OWNER'S MANUAL

iENBL-111B

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IMPORTANT INFORMATION

Read these simple guidelines. Not following them may be dangerous or illegal.

COMPATIBILITY
The iENBL devkit is tested to work in multiple LoRa network operator and gateway configurations. Please make sure your device is provisioned with a network provider before deployment.

INTERFERENCE
All wireless devices may be susceptible to interference, which could affect performance.

QUALIFIED SERVICE
Only qualified personnel may install or repair this product.

BATTERIES, CHARGERS, AND OTHER ACCESSORIES
Use only batteries, chargers, and other accessories approved by Flex for use with this device. Do not connect incompatible products.

KEEP YOUR DEVICE DRY
Your device is not water-resistant. Keep it dry.

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ABOUT iENBL Devkit

iENBL is a multi-sensor IoT development platform embedded in a ruggedized clamshell enclosure with focus in LPWAN (Low Power Wide Area Network) technologies. iENBL supports an easy to use software packages, enables developers to develop and prototype IoT applications very quickly and smoothly
The highly integrated iENBL combines a high-performance ARM Cortex M4 microcontroller with 512 MB of memory, the sensors required for most IoT applications, the short-range communication WiFi and BLE solutions, a few actuators and the aforementioned LPWAN technologies.

iENBL-111B supports on unlicensed LPWAN solutions LoRa and Sigfox technologies

Figure 1- iENBL devkit dimensions: 65 mm by 97 mm by 26 mm

WHAT'S INCLUDED?

- iENBL Devkit with rechargeable battery
- Downloadable documentation

GET TO KNOW YOUR Devkit

Table I summarizes all the features iENBL devkit in various versions

Connectivity (Ver.1)	Connectivity (Ver.2)	Sensors	Actuators	HW Features	SW Features
LoRa	Cat-M (all Ver 2.x)	Accelerometer	RGB LED	MCU ARM Cortex M4 (STM32L4 — 512MB)	API Description
LoRaWAN 1.1	NB_IoT (all Ver 2.x)	Gyro + Accelerometer	Push Button (x2)	HW Secure Element (STSAFE)	C Examples
SigFox	GPRS (Ver 2.a)	Temperature	Buzzer	1.320 mAh Rechargeable battery	Instructions to install and Configure a Programming IDE based on TrueStudio
GNSS (GPS, GLONAS, GALILEO, BeiDou	GNSS (GPS, GLONAS, GALILEO, BeiDou	Humidity		SD Card Holder	
WiFi (802. 11b/g/n 2.4GHz)		Pressure		JTAG & USB Programable	
BLE 4.2		Light Sensor		IP65 Rated, Ruggedized Clamshell Enclosure	
		Hall Effect Sensor		ETSI & FCC Certification	
		Microphone			

Table I- iENBL key features

Should the IoT application need a sensor that is not included in the device, the iENBL is expandable, and required sensors can connect to and be powered by the expansion port (Figure 1). The expansion port is also used to program the device using a JTAG programming interface.

The iENBL's USB port is able to download new firmware and also charge the included 1.320 mAh rechargeable battery.

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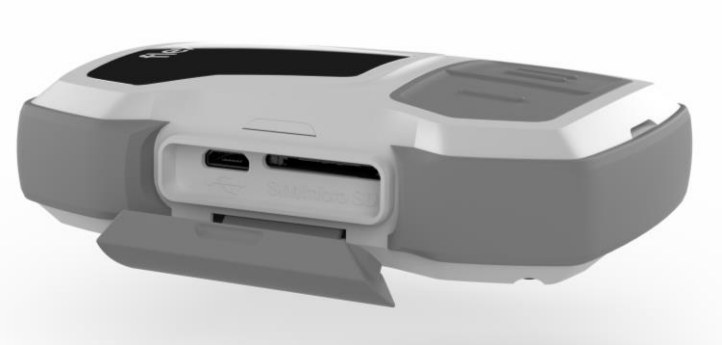

The iENBL also includes a microphone and an SD card slot for logging noise data in predictive maintenance applications. Any of the sensors can be utilized to record data.

iENBL features a GNSS receiver which, when combined with the accelerometer, the pressure sensor, the WiFi and BLE interfaces, and the geolocation capabilities of LPWAN technologies, makes the iENBL an excellent platform to develop and test use cases such as asset tracking for IoT applications. The GNSS receiver offers accurate position information outdoors, while the LPWAN conveys rough position information in both outdoor and indoor environments. The WiFi interface can leverage more precise WiFi location databases, like those from Google or HERE, for indoor location information. The BLE unit also provides an indoor location/position if a BLE beacon infrastructure is available. The accelerometer can be employed as an energy-saving device, updating the position information only when movement is detected. Finally, the pressure sensor furnishes altitude information as well.

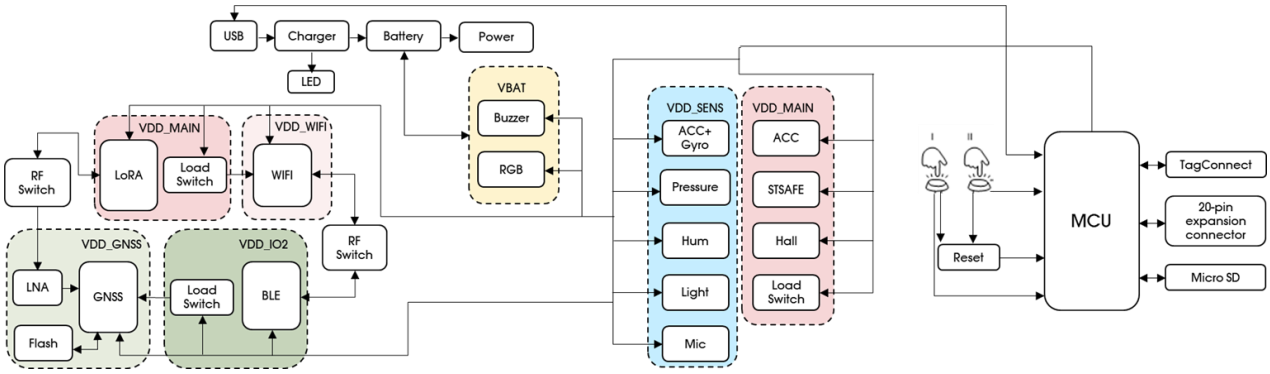

Figure 5 – iENBL Block Diagram

HOW TO USE YOUR iENBL DevKit?

