OpenSource BLE 5/Thread/Zigbee to WiFi/LTE Gateway
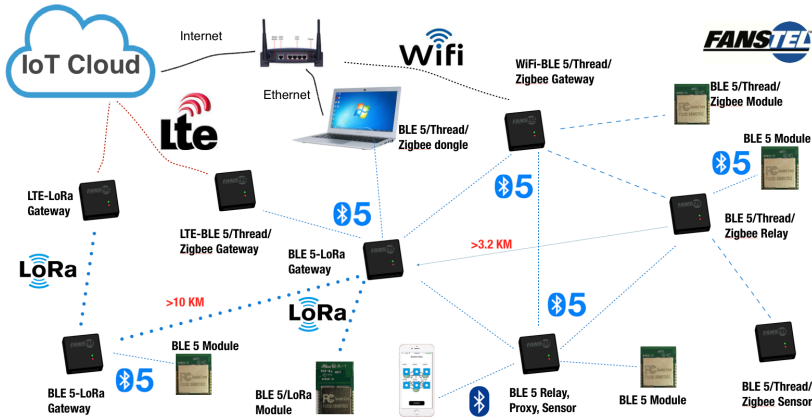### Market Ready Enclosure, Just Add Your Firmware

Since 1990

Gateway for Home/Small Mesh
BWG832F is a low cost Bluetooth 5-WiFi gateway for point to point or small mesh network. Its range to other node is 280 meters, enough for home and typical small office implementation.

BWG832X to Penetrate Multiple Walls
Using BT832X with +20 dBm TX, BWG832X can penetrate multiple walls or be used in wide area Bluetooth mesh

applications.

Industrial BLE 5/Thread/Zigbee to WiFI Gateway
CryptoCell-310 co-processor in BWG840F/X gateways can offload decryption and authentication of messages, required in Bluetooth SIG mesh. Cortex M4F MCU can relay messages in a large mesh network efficiently. ESP 32 WiFi module estabishes and maintain connection to a cloud server.

Industrial BLE 5/Thread/Zigbee to LTE Gateway
A Nordic nRF9160 LTE module is integrated with BT840F/X module in this industrial gateway.

LoRa to BLE 5 and LTE Gateways
A dual mode BLE 5/LoRa modus is used or integrated with a Nordic nRF9160 LTE module in gateways.

Nordic nRF52 Development Environment
Nordic nRF52 SoC in Bluetooth module communicates with a cloud server in message layers. Nordic nRF52 development environment should be used. An nRF52DK is required.

Source codes specific to gateway interfacing with Fanstel BLE 5 sensors are available at:
http://www.fanstel.com/download-opensource/

Over-The-Air DFU
The Bluetooth module is supported by an Over-The-Air Device Firmware Upgrade (OTA DFU) feature. This allows for in the field updates of application software and SoftDevice.

WiFi Module development-Mongoose OS
Development Kit (e.g., DK-BWG832F) is required to load codes into WiFi module. DK is preloaded with codes for connection to Fanstel development server.
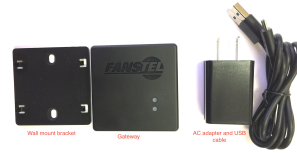**Mongoose OS** OpenSource codes for connecting to Fanstel development server and to **Google Cloud IoT Core** are available. They can be used as base to develop interface with other servers.
Link to download additional document and source codes:
http://www.fanstel.com/download-opensource/

Miscellaneous
- Size: 60x60x22mm
- Desk and wall mountable
- Power supply and USB cable included
- 2 LED indicators defined by user

Module and Product Bluetooth Ranges
Bluetooth ranges are measured with at least 60% Fresnel zone clearance (Low Multi Path Interference). They are provided as comparison. In actual environments with interference and obstruction, working Bluetooth ranges are much shorter. In addition, range degradation through 4 mm of plastic enclosure is about 20%. Modules with PA (BT832X) maintain working range better. For more information, click:
https://www.fanstel.com/testreport/.

	Low Cost	Long Range	Industrial Grade Bluetooth 5/Thread/Zigbee to WiFi/LTE			
Gateway	BWG832F	BWG832X	BWG840F	BWG840X	BLG840F	BLG840X
WiFi Module	ESP 8266	ESP 8266	ESP 32	ESP 32		
LTE Module					nRF9160	nRF9160
BLE Module	BT832F	BT832X	BT840F	BT840X	BT840F	BT840X
BT range,1Mbps	760 meters	1140 meters	1000 meters			
BT range,125 Kbps			2300 meters	>3200 meters		>3200 meters
Thread, Zigbee			Yes	Yes	Yes	Yes
FCC ID	X8WBT832	X8WBT832XE				
IC IC	4100A-BT832	4100A-BT832XE				
QDID	97989	97989	108621	108621	108621	108621
1K price, each	$22.49	$36.65	$31.14	$45.36		
Development Kit	DK-BWG832F	DK-BWG832X	DK-BWG840F	DK-BWG840X	DK-BLG840F	DK-BLG840X
Availability	Production	Production	Sample	Sample	Sample 2019	Sample 2019

OpenSource BLE 5/Thread/Zigbee USB Dongle

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Features

- Preloaded with Nordic USB CDC ACM secure DFU boot loader, USB dongle can be booted and firmware updated from a PC.
- Support Bluetooth 5, Thread and Zigbee radio protocols
- USB840F and USB840X have pads for Tag-Connect cable TC2050-IDC-NL-050-ALL for programming nRF52840 SoC.

- USB840F and USB840X with vertical antenna for near omni-directional range coverage.

USB840F
FCCID:X8WBT840
IC ID:4100A-BT840 CE

	USB840F	USB840M	USB840X
BLE Module	BT840F	BC840M	BT840X
Module BT range,1Mbps	1000 meters	135 meters	
Module BT range,125 Kbps	2300 meters	400 meters, est.	>3200 meters
Size	52x21x21mm	26x15x6.0mm	52x21x21mm
LED indicators	2	1	2
Tag Connect pads	Yes	No	Yes
FCC ID	X8WBT840	X8WBC840M	Pending
IC ID	4100A-BT840	4100A-BC840M	Pending
CE	Certified	Certified	
Japan	Pending	201-190140	
Australia	Pending	Certified	
QDID	108621	108621	108621
1K price, each	$11.85	$11.85	$19.99
Availability	Production	Production 2Q2019	Production 2Q2019

OpenSource BLE 5/Thread/Zigbee Sensors

Features

- AMS ENS210 temperature and humidity sensor.
- Size: 60x60x22mm
- Desk or wall mount
- Optional magnetic mount
- Preloaded with boot loader and basic sensor application.
- OTA firmware upgrade with manufacturer's codes.

Development with Open Source

To develop your own codes and boot loader, Nordic nRF52 development environment should be used. An

nRF52DK and Tag-Connect cable TC2050-IDC-NL-050-ALL are required.

Source codes available at:

http://www.fanstel.com/download-opensource/

- Firmware to send sensor data to Fanstel gateway, development server, Google Cloud Platform
- Android OS app.

	SE832AF-210	SE840F-210	SE840X-210
BLE Module	BT832AF	BT840F	BT840X
Module BT range,1Mbps	760 meters	1000 meters	
Module BT range,125 Kbps		2300 meters	>3200 meters
Thread, Zigbee	No	Yes	Yes
Power supply	2 AAA, not included	2 AAA/micro USB, none included	Micro USB adapter, included
FCC ID			
IC ID			
CE			
QDID	97989	108621	108621
1K price, each	$12.39	$18.50	$30.00
Availability	Sample	Sample	

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