REDCOM SIGMA® XRI-M4K

Bringing REDCOM Sigma® C2 software & radio interop to the Klas Voyager platform

Key benefits:

- **Voice, video, chat, and console for the Klas Voyager platform**
- **One interface for controlling all IP and RF comms**
- **Supports TSM networks and 4 radio nets per module**
- **Bridge disparate devices in real time**
- **Agnostic to network, waveform, & device**
- **Reduces the complexity of installing & maintaining comms**

REDCOM and Klas have teamed up to deliver REDCOM Sigma® C2 software and the Sigma® XRI-M4K module on the Klas Voyager platform, providing tactical users with an integrated and proven voice, video, chat, and radio interop solution.

The Klas Voyager platform empowers the mobile command post with a highly scalable expeditionary kit for data and comms, delivering a CMOSS-like capability today. REDCOM Sigma XRI-M4K is a module for the Klas Voyager platform that provides a full spectrum of C2 comms and radio interoperability, managed and controlled by REDCOM Sigma C2 software. Up to two Sigma M4K modules can be installed in the same Voyager system, each providing four analog ports for donor radios.

Sigma XRI-M4K bridges the gap between disparate radio systems used by military units, government agencies, and public safety organizations. By leveraging existing radio assets, Sigma XRI-M4K enables these organizations to instantly connect to each other, regardless of radio network, endpoint, or frequency used. Furthermore, The XRI-M4K module allows radio users to communicate directly with users on any SIP endpoint, and can be controlled and patched together on-the-fly via the REDCOM C2 Console app.

Support for various C2 ecosystems

- Gives the warfighter flexibility to connect numerous disparate IP and RF comms endpoints.
- Provides warfighters with a C2 platform (voice, video, chat) for lower echelons that does not rely on higher HQ.
- Enables stand-alone comms in DIL (disconnected, intermittent, and limited) environments.
- Providers warfighters with the ability to interoperate in the CJADC2 (Combined Joint All Domain Command & Control) theater.

Powered by REDCOM Sigma® software

- The C2 platform of choice for the U.S. Army and USAF.
- Built for tactical communicators; software is easy to learn without the need for field service reps and IT experts.
- C2 Console app enables an operator to monitor and control all tactical comms from a single pane of glass.
- Lightweight selectable video conferencing is ideal for chaotic, congested, or contested environments.

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Intelligent radio interoperability

- Features 4 built-in analog ports for donor radios.
- Agnostic to radio make, model, encryption, and waveform.
- Works with virtually any public safety or tactical radio.
- Communicate seamlessly over multiple nets, including VHF, UHF, HF, SATCOM, and TSM.
- Configurable PTT signaling modes per port and per caller.
- Supports patches, dialed calls, and independent monitoring.

Resilient, future-proof design

- Resilient to hard shutdowns.
- Built to MIL-STD specs.
- No rip and replace — interoperates with legacy or existing technology.
- Enables tactical users to pivot to new C2 tech quickly and efficiently.
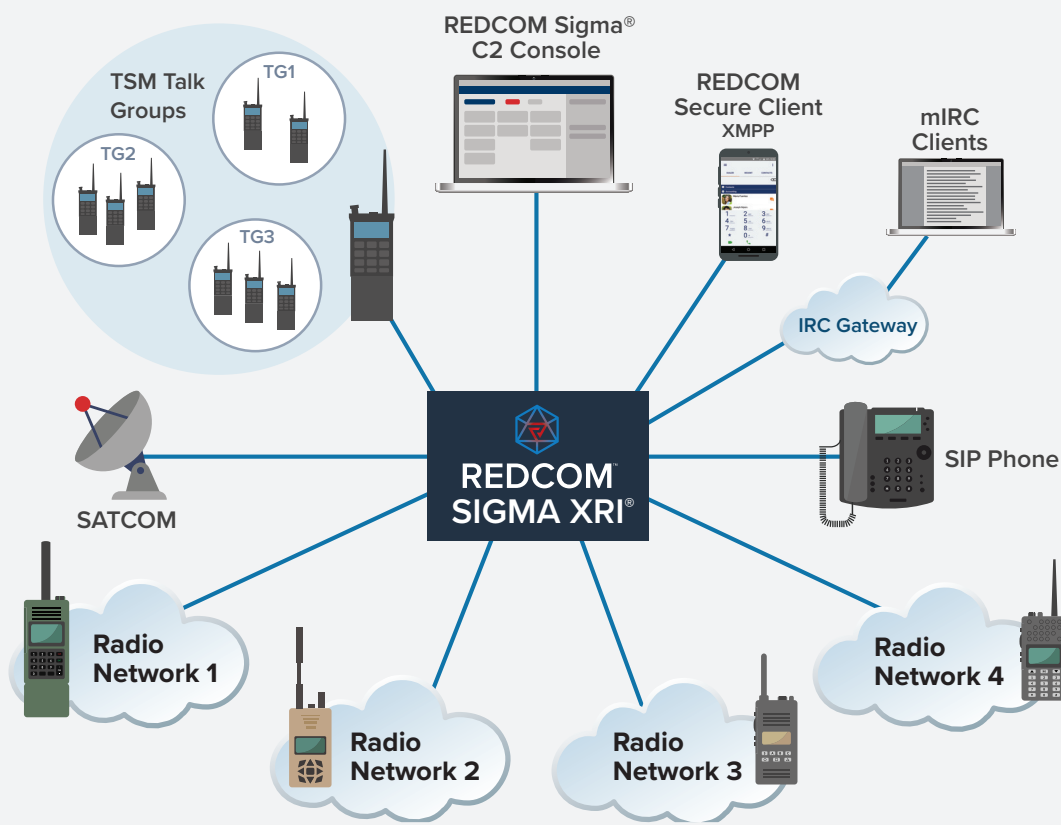
TSM™ radio integration

