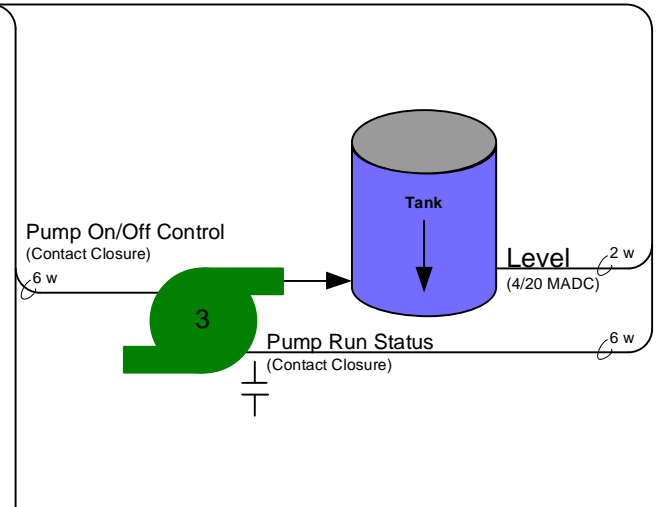
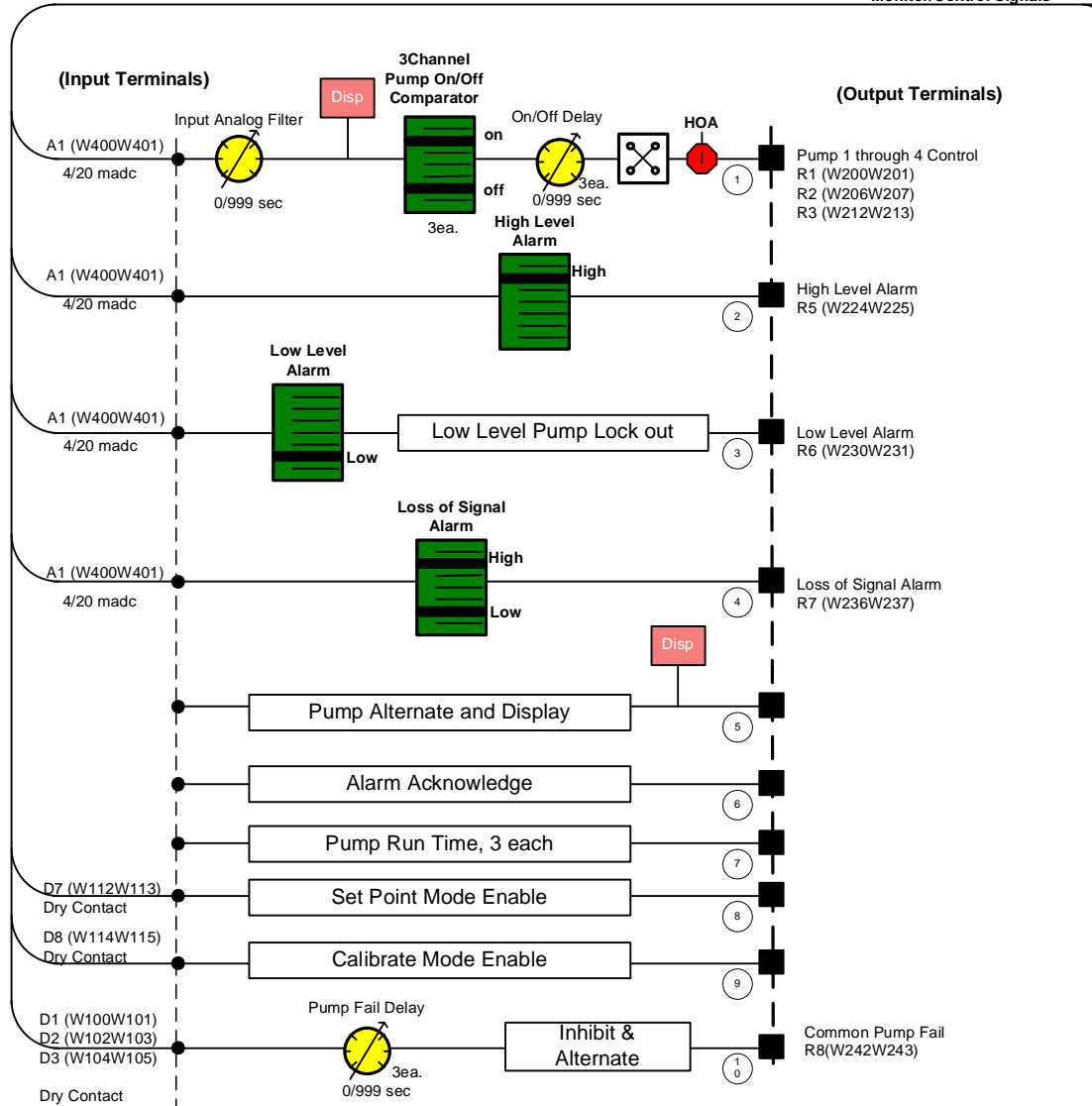


