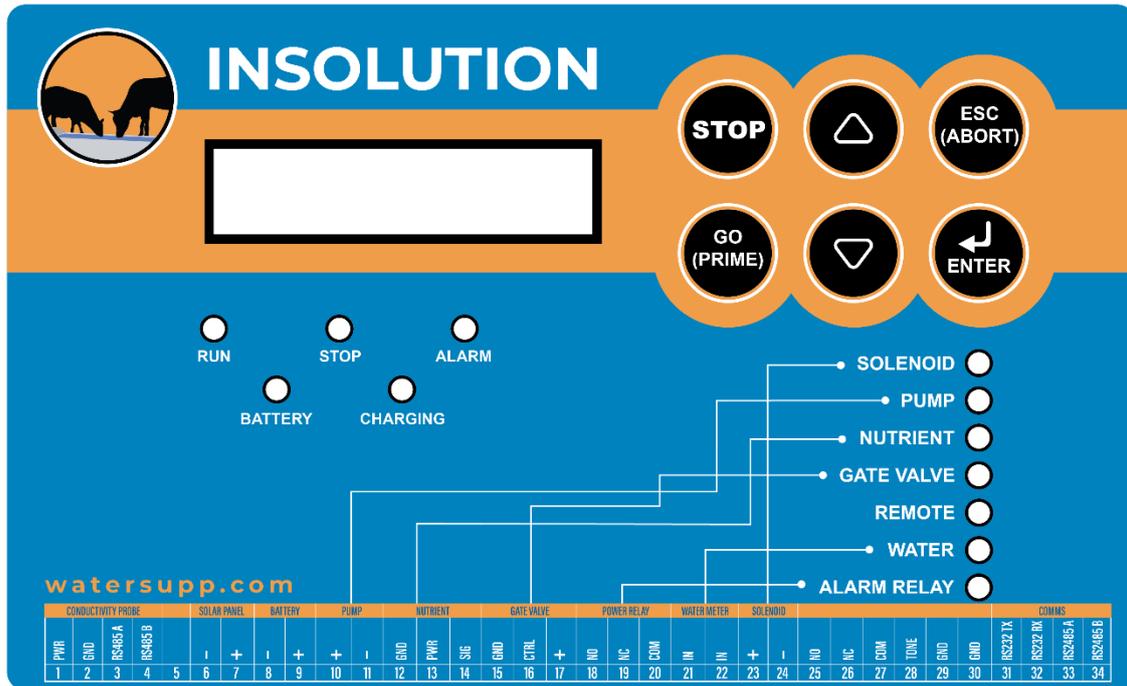


0521-00-03 InSolution User Manual



INSOLUTION

STOP, GO (PRIME), ESC (ABORT), ENTER

RUN, STOP, ALARM, BATTERY, CHARGING

SOLENOID, PUMP, NUTRIENT, GATE VALVE, REMOTE, WATER, ALARM RELAY

watersupp.com

| CONDUCTIVITY PROBE | | | | SOLAR PANEL | | BATTERY | | PUMP | | NUTRIENT | | GATE VALVE | | POWER RELAY | | WATER METER | | SOLENOID | | COMMS | | | | | | | | | | | | | |
|--------------------|-----|---------|---------|-------------|---|---------|---|------|----|----------|-----|------------|-----|-------------|----|-------------|----|----------|----|-------|----|----|----|----|-----|------|-----|-----|----------|----------|---------|---------|----|
| PWR | GND | RS485 A | RS485 B | - | + | - | + | - | + | GND | PWR | SIG | GND | CTRL | + | NO | NC | COM | IN | IN | + | - | NO | NC | COM | TONE | GND | GND | RS232 TX | RS232 RX | RS485 A | RS485 B | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |

1 Front Panel Control

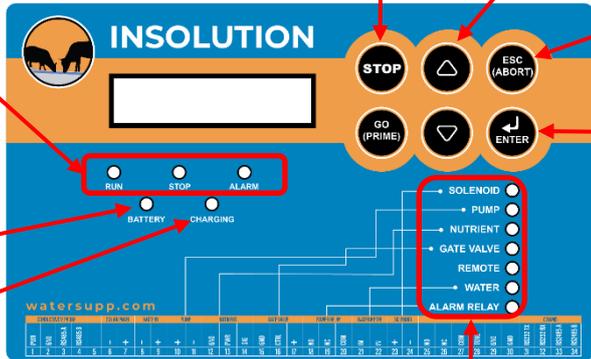
RUN
Green - Unit is operating

STOP
Red - Unit will not dose

ALARM
Red - The unit has detected an issue and stopped

BATTERY
Green means the unit has power.
Blank means battery not connected

CHARGING
Green means the internal solar charging regulator is trying to charge the battery.



