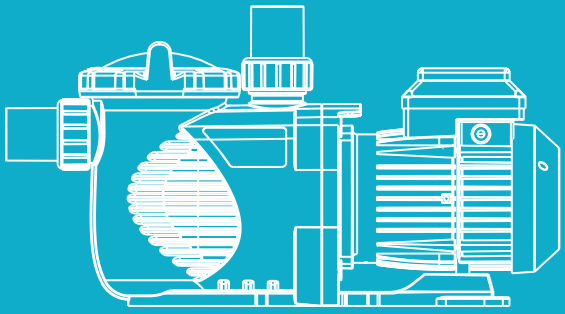
Emaux

SUPER POWER

VARIABLE SPEED PUMP
With Wi-Fi AND MODBUS OPTIONS



USER MANUAL

SUPERPOWER

RoHS COMPLIANT 2002/95/EC

Model: SPV125 / SPV165

26051502

WARNINGS AND SAFETY INSTRUCTIONS
GENERAL WARNING

–This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

-Children shall not play with the appliance.

-Cleaning and user maintenance shall not be made by children without supervision.

-If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

-This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

--The pump must not be used when people are in the water.

--The pump must be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA

--Shall state the maximum period of operation continuable.

--The instruction shall indicate the maximum density (in 1000kg/m^3) of the media intended for use with the pump.

The maximum total head 20m.

-- Pollution of the liquid could occur due to leakage of lubricants.

--- shall state that the pump is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.

-- Only use the supplied connector when installing the pump.

-- This appliance shall not be used by children. Cleaning and user maintenance shall not be carried out by children.

-- Always disconnect the appliance from the supply before assembling, disassembling or cleaning.

-- Appliances can be used by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and if they understand the hazards involved.

--Children shall not play with the appliance.

-- Pumps without indication that they are protected against the effect of freezing shall not be left outside during freezing weather conditions.

- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

– If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

RISK OF ELECTRICAL SHOCK

This appliance should be installed by qualified electrical personnel in accordance with National Electrical Code and all applicable local codes and ordinances. Hazardous voltage can shock, burn, and cause death or serious property damage. DO NOT use an extension cord to connect unit to electric supply to reduce the risk of electric shock.

1 The pump should be permanently connected to an individual circuit breaker.

2 Pump must be connected to a residual current device (RCD) having a rated residual operating curren Not exceeding 30 mA or receptacle with ground fault circuit interrupt (GCFI).

3 . Electrical grounding must be connected before connecting to electrical power. Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard.

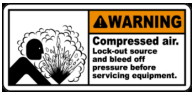
4 Bonding: Use at least #8 AWG (#6 AWG for Canada) a solid copper conductor, run a continuous wire from external bonding lug (if available) to the pressure wire connector provided on the electrical equipment and to all metal parts of swimming pool, spa, or hot tub, and metal piping (except gas piping), and conduit within 1.5 m (5 ft) of inside walls of swimming pool, spa, or hot tub.

5 Never open the inside of the drive motor enclosure. There is a capacitor bank that holds a mains supply voltage charge even when there is no power to the unit. The voltage should be referred to the individual pump operation voltage.

6 The pump is capable of high flow rates; use caution when installing and programming to limit pumps performance only.

7 Switch OFF pump power before servicing and disconnecting the main circuit to the pump.

8 Never change the filter control valve position while the pump is running.



COMPRESS AIR HAZARDOUS

This system enclosed pre-filter / filter and become pressurized. Pressurized air can cause the Lid to separate which can result in serious injury or death.

Pool and spa circulation systems operate under high pressure. When any part of the circulating system (i.e. lock ring, pump, filter, valves, etc.) is serviced, air can enter the system and become pressurized. Filter tank Lid and pre-filter cover must be properly secured to prevent violent separation. Place pre-filter / filter air relief valve in the open position and wait for all pressure in the system to be relieved before remove the lib to access the basket for cleaning.

HYPERTHERMIA

SPA water temperature excess 38°C (104°F) may be injurious to health. Measure water temperature before entering SPA. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6 °F (37 °C). The symptoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body.

