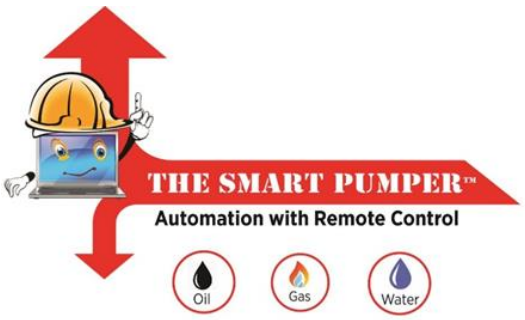
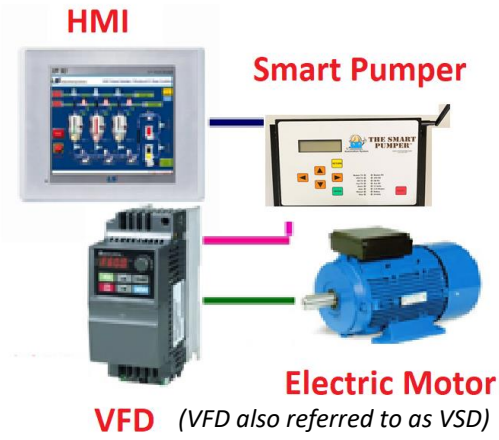
ANNEX3 SMART PUMPER IS A VSD CONTROLLER





Smart Pumper modbus cable connects to VSDs to remotely control the VSDs and motor speed. It also data logs the VSD electrical parameters and defines error codes; see all the data and control through the Smart Pumper HMI.

The Smart Pumper communication to VSDs issues speed references, run, stop, direction and jog commands. It can also adjust motor parameters such as Min.-Max. Hertz, Min.-Max. Amps, Min.-Max. Torque, and Run Parameters associated with High Pump Speed and Low Speed reference points. Other analog and digital preset parameters can also be controlled and monitored remotely through the established connection with Smart Pumper.

Connect 16 additional sensors to Smart Pumper Digital and Analog channels to monitor and control other site parameters and additional operations. Smart Pumper controls VSDs in either a manual mode or automated mode based on a patented real time fluid level approach or in tandem with the digital and analog signals from the nameable channels. Also, **control chemical pumps at the same time** in harmony with VSD or independently.

Smart Pumper calculates PCP Pump Rate and RPM as wells as for other forms of artificial lift; based on device parameters and VSD frequency changes in real time.

Built-In Two-Way digital communications enables drive commands to be controlled remotely through Smart Pumper. Data from the VSD and sensors is stored on the Smart Pumper and is downloaded to inhouse servers where data covering electrical drive parameters from line voltage to motor voltage, amperage, torque Kw, HP, and drive temperature, to name a few, can be viewed. Fault codes are defined into meaningful messages like “overcurrent, overvoltage, low voltage, and other.” **Smart Pumper Integrated Solutions** most often include the VSD in a prepackaged enclosure sized to specific horsepower requirement(s) to deliver a plug-n-play system. However, you can also retrofit existing drives in existing enclosures in the same way to automate, control, and monitor sites with existing VSDs.