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DATASHEET K1S - R24

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KAONIC 1S

Zero-Trust Tactical Mesh Radio Platform

Kaonic 1S is a decentralised, zero-trust mesh communication Software Defined Radio (SDR) designed for operation without GNSS, infrastructure, or continuous connectivity.
Built for contested environments, it delivers resilient, secure communication when and where it's needed most.

UP TO 128 ENCRYPTED MESH HOPS

DUAL-BAND SDR 862-928 MHZ 2.4 GHZ

4 CONCURRENT RF CHANNELS

ZERO-TRUST IDENTITY-BASED SECURITY

AI-RESISTANT FREQUENCY HOPPING

STORE-AND-FORWARD DELIVERY UNDER DISRUPTION

NATIVE TAK & MAVLINK INTEGRATION

RADIO–IP–RADIO BRIDGE CAPABILITY

OPERATIONAL PROBLEM

Tactical communications degrade under GNSS denial, RF interference, mobility, and infrastructure loss. Conventional systems assume continuous connectivity and stable topology. When these fail, networks fragment and communication collapses.

KAONIC 1S SOLUTION

Kaonic 1S provides a decentralised, disruption-tolerant mesh capability. Each node independently performs routing, forwarding, and security, ensuring network continuity and data delivery even under fragmentation.

KEY BENEFITS

- Disruption-tolerant communication
- Fully decentralised operation
- Identity-based security model
- Stateless frequency hopping (HopSync)
- Adaptive RF behaviour
- Scalable multi-hop networks
- Transparent IP transport via VPN
- Multi role deployment flexibility

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TECHNICAL SPECIFICATIONS

RF PERFORMANCE

Frequency Range	862-928 MHz / 2.4 GHz
Max Tx Power	1 W per SubGHz RF Chain/ 250 mW per 2.4 GHz RF Chain
Rx Sensitivity	Down to -123 dBm at 6.25 kbps
Raw data rate	6.25 kbps to 2.4 Mbps per RF chain
Modulation	QPSK, GFSK, FSK, OFDM, Custom
OFDM MCS	0-6
RF Chains	4 concurrent (2 per band)
Duplex	TDD SISO or 2x2 MIMO
Antenna connectors	5x HDBNC or 5x SMA

THROUGHPUT PERFORMANCE

Base configuration	4.8 Mbps per TRX
With FPGA Module	14.4 Mbps total = 9.6 Mbps 2x2 MIMO + 2.4 Mbps SISO x 2
Long range	6.25 kbps QPSK 100 kHz x 4
TCXO	± 0.5 ppm

ELECTRICAL SPECIFICATIONS

Supply Voltage	5-20 V
Rx Power Consumption	~ 1.3 W
Tx Power Consumpition	~ 11.3 W at 100% duty cycle
Idle Current	0.8 A at 5 V

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40°F to +185°F
Storage Temperature	-40°F to +185°F
Shock & Vibration	MIL-STD-810
Humidity	5% to 95% RH (non-condensing)
Cooling	Passive, fanless
Ingress Protection	IP67 (Enclosure)

PROCESSING & MEMORY

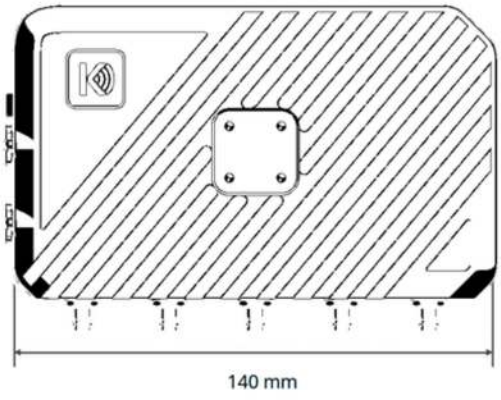
System on Chip	STM32MP1
Operating System	Open Architecture Yocto Linux
RAM	512 MB
Storage recommended	microSD card 8-32 GB
Interfaces	USB-C, Ethernet, UART, I2C, I2S

MECHANICAL SPECIFICATIONS

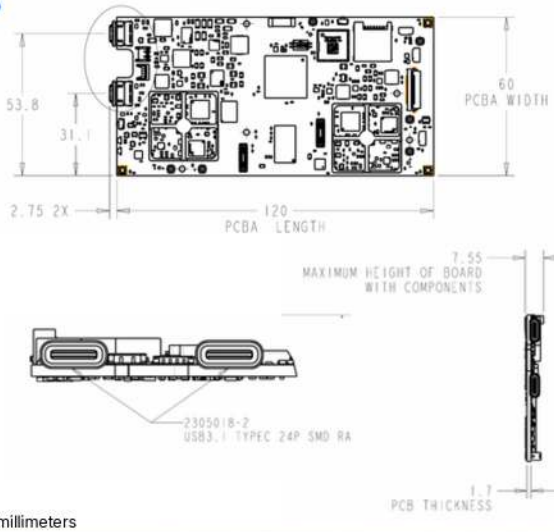
Dimensions (OEM Board)	4.72 × 2.36 × 0.30 in
Weight (OEM Board)	3 oz / 85 g
Dimensions (Enclosed)	5.51 × 3.35 × 0.69 in
Weight (Enclosed)	9.5 oz / 270 g
Enclosure Material	Anodised Aluminium
RF Connectors	5 x HDBNC or 5 x SMA (Enclosure)
USB Connectors	4 x USB-C Screw-lock data, power, audio, host (Enclosure)
Mounting	M3 mounting frames Front and back

MECHANICAL DRAWINGS

ENCLOSED DEVICE (RECOMMENDED FOR FIELD USE)



OEM BOARD



All dimensions in millimeters

NATIVE TAK
CoT, Messaging, Sit. Awareness

MAVLINK SUPPORT
UxV Telemetry & Control

IP TRANSPORT VIA VPN
Transport TCP/UDP/IP over secure mesh

PLUGINS & SDK
For OEM and System Integration

RADIO-IP-RADIO BRIDGE
Extend Legacy Networks

LEARN MORE

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