

# Operation Instruction v1.2.0

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## Attention

- ◇ Attention: In order to prevent damages, do not place this clock on uneven place.
- ◇ Warning: The clock has an internal high voltage circuit, do not touch the circuit board and components if the clock is working.
- ◇ Warning: Exposing outdoor prohibited, using in moist or raining place prohibited.
- ◇ Warning: Do not let the children touch the clock without adult.

## Functional features

1. Eight digits IV-18 (ИВ-18) VFD tubes display. (1980-1090 made in USSR).
2. Display hour, minute and second (12 or 24 hours format optional).
3. Display year, month and day and Chinese lunar date (YY-MM-DD or MM-DD-YY.DD-MM-YY.YY-DD-MM format optional).
4. Leader zero ON/OFF function.
5. GPS adjust, automatic adjust date and time in real time. GPS status display (GPS is offered as an option).
6. GMT time zone functions, the clock will calculate the local time base on satellite.
7. Temperature display(°C or °F temperature unit optional).
8. Two alarm clock(set on or off different alarm respectively).
9. Auto date and temperature circulating display. Also can set interval for circulation.
10. Timer function which can supply longest 99 hours 59 minutes and 59 seconds.
11. Power on/off timer, also can set the on/off time respectively. You can also check time and date easily after auto power off.
12. 8 levels brightness adjustable, or auto brightness in different environment.
13. Button sound on/off.
14. Auto switch upright and upside-down mode, this function can display the right side based on the position that you put the clock in.
15. IR remote controller operation supplied.
16. With extremely accurate RTC module, accuracy <1 minute in a year.
17. Built-in backup lithium battery, keep time more than 3 years without power supply.

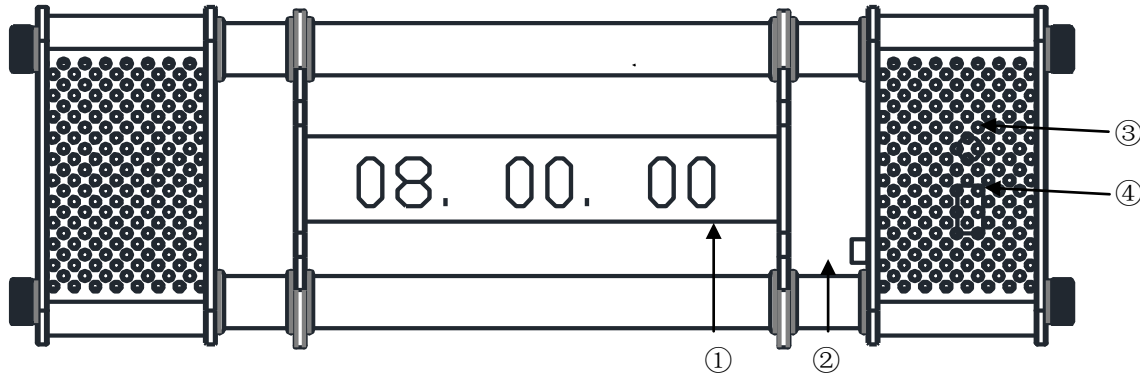
## Technical specifications

|                 |  |
|-----------------|--|
| Input voltage   | DC5V   |
| Working current | Max 220mA  |
| Tube type       | IV-18 ( ИВ-18 1984-1992 made in USSR )               |
| Size            | 200mm x 52mm x 64mm, tube length 115mm diameter 18mm |
| Working temp    | 0°C-60°C   |
| Weight          | 350g   |
| Shell material  | Aluminum alloy                                       |

## Package content

| Name                 | Quantity | Name                | Quantity |
|----------------------|----------|---------------------|----------|
| VFD tube clock       | 1        | Mini USB power line | 1        |
| IR remote controller | 1        | User manual         | 1        |

## Appearance layout



| Num | Name                | Num | Name                  |
|-----|---------------------|-----|-----------------------|
| 1   | IV-18 VFD tube      | 2   | IR receiver           |
| 3   | GPS Receiver Socket | 4   | Mini USB Power Socket |

## IR remote control introduction



- |          |             |               |
|----------|-------------|---------------|
| 1.POWER  | 2.BACKLIGHT | 3.SET         |
| 4.DATE   | 5.ALARM     | 6.TEMPERATURE |
| 7.LEFT   | 8.RIGHT     | 9.FUNCTION    |
| 10.OK    | 11.CANCEL   | 12.NUM 0      |
| 13.NUM 1 | 14.NUM 2    | 15.NUM 3      |
| 16.NUM 4 | 17.NUM 5    | 18.NUM 6      |
| 19.NUM 7 | 20.NUM 8    | 21.NUM 9      |

Considered the battery are not allowed transport during air transportation, if there' re no battery in controller, please put two AG10 cell (suit for double cell remote) or CR2025 cell (suit for single battery remote control ) in it.

