KAFTS Technologies

BLUETOOTH EDGE

Bluetooth to MQTT Bridge

OVERVIEW

The Bluetooth Edge is a USB-powered device which scans for Bluetooth advertising packets and forwards them to the MQTT broker over the Wi-Fi. Each MQTT message includes information in JSON format, describing the received Bluetooth advertising packet (time of arrival, RSSI, advertising type, address type) and the data it contains (address, advertising data). The following configuration parameters can be set over the USB COM port: WLAN SSID and password, MQTT server, port, keepalive, QoS, user and password. Each manufactured device has a guaranteed unique identifier contained in the MQTT topic.

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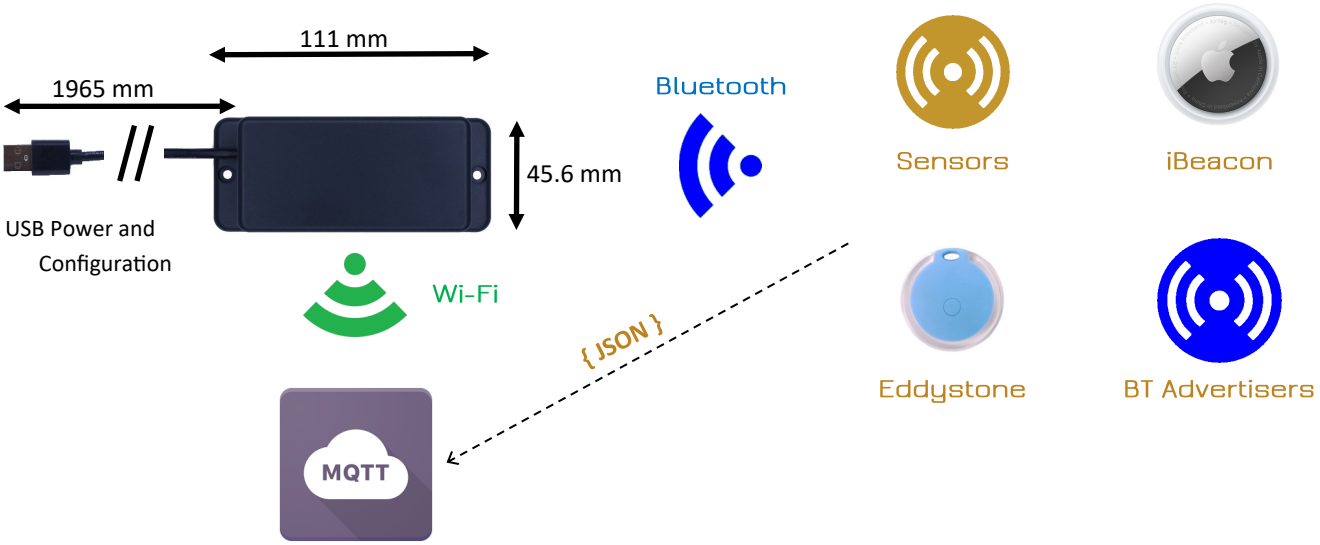
FEATURES

- **Bridges all Bluetooth advertising packets to MQTT broker**
- **Unique 64-bit ID**
- **USB powered**
- **Low-power consumption < 1W**
- **2.4 GHz 802.11n Wi-Fi**
- **Bluetooth 5.2**
- **Wall mounted**
- **IP65 enclosure**
- **UKCA / FCC / CE certified**

APPLICATIONS

- **Bluetooth location tracking**
- **Bluetooth sensors**
- **Remote control systems**
- **Alarm systems**
- **Smart homes**
- **Industrial control**
- **Telemetry systems**