SUCTION ENTRAPMENT HAZARD

This pump produces high levels of suction and creates a strong vacuum at the main drain at the bottom of your pool and spa. This suction is so strong that it can trap adults or children under water if they come in close proximity to a pool or spa drain or a loose or broken drain cover or grate. The Virginia Graeme Baker (VGB) Pool and Spa Safety Act creates new requirements for owners and operators of commercial swimming Pools and spas.

Commercial pools or spas constructed on or after December 19, 2008, shall utilize:

1 . A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANS A112.19.8a Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs and either:

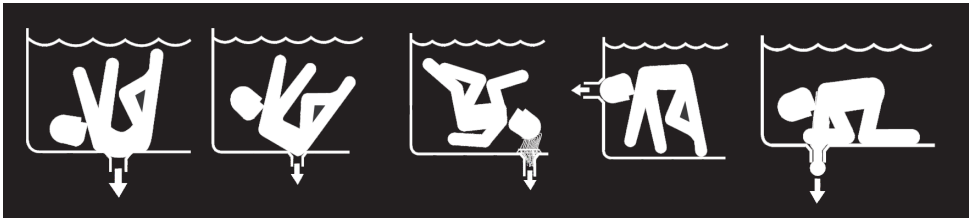
1.1 A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release systems (SVRS) For Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems and/or ASTM F2387 Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming pools, Spas and Hot Tubs or

1.2 A properly designed and tested suction-limiting vent system or

1.3 An automatic pump shut-off system.

Commercial pools and spas constructed prior to December 19, 2008, with a single submerged suction outlet shall use a suction outlet cover that meets ASME/ANSI A112.19.8a and either: 1 . A SVRS meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or 2 . A properly designed and tested suction-limiting vent system, or 3 . An automatic pump shut-off system, or 4 . Disabled submerged outlets, or 5 . Suction outlets shall be reconfigured into return inlets.

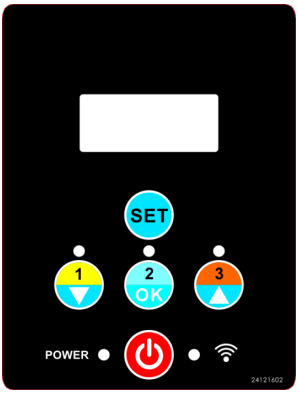
There are five types of suction entrapment according to The Virginia Graeme Baker (VGB) Pool and Spa Safety Act 1 Body Entrapment a section of the torso becomes entrapped 2 Limb Entrapment an arm or leg is caught by or pulled into an open drainpipe 3 Hair Entrapment or entanglement hair is pulled into and/or wrapped around the grate of the drain cover 4 Mechanical Entrapment the bather's jewelry or clothing gets caught in the drain or the grate 5 Evisceration the victim's buttocks come into contact with the pool suction outlet and he or she is disemboweled.



TO REDUCE ENTRAPMENT HAZARD RISK

WARNING:

Two function suctions outlets per pump must be installed to prevent entrapment. The minimum separate of suction on the same plate must be at least point to point measurement 1 meter (3ft) apart. It is used to avoid “dual blockage” by bather. If suction is found damage, broken, cracked, missing or not securely attached during regular checking, shunt down the pool and replace it immediately. A vacuum release or vent system is recommended to install for suction entrapment release.



Control and LED	Description
1) Speed Display	Displays the current motor speed, menu or error codes.
2) "SET" Button	Used to enter set menu (hold for at least 3 seconds).
3) "Speed 1/▼" Button	Selects preset Speed 1 or reduce speed in set menu.
4) "Speed 2/OK" Button	Selects preset Speed 2 or confirms/saves parameters in set menu.
5) "Speed 3/▲" Button	Selects preset Speed 3 or increases speed in set menu.
6) " ⏻ "Button	Power on/off
7) Power LED	Green LED light up when power on.
8) Wi-Fi Indicator	Indicates Wi-Fi status.

