









TECHNICAL MANUAL

Telemetry Andon Version

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Hardware List

<p>Raspberry Pi 3B+</p> 	<p>12V 3A Power Adapter</p> 
<p>LM2596 Step-down Converter</p> 	<p>12V Buzzer</p> 
<p>12V Red Andon Light</p> 	<p>5V Dual Channel Relay (Trigger Low)</p> 
<p>AM2315C Sensor</p> 	<p>Red LED</p> 

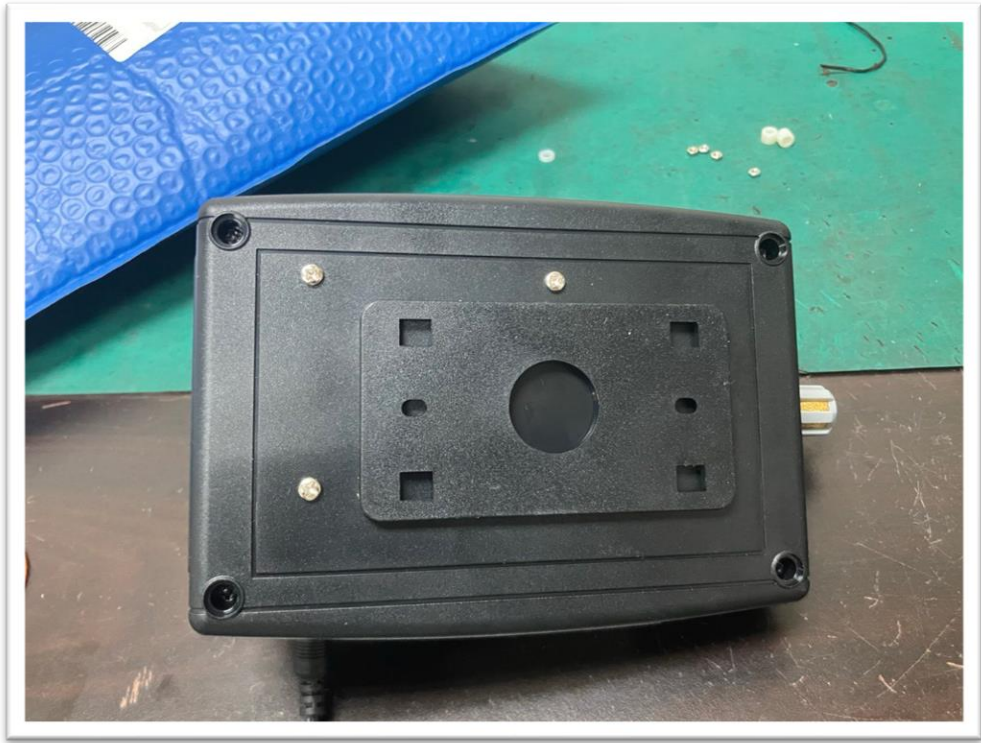
Others:

1. Box Enclosure
2. Jumper Wires/Wires
3. Screw and Nuts
4. Power Jack Panel Mount

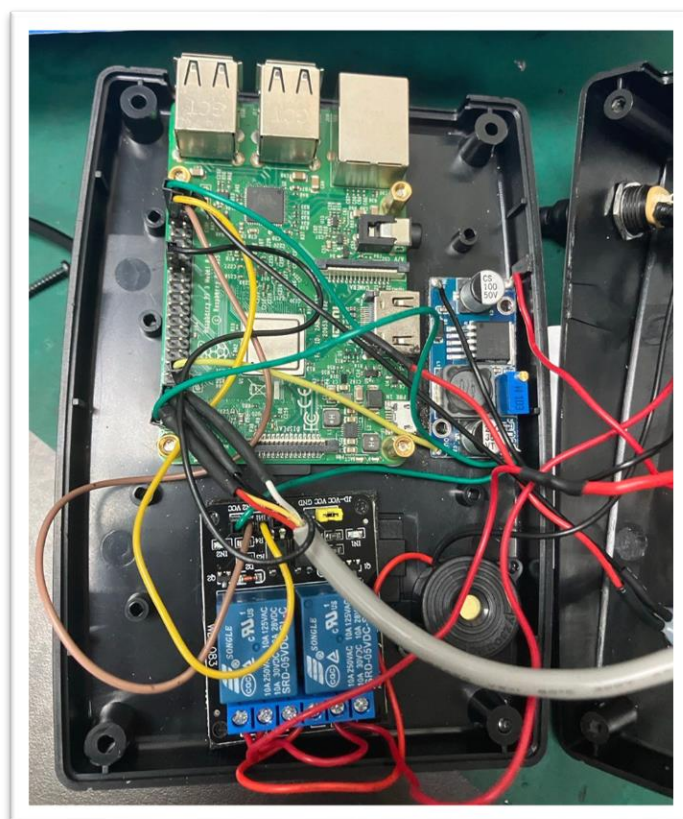
Exterior Look





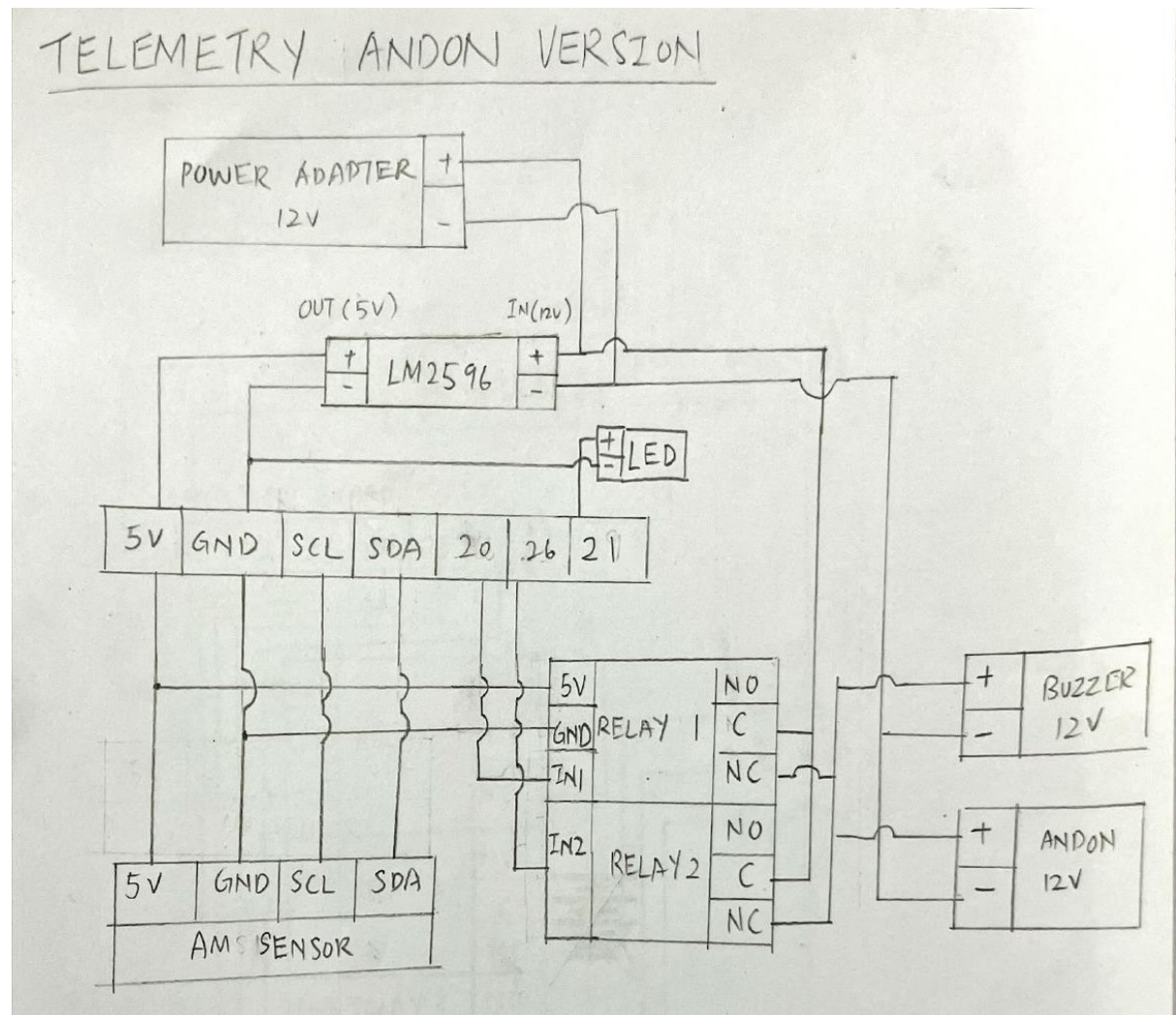


Interior Look





Hardware Diagram



Software Installation

Raspbian OS environment: 32bit(must), Bullseye.

After copy the file, give permission to Install.sh, then run it.

1. Open Command Line Interface
2. Go to src folder.
3. `sudo chmod u+x Install.sh`
4. `sudo ./Install.sh`

Other Info:

1. `src/main.c` is the main file that runs the telemetry.
2. `bin/config.json` saves all configuration, can be updated using Telemetry uapp.
3. `bin/aht.py` is a working python version that only reads from sensor.
4. `bin/stopbuzzeronce.txt` is used for temporarily off the buzzer.

