

KS Technologies, LLC

KST7022

Affinity Outdoor LoRaWAN Gateway

External Reference Specification

Document Revision F - Last Updated 1 September 2022



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Document Revision History

Revision	Date	Author	Changes
A	1/26/2022	DM	Initial Rev
B	2/14/2022	AS	Product Overview Updates
C	16 Feb 2022	BK	Generalized LNS Requirements
D	1 Mar 2022	DS	Drawing and Concentrator Specs Added
E	7 July 2022	DS	Removing "LP" Updated Specs to match final product
F	1 SEP 2022	BK	Added LNS Web Links, Helium Wallet App Removed WiFi, Cell Support Added Photograph to Cover Page Added Detailed Mechanical Specifications

Product Overview

The KST7022 is an Outdoor-Rated LoRaWAN Gateway built to support public (such as [Helium](#) and [The Things Network](#)) and private (such as [AWS IoT Core for LoRaWAN](#)) LoRaWAN Network Servers (LNS). Affinity offers a robust outdoor-rated enclosure, industrial-grade components, and device fleet management capabilities. Fleet management can be done by KST or KST can expose our AWS IoT Greengrass deployment details to your enterprise for management.

Affinity is designed from the ground up for the Enterprise, making it the perfect solution for collecting LoRaWAN sensor data deployed in multiple locations. The KST7022 gets its power and data backhaul via Power-over-Ethernet (PoE).

Special accommodations have been made in the hardware development to support Helium's carrier-grade LoRaWAN Network Server and has been certified by Nova Labs as well as the Helium Foundation.

The KST7022 comes pre-commissioned for rapid field deployment and according to your LNS requirements.

KST ships directly from our offices in Colorado and can coordinate with your freight carrier for bulk shipments.

Hardware

Key features include -

- A KST7030 LoRa Concentrator, which is fully compliant with the LoRa Alliance US915 frequency plan for uplink and downlink channel frequencies, bandwidths, and channel spacing
 - Concentrator Power Specs:
 - Idle > ~+3.3VDC @ ~20mA = ~65mW
 - Rx > ~+3.3VDC @ ~60mA = ~200mW
 - Tx > ~+3.3VDC @ ~400mA = ~1320mW
- An industrial Compute Module with a minimum 1.6GHz clock rate, 64GB Flash, and 4GB of RAM
- TPM Secure element
- IEEE 802.3af PoE Compatibility
- +27dBm max TX power (Helium restricted to +20dBm)
- Advanced Firmware thermal management techniques to guarantee operation within industrial temperature ranges and maximize reliability
- Backhaul via Ethernet 10/100/1000 BT
- Integrated +12VDC Cooling Fans



Mechanical

Key features include -

- 10 to 95% Operational Humidity (Currently Under Test)
- IP24 / NEMA 3 Compliant (Currently Under Test)
- Tamper Resistant Fasteners
- +8dBi Omni-Directional Antenna Terminated with an N-Type Connector
- 0°C to 70°C Rated Electronic Components (-40°C to 85°C Under development)
- Lightning Protection
- Built-in Thermal Management
- Pole or Flange Mountable
- Weight: 10 Pounds (Excluding the antenna)
- Size: 13.2" x 12.2" x 7.9"

Software and Management Resources

Key features include -

- Secure Cloud Management Interface via KST's *Affinity Cloud*
- Constant Affinity Health Reporting to the Cloud
- Cloud Managed Over The Air (OTA) Software, Firmware, and Application Updates
- Local Diagnostic Dashboard
- System Health Monitoring via Mobile App
- System Health Notifications (Coming Soon!)
- Mobile App for Management and Diagnostics

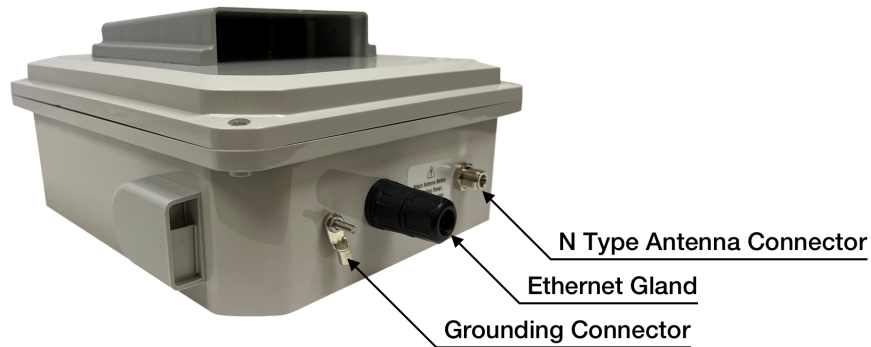
Helium-Specific Deployment Options

Key features include -

- Wallet Onboarding at KST at Time of Manufacture
- Drop Shipment of Pre-Commissioned Devices to Your Final Destination
- Field-Updatable Miner
- Full integration with the [Helium Wallet App](#)



External Connections



Body Outline and Dimensions

(Dimension shown in Inches)

