EQUIPMENT SPECIFICATION FOR

MULTI-PAGE/PARTY®

INTRA-PLANT COMMUNICATIONS

FOR 120 VAC SYSTEMS

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Part I

# Scope and Intent

This specification covers the furnishing of all labor, materials, and services in connection with the design, fabrication, and delivery of a complete communications system. Upon request GAI-Tronics will supply publications 42004-135, Speaker Installation; 42004-139, System Installation; and 890901, Loudspeaker Selection guide, to aid in specifying a GAI-Tronics system. These items are available on the GAI-Tronics Website: www.gai-tronics.com.

The equipment to be furnished shall include all of the necessary handsets, headsets, amplifiers, and cable, plus any other equipment required for a complete, satisfactorily operating system. Field conduit, raceways, and associated hardware will not be included.

* 1. Components used in hazardous locations defined by the National Electrical Code, articles 500 through 503, shall be listed and or approved by a Nationally Recognized Testing Laboratory for the USA.
  2. Components used in hazardous locations defined by the Canadian Electrical Code, Section 18, shall be listed and or approved by a Nationally Recognized Testing Laboratory for Canada.

# Inspection and Testing

Purchaser's representative shall have free entry into shops of the Seller at all times, with proper notice during fabrication and testing of the specified equipment. The Seller shall award the Purchaser's inspector, free of cost, all reasonable facilities necessary to satisfy that the material and fabrication is in accordance with the Purchaser's specifications. However, such inspection or waiver of inspection by the Purchaser shall not relieve the Seller of his responsibility for furnishing material and equipment in conformance with the specifications, nor will it invalidate any claim made by the Purchaser because of defective or unsatisfactory material and workmanship.

# Seller Warranties

* 1. The Seller warrants the satisfactory and successful operation of all equipment furnished under this specification at the ratings, under the conditions, and for the type of service specified herein.
  2. Goods manufactured by the seller are warranted to be free from defects in material and workmanship until one year after the date of shipment.

# Workmanship

All work shall be performed in accordance with the best modern practice in design, manufacture, and fabrication of all material and apparatus by this specification, notwithstanding any omission from the specifications or drawings.

# Material and Construction

All materials used in the construction of the apparatus shall be new and selected as the best available for the intended purpose, considering long life and best engineering practices. Factors of safety shall be used throughout the design. Only heavy-duty industrial components rated to operate within the temperature ranges and other environmental conditions specified in Paragraph 8 shall be used.

# Installation: Equipment and wiring to be installed by the Purchaser.

* 1. Seller shall provide technical guidance during installation and/or after installation is completed to perform a checkout of the system. At such time, a factory-trained technician will make all necessary adjustments and instruct the operating and maintenance personnel on the proper use and care of the system. Charges for the service are to be on a per diem basis (including travel time), plus all expenses at actual cost.

# Operation and Maintenance Instructions

* 1. After award of contract, at the buyer's request, the seller shall furnish two (2) sets of the following at the time equipment is shipped.
     1. Installation, Operation and Maintenance literature complete with mounting details and dimensions, installation and connection instructions, operating and maintenance instructions, a list of replacement parts and equipment specifications.

# Locations of Equipment

Equipment shall be suitable for use in the following general types of surroundings:

* 1. Extremely noisy, as high as 115 dB sound pressure level.
  2. Extremely warm or cold locations (ambient temperature of 158ºF, 70ºC maximum; -22ºF, -30ºC minimum).
  3. Humid and oily locations (optional tropicalization treatment for extreme areas).
  4. Extremely dusty and smoky locations, including dirt and flash.
  5. Hazardous Areas (Class I, II, and III, Division 1 and 2).
  6. Outdoors (Equipment listed as outdoor or weatherproof only).
  7. Constant vibration.

# System Operation

* 1. The system shall provide facilities for both page and common-talking party line operation at various locations throughout the system. Two-way conversations shall take place between stations using telephone type handsets. Handsets shall perform in areas as high as 115 dB (Sound Pressure Level) ambient noise without the use of acoustical enclosures or booths (not to exceed 115 dB SPL).
  2. Each station shall be capable of switching between the page line and (five) common-talking party line(s).
     1. Page channel shall broadcast speech over all system speakers. Where necessary, to prevent acoustic coupling, the speaker adjacent to the handset station shall be automatically muted (when wired accordingly in enclosure during installation) when the handset is removed from its cradle and the page channel is selected.
     2. Party line channel(s) shall provide two-way conversation capability without interference or crosstalk between channels; conversation will not be heard over the speaker system.

# Field Wiring

* 1. Communications cable will be run throughout the plant in cable trays, cable rails, metallic or non-metallic conduit, and various combinations of each (customer responsibility).
  2. Seller must guarantee that no crosstalk, interference or oscillation will occur due to induced coupling under wiring conditions of Paragraph 10.1, when installed in accordance with Seller's field wiring recommendations.
  3. Field wiring cable shall be furnished by the Seller and meet specifications as set forth by Seller in Paragraph 24. Cable shall be quoted separately in accordance with Part II, and is to be supplied on five hundred or one thousand foot, continuous-length, non-returnable reels or special ordered lengths.
  4. One twisted pair of conductors shall be required for the page line and one twisted pair for each party line.
     1. Multi-party system cable with ground conductor and spare conductor shall contain sixteen (16) conductors (Ref. paragraph 24.12).
     2. Speaker cable shall contain two (2) conductors (Ref. paragraph 24.1).

# Indoor Wall Station, Series 7005

* 1. Indoor Wall Station, **Model 7005-102**
     1. Handset/Speaker Amplifier with page switch in handset for one-hand operation is to operate from 90-140 VAC. 50 or 60 Hz. It shall consume 10 V.A., 4.5 W at zero signal, and 50 V.A., 27 W, at maximum signal. The unit shall operate in ambient temperatures from -30ºC to +70ºC (-22ºF to +158ºF). The handset amplifier section shall have an output level of 1.5 Vrms (nominal) into a 33 ohm load. There shall be a 55 dB nominal voltage gain, an Automatic Gain Control Circuit, and a frequency response of 250 to 4000 Hz, ± 1.5 dB. Distortion shall be no greater than 1.5% maximum THD at 1000 Hz. The input impedance shall be 100 ohms (nominal) at 1000 Hz. It shall also include a gray ABS handset with a 10 ohm, pressure differential, noise-canceling dynamic transmitter, a 130 ohm, high efficiency dynamic receiver, and a pressbar page switch for one-hand operation. The transmitter gain, receiver volume, and sidetone controls are adjusted through access holes on the rear surface of the unit.

The speaker amplifier section shall have a push-pull, Class B, 12 watt minimum output at 120 VAC nominal input and with taps for 8 or 16 ohm speaker loads. There shall be 20 dB maximum voltage gain into an 8 ohm load, and a frequency response of 250 to 4000 Hz +0, -3 dB reference to 1KHz. The distortion shall be no greater than 1% maximum THD at 12 watts and 1000 Hz, with a full load to no load regulation of a 1.5 dB maximum rise, and an input impedance of 50,000 ohms (nominal). The volume control shall be concealed and adjusted through the access hole behind the nameplate on the front panel of the unit.

The hookswitch mechanism shall be an electronic proximity detection circuit utilizing a sealed relay to eliminate exposed contacts. The shipping weight shall not exceed 6.8 lbs (3.1 kg).

* + 1. Multi-Party Enclosures shall consist of a steel box approximately 12.3" (313mm) H x 8.1" (206mm) W x 5.1" (129mm) D with a switch for selection of up to five (5) party lines, a receptacle to mate with plug-in handset/speaker amplifier, and terminal strips for connection of field wiring. Drill template shall be included for field installation. The shipping weight shall not exceed 7.5 lbs (3.4 kg).
    2. The amplifier (11.1.1) and enclosure (11.1.2) shall be approved/Listed for Class I, Division 2, Group A, B, C and D locations.
  1. Indoor Wall Station with Auxiliary Jack, **Model 7005-104**
     1. Handset/Speaker Amplifier (same as 11.1.1) with auxiliary jack for use with a headset and 30' extension cable (Reference paragraph 28 and 29).
     2. Multi-Party Enclosure (same as 11.1.2)

