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SPECIFICATION GUIDE

Phoenix DX Clean Power AC Drive

Sensorless AC Vector Control

20 HP to 1200 HP

200 to 600 VAC Input

VARIABLE FREQUENCY DRIVE
SPECIFICATION

1.0 GENERAL

1.1 The Variable Frequency Drive (VFD) shall be of the fixed dc bus type. The VFD shall convert three phase, 50 or 60 Hz input power to three phase adjustable voltage, adjustable frequency output power using Pulse Width Modulation (PWM) switching techniques and Insulated Gate Bi-Polar Transistors (IGBTs).

1.2 The VFD shall be of the Clean Power type. The VFD input rectifier section shall include an input ac line reactor for added harmonic filtering, a phase shifting transformer (three phase input to nine phase [or higher] output), an 18 pulse (or higher) diode bridge rectifier, and a dc link reactor. All input rectifier section components including the input ac line reactor and the phase shifting transformer shall be factory mounted and wired within the confines of the VFD enclosure.

1.3 The VFD shall meet all the requirements of IEEE-519-1992 for total harmonic distortion and for each individual harmonic as detailed in the specification. The point of common coupling for all harmonic calculations and field measurements for both voltage and current distortion shall be defined as the VFD input terminals. Maximum input voltage unbalance shall be 0.5% as defined in NEMA MG 1 section 14.35.2.

1.4 As per Table 10.2 of IEEE-519-1992, individual or simultaneous operation of all VFDs shall not add more than 3% total harmonic voltage distortion while operating at full load and speed from the utility source or more than 5% while operating from a standby generator source (if applicable). The VFD manufacturer will not be responsible for correcting pre-existing voltage distortion on the line or distortion on the line caused by equipment supplied by others.

1.5 As per Table 10.3 of IEEE-519-1992, maximum allowable total harmonic current demand distortion limits for each VFD operating at full load and speed shall not exceed 5% as calculated and measured at the point of common coupling ($I_{sc} / I_l > 20$).

1.6 The VFD shall be capable of operating any standard squirrel cage induction motor with a full load current rating equal to or less than the full load current rating of the VFD. At any time in the future it shall be possible to install a new or rewound standard squirrel cage induction motor with a full load current rating equal to or less than the full load current rating of the VFD without making any modification to the VFD.

1.7 The VFD shall have multiple motor capability (i.e. the ability to operate multiple pumps, fans, conveyors, or other equipment off the same VFD). Without modification, the VFD shall be capable of operating any combination of motors whose total full load current rating is less than or equal to the VFD's full load current rating.

1.8 For maintenance purposes, the VFD shall be capable of stable operation with the motor completely disconnected from its load. The VFD shall also be capable of being operated without a motor connected to its output terminals.

1.9 The VFD shall be listed by Underwriters Laboratories (UL) and properly labeled by the manufacturer. Assembled drive packages shall be manufactured by a manufacturer of UL Listed Industrial Control Panels and shall include the manufacturer's UL label. If a modification is required to the manufacturer's standard product to meet the requirements of this specification, only the VFD manufacturer is allowed to make that modification. Distributor and/or System Integrator changes to a manufacturer's standard product are specifically not allowed.

1.10 All VFDs for this project (regardless of their horsepower rating) shall utilize identical operator interfaces and employ exactly the same programming methods.

1.11 All the VFDs for this project shall be designed and manufactured in the United States of America.

1.12 The VFDs for this project shall be US Drives, Inc., Phoenix DX Clean Power or pre-approved equal.

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2.0 CONFIGURATION

2.1 Unless otherwise specified, the VFD shall be provided in a Nema Type 1, Floor Mount Enclosure. Maximum allowable enclosure dimensions are as follows:

Input Voltage / Drive Horsepower			Max Dimensions (H x W x D)
200 to 250 VAC (208/230/240)	380 to 500 VAC (380/400/415/480)	525 to 600 VAC (525/575/600)	
20 HP to 30 HP	40 HP to 60 HP	40 HP to 75 HP	60" x 24" x 23"
40 HP to 100 HP	75 HP to 200 HP	100 HP to 200 HP	72" x 30" x 25"
125 HP to 250 HP	250 HP to 500 HP	250 HP to 600 HP	84" x 78" x 30"
-	600 HP to 1000 HP	700 HP to 1200 HP	84" x 118" x 30"

2.2 The VFD Enclosure shall be constructed of sheet steel to reduce Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) and to provide maximum physical protection for all internally mounted components.

