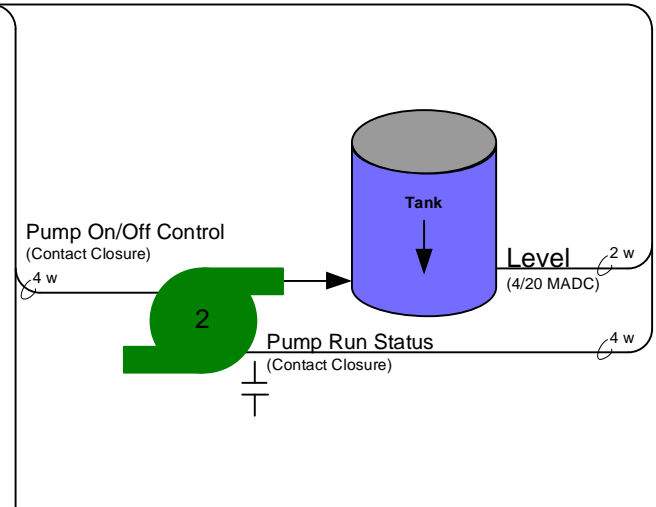
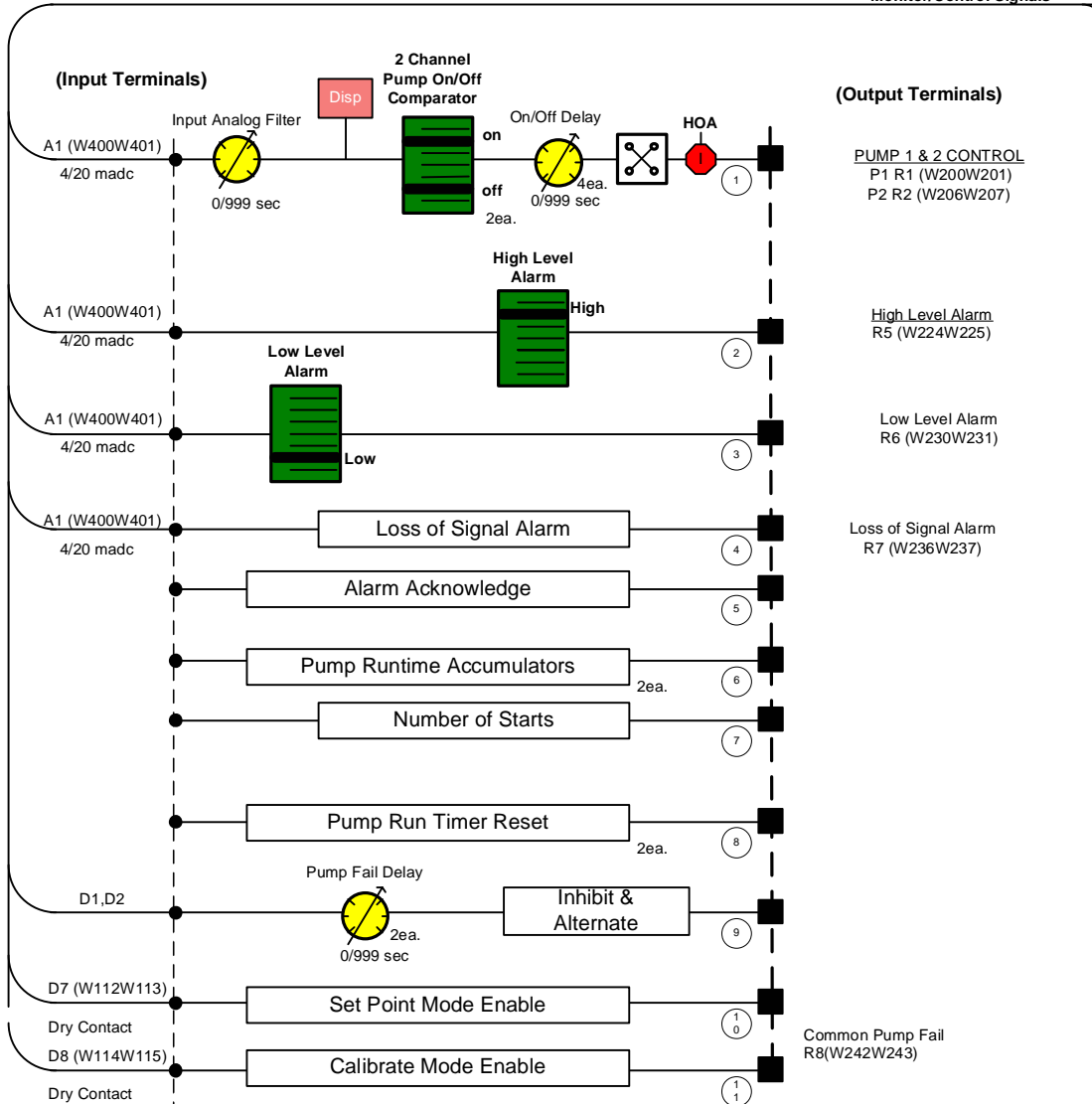