GO – Starts the dosing process
GO (Hold) – Primes the pump
STOP – Stops dosing

UP & DOWN ARROWS
 Moves up and down through the menus and to change values.

ESC to revert to the previous value.
ESC ESC at any time takes you to the summary screen

Press **ENTER** to edit data, Square brackets [123] show the number being changed. Use the up and down arrows to change the value. **ENTER** to lock in the value. **ESC** to go back to the old value.

LEDs

| | |
|-------------|---|
| SOLENOID | GREEN = Solenoid OPEN and nutrient can flow |
| PUMP | GREEN = Pump Running |
| NUTRIENT | FLASHES GREEN as the flow meter (if connected) detects flow |
| GATE VALVE | GREEN = Gatevalve (If connected) is OPEN and nutrient can flow. |
| REMOTE | GREEN = The Power Relay is energized (Not used at present) |
| WATER | GREEN = Slow pulse ON when the water meter contacts close. |
| ALARM RELAY | RED = Alarm detected. Unit has tripped out. |

2 Quick Start

Assumes one water meter pulse per 10L water and one dose per 10L pulse.

Connect the battery.

Set the time per dose.

Press and hold the Go/Prime key until the pump is primed. Note it will trip out after 15 seconds so if it takes longer than 15 seconds to prime, the easiest thing is to release and repress the button every 10 or so seconds.

Press Go.

3 LCD Menus

3.1 Top Level Menu

The LCD has a two level menu system. The top level menu's are shown here. An asterisk in the top right corner indicates that there is more data underneath. Press the up and down arrows to move between menus. Press the Enter button to enter the sub menu.

Press ESC ESC (ie ESC twice at any time to return to the summary screen)

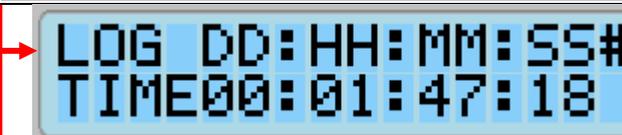
| | |
|--|---|
| | Splash Screen Manufacture model number & firmware version |
| | Summary Screen This is the set point. Press ENTER to Change Live results. mL only displayed if there is a flow sensor. Press ESC twice at any time to return to this screen. |
| | Alarm Screen If there is an alarm then the unit will stop dosing and light the RED Alarm LED. The alarm will be shown on the second line of LCD. See section 3.2 for more details |
| | WATER & NUTRIENT LOG Press ENTER to see the sub menu |
| | This menu shows the battery voltage. Press ENTER to see other voltage and current information. |
| | Nutrient tank level. Press ENTER to see or change other Nutrient related parameters. |
| | Water tank level. Press ENTER to see or change other Water related parameters. |
| | Summary Satellite connection information. Press ENTER to see other Satellite related data. |

The Asterisk '*' means there is more data. Press ENTER to open the sub menu.

3.2 Alarms

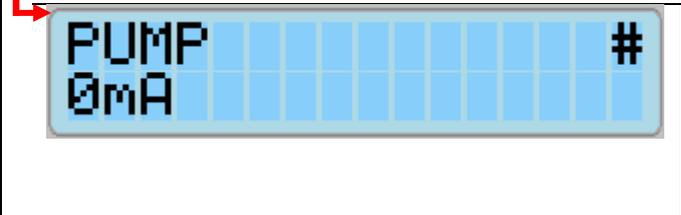
| Displayed Alarm | Action to take |
|------------------|--|
| LOST POWER | This is what is displayed when power first applied. Press the Go button. |
| PUMP ON TOO LONG | When priming, the pump has been held on for more than 15 seconds. When dosing, the pump has operated for longer than the level set in the SET PUMP MAX menu |
| OUT OF NUTRIENT | Fill the nutrient tank. If the Nutrient tank is not empty, set the NUTRIENT BLOCK LEVEL to a lower level. |
| NUTE SENS FAULT | Check the wiring between the controller and the Nutrient pressure sensor. If there is no Nutrient sensor in the installation, set the NUTRIENT BLOCK LEVEL to zero |
| LOW BATTERY VOLT | The battery voltage dipped below 10V. Check the solar panel is clean. Even small obstructions such as dust or a leave can significantly reduce output. Check the wiring between the solar panel and the controller. Check that the battery is OK. |

