APCON
Powered by Devyami

Operating Manual

Motor Driver

(MD1/MD3)

Version > 2.7.0

24 Oct 2025

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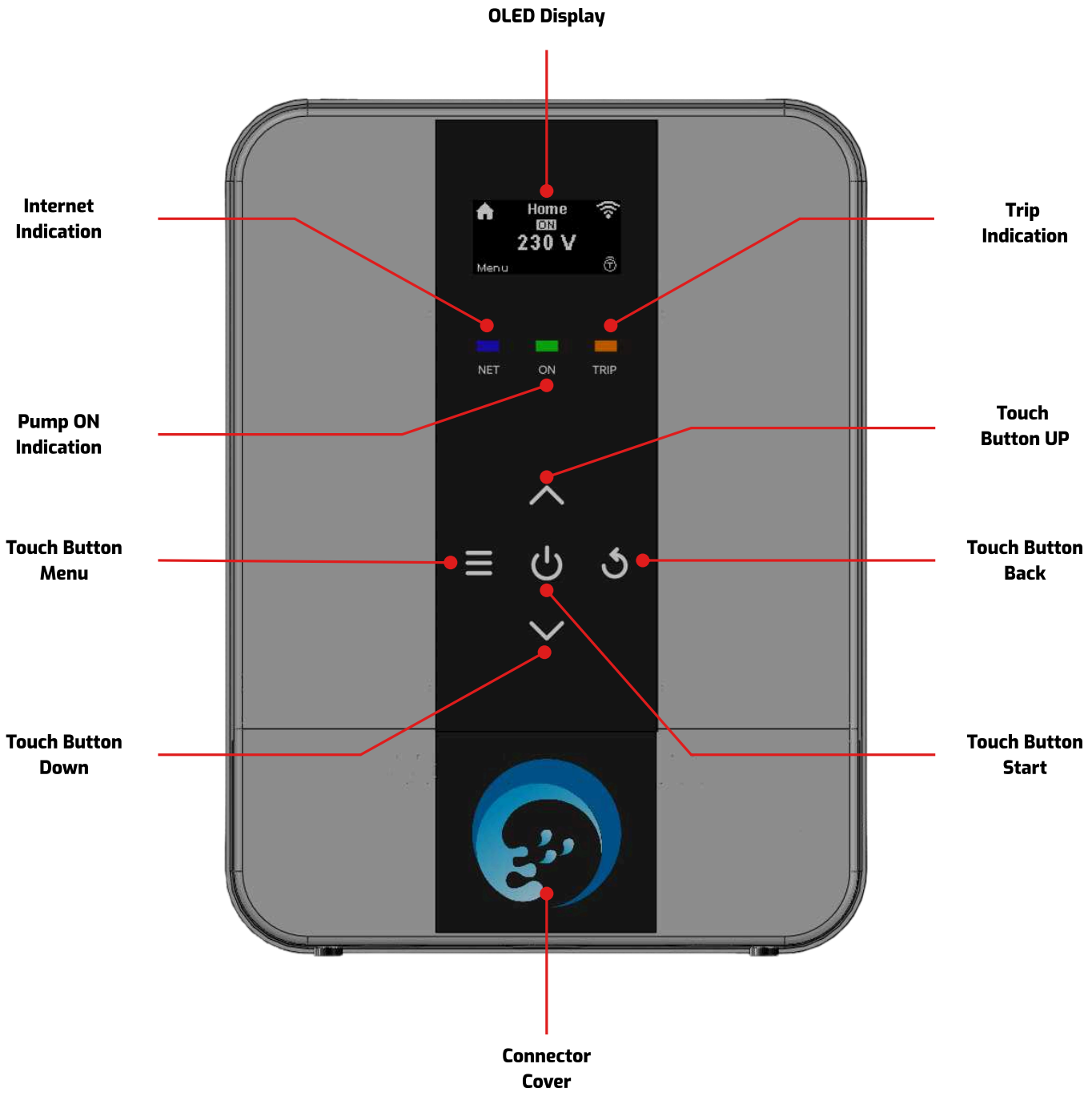
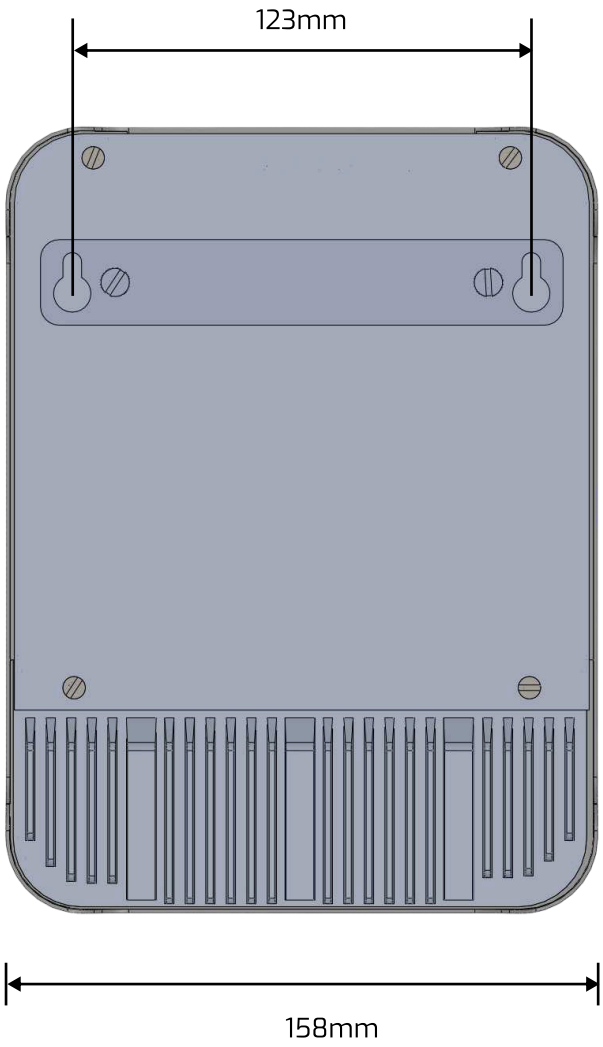
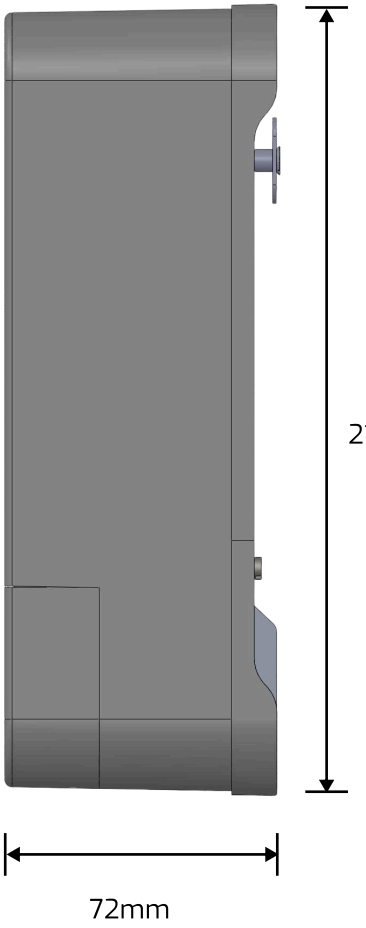
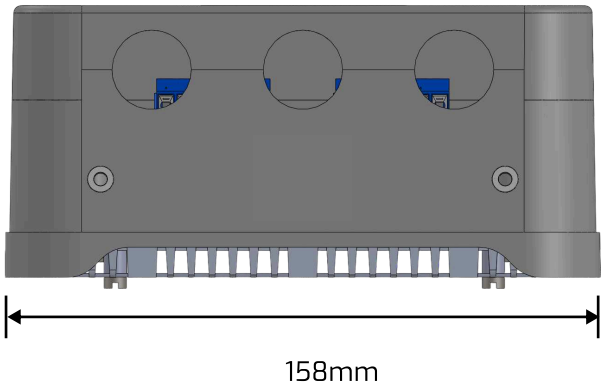
Front Panel Layout



Product Dimensions







Product Specifications

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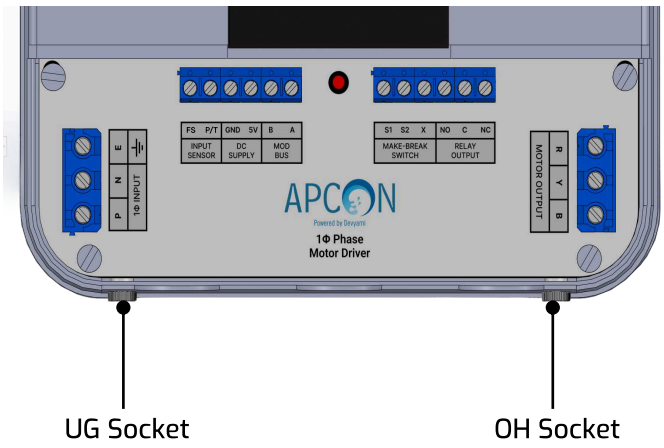
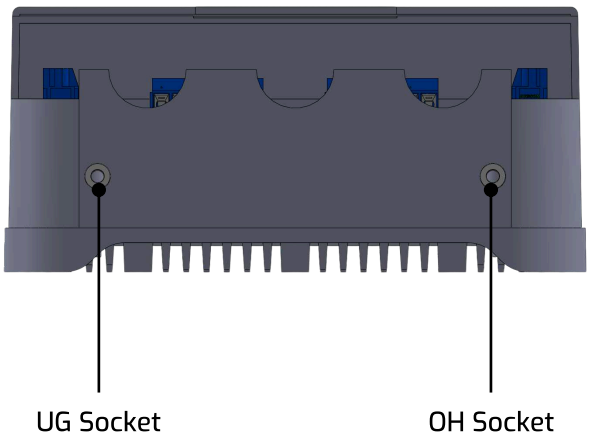
Parameter	MD1	MD3	MD3-16	MD3-22
Input Phase	Single	Three		
Operating Voltage	230V	415V		
Frequency	50 Hz			
Max Current	16A	10A	16A	22A
Pump Protections	Undervoltage- Overvoltage- Underload- Overload- Dry Run- Overrun- Overcycle- Off Delay- Short Circuit	Same as MD1 + SSP (Single Phasing Protection)		
Control Method	Microcontroller-based			
Output Type	Solid State Relay Output		Contactors	
Display	OLED Display (128x64)			
Indicators	LED (NET, ON, TRIP)			
User Interface	Capacitive Touch Buttons			
Configuration	On-device & App			
Materials	FRPC housing with acrylic touch plate for OLED and LED indicators, aluminum back plate with internal heat sink, and GI container enclosing internal components.			
Dimension (L x W x H)	210 x 158 x 72 mm			
Weight (Approx.)	1500 g			
Mounting Type	Wall / Panel mount			
Weather Protection	IP30 (Requires enclosure protection)			
Operating Temperature	-10°C to +50°C			
Humidity Tolerance	Up to 65% RH (non-condensing)			
Altitude Rating	≤ 2000 m above sea level			
Enclosure Rating	FRPC: UL94 V-0 (fire resistant)			
Cable Terminals	Screw terminals, PG glands			
Included Accessories	Mounting Screws			
Packaging	Corrugated box (Not Water Proof)			

Connectors for MD1 Single Phase

Front View

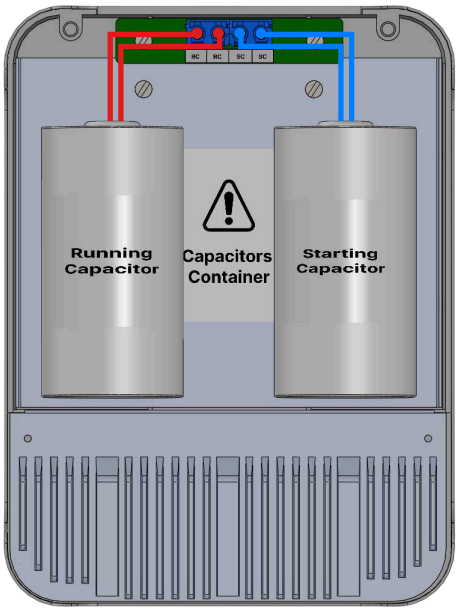


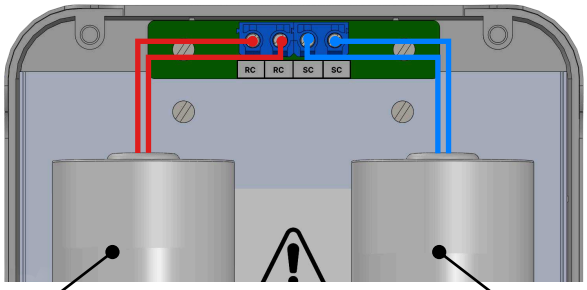
Bottom View



Socket Name	Description
1Φ INPUT	Phase (P) and Neutral (N) input
P/T (INPUT Sensor)	Pressure/Temp/TDS sensor input (0–3.3V analog) (configurable via settings)
FS (INPUT Sensor)	Flow sensor input (frequency-based) – configurable via settings
DC Supply	5V & GND output for powering sensors
Modbus	RS485 Modbus communication – terminals A(+) & B(-)
Make - Break Switch	Custom logic switch – short S1 & S2 to "Make", X unused (configurable)
Relay Output	NO/C/NC – for custom appliance control (configurable via settings)
UG Socket	Source tank dry-run sensor input (Contact/Float/LHT)
OH Socket	Destination tank level sensor input (Contact/Float/LHT)
E	Earthing terminal for sensor reference
Motor Output	Motor connection – R, Y, B (use R & B if capacitors are external)

Capacitors Connectors for Single Phase

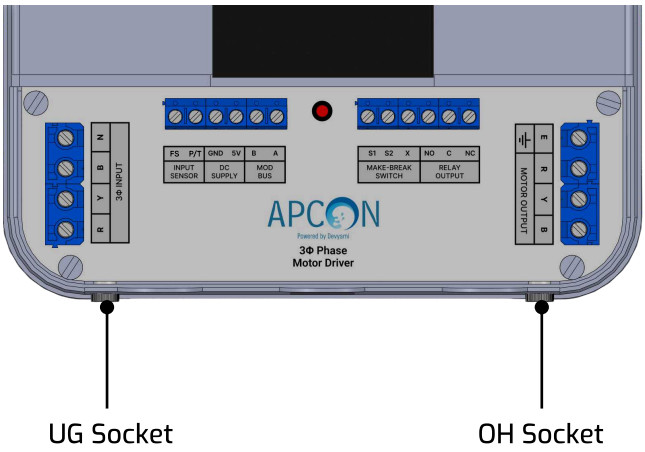




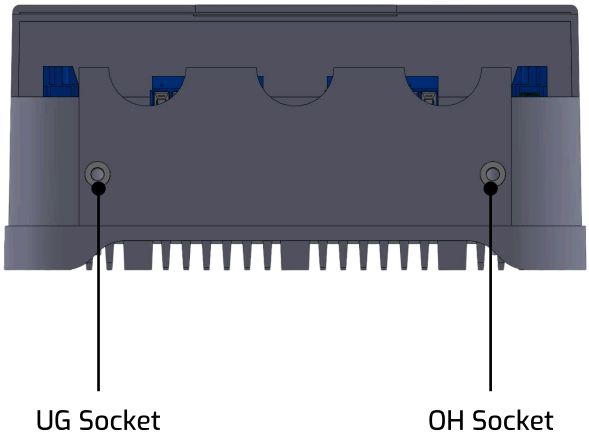
Socket Name	Description
RC RC	2 Terminals for Running Capacitors
SC SC	2 Terminals for Starting Capacitors

