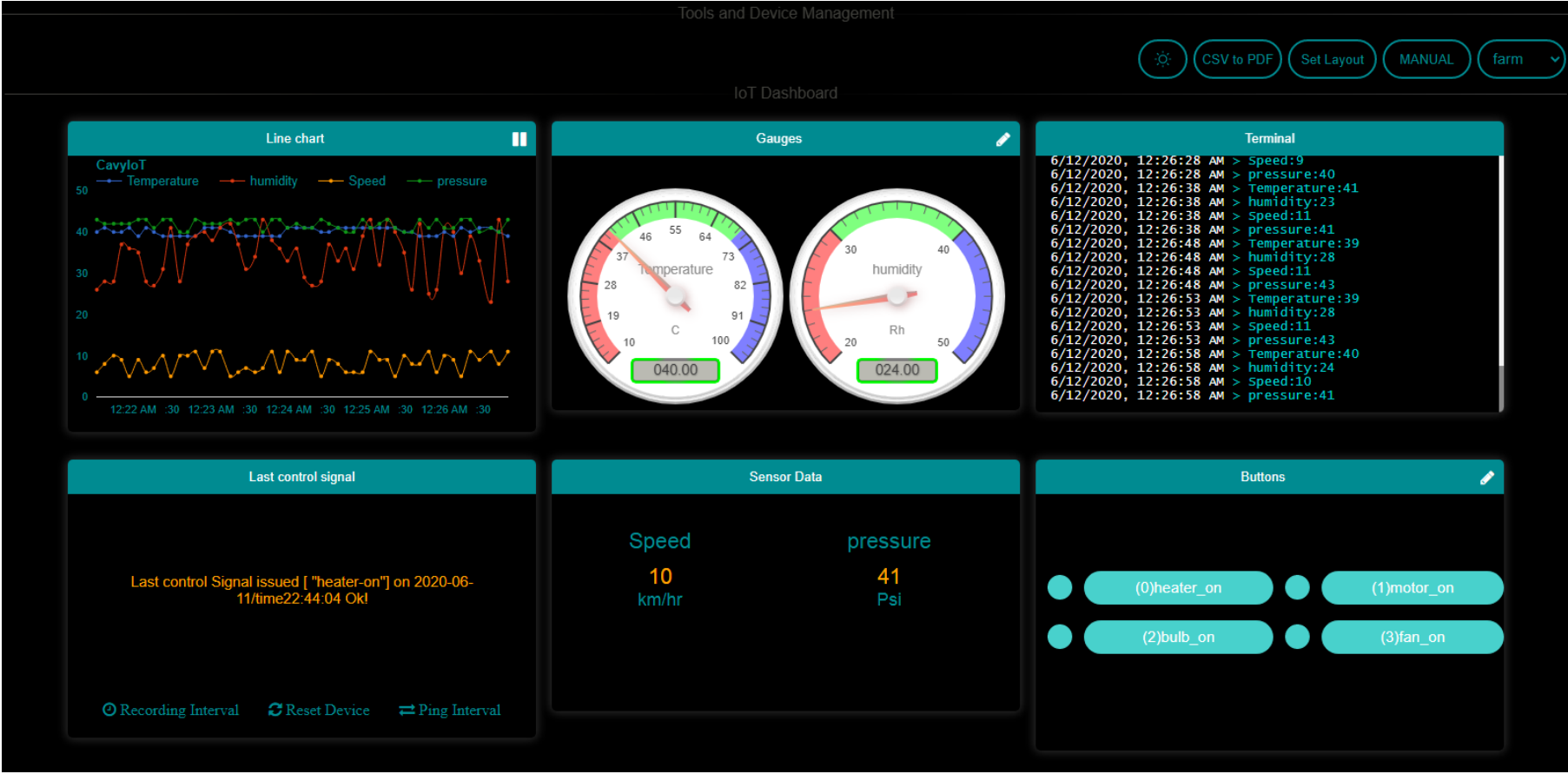# All about Multimaster Control Panel (IoT Dashboard)

Learn everything about CavyIoT Control Panel

Introduction

CavyIoT's Multimaster Control Panel is a standard GUI software accessible over internet using internet browser. With the help of this you can control all the operations of CavyIoT-DevBoard anytime, anywhere and also monitors your sensor data received from CavyIoT-DevBoard in a standard Data Visualization formats for data analysis (Charts, Gauges, etc). Control panel/Dashboard consist of Toolbar at the top-right corner. Floating widgets are for monitoring sensor data and controlling device etc. User can arrange them according to his preference.
All these widgets are dynamic. Charts, Gauges and trigger setting menu, for their own creation, automatically configures with the variables required, according to the data and lables of the buttons defined by user. And this unique feature facilitates the user that he does not need to write any code for it!

1. Gauges
2. Sensor Data
3. Line chart
4. Terminal
5. Buttons
6. Last Control Signal
7. Toolbar
8. Triggers

Gauges

Canvas gauges which are for the visulization of sensor data is the featured facility in the Control Panel. As well as of displaying sensor data these gauges also indicates the communication status of CavyIoT-DevBoard. In case of communication failure, there will be a change in colour of gauge-dial. This change in colour of gauge-dial is depends upon what type of the failure is. Black colour of gauge dial indicates the device is offline.
CavyIoT Dev-board permits up to four sensor variables as Sensor1 to Sensor4 out of which first two variables Sensor1 and Sensor2 will be displayed in gauge view. Gauges can monitor physical quantity like temperature, humidity, light intensity, percentage of various gases in air, proximity, electric current, liquid flow rate, level in tank, pressure, etc. User can edit/customize gauge according to sensor used in his/her project, user can set the gauge parameters like minimum value,maximum value,steps,unit etc. for observing data with modern way!

How to customize gauge?

