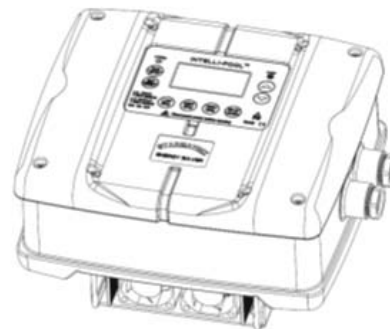


CLEVER-POOL ENERGY SAVER

ACCORDING TO: EN61800-5-1:2007

Designed by STARMATRIX GROUP INC.,

Installation, Operation & Maintenance Instructions



**Please leave this instruction booklet with the owner as it contains important maintenance and safety information.
Read this manual carefully before commencing installation**

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CONTENTS

1. SAFTY AND CAUTION

| | |
|---|---|
| 1.1 READING BEFORE INSTALLATION..... | 3 |
| 1.2 PRODUCT CHECK BEFORE INSTALLATION | 4 |
| 1.3 ENVIROMENT CAUTION | 5 |

2. PRODUCT DIMENSION AND PARAMETERS

| | |
|---|---|
| 2.1 DIMENSION AND TECHNICAL PARAMETERS..... | 6 |
|---|---|

3. INSTALLATION AND FUNCTION EXPLANATION

| | |
|--|----|
| 3.1 INSTALLATION | 7 |
| 3.1.1 INSTALLATION SKETCH AND DESCRIPTION..... | 7 |
| 3.2 WIRE CONNECTION | 8 |
| 3.2.1 WIRE CONNECTION AND DESCRIPTION FOR 2HP AC220V SINGLE PHASE IN - SINGLE PHASE OUT..... | 8 |
| 3.2.2 WIRE CONNECTION AND DESCRIPTION FOR 3HP AC220V SINGLE PHASE IN - THREE PHASE OUT..... | 9 |
| 3.2.3 WIRE CONNECTION AND DESCRIPTION FOR 5HP AC380V THREE PHASE IN - THREE PHASE OUT..... | 10 |
| 3.3 RUNNING | 10 |
| 3.3.1 CHECK BEFORE RUNNING..... | 10 |
| 3.3.2 PROGRAMMING GUIDE | 11 |

4. BUTTON AND FUCNTION EXPLANATION

| | |
|---|----|
| 4.1 BUTTON AND FUCNTION EXPLANATION | 13 |
|---|----|

5. PROTECTION AND TROUBLE SHOOTING


| | |
|---|----|
| 5.1 ERROR CODE LIST AND EXPLANATION | 14 |
|---|----|

1. SAFETY AND CAUTION


1.1 READING BEFORE INSTALLATION

Clever-Pool uses vector frequency technology and is a highly precious electronic device, to ensure for personal and property safety, please read carefully this instruction before using.

There are marks **【DANGER】** or **【CAUTION】** in this book, please strictly obey when moving, installing, using or checking the product.

| | |
|---|---|
|  DANGER | 1、 Please make sure to use the correct power supply. |
| | 2、 Please make sure to close the control panel before power connection to avoid electricity shock or explosion |
| | 3、 Please make sure not to confuse the input and output terminals. |
| | 4、 If our Clever-Pool is stocked over 2 years, please use a voltage adjuster to increase the voltage gradually when power connection. |
| | 5、 Please DO NOT touch the wire terminals when power is connected. |
| | 6、 Please wait after 10 minutes after the power is cut off when all the indication lights are off for further maintenance. |
| | 7、 Please DO NOT use wet hands for operation. |
| | 8、 Please ask for professional help if you need to change any parts, strictly forbidden to leave any metal things inside our Clever-Pool. |

1. SAFTY AND CAUTION

| | |
|--|--|
|  CAUTION | 1、 Installation based on local safty rules. |
| | 2、 Only professionals for installation and maintanence. |
| | 3、 Power connection is required after control panel closed,electricity shock will occure if against this rule. |
| | 4、 Do not touch the terminals,electricity shock will occure if against this rule. |
| | 5、 Do not disconnect the wire connection if power is connected, serious personal damage will occure if against this rule. |
| | 6、 Do not touch CMOS elements. |
| | 7、 No voltage duration test allowed for our Clever-Pool, it will get semiconductor elements damaged. |
| | 8、 Make sure air ventilation when in summer or high ambient temperature use,this will avoid condensate water formed and electrical faulty. |
| | 9、 Please stock our Clever-Pool in a dry,ventilated and cool place. |

1.2 PRODUCT CHECK BEFORE INSTALLATION

Each Clever-Pool is 100% tested before factory delivery, you need to check by yourself below:

- (1) If our Clever-Pool is the right model you ordered.
- (2) Any damage caused by transportation, if yes please do not connect to power supply.