MQTT

- ```
x mqtt/telemetry/#

{"messageld": 1272, "date": "06-06-24 14:26:54", "devicename": "Tele01
6", "operator": "update", "info": [{ "temp": "31.140327", "hum": "45.841297",
"pm25": "0.000000", "lux": "0.000000" }] }

qos : 0, retain : false, cmd : publish, dup : false, topic : mqtt/telemetry/Tele016, m
essageld : , length : 217, Raw payload : 123323410910111511597103101731003458
324950555044323410097116101345832344854454854455052324952585054585
3523444323410010111810599101110971091013458323484101108101484954344432
341111121011149711611111434583234117112100971161013444323410511010
211134583291321233234116101109112345832345149464952485150553444323
4104117109345832345253465652495057553444323411210950533458323448464848
48484848344432341081171203458323448464848484848483432125329332125

{"messageld": 12, "date": "06-06-24 14:26:34", "devicename": "Tele017",
"operator": "update", "info": [{ "temp": "27.178574", "hum": "53.870197", "p
m25": "0.000000", "lux": "0.000000" }] }

qos : 0, retain : false, cmd : publish, dup : false, topic : mqtt/telemetry/Tele017, m
essageld : , length : 215, Raw payload : 123323410910111511597103101731003458
324950443234100971161013458323448544548544550523249525850545851523
4443234100101118105991011109710910134583234841011081014849553444323411
1112101114971161111143458323411711210097116101344432341051101021113458
329132123323411610110911234583234505546495556535552344432341041171
002458323452544265548405755244432341121005052345832344846484848484848
```

2. To check IP address for VNC purpose, publish “?” to “**mqtt/telemetry/{yourdeviceid}/setting**”

bizsmart yeow - mqtt://101.99.74.167

×

Topic to publish

mqtt/telemetry/Tele016/setting

QoS

0 - Almost Once

Retain

☐

Payload Type

Strings / JSON / XML / Characters

e.g: {'hello':'world'}

Payload

?

Publish

×

mqtt/telemetry/#

lo IP Address 127.0.0.1 wlan0 IP Address 192.168.0.120

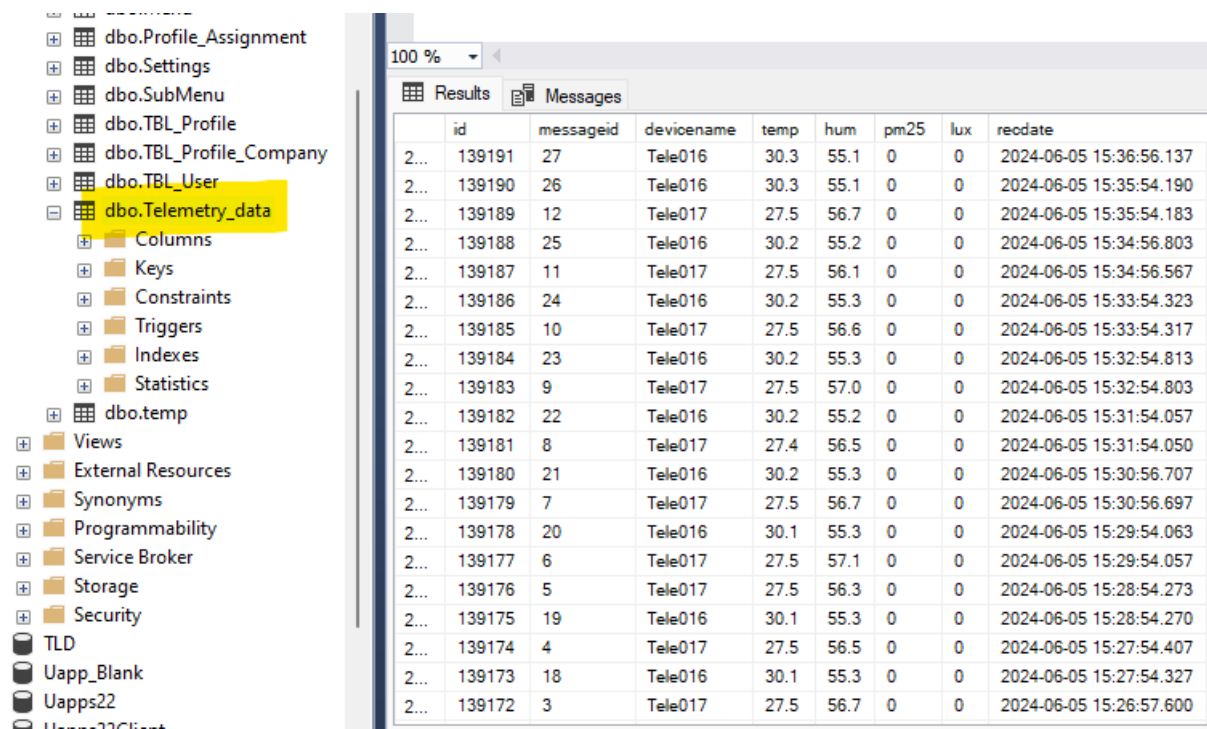
qos : 0, retain : false, cmd : publish, dup : false, topic : mqtt/telemetry/Tele016/setting, messageid : , length : 87, Raw payload : 1081113273803265100100114101115115324950554648464846491011910897110483273803265100100114101115115324957504649545646484649504810

