# ICON SERIES iPOOL

## Swimming Pool Pump Controller

## User Manual


iCON SERIESDRIVES

**PREFACE**

Thanks for choosing our iPOOL swimming pool pump controller.

iPOOL is an intelligent controller which is specifically designed for swimming pool, with the function of auto/manual mode and multi-speed for multi-time sections. What's more, with high quality, multi-functional and low noise etc. characteristics, iPOOL controller is suitable for full automatic water supply of swimming pool.

Professional design based on the swimming pool water supply users' needs, simplicity of operation.

According to the real-time section to run automatically without manual operation after parameters are set correctly

Easy for the user to change speeds in the manual mode

Conformity:

- Verification of EMC compliance certificate no. AC/0410709 to EN 61326-1:2006, EN 61000-3-2:2005, EN 61000-3-3:1995+A1:2001+A2:2005.
- Verification of LVD compliance certificate no. AC/0420709 to EN 61010-1:2001.

## SAFETY PRECAUTIONS

ISUB is a new power electronic product, please read the operation manual carefully before using to keep your safety and make sure proper operation.

In this manual, the safety precautions were sorted to "WARNING" and "CAUTION".

! **WARNING:** Incorrect use may result in death or serious personal injury.

⚠ **CAUTION:** Incorrect use may result in the damage of controller or system.

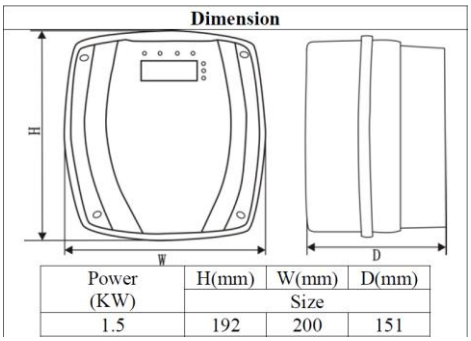
**! WARNING**

- Do not dismantle or change the product, which may cause electric shock, fire hazard and personal injury.
- Do not open the cover during the running of controller. Disconnect power and allow 5 minutes for the internal capacitors to discharge dangerous internal voltage before working on controller and pump.
- Ensure that the controller along with the pump as well as metal in proximity are adequately earthed.
- Do not put wire, metal bar, filaments etc. into the controller as to cause a short circuit or get an electric shock.
- Do not splash water or other liquid over the controller.

**CAUTION**

- The controller and pump should be installed by suitably qualified technical personnel, and failure to install in compliance with local standards may result in poor performance, equipment damage, fire and electrical shock.
- Do not perform high voltage insulation testing on the controller.
- The motor, controller and power specifications should be matching, otherwise it could cause abnormal operation and damage the equipment.
- If the controller has serious vibration, noise, heat or peculiar smell in the first operation, please cut off the power immediately and contact customer service.
- Do not install the controller in an environment with direct sunlight, rain, dust, frost or snow.
- When moving the controller please lift by its base and don't lift by the panel. Otherwise it may cause the main unit to fall off which may result in personal injury.
- Install the controller on fireproof material (such as metal) to prevent fire.
- When powered off, you should not install the controller until the power indicator light has extinguished, which will ensure the device has been discharged completely.

**Dimension**




| Power (KW) | H(mm) | W(mm) | D(mm) |
|---|---|---|---|
| | Size | | |
| 1.5 | 192 | 200 | 151 |

**2. ENVIRONMENTAL REQUIREMENT**

2.1 Environment temperature range: -10deg. C ~+40 degrees C. Controller will be degraded if ambient temperature exceeds 40 degrees C.
2.2 Prevent rain drops, moist environment, oil fog, salt erosion, corrosive gas, etc.
2.3 Prevent direct sunlight, keep away from radiation source.
2.4 Prevent violent vibration or sudden impact.
2.5 Lower than 1000m installation altitude, it will be degraded when the altitude is higher than 1000m.

**3. Product Functional Performance**

| **Product Functional Performance** Input Voltage | 220V±15% |
|---|---|
| Output Voltage | 0~as input voltage |
| Output Frequency | 0~600Hz |
| Capacity | Max Load 1.5kw motor |

**Function** **Instruction**

LED

- Parameter display and malfunction display；
- Display the current preset speed/DC bus voltage/ system time when stopping;
- Display the current actual speed/preset speed/output power/DC bus voltage/output current/system time

Programmable Variable Speed Max.8 Settings

- 8 setting programmable time section, running according to system real-time with clock;
- Time section has independent start-end period;
- Time section has independent speed setting；

Manual Speed range：Max 4 Settings 0~3450RPM

- Optional 4 manual settings；
- Speed is set by parameter；
- Button for auto/manual shift, under manual mode, change gears by the same button. 


