



STENTOFON Pulse

Serverless Communications System

A & E GUIDE SPECIFICATIONS





PART I: GENERAL

1.1. WORK INCLUDED

- A. Furnish and install a complete microprocessor controlled, serverless voice communication system as described herein and shown on the plans. The system shall be IP based consisting of Stentofon IP stations which includes both master stations and substations along with the possibility via software licensing to include SIP stations & SIP gateways.

1.2. CONTRACT DOCUMENTS

- A. All equipment and work specified in this section shall comply with all the General Conditions of the specifications, contract documents, and drawings as indicated.

1.3. RELATED WORK

- A. Systems shall be installed by a qualified Security Communications Contractor, who shall coordinate all work with other contractors and trades.
- B. All necessary network switches, CAT5 cabling, standard boxes, (and special boxes provided by intercom manufacturer), shall be installed by the contractor.

1.4. QUALITY ASSURANCE

- A. Installation shall comply with all applicable codes.
- B. All equipment shall be new, in current production, and the standard products of a manufacturer of intercom equipment. Manufacturer shall be certified as complying with the standards of ISO-9001 for quality control.
- C. Manufacturer shall guarantee availability of parts, for a minimum of (_7_) years from date of shipment.
- D. If required, manufacturer shall be able to demonstrate features, functions, operating characteristics and clarity of sound to owner.
- E. System shall be installed by a factory authorized communications contractor.
- F. On-site maintenance and repair service shall be available locally and within (_4_) hours of notification for emergency conditions.
- G. System shall allow remote programming. Manufacturer shall have the ability to access and make changes to the system via IP connectivity.



1.5. WARRANTY

- A. System shall include a factory warranty that equipment is free from defects in design, material, manufacturing and operation.
- B. Factory warranty period shall be for 36 months from date of shipment.
- C. Installing communications contractor shall guarantee the equipment, wire, cable, and installation for 12 months from date of acceptance.

1.6. SUBMITTALS

- A. Shall include an equipment list, and data sheets, system description and block diagrams on equipment to be furnished.
- B. Shall include all data necessary to evaluate design, function, quality, and configuration of proposed equipment and system(s).



PART II: PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS

- A. The system as described herein is based on STENTOFON® PULSE manufactured by Zenitel USA, Kansas City, Missouri. STENTOFON PULSE meets the requirements of the specifications and shall be considered as the acceptable Base Bid.
- B. Substitutions must meet requirements of Prior Approval, as outlined in the contract documents. Substitutions that meet Prior Approval requirements must be listed as alternates by addendum, and shall be shown separately on the bid forms. Consideration will be based on ability to comply with all aspects of the specifications, the desired functional operation, quality, reliability, design, size, and appearance of the equipment and the support capabilities of the manufacturer.

2.2. SYSTEM DESCRIPTION

- A. The purpose of the SECURITY COMMUNICATION SYSTEM shall be to provide fast “open duplex,” (hands-free at both ends) voice communication as required to provide instant intercommunications for employees and visitors, emergency paging and active noise cancellation for high noise environments. System shall assist with personnel safety, facility security, operational efficiency and maintenance functions.
- B. The system shall be a microprocessor controlled system based on SIP protocol where one Stentofon station in the system is designated as the System Master. System Master shall be the central point for the programming of the system which shall include the programming of station directory numbers, station text, DAK keys for masters and substations, group calls, etc. All stations shall be IP based consisting of Stentofon IP stations, SIP stations or SIP gateways. The system shall be capable of open duplex, hands-free operation, without the use of handsets, at both the initiating and receiving station. PULSE shall support the following SIP protocols, RFC 3261, RFC 3215, RFC 2976, RFC 2833, RFC 4566 & RFC 3550. PULSE system shall support open IP standards which are SIP, HTTP(s), NTP & SNMP. System shall allow for a maximum of 10 speech paths. Auto discovery of stations shall be supported with station IP addressing being either static or DHCP. Each station shall have integrated web server for programming. PULSE shall support the ability for software upgrade of stations via TFTP. Audio codec's shall be G.722 (HD Voice) as well as G.711A and u law for SIP phones. PULSE shall have adaptive jitter buffering as a standard feature. PULSE shall support the possibility to use SIP phone and gateway devices to expand the capability and reach of the system for off site call monitoring. Stentofon IP stations shall be equipped with 2 Ethernet ports with LAN port being PoE capable and the AUX port being used if needed to connect to other IP devices, integrated web server, adjustable microphone sensitivity, active noise cancellation and voice activity detection as standard.
- C. Total system capacity shall be 16 Stentofon IP stations along with the possibility for 10 SIP stations and up to 4 SIP gateways. Stentofon IP stations in PULSE system don't require IP stations licenses to work.
- D. All stations in the PULSE system must reside on the same LAN.
- E. The scope of the system shall include all features and functions described herein and the equipment shown on the plans. System shall be capable of adding optional features, equipment and interfaces listed in the specifications, even if not initially included or shown on the plans
- F. A complete operational system shall be provided.



