



GAI-TRONICS®
A Hubbell Company



SmartSeries™ *solutions*





When faced with the responsibility of upgrading your plant communication system...or with the task of designing or recommending an Emergency Notification System for your facility...GAI-Tronics SmartSeries™ systems offer a smart solution.

After 60 years' experience in producing rugged and reliable communications systems for industrial and hazardous environments, GAI-Tronics knows what it takes to keep a communication system running smoothly. We used this experience in designing the microprocessor-based SmartSeries™ System, the intelligent way to address all of your communication, supervision, and notification needs.

SmartSeries™ systems are fully adaptable to a variety of facility sizes, from a few handsets to several hundred. Using SmartLink technology, multiple independent communication systems can be interfaced and monitored from a central location.

The same features that improve operational communications assume even greater significance in an Emergency Notification System:

- Broadcast of up to 100 alarm tones and pre-recorded speech messages, all custom configured.
- The **ID feature** identifies the specific station generating a page, so that control room personnel can locate the source of the emergency.
- The **Emergency Party Line** feature automatically connects the SmartSeries station to the Control Room, as well as identifying the specific station, to locate the source of the emergency.
- The **Priority Page feature** allows a control room operator to override operational communication to issue priority pages to emergency response personnel, or to issue live updates to the emergency situation.
- The **SmartStatus feature** provides a graphical user interface to the system, allowing quick location of emergency pages or reports. **SmartView** provides a graphical representation of the facility and communication system.
- GAI-Tronics' **SmartVolume** technology ensures that even in the presence of high ambient noise levels, employees will hear important emergency announcements.
- **Auxiliary Input/Output** features allows alarm initiation and auxiliary device activation from the field stations.

SmartSeries™ system field devices utilize the latest technology in data communications to significantly improve system integrity and functionality. By interfacing with the SmartSeries™ control unit, the devices exchange fault and activity messages. The SmartView feature provides a graphical display of the entire communication system, making the system very user-friendly.

Current faults are displayed or logged, depending on the system configuration, to provide maintenance personnel a means to diagnose equipment problems. For example, a handset left off-hook can degrade an audio channel. To alleviate this problem, the stations report this condition and are programmed to go electronically on-hook after a pre-set time period configured at start up.

Other system functions monitored by the control unit include use of the page line, integrity of the system cable, and the functionality of the station amplifier and associated speakers. Supervision of these features significantly reduces the costs associated with maintaining your communication system.

With emergency notification as a major industrial concern, GAI-Tronics offers the ADVANCE Emergency Notification System. The ADVANCE Control Unit interfaces with GAI-Tronics standard Page/Party® or SmartSeries™ stations to provide all of the features required for an Emergency Notification System that you and your employees can depend on to give you peace of mind.

- Station off-hook status monitored
- Page and off-hook duration limited to prevent nuisance pages and open microphone problems
- SmartVolume feature automatically adjusts station speaker volume according to background noise
- Self-diagnostics monitor status and report problems with speaker amplifier, speaker voice coil, cable path, and handset amplifier
- Priority page allows important messages to override operational communications. Different priorities are available for normal and alarm modes
- Hazardous Area Approvals
 - UL/cUL (Division 1 and Division 2)
 - ATEX (Zone 1 and Zone 2)



Desktop Station



Flush-mount Station



Indoor Speaker Amplifier



Outdoor Station

Indoor/Outdoor Handset Stations and Speaker Amplifiers

SmartSeries™ Indoor/Outdoor Handset Stations offer communication and monitoring features for use in the GAI-Tronics SmartSeries™ System. The stations interface with the SmartSeries™ Control Unit, exchanging information including station health check and the status of the associated speaker. These stations are equipped with GAI-Tronics' SmartVolume feature to automatically adjust speaker volume by measuring ambient noise levels.

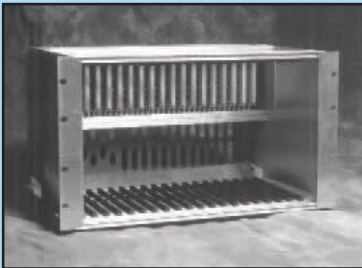
Indoor/Outdoor Stations with RTU

The SmartSeries™ Remote Terminal Unit (RTU) Station provides the added benefit of interfacing with the SmartSeries™ Control Unit to monitor inputs such as pullboxes or smoke detectors, and activate outputs such as strobes. A typical installation allows the user to initiate alarms or signal equipment starts by pressing a remotely located pushbutton (up to twenty feet from the enclosure). The system recognizes the input and proceeds as configured by the system software.

