



Automatic Changeover System

Installation, Operation & Maintenance



The manufacturing took place in Egypt under the manufacturing contract between us and the Water Technology Company in Egypt, through which it is requested

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1- Safety instructions

1.1- Power

AC Power

Ensure that nothing rests on your equipment's cables and that the cables are not located where they can be stepped on or tripped over.

Do not use AC powered equipment during an electrical storm. Battery powered devices may be used if all cables have been disconnected.

Ultracell Battery

The Valve-regulated lead-acid batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, with could cause casualty loss.

Contact with internal components may cause irritation or burns to eyes and skin. Abuses include but not limited to the following cases: charged for long time, short circuited, put into fire, whacked with hard object, punctured with acute object, crushed, and broken.

2- About

Project aims to implement a changeover system using two valves and a pressure sensor for a gas company. The system will be based on embedded technology, providing precise control and monitoring. By seamlessly transitioning between two gas sources and ensuring optimal pressure levels, the changeover system enhances operational efficiency and safety for the company.

3- Features

3.1- Automatic Changeover

The system automatically switches between two gas sources.

Seamless transition between the primary and secondary gas sources based on predefined criteria.

3.2- Pressure Regulation

Automatic adjustments to valve positions based on pressure readings to prevent under pressure situations.

3.3-Monitoring and Visualization

Clear and intuitive user interface displaying valve positions, and system status.

4- Technical specs

Provision of technical support for system implementation, configuration, and troubleshooting.

4.1- Hardware Specifications

Embedded Controller:

Microcontroller with sufficient processing power and memory for control logic and data storage.

Input/output pins for valve control and sensor integration.

Power supply circuitry to provide appropriate voltage levels and ensure system stability.

Pressure Sensor:

Precision pressure sensor capable of measuring gas pressures within the desired range.

Compatibility with the embedded controller's communication interfaces for data exchange.

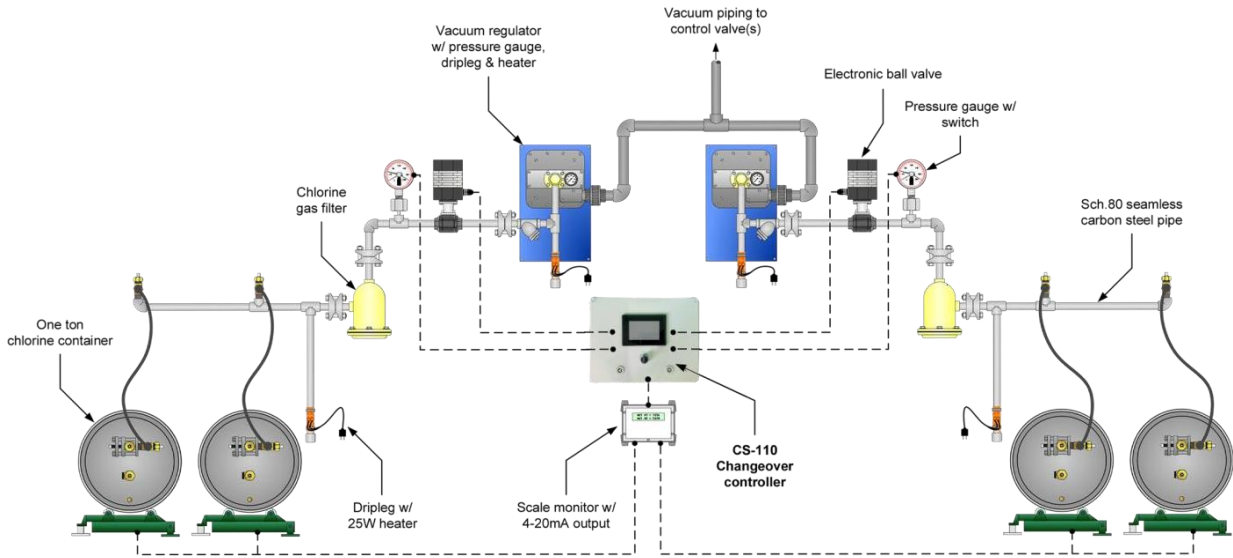
LED Indicators:

7 LED indicators for Output Relay, Battery charger and Sensors.

Alarm:

There is a buzzer triggered with critical faults and low pressure.