2.3. SYSTEM CONFIGURATION

- A. The system shall be connected to an internal self-contained IP network or connected to the customers' network in an appropriate secure data processing room (as shown on the plans).
- B. System shall consist of Stentofon IP master stations and substations with direct access buttons, with or without handsets, and with or without LCD displays, as indicated on the plans.
- C. Security control room masters and all other master stations shall be desk, flush or surface wall mounted as shown on the plans.
- D. Substations shall be flush or surface mounted, tamper and weather resistant where needed and located as required for direct access calling to masters, as shown on the plans.
- E. All features and functions shall be programmed on site with a standard PC via IP.

(Note to specifier: Indicate project requirements)

2.4. STANDARD SYSTEM FEATURES

- A. **MASTER CALLS.** A call shall be placed from any master station to any other station in the system, by dialing the appropriate number of the desired station, or using one of the direct access buttons. Either party can cancel call by pressing the (C) button.
- B. **SUBSTATION CALLS.** Each substation shall be programmed to call a specific master station(s) depending on the programming. Pressing button on substation shall provide an open call connection or ringing of one or up to 4 master stations in sequential order or in parallel.
- C. **DIRECT ACCESS BUTTONS.** All desk master stations shall include (10) direct access buttons, programmed for direct access calling, to allow single button speed dialing of other stations, features or to SIP capable IP phones or SIP gateways.
- D. **ALL-CALL.** All master stations shall be able to initiate an all-call page to all other stations in the system. It shall be possible to remove stations, through programming, from receiving all-call and restrict any station from initiating an all-call. System shall support 1 all call.
- E. **GROUP-CALL.** All master stations shall be able to initiate selective paging to predetermined groups of stations in the system. Ability to initiate group call shall be restricted to designated stations. System shall support 3 group calls.
- F. **OVERHEAD PAGING.** All master stations shall be able to dial or direct access into one, or more, voice paging system(s) for zoned and/or department paging over amplified speakers.
- G. **REMOTE CONTROL FUNCTIONS.** Each Stentofon IP station shall be equipped with one form "A" relay contact that may be used for gate, door or strobe control.
- H. **VOLUME CONTROLS.** The volume of each station shall be adjustable via programming of the station's built in web server. Each Stentofon master shall have an adjustable volume control button.
- I. **MICROPHONE MUTE.** During a conversation, a person shall be able to momentarily block the microphone on any master by pressing the mute button.