?

qos : 0, retain : false, cmd : publish, dup : false, topic : mqtt/telemetry/Tele016/setting, messageid : , length : 33, Raw payload : 63

## Database

1. Telemetry data is saved in “Telemetry” database, “Telemetry\_data” table



The screenshot displays the SQL Server Enterprise Manager interface. On the left, the 'Server Enterprise' tree shows the database structure, with 'dbo.Telemetry\_data' highlighted. The right pane shows the 'Results' tab of a query, displaying a table with 8 columns: id, messageid, devicename, temp, hum, pm25, lux, and recdate. The table contains 20 rows of data, showing various sensor readings and timestamps.

|      | id     | messageid | devicename | temp | hum  | pm25 | lux | recdate                 |
|------|--------|-----------|------------|------|------|------|-----|-------------------------|
| 2... | 139191 | 27        | Tele016    | 30.3 | 55.1 | 0    | 0   | 2024-06-05 15:36:56.137 |
| 2... | 139190 | 26        | Tele016    | 30.3 | 55.1 | 0    | 0   | 2024-06-05 15:35:54.190 |
| 2... | 139189 | 12        | Tele017    | 27.5 | 56.7 | 0    | 0   | 2024-06-05 15:35:54.183 |
| 2... | 139188 | 25        | Tele016    | 30.2 | 55.2 | 0    | 0   | 2024-06-05 15:34:56.803 |
| 2... | 139187 | 11        | Tele017    | 27.5 | 56.1 | 0    | 0   | 2024-06-05 15:34:56.567 |
| 2... | 139186 | 24        | Tele016    | 30.2 | 55.3 | 0    | 0   | 2024-06-05 15:33:54.323 |
| 2... | 139185 | 10        | Tele017    | 27.5 | 56.6 | 0    | 0   | 2024-06-05 15:33:54.317 |
| 2... | 139184 | 23        | Tele016    | 30.2 | 55.3 | 0    | 0   | 2024-06-05 15:32:54.813 |
| 2... | 139183 | 9         | Tele017    | 27.5 | 57.0 | 0    | 0   | 2024-06-05 15:32:54.803 |
| 2... | 139182 | 22        | Tele016    | 30.2 | 55.2 | 0    | 0   | 2024-06-05 15:31:54.057 |
| 2... | 139181 | 8         | Tele017    | 27.4 | 56.5 | 0    | 0   | 2024-06-05 15:31:54.050 |
| 2... | 139180 | 21        | Tele016    | 30.2 | 55.3 | 0    | 0   | 2024-06-05 15:30:56.707 |
| 2... | 139179 | 7         | Tele017    | 27.5 | 56.7 | 0    | 0   | 2024-06-05 15:30:56.697 |
| 2... | 139178 | 20        | Tele016    | 30.1 | 55.3 | 0    | 0   | 2024-06-05 15:29:54.063 |
| 2... | 139177 | 6         | Tele017    | 27.5 | 57.1 | 0    | 0   | 2024-06-05 15:29:54.057 |
| 2... | 139176 | 5         | Tele017    | 27.5 | 56.3 | 0    | 0   | 2024-06-05 15:28:54.273 |
| 2... | 139175 | 19        | Tele016    | 30.1 | 55.3 | 0    | 0   | 2024-06-05 15:28:54.270 |
| 2... | 139174 | 4         | Tele017    | 27.5 | 56.5 | 0    | 0   | 2024-06-05 15:27:54.407 |
| 2... | 139173 | 18        | Tele016    | 30.1 | 55.3 | 0    | 0   | 2024-06-05 15:27:54.327 |
| 2... | 139172 | 3         | Tele017    | 27.5 | 56.7 | 0    | 0   | 2024-06-05 15:26:57.600 |