Product Brief

Nexus 8

8-channel LoRaWAN™ IoT Edge Gateway

LoRaWAN™ gateway with LTE and PoE

- LoRaWAN™ Support via several network packet-forwarders
- LTE connectivity with 3G fallback
- 10/100 BaseT Ethernet with 802.3af Power-over-Ethernet
- Multi-constellation GNSS
- GPS based time synchronization
- USB host support with full embedded Linux system

Product Description

Definium LoRaWAN™ gateways combine a high-performance LoRaWAN™ radio with multiple back-haul technologies, simplifying deployment of Internet of Things networks in urban and rural areas.

The 8-channel low-power long-range LoRa® ISM-band radio is suitable for coordinating thousands of IoT devices within a radius of up to 25 km. Multiple gateways can be effectively co-located to create gateway installations of 16 or more channels. Rural or difficult urban deployment is straight-forward using solar and LTE, and can provide Internet connectivity to other devices via Ethernet.

The built-in multi-constellation GNSS can accurately locate the gateway and assists with gateway time synchronisation and radio transmit frequency calibration.

The Embedded Linux operating system which powers the gateway is fully open to the user, enabling custom configuration and application installation. Out-of-the-box support for multiple major LoRaWAN™ networks makes setup a breeze, and secure cryptographic storage means nobody can infiltrate your network—even if they gain physical control.

The LoRa® radio is fully configurable and supports the creation of custom LoRa® and FSK protocols or running a local closed-loop LoRaWAN™ server without Internet connectivity required. Ultra-remote deployment can be achieved using a stand-alone server with solar power, transmitting important data through the Iridium Satellite network using one of our supporting products. Definium Technologies designs and manufactures its devices in-house in Launceston, Tasmania. Definium produces a broad range of gateways and sensors to use in any IoT network.

Product Selector

Model	Region			Radios					Access		Interfaces			Features							Enclosure	
	AU915, AS923 (Australia / Asia)	US915 (United States)	EU868 (Europe)	LoRa®, LoRaWAN™, FSK	LTE (RX diversity, 3G fall-back)	Multi-constellation GNSS	WiFi	Iridium Satellite	Display (HDMI) with USB	USB Serial Console	CAN / CANOpen Ports	USB Host	GPIO Expansion	LoRaWAN™ Packet Forwarder	MicroSD for OS & Storage	Embedded Linux OS	RSSI geo-location capable	Secure cryptographic storage	Power over Ethernet (802.3af)	Solar Charger (no battery/panel)	Powder-coated & transparent	IP66+ (with outdoor antennas)
Nexus 8	○	○	○	●	●	●	○	○	●	●	2	1	20	●	16GB	4.x	●	●	●		●	
Nexus 8 Outback	○	○	○	●	●	●	○	○	●	●	2	1	20	●	16GB	4.x	●	●	●			●
Nexus 8 Solar	○	○	○	●	●	●	○	○	●	●	2	1	20	●	16GB	4.x	●	●	●	●		●

OS Installed on SD Card. ● = Hardware ready, software available. ○ = Product variants support individual regions (see below).

Definium Technologies

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Features

LoRaWAN™	8-channel LoRaWAN™ Gateway RSSI geo-location capable Packet forwarders for major networks
LoRa® /FSK	ISM band low-power long-range radio RX: 8×125kHz LoRa®, 1×500kHz LoRa®, 1×FSK TX: 1×LoRa® /FSK (half-duplex) RX Sensitivity –137 dBm Maximum TX power 20 dBm EIRP
GNSS	Concurrent multi-constellation GNSS (3) GPS, Gallileo, GLONASS, and BeiDou support GPS time synchronisation –167 dBm navigation sensitivity
CAN	Dual CAN ports with dedicated ground and power access CAN support via SocketCAN CANopen support via CANopenNode

System

OS	Definium Linux 4.x Kernel (ArchLinux derivative) Software pre-installed for managing all features
Hardware	1 GHz ARM A8 with 512 MB RAM 16 GB MicroSD storage (OS installed on card)
Display	HDMI with up to 2048 × 2048 resolution USB touch-display capable Full desktop environment available
LTE/3G	Up to 10 Mbps down / 5 Mbps up FDD LTE Bands: 1, 3, 5, 7, 28 WCDMA Bands: 1, 5 RX diversity Software supported sharing to Ethernet
Ethernet	10/100 BaseT Ethernet 802.3af Power-over-Ethernet
WiFi	WiFi USB dongles supported by Linux
Iridium Satellite	When paired with supporting products only
Interfaces	RJ45 Ethernet Micro-SIM 1.8V/3V MicroSD (included) Terminal block (CAN, power) 2.1mm barrel (power) USB A Host (1) Micro-USB B Serial Console (1) HDMI (full-size) 50Ω SMA radio connectors (4)

Enclosure

Powder-coated	183 × 138 × 35 mm, 300 g
IP66+	TBA

Electrical data

Power supply	12 V nominal, range 10 V to 24 V DC 802.3af Power-over-Ethernet, range 44 V to 57 V
Consumption	5 W average, 7 W peak

Environmental data, quality & reliability

Operating range	–20°C to 60°C

RoHS compliant (lead-free)

Security

Secure cryptographic storage of keys and certificates

Hardware random number generator

Certifications and approvals

AS/NZS CISPR 32: 2015, AS/NZS 4268:2017

Other certifications planned:
AS/NZS 60950.1:2011, IEC 60950–1, CENELEC EN 60950–1, 47 CFR 15.247, 47 CFR 15.207, 47 CFR 15.247, 47 CFR 15.215, IDA TS SRD

Support products

Definium Luna LoRaWAN™ Sensors

11.00006.301	Multi-technology industrial gateway with LTE & Iridium satellite back-haul

LoRaWAN™ network provision and hosting via partners

Product variants

11.00004.000	Nexus 8 (Australia / Asia)
11.00004.010	Nexus 8 (United States)
11.00004.020	Nexus 8 (Europe)
11.00004.100	Nexus 8 Outback (Australia / Asia)
11.00004.110	Nexus 8 Outback (United States)
11.00004.120	Nexus 8 Outback (Europe)
11.00004.200	Nexus 8 Solar (Australia / Asia)
11.00004.210	Nexus 8 Solar (United States)
11.00004.220	Nexus 8 Solar (Europe)

Further Information

For conact information, see www.definium.net/contact.

For more product details and ordering information, see the product data sheet.

LoRa® and LoRaWAN™ are trademarks of Semtech Corporation.

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