2.3 The VFD shall include a digital Operator Interface with a two line, 32 character, Liquid Crystal Display (LCD) and a sealed membrane type Keypad. The Operator Interface shall be used for drive operation, drive programming, drive monitoring, and drive troubleshooting. The Operator Interface must also be able to start and stop the drive, reset VFD faults, and manually adjust the VFD's speed reference. The Operator Interface shall have LED indicators for drive "Fault", drive "Run", drive in "Current Limit", and "Forward" direction of rotation. The Operator Interface shall be removable and remote mountable.

2.4 The Operator Interface shall be able to display, in plain english language messages, all real time operating variables, and all drive programming parameters. The operator interface shall be capable of displaying a specific user selected parameter on power-up. This "power-up" parameter would typically be a parameter that is important to the machine operator such as motor speed or motor load. Two scaling parameters shall be provided so it is possible to display at least two drive parameters (such as output frequency and motor torque) in real world terms such as Gallons per Minute (GPM) and Percent Machine Load.

2.5 The VFD shall include a bright LED to indicate that voltage is present on the DC Bus.

3.0 OPERATING CONDITIONS

3.1 The VFD shall operate properly at full rated capacity under the following conditions:

3.1.1 Input Line Voltage ranging from 200-250 VAC, 380-500 VAC, 500-600 VAC, -15%, +10%

3.1.2 Input Line Frequency ranging from 45 Hz to 65 Hz.

3.1.3 Ambient Temperature ranging from 14°F to 104°F (-10° to 40° C) – Nema 1 Enclosure.

3.1.4 Altitude up to 3,300 feet (1000meters) above mean sea level.

3.1.5 Humidity up to 95% (non-condensing).

4.0 VFD PROTECTIVE FEATURES

4.1 The VFD shall include either a 3% dc bus reactor to correct the input power factor to 0.95 or higher.

4.2 The VFD shall protect itself from damage due to any grounding or shorting of its output power circuit. Protection is defined as a normal shut down with no component damage. Output circuit phase-to-phase and/or phase-to-ground faults shall not cause fuse blowing. VFDs that require an isolation transformer to provide ground fault or short circuit protection without fuse blowing are not acceptable.

4.3 The VFD shall protect itself from damage due to any unintended disconnection or reconnection of the output load. Protection is defined as a normal shut down with no component damage and no fuse blowing. The VFD shall not trip off line due to the instantaneous removal of motor load.

4.4 The VFD shall protect itself from damage due to a single phase condition on the input ac power line and/or the complete loss of input power. Protection is defined as a normal shut down with no component damage and no fuse blowing.

4.5 Brownout conditions and/or high line voltage conditions shall not damage the VFD. The VFD shall go through an orderly shutdown whenever the incoming ac line voltage falls outside the acceptable voltage limits as defined in the previous section of this specification.

4.6 The VFD shall be insensitive to phase rotation. Incorrect phase sequence during installation or inadvertent phase reversal after installation shall not cause damage to the drive or prevent it from operating.

4.7 The VFD shall include heat sink thermal protection to protect itself against excessively high ambient temperature conditions.

4.8 An Instantaneous Over Current (IOC) trip circuit shall continuously monitor the peak output current. It shall provide instantaneous shutdown without component failure whenever its trip point is surpassed. The IOC trip point must be greater than or equal to 250% of the VFD's rated full load output current.

4.9 The VFD must pass the following standards for noise immunity and voltage transient protection:

4.9.1 IEEE C62.41-1991 Category B (Voltage Transients up to 6000V)

4.9.2 EN50082-1/2 (Generic Immunity Standard)

VFDs that have not been tested to these standards are not acceptable.

4.10 The VFD shall be provided with Metal Oxide Varistors (MOVs) for transient voltage suppression on all three phases of the incoming power line. The MOVs shall have a rating of not less than 80 joules. An additional MOV to ground shall be provided on grounded ac power systems.

4.11 The VFD shall protect against damage due to any interruption or run away of its incoming speed reference signal. If the speed reference signal is a 4 to 20 ma current reference, it shall be possible to program the VFD to either shut down, go to minimum speed, or continue operation at its last known speed reference point whenever a loss of reference signal is detected.

