PROPERTY MONITORING SYSTEM

User manual

20th Dec, 2018

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1 HARDWARE

To power the nodes:

- **Use USB Power**: using micro USB cable to plug into computer's USB ports or to appropriate power supply (3,3-5V)
- **Provide 3.3V directly using regulator adapter.**
- **Provide Power to Vin** (The regulator is rated up to 800 mA)

2 NETWORKING

By the default, the system is made to work within its own ecosystem. To allow internet connection, you need to plug in an external wi-fi dongle to a USB port. Similarly, if you want to enable internet access point on the camera node, you need also need to plug in another external wi-fi dongle to the node’s USB port.

3 SOFTWARE

After all the hardware setup is ready, power up the main controller and it will directly boot to the application main window shown in figure 1. The application comes with different monitoring options: Climate, Security, Report, Devices and Power. However, some options are not available in this version, hence it will not response when you touch on them.

Figure 1: Main window

3.1 Climate

Climate option provides the real-time current status of the atmosphere around each node. Figure 2 shows the example of the Climate window. There are three different colours showing three different statuses. When a block turns red, it means that the current environment is severe, and it also comes with the warning in words to describe what the number means. Yellow colour means that the current environment

is below the healthy line. The reason may be the values measured exceed or under the recommended range. Green colour shows that the current status of the environment is normal or in the recommended range.

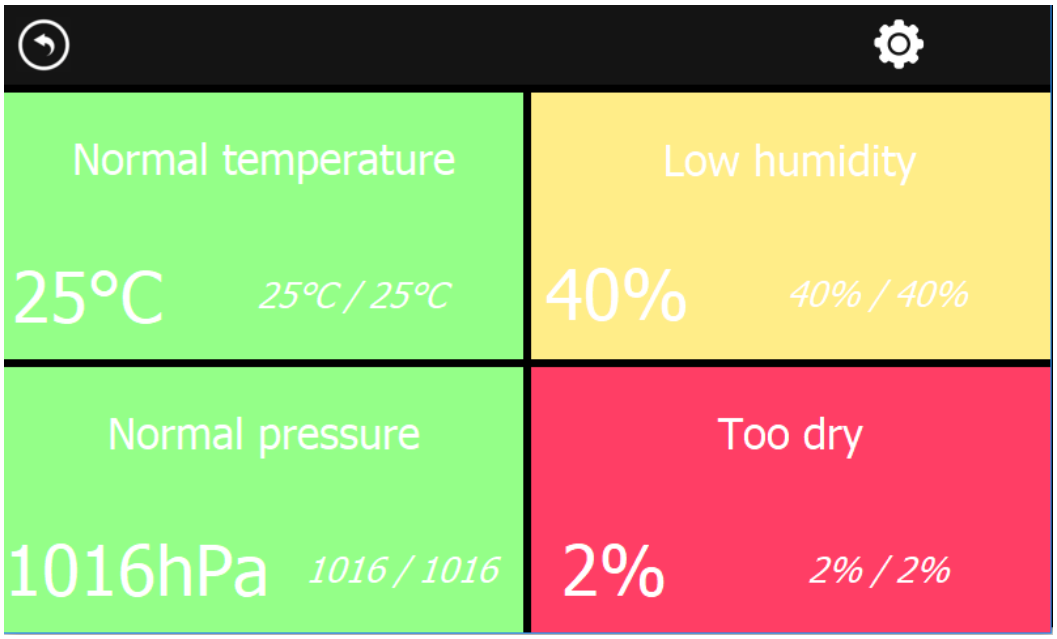

Figure 2: Climate window

3.2 Security

Security option allow watching surveillance streaming video from the camera node. Normally, the streaming window should as in Figure 3. It also provides some additional features that is to change the colour of the video and motion detection. The colour is changed by moving the triangle symbol appearing on the right edge of the window. Pi camera always detects moving object when it is caught on the video.

