

Vocia VACIE
Reference Guide

Document Revision 1.2.1, January 2012

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INTRODUCTION

The Biamp Vicia VACIE (Voice Alarm Control and Indicating Equipment) is designed to provide an emergency announcement and paging system in accordance with the requirements of international standards. The Vicia VACIE includes Control and Indicator Equipment, Multi Channel Amplifiers and optional Emergency Wall Station paging devices. Components of the Vicia VACIE are designed to be housed in separate cabinets to facilitate the diverse requirements of modern emergency announcement systems. Various other non Vicia devices are required to provide power and the network infrastructure required by a Vicia system as specified in the following sections.

The VACIE is a particular implementation of the technically advanced Biamp Vicia product series. Installers and operators of the Vicia VACIE should review the functionality, interconnects and network distribution principles unique to Vicia prior to reviewing the information presented in operation manuals, installation requirements and associated drawings.

This guide is intended to provide users with a reference to the documentation that can provide a good understanding of the system architecture, the purpose and specifications of individual equipment that make up the Vicia VACIE, the operation of the system and the installation processes required.

HOW TO USE THIS GUIDE

This guide is organized into several sections as described below. In general, sections 1 through 4 provide summary information that will introduce the general concepts of a VACIE implementation using Vicia. Section 6 provides an appendix with specific information about compliance requirements.

SECTION 1 - VACIE CONFIGURATION provides an overview of structure of a Vicia VACIE configuration, the various elements that comprise the system, the communications between these elements and power supply requirements.

SECTION 2 - INSTALLATION REQUIREMENTS summarizes general installation matters that a system designer must take into account when specifying and installing a Vicia VACIE system.

SECTION 3 - CABINETS discusses requirements for housing the Vicia VACIE and associated equipment.

SECTION 4 - CABLING discusses general interconnection requirements for the Vicia VACIE.

SECTION 5 –Provides the **EC Declaration of Conformity**, along with the **EN 54-16 Certification** details.

SECTION 6 – APPENDIX provides details and drawings of specific requirements and methods that must be applied for general Vicia VACIE installations (Appendix A) and for EN 54-16 compliance (Appendix B).

SECTION 1: VACIE CONFIGURATION

A minimum standard system will service up to four Emergency Zones and requires a single LSI-16/e, at least one Vicia amplifier with channel/s assigned to service the speaker configuration required in the emergency zones, and an optional EWS Paging Station (microphone). These devices are to be powered by certified external battery-backed power supplies (for example according to EN 54-4). These power supplies are not available from Biamp. The VACIE must be supported by network infrastructure including Ethernet Switches, LAN and control and indicator cabling and Vicia End of Line monitoring devices (ELD-1). **Refer to Appendix B-2 Vicia EN 54-16 Installation System Block Diagram.**

Communications

The Vicia VACIE communicates all audio and internal control data using standard Ethernet network equipment and infrastructure. The Control and Indicating Equipment (CIE) inputs / outputs and faults are communicated using discrete control signals. **Refer to Appendix A-2 Vicia VACIE Communications.**

Vicia VACIE Devices

Devices that form part of a Biamp Vicia VACIE include those listed below. Note that some devices are required while others are optional as described elsewhere in this guide.

LSI-16: Vicia Life Safety Interface device. The LSI-16 facilitates the control, system integrity monitoring and reporting of faults for the Vicia VACIE. VACIE Control and Indicator functions are facilitated by the LSI-16. **Refer to the LSI-16/LSI-16e manual.**

LSI-16e: Vicia enhanced Life Safety Interface device. The LSI-16e provides an additional 16 inputs to the LSI-16. **Refer to LSI-16/LSI-16e manual.**

CI-1: Vicia Control Interface unit. The CI-1 provides the input of control signals from fire detection equipment (CIE) and directly interfaces with the LSI-16/e. The LSI-16/e and CI-1 are installed as a pair in the same cabinet. **Refer to the CI-1 manual.**

Vicia Amplifiers (VA-2060 / VA-2060e / VA-4030 / VA-4030e / VA-8600c):

Vicia networked audio power amplifiers with integrated digital signal processing. Vicia amplifiers power speakers in the Emergency Zones and store pre-recorded emergency announcements. Vicia amplifiers provide speaker line short circuit and ground fault detection and protection to limit the consequence of fault.

