

TECHNICAL MANUAL

Telemetry Andon Version

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Hardware List

Raspberry Pi 3B+	 A green printed circuit board (PCB) with a Broadcom SoC, RAM, and various connectors, including two USB ports and a LAN port.	12V 3A Power Adapter	 A black power adapter with a UK-style three-pin plug and a power cord. It is labeled "12V 3A".
LM2596 Step-down Converter	 A blue printed circuit board (PCB) featuring the LM2596 integrated circuit, which is a step-down voltage regulator. It includes several components like resistors, capacitors, and a diode.	12V Buzzer	 A small black cylindrical buzzer with a red and black wiring harness attached.
12V Red Andon Light	 A red circular LED light with a black base, designed to be mounted on a panel or wall.	5V Dual Channel Relay (Trigger Low)	 A blue relay module with two relays. It has a PCB with two blue relays and some connecting wires.
AM2315C Sensor	 A grey cylindrical probe with a yellow and grey cable, used for measuring temperature and humidity.	Red LED	 A standard red LED component with two long metal pins (leads).

Others:

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

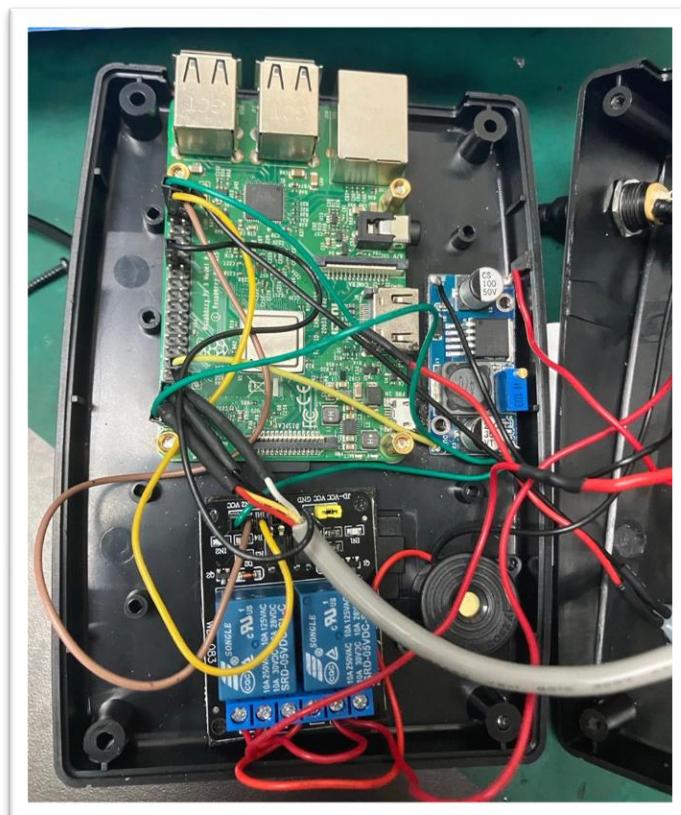
Exterior Look





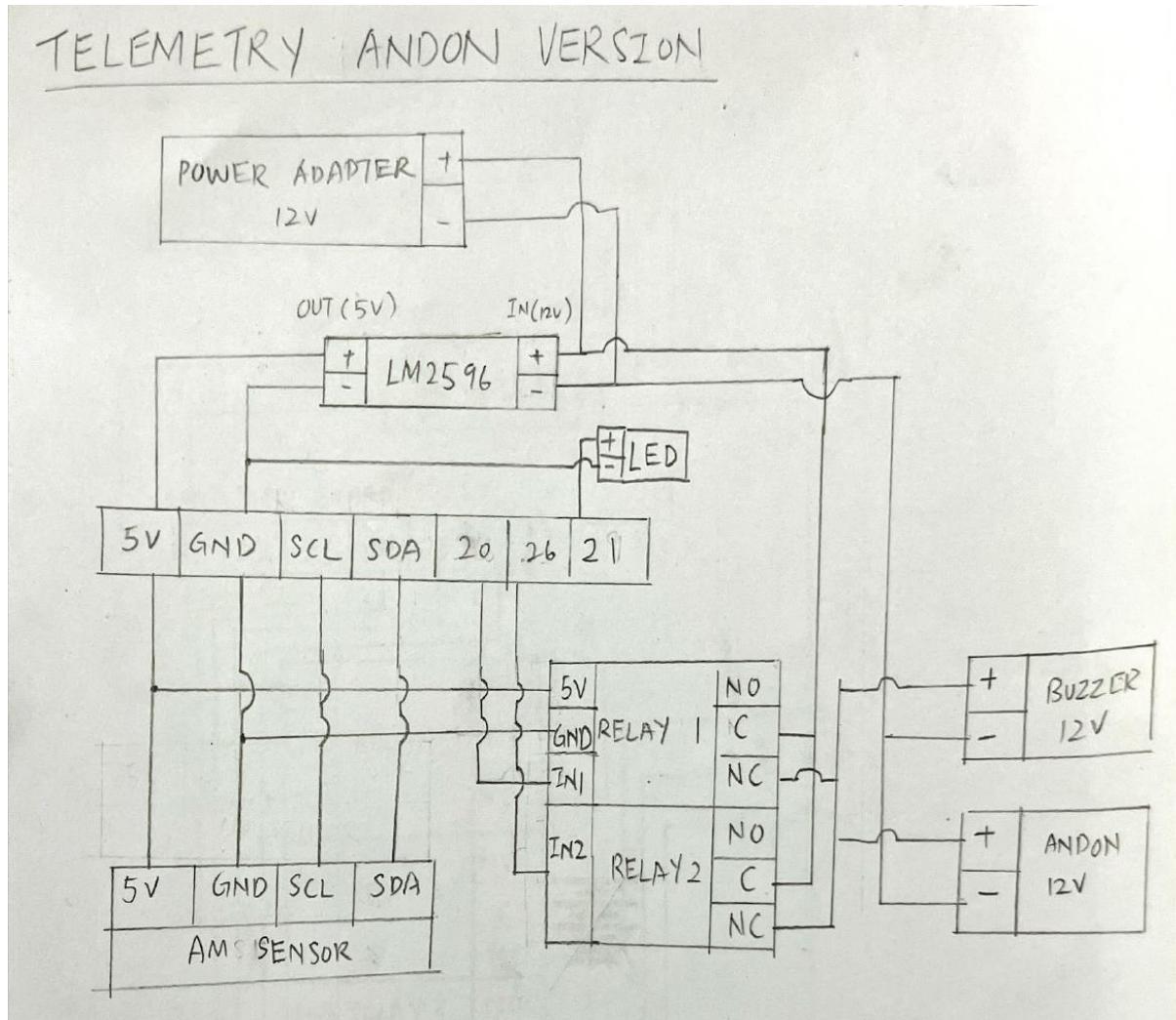