1. SAFTY AND CAUTION

1.3 ENVIROMENT CAUTION

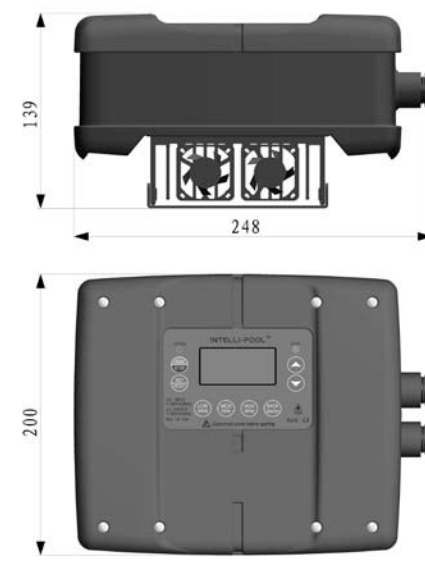
The correct enviroment for our Clever-Pool determines its right function and life. So the installation must obey below:

- IP65 for both outdoor and Indoor use
- No direct sunshine
- No corrosive fluid
- Away from radioactive or flammable substances
- Ambient temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- No oil or salt
- No dust or metal scraps
- No electromagnetic interference

2. DIMENSION AND PARAMETERS

2.1 DIMENSION AND TECHNICAL PARAMETERS

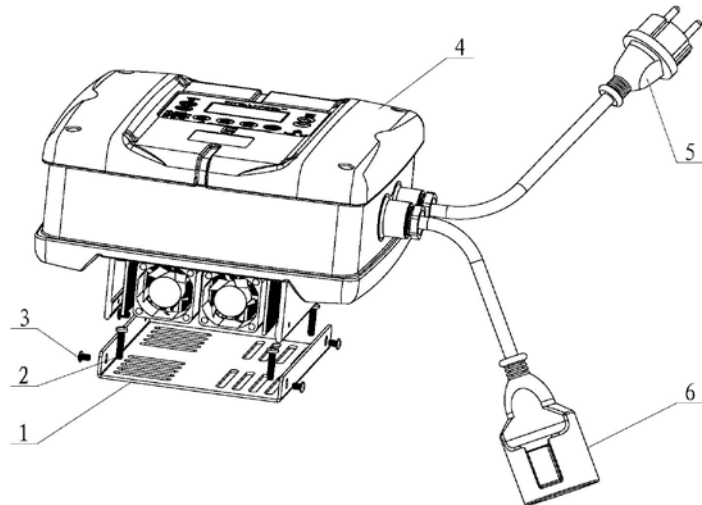
| PARAMETER SHEET | | | | Dimension | |
|-------------------|--------------------------|--------------------|------------------|-----------|--|
| Model Item | Clever-Pool/220V | Clever-Pool M/220V | Clever-Pool/380V | | |
| Input power | Single-phase AC | Single-phase AC | Three-phase AC | | |
| Input voltage | 220V \pm 15% | 220V \pm 15% | 380V \pm 15% | | |
| Input frequency | 50/60Hz | 50/60Hz | 50/60Hz | | |
| Output voltage | 1 \sim 220V | 3 \sim 220V | 3 \sim 380V | | |
| PUMP TYPE | SINGLE-PHASE | THREE-PHASE | THREE-PHASE | | |
| Max.Power | MAX 2HP | MAX 3HP | MAX 5HP | | |
| Max current | 12A | 10A | 10A | | |
| Mode option | Manual or Auto | | | | |
| Cooling | By air | | | | |
| Motor speed range | 50Hz:1200 \sim 3000rpm | | | | |
| | 60Hz:1200 \sim 3600rpm | | | | |



