



TEKTELIC COMMUNICATIONS INC.

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Product codes: **See Table 1**

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Revision History

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0.2	Dec 06, 2016	Released	A.Naryanan	Updated as per review comments
0.3	April 21, 2017	Released	A.Narayanan	Added upgrade instruction for GW prototype
0.4	April 25, 2017	Released	A.Narayanan	Added LED fault indication section
0.5	April 28, 2017	Released	A.Narayanan	Added details of lorawan_conf.json
0.6	Oct 11, 2017	Released	A.Narayanan	Added details of Loriot and Actility
0.7	Feb 20, 2018	Preliminary	A.Narayanan	Updated to new format for Quick start guide
0.8	Jun 13, 2018	Released	A.Narayanan	Corrected Table 1 heading and LED behavior

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1 Product Description

1.1 Overview

Kona Pico gateway is a compact and cost effective LoRa base station for IoT applications. The product is designed to operate in the North American Industrial, Scientific and Medical (ISM) Band. The gateway supports two configuration options for backhaul connection, namely Ethernet only and Ethernet/Wi-Fi (optional).

LoRaWAN™ is a Low Power Wide Area Network (LPWAN) specification intended for wireless battery operated things in regional, national or global network. LoRaWAN target key requirements of internet of things such as secure bi-directional communication, mobility and localization services.

The Kona Pico Gateway is designed for indoor use to provide good coverage within and around the building. It can simultaneously receive on eight 125-kHz channels and one 500-kHz uplink channel. The Kona Pico is module supports a maximum transmit RF conducted power of +27 dBm.

Table 1: Kona Pico Gateway Models

Product Code	Description	RF Region
T0004471	LORA GATEWAY MODULE, KONA PICO, NA, EXTERNAL ANTENNA	NA
T0004599	LORA GATEWAY MODULE, KONA PICO, EU, EXTERNAL ANTENNA	EU

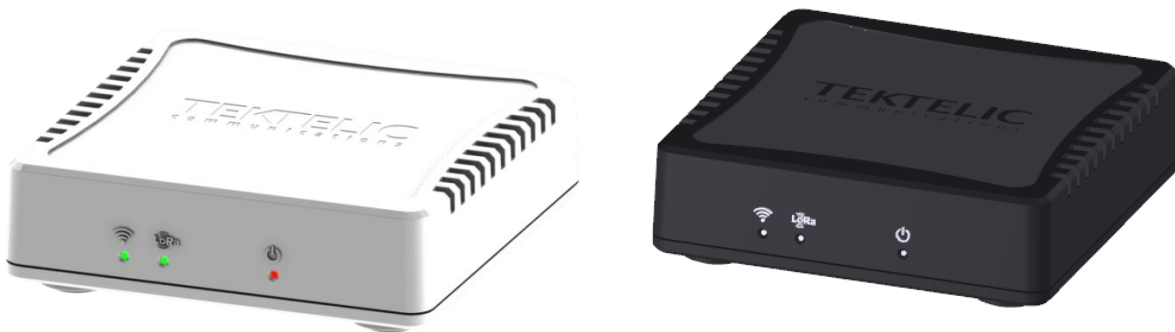
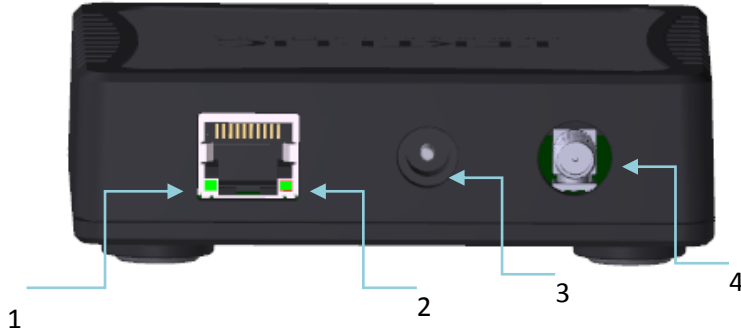


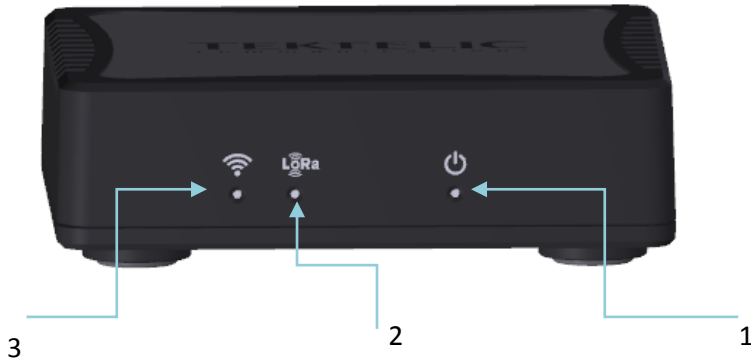
Figure 1: Kona Pico Gateway

1.2 Physical Interfaces

Figure 2 illustrates the layout for the Kona Pico Gateway interfaces.



