

Phoenix G2 Fire Station Alerting System Performance Specifications

1.00 Overview

This specification is for a Fire Station Alerting system to be installed in one or more fire stations. This new system shall be a US Digital Designs "Phoenix G2" system or equal. It shall be capable of interfacing to, and receiving alerts from a data network, radio network, and two-tone paging system. The system shall be based on standard EIA/TIA 568-B Category 5 data network cabling and shall be installable by a low voltage cabling contractor. The alerting system shall accommodate connections to systems such as lighting control, telephone paging, voice radios, doorbell buttons, and other devices. These systems and their installation will be specified in other sections and provided by the owner or other trades.

1.01 Section Includes:

Fire Station Alerting system equipment with Fire Station Controller along with an optional expansion unit installed in a central location and peripherals consisting of Room Remotes, Message Remotes and message signs, Turnout Timers and audio speakers located throughout the Fire Station.

1.02 References

- A. Underwriter's Laboratories UL-1069.
- B. Electronics Industry Association / Telecommunications Industry Association.
- C. National Electrical Code.
- D. U.S. Dept. of Labor / Occupational Safety and Health Administration.
- E. National Fire Protection Association 1221.

1.03 Qualifications

- A. Certified low-voltage system installer.
- B. Applicable state licenses.
- C. **Certificate of successful completion of manufacturer's installation/training school for the equipment being proposed.**

1.04 Related Work Provided in Other Specification Sections

- A. Unless noted otherwise, the following work is to be provided under other specification sections:
 1. Installation of conduits, raceways and electrical junction boxes.
 2. 120 VAC power wiring and outlets.
 3. Overhead lighting.
 4. Rough openings and framing for equipment cabinets and Room Remotes.

1.05 System Description

- A. System hardware shall consist of a Station Alerting Controller and multiple peripheral units. These peripherals shall be one or more Message Remotes with BetaBrite message signs; Room Remotes and Turnout Timers. System speakers shall be Bogen S86 or equivalent speakers for non-lighted applications, US Digital Designs Jupiter low-voltage lighted speakers for lighted applications, and Bogen NEAR A2 speakers for apparatus bay and outside applications.
- B. All necessary equipment required meeting the intent of these specifications, whether or not enumerated within these specifications, shall be supplied and installed to provide a complete and operating fire station alerting system.

- C. System firmware shall be the product of the station alerting system manufacturer with sole control over revisions and/or changes. Manufacturer shall provide, free of charge, product firmware/software upgrades for a period of one year from date of installation for any product feature enhancements. System firmware upgrades shall not require any exchange of parts and shall be capable of being executed via a laptop computer connection, a web browser, and the SSL protocol.

1.06 Submittals

- A. Any supplying contractor proposing equipment which is not the base standard for this specification, must provide full submittals at the time of bid. This option shall be exercised at the discretion of the owner/specifying authority.
- B. In the event the specifying authority decides to reject the submittals of a supplying contractor, the specifying authority may ask the contractor to re-submit if the discrepancies are minor. Otherwise rejection of submittals means the specified product must be supplied.

Part 2—Products

2.01 Manufacturers

The products specified shall be new and of the standard manufacture of a single reputable manufacturer. As a reference of standard and quality, functionality and operation, it is the request of the owner that bids be based only on equipment manufactured by US Digital Designs, Tempe, Arizona.

2.02 Cabling

Cabling shall be in strict accordance with local codes and to the cable specifications found in the manufacturer's installation manual.

All peripheral network cabling shall be ANSI/EIA/TIA-568-B Category 5 UTP plenum rated cable run as shown on drawings. Cable jacket shall be YELLOW in color. Certification documents shall be provided for all cabling runs.

Message Remote to BetaBrite message sign data cable shall be flat grey 6 conductor telephone device cable with 6 conductor modular plugs attached on both ends. Wiring shall be straight through.

All speaker cabling shall be 18 gauge, 2 conductor stranded jacketed cable for speakers only and 18 gauge, 4 conductor stranded jacketed cable for Jupiter speaker lights. Optionally, contractors can run two 18 gauge, 2 conductor cables for Jupiter speaker lights.