Basic Operation

1. To start the pump from stop, press Speed 1, 2, or 3. The pump will operate in self-priming mode. During this mode, the LED display will flash, and the green LED for the selected speed level will light up.

2. Once the self-priming mode is completed, the selected speed will be displayed on the LED screen.

Note: To save power, the LED display will turn off after 3 minutes of normal operation.
To stop the pump at any time, press the " ⏻ " button. The pump will save operating status and then stop, the LED display will show "OFF."
If the power is power up by using the " ⏻ " button, The pump will operate in the programmed self-priming mode and then restore saved condition and run.

Adjusting Self-Priming Mode: Time and Speed

The pump is set at the factory with a default starting speed of 2900 RPM for 2 minutes. The following steps show how to change these parameters:

1. After powering on the pump, press the " ⏻ " button. If the pump is running, this will stop it, and the LED window will display "OFF."
2. Hold the "SET" button for at least 3 seconds. Until display "_PS_ "
3. Click "OK" to enter priming menu
4. Press the "1/▼" button to decrease the speed, or press the "3/▲" button to increase the speed in 10 RPM increments. The priming speed range is from 2900 RPM to 3400 RPM.
5. Press the "OK" button to save the priming speed setting. The priming time will then begin to flash in the LED window. To cancel and return to the previous mode, press the "SET" button.
6. Press the "1/▼" button to decrease the time, or press the "3/▲" button to increase the time in 1-minute increments. The starting time range is from 1 to 15 minutes. To cancel without changing the starting time, press the "OK" button.
7. Press the "OK" button to save the starting time setting and exit programming mode.

Adjusting Preset Speeds

Note: to entry MENU, pump status must be "OFF" (show on display)

The user interface provides manual speed control for the pump. There are 3 factory preset buttons to choose from (1, 2, or 3). Speed level 1 is preset at 1500 RPM, speed level 2 at 2500 RPM, and speed level 3 at 2900 RPM. After pressing the button (1, 2, or 3), the LED for the selected speed level will light up, and the speed will be displayed in the LED window.

Note: In self-priming mode, the LED for the selected speed level will light up. The priming speed will flash in the LED window. The following steps demonstrate how to change the preset speed:

1. Press the button corresponding to the preset speed level (1, 2, or 3) you want to change. If the pump is stopped, it will start running.
2. Allow the pump to complete the self-priming mode (if the button was pressed while the pump was stopped).
3. Hold the "SET" button for at least 3 seconds. until display "_PS_ "
4. Press the "1/▼ or 3/▲" button to surf to "SPEE" menu (Speed Program)
5. Press the "OK" button to enter to surf "SP01" selection
6. Press the " 1/▼ or 3/▲" to select target speed program "SP01 – SP03"
7. After target speed program is selected, press "OK" to confirm.
8. Press the "1/▼" button to decrease the speed, or press the "3/▲" button to increase the speed in 10 RPM increments. Each preset speed can be set between 800 - 3400 RPM.
9. Press the "OK" button to save the selected speed and exit programming mode. To cancel and revert to the original programmed speed, press the "SET" button.

Reset to Factory Default Settings

Confirm that the pump is powered on, and the green power LED is lit.

If the pump is running, press the "⏻" button to stop it. Hold the "SET" button for at least 15 seconds.

The LEDs for the three preset speed levels and the power LED will light up simultaneously, indicating that the factory default settings have been restored.

Wi-Fi

This function is available in Wi-Fi version to ON / OFF

Enable / Disable Wi-Fi

1. After powering on the pump, press the " ⏻ " button. If the pump is running, this will stop it, and the LED window will display "OFF"
2. Hold the "SET" button for at least 3 seconds. until display "_PS_ "
3. Press the " 1/▼ or 3/▲ " button to surf to " nEt_ " menu (Network)
4. Press the "OK" button to enter the WI-FI function setting.
5. Press the " 1/▼ or 3/▲ " button to surf to " Wi on " menu (Network Enable sub-menu)
6. Press the "OK" button to confirm the WI-FI function is enabled.
7. Press the "SET" button several times to exit menu mode (until the display shows "OFF")

