SYSTEM OVERVIEW

The BridgeWay M800 system provides vehicle-based voice over IP (VoIP) communications between mobile radio, SATCOM terminals, telephone systems, user headsets and VoIP networked communication terminals.

BridgeWay supports radio repeater and cross-band patching operations, while simultaneous radio and intercom calls may be placed between mobile radios, SATCOM and telephone networks, cell phone, IP phone and PC based operators.

BridgeWay integrates a 4 port (M400) or 8 port (M800) switched radio controller, VoIP Gateway and Operator terminal command and control server into a single compact, light weight and low power vehicle based or man portable system. BridgeWay supports all types of analog E&M, serial digital control and IP interfaced radios.

BridgeWay is compatible with PC based VoIP networked command and control consoles and SIP or H.323 standard IP communication terminals.

A plug in option card for the M800 supports Quad FXO telephone lines. Environmentally sealed and ruggedized panel mount LCD operator terminals are also available for use with the M800.

For operation in extremely hostile environments, the BridgeWay M800 is also available in an environmentally sealed enclosure, model M8100.

RADIO CONTROLLER

Bridgeway radio ports feature transformer isolated 4-wire audio, COR inputs and relay operated PTT transmit control.

Base stations may be remotely controlled via RS-232 and RS-422/RS-485 ports, with messaging protocols available for most popular radio types.

VoIP GATEWAY

10/100bT Ethernet and 100bFX optical fiber network connections are provided for VoIP communications. VoIP data may be AES encrypted, or an external module may be added for Type 1 crypto operation over the Ethernet network.

BridgeWay may be optionally equipped with an embedded H.323 or SIP Gateway supporting up to 60 VoIP terminal devices, such as IP telephones, PC laptops and operator workstations.

BridgeWay M800

MC² COMMAND/CONTROL GUI

The BridgeWay MC² command and control operator console option comprises an embedded call manager and web server communicating over VoIP with a PC based JAVA client GUI. The on-board MC² software eliminates the necessity for external server and call manager equipment.

The MC² client GUI provides operator command and control over multiple radios and telephones, radio and telephone cross patching and intercom communications across a multi-location distributed IP network.

MC² client GUI will run on any laptop, computer or workstation supporting a standard web browser and JAVA scripts.

Multiple BridgeWay systems may be networked together and console operators may log in on to any terminal located on the network.

BridgeWay is compatible with third party call management servers and operator terminal GUI software using multicast techniques.

Voiceboard offers BridgeWay MC^2 client GUI software customized to your project requirements. Alternatively, the BridgeWay MC^2 client GUI source code and API may be licensed to users interested in developing customized client workstation and administrative GUI's.

TIGER COMMAND/CONTROL GUI

As an alternative to MC^2, the BridgeWay "Tiger" command and control console software providing fully featured dispatch operator console positions is available. Tiger must be used with the BridgeWay tactical networked server option.

TELECOM PORTS

BridgeWay may be equipped with optional FXO ports for integration with command and control telephones, PSTN, or for interfacing to SATCOM or cell phone terminals.

OPTIONAL SIP OR H.323 VOIP GATEWAY

In addition to the MC^2 feature set, the BridgeWay M800 optional VoIP Gateway interfaces with VoIP communication terminals, including SIP or H.323 telephones and computer terminals supporting VoIP.

The VoIP Gateway features include:

- Standard SIP or H.323 protocol support
- All G.7xx vocoders
- Comfort noise generation and Jitter Buffering
- G.168 echo canceller, 128 msec. tail
- RTP packet streaming

FEATURES AND BENEFITS LISTING

- 2/4-wire software programmable transformer isolated audio interfaces adapt to all radio types.

- Programmable PTT and COR control lines provide universal interfacing with E&M controlled radios.

- Software programmable universal digital radio interface option adapts to all types of radios with serial or IP port digitally controlled messaging.

- Programmable radio control features include PTT, frequency selection, squelch bypass, caller ID capture, addressable user calling, BIT and more.

- Built in test (BIT) and remotely activated self-test facilitates high availability operation.

- VoIP SIP or H.323 Gateway option interoperates radios and conventional telephone systems with industry standard IP networked communication terminals and routers.

- Optional quad FXO interface for interfacing with PSTN trunks, SATCOM and cell phone terminals.

- MC^2 operator command and control GUI option features foreground and background mixing of all radio channels and individual gain control on each channel.

- MC^2 operator command and control GUI option features simultaneous monitoring of multiple channels, multi-channel intercom, soft phone, simulcast and more.

- Auto attendant software option allows telephone and IP phone users dial access to pre-configured conferences, operator consoles and radios.