2.03 Fire Station Controller Equipment

NOTE TO SPECIFIERS: Select one of the two controller option sections below.

Option 1

Furnish a Phoenix G2 Fire Station Alerting Controller mounted in a 19" rack cabinet located in a central location. Each unit shall have the following equipment factory installed and interconnected:

- A. Fire Station Controller.
- B. Audio Tone Unit – ATU.
- C. 24 Port Ethernet Switch.
- D. 24 Port Power Audio Ethernet Mixer.
- E. Uninterruptible Power Supply.
- F. Cabling Patch Panel.
- F. Radio Mounting Bracket.

Option 2

Furnish a Phoenix G2 ATX Fire Station Alerting Controller [19" rack mounted, wall mounted, desktop mounted]. Each unit shall have the following features built into a single cabinet:

- A. Fire Station Controller
- B. 3 Configurable Audio Inputs and Audio Switching System
- C. 8 Port Power Audio Ethernet Mixer
- D. 4 x 20 Watt Audio Amplifiers
- E. 48 vdc low-voltage lighting control
- F. Auxiliary Inputs and Outputs
- G. External UPS

2.04 Message Remotes

Furnish as shown on plans, Message Remotes capable of the following functions:

- A. Dual Message Sign control.
- B. Independently Controlled Dual 15 Watt Audio Amplifiers.
- C. Lighting Control.
- D. Panel or wall-mountable.
- E. Single cable connection.

2.05 Double-Sided Message Remotes

Furnish as shown on plans, Double-Sided Message Remotes w/ 2 Beta-Brite signs attached capable of the following functions:

- A. Dual Message Sign control.
- B. Independently Controlled Dual 15 Watt Audio Amplifiers.
- C. Lighting Control.
- D. Cantilever support with attached mounting bracket.
- E. Single cable connection.

2.06 Room Remotes

Furnish as shown on plans, Room Remotes capable of the following functions:

- A. Integrated Message Display.
- B. 15 Watt Audio Amplifier.
- C. Lighting Control.
- D. Flush or surface mountable.
- E. Single cable connection.

2.07 Turnout Timers

Furnish as shown on plans, Turnout Timers capable of the following functions:

- A. 2.25" LED Digit Display
- B. Count up display showing Minutes and Seconds elapsed during alert
- C. Dry Contact triggers to start/stop and reset counter

2.08 Speaker Systems

Speaker systems shall be either 8 ohm or 70 volt, as per design documents. Speakers shall be grouped into "areas" of similar sound level and unit alerting requirements.

2.09 Hallway / Room Speakers

Speakers may be provided by Alerting System manufacturer, or contractor. Check with System manufacturer for details.

Speakers shall be Bogen S86T725PG8W or as called out on plans.

For suspended ceiling applications, provide appropriate speaker support tile bridge. For hard ceiling applications provide appropriate speaker back box.

2.10 Apparatus Room and Outdoor Speakers

Provide as shown on plans, Bogen Communications NEAR A2 loudspeakers.

2.11 LED Lighted Speakers

Provide Jupiter low-voltage LED lighted speakers as noted on drawings. This low-voltage lighting shall be 48 VDC and operated by dry contact closure.

2.12 System Diagnostics

- A. All active components in the system shall be continuously supervised for both power and data to ensure proper operation and in the case of system faults to aid in troubleshooting.
- B. All faults shall be displayed immediately on the associated Communications Gateway.

Part 3—Execution

3.01 Supervision

Only factory trained installers shall install, service, and maintain the specified system.

3.02 Rough Openings

NOTE TO SPECIFIERS: Select one of the two controller option sections below.

Option 1

- A. Phoenix G2 Station Alerting Controller Cabinet – The rough opening for the Station Alerting Controller rack cabinet shall be 84 1/2" H x 26" W.

Option 2

- A. The Phoenix G2 ATX Station Alerting Controller only requires a rough opening if mounted exposed in a 19" rack cabinet. The ATX is normally surface wall mounted.
- B. Room Remote – The flush mount Room Remote rough opening shall be 5 1/2" H x 13 1/2" W. Maximum high side reach allowed shall be 64" AFF, typical height shall be +48" AFF.
- C. Provide access hatches in finished drywall ceiling areas where access is restricted to devices mounted above ceiling.

