

REDCOM SIGMA® XRI-400 FOR FIRST RESPONDERS

Seamless interoperability for incident response teams

REDCOM Sigma XRI is a compact but powerful Command and Control platform that solves interoperability challenges for incident response teams. Sigma XRI delivers the power of a comms truck in a box that weighs less than 3 lbs. It can be installed in a portable kit or mounted in the trunk of a cruiser. In either case, it integrates with existing public safety equipment without requiring the rip-and-replace of gear or infrastructure.

Sigma XRI-400 bridges the gap between disparate radio systems used by public safety organizations, government agencies, and military units. By leveraging existing radio assets, Sigma XRI-400 enables these organizations to instantly connect to each other, regardless of radio network, endpoint, or frequency used. Because Sigma XRI-400 is a full-featured C2 platform, radio users can communicate directly with users on other radio nets, users on TSM networks, and even users on SIP endpoints. All of these connections can be controlled and patched together on-the-fly via the REDCOM C2 Console app.



Intelligent radio interoperability

- Features 4 built-in radio interfaces.
- 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.

Support for various IP & RF ecosystems

- Enables users to connect numerous disparate IP and RF comms endpoints.
- Voice, video, & chat for emergency responders and public safety personnel that does not require reachback.
- Enables stand-alone comms in DIL (disconnected, intermittent, and limited) environments.

TSM™ radio integration

- IP-based integration of individual talk groups on a TSM (RF mesh) network via a single donor 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.

Powered by REDCOM Sigma® software

- The C2 platform of choice for the U.S. Army and USAF.
- Intuitive software is easy to learn and operate, even in complex and disconnected environments.
- C2 Console app enables an operator to monitor and control all comms from a single pane of glass.
- Lightweight selectable video conferencing is ideal for chaotic, congested, or contested environments.



RESEARCH, ENGINEERING, & DEVELOPMENT IN COMMUNICATIONS

Resilient, future-proof design

- Powers up in less than two minutes.
- Resilient to hard shutdowns.
- Built to MIL-STD specs.
- No rip and replace — interoperates with legacy or existing technology.
- Enables public safety organizations to pivot to new comms tech quickly and efficiently.