- **VA-2060 / VA-2060e:** Vicia two channel 60W RMS power amplifier.
- **VA-4030 / VA-4030e:** Vicia four channel 30W RMS power amplifier.
- The VA-2060e and VA-4030e have the ability to be powered by dual 24V DC connections in addition to the AC mains power supply. **Refer to the VA-2060/ VA-2060e / VA-4030, VA-4030e manual.**
- **VA-8600c:** Vicia eight channel power amplifier. The VA-8600c can house up to 8 AM-600c amplifier cards. The VA-8600c chassis provides a maximum of 800W RMS (1 kHz continuous sine wave indefinitely). **Refer to the VA-8600/ VA-8600c manual.**

EWS-4: Vicia Emergency Wall Station 4 device is a wall mounted paging stations specifically dedicated as an optional emergency microphone. The EWS-4 device provides priority over all announcements (both pre-recorded and live non-emergency). **Refer to the Vicia EWS-4/WS-4/EWS-10/WS-10 Paging Station manual.**

EWS-10: Vicia Emergency Wall Station 10 device is a wall mounted paging station specifically dedicated as an optional emergency microphone. The EWS-10 device provides priority over all announcements (both pre-recorded and live non-emergency). **Refer to the Vicia EWS-4/WS-4/EWS-10/WS-10 Paging Station manual.**

Vicia Support devices:

The following devices support operation of a Vicia VACIE.

ELD-1: Vicia End of Line Device. The ELD-1 is not part of the VACIE but is required to support reporting of the integrity of loudspeaker lines. **Refer to the Vicia ELD-1 manual.**

Power Supply and Network equipment

The specific requirements for power supplies and network equipment must be met to ensure the standards compliance of the Vicia VACIE. These devices are referred to as devices that support the operation of the VACIE and are manufactured by other vendors. **Refer to Appendix A-3 Vicia VACIE Network Infrastructure and Appendix A-4 Vicia VACIE Power requirements.**

SECTION 2: INSTALLATION REQUIREMENTS

In order to ensure that the standards compliance of the Vocia VACIE are not compromised the LSI-16/e, CI-1, VA-2060/e, VA-4030/e, VA-8600c, EWS, the interconnections to the Fire Detection System, power supplies, network infrastructure and other Vocia components must be installed in accordance with the provisions of applicable standards, Biamp Vocia Operation Manuals for each item of equipment, and this guide. The information contained in the appendices of this document is most important. It provides detailed specifications and requirements for component parts of a compliant system.

The Biamp Vocia VACIE must be installed and commissioned by personnel who have completed the Vocia training courses conducted by Biamp Systems. Once the installation and commissioning process is complete, software access to the Vocia VACIE should be restricted to authorized service personnel only.

The separate cabinets of the Vocia VACIE are designed to be connected together in a network and to be powered by external battery-backed power supplies. Power supplies and Ethernet switches which comply with all applicable standards must be provided to support the system and the units interconnected in accordance with those standards.

The system installer should refer to the appendix for a list of standards and specific clauses that apply.

In addition to the Vocia VACIE devices sourced from Biamp, the installer must provide:

- EN 54-4 certified 24V battery backed power supplies.
- Mains Uninterruptable Power Supply (UPS) to power Vocia amplifiers.
- 24V Managed Ethernet Switches with fault relay connections to support the LSI-16/e and CI-1.
- Mains or 24V powered Managed Ethernet switches to support the Vocia amplifiers.
- A Power over Ethernet (PoE) Ethernet switch to support the ELD-1 devices.
- (Ethernet switch port requirements depend on number of ELD-1s installed in a system)
- EN 54-24 Certified Loudspeakers

SECTION 3: CABINETS

Typically the Vocia VACIE is housed within two or three rack cabinets:

- A cabinet containing the LSI-16/e, CI-1 and associated support devices cabinet; and
- A cabinet containing Vocia amplifiers and associated support devices.
- If a EWS device is present, an additional third cabinet attached to a certified power supply to facilitate remote stand-alone applications.

If multiple Vocia amplifiers are required to drive a large number of loudspeakers servicing an expansive area then additional cabinets may be added as appropriate. In order to ensure that the Vocia VACIE is able to be installed in a wide variety of physical locations the LSI-16/e and Vocia amplifiers are manufactured in IP30 rated 'rack mount' enclosures. The EWS devices optional emergency microphone may require an IP30 rated 'wall mount' enclosure in order to meet the requirements of some standards.

To ensure correct operation, the installer must ensure that access level requirements are met. To maintain standards compliance, installers must follow the Biamp installer guidelines. In some circumstances cabinet construction must limit access to rear terminals and wiring of equipment to achieve specified access levels.

Refer to Appendix B-4 Vocia VACIE Cabinets for specific standards requirements for Vocia VACIE Cabinets.

SECTION 4: CABLING

Ethernet and Interconnection

Ethernet and interconnecting cabling must be installed appropriately to support standards compliance of the Vocia System. Specifically, any cabling between devices that are housed in separate cabinets must support the LSI-16/e fault detection strategy. In order to comply, two independent Ethernet connections must be maintained between the LSI-16/e and the Vocia amplifiers. This will usually require that there are two Ethernet cables run between LSI-16/e and its associated Ethernet switch, between Ethernet switches and the connections to the associated Vocia amplifiers. A single connection only is required to each ELD-1, EWS device and to the non Life Safety components of the Vocia paging system.

Refer to Appendix A-5 Vocia VACIE Cable Requirements.