TYPICAL SETUP DIAGRAM



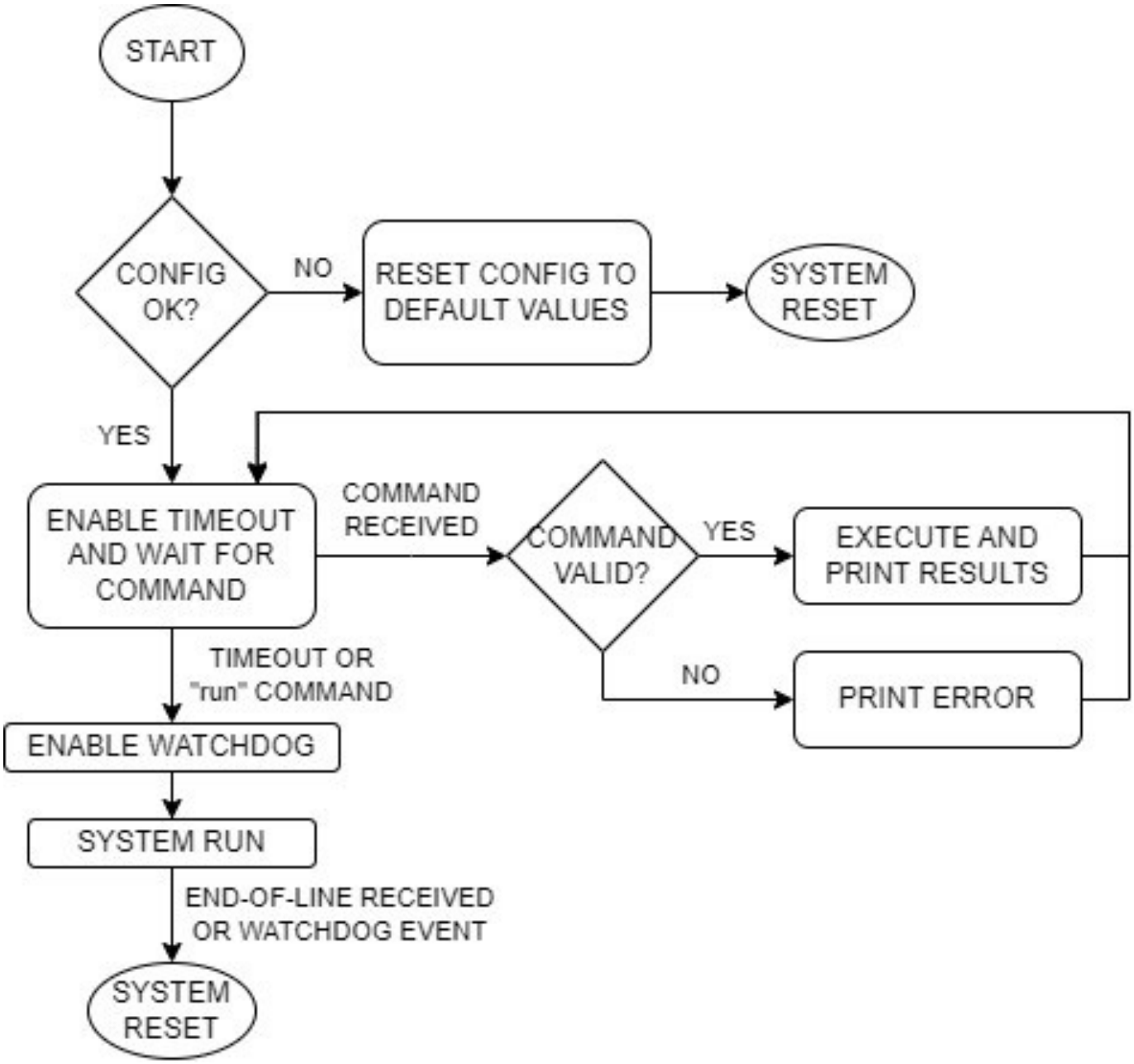
USB INTERFACE

The Bluetooth Ede provides a simple configuration interface over a USB COM port. Users can plug the device into a computer with a USB and open a COM port with any settings via popular terminal emulators like Tera Term, Putty and RealTerm on Windows, minicom, screen and picocom on Linux, o Serial on Mac OS. The USB console is processing the incoming command after receiving the end-of-line character (enter), not echoing received bytes. Three commands and ten parameters are available to the user (please note the console is case sensitive).

