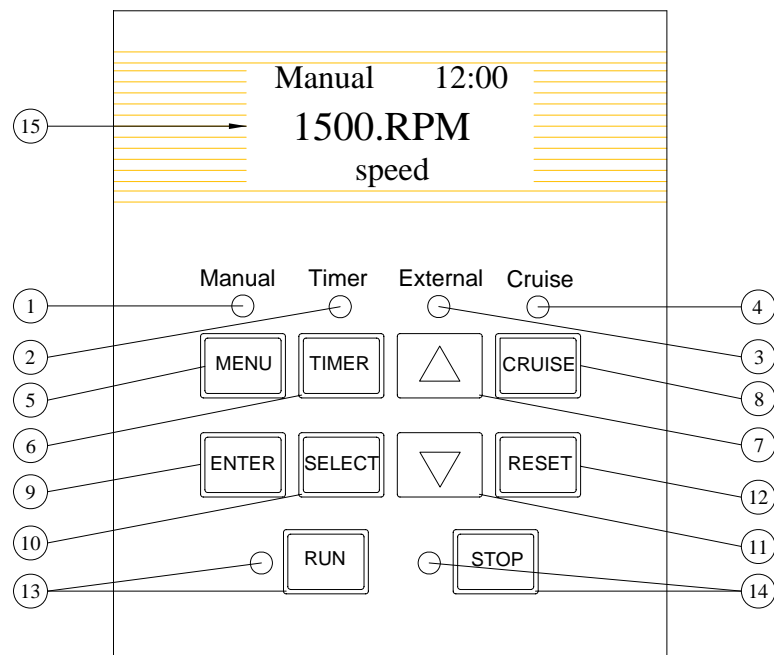


Operator Control Panel

This section describes the operator control panel controls and LEDs.

Notes: the labels of the buttons and LEDs on the old controller are different from the drawing below, but their function is the same as the new one.

Red Devil Operator control Panel



Controls and LEDs

- ① **Manual LED:** The LED is on when Manual mode is active.
- ② **Timer LED:** The LED is on when Timer function is active.
- ③ **External LED:** The LED is on when rotor speed command comes from external signal like 0~5V voltage input, or Host controller.
- ④ **Cruise LED:** The LED is on when Cruise function is active.
- ⑤ **Menu button:** Access the menu items and modified parameters when pump is stopped.
- ⑥ **Timer button:** Starts or stops Timer mode set by “Timer Mode” menu item.
- ⑦ **Up arrow button:** Move one level up in the menu tree or increase a digit when editing a setting.
- ⑧ **Cruise button:** Starts or stops Cruise mode.
- ⑨ **Enter button:** Save current menu item settings. Also, press this button to acknowledge alarms and warning alerts.
- ⑩ **Select button:** Display available menu items or enters edit mode for changing a value on line two of the display.

- ⑪ **Down arrow button:** Move one level down in the menu tree or increase a digit when editing a setting.
- ⑫ **Reset button:** Reset controller for initializing program when in Alert.
- ⑬ **Run button/LED:** Start the pump. When the LED is lit it indicates the pump is running.
- ⑭ **Stop button/LED:** Stop the pump. When the LED is lit it indicates the pump is stopped.
- ⑮ **Control Panel LCD Display**

LCD Display Lines:

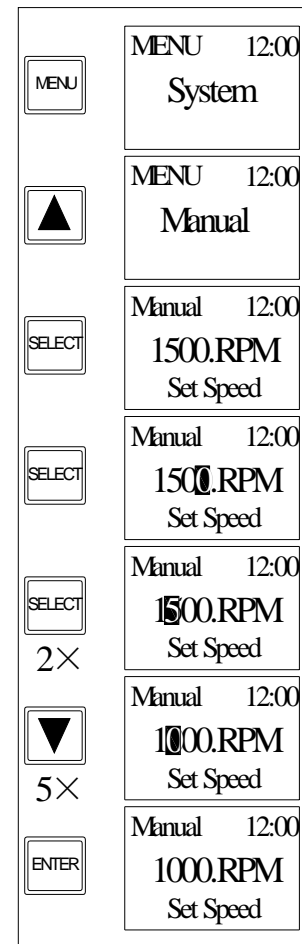
- Line 1 – Mode and time
- Line 2 – Data or variable
- Line 3 – name of data or variable on line 2

Navigating the Menu Structure

Before navigating the control panel menu structure, first familiarize yourself with the menu buttons. To change a parameter setting, use the **Select** button to select the digit, then the **Up** and **Down** arrow buttons to edit the digit. The following example shows how to set the RPM.