Power

The LSI-16/e and CI-1 require a 24V DC power supply to be housed in a separate cabinet. Two 24V cables must be run from the 24V supply to the CI-1 which connects directly to the LSI-16/e. As required, 24V cables may also run from the 24V supply to the VA-2060e / VA-4030e. An uninterruptible power supply system (UPS) is required for provision of AC power to Vocia amplifiers. UPS devices must be installed in accordance with local power wiring standards/codes and manufacturer's specifications.

Refer Appendix A-4 Vocia VACIE Power Requirements.

CIE

The CI-1 provides an interface between the CIE and the LSI-16/e. The cables that provide interconnection between the CI-1 and CIE should be installed as a cable loom.

Fault monitoring

Typical standards-compliant installations require both an LSI-16/e and CI-1. The LSI-16/e monitors system health and detects alarm and fault inputs. The CI-1 provides an interface to external fault contacts and alarm inputs from the CIE, and also provides an alarm/fault sounder and required control switches.

For installations using an LSI-16, fault relay outputs from the 24V power supplies and from UPS devices must be wired in parallel to the CI-1 power supply and UPS fault input ports. Similarly, fault outputs (relay contacts) from associated Ethernet switches must be wired in parallel to the CI-1s Ethernet fault input port to ensure all Ethernet path faults are monitored.

For Installations using an LSI-16e, fault relay outputs from 24V power supplies, UPS devices and Ethernet switches may be wired independently to additional inputs provided on the LSI-16e. These inputs must be configured for appropriate fault indications.

Refer to Appendix B-1 Features and Functions of the Biamp Vocia VACIE.

The LSI-16/e has a voltage free relay contact that is closed on system fault detection and when power is removed. For standards compliance, this contact is wired via the CI-1 to provide a fault indication to the CIE. If a CI-1 is not installed (non-compliant installation) the contact may be wired in parallel with any other remote general fault contact to a remote indicator or sounder.

Refer to the LSI-16/e and CI-1 manuals.

SECTION 4: MAINTENANCE

The Biamp Vocia VACIE and supporting devices must be maintained in accordance with manufacturer's specifications. Please refer to the Biamp Vocia manuals and supporting equipment manufacturers manuals.



0832-CPD-1401

EC Declaration of Conformity

Biamp Systems Corporation, as manufacturer having sole responsibility, hereby declares that our delivered version of the following described product complies with the applicable provisions of the DIRECTIVES except as noted herein. In case of alterations the product, not agreed upon and directed by Biamp Systems Corporation, this declaration is no longer valid.

Product:

VACIE comprising Models LSI-16, LSI-16e, CI-1, VA-8600c, VA-8600, VFOM-1, EWS-10 and EWS-4, VA-4030, VA-4030e, VA-2060, VA-2060e, VFOM-1

Applicable Directive:

Construction Products Directive (CPD) 93/68/EEC

Evaluation Standard:

EN 54-16:2008 - Voice Alarm Control and Indicating Equipment

Provided Options:

Audible warning
Phased evacuation
Voice alarm condition output
Emergency microphones
Redundant power amplifiers

Ancillary Functions:

Background audio and zone paging

Notified Body (Test and Certification):

BRE Global Limited incorporating LPC Testing, BRE Testing
Notified Body number: 0832, Garston, Watford WD25 9XX UK

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Authorized Signature:

Issued: June 2010

SECTION 6: APPENDIX A-1 VOCIA VACIE INSTALLER CHECKLIST

This checklist provides pre and post installation checks that must be conducted for VACIE compliance.

Item	Requirement	Y/N
1	Familiarization with requirements of applicable standards and Biamp instructions.	
2	Provide mains powered and 24V DC managed Ethernet switches.	
3	Provide mains powered PoE Ethernet switch for support devices (ELD-1s).	
4	A lockable cabinet may be required for the EWS device to meet standards compliance. Please refer to the Appendix Table of Contents.	
5	A standards compliant 24V DC power supply attached to the EWS device cabinet to provide power to EWS (if optional paging station is required).	
6	CI-1 has been installed with the LSI-16/e to provide an interface to the CIE.	
7	LSI-16/e, CI-1 and 24V DC managed Ethernet switch is housed in a cabinet that meets access level requirements.	
8	A standards compliant dual 24V DC power supply to provide power to VA-2060e, VA-4030e, LSI-16/e, CI-1 and 24V managed Ethernet switch.	
9	Vocia amplifier/s and Mains Powered Managed Ethernet Switch are housed in a cabinet that meets access level requirements.	
10	A mains output UPS to provide power for Vocia amplifiers and mains powered managed Ethernet switch.	
11	LSI-16/e to Fire Detection System Interface.	
12	Ethernet and power cabling as per installation instructions.	
13	Fault monitoring wiring as per installation instructions.	
14	Ensure equipment access levels have been provided.	

SECTION 6: APPENDIX A-2 VOCIA VACIE COMMUNICATIONS

Overview

The Vocia VACIE internally communicates using networked audio and control data over standard 100BASE-TX Ethernet network infrastructure. External communications to the Vocia VACIE from 3rd party vendors are provided using discrete parallel logic interconnections.