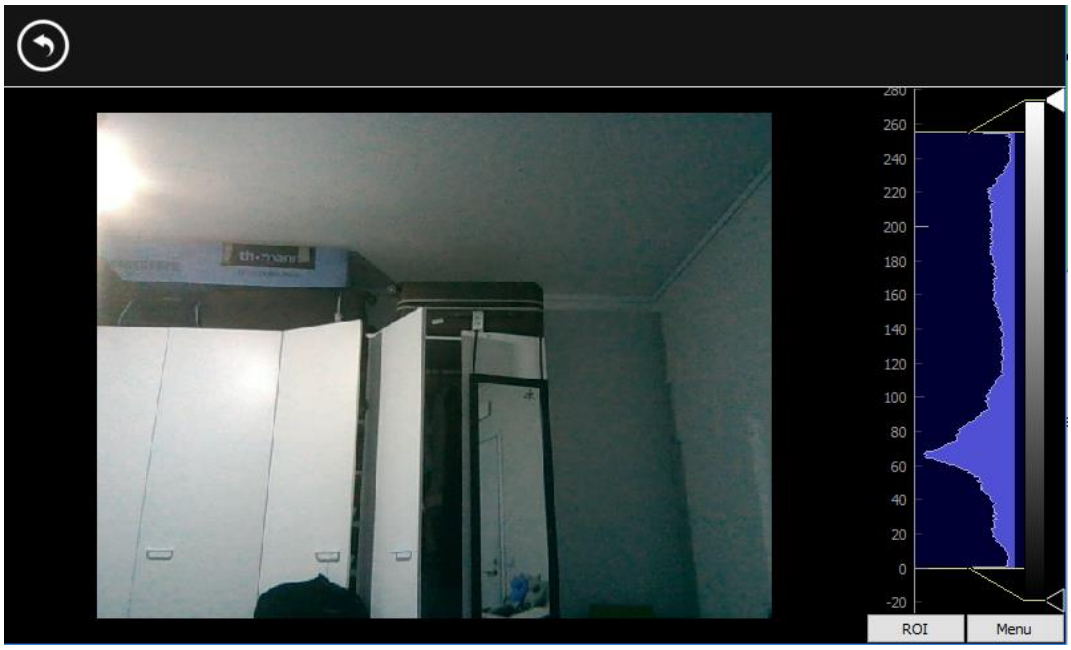

Figure 3: Streaming window

When an error message shows up as in figure 4, please check carefully if the camera or the camera node is still working or within the WIFI range. The device status can be verified by opening device window. Please read part three for more details.

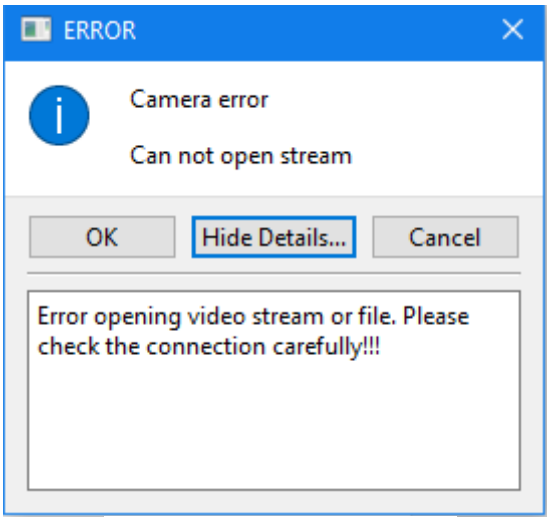

Figure 4: Streaming error

3.3 Device status

To open device status window, click on DEVICE button on main window. Figure 5 shows an example of a system with two devices which are already recognized. There are three elements of a node that the user needs to look at to verify that the system is working normally. Device column shows the node name; Location column show where the node displayed on the left is located. These two elements can be modified by the user. The last column displays the status of the nodes. If the

node is working, it shows “Enable” in light blue colour. When the node is broken or out of range, “Disable” is displayed in red colour. When there are new nodes in the system, the table will automatically add them to the end of the device list.