- J. **BUSY OVERRIDE.** It shall be possible via programming for a Stentofon master to break in to an ongoing conversation by pressing the digit 5.
- K. **STATION NUMBERING.** System shall have a true flexible numbering plan feature whereby any number from "0" to "9999999" may be assigned to stations or feature codes.
- L. **PARALLEL RINGING TO MULTIPLE MASTERS.** It shall be possible to program up to (4) masters to simultaneously receive a call from a substation.
- M. **TRANSFER OF CALLS.** It shall be possible to redirect (Call Forward) "all" calls to another master station which can be a Stentofon master or SIP phone.
- N. **"CAMP-ON" BUSY.** The system shall include the ability to call a busy station and hear a busy tone for up to a maximum of 20 seconds. If the station becomes free within the 20 seconds the call will be setup. In these 20 seconds the user may do busy override if the station's service profile allows it.
- O. **SIP INTERFACE.** This interface shall provide the ability for VoIP telephones & SIP gateways which support SIP protocol to interface to the PULSE system. VoIP telephone can be a single IP telephone device or can be a soft SIP phone client running on a PC. This interface allows for point to point calling between any intercom station and SIP telephone device(s) with call number and text shown on both ends of the call.
- P. **ACTIVE NOISE CANCELLATION.** Shall be provided at the audio edge device, i.e. IP station. Stentofon IP stations shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server.
- Q. **LANGUAGE SUPPORT.** Default language is English however it shall be possible using Notepad to modify the language file to support any language desired for the customer.
- R. **AUTO SWITCHING MODES.** Stentofon Pulse stations shall support a set of audio switching modes to manage acoustic feedback and control audio direction. Three types shall be possible and they are open duplex mode, switched duplex mode and push to talk mode. Open duplex mode is the default mode for the system.

2.5 EQUIPMENT AND PRODUCTS

- A. IP DESK MASTER STATION. Desk master station for use in offices and control rooms. Station shall include a large high contrast display with backlight which allows important information about connections to be shown. The 10008001000 shall be equipped with 10 DAK keys for single touch access to stations, group calls, etc and handset for confidential conversations. It shall connect directly to IP networks and have an integrated web server for easy configuration, monitoring and remote automatic software updates. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Station shall provide wideband audio. Connection must be to a PoE switch or power injector. Shall be STENTOFON #1008001000 IP Desk Master w/handset or #1008000000 IP Desk Master.



1008001000



1008000000

- B. IP DUAL DISPLAY MASTER STATION. Desk master station for use in offices and control rooms. Station shall include a high contrast display with backlight which allows important information about connections to be shown. The 1008007000 shall be equipped with 10 physical DAK keys for single touch access to stations, group calls, etc but by using navigation keys will allow the station to have 20 DAK's. The station shall have 4 specific navigation keys for quick access to system menus and directory entries. It shall connect directly to IP networks and have an integrated web server for easy configuration, monitoring and remote automatic software updates. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Connection must be to a PoE switch or power injector. Station can be equipped with optional gooseneck microphone #10007007GM. Shall be STENTOFON #1008007000 Desk Master



1008007000

- C. **IP OR MASTER.** Master station for use in operating and clean rooms that require chemical resistant and anti-bacterial front surface for easy cleaning. Station features a large high contrast display with backlight and up to 4 lines with 20 characters as well as the added feature of lighting behind each key that provides excellent readability in locations where lighting can be a problem. Station connects directly to IP network making it easy to deploy. Station has integrated web server for easy configuration, monitoring and remote automatic software updates are built in features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Station provides wideband audio and may be powered locally, connected to a POE switch or power injector. Station can be mounted in flush #1008098700 back box. Optional handset unit #1008097100 is available. Shall be STENTOFON #1008015000 IP OR Master.



1008015000

- D. **IP FLUSH MASTER.** Flush master station with display is a general purpose intercom station intended for use where a desktop station is impractical. Station features a large high contrast display with backlight which allows important information about connections to be shown very clearly. Station is equipped with 4 DAK keys that provide single-touch access to stations and features. Station connects directly to IP network making it easy to deploy. Station has integrated web server for easy configuration, monitoring and remote automatic software updates are built in features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Station provides wideband audio and may be powered locally connected to a POE switch or power injector. Station can be mounted in flush #1008098700 back box or surface #1008098600 back box. Optional handset unit #1008097100 is available as well as optional gooseneck microphone #1008097500. Shall be STENTOFON #1008031000 IP FLUSH MASTER