4.12 The VFD shall include inverse time overload protection that meets the requirements of the National Electrical Code (NEC), Article 430. It shall be programmable for Class 10, Class 20, or Class 30 protection.

4.13 The VFD shall be capable of protecting the motor against damage during stall conditions.

5.0 VFD GENERAL PERFORMANCE FEATURES

5.1 The VFD shall employ sensorless ac vector control with automatic voltage boost that continually adapts to changing load conditions to provide maximum motor output torque at all operating speeds. High Overload Capacity (Constant Torque) rated drives must be capable of starting any ac motor that can be started across the line.

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5.2 Drive output voltage shall vary with frequency to maintain a constant volts per hertz ratio up to motor base speed (typically 60 Hz).

5.3 Operation above motor base speed, should be possible with either constant voltage operation (typical for most applications) or constant volts per hertz operation. Operation at frequencies more than 10% above motor base speed shall be prevented unless the user specifically programs the VFD to allow for high speed motor operation.

5.4 The VFD shall have separately adjustable rates of acceleration and deceleration control. The acceleration and deceleration ramps shall be adjustable from 0.1 to 3200 seconds and it shall be possible to select either a linear ramp or an s-curve shaped ramp. Up to eight (8) different user selectable acceleration rates and eight (8) different user selectable deceleration rates shall be available.

5.5 The VFD shall be horsepower rated and have a continuous output current rating equal to or greater than the Full Load Current ratings shown in National Electrical Code (NEC) Table 430-150. High Overload Capacity (Constant Torque) rated drives shall have a 1 minute overload rating equal to 150% of their continuous output current rating. Normal Overload Capacity (Variable Torque) rated drives shall have a 1 minute overload rating equal to 120% of their continuous output current rating.

5.6 The VFD shall employ adjustable current limit control that will override the speed reference command and decrease the drive's output frequency while maintaining the optimum volts per hertz ratio whenever the output current level exceeds the current limit set-point. Current limit shall automatically extend the acceleration ramp to prevent motor overload during acceleration and automatically extend the deceleration ramp to prevent over-voltage tripping due to motor regeneration during deceleration. Current limit shall be adjustable up to 120% of the VFD's full rated output current on Normal Overload Capacity (Variable Torque) rated drives and up to 150% of the VFD's full rated output current on High Overload Capacity (Constant Torque) rated drives.

5.7 The VFD shall have separately adjustable minimum and maximum frequency limits.

5.8 The VFD output carrier frequency shall be programmable for either fixed or variable carrier operation.

5.9 VFD efficiency shall be no less than 96% at full load, full speed.

5.10 The VFD shall have bi-directional auto-speed search (flycatcher) for starting into rotating loads. The VFD must be able to catch a motor spinning in either direction and bring the motor to the desired operating speed in the proper direction without stopping the motor or tripping the drive.

5.11 The VFD control power supply shall continue to operate during a momentary power loss (power dip ride-through). The minimum acceptable ride through time shall be 2 seconds.

5.12 The VFD shall be able to prevent mechanical system resonance conditions by avoiding (rejecting) specific programmed frequency set-points. There shall be three frequency reject points available for programming and the bandwidth around each of these points shall also to be programmable.

5.13 Cyclic loads and loads that include momentary regeneration shall not cause the VFD to Overvoltage Trip. Typical applications include Metal Forming Presses, Injection Molding Machines, Piston Type Pumps, Vibratory Feeders, Long Belt Conveyors, Crushers, Grinders, Kilns, and Sawmills.

5.14 The VFD shall have the ability to be programmed to automatically restart after a power outage and/or after a fault trip. It shall be possible to program the VFD to attempt a restart only after a power outage or after either a fault trip or a power outage. The VFD shall automatically attempt to restart (up to) 10 times. The number of restart attempts and the time between restart attempts shall be programmable.

5.15 The VFD stopping mode shall be programmable for coast to rest or ramp stopping. The VFD shall also be able to inject dc voltage and current into the motor for rapid deceleration. If dc injection braking is selected, the amount of injected current shall be programmable and the braking time shall be calculated automatically by the VFD.

5.16 The VFD shall have reversing capability, but reverse operation should be prevented unless the user specifically programs the VFD to allow for motor reversal.

