





Main Features. (Version 1811.00 Onwards)

- An industry proven dedicated pump control system designed to operate fixed speed pumps.
- Complete control package.
 - Connect power, wire in the pumps and attach the pressure tube.
- □ Supplied equipment.
 - Swordfish+ controller
 - o IP54 Enclosure
 - o Mains Isolator
 - o Circuit breakers
 - MEN power connections
 - 25Bar pressure transducer 4-20mA
- □ Multiple control voltages.
- □ Capable of operating up to 6 pumps.
- Real English Menus with a 2 Line 16 characters LCD Display.
- Pump enabled and run indicators.
- Easy navigation menu system with password access control.
- □ For clarity Menus disappear when an option or function is not selected or required.
- □ Simple push button actions to enable/disable or manually operate each pump.
- □ Inbuilt settable time clock.
- **□** Remote Control capability via digital input or telemetry.
- SCADA Compatible Modbus/RS485 for remote data acquisition, download or control.
- □ Two control modes.
 - One Cut In and Cut Out pressure for all pumps with time delayed starting of pumps.
 - Individual Cut In and Cut Out pressures for each pump.
- Data protection or user entry via access code.
- Twelve programmable inputs for user selectable functions with adjustable delay.
- □ Four programmable voltage free outputs for BMS interfacing or user selectable output functions.
- Selectable Duty /Standby and Backup pump operating mode options.
- Programmable spin-up mode for any pump that has not recently run. Adjustable Interval & time.
- Temporary mute of the buzzer on key press actions for silent operation. (Not essential)
- Continuous display of the pressure
- Optional Rotary Auto/Off/Manual switches.
 - Manual can be configured to one of two modes.
 - Indirect- The Swordfish+ will operate the pump and provide protection.
 - Direct- The pump switchgear is operated directly from the AOM switch. Provides further redundancy but bypasses protection.
- Simple scaling and zeroing for all types of sensors or transducers.



- Data logs for local or remote viewing.
 - Total system flow.
 - Resettable Hours runs and pump starts for each pump
 - Status of all inputs or outputs.
 - Highest pressure
 - Communications status
- □ Fault logging.
- User adjustable Low Pressure Setting with adjustable delay which performs a Low Pressure Shutdown.
- □ User adjustable Cut In (Restart) Pressure setting.
 - Also has an adjustable next pump In (ON) delay timer
- User adjustable Cut Out (Turn off pumps) Pressure setting.
 - Cut Out is set a pressure.
 - Also has an adjustable next pump Out (OFF) delay timer
- User adjustable High Pressure setting with adjustable delay which performs a High Pressure Shutdown.
- □ A High pressure shutdown displays the pressure that exceeded the limit until the system is reset.
- □ Individual pump fault protection option with adjustable delay.
- Individual pump protection option with auto-resetting and adjustable delay.
- □ Anti cycle options.
 - Pump minimum run time.
 - Maximum starts per hour.
- System Restart Delay Timer.
- System No Flow Input with adjustable timer.
- Pump Rotation Options:
 - Normal Full Autorotation will occur during any system restart.
 - \circ $\;$ Fixed Pump Start. The same pumps starts on every restart.
 - Pump with the lowest hours to start next.
- Optional independent Jockey pump.
- Pause Input.
 - Two options available.
 - Pause all pumps including the Jockey pump.
 - Pause the main pumps and allow the Jockey pump to run.

- Low Level Input option.
 - Used with floats or similar on pressure applications. Displays "Paused Low-Level".
- User Access Code Features
- Multiple Sensor interface
 - Sensor signals.
 - 0-20mA
 - 4-20mA
 - 0-10VDC
 - 0-5VDC

- Telemetry
 - The Swordfish+ is capable of communicating with an external telemetry system based on digital Inputs and/or Outputs from other devices.
 - A serial communications port is provided for direct connection to SCADA or BMS system for access to the Swordfish+ operating parameters. This is via RS485 MODBUS RTU protocol. A full list of registers addresses can be provided.
 - Option interfaces can be provided such as.
 - Ethernet.
 - Multi Mode Fibre
 - Single Mode Fibre
- Digital Outputs
 - The Swordfish+ has 4 programmable outputs that can be selected for a variety of functions. They are rated to 5 amps 240VAC with change over contacts.
- Digital Inputs
 - The Swordfish+ has 12 programmable voltage free inputs that can be selected for a variety of functions.
- □ Four programmable Start and Stop times for system operation.

Outline of available menus.

- □ System set pressure.
- Current system flow rate.
 - Fault History menu.
 - Readouts for the last five (5) faults.
 - Pump Data Log.
 - Hour Run counters for each pump.
 - Pump Start counters for each pump.
 - Total starts in the last hour.
 - Status of all inputs and outputs.
 - Controller temperature.
 - Communications status monitor.
 - Settings.
 - Low pressure shutdown.
 - Cut In pressure.
 - Cut Out pressure..
 - High Pressure Limit/Alarm/Shutdown.
 - 3 Optional pressure cut in and cut out settings.
 - Pressure trips for activating digital outputs.
 - Timing.
 - Low pressure shutdown delay.
 - Cut In delay.
 - Cut Outdelay.
 - High Pressure Shutdown delay.
 - Individual and System NO Flow input delay.
 - Delays for general inputs.
 - Pressure trip and flow trip delay for activating digital outputs.
 - o Configuration.
 - Operating mode. (Pressure or Level or Multi Level)
 - Number of pumps on the system.
 - Pressure transducer zero and scaling.
 - User Access Code.
 - Serial communications settings.
 - Independent Jockey Pump.
 - Cut In pressure.
 - Cut Out pressure.
 - Run On time
 - Cut In delay time
 - Outputs (4) All individually programmable to one of the options below.
 - Shutdown Fault.
 - Low Pressure Fault.
 - High Pressure Fault.
 - Any Alarm.
 - Pump 1-6 Run.
 - Pump 1-6 Fault.
 - System Paused.
 - Any Pump Shutdown.
 - Any Pump Running.
 - No Flow Shutdown.
 - Pressure Trip
 - Alternate Trip.
 - Aux Output 1-3.

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- Inputs (12) All individually programmable to one of the options below.
 - Alternate No 2 Cut In Cut Out settings.
 - Alternate No 3 Cut In Cut Out settings.
 - Pump 1-6 Protect(Pause).
 - Pump 1-6 Stop.
 - Pump 1-6 Manual Run.
 - Cycle pumps.
 - Reset.
 - No Flow.
 - Aux Input 1-3.
- Analogue Inputs. 0-5V, 0-10V or 4-20mA

Controller Specifications.

Size.

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- 22CM Wide x 19CM High x 4.5CM Deep
- Weight.
 - 550 Grams
- Standard supply voltage.
 - 240VAC +/- 10%
- Optional supply voltage.
 - 18VAC or 24VDC
 - Power consumption.
 - o 6W Typical
 - \circ 12.1W (6 Pump system- All inputs and outputs ON)

All options are available with every controller. Some options will require extra hardware or connection/s to perform the desired task.