Power-on Restart

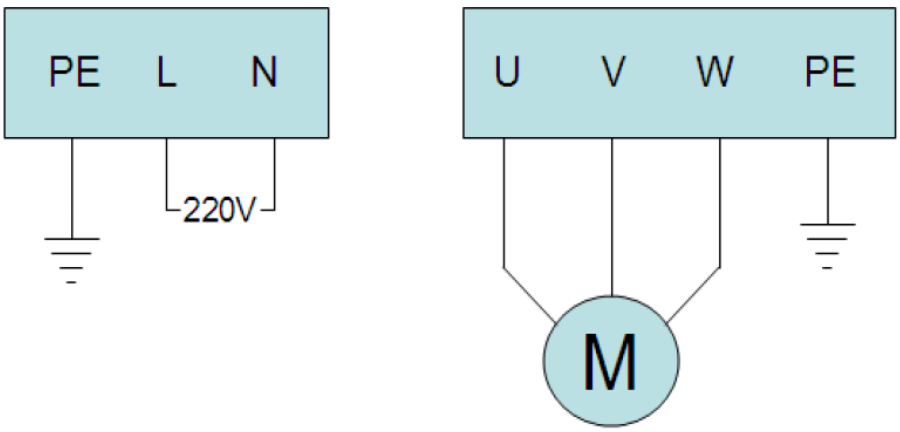
- If there is a power failure, restart when power on；

Protection

- Over Current /Over Voltage /Under Voltage/Overheat/Overload etc. 25 protection.

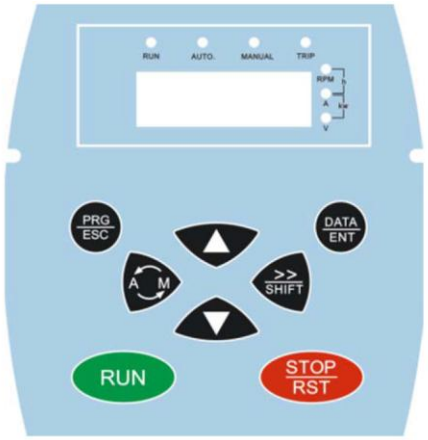
**4 How to use**

**4.1 Wiring**




In order to keep safety and prevent electric shock and fire, PE must be grounded with ground resistance. Ground wire should be big and short, and it is better to use copper wire (>3.52mm). Furthermore, reliable grounding is the simplest, most effective and minimum cost solution for EMC problems, so it enjoys priority in all EMC methods.

**4.2 Operating Panel**




**4.3 Button Instruction**

| Interface | Button | Function |
|---|---|---|
| Primary Interface | >> SHIFT | Shift display of each monitoring parameter |
| | PRG ESC | Enter first rank parameter menu |
| | A M | Auto/Manual Shift |
| | RUN | Running |
| | STOP RST | Stopping |
| First Rank Parameter Menu | PRG ESC | Back to Primary Interface |
| | DATA ENT | Access the current parameter |
| | ▲ ▼ | Increase/Decrease |
| | >> SHIFT | Data Shift |
| Secondary Rank Parameter Menu | PRG ESC | Cancel parameter setting, back to first rank menu and remain previous setting |
| | DATA ENT | Affirm parameter setting, back to first rank menu and shift to the next parameter |
| | ▲ ▼ | Increase/Decrease |
| | >> SHIFT | Data Shift |

**4.4 Indicator Instruction**

1）Function Indicator

| Name | Introduction |
|---|---|
| RUN | Running Lamp, it is on light when running; off when stopping |
| AUTO. | Auto Lamp ,it is on light when Auto Mode |
| MANUAL | Manual Lamp， it is on light when Manual Mode; |
| TRIP | Malfunction Lamp， It is on light when malfunction; off when normal |

2）Unit Indicator

| Name | Introduction |
|---|---|
| RPM | Rotate Speed Unit, it is on light when displaying speed; flickering when setting speed |
| A | Current Unit， it is on light when displaying current |
| V | Voltage Unit,it is on light when displaying voltage |
| kw | Power Unit, A&V lamps are on light at the same time when displaying power |
| h | Time Unit, RPM&A lamps are on light at the same time when displaying the current time;flickering when setting speed |