Connectors for MD3 Three Phase

Front View



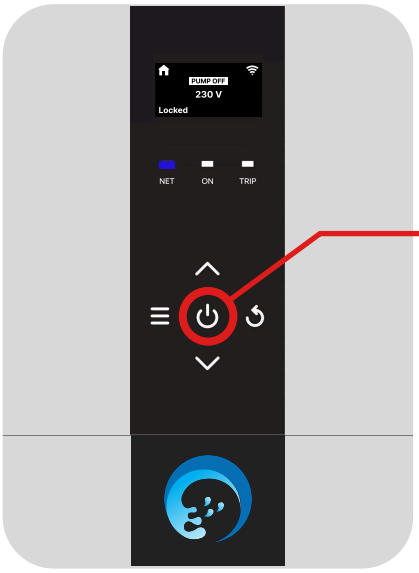
Bottom View



Socket Name	Description
3Φ INPUT	Phase (R, Y, B) and Neutral (N) input
P/T (INPUT Sensor)	Pressure/Temp/TDS sensor input (0–3.3V analog) (configurable via settings)
FS (INPUT Sensor)	Flow sensor input (frequency-based) – configurable via settings
DC Supply	5V & GND output for powering sensors
Modbus	RS485 Modbus communication – terminals A(+) & B(-)
Make - Break Switch	Custom logic switch – short S1 & S2 to "Make", X unused (configurable)
Relay Output	NO/C/NC – for custom appliance control (configurable via settings)
UG Socket	Source tank dry-run sensor input (Contact/Float/LHT)
OH Socket	Destination tank level sensor input (Contact/Float/LHT)
E	Earthing terminal for sensor reference
Motor Output	Motor connection – R, Y, B

i. Manual Pump ON / OFF

A. Manual Pump ON



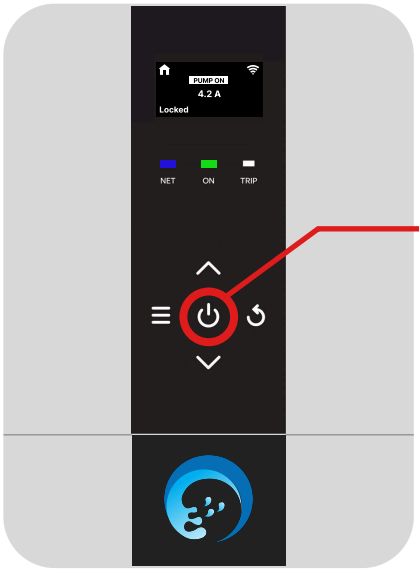
Long Press
To Turn ON
Pump

This will only work depending on conditions and settings

OFF

ON

B. Manual Pump OFF



Single Click
To Turn OFF
Pump

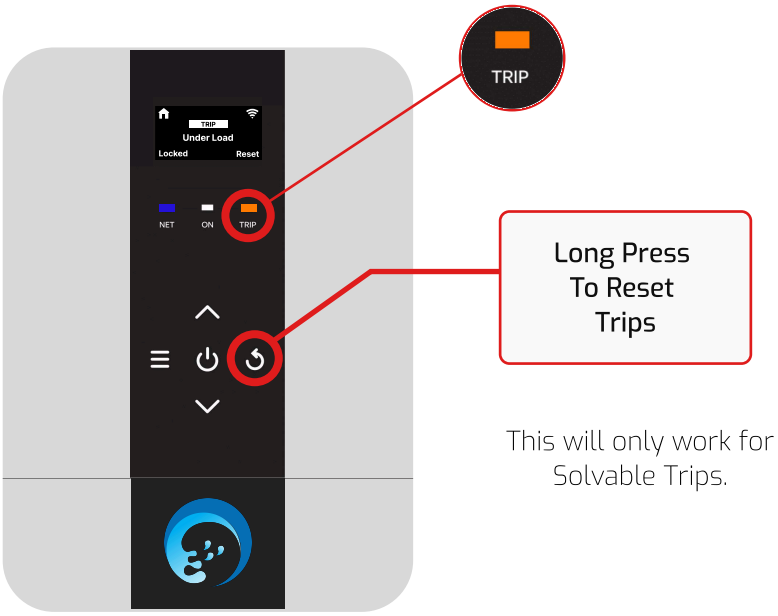
This will only work depending on conditions and settings