# Weatherproof Wall Station, Series 7305

* 1. Weatherproof Wall Station, Non-Metallic Enclosure, **Model 7305-104**
     1. Handset/Speaker Amplifier (same as 11.1.1)
     2. Multi-Party Non-Metallic Enclosure shall be made from glass-reinforced polyester approximately 14.6" (371mm) H x 10.9" (276mm) W x 10.5" (267mm) D overall, shall have a hinged door with cam-style latch, and built to NEMA 4X standards. It shall contain a switch for selection of up to five (5) party lines, a receptacle to mate with plug-in handset/speaker amplifier, and double-row terminal strips for connection of field wiring. Hubs for conduit entrance shall not be supplied, because field installation is simple and conduit entrance/exit can be made in the most convenient location. A template is provided to simplify installation. The shipping weight shall not exceed 9.6 lbs (4.4kg).
  2. Weatherproof Wall Station with Auxiliary Jack, Non-Metallic Enclosure, **Model 7305-107**
     1. Handset/Speaker Amplifier with Auxiliary Jack (same as 11.2.1)
     2. Multi-Party, Non-Metallic Enclosure (same as 12.1.2)
  3. Weatherproof Wall Station, Metallic Enclosure, **Model 7305-103**
     1. Handset/Speaker Amplifier (same as 11.1.1)
     2. Multi-Party Metallic Enclosure shall be cast aluminum, approximately 14.9" (378mm) H x 10.6" (270mm) W x 9.6" (244mm) D overall, shall have a hinged door with a cam-style latch, and built to NEMA standards. It shall contain a switch for selection of up to five (5) party lines, a receptacle to mate with plug of plug-in handset/speaker amplifier, and double row terminal strips for connection of field wiring. 1-1/4" (31.8mm) conduit hubplates shall be provided on both top and bottom. The shipping weight shall not exceed 20.4 lbs (9.3 kg).
  4. Weatherproof Wall Station, Metallic, with Auxiliary Jack **Model 7305-106**
     1. Handset/Speaker Amplifier with Auxiliary Jack (same as 11.2.1)
     2. Multi-Party Metallic Enclosure (same as 12.3.2)
  5. Weatherproof Wall Stations (12.1) and (12.3) shall be approved/listed for Class I, Division 2, Groups A,B,C,D; suitable for Class II, III, Division 2, Group G and Canada for Class I, Division 2, Groups A,B,C,D; Class II, Div.2, Groups E,F,G; Class III, Division 2 locations.

# Desk-Edge Station, Model 7105-104

* 1. Multi-Party Desk-Edge Subset shall be approximately 6" (155mm) H x 3" (79mm) W x 9" (239mm) D overall and shall secure to either side of a desk through sets of 13/64" (5.16mm) diameter holes in the mounting bracket. It shall also include a gray ABS handset with a 10 ohm, pressure differential, noise-cancelling dynamic transmitter, a 130 ohm, high efficiency dynamic receiver, a pressbar page switch for one-hand operation, and a switch for selection of up to five (5) party lines. All connections to the subset are to be made through an eight foot (8') multi-conductor cable terminated by a connector which plugs into the bottom of the associated remote amplifier enclosure. The hookswitch mechanism shall be of an electronic proximity detection circuit utilizing a sealed relay in the amplifier to eliminate exposed contacts. The shipping weight shall not exceed 5.6 lbs (2.5 kg).
  2. Remote handset/speaker amplifier is to operate from 90-140 VAC, 50 or 60 Hz. It shall consume 10 V.A., 4.5 W at zero signal, and 50 V.A., 27 W at maximum signal. The unit shall operate in ambient temperatures from -30ºC to +70ºC (-22ºF to + 158ºF). The handset amplifier section shall have an output level of 1.5 Vrms (nominal) into a 33 ohm load. There shall be a 55 dB nominal voltage gain, an Automatic Gain Control Circuit, and a frequency response of 250 to 4000 Hz, ± 1.5 dB. Distortion shall be no greater than 1.5% maximum THD at 1000 Hz. The input impedance shall be 100 ohms (nominal) at 1000 Hz. The transmitter gain, receiver volume, and sidetone controls shall be adjusted through the access holes on rear surface of unit. The shipping weight shall not exceed 5.6 lbs (2.6 kg).

The speaker amplifier section shall have a push-pull, Class B, 12 watt (minimum) output at nominal 120 VAC, with taps for 8 or 16 ohm voice coils. There shall be a 20 dB maximum voltage gain into an 8 ohm load, and a frequency response of 250 to 4000 Hz, +0, -3dB reference to 1KHz. The distortion shall be no greater than 1% maximum THD at 12 watts and 1000 Hz, with a full load to no load regulation of a 1.5 dB maximum rise, and an input impedance of 50,000 ohms (nominal). The volume control shall be concealed and adjusted through the access hole located behind the nameplate on the front panel of the unit.

* 1. Remote amplifier enclosure for multi-party operations shall consist of a steel gray polyurethane enclosure approximately 8.1" (206mm) H x 8.1" (206mm) W x 5.1" (129mm) D with a receptacle to mate with plug of remote handset/speaker amplifier, double-row terminal strips for connection of field wiring and receptacle to mate with subset plug. The shipping weight shall not exceed 5.5 lbs (2.5 kg).
  2. The Subset, Amplifier, and Enclosure shall be approved/listed for Class 1, Division 2, Groups A, B, C, and D locations.

# Flush Panel Station, Model 7155-104

* 1. Multi-Party Flush Panel Subset shall be approximately 6" (153mm) H x 6" (153mm) W x 2.5" (64mm) D behind panel and be mounted through four (4) .25" diameter holes in the subset panel. Panel cutout shall be 5" (127mm) W x 4.88" (124.0mm) H x 2.5" (63.5)D. It shall also include a gray ABS handset with a 10 ohm, pressure differential, noise- cancelling dynamic transmitter, a 130 ohm, high efficiency dynamic receiver, and a pressbar page switch for one handed operation. All connections to the subset are to be made through an eight foot (8') multi-conductor into the bottom of the associated remotely mounted amplifier enclosure. The hookswitch mechanism shall be an electronic proximity detection circuit utilizing a sealed relay in the amplifier to eliminate exposed contacts. The shipping weight shall not exceed 5 lbs (2.3 kg).
  2. Remote Handset/Speaker Amplifier (same as 13.2)
  3. Remote Amplifier Enclosure (same as 13.3)
  4. Subset, Amplifier, and Enclosure shall be listed/approved (same as 13.4)

# Desktop Station, Model 7265-202

* 1. Multi-Party Desktop Subset shall be approximately 4.81" (122.2mm) H x 10.46" (265.7mm) W x 9.35" (237.5mm) D overall. It shall also include a gray ABS handset with a 10 ohm, pressure differential, noise-canceling dynamic transmitter, a 130 ohm, high efficiency dynamic receiver, a pressbar page switch for one-hand operation, and a switch for selection of up to five (5) party lines. All connections to the subset are to be made through an eight foot (8') multi-conductor cable terminated by a connector which plugs into the bottom of the associated remote amplifier enclosure. A speaker and volume control shall be located on the front panel. The hookswitch mechanism shall be an electronic proximity detection circuit utilizing a sealed relay to eliminate exposed contacts. The shipping weight shall not exceed 6 lbs (2.7 kg).
  2. Remote Handset Speaker Amplifier (same as 13.2)
  3. Remote Amplifier Enclosure (same as 13.4)
  4. Subset, Amplifier, and Enclosure shall be listed/approved (same as 13.4)

# Hazardous Area Station, Series 7805

* 1. Hazardous Area Station-Indoor: **Model 7805-001**
     1. Hazardous area Multi-party station shall be approximately 13.1" (332mm) H x 7.9" (200mm) W x 5.6" (143mm) D overall and have facilities for bottom entry for two 1.5" (38.1mm) (one plugged) conduit and a .75" (19.1mm) conduit entry in top. It shall also include a gray ABS handset with a 10 ohm, pressure differential, noise-cancelling dynamic transmitter, a 130 ohm, high efficiency dynamic receiver, and a switch for selection of up to five (5) party lines. This handset shall be operated through a safety barrier to limit voltage and current to an intrinsically-safe level. The page button shall be momentary, single action, and located on the front panel. The amplifier operated from 90-140 VAC, 50 or 60 Hz. It shall consume 10 V.A., 4.5 W at zero signal, and 50 V.A., 27W, at maximum signal. The unit shall operate in ambient temperatures from -30ºC to +70ºC (-22ºF to +158ºF). The handset amplifier section shall have an output level of 1.5 Vrms (nominal) into a 33 ohm load. There shall be a 55 dB nominal voltage gain, an Automatic Gain Control Circuit, and a frequency response of 250 to 4,000 Hz, +0, ± 1.5 dB reference. Distortion shall be no greater than 1.5% maximum THD at 1,000 Hz. The receiver volume and sidetone controls are adjusted through the access holes on rear surface of the unit.

The speaker amplifier section shall have a push-pull, Class B, 12 watt (minimum) output at nominal 120 VAC, with taps for 8 or 16 ohm voice coils. There shall be 20 dB maximum voltage gain into an 8 ohm load, and a frequency response of 250 to 4,000 Hz +0, -3dB reference to 1 KHz. The distortion shall be no greater than 1% maximum THD at 12 watts and 1,000 Hz. The shipping weight shall not exceed 21 lbs (9.5kg)

* + 1. Equipment shall be listed/approved for Class I, II, and III, Division 1, Groups C, D, E, F and G locations, and for Canada for Class I, Division 1, Groups C and D; Class II, Division 1, Group E, F, G; Class III, Division 1 locations.
  1. Hazardous Area Weatherproof Non-Metallic, **Model 7855-001**
     1. Hazardous area multi-party weatherproof station (same as 16.1.1) in a glass-reinforced polyester weatherproof housing approximately 14.6" (371mm) H x 10.9" (276mm) W x 10.5" (226mm) D overall shall have a hinged door with cam-style latch, and be built to NEMA 4X standards.
     2. Components used to form the Hazardous Area Station may be rearranged by the installer for top entry of system conduit by following these instructions:
        1. Mount rear part of housing inverted
        2. Invert P.C.B. sub-assembly inside rear housing to return it to

proper orientation

* + - 1. Equipment shall be approved by Factory Mutual for Class I, II, and III, Division 1, and CSA (same as 16.1.2).

