Valcom Advanced Communication System
FOR NEW AND RETROFIT INSTALLATIONS

Revision 2020-1.00

Valcom Advanced Communication System

Intercom, Paging, Emergency Paging, Emergency Tones, Clock Control and Time Tones
Advanced Communication System

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PART 1 - GENERAL

1.0 DESCRIPTION

A. The Contractor shall furnish and install all equipment including, but not limited to, outlet boxes, wiring, speakers, and all other necessary equipment to provide a complete operating system as indicated with the contract documents. Provide all necessary wall plates, specialty boxes, etc., not provided by others.

B. ACS by Valcom, shall be considered as meeting all specifications and as the base bid. The specifying authority must approve alternate systems. Bidders proposing alternate systems shall provide all relative descriptive information, including catalog cuts, shop and working drawings, data sheets along with a demonstration of the proposed system. This information must be presented to the relative parties as to allow enough time to review all material. This should be accomplished at least 10 (ten) days prior to the bid date.

C. The intent of this specification is to maximize communications between the classroom and administrative areas while enhancing school safety and reducing maintenance and operational cost.

D. Under this specification, the system shall provide a complete Communication System for the Administrative, Classroom, Cafeteria, Library, and Common areas.

E. The Communication System shall provide distribution of intercom, overhead paging, emergency paging, class change time tones, emergency tones, program material and prerecorded WAV files for emergency messaging.

1.1. RESPONSIBILITIES

A. Contract documents are detailed only to the extent required to show design intent. It shall be understood and agreed upon by the Contractor that all work described herein shall be complete in every detail.

B. Furnish additional items not mentioned herein to meet requirements as specified without claim for additional payments. Items may include hardware, rack panels, appropriate connection blocks, and all other parts that are required for installation.

C. Labor furnished shall be trained and experienced in telecommunication systems.

D. All equipment unless otherwise specified, shall be new, free from defects, and the best craftsmanship in its class.

E. All manufactured equipment shall be installed as recommended by the manufacturers, or as indicated in their published installation manual.

F. Furnish and install necessary equipment, backboxes, supports and enclosures.

G. Furnish and install all necessary wire.

H. Furnish shop drawings.

I. Perform final programming of system and audio level adjustments.

J. Provide system documentation including equipment manuals and drawings.

K. Guarantee all equipment and components for their specified period from date of acceptance.

L. Provide information on system requirements to any Contractor responsible for supplying related materials for this system.

1.2. SUBMITTALS

A. Submit layout drawings of the communication system and all components.

B. Submit drawings of control equipment showing all major components and positions in the rack.

C. Provide block diagrams showing components and relative connections.

D. Submit a certificate showing completion of installation, programming, and service training from the system manufacturer.

E. Submit data sheets on equipment provided.

1.3. QUALIFICATIONS

A. The Contractor shall be from an established and local company providing solutions to the school market for a minimum of 3 (three) years with Telecom/Data/Sound experience and shall have factory trained technicians on staff.

B. The Contractor shall maintain an adequate parts inventory to perform necessary service and upgrades.

1.4. MAINTENANCE

A. The Contractor shall provide a 12 (twelve)-month guarantee of the installed system against defects in material and workmanship. All warranty material shall be provided at no expense to the Owner. Guarantee period shall begin on the date of acceptance by the Owner or Engineers.

1.5. PLEDGE OF QUALITY

A. The Contractor shall be an authorized integrator for the supplied equipment with full warranty privileges.

B. The Contractor must have attended the proposed equipment Manufacturer's Training Program.

C. The Contractor shall inventory the necessary parts in order to maintain and service the equipment being supplied. This equipment inventory level shall be in direct proportion to total systems installed as recommended by the manufacturer.

D. The Contractor shall provide complete drawings detailing all interconnections, panel wiring diagrams, and specification sheets.

1.6. IN-SERVICE TRAINING

A. The Contractor shall furnish in-service training with the system. The sessions shall facilitate the training of personnel in operating classroom equipment, administrative equipment, program distribution, and user programming functions. System specific customized user manuals shall be provided at the time of training.

1.7. WIRING

A. Wiring shall be in accordance with the Manufacturer's specifications. Wiring shall meet all local and state codes. All wiring shall be ground and short tested.

1.8. COMMUNICATION SYSTEM

The Communication System shall provide at least the following functions and features:

A. Direct dialed, hands-free, two-way communication from all administrative telephones to any location equipped with a talkback speaker.

B. Automatic gain control on intercom speech to assure constant talkback speech level.

C. Capable of handling up at least 72 zones (speaker circuits and call-in buttons)

D. System shall be modular in design and capable of expanding to 72 zones allowing for budget flexibility and expandability.

