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PRIMESAVER LITE SPC SOFTWARE

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1. Introduction

The PrimeSaver Lite is a SPC software solution for gauging applications where multiple air gauges are used one by one in a pre-defined sequence for dimensional measurements. This software helps the operator to go through the sequence covering all the defined parameter measurement step by step and guides the operator to select next air gauge. The operator is guided using digital image of actual component where the measurement is to be carried out. The software is highly configurable for up to 24 air gauges and 24 parameters covered by multiple fixtures. The software supports up to 50 product models and has all the parameter settings required for dimensional gauging. All the IO interfaces, gauge port device interface are configurable in software.

In addition to basic measurement features, the software has very elaborate reporting with SPC. Offline and online SPC helps user keep track of production, rejection while using the system. All the reports can be directly exported to desired file format with number of filtering options. Instructions are also displayed at the bottom of each screen to guide the operator. These two features make the software very easy to use. User-friendly screens with color graphics or digital pictures display icons for simple menu selection.

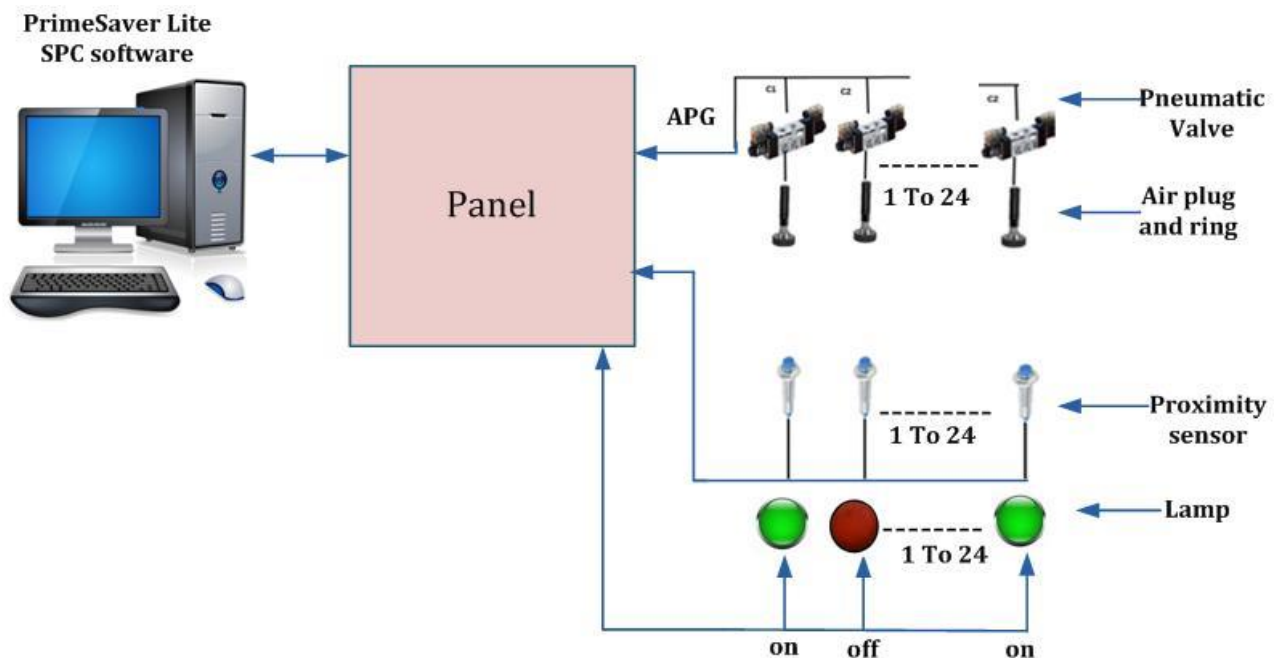


Figure 1

Air is turned on when any specific air plug is picked up from its resting position.

2. FEATURES

- **PrimeSaver Lite™** software are primarily used reduce wastage of air when not in use, contributing to cost savings and environmental sustainability.
- Supports up to 24 air-gauge channels.
- Up to 50 product models can be added in software. Specific product can be selected manually on main window.
- **PrimeSaver Lite™** ensures a friendly interface with clear layout, user-friendly messages, and visual indicators, making operation easy for all users.
- Dynamic arrows and indicator lamps guide operator to pick the correct gauge and take the measurement at correct bore.
- Up to 10GB of measurement data can be stored in database of **PrimeSaver Lite™**.
- Users benefit from real-time data displayed on the main screen report, enabling instant analysis and quick decision-making.
- Sequential activation of indicator lamps ensures users follow a systematic parameter monitoring cycle, preventing oversights and ensuring comprehensive data collection.
- Simultaneous display of up to four fixtures optimizes efficiency, addressing the needs of users monitoring multiple parameters concurrently.
- **PrimeSaver Lite™** uses easy-to-understand indicators like 'Accept', 'Rework', or 'Reject' in a clear display, and corresponding relay output are operated for connection to third party systems.
- Trend analysis feature in **PrimeSaver Lite™** keeps a history of past readings in a structured display, helping users see how things have changed over time. This is useful for looking at patterns and planning maintenance ahead of time.
- Users can set customizable alert thresholds, ensuring prompt notifications for abnormal readings and supporting preventative maintenance to minimize downtime.
- **PrimeSaver Lite™** features collectively contribute to an efficient and streamlined monitoring process, optimizing workflows and maximizing data accuracy from product selection to parameter monitoring.
- **Parameter Check Modes:** **PrimeSaver Lite™** offers flexibility in parameter checking by providing two distinct modes:
 1. **Sequential Mode:** Follows a predefined sequence, systematically checking each parameter in order. Ideal for structured and organized monitoring processes.
 2. **Random Mode:** Allows users to randomly check parameters by inserting plugs into the component. This mode is suitable for scenarios where a more flexible and varied approach to parameter checking is preferred.
- **Low Air Pressure Alert*:** **PrimeSaver Lite™** includes a low air pressure alert feature, ensuring users are promptly notified if the air pressure falls below a specified threshold. This proactive warning helps prevent issues related to insufficient air pressure during the monitoring process. (* Separate digital pressure switch required)
- **Robust Data Backup Policy:** **PrimeSaver Lite™** implements a robust data backup policy with regular intervals, including daily, weekly, monthly, and yearly selectable options. This ensures that users' data is consistently and securely stored, providing peace of mind and data reliability.
- **Easy Report Generation:** **PrimeSaver Lite™** simplifies the process of creating reports through its user-friendly interface. Users can effortlessly generate comprehensive reports in both CSV and PDF formats, ensuring flexibility in data analysis and convenient sharing. This

feature allows users to export reports in their preferred format (.csv for data manipulation and .pdf for easy sharing and viewing).

- **PrimeSaver Lite**™ application features dynamic charts for comprehensive analysis:
 1. **Histogram**
 2. **Run Chart**
 3. **X-bar R-Chart**
 4. **X-bar S-Chart**
 5. **Pie Chart**
 - Excellent low-cost solution where wiring panel can be avoided.
 - Product and rejection counters are maintained for operator's quick view. These can be reset manually or automatically on daily basis.
 - Online SPC charts and process capability indices help optimize quality much before the rejections occur.
 - Sensitive settings such as master values, limit values etc. are password protected.
 - Absolute/relative mode of display for measured dimension.
 - There are three modes for serial number
 1. **Automatic mode:** Serial number increments automatically after every checked component.
 2. **Manual mode:** Before starting measurement of any new component, the software will wait for operator to enter serial number manually.
 3. **Scanner mode:** Before starting measurement of any new component, the software prompts operator to scan serial number using barcode scanner.
- All the result of measurements is saved against specified serial number for future reference.

3. Screen functionality

- One of the key features of the **PrimeSaver Lite** multigauging SPC Software is the customization of the screens used for measurement. The operator in following the sequential steps to measure apart and collect data.
- The first step is to install the **PrimeSaver Lite** SPC software on the computer. As shown in figure 2, the welcome page will open after clicking on the PrimeSaver Lite application.



Figure 2

- Make sure to finish the system settings before starting the first cycle.
- Select the product selection modes in the advanced settings, including auto, scanner and manual.
- The following image will appear as shown in figure 3, if the manual selection is selected.