3.03 Wiring

- A. All peripheral network cables terminate on patch panel located in the Station Controller Cabinet and on a single telecommunications outlet on the peripheral end. Telecommunications Outlet jack shall be Panduit CJ5E88TGWH Mini-Com or equivalent.
- B. All speaker cabling shall be 18 gauge, 2 conductor stranded, jacketed cable for speakers only and 18 gauge, 4 conductor stranded jacketed cable for Jupiter speaker lights. Optionally, contractors can run two 18 gauge, 2 conductor cables for Jupiter speaker lights.
- C. Contractor shall terminate all four (4) pairs of Category 5 cable on manufacturer-approved connectors, and shall test and certify all connections to 100MHz. Provide all cabling test certifications after testing.
- D. All wiring shall be free from shorts and faults. Wiring shall be UL listed, NEC and NFPA 70, Article 25 approved.
- E. Terminate all network cabling on approved patch panels. Label each jack panel with the room number of each terminating jack and the end of the corresponding cable with the jack panel number and jack number.
- F. Message Sign cabling to Message Remote shall be 6 conductor flat "silver satin" type cable or equivalent. Terminate both ends with 6 conductor modular plugs utilizing straight thru wiring (DO NOT turn over conductors). Message Sign to Message Remote cabling shall not be longer than 25 feet to observe proper serial operation.

- G. 8 ohm speakers shall have cabling run to nearest speaker, Message Remote, or Room Remote as noted on plans. 70 Volt speakers shall have cabling run to the nearest speaker, Message Remote with 70 volt transformer, or home run back to Station Controller cabinet as noted on plans.
- H. Label both ends of all network cabling and the Station Controller Cabinet end of all speaker and lighting cables. Label patch panels in the Station Controller location.

3.04 Outlet Boxes and Conduit

General – Provide pull string in all empty conduit installed in this section. Label conduit ends with conduit usage when practical.

- A. Message Remote – In suspended ceiling locations, provide 4” metal J-box with mud ring, as indicated, above finished ceiling. Stub up 3/4” empty conduit from each Message Remote J-box to nearest accessible ceiling, cable tray, or other location as shown. In hard ceiling locations, locate J-box at nearest accessible ceiling location.

Provide 4” metal J-box with duplex mud ring as indicated for each associated message sign at +7’6” AFF typical (+13’ AFF for apparatus bay). Center J-box above doorways and align with other architectural features as directed. Orient mud ring opening horizontally. Provide 3/4” empty conduit between the Message Remote J-box and each of the associated message sign J-boxes (maximum of two). Provide duplex stainless steel J-box covers with 3/4” dia. hole centered in the cover with a Heyco #2840 bushing for all junction boxes.

- B. Double-sided Message Remote – Provide 4” metal J-box with mud ring, as indicated, on wall behind sign mounting location. Stub up 3/4” empty conduit from J-box to nearest accessible ceiling, cable tray, or other location as shown. Provide suitable mounting (3/4” plywood typical) behind drywall surface for mounting Double-sided Message Remote bracket. **NOTE: The mounting bracket must support the entire weight of the Message Remote and attached signs.**
- C. Room Remote – Provide 3/4” empty conduit from rough opening to nearest accessible ceiling, cable tray, or as shown on drawings. Rough opening to be located +48” AFF typical and no more than +64” AFF.
- D. Ceiling Speakers (Hard Ceiling) – Provide Bogen RE84 Ceiling Speaker Enclosures in all hard ceiling applications. Provide 3/4” empty conduit to enclosure and run to nearest accessible ceiling location, cable tray or equipment as shown. Conduit shall also be used to interconnect with other enclosures as shown on construction drawings.
- E. Ceiling Speakers (Suspended Ceiling) – Provide Bogen TB8 as appropriate for specified speakers. Provide RE84 ceiling speaker enclosures as required by specifying engineer or client.
- F. Apparatus Bay and Outside Speakers – Provide 4” metal J-box with mud ring and cover at each speaker location with 3/4” empty conduit to Message Remote or other location as indicated. Provide a 3/4” dia. hole centered in the J-box cover with a Heyco #2840 bushing to allow speaker cable to run to speaker. Apparatus bay speakers are typically located +13’ AFF, outside speakers are typically located +11’ AFF. Other heights as noted on drawings.

