FEDERAL SIGNAL
Safety and Security Systems

PAGASYS® GEN II

Public Address and General Alarm System
Model: P-SYS-G

Description, Installation, Operations and Maintenance Manual

Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.

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1.0 Safety Messages

⚠ WARNING

This equipment should be installed, adjusted, and serviced by qualified technicians familiar with the construction and operation of the equipment and the hazards involved.

Read, understand, and follow all of the warnings provided in the Safety Messages section of this instruction manual, before servicing the system. Failure to do so could result in personal injury, bodily harm, or death to you or others.

Shock Hazard Warning

Hazardous voltages applied to the Controller Chassis may cause severe injury or death. Verify AC and DC power is disconnected before performing installation or service procedures.

Static Protection Notice Warning

The printed circuit cards used in this equipment contain static sensitive components. Observe the warnings listed below to prevent damage to these components. Disregarding any of these warnings may result in personal injury or damage to the equipment.

• Strictly adhere to the procedures provided in this document.

• Before touching any static sensitive component or printed circuit card containing such a component, discharge all static electricity from yourself by wearing a wrist strap grounded through a 1 Megohm resistor.

• Do not touch the traces or components on a printed circuit card containing static sensitive components. Handle the printed circuit card only by the edges that do not have connector pads.

- After removing a printed circuit card containing a static sensitive component, place the printed circuit card only on conductive or anti-static material (such as conductive foam, conductive plastic, or aluminum foil). Do not use ordinary Styrofoam or ordinary plastic.

- Store and ship static sensitive devices or printed circuit cards containing such components only in static shielding containers.

- If necessary to repair a printed circuit card containing a static sensitive component, follow these guidelines:

    - Wear an appropriately grounded wrist strap

    - Work on a conductive surface

    - Use a grounded soldering iron

    - Use grounded test equipment

2.0 General Description

2.1 Introduction

This document is a description of the features, installation, operation, and maintenance of the PAGASYS GEN II Public Address and General Alarm System. The PAGASYS GEN II system provides robust public address and general alarm services for use in a variety of environments, including, but not limited to, offshore petrochemical facilities, onshore petrochemical facilities, and onshore industrial facilities.

2.2 Overview

The public-address functions include the broadcasting of live-voice announcements from one or more microphones across all or selected areas of the facility. The general alarm functions include the broadcasting of pre-recorded alarm tones or voice messages across all or selected areas of the facility. These general alarm functions are in response to alarm conditions initiated manually, or by third party automatic equipment (such as fire and gas detection, process monitoring or other safety monitoring systems). The system also supports non-emergency, pre-recorded messages for routine operational events. The above functions are supplemented by visual indication through beacons, status lamps and so forth, as required.

System robustness is maintained though redundant system architectures, comprehensive fault monitoring functions, and automatic re-routing of audio signals and control signals to bypass failed components.

PAGASYS GEN II is a rack-mounted, software-controlled system that can incorporate duplicate control systems and redundant/protected audio signaling.

2.3 System Architecture

PAGASYS GEN II consists of one or more central equipment cabinets.

These cabinets contain:

- **Control Subsystem**: Manages and monitors the components of the system.

- **Power Amplifiers**: Generate amplified electrical audio signals to speaker line level (typically 100 V or 70 V) and have a typical continuous power output of several hundred watts.

- **Audio Subsystem**: Contains audio routing and mixing, alarm tone generation, audio message stores and other related audio processing.

- **I/O Subsystem**: Interfaces to field and third-party equipment.

A standard PC is often installed in the central equipment cabinet for configuration, test and fault reporting. It is not required for the normal operation of the system.

The system has field equipment, including:

- **Loudspeakers:** Convert the electrical audio signal from the amplifiers into a corresponding sound.

- **Beacons and Status Lamps:** Supplement audio broadcasts in areas of high ambient noise with visual signaling.

- **Access Panels and Microphone Stations:** Include microphones and push-button controls.

Redundancy is one of the techniques employed to ensure the robustness of a system, allowing it to perform its functions in the event of component or subsystem failure. Redundancy relies on three features:

- The provision of duplicated subsystems, components, and interconnections

- The ability to detect the failure of the above

- The ability to re-route control and audio signals in response to such a failure