By right clicking or hold for 2 seconds in touch displays on a gauge opens a popup menu for parameter settings. User can set Max value, Min value, Steps and Minor ticks. Click on the **Save** Button on popup menu to save edited gauge parameter or click on **Quit** to abort editing gauge.
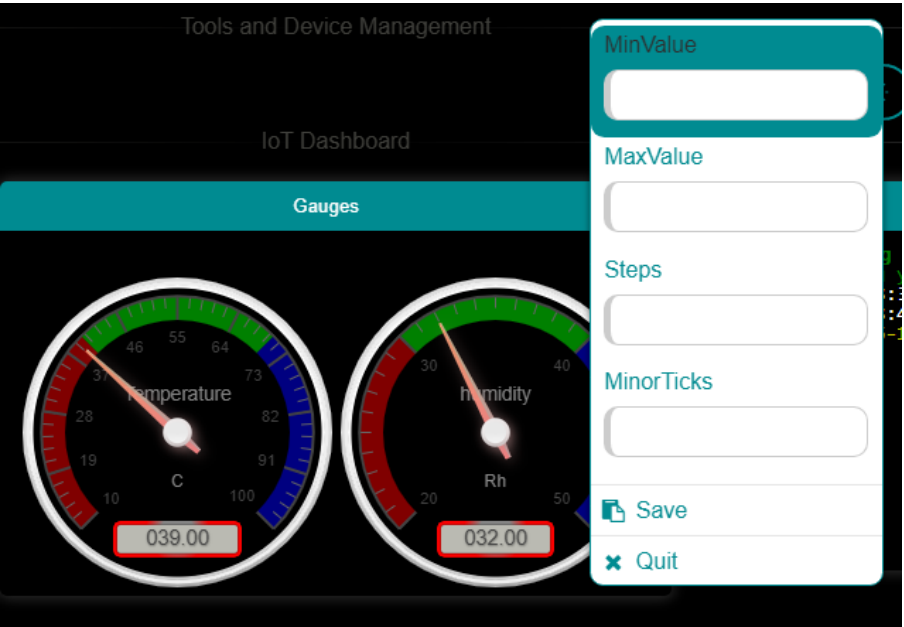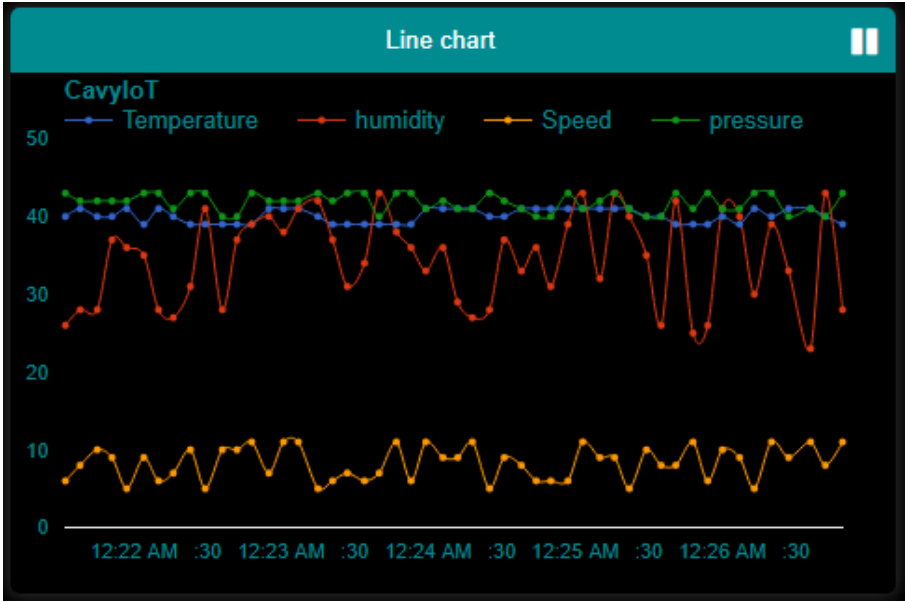
Sensor Data

- As described earlier CavyIoT Dev-board permits up to four sensor variables out of which first two variables will be displayed in gauge view. And Sensor3, Sensor4 data will be displayed here if available.

-
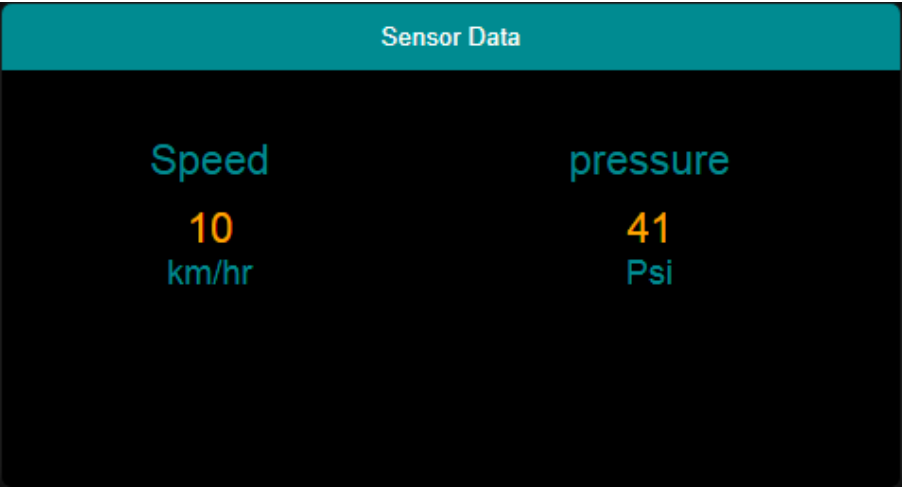
Line Chart

Chart for Data visualization is one of the most famous and useful techniques in the field of data analysis and IoT. CavyIoT uses Line Chart for the Sensor Data visualization. This chart continuously updates with the interval of 5 seconds and plots the received sensor data in it.