VACIE Inputs from CIE

LSI-16e with CI-1 provides for up to twenty voice alarm inputs (maximum of four voice alarm inputs with LSI-16), one voice alarm silence and one voice alarm reset. These inputs and associated circuitry have been designed so that a fault on these inputs will not cause a change of operation.

Emergency Detection System Alarms

The LSI-16 provides four voice alarm inputs (or up to twenty voice alarm inputs with LSI-16e). These inputs are activated by a low to high transition. Please note if the CIE provides a voice alarm signal in the form of a pulse train the frequency cannot be greater than 1Hz with a 50% duty cycle.

Voice Alarm Silence

The voice alarm silence provides the ability to mute all active emergency messages.

To activate a voice alarm silence a low to high transition is required. Upon activation the active emergency messages will immediately mute and remain in this state until either:

1. A second low to high transition is detected and the alarm silence is removed
2. The voice alarm reset is activated

Voice Alarm Reset

The voice alarm reset provides a reset function to remove all active voice alarms. This input is activated by a low to high transition.

VACIE Outputs to CIE

The LSI-16/e with CI-1 provides monitored outputs that correspond to the LSI-16/e front panel indicators. Please refer to the LSI-16/e manual for more information relating to general fault, PSU fault, protection fault and path fault outputs.

Voice Alarm Active

This output provides indication of when an emergency message is playing or when an emergency message has been muted (silenced).

- Constant active output - indicates an emergency message is playing in response to a voice alarm input.
- Cyclic output (1.25Hz) - indicates the emergency message has been muted (silenced).

SECTION 6: APPENDIX A-3 VOCIA VACIE NETWORK INFRASTRUCTURE

Ethernet switches used in Vokia VACIE installations must be chosen to meet the requirements of applicable standards.

Electromagnetic Capability (EMC), Immunity Requirements

The network infrastructure that is part of the VACIE must meet the EMC and immunity requirements specified in applicable standards. Biamp has tested the system with the RuggedCom RS900 series Ethernet Switch and it is a suitable candidate.

Managed Switch Requirement

The Ethernet switch must be managed to facilitate redundant link strategies for the dual Ethernet paths between Ethernet Switches used in the Vokia VACIE.

24V Managed Ethernet Switch

This Ethernet Switch is to be powered from the same dual power supply as the LSI-16/e or VA-4030e / VA2060e. The Ethernet Switch must provide a fault relay output connection that monitors the power and port link status of the switch.

Refer to Appendix B-2 Vokia EN 54-16 Installation System Block Diagram.

Mains Powered Managed Ethernet Switch

This Ethernet switch is to be powered from the same mains powered UPS as the Vokia amplifier.

PoE Ethernet Switch

This Ethernet switch is required to supply power and control data to the ELD-1 (support devices, not part of VACIE). The switch must be IEEE 802.3af compliant and provide enough ports to service the ELD-1 requirements.

Refer to Appendix B-2 Vokia EN 54-16 Installation System Block Diagram.

SECTION 6: APPENDIX A-4 VOCIA VACIE POWER REQUIREMENTS

The Vocia VACIE requires a combination of 24V DC and mains AC power supplies. These power supplies must comply with local emergency standards for required backup and operation times. They must be installed in accordance with both Biamp Vocia VACIE guidelines, and the equipment manufacturer's guidelines.

- 24V DC Power Supplies: 24V power supplies that meet applicable standards, to power the LSI-16/e, VA-2060e, VA-4030e and optional EWS-4 and EWS-10 devices.
- Mains UPS: Mains UPS system that meets applicable local standards/codes, to power Vocia amplifiers.
- Mains Ethernet Switch: Mains powered Managed Ethernet Switch associated with the Vocia Amplifiers (Minimum 5 port).
- 24V DC Ethernet Switch: 24V Managed Ethernet Switches (Minimum 5 port) associated with the LSI-16/e, VA-4030e and VA-2060e.
- Mains PoE Ethernet Switch: A PoE Ethernet Switch for ELD-1 devices. (Ports depend on number of amplifier channels installed)

VOCIA VACIE POWER REQUIREMENTS

BIAMP PRODUCTS

LSI-16/e with CI-1

Nominal Voltage	-	24V DC
Tolerance	-	± 20%
Power Consumption	-	15W

EWS-4 and EWS-10

Nominal Voltage	-	24V DC
Tolerance	-	-5% +20%
Power Consumption	-	6W

VA-4030e, VA-4030, VA-2060e, VA-2060

AC Voltage	-	100 - 240V AC
AC Frequency	-	50/60Hz

VA-4030e and VA-2060e only

DC Voltage	-	24V DC
Tolerance	-	± 25%
Power Consumption	-	150W

VA-8600c

Voltage	-	110 - 120V AC OR
(Switch selectable)	-	220 - 240VAC
Frequency	-	50/60Hz

3RD PARTY PRODUCTS

Ruggedcom RS900-24

Nominal Voltage	-	24V DC
Tolerance	-	± 20%
Power Consumption	-	10W

Ruggedcom RS900-HI

Nominal Voltage	-	110 - 240VAC
Tolerance	-	± 20%
Power Consumption	-	10W

SECTION 6: APPENDIX A-5 VOCIA VACIE CABLE REQUIREMENTS

The minimum cable specification has been provided as a reference for all Vocia VACIE interconnecting cable types and parameters.