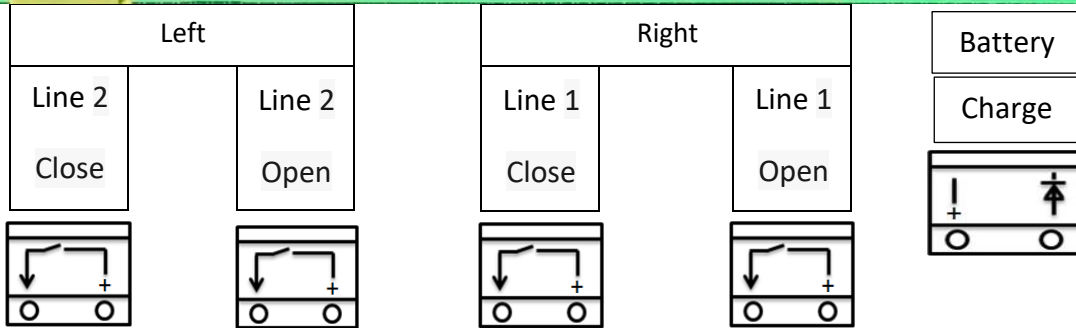
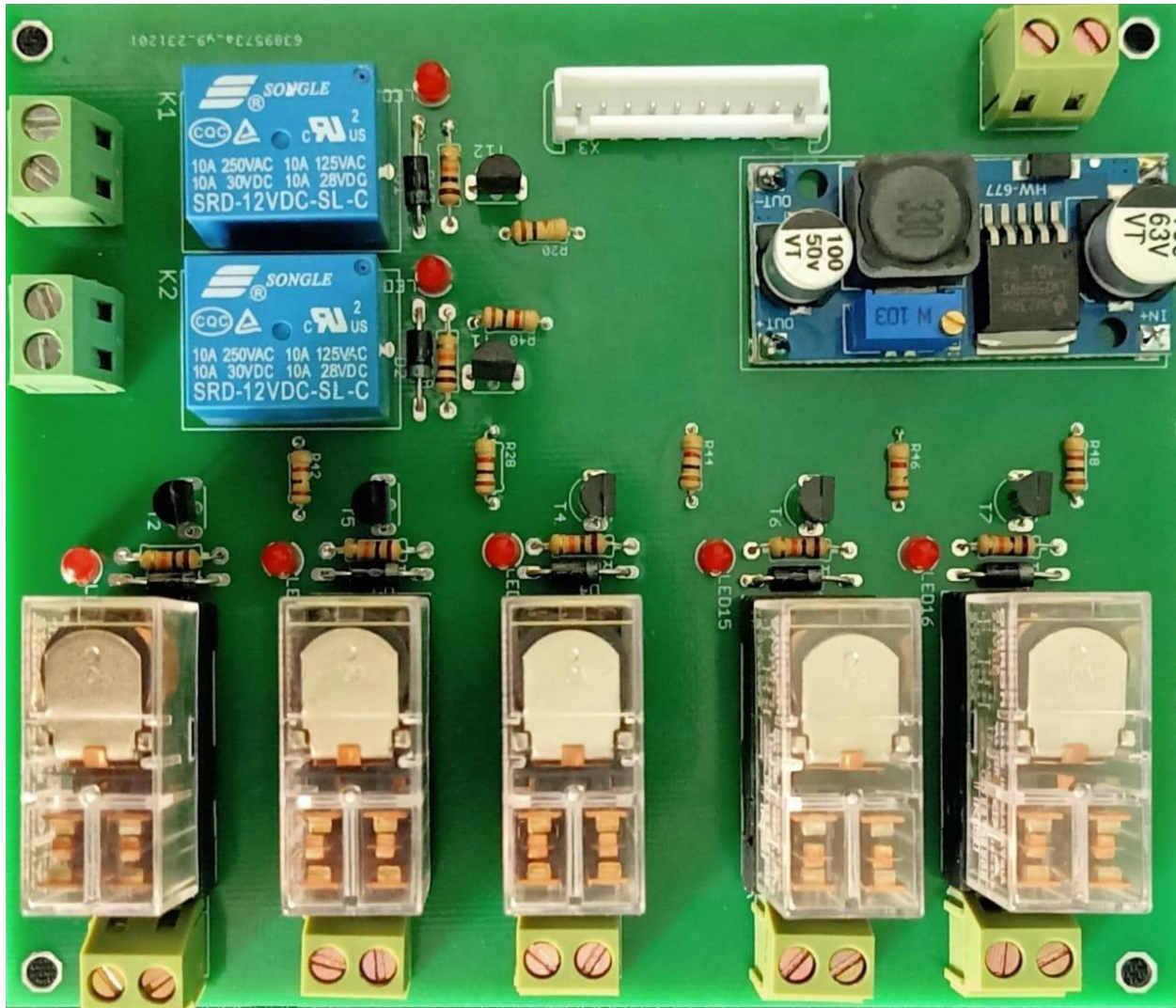
System Installation