- This line chart can plot sensor values received from CavyIoT-DevBoard upto four different sensors simultaneously with individual line of indications and 50 data points.
- User can pause chart to explore by simply clicking on the Pause button placed at the upper-right corner in the Line Chart division.
- To explore, Scroll on the chart to zoom, Pan to move and Right Click on chart to get back to normal view.(This will not work in touch responsive displays).
- Horizontal line of chart is for time in seconds/min/hours and Vertical line is for Values.
- Hover on each data point on chart opens a tooltip. This tooltip contains values of all sensors at that instance with timestamp.
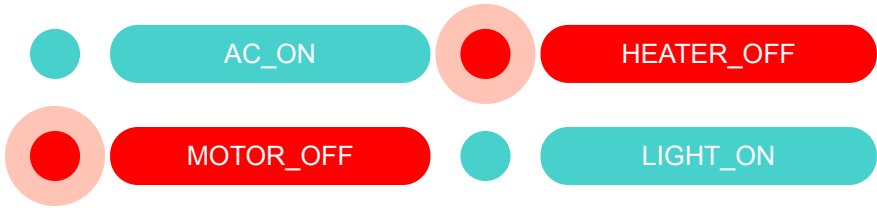
Terminal

Terminal on control panel continuously posts latest updates of the device status and sensor data. It will post a message on terminal whenever a user issues a control signal, control signal issued by trigger, while switching between AUTO/MANUAL modes and receiving data from CavyIoT-DevBoard.
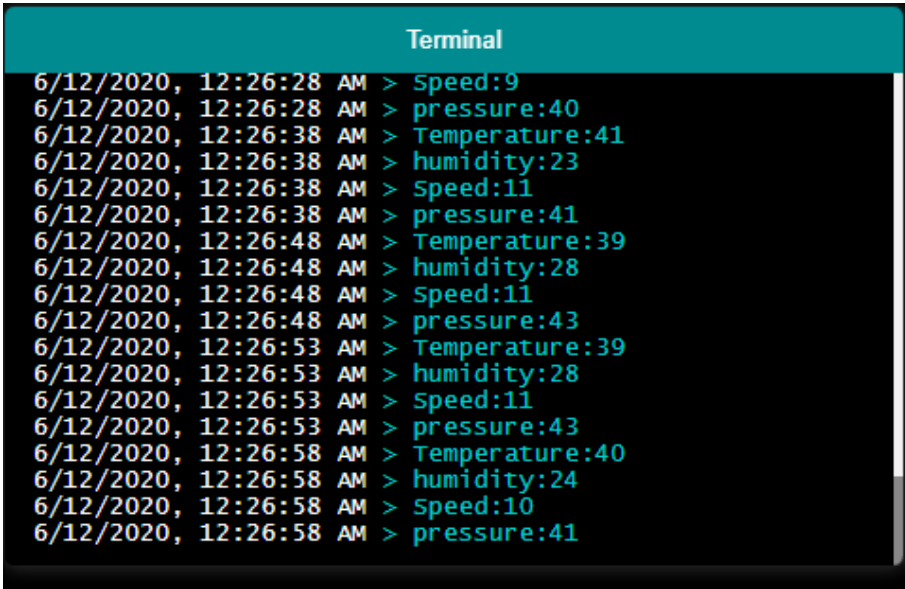
Buttons

Buttons on control panel are for sending control signal to CavyIoT device. user can give meaningful name to buttons according to the designed system which makes easy for operator to operate control panel. Output pins of CavyIoT device if are used for controlling the electrical devices like Heater,fan,bulp, pump, sprayer, solnoid valve, AC, cooler etc.

How to customize buttons?

As a Common practice, user usually assigns meaningful lable to the related buttons. Operating of system goes more easy when buttons are named properly, rather than using it as named as **Relay_1 ON, Relay_3 OFF** and so on. Considering the benifits of naming button, the facility of editable buttons is made available by CavyIoT. user can easily modify the lables for buttons on the control panel through the API of Dev-Board.

Blinking circle of the adjacent button is covered in Triggers information.

Last Control Signal

- Displays a message for last control signal issued with the timing details.The text colour of message is red when user clicks the Button on control panel and then turns to orange. This change in colour from RED to ORANGE is the indication of that the control signal is successfully sent to the CavyIoT sever.

- If control signals are generated by Trigger and device is working in AUTO mode, then message will add the text **" By Trigger "** to it.

- Displays Dev-Boards settings set by user for the **Ping interval** and **Recording interval**.
- Three buttons at the bottom of this widget are for settings **Recording interval**, **Reset Device** and **Ping interval**.
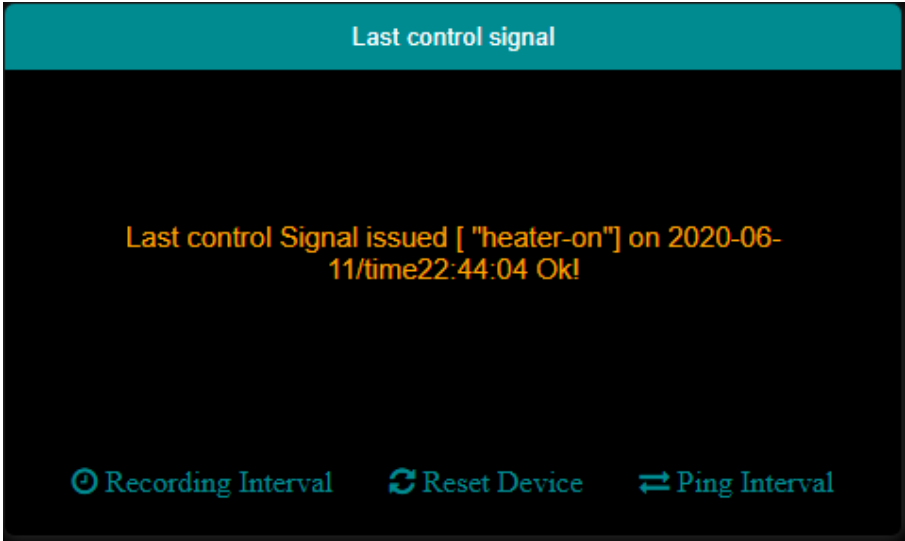
How to set Recording Interval?