Follow these instructions to start using the devkit

1. ***Charge the iENBL.***

   Charge the iENBL using a power adapter with micro-USB connection.
   To charge the iENBL completely will take approximately 3 hours.

   IMPORTANT: The power adapter should be specified to supply between 4.75V – 5.25V and 500mA – 2100 mA

2. ***First start-up***

   The iENBL device is delivered in a dedicated shipping mode, to exit this mode and start the device press and hold both buttons on the front of the device for >10 seconds.
   This will make the device start up for the first time and prepare it for provisioning.

3. ***Steps for provisioning***

   Log on to your LoRa network providers website and follow their instructions to enroll a new device using the DevEUI found on the iENBL device label.

   After enrolling the device, use the generated AppEUI/JoinEUI and AppKey to provision your iENBL device.

4. ***Connecting your iENBL to a Computer (With Extension Board)***
   Connect the extension board to the iENBL device as shown below.

   Connect the ST-Link to the USB port of the computer being used and to the 20-pin connector on the extension board labeled "Program".

FAQs AND TROUBLESHOOTING

Q: What's the operating temperature?
A: 5C to +35C

Q: Is iENBL water resistant or water proof?
A: No. iENBL includes a ruggedized clamshell casing

Q: How long does it take to fully charge iENBL?
A: Approximately 3 hours. For safety reasons charging will be automatically terminated after approximately 6 hours even if the battery is not fully charged at that time.

Q: Is the battery removeable?
A: No, please do not use sharp objects to remove the battery.

Q: How can I use a sensor that is not included in iENBL?
A: Additional sensor can be used with the iENBL by connecting them to the external expansion interface. The simplest way to do this is by using a sensor expansion board that can be acquired though your Flex contact person.

Q: What's the operating temperature?
A: 5C to +35C

Q: What are the supported development environments for iENBL?
A: Atollic True Studio and Keil uVision

Q: Where do I call for support?
A: TBD

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PRODUCT SAFETY, TIPS, AND PRECAUTIONS

How to take care of iENBL.

Handle the iENBL, charger and accessories with care.

The following suggestions will help you keep iENBL operational.
Keep the iENBL dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that corrode electronic circuits. If iENBL gets wet, let it dry.

WARNING: Failure to follow these safety instructions could result in fire, electric shock, injury, or damage to phone or other property. Read all the safety information below before using iENBL.

Battery charging tips and precautions

Charge the battery before using it for the first time or when it has been unused for extended periods.

If the battery is completely discharged, the device cannot be turned on immediately after the charger is connected. Allow the depleted battery to charge for several minutes before turning on the device.

Using a power source other than a USB power adaptor, such as a computer, may result in a longer charging time or not charging at all due to a lower electric current.

While charging, the device and the charger may heat up. This is normal and should not affect the device's lifespan or performance. If the battery gets hotter than usual, the charger may stop charging.

Battery

Don't attempt to replace the iENBL battery yourself—you may damage the battery, which could cause overheating and injury.

Using damaged cables or wall adapters, or charging when moisture is present, can cause fire, electric shock, injury, or damage to the phone or other property. Make sure the USB cable is fully inserted into the power adapter before plugging the adapter into a power outlet.

Storage

Do not use or store the iENBL in dusty or dirty areas as it will affect its performance.

Do not store the device in high temperatures, such as a parked car in the sun, or in cold temperatures.

Operating temperature

It is recommended to use iENBL at temperatures from 5C to +35C.
Do not store your iENBL in very hot or very cold areas.

Handling

Do not drop, knock, or shake the iENBL. Rough handling can break it.

During extended operation, the device may feel warm. In most cases, this is normal.

Using connectors, ports, and switches

Never force a connector into a port or apply excessive pressure to a switch, because this may cause damage. If the connector and port don't join with reasonable ease, they probably don't match. Check for obstructions and make sure that the connector matches the port and that you have positioned the connector correctly with respect to the port.

Repairs and unauthorized modifications

Do not open the iENBL to reveal the components.

Do not open the iENBL to replace the batteries.

Unauthorized modifications may damage the device and violate regulations governing radio devices.

Recycle

Always return your used electronic products, batteries, and packaging materials to dedicated collection points. This way you help prevent uncontrolled waste disposal and promote the recycling of materials. All materials of the device can be recovered as materials and energy. Check how to recycle your products at www.call2recycle.org.

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Placeholder_ COPYRIGHTS AND OTHER NOTICES

DECLARATION OF CONFORMITY

FCC/INDUSTRY CANADA NOTICE This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For more info, go to transition.fcc.gov/oet/rfsafety/rffaqs.html. Any changes or modifications not expressly approved by Flextronics could void the user's authority to operate this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

NOTE: FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated such that a minimum separation distance of 20 cm is maintained between radiator (antenna) and user's/nearby person's body at all times.