Drive Dynamics
Experts in Motor Control

SD700 Variable Speed Drive
Irrigation software features

The SD700 series of variable speed drives offer a complete motor control solution for pumping applications ranging from 30kW through to 2000kW. Advanced motor control is complimented with an extensive and highly programmable set of inputs and outputs. User interface is achieved through a plain English 4 line, 64 character LCD display or by fitting an optional 3.5” 262000 colour, 240x320 pixels TFT touch screen.

The SD700 has been developed by Power Electronics, one of Europe’s leading variable speed drive and soft starter manufacturers. Drive Dynamics are the NZ distributors for all of Power Electronics product, with more than 12 years history between the two companies. Drive Dynamics brings more than 30 years experience to the NZ market, much of that time spent involved with the irrigation industry.

Pump Control Macro

Although the SD700 series of variable speed drive can be used for a variety of applications it has been designed specifically with pumping and irrigation in mind. A pump control macro is included as standard in every SD700. The constant pressure pump control macro provides control of up to four pumps as a lead pump system. The SD700 runs the lead pump under speed control and determines when the fixed speed pumps are to be started to meet the required demand.

In addition to constant pressure pumping the SD700 also provides flow limiting through either an analogue flow meter or pulse flow meter.

When the SD700 is set to pump control mode a number of new digital input functions become available for the direct connection of field devices:

- High pressure switch
- Low pressure switch
- Flow switch
- Irrigator fault
- Low water probe
- Pulse flow meter

In addition to the direct connection of these field devices, the SD700 digital inputs can also be configured for further pump control related functions:

- System start/stop – reset
- Setpoint 2,3,4 to provide up to eight pressure setpoints
- Protected manual start
- Unprotected manual start
- Alternative manual speed

The SD700 has two analogue inputs that can be configured for the connection of a pressure transducer and a flow meter. Pressure can be configured in true engineering units such as Bar, kPa, psi, m. Likewise flow can be configured in l/s, l/m, l/h, m3/s, m3/m, m3/hr, m/s, m/m, m/h. Pressure and flow will then be displayed in the selected units.

Major Features

The pump macro has been designed to eliminate the need for any external control system such as a PLC. The comprehensive plain English messages on the SD700 LCD display also eliminates the need for external signal lamps or display.

The major system control features that the SD700 pump macro provides are:

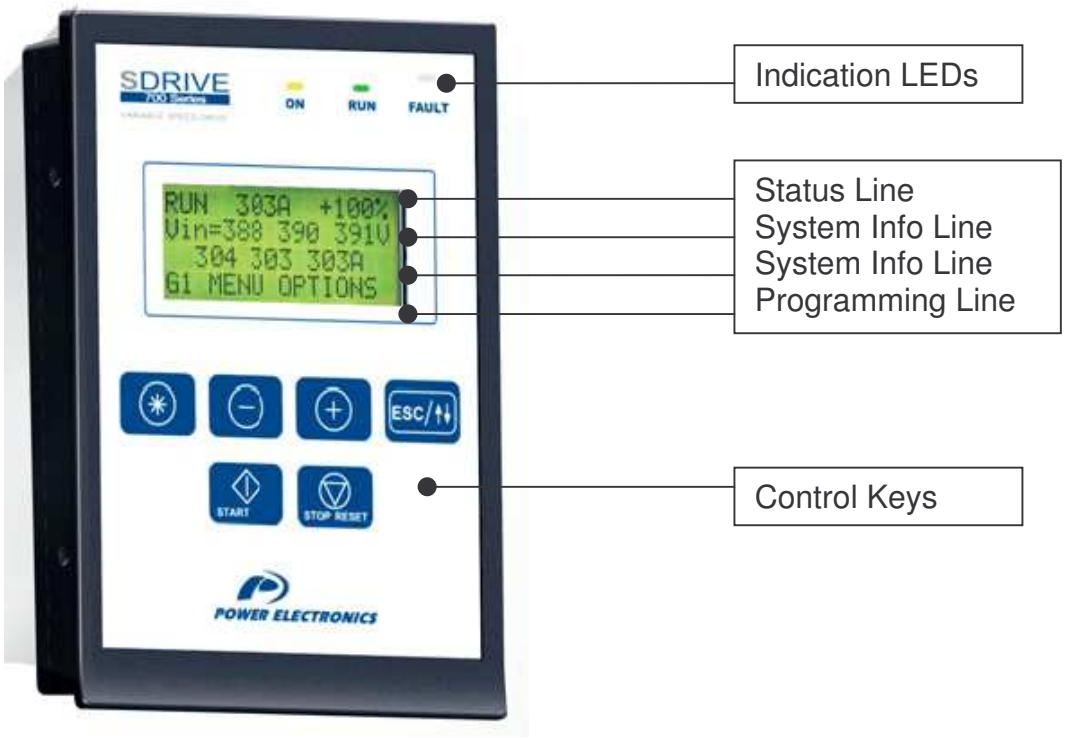
- Irrigation run time with elapsed time display.
- Pipe fill mode gently fills an empty pipe
- Pressure setpoint ramp gradually raises the PID setpoint up to the final setpoint thus eliminating overshoot.
- Control of up to three fixed speed pumps to assist in demand.
- Up to eight pressure setpoints via digital inputs
- Automatic sleep mode shuts the system down in the event of no demand. No demand can be determined through pressure, flow (via flow meter or flow switch) or motor current.
- Automatic system wakeup on pressure drop.
- Jockey pump (stock water, house water etc) control
- Protected manual run. All protective features are still operational.
- Override manual run. No protective features are operational.
- Two selectable manual speeds.

- Friction loss compensation. Pressure setpoint can be raised automatically when a fixed speed pump runs.
- Automatic fault reset. Each individual pump related fault can be selected to reset automatically if desired.
- Lead pump and fixed speed pump run time log.

The major system protection features that the SD700 pump macro provides are:

- Low pressure trip via either analogue or digital input
- High pressure protection via analogue input. This can be configured to either momentarily pause the SD700 or trip on a fault
- High pressure trip via digital input
- Cavitation protection. This can be configured to either momentarily pause the SD700 or trip on a fault
- No flow detection via flow switch or flow meter. This can be configured to either momentarily pause the SD700 or trip on a fault.
- Low water detection.
- Short cycle protection prevents the SD700 from continuously starting and stopping in the event of a leaky NRV.

The standard four line 32 character LCD display



The four line 32 character display has two selectable lines that can be set to display system information. The information displayed includes:

- System operating status eg. PIPE FILLING, SLEEPING NO DEMAND, SETPOINT RAMP, HIGH PRESSURE, FLOW LIMITING etc
- All fault conditions.
- Setpoint pressure and feedback pressure in the selected engineering units
- Flow rate in the selected engineering units.

The optional colour graphic touch screen gives greater scope for displaying information and can be customised to suit an individual users requirements.

Other general operating information that can be displayed includes:

- Line voltages, frequency
- Motor currents, power, power factor, kilowatts, torque
- Motor speed in rpm
- Motor temperature
- SD700 temperatures

SD700 General Information

The SD700 is a fully enclosed VSD with either IP20 or IP54 rating. A switchboard version is also available in IP00. All electronic components are conformally coated with all internal metal components treated with a gold passivated coating. The metal chassis is manufactured from electro-zinc treated mild steel.

Cooling fans are controlled by the SD700 to run only when the SD700 internal temperature reaches a predetermined level thus increasing fan life.

Drive Dynamics holds all stock and spare parts in a fully stocked Christchurch warehouse.