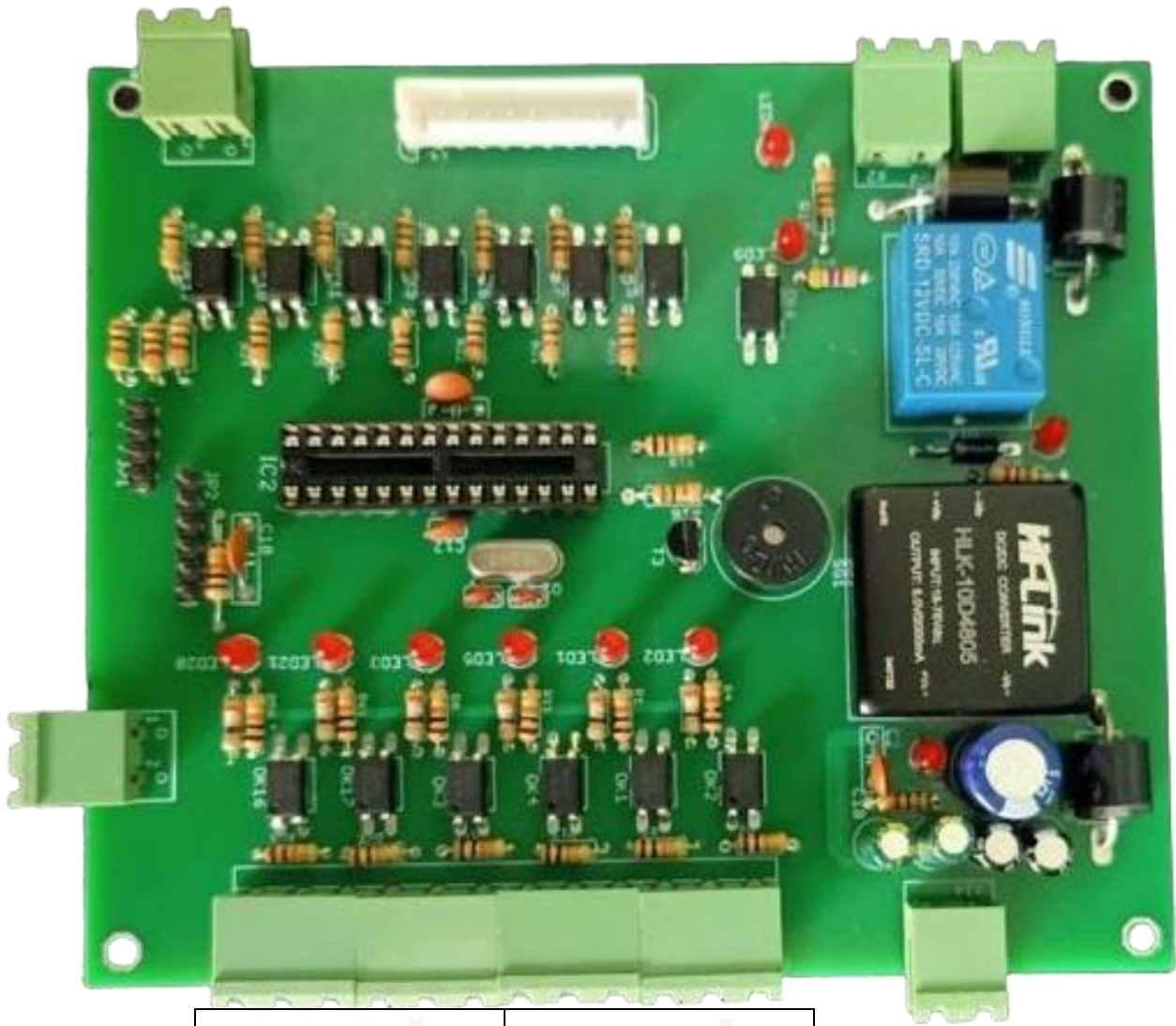


5- Dimension

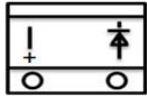


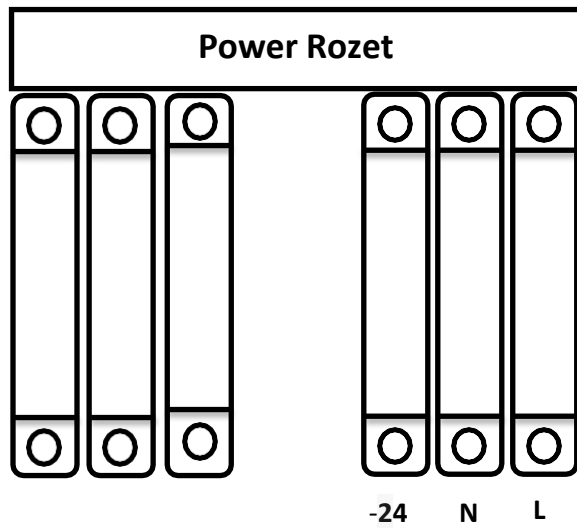
6- Wiring





Sensor Line 2			Sensor Line 1		
Close	Open	P.S 1	P.S 2	Close	Open





7- Operation

7.1- Power On

- Connect the changeover system to a suitable power source.
- Ensure that the power supply voltage matches the system's requirements.
- Turn on the Selector power switch of the system.

7. 2 User Interface

The user interface displays real-time valve positions, and system status.

Use the interface control touch to navigate and interact with the system.

7.3- Automatic Changeover

If the pressure falls below the lower threshold, indicating a low gas supply from the current source it will:

- Activate the changeover process.
- Close the valve of the current gas source.
- Open the valve of the alternate gas source.