Figure 1 System Architecture
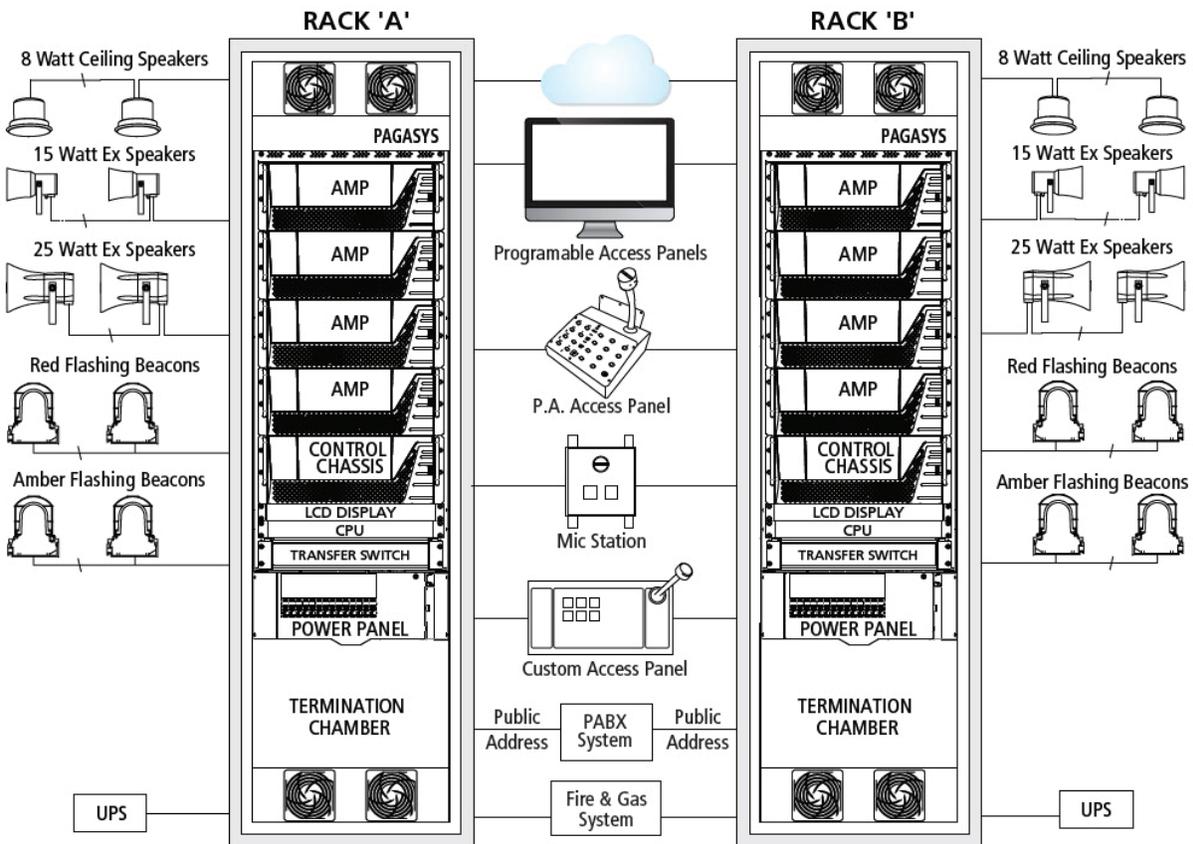
2.4 Features

The PAGASYS GEN II system has the following features:

- System Manager application provides real-time system status, including event logs, system activity, broadcast status, impedance speaker monitoring, fan flow, and amplifier temperature status

- A single Controller can support up to thirty-two 1200 W Amplifier Chassis

- Supports multi-voice audio, driving up to 6 voices concurrently up to 128 zones

- DSP-based Audio

- Up to 32 access panels per system

- Supports Intelligent Speaker Monitoring and Tapping (ISMT)

- Non ISMT speaker number is limited only by the total power of the amplifier

- Up to 32 speakers per loop (with ISMT)

- Audio "ducking" for clear voice communication over a sounding alarm

- Up to 128 zones

- Up to 32 external audio inputs

- Up to 128 recorded messages

- Seven broadcast categories with unlimited priority levels

- Front cabinet access for ease of maintenance

- Web-based GUI interface for ease in configuration and monitoring

- Programmable logging of calls and fault events, for example:

  - Access Panels

  - Amplifier standby routing

  - PABX interface

- DNV Type Approved and CE Certified as a Public Address and General Alarm System, using the standards DNVGL-CG-0339, the relevant parts of IEC60945 Ed. 4 for protected equipment, and EN 61000-3-2:2006, EN 61000-3-3:1995, EN 55103-2:2009

2.5 Components

2.5.1 Cabinet

The PAGASYS GEN II Cabinet is available in 120 Vac or 240 Vac versions. The cabinet models include the following:

- Controller Chassis (except for the P-SYS-G-AMPS-5KW-x cabinets)

- Standard I/O cards (See Table 23.)

- Configured and wired to enable support of the respective number of amplifiers. (Amplifier Chassis are ordered separately from the cabinet.)

Models P-SYS-G-CNTL-2KW-120 and P-SYS-G-CNTL-2KW-240

Models P-SYS-G-CTNL-2KW-120/P-SYS-G-CTNL-2KW-240 are configured to support a control chassis and two Amplifier Chassis, and include the control chassis and standard I/O cards in the standard configuration.

Models P-SYS-G-CNTL-4KW-120 and P-SYS-G-CNTL-4KW-240

Models P-SYS-G-CTNL-4KW-120/P-SYS-G-CTNL-4KW-240 are configured to support a control chassis and four Amplifier Chassis, and include the control chassis and standard I/O cards in the standard configuration.

Models P-SYS-G-AMPS-5KW-120 and P-SYS-G-AMPS-5KW-240

Models P-SYS-G-CTNL-5KW-120/P-SYS-G-CTNL-5KW-240 are configured to support five Amplifier Chassis, do not include a control chassis, and include only the standard I/O cards needed for audio distribution. This model of cabinet requires an external connection to a control chassis in a control cabinet for command and control.

Figure 2 PAGASYS GEN II Cabinet

2.5.2 Controller Chassis

The Controller Chassis includes the Controller Backplane and the Controller daughter cards. (See Figure 3) The Controller Backplane provides the electrical power and signal interconnections between the various controller daughter cards or modules to form a complete Controller. Table 1 lists the Controller Chassis and Backplane models.