Wi-Fi Reset

1. After powering on the pump, press the " ⏻ " button. If the pump is running, this will stop it, and the LED window will display "OFF"
2. Hold the "SET" button for at least 3 seconds. until display " _PS_ "
3. Press the " 1/▼ or 3/▲ " button to surf to " nEt_ " menu (Network)
4. Press the "OK" button to enter the WI-FI function setting.
5. Press the " 1/▼ or 3/▲ " button to surf to " Wi on " menu (Network Enable sub-menu)
6. Press the "OK" button to confirm the WI-FI function is enabled.
7. Press the " 1/▼ or 3/▲ " button to select the option of Reset Yes " rSty " or Reset No " rStn "
8. Press the "OK" button to confirm reset the WI-FI function setting.
9. Press the "SET" button several times to exit menu mode (until the display shows "OFF")

RS485

This function is for external MODBUS automation control system connection. It is not for domestic user access purpose.

Enable / Disable RS485 function

1. After powering on the pump, press the “ ” button. If the pump is running, this will stop it, and the LED window will display “OFF”
2. Hold the “SET” button for at least 3 seconds. until display “_PS_ “
3. Press the “ 1/▼ or 3/▲“ button to surf to “r485” menu (RS485)
4. Press the “OK” button to enter the RS485 function setting.
5. Press the “ 1/▼ or 3/▲“ button to surf to “EA.on” menu (RS485 Enable sub-menu)
6. Press the “OK” button to confirm the RS485 function is enabled.
7. Press the “SET” button several times to exit menu mode (until the display shows “OFF”)

RS485 (Setup RS485 address)

Define RS485 address function , set the EPV pump address location in the MODBUS network form 1-247.

1. After powering on the pump, press the “ ” button. If the pump is running, this will stop it, and the LED window will display “OFF”
2. Hold the “SET” button for at least 3 seconds. until display “_PS_ “
3. Press the “ 1/▼ or 3/▲ “ button to surf to “r485” menu (RS485)4. Press the “OK” button to enter the RS485 function setting.
5. Press the “ 1/▼ or 3/▲ “ button to surf to “EA.on” menu (RS485 Enable sub-menu)
6. Press the “OK” button to confirm the RS485 function is enabled.
7. Press the “ 1/▼ or 3/▲ “ button to select the option of the RS485 address from “0001” to “0247”
8. Press the “OK” button to confirm reset the RS485 address setting.
9. Press the “SET” button several times to exit menu mode (until the display shows “OFF”)