VOCIA VACIE Minimum Cable Specification					
From	To	Wire Size and Configuration	Insulation	Shielded	Comments
Vocia LSI-16/e Monitored Outputs	CIE	22 AWG, stranded	PVC	Yes	
CIE	Vocia CI-1	22 AWG, stranded	PVC	Yes	
CIE	Vocia LSI-16e Option A / B Connections	22 AWG, stranded	PVC	Yes	
Vocia LSI-16/e System Fault Relay Output	CIE	22 AWG, stranded	PVC	Yes	
Vocia LSI-16/e RS-232	CIE	9 core, 22 AWG, stranded	PVC	Yes	
24V DC Power Connections (not including VA-4030e and VA-2060e)	24V DC Power Connections	18 AWG, stranded	PVC	Yes	
24V DC Power Connections for VA-4030e and VA-2060e	24V DC Power Connections	12 AWG, stranded (30m maximum)	PVC	Yes	Cable gauge is load dependent
Ethernet Connections	Ethernet Connections	4 pair, 26 AWG, stranded, impedance: 100Ω	PVC	Yes	Cat 5e
Vocia amplifier speaker line connections	Speakers	18 AWG, stranded	PVC	No	Cable gauge is load dependent
Vocia VFOM-1	Vocia VA-8600 speaker line connections	18 AWG, stranded	PVC	No	

SECTION 6: APPENDIX B-1 FEATURES AND FUNCTIONS OF THE BIAMP VOCIA VACIE

The Biamp Vocia VACIE provides voice alarm control and indicating functions to initiate and manage an audible fire or other emergency alarm signal/announcement within a building or other defined space. This may be automatic in response to fire alarm or other signals or manually from an emergency paging station.

The Vocia VACIE is manufactured as stand alone equipment completely separate to the fire detection and fire alarm Control and Indicating Equipment (CIE, as referenced in EN 54-2). The Vocia VACIE includes Control and Indicator Equipment, Multi Channel Amplifiers and an optional Emergency Wall Station paging device each of which are designed to be housed in a separate cabinets powered by external EN 54-4 compliant DC power supplies and/or Uninterruptible Mains Power Supplies.

The Vocia VACIE supports three operating conditions.

- a. The quiescent condition
- b. The alarm condition
- c. The fault condition

THE FOLLOWING INFORMATION DIRECTLY REFERENCES CLAUSES IN EN 54-16.

5.4 Indication of the Supply of Power

The Vocia VACIE displays all the mandatory indications on the front panel of the LSI-16/e. The display is clearly identifiable and conforms to EN 54-16 indication colors, intensity and viewing angles. Power is indicated by a GREEN LED on all cabinets.

7 The Voice Alarm Condition

The Vocia VACIE receives and processes up to twenty alarm signals from the CIE causing the appropriate voice alarm outputs to be activated within 3 seconds. The VACIE will silence all alarms immediately when a silence signal is received from the CIE. The Vocia VACIE will reset all alarms immediately when a reset signal is received from the CIE.

8 Fault Warning Condition

The Vocia VACIE enters the fault warning condition within 60 seconds of any signal being received which is interpreted as a fault. The presence of faults in specified functions are indicated on the Vocia VACIE as specified in section 8 of EN 54-16.

8.5 System Fault

The Vocia VACIE will generate a system fault whenever:

1. A fault as specified in clauses 14.4 or 14.6 of EN 54-16 occurs
2. There is a return from loss of power.

The system fault is indicated by means of the general fault warning indicator, a separate light emitting indicator and a sounder on the Vocia VACIE that remain on until a manual reset is performed.

Faults other than the System Fault are automatically

7.3 Audible Warning (option with requirements)

An audible warning is provided on the CI-1. The audible warning will activate when any fault or voice alarm condition occurs in the Vocia VACIE. The audible warning may be silenced by pressing the sounder silence on the CI-1. If a new voice alarm or fault occurs whilst the audible warning is silenced, the audible warning will revert to the active state.

Note: If an emergency microphone is located near the audible warning, the emergency microphone may be configured (at access level 3) to silence the audible warning during live announcements.

7.5 Phased Evacuation (option with requirements)

Phased evacuation delay can be configured independently for each emergency loudspeaker zone. The phased evacuation delay duration can only be configured at access level 3 and there is no provision for manual control of phased evacuation at access level 2.

7.9 Voice alarm condition output

A voice alarm active output is provided to for remote signaling of a voice alarm condition.