To set the “Set Speed” settings:

1. Ensure that the pump is stopped, the **Stop** led is lit.
If the pump is running, press the **Stop** button.
2. Press the **Menu** button. “System” is displayed.
3. Press the **Up** arrow button. “Manual” is displayed.
4. Press the **Select** button to access Manual menu. Value of “Set Speed” is displayed.
5. **Set the RPM:** Press the **Select** button to select which digit to modify. Press the **Up** and **Down** arrows to change the selected digit.
6. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.



Operating Red Devil Controller

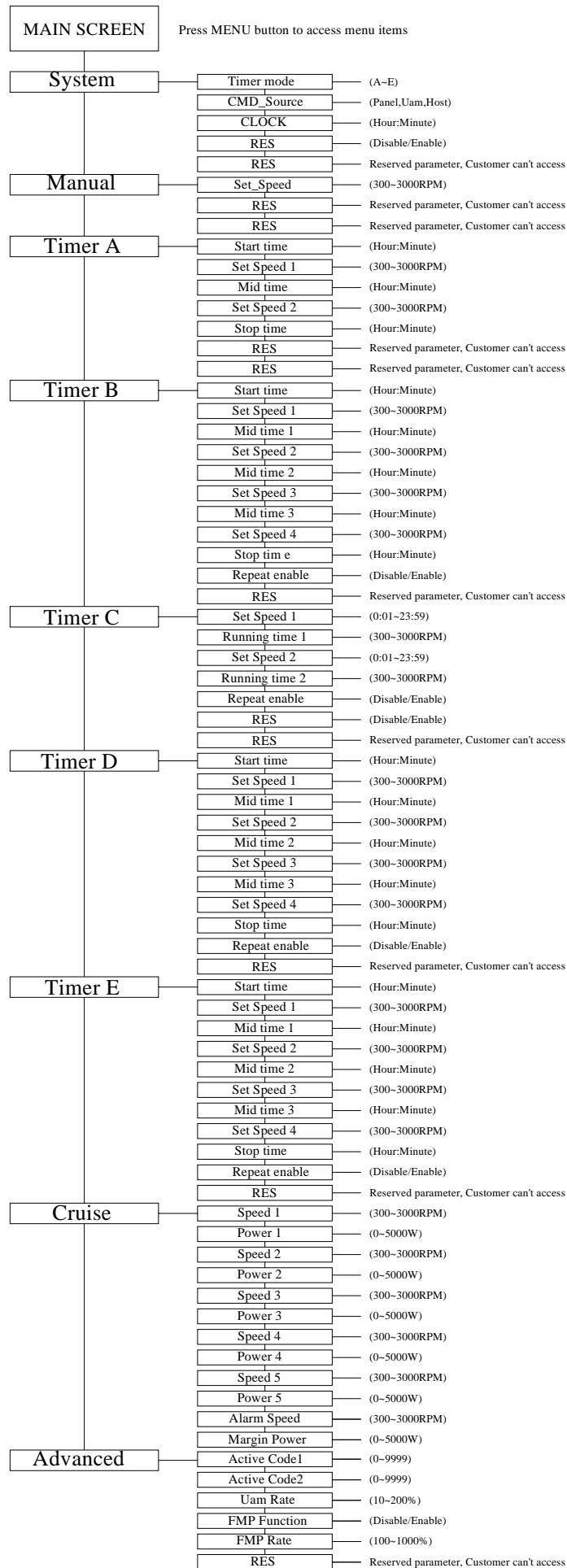
This section describes how to use the Red Devil pump control panel.

Red Devil Control Panel Menu

Use the control panel menu to setup and configure Red Devil controller.