3. INSTALLATION AND FUNCTION EXPLANATION

3.1 INSTALLATION

3.1.1 INSTALLATION SKETCH AND DESCRIPTION

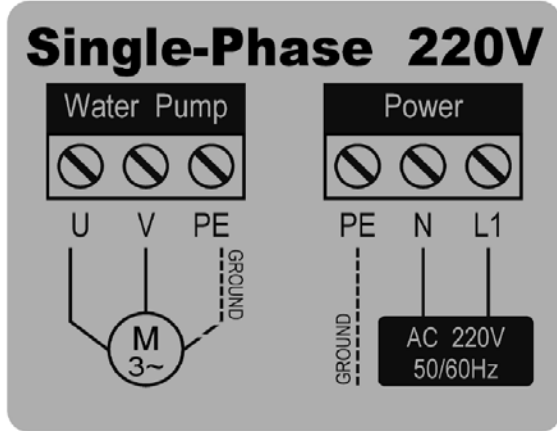
| Sketch for Installation | Procedure and instruction |
|--|---|
|  | 1. Use a cross screwdriver to take |
| | off the screws as shown 3 and plate 1 |
| | 2、 Put plate 1 in your installation place |
| | and use screws as shown 2 to fix |
| | plate 1. |
| | 3、 Put the control box 4 on plate 1 |
| | and fix with screws as shown 3 |
| | 4、 Connect the plug from pump to the part |
| | as shown 6. |
| | 5、 Connect plug 5 as shown to the correct |
| | power supply socket. |
| | 6、 Strictly follow the operation |
| | steps as indicated in this manual. |

3. INSTALLATION AND FUNCTION EXPLANATION

3.2 WIRE CONNECTION

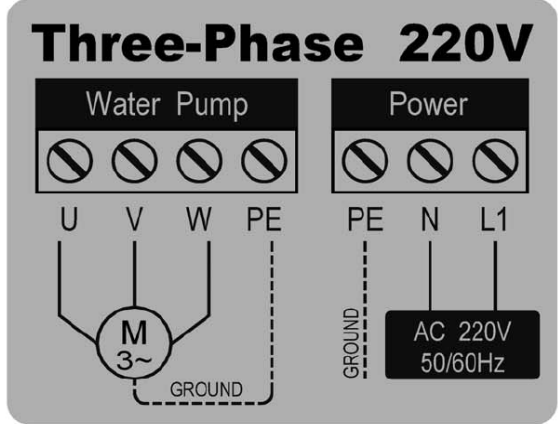
Wires has been preconnected before factory delivery as per request, if you need to re-connect the wires, please pay attention as below:

3.2.1 WIRE CONNECTION AND DESCRIPTION FOR 2HP AC220V SINGLE PHASE IN - SINGLE PHASE OUT

| WIRE CONNECTION SKETCH | Procedure and instruction |
|---|--|
|  <p>Single-Phase 220V</p> <p>Water Pump</p> <p>U V PE</p> <p>GROUND</p> <p>Power</p> <p>PE N L1</p> <p>GROUND</p> <p>AC 220V 50/60Hz</p> <p>M 3~</p> | 1.Disconnect power before opening the control panel. |
| | 2.Make sure no connection between PE,N,L1 termials and U,V terminals. |
| | 3.Wire connection operated only when power disconnected. |
| | 4.Check if the input voltage from the power supply is compliance with clever-pool. |
| | 5.No voltage duration test |
| | 6.Screw torque for terminal screws more than 1.7N.m |
| | 7.Ground link must be connected before operation. |
| | 8.Must use the copper wires over 3G1.5mm ² |
| | 9.Power supply connected only after the control panel is fixed, |

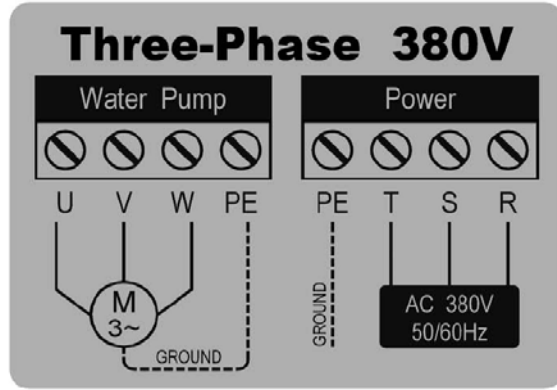
3. INSTALLATION AND FUNCTION EXPLANATION