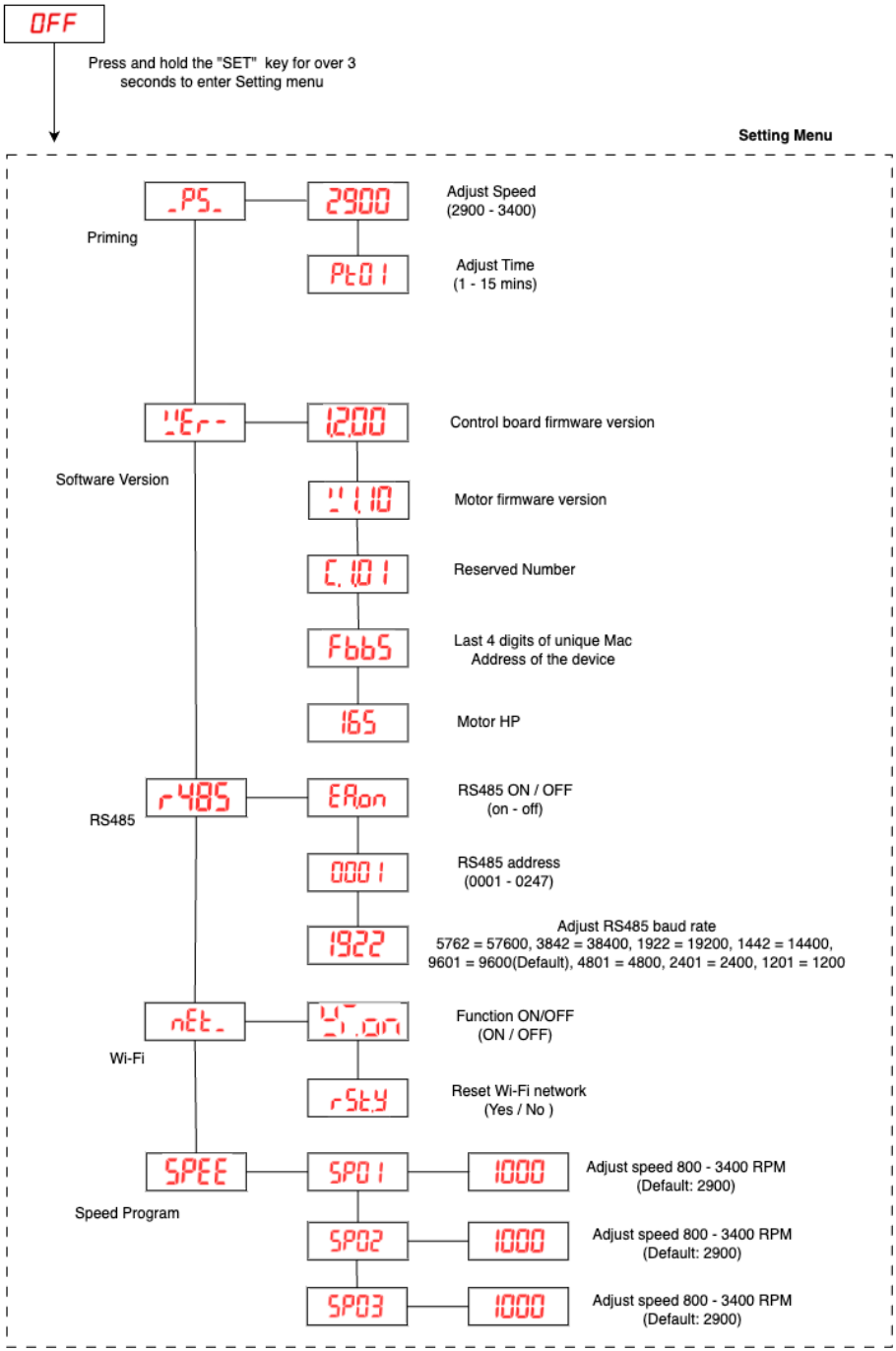
RS485 (setup RS485 baud rate)

This function is for external MODBUS automation control system connection. It is not for domestic user access purpose.

Set the data rate from 1200 / 2400 / 4800 / 9600 bps

1. After powering on the pump, press the “ ” button. If the pump is running, this will stop it, and the LED window will display “OFF”
2. Hold the “SET” button for at least 3 seconds. until display “_PS_ “
3. Press the “ 1/▼ or 3/▲ “ button to surf to “r485” menu (RS485)
4. Press the “OK” button to enter the RS485 function setting.
5. Press the “1/▼ or 3/▲ “ button to surf to “EA.on” menu (RS485 Enable sub-menu)
6. Press the “OK” button to confirm the RS485 function is enabled.
7. Press the “ 1/▼ or 3/▲ “ button to select the option of the RS485 address from “0001” to “0247”
8. Press the “OK” button to confirm reset the RS485 address setting.
9. Press the “ 1/▼ or 3/▲ “ button to select the option of the RS485 baud rate from “9601” (see table)
10. Press the “OK” button to confirm reset the RS485 address setting.
11. Press the “SET” button several times to exit menu mode (until the display shows “OFF”)

SPV-T (Emaux)