## Warning tone introduction

| Beep     | Description | Meaning                               |
|----------|-------------|---------------------------------------|
| Be       | 1 shot beep | Normal operation                      |
| Be...    | 1 long beep | Confirm and saved                     |
| Bebebe   | 3 shot beep | Sync with satellite time successfully |
| Bebebebe | 4 shot beep | Set error/cancel/alarm                |

## Display mode switch

### 1. Display time Mode

After power on the clock, or press **POWER** button in shutdown state, it' s display time mode. Clock will display HOUR, MINUTE, SECOND (displayed as decimal point) on this mode.

### 2. Display calendar date Mode

Press **DATE** button enter display calendar date mode. Clock will display YEAR, MONTH, DAY. Clock will return to display time mode after three seconds.

### 3. Display lunar date Mode

Press **DATE** button twice or press **DATE** button once under calendar date mode will enter display lunar calendar date mode. Clock will display YEAR, MONTH, DAY of lunar date. Clock will return to display time mode after three seconds.

### 4. Display alarm Mode

Press **ALARM** button, enter show alarm 1 mode. Press **ALARM** button again, it will show alarm 2. Clock will return to display time mode after three seconds.

### 5. Display temperature Mode

Press **TEMPERATURE** button to enter display temperature mode. Clock will return to display time mode after three seconds.

### 6. Timer Mode

Press **ALARM** button three times to enter timer mode. Then press **CANCEL** will return to Display time Mode.

### 7. Menu Mode

Press **FUNCTION** button will enter menu mode, and then press **CANCEL** will exit.

## Power ON/OFF

In display time mode, press **POWER** button can on/off the power of clock, and it will be displayed as "**HELLO**" when power on, "**POWER OFF**" when power off.

Clock will cut off the filament supply and high voltage supply of the VFD tube in order to extend VFD tube life-span.

## Adjust brightness

In display time mode, press **LIGHT** button change brightness repeatedly, step 1-8. After step 8, clock will show "**Auto**" mean clock will adjust brightness automatic according environmental light. There was a high light at daytime and a low light at night which has no effect to your sleep.

## Temperature unit °C/°F

In the display temperature mode, press **FUNC** button can switch temperature unit repeatedly.

- **This option stored in the clock and can't lose when power off.**

## Set time

In display time mode, press **SET** button enter set time mode.

After enter set time mode, **SECOND** will blinking, means now is setting **SECOND**. Press **LEFT** or **RIGHT** button change setting position.

Press button **NUM0-NUM9** to change the number.

Press **OK** to save setting.

Press **CANCEL** abort setting and exit.

- **After setting success, clock will beep for a long time, and return display time mode.**
- **If setting is illogical, clock will beep four times with short time, and abort save setting then return display time mode.**
- **Please according to 24H format to set time.**

## Set date

In display date mode, press **SET** button enter set date mode.

After enter set date mode, **DAY** will blinking, means now is setting **DAY**. Press **LEFT** or **RIGHT** button change setting position.

Press button **NUM0-NUM9** to change the number.

Press **OK** to save setting.

Press **CANCEL** abort setting and exit.

- **After setting success, clock will beep for a long time, and return display time mode.**
- **If setting is illogical, clock will beep four times with short time, and abort save setting then return display time mode.**
- **The moon date don't need set, clock will calculate automatic according Gregorian calendar.**
- **Two digit of YEAR means after 2000 year.**

## Set alarm

In display alarm 1/2 mode, press **SET** button enter set alarm mode.

After enter set alarm mode, **HOUR** will blinking, means now is setting **HOUR** of alarm. Press **LEFT** or **RIGHT** button change setting position.

Left two digits will display witch alarm is setting now, **A1** means now is setting alarm 1, **A2** means now is setting alarm2.

Press button **NUM0-NUM9** to change the number.

Press **OK** to save setting.

Press **CANCEL** abort setting and exit.