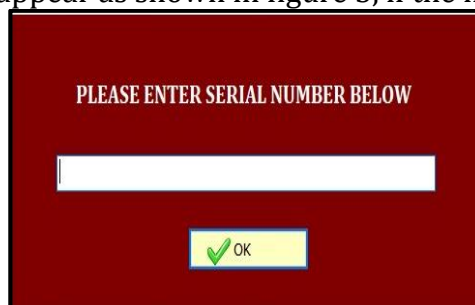


Figure 3

3.1 Main screen

The PrimeSaver Lite SPC main window is shown in figure 4.

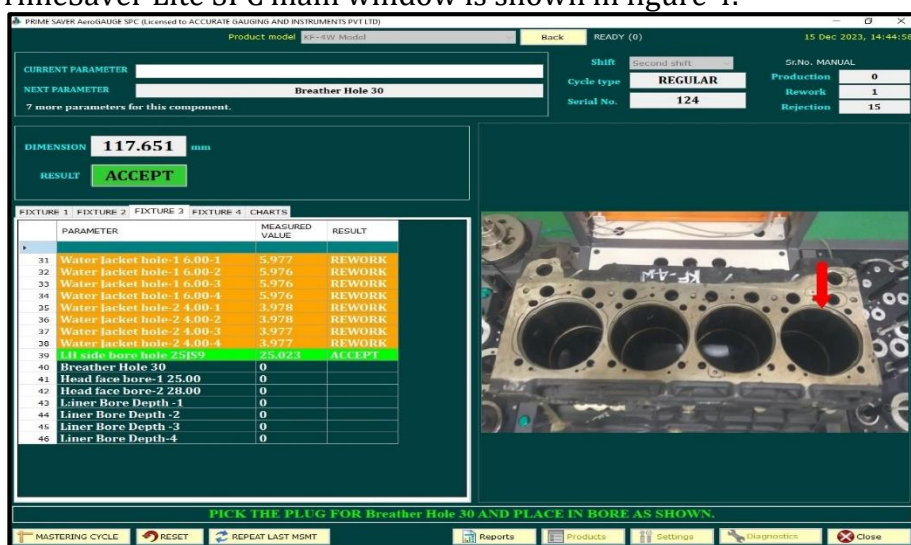


Figure 4

- 3.1.1 Product model:** Select the product model on the main page, and the product image will appear on the screen as shown in figure 4.

3.1.2 Current Parameter and Next Parameter: The current and next parameters of the selected product will be displayed. It will also show how many remaining parameters there are in the cycle.

3.1.3 Dimension: Displays the current readings on the screen.

3.1.4 Result: There are four fixtures in one product and 16 parameters in one fixture.

If there are no issues with the parameters of the fixtures, then the result of the product will be **ACCEPT**. If there are issues with the parameters of the fixtures, the result of that product will be **REJECT** or **REWORK**.

3.1.5 Shift: Select the shift

- All Shift
- First Shift
- Second Shift
- Third Shift
- General Shift

3.1.6 Cycle Type: Regular Cycle/Normal Cycle-If the parameter is mastered, there is no need to master it again. Probe readings will start after clicking on the normal cycle.

3.1.7 Mastering Cycle: Click on mastering cycle.

How to Do Mastering

Double mastering

Note: When two reference masters are available for measurement, choosing double mastering is required for calibration. This is mandatory step. Double mastering must be done at least once before doing single mastering

- Select 'DOUBLE MASTERING'.
- The screen will display 'PLACE PLUG IN HIGHER MASTER'.
- After placing the plug into the higher master and the screen will show 'CAPTURED HIGHER MASTER VALUE '.
- The screen displays 'PLACE PLUG IN LOWER MASTER.'
- After placing the plug into the lower master and the screen will show "CAPTURED LOWER MASTER VALUE '.
- After mastering, click on the normal cycle.

Single mastering

Note: When there is only one reference master available, choose single master mode. Single mastering will work only when double mastering is already done at least once for that program

- Select 'SINGLE MASTERING'.
- The screen will display 'PLACE PLUG IN MASTER'.
- After placing the plug into the master and the screen will show 'CAPTURED MASTER VALUE '.
- After mastering, click on the normal cycle.

3.1.8 Serial no: After scanning the product, the serial number will be displayed.

3.1.9 Production: The production counts are shown here.

3.1.10 Rework: The rework counts are shown here.

3.1.11 Reject: The reject counts are shown here.

3.1.12 Reports Button: The report can be viewed and exported here.

3.1.13 Here are five tabs:

- **FIXTURES 1 To FIXTURES 4:**

As shown in figure 3, click on the tabs for fixtures 1 to 4. The parameter list, measured value, and result can be seen here.

- **CHARTS:**

Click on the charts tab. The graph of Fixture, Min value, Max value, Average value and TIR value can be viewed here.

3.1.14  **Close Button:** Main window close after click on the Close Button.

3.2 System settings

Click on the main page settings button. After clicking on the window as shown in figure 5, enter the password and click 'OK'. The figure 6 window will show. Here are three options.

3.2.1 PORT SETTINGS

3.2.2 ADVANCE SETTINGS

3.2.3 SHIFT TIMINGS

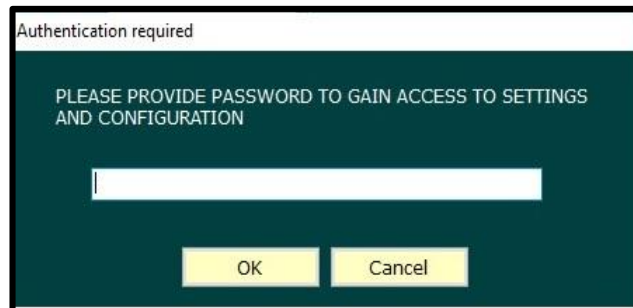


Figure 5

3.2.1 PORT SETTINGS

- Make the following settings by clicking on port settings as shown in figure 6.
- Set the COM Port, BAUD Rate of the Air Gauge Interface, GPIO1 Unit, GPIO2 Unit and Barcode Scanner.

-  **Save Button:** To save the Port settings, click on the save button.

Note-If any system settings are changed, the software needs to be restarted.

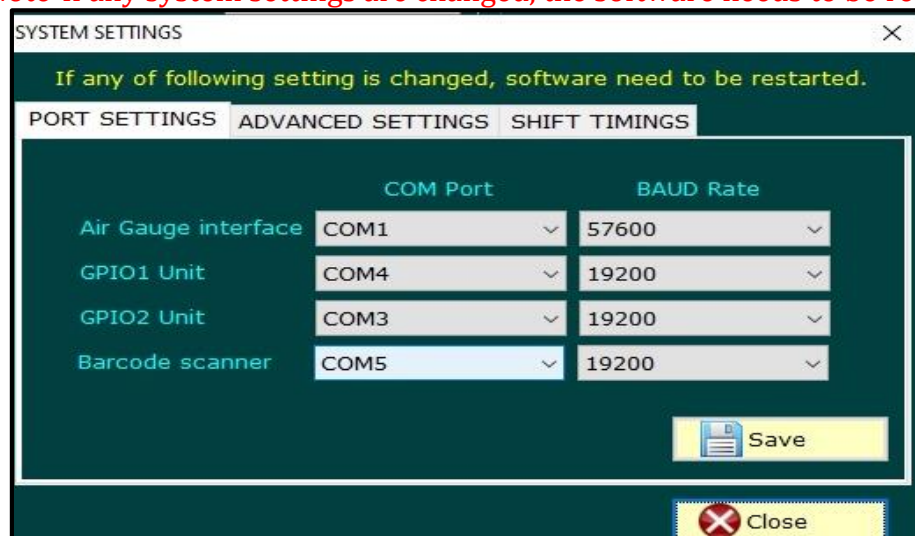


Figure 6

3.2.2 ADVANCED SETTINGS

- Make the following settings by clicking on the advanced settings as shown in figure 7.
- **Group Size:** Group size is requiring for calculation of Cp and Cpk.
- **Chart Samples:** The Number of samples used for run chart.
- **Sub-group Size:** Sub-group integer is divisible of group size.
- **Mastering message trigger:** The component must be mastered again after the count given in the mastering message trigger.
- **Auto-export report Location:** Find the location where to save the report.
- **Production selection mode:** There are three choices in serial mode. 1. **Auto** 2. **Manual**. 3. **Scanner**.

- **Reset Sr.No.:** To reset the serial number, click here.
 -  **Save Button:** To save the advance settings, click on the save button.
- Note-** If any system settings are changed, the software needs to be restarted.

