Geoflow GEO Control Panels
Follow the Slides

- Install Your Geoflow control Panel
- Wiring Diagrams
- Enter Field Settings
- Basic Troubleshooting
Installing your Geoflow Control Panel

Step 1: Location, Location and Location...

- Easy to Access for installation & maintenance
- Ground panel
Installing your Geoflow Control Panel

Step 2: Read your Documentation (instructions & Diagrams)
Installing your Geoflow Control Panel
Installing your Geoflow Control Panel

Step 3: Run your field wires and Identify them

Color wire

Numbered Wire

Good

Better
Installing your Geoflow Control Panel

**Float Arrangement Diagram**

1. High Level Alarm
2. Secondary Timer On & Off
3. Timer On & Off
4. Redundant Off & Low Level Alarm

**Power Wiring Options**

- **Two Circuits**
  - Controls Neutral
  - Pump L1
  - Pump L2
  - Ground
  - Factory default. Wire as shown.

- **One Circuit**
  - Controls Neutral
  - Pump L1
  - Ground
  - Use a wire nut to connect the first pole of the pump circuit breaker to the controls breaker and with the incoming L1 power line.
Installing your Geoflow Control Panel

• **Wire Sizing**

**Figure 1. Recommended Breaker & Wire Size**

<table>
<thead>
<tr>
<th>Pump Motor Size</th>
<th>Breaker Size</th>
<th>Wire Size</th>
<th>Max Distance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 VAC 1/3 hp</td>
<td>20 amp</td>
<td>12 AWG</td>
<td>210 ft</td>
</tr>
<tr>
<td>1/2 hp</td>
<td>20 amp</td>
<td>12 AWG</td>
<td>160 ft</td>
</tr>
<tr>
<td>230 VAC 1/2 hp</td>
<td>15 amp</td>
<td>14 AWG</td>
<td>400 ft</td>
</tr>
<tr>
<td>1 hp</td>
<td>20 amp</td>
<td>12 AWG</td>
<td>400 ft</td>
</tr>
<tr>
<td>1 1/2 hp</td>
<td>20 amp</td>
<td>12 AWG</td>
<td>310 ft</td>
</tr>
</tbody>
</table>

* This is the maximum distance from the main power panel to the pump motor for the recommended wire size. If actual distance is greater than the listed maximum, or more than one pump is on the circuit, then a larger gauge of wire must be used. If the actual distance is close to the maximum distance, then it is recommended that the next larger gauge wire be used.
Installing your Geoflow Control Panel

**Wire Sizing**

### Wire Sizing Chart 24 Volt System

Maximum one-way distance (feet) for 5% voltage loss in 24 volt systems. Wire Size (AWG)

<table>
<thead>
<tr>
<th>Amps</th>
<th>14</th>
<th>12</th>
<th>10</th>
<th>8</th>
<th>6</th>
<th>4</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>00</th>
<th>000</th>
<th>0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>213</td>
<td>338</td>
<td>537</td>
<td>854</td>
<td>1359</td>
<td>2160</td>
<td>3434</td>
<td>4332</td>
<td>5460</td>
<td>6887</td>
<td>8684</td>
<td>10951</td>
</tr>
<tr>
<td>2</td>
<td>106</td>
<td>169</td>
<td>269</td>
<td>427</td>
<td>679</td>
<td>1080</td>
<td>1717</td>
<td>2166</td>
<td>2730</td>
<td>3444</td>
<td>4342</td>
<td>5475</td>
</tr>
<tr>
<td>4</td>
<td>53</td>
<td>85</td>
<td>134</td>
<td>214</td>
<td>340</td>
<td>540</td>
<td>859</td>
<td>1083</td>
<td>1365</td>
<td>1722</td>
<td>2171</td>
<td>2738</td>
</tr>
<tr>
<td>6</td>
<td>35</td>
<td>56</td>
<td>90</td>
<td>142</td>
<td>226</td>
<td>360</td>
<td>572</td>
<td>722</td>
<td>910</td>
<td>1148</td>
<td>1447</td>
<td>1825</td>
</tr>
<tr>
<td>8</td>
<td>27</td>
<td>42</td>
<td>67</td>
<td>107</td>
<td>170</td>
<td>270</td>
<td>429</td>
<td>542</td>
<td>682</td>
<td>861</td>
<td>1086</td>
<td>1369</td>
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<tr>
<td>10</td>
<td>21</td>
<td>34</td>
<td>54</td>
<td>85</td>
<td>136</td>
<td>216</td>
<td>343</td>
<td>433</td>
<td>546</td>
<td>689</td>
<td>868</td>
<td>1095</td>
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<tr>
<td>15</td>
<td>14</td>
<td>23</td>
<td>36</td>
<td>57</td>
<td>91</td>
<td>144</td>
<td>229</td>
<td>289</td>
<td>364</td>
<td>459</td>
<td>579</td>
<td>730</td>
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<tr>
<td>20</td>
<td>–</td>
<td>17</td>
<td>27</td>
<td>43</td>
<td>68</td>
<td>108</td>
<td>172</td>
<td>217</td>
<td>273</td>
<td>344</td>
<td>434</td>
<td>548</td>
</tr>
<tr>
<td>25</td>
<td>–</td>
<td>–</td>
<td>21</td>
<td>34</td>
<td>54</td>
<td>86</td>
<td>137</td>
<td>173</td>
<td>218</td>
<td>275</td>
<td>347</td>
<td>438</td>
</tr>
<tr>
<td>30</td>
<td>–</td>
<td>–</td>
<td>18</td>
<td>28</td>
<td>45</td>
<td>72</td>
<td>114</td>
<td>144</td>
<td>182</td>
<td>230</td>
<td>289</td>
<td>365</td>
</tr>
<tr>
<td>35</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>24</td>
<td>39</td>
<td>62</td>
<td>98</td>
<td>124</td>
<td>156</td>
<td>197</td>
<td>248</td>
<td>313</td>
</tr>
<tr>
<td>40</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>34</td>
<td>54</td>
<td>86</td>
<td>108</td>
<td>136</td>
<td>172</td>
<td>217</td>
<td>274</td>
</tr>
<tr>
<td>45</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>30</td>
<td>48</td>
<td>76</td>
<td>96</td>
<td>121</td>
<td>153</td>
<td>193</td>
<td>243</td>
</tr>
<tr>
<td>50</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>27</td>
<td>43</td>
<td>69</td>
<td>87</td>
<td>109</td>
<td>138</td>
<td>174</td>
</tr>
</tbody>
</table>
Enter Field Settings