And on control panel, you can set **Recording interval** simply by right clicking or hold for 2 seconds in touch displays on
⏱ Recording Interval (you can try here for demo) button will open popup menu for Interval setting. User can set recording interval form the options. **Save** Button is for saving the changes, and **Quit** is for abort setting.
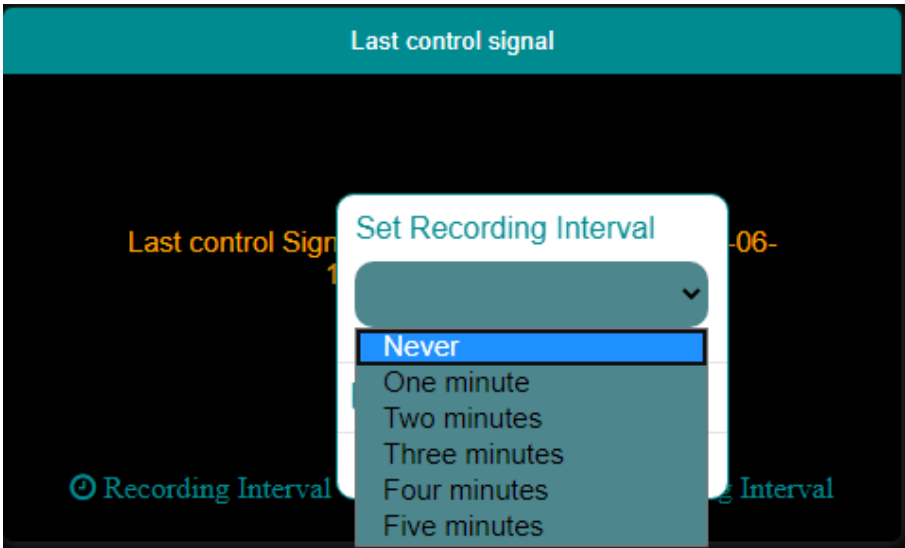
Recording Interval-
In Dev-Board there is inbuilt provision for keeping records of the all operations and state of device. It keeps the record of records all data, operations and status of the device. As you know, the output pins of DevBoard are responsive to the corresponding Buttons on the Remote control panel. If the button is clicked on remote control panel causes the state of output pin of device get changed or if user switches operation mode ie from "AUTO" to "MANUAL" causes a change in status of device. This change in operation mode or the change in state of output pin generates an event to write record to the end of log file in DevBoards memory. Even if any such event does not occurs the device records the state of device in predefined interval. Local data backup is the most important as it is useful for data analysis, and for tracing the track of operation done. Recording interval is configurable and can be set with hardware API of the Dev-Board too!

How to set Ping Interval?

And on control panel, you can set **Ping interval** simply by right clicking or hold for 2 seconds in touch displays on
⇄ Ping Interval (you can try here for demo)button will open popup menu for Interval setting. User can set Ping interval form the options. **Save** Button is for saving the changes, and **Quit** is for abort setting.
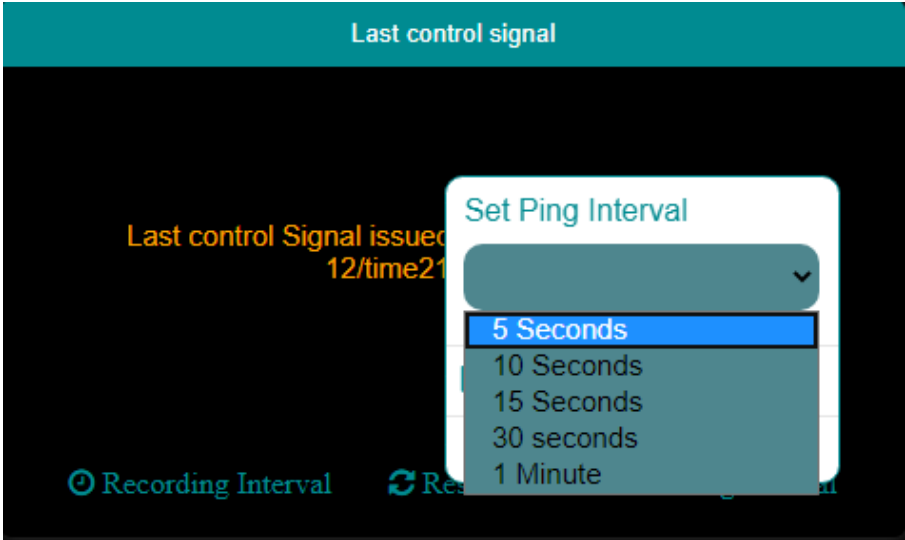

Ping Interval-
Device sends request to the CavyIoT server via internet, in defined interval to get the status of remote control panel, for an example if the user clicks the button on control panel, the device will receive control signal issued in the next ping (request). The pinging keeps the device in synchronization with the remote control panel. Default ping interval is 5 sec, setting ping interval to higher values slows the response time of device and vice versa . Ping interval is configurable and can be set with hardware API of the Dev-Board too!

How to Reset Device from control panel?

click on the ⟳ Reset Device to reset the CavyIoT-DevBoard.

Toolbar
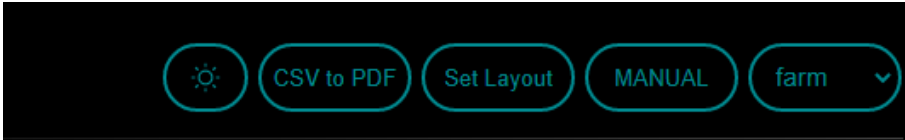
- Device selector
- AUTO/MANUAL toggle button
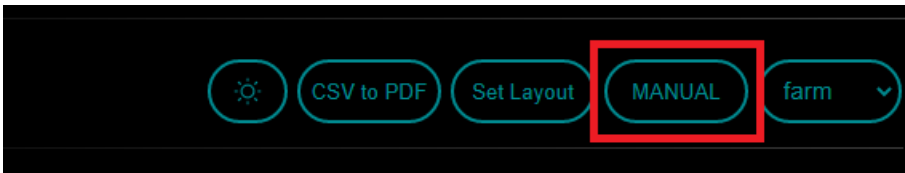- Set Layout
- CSV to PDF
- Theme

AUTO/MANUAL toggle button

The control system which is made available for the CavyIoT-DevBoard can control its output pins to a particular value (LOW/HIGH) or perform an event if the specified conditions are satisfied based on the sensor data.