- IP-based integration of individual talk groups on a TSM network via a single gateway TrellisWare TSM radio.
- Support for up to 32 talk groups configured on the TSM network.
- Native support for the AMR 5.9 and MELPe codecs on TSM networks.
- TSM talk groups can be bridged together with other TSM talk groups, radio nets, and SIP endpoints.

Improves tooth-to-tail ratio

- Solves Coalition and Joint interoperability challenges — connecting radios to Sigma XRI-M4K reduces the need for liaison officers.
- Flexible and scalable — supports IP phones, analog radios, TSM radios, and the REDCOM Secure Client for Android™ & Windows®

BRIDGE DISPARATE RF & IP ENDPOINTS WITH REDCOM

REDCOM technology greatly increases the C2 capability of the Klas Voyager platform.
REDCOM Sigma software delivers best in class voice, video, and chat, while the M4K module
bridges up to four disparate radio nets with the rest of the C2 network.

TSM Talk Groups — TG1, TG2, TG3 · REDCOM Sigma® C2 Console · REDCOM Secure Client XMPP · mIRC Clients · IRC Gateway · SATCOM · REDCOM SIGMA XRI® · SIP Phone · Radio Network 1 · Radio Network 2 · Radio Network 3 · Radio Network 4

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Radio Features

Unless noted otherwise, the radio features listed below apply to both the radio ports and to TSM talk group connections.

- **Dynamic (dialed) call sessions —** incoming and outgoing, with support for radios with and without DTMF dialpads including three-click seize/answer and automatic dialing.
- **Dynamic and static patches —** for patching a radio port to another radio port or a conference or even a speakerphone. Dynamic patches are managed by the C2 Console app, while static patches are managed by database configuration.
- **Tunable 4-wire TX/RX audio interface —** for connection to radios or other devices with balanced or unbalanced audio via the 4 analog radio ports. Transmit and receive audio gains are independently configurable, and each radio port is selectable for line or mic levels. All audio is transformer-coupled to provide DC isolation of external signals and reduce noise.
- **Flexible PTT/PTS controls:**
  - Configurable Push-To-Talk (PTT) mode and Push-To-Signal (PTS) trigger mode per radio port to support any mix of discrete PTT/COR signals, tone-based signals, and voice detection. DTMF-based PTS trigger mode allows radio users to choose which portions of a conversation to share with other patched radio ports.
  - Smart PTS modes are per caller rather than per radio port and allow configurable RFC2833 events and/or DTMF digits as manual PTS control, with an automatic voice-operated transmit (VOX) function when no PTS is provided by the caller. The VOX noise threshold can also be configured per caller.
  - Bi-directional PTS signaling for radio-to-radio patches.
  - PTS forwarding through conferences and patches — allows PTS to traverse a conference to key connected radios.
  - Block VOX-based PTT/transmission to a radio line while the receiver is active, preventing a user from talking over the radio net when another party is already talking.