3.05 Speakers

- A. Ceiling Speakers (Suspended Ceiling) – Install Bogen S86T725PG8W speakers through ceiling tiles and tile bridge per manufacturer's specifications. Connect speakers to Room Remotes and Message Remotes as shown. 8 ohm speaker systems require that the 70 volt transformer be bypassed by the installer. All 8 ohm speakers shall be installed using parallel or series/parallel connections with no less than 4 ohms impedance.
- B. Ceiling Speakers (Hard Ceiling) – Install Bogen S86T725PG8W speakers into enclosures and connect to Room Remotes or Message Remotes as shown.
- C. Apparatus Bay Speakers – Install Bogen NEAR A2 speakers to structure per manufacturer's specifications. Connect speakers to Message Remote amplifier via cable in conduit as shown. Dress cabling neatly to minimize visibility.

- D. Exterior Speakers – Install Bogen NEAR A2 speakers to structure per manufacturer's specifications. Connect speakers to correct Message Remote amplifier as shown. Provide Bogen model ASTB4 cable boot and install drip loop in cable prior to entry into J-box. Seal entry using appropriate sealant.

3.06 Equipment Mounting

All equipment mounted to drywall shall use appropriate fasteners and drywall anchors. Equipment shall not be directly screwed into drywall using unapproved fasteners such as drywall or wood screws.

3.07 Electrical Power Connections

- A. It shall be the responsibility of other trades to provide the appropriate number of dedicated 120 VAC, 20A duplex outlets into the equipment cabinet rough opening. This power feed shall not have any other devices connected directly to it and shall be labeled "Station Alerting". This electrical circuit shall be connected to the fire station's emergency power system for automatic power provision during loss of utility power.
- B. Provide single 120 VAC 15A outlet for each Turnout Timer location. Outlet shall be located to accept standard plug-in wall transformer.
- C. Connect all system power supplies and equipment cabinets to a common earth ground utilizing a 14 AWG, or larger, solid conductor which is at minimum the same conductor size as the AC feed wires.

3.08 Environmental Protection

Make certain that all central equipment is accessible for service. Contractor shall notify specifying authority if designated equipment closet does not meet manufacturer's requirements for heat, radiation or static electricity.

3.09 Connections to Other Equipment

- A. Lighting Controller (optional) – Connect low voltage dry contact lighting controls (provided by others) to Room Remote, Message Remote or ATU outputs. Low voltage outputs are non-inductive load, 24VDC 1A maximum. Provide an interposing relay or contactor between the low voltage output and any 120/277 VAC lighting or other load.
- B. Local Area Network (optional) - Connect the Fire Station Controller to the general purpose LAN (provided by others) located in the Fire Station. This connection shall be connected back to the central Communications Gateway to allow alerting commands to be sent from the Communications Gateway to the Fire Station Controller. In addition, the connection shall allow remote diagnostics and configuration.
- C. Radio System (optional) – Connect Audio Input #1 to the dispatch voice radio system (provided by others) as necessary to provide dispatch audio. This connection shall provide a 600 ohm impedance 0 dBm level signal.
- D. Telephone System Intercom (optional) – Connect Audio Input #3 to an Intercom output from the building telephone system (provided by others). This line shall be provided via a jack box located directly adjacent to the Station Alerting system equipment.
- E. Other Audio Source (optional) – Connect Audio Input #4 to an audio source (provided by others). This line shall be provided via a jack box located directly adjacent to the Station Alerting system equipment.
- F. Telephone System Ringdown (optional) – Connect the Ring Detector input to a telephone line (provided by others) for telephone ringing and backup alerting. This line shall be provided via a jack box located directly adjacent to the Station Alerting equipment.

3.10 Drawings

Provide as-built drawings of all installed components and associated wiring on building plans.