1008031000

- E. IP HD TELEPHONES. Shall be IP HD telephone made for environments which can withstand rough usage and treatment. The unit is well suited for heavy duty usage due to its thick aluminum casing, stainless steel materials and its high ingress protection (IP-67). The IP HD telephone shall be equipped with dual IP ports for possible daisy chaining of IP stations or devices, integrated web server for programming, wideband audio (7kHz), dry relay contact for door opening or strobe control as standard features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. IP HD telephone station shall be available in 4 versions, 2 version with full keypad with or without door and 2 versions with handset only with and without door. Shall be STENTOFON #1008072XXX



1008072XXX

- F. DOOR TAMPER RESISTANT SUBSTATION. Shall be a tamper resistant substation with one (1) stainless steel call push button, a 2.5", 45 ohm speaker, an electret condenser microphone with IP substation board on an 11 gauge, #304 Stainless Steel face plate. The call button shall be programmed to call a specific master or feature. The IP substation shall be equipped with dual IP ports for possible daisy chaining of IP stations or devices, integrated web server for programming, wideband audio (7kHz), dry relay contact for door opening or strobe control as standard features and mounting plate shall include a rubberized gasket. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Shall mount on a standard (3) gang deep electrical back box, box provided by others. IP6294-1 isn't recommended for outdoor installations, but if installed outside installer must drill weep holes in back box. Shall be STENTOFON #100062941IP.



100062941IP

- G. IP EXTERIOR TAMPER RESISTANT SUBSTATION. This station shall be tamper resistant with one 1.5" red mushroom button. The station shall be mounted on a 1/4" thick aluminum plate designed to withstand extreme abuse. Moisture resistant speaker and microphone shall be mounted behind two offset grills, milled into aluminum block to prevent damage from foreign material or water. The IP substation shall be equipped with dual IP ports for possible daisy chaining of IP stations or devices, integrated web server for programming, wideband audio (7kHz), dry relay contact for door opening or strobe control as standard features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. The station shall mount on a #1000629700 flush, #1000629800 surface or #1000629910 weatherproof back box. If installed outside installer must drill weep holes in back box. Shall be STENTOFON #1000629271P.



1000629271P

- H. IP SECURITY/EMERGENCY SUBSTATION. This station shall have an 11 gauge stainless steel faceplate with a 3" weather resistant speaker, protected electret microphone, high intensity 1/2" LED and a large red mushroom call button. Substation shall operate from -10°F to +120°F. The IP substation shall be equipped with dual IP ports for possible daisy chaining of IP stations or devices, integrated web server for programming, wideband audio (7kHz), dry relay contact for door opening or strobe control as standard features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Shall mount on a #1000104100 (Steel Back Box as shown below), #1000104200 (Rolled Steel Back Box-Yellow), #10001043 (Stainless Steel Back Box) or 1600 series stanchions or wall units provided by STENTOFON. If installed outside installer must drill weep holes in back box. Shall be STENTOFON #1000629279IP.



1000629279IP in back box

- I. IP VANDAL RESISTANT IP SUBSTATION. This station shall have a 2mm stainless steel faceplate and shall be equipped with dual IP ports for possible daisy chaining of IP stations or devices, integrated web server for programming, wideband audio (7kHz), dry relay contact for door opening or strobe control as standard features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Station shall be equipped with a one call button. Shall flush mount in #1008098100 back box or surface mount in #1008098000 back box. Shall be STENTOFON #1008041100



1008041100

- J. IP VANDAL RESISTANT IP SUBSTATION. This station shall be have a 2mm stainless steel faceplate and shall be equipped with dual IP ports for possible daisy chaining of IP stations or devices, integrated web server for programming, wideband audio (7kHz), dry relay contact for door opening or strobe control as standard features. IP station shall use an advanced signal processing algorithm to identify and filter out background repetitive noise signal audio. The feature shall be integrated into the IP station onboard DSP and software adjustable from the IP station integrated web server. Station shall be equipped with a red raised red call button. Station shown is mounted vertically in 3-gang electrical flush or surface mount back box for proper installation. 3-gang electrical back box to be provided by others. Shall be STENTOFON #1008051000