ON

OFF

Basics of Touch Interface

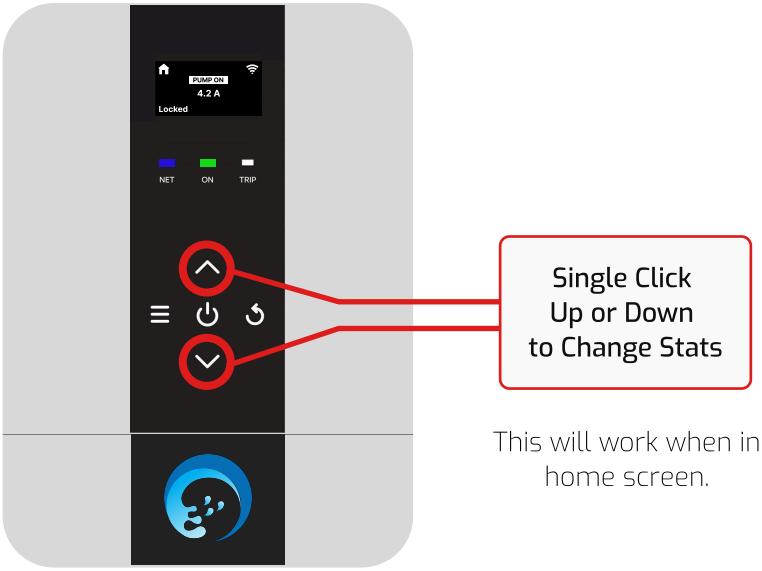
ii. TRIP Reset



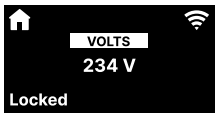
TRIPPED

HEALTHY

iii. Home Dashboard Stats



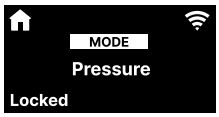
Current



Voltage

Power

Power Factor

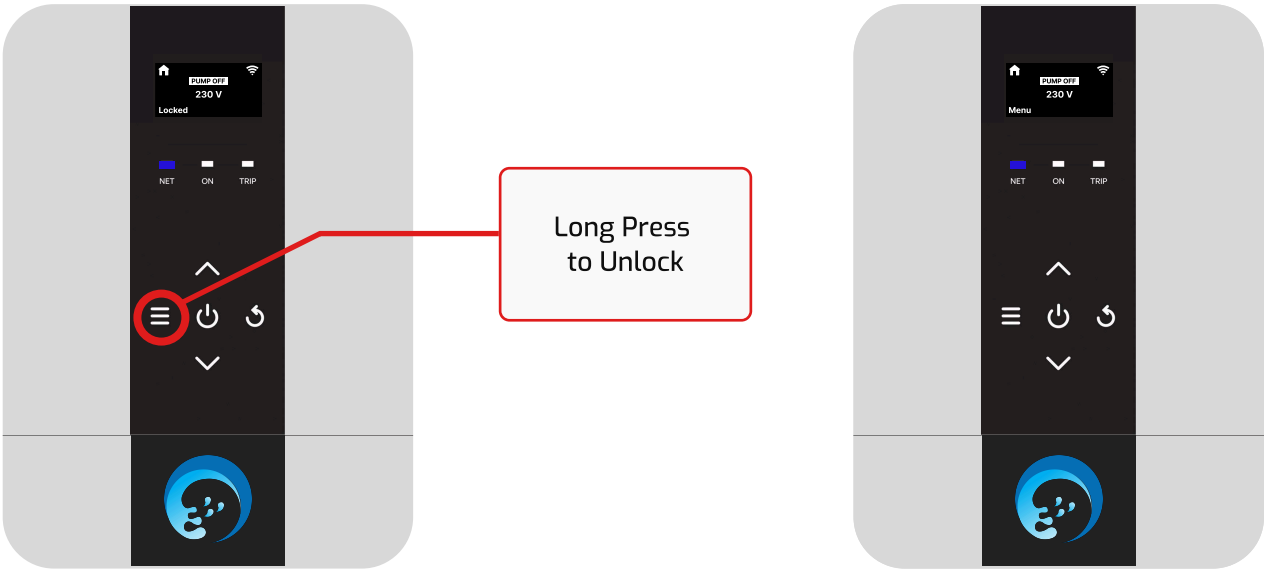


System Mode

Sensor Reading

iv. Change Settings

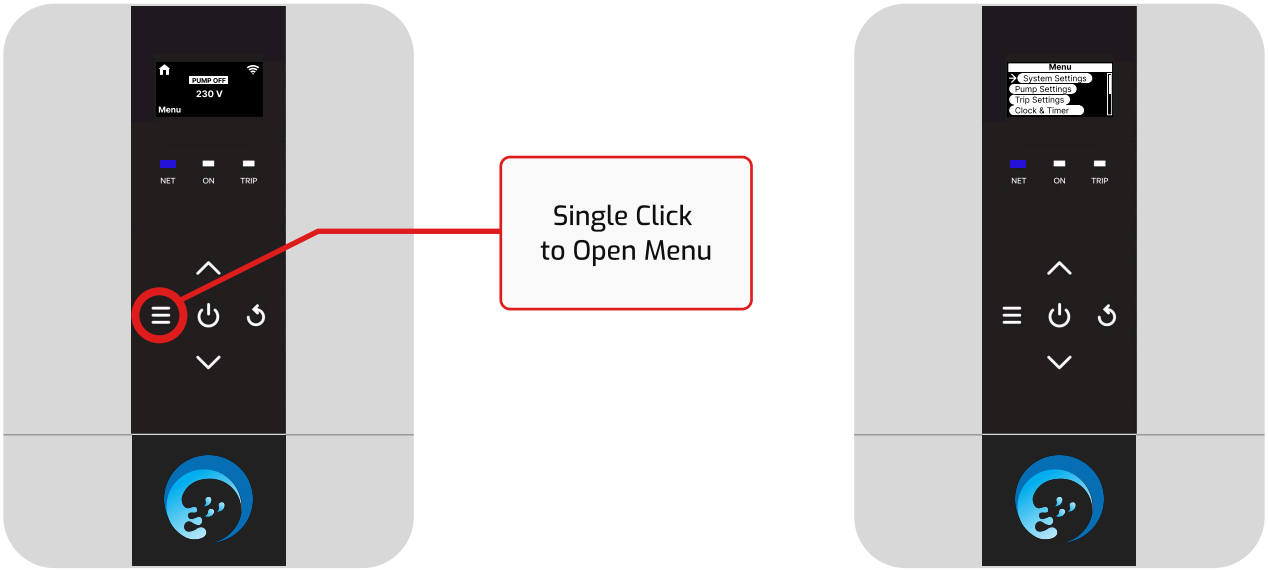
A. Unlock Settings



Locked

Unlocked

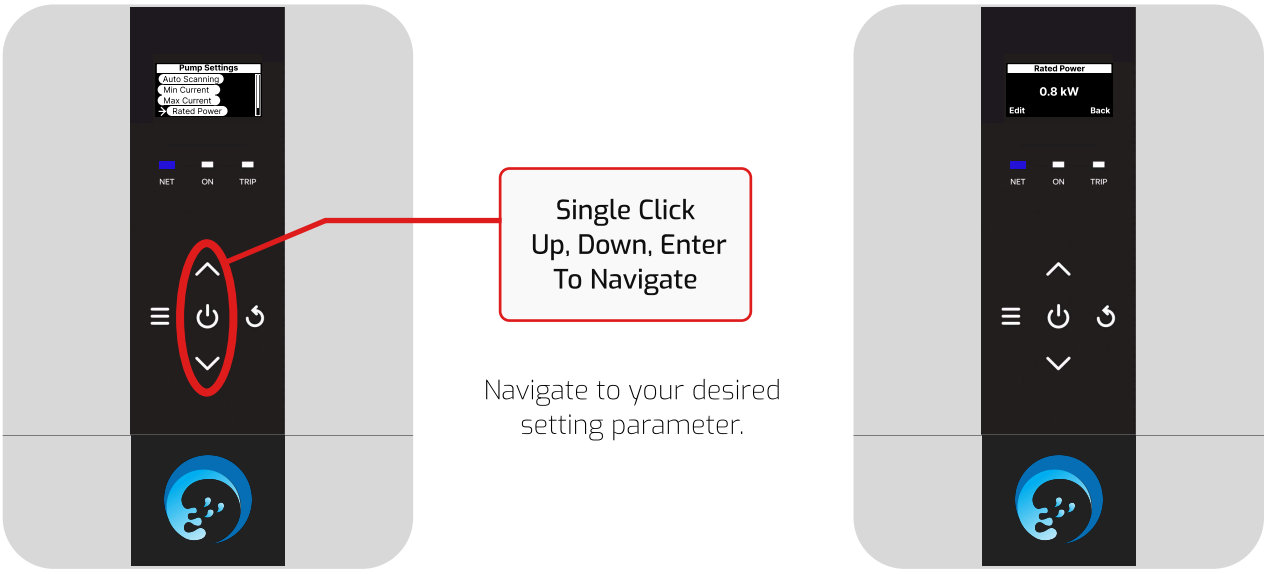
B. Open Settings List



Unlocked

Menu

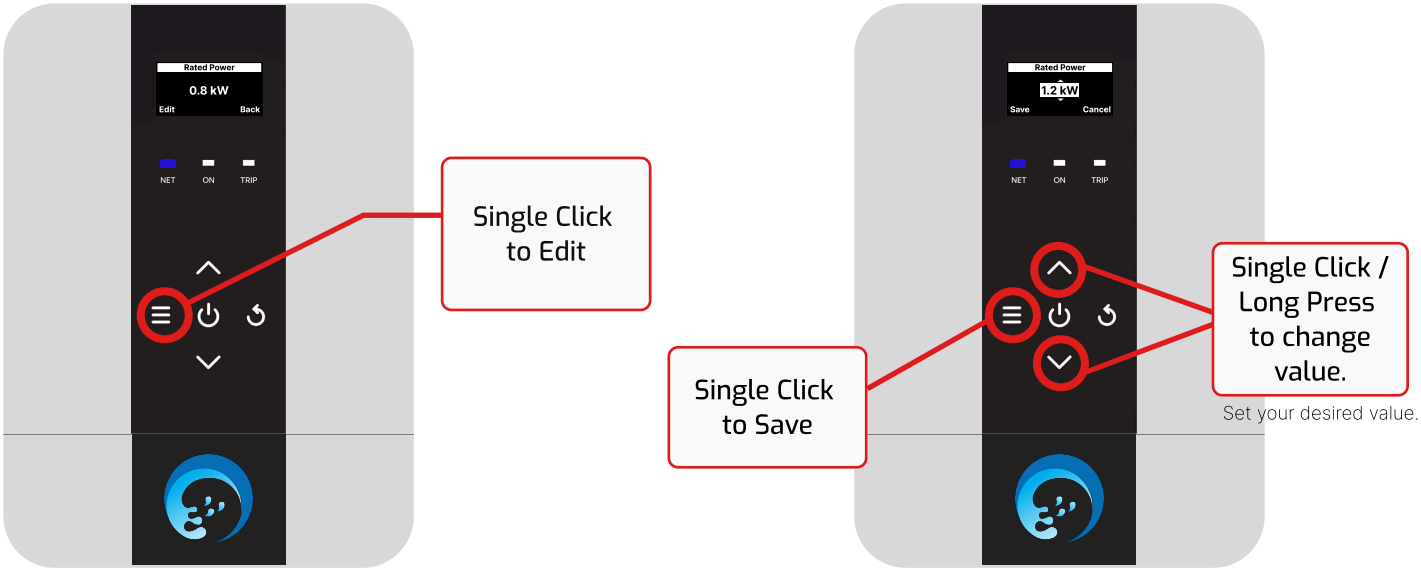
C. Navigate Desired Setting



Setting List

Desired Setting

D. Edit & Save Desired Setting



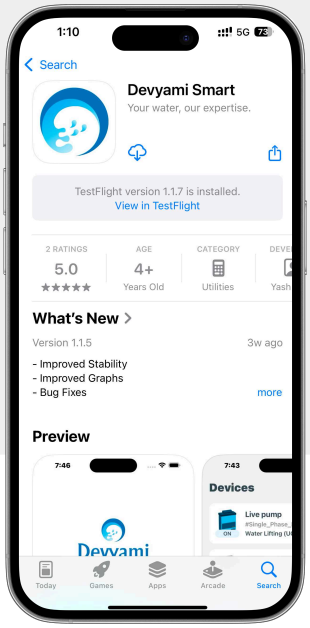
Edit

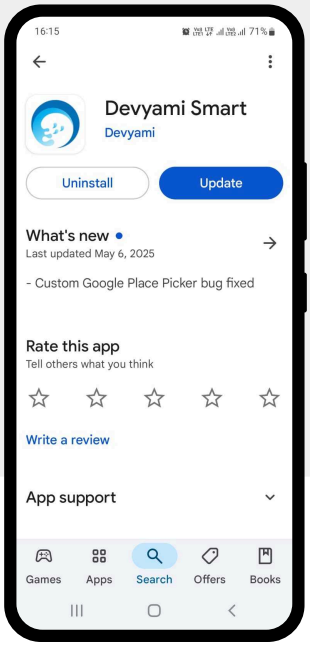
Save

App & Wi-Fi Setup

Step 1: Download Devyami Smart App

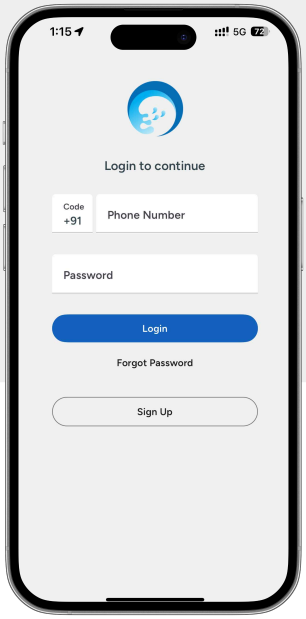
Download on the App Store



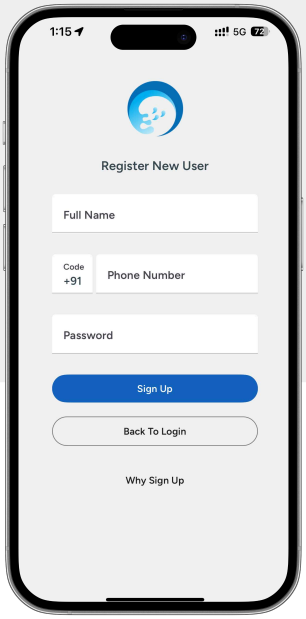


GET IT ON Google Play

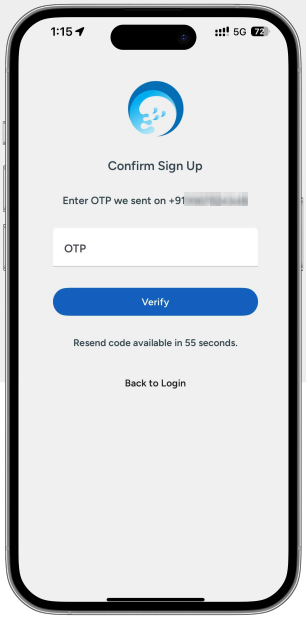
Step 2: Log in / Sign Up



Existing user



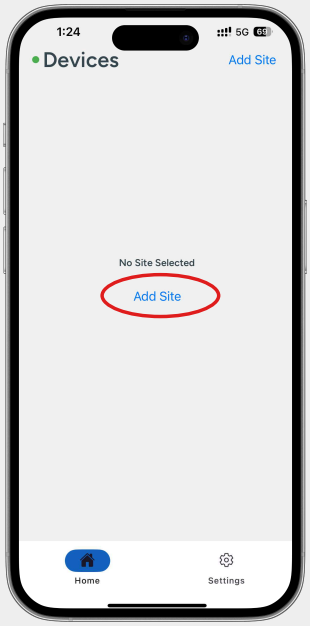
Register new user

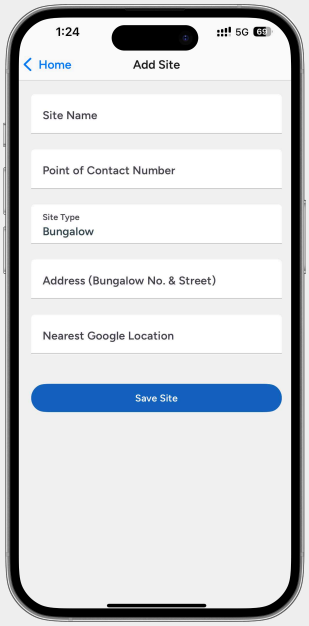


Enter OTP to Authenticate

Step 3: Create Site

i. Create First Site

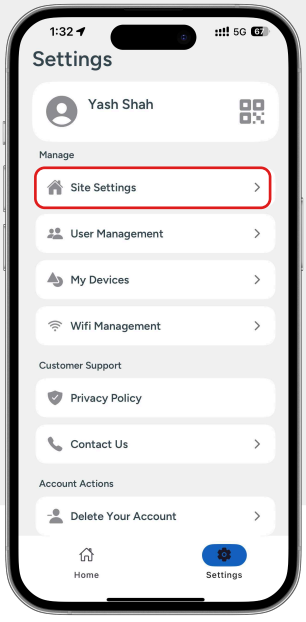




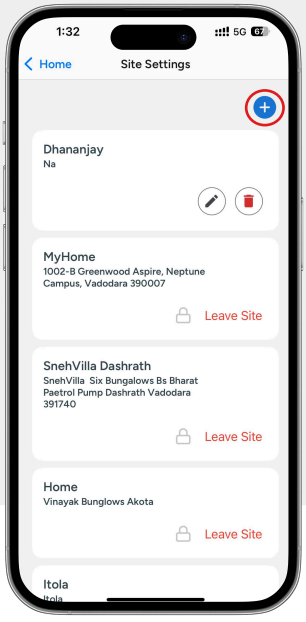
Add Site

A site is defined as a physical location where the devices will be installed. A user can have multiple sites.

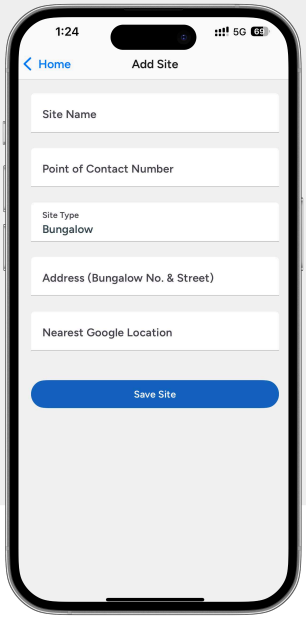
ii. Create More Sites (Optional)



Site Settings



Add New Site



Add Site

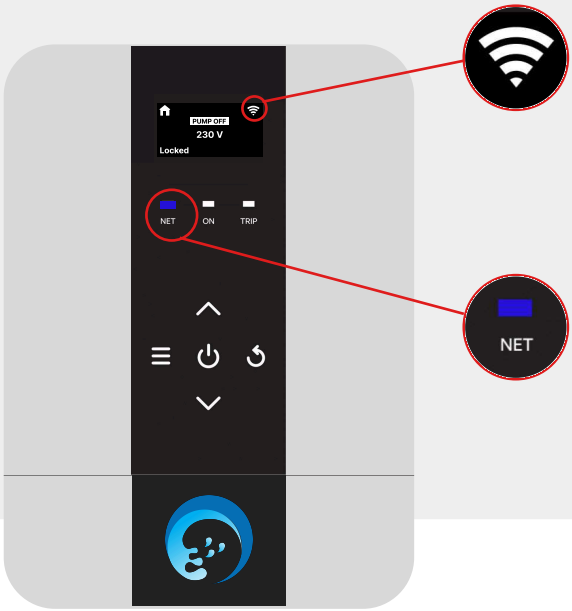
Step 4: Provide Default Wi-Fi

i. Provide Hotspot or Access Point with default credentials

SSID : apcon
Password : apcon123

The Device is only compatible with
2.4GHZ Wi-Fi Bandwidth

ii. Device Connected to cloud

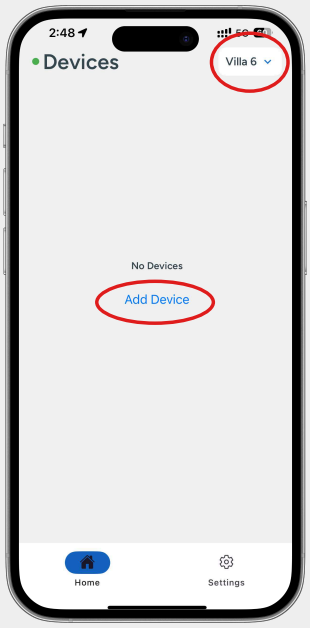


The logo should stop blinking if connected to the Access Point

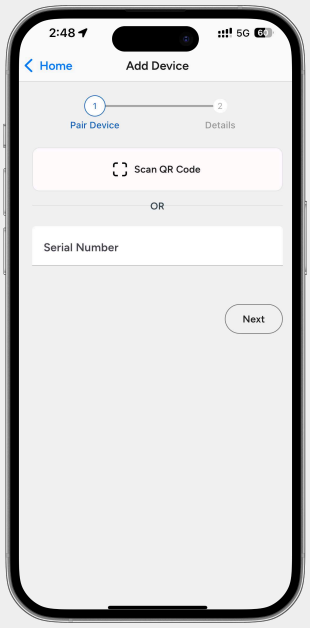
If setup correctly and internet is available, the blue indicator will illuminate.

Step 5: Add Device

i. Add First Device in the Site



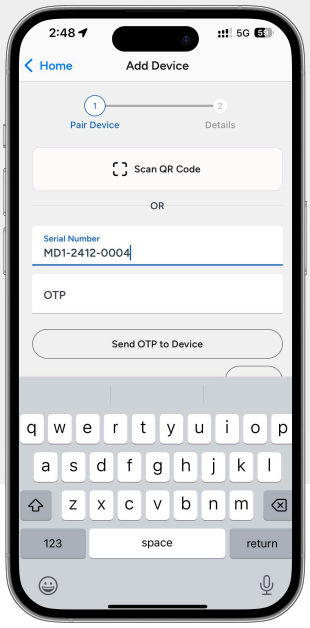
Make Sure Correct Site is selected



ii. Scan QR or Enter Serial Number

Scan Device QR

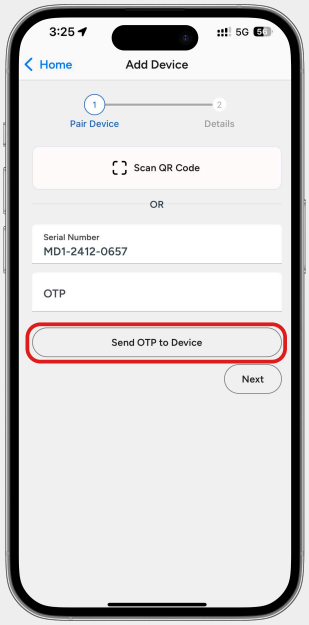
OR



Enter serial number

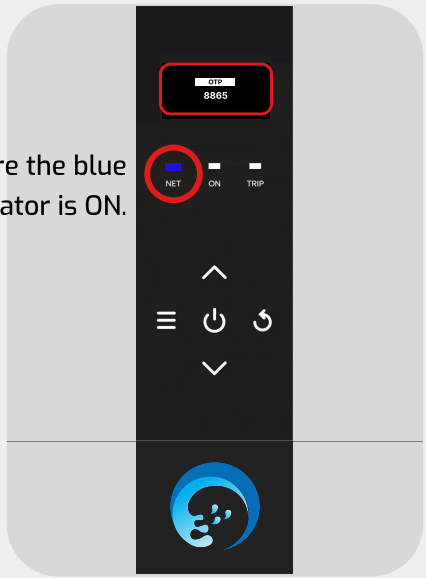
Step 5: Add Device

iii. Receive the OTP on Device

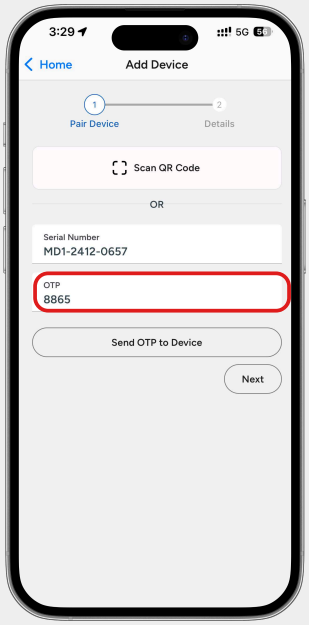


Send OTP

Make sure the blue indicator is ON.

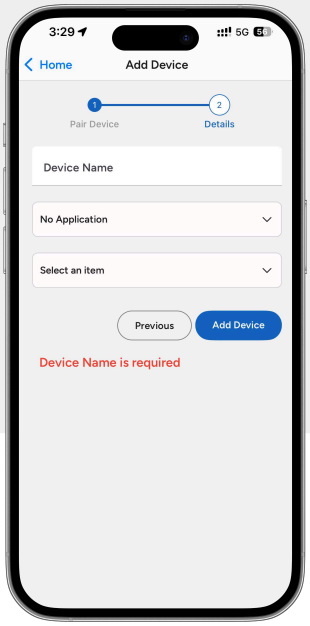


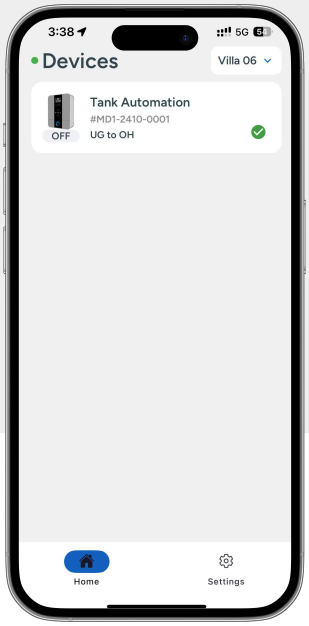
Receive OTP

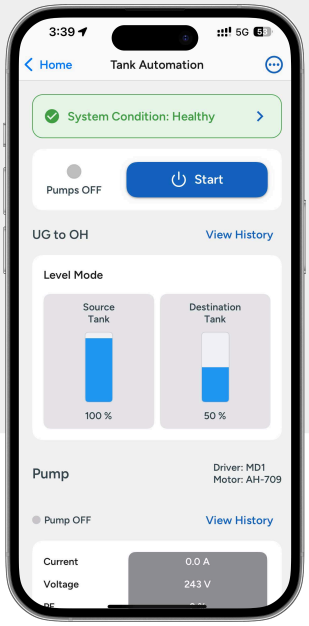


Enter OTP and Click Next

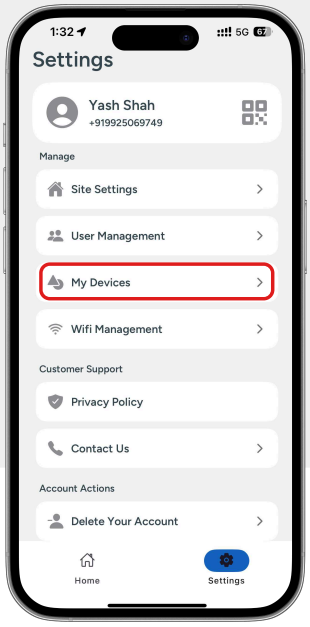
iv. Enter details and add Device





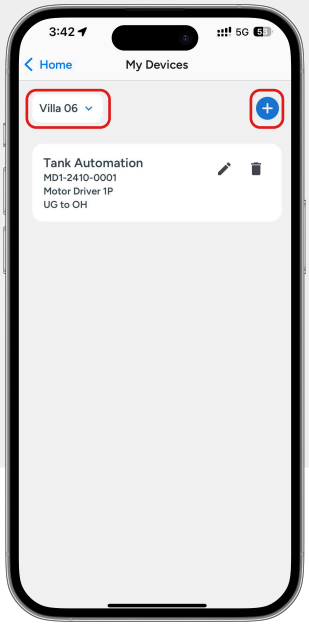


Step 6: Add More Devices (Optional)



My Devices

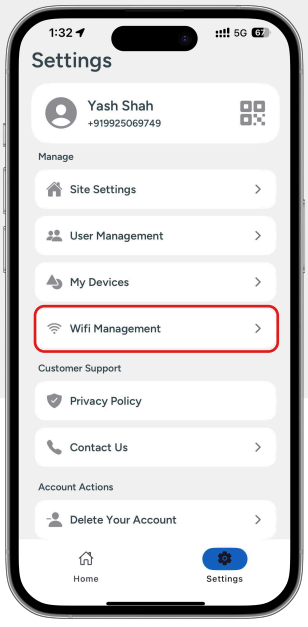
Make Sure the Desired site is selected



Add New Devices

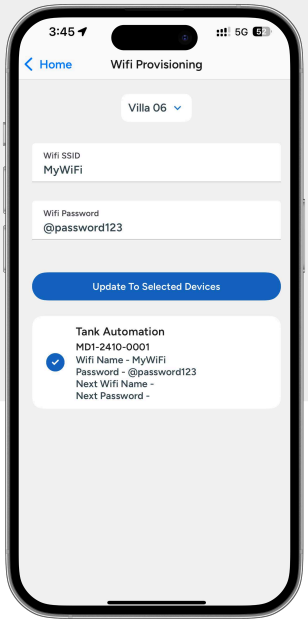
Add New Devices and follow step 5 again.

