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**SAMPLE SPECIFICATION**

**Model 7700A Pump Director**

GA-7700A-SPEC Rev A

1.0 GENERAL

1.1 The Pump Director controller shall function as the interface between the pump control valve and the pump starter. The Pump Director shall properly sequence and control the pump start-up and pump shut-down procedure, providing both visual and electronic status outputs for operating personnel.

1.2 The Pump Director shall include automatic recognition of common fault conditions and shall provide proper fault response sequencing to the pump control valve and pump starter as well as visual and electronic fault notification to operating personnel.

2.0 PRODUCT

2.1 The Pump Director shall include a solid state processor capable of monitoring a minimum of (10) digital input signals, and providing a minimum of (4) powered output signals and (15) digital output signals. The processor shall have a minimum of 2 MB logic memory, minimum 120 K database memory, and 9 μsec scan time.

2.2 Local operator status shall be provided by illuminated LCD touchscreen panel, minimum 5.7” screen size, 256 color. Data input shall be possible by virtual keypad via the touchscreen panel. Remote communication and status monitoring shall be available by means of an RS232 port connection.

2.3 A regulated power supply shall be provided, suitable for 115 to 120 VAC single phase supply voltage, 50/60 hz, with maximum 30 amp surge current rating. Output voltage shall be regulated 24 VDC ± 5%, 0.6 amp rated with 0.8 amp over-current protection. A separate 5 amp circuit breaker shall be provided on the incoming supply voltage connection.

2.4 The Pump Director shall be housed in a NEMA 4X fiberglass enclosure with gasketed door, gasketed touchscreen panel, continuous stainless steel hinge, stainless steel twist/latch door fasteners, and padlock-able door hasp.

2.5 The enclosure shall include a minimum 120 watt heater with integral thermostat. A gasketed Local-Off-Remote (L-O-R) selector switch shall be provided. A gasketed emergency shut-down pushbutton shall be provided (locking type, with manual reset). Labeled, screw-type terminal blocks shall be provided for all input and output connections and supply voltage connection. A minimum of (8) spare terminal blocks shall be provided.

3.0 INPUTS

3.1 The Pump Director shall be capable of monitoring the following inputs: presence of supply voltage, status of L-O-R selector switch, status of Emergency Shutdown pushbutton, digital remote pump start/stop command signal, two (2) digital valve closed/not closed signals, digital pump discharge pressure switch signal, digital auxiliary system override/shut-down signal, digital remote alarm reset signal.

3.2 All digital inputs shall be dry contact type and shall be powered by the Pump Director 24 VDC power supply. Local inputs shall be entered by means of the LCD touchscreen panel and shall include: set-up screen for setting of timers and user-selectable options, local pump start command, local pump stop command, local alarm override command.

4.0 OUTPUTS

4.1 The Pump Director shall provide the following powered outputs: motor start signal, normal solenoid pilot/valve open signal, emergency solenoid pilot, valve close signal. Powered outputs shall be powered by the incoming VAC supply voltage and protected by the 5 amp circuit breaker.

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4.2 The Pump Director shall provide the following non-powered digital outputs: motor start signal, normal valve open signal, normal valve close signal, emergency valve close signal, L-O-R switch in Local signal, L-O-R switch in Remote signal, valve not fully closed alarm, auxiliary system override/shutdown alarm, insufficient pressure on start-up alarm, valve failed to open on start-up alarm, loss of pressure while pumping alarm, valve closed without command alarm, valve failed to close after shut-down command alarm, emergency shut-down button activated alarm, power failure alarm. Non-powered outputs shall be dry contact, isolated relay type rated for 230 VAC / 30 VDC with maximum allowable 3 amp rating (resistive load).

4.3 Remote monitoring of the Pump Director shall be possible by communication via the RS232 port connection provided within the processor.

5.0 TIMERS AND SETTINGS

5.1 The Pump Director shall include the following timers and settings, programmable from a set-up screen and virtual keypad:

* VDT Timer - Allowable time for pump to develop pressure on start-up.
* VDT-2 Timer - Delay valve opening after pressure developed on start-up.
* VIT Timer- Allowable time for valve to begin opening.
* VCD Timer - Allowable time for valve to close.
* PFT Timer - Delay time for automatic pump re-start following power failure.

5.2 If valve fails to close within VCD timer setting, Pump Director can be set to allow pump to continue to run or to initiate an emergency shut-down sequence of valve and pump.

5.3 Following a power failure, upon restoration of power, Pump Director can be set to require a reset of the power failure alarm or to permit an automatic restart of the pump upon restoration of power and expiration of the PFT timer setting.

6.0 MANUFACTURER

6.1 The controller shall be GA Industries Model 7700A Pump Director, as manufactured by VAG USA, LLC Mars, PA USA.

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