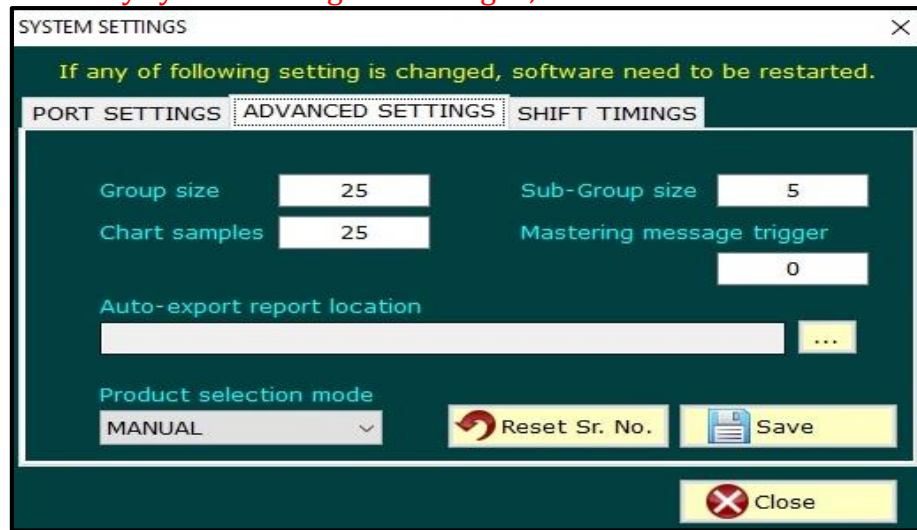


Figure 7

3.2.3 SHIFT TIMINGS

- Can set shift timing as shown in figure 8.
- **First shift start time:** Enter the start time for the first shift.
- **Second shift start time:** Enter the start time for the second shift.
- **Third shift start time:** Enter the start time for the third shift.
-  **Save Button:** To save the shift timings settings, click on the save button.

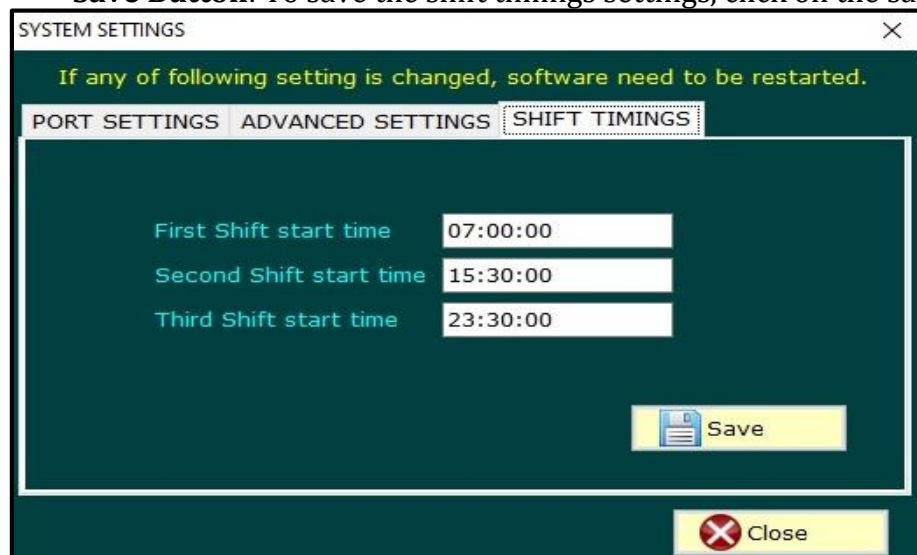


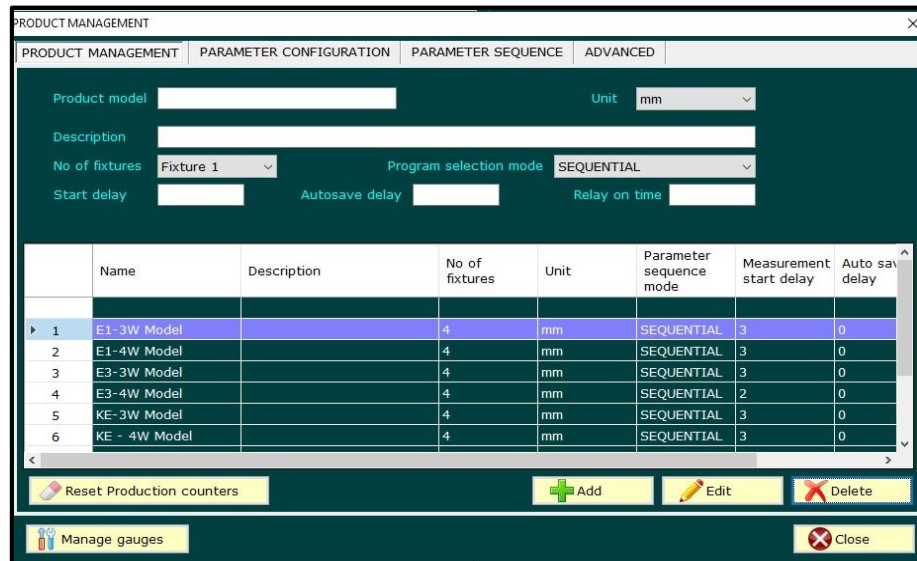
Figure 8

-  **Close Button:** To close the system settings window click on the close button.

3.3 Products management

The figure 9 window will display. Here are four options.

- 3.3.1 PRODUCT MANAGEMENT
- 3.3.2 PARAMETER CONFIGURATION
- 3.3.3 PARAMETER SEQUENCE
- 3.3.4 ADVANCED



	Name	Description	No of fixtures	Unit	Parameter sequence mode	Measurement start delay	Auto save delay
1	E1-3W Model		4	mm	SEQUENTIAL	3	0
2	E1-4W Model		4	mm	SEQUENTIAL	3	0
3	E3-3W Model		4	mm	SEQUENTIAL	3	0
4	E3-4W Model		4	mm	SEQUENTIAL	2	0
5	KE-3W Model		4	mm	SEQUENTIAL	3	0
6	KE - 4W Model		4	mm	SEQUENTIAL	3	0

Figure 9

3.3.1 PRODUCT MANAGEMENT

- **Product Model:** Write the name of the Product Model.
- **Description:** Write a Product Model Description.
- **No. Of Fixtures:** Select the fixtures.
 - Fixture 1
 - Fixture 2
 - Fixture 3
 - Fixture 4
- **Unit:** This is the unit of measurement.
 - **mm (millimeter):** Display the final results in millimeters, then select mm.
 - **Inch:** Display the final results in inch, then select inch.
- **Program Selection Mode-**Here are two program selection modes options.
 - **SEQUENTIAL:** Parameters to be set one after another.
 - **RANDOM:** Parameters to be set not determined order.
- **Start Delay:** The measurement will start after a set delay.
- **AutoSave Delay:** The part's dimensions are automatically saved according to the set delay.
- **Relay on Time:** If a non-zero value is specified for this setting. The result relay will remain ON for the specified seconds. If this value is zero, the rely will be ON according to the result until the plugs are restored.

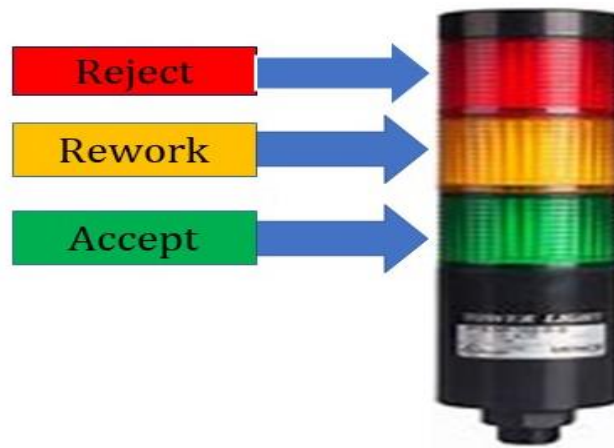


Figure 10

- **+ Add Button:** After filling out all the product information, click on the 'Add' button to view the data in the table.
- **✎ Edit Button:** Click on the edit button to update the information of a particular product in the table.
- **✖ Delete Button:** Click on the delete button to delete the information of a particular product in the table.
- **Reset Production Counter Button:** Reset the production count for the product.

3.3.2 PARAMETER CONFIGURATION

- Parameter information has to be filled after selecting the product and fixture as shown in figure 11.