5.17 The VFD shall have the ability to provide a non-standard output voltage (non standard volts per hertz ratio) to accommodate special motors and/or special applications.

5.18 The VFD speed reference shall be selectable from any of the following: drive keypad, external speed potentiometer, VFD mounted speed potentiometer, analog signal input (voltage or current signal), speed increase / decrease pushbuttons (contact inputs), or via digital communications (i.e. RS-232/422/485, ModBus RTU, Metasys N2, etc.).

5.19 The VFD shall be capable of accepting up to eight (8) digital inputs. One input shall be a dedicated “drive enable” input and the other digital inputs shall be user programmable. It shall be possible to direct these digital inputs to any settable bit parameter within the drive. It shall also be possible to individually invert the sense of any input. Digital Inputs will typically be used to start and stop the drive, reset a fault, change machine direction, or select an alternate reference source. Because these digital inputs can be directed to any settable bit parameter within the drive, they can also be used to select preset speeds, alternative acceleration and deceleration rates and various different operational modes.

5.20 The VFD shall include a high performance set-point controller. The set-point controller shall include gain adjustments for Proportional, Integral, and Differential functions (PID Control).

5.21 The VFD shall be capable of accepting up to two (2) analog input signals configured as one or more of the following signal types: 0 to 10VDC, 0 to -10VDC, -10 to +10VDC, 0 to 20 mA, 4 to 20mA, 20 to 0 mA, or 20 to 4 mA. These analog inputs shall be user programmable. It shall be possible to individually scale each input, invert it, offset it, and then direct it to any settable parameter within the drive. Typically these inputs will be used as (speed or current) reference signals, but they may also be used as feedback signals (PID Control), or they may be used to set limits or control thresholds within the drive. An option card shall be available for applications requiring more than two analog inputs.

5.22 The VFD shall have two (2) digital outputs. Each digital output must be a voltage free “form C” contact rated 120VAC at 5 amps or higher. Digital outputs shall be user programmable to mirror the state of any bit parameter within the VFD such as drive fault, drive run, at target speed, in current limit, or at zero speed. It shall also be possible to control these outputs based on the result of a logical operation (AND, OR, NOR) on any two bit parameters within the VFD. Each digital output must include an optional time delay function. For applications requiring more outputs, an option card shall be available to provide up to five (5) additional relay outputs.

5.23 The VFD shall have two (2) analog output signals. Each analog output shall be user programmable and scalable. The analog outputs shall be 0 to 10 VDC signals user programmable to mirror any parameter in the VFD such as output frequency, motor speed, motor current, or motor voltage. An option card shall be available for applications requiring more than two analog outputs.

5.24 The VFD shall have eight (8) user programmable preset speeds. It must be possible to select the eight different preset speeds using no more than three contact inputs (binary coded inputs).

5.25 The VFD shall have two (2) threshold detectors. Each threshold detector shall be able to compare an internal drive parameter such as motor speed or motor current against some user defined pre-set value. The output of the threshold detector can be programmed to control one of the digital outputs (for a customer alarm) or it can be used to control any user programmable bit parameter within the drive (for an automatic mode change or automatic rate change). Threshold

detectors shall be programmable for threshold level, hysterisis, and sense (normally open or normally closed).

5.26 The VFD shall be able to generate up to two (2) customer defined parameters by adding, subtracting, multiplying, dividing, ramping, limiting, and/or filtering existing parameters within the drive. These customer defined parameters can be displayed, routed to an analog output, or re-routed and used as an input parameter to control another function within the drive.

5.27 The VFD main PCB shall have LED indicators to indicate: Drive in Current Limit and Microprocessor Active.

5.28 The VFD shall include sensorless ac vector control with automatic tuning for the speed loop and current loop. The VFD shall be capable of maintaining motor speed within ± 0.5% of maximum speed without the use of a motor mounted encoder or tachometer. VFD tuning shall be completely automatic (it must not require user participation during start-up). Tuning routines that require the motor to be disconnected from the load and/or rotated at a pre-set speed during start-up are specifically not allowed.

5.29 The VFD main PCB shall include isolated control circuitry.

5.30 The VFD shall include password protection to prevent parameter changes by unauthorized personnel.

5.31 The VFD shall keep a running log of total “drive running” time.

5.32 The VFD shall have two built in reset-able timers to provide alarms for critical maintenance tasks such as changing filters and lubricating bearings.