- **After setting success, clock will beep for a long time, and return display time mode.**
- **If setting is illogical, clock will beep four times with short time, and abort save setting then return display time mode.**
- **If want disable the alarm function, you should press FUNC button in alarm display mode, then clock display OFF, means this alarm was disabled.**
- **If now is alarming, press any button to stop alarm, or clock will stop alarm after 60sec.**

## Menu 1: Date format YY-MM-DD/YY-DD-MM/DD-MM-YY/MM-DD-YY

Press **FUNC** button to enter the Menu, use RIGHT/LEFT key to switch the menu number, menu 1 Date Format.

Press **OK** to enter settings screen, at this time will display the present date format. Press **RIGHT/LEFT** key to change the four formats. (YY-MM-DD/YY-DD-MM/DD-MM-YY/MM-DD-YY).

Press **OK** to save and exit the settings, press **CANCEL** to cancel the settings and back to the main screen.

- **This setting stored in the clock and can't lose when power off.**
- **The date format will only effective to date displaying. The setting should according to YY-MM-DD format.**

## Menu 2: Time format 12H/24H

Press **FUNC** button to enter the menu and use the **RIGHT/LEFT** key to change the menu number, then enter the menu 2 time format.

Press **OK** to enter settings screen, at this time will display the present time format. Press **RIGHT/LEFT** will change the format. (12H/24H).

Press **OK** to save the present format and exit the menu, press **CANCEL** to cancel the settings and back to the main screen.

- **This setting stored in the clock and can't lose when power off.**
- **The time format will only effective to time displaying. The setting should according to 24H format.**

## Menu 3: Set UTC

Press **FUNC** to enter the menu, use **RIGHT/LEFT** key to change the number, then enter in menu 3. Set UTC.

Press **OK** to enter the setting screen, at this time it will display the present UTC settings. Press **RIGHT/LEFT** key to change the format between GMT-12 and GMT+12.

Press **OK** to save the settings and exit the menu, when you power on or cut off the power it will remember what you set before.

- **This setting stored in the clock and can't lose when power off.**
- **After reset UTC, it will worked in the next time when GPS checking the time.**

## Menu 4: GPS status

Press the **FUNC** key to enter the menu, use **RIGHT/LEFT** key to change the number, and then enter menu 4 GPS status screen.

Press **OK** to enter the settings screen, at this time will display the present GPS status.

Displaying **NO GPS**: no connect with GPS receiver or the BAUD setting was wrong.

Displaying **SEARCH**: now connected to the GPS receiver, but GPS receiver didn't connect to satellite, and now it is searching for the satellite.

Displaying **ONLINE**: now connected to the GPS receiver and the satellite, and it is checking the time.

- **When the present time error reached 1 second to the satellite time, clock will check the time and update the time immediately.**
- **After refresh successfully, clock will have three short beep.**

## Menu 5: Set GPS BAUD RATE

Press **FUNC** key to enter menu, use **RIGHT/LEFT** key to change the number, and then enter menu 5 Set GPS baud rate.

Press **OK** to enter settings screen, at this time it will display the present GPS BAUD, use **RIGHT/LEFT** key to change the BAUD.(4800bps/9600bps/19200bps/38400bps)

Press **OK** to save the settings and exit the menu 5, press **CANCEL** to cancel it.

- **This setting stored in the clock and can't lose when power off.**
- **The set should according to your GPS receiver user manual, if the BAUD was mismatching the clock can't check the right time.**

## Menu 6: Set leader 0 mode

Press **FUNC** key to enter the menu, use **RIGHT/LEFT** key to change the number, and then enter in menu 6 Set leader 0 mode.

Press **OK** to enter the settings screen, at this time it will display the present settings. Press **RIGHT/LEFT** will switch it between ON/OFF.

Displaying **ON**: when the first number is 0, 0 will display, eg: 8 am for 08:00:00

Displaying **OFF**: when the first number is 0, it will not display, eg: 8 am for 8:00:00

Press **OK** to save the settings and exit the menu 6, or you can cancel it.

- **This setting stored in the clock and can't lose when power off.**
- **The display mode only effective for displaying time, when you set the time, the leader 0 will always display.**

## Menu 7: Set Buzzer mode

Press **FUNC** key to enter menu, use **RIGHT/LEFT** key to change the number, then enter the menu 7 Set buzzer mode.

Press **OK** to enter settings screen, at this time it will display the present buzzer settings. Use **RIGHT/LEFT** key to switch.

Displaying **ON**: operate to the clock, buzzer will have beep sound.

Displaying **OFF**: operate to the clock, buzzer will sound off.

Press **OK** to save the settings and exit the menu, also you can cancel it.

