

SYSTEM OVERVIEW

BridgeWay M3800RM VoIP systems provide anywhere, anytime collaborative radio and intercom communications. BridgeWay supports multiple simultaneous radio net, cross-patch, telecom, intercom and operator console connections.

BridgeWay integrates 8 radio audio and serial data ports, a VoIP Gateway, telecom ports, softswitch, client server and call manager into a light-weight and low power 1u rack mount system.

All BridgeWay telephone line, radio and conference net resources may be assigned a telephone number, allowing VoIP devices to direct dial any resource and vice-versa. Callers hear standard call progress tones, making for intuitive system operation.

Tactical Communications offers a BridgeWay compatible line of rugged PC operator and handheld consoles, intercom crew stations and headset boxes. BridgeWay systems are configurable via a network connected administration and maintenance PC.

Multiple BridgeWay systems may be networked and console operators may login any networked terminal. A mix of FXO, FXS, E&M lines and Primary Rate ISDN T1/E1 spans are optionally available.

RADIO PORTS

Each BridgeWay analog radio/audio port features transformer isolated 4-wire audio, Carrier Operated Relay (COR) inputs, relay operated transmit control outputs and RS232/422/485 serial control ports.



M3800RM VOIP GATEWAY

The gateway feature interoperates VoIP networked devices, such as SIP telephones, iPBXs, laptops and computer workstations with TDM devices, such as radios, headsets, intercoms, telephone lines and legacy PBXs. M3800RM gateways may also act as Multicast Servers to distribute resource access to a large number of users. Signaling and control in the Multicast environment are synchronized using with "MC-Link" out-of-band control signaling

BridgeWay operators may control radio patching and relay connections, as well as transmit and receive data, on remote radios. The BridgeWay remote communications feature will reliably operate over long delay and high packet loss SATCOM networks, including connections over multi-hop networks.

BRIDGEWAY POWER

M3800RM BridgeWay systems operate from 9-32V DC power @ 8W IAW MIL-STD-1275E. (Add 1W for each optional FXS port), or from 110/220V AC power with an auto-switching power pack. The (-F) version with advanced filter option operates from 15-32VDC and provides enhanced power line EMI protection.

MIL-STD

M3800RM BridgeWay radio gateway systems have been tested to MIL-STD-810, MIL-STD-461 and MIL-STD-1275 in a variety of customer environments.

FEATURES AND BENEFITS

- 2/4 wire 600 ohm and 150 ohm transformer isolated audio interfaces, with software programmable I/O gain, adapts to all radio types
- Programmable PTT + COR signal lines provide universal compatibility with radio base station and repeater equipment
- Software programmable remote radio configuration option adapts to all types of radios equipped with RS232/485 serial digital or IP ports
- Programmable remote radio configuration features include: channel selection, squelch bypass, modulation type, BIT, power, and more
- Uplink/downlink codec options include G.711, G.729 and MELPe, with symmetrical or asymmetrical uplink and downlink settings
- Automated call routing feature allows networked user dial access to multiple combat net radios, intercom nets and meet-me conferences
- Configurable voice detect and IP packet detect VOX transmit control modes
- MC² operator terminal GUI features simultaneous monitoring/mixing of multiple channels with individual gain control, multi-channel intercom, soft phone, simulcast, personalized operator screen configurations, remote radio configuration and more
- Provides Multicast distribution of resources to large numbers of users with "MC-Link" out-of-band control signaling
- Operator may simulcast transmissions to all users, or a selected group of users, efficiently handling group and emergency communications
- IP Link between the M3800RM, other networked BridgeWay systems and operator terminals may be configured with AES encryption.
- SIP or H.323 Gateway includes standard G.7xx vocoders, jitter buffering, AGC and echo cancellation for universal VoIP terminal compatibility

- Remote software and configuration updates to on board flash
- Built-in test (BIT) and remotely activated self-test facilitates high availability operation
- Built-in conference bridge supports multiple simultaneous intercom and combat radio nets
- Selectable PTT control or full duplex operation from IP phones allows integration of VoIP telephones with radio networks
- Downloadable configuration files allows plug and play mission profiles
- Language packs allow configuration GUI and operator consoles to display in any language.

BRIDGEWAY SOFTWARE

BridgeWay includes Tactical Communications' embedded call manager application software. The call manager application supports compatible BridgeWay client GUI software products.

MC² call manager software networks multiple BridgeWay system nodes, allowing operators to access all BridgeWay connected radios or to login via any LAN-connected VoIP terminal.

The embedded MC² call manager and web server eliminates the external server and call manager equipment typically required when using third party software GUIs, or when BridgeWay is connected to external telephone systems.

The BridgeWay JAVA programmed client GUI may be easily configured to meet unique requirements.

MC² CLIENT GUI

The MC² Client GUI allows operators to communicate via VoIP with multiple radios and telephones, and to set up radio-telephone patches and intercom nets. The MC² Client GUI will run on any laptop, computer or workstation supporting standard JAVA scripts.

Tactical Communications offers BridgeWay MC² client GUI software customized to specific project requirements.

