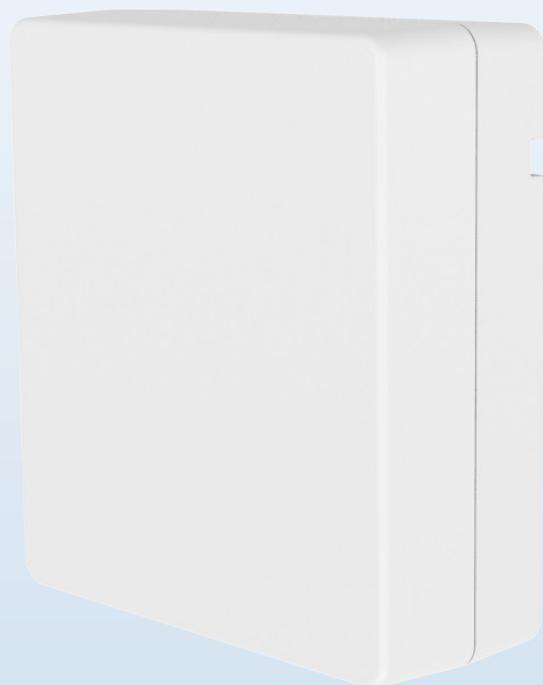




MNDBPOE1 PoE Gateway + Bridge Combo

Datasheet



PRODUCT OVERVIEW

Wiliot bridges serve 3 operational tasks: energizing Wiliot IOT Pixels, receiving and filtering packets from Pixels, and echoing the filtered packets to gateways. The Minew Dual Band Reference Bridge runs Wiliot firmware and is optimized for Wiliot deployments. It features a Sub-1 GHz antenna for energizing Pixels and a 2.4 GHz antenna for echoing Wiliot Bluetooth packets.

The Minew POE is a device capable of the 4 Wiliot Network infrastructure modules: IoT Pixels Energizing, Data path, Network Management & Cloud Connectivity. It can achieve Cloud Connectivity via Wi-Fi or Ethernet. Lastly, it can be powered via a USB-C cable or PoE (Power over Ethernet).



Operational Modes

The goal (whether operating as a bridge or gateway) of the device at hand must be known before setting it up, since different steps are required accordingly.

Gateway

The device can work as a gateway through one of the following network interfaces:

Ethernet - Connect the device to Ethernet connection and register it through the Wiliot App.

Wi-Fi - Connect the device to a power source, wait 2 minutes until the blue led flickers rapidly. Register the device through the Wiliot App in which you'll have to provide Wi-Fi credentials.

Regardless of the network interface, once your gateway is fully initialized you'll see a blue LED constantly on, indicating network connectivity. You may also see a yellow LED blink if the device is echoing packets.

Bridge

For the device to work as a bridge, simply connect it to a power source. You may configure it through Wiliot Platform as long as there are nearby gateways.

Note that the LEDs do not reflect a bridge behavior for the first 8 minutes which is the time window for network interface initialization. Once 8 minutes have passed, the bridge's blue LED should be constantly off, indicating there is no cloud connectivity. You may see a yellow LED blinking indicating BLE transmissions.

Please Note: Regardless of the board behaving as a bridge or gateway, it can be configured to energize Wiliot IoT Pixels® via the Wiliot platform. In such case, it will have a red LED constantly on.

DETAILED SPECIFICATION

Parameter		Description
Functionality	Common Uses	Asset Tracking, Inventory, Temperature Sensing, Proximity
	Supported Products	Dual Band Pixel, Single Band Pixel, Battery Assisted Pixel
	Key Functions	Energizing Pixels, Rebroadcast (Echo) Pixel Packets to gateway, Pacing Data
Hardware	Antennas	2.4GHz: Linear polarization, 915MHz: Linear polarization WiFi: Linear polarization
	LED Indicators	Blue and Red (Power and Data)
	Firmware	Firmware provided by Wiliot
	Power	PoE IEEE 802.3af (PoE + Ethernet) 5 volt ,1.5A, USB C (USB C Power and WiFi) *
	Network connection	PoE/Wifi
	Memory Capacity	BLE (1MB flash+ 256kB RAM) Flash (64M-BIT)
Package	Interfaces	type-C RJ45 TC2050 (1-VCC 2-SWDIO 3-GND 4-SWDCLK 5-GND 6-SWO 7-RXB 8-TXB 9-GND 10-P0.18/RESET)
	Operating temperature	-20~65°C
	Detailed Dimensions	11 x 10 x 4 cm
	Weight	6.9 oz
	Installation	4Screw sockets, cable tie slots, 1/4-20 threaded insert
	Certifications	CE, FCC, RCM, ROHS, REACH, IC

* **Tips:** The package includes a 1-meter USB-A to Type-C charging cable. Adapter must be purchased separately. It is recommended to use a certified 5V2A adapter without fast charging and not specifically designed for Apple computers.