Figure 3 Controller Chassis (P-NET-G)
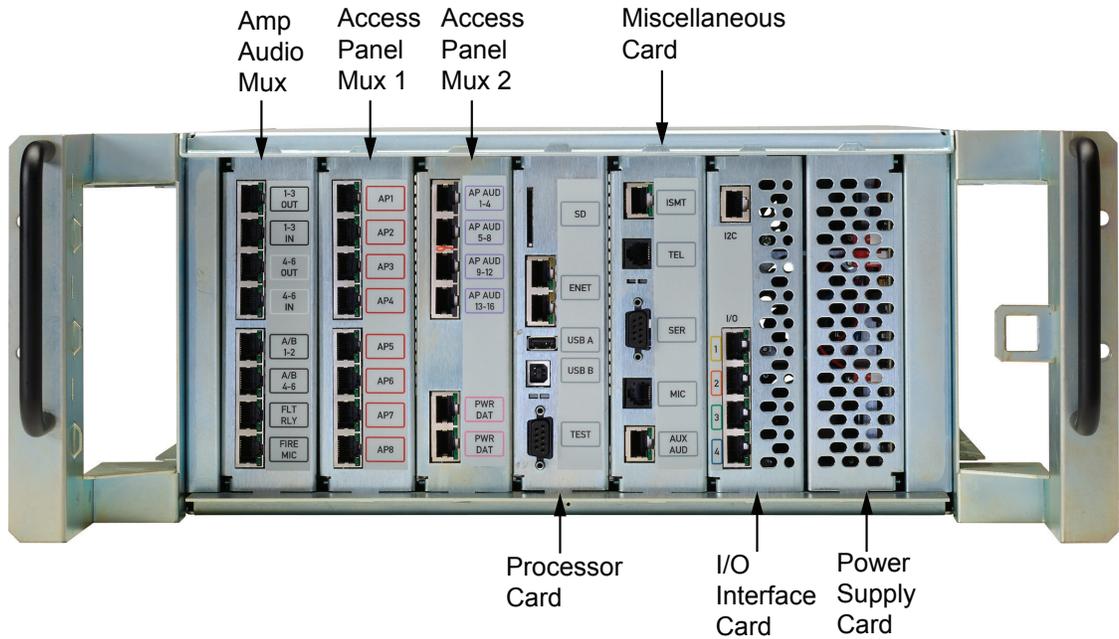
Table 1 Controller Models

Model	Description
P-NET-G	Controller Chassis
K20000170	Controller Backplane Service Model

Table 2 Environmental and Physical for the Controller Chassis (P-NET-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
Controller Chassis Dimensions (H x W x L)	197 mm x 356 mm x 375 mm
Weight	10.6 kg/23.44 lb

2.5.3 System Controller Backplane (20000170)

The System Controller Backplane (20000170) provides the electrical power and signal interconnections between the various controller cards to form a complete System Controller. (See Figure 4.)

NOTE: The service model for the System Controller Backplane is K20000170.

Figure 4 System Controller Backplane (20000170)

Table 3 lists the PAGASYS GEN II controller cards that can be inserted into the backplane.

Table 3 Controller Cards

Model	Description	Backplane Slot
P-ADPS-G	Power Supply Card (120/240 VAC)	Power supply
P-CPC-G	Controller Card (DSP/ARM)	Processor
P-AAMC-G	Amplifier Audio Mux Card	Amp Audio I/O Mux
P-IAMC-G	Internal AP Mux Card	AP Mux slot 1 or 2
P-EAMC-G	External AP Mux Card	AP Mux slot 1 or 2
P-CMC-G	Miscellaneous Card	Miscellaneous
P-IOIC-G	I/O Interface Card	I/O interface

2.5.4 Controller Backplane Specifications

Table 4 Environmental and Physical for the Controller Backplane (20000170)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
Controller Backplane Dimensions (H x W x L)	177 mm x 483 mm x 476 mm
Weight	0.57 kg/1.25 lb

2.5.5 Power Supply Card (120/240 Vac) (P-ADPS-G)

The Power Supply card is the primary power supply for the AC-powered Controller Chassis. (See Figure 5.) This card supports universal 90 to 264 Vac voltage input, with onboard AC fusing.

The Controller Power Supply card addresses the system controller chassis's various DC power needs. The card provides 24 Vdc, 12 Vdc, 5 Vdc, and 3.3 Vdc power on separate power rails.

This card also provides control and monitoring of the chassis's temperature. The Power Supply card stores card information, including card serial number, part number, and date of manufacture.

NOTE: The service model for the System Controller Power Supply card is K-P-ADPS-G.