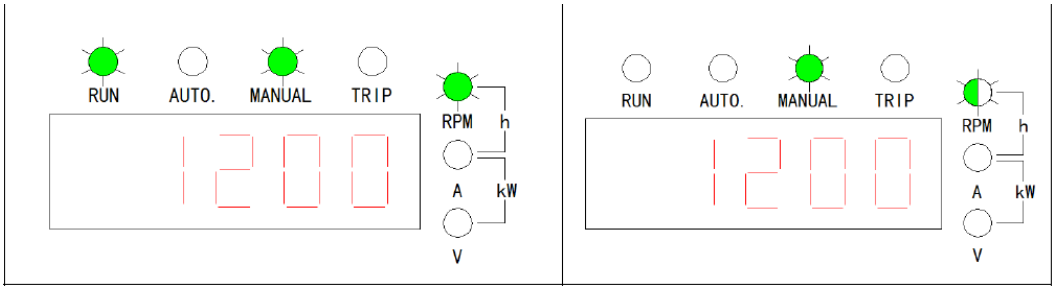
**4.5 Operation Instruction**

**1)Auto/Manual Mode：** Under Auto Mode, press  system will enter into Manual Mode, Manual Lamp is on light. Setting is the setting before switching to automatic mode (it defaults to the first- speed when you enter MANUAL for the first time), the controller to maintain automatic mode of operation (run/stop).

In manual mode, whatever it is running or in stopped the controller can be switched to different speed by  and  key and the parameters of manual speed is br-18 ~ br-21. At the same time, the controller can keep the original state (run/stop) after modifying the parameters above.

**See below for manual mode operation and stop state display interface:**

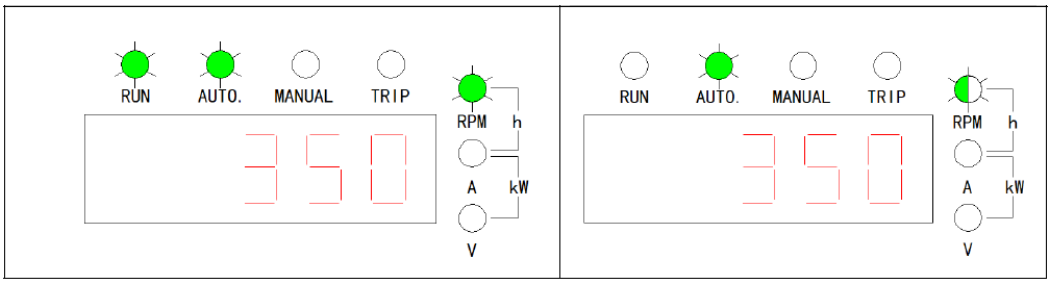
Running state (display the current working speed)  Stop state (display the set speed of the current setting)




In Manual Mode, press system  will enter into Auto Mode and run at the rate corresponded to the real-time section. At the same time, the controller can keep the original state (run/stop) after switching the working operation.

**See below for automatic mode operation and stop state display interface:**

Running state (display the current working speed)  Stop state (display the set speed of the current setting)



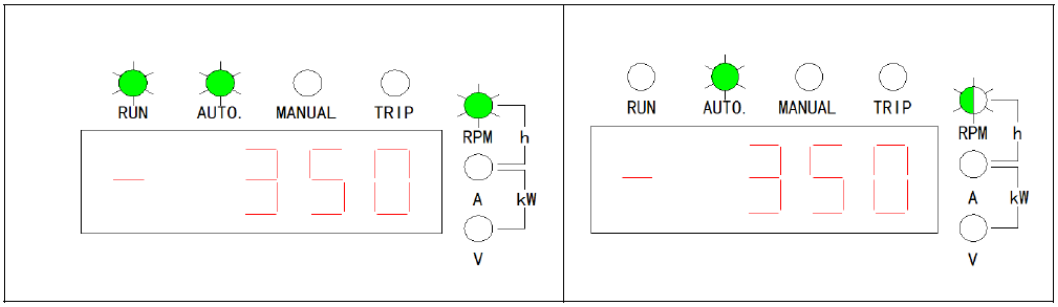

2)**Motor direction**：

Motor's rotary direction is positive by default, when you need to set the motor direction to reverse, the br-01 is set to 1, and there will be a symbol "-" in front of the current rate at the speed display interface.

Note: The motor steering can only be set in the down state.