OFF
Press and hold the "SET" key for over 3 seconds to enter Setting menu
Setting Menu
_PS_
2900
Adjust Speed (2900 - 3400)
Priming
Pt01
Adjust Time (1 - 15 mins)
VEr-
1200
Control board firmware version
Software Version
V110
Motor firmware version
C.101
Reserved Number
F665
Last 4 digits of unique Mac Address of the device
165
Motor HP
r485
EAon
RS485 ON / OFF (on - off)
RS485
0001
RS485 address (0001 - 0247)
1922
Adjust RS485 baud rate
5762 = 57600, 3842 = 38400, 1922 = 19200, 1442 = 14400, 9601 = 9600(Default), 4801 = 4800, 2401 = 2400, 1201 = 1200
nEt_
YES.on
Function ON/OFF (ON / OFF)
Wi-Fi
rSEY
Reset Wi-Fi network (Yes / No)
SPEE
SP01
1000
Adjust speed 800 - 3400 RPM (Default: 2900)
Speed Program
SP02
1000
Adjust speed 800 - 3400 RPM (Default: 2900)
SP03
1000
Adjust speed 800 - 3400 RPM (Default: 2900)

Controller Errors

Error	Description	Reason
E-00	Overcurrent: driver current output exceeds the threshold.	- Driver output failure. - Driver IPM module is damaged.
E-73	Under-voltage: the main electric current is too low.	- Ambient temperature is too high. - Supply voltage fluctuation is too large.
E-10	Overheating: the motor heat sink is overheated.	- Ambient temperature is too high. - Motor Cooling Fan does not work.
E-74	No Flow: No water flow is detected.	- The mechanical seal might be damaged if no water flow is detected.
E-75	Safety Vacuum Release System.	- To prevent entrapment or injury in swimming pools.
E-76	Lock Rotor: A locked rotor condition occurs when the motor's rotor.	- The motor is stock.

Mobile App : Smart Life

Smart Life app allows users to control ETV pumps outside the home network through their mobile phones. Please follow the instructions below to complete the Smart Life App installation, and set up and operate the ETV water pump.

App installation

Search “Smart Life – Smart Living” in Google Play Store(Android) or AppStore (Apple iOS) to download the App for your mobile phone

Android (PlayStore)	iOS (AppStore)
Smart Life - Smart Living Volcano Technology Limited In-app purchases	Smart Life - Smart Living Smart Living Volcano Technology Limited #30 in Lifestyle Free · Offers In-App Purchases

App setup

Check this link for more information about the Smart Life app that including installation the app, account management, scene function, manage homes and more.

https://developer.tuya.com/en/docs/iot/user-manual-for-tuya-smart-v3177?id=K9obrofrfk4sk or you can scan this QR code to visit the web site.

Scan this QR code to visit Tuya Technical Support site

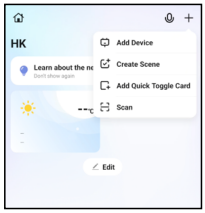
Complete the following steps based on Tuya Technical support site.

1) Download and install the Smart Life app on the mobile phone
2) Register the account for Smart Life app, you can enter a mobile phone number or email address, agree on the **User Agreement**, **Privacy Policy**, and **Third Party Information Sharing List**, and then tap **Get Verification Code**.
3) Enter the returned verification code to navigate to the password setting page. Set a password as required and tap **Done**.

Step 2) Trigger network configuration mode for the SPV-T pump.

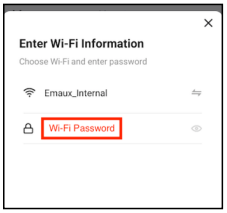
Step	Operation	Screenshot
1	Make sure the pump is in off mode.	
2	long press SET key until the pump setup mode	
3	Press Up or Down button to Wi-Fi menu and then press OK button once	
4	Make sure Wi-Fi function is ON Press Up or Down button to Wi-Fi menu and then press OK button once	
5	Trigger Wi-Fi function reset Press Up or Down button to Wi-Fi reset menu and then press OK button once	

Step 3) Open the Smart Life app and click “Add device” in the Smart Life app.