12 Emergency microphone(s)

The Vocia EWS-4 and EWS-10 emergency microphone can only be configured at access level 3. The Vocia EWS device must be housed in a lockable cabinet with provision to view the Vocia EWS display with the cabinet door locked.

Refer to the Vocia EWS manual for more information.

The emergency microphone(s) provides:

a) Priority over all inputs, including pre-recorded messages;

The emergency microphone(s) have priority over all announcements (both pre-recorded and live non-emergency). Access level 3 configuration also provides four levels of priority for emergency microphone(s).

b) an emergency microphone control to open the microphone channel, at access level 2;

Access level 2 personnel are authorized to control the emergency microphone (EWS-4 or EWS-10). The EWS device provides up to ten configured (at access level 3) buttons to select the announcement destination. The microphone channel is opened using the Push-to-Talk (PTT) button on the side of the handheld microphone.

c) where a pre-announcement attention drawing signal is provided, an indicator adjacent to the microphone shall show when the signal has finished and live speech can commence;

The EWS device can be configured (at access level 3) to provide a pre-announcement attention drawing signal prior to a live emergency announcement. The EWS device provides indication about the status of the pre-announcement signal and indicates when the operator can commence a voice announcement.

d) when the emergency microphone control is operated, any audible indication that might interfere with the use of the microphone shall be automatically muted;

If an emergency microphone is located near the audible warning, the emergency microphone may be configured (at access level 3) to silence the audible warning during live voice announcements.

e) where the VACIE has provision for the connection of more than one emergency microphone, they shall be configurable for priority at access level 3 or 4 and only one emergency microphone shall be active at any one time.

The emergency microphones (EWS-4 or EWS-10) can be configured (at access level 3) to four levels of priority. Emergency microphones configured at the same priority cannot be active in the same emergency zone at the same time. The EWS display will indicate if an emergency zone is busy (if configured at the same priority level) and will indicate when the emergency zone becomes available.

13.6 Accessibility of indicators and controls

Four Access levels are supported by the following mechanisms:

Level 1: All mandatory indications are visible through transparent locked cabinet doors.

Level 2: Protected by a lockable cabinet door. Access to system fault reset, system test and sounder silence are available at this level.

Level 3: Protected by software password. Access level 3 users have access to change emergency paging priority, change emergency messages and to change the phased evacuation delay. All other software configurations can only be viewed.

Level 4: Protected by requirement to be Biamp trained. Access level 4 users have access to all hardware and software components of the Vocia VACIE. Access Level 4 personnel have full software privileges that allow for system configuration changes, firmware updates and other functions that can alter the basic mode of operation of the Vocia VACIE.

13.14 Redundant power amplifiers

The Vocia amplifiers provide 2 / 4 or up to 8 channels of amplification and each channel pair can be configured for redundancy (failover).

The VA-4030/e provides the additional functionality of 3 to 1 redundancy (failover).

The VFOM-1 module (VA-8600c) provides the additional functionality of 7 to 1 or dual 3 to 1 redundancy (failover).

13.14.1 The VACIE may have provision for at least one spare power amplifier. In this case:

- a) in the event of the failure of a power amplifier, the faulty amplifier shall be capable of being replaced automatically with a spare amplifier within 10s of the fault being detected;
The failover channels are externally wired in parallel and if a power amplifier fails the redundant amplifier channel will become active and the failed channel will be disabled.
- b) the spare power amplifier(s) shall have at least the same functionality and output power as the replaced amplifier.
The power amplifiers are configured automatically to the same functionality and power output when the redundancy feature is enabled during configuration at access level 3.