3.2.2 WIRE CONNECTION AND DESCRIPTION FOR 3HP AC220V SINGLE PHASE IN - THREE PHASE OUT

| WIRE CONNECTION SKETCH | Procedure and instruction |
|--|--|
|  <p>Three-Phase 220V</p> <p>Water Pump</p> <p>U V W PE</p> <p>M 3~</p> <p>GROUND</p> <p>Power</p> <p>PE N L1</p> <p>GROUND</p> <p>AC 220V 50/60Hz</p> | <ol style="list-style-type: none"> 1. Disconnect power before opening the control panel. 2. Make sure no connection between PE, N, L1 terminals and U, V, W terminals. 3. Wire connection operated only when power disconnected. 4. Check if the input voltage from the power supply is compliance with clever-pool. 5. No voltage duration test 6. Screw torque for terminal screws more than 1.7N.m 7. Ground link must be connected before operation. 8. Must use the copper wires over 3G2.0mm² 9. Power supply connected only after the control panel is fixed, |

3. INSTALLATION AND FUNCTION EXPLANATION

3.2.3 WIRE CONNECTION AND DESCRIPTION FOR 5HP AC380V THREE PHASE IN - THREE PHASE OUT

| WIRE CONNECTION SKETCH | Procedure and instruction |
|---|--|
|  <p>The diagram shows a control panel for a 'Water Pump' and 'Power'. The 'Water Pump' section has four terminals: U, V, W, and PE. The 'Power' section has four terminals: PE, T, S, and R. A three-phase motor (M 3~) is connected to U, V, and W, with its ground connected to the PE terminal. The power supply is connected to T, S, and R, with its ground connected to the PE terminal. A label 'AC 380V 50/60Hz' is shown next to the power supply terminals.</p> | 1.Disconnect power before opening the control panel. |
| | 2.Make sure no connection between PE,T,S,R termials and U,V W terminals. |
| | 3.Wire connection operated only when power disconnected. |
| | 4.Check if the input voltage from the power supply is compliance with clever-pool. |
| | 5.No voltage duration test |
| | 6.Screw torque for terminal screws more than 1.7N.m |
| | 7.Ground link must be connected before operation. |
| | 8.Must use the copper wires over 4G2.0mm ² |
| | 9.Power supply connected only after the control panel is fixed, |

3.3 RUNNING AND OPERATION

3.3.1 BEFORE RUNNING AND OPERATION

- 1.Check if installation and wire connection is 100% correct.
- 2.Check if any metal substances left in the product.
- 3.Check if wire terminals are well tightened.
- 4.Check if there are naked wires on the terminals touching other terminals.

3. INSTALLATION AND FUNCTION EXPLANATION

5. Check if the control panel is well closed.
6. A GFCI device must be used in the system.
7. Check if the power supply frequency is the same as CLEVER-POOL.
8. If all connection is correct, run with no load. If it is a three-phase pump. Please check the motor rotation direction, you can choose the wire connection between UV, WV or WU.

3.3.2 PROGRAMMING GUIDE

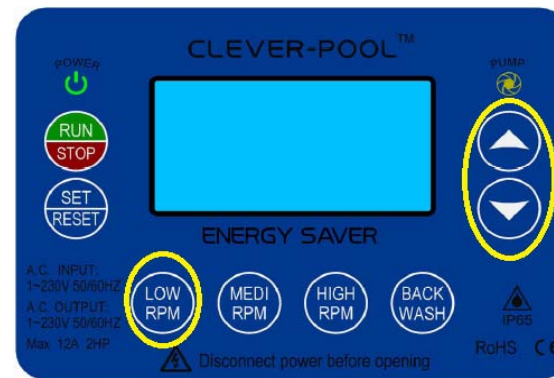
1. The Clever-Pool has two running modes: Manual mode and Auto mode.
 - 1.1 Manual mode is used when you are connecting to a pool chlorinator or timer. The system time settings are not required to run in this mode.
 - 1.2 Auto mode is used when there is no chlorinator or timer and includes up to 4 separate timers with individual speed options. This is ideal for when you want to run your pool pump at different times and speeds to take advantage of the different electrical consumption.
 - 1.3 In stop and manual mode press the SET/RESET button once to switch to Auto Mode. In stop and Auto mode press the RUN/STOP button to switch to Manual Mode.