Indoor/Outdoor Stations with Emergency Party Line

SmartSeries™ Indoor/Outdoor Emergency Party Line stations are designed especially for use in emergency notification systems. The stations interface with the SmartSeries™ Control Unit, exchanging information including station off-hook status, page detection, and station health check. The Emergency Party Line stations offer the added benefit of reporting use of Party Lines #1 and #2. This feature is essential when reporting life critical events or for providing hot-line service to a central command center.

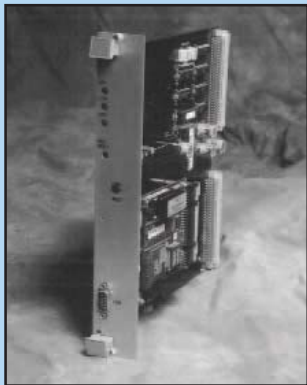
SmartSeries™



Card Rack Assembly

The Card Rack Assembly is the central component for the SmartSeries™ system. It houses the control, audio generation and interface assemblies for the system. Two power supply formats are available: universal AC and 48 VDC.

The Card Rack Assembly supports a total of eighteen SmartSeries™ plug-in cards. Two of the card slots are dual format. The remaining slots accept single width cards. All of the cards described in this brochure may be installed in the assembly.



Master Control Unit (MCU)

The Master Control Unit (MCU), the central processing component of the SmartSeries™ system, coordinates and processes all system functions.

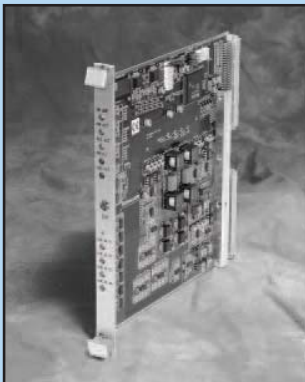
Pre-loaded with system software, the MCU includes system configuration information stored on a solid state disk. During start-up, the MCU executes all system operations based on the programmed configuration.

The MCU maintains constant communication with the Card Rack interface assemblies through an ISA PC style bus structure. Static conditions (e.g., Page/Party® Interface line in-use status) are monitored by the MCU through this mechanism. Data communications to field devices are supported by this mechanism and the specialized data port of each interface.

External Audio Interface (EAI) Audio Messenger Interface (AMI)

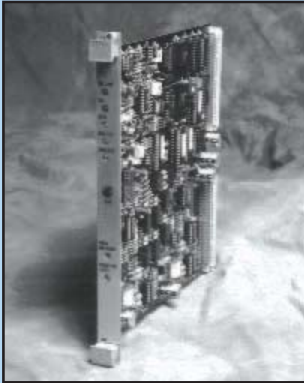


The External Audio Interface (EAI) allows multiple audio paths to be interfaced to a SmartSeries™ system. The EAI works in concert with the Audio Messenger Interface (AMI) to route alarms and pre-recorded speech messages. The EAI supports 4 external audio inputs. These inputs may be independently routed to one of the following five card rack audio busses: evacuation, page resource 1, page resource 2, party line 1, or party line 2. Additionally the EAI provides 2 audio outputs that may be independently routed from one of the following four card rack audio busses: page resource 1, page resource 2, party line 1, or party line 2. The EAI contains a 1.00 kHz sine wave detector for use in the supervision of several internal audio paths.



The Audio Messenger Interface (AMI) provides pre-recorded alarm tones, pre-recorded speech messages. The tones include typical emergency tones (i.e., a siren, slow whoop, etc.) and signaling or process tones (i.e., a gong, steady tone, etc.). All of the tones and speech messages broadcast by the AMI are stored in MP3 file format. For applications where a needed tone is not supplied, any tone recorded or stored in an MP3 file format can be used with the AMI. The telephone interface option allows users to access the SmartSeries™ system for page and party line communication through a telephone.