Figure 5 Power Supply Card (120/240 Vac)(P-ADPS-G)
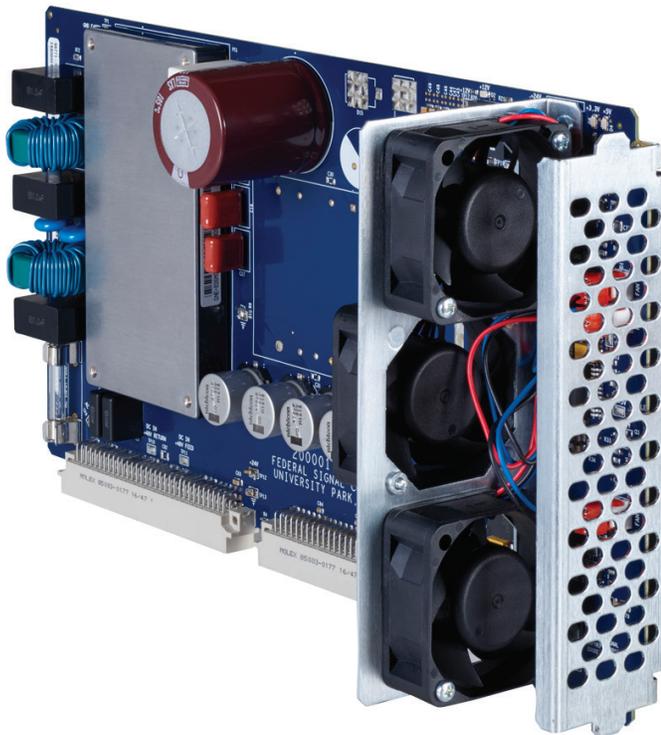
Table 5 Environmental and Physical for the Controller Power Supply Cards (P-ADPS-G and P-ADPS-G-01)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-ADPS-G Dimensions (H x W x L)	45 mm x 343 mm x 171.9 mm
Weight	0.83 kg/1.83 lb

Table 6 Electrical Specifications for the Power Supply Card (P-ADPS-G)

AC supply input voltage range		85–264 V$_{RMS}$
AC supply input Frequency		50/60 Hz
Max Input Current Draw 115 V input 230 V input		 3.2 A 1.6 A
DC power supply rail	**Parameter**	**Output Voltage / Current**
24 Vdc rail	Output voltage range Max Output current	23.7 V–24.9 V
12 Vdc rail	Output voltage range Max Output current	11.7 V–12.3 V
5 Vdc rail	Output voltage range Max Output current	4.9 V–5.2 V
3.3 Vdc rail	Output voltage range Max Output current	3.3 V–3.4 V

2.5.6 Controller Processor Card (DSP/ARM) (P-CPC-G)

The Controller Processor card (P-CPC-G) uses an Advanced RISC Machine (ARM) processor and a Field-Programmable Gate Array (FPGA) based Universal Asynchronous Receiver/Transmitters (UARTs) to serve as a hub for all data communication and to coordinate the main control functions required by the PAGASYS GEN II system. (See Figure 6.) The Controller Processor card also contains a Digital Signal Processor (DSP) to carry out all digital audio processing.

In addition to the UART communication interfaces, the Controller Processor card also includes a network switch, a SATA interface for an on-board hard disk (for primary and backup data storage), and an SD card interface.

The Controller Processor card also provides an interface for an optional Digital Audio Network Through Ethernet (Dante) module to provide up to 16 channels of bi-directional digital streaming over an Internet Protocol (IP) network.

For external communications, the Controller Processor card contains several communications interfaces, including an Inter-Integrated Circuit (I²C) bus, USB Master/ Slave interfaces, and an RS232 port.

The card includes a battery holder for a 3 V Lithium CR16xx coin battery cell, which supports the processor card real-time clock when power is removed from the Controller Chassis. The processor card is shipped with the battery inserted in the battery holder, but the battery is not operational until the Mylar insert is removed from the battery. See the Controller Chassis Operations section of this document for the procedure to remove and replace the battery.

The Controller Processor card uses a watchdog circuit to monitor processor operation and reset the processor if the watchdog timer is not updated.

NOTE: The service model for the System Controller Processor card is K-P-CPC-G.

Figure 6 Controller Card (DSP/ARM) (P-CPC-G)
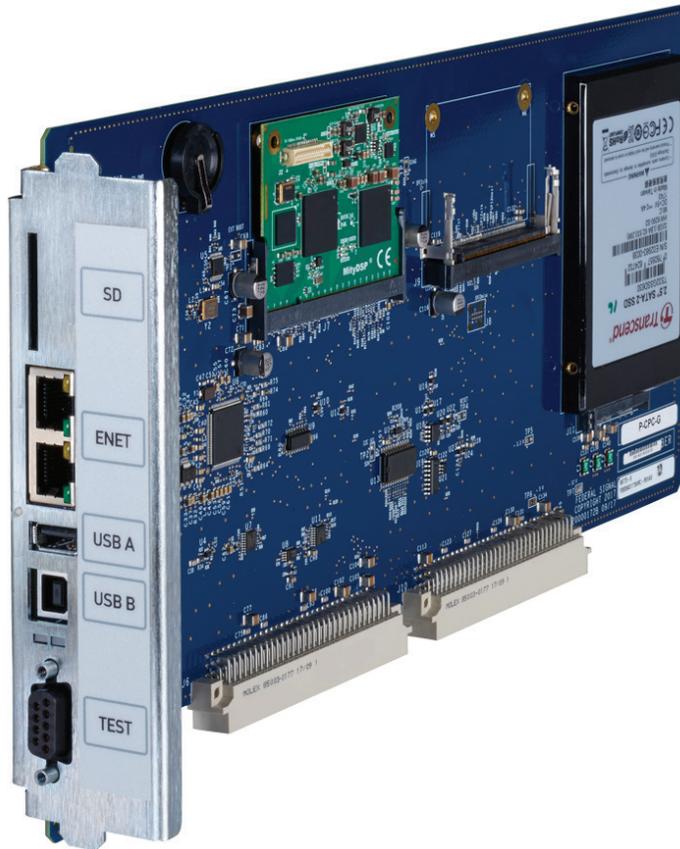
Table 7 Environmental and Physical for the Controller Processor Card (P-CPC-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-CPC-G Dimensions (H x W x L)	45 mm x 343 mm x 171.9 mm
Weight	0.42 kg/0.92 lb

2.5.7 Amplifier Audio Mux Card (P-AAMC-G)

The Amplifier Audio Multiplexer card (P-AAMC-G) provides an interface to connect a System Controller to its associated Amplifiers. (See Figure 7.) In addition, the P-AAMC-G provides the interface needed to connect two System Controllers to form N+1 redundant PAGASYS GEN II system.