# Speaker Amplifier, **Model 750-401**

* 1. Amplifier is to operate from 90-140 VAC, 50 or 60 Hz and shall consume 10 V.A., 4.5 W at zero signal, and 50 V.A., 27 W at maximum signal. The unit shall operate in ambient temperatures from -30ºC to +70ºC (-22ºF to +158ºF). The circuitry shall be push-pull, Class B, 12 watt (minimum) output at nominal 120 VAC, with taps for 8 or 16 ohm voice coils. There shall be a 20 dB maximum voltage gain into an 8 ohm load, and a frequency response of 250 to 4000 Hz, +0,-3dB reference to 1KHz. The distortion shall be no greater than 1% maximum THD at 12 watts and 1000 Hz, with a full load to no load regulation of a 1.5 dB maximum rise, and an input impedance of 50,000 ohms (nominal). The shipping weight shall not exceed 5.5 lbs (2.5 kg).

The volume control shall be concealed and adjusted through the access hole behind the nameplate on the front panel of the unit.

* 1. Enclosure shall consist of a steel box approximately 8.1"(206mm) H x 8.1" (206mm) W x 5.1"(129mm), with a receptacle to mate with plug of speaker amplifier, and double-row terminal strip for connection of field wiring. All field wiring connections for external power, page lines, party lines, and loudspeaker circuits shall terminate on this strip. A drill template shall be included for field installation. The shipping weight shall not exceed 5 lbs (2.3 kg).
  2. The unit shall be approved by listed/approved nonincendive for use in Class 1, Division 2, Groups A, B, C, and D locations and for Canada for Class I, Division 2, Group A,B,C, and D locations.

# Weatherproof Speaker Amplifier, Series 760

* 1. Weatherproof Speaker Amplifier with Non-Metallic Enclosure, **Model 760-003**
     1. Amplifier (same as 17.1)
     2. Non-Metallic Enclosure shall be made of glass-reinforced polyester resin, approximately 14.6" (371mm) H x 10.9" (276mm) W x 10.5" (257mm) D overall, shall have a hinged door with cam-style latch, and be built to NEMA 4X standards. It shall contain a receptacle to mate with plug-in speaker amplifier, and terminal strips for connection of field wiring. Hubs for conduit entrance shall not be supplied. All field wiring connections for external power, page lines, party lines, and loudspeaker circuits shall terminate on this strip. The shipping weight shall not exceed 11 lbs (5 kg).
     3. Non-metallic assemblies shall be listed/approved for use in Class I, Division 2, Groups A, B, C, and D; suitable for Class II, III Division 2, Group G locations, and for Canada for Class I, Div. 2, Groups A, B, C & D; Class II, Div. 2, Groups F & G; Class III locations.
  2. Weatherproof Speaker Amplifier with Metallic Enclosure, **Model 760-001**
     1. Amplifier (same as 17.1)
     2. Metallic Enclosure shall be cast aluminum, approximately 11.6" (294mm) H x 9.6" (243mm) W x 5.2" (133mm) D overall, with a neoprene-gasketed cover attached with four (4) stainless steel screws. It shall contain a receptacle to mate with plug-in speaker amplifier, and double-row terminal strip for connection of field wiring. Also furnished shall be a hubplate for 1.25" (31.8mm) conduit entrances (top) and a dual hubplate for 2, 1.25" (31.8mm) conduit entrances (bottom). The shipping weight shall not exceed 10 lbs (4.5 kg).
     3. Metallic assemblies shall be listed/approved for use in Class I, Division 2, Group A,B,C, and D; suitable for Class II, III, Division 2, Group G locations, and for Canada Class I, Division 2, Groups A,B,C, and D; Class II, Division 2, Group F, and G; Class III locations.

# Hazardous Area Speaker Amplifier, **Model 670-001**

* 1. Hazardous Area Speaker Amplifier Station shall consist of an explosionproof aluminum box approximately 13.1" (332mm) H x 7.9" (200mm) W x 5.6" (143mm) D overall, and terminal strips for connection of field wiring. All wiring connections for external power, page line, party lines, and loudspeaker connections shall terminate on the strip. Enclosure shall have two (2) 1.5" (38.1mm) and one (1) .75" ( 19.1mm) holes tapped for conduit entrances.

The amplifier is to operate from 90-140 VAC, 50 or 60 Hz and shall consume 10 V.A., 4.5 W at zero signal, and 50 V.A., 27 W at maximum signal. The unit shall operate in ambient temperatures from -30ºC to +70ºC (-22ºF to +158ºF). The circuitry shall be push-pull, Class B, 12 watt (minimum) output at nominal 120 VAC, with taps for 8 or 16 ohm voice coils. There shall be a 20 dB maximum voltage gain into an 8 ohm load, and a frequency response of 250 to 4000 Hz, +0, -3dB reference to 1KHz. The distortion shall be no greater than 1% maximum THD at 12 watts and 1000 Hz, with a full load to no load regulation of a 1.5 dB maximum rise, and an input impedance of 50 ohms (nominal). The shipping weight shall not exceed 21 lbs (9.5 kg).

* 1. Equipment shall be listed/approved for Class I, II, and III, Division 1, Groups C, D, E, F and G locations, and for Canada for Class I, Division 1, Groups C and D; Class II, Division 1, Group E, F, G; Class III, Division 1 locations.

# Portable Station, Series 770

* 1. Portable Station, **Model 770-202**
     1. Amplifier (same as 11.1)
     2. Portable Enclosure for single-party line operation shall consist of a steel box approximately 13.1" (206mm) H x 8.1" (206mm) W x 8.1" (206mm) D with a carrying handle, built-in speaker, and a twenty-five foot (25') cable, with connector to mate with jack station, and hook to hang cable.
  2. Portable Station with Auxiliary Jack, **Model 770-204**
     1. Amplifier with Auxiliary Jack (same as 11.2)
     2. Portable Enclosure (same as 20.1.2)
  3. Weatherproof Jack Station, **Model 773**, shall consist of a cast aluminum condulet approximately 5" (127mm) H x 3" (76.2mm) W x 3.75" (95.3mm) D overall. The unit shall include a spring door cover that protects a female connector which mates with the connector of the portable station.

# Line Balance Assembly, Model 305-001

* 1. Line balance assembly shall consist of a cast aluminum two gang outlet box with a dust tight cover, approximately 5" (127mm) W x 5.5" (139.7mm) H x 2.25" (57.2mm) D overall. Barrier-type terminal strips for connection of field wiring, an adjustable control for the page line, and fixed resistance across the party line circuits shall be included.
  2. Line balance assembly shall be approved by listed/approved for Nonincendive Class I, Division 2, Group A,B,C and D locations and CSA suitable for Class I, Division 2, Group A,B,C, and D locations.