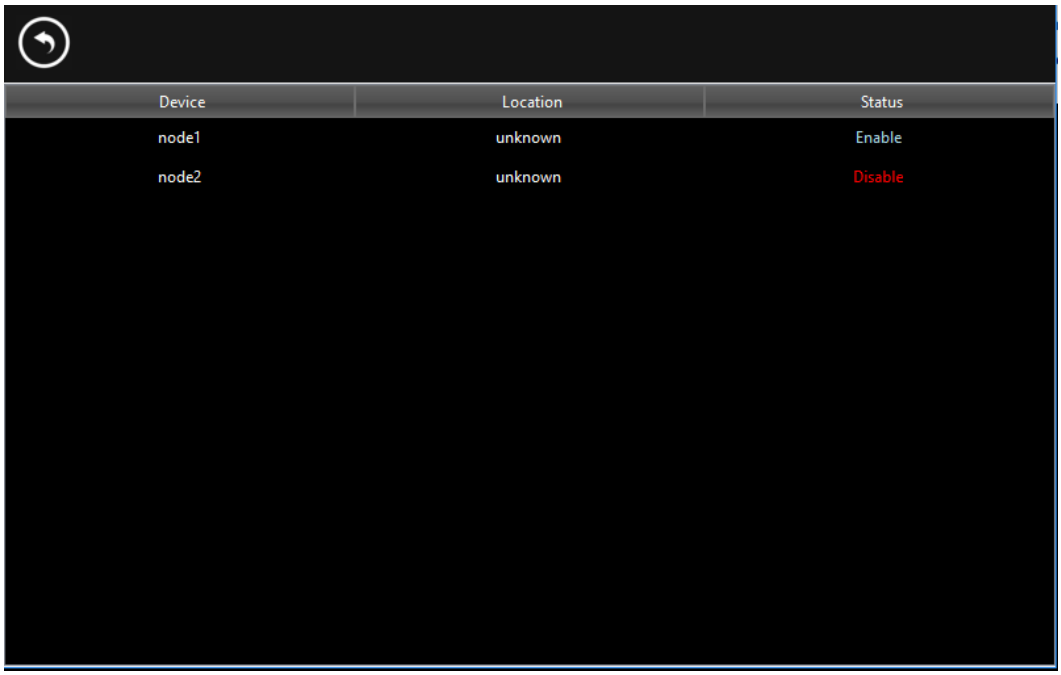

Figure 5: Device status

If there is a node that has the function to control light in the system, light adjustment block can be open by double clicking any cell that belongs to the row showing the information of that node. Make sure that the right node is double clicked, otherwise, nothing will happen. The name of the node will be displayed in the light adjustment block to show which node the block is referring to. There are two different controlling modes: Auto and Manual. Switching between modes by clicking the mode button. There is a slider for adjusting the brightness of the light. The right side of the slider indicates maximum brightness, the left side indicates less brightness; The light will turn off when the slider is moved to the left most position. After finishing adjusting the light, close the block by clicking OK button.

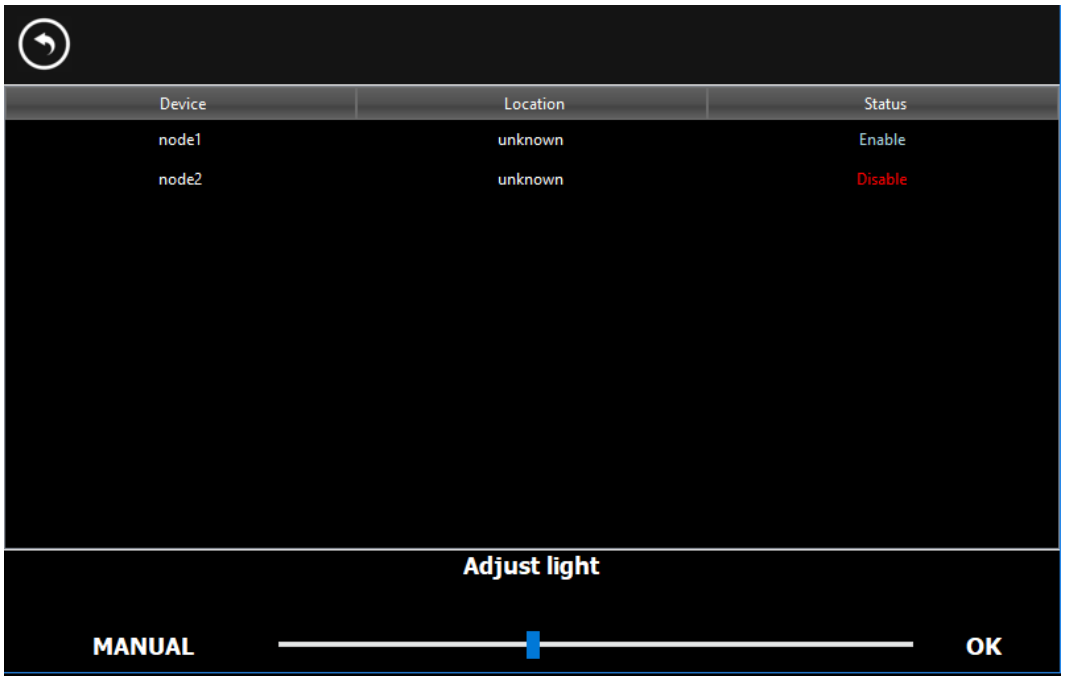

Figure 6: Light Adjustment

3.4 Collecting report

Opening report window by clicking report button on the main window. Report window will firstly appear without any graph. To activate the plot, choose one type of the data on the header. There are four types of data to be chosen from: temperature in thermometer icon, humidity in water drop icon, air pressure in pressure gauge icon and soil moisture in tree icon. Then, click on plot type button to change between minutely, hourly, daily and monthly type of graph. Graphs will automatically be drawn when the user switches between options.