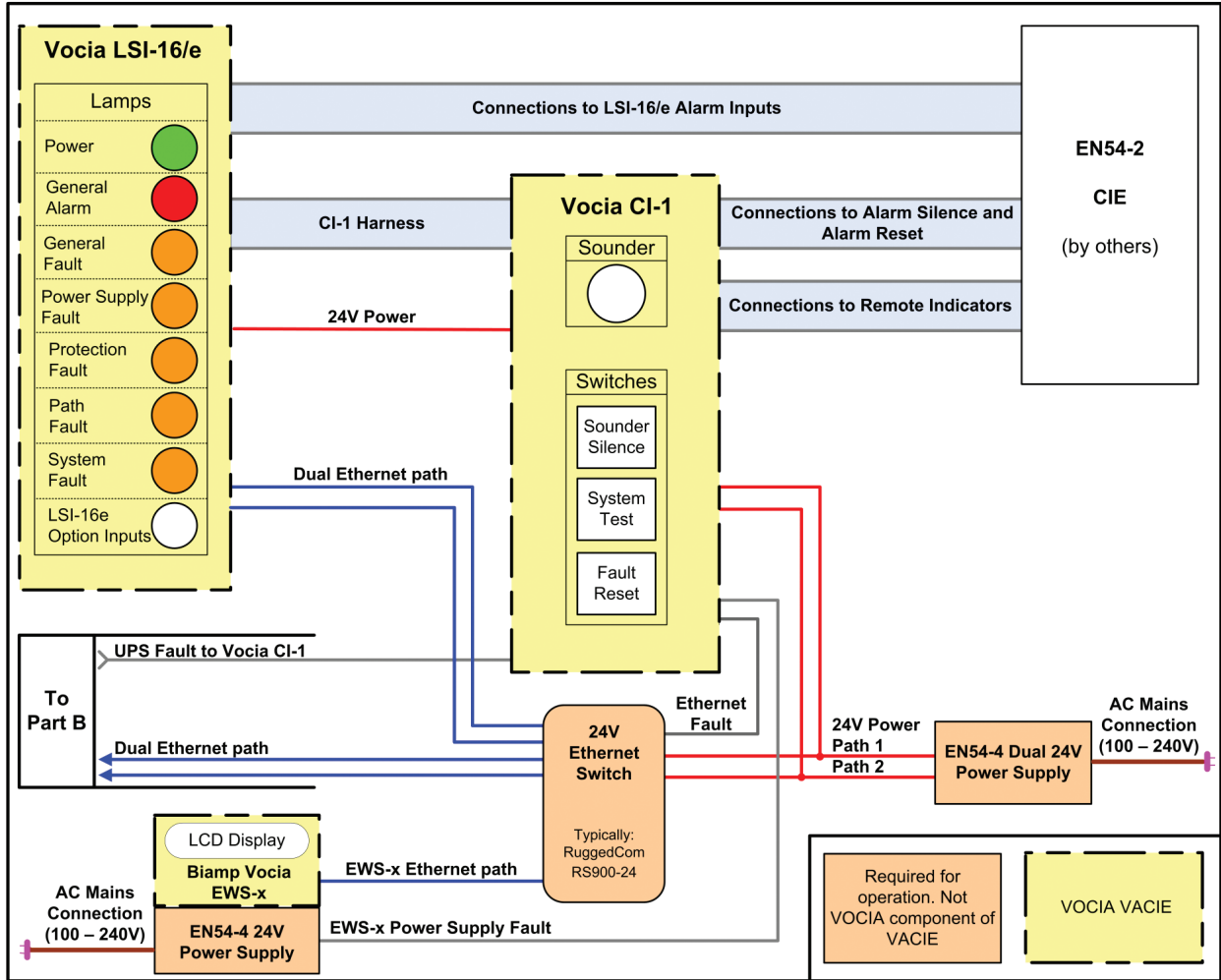
13.14.2 Every fault of an amplifier shall be indicated by the general fault warning indicator as specified in 8.2.

Every fault of the Vocia amplifiers are monitored by the LSI-16/e and indicated by a general fault warning indicator and general fault output.

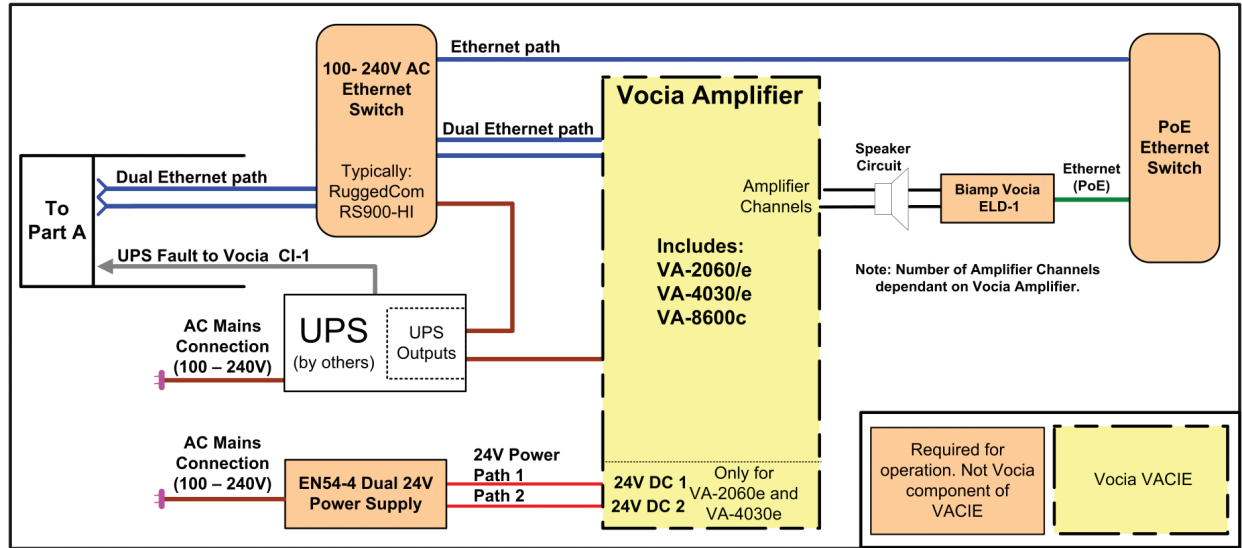
13.14.3 Supervision of the spare amplifier(s) shall be maintained during the functional condition whilst the VACIE is powered by either the mains or standby power supplies.