1008051000

- K. CAMPUS EMERGENCY SIGNALLING UNITS. Unit shall include a 50 watt constantly glowing blue identification luminaries, a small 7 watt fluorescent to illuminate the substation and an extremely bright 1.5 million candle power blue flash strobe. Lamps shall have blue prismatic Lexan lenses with clear UV protected polycarbonate outer lenses. Unit shall be a 10 gauge stainless steel wall or pole mount weather proof housing with silk screened "emergency" signs. Shall be STENTOFON #1600 series units. Order Substation #1000629279IP.



1000160000



1000160100



1000160200



1000160300

2.6 OPTIONS (Available with additional equipment)

- A. SIP GATEWAY TELEPHONE INTERFACE. System shall include an interface to allow telephone calls to be directed in, and out, of the system for two-way communication between intercom stations and remote telephones via IP using SIP protocol. Selected master stations shall be able to dial an access code [0], receive PABX or Central Office dial tone, and dial any unrestricted telephone number and vice versa. Requires SIP trunking license #1009643121 license. Shall be STENTOFON #3006204094 MP-114 SIP Gateway or #3006204099 MP-118 SIP Gateway.
- B. IP STATION ADAPTER UNIT. This unit shall allow a traditional copper wired Stentofon substation to work via IP. Connection to the IP network is via CAT5 and screw terminals for connection to traditional copper substations. Traditional copper wired stations can be up to 4,500 feet from the unit using 24AWG wire. Unit provides line monitoring and is enclosed in a metal box for mounting to a flat surface. Stentofon traditional copper substations in the part number series of 1000629XXXX are used with unit. Unit requires local 24VDC power #1000111700. Shall be STENTOFON #10006295IP IP/Station Adaptor Unit.



10006295IP Station Adapter Unit

- C. IP PAGE ADAPTER. This page adapter shall be IP based and have much the same features as IP substations such as dual IP ports, integrated web server for programming, dry relay contact for possible muting of music on PA amplifier. Output shall be balanced 600 ohm, 0Db for connection to PA amplifier and speakers to allow for paging of internal or external areas over IP to local or remote sites as required. IP AUDIO REMOTE I/O UNIT. Is used in conjunction with VPA series of amplifiers or 1800 series amplifiers along with ceiling speakers and horns. IP Page Adapter shall be enclosed in a box to allow for easy mounting. Unit requires a local 24 VDC power supply #1000111700. Shall be STENTOFON #10001078IP Page Adapter.
- D. IP DECT BASE 300. This unit shall provide, via SIP protocol, an interface to IP DECT wireless phones (8 maximum) to PULSE system, allowing calls to and from intercom stations. Provides encrypted radio communication as well as centralized radio planning, configuration and monitoring. Using the IP DECT Server will require the use of #1009643111 or 1009643112 SIP station licenses which is dependent on how many IP DECT wireless phones are required. Unit requires local 24 VDC power supply #1000111700 and IP station license. Shall be STENTOFON #2211010100 IP DECT Base 300.