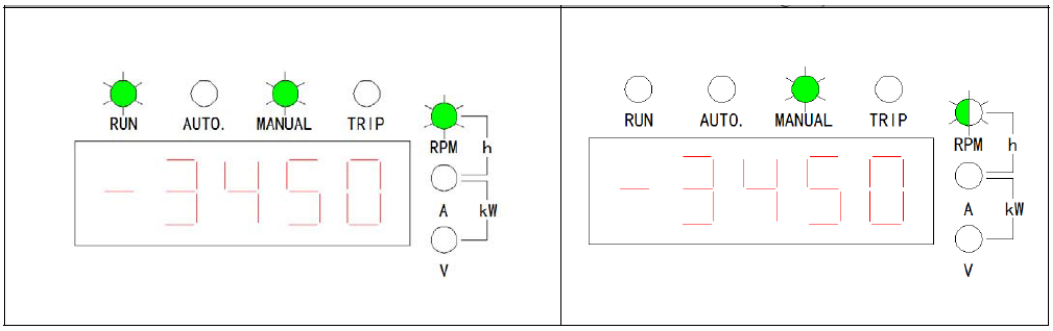
The display of reversal operation in Automatic mode:

Running state (display the current working speed)  Stop state (display the set speed of the current setting)



The display of reversal operation in Manual mode:

Running state (display the current working speed)  Stop state (display the set speed of the current setting)




**3)Check Sate of Parameter：this** Setting parameter（br-24）decide to the display of each item, including Running Speed/Preset Speed/Output Power/DC Bus Voltage/Output Voltage/Output Current/System Time, each item can be set to be display or hidden as well as checked through SHIFT button.

4)**Power-on**

**Initialization:** Displays "b - 607".

Enter the primary interface after initialization is complete, and the controller is be on standby mode. If you use the **Power-on Restart** function, the controller can restore the state at the power off last time.

**5)RUN:** In the stopped state, press 

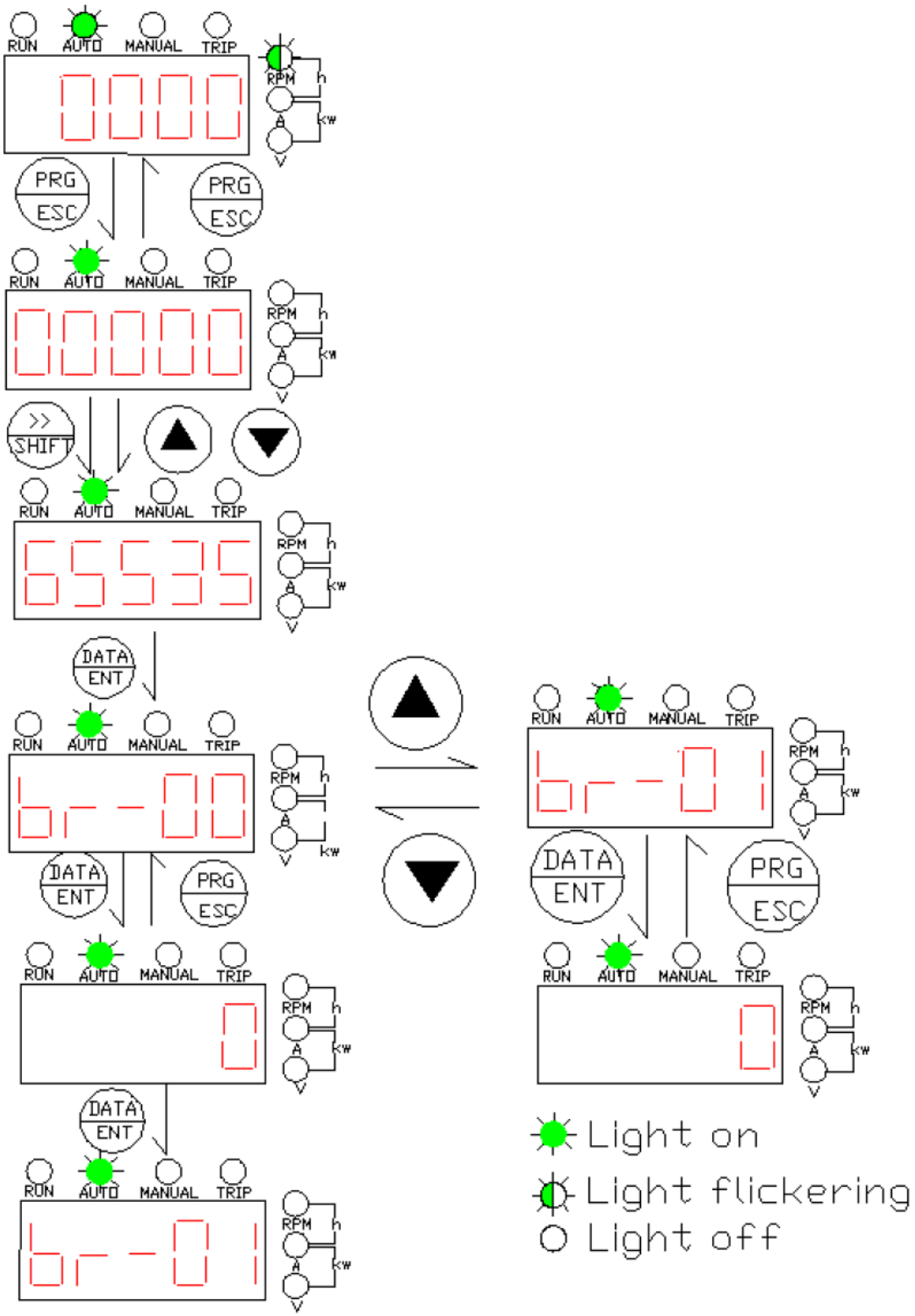
to enter the running state.