GENERAL SPECIFICATIONS		
MODEL	DIMENSIONS ^(NOTE 1) AND WEIGHT	POWER
M3800RM	19.0" (483 mm) W x 10.0" (254 mm) L x 1.75" (44 mm) H, 4.5 lb (2.04Kg.)	12-32V DC @ 8 Watts. (Note 2)
M3800RM-F	19.0" (483 mm) W x 10.0" (254 mm) L x 1.75" (44 mm) H, 4.8 lb (2.18Kg.)	15-32V DC @ 8 Watts. (Note 3)

Note 1: Dimensions do not include connector protrusion.

Note 2: Add 1 Watt for each optionally equipped FXS telecom port, whether active or not.
DC Power 9-32 V DC if telecom option not included.

Note 3: Add 1 Watt for each optionally equipped FXS telecom port, whether active or not.

BRIDGEWAY ORDERING INFORMATION	
M3800RM SYSTEM COMPONENTS	PART NUMBER
8 Port Rackmount, DC power	M3800RM
M3800RM FEATURE OPTIONS	PART NUMBER
Remote Radio Configuration License, xxx = Radio Type	RRC-xxx
MC ² Console GUI license, xxx = seat capacity	GUI-xxx
SIP/H.323 Gateway with Call Manager	VoIP-GW
(4) FXO and (4) FXS Port option Card	TM446
MIL-STD-461F enhanced power filtering	M3800RM-F

BRIDGEWAY M3800RM I/O INTERFACE SPECIFICATIONS		
AUDIO SIGNAL	DESIGNATION	SPECIFICATION
Line Inputs	Line In	Up to 24V pk-pk, balanced 600 ohm transformer isolated and transient protected inputs. D-38999 connector.
Line Outputs	Line Out	0-18V pk-pk, 600 ohm and 0-1V pk-pk 150 ohm balanced transformer isolated and transient protected outputs. D-38999 connector.
Audio Bandwidth	BW	Bandwidth 150Hz - 3.4Khz, +/- 1dB
Channel Isolation		> 90dB
RADIO CONTROL	DESIGNATION	SPECIFICATION
COR Inputs	COR	Contact closure or voltage inputs. Inputs pulled up to +5V DC through a 51k resistor. Programmable trigger voltage. D-38999 connector.
XMIT Control Outputs	XMIT	Normally Open relay contact closure. D-38999 connector.
Radio Control RS232 Ports	RS232	1.2K – 115.2Kbps RS232 serial ports. Rx, Tx, signal ground. D-38999 connector.
Radio Control RS485/422 Ports	RS485/422	1.2K – 115.2Kbps RS485 or RS422 2/4 wire serial port. D-38999 connector.
COM NETWORKS	DESIGNATION	SPECIFICATION
Dual 10/100bT Ethernet	10/100bT Ethernet Port	Dual IEEE STD 802.3 10/100bT Ethernet LAN. D-38999 connector.
RS232 Maintenance Port	RS232	1.2K – 115.2Kbps RS232 serial port. Rx, Tx, signal ground. D-38999 connector.
REMOTE RADIO CONTROL	DESIGNATION	SPECIFICATION
Serial Digital	RRC	<ul style="list-style-type: none"> - Set Channel Frequencies - Select channel presets - Selection Modulation Type - Tx power level - Encryption Control - Squelch Disable - Run BIT - Guard Receive

STANDARDS SPECIFICATIONS		
SPECIFICATION	PARAMETERS	STANDARD
Altitude	Operational: +50,000 ft. Non-Operational: +60,000 ft.	MIL-STD-810G, Method 500.4
Storage Temperature	-55 ^o C to 85 ^o C	MIL-STD-810G, Methods 501.4 and 502.4, Procedure I
Operating Temperature	-40 ^o C to +70 ^o C	MIL-STD-810G, Methods 501.4, Procedure II
Vibration	Transportation and Operating	MIL-STD-810G, Method 514
Functional Shock	Functional Shock, 20G 11msec, Saw-Tooth	MIL-STD-810G, Method 516.5, Procedure I
Humidity	0 - 95%, non-condensing	MIL-STD-810G Method 507.4, Procedure I
Salt Fog	48 hour exposure at 5% concentration	MIL-STD-810G Method 509.4
Sand and Dust	Blowing dust conditions	MIL-STD-810G, Method 510.4, Procedure I
EMI/EMC	CE102, RE102 and RS103	MIL-STD-461F
EMI/EMC (-F option)	CE101, CE102, CS101, CS114, CS115, CS116, RE102 and RS103	MIL-STD-461F
Reliability	125,000 Hours	MIL-HDBK-217F
Power	Input Voltage and Transient Testing	MIL-STD-1275E
SIP	Industry Standard SIP	RFC3261 SIP; RFC1889 RTP; RFC2327 SDP; RFC2833 RTP for DTMF Digits.
H.323	Industry Standard H.323	H.323; H.225; H.245; RFC1889 RTP

Specifications subject to change without notice
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US patents 8,442,506 and 9,154,630