3. INSTALLATION AND FUNCTION EXPLANATION

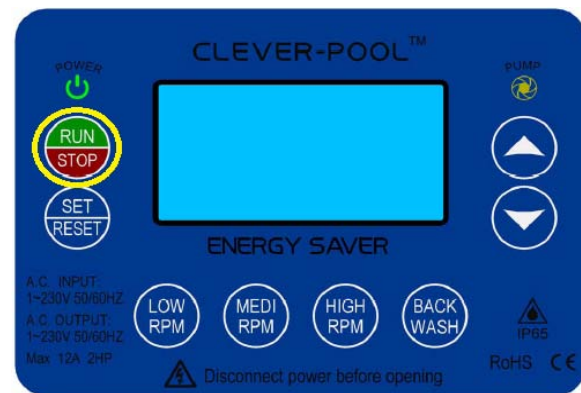
2. Manual mode

In stop mode the display will now show MANUAL, LOW RPM and the speed in rpm.

Press the up or down buttons to select the speed. Alternatively press one of the systems, preset speed buttons LOW RPM, MEDI RPM, HIGH RPM.



Press the RUN/STOP button to put it into run mode, this will start the pump. When the chlorinator timer turns off, the CLEVER-POOL will store the speed and resume at that speed when switched on again.

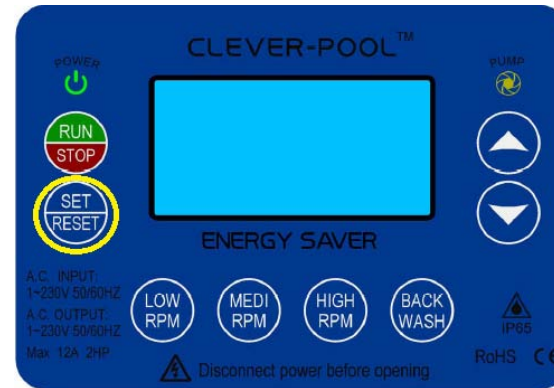


To stop the pump simply press the RUN/STOP button again.

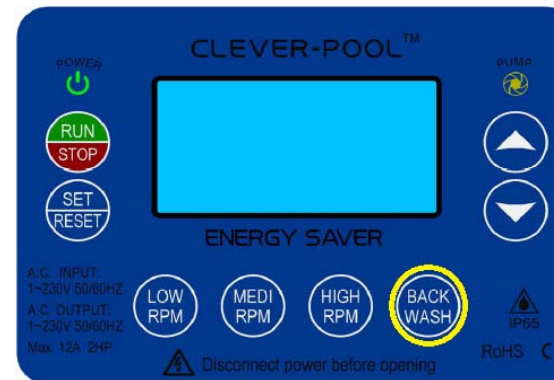
3. INSTALLATION AND FUNCTION EXPLANATION

3. Back Wash mode

In stop mode press the SET/RESET button once. The display will now show MANUAL, LOW RPM and the speed in rpm.

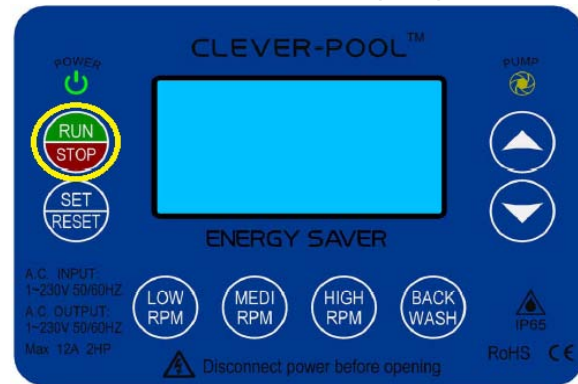


Press the BACKWASH button. The display will now show backwash and the rpm.



3. INSTALLATION AND FUNCTION EXPLANATION

Press the RUN/STOP button to put it into on mode, this will start the pump.

