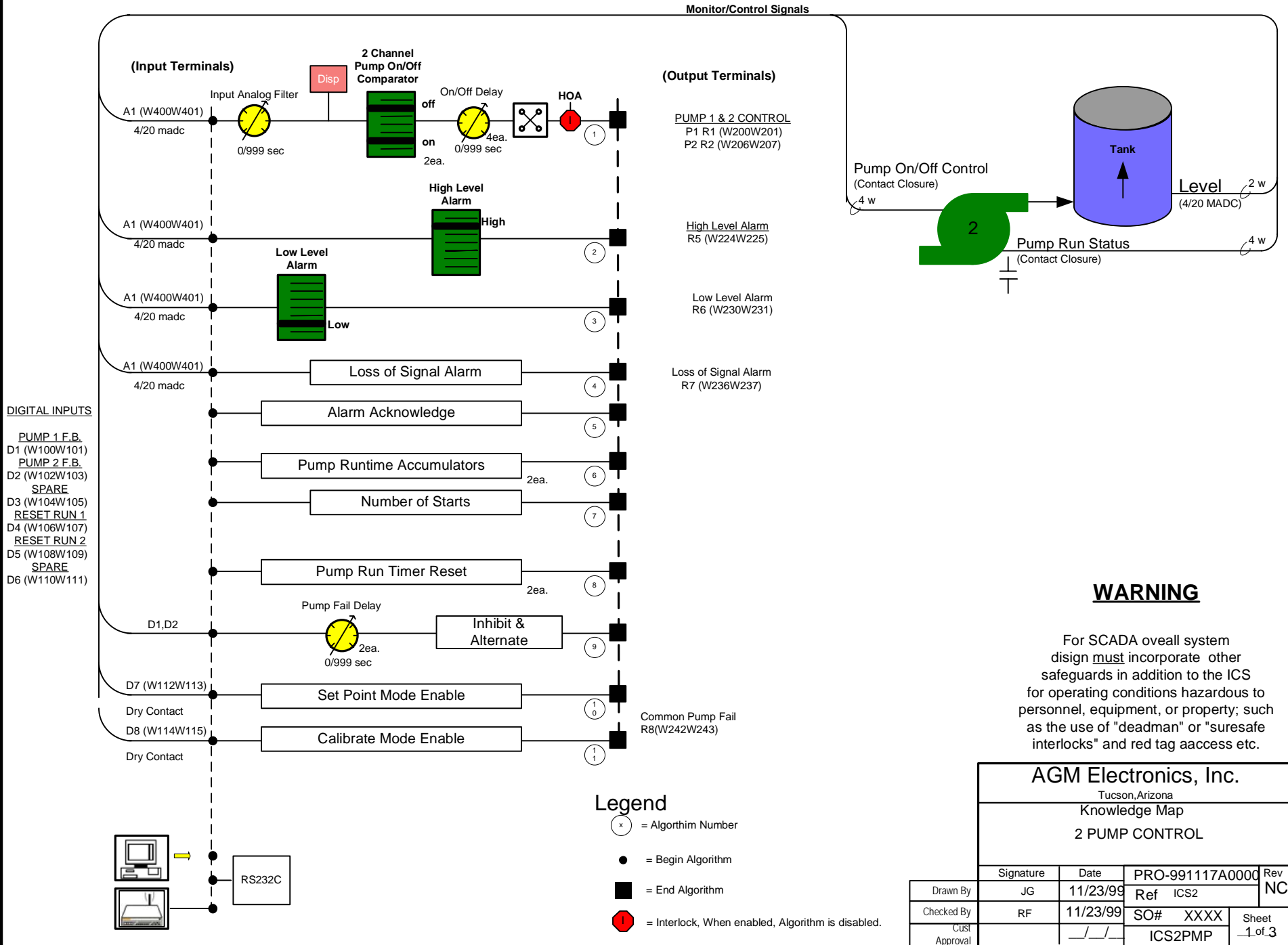


Algorithms

Field-Equipment



DIGITAL INPUTS

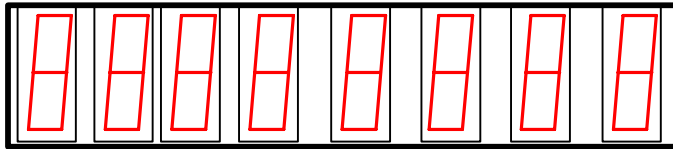
- PUMP 1 F.B.
- D1 (W100W101)
- PUMP 2 F.B.
- D2 (W102W103)
- SPARE
- D3 (W104W105)
- RESET RUN 1
- D4 (W106W107)
- RESET RUN 2
- D5 (W108W109)
- SPARE
- D6 (W110W111)

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

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.

| | | | |
|--|----------|-----------------|--------|
| AGM Electronics, Inc. Tucson, Arizona Knowledge Map 2 PUMP CONTROL | | | |
| Signature | Date | PRO-991117A0000 | Rev |
| JG | 11/23/99 | Ref ICS2 | NC |
| Checked By | Date | SO# XXXX | Sheet |
| Cust Approval | 11/23/99 | ICS2PMP | 1 of 3 |



INC
DEC

ENTER

SELECT

MODE SELECT
02

PUMP SEQUENCE
04 G

LEVEL
05 G

RUN TIME
PUMP 1 06 G
PUMP 2 07 G

SETPOINT
09 Y

A
11 G

B
13 G

TIME
14 G

DATE
15 G

CONTROL/STATUS

CALL
18 Y

20 Y

RUN
25 G

27 G

ON
29 G
ALTERNATION

FAIL
32 R

34 R

36

1
46 H O A

2
41 H O A

ALARMS

HIGH LEVEL
51 R

LOW LEVEL
53 R

LOSS OF SIGNAL
55 R

ALARM RESET
57

58 Y
CALIBRATION

60 G
0 %

62 G
100 %



AGM Electronics, Inc.

Tucson, Arizona

Knowledge Map - Front Panel

2 PUMP CONTROL

| | | | |
|---------------|------|------------------|----------|
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| Drawn By | JG | 11/23/99 | Ref ICS2 |
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NC
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 | |