# Cable

* 1. Two (2) conductor cable, **Model 60021-301**, shall be a twisted pair (generally for speaker connection to amplifier enclosures) with 2.0" (50.8mm) (maximum) lay, each conductor No. 18 AWG (16 strands No. 30), soft-drawn bare copper with .015" (.38mm) wall of high dielectric, flame retardant 105ºC polyvinyl chloride with .005" (.13mm) clear nylon armor. Twisted conductors are assembled with non-wicking, non-hygroscopic nylon filler, wrapped with a uniformly-round jacket. Overall jacket of hard service, flame retardant, moisture and sun resistant, black 90º polyvinyl chloride compounded to provide protection against oil, heat, chemical and mechanical abuse. Maximum O.D. shall be .285" (7.2mm). The shipping weight shall not exceed 44 lbs (19.9 kg). Cable shall be Underwriter's Laboratories Inc. - listed (Subject 1277), and shall meet or exceed the requirements of IEEE-45, CSA C22.2, No 239 Control and Instrumentation Cable and NEC Article 501.
  2. Two (2) conductor cable, **Model 60021-303**, (same as 22.1) with bronze braid and PVC jacket. Maximum O.D. shall be .450" (11.43mm). The shipping weight shall not exceed 200 lbs (90.7 kg).
  3. Two (2) conductor cable, **Model 60021-305**, (same as 22.1) with aluminum braid and PVC jacket. Maximum O.D. shall be .450" (11.43mm). The shipping weight shall not exceed 200 lbs (90.7 kg).
  4. Two (2) conductor cable, **Model 60021-307**, (same as 22.1) with corrugated aluminum sheath and PVC jacket. Maximum O.D. shall be .498" (12.65 mm). The shipping weight shall not exceed 136 lbs (61.7 kg).
  5. Two (2) conductor cable, **Model 60022-201**, (generally for AC Power connection) shall be a twisted pair with 3.5" (88.9mm) maximum lay, each conductor 14 AWG (19 strands No. 27), soft drawn bare copper with .015" (.38mm) wall of high dielectric, flame retardant 105ºC polyvinyl chloride with .005" (.13mm) clear nylon armor. Twisted conductors are assembled with non-wicking, non-hygroscopic nylon filler, wrapped with a uniformly round jacket. Overall jacket wall of hard service, flame-retardant, moisture and sun-resistant, black 90ºC polyvinyl chloride compounded to provide protection against oil, heat, chemical and mechanical abuse. Maximum O.D. shall be .340" (8.6mm). The shipping weight shall not exceed 71 lbs (32.2 kg). Cable shall be Underwriter's Laboratories Inc. - listed (Subject 1277), and shall meet or exceed the requirements IEEE-45, CSA C22.2, No 239 Control and Instrumentation Cable and NEC Article 501.
  6. Two (2) conductor cable, **Model 60022-203**, (same as 22.7) with bronze wire braid and PVC jacket. Maximum O.D. shall be .500" (12.7mm). The shipping weight shall not exceed 285 lbs (129.3 kg).
  7. Two (2) conductor cable, **Model 60022-205**, (same as 22.7) with aluminum braid and PVC jacket. Maximum O.D. shall be .500" (12.7mm). The shipping weight shall not exceed 285 lbs (129.3 kg).
  8. Sixteen (16) conductor cable, **Model 60029-101**, shall contain power and ground, page and party conductors. Power conductors shall be one (1) twisted pair with single ground 3.5" (88.9mm) maximum lay, each conductor 14 AWG (19 strands No. 27), soft drawn bare copper with .015" (.38mm) wall of high dielectric, flame-retardant 105ºC polyvinyl chloride with .005" (.13mm) nylon armor. Party and page conductors shall be six (6) twisted pairs with 2.0" (50.8mm) maximum lay, each conductor 18 AWG (16 strands No. 30) soft-drawn bare copper with.015" (.38mm) wall of high dielectric, flame-retardant 105ºC polyvinyl chloride with .005" (.13mm) nylon armor. The cable shall be assembled with all pairs twisted with systematically varying lays to minimize crosstalk, with non-wicking, non-hygroscopic nylon filler, wrapped with polyester binding tape for uniformly round cable. The overall jacket shall be a flame-retardant, moisture and sun-resistant, black 90ºC polyvinyl chloride compounded to protect against oil, heat, chemical, and mechanical abuse. Maximum O.D. shall be 0.695" (17.2mm). The shipping weight shall not exceed 290 lbs (131.5 kg). Cable shall be Underwriter's Laboratories Inc. - listed (Subject 1277), and shall meet or exceed the requirements of IEEE-45, CSA C22.2, No 239 Control and Instrumentation Cable and NEC Article 501.
  9. Sixteen (16) conductor cable, **Model 60029-103**, (same as 22.8) with bronze wire braid and PVC jacket. Maximum O.D. shall be .860" (21.84mm). The shipping weight shall not exceed 540 lbs (244.9 kg).
  10. Sixteen (16) conductor cable, **Model 60029-105**, (same as 22.8) with aluminum braid and PVC jacket. Maximum O.D. shall be .860" (21.84mm). The shipping weight shall not exceed 540 lbs (244.9 kg).
  11. Sixteen (16) conductor cable, **Model 60029-107**, (same as 22.18) with corrugated aluminum sheath and PVC jacket. Cable stranding on 14 AWG conductors is 7 strands 22 AWG and on 18 AWG conductors is 7 strands 26 AWG. Maximum O.D. is .999" (25.37mm). The shipping weight shall not exceed 449 lbs (203.7 kg).
  12. All cable shall be manufactured to meet or exceed the requirements of IEEE-45, CSA C22.2, No 239 Control and Instrumentation Cable, NEC Article 501, and UL subject 1277.