Interior Look





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

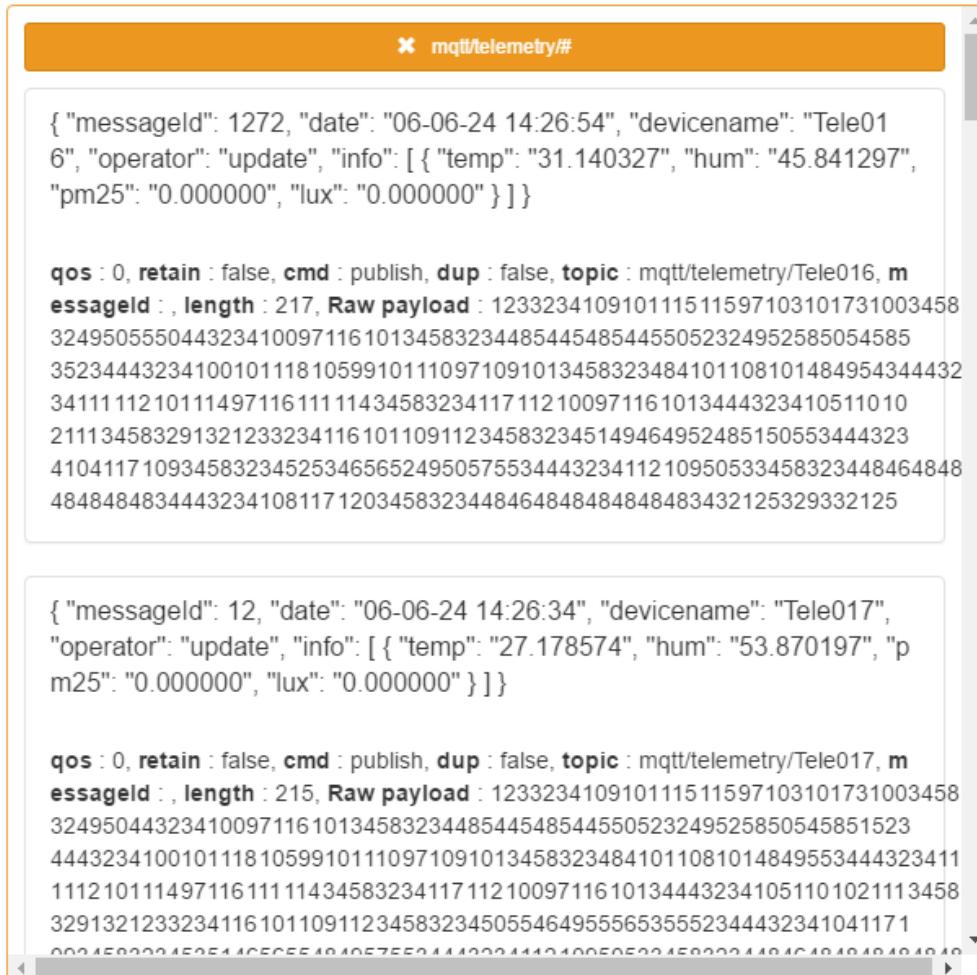
Other Info:

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.

Monitoring

MQTT

1. Using MQTTBox software, subscribe to “**mqtt/telemetry/#**” and check if relevant telemetry appears.



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

bizsmart yeow - mqtt://101.99.74.167

Topic to publish

QoS

Retain

Payload Type

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

Payload

Publish

✖ mqtt/telemetry/#

Io 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 shows the SQL Server Management Studio interface. On the left, the Object Explorer tree view displays various database objects under the 'dbo' schema, including Profile_Assignment, Settings, SubMenu, TBL_Profile, TBL_Profile_Company, TBL_User, and Telemetry_data. The 'Telemetry_data' node is highlighted with a yellow box. On the right, a results grid titled 'Results' shows data from the 'Telemetry_data' table. The columns are id, messageid, devicename, temp, hum, pm25, lux, and reodate. The data consists of 20 rows of telemetry data for devices Tele016 and Tele017.

	id	messageid	devicename	temp	hum	pm25	lux	reodate
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