The P-AAMC-G provides eight buffered Analog to Digital Converter (ADC) channels to digitize incoming analog input audio for subsequent DSP audio processing. The eight audio inputs include six audio inputs received through the A/B connection from another System Controller, one audio input from the local microphone preamplifier located on the Miscellaneous (P-CMC-G) card, and one audio input from the Private Automatic Branch Exchange (PABX) interface on the Miscellaneous card.

The P-AAMC-G provides an audio Digital-to-Analog Converter (DAC), which provides 14 buffered analog output channels that are routed to the following circuits:

- Six Audio inputs of local Amplifier Chassis

- Six Audio inputs of another System Controller through the A/B connection

- Controller Chassis audio auxiliary output

- Controller Chassis audio PABX interface

The System Controller A/B connection supported by this card includes a full-duplex RS485 interface and six bidirectional analog audio paths. When the local System Controller is in a failure state, the P-AAMC-G enters a Fallback state that enables audio signals connected to the local audio amplifiers to be supplied by a second System Controller through the A/B connection.

The P-AAMC-G also includes the Fireman's interface for the System Controller. During normal operation, the Fireman's microphone audio is routed to the Access Panel Mux card in slot 1, where it can be digitized (P-IAMC-G or P-EAMC-G). When the P-AAMC-G card is in a Fallback state and the fireman's microphone PTT signal is active, the audio signals connected to all the local audio amplifiers are supplied from the fireman's microphone rather than the second System Controller.

NOTE: The service model for the Amplifier Audio Mux card is K-P-AAMC-G.

Figure 7 Amplifier Audio Mux Card (P-AAMC-G)
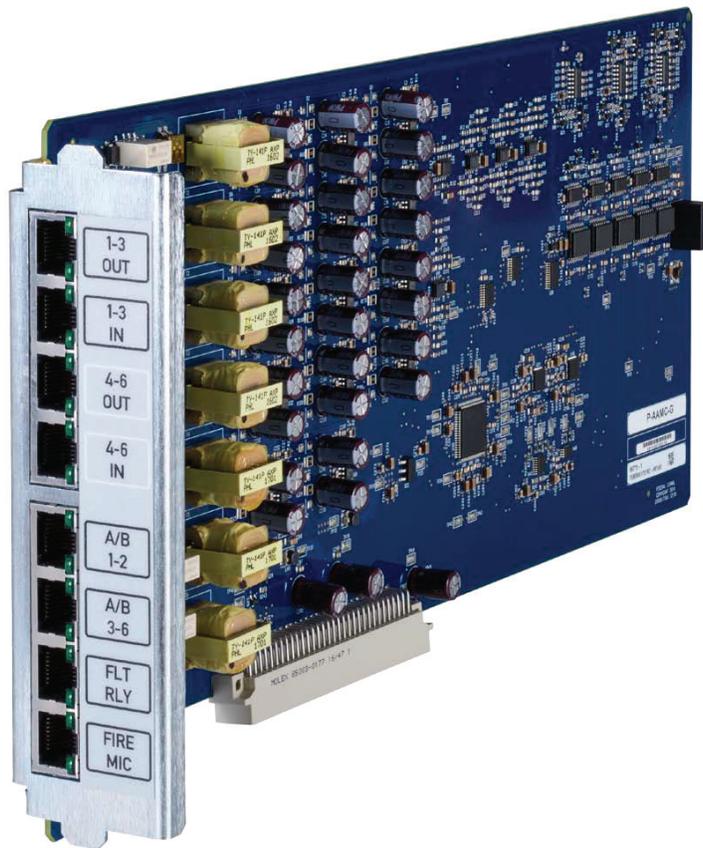
Table 8 Environmental and Physical for the Amplifier Audio Multiplexer Card (P-AAMC-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-AAMC-G Dimensions (H x W x L)	45 mm x 343.9 mm x 152.25 mm
Weight	0.41 kg/0.90 lb

2.5.8 Internal AP Mux Card (P-IAMC-G)

The Internal Access Panel Multiplexer card (P-IAMC-G) provides the interface to connect eight Access Panels or Microphone Stations to a System Controller. (See Figure 8.) Install the P-IAMC-G card in the System Controller Chassis in AP MUX slots 1 or 2, or in both slots. See the External Access Panel Multiplexer card (P-EAMC-G) for another option for these two System Controller AP MUX slots.

Access Panels connected to the P-IAMC-G are numbered differently depending on the installation of the P-IAMC-G. If installed into AP MUX slot 1, Access Panels are numbered from 1 to 8. If installed into AP MUX slot 2, the Access Panels are numbered from 17 to 24.