The control can be classified into 'Automatic control' and 'Manual control', based on the involvement of human being. The aim of any control system is always to modify the output or performance of the system to the desired one. In **Manual control** of CavyIoT device, the process operator observe the sensor data and controls the system manually. with the help of Buttons of Contol Panel, the operator can change the state (LOW/HIGH) of output pin of CavyIoT-DevBoard by sending control signal from remote location. The manual control is very useful during emergencies.

Automatic control system uses the control signals generated by Triggers. Automatic control gives high efficiency and it is necessary for reducing the labour cost in many industries. User of CavyIoT-DevBoard can select/change AUTO/MANUAL mode for the operation of control panel as per his requirement.

By simply clicking on the button with label AUTO/MANUAL placed at the top-right corner on the control panel as shown in the image below:

Set Layout

Click on Set Layout button causes all the widget to blur (indicates Layout to be set) and displays a check box in his header. User can arrange the sequence of widgets in control panel, by checking the check boxes in a sequence according to his preferences. Lay out is saved immediatly after the user checks check box of last widget.
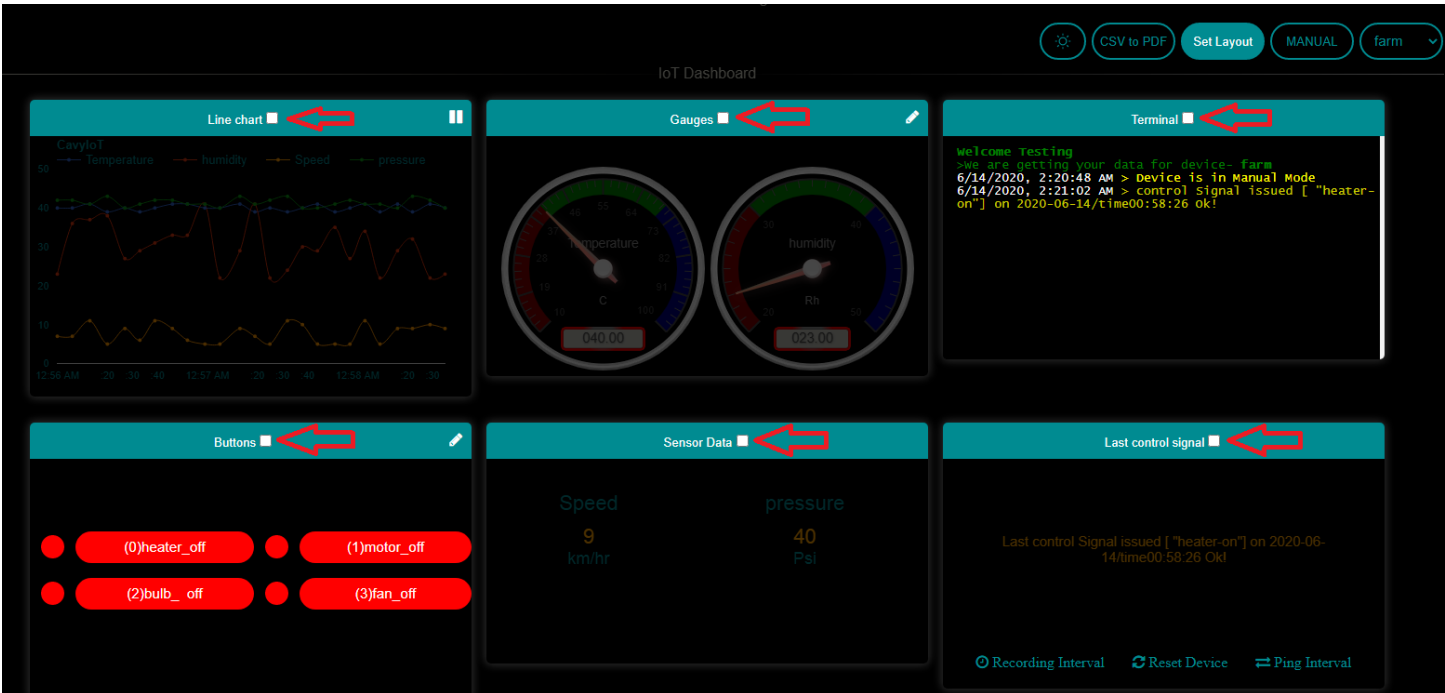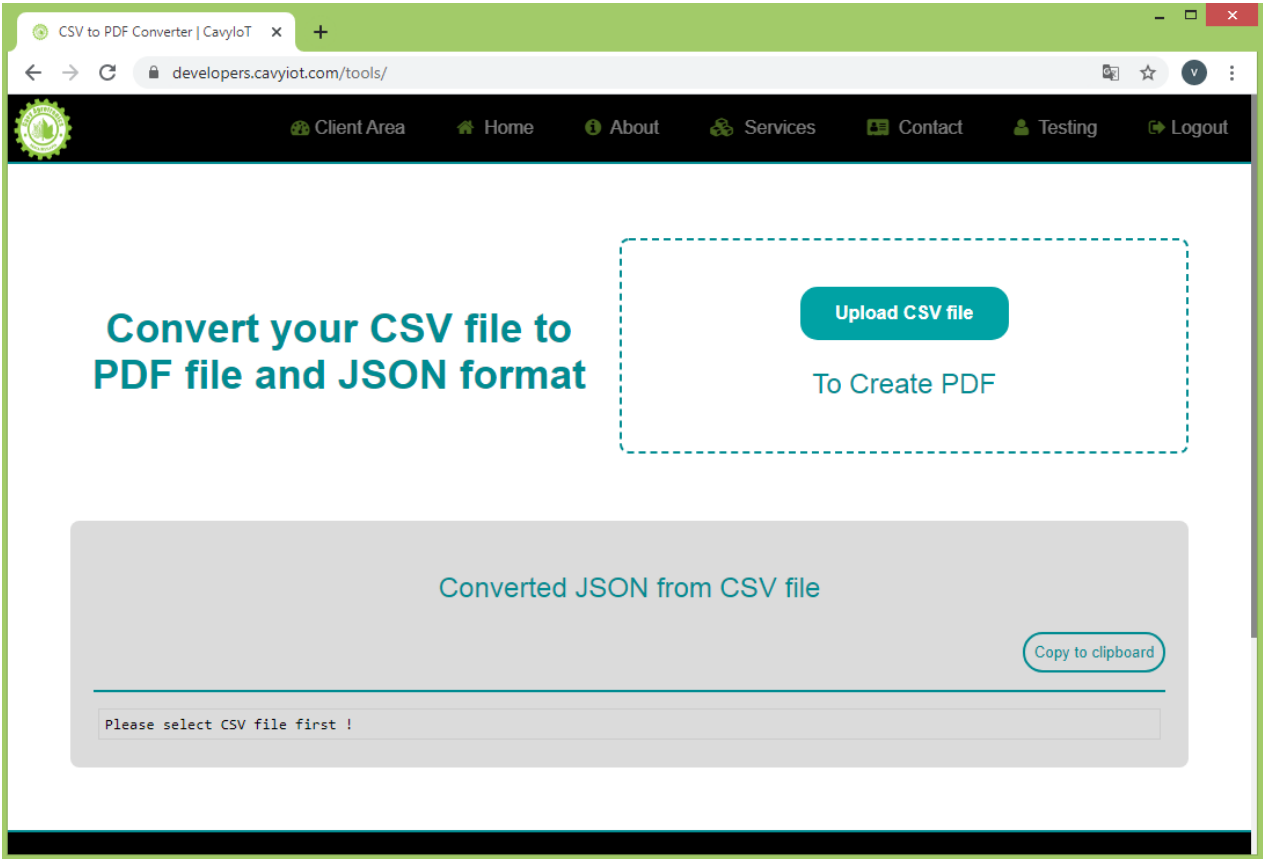
CSV to PDF

