



FUTURE-PROOF YOUR CAPITAL INVESTMENT IN ESP SURFACE CONTROLS WITH THE XCEL VARIABLE SPEED DRIVE (VSD) FROM EXTRACT



ESSENTIAL FOR RELIABILITY AND OPTIMIZATION

Providing protection for downhole components against voltage spikes, VSDs are an essential ingredient for improving overall reliability.

XCEL VSDs not only protect an operator's downhole investment but are a must-have for optimizing production rates and controlling drawdown while mitigating gas locking that can damage an ESP. They also play an essential part in power efficiency and maintaining power quality to the downhole equipment.

ADVANCED TECHNOLOGY NOW AND IN THE FUTURE

Induction motors. Permanent magnet motors. High-speed PM motors. XCEL drives from Extract can control each one

with no hardware modification giving you a long-life capital asset that won't become a paperweight if you change your ESP motor technology tomorrow.

SOLUTIONS FOR TODAY'S POWER CHALLENGES

With increasing power demands in geographies with infrastructure constraints, operators need solutions to minimize harmonic distortion. Extract offers 6 pulse XCEL Drives in vector control with input harmonic filter to block distortion back to the line side.

Our proprietary input filter handles 25% more voltage distortion than leading competitor filters and has a smaller footprint. Combined with vector control for permanent magnet motors, it is a superior option to an AFE drive.



XCEL DRIVE

TECHNICAL DATA AND SPECIFICATIONS

SPECIFICATIONS

Feature Description	Enclosed VFD Type NEMA 3R
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PRIMARY DESIGN FEATURES

Output Range @ 480V *	10 – 512 KVA
45-66 Hz Input Frequency	Standard
Output: AC Volts maximum	Input Voltage Base
Output Frequency Range: Hz	0 – 599hz
Initial Output Current	180% for 2 seconds
Overload: 1 Minute	120%
Enclosure with Sun Shield	Standard
VFD Enclosure Heat Exhaust System	Standard
Operator Access Door	Standard
Enclosed IO Access Panel	Standard
Enclosure Space Heater	Standard
Oversize Enclosure	Standard
Maximum Motor Lead Length	15,000 ft
AC Input Circuit Disconnect	Standard
Input Line Reactors – 3%	Standard
EMI Filter	Standard
Input Phase Loss Protection	Standard
Input Overvoltage Protection	Standard
Line Surge Protection	Standard
Output Short Circuit Protection	Standard
Output Ground Fault Protection	Standard
Output Phase Protection	Standard
Overtemperature Protection	Standard
DC Overvoltage Protection	Standard
Drive Under Speed Protection	Standard
Drive Under Load Protection	Standard
Drive Overload Protection	Standard
Motor Overload Protection	Standard
Local/Remote Keypad	Standard
12" Color Operator Interface	Standard
Keypad Lockout	Standard
Fault Alarm Output	Standard
Built-In Diagnostics	Standard
Embedded Web server	Standard
Embedded Power Measurement	Standard
Maintenance via Dynamic QR-Code	Standard

INPUT/OUTPUT INTERFACE FEATURES

Speed Setting Inputs:	
12" Operator Interface	Standard
4-20 mA Isolated	Standard
4-20 mA Differential	Configurable
PID Control for Downhole Tool	Standard

Analog Outputs:	
Speed/Frequency	Standard
Torque/Load/ Current Motor	Programmable
Voltage	Programmable
0-10V DC Signals	Programmable
4-20mA DC Signals	Programmable

Discrete Outputs:	
Fault Alarm	Standard
Drive Running	Programmable
Drive at Set Speed	Programmable
Optional Parameters	50

Communications:	
ModBus TCP	Standard
Serial 232/485	Optional

PERFORMANCE FEATURES

Sensorless Vector Control	Standard
Volts/Hertz Control	Standard
IM/ PM motor Control	Standard
Electronic Reversing	Standard
DC Braking	Standard
PID Set point Controller	Programmable
Critical Speed Lockout	Standard
Current (Torque) Limit	Standard
Adjustable Acceleration/Deceleration	Standard
Automatic Restart	Selectable
Coasting Motor Start	Standard
Coast or Ramp Stop Selection	Standard
Carrier Frequency Adjustment	1 – 8 kHz

STANDARD CONDITIONS FOR APPLICATION AND SERVICE

Operating Ambient Temperature	0 -45C
Storage Temperature	-40 - 60C
Humidity (Maximum) Noncondensing	95%
Altitude (Maximum without De-rate)	3300 ft. (1000m)
Line Voltage Variation	+10%/-10%
Line Frequency Variation	48 – 63 Hz
Efficiency	>96%
Power Factor (Displacement)	.98

STANDARD I/O SPECIFICATIONS

12 – Digital Input Programmable	24V Positive or Negative Logic
4 – Analog Input Configurable	Voltage : 0-+10V Current : 0(4) -20 mA
2 – Digital Output Programmable	Assignable
3 – Relay Outputs	1 NO/NC 2 NO
2 – Analog Output Programmable	Configurable as Voltage(0-10V) or Current(0-20ma)

Setup Adjustment Provisions:

12" Color Operator Interface	Standard Standard
Personal Computer Connectivity via Wi-Fi	-40 - 60C

Operator Control:

12" Color Operator Interface	Standard
Drive Mounted Keypad/Display	Standard
Serial communications	Optional
24V DC Control Circuit	Standard



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