The P-IAMC-G communicates with remote Access Panels or Microphone Stations through eight electrically isolated full duplex RS422 serial ports. When Access Panels need to communicate with the P-IAMC-G card using field wiring, use the Passive Terminal Block card (P-PTBC-G) to convert the field wiring to a compatible RJ45 cable that can connect directly to the P-IAMC-G card.

When remote Access Panels are located in a hazardous area, use Zener safety barriers mounted on an IS Barrier card (P-IS-BARRIER-G) between the P-IAMC-G and the field wiring to provide a safe interface. You can connect two Access Panels or Microphone Stations to each IS BARRIER card.

NOTE: The service model for the Internal Access Panel Multiplexer card is K-P-IAMC-G.

Figure 8 Internal AP Mux Card (P-IAMC-G)
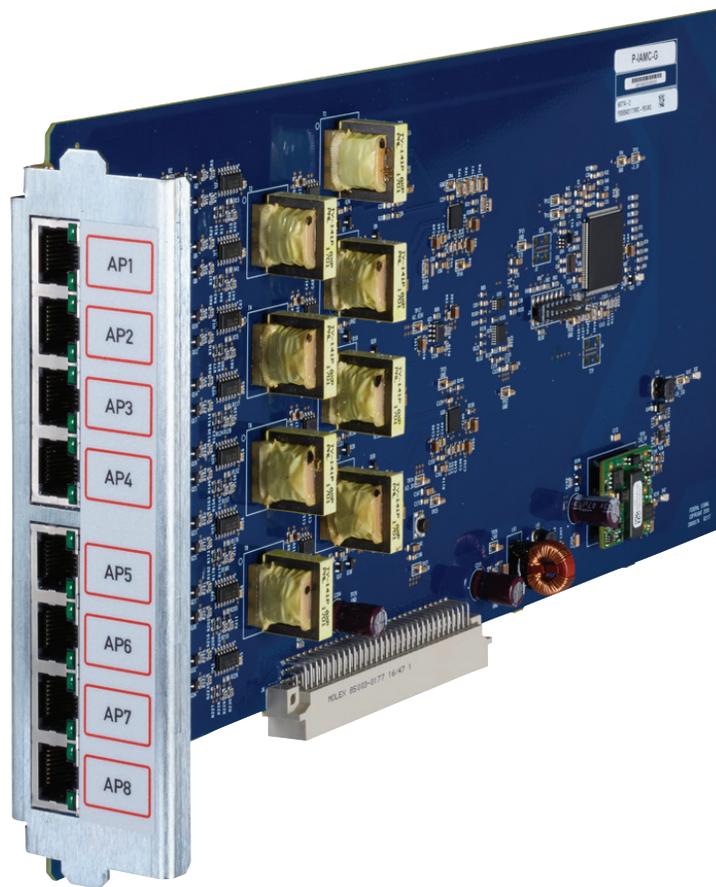
Table 9 Environmental and Physical for the Internal AP Mux Card (P-IAMC-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-IAMC-G Dimensions (H x W x L)	45 mm x 343.9 mm x 171.9 mm
Weight	0.44 kg/0.97 lb

2.5.9 External AP Mux Card (P-EAMC-G)

The External Access Panel Multiplexer card (P-EAMC-G), when combined with two Access Panel Aggregator cards (P-APIC-G), can provide the interface to connect up to 16 Access Panels or Microphone Stations to a System Controller. (See Figure 9.) Install the P-EAMC-G card in the System Controller Chassis in AP MUX slots 1 or 2, or in both slots. See the Internal Access Panel Multiplexer card (P-IAMC-G) for another option for these two System Controller AP MUX slots.

Access Panels connected to the P-EAMC-G are numbered differently depending on the installation of the P-EAMC-G. If installed into AP MUX slot 1, Access Panels are numbered from 1 to 16. If installed into AP MUX slot 2, the Access Panels are numbered from 17 to 32.

Each P-APIC-G that interfaces with the P-EAMC-G card provides up to eight electrically isolated RS422 full duplex serial ports for connection to remote Access Panel or Microphone Stations. The System Controller communicates with the microcontrollers located on up to two P-APIC-G cards through a half-duplex RS485 serial port located on the front panel of the P-EAMC-G card.

Each P-EAMC-G provides 16 buffered ADC channels for digitizing 16 audio signals produced by up to 16 remote Access Panels or Microphone Stations.

NOTE: The service model for the External Access Panel Multiplexer card is K-P-EAMC-G.

Figure 9 External AP Mux Card (P-EAMC-G)

Table 10 Environmental and Physical for the External AP Mux Card (P-EAMC-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-EAMC-G Dimensions (H x W x L)	45 mm x 343.9 mm x 171.9 mm
Weight	0.51 kg/1.13 lb

2.5.10 Miscellaneous I/O Card (P-CMC-G)

The Miscellaneous I/O card (P-CMC-G) (see Figure 10) provides several input/output (I/O) interfaces for the System Controller:

- Local Microphone

- PABX Interface Module

- Auxiliary audio interface

- ISMT RS485 Port

- RS232 command line interface for processor card DSP

The Miscellaneous I/O card provides an audio preamp for the PAGASYS GEN II local microphone. The preamplifier also provides a 20-kHz test tone, which is injected into the microphone capsule to enable critical signal path monitoring between the microphone capsule and processor card DSP. A press-to-talk (PTT) interface circuit is provided to enable monitoring of the microphone PTT button.