Step 7: Update New Wi-Fi to all Paired Devices.



Wifi Management

Make sure the WiFi is available in 2.4Ghz bandwidth and with good signal strength.

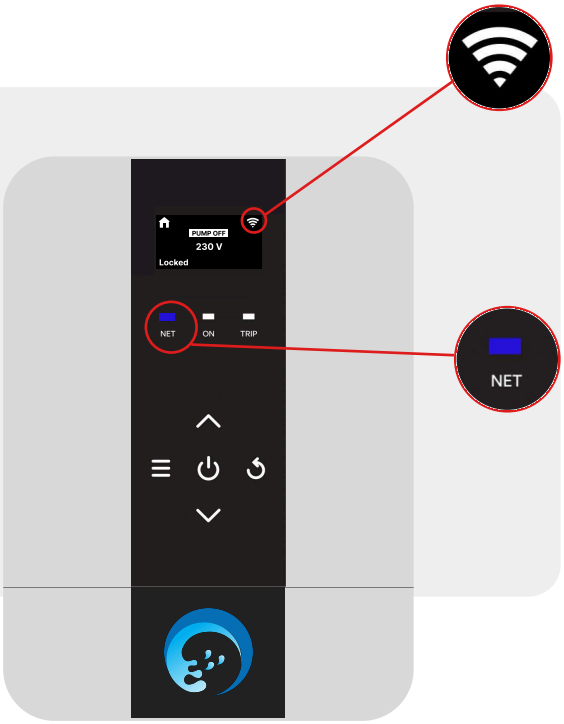


Update SSID & Passwords

App & Wi-Fi Setup

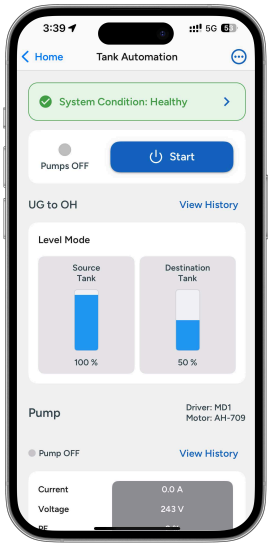
Step 8: Disconnect your hotspot

Disconnect Your Hotspot

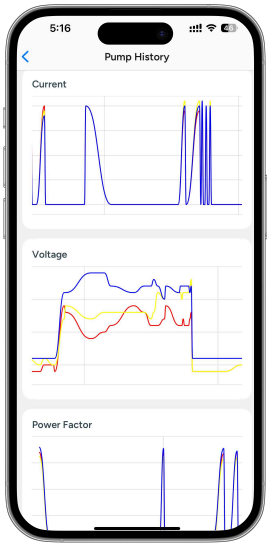


Wait for the device to connect to new WiFi

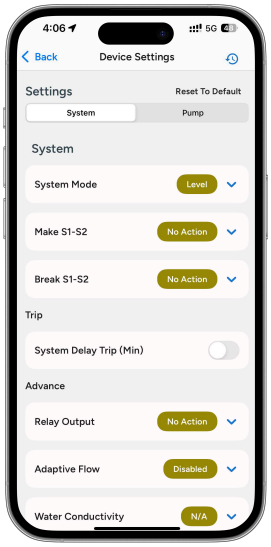
You're all set.



Control



Monitor



Settings

Schedules

System Settings

Parameter	Path	Type	Description
System Mode	System Settings	Options	It is used to dictate the working automation. (Manual / Level /Pressure / Temperature / Dewatering / Level(LHT))
Min Pressure	System Settings > Pressure	Number	Minimum pressure threshold. Only applicable when System Mode = Pressure.
Max Pressure	System Settings > Pressure	Number	Maximum pressure threshold. Only applicable when System Mode = Pressure.
Pressure Meter	System Settings > Pressure	Options	Type of pressure meter connected. (0.8, 1.6, 1 mPa)
Min Temp	System Settings > Temperature	Number	Minimum temperature threshold. Only applicable when System Mode = Temperature.
Max Temp	System Settings > Temperature	Number	Maximum temperature threshold. Only applicable when System Mode = Temperature.
Temp Mode	System Settings > Temperature	Options	Mode for temperature control (Hot / Cold). Only applicable when System Mode = Temperature.
Adaptive Flow	System Settings > Temperature	Options	Adapts pump on-off with system flow.
Min Level	System Settings > Level(LHT)	Number	Minimum tank level in meters. Only applicable when System Mode = Level (LHT)
Max Level	System Settings > Level(LHT)	Number	Maximum tank level in meters. Only applicable when System Mode = Level (LHT)
Tank Area	System Settings > Level(LHT)	Number	Cross-section Area of the tank for volume calculation. Only applicable when System Mode = Level (LHT)
Level Meter	System Settings > Level(LHT)	Options	Type of Level meter connected. (35, 100, 200 kPa)

System Settings

Parameter	Path	Type	Description
UG Sensor	System Settings > Source Tank	Number	Dictates which UG Sensor to be used. (Disabled, Contact/Float, LHT)
UG Min Level	System Settings > Source Tank	Number	Minimum UG tank level in meters. Only applicable when UG Sensor = LHT
UG Optimal Level	System Settings > Source Tank	Number	UG tank level in meters where it is considered to be acceptable . Only applicable when UG Sensor = LHT
UG Max Level	System Settings > Source Tank	Number	Maximum UG tank level in meters. Only applicable when UG Sensor = LHT
UG Tank Area	System Settings > Source Tank	Number	Cross-section Area of the UG tank for volume calculation. Only applicable when UG Sensor = LHT
UG Level Meter	System Settings > Source Tank	Options	Type of Level meter connected. (35, 100, 200 kPa)
Make	System Settings > Switch S1-S2	Options	Defines make condition for switch S1-S2. (No-Action, Start, Stop)
Break	System Settings > Switch S1-S2	Options	Defines make condition for switch S1-S2. (No-Action, Start, Stop)

Pump Settings

Parameter	Path	Type	Description
Auto Scanning	Pump Settings	Function	Automatically determines min and max pump current.
Min Current	Pump Settings	Number	Minimum current setting for pump operation.
Max Current	Pump Settings	Number	Maximum current setting for pump operation.
Rated Power	Pump Settings	Number	Rated power setting for pump.
Pump Flow	Pump Settings	Number	Pump flow rate setting. For virtual flow calculations

Trip Settings

Parameter	Path	Type	Description
Min Current	Trip Settings > Under Load	Number	Minimum current before underload trip.
UL Trip EN/DIS	Trip Settings > Under Load	Options	Enable/Disable Underload trip.
Max Current	Trip Settings > Over Load	Number	Maximum current before overload trip.
OL Trip EN/DIS	Trip Settings > Over Load	Options	Enable/Disable Overload trip.
Dry Run	Trip Settings > Dry Run	Number	Dry run Power threshold in % with respect to Rated Power (0 = Disable)
Rated Power	Trip Settings > Dry Run	Number	Pump rated power for dry run detection. Same as Pump Settings > Rated Power
Min Voltage	Trip Settings > Under Volt	Number	Minimum voltage before undervolt trip.
UV Trip EN/DIS	Trip Settings > Under Volt	Options	Enable/Disable Under Voltage trip.
Max Voltage	Trip Settings > Over Volt	Number	Maximum voltage before overvolt trip.
OV Trip EN/DIS	Trip Settings > Over Volt	Options	Enable/Disable Over Voltage trip.
Off Delay	Trip Settings > Off Delay	Number	Minimum Delay time before consecutive Pump turn ONs.
Off Delay EN/ DIS	Trip Settings > Off Delay	Options	Enable/Disable Off delay function.

Trip Settings

Parameter	Path	Type	Description
Sys Delay	Trip Settings > Sys Delay	Number	Minimum Delay time before consecutive System turn ONs. Applicable only when Multipump Mode.
Sys Delay EN/ DIS	Trip Settings > Sys Delay	Options	Enable/Disable system delay function.
Overrun Limit	Trip Settings > Over Run	Number	Maximum Time limit for pump overrun.
Overrun EN/DIS	Trip Settings > Over Run	Options	Enable/Disable overrun trip.
Overcycle Duty	Trip Settings > Over Cycle	Number	Maximum Pump Turn ONs in one hour before overcycling trip.
Overcycle EN/ DIS	Trip Settings > Over Cycle	Options	Enable/Disable overcycle trip.
SPP Trip EN/DIS	Trip Settings > 3 Phase Err	Options	Enable/Disable Single Phase Protection trip. Only Applicable for MD3
Auto Resets	Trip Settings > Auto Resets	Number	Number of consecutive auto resets allowed.
Auto Reset Time	Trip Settings > Auto Resets	Number	Time after the system auto resets the trips.
Healthy Runtime	Trip Settings > Auto Resets	Number	Minimum healthy runtime to reset Autoreset counter.

Settings & Parameters

Clock & Timer

Parameter	Path	Type	Description
Clock	Clock & Timer	Time	Real-time clock showing HH:MM:SS and DAY.
Timezone	Clock & Timer	GMT	Timezone setting in GMT offset.
ON Timer 1 to 8	Clock & Timer > ON Timers	Schedule	Scheduled ON time settings for devices.
OFF Timer 1 to 8	Clock & Timer > OFF Timers	Schedule	Scheduled OFF time settings for devices.
Timer Mode	Clock & Timer	Options	Timer control mode: Window or Trigger

Network Settings

Parameter	Path	Type	Description
OTP	Network Settings	Read-only	One-Time Password used for secure setup or pairing.
Saved Wi-Fi	Network Settings	Read-Only (Editable via App)	Saved Wi-Fi network.
Scan Wi-Fi	Network Settings	Function	Displays nearby Wi-Fi networks for connection.
Wi-Fi	Network Settings	Options	Enable/Disable Wi-Fi.
Default Wi-Fi	Network Settings	Read-only	Default Wi-Fi network to auto-connect.

Advance Settings

Parameter	Path	Type	Description
Relay Output	Advance Settings	Options	Relay control configuration for external outputs. (Pump ON/OFF or TRIPs or Currents)
Flow Meter	Advance Settings	Options	Type of flow meter connected. (0.5, 1, 1.5, 2, 2.5... inches) Keep disable for virtual flow calculations
Conductivity	Advance Settings	Options	Water conductivity quality setting. Useful for the level sensors calibration.
Extra Sensor	Advance Settings	Options	Extra Sensor like TDS/Temperature. Only applicable when System Mode = Manual / Level / Dewatering /Level(LHT)
OBR	Advance Settings	Number	Gives regeneration due indication when more water is consumed than OBR.
Working Mode	Advance Settings > Multi Pump	Options	Select communication mode: Self, Master, Slave.
Slave ID	Advance Settings > Multi Pump	Number	Unique identifier for slave device. Only applicable when Working mode = Slave
No of Slaves	Advance Settings > Multi Pump > Master	Number	Total number of slave pumps to be controlled. Only applicable if Working mode = Master
Slave ID (1 to 6)	Advance Settings > Multi Pump > Master > Slaves	Number	ID of each slave pump. Only applicable if Working mode = Master.
Slave Type (1 to 6)	Advance Settings > Multi Pump > Master > Slaves	Options	Defines type of slave device (Apcon or VFD). Only applicable if Working mode = Master.
VFD Type (1 to 6)	Advance Settings > Multi Pump > Master > Slaves	Options	Type of VFD Models used as slave devices. Only applicable when Slave Type = VFD
Master Pump	Advance Settings > Multi Pump > Master	Options	Defines whether master also runs a pump. Only applicable if Working mode = Master.
ON Time Delay	Advance Settings > Multi Pump > Master	Number	Delay in switching ON next slave pump. Only Applicable if System Mode = Manual/ Level, Level(LHT).
Max Working	Advance Settings > Multi Pump > Master	Number	Maximum pumps it allows to be ON at a given time.

Trips & Faults

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Trips	Description	Severity
3 Phase Err (SPP)	Single Phasing Prevention. One or more of the three phases is missing or has phase imbalance. Only Applicable for MD3	Hard
Dry Run	Pump is running without water flow, risking motor burnout.Dryrun detection via power.	Hard
Under Load (UL)	Load current is significantly below expected value, indicating potential no-load or disconnection.	Hard
Over Load (OL)	Load current exceeds the rated threshold, risking motor damage.	Hard
Under Volt (UV)	Input voltage is below acceptable operating range.	Hard
Over Volt (OV)	Input voltage exceeds acceptable operating range.	Hard
Over Run (OR)	Device/pump ran longer than its maximum allowed runtime.	Hard
Over Cycle	Excessive number of ON-OFF cycles in short duration, indicating site or sensor problems.	Hard
Tank Empty	Underground tank is detected to be empty via level sensor. Dryrun detection via sensor.	Hard
OFF Delay (OD)	Pump remains OFF for a defined delay after the stop condition.	Timer
SYS Delay	System remains OFF for a defined delay after the stop condition. Only applicable for multipump system.	Timer
TIMER OFF	Operation turned off due to programmed schedule.	Timer
Slave Err	Communication error with slave controller/device.	Hard
VFD Err	Variable Frequency Drive fault detected.	Hard
EICE	Internal electronic error — potential mother board failure.	Critical
Regeneration	Indication when more water is consumed than OBR.	Indication

Pump Settings & Connections

Supporting Pump Types

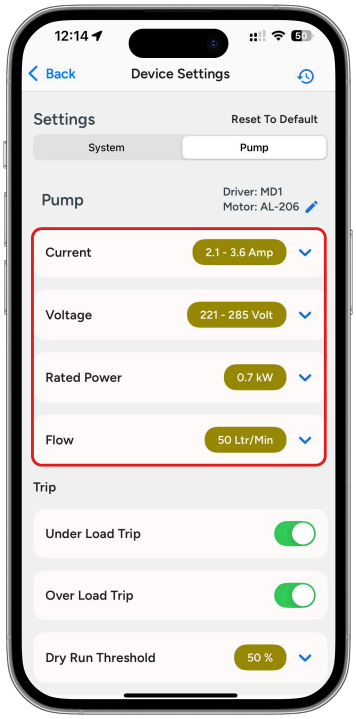
1. Single Phase Submersible Pump
2. Single Phase Surface Pump
3. Three Phase Submersible Pump
4. Three Phase Surface Pump

Crucial **Pump Settings**

- Pump Settings > Min Current > **{Desired Value}**
- Pump Settings > Max Current > **{Desired Value}**
- Pump Settings > Rated Power > **{Desired Value}**
- Pump Settings > Pump Flow > **{Desired Value}**

This Settings are crucial for pump protection and prolonged pump health.