To modify the menu features, ensure the pump is stopped. Press **Menu** button. Use the **Up** or **Down** arrow button to scroll through the menu items. Use the **Select** button to select a menu item. Press the **Enter** button to save a setting. Press the **Menu** button to move up a level from a selected menu item.

Main Structure



System Menu

Use the “System” menu to set the timer mode, the command source and the system clock. The timer mode decides which timer mode the controller takes when the **Timer** button is pressed. The command source indicates where the pump rotation speed command comes from. The system clock controls all scheduled start and stop times, functions and programmed cycles. The system clock can store the correct time for up to 96 hours after power is shut off. After 96 hours the clock must be reset to the correct time.

To access the System menu:

1. Ensure that the power is on and the pump is stopped.
2. Press the **Menu** button.
3. Press the **Up** and **Down** arrow buttons to scroll through the menu items. Press the select button to access the “System” menu.
4. **To enter the Timer mode:** Press the **Up** and **Down** arrow buttons button to select “Timer mode” setting. To set the Timer mode, see step 8.

The “Timer mode” value from A to E decides which timer mode the controller takes when the **Timer** button is pressed.

5. **To set the command source:** Use the **Up** and **Down** arrow buttons to select “CMD_source”. To set the command source, see step 8.

The “CMD_source” value “Panel” means the pump rotation speed is set by controller panel, value “Uam” means the pump rotation speed comes from 0~5V voltage input, and value “Host” means the pump rotation is set by host controller.

6. **To enter the clock:** Use the **Up** and **Down** arrow buttons to select “CLOCK”.
7. Press the Select button to change the current setting.
8. To enter a new setting, press the **select** button to select which digit to modify, then use the **Up** and **Down** arrow buttons to change the selected digit.
9. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.

MENU	12:00
System	

System	12:00
A	
Timer Mode	

System	12:00
Panel	
CMD Source	

System	12:00
12:00	
Clock	

Manual Mode

The manual mode is the default operation mode for the pump controller. Users may change the pump rotation speed by manual.

When the pump is operating in manual mode, the **Manual LED** will be lit and the control panel **LCD** will display “Manual” on first line. The pump will start with the reference speed set by “set speed” item in Manual Menu. In running state,

pressing **Up** and **Down** arrow buttons can change the pump rotation speed from 300 to 3000 RPM (Round per Minute)

Manual Menu

To access the Manual Menu:

1. Ensure that the power is on and the pump is stopped.
2. Press the **Menu** button.
3. Press the **Up** and **Down** buttons to scroll through the menu items. Press the **Select** button to access the “Manual” menu.
4. Press the **Up** and **Down** buttons to scroll through the Manual menu items. Press the **Select** button to change the “set speed” setting.
5. To enter a new setting, press the **Select** button to select which digit to modify, then use the **Up** and **Down** arrow buttons to change the selected digit.
6. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.

MENU	12:00
Manual	

Manual	12:00
1500.RPM	
Set Speed	

Timer Modes

Timer Modes can be used with water features such as spa, cleaner, waterfalls, etc.

You can schedule start and stop times for each timer. All timers are operated using speed control. The Timer Modes include: Timer A ~ E mode.

Timer A Menu

To access the Timer A menu:

1. Ensure that the power is on and the pump is stopped.
2. Press the **Menu** button.
3. Press the **Up** and **Down** buttons to scroll through the menu items. Press the **Select** button to access the “Timer A” menu. The Timer A menu setting is displayed.
4. Press the **Up** and **Down** buttons to scroll through the Timer A menu items.
5. Press the **Select** button to select which digit to modify, then use the **Up** and **Down** arrow buttons to change the selected digit.
6. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.

MENU	12:00
Timer A	

Timer A	12:00
12:00	
Start Time	

Timer A	12:00
1500.RPM	
Set Speed 1	

Timer A	12:00
12:00	
Mid Time	

Timer A	12:00
1500.RPM	
Set Speed 2	

Timer A	12:00
12:00	
Stop Time	

Timer A	12:00
Disable	
Repeat enable	

Timer A settings

Name	Value	Description
Start time	00:00 – 23:59 (Default 12:00)	Start time for Timer A
Set speed 1	300 – 3000 RPM (Default 1500.RPM)	Pump running at this speed from start time to mid time 1
Mid time	00:00 – 23:59 (Default 12:00)	Pump changes running speed at the setting time
Set speed 2	0 – 3000 RPM (Default 1500.RPM)	Pump running at this speed from mid time to stop time, but if the setting speed is smaller than 300, the pump will be stopped in this schedule.
Stop time	00:00 – 23:59 (Default 12:00)	Pump stops at the setting time in next day. If repeat by day is disabled (set by “Repeat enable”), the controller will exit Timer A mode back to Manual mode.
Repeat enable	Disable/Enable (Default Disable)	The setting decides whether timer A mode repeat by day or not.