	Name	Measurement mode	Status	Nominal size	Lower specified limit	Upper specified limit	Direction
1	Cam bore 55.00-1	CURRENT	Enabled	0.0000	55.0600	55.0900	ID
2	Cam bore 55.00-2	CURRENT	Enabled	0.0000	55.0600	55.0900	ID
3	Cam bore 55.00-3	CURRENT	Enabled	0.0000	55.0600	55.0900	ID
4	Crank bore 74.00-1	CURRENT	Enabled	0.0000	73.9700	74.0000	ID
5	Crank bore 74.00-2	CURRENT	Enabled	0.0000	73.9700	74.0000	ID

Figure 11

- **Select Product Model:** Select the product that has been added to the product management system.
- **Select Fixture:** Select the fixtures.
 - Fixture 1
 - Fixture 2
 - Fixture 4
- **Parameter Name:** Write the parameter name.
- **Nominal Size:** 000.000 is default nominal value. User need to enter nominal value of the components to be used for measurement. Nominal value is used for showing measurement result in absolute mode only. For relative display mode, nominal value is not required. The nominal value lies between upper and lower limits. And nominal size lies between these limits.

- **Lower Limit Value:** This is lower limit of the dimensional measurement. When measurement value is below this limit, the component is for rework or reject depending upon direction.
- **Higher Limit Value:** This is higher limit of the dimensional measurement. When measurement value is above this limit, the component is for rework or reject depending upon direction.
- **Lower Master:** Enter the actual value of the lower master that was mentioned on the lower master component.
- **Higher Master:** Enter the actual value of the lower master that was mentioned on the higher master component.
- **Measurements Mode:**
 - **AVERAGE**
In this mode, device will show average measured reading on digits and same is used for deciding the final result as ACCEPT, REJECT or REWORK. ENTER key can be used for resetting the averaging function.
 - **MINIMUM**
In this mode of measurement device will take measurements and from that measurement it will take minimum value and displayed as final result.
 - **MAXIMUM**
In this mode of measurement device will take measurements and from that measurement it will take maximum value and displayed as final result
 - **TIR**
In TIR mode total traverse of readings during measurement cycle are shown as result.
 - **CURRENT**
In this mode, device will show current measured reading on digits and same is used for deciding the final result as ACCEPT, REJECT or REWORK
- **Display Type:**
 - **RELATIVE**
In this mode nominal value will not be considered for final result display. Direct measurement value is shown on display as final result.
 - **ABSOLUTE**
In this mode nominal value will be added to the obtained measurement value and then final result will be displayed.
- **Least Count:** least count is measure smaller changes in a value.
When metric unit is selected
0.001mm, 0.002mm, 0.005mm,
0.010mm,
0.0001mm, 0.0002mm, 0.0005mm.
When Inch unit is selected
0.0001", 0.0005".
0.001",
0.00001", 0.00002, 0.00005".
- **Direction:**
 - **ID (Internal Diameter):**
for measuring internal diameter of component choose this option else results are different. If measurement direction is ID in that case readings goes above higher limit values result will be REJECT, and if readings go below lower limit values result will be REWORK.
EX-ID=15.20 m
If ID is 15.25mm then **Reject** Condition
If ID is 15.15mm then **Rework** Condition

- **OD (Outer Diameter):**
for measuring outer diameter of component choose this option else results are different. If measurement direction is OD in that case readings goes above higher limit values result will be REWORK and if readings go below lower limit values result will be REJECT.
EX-OD=20.20 mm
If OD is 20.30mm then **Rework** Condition
If OD is 20.10mm then **Reject** Condition
- **Range:**
The user wants to check and accept components only within a certain range, and all components outside of that range are rejected, then select this option.
- **Result Scale Factor:** Set- +0.0000.
The result factor value is multiplied with the actual measurement result, and then the final result will be displayed.
- **Enabled:** If enabled, the selected parameter will be added to the current running cycle. If disabled, the parameter will not be added to the running cycle.
- **Sensor Input:** Select sensor input from 1 to 16. The proximity sensor is connected to the plug. The proximity sensor will sense whether the plug is picked up from the same channel or not. If the wrong plug is picked up, the message 'wrong plug pickup' will appear on the screen.
- **Air Plug Channel:** Select an air plug channel from 1 to 16.
- Always Positive-If the value is negative, it converts to a positive value.
- **+ Add Button:** After filling out all the parameter information, click on the 'Add' button and the parameter information will be added to the table.
- **✎ Edit Button:** To update the information of a particular parameter in the table, click on the 'Edit' button.
- **✖ Delete Button:** To delete the information of a particular parameter in the table, click on the 'Delete' button

3.3.3 PARAMETER SEQUENCE

- The parameters can be sequenced using the up and down buttons after selecting the product and fixture, as shown in figure 12.

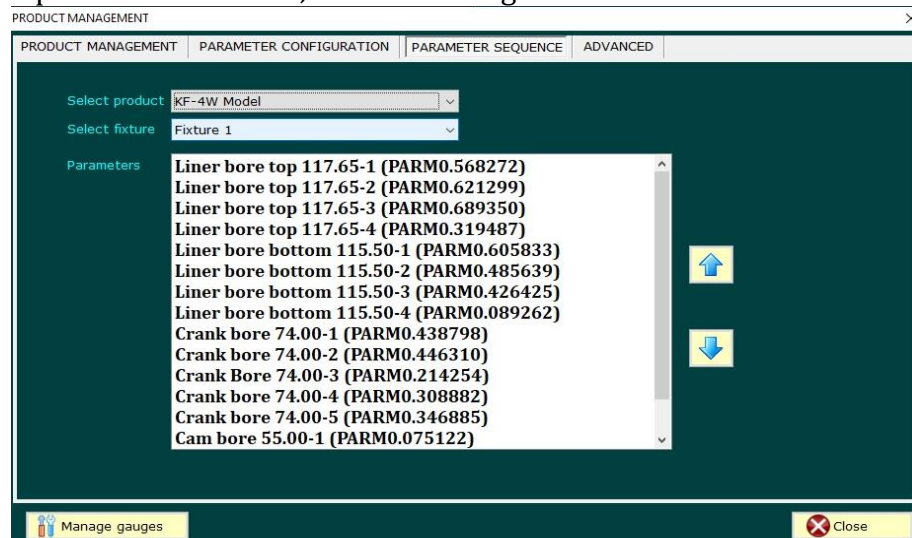


Figure 12

- **Select Product:** Select the product that was added to the product management.
- **Select Fixture:** Select the fixtures.
 - Fixture 1
 - Fixture 2

- Fixture 3
- Fixture 4
- **Parameters:** The parameters of the selected fixture will be shown.
-  **Up Button:**
Click on the 'Up' button to move the parameter up in the list.
-  **Down Button:**
Click on the 'Down' button to move the parameter down in the list.

3.3.4 ADVANCED

- The SPC chart can be viewed here. Add a new image of the product. Shown in figure 14.