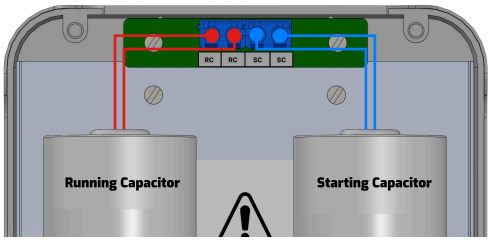
Without these settings, the protections are compromised.



Connections for

1. Single Phase Submersible Pump

1. **Power Supply**: Ensure a stable single-phase, 230V AC supply with proper earthing.
2. **Correct Wiring**: Connect the pump wires (Phase, Neutral, and Earth) correctly as per wiring diagram.
3. **Circuit Protection**: Install suitable MCB, RCCB/ELCB, or fuse for electrical protection.



Select Capacitors Based on Pump Model

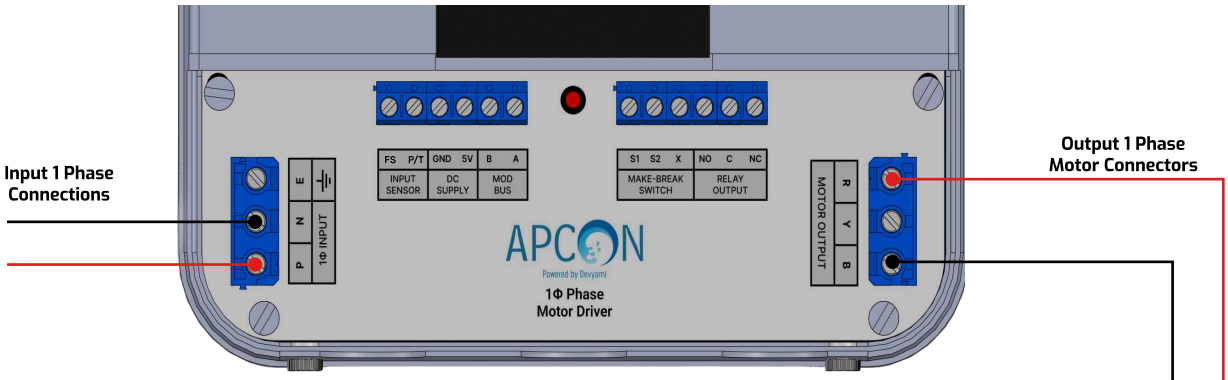
4. **Capacitor Installation**: Confirm the correct rating and proper installation of the start/run capacitor provided. (Behind the back plate of MD1)
5. **Immersion**: Submerge pump fully below water level to maintain cooling and lubrication.
6. **Piping Connections**: Ensure airtight connections on suction and delivery lines to prevent air leaks.
7. **NRV Valve**: Install a non-return valve (check valve) to prevent backflow and water hammer.
8. **Check Rotation**: Verify correct pump rotation direction after initial start-up.
9. **Dry Run Protection**: Use dry-run protection to prevent pump damage.
10. **Suspension**: Ensure the pump is suspended well above the bottom (usually minimum 0.5-1 meter) to prevent sediment intake and damage.

11. **Testing**: Conduct a brief test run after installation to confirm proper operation and absence of leaks.

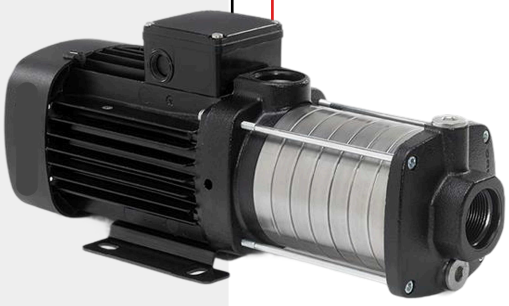
Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Connections for

2. Single Phase Surface Pump



1. **Power Supply**: Ensure a stable single-phase, 230V AC supply with proper earthing.
2. **Correct Wiring**: Connect the pump wires (Phase, Neutral, and Earth) correctly as per wiring diagram provided.
3. **Circuit Protection**: Install suitable MCB, RCCB/ELCB, or fuse for electrical protection.
4. **Capacitor Installation**: Confirm the correct rating and proper installation of the start/run capacitor provided. (Mostly in the Pump Capacitor box)
5. **Priming**: Always prime the pump adequately before starting to avoid dry-run damage.
6. **Piping Connections**: Ensure airtight connections on suction and delivery lines to prevent air leaks.
7. **Foot Valve**: Install a foot valve in the suction line to maintain prime and prevent backflow.
8. **Check Rotation**: Verify correct pump rotation direction after initial start-up.
9. **Dry Run Protection**: Use dry-run protection to prevent pump damage.
10. **Mounting**: Securely mount the pump on a flat, stable surface to minimize vibrations and noise.
11. **Testing**: Conduct a brief test run after installation to confirm proper operation and absence of leaks.



Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Connections for

3. Three Phase Submersible Pump

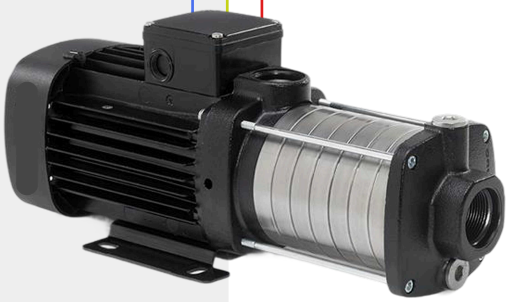
1. **Power Supply**: Ensure a stable three-phase, 415V AC supply with proper earthing.
2. **Correct Wiring**: Connect the pump wires (R,Y,B Phases, Neutral, and Earth) correctly as per wiring diagram provided.
3. **Circuit Protection**: Install suitable MCB, RCCB/ELCB, or fuse for electrical protection.
4. **Phase Sequence Check**: Confirm correct phase sequence and rotation direction for the three-phase pump motor to ensure proper operation and prevent equipment damage.
5. **Immersion**: Submerge pump fully below water level to maintain cooling and lubrication.
6. **Piping Connections**: Ensure airtight connections on suction and delivery lines to prevent air leaks.
7. **NRV Valve**: Install a non-return valve (check valve) to prevent backflow and water hammer.
8. **Check Rotation**: Verify correct pump rotation direction after initial start-up.
9. **Dry Run Protection**: Use dry-run protection to prevent pump damage.
10. **Suspension**: Ensure the pump is suspended well above the bottom (usually minimum 0.5-1 meter) to prevent sediment intake and damage.
11. **Testing**: Conduct a brief test run after installation to confirm proper operation and absence of leaks.

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Connections for

4. Three Phase Surface Pump

1. **Power Supply**: Ensure a stable three-phase, 415V AC supply with proper earthing.
2. **Correct Wiring**: Connect the pump wires (R,Y,B Phases, Neutral, and Earth) correctly as per wiring diagram provided.
3. **Circuit Protection**: Install suitable MCB, RCCB/ELCB, or fuse for electrical protection.
4. **Phase Sequence Check**: Confirm correct phase sequence and rotation direction for the three-phase pump motor to ensure proper operation and prevent equipment damage.
5. **Priming**: Always prime the pump adequately before starting to avoid dry-run damage.
6. **Piping Connections**: Ensure airtight connections on suction and delivery lines to prevent air leaks.
7. **Foot Valve**: Install a foot valve in the suction line to maintain prime and prevent backflow.
8. **Check Rotation**: Verify correct pump rotation direction after initial start-up.
9. **Dry Run Protection**: Use dry-run protection to prevent pump damage.
10. **Mounting**: Securely mount the pump on a flat, stable surface to minimize vibrations and noise.
11. **Testing**: Conduct a brief test run after installation to confirm proper operation and absence of leaks.



Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Automation - Level

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Types of Level Automation

1. Via Level Sensors
2. Via Float Sensors
3. Via Level Transmitter (LHT)
4. Dewatering

1. Via **Level Sensors**

- System Settings > System Mode > **Level**
- System Settings > Source Tank > Ug Sensor > **Contact/Float**

2. Via **Float Switch**

- System Settings > System Mode > **Level**
- System Settings > Switch S1-S2 > Make > **Start**
- System Settings > Switch S1-S2 > Make > **Stop**

Swap if Switch logic is inverse

- System Settings > Source Tank > Ug Sensor > **Contact/Float**

3. Via **Level Transmitter**

- System Settings > System Mode > **Level (LHT)**
- System Settings > Level (LHT) > Min Level > **{Desired Value}**
- System Settings > Level (LHT) > Max Level > **{Desired Value}**
- System Settings > Level (LHT) > Tank Area > **{Desired Value}**
- System Settings > Level (LHT) > Level Meter > **{Desired Value}**
- System Settings > Source Tank > Ug Sensor > **LHT**

4. Dewatering

- System Settings > Source Tank > Ug Sensor > **Contact/Float**
- System Settings > Source Tank > Min Level > **{Desired Value}**
- System Settings > Source Tank > Optimal Level > **{Desired Value}**
- System Settings > Source Tank > Max Level > **{Desired Value}**
- System Settings > Source Tank > Tank Area > **{Desired Value}**
- System Settings > Source Tank > Level Meter > **{Desired Value}**

Only Applicable when Ug Sensor = LHT

5. Motor Operated Valve

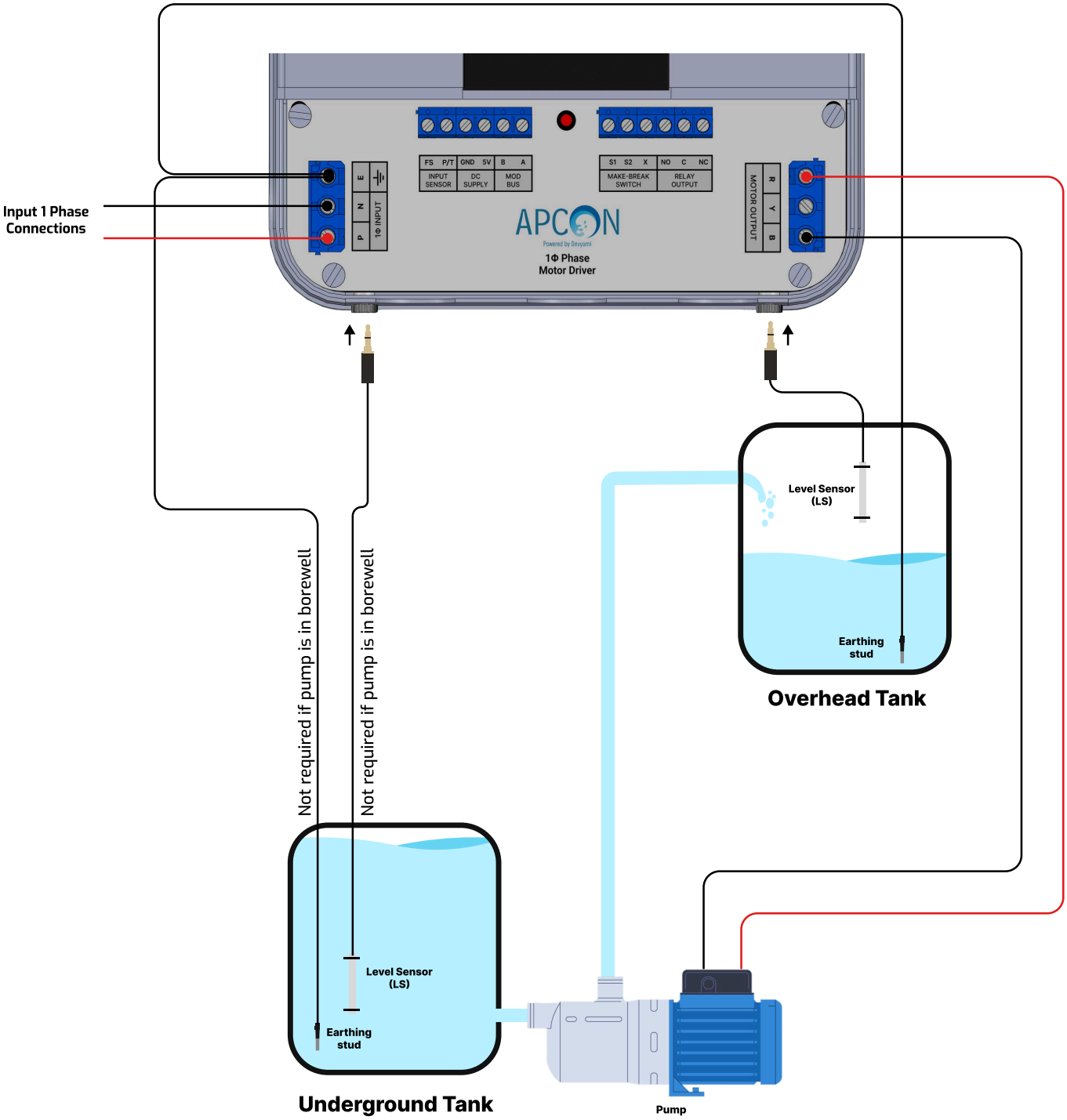
- System Settings > System Mode > **Level**
- System Settings > Source Tank > Ug Sensor > **Disabled**
- Advance Settings > Relay Output > **Pump**

Applications

A. Underground & Overhead Tank Management
B. Feed Pumping
C. Basement sump dewatering
D. Water Transfer between tanks
E. Water Treatment Plants.

Incase of borewell, Ug Sensor can be disabled.
UG & OH Sensor can also be mixed and matched as per requirement.