This is online tool to convert log file of DevBoards to PDF and JSON format. For availing this facility user must have 'log file' saved in his computer, which is downloaded from the Dev-Board.If you not downloaded the log file from Dev-Board yet, you can download log file from here for demo example purpose.
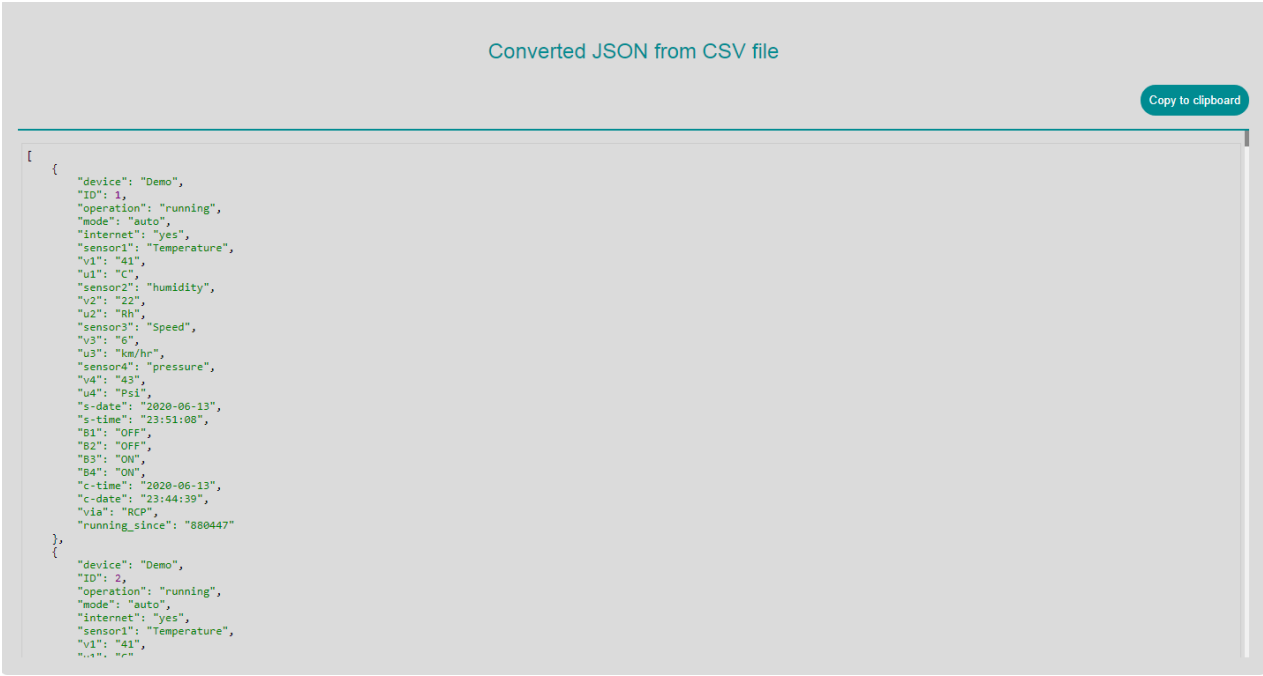
1. Click on **Upload CSV file**