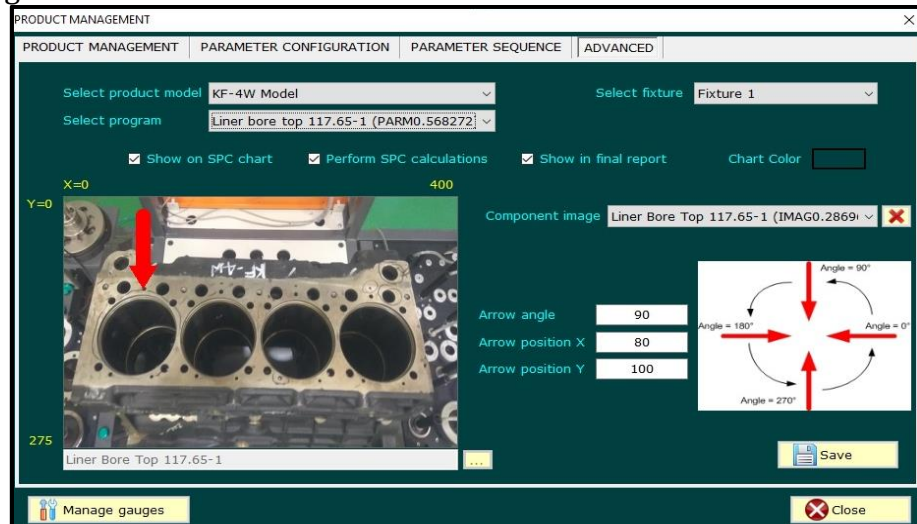


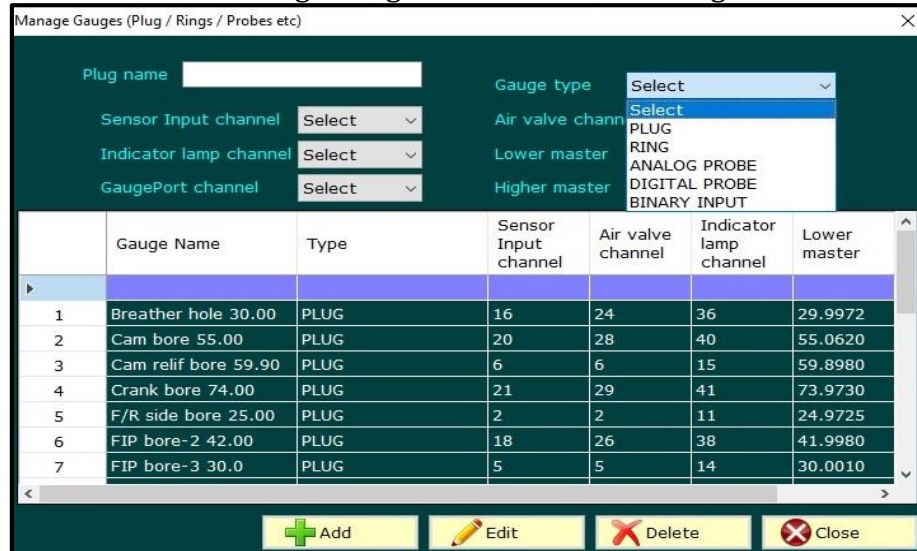
Figure 13

- **Select Product:** Select the product model that has been added to the product management.
- **Select Program:** Select the program that has been added to the product configuration.
- **Select Fixture:** Select the fixtures.
 - Fixture 1
 - Fixture 2
 - Fixture 3
 - Fixture 4
- **Show on SPC Chart:** See the SPC chart on the main page window and then click on the 'Show SPC Chart' button.
- **Perform SPC Calculations:** Statistical Process Control (SPC) is an industry-standard methodology for measuring and controlling quality during the manufacturing process. If you want to do SPC calculations, then click on SPC Calculations box.
- **Show in Final Report:** To view the final report, click on the 'show in final report' checkbox.
- **Chart Color:** Add color to the SPC chart using the chart color.
- **Component Image**
 - **No Image:** The image has already been set to that parameter.
 - **New Image:** Set a new image for the parameter.
- **Arrow angle:** The angle of the arrow will indicate which bore the plug should be inserted into. For example: 0, 90, 180, 270, 360 degrees.

- **Arrow Position X and Y:** The position of the arrow will indicate in which bore the plug is to be inserted.
- **Search parameter Image:** Find the new parameter image to set. Write a description after searching for a new image parameter.
-  **Save Button:** Click the save button and the data will be saved.

3.3.5 Manage Gauges

- First click on the Manage Gauge button as shown in figure 14.



	Gauge Name	Type	Sensor Input channel	Air valve channel	Indicator lamp channel	Lower master
1	Breather hole 30.00	PLUG	16	24	36	29.9972
2	Cam bore 55.00	PLUG	20	28	40	55.0620
3	Cam relief bore 59.90	PLUG	6	6	15	59.8980
4	Crank bore 74.00	PLUG	21	29	41	73.9730
5	F/R side bore 25.00	PLUG	2	2	11	24.9725
6	FIP bore-2 42.00	PLUG	18	26	38	41.9980
7	FIP bore-3 30.0	PLUG	5	5	14	30.0010

Figure 14

- **Plug name:** Enter the name of the plug.
- **Sensor Input Channel:** Select channels 1 to 4 for sensor input.
- **Indicator lamp channel:** Select channel 1 to 24 for Indicator lamp.
- **Gauge Port channel:** Select channel 1 to 4 for gauge port.
- **Gauge Type:** Select gauge port type: plug, ring, analog probe, digital probe, or binary input.
- **Air valve channel:** Select channel 1 to 24 for air valve.
- **Lower Master:** Enter the actual value of the lower master that was mentioned on the lower master component.
- **Higher Master:** Enter the actual value of the higher master that was mentioned on the higher master component.
-  **Add Button:** After filling out all the Gauge information, click on the 'Add' button to view the data in the table.
-  **Edit Button:** Click on the edit button to update the information of a particular gauge in the table.
-  **Delete Button:** Click on the delete button to delete the information of a particular Gauge in the table.
-  **Close Button:** The window closes after clicking on the Close button.

3.4 Reports

- Click on the 'Reports' button on the main page. After clicking, the following window is shown in figure 15. Can view the product report and export it.

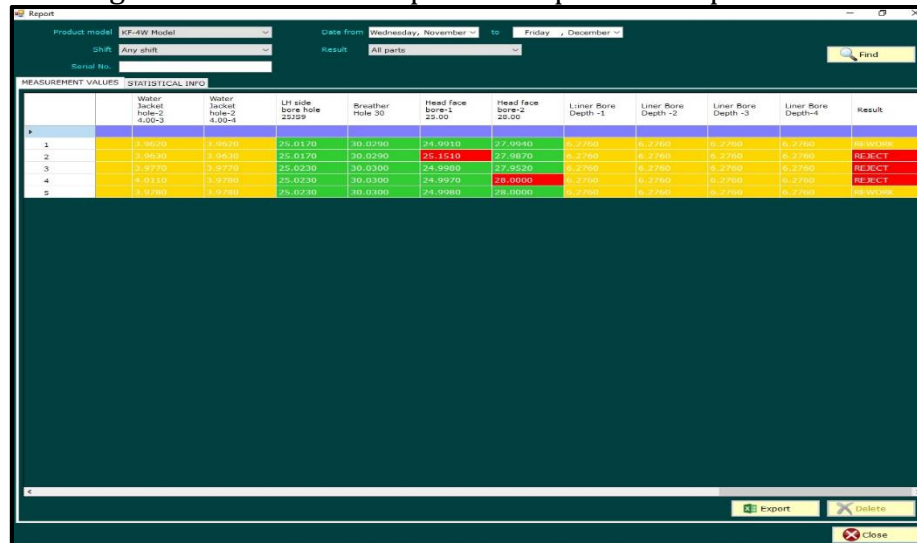


Figure 15

- Product model:** Select the product model that has been added to the product management.
- Shift:** Select shift
 - All Shift
 - First Shift
 - Second Shift
 - Third Shift
 - General Shift
- Serial No:** After scanning the product, the serial number will be displayed.
- Date From- TO:** Select the month, date, and week report to view.
- Result:** Select the report type to view.
 - All parts
 - All accepted parts
 - All rejected parts
- Find button:** To select the first product model, select the shift, select the serial number, select the month and week report to view, and select the result to see whether the part is accepted or rejected. After clicking on the 'Find' button, this report will be shown in figure 15.
- Here are two options.
 - Measurements Values:** Click on the find button and its product report will be shown here as shown in figure 16.
 - Statistical Info:** A graph of the product parameters will be shown here. Here are five tab.
 - Distribution and statistics
 - Run chart
 - X-bar R chart
 - X-bar S-chart
 - Pie chart