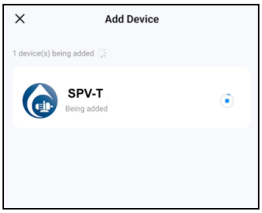


1) Click “Add Device"

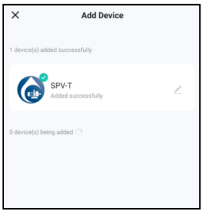
2) Select pump icon



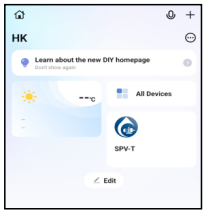
3) Select your target Wi-Fi network and input password



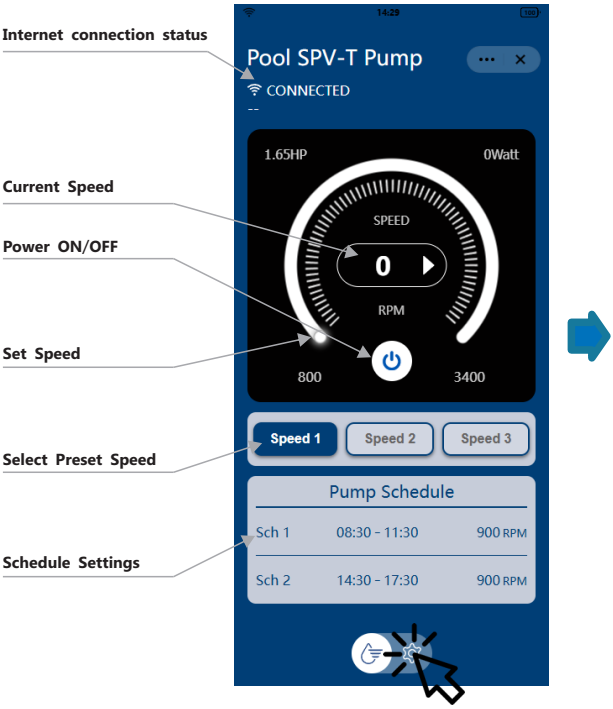
4) Wait until the setup is finished

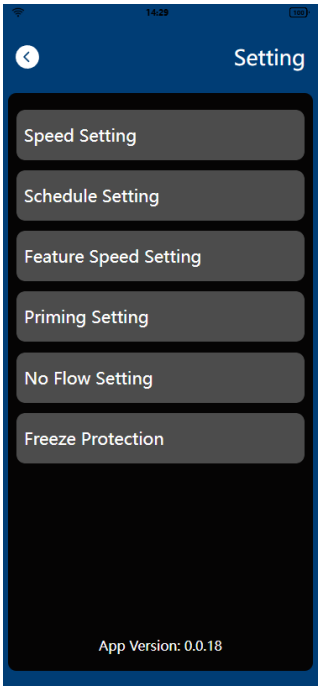


5) Device is added in success



6) Done





Connectivity Specification

Wi-Fi : Compliant to IEEE 802.11b / g / n
1T1R 2.4GHz with support for a 150Mbps PHY data rate
Security: WEP64 / 128, TKIP, AES, WPA, WPA2, WAPI
AP and STA mode
25m distance transmission
Build-in antenna

RS485: Max baud rate 57600bps
MODBUS Protocol, support function code 3, 4, 6 and 16
1-247 slave address
Isolated A / B data bus, without 120 ohm terminal resistor

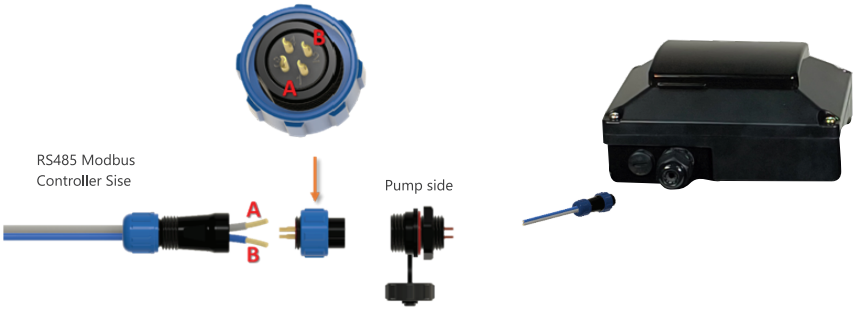
RS-485 CONNECTION (FOR RS-485 VERSION)

The RS-485 connection point is located on the side of the variable speed drive and should be connected to the MODBUS controller by a cable connector assembly (only the connector without cable is provided) as in the figure below.