The P-CMC-G provides a PABX interface module for the System Controller. The PABX interface module plugs into the P-CMC-G board. Configure the PABX interface with the System Manager software to operate with a standard analog extension line or a CO trunk line. The PABX interface provides ring, call progress tone, and DTMF tone detection. The incoming and outgoing telephone audio signals are routed from the PABX interface circuit located on P-CMC-G, through the System Control backplane, and onto the Amplifier Audio MUX card, where the audio signals are converted to and from digital format respectively. The System Processor card controls and monitors the interface through a serial port connected to the microcontroller located on the P-CMC-G.

Similarly, the P-CMC-G provides an auxiliary audio interface for the System Controller. The incoming and outgoing auxiliary audio signals are routed through the P-CMC-G AUX Audio connector, through audio transformers located on the P-CMC-G, through the System Controller Backplane and onto the P-AAMC-G and the AP Mux card slot in System Controller slot 1, where the signals are converted to and from digital format respectively. A press-to-talk (PTT) interface input circuit is provided to enable monitoring of the Auxiliary audio input external PTT switch contact. A PTT interface output circuit is provided to enable remote monitoring of the Auxiliary audio output relay contact.

NOTE: The service model for the Miscellaneous I/O card is K-P-CMC-G.

Figure 10 Miscellaneous I/O Card (P-CMC-G)

Table 11 Environmental and Physical for the Miscellaneous I/O Card (P-CMC-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-CMC-G Dimensions (H x W x L)	45 mm x 343.9 mm x 171.9 mm
Weight	0.38 kg/0.84 lb

2.5.11 I/O Interface Card (P-IOIC-G)

The I/O Interface card (P-IOIC-G), provides I/O interfaces for the System Controller. (See Figure 11.)

The P-IOIC-G card provides four electrically isolated half-duplex RS485 serial port interfaces for communication with the I/O modules used in the system, and a 24 Vdc supply to power these I/O modules.

The P-IOIC-G card also provides one electrically isolated I²C bus for communication with legacy PAGASYS I/O modules, and a 24 Vdc supply to power the I/O modules.

NOTE: The service model for the I/O Interface card is K-P-IOIC-G.

Figure 11 I/O Interface Card (P-IOIC-G)

Table 12 Environmental and Physical for the I/O Interface Card (P-IOIC-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-IOIC-G Dimensions (H x W x L)	45 mm x 343.9 mm x 171.9 mm
Weight	0.29 kg/0.63 lb

2.5.12 Amplifier Chassis

The Amplifier Chassis is an industrial grade, high-efficiency Class D amplifier that is designed for Public Address and General Alarm applications. (See Figure 12.) It can deliver full power at temperatures from -10 to +55°C.

The Amplifier Chassis contains up to four, 300 W amplifier cards that share two common motherboards. (See Figure 13.) The front motherboard is a signal router board, while the rear motherboard is a power connection board. An optional Intelligent Monitoring and Tapping (ISMT) card may be inserted into the chassis on the right side of the signal router motherboard.

The Amplifier Chassis's daughter cards, modules, and backplanes are listed in Table 14.

Table 13 Amplifier Models

Model	Description
20000154	Amplifier Signal Backplane
20000155	Amplifier Power Backplane
20000150	300 W Amplifier Card
P-ISMT-G	ISMT Line Card (Optional)

The Amplifier Chassis models are listed in the following table.

Table 14 Amplifier Chassis Models

Model	Description
P-A250-G	Amplifier chassis with backplane cards, one 100 V amplifier PCB
P-A500-G	Amplifier chassis with backplane cards, two 100 V amplifier PCBs
P-A750-G	Amplifier chassis with backplane cards, three 100 V amplifier PCBs
P-A1000-G	Amplifier chassis with backplane cards, four 100 V amplifier PCBs
P-A250-G-70	Amplifier chassis with backplane cards, one 70 V amplifier PCB with transformers, no ISMT
P-A500-G-70	Amplifier chassis with backplane cards, two 70 V amplifier PCBs with transformers, no ISMT
P-A750-G-70	Amplifier chassis with backplane cards, three 70 V amplifier PCBs with transformers, no ISMT
P-A1000-G-70	Amplifier chassis with backplane cards, four 70 V amplifier PCBs with transformers, no ISMT
P-ISMT-G	ISMT line card

Figure 12 Amplifier Chassis
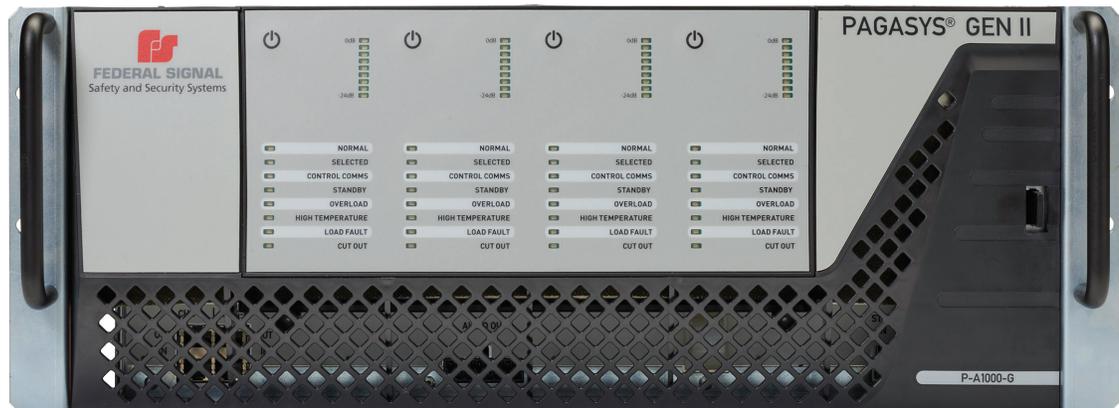
Figure 13 Amplifier Chassis Card Layout (P-A1000-G)