DATE AND TIME SCREEN IS HOME BASE
Enter Field Settings

- Press “>” (Right Arrow Key)
Field Settings
I = Input Screen

LOGO Input Screen

<table>
<thead>
<tr>
<th>Activation Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Float up</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inputs 1-9</th>
<th>Inputs 10-19</th>
<th>Inputs 20-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Low Water Alarm float</td>
<td>2 = Primary Timer on &amp; off float</td>
<td>3 = Secondary Timer on &amp; off float</td>
</tr>
<tr>
<td>Float up</td>
<td>Float up</td>
<td>Float up</td>
</tr>
<tr>
<td>4 = High Water Alarm float</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Float up</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Field Settings**

Q = Output Screen

If highlighted, Output is activated

Output 1-9
Output 10-16

<table>
<thead>
<tr>
<th>LOGO Output Screen</th>
<th>Conditions for Activation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Pump</td>
<td>Pump is on</td>
</tr>
<tr>
<td>2 = General alarm</td>
<td>Alarm condition exists</td>
</tr>
<tr>
<td>3 = Filter flush</td>
<td>Filter flush valve is activated</td>
</tr>
<tr>
<td>4 = Dripfield flush</td>
<td>Dripfield flush valve is activated</td>
</tr>
</tbody>
</table>
Enter Field Settings

- Everyone go back to home Base (<<,<<,)

Let's start Entering Field Data Press "ESC" (Escape)
Enter Field Settings

Use the down key Select
“Set Param” press “OK” to enter
**Enter Field Settings**

**Off Time**
- \( T \) = Primary Off Timer (Pump rest time between doses).
- \( Ta \) = Elapsed time for cycle currently in progress. Not programmable.

**NOTE**
- \( 01:55h \) = HH:MM
- \( 01:55m \) = MM:SS
- \( 01:55s \) = SS:1/10s

To change settings press “ok” and use directional <> to navigate. Use Up and Down to Increase and Decrease value. Press “ok” When desired changes are made.

Primary off time varies for each drip site. Please check the design provided.
Enter Field Settings

On Time
T = Primary On Timer (Pump run time or Dose Time)
Ta = Elapsed time for cycle currently in progress. Not programmable.

NOTE
01:55h = HH:MM
01:55m = MM:SS
01:55s = SS:1/10s

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.

Primary On time varies for each drip site. Please check the design provided.
Enter Field Settings

Off Time 2

T = Secondary/ Override Off Timer (Rest Time between Dose’s when 3\textsuperscript{rd} float is up and timer is in override mode)
Ta = Elapsed time for cycle currently in progress. Not programmable

NOTE

01:55h = HH:MM
01:55m = MM:SS
01:55s = SS:1/10s

To change settings press “ok” and use directional < > to navigate.
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.
Secondary Off time varies for each site. Usually half of Primary Rest Time.
Enter Field Settings

On Time 2
T = Secondary/ Override  On Timer (Dose Time when 3rd float is up and timer is in override mode)
Elapsed time for cycle currently in progress. Not programmable

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.
Secondary On time varies for each drip site. If secondary off time is half of primary off time, then secondary on time is the same as primary on time

NOTE
01:55h  = HH:MM
01:55m  = MM:SS
01:55s  = SS:1/10s
Enter Field Settings

Filter Flush
T = Filter Flush Time Settings (amount of time the filter will flush for)
Ta = Elapsed time for cycle currently in progress. Not programmable