▪ **Distribution and statistics:**

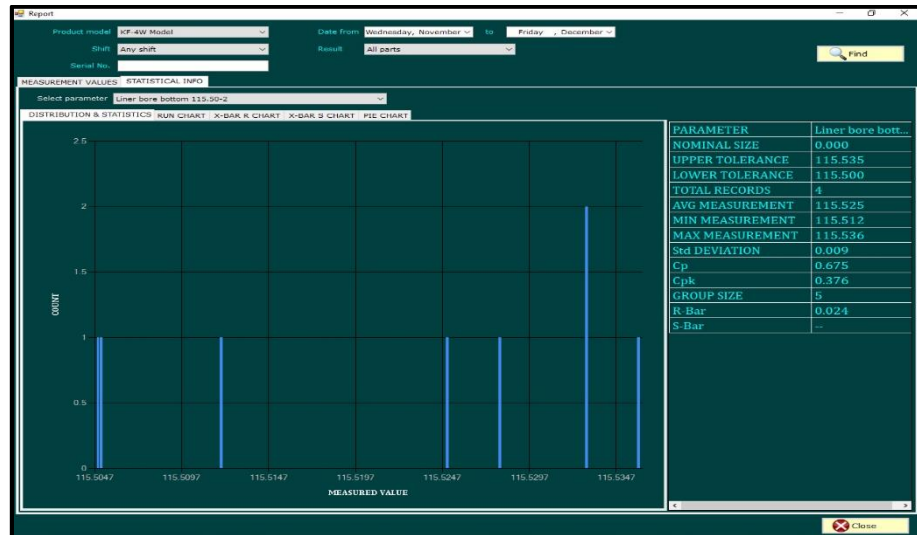


Figure 16

▪ **Run Chart:**

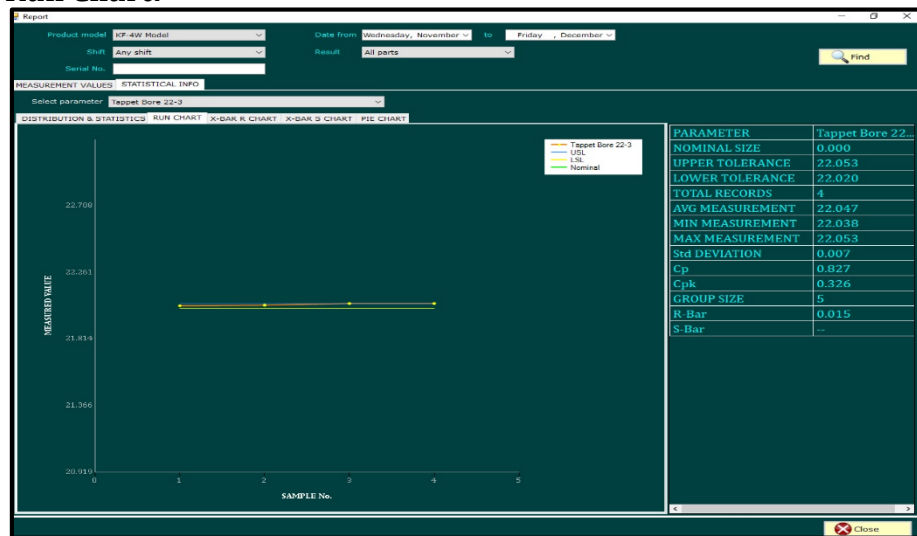


Figure 17

▪ **X-bar R chart:**

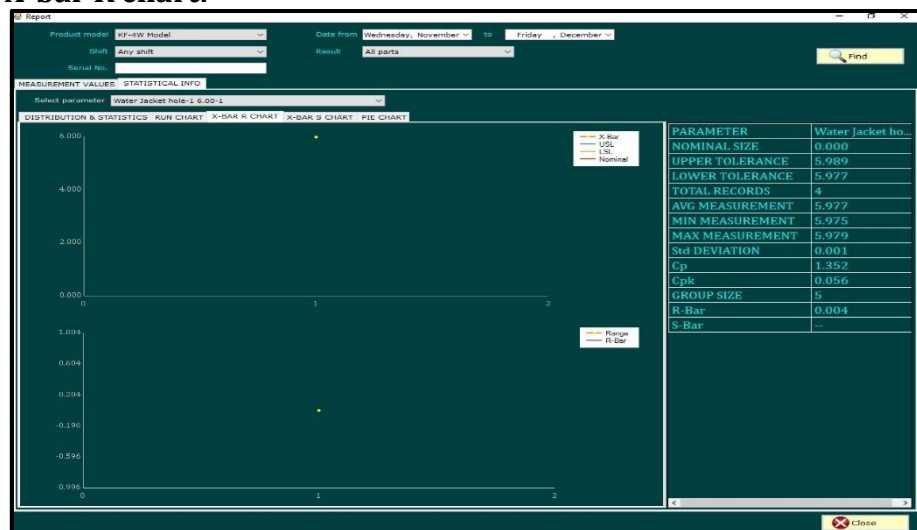


Figure 18

▪ **X-bar S chart:**

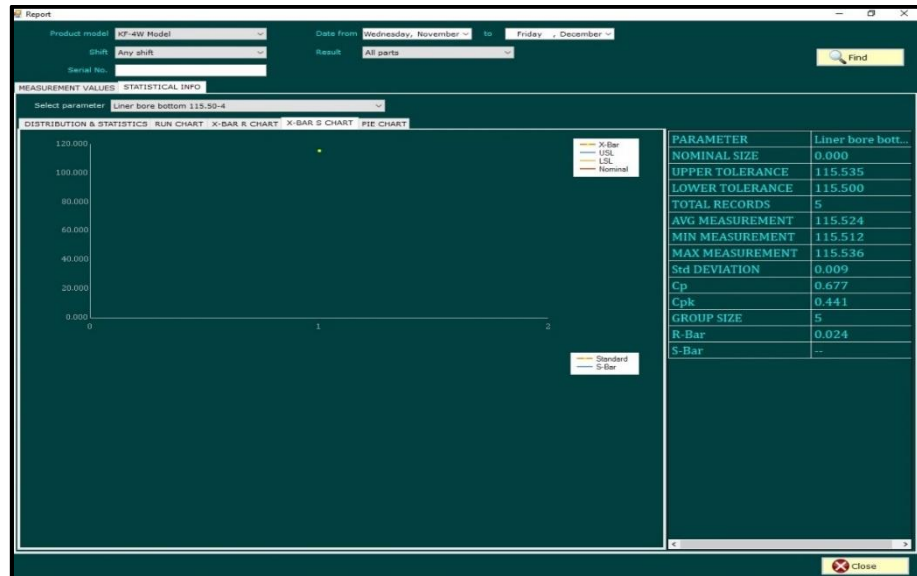


Figure 19

▪ **Pie chart:**

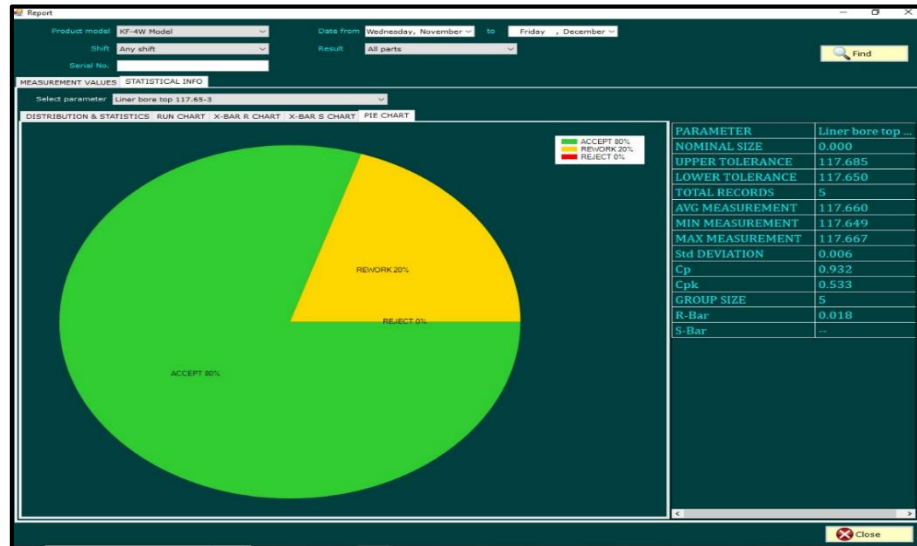


Figure 20

-  **Export Button:** Click on the Export button to download the CSV, Excel, and PDF report.
-  **Close Button:** The report window closes after clicking on the Close button.