Making the RS-485 cable connector assembly:

Disassemble the female connector and locate the pin numbers on the base.

Prepare one Pair 22 unshielded twisted Paired Cable RS 485. The length depends on the PUMP distance from the MODBUS controller which should not be more than 100m. Solder pin 1 for A and pin 2 for B respectively which corresponds to the Pump MOSBUS controller RS485 output pin configuration. Reassemble the connector and plug into the RS485 socket on the variable speed pump



For long distance wiring, pin 4 is needed for grounding and 120 ohm terminal resistor across A / B signal line.

14. TROUBLE SHOOTING

Problem description	Possible causes
Motor does not start	1. Disconnect switch or circuit breaker in off position 2. Fuses blown or thermal overload open 3. Locked motor shaft 4. Motor windings burned out 5. Defective starting switch inside single phase motor 6. Disconnected or defective wiring 7. Low voltage
Pump does not reachfull speed	1. Low voltage 2. Pump connected to the wrong voltage
Motor overheats(protect or trips)	1. Low voltage 2. Motor windings connected to the wrong voltage on dual voltage model
Pump delivers no water	1. Pump is not primed 2. Closed valve in suction or discharge line 3. Leakage of air into suction system 4. Impeller clogged
Leakage of water at the shaft	Shaft seal requires replacement
Low pump capacity	1. Valve in the suction or discharge line partly closed 2. Suction or discharge line partly plugged 3. Suction or discharge line too small 4. Plugged basket in skimmer or hair and lint strainer 5. Dirty filter 6. Impeller clogged
High pump pressure	1. Discharge valve or inlet fittings closed too much 2. Return lines too small 3. Dirtyfilters
Noisy pump and motor	1. Blocked skinner basket or hair in lint strainer 2. Worn motor bearings 3. Valve in suction line partly closed 4. Suction line partly plugged 5. Vacuum hose plugged or too small 6. Pump not supported properly
Air bubbles at in let fittings	1. Leakage of air into the suction line in connections or valve stem 2. Cover gasket of hair and lint strainer needs cleaning 3. Low water level in the pool
Pump Running not as Schedule	Clock setting is not the local time

Note: If the above suggestion do not solve your particular problem(s), please contact your local service agent for further assistance.

15. TERMS OF THE WARRANTY

As original purchaser of this equipment have purchased from Emaux Water Technology Co., Ltd, through Authorized International Distributor or Dealer, warrants its products free from defects in materials and workmanship under normal use during warranty period. The warranty period begins on the day of purchase and extends only to the original purchaser. It is not transferable to anyone who subsequently purchases the product from you. It excludes all expendable parts.
During the warranty period, Emaux authorized reseller will repair or replace defective parts with new parts or, at the option of Emaux, serviceable used parts that are equivalent or superior to new parts in performance.

This Limited Warranty extends only to products purchased from Emaux authorized reseller. This Limited Warranty does not extend to any product that has been damaged or rendered defective
1. As a result of accident, misuse or abuse;
2. As a result of an act of God;
3. By operation outside the usage parameters stated herein;
4. By the use of parts not manufactured or sold by Emaux;
5. By modification of the product;
6. As a result of war or terrorist attack; or
7. As a result of service by anyone other than Emaux authorized reseller or authorized agent.

Except as expressly set forth in this warranty, emaux makes no other warranties expressed or implied, including any implied warranties or merchantability and fitness for a particular Purpose. Emaux expressly disclaims all warranties not stated in this limited warranty. Any Implied warranties that may be imposed by law are limited to the terms of this express limited Warranty.

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