- **This setting stored in the clock and can't lose when power off.**
- **Even if the buzzer mode is OFF, the Alarm will always ringing.**

## Menu 8: Date interval of scrolling display

Press **FUNC** key to enter the menu, use **RIGHT/LEFT** key to change the number, and then enter in menu 8 date interval of scrolling display.

Press **OK** to enter the settings screen, at this time it will display the present date interval of scrolling display. Press digital number can set the time interval as 00-99 seconds.

Displaying 00 SEC, it means no alternate display for date.

Press **OK** to save the settings and exit the menu 8, and you also can cancel it.

- **This setting stored in the clock and can't lose when power off.**
- **If the time interval was beyond 0, the clock will displayed date for 3 seconds per N seconds.**

## Menu 9: Temp interval of scrolling display

Press **FUNC** key to enter the menu, use **RIGHT/LEFT** key to change the numbers, and then enter in menu 9 Temp interval of scrolling display.

Press **OK** to enter in settings screen, at this time it will display the temp interval settings. Press digital number can set the temp interval as 00-99 seconds.

Displaying 00 SEC, it means no alternate display for temp.

Press **OK** to save the settings and exit the menu 9, and you also can cancel it.

- **This setting stored in the clock and can't lose when power off.**



- **If the time interval was beyond 0, the clock will displayed temp for 3 seconds per N seconds.**

## Menu 10: Set auto power off Time

Press **FUNC** key to enter in menu, use **RIGHT/LEFT** key to change the number, and then enter in menu 10 set auto power off time.

Press **OK** to enter settings screen, at this time it will display the time of auto power off, and press digital number to set the time of auto power off.

Press **OK** to save the settings and exit the menu, press **CANCEL** to cancel it.

- **This setting stored in the clock and can't lose when power off.**
- **After settings, clock will have a long beep sound and back to the menu mode.**
- **When you set it, every number can be edit, but it will give up the settings only when your set is not logical.**
- **When the time is reach off time, clock will display "Auto OFF" three seconds, then turn off automatically.**
- **When you want to see the time during the clock is in off time mode, please press any digital number button, clock will display the time three seconds.**
- **In off time mode, you can set the time same as the power on mode.**

## Menu 11: Set auto power on Time

Press **FUNC** key to enter in menu, use **RIGHT/LEFT** key to change the number, and then enter in menu 11 set auto power on time.

Press **OK** to enter settings screen, at this time it will display the time of auto power on, and press digital number to set the time of auto power on.

Press **OK** to save the settings and exit the menu, press **CANCEL** to cancel it.

- **This setting stored in the clock and can't lose when power off.**
- **After settings, clock will have a long beep sound and back to the menu mode.**
- **When you set it, every number can be edit, but it will give up the settings only when your set is not logical.**
- **When the time is reach on time, clock will display the time immediately**
- **When you want to close the auto power off function, you can set the time same as the auto power on time**

## Timer Function

Under Display time mode, press **ALARM** key 3 times can enter in timer function.

When you enter in timer function, clock will adjust countdown time in acquiescent condition for 1 hour. When the first character was 'o' in the left side, it was stopped. Then you can use the digital number to set the countdown time, it could be 00:00:01-99:59:59, that is 1 second to 99 hours 59 minutes and 59 seconds.

After settings successes, press **OK**, the clock will start the countdown function, at this time, the first character in the left side will scrolling the icons.

When the time is over, clock will beep for four short times repeatedly, at the same time the screen flashes "00:00:00" , then you can press **OK**.

- **When you set the countdown time, any number can be edit, but only when the settings is logical the clock will be behave correctly, on the contrary it will have four short beep.**
- **When the timer function working, the screen only display the countdown time, and you can't back to other display mode, unless you press OK to stop timer, then you can back to other display mode, or you can press CANCEL to back to the main screen.**

## Special function

In power off mode, press the following combination key will enter the special function.

**8-3-7-7-OK** check the present software version (present: v1.2.0)

**4-6-4-8-OK** restore the default settings but not the time and the date

**8-3-7-8-OK** test mode (you can press **RIGHT/LEFT** key to check the displaying of the VFD tube is alright, and then press **CANCEL** to cancel it.)

## Announcement

1. VFD tube is the product from 1980-1990, please don't compare its quality to modern technology.
2. It is the normal situation when clock working it may produces heat.
3. Please check the Mini USB power line and the power supply when clock doesn't work.

- **Any questions please contact me, it's my pleasure to answer your question**

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