

## Intellek™ Variable Speed Drive

Precise, Reliable Surface Control of Induction or Permanent Magnet Motors

### Applications

Control of induction or permanent magnet motors used with

- Electric submersible pump (ESP) systems
- Progressing cavity pump (PCP) systems
- Horizontal pumping systems (HPS)

### Benefits

- Increased system run life
- Optimized system performance
- Increased well production

### Features

- Multiple motor start modes (soft, jog, rock, current)
- Automatic, manual and programmable operating modes
- Protective alarms and shutdown
- Superior personnel safety
- Different configurations to fit most end-user requirements
- User-friendly UHMI interface
- Compatible with most downhole sensors

The Levare Intellek™ variable speed drive (VSD) provides precision speed control and protection of electric submersible pump (ESP), progressing cavity pump (PCP) and horizontal pumping systems to efficiently optimize well production and downhole equipment system performance.

The Intellek™ VSD is capable of controlling both permanent magnet (PMM) and induction motors (IM) across the widest variety of well conditions.

Specifically designed and built for oilfield applications, the Intellek™ VSD comes with an integral output sine wave filter (SWF) and incorporates the latest surface controller technology, the Levare UHMI. Integrating external surface and/or downhole sensor measurements, programmable control and protection software functions enable intelligent ESP, PMM-PCP and well operations.

Standard Intellek™ VSDs are equipped with a NEMA4 rated enclosure and are well suited to protect against the demanding environmental conditions experienced in many operating locations.

### Superior Control

The Intellek™ VSD offers multiple pump start-up options dependent on the system type and motor torque requirements.

Soft motor starting is the default start-up mode and is executed according to predetermined user setpoints for start and operating frequency and the duration over which the speed is accelerated. Under more difficult starting conditions, additional start modes are optionally available that provide dynamic voltage pulses to “jog” motor starting or momentarily change shaft rotational direction to “rock” motor starting.

Also available is a “current” start mode which sets and limits the motor current level over the duration which speed is ramped-up to the desired setpoint. PID-loop is available for pump intake pressure, motor amps or analog Input signal.



## Protection

- Protection against low insulation resistance in downhole cable & motor (determined by measurement of resistance or leakage current from downhole gauge)
- Low/high input voltage protection
- Input voltage unbalance protection
- Power ride-through protection (up to 100 ms)
- Overload and underload protection
- Motor current unbalance protection
- Advanced Gas Lock Removal algorithm
- Start overload protection
- High vibration protection
- Motor high-temperature protection
- Low pump intake pressure protection
- High pump discharge pressure protection
- High pump discharge temperature protection
- DHG communication loss protection
- “Door open” protection

## SCADA I/O built-in options

- SCADA communication interface RS-485 (selectable baud rate)
- SCADA communication ethernet port
- SCADA communication wireless modem

## Specifications

Input Voltage (+ range deviation from nominal)	480 V AC (60 Hz) -25% / + 25% 380 V AC (50 Hz) -25% / + 25%						
Current Rating, A	160	250	400	630	1,000	1,200	1,600
Output Power, kVA @ 480 V	132	208	332	520	830	998	1,130
Input Frequency	47 – 63 Hz						
Min. efficiency	95%						
Output Frequency / Speed Range							
- IM	2 – 75 Hz						
- PMM	120 – 7,200 rpm						
Inverter Output	Filtered PWM						
Output distortion	5% with built-in output sinewave filter						
Intermittent Overload	125% for 300 sec						
Ambient Temperature	-10°C to 55°C						
Degree of Protection	NEMA3R / NEMA 4						
Drive Controller	UHMI						

## User interfaces

USB - 2.0 IP-67	1
Ethernet 10/100 Mbit	4
RS-485 (Modbus RTU protocol)	3
RS-232 (Modbus RTU protocol)	1
Digital Inputs	8
Digital Output (Open Collector)	7
Digital Output (SPDT Relay)	1
Analog Inputs (4-20 mA, 0-10 V)	8
Analog Outputs (4-20 mA, 0-10 V)	2