3.3 WATER & NUTRIENT

| | |
|---|--|
|  | WATER & NUTRIENT LOG Press ENTER to see the sub menu |
|  | This is the time applicable to the log in the menu above. |
|  | 7 RESET USER LOG To reset the log, Press ENTER The unit will display: "ENTER TO CONFIRM" "ESC TO CANCEL" Press ENTER and the time, water pulses and litres, nutrient pulses and litres are set to zero. |
|  | This screen shows water and Nutrient PULSES. Use this screen to verify the signals are being received. The WATER/NUTRIENT display just above shows the same information in Litres |
|  | SET PUMP MAX This menu is used to set the maximum time that the pump will run while dosing. When Priming, there is a pre-set maximum time of 15 seconds. If the pump runs for longer than this time then the unit will shut down and display "PUMP ON TOO LONG" Alarm. |

3.4 BATTERY

The battery menu shows the battery voltage. Underneath it shows other DC power related values.

| | |
|---|--|
|  | |
|  | <p>Shows the total current Less than 200mA when not dosing. Changing with values up to about 10 000 when dosing</p> |
|  | <p>Shows the Solenoid current. If it's low or zero, this indicates the wiring to the solenoid is broken. Typically between 1000 and 2000</p> |
|  | <p>Shows the pump current Typically between 6000 and 10000. Low or zero indicates a wiring problem. If it above 10000 then there maybe there is a blockage between the pump and the injection point.</p> |

3.5 NUTRIENT

The Nutrient menus shows Nutrient related parameters.

| | |
|--|--|
|  | <p>Nutrient tank level as a percentage of the full amount. Set the full height below.</p> |
|  | <p>If the Nutrient tank falls below this level then the controller will trip out and display a OUT OF NUTRIENT alarm. Set to zero to disable the feature. Press ENTER to adjust. Square brackets will be displayed around the numbers. Then use the up and down arrows to set the new level. Press ENTER again to lock in the new level.</p> |
|  | <p>This sets the height of the Nutrient tank. Press ENTER to adjust. Square brackets will be displayed around the numbers. Then use the up and down arrows to set the new level. Press ENTER again to lock in the new level.</p> |
|  | <p>If a flow sensor is installed to measure the nutrient then this menu is used to specify the pulses per litre. Press ENTER to adjust. Square brackets will be displayed around the numbers. Then use the up and down arrows to set the new level. Press ENTER again to lock in the new value.</p> |

3.6 WATER

These menus show parameters related to water.