**6) STOP:** Under the running status, press 

to stop and enter the stopped state.

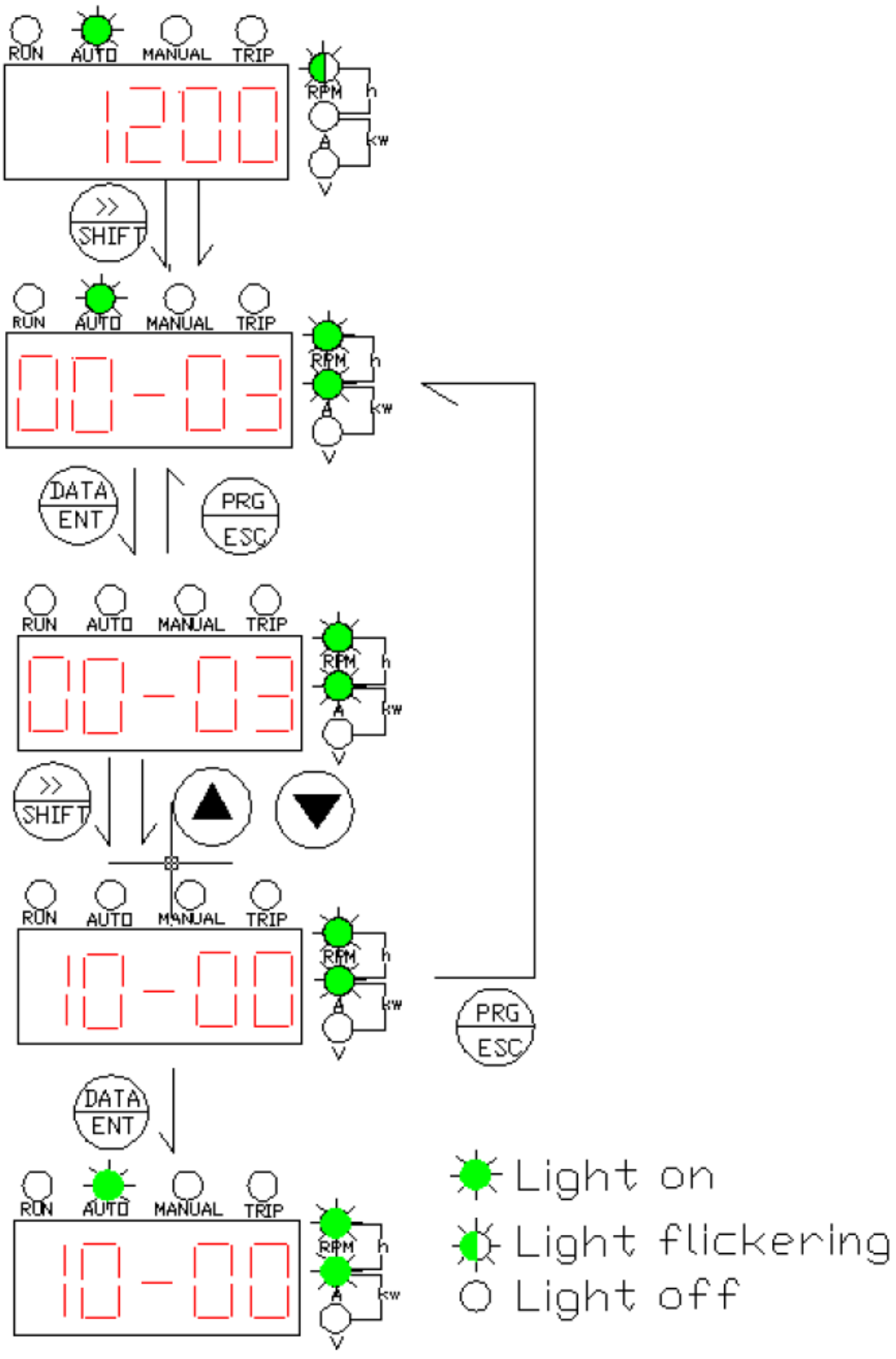
**7) Modify parameter**

Below is the method of modifying parameters:



**4.6 The system time Settings**

It is 24 hours type, such as 05-10 means it is at 5:10 a.m.
In manual or automatic mode, we can modify system time in the following way:



### 4.6 Eight time section of application

The automatic mode includes the full day of multi-time section cycle working mode .Press 

Controller will start to run according to the rate corresponded to the real-time section and it can automatically change to the different speed corresponded to different time section. At most, you can set eight speed for eight time sections and each time section must be set to the different. If the time sections you set are less than eight ,the remainder time sections which it is not be used must be set to the same as the first time section.

For example 1, If we want to the pump running at the rate of 1350RPM corresponding to day part 00:00～03:00 and at the rate of 800RPM corresponding to day part 03:00～06:00, at the rate of 350RPM corresponding to day part 06:00～09:00, at the rate of 1650RPM corresponding to day part 09:00～12:00, at the rate of 2000 RPM corresponding to day part 12:00～15:00, at the rate of 2500RPM corresponding to day part 15:00～18:00, at the rate of 2700RPM corresponding to day part 18:00～21:00, at the rate of 3450RPM corresponding to day part 21:00～00:00, all above is eight speed for eight time section, we need to set the parameters as follows:
br-02 set to 00-00； br-03 set to 1350；
br-04 set to 03-00； br-05 set to 800；
br-06 set to 06-00； br-07 set to 350；
br-08 set to 09-00； br-09 set to 1650；
br-10 set to 12-00； br-11 set to 2000；
br-12 set to 15-00； br-13 set to 2500；
br-14 set to 18-00； br-15 set to 2700；
br-16 set to 21-00； br-17 set to 3450。

For example 2, If we want to the pump running at the rate of 1350RPM corresponding to day part 08:13:00 and at the rate of 2700RPM corresponding to day part 13:00～19:00, at the rate of 3450RPM corresponding to day part 19:00～21:00, at the rate of 350RPM corresponding to day part 21:00～08:00,that is four speed for four time section， we need to set the parameters as follows:
br-02 set to 08-00； br-03 set to 1350；
br-04 set to 13-00； br-05 set to 2700；
br-06 set to 19-00； br-07 set to 3450；
br-08 set to 21-00； br-09 set to 350；
br-10 set to 08-00； br-11 set to 0000；
br-12 set to 08-00； br-13 set to 0000；
br-14 set to 08-00； br-15 set to 0000；
br-16 set to 08-00； br-17 set to 0000。

### 5. Parameter Instruction

| Code | Name | Range | Default | Instruction | Remark |
|---|---|---|---|---|---|
| br-00 | Power-on Restart | 0~1 | 0 | If there is a power failure, restart when power on | |
| br-01 | Motor Steering | 0~1 | 0 | Direction | Set in the stopped mode |
| br-02 | A section starting time | 00-00~23-59h | 00-00 | | A section starting time as H closing time |
| br-03 | A section current speed | 0~3450 | 0 | Display A current speed | |
| br-04 | B section starting time | 00-00~23-59h | 00-00 | | B section starting time as A closing time |
| br-05 | B section current speed | 0~3450 | 0 | Display B current speed | |
| br-06 | C section starting time | 00-00~23-59h | 00-00 | | C section starting time as B closing time |

| | | | | | |
|---|---|---|---|---|---|
| br-07 | C section current speed | 0~3450 | 0 | Display C current speed | |
| br-08 | D section starting time | 00-00~23-59h | 00-00 | | D section starting time as C closing time |
| br-09 | D section current speed | 0~3450 | 0 | Display D current speed | |
| br-10 | E section starting time | 00-00~23-59h | 00-00 | | E section starting time as D closing time |
| br-11 | E section current speed | 0~3450 | 0 | Display E current speed | |
| br-12 | F section starting time | 00-00~23-59h | 00-00 | | F section starting time as E closing time |
| br-13 | F section current speed | 0~3450 | 0 | Display F current speed | |
| br-14 | G section starting time | 00-00~23-59h | 00-00 | | G section starting time as F closing time |
| br-15 | G section current speed | 0~3450 | 0 | Display G current speed | |
| br-16 | H section starting time | 00-00~23-59h | 00-00 | | H section starting time as G closing time |
| br-17 | H section current speed | 0~3450 | 0 | Display H current speed | |
| br-18 | First Manual Gear | 0~3450 | 1200 | | |
| br-19 | Second Manual Gear | 0~3450 | 1650 | | |
| br-20 | Third Manual Gear | 0~3450 | 2700 | | |
| br-21 | Fourth Manual Gear | 0~3450 | 3450 | | |
| br-22 | Acceleration Time | 0.0~60.0s | 5 | | Entire controller share the parameter |
| br-23 | Deceleration Time | 0.0~60.0s | 5 | | |
| br-24 | Parameter Display Select | 0x01~0x3F | 0x0F | Bit0: Current Speed<br>Bit1: Preset Speed<br>Bit2: System Time<br>Bit3:DC Bus Voltage<br>Bit4: Output Current<br>Bit5: Output Power | Binary Display，Digit of 1 means display; Digit of 0 means hidden |
| br-25 | Reset | 0~1 | 0 | 0 ： none operation;<br>1：Factory reset | Reset |
| br-26 | Motor Rated Power | 0.75~1.5kW | 1.5 | | Input according to motor, protection of overload |
| br-27 | Motor Rated Voltage | 0~240V | 220 | | |
| br-28 | Motor Rated Freq. | 0~60.00Hz | 60 | | |
| br-29 | Motor Rated Speed | 350~3450 RPM | 3450 | | |
| Br-30 | Motor Rated Ampere | 0.1~10A | | | |