Algorithms

Field-Equipment

Monitor/Control Signals



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

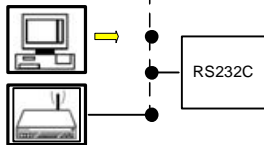
- (x) = Algorithm Number
- = Begin Algorithm
- = End Algorithm
- ⬮ = Interlock, When enabled, Algorithm is disabled.

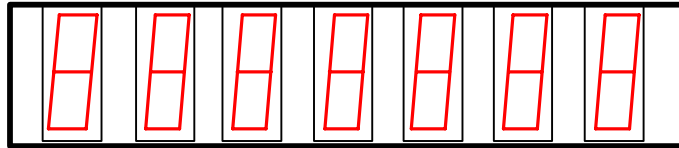
AGM Electronics, Inc.

Tucson, Arizona
Knowledge Map

ICS 3 Pump Control
AGM Electronics

Signature	Date	PRO-xxxxxx-0000	Rev
xx	__/__/__	Ref APP-ICS3	NC
Checked By	Date	SO# yxxxx	Sheet
CUST Approval	__/__/__	yxxxxKM	_1_ of _3_





- INC
- DEC
- ENTER
- SELECT

- MODE SELECT
- PUMP SEQUENCE
- TANK LEVEL (FT)

SETPOINTS

-
- A
- B
- C

CONTROL/STATUS

- RUNTIME
- CALL
- ON
- ALTERNATION
- PUMP FAIL
- PUMP 1 H O A
- PUMP 2 H O A
- PUMP 3 H O A

ALARMS

- HIGH LEVEL
- LOW LEVEL
- LOSS OF SIGNAL
- ALARM RESET

CALIBRATION

-
- 0%
- 100%



ELECTRONICS, INC.
P.O. BOX 32227
TUCSON, AZ. 85751-2227

AGM Electronics, Inc.

Tucson, Arizona
Knowledge Map - Front Panel
3 Pump Controller

AGM Electronics

Signature	Date	PRO-yymmdd-0000	Rev
xx	__/__/__	Ref APP-ICS3	NC
Checked By	Date	SO# yxxxx	Sheet
Cust Approval	__/__/__	yxxxxFP	2 of 3

Display/Normal Mode

The display mode is entered upon power up, or by pressing switch (S02P). The display will show the Level with (L06) on. The Pump Sequence will be shown with light (L04). To exit the display mode, enter the set point or calibration mode.

Setpoint Mode

The Setpoint Mode is entered by pressing Switch (S02) with digital input (#7) closed. Light (L09) will be on. To move through the Setpoint mode, use Switch (S08). To enter a setpoint, select the correct pointer light using the Select Switch (S08). Use (S00) to increment or decrement the displayed value. Use Switch (S01) to save the Displayed value. A flashing light indicates an unsaved value and a steady light indicated a saved value.