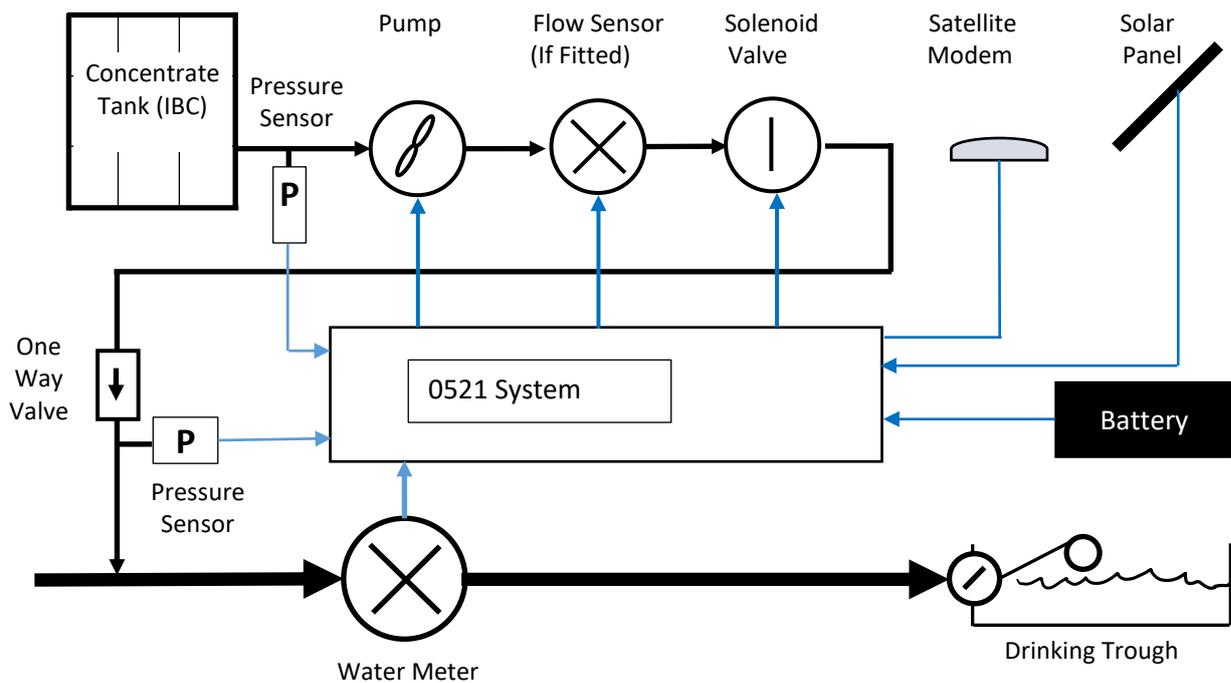
| | |
|---|---|
|  | <p>Main water tank level/pressure.</p> |
|  | <p>Normally one pulse is 10L. This menu is used to decide how many pulses are required per dose. Press ENTER to adjust. Square brackets will be displayed around the number. Then use the up and down arrows to change the number. Press ENTER to lock it in.</p> |
|  | <p>This sets the height of the Water tank. Press ENTER to adjust. Square brackets will be displayed around the numbers. Then use the up and down arrows to set the new level. Press ENTER again to lock in the new level.</p> |

3.7 Satellite

The Satellite menu shows data associated with the COMMS interface. This typically has a Skywave modem connected

| | |
|--|--|
| <p>SATELLITE * Detecting Modem</p> | |
| <p>SERIAL # TX: Sent</p> | |
| <p>TRANSMIT NOW # Press Enter</p> | |