- Support for REDCOM's patented RTP-based PTS with positive acknowledgements.
  - **Mobile clients —** PTT interoperability between radio users and smartphone users with REDCOM's Secure Client app.
- **Voice queuing —** Configurable PTT assertion timing/validation modes per radio port, with automatic store & forward audio queuing to prevent lost syllables at the beginning of each transmission:
  - Timer based
  - Trunk radio grant tone
  - Secure radio tone burst (to confirm secure fill)
- **Audio monitoring —** Monitor callers hear all of the audio transmitted/received from the target radio port, regardless whether the radio port is in an active call/patch. Each radio port can be monitored by multiple callers from the network and/or other local radio ports or even a conference.
- **Secure radio over IP —** TLS/SRTP encryption for privacy of signaling and audio information over IP networks.
- **Repeater squelch tail suppression —** to prevent tail noise bursts from oscillating between bridged repeater nets.
- **Optional inactivity timeout**
- **Optional RX audio suppression —** to blank out receive audio when saturated by a nearby transmitter or when transmit audio is echoed by a radio with handset sidetone.
- **User-programmable radio line templates**
- **Auto and manual answer modes**
- **Notification tones**
- **Radio ports status dashboard with realtime signal tracking**
- **Detect attached donor/gateway radio —** when enabled, the radio line's maintenance status will automatically track the presence or absence of the attached radio.

Interoperability Features

- **Flexible 4W audio ports —** The 4W audio ports on Sigma XRI-M4K can be used to connect to almost any audio device (full-duplex or half-duplex; transmit-only, receive-only, or bi-directional). Supported devices include intercoms, speakers, PA systems, microphones, or an always-open audio channel.

- **Discrete input/output analog interfaces —** Sigma XRI includes general purpose sensor/driver interfaces which can be wired up to virtually anything. For example: calling a special dial code can lock a door; or a sensor can trigger a blast announcement or preset conference when a condition passes a critical threshold.

C2 Console Features

- Works with any Sigma XRI-reachable endpoint, such as a SIP device, an analog phone via a SIP trunk, or radio net.
- Provides the operator with visibility of all endpoint connections from a single pane of glass.
- Operator can listen and PTT to any conversations across multiple devices and talk groups.

- Operator can build patches on-the-fly simply by dragging and dropping connections together.
- TSM support: monitor and control multiple TSM talk groups simultaneously. A TSM talk group can be patched together with other TSM talk groups, non-TSM radio nets, and SIP devices.

REDCOM Sigma® XRI-M4K Specifications

PHYSICAL

Dimensions (WxDxH)	7.4 x 5.7 x 1 in / 18.8 x 14.5 x 2.5 cm
Weight	1.4 lbs. / 0.6 kg
Chassis	Lightweight anodized extruded aluminum
Power Input	10–18 VDC, 5W peak power draw

ENVIRONMENTAL

Temperature (operational)	-20 to 70 °C (MIL-STD-810H, Methods 502.7 and 501.7, Procedure II)
Temperature (storage)	-34 to 70 °C (MIL-STD-810H, Methods 502.7 and 501.7, Procedure I)
Altitude (operational)	Up to 30,000 ft. (MIL-STD-810H, Method 500.6, Procedure II)
Altitude (storage)	Up to 30,000 ft. (MIL-STD-810H, Method 500.6, Procedure I)
Vibration	7.7 Grms (MIL-STD-810H, Method 514.8, Procedure I, Category 24: General Minimum Integrity Exposure)
Shock	20 G (MIL-STD-810H, Method 516.8, Procedure I)
Emissions	FCC Part 15 Sub-part B Class B compliant (validated)

REDCOM SIGMA® SOFTWARE

Minimum version required	3.2.0
Sigma features	Controlled by software license
Supported compute modules	Sigma must be installed on a Klas Voyager compute module, such as the VMm. A USB connection from the compute module to the XRI-M4K module is required for operation.

PORTS

USB 2.0	1 (for connecting to a compute module)
Analog	4x RJ45
LEDs	Power, 4x Port Status

ANALOG PORT DETAILS

Receive audio interface	2-wire transformer coupled input for noise reduction and DC isolation
	Supports balanced 600 ohm or unbalanced connections
	Software-selectable input gain
	Maximum audio input signal voltage is 5 volts peak-to-peak
Transmit audio interface	2-wire transformer coupled output for noise reduction and DC isolation
	Supports balanced 600 ohm or unbalanced connections
	Software-selectable output gain with line-level and microphone-level modes
Discrete interfaces for PTT and general-purpose output functions	GPIO A: solid-state relay, dedicated return, output limits: 56 VDC, 100 milliamps
Discrete interfaces for COR/Retrans and general-purpose input functions	GPIO D: input with on/off sense and voltage sense, 0-58 VDC
Common ground isolated per port	Allows ground plane variations between XRI-M4K and each attached radio

Note: some features, such as TSM talk group integration, require a feature license.

Please consult with your REDCOM or Klas solution advisor for pricing and configuration options.

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