Supervision is maintained for all amplifiers whilst the Vocia VACIE is powered by either mains or standby power supplies. If a fault condition occurs the Vocia VACIE will indicate a protection fault and a general fault.

SECTION 6: APPENDIX B-2 VOCIA EN 54-16 INSTALLATION SYSTEM BLOCK DIAGRAM



PART A - EN54-16 Installation System Block Diagram



PART B - EN54-16 Installation System Block Diagram

SECTION 6: APPENDIX B-3 VOCIA VACIE POWER REQUIREMENTS

The Vocia VACIE requires a combination of 24V DC and mains AC power supplies. These power supplies must comply with local emergency standards and must be installed in accordance with both Biamp's VACIE guidelines, and the equipment manufacturer's guidelines.

EN 54-16 COMPLIANT INSTALLATIONS

EWS-4 and EWS-10

A 3rd party EN 54-4 24V DC 1A power supply is required for EN 54 compliant installations. This power supply shall be housed in the same cabinet as the EWS device. 24V DC Power Supplies must comply with local requirements for run-time on batteries and recharge time.

LSI-16/e and CI-1

A 3rd party EN 54-4 Dual 24V DC 1.2A power supply is required for EN 54 compliant installations. This power supply shall be housed in a separate cabinet to the LSI-16/e with interface. 24V DC Power Supplies must comply with local requirements for run-time on batteries and recharge time.

VA-8600c, VA-4030e, VA-4030, VA-2060e and VA-2060 AC Mains Power

A 3rd party 240V AC Uninterruptible Power Supply (UPS) is required for EN 54 compliant installations. This power supply shall be housed in the same cabinet as the Vocia amplifier or in an adjacent cabinet with common wall structure. Multiple Vocia amplifiers within a common enclosure may be powered from a single UPS of adequate rating. UPS devices must comply with local requirements for run-time on batteries and recharge time. UPS devices and the installations of these devices must also comply with all applicable local or regional standards, norms or codes.

VA-4030e and VA-2060e Auxiliary Power (alternate powering option)

If optional 24V powering of VA-4030e or VA-2060e amplifiers is installed in an EN 54 compliant installation, a 3rd party EN 54-4 certified 24V DC 150W (per amplifier) power supply is required. This power supply may be housed in the same cabinet as the VA-4030e / VA-2060e, or alternatively be housed in a separate cabinet to the VA-4030e / VA-2060e. 24V DC Power Supplies must comply with local requirements for run-time on batteries and recharge time.

SECTION 6: APPENDIX B-4 VOCIA VACIE CABINETS

The Vocia VACIE is designed so that it may be housed in multiple cabinets installed in distributed locations. The requirements for each cabinet are specified in this document in accordance with EN 54-16.

LSI-16/e Cabinet

The LSI-16/e, CI-1 and the supporting 24V Managed Ethernet Switch require a 19" rack cabinet for installation. This cabinet must have a lockable transparent front door to prevent access at Access Level 1 (EN 54-16 Annex A) and to provide visual access to the LSI-16/e indicators. The cabinet must also prevent access at Access Levels 1 and 2 to the internal cabling and connections.

Refer to Drawing A4.4640* for a typical cabinet configuration.

Vocia Amplifier Cabinet

The Vocia amplifier/s and Mains AC or 24V DC powered Managed Ethernet Switch require a 19" rack cabinet for installation. This cabinet does not require a front door because there are no front panel controls on the Vocia amplifiers. The cabinet must also prevent access at Access Levels 1 and 2 to the internal cabling and connections.

Refer to Drawing A4.4641* for a typical cabinet configuration.

EWS Cabinet

The EWS must be housed in a wall mount cabinet. The cabinet must have a lockable transparent front door and have a minimum IP30 (EN 60529) rating. The lockable front door is to prevent access at Access Level 1. The cabinet must also prevent access at Access Levels 1 and 2 to the internal cabling and connections. An EN 54-4 compliant power supply (in separate enclosure) must be fixed to the EWS cabinet.

Refer to Drawing A4.4636 for a typical cabinet configuration

19" Rack Cabinet Specification

The rack cabinet must be of heavy duty (min. 16-gauge steel) construction with a fully welded rack frame and fixed front mounting members. The cabinet must comply with mechanical dimensions as specified in EN 60297-3-100.

IP Rating

The LSI-16/e, CI-1 and Vocia amplifier product chassis have been designed to meet the requirements of IP30 (EN 60529) and therefore do not require an IP30 rated cabinet for installation.

The EWS requires an IP30 (EN 60529) rated cabinet to meet the requirements of EN 54-16.

Please refer to EN 54-16 Annex A for an explanation of access levels.

*Drawings may be downloaded from www.biamp.com/support/downloads.aspx