SmartSeries™



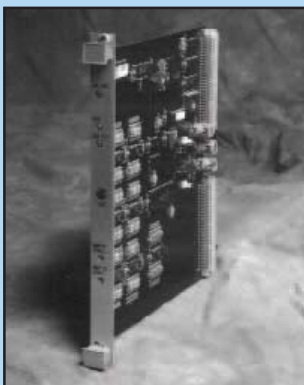
Page/Party® Interface (PPI)

The Page/Party® Interface (PPI) is used to route audio to Page/Party® and SmartSeries™ field equipment connected to a Page/Party® system cable with interrogation for up to 200 SmartSeries™ devices and/or numerous Page/Party® stations. A data communications port supports interrogation of the addressable devices by the Master Control Unit (MCU).

System page operation to/from the Page/Party® area is sequenced by the MCU through use of the Card Rack Assembly page resources. The internal page audio path is supervised when not in use. Two Card Rack party line connections support MCU system merge/isolate party operations. The corresponding Page/Party® party lines are monitored for in-use status.

The PPI monitors the Page/Party® page line and one party line for faults that degrade audio quality. Faults may be attributed to continuity to ground, wire-to-wire shorts or open circuit conditions. Detection of short or open conditions require an end of line device to be placed at the end of each circuit branch.

Amplifier Zone Interface (AZI)



The Amplifier Zone Interface (AZI) is used to route Card Rack page audio to twelve power amplifiers. These amplifiers may feed from one to twelve speaker-loops.

The AZI supports Master Control Unit (MCU) selection of any of the 12 audio outputs for three simultaneous page operations: two page broadcasts and audio supervision. Two output level settings are provided for normal or emergency page broadcasts. In addition, the interface supports ten SmartSeries™ devices through a data communications port. These devices are interrogated by the MCU.

Supervision of any amplifier audio path requires the use of one or more Amplifier Distribution/Monitor Modules (ADM). To test the systems' amplifier and speaker loop integrity a high frequency inaudible test tone is routed to the amplifier and associated speaker-loops when the circuit is not in use. The ADM monitors the return path for faults that degrade audio quality. Faults may be attributed to continuity to ground, wire-to-wire shorts or open circuit conditions.

SmartSeries™



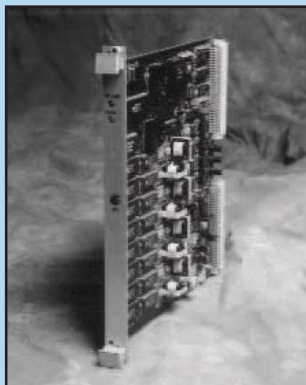
Access Panels

S SmartSeries™ Access Panels provide an operator interface for alarm control, speech communications and system status monitoring. Four models of Access Panels address a variety of customer requirements.

Console models include an integral display, handset and programmable switch/lamp array. Rear connections are available for remote amplified speaker and sounder attachments. These models are available with 15 or 25 switch configuration. **Desktop models** include a handset, integral speaker and 15 programmable switch/lamp elements. One model includes 27 configurable pushbuttons and supports a docking base with integral display.

The handset supports paging and/or party line communications as determined by the system configuration. Models with a display include a vacuum fluorescent display (VFD), acknowledge switch sounder and lamp, and previous switch. The VFD allows operator review of textual system status messages including system alarm initiation, faults and operation information. A sounder and lamp alert the operator of system status changes.

Access Panel Interface Card (API)

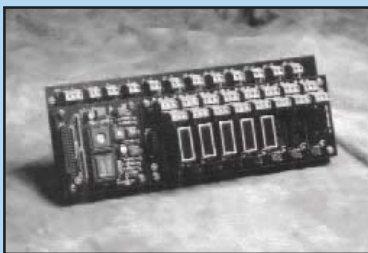
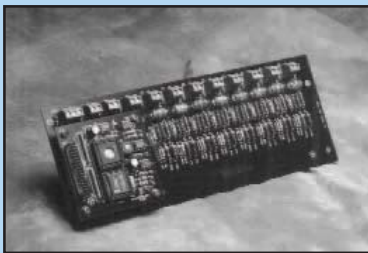
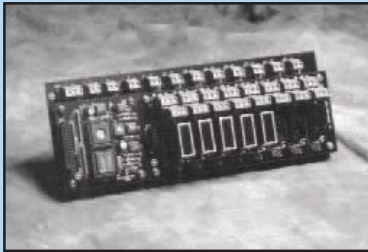


The Access Panel Interface (API) supports the deployment of eight customer configured Access Panels. These panels provide operator-machine interface for SmartSeries system alarm, page, party and status operations.

