Algorithms

Field-Equipment

Monitor/Control Signals

(**Input Terminals**)**

- A1 (W400W401)
  - 4/20 madc
  - 0/999 sec
  - 3ea.

- A1 (W400W401)
  - 4/20 madc
  - Low Level Alarm

- A1 (W400W401)
  - 4/20 madc
  - Loss of Signal Alarm

- D7 (W112W113)
  - Dry Contact

- D8 (W114W115)
  - Dry Contact

- D1 (W100W101)
  - D2 (W102W103)
  - D3 (W104W105)
  - Dry Contact

- Pump Fail Delay
  - 0/999 sec
  - 3ea.

- Inhibit & Alternate

- Alarm Acknowledge

- Pump Run Time, 3 each

- Set Point Mode Enable

- Calibrate Mode Enable

- Pump Alternate and Display

- Pump 1 through 4 Control
  - R1 (W200W201)
  - R2 (W206W207)
  - R3 (W212W213)

- High Level Alarm
  - R5 (W224W225)

- High Level Alarm
  - R6 (W230W231)

- Loss of Signal Alarm
  - R7 (W236W237)

- Common Pump Fail
  - R8 (W242W243)

Legend

- Algorithm Number
- Wiring Table Designations. Refer to Page 2 of WSD (Figure 2) drawing for physical layout/connection location.

**Output Terminals**

- Pump On/Off Control
  - (Contact Closure)

- Pump Run Status
  - (4/20 MADC)

- Tank

- Level

**Knowledge Map**

AGM Electronics, Inc.
Tucson, Arizona
Knowledge Map
3 Pump Control
AGM Electronics

Signature Date PRO-xxxxx-0000 Rev NC
Drawn By xx / / Ref APP-ICS3
Checked By xx / / SO# xxxx Sheet 1 of 3
Cust Approval xx / / xxxxKM
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.

<table>
<thead>
<tr>
<th>Step</th>
<th>Light</th>
<th>Display</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L11</td>
<td>on 99.9</td>
<td>Pump 1 on set point</td>
<td>Feet</td>
</tr>
<tr>
<td>2</td>
<td>L11</td>
<td>off 99.9</td>
<td>Pump 1 off set point</td>
<td>Feet</td>
</tr>
<tr>
<td>3</td>
<td>L12</td>
<td>off 99.9</td>
<td>Pump 1 on set point</td>
<td>Feet</td>
</tr>
<tr>
<td>4</td>
<td>L12</td>
<td>off 99.9</td>
<td>Pump 1 off set point</td>
<td>Feet</td>
</tr>
<tr>
<td>5</td>
<td>L13</td>
<td>on 99.9</td>
<td>Pump 2 on set point</td>
<td>Feet</td>
</tr>
<tr>
<td>6</td>
<td>L13</td>
<td>off 99.9</td>
<td>Pump 2 off set point</td>
<td>Feet</td>
</tr>
<tr>
<td>7</td>
<td>L14</td>
<td>on 99.9</td>
<td>Pump 3 on set point</td>
<td>Feet</td>
</tr>
<tr>
<td>8</td>
<td>L14</td>
<td>off 99.9</td>
<td>Pump 3 off set point</td>
<td>Feet</td>
</tr>
<tr>
<td>9</td>
<td>L24</td>
<td>off 99.9</td>
<td>Pump 4 on set point</td>
<td>Feet</td>
</tr>
<tr>
<td>10</td>
<td>L34</td>
<td>off 99.9</td>
<td>Pump 4 off set point</td>
<td>Feet</td>
</tr>
<tr>
<td>11</td>
<td>L34</td>
<td>off 99.9</td>
<td>Pump 4 on set point</td>
<td>Feet</td>
</tr>
<tr>
<td>12</td>
<td>L35</td>
<td>off 99.9</td>
<td>Pump 4 off set point</td>
<td>Feet</td>
</tr>
<tr>
<td>13</td>
<td>L35</td>
<td>off 99.9</td>
<td>Pump 4 on set point</td>
<td>Feet</td>
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<tr>
<td>14</td>
<td>L18</td>
<td>9999</td>
<td>Input Filter Delay</td>
<td>Seconds</td>
</tr>
<tr>
<td>15</td>
<td>L31</td>
<td>9999</td>
<td>Pump 1 Fail Delay</td>
<td>Seconds</td>
</tr>
<tr>
<td>16</td>
<td>L32</td>
<td>9999</td>
<td>Pump 2 Fail Delay</td>
<td>Seconds</td>
</tr>
<tr>
<td>17</td>
<td>L33</td>
<td>9999</td>
<td>Pump 3 Fail Delay</td>
<td>Seconds</td>
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<td>9999</td>
<td>Pump 4 Fail Delay</td>
<td>Seconds</td>
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<td>19</td>
<td>L35</td>
<td>9999</td>
<td>Pump 4 Fail Delay</td>
<td>Seconds</td>
</tr>
<tr>
<td>20</td>
<td>L20</td>
<td>99</td>
<td>High Alarm set point (Level)</td>
<td>Feet</td>
</tr>
<tr>
<td>21</td>
<td>L21</td>
<td>99</td>
<td>Low Alarm set point (Level)</td>
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<td>22</td>
<td>L30</td>
<td>99</td>
<td>Time (HH:MM)</td>
<td>HH:MM</td>
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<tr>
<td>23</td>
<td>L31</td>
<td>99</td>
<td>Date</td>
<td>Month</td>
</tr>
<tr>
<td>24</td>
<td>L32</td>
<td>99</td>
<td>Date</td>
<td>Day</td>
</tr>
<tr>
<td>25</td>
<td>L33</td>
<td>99</td>
<td>Date</td>
<td>Year</td>
</tr>
</tbody>
</table>

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.