1. Via Level Sensors



Items Used

Level Sensors (LS)

x 2

Earthing Studs (E)

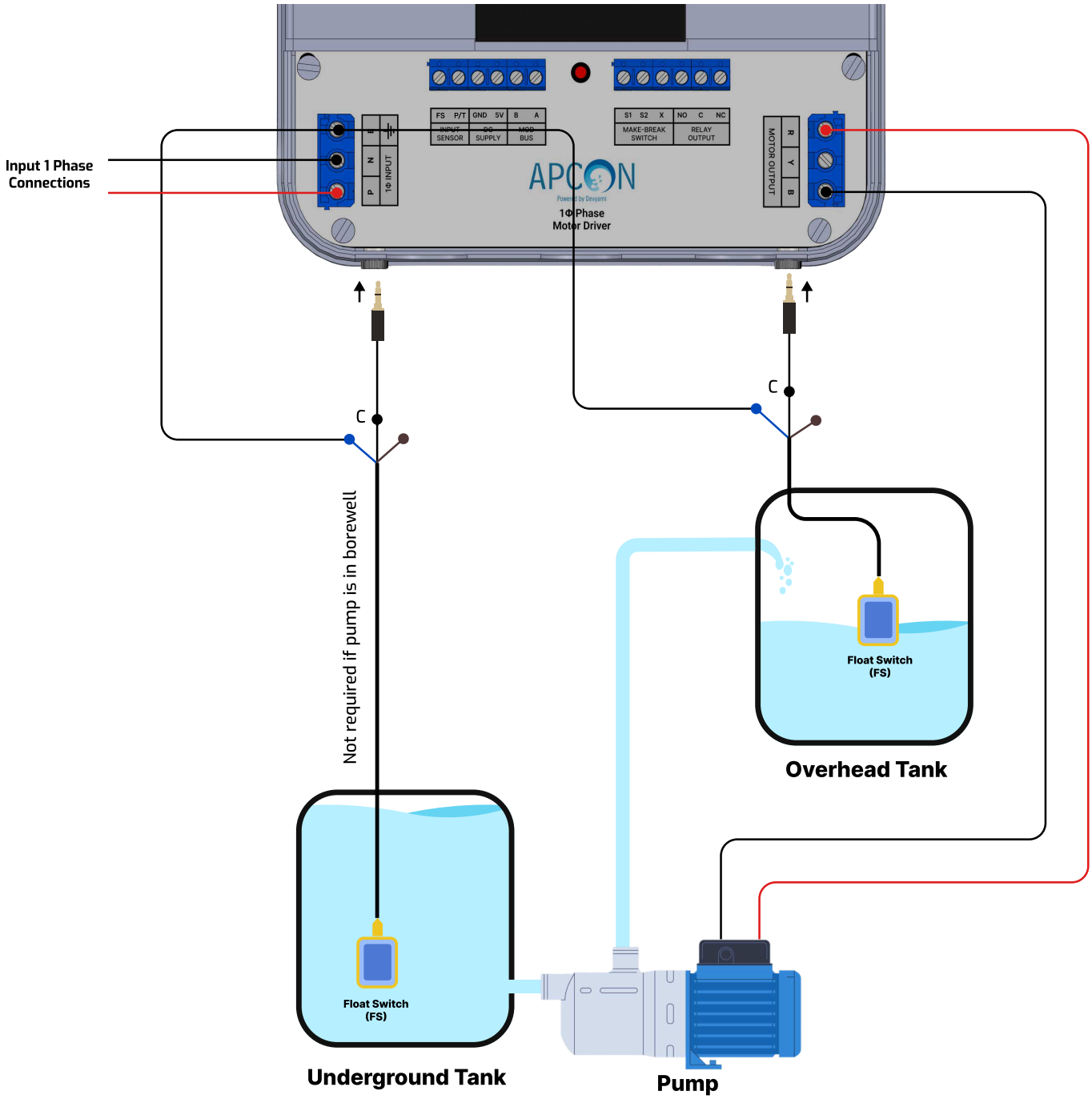
x 2

Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

2. Via Float Sensors



Items Used

Float Switch (FS)

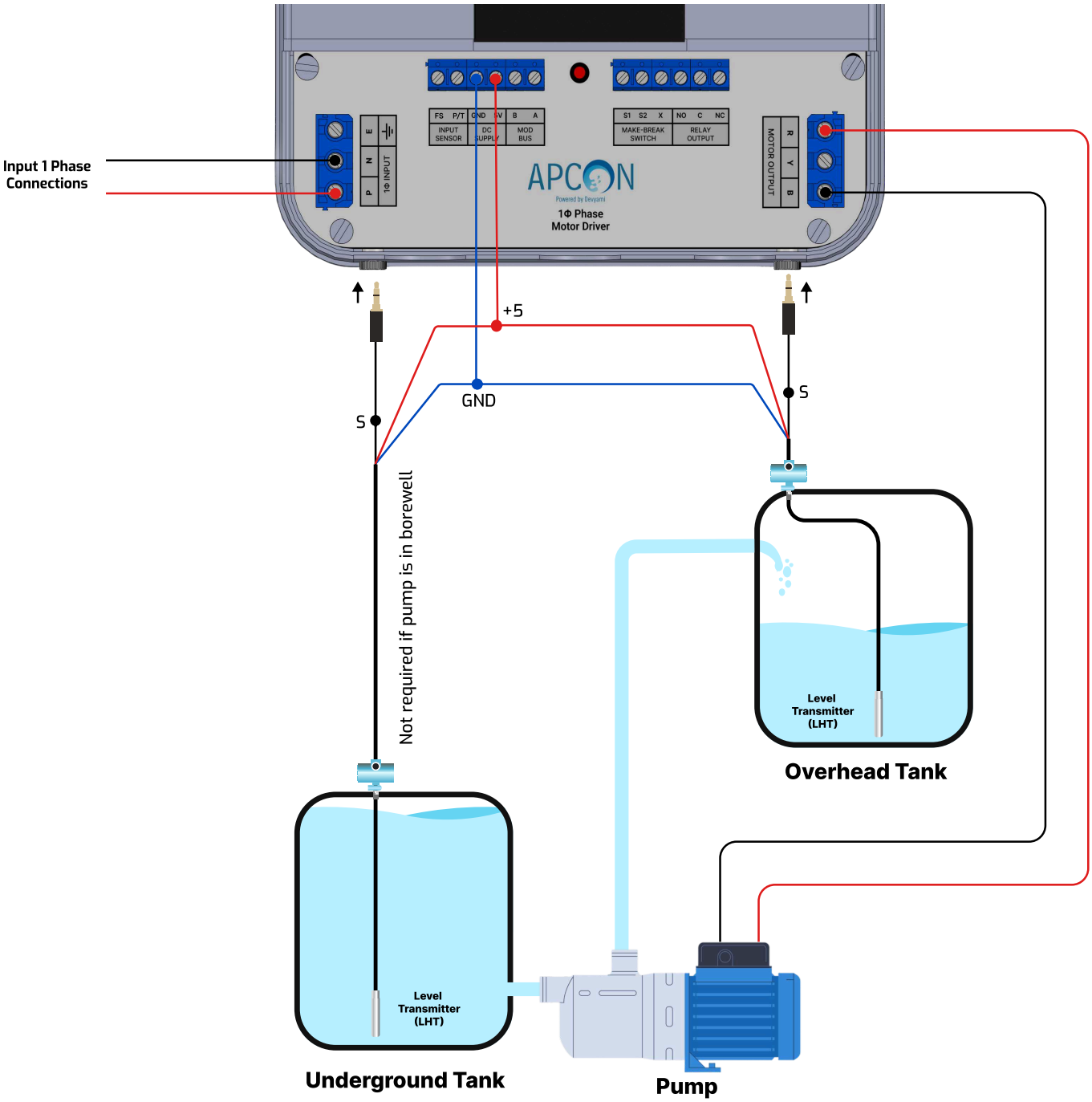
x 2

Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

3. Via Level Transmitter (LHT)



Items Used

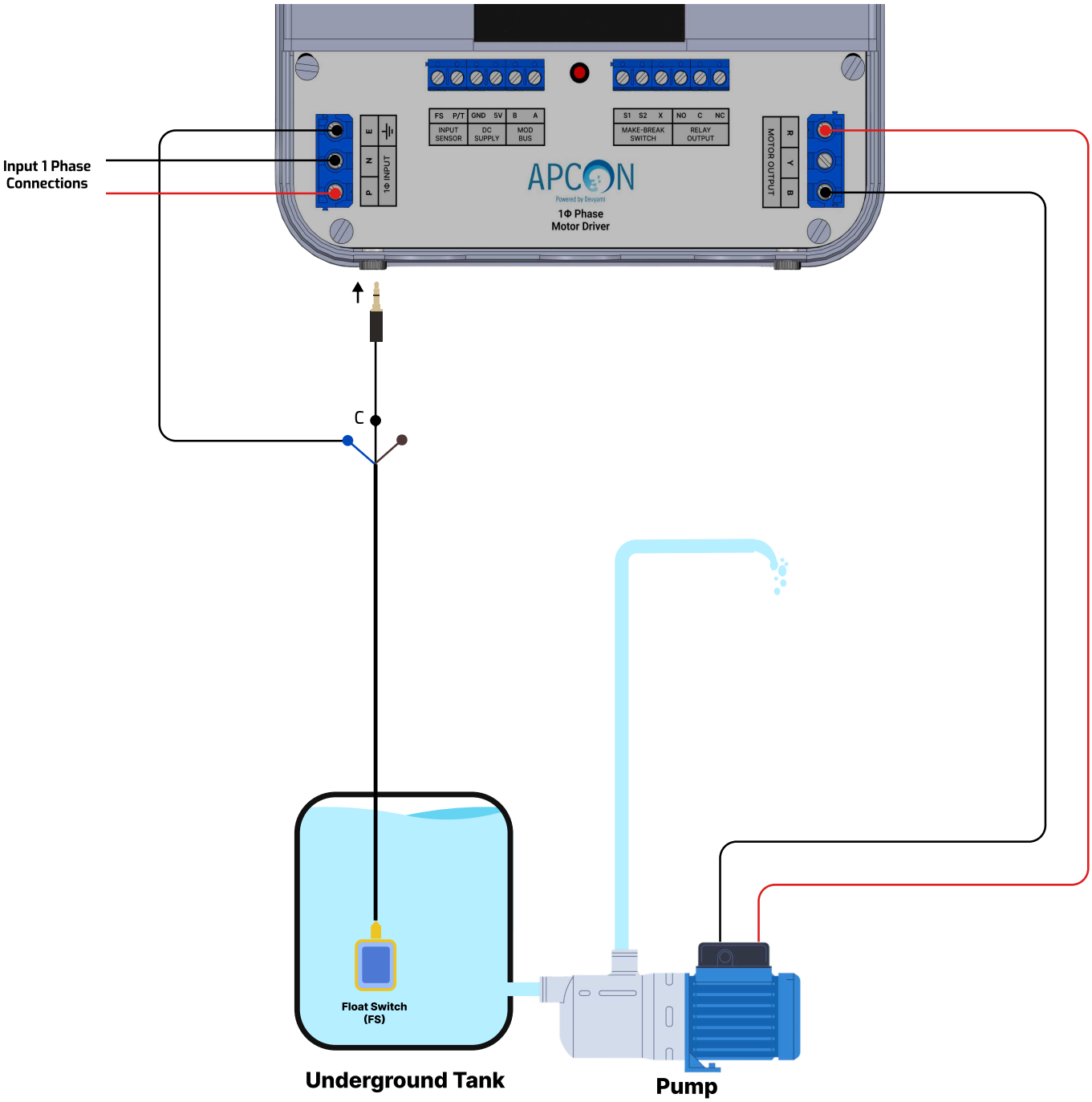
Level Transmitter (LHT)
x 2

Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

4. Dewatering (Float)



Items Used

Float Switch (FS)

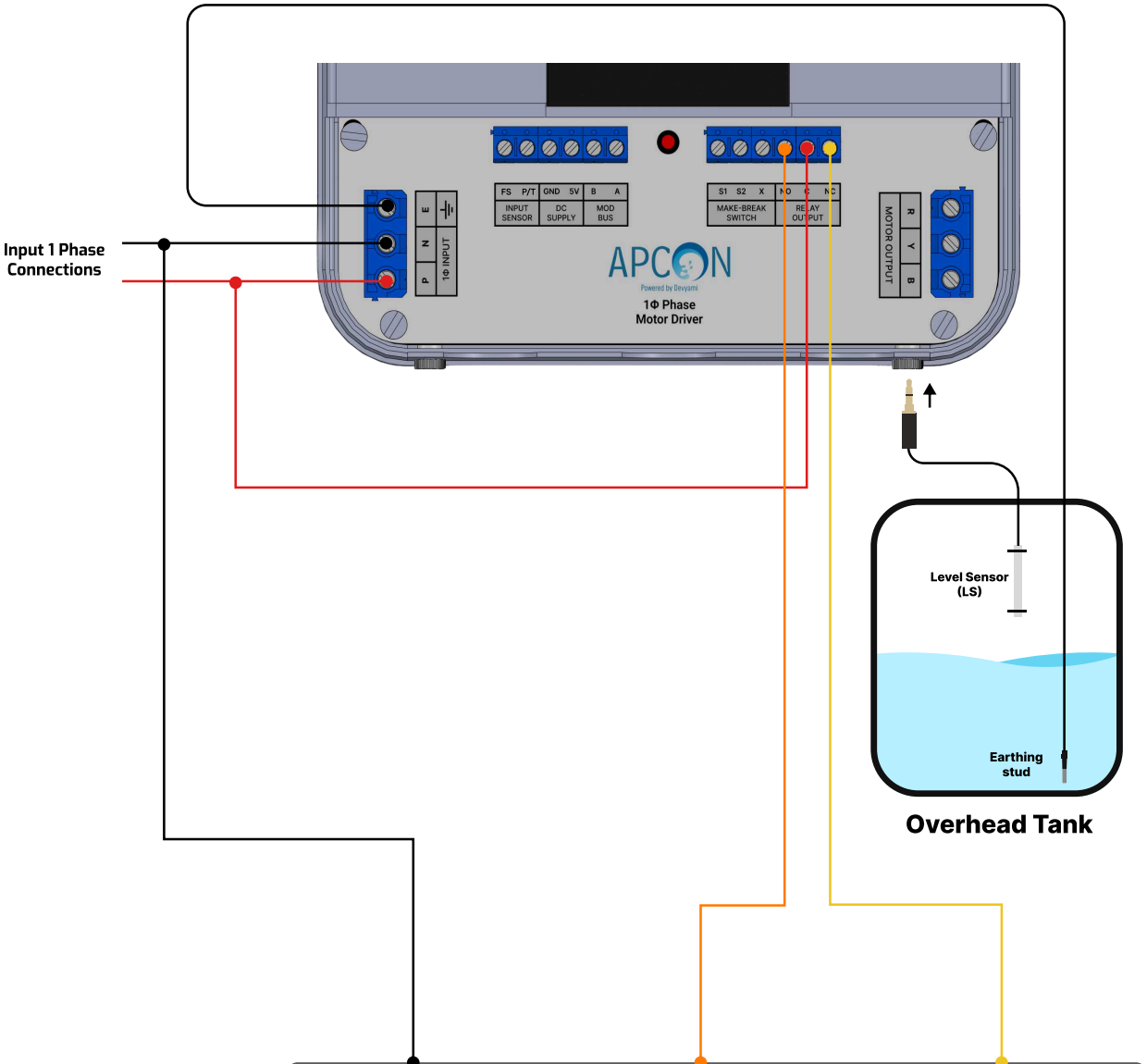
x 1

Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

5. Motor Operated Valve



Common	Open	Close
Neutral (N)	Open Valve (L)	Close Valve (L)

Motor Operated Valve Connections

Items Used

Level Sensors (LS)

x 1

Earthing Studs (E)

x 1

MOV

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Automation - Pressure

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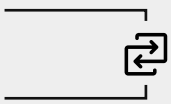
Types of Pressure Automation

1. Via Pressure Switch
2. Via Pressure Transmitter

1. Via **Pressure Switch**

- System Settings > System Mode > **Manual**
- System Settings > Switch S1-S2 > Make > **Start**
- System Settings > Switch S1-S2 > Make > **Stop**