- Optional Tiger software supports dispatch operator command and control consoles. The Tiger configuration requires a separate networked server computer running Tiger server software.
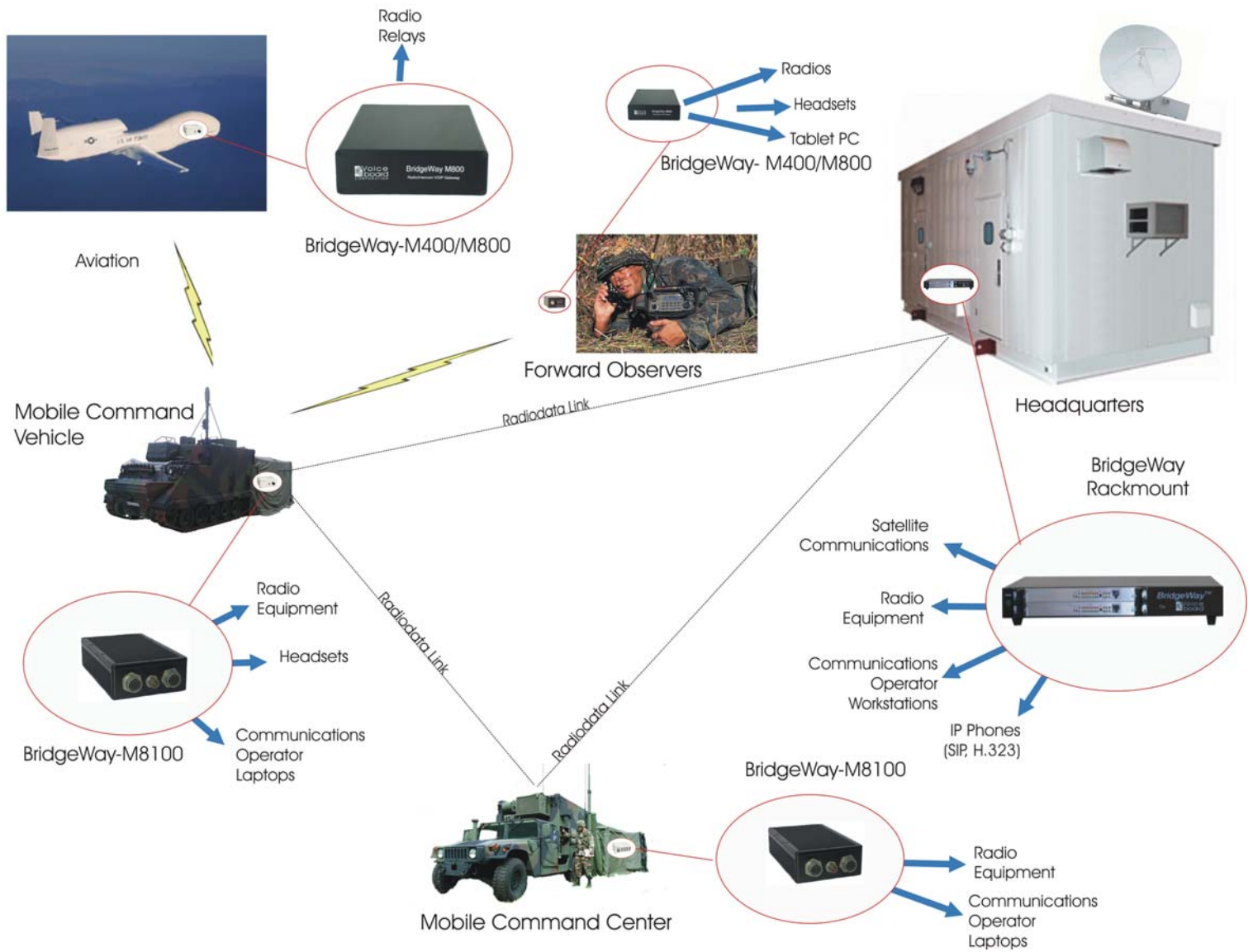
VoIP Radio/Intercom Network

MC^2 SOFTWARE FUNCTIONALITY

The MC^2 software module integrates command and control consoles with the BridgeWay system. The customizable MC^2 user GUI provides operator control of real time communications processing.

Features of MC^2 include:

- Programmable console operator GUI screens (see MC^2 Operator User Guide)
- System configuration and administration GUI
- Repeater and cross-patch control screen
- Softphone for telephone communications
- Console operator log in from any workstation on the network
- Multi-level password protection
- Multi party conferencing
- Multi channel monitor/mixing
- Multiple operator Intercom channels
- Operator programmable radio and intercom mixing monitor
- Simulcast "one-to-many" broadcast capability
- User dial access to radios, operators and conferencing
- Meet me and preset conference types

LCD PANEL OPERATOR CONTROL STATION

The BridgeWay LCD operator control station (OCS) with keyboard is a rugged ultra-portable single user command and control console for operation with the BridgeWay system.

The OCS panel is a functional equivalent to a PC workstation, designed for field use with gloved hands. BridgeWay OCS may be attached at any point on the BridgeWay system IP network, as it emulates a standard PC workstation.

BridgeWay OCS supports military headsets, including ANR types. The LCD GUI is customizable to your specific requirements.