Step	Light	Display	Description	Units
1	L11	on 99.9	Pump 1 on set point	Feet
2	L11	oFF 99.9	Pump 1 off set point	Feet
3	L12	on 99.9	Pump 2 on set point	Feet
4	L12	oFF 99.9	Pump 2 off set point	Feet
5	L13	on 99.9	Pump 3 on set point	Feet
6	L13	oFF 99.9	Pump 3 off set point	Feet
7	L14	on 99.9	Pump 4 on set point	Feet
8	L14	oFF 99.9	Pump 4 off set point	Feet
9	L32	DEL 999	Pump 1 Fail Delay	Seconds
10	L33	DEL 999	Pump 2 Fail Delay	Seconds
11	L34	DEL 999	Pump 3 Fail Delay	Seconds
12	L35	DEL 999	Pump 4 Fail Delay	Seconds
13	L30	DEL 999	on/off Pump Delay	Seconds
14	L18	9999	Input Filter Delay	Seconds
15	L51	99.9	High Alarm set point (Level)	Feet
16	L53	99.9	Low Alarm set point (Level)	Feet
17	L19	9999	Time (HH:MM)	HH:MM
18	L20	99	Date	Month
19	L21	99	Date	Day
20	L20	99	Date	Year
xx	xxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxx

Control/Status

Switches (S46 - S49) are used to turn the Pumps off, or select Automatic control of each Pump, The Pump status lights (L25 - L28) will go on whenever a Pump is called. The Run lights (L32-L35) turn on when the pump feedback is received. The Pump fail lights (L39-L42) turn on if the pump feedback does not occur within the set pump feedback delay. When a pump failure occurs, the next pump will be selected. The alternation select switch (S37) is used to enable automatic rotation of the pumps. Only available pumps (auto) will be rotated. Example: If pumps 1 and 4 are in the 'Auto' position and pumps 2 and 3 are in either the 'off' or 'on' position, pumps 1 and 4 will run from the first two setpoints that turn on and pumps 1 and 4 will be the only two pumps to rotate. I.E. (1-4, 4-1). When a pump is set to 'auto' after being either 'on' or 'off' , it will be placed in the rotation sequence in the order that it was set to 'auto'. Example: If all H/O/A switches are set 'off', sequentially set pump 1 to 'auto', then set pump 2 to 'auto', then set pump 3 to 'auto', then set pump 4 to 'auto'. This action will set the available pump sequence to (1,2,3,4). This may be done for any sequence to program any possible combination of pump sequence operations. Alternation will occur when 1 or more pumps are in 'auto' and go on and then all return to off.

Alarms

Alarms will show High/Low and Loss of Signal alarms (L51,L53,L55). Alarms will be initially indicated by a Flashing Light. The Alarm Light will be on steady on when it is acknowledged. Or the Alarm light when go steady if alarm self cleared. To acknowledge or clear the alarm light, press Switch (S57).

Calibration Mode

To enter the calibration mode for calibrating the incoming signal(s) to engineering units, press switch (S02) with digital input # 8 closed until the Calibration pointer light (L58) is on. To Calibrate -

- 1) Use the select switch (S08) to select the 0 % Light (L60)
- 2) Apply 0% analog signal to analog input
- 3) Use the Inc/Dec switch (S00) to set the display to the desired 0% units
- 4) Press the enter switch (S01) to save the 0% Calibration
- 5) Use the select switch (S08) to select the 100 % Light (L62)
- 6) Apply 100 % analog signal to analog input
- 7) Use the Inc/Dec switch (S00) to set the display to the desired 100% units
- 8) Press the enter switch (S01) to save the 100% calibration
- 9) Repeat steps 1 through 8 for all analog inputs that are used
- 10) Calibration is now complete. Press switch (S02) or open digital input # 8 to enter Display Mode

Signature		Date	PRO-xxxxxx-0000	Rev	AGM Electronics, Inc. Tucson, Arizona Front Panel Notes 3 Pump Control AGM Electronics
Drawn By	xx	__/__/__	Ref APP-IC33	NC	
Checked By	xx	__/__/__	SO# yxxxx	Sheet	
Cust Approval		__/__/__	yxxxxNO	3_of_3	