User may also collect the report to personal devices by clicking email icon. The report will be sent to a registered email address with the information of current climate value, and the change of those value in a day or a month. When email is sent successfully, there will be a pop-up message to confirm the completion.

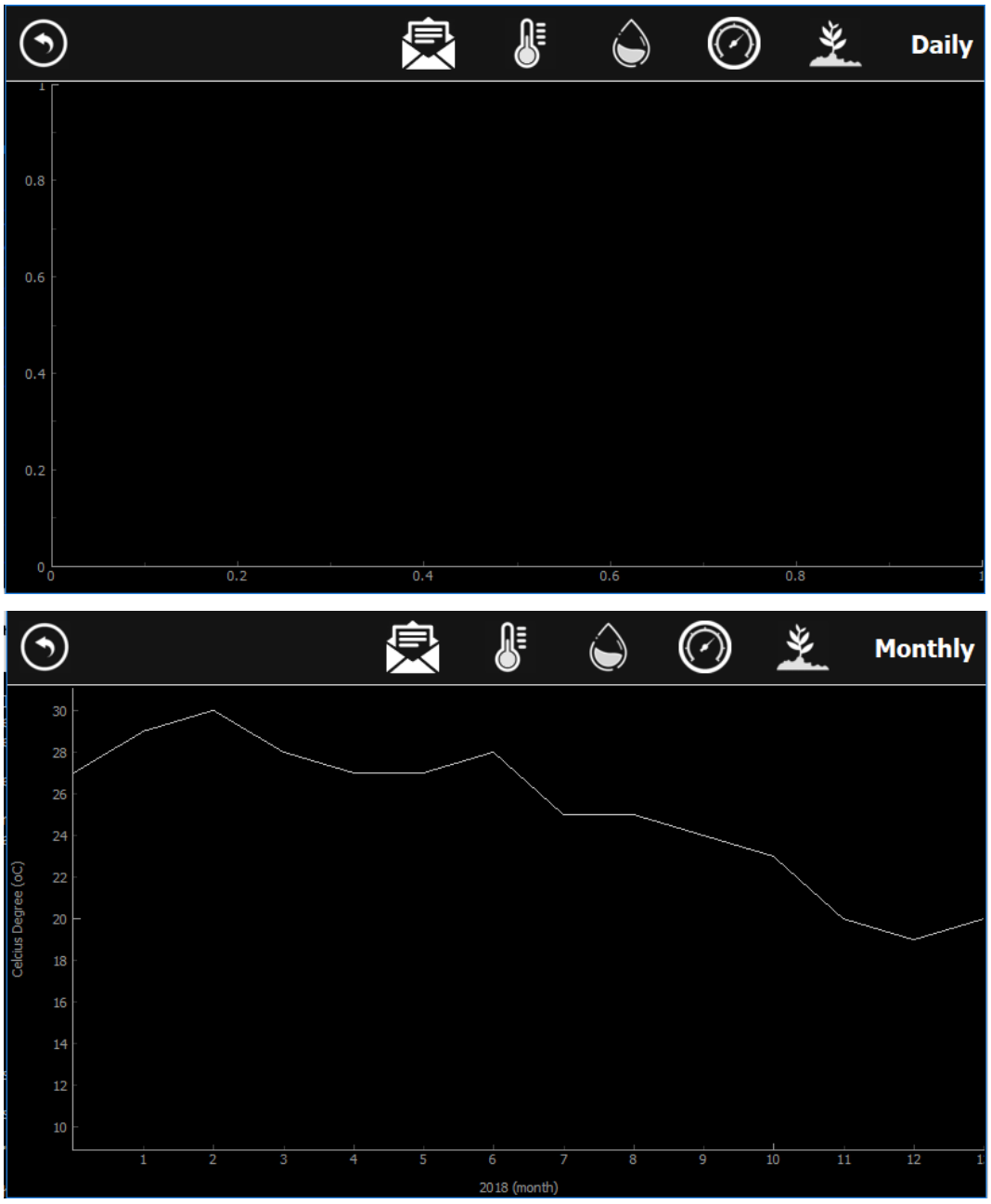

Figure 7: Report window