1. Ethernet activity LED
2. Gateway Power LED
3. 5V power connector
4. LoRa External Antenna connector



1. System Status LED
2. LoRa Activity LED
3. Future use

Figure 2: Kona Pico Gateway front panel and back panel interfaces

Table 2 lists the connector types used for the interfaces on Kona Pico Gateway

Table 2: Kona Pico Outdoor Gateway Interface Connector Types

Interface	Connector Type	Mating Connector
LoRa Antenna Port	RPSMA Type female	Industry standard RPSMA male
Copper Ethernet Port	RJ-45	Standard RJ45 cable
DC 5V Input Port	Barrel Jack 2 mm ID, 5.5mm OD	Barrel plug 2.1mm ID, 5.5mm OD

1.3 Specifications

The Kona Pico Gateway specifications are listed in Table 3.

Table 3: Kona Pico Outdoor Gateway Specifications

Attribute	Specification
Dimensions	96mm (3.8") wide x 30mm (1.2") deep x 96mm (3.8") tall
Weight	0.1 kg (0.25 lbs)
Operating Temperature	0°C to 40°C
Relative Humidity	5% to 95% Non-Condensing
Power Input, Direct DC	5V DC nominal 2A
Power Consumption	7 W maximum
Ingress Protection	IP 30
Regulatory Compliance	CSA/UL 60950-1 FCC Pt. 15 Class B CE

2 What is in the Box

2.1 Product and installation material

The Kona Pico Gateway along with all other materials included in the product box is pictured below and the entire its content is listed below.

- Pico Gateway
- AC Power adapter
- Ethernet cable
- External LoRa Antenna

3 Installation

3.1 Safety Precautions

- The Kona Pico Gateway is for indoor use only. Do not connect Pico Gateway to outdoor antennas or outdoor network cables.
- The Kona Pico Gateway has no internal field serviceable parts. The Gateway module must only be opened by an approved TEKTELIC service center.
- All installation practices must be in accordance with the local and national electrical codes.
- The Kona Pico Gateway should be only used with the AC power adapter provided.
- The Kona Pico Gateway should be only used with the Antenna provided.

3.2 Unpacking and Inspection

The following should be considered during the unpacking of a new Kona Pico Gateway.

1. Inspect the shipping carton and report any significant damage to TEKTELIC.
2. Unpacking should be conducted in a clean and dry location when possible.
3. Do not discard the shipping box as they will be required if a unit is returned for repair or re-configuration.

4 Power UP and Commissioning and Monitoring

4.1 Required Equipment

The following equipment is required for commissioning a Kona Pico Gateway.

1. A laptop running Windows XP/Vista/7.
2. A Cat5 or better Ethernet cable.

4.2 Power Up Procedure

- Connect the provided external antenna to the gateway
- Connect the Ethernet cable from your Gateway to a LAN port on your router
- Power the Gateway using the power adapter provided
- The Gateway starts up as soon as power is applied, expect to see a solid green LED on the back RJ45 right LED
 - The Gateway is configured for DHCP, you should see activity indicated on the RJ45 left LED after a few moments. The System LED will flash at a high rate when trying to obtain an IP from your DHCP server
- The Gateway is ready for use when the System LED is solid.
- Gateway ID and MAC address assigned to Gateway is listed on the product label.
- Depending on the network server the GW has to connect, the gateway may need registration on the network server. Please refer to the network server documentation for details on how to register a gateway on the network.
- If the Gateway needs to be re-configured to connect to a network server other than the one it was originally shipped with, please refer to the Pico GW configuration user guide [1] for instructions.

5 Operation, Alarms & Management

This section describes the Pico GW LED behavior

1. System Status LED – as opposed to a simple power indicator, as with the RJ45 power LED on the back side:
 - LED flashes at a high rate while the gateway is obtaining an IP address via DHCP
 - LED is solid on after the gateway has obtained an IP address via DHCP, and remains solid on during normal operation
 - The LED flashes at a slow rate (0.5Hz) if the gateway is unable to negotiate an Ethernet link, obtain an IP address via DHCP, the connection to network server is not established, or some other problem prevents normal operation
 - If the firmware programmed on the gateway and the configuration stored on the gateway don't match then the system LED will blink at a slow rate while the gateway is waiting for a valid configuration file. See configuration user guide [1]
 - All LEDs will be ON briefly during Power On Self test (POST)

2. LoRa Activity LED – flashes with the receipt of packets:
 - The LED is lit briefly whenever an uplink packet received via the LoRaWAN is sent to the network server
 - The LED is lit briefly whenever a downlink packet received from the network server is transmitted via the LoRaWAN

The System LED behavior during SW upgrade is shown below

Software update status is shown on the front panel LED intended for the purpose of showing system status. Specifically:

- The LED flashes during the TFTP transfer (i.e., while the software image is being transferred to the gateway)
- The LED turns off (briefly) while the gateway is resetting itself as a result of a successful update

Note that if the LED remains ON instead after the transfer, then the software update failed. In a successful update, the GW would reboot itself and the System LED will behave as it would on a power up.

6 Bibliography

[1] "Pico Gateway Configuration User Guide," 2018.