Notes: the Mid time must be later than the start time, or the LCD will show “Alert” in line 2, and “set time error” in line 3.

Timer B Menu

To access the Timer B menu:

1. Ensure that the power is on and the pump is stopped.
2. Press the **Menu** button.
3. Press the **Up** and **Down** buttons to scroll through the menu items. Press the **Select** button to access the “Timer B” menu. The Timer B menu setting is displayed.
4. Press the **Up** and **Down** buttons to scroll through the Timer B menu items.
5. Press the **Select** button to select which digit to modify, then use the **Up** and **Down** arrow buttons to change the selected digit.
6. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.

MENU 12:00 Timer B	Timer B 12:00 12:00 Start Time	Timer B 12:00 1500.RPM Set Speed 1	Timer B 12:00 13:00 Mid Time 1	Timer B 12:00 300.RPM Set Speed 2	Timer B 12:00 14:00 Mid Time 2
Timer B 12:00 1500.RPM Set Speed 3	Timer B 12:00 15:00 Mid Time 3	Timer B 12:00 1000.RPM Set Speed 4	Timer B 12:00 16:00 Stop Time	Timer B 12:00 Disable Repeat enable	

Timer B settings

Name	Value	Description
Start time	00:00 – 23:59 (Default 12:00)	Start time for Timer B
Set speed 1	300 – 3000 RPM (Default 1500.RPM)	Pump running at this speed from start time to mid time 1
Mid time 1	00:00 – 23:59 (Default 13:00)	Pump changes running speed at the setting time
Set speed 2	0 – 3000 RPM (Default 1500.RPM)	Pump running at this speed from mid time 1 to mid time 2, but if the setting speed is smaller than 300, the pump will be stopped in this schedule.
Mid time 2	00:00 – 23:59 (Default 14:00)	Pump changes running speed at the setting time
Set speed 3	0 – 3000 RPM (Default 1500.RPM)	Pump running at this speed from mid time 2 to mid time 3, but if the setting speed is smaller than 300, the pump will be stopped in this schedule.
Mid time 3	00:00 – 23:59 (Default 15:00)	Pump changes running speed at the setting time
Set speed 4	0 – 3000 RPM (Default 1500.RPM)	Pump running at this speed from mid time 3 to stop time, but if the setting speed is smaller than 300, the pump will be stopped in this schedule.
Stop time	00:00 – 23:59 (Default 16:00)	Pump stops at the setting time. If repeat by day is disabled (set by “Repeat enable”), the controller will exit Timer B mode back to Manual mode.
Repeat enable	Disable/Enable (Default Disable)	The setting decides whether timer B mode repeat by day or not.

Notes: The time settings should be meet: Start time < Mid time 1 < Mid time 2 < Mid time 3 < Stop time, or the LCD will show “Alert” in line 2, and “set time error” in line 3.

Timer C Menu

To access the Timer C menu:

1. Ensure that the power is on and the pump is stopped.
2. Press the **Menu** button.
3. Press the **Up** and **Down** buttons to scroll through the menu items. Press the **Select** button to access the “Timer C” menu. The Timer C menu setting is displayed.
4. Press the **Up** and **Down** buttons to scroll through the Timer C menu items.
5. Press the **Select** button to select which digit to modify, then use the **Up** and **Down** arrow buttons to change the selected digit.
6. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.