2. Valid selection of CSV file (CavyIoT-DevBoard log file) converts CSV file to PDF file . Click on **Save** to save PDF file.
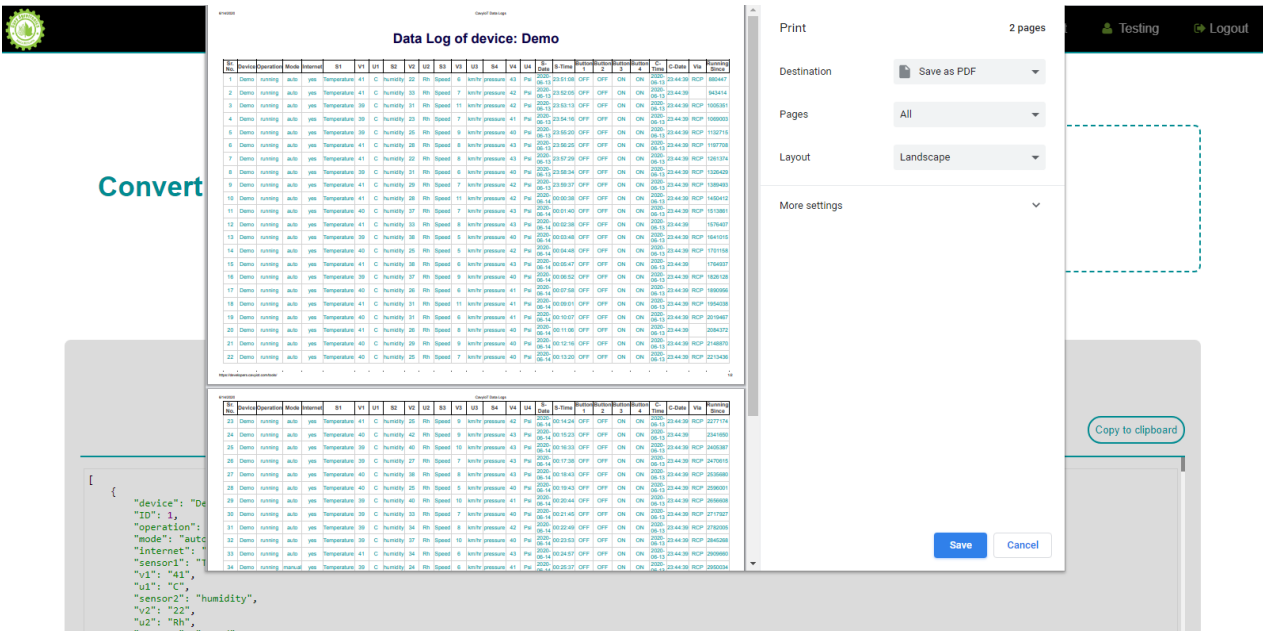
3. And JSON format of CSV file you can **Copy to Clipboard**.

To know more about how to download log file from DevBoard Click here.

Theme - Day/Night Mode

Click on the Theme button (shown in the above image) to switch between Day-Night Mode

1. **Day Mode**
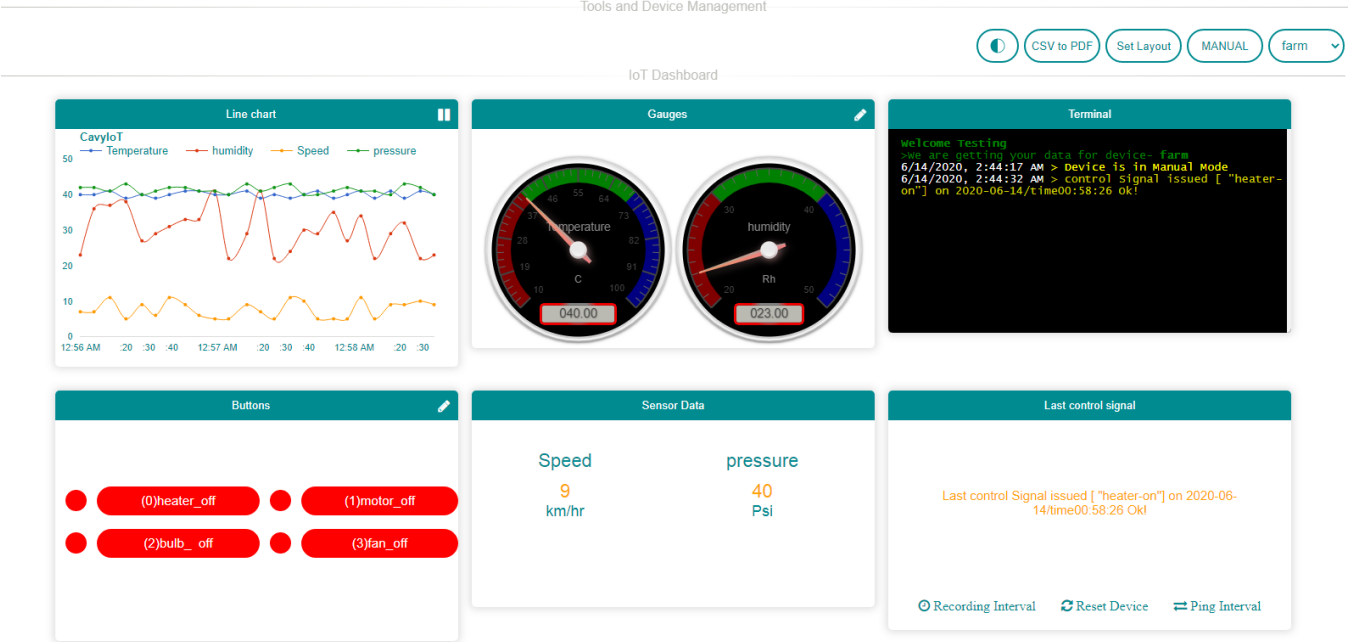
2. **Night Mode**
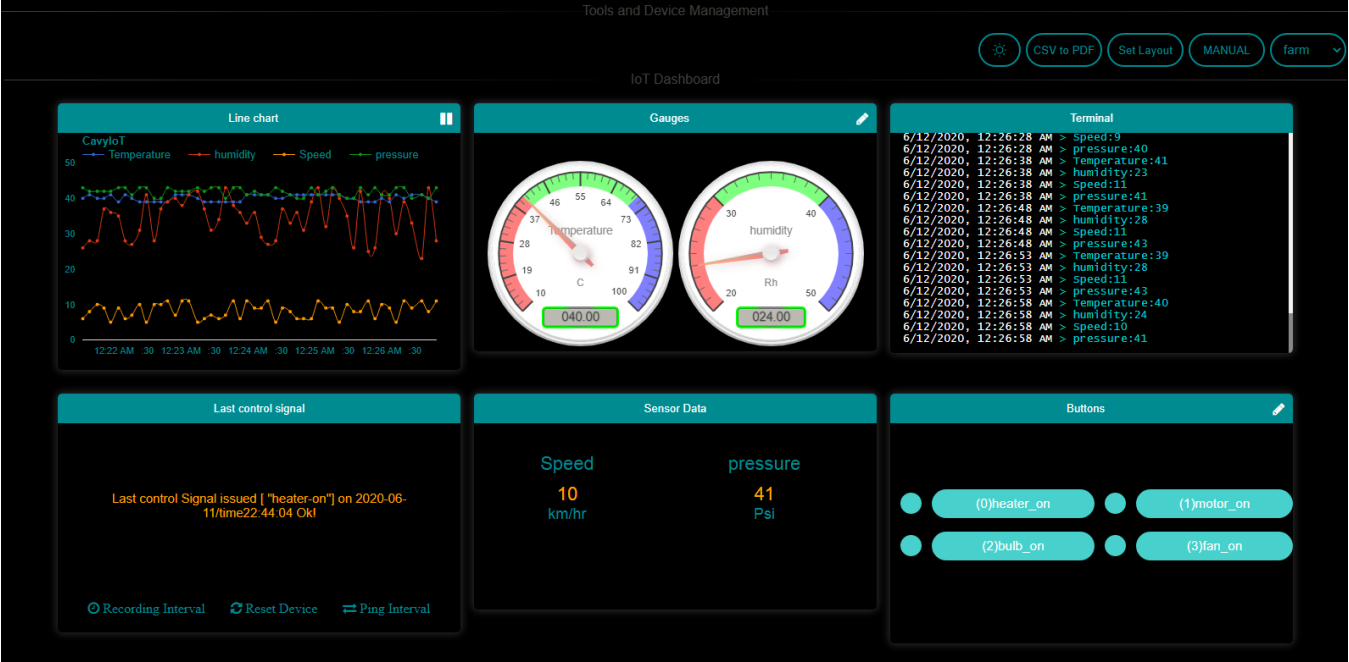
Triggers