# Speakers

* 1. Compact Paging Speaker with Built-in Drivers
     1. Speaker shall be **Model 13350** weatherproof direct-radiating horn with an asymmetrical shape for efficient sound dispersion and equipped with built-in driver. Frequency response shall be 450 - 4500 Hz ± 5 dB and dispersion shall be 90º. Horn assembly shall be constructed of high-impact, glass-reinforced polyester. Sound pressure level shall average 118 dB at 3.3 ft (1m) on axis at 12 watt rated power. Voice coil impedance shall be 8 ohms. Power handling capacity shall be 16 watts rms. Horn shall be equipped with two integral 0.75" (19.05mm) conduit entries and a terminal block for wire termination. Dimensions of horn shall not exceed 9.52" (241.8mm) H X 8.02" (203.7mm)W. Finish shall be black. Shipping weight shall not exceed 6.6 lbs (3 kg).
     2. Speaker shall be **Model HP15-8** re-entrant horn equipped with built-in driver. Frequency response shall be 470-7600 Hz and dispersion shall be 130º nominal. Horn assembly shall be constructed of ABS and equipped with a stainless steel mounting bracket. Sound pressure level shall average 116 dB at 4 ft. (1.2m) on axis at 12 watt rated power. Voice coil impedance shall be 8 ohms. Power handling capacity shall be 20 watts. Dimensions of horn shall not exceed 7.8" (198.1mm) diameter and 9.7" (246.4mm). Finish shall RAL7035. Shipping weight shall not exceed 3.8 lbs (1.7 kg).
     3. Speaker shall be **Model 13328-001** re-entrant horn equipped with built-in driver. Frequency response shall be 500-5500 Hz and dispersion shall be 80º nominal. Horn assembly shall be constructed of acrylic with metal mounting bracket. Sound pressure level shall average 115 dB at 4 ft. (1.2m) on axis at 12 watts rated power. Voice coil impedance shall be 8 ohms. Power handling capacity shall be 15 watts. Dimensions of horn shall not exceed 6.5" (165mm) and 6.625" (168.2mm). Finish shall be beige acrylic. Shipping weight shall not exceed 3 lbs (1.4 kg).
  2. Reflex Horns
     1. The re-entrant horn shall be **Model 13340** and possess constant directivity characteristics across the voice frequency band. The horn body shall be of high-impact, glass-reinforced polyester and shall have an air column length of 2.8' (.85m). A hot-dipped galvanized zinc "U" mounting bracket shall be affixed with stainless steel hardware to the horn body. Threaded throat area to accommodate screw-in driver shall have standard 1 3/8 - 18 UNEF thread. Dimension shall not exceed 15.63" (397mm) H X 27" (686mm) W X 14" (355.6mm) D. Dispersion angle shall be 120º horizontal, 60º vertical, maximum and nominal. The acoustical frequency response is 450-8,000 Hz with the drivers listed in sections 23.3.1 and 23.3.2. The low frequency cutoff is -10 dB (350 Hz) and the high frequency cutoff is -10 dB (12 KHz). The dB level is 108 dBspl 1 watt at 1 meter with the driver listed in section 23.3.1, and 102 dBspl 1 watt at 1 meter with the driver listed in section 23.3.2. Shipping weight shall not exceed 12 lbs (5.44 kg).
     2. The re-entrant horn, **Model 13302-002**, shall be reflexed, with reflector and bell of spun aluminum with epoxy coating and shall have an air column length of 3.5 feet (1.1m). A rib-reinforced steel "U" mounting bracket shall be affixed to the bell with fully serrated, adjustable joints and bracket position secured by self-locking nuts. All parts other than hardware, but including the mounting bracket, shall be epoxy coated. The mounting bracket shall have three holes at the base for mounting to a pipe fixture. Threaded throat area to accommodate screw-in driver shall have standard 1.38" (35.1mm) - 18 thread. Overall trumpet length shall not exceed 15.75" (400mm), less mounting bracket and driver unit. Bell mouth diameter shall not exceed 20.5" (520.7mm). Dispersion angle is 50º nominal and efficient frequency range, 250-5200 Hz. Sound pressure level shall be 120 dB at 4 ft (1.2m) on axis at 12 watt rated power when used with driver referenced in 23.3.1. Shipping weight shall not exceed 13.0 lbs (5.9 kg).
     3. The re-entrant horn, **Model 13304-002**, shall be reflexed, with reflector and bell of spun aluminum with epoxy coating and shall have an air column length of 2.5' (762mm). A rib-reinforced steel "U" mounting bracket shall be affixed to the bell with fully serrated, adjustable joints and bracket position secured by self-locking nuts. All parts other than hardware, but including the mounting bracket, shall be finished with epoxy coating. The mounting bracket shall have three holes at the base for mounting to a pipe fixture. Threaded throat area to accommodate screw-in driver and shall have standard 1.38" (35.1mm) - 18 thread. Overall trumpet length shall not exceed 12", less mounting bracket and driver unit. Bell mouth diameter shall not exceed 16.5" (471mm). Dispersion angle shall be 45º nominal and efficient frequency range shall be 300-5500 Hz. Sound pressure level shall be 119 dB at 4 ft (1.2m) on axis at 12 watts rated power when used with driver referenced in section 23.3.1. Shipping weight shall not exceed 9.6 lbs (4.1 kg).
     4. The re-entrant horn, **Model 13306-101**, shall be reflexed, with reflector and bell of spun aluminum, with epoxy coating, and shall have an air column length of 1.5 ft. All parts shall be finished with epoxy coating. Threaded throat area to accommodate screw-in driver shall have standard 1.38" (35.1mm) - 18 thread. Overall trumpet length shall not exceed 7", less mounting bracket and driver unit. Bell mouth diameter shall not exceed 8.75" (222.3mm). Dispersion angle shall be 70º nominal and efficient frequency range shall be 500-6000 Hz. Sound pressure level shall be 116 dB at 4 ft (1.2m) on axis at 12 watts rated power when used with driver referenced in section 23.3.1. Shipping weight shall not exceed 2.8 lbs (1.3 kg).
     5. Two-way horn, **Model 13305-101**, shall have two double-reflexed horns, with reflectors of high impact Butyrate, bells of spun aluminum with epoxy coating and tone arms of die-cast aluminum. The horns shall face in opposite directions and be joined by a cast aluminum "T" acoustic coupler. It shall be possible to use a driver unit up to 5" diameter having 1.38" (35.1mm) -18 thread screwed directly into the acoustic coupler. Each bell mouth diameter shall not exceed 8.5' (215.9mm) and shall have a dispersion angle of 70º nominal. Low frequency cut-off shall be rated as 400 Hz. Heavy gauge stamped steel "S" shaped mounting bracket shall connect directly to the acoustic coupler in such a way as to permit variation in projection angle approximately 10º outward from both horns. Sound pressure level shall be 116 dB at 4 ft (1.2m) on axis at 12 watts rated power when used with driver referenced in section 23.3.1. Shipping weight shall not exceed 4.5 lbs (2.0 kg).
  3. Heavy Duty Drivers
     1. Driver shall be **Model 13314-002** and approved raintight by Underwriters Laboratories for use in Division 2 areas. Driver power handling capacity shall be 30 watts with a frequency response of 300 to 4,500 Hz ± 6 dB. Voice coil shall have an impedance of 16 ohms. Sound pressure level shall be 111 dB at 1 watt, 1 meter (swept sine average) with reflex horn referenced in section 23.2.3., a 3.5 ft. (1.1m) air column re-entrant type horn. Complete housing assembly shall be weatherproof molded VALOX equipped with 1.38" (35.1mm) - 18 threads for screw-in connection to horn. An electro-formed metal mesh screen shall be integral in the throat of unit to prevent the entrance of foreign particles. Color shall be black. Electrical connections shall be made to a 3 ft. 1 cable preconnected to the driver. Dimensions of unit shall not exceed 5" (127mm) in diameter and 5.5" (139.7mm) in length. Shipping weight shall be 3.1 lbs (1.41 kg).
     2. The explosionproof driver shall be **Model 13310-101** and approved by Underwriters Laboratories for use in hazardous areas specifically designated as Division 1, Class 1, Groups B,C, and D; and Class II, Groups E,F, and G. Driver shall have a full range power capacity of 30 watts continuous power. Frequency response shall be 400 to 3500 Hz (± 6 dB). Voice coil shall have an impedance of 16 ohms. Sound Pressure level shall be 104 dB at 1 watt, 1 meter (swept sine average) with reflex horn referenced in section 23.2.3. Case shall be heavy die-cast aluminum, epoxy coated with dimensions not exceeding 7.875" (200mm) in diameter and 7.40" (188mm) in length. Rear of case shall be made removable to facilitate wiring by incorporation of six .375" (9.5mm) diameter bolts and provisions made for connection of standard .5" pipe conduit. The driver voice-coil impedance shall be 16 ohms. Coupling diameter shall be standard 1-3/8" (35.1mm) - 18 threads for screw-in attachment to horn. Weight of unit shall not exceed 12.0 lbs (5.5 kg).
  4. Cone Speaker Assemblies
     1. Wall speaker assembly, **Model B406-8-W**, shall be ABS white finish. Mounting shall be accomplished by a metal bracket. Dimensions shall be 8.3" (210mm) H x 8.3" (210mm) W x 2.6" (66mm) D. The loudspeaker shall be have a frequency response of 160-12,000 Hz with a power handling capacity of 6 watts. The voice coil impedance shall be 8 ohms. The assembly weight shall be 2.7 lbs (1.2 kg).
     2. Wall speaker assembly, **Model 1201A**, shall be furnished in simulated walnut finish with a sloping front. Mounting shall be accomplished by a metal bracket which will easily attach to a standard electrical switch box. Dimensions shall be 13.38" (339.8mm) H x 14" (355.6mm) W x 17.8" (452.4mm) D. The loudspeaker shall be 8" (203.2mm) in diameter with a frequency response of 150-7,000 Hz with a power handling capacity of 10 watts. The voice coil impedance shall be 8 ohms. The unit shall have a built-in volume control. The assembly weight shall be 12.5 lbs (5.7 kg).
     3. Ceiling speaker assembly shall be **Model B650-8** and consist of an ABS grill, polystyrene dust box, and 6" cone speaker and related mounting hardware. The unit shall be factory assembled and wired, ready for installation. The enclosure shall measure 9.1" (232mm) diameter x 4.7" (107.9mm) deep. The baffle shall be an white ABS. The frequency response shall be 140-20,000 Hz with a power handling capacity of 6 watts. The voice coil impedance shall be 8 ohms. The assembly weight shall be 2.7 lbs (1.2 kg).
     4. Ceiling speaker assembly shall be **Model 1204** and consist of an enclosure, baffle, a 12" (304.8mm) cone speaker and related mounting hardware. The unit shall be factory assembly and wired, ready for installation. The enclosure shall measure 12.75" (323.9mm) diameter x 7.25" (184.2mm) deep. It shall be constructed of heavy gauge steel and be heavily undercoated. The baffle shall be an aluminum trim ring 17" (431.8mm) in diameter. The frequency response shall be 140-7,000 Hz with a power handling capacity of 10 watts. The voice coil impedance shall be 8 ohms. The unit shall have a remote volume control arranged to mount in a standard electrical switch box. The assembly weight shall be 10 lbs (4.6 kg).
  5. Optional Mounting Assemblies

GAI-Tronics strongly recommends the use of mounting brackets primarily as a means of terminating conduit and cable connection to the speaker. Secondly, they are recommended where speaker orientation is a factor in high noise environments. Although every horn or speaker is provided with a bracket that can bolt to any secure structure, conduit cannot be terminated without a junction box (except paragraph 23.1.1). In addition, speakers can only be aligned through one range of motion. By using our mounting brackets, the speaker can be positioned through a full range of motion to allow for best orientation during or after installation. This allows precise direction of sound toward the most critical listening area. Please reference the following chart for a specification of model numbers of the optional Mounting Assemblies. For a listing of speaker model numbers, please reference Part II of this specification beginning with the speakers.

* 1. MOUNTING ASSEMBLIES

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 4  1  1  A | 4  1  2  A | 4  1  2  B | 4  1  3  A | 4  1  4  -  0  0  2 | 4  1  5  A |  |  |  |
| SPEAKER NUMBER |  |  |  |  |  |  | Driver Number | | |
| 13328-001 |  |  |  |  | \* |  | Integral  Driver | | |
| HP15-8 |  |  | \* |  |  |  |
| 13350 |  |  |  |  |  |  |
| 13340 | **\*** |  |  |  |  |  | 13314-xxx | | |
| 13340 |  |  |  |  |  | \* | 13310-101 | | |
| 13306-101 | \* |  |  |  |  |  | 13310-101 or 13314-xxx for bottom mounting | | |
| 13306-101 |  |  |  |  |  | \* | 13310-101 or 13314-xxx for suspended mounting | | |
| 13305-101 |  |  |  | **\*** |  |  | Any driver | | |
| 13304-002 | **\*** |  |  |  |  |  | 13314-xxx | | |
| 13304-002 |  |  |  |  |  | **\*** | 13310-101 | | |
| 13302-002 | **\*** |  |  |  |  |  | 13314-xxx | | |
| 13302-002 |  |  |  |  |  | **\*** | 13310-101 | | |

# Terminal Boxes

* 1. Indoor Terminal Box
     1. Indoor Terminal Box, **Model 10434-002**, shall be constructed of 16 ga. steel with gray polyurethane, approximately 8.12" (206.2mm) H x 8.12" (206.2mm) W x 5.25" (133.4mm) D overall, with a neoprene gasketed cover attached with four screws. It shall have two (2) 11 point terminal strips for field wiring connections. Shipping weight shall be approximately 6 lbs (2.7 kg).
  2. Indoor/Outdoor Terminal Box
     1. Indoor/Outdoor Terminal Box, **Model 9974**, shall be high-impact, glass-reinforced polyester, approximately 9.5" (241mm) H X 8" (201mm) W X 3.8" (97mm) D overall, a modular assembly that allows the front panel to be separated from the rear enclosure. The front panel shall be secured to the rear enclosure using four captive screws. It shall have two 11-point terminal strips for field wiring connections. It shall have two drill spots on the top and two drill spots on the bottom for locating conduit entry. The shipping weight shall not exceed 5 lbs (2.27 kg).