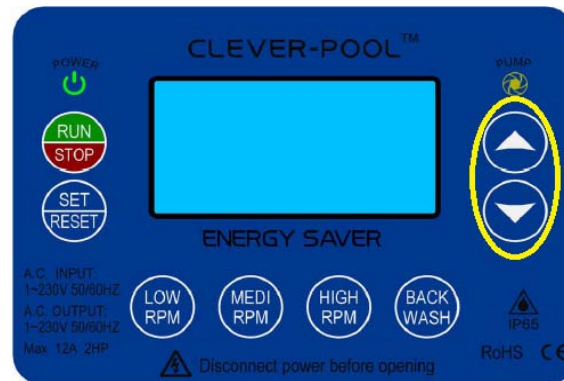


Press the RUN/STOP button to stop the pump

4. Time setting

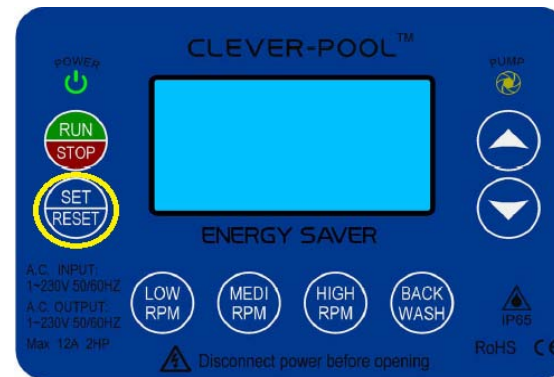
4.1 Current time

In stop and Auto Mode, Press UP and Down button to set Current time,



3. INSTALLATION AND FUNCTION EXPLANATION

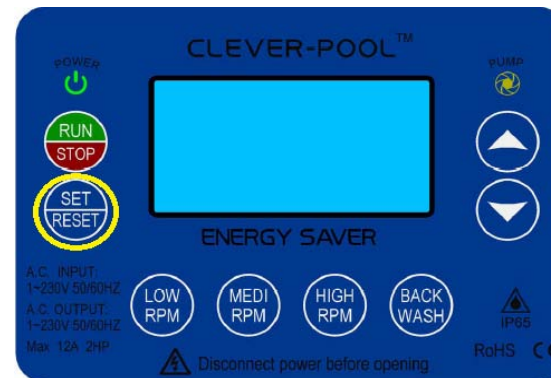
Press the SET/RESET button to step over from hours to minutes. The display will then flash the minutes digits.



Press the SET/RESET button to store the time. The display will now show the current time with flashing cursor and the word shown at the top.

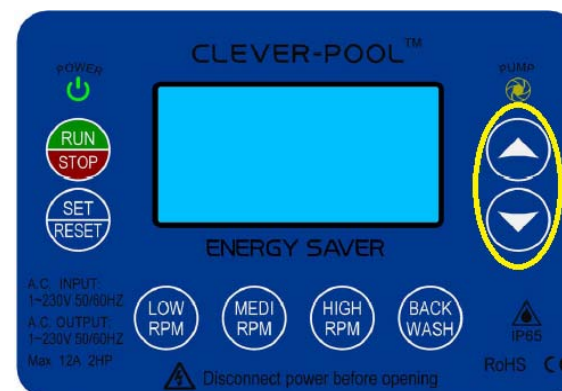
4.2 Auto Mode timer and Speed setting

In stop mode press the SET/RESET button, The display should show CURRENT TIME, START TIME, STOP TIME and the stored

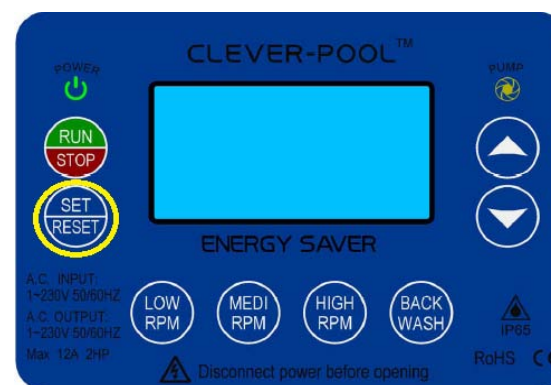


3. INSTALLATION AND FUNCTION EXPLANATION

Press the up or down button to select the hours.