Swap if Switch logic is inverse

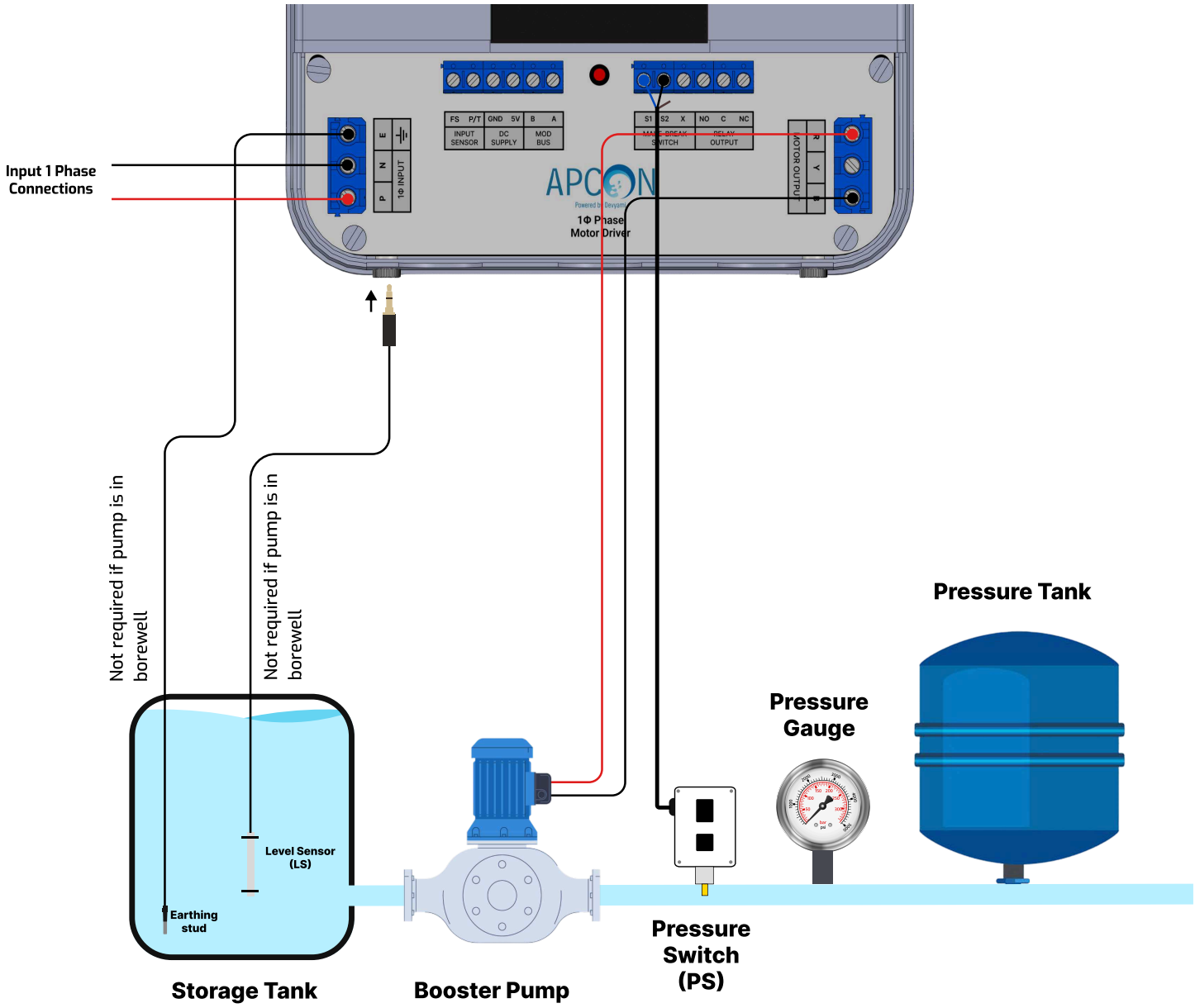
2. Via **Pressure Transmitter**

- System Settings > System Mode > **Pressure**
- System Settings > Pressure > Min Pressure > **{Desired Value}**
- System Settings > Pressure > Max Pressure > **{Desired Value}**
- System Settings > Advance > Pressure Meter > **{Desired Value}**

Applications

A. Water pump pressure boosting
B. Hydro-pneumatic tank automation
C. Cleaning & washing systems
D. Water supply via underground boosting

1. Via Pressure Switch



Items Used

Level Sensors (LS)

x 1

Earthing Studs (E)

x 1

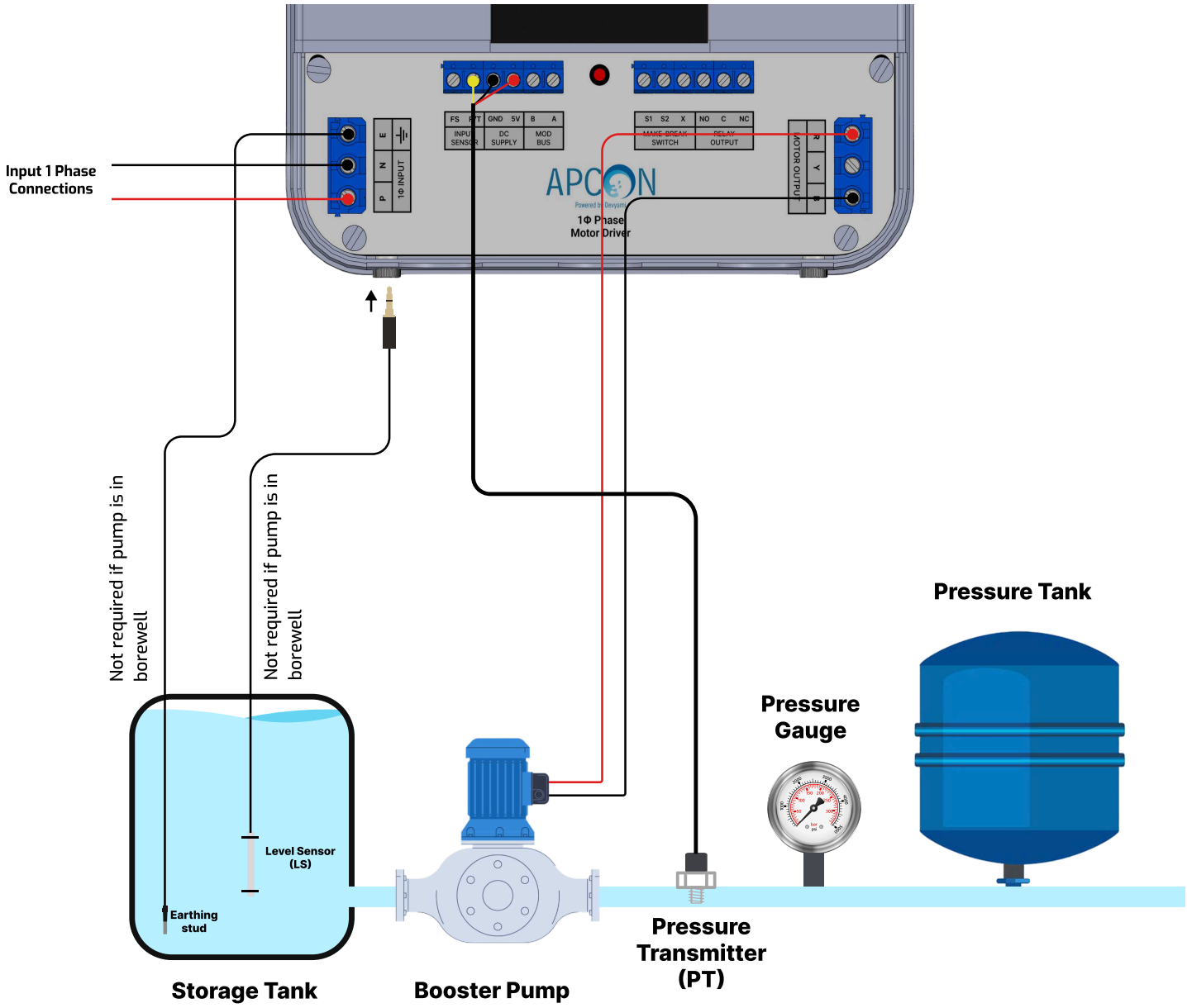
Pressure Switch (PS)

Booster Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

2. Via Pressure Transmitter



Items Used

Level Sensors (LS)

x 1

Earthing Studs (E)

x 1

Pressure Transmitter (PT)

Booster Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Automation - Temperature

Types of Temperature Automation

1. Via Temperature Sensor
    a. Hot Water Circulation
    b. Cold Water Circulation

Via **Temperature Sensor**

- System Settings > System Mode > **Temperature**
- System Settings > Temperature > Min Temp > **{Desired Value}**
- System Settings > Temperature > Max Temp > **{Desired Value}**
- System Settings > Temperature > Temp Mode > **Hot / Cold**

Depending on Requirement.

Adaptive Flow (Optional)

This lets system run only when flow is detected, thus saving resources.

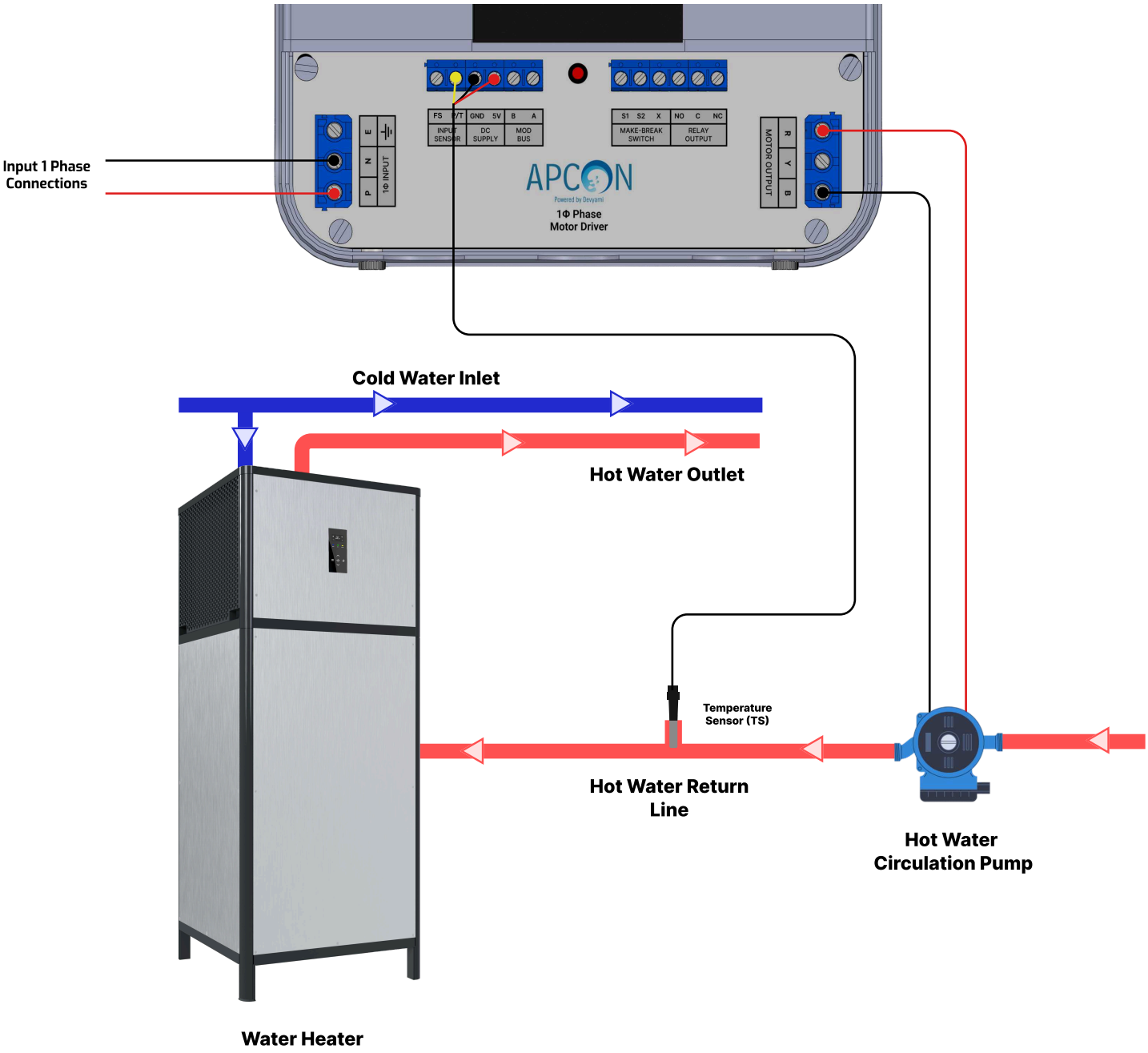
- System Settings > Temperature > Adaptive Flow > **Enable / Disable**

Add Timers (Recommended)

This lets system run only on defined times, thus saving resources.

- Clock & Timers > Timer Mode > **Window**
- Clock & Timers > ON Timers > **{ON Time}**
- Clock & Timers > ON Timers > **{OFF Time}**

1. Via Temperature Sensor



Items Used

Temperature Sensor (TS)

Circulation Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Automation - Manual or Timer

Applications

1. Fountains
2. Gardening Systems
3. Irrigation System

Manual

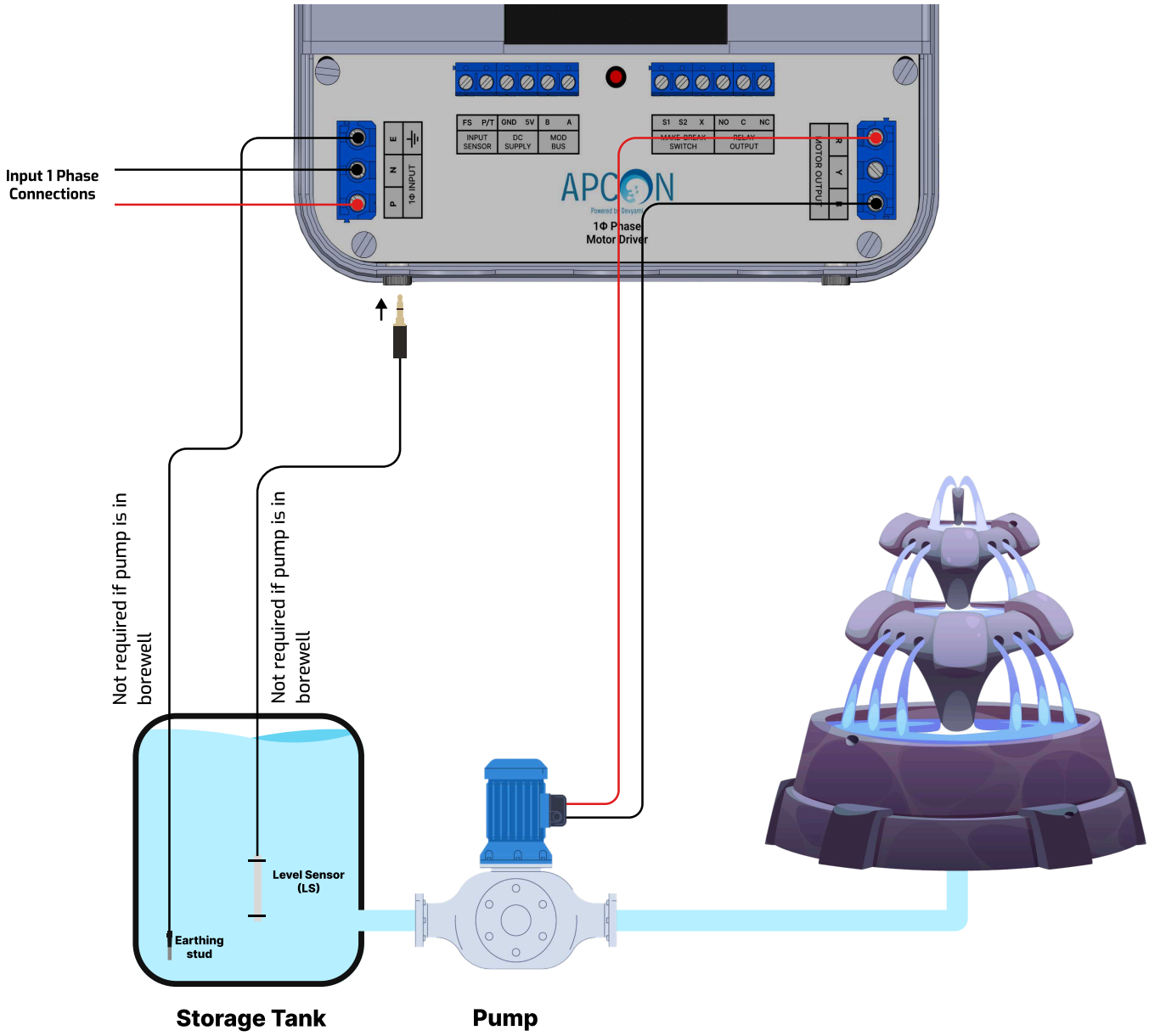
- System Settings > System Mode > **Manual**

Add Timers (Optional)

This will automatically start & stop system on defined times.