Equipment shall be listed/approved for Class I, Div. 2, Groups A, B, C & D; Class II, Div. 2, Groups F & G; Class III locations

* 1. Weatherproof Terminal Box
     1. Weatherproof Metallic Terminal Box, **Model 10436-002**, shall be cast aluminum alloy with gray baked enamel finish, approximately 11.56" (293.6mm) H x 9.55"(242.6mm) W x 5.3" (134.6mm) D overall, with a neoprene gasketed cover attached with four stainless steel screws. It shall have two (2) 11 point terminal strips for field wiring connections. Also furnished shall be a hubplate for 1.25" (31.8mm) conduit entrances (top and bottom). Shipping weight shall be approximately 10 lbs (4.5 kg).
     2. Weatherproof Non-Metallic Terminal Box, **Model 10499-001**, shall be injection molded thermoplastic (PVC), approximately 12" (304.8mm) H x 10" (254mm) W x 6.88" (174.6mm) D overall, meeting NEMA 1, 2, 3, 3R, 3S, 3R, 12, 13. Components are UL-listed and CSA-certified. It shall have two (2) 19 pt. terminal strips for field wiring connections. Shipping weight shall be approximately 6 lbs (2.7 kg).

# Signaling Devices

* 1. Programmable Tone/Speech Generator, **Model 10959-201**
     1. The process and emergency voice and tone generator shall be a GAI-Tronics Audio Messenger. The Audio Messenger shall be a self-contained unit and shall only require dry contacts for activation. It shall provide a supervisory dry contact output upon activation.

There shall be no need for the burning of EPROM’s in order to program the unit. The Audio Messenger shall be customer configurable by use of the Configuration Software application tool. Customer shall be able to set all parameters of the unit as well as create and program both tones and speech messages. The unit’s configuration shall be stored on a minimum 128mB Compact Flash card.

The Audio Messenger shall provide a 600 Ohm / 0 dBm audio output. The unit shall accept up to 8 voltage free input contacts. These contacts shall be programmed by use of the Configuration Software tool for Normally Opened, Normally Closed, Momentary or Maintained contacts. The user shall be able to configure the priority of the input, the output combination to be initiated by the input and the message to be played by the input.

The Audio Messenger shall provide 8 voltage free output contacts. These contacts shall be configured by use of the Configuration Software tool for Maintained, Momentary or Cycled initiation. The user shall create output combinations that groups outputs and these combinations are mapped to initiate to specific inputs.

The unit shall include an onboard real-time clock. The clock shall allow the Audio Messenger to play scheduled events at specific times or intervals such as daily, weekly, monthly or specific days or dates. The user shall be able to program up to 100 scheduled events in addition to the 8 input messages.

User controls shall include an LCD display, and scroll up, scroll down, select and enter buttons. The user shall be able to initiate or cancel messages by use of these controls. The LCD shall display current time and indicate current message playing. A microphone input shall be included to allow live speech broadcast form the Audio Messenger.

The Audio Messenger shall include a supervisory output. This output shall remain active (closed) when the unit’s processor is healthy. The contact shall be opened if the processor fails.

The Wallmount Audio Messenger shall require power input of 12-26V dc. The unit shall be housed in a non-metallic enclosure with non-intrusive mounting holes and measure 9.27" W x 13.02"H x 3.86" D. The unit shall have an operating temperature range of 0°C to +50°C and relative humidity to 20-80% non-condensing. And have a frequency Range-20 - 20,000 Hz.

The Audio Messenger shall be UL listed .

# Tone Generator with Telephone Interface

* 1. Programmable Tone/Speech Generator and Telephone Interface, **Model 10959-203**
  2. The process and emergency voice and tone generator shall be a GAI-Tronics Audio Messenger. The Audio Messenger shall be a self-contained unit and shall only require dry contacts for activation. It shall provide a supervisory dry contact output upon activation.

There shall be no need for the burning of EPROM’s in order to program the unit. The Audio Messenger shall be customer configurable by use of the Configuration Software application tool. Customer shall be able to set all parameters of the unit as well as create and program both tones and speech messages. The unit’s configuration shall be stored on a minimum 128mB Compact Flash card.

The Audio Messenger shall provide a 600 Ohm / 0 dBm audio output. The unit shall accept up to 8 voltage free input contacts. These contacts shall be programmed by use of the Configuration Software tool for Normally Opened, Normally Closed, Momentary or Maintained contacts. The user shall be able to configure the priority of the input, the output combination to be initiated by the input and the message to be played by the input.

The Audio Messenger shall provide 8 voltage free output contacts. These contacts shall be configured by use of the Configuration Software tool for Maintained, Momentary or Cycled initiation. The user shall create output combinations that groups outputs and these combinations are mapped to initiate to specific inputs.

The unit shall include an onboard real-time clock. The clock shall allow the Audio Messenger to play scheduled events at specific times or intervals such as daily, weekly, monthly or specific days or dates. The user shall be able to program up to 100 scheduled events in addition to the 8 input messages.

User controls shall include an LCD display, and scroll up, scroll down, select and enter buttons. The user shall be able to initiate or cancel messages by use of these controls. The LCD shall display current time and indicate current message playing. A microphone input shall be included to allow live speech broadcast form the Audio Messenger.

The Audio Messenger shall include a supervisory output. This output shall remain active (closed) when the unit’s processor is healthy. The contact shall be opened if the processor fails.

A Telephone Interface shall be available to allow users to access the system via a telephone network. The Audio Messenger shall auto-answer and may either provide a live audio path to the system or be programmed by the user for record and playback to avoid acoustical feedback.

The Wallmount Audio Messenger shall require power input of 12-26V dc. The unit shall be housed in a non-metallic enclosure with non-intrusive mounting holes and measure 9.27" W x 13.02"H x 3.86" D. The unit shall have an operating temperature range of 0°C to +50°C and relative humidity to 20-80% non-condensing. And have a frequency Range-20 - 20,000 Hz.

The Audio Messenger shall be UL listed .

# Interface to Other Systems

* 1. Page/Party® to 600 ohm Interface, **Model 370-301**
     1. Dual-channel two-way interface shall operate from 120-230 VAC, 50 or 60 Hz. Interface shall include two independent conversion circuits. With a line impedance of 600 ohms, the line terminals shall have a nominal input/output level of 1.0 Vrms, with a maximum output level of 1.3 Vrms. The output distortion shall be no greater than 1.0% THD maximum at nominal output. With a load source of 33 ohms the page/party line terminals shall have a nominal input/output level of 1.5 Vrms with a maximum output level of 2.3 Vrms. The output distortion shall be no greater than 1.5% THD maximum at nominal output. Controls shall be accessible by removing the front cover of the unit to adjust gain and balance of interface operation. The shipping weight shall not exceed 11 lbs (4.8 kg).
     2. Enclosure shall consist of a steel box approximately 14.5" (368mm) H x 8.31" (211mm) W x 5.26" (134mm) D. A drill template shall be provided for field installation.
  2. Page Party to Radio Interface, **Models 370-400 and 370-420**
     1. Two-way interface shall work operate from 120-230 VAC, 50 or 60 Hz. The unit shall include an interface circuit and either a UHF (370-400) or VHF (370-420) radio transceiver.
     2. Enclosure shall consist of a steel box approximately 14.5" (368mm) H x 8.31" (211mm) W x 5.26" (134mm) D. A drill template shall be provided for field installation.

# Auxiliary Headset

* 1. Headset/Microphone assembly, **Model 10401-201** for use with or without a hardhat, shall have liquid filled earcups, a gooseneck noise-cancelling boom microphone, a Noise Reduction Rating of 24db and permit intelligible communications in areas up to 110dBspl ambient noise. Male connectors shall be included to mate with extension cable (Reference Paragraph 31). The shipping weight shall not exceed 2 lbs (.9 kg).

# Extension Cable

* 1. Extension cable, **Model 10416-103**, shall be provided with a female connector to mate with headset/microphone (Reference Paragraph 28), and the male connector to mate with amplifier. The thirty foot (30') straight cord shall include a belt clip to act as strain relief for headset and a push-to-page switch. Shipping weight shall not exceed 2 lbs (.9 kg).

# Options

* 1. Epoxy Coating - EP

Epoxy coating shall protect equipment exposed to corrosive, environmental conditions. Epoxy coating shall preserve the finish of metal components by resisting the harsh effects of extreme temperature, humidity, and wind-blown sand particles. Epoxy shall not chip, peel, or rust.