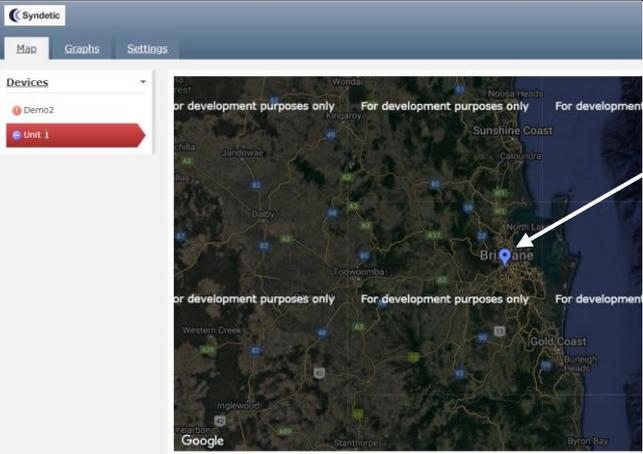
4 Block Diagram

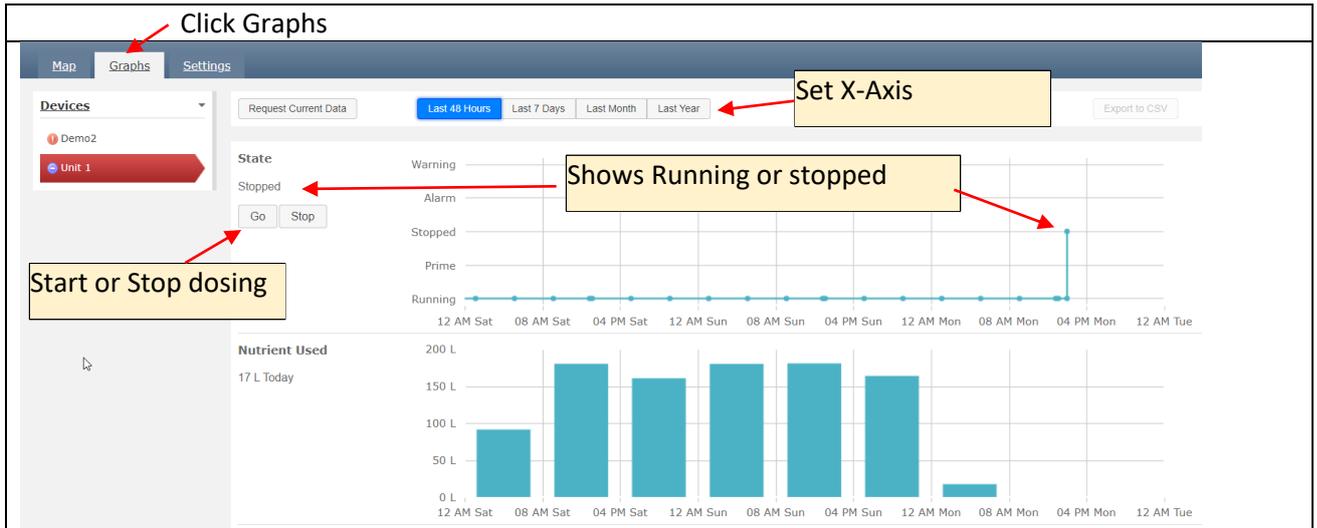


5 Remote Control and Monitoring

Type 49.176.219.155 into a browser.

Username = test Password = test

| | |
|---|--|
| <h3>Syndetic Remote Station Server</h3> <p>Remote Bird Graph Syndetic Remote Monitoring</p> | <p>On a web browser type 49.176.219.155 Click Syndetic Remote Monitoring</p> |
| <h2>Login</h2> <p>Username: <input type="text" value="test"/></p> <p>Password: <input type="password" value="...."/></p> <p><input type="checkbox"/> Remember me next time <input type="button" value="Login"/></p> | <p>Enter your username and password.</p> |
|  | <p>You will see your devices on the left. (Ignore the google maps error for now) Click on the device to select it</p> <p>Teardrop RED = Stop tripped out. BLUE = Stopped because told to stop GREEN = Running</p> |