## 6 .Controller Running Fault and Trouble Shooting

| Fault Code | Fault Type | Reason | Solution |
|---|---|---|---|
| E004 | Over-current when acceleration (OC1) | Acc time is too short;<br>Load is too heavy;<br>Low input voltage;<br>The capacity of controller is small | 1. Increase Acc time;<br>2. Check the power supply;<br>3. Select bigger capacity controller |
| E005 | Over-current when deceleration (OC2) | Dec time is too short;<br>Load is too heavy;<br>The capacity of controller is small | 1. Increase Dec time;<br>2. Increase braking unit;<br>3. Select bigger capacity controller |
| E006 | Over-current when constant speed running (OC3) | Sudden change of load;<br>Low input voltage;<br>The capacity of controller is small | 1. Check the load;<br>2. Check the power supply;<br>3. Select bigger capacity controller |
| E007 | Over-voltage when acceleration (OV1) | High input voltage;<br>Regenerative energy from the motor is too large | 1. Check the power supply;<br>2. Avoid to restart the motor until it stop running completely |
| E008 | Over-voltage when deceleration (OV2) | High input voltage;<br>Deceleration time is too short;<br>Load is too heavy | 1. Increase Dec time;<br>2. Check the power supply;<br>3. Increase braking unit |
| E009 | Over-voltage when constant speed running (OV3) | High input voltage;<br>Load is too heavy | 1. Install input reactor;<br>2. Increase braking unit |
| E010 | DC bus under-voltage (UV) | Low input voltage | Check the grid's input power supply |
| E011 | Motor overload (OL1) | Low input voltage;<br>Improper overload protection threshold of motor;<br>Sudden change of load;<br>The capacity of motor is too small | 1. Check the power supply;<br>2. Set the rated current of motor properly;<br>3. Check the load, adjust the value of torque boost;<br>4. Select proper capacity motor |
| E012 | Controller overload (OL2) | Acc time is too short;<br>Restart the motor when it is decelerating;<br>Low input voltage;<br>Load is too heavy | 1. Increase Acc time;<br>2. Avoid to restart the motor until it stop running completely;<br>3. Check the power supply;<br>4. Select bigger capacity controller |
| E014 | Output phase failure (SPO) | Open-phase occurred at output side of main circuit | Check the wiring, installation and motor |
| E015 | Rectify overheat (OH1) | Sudden over-current;<br>Input/output side has short circuit;<br>Cooling fans of controller stopped or damaged;<br>Obstruction of ventilation channel;<br>Ambient temperature is | 1. Refer to measures of over-current<br>2. Check the wiring<br>3. Replace cooling fans;<br>4. Clear the ventilation channel;<br>5. Install cooling unit;<br>6. Decrease carrier frequency; |

| Fault Code | Fault Type | Reason | Solution |
|---|---|---|---|
| E016 | IGBT overheat (OH2) | too high;<br>Carrier frequency is too high;<br>Near heat source;<br>Wires or connectors of control board are loose;<br>Auxiliary power supply unit is damaged or low driving voltage for IGBT;<br>Power module bridge is damaged;<br>Control board is abnormal | 7. Remove the heat source;<br>8. Check the wires and connectors;<br>9. Ask supplier for support; |
| E019 | Current detection fault (ITE) | Wires or connectors of control board are loose;<br>Auxiliary power supply unit is damaged;<br>Current detector is damaged or amplifying circuit is abnormal | 1. Check the wiring and connectors<br>2. Ask supplier for support |

| ! WARNING |
|---|
| **It must be noted that controller have no the protection function of no water, So you must make sure that there is enough water before starting the controller, or else the pump would be burn out.** |