* 1. Tropicalization - TR

Tropicalization process shall protect vulnerable circuitry with a preparation that combats the effects of humidity and high temperatures. The tropicalization process shall deter corrosion and fungus growth, ensuring operational reliability.

* 1. Plasite Coating - PL

Plasite coating shall be a thick film, chemical resistant coating, resistant to radiation and shall be decontamination compatible. Plasite coating shall provide a finish coat for nuclear coating systems for steel and excellent for marine exposure when applied under high humidity conditions.

* 1. Hytrel Handset Cord - HY

Thermoplastic elastomer cords (Hytrel®) shall offer superior performance via "memory" to retain coil and shall provide excellent performance in extreme temperatures. Bushings shall be molded to coil cord to protect internal wires. Hytrel cords are available in the following lengths:

• 6 foot length

• 15 foot length

• 25 foot length

* 1. 15 foot PVC Handset Cord - 15
  2. 25 foot PVC Handset Cord - 25
  3. Spring Kit for Weatherproof Non-metallic Enclosure - SK

Spring Kit shall ensure closure for door to protect Handset/Speaker Amplifier from rain and dust in addition to damage to enclosure door. Spring kit shall be installed by the manufacturer of the enclosure.

* 1. Volume Level Control - VC

Volume Level Control receiver shall allow manual or automatic remote volume control of specific speaker amplifiers via a RF Signal. This option shall provide one alternate amplifier volume setting for special applications, for example:

• **Increase** volume levels when alarms are activated.

• **Decrease** volume levels for night muting of speakers near residential areas.

NOTE: Recommended only if a special transmitter package is requested.

* 1. Extended Subset Cable - EX\*

Extended Subset Cable shall lengthen the 8 ft. standard subset cable to a maximum length of 50 ft.\*

\* Specify length in feet.

EQUIPMENT SPECIFICATION FOR

MULTI-PAGE/PARTY®

INTRA-PLANT COMMUNICATIONS SYSTEM

Part II

# Quantity Specification

The products mentioned in Part I of this specification establish a standard of quality. The following format establishes quantity:

* 1. MULTI-PARTY EQUIPMENT

Indoor Wall Station, in accordance with paragraph 11.1 **GAI-Tronics No. 7005-102**.

Indoor Wall Station with Auxiliary Jack, in accordance with paragraph 11.2, **GAI-Tronics No. 7005-104**.

Weatherproof Wall Station, (Glass-Reinforced Polyester), in accordance with paragraph 12.1, **GAI-Tronics No. 7305-104**.

Weatherproof Wall Station (Glass-Reinforced Polyester) with Auxiliary Jack, in accordance with paragraph 12.2, **GAI-Tronics No. 7305-107**.

Weatherproof Wall Station, in accordance with paragraph 12.3, **GAI-Tronics No. 7305-103**.

Weatherproof Wall Station with Auxiliary Jack, in accordance with paragraph 12.4, **GAI-Tronics No. 7305-106**.

Desk-Edge Station, in accordance with paragraphs 13.1, 13.2, and 13.3, **GAI-Tronics No. 7105-104**.

Flush-Panel Station, in accordance with paragraphs 14.1, 14.2, and 14.3, **GAI-Tronics No. 7155-104**.

Desktop Station, in accordance with paragraphs 15.1 and 15.2, **GAI-Tronics No. 7265-202**.

Hazardous Area Station, in accordance with paragraphs 16.1.1 and 16.1.2, **GAI-Tronics No. 7805-001**.

Hazardous Area Weatherproof Station, in accordance with paragraphs 16.2.1, 16.2.2, and 16.2.3, **GAI-Tronics No. 7855-001**.

* 1. ADDITIONAL EQUIPMENT

Indoor Speaker Amplifier, in accordance with paragraphs 17.1, 17.2, and 17.3 **GAI-Tronics No. 750-401**.

Weatherproof Speaker Amplifier Metallic Enclosure, in accordance with paragraphs 18.2.1, 18.2.2, and 18.2.3 **GAI-Tronics No. 760-001**.

Weatherproof Speaker Amplifier Non-Metallic Enclosure, in accordance with paragraphs 18.1.1, 18.1.2, and 18.1.3, **GAI-Tronics No. 760-003**.

Hazardous Area Speaker Amplifier, (FM and CSA), in accordance with paragraphs 19.1 and 19.2, **GAI-Tronics No. 670-001**.

Portable Station, in accordance with paragraphs 20.1.1 and 20.1.2, **GAI-Tronics No. 770-202**.

Portable Station, in accordance with paragraphs 20.2.1 and 20.2.2, **GAI-Tronics No. 770-204**.

Weatherproof Jack Station, (for use with Portable Station), in accordance with paragraph 20.3, **GAI-Tronics No. 773**.

Line Balance Assembly, in accordance with paragraphs 23.1 and 23.2 **GAI-Tronics No. 305-001**.

* 1. CABLE

Two (2) Conductor, 18 AWG Twisted Pair Cable, in accordance with paragraph 22.1, **GAI-Tronics No. 60021-301**.

Two (2) Conductor, 18 AWG Twisted Pair Cable, in accordance with paragraph 22.3, **GAI-Tronics No. 60021-303**.

Two (2) Conductor, 18 AWG Twisted Pair Cable, in accordance with paragraph 22.5, **GAI-Tronics No. 60021-305**.

Two (2) Conductor, 18 AWG Twisted Pair Cable, in accordance with paragraph 22.6, **GAI-Tronics No. 60021-307.**

Two (2) Conductor, 14 AWG Twisted Pair Cable, in accordance with paragraph 22.7, **GAI-Tronics No. 60022-201**.

Two (2) Conductor, 14 AWG Twisted Pair Cable, in accordance with paragraph 22.9, **GAI-Tronics No. 60022-203**.

Two (2) Conductor, 14 AWG Twisted Pair Cable, in accordance with paragraph 22.11, **GAI-Tronics No. 60022-205**.

Sixteen (16) Conductor System Cable, in accordance with paragraph 22.12, **GAI-Tronics No. 60029-101**.

Sixteen (16) Conductor System Cable, in accordance with paragraph 22.14, **GAI-Tronics No. 60029-103**.

Sixteen (16) Conductor System Cable, in accordance with paragraph 22.16, **GAI-Tronics No. 60029-105**.

Sixteen (16) Conductor System Cable, in accordance with paragraph 22.17, **GAI-Tronics No. 60029-107**.

* 1. SPEAKERS

Indoor/Outdoor Direct-radiating Horn with built-in driver, in accordance with paragraph 25.1.1, **GAI-Tronics No. 13350**.

Indoor/Outdoor Re-entrant Horn with built-in driver, in accordance with paragraph 25.1.2, **GAI-Tronics No. HP15-8**.

Indoor/Outdoor Re-entrant Horn with built-in driver, in accordance with paragraph 25.1.3, **GAI-Tronics No. 13328-001**.

Indoor/Outdoor Re-entrant Horn, in accordance with paragraph 25.2.1, **GAI-Tronics No. 13340**.

Indoor/Outdoor Reflex Horn, in accordance with paragraph 25.2.2, **GAI-Tronics No. 13302-002**.

Indoor/Outdoor Reflex Horn, in accordance with paragraph 25.2.3, **GAI-Tronics No. 13304-002**.

Indoor/Outdoor Reflex Horn, in accordance with paragraph 25.2.4, **GAI-Tronics No. 13306-101**.

Indoor/Outdoor Bi-directional Horn, in accordance with paragraph 25.2.5, **GAI-Tronics No. 13305-001**.

Indoor/Outdoor Driver Unit, in accordance with paragraph 25.3.1, **GAI-Tronics No. 13314-002**.

Indoor/Outdoor, Hazardous Area, Driver Unit in accordance with paragraph 25.3.2, **GAI-Tronics No. 13310-101**.

Indoor Cone Type Speaker Assembly, for Wall Mounting in accordance with paragraph 25.4.1, **GAI-Tronics No. B406-8-W**.

Indoor Cone Type Speaker Assembly, for Wall Mounting, in accordance with paragraph 25.4.2, **GAI-Tronics No. 1201A**.

Indoor, Cone Type Speaker Assembly, for Ceiling Mounting, in accordance with paragraph 25.4.3, **GAI-Tronics No. B650-8**.

Indoor Cone Type Speaker Assembly, for Ceiling Mounting, in accordance with paragraphs 25.4.4, **GAI-Tronics No. 1204**.

Mounting Assembly, in accordance with the chart in Section 25.5, **GAI-Tronics No. 411A**.

Mounting Assembly, in accordance with the chart in Section 25.5, **GAI-Tronics No. 412A**.

Mounting Assembly, in accordance with the chart in

Section 25.5, **GAI-Tronics No. 412B**.

Mounting Assembly, in accordance with the chart in Section 25.5, **GAI-Tronics No. 413A**.

Mounting Assembly, in accordance with the chart in Section 25.5, **GAI-Tronics No. 414-002**.

Mounting Assembly, in accordance with the chart in Section 25.5, **GAI-Tronics No. 415A**.