MENU 12:00 Timer C	Timer C 12:00 10:00 Running Time 1	Timer C 12:00 3000.RPM Set Speed 1	Timer C 12:00 00:30 Running Time 2	Timer C 12:00 300.RPM Set Speed 2	Timer C 12:00 Disable Repeat enable
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Timer C settings

Name	Value	Description
Set speed 1	300 – 3000 RPM (Default 3000.RPM)	Press the Run button, Pump starts running at the speed set by “Set Speed 1”
Running Time 1	00:01 – 23:59 (Default 10:00)	Pump keeps running at the speed set by “Set Speed 1”, until the time set by “Running Time 1” is over.
Set speed 2	0 – 3000 RPM (Default 300.RPM)	Pump will change the speed to “Set Speed 2” when the timer set by “Running time 1” is over. If the setting speed is smaller than 300.RPM, the pump will be stopped.
Running Time 2	00:01 – 23:59 (Default 00:30)	Pump keeps running at the speed set by “Set Speed 2”, until the time set by “Running Time 2” is over.
Repeat enable	Disable/Enable (Default Disable)	The setting decides whether timer C mode repeats by cycles or not.

Timer D Menu

Timer D Menu is the same as Timer B Menu.

Timer E Menu

Timer E Menu is the same as Timer B Menu.

Cruise Mode

In the cruise mode, the controller will adjust the pump rotation speed to keep a stable flow. Customer will set 2 or more up to 5 cruise points in manual mode before using the cruise control mode.

Cruise Menu

To access the Cruise menu:

1. Ensure that the power is on and the pump is stopped.
2. Press the **Menu** button.
3. Press the **Up** and **Down** buttons to scroll through the menu items. Press the **Select** button to access the “Cruise” menu. The Cruise setting is displayed.
4. Press the **Up** and **Down** buttons to scroll through the Cruise menu items.
5. Press the **Select** button to select which digit to modify, then use the **Up** and **Down** arrow buttons to change the selected digit.
6. When you are done, press the **Enter** button to save the changes. To cancel any changes, press the **Menu** button to exit edit mode without saving.

Cruise settings

Name	Value	Description
Speed 1	300 – 3000 RPM (Default 1500.RPM)	Speed of set point 1 when presetting the Cruise function.
Power 1	0 – 3000W	Power of set point 1 when presetting the Cruise function.
Speed 2	300 – 3000 RPM (Default 1800.RPM)	Speed of set point 2 when presetting the Cruise function.
Power 2	0 – 3000W	Power of set point 2 when presetting the Cruise function.
Speed 3	300 – 3000 RPM (Default 2100.RPM)	Speed of set point 3 when presetting the Cruise function.
Power 3	0 – 3000W	Power of set point 3 when presetting the Cruise function.
Speed 4	300 – 3000 RPM (Default 2400.RPM)	Speed of set point 4 when presetting the Cruise function.
Power 4	0 – 3000W	Power of set point 4 when presetting the Cruise function.
Speed 5	300 – 3000 RPM (Default 2700.RPM)	Speed of set point 5 when presetting the Cruise function.
Power 5	0 – 3000W	Power of set point 5 when presetting the Cruise function.
Alarm Speed	300 – 3000 RPM	Alarm will be triggered when the rotation speed of the pump gets to the speed set by this parameter.
Margin Power	0 – 5000W	It should be set by engineer and will not be show to customers.

Notes: The Cruise settings should be meet: Speed 1 < Speed 2 < Speed 3 < Speed 4 < Speed 5, or the LCD will show “Alert” in line 2, and “set cruise error” in line 3.

To set the Cruise points:

1. Ensure that the power is on and the controller is in manual mode.
2. Press the **RUN** button to start the pump.
3. Press the **Up** or **Down** buttons to modify the rotation speed of the pump, until the flow meet your need.
4. Press the **Cruise** button, the LCD will show “Point 1” with blinking. Press the **Enter** button to save the data on this state.
5. Reduce the area of the outlet by degrees, the flow will decrease.
6. Press the **Up** or **Down** buttons to modify the rotation speed of the pump, until it gets the flow as the same at “point 1”.
7. Press the **Cruise** button, the LCD will show “Point 2” with blinking. Press the **Enter** button to save the data on this state.
8. Repeat **step** 5, 6, and 7, controller will save the states of Point 3, 4, and 5.
The setting of Cruise points is done.

Notes: you should set two or more cruise points. The more points you set, the more accuracy you get.