. The adjustable range is 5 psi to 95 psi. THIS KNOB CAN ONLY BE USED WITH A 4-20 mA 100 PSI TRANSDUCER. **If SW1-1 is UP, this switch is ignored by the drive and the setting is taken from the mobile app.**

(9) BATTERY BACKUP FOR REAL-TIME CLOCK

SubDrive Connect units are equipped with a real-time clock that provides for real date and time information in the fault history and configuration logs. The date and time information is set in the factory and stored using this battery. The time zone for the log files is automatically set based on the time zone of the smartphone or mobile device that is used to connect to it.

(10) LCD DISPLAY

3.5 digit display used to show system and diagnostic fault information. When using an analog pressure transducer, the display will show system pressure in psi. 50 psi is shown as "50P" for example. When using the traditional "Hobbs-style" pressure switch, the drive display will show motor/pump speed in Hertz. 60 Hz will be shown as "60" for example. When displaying diagnostic fault codes, the drive will show "F" followed by the fault code number. For example, an underload fault would be indicated by "FI" on the drive display. This is clearer and more informative than the flashing green and red lights.

(11) WIRELESS STATUS LIGHT / WIRELESS MODULE

This light shows the status of the wireless connection used for the mobile app. ON/SOLID means the drive is ready to be connected to. ON/FLASHING means a device is connected to the drive. OFF means that the drive is not broadcasting a wireless signal. The wireless is available for connection for 15 minutes after the drive is powered on. If no connection is made in 15 minutes, the radio is turned off to avoid unauthorized connections. A power cycle is required in order to reactivate the wireless signal.

(12) ALTERNATOR

Terminal Block **ALT**
Connection for communication cable between two (2) SubDrive Connect units to facilitate the built-in duplex alternator function. Communication cable must be connected between the drives and each drive must be configured via the mobile app to enable duplex alternator mode. Duplex alternator cables come in the following lengths: 10 ft (226895901), 50 ft (226895902), and 100 ft (226895903).

(13) WET SENSOR/MOISTURE SENSOR

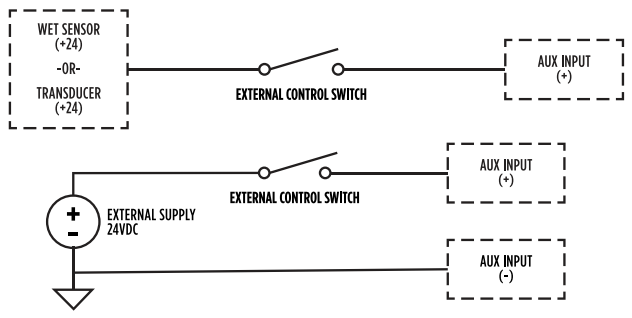
Terminal Block **WS**
This terminal block is for installing a moisture sensor (226770901). The moisture sensor returns a 24 VDC signal between the I+ and I- terminals when water is detected. Multiple moisture sensors may be installed in parallel.

(14) INPUT TERMINALS

Input power terminal is sized to accept a wide range of wire sizes from 6 to 20 AWG. If using longer runs that require larger than 6 AWG wire, the wire must be properly junctioned prior to installation in the drive terminal block(s).

(15) AUX INPUT

Terminal Block **A1**
This terminal block is for wiring an external stop command. The AUX IN is a 24 VDC digital input and can be used with the internal 24 VDC supply from the drive, or an external device with its own 24 VDC supply. The default setting is FAULT WHEN HIGH (stop command). This terminal is wired as follows:



(16) PRESSURE SENSOR

Terminal Block **PS**
This terminal block is used to install the traditional SubDrive pressure sensor ("Hobbs-style" switch). SubDrive Connect units ship standard with a 4-20 mA 100 psi analog pressure transducer and are configured by default to operate with the transducer. If the user wants to use the traditional pressure sensor/switch, DIP SW1-5 must be in the UP (PS) position. New kit number (226941901) has been created for customers to order the stainless steel, NSF-approved, 15 mm wrench size pressure sensor that previously shipped standard with SubDrive NEMA 3R units.

(17) TRANSDUCER

Terminal Block **XDCR**
This terminal block is used to install a 4-20 mA analog pressure transducer. SubDrive Connect units ship standard with a 4-20 mA 100 psi transducer and are configured by default to operate with the 100 psi transducer by using the pressure set point potentiometer knob on the display board to set the desired system pressure. If the user wishes to use a 4-20 mA with a range other than the standard 100 psi, the FE Connect DIP switch (SW1-1) must be in the UP (ON) position and the FE Connect mobile app must be used to set the transducer range and system set point. A maximum range of 300 psi may be used.
If the transducer range is not 100 psi and is not adjusted in the app, the selection knob on the display board can still be used; however, the regulated pressure and the pressure displayed on the screen will be scaled incorrectly. If a pressure transducer range greater than 100 psi is used without using the mobile app to adjust the range, the drive will read the pressure as lower than actual pressure. Care should be taken and the pressure should be monitored using a pressure gauge to avoid over pressurization. Transducers may be ordered with ranges of 100 psi (226905902), 150 psi (226905903), and 200 psi (226905904).

(18) ALARM RELAY

Terminal Block **R1**
The Alarm Relay is used to provide external indication or control when the system is actively faulted. This function can be used to control an external indication pilot lamp, auto-dialer, or other device used to notify the user that the system is indicating a fault status.
NC-COM: Shorted when the system is IDLE or RUNNING, open-circuit when the system is FAULTED
NO-COM: Open-circuit when the system is IDLE or RUNNING, shorted when the system is FAULTED

(19) RUN RELAY

Terminal Block **R2**
The Run Relay is used to provide external indication or control when the system is actively running the motor/pump. This function can be used to control an external indication pilot lamp, run counter/timer, or other devices that are used when water is being pumped by the drive.
NC-COM: Shorted when the system is IDLE or FAULTED, open-circuit when the system is RUNNING
NO-COM: Open-circuit when the system is IDLE or FAULTED, shorted when the system is RUNNING

(20) OUTPUT MOTOR TERMINAL

Output motor terminal is sized to accept a wide range of wire sizes from 6 to 20 AWG. If using longer runs that require larger than 6 AWG wire, the wire must be properly junctioned prior to installation in the drive terminal block.
3-phase and 3-wire motor leads should be wired to the appropriate GND, RED, YEL, and BLK positions.
2-wire motor leads should be wired to the appropriate GND, BLK and BLK positions. The X terminal is unused.

(21) DRIVE COOLING FAN

The cooling fan is a variable speed fan that runs only as fast as needed to cool the drive, which results in quieter drive operation. The fan is also replaceable as a service part. Replacement fan kits are (226545904) for MD and SD15, (226545905) for MDXT and SD20/30, and (226545903) for SD50.

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