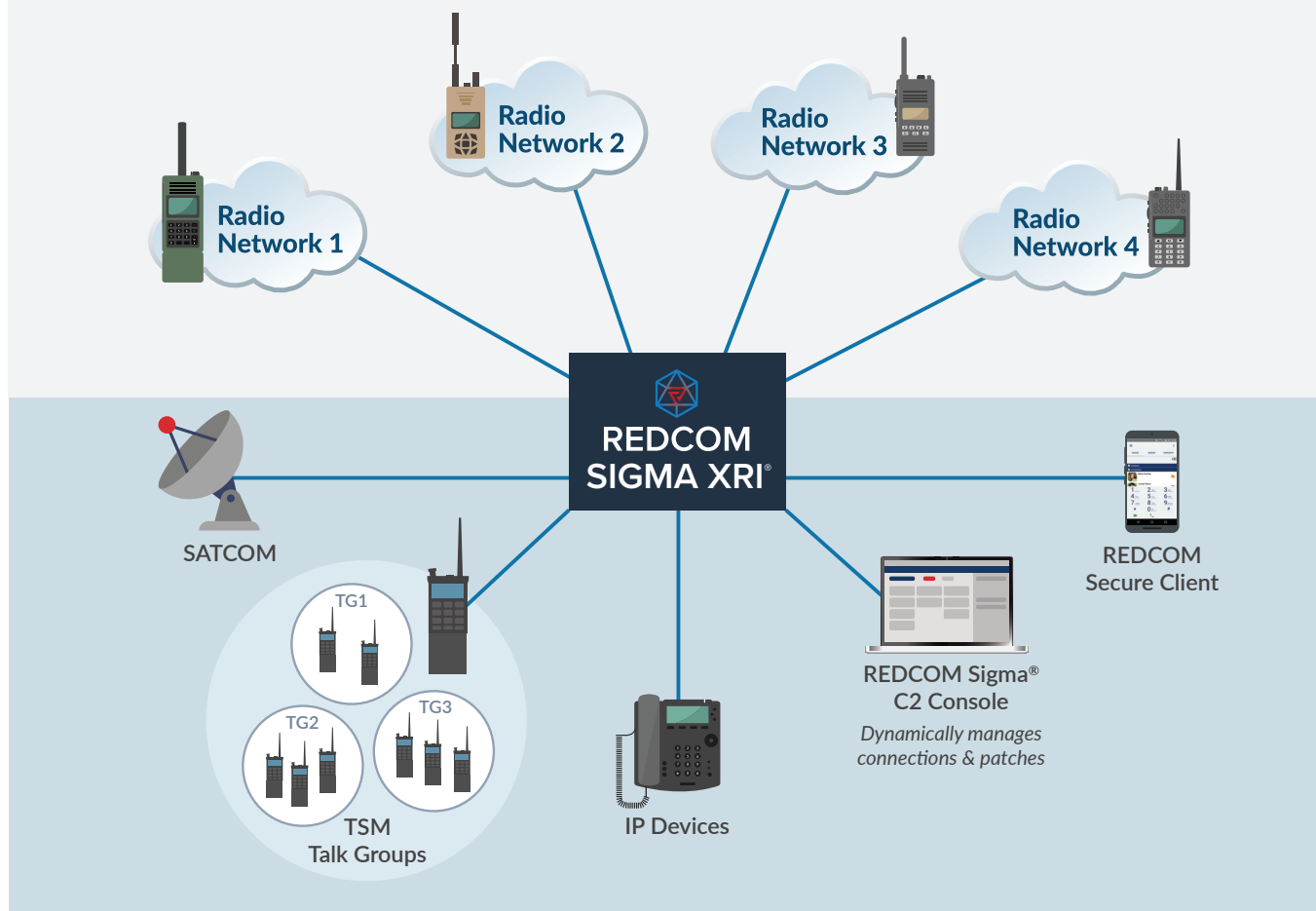
Solves interoperability challenges

- Solves interoperability challenges during a crisis or incident response — connecting radios to Sigma XRI-400 enables users on any IP or RF endpoint to communicate.
- Small and light enough to be mounted in a vehicle, pack- or hand-carried, or added to an existing data/comms rack.
- Flexible and scalable — a single XRI-400 supports IP phones, analog radios, TSM radios, and the REDCOM Secure Client for Android™ & Windows®

BRIDGE DISPARATE RF & IP ENDPOINTS WITH REDCOM SIGMA® XRI-400

A single Sigma XRI-400 unit can bring together RF and IP devices from multiple agencies and organizations, enabling first responders and public safety officials to command, control, and communicate.

The XRI hardware includes four analog ports to connect to four separate radio networks. TSM support allows a TrellisWare TSM radio with up to 32 talk groups to connect into the XRI network. The REDCOM C2 Console app enables an operator to monitor and control all connections and dynamically patch them together.



RESEARCH, ENGINEERING, & DEVELOPMENT IN COMMUNICATIONS

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-400 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.



RESEARCH, ENGINEERING, & DEVELOPMENT IN COMMUNICATIONS

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-400 Specifications

PHYSICAL

Dimensions (WxDxH)	8.4 x 5.75 x 2.6 in / 21.3 x 14.6 x 6.6 cm
Weight	2.6 lbs. / 1.2 kg
Power Input	10–26 VDC, 30W peak power draw

ENVIRONMENTAL

Temperature (operational)	-20 to 70 °C (MIL-STD-810G, Methods 502.6 and 501.6, Procedure II)
Temperature (storage)	-20 to 70 °C (MIL-STD-810G, Methods 502.6 and 501.6, Procedure I)
Altitude (operational)	Up to 15,000 ft. at 50 °C (MIL-STD-810G, Method 500.6, Procedure II)
Altitude (storage)	Up to 30,000 ft. at 50 °C (MIL-STD-810G, Method 500.6, Procedure I)
Vibration	7.7 Grms (MIL-STD-810G, Method 514.7, Procedure I, Category 24: General Minimum Integrity Exposure)
Shock	20 G (MIL-STD-810G, Method 516.7, Procedure I)
Emissions	FCC Part 15 Sub-part B Class B compliant (validated)

SOFTWARE

	Standard Config	Lite Config
REDCOM Sigma® version	3.1.0+	3.1.0+
SIP/AS-SIP Registrations	100	50
SIP/AS-SIP Trunk Channels	20	10
Chat Clients	100	50
Conference Bridges	20	10
Conference Members	50	25
Conference App Power Users	2	2
Transcoded Sessions	10	5
Voice Mailboxes	10	5

PORTS

USB 2.0	2
Ethernet	2 x 10/100/1000
Video	1 x DisplayPort™ dual mode (DP++)
Analog	4x DB15
LEDs	Power, Disk Activity, 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
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	1x solid-state relay, dedicated return, output limits: 56 VDC, 100 mA 1x solid-state relay, common ground/return, output limits: 56 VDC, 100 mA 1x form C mechanical relay, 1 Amp max
Discrete interfaces for COR/Retrans and general-purpose input functions	3x inputs with on/off sense and voltage sense, 0-58 VDC, common ground
Common ground isolated per port	Allows ground plane variations between XRI and each attached radio

Note: some features, such as TSM talk group integration, require a feature license. Please consult with your REDCOM solution advisor for pricing and configuration options.

©2023 REDCOM Laboratories, Inc. REDCOM, Sigma, and Sigma XRI are registered trademarks and the REDCOM logo is a trademark of REDCOM Laboratories, Inc. TSM is a trademark of TrellisWare Technologies, Inc. All other trademarks are property of their respective owners. Subject to change without notice or obligation. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>). This product includes cryptographic software written by Eric Young (ey@cryptsoft.com). This product includes software developed by the Computer Science Department at University College London.



REDCOM™

RESEARCH, ENGINEERING, & DEVELOPMENT IN COMMUNICATIONS

ONE REDCOM CENTER, VICTOR, NY 14564, USA | 585.924.7550 | WWW.REDCOM.COM | SALES@REDCOM.COM

20231204 V14