E. The system shall be connected to a switched, multicast enabled network meeting the manufacturer's published guidelines. This connection shall be via a standard Ethernet RJ-45 jack and shall provide for network-based programming and administration.

F. System shall interface with any telephone system, thus allowing the school(s) to upgrade or replace their telephone system without suffering a requirement to replace, or lose any feature of, their internal communications (intercom) system. Any system that limits system features based upon any selected telephone system, and/or is proprietary to one or only a few telephone systems shall not be acceptable.

G. Session Initiation Protocol access shall be easily facilitated through the addition of one device. To ensure compatibility, this device shall be available from the same manufacturer as the proposed system.

H. System shall automatically sound a tone or play a pre-page WAV file over any loudspeaker connected for two-way communication to alert the classroom teacher that this two-way call has been established. This is intended to prevent unauthorized monitoring. A privacy tone must repeat every 15 (fifteen) seconds.

I. System shall provide the distribution of emergency announcement(s) from any authorized telephone to all areas furnished with a loudspeaker. Emergency announcements shall have the highest system priority.

J. System shall provide the distribution of general announcements from any administrative telephone, staff telephone, or classroom telephone. The system shall be capable of providing all-call, group calls, multiple group call, or dial-on-the-fly page groups.

K. System shall provide the distribution of emergency announcements from a high priority microphone.

L. Classroom speakers shall be assignable to a minimum of 24 (twenty-four) audio paging/distribution groups.

M. System shall provide the ability to define at least 8 time tone schedules with a minimum of 255 events per schedule. Each scheduled event shall be capable of controlling WAV file distribution; user selected custom audio/voice phrases, audio from auxiliary sources or a relay for building control. Each scheduled audio event shall be distributable to at least 24 audio groups. The system shall feature the ability to automatically simultaneously operate all 8 schedules per day, based upon the day of the week or calendar dates up to one year in advance. Schedule administration, modification and creation functions must be available through designated administration computers. Systems that do not allow the school to manage their own schedules via computer or do not offer calendar-based scheduling up to one year in advance or require separate page and time groups shall not be acceptable.

N. Provide a minimum of a 4-digit numbering plan, thus allowing the classroom speaker and the classroom telephone to be the same architectural number.

O. Any classroom/area loudspeaker must have the flexibility to be programmed as a testing room. A testing room shall be excluded from receiving general announcements,

class change tones, group announcements and program material. The testing room must receive emergency tones and announcements. The testing rooms may be reactivated to normal operation at any time by the administration staff as needed. As an option, testing rooms shall feature the ability to automatically reset to normal operation before start of class the next day.

P. Customized programming shall be stored in non-volatile memory and shall not be lost due to power failures.

Q. Classroom initiated intercom calls must be assignable to ring at specific administrative ports. Each administrative port shall have the flexibility to be forwarded to the other administrative port should a call go unanswered or should the assigned administrative port be busy.

R. System must feature facilities to annunciate incoming intercom calls at both administrative phones simultaneously. Once answered, the call will automatically be cancelled for the other administrative phone.

S. System functionality must include the capability to manually distribute 60+ custom audio files via pushbuttons, contact closure, or dial code from administrative telephones. The tones shall be fully customizable.

T. The system must provide a minimum of 2 (two) ports to be connected to the telephone system from the intercom system. These 2 (two) intercom lines shall provide built-in Enhanced Caller Line Identification which will visually announce the name of the teacher or location and the classroom dial intercom code, and call priority level; thus allowing interface to any telephone system. Systems that require integration to a specific telephone system or systems in order to offer this feature shall not be acceptable.

U. The system shall have the ability to control relays. Relays shall be controlled through administrative computers, DTMF controlled or automatically cycle on and off by schedules. All relays must be programmable with the flexibility to change as required. A minimum of four (4) relays shall be provided.

V. The system shall provide at least two simultaneously operating, non-restrictive program distribution channels. The audio program material shall be controlled and distributed through the administration computer thus allowing simple and easy changes. Systems that require manual operated switch-banks or cumbersome DTMF telephone codes for distribution shall not be acceptable

W. The system shall have the ability to store a minimum of 60 minutes of WAV files in a non-volatile manner.

X. WAV files distribution shall feature programmable priority levels. They shall be programmable as to override any class change tones, normal all call, music, and intercom in the event of an emergency.

Y. The WAV files shall have the ability to be broadcast into any one or all the audio groups within the system.

Z. The WAV files shall have the ability to be broadcast via a schedule for any day of the week or time of the day. They shall have the ability to broadcast for any duration of time and/or repeat.

AA. The WAV files shall be able to be broadcast via a pushbutton selecting which WAV file is broadcast and where it is broadcast.