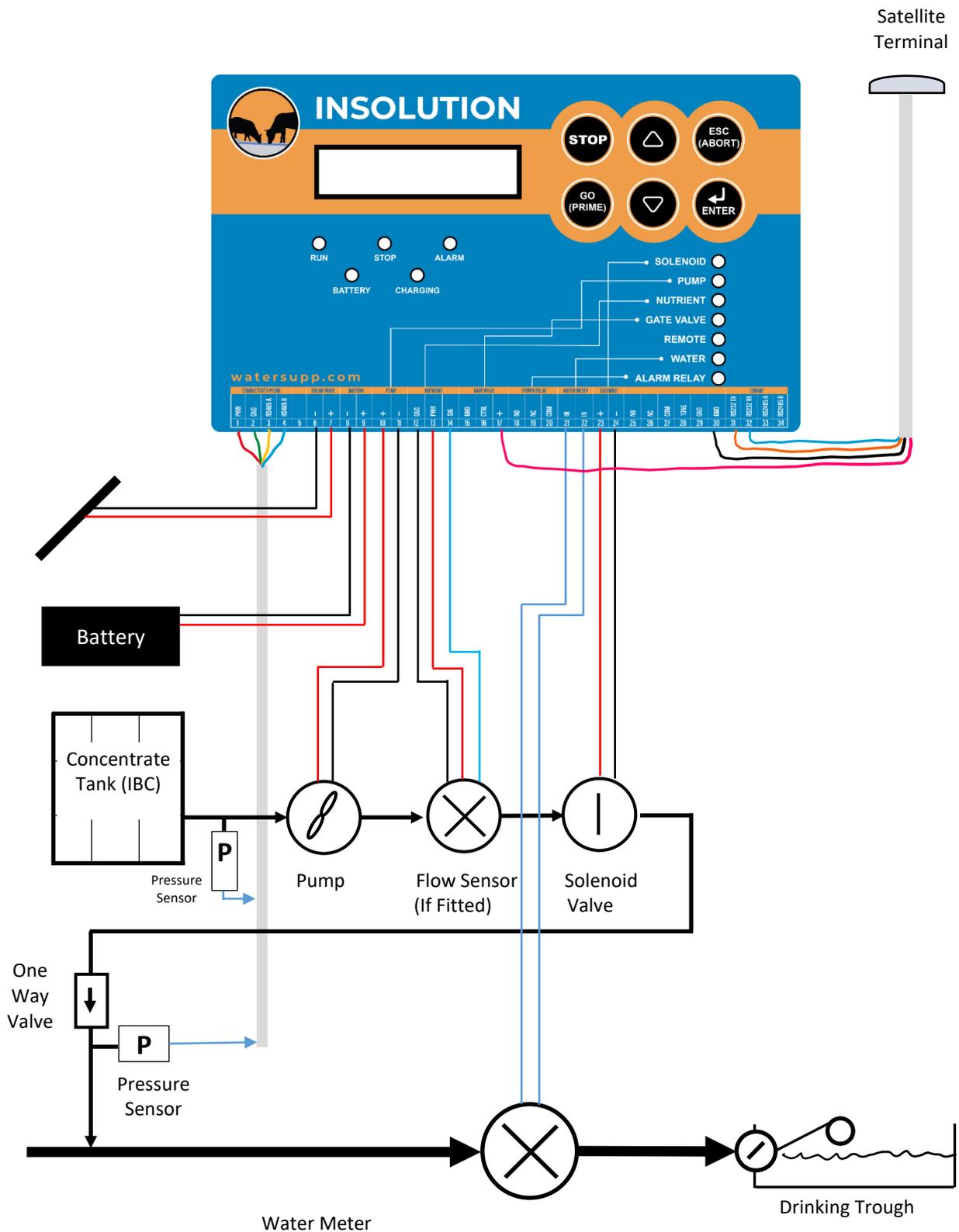
Click Settings

Current Values

| Setting | Current Values: 29-05-2023 14:01:24 | 09-05-2023 12:44:09 | 09-05-2023 12:40:54 | 09-05-2023 12:40:13 | 09-05-2023 12:38:31 | 08-05-2023 12:38:31 |
|--------------------------------|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| Sequence Number | 6 | 0 | 15 | 14 | 13 | 1 |
| Report Reason | Server Change | 1 | 4 | 3 | 7 | 4 |
| Firmware Version (v) | 20.07 | 2007 | 2007 | 2007 | 2007 | 20 |
| Dosing Mode | Timer | 0 | 0 | 0 | 0 | 0 |
| Dosing Percent (%) | 1 | 100 | 100 | 100 | 100 | 10 |
| Pump Time (ms) | 59392 | 59392 | 35840 | 35840 | 35840 | 56 |
| Max Dosing Percent (%) | 110 | 110 | 110 | 110 | 110 | 11 |
| Max Pump On Time (s) | 2.4 | 24 | 24 | 24 | 24 | 24 |
| Water Meter Pulses | 1 | 1 | 6 | 5 | 4 | 4 |
| Nutrient Cal Factor (pulses/L) | 449 | 449 | 449 | 449 | 449 | 44 |
| Conductivity Mode | Off | 1 | 1 | | | 1 |
| Conductivity Warning (µS) | 1000 | 1000 | 1000 | | | 10 |
| Conductivity Alarm (µS) | 2500 | 2500 | 2500 | | | 25 |
| Alarm Relay Mode | Latching | 1 | 1 | 1 | 1 | 1 |

Grey Background shows the parameters that were changed

6 Wiring Diagrams



7 Document Revision Status

| REV | Details of Change | Who | Date |
|-----|---|---------------|------------|
| H | Added Satellite Connection Details. Added page numbers. | Frank Thomson | 29-05-2023 |
| | | | |