- Clock & Timers > Timer Mode > **Trigger**
- Clock & Timers > ON Timers > **{ON Time}**
- Clock & Timers > ON Timers > **{OFF Time}**

Via User Desired Control



Items Used

Level Sensors (LS)

x 1

Earthing Studs (E)

x 1

Pump

Motor Driver MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Clock & Timer

Timer Mode

- Clock & Timer > Timer Mode > **Window / Trigger**

Window

Automation within defined interval

Example :

1. Set Window: 9:00 AM – 6:00 PM
2. Automation and functions active only within set window.
3. Device restricts operation outside this interval.

Application :

1. Hot Water Circulation
2. Pressure Pumping

Trigger

Scheduled ON/OFF operations

Example :

1. Set Trigger: ON at 9:00 AM & OFF at 11:00 AM
2. Pump will start at 9AM
3. Pump will stop at 11AM.

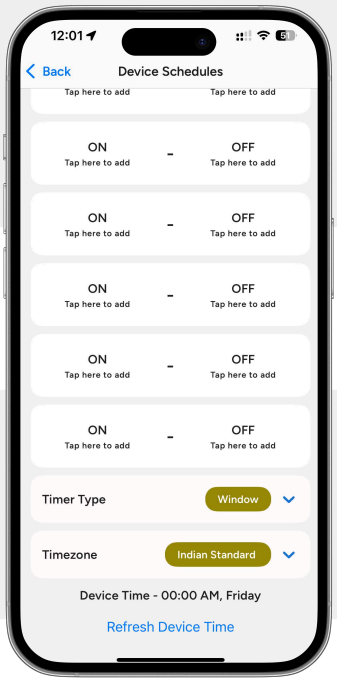
Application :

1. Fountains
2. Irrigation

Timezone

- Clock & Timer > Timezone > **+5:30 GMT**

  Used for auto time fetching when online.



Clock

- Clock & Timer > Clock > **{HH : MM , DAY}**

  Real Time Clock

Clock & Timer

ON Timers

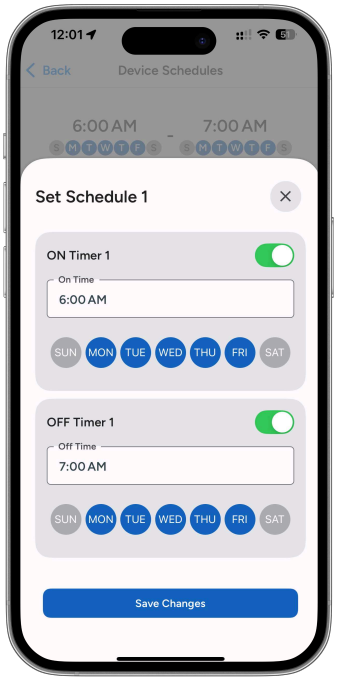
- Clock & Timer > Timer Mode > **Window / Trigger**

  Up to 8 ON Timers

OFF Timers

- Clock & Timer > OFF Timer > **{HH : MM, DAYS}**

  Up to 8 OFF Timers



Tracking - Water Usage

Actual Flow Monitoring via Flow Meter

Precise Flow monitoring = Actual Water Usage.

- System Settings > Advance > Flow Meter > **{Compatible Flow Sensor}**

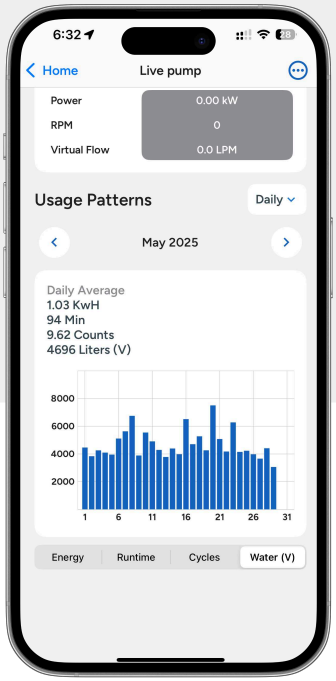
Virtual Flow Monitoring via runtime

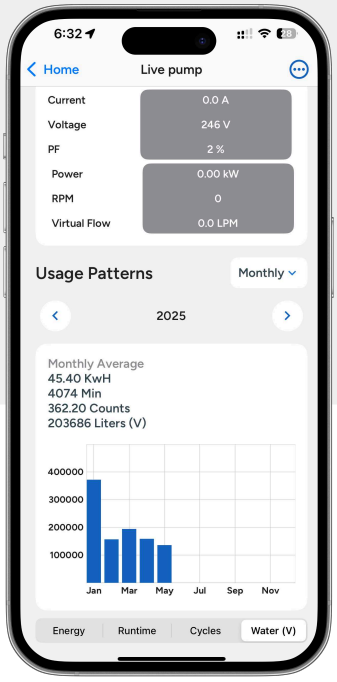
Average Pump Flow * Runtime = Virtual Water Usage.

- Pump Settings > Pump Flow > **{Average Pump Flow}**
- System Settings > Advance > Flow Meter > **Disable**

Monitor on APP

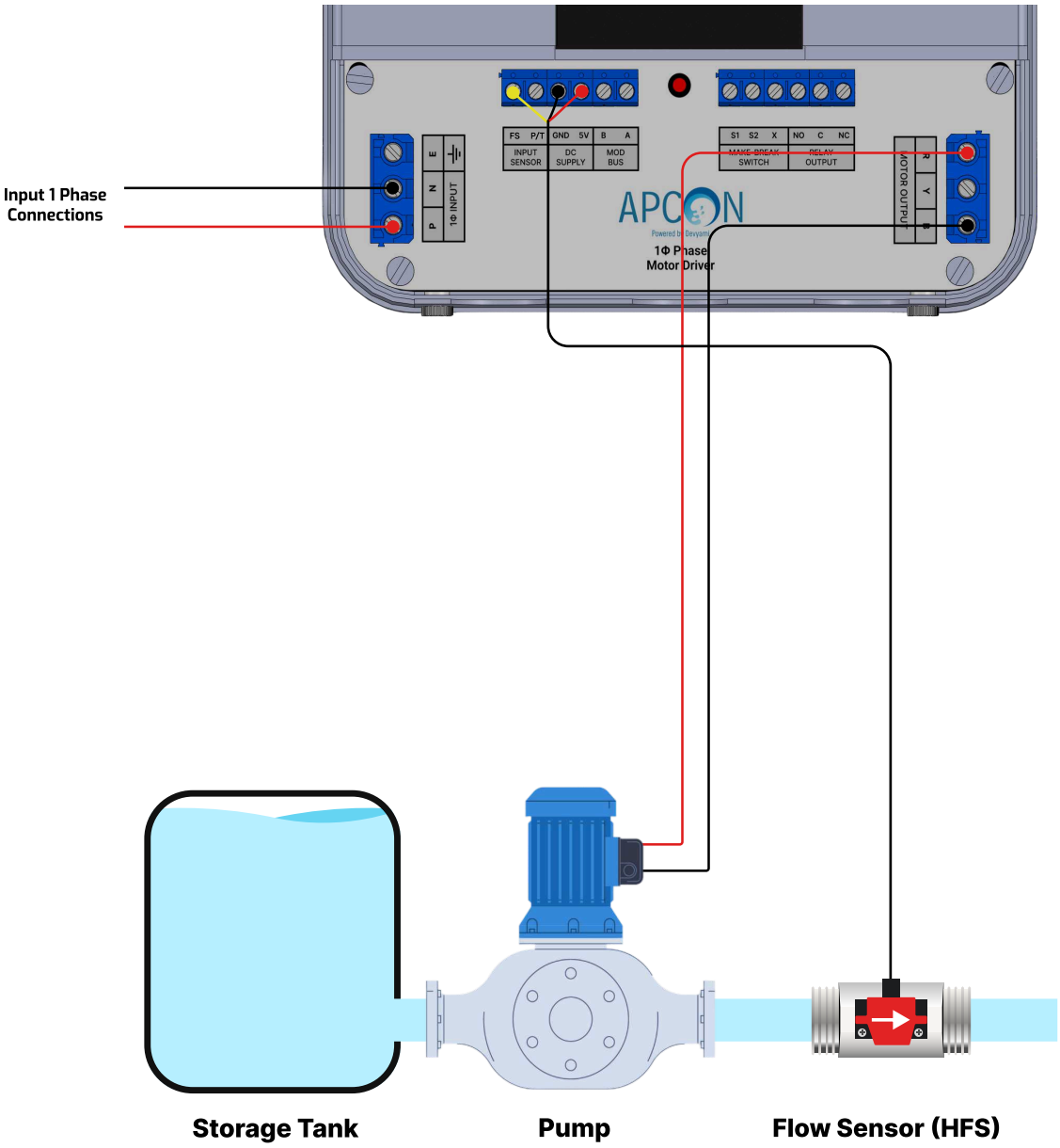
Depending on the settings the App will show consumption Data.





Water Usage Tracking

Via Flow Meter



Items Used

Flow Sensor (HFS)

Pump

Motor Driver
MD1 / MD3

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Multi Pump Cascading

Applications

1. Level Cascading (Working + Standby)
2. Pressure Cascading (Working + Standby)

Master Settings

- Advance Settings > Multi Pump >Working Mode > **Master**
- Advance Settings > Multi Pump > Master > No of Slaves > **{Slaves Excluding Master}**
- Advance Settings > Multi Pump > Master > Slaves > **{Config Connected Slaves}**
- Advance Settings > Multi Pump > Master > Master Pump > **Active/Not**
- Advance Settings > Multi Pump > Master > Max Working > **{Desired}**

Up to 6 Slaves can be connected in any combination including MD1s, MD3s or VFDs.

Slave Settings

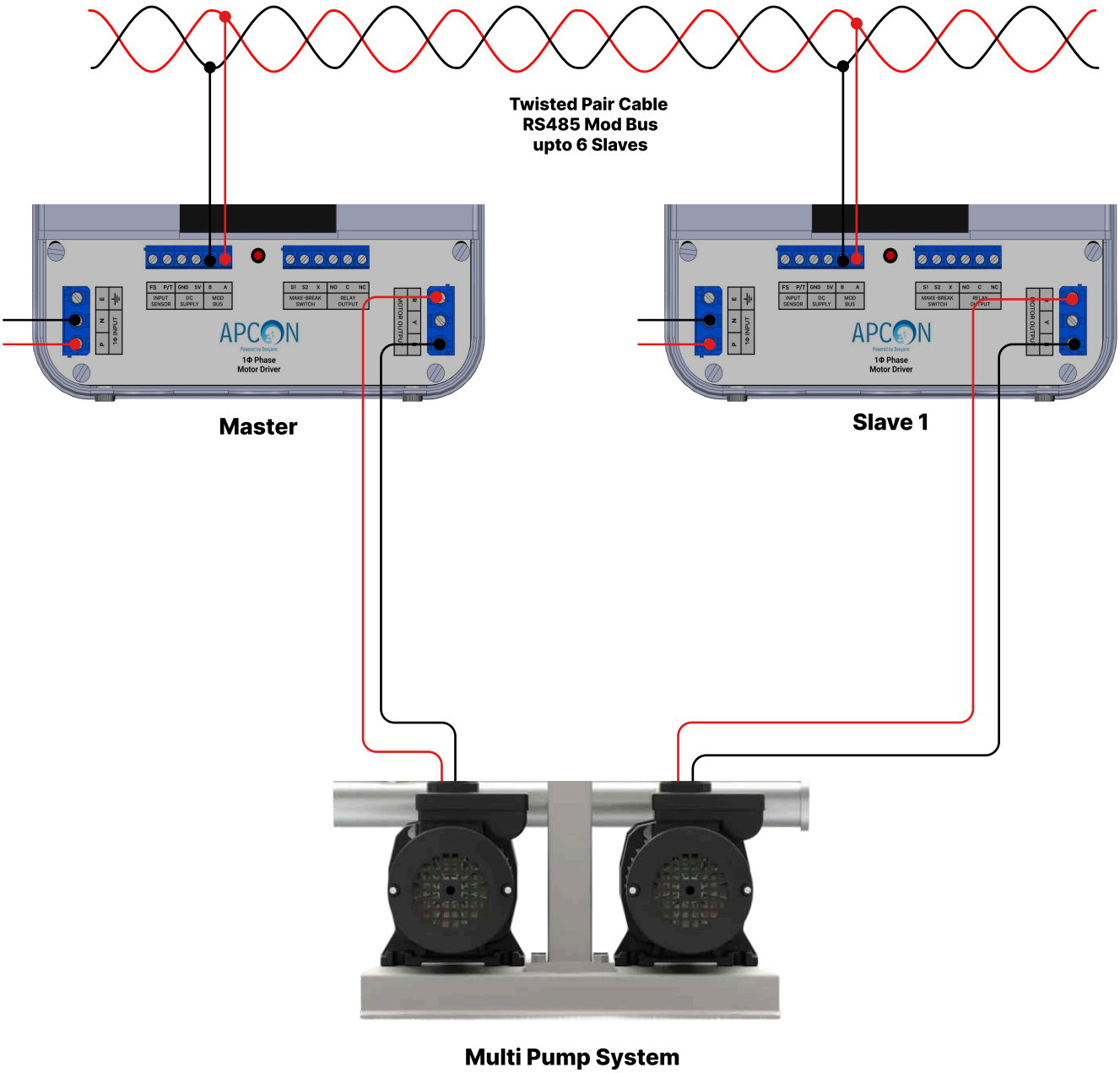
- Advance Settings > Multi Pump >Working Mode > **Slave**
- Advance Settings > Multi Pump > Slave > Slave ID > **{Slave ID}**

Some Important Notes :

- Any Level, Pressure, Temperature Automation shall work along with Cascading
- Only Master Device needs sensor connections.
- Only Master Device is supposed to connect to the App
- If settings not found then try restarting.
- These settings can be done via device only, not App.
- Master Mode is an Add ON, contact your seller to activate the feature.

Multi Pump Cascading

Via Master - Slaves Config



Items Used

Pump

x 2

Motor Driver MD1 / MD3

x 2

Note : The objects in the connection diagram are not to scale and are intended for illustrative purposes only.

Guidelines

Safety Instructions

- **Electrical Hazard**:
  - Operates at 230/415 Volts AC.
  - Handle with extreme caution to prevent electric shock or injury.

- **Installation**:
  - Installation and servicing must be carried out by qualified professionals.
  - Ensure the device is disconnected from the power supply before servicing or making connections.

- **Usage:**
  - Avoid contact with water or moisture when handling the device.
  - Maintain proper earthing to prevent electrical hazards.

Operational Conditions

- **Voltage and Site Conditions**:
  - Device functions optimally under stable and recommended site conditions.
  - Significant voltage fluctuations, improper installation, environmental extremes, or incorrect wiring may impair functionality.

- **Pump Protection Disclaimer:**
  - While the device is designed with protective features, complete protection of pumps or connected equipment cannot be guaranteed.
  - The device aims to minimize risks associated with pump operations; however, its effectiveness is dependent on proper usage and favorable site conditions.

- **Liability:**
  - The manufacturer is not liable for damages or equipment failure resulting from factors beyond device capabilities, including adverse site conditions, misuse, or improper maintenance.

Recommendations

- **Regularly inspect and maintain the device and connected equipment.**
- **Follow the recommended guidelines for optimal safety and performance.**

Website

APCON

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