

K1S - R24

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

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 Consumption	~ 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

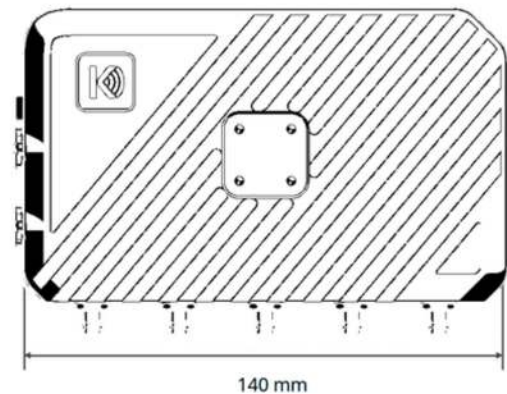


MECHANICAL SPECIFICATIONS

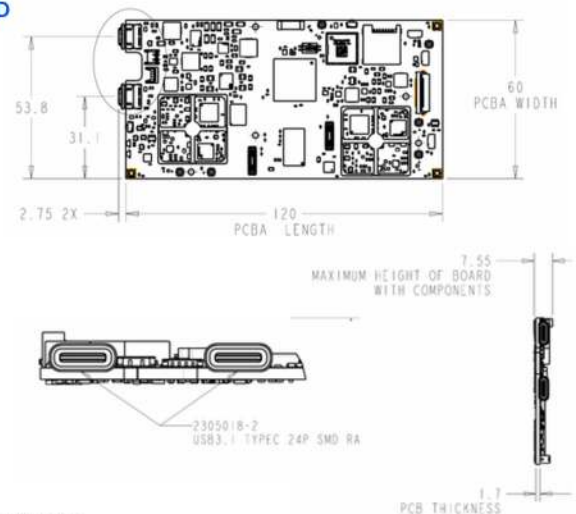
Dimensions (OEM Board)	4.72 × 2.36 × 0.30 in
Weight (OEM Board)	3 oz / 85 g
Dimensions (Enclosed)	5.51 × 3.35 × 0.69 in
Weight (Enclosed)	9.5 oz / 270 g
Enclosure Material	Anodised Aluminium
RF Connectors	5 x HDBNC or 5 x SMA (Enclosure)
USB Connectors	4 x USB-C Screw-lock data, power, audio, host (Enclosure)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