BB. The WAV files shall have the ability to be utilized as class change tones within the system. These files shall be able to replace any tone within the class change schedules as to offer the flexibility of customizable tones and or phrases in this class change mode.

PART 2 - PRODUCTS

2.0 INTERCOM CONTROL UNIT

A. Shall be capable of expanding to a maximum of 72 (seventy-two) zones (speaker circuits and call-in buttons)

B. Provide pre-alert tone to classroom for intercom calls and general announcements.

C. System shall provide the ability to program and control the built-in scheduler with unlimited events and unlimited time schedules with multiple audio groups.

D. System shall provide the ability to control wireless or wired clocks (various correction methods).

E. System shall provide the ability to produce user defined tone signals for time tones or emergency tones.

F. System shall provide the ability to select the tone on an all call basis from any, or selected, administrative telephones.

G. Provide an Ethernet port, which will give ability to monitor operations and functions of the systems.

H. Provide off-site programming of the system.

I. The system shall be capable of conversations between administrative ports.

J. System shall provide calendar based scheduling up to one year in advance.

K. The system shall be programmable via Ethernet connection.

L. System shall be capable of utilizing 45 (forty-five) ohm or 25-volt speakers for classroom type speakers.

M. Retrofit applications shall, where possible, reuse existing 25 volt speakers, call buttons and existing cabling. Substandard or defective speakers, call buttons and cabling shall be replaced on a per need basis.

N. New system speakers shall be capable of utilizing UTP data wiring for installation, thus allowing for only one type of wiring infrastructure within the school. New systems that require infrastructure sized greater than 24 AWG shall not be acceptable.

O. Provide a minimum of 6 (six) unrestricted simultaneous audio paths for communication between administrative phones, program material, time tone distribution, and paging. Systems that do not allow simultaneous pages to different paging groups will not be accepted.

P. Provide a minimum of 3 (three) programmable pushbutton inputs that can be used to activate tones or distribute program material.

Q. Provide a minimum of 4 (four) programmable output contact closures which can be activated manually to turn on cameras, unlock doors, emergency lockdown, etc., or automatically based upon one or more schedules.

R. Provide a call confirmation tone at speaker when an intercom call is placed. This verifies that the call has been placed in queue.

S. System must have the capability to tie to a WAN to provide district wide all call paging as well as multi-building paging for the purposes of mass notification. Access to individual rooms for intercom purposes via the WAN must also be supported.

T. Provide emergency voice messaging via the following methods:
   Any authorized PC on the school's LAN/WAN
   Any authorized telephone
   Any pushbutton

2.1 MASTER CLOCK

A. The intercom system shall provide a time base for the system secondary clocks. Systems requiring a separate master clock with a separate software package will not be accepted.

B. The intercom system shall have the ability to synchronize both analog and digital secondary clocks.

C. The integrated master clock shall have the ability to obtain time via NTP synchronization.

2.2 SPEAKERS/CALL SWITCHES

A. Ceiling speakers shall be 2'x 2' Lay in style and shall consist of a white perforated grille, a speaker and integral backbox. The speaker cone shall be 8" in Diameter and have a minimum 5 oz magnet: The voice coil diameter shall be a minimum of ¾" and an impedance of 45 Ohms. The speaker shall produce a sound pressure level of 95 dB at 1 meter on axis with 1 watt applied. Frequency response shall be 80Hz to 15Khz. The baffle shall be constructed with a single piece of perforated steel with a white baked on acrylic enamel finish. The baffle shall be constructed with a single piece of

perforated steel with a white baked on acrylic enamel finish. The backbox meets or exceeds A.S.T.M. E84 flame and smoke test and has a three-hour burn rating (UL181). Four seismic tabs provided for additional mounting integrity.

B. Wall speakers, including those within clock/speaker units, shall be 8" in Diameter and have a minimum 5 oz magnet: The Voice coil diameter shall be a minimum of ¾" and an impedance of 45 Ohms. The speaker shall produce a sound pressure level of 95 dB at 1 meter on axis with 1 watt applied. Frequency response shall be 80Hz to 15Khz.

C. Rooms requiring volume control of speakers shall have provisions for volume adjustment as part of the call switch assembly.

2.4 WIRING

A. All wiring shall be listed for the intended purpose. The intercom shall use UTP listed cable.

B. All interior wiring shall be in accordance with new construction guidelines suggested by the Manufacturer; including the speaker and the call-in switch.

2.5 INSTALLATION

A. Complete system shall be installed in accordance with Manufacturer's recommendations.

B. All wiring shall be installed in raceways or plenum rated cable where routed in plenum ceiling areas.

2.6 PROTECTION

A. The contractor shall note in his system drawings, the type of protection devices and all relative information.

B. The contractor shall provide all necessary protection on the AC power feed and on all station lines leaving/entering the building.