3.5 Diagnostics

- The inputs and outputs of GPIO can be checked here. As shown in figure 21.
- Diagnostics divided into three parts.
 - Gauge Port
 - GPIO
 - Scanner

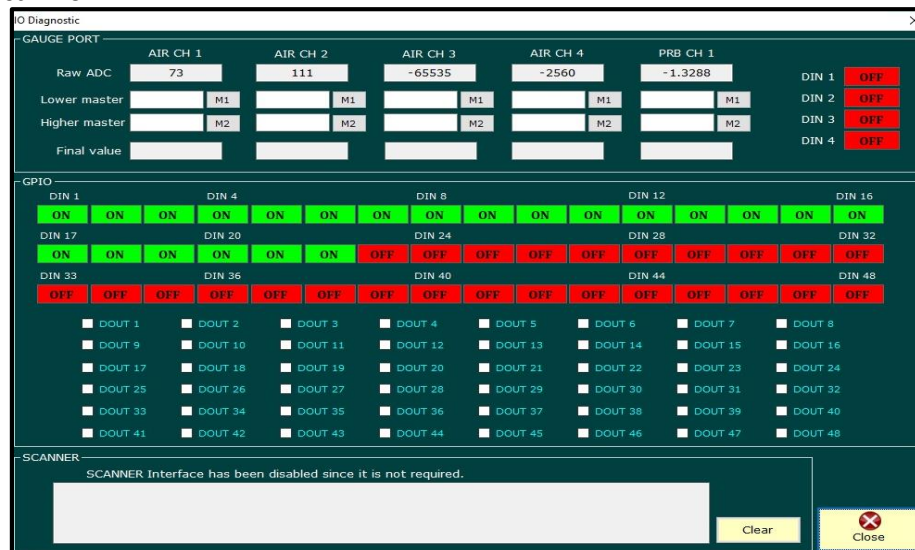


Figure 21

- **Gauge Port:**
 - Connect the analog probe to the Aero Gauge Port. The window will start showing the APG count.
 - Type the lower master range value and the higher master range value to set up every channel.
 - Before starting to make any measurements, it is important to ensure that the air supply is highly stable. Using poor air regulators might lead to unstable measurements. Press M1 for the lower master and press M2 for the higher master. Final readings are obtained after setting these fixtures. These readings should be between the lower and higher master. This process is repeated for each channel
- **GPIO:**
 - GPIO has 24 digital inputs and 24 digital outputs.
 - If digital inputs are turned on the GPIO, they are also turned on the screen. If digital input will be turned off on the GPIO, and the digital input will be turned off on the screen.
 - If digital outputs are turned on from the screen, the relay will have been turned on. If the digital outputs on the screen are turned off, the relay will have been turned off as shown in table 1.

GPIO DIN ON	DIN ON(Diagnostics Screen)
GPIO DIN OFF	DIN OFF(Diagnostic Screen)
DOUT ON (Diagnostic Screen)	DOUT ON(Relay)
DOUT OFF(Diagnostic Screen)	DOUT OFF(Relay)

Table 1

- **Scanner:** Scan a barcode or QR code and the data should appear in the box.
- **Clear Button:** Click on the clear button and the scan data will be cleared.
- **Close Button:** The diagnostic window closes after clicking on the Close button.