# Algorithms

# Field-Equipment

Monitor/Control Signals



**DIGITAL INPUTS**

- PUMP 1 F.B. D1 (W100W101)
- PUMP 2 F.B. D2 (W102W103)
- SPARE
- D3 (W104W105) RESET RUN 1
- D4 (W106W107) RESET RUN 2
- D5 (W108W109) SPARE
- D6 (W110W111)

## WARNING

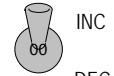
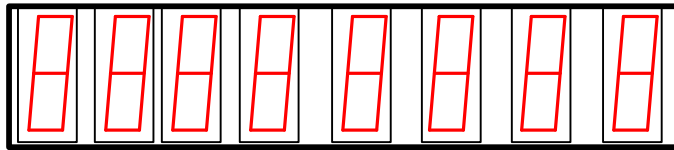
For SCADA overall system design must incorporate other safeguards in addition to the ICS for operating conditions hazardous to personnel, equipment, or property; such as the use of "deadman" or "suresafe interlocks" and red tag access etc.

### Legend

- (x) = Algorithm Number
- = Begin Algorithm
- = End Algorithm
- ⬇️ = Interlock, When enabled, Algorithm is disabled.

**AGM Electronics, Inc.**  
Tucson, Arizona  
Knowledge Map  
2 PUMP CONTROL

Signature	JG	Date	11/23/99	PRO-991117A0000	Rev	NC
Checked By	RF	Date	11/23/99	Ref	ICS2	
Cust Approval				SO#	XXXX	Sheet
				ICS2PMP		1 of 3



DEC



ENTER

MODE  
SELECT



PUMP  
SEQUENCE



LEVEL



RUN TIME

PUMP 1



PUMP 2



SELECT

SETPOINT



A



B



TIME



DATE



CONTROL/  
STATUS

CALL



RUN



ON



ALTERNATION

FAIL



1



H  
O  
A

2



H  
O  
A

ALARMS

HIGH  
LEVEL



LOW  
LEVEL



LOSS OF  
SIGNAL



ALARM  
RESET



CALIBRATION



0 %



100 %



AGM Electronics, Inc.

Tucson, Arizona

Knowledge Map - Front Panel

2 PUMP CONTROL

Signature	Date	PRO-991117A-0000	Rev
Drawn By	JG	11/23/99	Ref ICS2
Checked By	RF	11/23/99	SO# XXXX
Cust Approval		____/____/____	XXXX
			Sheet 2 of 3

**DISPLAY MODE**

THE DISPLAY MODE IS ENTERED UPON POWER UP, OR BY PRESSING SWITCH (S02P), AND THE TANK LEVEL WILL BE DISPLAYED IN ENGINEERING UNITS. TO EXIT THE DISPLAY MODE ENTER THE SETPOINT OR CALIBRATION MODE.

**SETPOINT MODE**

THE SETPOINT MODE IS ENTERED BY PRESSING SWITCH (S02P) WITH DIGITAL INPUT (D7) CLOSED, TO MOVE THROUGH THE SETPOINT MODE USE SWITCH (S08P). TO ENTER A SETPOINT SELECT THE CORRECT POINTER LIGHT USING THE SELECT SWITCH (S08P) AND USE SWITCH (S00) TO INCREMENT OR DECREMENT THE DISPLAYED VALVE. USE SWITCH (S01P) TO SAVE THE DISPLAYED VALUE, A FLASHING SETPOINT LIGHT INDICATES AN UNSAVED VALUE WHILE A CONSTANT LIGHT DENOTES A SAVED VALUE.