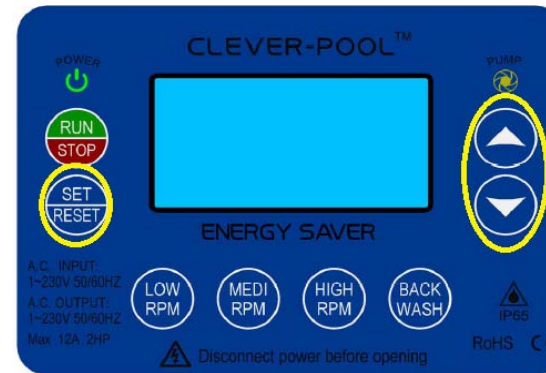


Press the SET/RESET button to step over from hours to minutes and from Start Time to Stop time



3. INSTALLATION AND FUNCTION EXPLANATION

Press the SET/RESET button to step to SPEED setting. The display will now show the flashing four digits for speed, which is the speed for AUTO MODE 1. Press the up or down button to change motor speed. Alternatively press one of the systems preset speed buttons LOW RPM, MEDI RPM, HIGH RPM.



Press the SET/RESET button to store the speed and step over to AUTO MODE 2. The display should show CURRENT TIME, START TIME, STOP TIME and the stored time with hours digits flashing. This is the start time for AUTO MODE 2.

Repeat steps above to set speed, start and stop times for AUTO MODE 2 3 and 4. Pressing the SET/RESET button after selecting the speed for Auto mode 4 will finalize the timer settings.

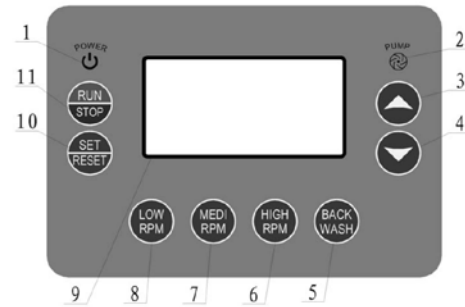
The display will go blank and return to stop mode with the current set time displayed.

Alternatively if you only require one time period per day press the SET/RESET button to cycle through time a speed settings of the remaining TIMERS ensuring all start and stop times are set to zero's or to the same time period. Please note all settings for AUTO MODE 1 to 4 will be retained in the event of power loss.

After all timers have been set. The CLEVER-POOL will then start and stop the pump at set times and speeds.

4. BUTTON AND FUNCTION EXPLANATION

4.1 BUTTON AND FUNCTION EXPLANATION



| Number | Name | Explanation |
|--------|-------------|--|
| 1 | Power light | Power supply connected or disconnected |
| 2 | Pump light | Pump on or off |
| 3 | Increase | Increase the parameter |
| 4 | Decrease | Decrease the parameter |
| 5 | Full RPM | Pump motor RPM setting |
| 6 | High RPM | Pump motor RPM setting |
| 7 | Medium RPM | Pump motor RPM setting |
| 8 | Low RPM | Pump motor RPM setting |
| 9 | LCD screen | Showing all parameters |
| 10 | Setting | Parameter setting or re-set system |
| 11 | Run/Stop | Manually control pump run or stop |

5. PROTECTION AND TROUBLE SHOOTING

5.1 ERROR CODE LIST AND EXPLANATION

| | PROTECTION | CODE | EXPLANATION |
|---|----------------------------------|------|--|
| 1 | Too Low voltage | LU | When the voltage is below 160V it shows LU on the screen, when the voltage comes normal from the grid, the error code disappears automatically. |
| 2 | Over voltage | OU | When the voltage is over 285V it shows OU on the screen, when the voltage comes normal from the grid, the error code disappears automatically. |
| 3 | Over temperature | OC | When the temperature in the casing is over 80℃, it shows OC on the screen till the temperature drops down to 55℃, the error code disappears automatically. |
| 4 | Over load | OLD | When the output ampere is 1.6 times higher than the rated ampere and working for 15 seconds, it shows OLD on the screen, it needs to cut off the power supply and eliminate the problem, then re-plug the power for normal work. |
| 5 | Short circuit | OLP | When the output of the inverter is short-circuit, it shows OLP on the screen, it needs to cut off the power supply and eliminate the problem, then re-plug the power for normal work. |
| 6 | Lack phase (For 380V version) | OP | When there is a phase wire missing connection at the input, it shows OP on the screen and it needs to cut off the power supply and eliminate the problem, then re-plug the power for normal work. |