7.4- Manual Override

- In case of any system issues or user intervention, the manual override functionality allows manual control over the valve positions.
- Use the interface controls to manually open or close the valves.
- Take caution while manually overriding the system to prevent any safety hazards.

7.5- Visual Indicators and Alarm

Observe the LED indicators to monitor the system status, valve positions, and any alarm conditions.

If an alarm is triggered due to critical faults, low pressure, or system malfunctions, the Buzzer will sound.

Acknowledge and address the alarm condition promptly to ensure system integrity and safety.

7.6- Emergency Shutdown

In case of critical faults or emergencies, initiate the emergency shutdown procedure with the main Selector.

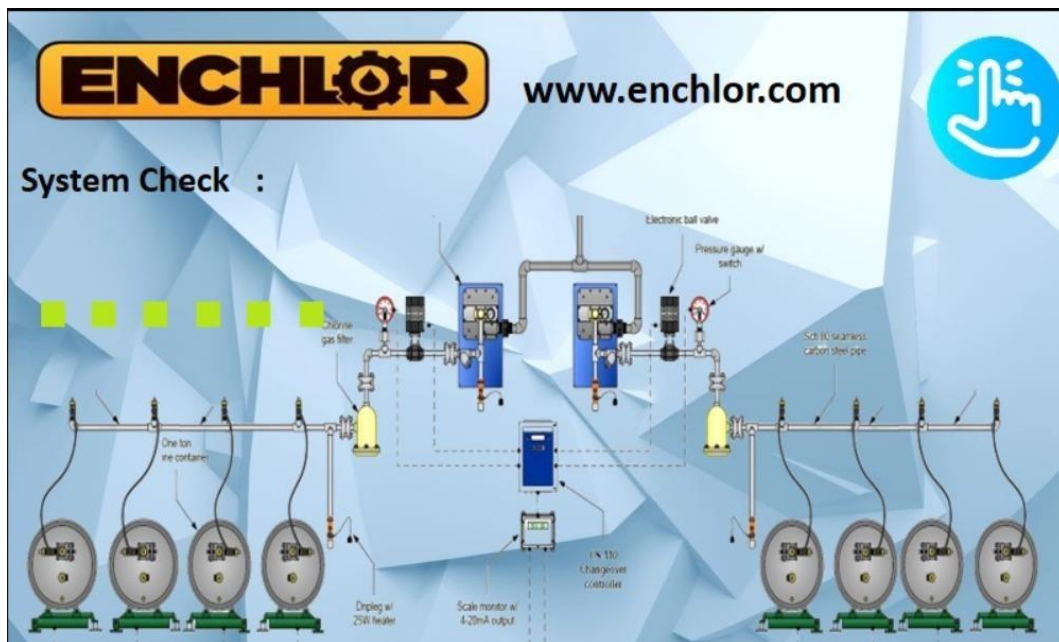
7.7- Maintenance and Troubleshooting:

Regularly inspect the system components, including valves, pressure sensor, and electrical connections, for any signs of wear, damage, or malfunction.

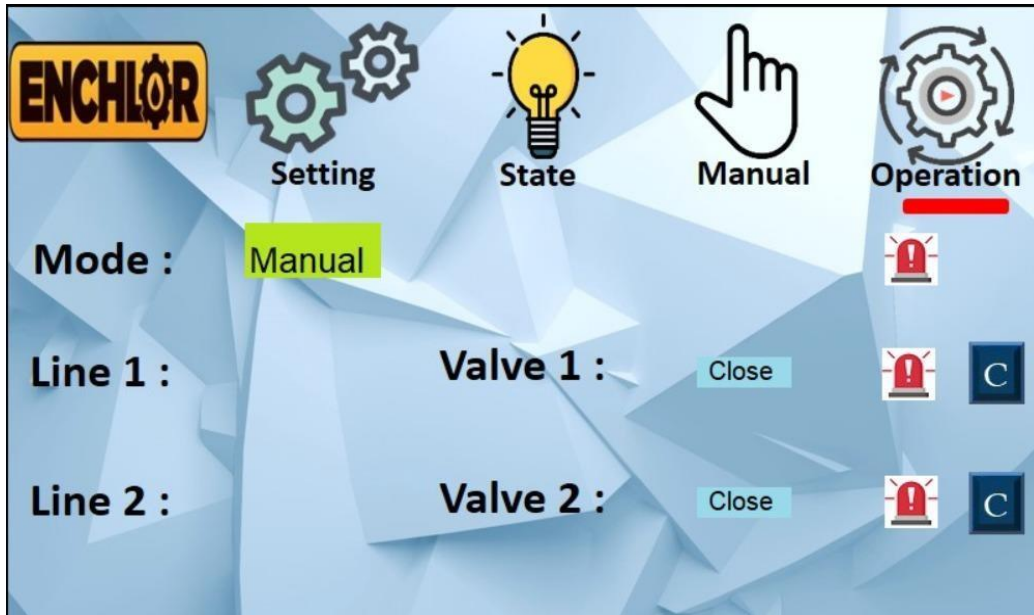
8- Setting

User Interface Display

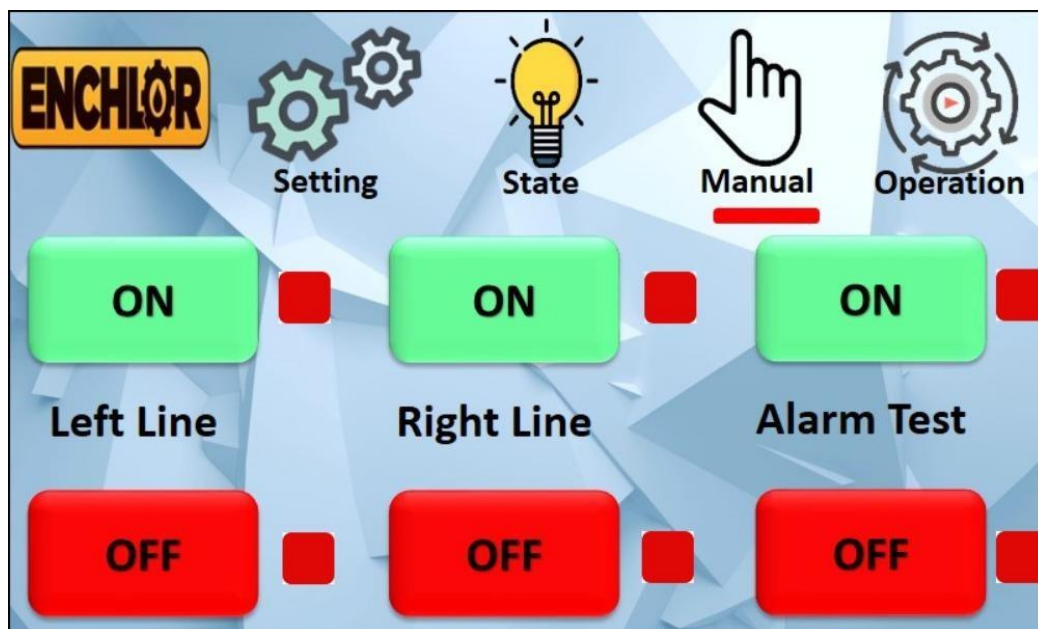
On the user interface screen "System Checks," the purpose is to perform a series of system checks before the changeover process begins. This screen provides System installation, indicating the progress of the checks through a numbers countdown from Ten to Zero.



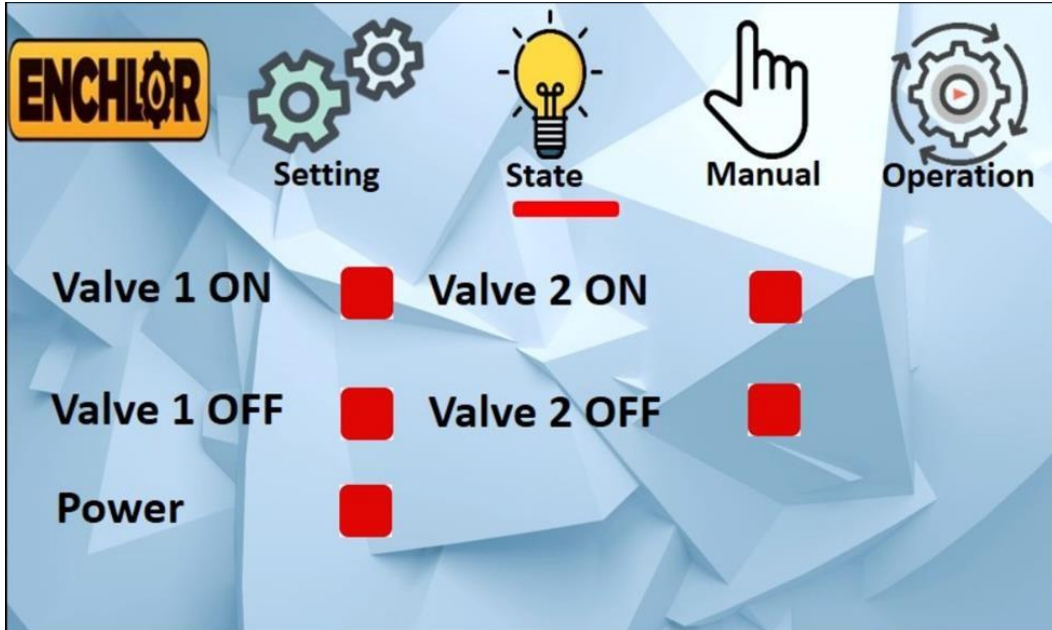
The Operation Page of the user interface provides the user with controls and information related to the operation of the changeover system. It typically includes options to select the operation mode (manual or automatic) and displays the current status (open or closed) of valve one and valve two.



The Manual Page of the user interface allows the user to have direct control over the valves and provides an option to test the alarm system. This screen typically includes controls to turn on and off the left line and right line valves, as well as a button to initiate an alarm test.



The State Page of the user interface provides information about the current state of valve one, valve two, and the power status. This screen typically displays the on/off status of the valves and indicates whether the power is on or off.



The Setting Page of the user interface allows the user to configure the wait time and the alarm on time parameters. This screen typically provides controls or input fields to adjust these settings according to the user's preferences.