4. Many peripherals can be connected to PrimeSaver lite SPC software.

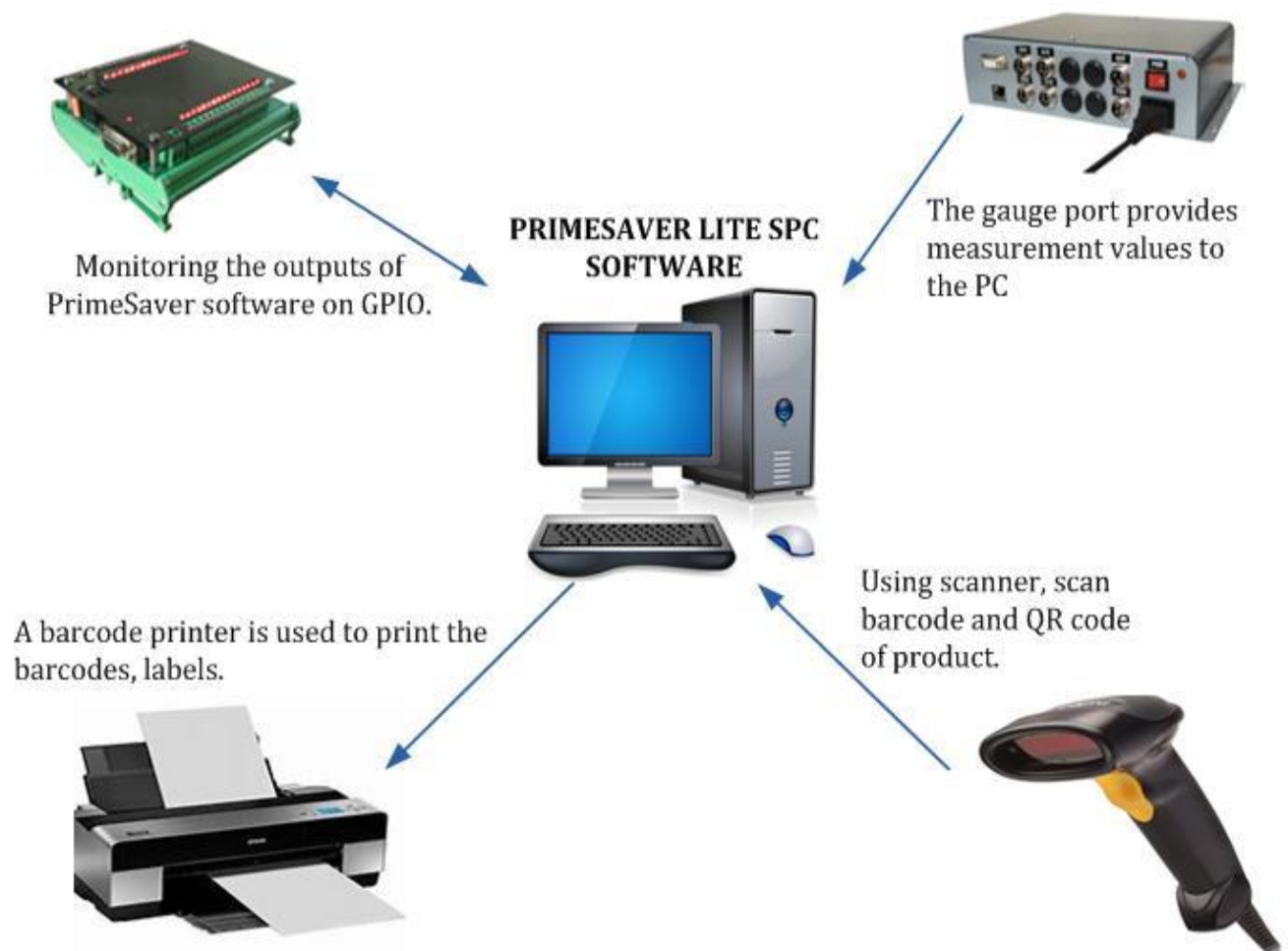


Figure 22

5. Wiring diagram of panel

5.1 SMPS wiring diagram

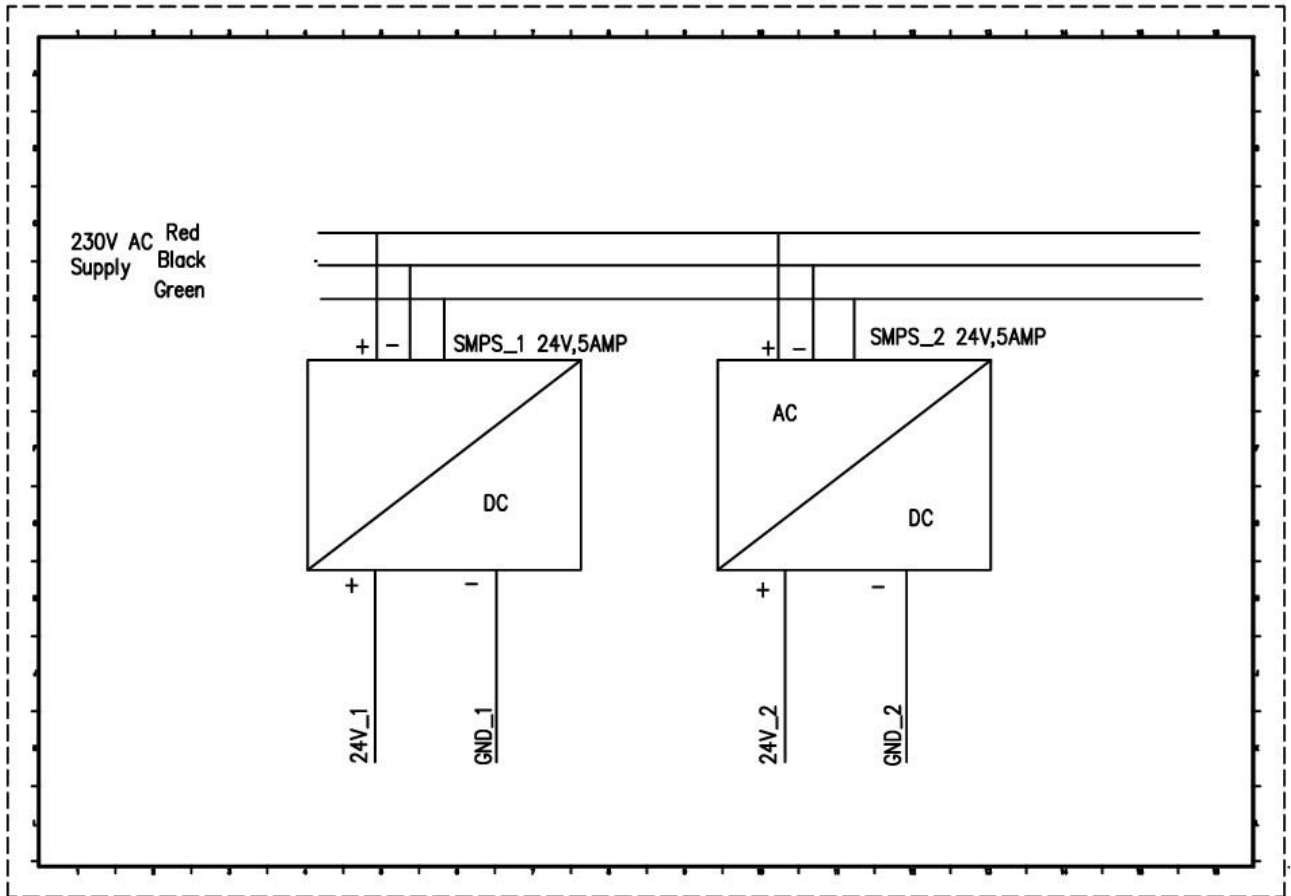


Figure 23

5.2 GPIO and relay wiring diagram

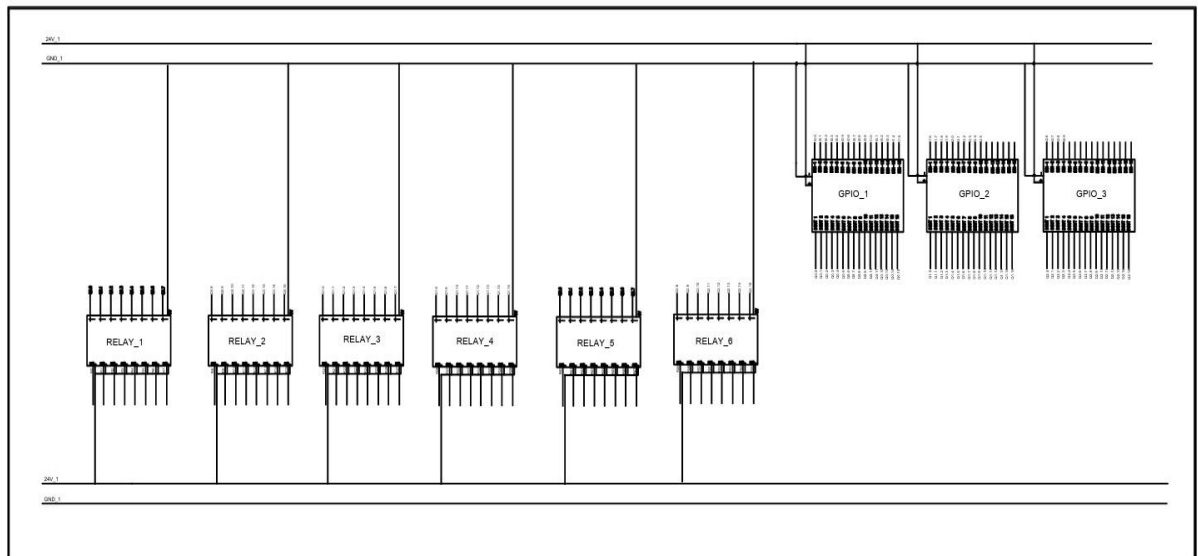


Figure 24

5.3 Terminals

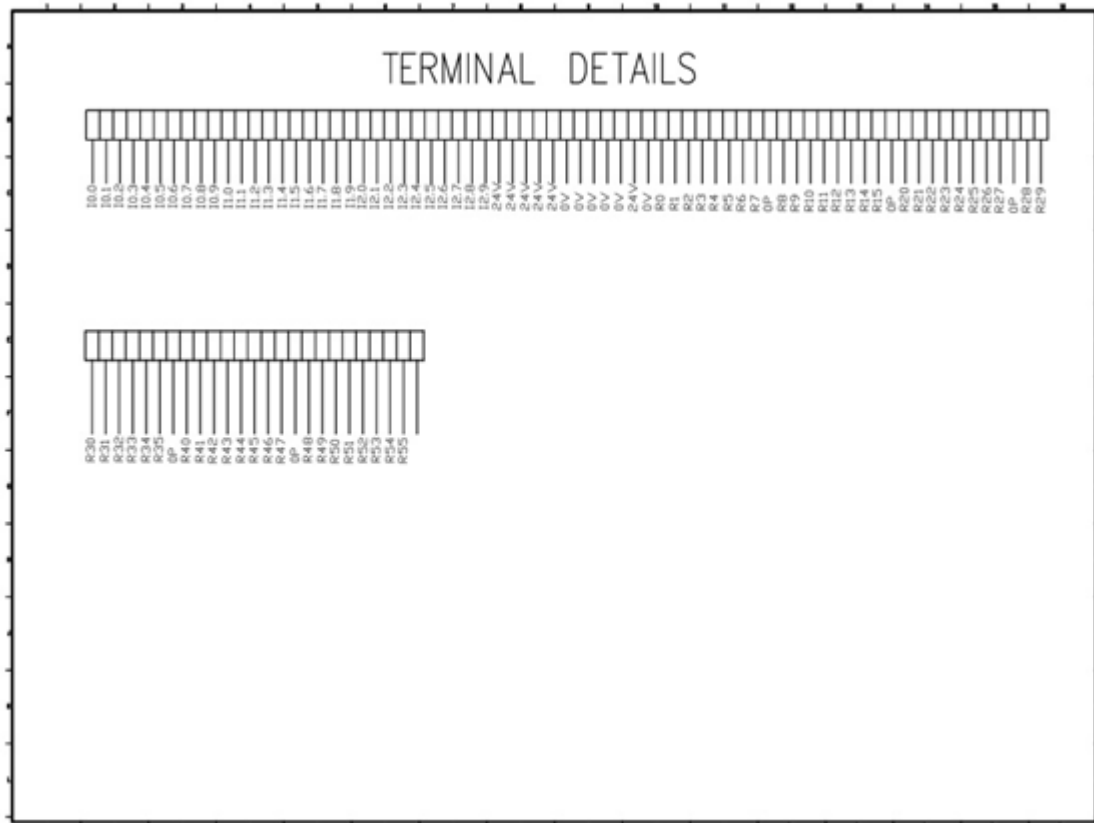


Figure 25

Warranty statement

All the products are covered under warranty for a period of 12 months against manufacturing defects, workmanship and malfunction under normal operating conditions. The warranty is subject to the terms and conditions mentioned below.

1. The warranty commences from the date of sale for a period of 12 months irrespective of the actual installation date.
2. The warranty is against manufacturing defects and any subsequent malfunction of the instrument during the normal operation. The warranty shall not be applicable in case of accidental damage, damage due to wrong operation, connection or conditions that are out of normal operating specifications.
3. MICRONBEATS Metrology Solutions, at its discretion may repair or replace the product depending on the condition of instrument, availability of spare parts and type of failure.
4. In case of warranty claim, the warranty period will not be extended and remains same as stated earlier from the date of sale.
5. Maximum liability of MICRONBEATS Metrology Solutions remains up to repair or replacement of the product only. Any damages or losses raised out of use of the instrument are not covered by this warranty. In any case, cost of the product will not be refunded.
6. In case of warranty claim, the product should be sent over to MICRONBEATS Metrology Solutions immediately after noticing the defect or failure. A detailed note of operating conditions in which fault occurred will be helpful in rectifying the defect.
7. Do not try to open or repair the instrument on your own. Warranty will stand null and void in such case. Products with tampered warranty seal will not be considered for warranty claims and regular service charges will be applicable.
8. In all claims, the company's decision will be final and legally binding.
9. Any and all disputes are subject to pune jurisdiction only.

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