2210020002 DECT Server



2211100503 DECT Phone



2211100110 DECT Phone



2211100120 DECT Phone

- E. **IP AUDIO REMOTE I/O UNIT.** This unit shall provide the ability for PA over IP. It is used in conjunction with VPA series of amplifiers or 1800 series amplifiers along with traditional ceiling speakers and horns. Unit can be powered locally or connected to PoE switch and is supervised by the AlphaCom XE audio server. Size: 1.7" H x 8.3" W x 9.4" D. Shall be STENTOFON #1008095100 IP ARIO Unit.
- F. **IP CEILING SPEAKER.** This IP ceiling speaker shall be individually addressable and ideal for applications that only require a limited number of speakers. PoE capable and provides 1.5 watt of output power. Remote software upgrade, configuration is done via built in web server. Shall be STENTOFON #1401002100.
- G. **IP HORN SPEAKER.** This IP horn loudspeaker shall be individually addressable and ideal for applications that only require a limited number of speakers. PoE capable and provides 1.5 watt of output power. Remote software upgrade, configuration is done via built in web server. Shall be STENTOFON #1401002500.
- H. **IP SUBSTATION KIT.** This kit shall provide the electronics of an IP substation allowing others to manufacture a unique IP substation to a customer's specific needs and wants. As well when IP substation kits are used it is recommended that Mounting and Assembly Kit #1008091000 be used as well. Shall be STENTOFON #1008090200 IP SUBSTATION KIT.

2.7 PULSE SOFTWARE LICENSES (Needed when SIP trunking or SIP stations are required)

- A. **PULSE SIP TRUNKING LICENSE.** This software license makes it possible to connect PULSE to VOIP IP Phone systems or traditional PBX that aren't IP capable if combined and used with a MP-114 or MP-118 SIP Gateway. SIP trunking gives a seamless integration between the PULSE system and other telecom systems supporting SIP which allows for advanced functions. Software license shall be part number #1009643121.
- B. **PULSE SIP STATION LICENSE.** This software license makes it possible to connect and register SIP based phones via IP with the PULSE system. Once the SIP based phone is registered it can then place and receive intercom calls must like a traditional intercom station. Depending on the number of SIP phones that are required for the job then multiples of the #1009643111 (1-user) or #1009643112 (4-user) will be required. Software license shall be #100964311X where X determines how many SIP phones to register.



PART III: EXECUTION

3.6 INSTALLATION

- A. Shall be installed by qualified technicians who have been factory trained and certified.
- B. Wiring shall be uniform and in accordance with national electric codes and manufacturers' instructions.
- C. Equipment shall be firmly secured, plumb, and level.
- D. All splices shall be in easily accessible junction boxes or on terminal boards.
- E. All cable runs at the main terminal board and in all junction boxes shall be tagged and identified.
- F. Coordinate all work with other effected trades and contractors.

3.7 SYSTEM INITIALIZING AND PROGRAMMING

- A. System shall include all software necessary for system configuration.
- B. System shall be turned on and adjustments made to meet requirements of specifications and on-site conditions.
- C. System shall be programmed to function as specified.
- D. Directory numbers, feature codes, and special programming shall be documented, printed and made available to owner.

3.8 SYSTEM TEST PROCEDURES

- A. System shall be completely tested to assure that the audio server and all components, stations, speakers, and accessories are hooked-up and in working order.
- B. System shall be pre-tested by contractor and certified to function in accordance with plans and specifications.
- C. System shall be tested in presence of owner's representative.

3.9 OWNER INSTRUCTIONS

- A. Installation contractor shall conduct up to (4) hours of instruction in use and operation of the system to designated owner representatives, within (30) days of system acceptance. Owner will print and distribute directory number plan to users.
- B. Installation contractor shall conduct up to (4) hours of technical training, in programming, troubleshooting, and service of the system, to designated owner representatives within (90) days of system acceptance.
- C. Manufacturer shall conduct periodic technical training seminars and make them available to those responsible for on-going maintenance of the system.



3.10 ON-SITE SPARES

- A. The following items shall be included in the system package and turned over to owner within (30) days of system acceptance.
1. (1) Desk master Station.
 2. (1) Tamper resistant security substation.
 3. (1) Wall master station.

(Note to specifier: Indicate exact items required)

3.11 MANUALS AND DRAWINGS

- A. Contractor shall provide owner with (2) copies of standard factory prepared operation, installation manuals.
- B. Contractor shall provide owner with (2) copies of any risers, layouts, and special wiring diagrams showing any changes to standard drawings, if required on project.