5.33 The VFD shall maintain a fault log that retains the last 10 VFD faults in memory.

5.34 The VFD shall be able to display the power output of the drive in Kw and the accumulated power output over time (Kw-Hr).

5.35 The VFD shall have the ability to calculate and display the approximate cost of electricity consumed by the drive over a given period of time (Kw-Hr x Cost of Power).

5.36 All VFD operating parameters shall be stored in non-volatile memory (EEPROM). Potentiometers and/or jumpers (links) will not be allowed for any adjustments.

5.37 Minimum VFD Performance characteristics shall be as follows:

Output Frequency Range:	0 to 60 Hz with operation to 600 Hz possible
Frequency Accuracy	
with Analog Reference:	0.1% of Max frequency (25°C ± 10° C)
with Digital Reference:	0.01% of Max frequency (0° to 70° C)
Frequency Resolution	
with Analog Reference:	0.06Hz @ 60Hz
with Digital Reference:	0.001Hz @ 60Hz
Speed Regulation:	0.5% of Maximum Speed
Speed Range:	100 to 1

6.0 VFD SYSTEM PERFORMANCE REQUIREMENTS

This section should be used to define the specific requirements of your project. It should clearly define the environmental conditions and enclosure requirements. It should describe all modifications required to the standard product including all special operators and indicators. It should also clearly define all interface requirements between the VFD and the plant control system and all interface requirements between the VFD and the plant electrical system. Standard drive modifications should be used whenever possible. Any non-standard drive modifications should be described in detail.

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The following is a sample of how this section could be structured:

6.1 Enclosure: Nema 1, Nema 12, Nema 3R (Outdoor), Nema 4, or Special
Wall Mount or Floor Mount
Cable Entry / Exit Requirements

Example: The VFD shall be provided in a NEMA 1 Wall Mount Enclosure. All power and control wires shall enter and exit the enclosure through the top. The VFD must fit within the available space as shown on the drawings.

6.2 VFD Mounted Operator Devices – Select specific operator devices as required.

6.2.1.1 Keypad – The VFD shall include a local Operator Interface. The Operator Interface shall include Start / Stop Keys and Speed Increase / Decrease Keys. The Operator Interface shall also include an LCD type readout for displaying important drive information such as Motor Speed, Motor Current, Motor Voltage, etc.

6.2.1.2 Hand / Off / Automatic Selector Switch - Allows the operator to select where the VFD Start / Stop commands and Speed Reference signal will come from. In "Hand" Mode the VFD is operated using a local Speed Reference and local Start and Stop commands. In "Auto" Mode the VFD follows a remote speed reference signal (typically 4 to 20 ma) and responds to remote Run / Stop commands.

6.2.1.3 Local / Remote Selector Switch – Allows the operator to select where the VFD Start / Stop command will come from. In "Local" Mode, the command will come from Local Start / Stop Pushbuttons (typically the Start / Stop Keys on the Operator Interface). In "Remote" Mode the command will come from a remote source such as a PLC.

6.2.1.4 Auto / Manual Selector Switch - Allows the operator to select where the Speed Reference Signal will come from. In "Auto" Mode, the reference signal will come from a remote source (typically a 4 to 20 ma signal). In "Manual" Mode the reference will come from a local Speed Potentiometer or from the VFD Operator Interface (Keypad).

6.2.1.5 Speed Potentiometer – Used when it is desirable to adjust VFD speed using a potentiometer instead of the Operator Interface (Keypad).

6.2.1.6 Additional Pushbuttons and / or Selector Switches: - Provide a detailed description of each additional operator device and its specific function.

6.2.1.7 Analog Indicators – The Operator Interface (Keypad) can provide a digital readout of all important drive parameters. Analog Indicators may be added if desired.

6.3 Standard Drive Modifications:

6.3.1 Input Disconnect and Fuses: The VFD shall include a door interlocked input ac line disconnect switch with fuses. The ac line fuses should be of the semiconductor type and have an asymmetrical short circuit interrupting capability of 200,000 amperes.

6.3.2 Input Circuit Breaker: The VFD shall include a door interlocked input circuit breaker. The circuit breaker shall have an asymmetrical short circuit interrupting capacity of _____ amperes.