31.5 TERMINAL BOXES

Indoor Terminal Box, in accordance with paragraph 26.1.1, **GAI-Tronics No. 10434-002**.

Indoor/Outdoor Terminal Box, in accordance with paragraph 26.2.1, **GAI-Tronics No. 9974**.

Weatherproof Metallic Terminal Box, in accordance with paragraph 26.3.1, **GAI-Tronics No. 10436-002**.

Weatherproof Non-Metallic Terminal Box, in accordance with paragraph 26.3.2 **GAI-Tronics No. 10499-001**.

31.6 ACCESSORIES

Tone/Speech Generator, in accordance with paragraph 25.2, **GAI-Tronics No. 10959-003**.

Manual Telephone Interface, in accordance with paragraph 26.1, **GAI-Tronics No. 370-201**.

Indoor Page/Party® to Electro-Sound II Interface, in accordance with paragraph 27.1, **GAI-Tronics No. 370-202**.

Headset/Microphone Assembly, in accordance with paragraph 28.1, **GAI-Tronics No. 10401-201**.

Extension Cable with Remote Page Switch, (for use with Headset), in accordance with paragraph 29.1, **GAI-Tronics No. 10416-103**.

# Drawing Symbols ‑ Multi Party Stations

* 1. **Wall Stations, Indoor, Multi Party**

*Numeral denotes symbol type as listed below.*

WS

**1** Model 7005‑102

MI

**2** Model 7005‑104 with Auxiliary Receptacle

(7005-102)

**\*** Options available for 32.1 include:

**- 15,** 15 ft. PVC Coil Cord (Models 1,2) **- H2,** 25 ft. Hytrel Coil Cord

**- 25,** 25 ft. PVC Coil Cord (Models 1,2) **- VC,** Volume Level Control

1. (Models 1,2)

**- H6,** 6 ft. Hytrel Coil Cord (Models 1,2) **- EP,** Epoxy Coating

**- H1,** 15 ft. Hytrel Coil Cord **- TR,** Tropicalization, Coating

**- PL,** Plasite Coating

* 1. **Wall Stations, Weatherproof, Multi Party**

*Numeral denotes symbol type as listed below.*

WP

**1** Model 7305‑103 with Metallic Enclosure

MI-H6

**2** Model 7305‑104 with Non‑Metallic Enclosure

(7305-103-H6)

**3** Model 7305‑106 Metallic with Aux Receptacle

**4** Model 7305‑107 Non‑Metallic with Aux Receptacle

\* Options available for 32.2 include:

**- 15,** 15 ft. PVC Coil Cord (Models 1,2,3,4) **- SK,** Spring Kit

**- 25,** 25 ft. PVC Coil Cord (Models 1,2,3,4) **- EP,** Epoxy Coating

**- H6,** 6 ft. Hytrel Coil Cord (Models 1,2,3,4) **- H1,** 15 ft. Hytrel Coil Cord

**- H2,** 25 ft. Hytrel Coil Cord **- PL,** Plasite Coating

**- VC,** Volume Level Control (Models 1,2,3,4)

* 1. **Portable Stations, Multi Party & Jack Station**

PS

*Numeral denotes symbol type as listed below.*

**1** Model 770‑202 Portable Station

1 or 2

**2** Model 770‑204 Portable Station with Aux Receptacle

**3** Model 773 Weatherproof Jack Station

J

\* Options available for 32.3 include:

**- 15,** ft. PVC Coil Cord (Models 1,2) **- H1,** 15 ft. Hytrel Coil Cord (Models 1,2)

**- 25,** 25 ft. PVC Coil Cord (Models 1,2) **- EP,** Epoxy Coating

**- H2,** 25 ft. Hytrel Coil Cord (Models 1,2) **- TR,** Tropicalization, Coating (Models 1,2)

**- H6,** ft. Hytrel Coil Cord (Models 1,2) **- PL,** Plasite Coating

* 1. **Hazardous Area Stations, Multi Party**

*Numeral denotes symbol type as listed below.*

HS

**1** Model 7805‑001, Indoor

MI

**2** Model 7855‑001, Weatherproof, Non‑Metallic Enclosure

\* Options available for 32.4 include:

**- 15,** 15 ft. PVC Coil Cord **- EP,** Epoxy Coating

**- 25,** 25 ft. PVC Coil Cord **- TR,** Tropicalization, Coating

**- SK,** Spring Kit Model 2 **- PL,** Plasite Coating

* 1. **Desktop Station, Multi Party, Model 7265‑102**

DT

\* Options available for 32.5 include:

**- 15,** 15 ft. PVC Coil Cord **- VC,** Volume Level Control

M

**- 25,** 25 ft. PVC Coil Cord **- EP,** Epoxy Coating

**- H6,** 6 ft. Hytrel Coil Cord **- TR,** Tropicalization, Coating

**- H1,** 15 ft. Hytrel Coil Cord **- EX,** Extended Subset Cable, up to 50 ft.

**- H2,** 25 ft. Hytrel Coil Cord **- PL,** Plasite Coating

* 1. **Desk‑edge Station, Multi Party, Model 7105‑104**

DE

\* Options available for 32.6 include: (same as section 32.5)

M

* 1. **Flush‑mount Station, Multi Party, Model 7155‑104**

FMM

\* Options available 32.7 include: (same as section 32.5)

M

* 1. **Wall Receptacle and Extension Cable for Desktop, Desk‑edge, and Flush‑mount Stations, Model 12587**

WR

* 1. **Speaker Amplifiers**

*Numeral denotes symbol type as listed below.*

A

**1** Model 750‑401, Indoor

1

**2** Model 760‑001, Weatherproof, Metallic

**3** Model 760‑003, Weatherproof, Non‑Metallic

**4** Model 670‑001, Indoor Hazardous Area

\* Options available 32.9 include:

**- VC,** Volume Level Control (Models 1,2,3) **- PL,** Plasite Coating

**- EP,** Epoxy Coating **- SK,** Spring Kit (Models 2,3,5,6)

**- TR,** Tropicalization, Coating

* 1. **Line Balance Assembly, Model 305‑001**

L

\* Options available for 32.10 include:

**- EP,** Epoxy Coating

**- TR,** Tropicalization, Coating

**- PL,** Plasite Coating

* 1. **Horn/Driver/Mounting Assembly**

*Numeral denotes symbol type as listed below.*

1

**1** Models 13340 Horn, 13314 Driver, 12526 U‑Bracket and

411A Mounting Assembly

**2** Models 13304 Horn, 13314 Driver and 411A Mounting Assembly

**3** Models 13302 Horn, 13314 Driver and 411A Mounting Assembly

NOTE: For Division 1 Hazardous Areas substitute Models 13310 Driver and 415A Mounting

Assembly for those listed above. *An (x) denotes hazardous driver and*

*mounting assembly.*

**4** Models 13306 Horn, 13314 Driver and 414 ounting Assembly

**5** Models 13305 Bidirectional Horn, 13314 Driver and

413A Mounting Assembly

NOTE: For Division 1 Hazardous Areas substitute Models 13310 Driver for

those listed above.

*An (x) denotes hazardous driver.*

\* Options available for 32.11, Models 13305, 13306 and Mounting Assemblies include:

**- EP,** Epoxy Coating

**- PL,** Plasite Coating

1

* 1. **Speakers w/Integral Driver and Mounting Assembly**

*Numeral denotes symbol type as listed below.*

**1** Model 13350 Speaker

**2** Models HP15-8 Speaker and 412B Mounting Assembly

**3** Models 13309 Speaker and 411A Mounting Assembly

**4** Models 13328 Speaker and 412A Mounting Assembly

\* Options available for 32.12 Mounting Assemblies include: (same as section 32.11)

* 1. **Cone Speakers**

1

*Numeral denotes symbol type as listed below.*

**1** Model B406-8-W Wall Mount

**2** Model 1201A Wall Mount

**3** Model B650-8 Flush Ceiling Mount

**4** Model 1204 Flush Ceiling Mount

\* Accessories available for 32.13 include:

Model 12506‑001, Remote Volume Control. *A (v) denotes the Remote Volume Control.*

* 1. **Tone/Speech Generator, Model 10959-003**

TS

\* Options available 32.14 include:

**- S2,** 20 Word Total Speech Content **- S8,** 80 Word Total Speech Content

**- S4,** 40 Word Total Speech Content **- TR,** Tropicalization, Conformal Coating

* 1. **Terminal Boxes**

TB

*Numeral denotes symbol type as listed below.*

**1** Model 10434‑002 Indoor, 22 terminals

**2** Model 10436‑002 Weatherproof Metallic, 22 terminals

**3** Model 9974 Indoor/Outdoor, NEMA‑4, 22 terminals

**4** Model 10499‑001 Weatherproof, 38 terminals

\* Options available for 32.16, Models 10434 and 10436 include:

**- EP,** Epoxy Coating

**- PL,** Plasite Coating

* 1. **System Cable, 16‑conductor, Model 60029-101**

M

* 1. **Speaker Cable, 2‑conductor, Model 60021‑301**

B