CUSTOM LCD/KEYBOARD OPERATOR CONTROL STATION

OCS FEATURES INCLUDE:

- Programmable console operator GUI screens
- Intercom communications
- Mix and monitor multiple radio channels
- Select transmit channel
- Low Power 9-32 VDC operation
- Meets MIL-STD-810
- Personalized operator or location screens
- Operation in bright sunlight and night vision environments
- Multiple operator Intercom channels
- Operator programmable radio and intercom mixing monitor
- Simulcast "one-to-many" broadcast capability
- User selectable call routing, cross patching and conferencing
- Meet me and preset conference types

BRIDGEWAY M800 I/O INTERFACE SPECIFICATIONS		
AUDIO SIGNAL	**DESIGNATION**	**SPECIFICATION**
Line Inputs	Line In	Up to 24V pk-pk, 1V typical, balanced 600ohm transformer isolated and transient protected inputs. MIL-DTL-38999 connector.
Line Inputs	Line Out	18V pk-pk, 600ohm balanced transformer isolated and transient protected outputs. MIL-DTL-38999 connector.
Audio Bandwidth	BW	Bandwidth 150Hz-3.4Khz, +/- 1db
RADIO CONTROL	**DESIGNATION**	**SPECIFICATION**
COR Inputs	COR	Contact closure or signal logic input levels. Inputs pulled up to +5VDC through a 51k resistor. MIL-DTL-38999 connector.
XMIT Control Outputs	XMIT	Normally Open relay contact closure. MIL-DTL-38999 connector.
Radio Control RS232 Ports	Radio RS232 #1-8	300-9,600bps RS232 serial ports. Rx, Tx, signal ground. MIL-DTL-38999 connector.
Radio Control RS485 Ports	Radio RS485 #1-8	300-9,600bps RS485 or RS422 2/4 wire serial port. MIL-DTL-38999 connector.
COM NETWORKS	**DESIGNATION**	**SPECIFICATION**
10/100bT Ethernet	10/100bT VoIP Port	IEEE STD 802.3 10/100bT Ethernet LAN. IPv4 and IPv6. MIL-DTL-38999 connector.
100bFX Ethernet	100bFX VoIP Port	IEEE STD 802.3u 100bFX Optical Fiber Ethernet LAN. IPv4 and IPv6. MIL-DTL-38999 connector.
RS-232 "Debug" Port	RS-232	9.6K - 112K bps RS-232 serial port. Rx, Tx, signal ground. MIL-DTL-38999 connector.
RADIO CONTROL	**DESIGNATION**	**SPECIFICATION**
Serial Digital	SDC	- Manual frequency entry - Volume - Scan/select channel presets - Squelch - Mode selection - Run BIT - TX power level - Caller ID

GENERAL SPECIFICATIONS

MODEL	DIMENSIONS AND WEIGHT	POWER
BridgeWay- BW-M800	10.75" (273mm) L x 6.75" (171.4mm) W x 2.0" (76.2mm) H 1.75lb (.8Kg.)	9-20VDC @ .8A or 20-32VDC @.4A 19 pin LEMO connector p/n HES.2F.319.XLDPS
OCS-01 Operator Control Station	7.4" (188 mm) W x 5.0" (127 mm) H x 2.0" (51 mm) D, 3.25lb (1.5Kg.)	9-20VDC @ .5A or 20-32VDC @ .2A IAW MIL-STD-1275B. 19 pin LEMO connector p/n HES.2F.319.XLDPS

ORDERING INFORMATION

BRIDGEWAY- M800 SYSTEM COMPONENTS	MODEL
4 Port MIL-STD-810 BridgeWay	BW-M400
8 Port MIL-STD-810 BridgeWay	BW-M800
LCD/Keyboard Operator Control Station	OCS-01

BRIDGEWAY- M800 FEATURE OPTIONS	MODEL
Serial Digital Radio Interface, xxx = radio type	SDR-xxx
Quad FXO 2 wire telephone interface	FXOPMC/4
MC^2 Console GUI license, xx = seat capacity	GUI-xxx
SIP Gateway	SIP-GW
H.323 Gateway	H323-GW

STANDARDS SPECIFICATIONS		
SPECIFICATION	**PARAMETERS**	**STANDARD**
Storage Temperature	-55°C to 85°C	MIL-STD-810, Methods 501.4 and 502.4, Procedure I
Operating Temperature	-40°C to 65°C	MIL-STD-810, Methods 501.4 and 502.4, Procedure II
Vibration	Sine: 10 g peak; Random: 0.04 g^2/Hz; 15-2k Hz	MIL-STD-810, Method 514.5, Procedure I
Shock	Functional Test for Ground Equipment	MIL-STD-810, Figure 516.5-8, Table 516.5-I
Operating and non-operating (storage) humidity	0 to 95% non-condensing	MIL-STD-810 Method 507.4
Altitude	-100 to 50,000 Feet	MIL-HDBK-5400 for Class 1A
EMI	CE102, CS101, CS114, CS115, CS116, RE102, RE103	MIL-STD-461E
Reliability	125,000 Hours	MIL-HDBK-217F
Safety	Sections 4.5.3.2 and 4.5.3.3	MIL-HDBK-454B