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ENGINEERING DATA
SINGLE PHASE PHOENIX DS AC DRIVE

Electrical Specifications:

Rated Input Voltage:	200-250Vac, 380-500Vac, 500-600Vac
	-15% of minimum, +10% of maximum.
Frequency Tolerance:	45-65 Hz
Number of Phases:	1
Efficiency:	97% or greater at rated current
Max. Short Circuit Current Rating:	200,000A rms symmetrical, 600 volts (when used with AC input line fuses specified in tables 1-1 to 1-3 of the Instruction Manual).

Control Specifications:

Control Method:	Sine coded PWM with programmable carrier. Space Vector control.
Output Voltage:	0 to rated voltage.
Output Frequency Range:	0 to 600 Hz.
Frequency accuracy:	Analog reference: 0.1% of max frequency. Digital reference: 0.01% of max frequency.
Frequency resolution:	Analog reference: 0.06Hz at 60Hz. Digital reference: 0.001Hz at 60Hz.
Accel/Decel:	0.1 to 3276 sec.
Drive overload:	At Constant Torque: 150% of drive rated output for 1 minute. At Variable Torque: 120% of drive rated output for 1 minute.
Inverse Time Overload:	Programmable motor overload protection to comply with N.E.C. Article 430.
Current limit:	Proactive current limit programmable in % of motor rated current.
Braking torque:	Approximately 20%.
Maximum connected motor:	2 times rated drive horsepower.

Environmental Specifications:

Ambient Temperature:	-10°C to 50°C (14°F to 122°F) Nema type 1 enclosed.
Storage Temperature:	-40°C to 70°C (-40°F to 158°F) Nema type 1 enclosed.
Altitude:	Sea level to 3300 Feet [1000m] without derating.
Humidity:	95% relative humidity non-condensing.
Vibration:	9.8m/sec^2 (1.0G) peak.
Immunity:	IEEE C62.41-1991 Category B (Formerly known as IEEE 587) EN50082-2 (Generic Immunity Standard).
Input R.F.I. Filter:	Standard on all models.

Physical attributes:

Mounting:	Though hole or panel mount for size 0 to size 3 drives. Size 4 drives are free standing enclosure.
Nema Rating:	Type 1 (IP20) as standard, Type 12 (IP54) optional.
Construction:	Steel construction (reduces E.M.I.)

Protective Features:

- Programmable speed sensitive motor overload protection to comply with UL 508C sections 43.3, 43.4 and 43.5.
- Drive overload protection to protect inverter.
- Motor stall protection at acceleration /deceleration and constant speed operation.
- Peak output current monitoring to protect against line-to-line shorts and line-to-ground shorts.
- Heatsink over-temperature monitoring.

- AC line overvoltage protection.
- DC bus over-voltage protection.
- DC bus under-voltage protection.
- Programmable stall protection.
- Internal power supply monitoring.
- AC power loss detection.
- Critical speed rejection with programmable 3 points with bandwidth to avoid mechanical resonance.
- Flycatcher "catch a spinning motor".
- Password protection to prevent parameter changes by unauthorized personnel.
- 4 to 20ma reference loss detection.
- Programmable thresholds and more.

Control I/O:

- 8 Digital Inputs: 7 user programmable inputs and 1 dedicated input for "Stop", rated for 24Vdc logic control.
- 2 Digital Outputs: 2 programmable dry contacts rated 115Vac @ 5A; 30Vdc @ 3.5A.
- 2 analog inputs: -10 to +10V (10 bits) with input impedance: 75KΩ, or 4-20 mA @ 500Ω - Programmable.
- 2 analog outputs: -10 to +10V (10 bits) @ 2 mA max; output impedance = 100Ω. - Programmable.
- 1 voltage reference: +15Vdc reference @ 10 mA max.
- 24Vdc source: Use to power operator pushbuttons and US Drives option boards: 24Vdc @ 80 mA max.

Standard Drives Features:

- New generation IGBT.
- Nema type 1 (IP20) as standard for all models.
- 50°C ambient with standard Nema type 1 (IP20) enclosure.
- High voltage ratings: 250Vac+10% , 500Vac+10% models, and 600Vac+10% models
- Modbus RTU serial communications ready.
- Input line suppression: Metal oxide varistors for line-to-line and line-to-ground voltage surge protection.
- Built-in radio frequency filter.
- Nonvolatile parameter storage.
- All parameters are saved in EEPROM (nonvolatile).
- Auto logging fault history: ten last faults recorded in order of occurrence.
- Simple programming through the Real-time Operator module (R.O.M.) with all data entries and monitoring in engineering units with English descriptions.
- Set point Control P.I.D.
- Injection DC Braking with braking time calculated automatically by the drive.
- Critical speed rejection.
- Programmable auto restart.
- Parameter security code.
- User definable displays with programmable format and parameter scaling.
- 7 programmable digital inputs for custom setups.
- Metering: AC line voltage, motor current, motor voltage, DC Bus voltage, Kw, Kwh, running Kwh cost, and more…
- 8 programmable digital preset speeds with user selectable acceleration and deceleration rates.
- M.O.P. function.
- Programmable PWM carrier frequency, fixed or variable.
- Programmable Time Based Function Generator and Programmable Threshold Detectors
- Run Time and Power on Time Countdown Timers with Alarms plus Run Time and Power on Time Totalizers
- Bi-directional auto-speed search (flycatcher) for starting into rotating loads.
- S-curve accel/decel control.
- Programmable time delay and logic functions (AND, OR, NOR) of bit parameters, digital inputs and outputs.
- Adding, subtracting, multiplying, dividing, ramping, limiting, and/or filtering functions of parameters and analog inputs and outputs.
- Parameters can be displayed, routed to an analog/digital output, or re-routed and used as an input parameter to control another function within the drive.
- User programmable functions and modes.
- Power loss ride through.
- Sleep mode PID.
- Pump underload and overload protection and load recovery.
- Pump backspin control.