CavyIoT Trigger is a free and fully managed service that makes it lets user to define specific event of sensor data, to trigger an events for desired action.

Before this, you may had built costly custom applications for collecting data from various nodes, to apply decision logic for condition to detect an event, to trigger another application for taking action desired for that event. But now using CavyIoT triggers, it is simple to detect events from IoT sensors data (ex:temperature,humidity etc) to trigger desired event.

For an example, an eggs incubator system needs to maintain temperature between specific range. For maintaining temperature between specific range, needs detection of an event on temperature data by watching continuously. And if the temperature excceds above the maximum value of range, then need an action to stop further heating. Similarly when temperature lowers below the minimum of range, need an action to start heating.

CavyIoT facilitates the user to define trigger by providing standerd UI. User can easily set the **if** and **then** logic for particular event and can select particular action from options to be triggered, when the defined event occurs. CavyIoT

continuously monitors data from multiple IoT sensors to detect **events**, and triggers alerts and actions in response to the events based on the logic defined by user, to solve issues quickly, reduce maintenance costs, and increases the operational efficiency.

CavyIoT Trigger mechanism
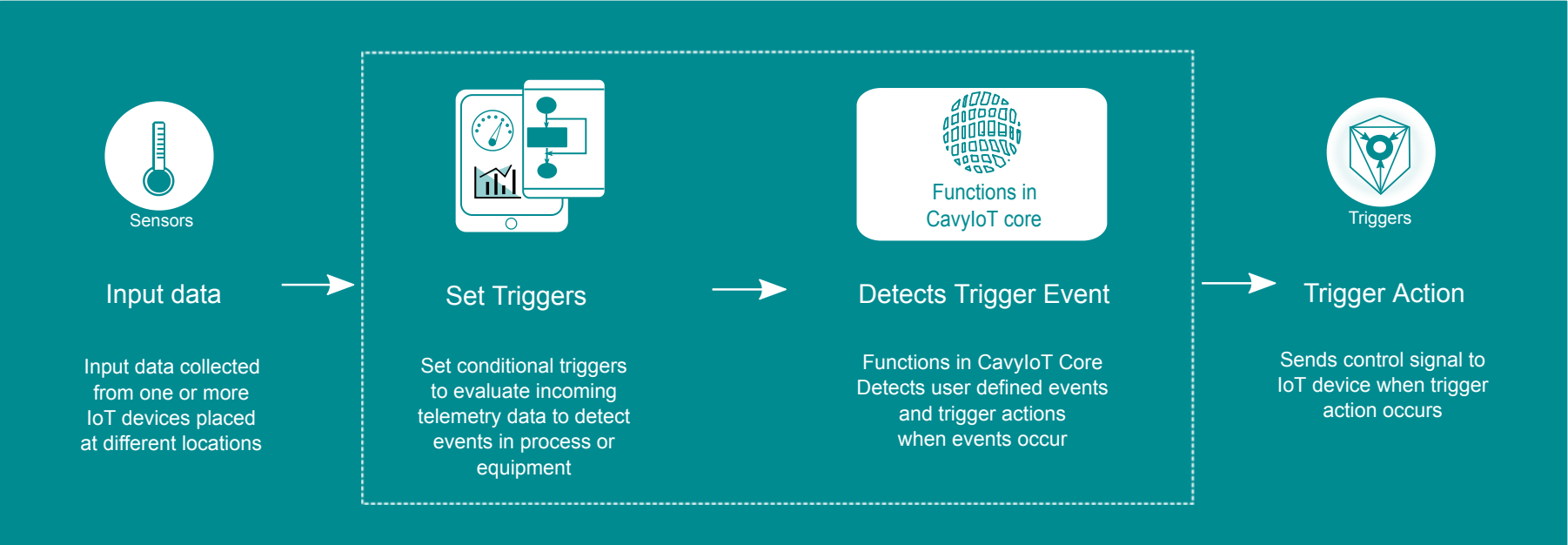
How to set triggers

1. Go to **Client Area** and select your Device and click **Set Triggers**-

2. Now, you have to select **Sensor, Condition, Value and Action** from the list-

3. If you want to set more triggers click on **Add Trigger**, after setting triggers click on **Save** and proceed-

4. Your triggers has been set successfully!

Troubleshooting

1. Dont worry about if **Set trigger** Button is not available in your **Client Area** . Whenever once you will send data it will be availble! And the your Sensors list and Action list, will be listed as options automatically!!

FAQ

1. How to Edit Gauge?

2. How to Set Ping Interval from Control Panel?

3. How to Set Recording Interval of device from Control Panel?

4. How to Reset Device from Control Panel?

5. How to switch between AUTO-MANUAL modes of working?

6. How to convert Data Backup file (.CSV) downloaded from CavyIoT-DevBoard to PDF using CavyIoT Online tool?