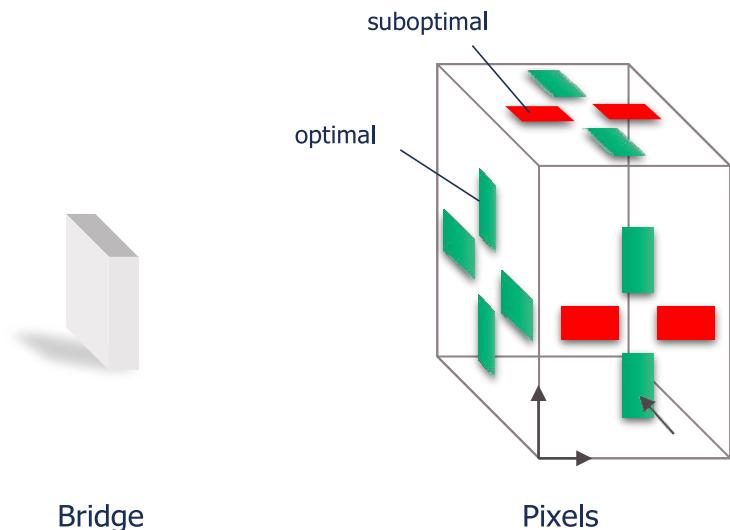
DETAILED SPECIFICATION

RADIO

Parameter		Pixel Packet Echo	Pixel Energizing
Broadcast	Function	Retransmit Wiliot Pixel packets, calibrate nearby Wiliot Pixels	Energize nearby pixels
	Signal Protocol	Bluetooth® Low Energy (LE) 5.2 (2.4 GHz)	FSK\CSS (915MHz)
	Signal Strength	EIRP +20dBm@2.4GHz Max	EIRP +30dBm@915MHz Max
Payload	Broadcast Packet	Standard Bluetooth Low Energy Packet (PDU), payload: Wiliot Ephemeral ID (WEID)	--
	Security	AES-128, encryption and authentication	
	Pixel Calibration Beacons	3 BLE advertisements every 200ms (default)	
	Default Echo Pacing Interval	15 s (configurable)	

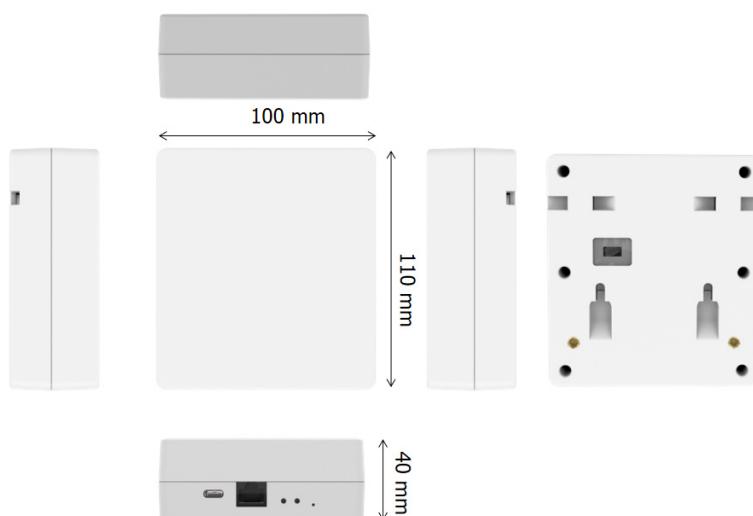
BRIDGE AND TAG ORIENTATION

The relative orientation of the bridge and tag antenna will affect energizing and broadcasting performance. The Dual Linear antenna in the Minew Dual Band Bridge makes it agnostic to in-plane (zy) tag orientation, and more capable of out-of-plane tag (xz and xy) energizing.



Optimal pixel orientation shown in **green**, and suboptimal in **red**, relative to the energizing bridge antenna. In the drawing, the antenna's dual linear polarizations are aligned with the y axis and z axis.

DETAILED DRAWINGS

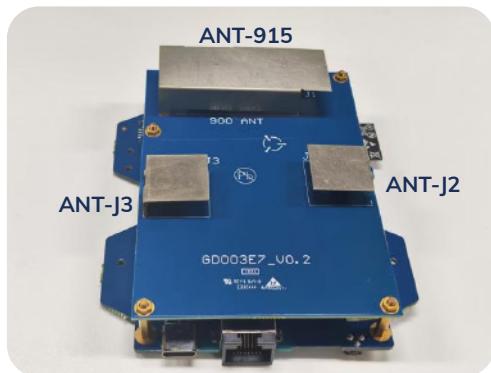


PROJECT INFORMATION

- * **Antenna Coding:** ANT-LMIL8024007 (ANT-915), ANT-BMIL8024008 (ANT-J2/J3), ANT-WBNCNC24009 (ANT-WiFi)
- * **Antenna Type:** Metal Antenna and onboard Antenna
- * **Model of the DUT:** DG5
- * **Test Data:** 2025.1.3



Product appearance



PCB board and antenna



IC STATEMENT

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The term "IC: " before the certification/registration number only signifies that the Industry Canada technical specifications were met.

This product meets the applicable Industry Canada technical specifications.

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- 1) L'appareil ne doit pas produire de brouillage;
- 2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

This device complies with part 15 of the FCC Rules. 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.

FCC WARNING:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the 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.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

QUALITY ASSURANCE

The factory has already obtained the certification of ISO9001 Quality System. Each product has been strictly tested (tests include transmission power, sensitivity, power consumption, stability, aging, etc.).

Warranty Period: 12 months from the date of shipping (other accessories excluded).

It is recommended to use a 5V1A/5V2A adapter with Electrical safety certification.

DECLARATION

Statement of Rights:

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