# 2 YEAR WARRANTY

White International Pty Ltd
Limited Product Warranties
TERMS & CONDITIONS

This warranty is given in addition to the consumer guarantees found within the Australian Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 NZ for goods purchased in New Zealand:

1) White International Pty Ltd / White International NZ Ltd (White International) warrant that all products distributed are free from defects in workmanship and materials, for their provided warranty period as indicated on the top or opposite side of this document. Subject to the conditions of the warranty, White International will repair any defective products free of charge at the premises of our authorised service agents throughout Australia and New Zealand if a defect in the product appears during the warranty period. If you believe that you have purchased a defective product and wish to make a claim under this warranty, contact us on our Sales Hotline on 1300 783 601, or send your claim to our postal address or fax line below and we will advise you as to how next to proceed. You will be required to supply a copy of your proof of purchase to make a claim under this warranty.
2) This warranty excludes transportation costs to and from White International or its appointed service agents and excludes defects due to non-compliance with installation instructions, neglect or misuse, inadequate protection against the elements, low voltage or use or operation for purposes other than those for which they were designed. For further information regarding the suitability of your intended application contact us on our Sales Hotline on 1300 783 601. If you make an invalid claim under this warranty, the original product will be sent back to you unrepaired.
3) This warranty refers only to products sold after the 1st January 2012, and is not transferable to another product type and only applies to the original owner, purchaser or end user, and is in addition to the consumer guarantees found within the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand.

WHITE INTERNATIONAL PTY LTD
ABN 48 000119380
52-60 Ashford Ave, MILPERRA NSW 2214
PO BOX 304, MILPERRA LPO NSW 2214
Ph: 02 9783 6000 Fax: 02 9783 6001
Customer Service Hotline: 1300 783 601
Customer Service Faxline: 02 9783 6003
EMAIL: Sales Enquiries: info@whiteint.com.au

WHITE INTERNATIONAL NZ LTD
138 Hugo Johnston Dr PENROSE, AUCKLAND, NZ
PO BOX 12704, PENROSE, AUCKLAND
Ph: 09 579 977 Fax: 09 579 7775
Customer Service Hotline: 0800 509 506
Customer Service Faxline: 0800 804 344
EMAIL: General Info Enquiries: sales@whiteint.co.nz

## 2 YEAR WARRANTY cont.

4) Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
5) To the fullest extent permitted by law, White International excludes its liability for all other conditions or warranties which would or might otherwise be implied at law. To the fullest extent permitted by law, White International's liability under this warranty and any other conditions, guarantees or warranties at law that cannot be excluded, including those in the Competition and Consumer Act 2010 (Cth), is expressly limited to:
   (a) in the case of products, the replacement of the product or the supply of equivalent product, the payment of the cost of replacing the product or of acquiring an equivalent product or the repair of the product or payment of the cost of having the product repaired, is at the discretion of White International or a 3rd party tribunal elected under the Competition and Consumer Act 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand; and
6) To the fullest extent permitted by law, this warranty supersedes all other warranties attached to the product or its packaging.
7) In the case of services, supplying the services again or the payment of the cost of having the services supplied again, is at the discretion of White International or a 3rd party tribunal elected under the Competition and Consumer At 2010 (Cth) for goods purchased in Australia and the Consumer Guarantees Act 1993 (NZ) for goods purchased in New Zealand.
8) Our warranty commences from the date of purchase of the above mentioned pumps. Proof of purchase is required before consideration under warranty is given. Record your date of purchase in the space below and retain this copy for your records.

Date of Purchase .....

Model Purchased .....

WHITE INTERNATIONAL PTY LTD
ABN 48 000119380
52-60 Ashford Ave, MILPERRA NSW 2214
PO BOX 304, MILPERRA LPO NSW 2214
Ph: 02 9783 6000 Fax: 02 9783 6001
Customer Service Hotline: 1300 783 601
Customer Service Faxline: 02 9783 6003
EMAIL: Sales Enquiries: info@whiteint.com.au

WHITE INTERNATIONAL NZ LTD
138 Hugo Johnston Dr PENROSE, AUCKLAND, NZ
PO BOX 12704, PENROSE, AUCKLAND
Ph: 09 579 977 Fax: 09 579 7775
Customer Service Hotline: 0800 509 506
Customer Service Faxline: 0800 804 344
EMAIL: General Info Enquiries: sales@whiteint.co.nz