NOTE
01:55h = HH:MM
01:55m = MM:SS
01:55s = SS:1/10s

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.
Usually set between 15 seconds and 1 minute
Enter Field Settings

Pump Delay

\[ T = \text{Pump Delay Time (Primary Float De-bounce timer)} \]
\[ Ta = \text{Elapsed time for cycle currently in progress. Not programmable} \]

NOTE

01:55h = HH:MM
01:55m = MM:SS
01:55s = SS:1/10s

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.
Usually not changed in field from factory setting
Enter Field Settings

Drain Timer

T = Drain Timer (Opens valves to drain system at the end of each cycle)
Ta = Elapsed time for cycle currently in progress. Not programmable

NOTE
01:55h = HH:MM
01:55m = MM:SS
01:55s = SS:1/10s

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.

If system is not required to drain at the end of each dose,
i.e. non-freezing conditions, then set to 1 second (00:01).
Enter Field Settings

Field Flush

T = Field Flush Timer (Drip field flush)
Ta = Elapsed time for cycle currently in progress. Not programmable

NOTE
01:55h = HH:MM
01:55m = MM:SS
01:55s = SS:1/10s

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.
Enter Field Settings

Flush Cycle Counter
On  = Frequency of Cycles between Flushing
Cnt = Number of counts it has left to next flush

To change settings press “ok” and use directional <> to navigate
Use Up and Down to Increase and Decrease value.
Press “ok” When desired changes are made.
Enter Field Settings

Zone Count

On = Number of zones serviced by this controller so each zone is flushed. With a Geo1 the default is 1, but if using an index (hydraulic) valve, this number should be changed to reflect the number of zones after the index valve.

To change settings press “ok” and use directional <> to navigate. Use Up and Down to Increase and Decrease value. Press “ok” When desired changes are made.

Field Settings Completed Press “ESC”
Timers and Counter in Geoflow Controllers

<table>
<thead>
<tr>
<th>Block Names</th>
<th>Description</th>
<th>Factory Default</th>
<th>Time Range</th>
<th>Block Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off Time</td>
<td>Primary timer off</td>
<td>1 hr 55 min</td>
<td>HH:MM</td>
<td>Timer</td>
</tr>
<tr>
<td>On Time</td>
<td>Primary timer on</td>
<td>5 min</td>
<td>MM:SS</td>
<td>Timer</td>
</tr>
<tr>
<td>Off Time 2</td>
<td>Secondary timer off</td>
<td>55 min</td>
<td>HH:MM</td>
<td>Timer</td>
</tr>
<tr>
<td>On Time 2</td>
<td>Secondary timer on</td>
<td>5 min</td>
<td>MM:SS</td>
<td>Timer</td>
</tr>
<tr>
<td>FltrFlsh</td>
<td>Filter flush timer</td>
<td>15 sec</td>
<td>MM:SS</td>
<td>Timer</td>
</tr>
<tr>
<td>PmpDlyTm</td>
<td>Pump off delay</td>
<td>5 sec</td>
<td>MM:SS</td>
<td>Timer</td>
</tr>
<tr>
<td>DrainTmr*</td>
<td>System drain Timer</td>
<td>5 min</td>
<td>MM:SS</td>
<td>Timer</td>
</tr>
<tr>
<td>FlshTmr</td>
<td>System flush timer</td>
<td>5 min</td>
<td>MM:SS</td>
<td>Timer</td>
</tr>
<tr>
<td>Flsh CT</td>
<td>System flush counter</td>
<td>10 cycles</td>
<td></td>
<td>Counter</td>
</tr>
<tr>
<td>Zone CT</td>
<td>System zone counter</td>
<td>1 zone</td>
<td></td>
<td>Counter</td>
</tr>
</tbody>
</table>

* Set to 00:01 (1 second) if there is no risk of freezing
Entering Time & Date

Use the down key Select “Set..” press “OK” to enter
Entering Time & Date

Use the down key Select “Clock” press “OK” to enter
To change settings press “ok” and use directional <> to navigate. Use Up and Down to Increase and Decrease value. Push right arrow to get to year. Press “ok” When desired changes are made.
Entering Time & Date

Use the ESC to Return to the Main Menu
Field Settings Complete.

Use the “ESC” key Select
To Exit Screen
Basic Trouble Shooting

Tools OF the Trade

- Volt Meter with amp Probe and Ohms settings.
- Wiring Diagram Of Panel
- Jumper Wire
- Input/Output Screen of your PLC
- Set of eye balls

The above is the bailing wire and duct tape of Control Panels
Basic Trouble Shooting

- Open Pump Chamber and compare Floats with PLC Inputs lights
- Use HOA switches to determent if equipment is working
- Use amp Probe to confirm Signals, Current & Amps on field Equipment
- Check continuity Between I/O and Panel Components.
• Use wiring Diagram to locate possible Cause
• Call For Technical Support
• Turn off power for 10 Seconds
• Whack it with your shoe....