6.3.3 Manual Contactor Bypass: A Manual Contactor Bypass Assembly shall be provided to allow the ac motor to be operated off the VFD (normal operating mode) or directly off the ac power line (bypass mode).

6.3.3.1 The Bypass Assembly shall consist of two electrically and mechanically interlocked, UL rated contactors (a VFD Mode Select Contactor and a Bypass Mode Select Contactor). A common motor overload relay shall also be provided.

6.3.3.2 Door mounted bypass operator devices shall include a "Power On" indicating light, a "VFD Mode" indicating light, a "Bypass Mode" indicating light, and a "VFD-Off-Bypass" mode selector switch.

6.3.3.3 When the "VFD-Off-Bypass" selector switch is in the "VFD Mode", the VFD Mode Select Contactor closes and connects the output of the VFD to the ac motor. The ac motor operates off the VFD with its speed controlled by the VFD. When the VFD-Off-Bypass" selector switch is in the off position, both Mode Select Contactors will be open and the ac motor will be stopped. When the "VFD-Off-Bypass" selector switch is in the "Bypass Mode", the Bypass Mode Select Contactor closes and connects the ac motor directly to the ac power line. In Bypass mode, the Bypass Mode Select Contactor and the motor overload relay function as a full voltage, non-reversing ac motor starter. The ac motor operates directly off the ac power line with no speed control.

6.3.3.4 A door interlocked main circuit breaker shall be provided to completely disconnect the bypass assembly (VFD and AC Motor Starter) from the AC Power Line.

6.3.3.5 A VFD Service Switch (Disconnect) shall also be provided to allow complete disconnection of the VFD from the ac power line when operating in the Bypass mode. A contactor at the VFD input is not acceptable. VFD AC line fuses shall also be provided. These fuses must be semiconductor type fuses with an asymmetrical short circuit interruption capability of 200,000 amps.

6.3.3.6 The VFD shall have a door mounted "Hand-Off-Auto" selector switch. In "Hand Mode" the VFD will be operated manually using the local Operator Interface. Start and Stop Keys and Speed Increase / Decrease Keys on the Operator Interface (Keypad) will control the VFD. In "Off" Mode, the VFD will not run. In Auto Mode, the VFD will follow a remote speed reference signal (typically 4 to 20 ma) and respond to remote Run/Stop commands.

6.3.4 120 VAC Operator (Digital Input) Interface Card - If the VFD will be operated using remote pushbuttons and selector switches powered at the 115 VAC level, this card should be added. It accepts 120 VAC logic level input signals and converts them to 24 VDC logic level inputs for the VFD.

6.3.5 RS 232/422/485 Communications Card – Allows the VFD to communicate with Computers, PLCs, and microprocessor based data collection systems. Available protocols include Modbus RTU, Metasys N2 and many others.

6.3.6 Analog Output Signal Conditioner Card – Conditions the VFD's 0 to 10 VDC Output (typically used when a 4 to 20 ma output signal is required).

6.3.7 Input / Output Expansion Card – Allows the VFD to accept additional Analog and Digital Input and Output signals.

6.4 Additional Drive Modifications – Additional modifications might include:

6.4.1 Input or Output Contactors – For positive disconnect of motor and drive.

6.4.2 Braking – Line Regenerative or Resistor Braking.

6.4.3 Output Reactors or Output Filters – Used when motor output cables are very long.

6.4.4 Automatic Bypass – Automatically switch to Bypass on a VFD Fault.

6.4.5 Special Logic and/or Operation.

6.4.6 Special Communications Requirements.

7.0 DRAWINGS, MANUALS, SPARE PARTS, START-UP, TRAINING, AND WARRANTY

7.1 The VFD manufacturer shall provide one (or more) sets of as built engineering drawings as part of the final documentation package.

7.2 The VFD manufacturer shall provide one (or more) copies of the VFD Operation and Maintenance Manual as part of the final documentation package.

7.3 The VFD manufacturer shall provide one (or more) copies of its list of recommended spare parts as part of the final documentation package.

7.4 The VFD manufacturer shall provide the services of a factory authorized start-up engineer. The start-up engineer shall also instruct the owner's operators in the proper use of the VFD.

7.5 The VFD manufacturer shall warrant the VFD for a period of not less than 3 years.

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