STEP	LIGHT	DISPLAY	DESCRIPTION
01	L11	on 999.9	PUMP 1 ON STPT ( LEVEL )
02	L11	oF 999.9	PUMP 1 OFF STPT ( LEVEL )
03	L13	on 999.9	PUMP 2 ON STPT ( LEVEL )
04	L13	oF 999.9	PUMP 2 OFF STPT ( LEVEL )
05	L18	D 9999	PUMP ON/OFF DELAY ( SECONDS )
06	L20	D 9999	INPUT FILTER ( SECONDS )
07	L51	on 999.9	HIGH ALARM ON STPT ( LEVEL )
08	L51	oF 999.9	HIGH ALARM OFF STPT ( LEVEL )
09	L53	on 999.9	LOW ALARM ON STPT ( LEVEL )
10	L53	oF 999.9	LOW ALARM OFF STPT ( LEVEL )
11	L32	D 9999	PUMP 1 FEEDBACK DELAY ( SECONDS )
12	L34	D 9999	PUMP 2 FEEDBACK DELAY ( SECONDS )
13	L60	999999	0% D/A ANALOG OUTPUT ( 650 )
14	L62	999999	100% D/A ANALOG OUTPUT ( 3280 )
15	L14	999999	CURRENT TIME (HR:MIN:SEC)
16	L15	999999	CURRENT DATE(MO/DAY/YR)

**ALARMS**

ALARMS ARE CONTROLLED BY THE ENTERED SETPOINTS. WHEN THE SETPOINTS ARE EXCEEDED, THE ALARM WILL LIGHT. THE RELAY WILL DE-ENERGIZE WHEN THE CONDITION CLEARS BUT WILL ALLOW THE LIGHT TO STAY ON UNTIL THE ALARM RESETS (S57P) IS PRESSED WHICH WILL TURN OFF THE ALARM LIGHT IF THE CONDITION IS CLEARED.

**CONTROL**

THE HAND/OFF/AUTO SWITCHES (S39 – S41) ARE USED TO TURN THE PUMPS ON AND OFF, OR SELECT AUTOMATIC CONTROL OF EACH PUMP. THE STATUS LIGHTS (L18 – L20) WILL TURN ON WHENEVER A PUMP IS BEING CALLED FOR. ONLY THE AVAILABLE PUMPS IN (AUTO) WILL BE ROTATED. LIGHTS (L32 – L34) ARE USED AS PUMP FAIL STATUS LEDES.

**CALIBRATION**

TO ENTER THE CALIBRATION MODE FOR CALIBRATING THE INCOMING ANALOG SIGNAL TO ENGINEERING DISPLAY UNITS (FEET), PRESS THE CALIBRATION MODE SELECT SWITCH (S02P).

**TO CALIBRATE :**

- 1> USE THE SELECT SWITCH (S08P) TO SELECT THE 0% LIGHT (L60)
- 2> APPLY 0% ANALOG SIGNAL TO ANALOG INPUT.
- 3> USE THE INC/DEC SWITCH TO SET THE DISPLAY FOR DESIRED 0% UNITS.
- 4> PRESS THE ENTER SWITCH TO SAVE THE 0% CALIBRATION
- 5> USE THE SELECT SWITCH TO SELECT THE 100% LIGHT (L62).
- 6> APPLY 100% ANALOG SIGNAL TO ANALOG INPUT.
- 7> USE THE INC/DEC SWITCH TO SET THE DISPLAY FOR DESIRED 100% UNITS.
- 8> PRESS THE ENTER SWITCH TO SAVE THE 100% CALIBRATION
- 9> CALIBRATION COMPLETE, PRESS (S02P) TO RETURN TO NORMAL MODE.

Signature		Date	PRO-991117A-0000	Rev	AGM Electronics, Inc. Tucson, Arizona Front Panel Notes 2 PUMP CONTROL
Drawn By	JG	11/23/99	Ref ICS2	NC	
Checked By	RF	11/23/99	SO# XXXX	Sheet	
Cust Approval		__/__/__	XXXX	3 of 3	