Command	Reply OK	Reply ERROR
run	[OK] SYSTEM RUN [OK] WLAN CONNECTED [OK] MQTT CONNECTED	
get *parameter*	[OK] *parameter* = *value*	[ERROR] INVALID VARIABLE NAME [ERROR] INVALID NUMBER OF PARAMETERS
set *parameter value*	[OK] *parameter* = *value*	[ERROR] INVALID VARIABLE NAME [ERROR] INVALID NUMBER OF PARAMETERS [ERROR] INVALID *parameter* VALUE –VALID VALUES […]

Parameter	Type	Read/Write	Default Value	Description
wlan_ssid	STRING	R + W	ssid	The device is searching for this WLAN SSID to connect to.
wlan_password	STRING	R + W	pass	The device is going to use this password when connecting to Wi-Fi.
mqtt_port	INT RANGE 0 TO 65535	R + W	1883	This is the port number the device will use to connect to MQTT broker.
mqtt_server	STRING	R + W	192.168.0.248	This is the server IP address or server name where the MQTT broker is running.
mqtt_user	STRING	R + W	user	This MQTT user the device will use when connecting to the MQTT broker.
mqtt_password	STRING	R + W	pass	This password the device will use when connecting to the MQTT broker.
mqtt_keepalive	INT RANGE 10 TO 600	R + W	10	MQTT keep alive in seconds.
timeout	INT RANGE 10 TO 600	R + W	30	Timeout in second of the state machine.
qos	INT VALUES 0, 1 OR 2	R + W	2	This is the MQTT Quality of Service value.
id	16 BYTES HEX STRING	R		Unique identifier as 16 bytes HEX value.

STATE MACHINE



MQTT MESSAGE BODY

The MQTT message contains a JSON string with the following fields.

JSON Field Name	JSON Field Type	Description
rssi	INT8	This field contains the measured power of the RF signal for each paket in dBm units. An excellent connection has rssi > (-55), good enough has rssi > (-70), and an unusable has rssi < (-90).
adv_data	HEX STRING	Advertising data in hexadecimal string. An example of an 8-byte data string is “07ff4c0012020002”, where each of the two characters represent one byte in hex value.
adv_type	UINT8	0—connectable and scannable undirected advertising 1—connectable directed advertising 2—scannable undirected advertising 3—non-connectable undirected advertising 4—scan response
addr	HEX STRING	This feld is a 48-bit Bluetooth MAC address represented as 6-byte hex string. An example is “13315ac83248”, where each of the two characters represent one byte in hex value.
addr_type	UINT8	0 for public and 1 for random (static, RPA, NRPA).
time	UINT32 Unix Time	Time of arrival of the Bluetooth packet in Unit Time (number of seconds that have elapsed since 00:00:00 UTC on 1 January 1970).

MQTT MESSAGE TOPIC

The MQTT topic structure is the following.

KAFTS/BTADV/JSON/{id}

Where **{id}** is the 64-bit unique identifier of the device in hex string. An example topic is as follows.

KAFTS/BTADV/JSON/E66141040328602F

ELECTRICAL SPECFICATION

Parameter	Minimum	Typical	Maximum	Unit
Power Supply Voltage	4.5	5	5.5	V DC
Power Consumption	0.15	0.2	0.5 (peak)	W
Operating Temperature Range	-20	-	70	°C
Storage Temperature Range	-40	-	85	°C
Operating and Storage Humidity Range	5	-	95	% RH (no icing or condensation)
Bluetooth 5.2 Frequency	-	2.4 (802.11n)	-	GHz
Wi-Fi Frequency	-	2.4 (802.11n)	-	GHz

SAFETY NOTES

1. **Do not plug the device to non-certified power supplies or other devices.**
2. **When installing the device, always wear protective equipment.**
3. **Do not operate or install the device when wet.**
4. **The device shall not operate outside specified environmental condition and electrical parameters.**
5. **For more information about the product, visit www.kaftstechnologs.co.uk and contact us.**