The Master Control Unit (MCU) interrogates and establishes audio connections for each of the eight (8) Access Panels through each API. The line connection to the panel is one twisted pair. This line supports one-way speaker output audio (page output), two-way handset audio (page and party), and data communications.

Each API provides digital switching, conferencing and conversion capabilities to support one analog and four digital party lines, and two analog page lines. The API page and party lines connect to the Card Rack resources.

Monitored Relay Module (MRM) Monitored Input Module (MIM) Amplifier Distribution Module (ADM)



The **Monitored Relay Module (MRM)** controls relays typically used for alarm notification, such as strobe lights to supplement alarm broadcasts. The MRM supports line supervision to the notification appliance when it is not in use.

The MRM is capable of supplying and supervising eight (8) relay circuits. Any outputs that are not utilized may be configured for use as an alarm initiation input. Each line may be configured independently for its intended use. All lines are supervised for open circuits and ground faults. Indication and single device configurations monitor short circuit conditions.

The MRM transmits and receives data via RS485 when deployed as a stand-alone module. Data communication is accomplished by FSK for RTU applications.

The **Monitored Input Module (MIM)** interrogates switch status changes for an alarm initiation request or various line fault conditions.

The MIM is capable of supervising eight (8) alarm initiating lines for such use as alarm pull box loops. Each line may be configured independently to monitor single or multiple switch activation or deactivated if not used. All lines are supervised for open circuits and ground faults. The single device configuration monitors short circuit conditions.

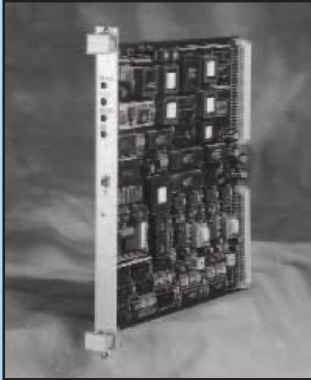
The MIM transmits and receives data via RS485 when deployed as a stand-alone module. Data communication is accomplished by FSK for RTU applications.

The **Amplifier Distribution Monitor/Module (ADM)** distributes the audio level to amplifiers and monitors the return speaker loop integrity and amplifier fault status condition. The ADM is used to distribute audio to up to six central amplifiers. The ADM also verifies the integrity of the related speaker loops and monitors up to six amplifier failure contacts, reporting their status to the MCU.

The ADM's speaker loop inputs detect various fault conditions on up to six speaker loops. These fault conditions include ground faults, cable breaks and wire-to-wire short circuits (while associated amplifier is not in use), and amplifier failures.

The ADM's contact closure inputs are typically used to monitor the contacts of the central amplifiers to determine amplifier failure.

SmartSeries™



SmartLink Network Connection

Larger facilities with many communication points frequently use multiple SmartSeries™ Control Units. These customers benefit from the use of our SmartLink technology because the systems can be combined for page and party line communication, and for the exchange of system status data.

Use of this feature requires a Voice Network Adapter Interface Card, shown at left, and an Ethernet card mounted on each MCU Card.

SmartView/Portal Graphical User Interface



Standard SmartSeries™ systems provide a printout of equipment and system status. Customers who prefer a flexible PC platform utilize the SmartView/Portal Graphical User Interface. Via a dedicated PC, SmartView/Portal provides an interactive tool for monitoring system and equipment status in real-time.

Use of this feature requires a dedicated PC for the Portal Server application.



Smart Services

GAI-Tronics offers system support agreements in four flexible coverage plans designed to meet the facility needs. Key features of these plans are:

- 24 Hour Telephone Support
- On-Site Emergency Support
- Advance Replacement of Critical Spares
- System Support and Maintenance Training for Quick Restore
- Software Support

Our Services Bring Peace of Mind



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Quality Management Systems Certified - ISO9001:2000

The policy of GAI-Tronics® is one of continuous improvement, therefore the company reserves the right to change specifications without notice