Amplifier Power Backplane

Amplifier Board

70 V/100 V Transformer

ISMT Card

Amplifier Signal Backplane
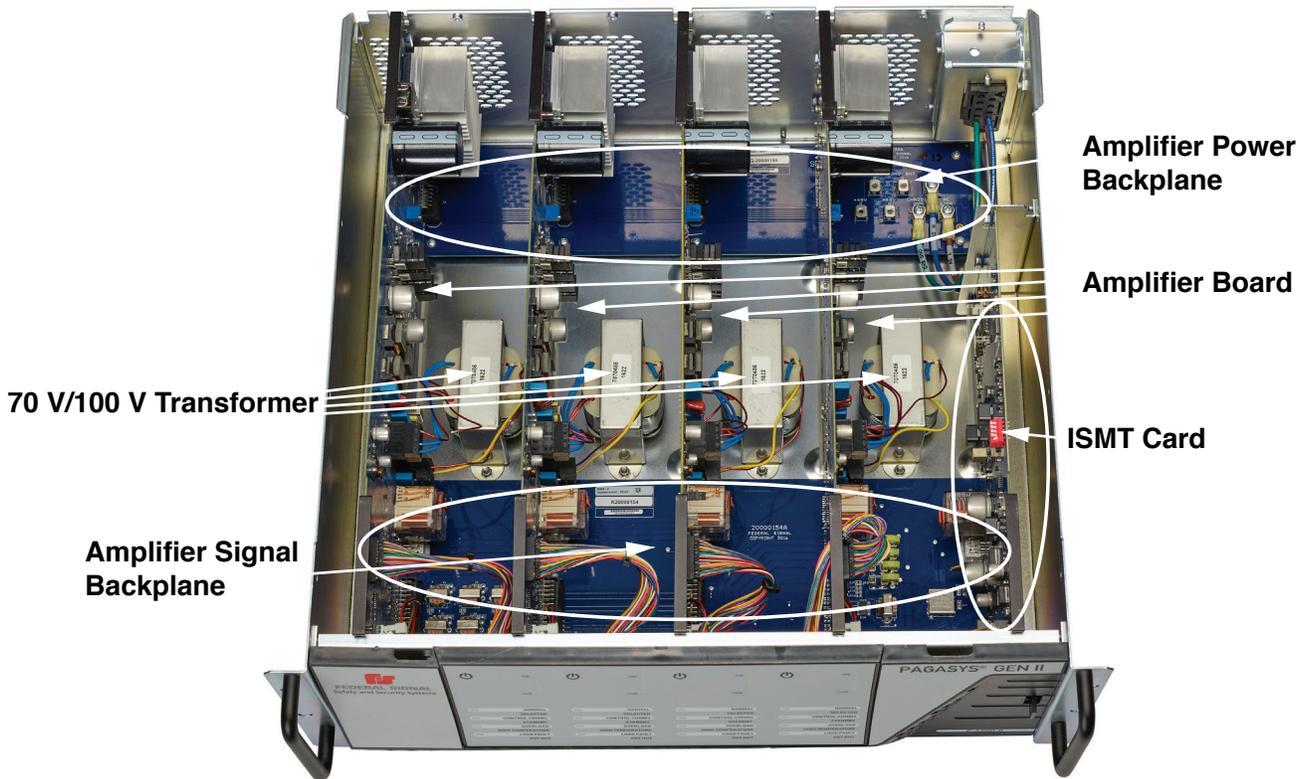
2.5.13 Amplifier Specifications

Table 15 Environmental and Physical for the Amplifier

Operating Temperature	-10 to +55°C
Humidity	0–98% non-condensing
Amplifier Chassis Dimensions (H x W x L)	177 mm x 483 mm x 478 mm
Weight	13.9 kg (Not including cards)

Table 16 Amplifier Chassis Cards

Model	Weight
P-A250-G	11.4 kg/25.15 lb
P-A500-G	13.2 kg/29.20 lb
P-A750-G	15.1 kg/33.25 lb
P-A1000-G	16.9 kg/37.30 lb
P-A250-G-70	11.4 kg/25.15 lb
P-A500-G-70	13.2 kg/29.20 lb
P-A750-G-70	15.1 kg/33.25 lb
P-A1000-G-70	16.9 kg/37.30 lb
P-ISMT-G	

Table 17 Power Requirements per Amplifier Card (AC Model)

Universal AC Power Line Input	90–264 Vac, 50/60 Hz
Power Consumption at 230 Vac, 300 W output	350 W
Efficiency at 230 Vac	85.6%
Power Consumption at 120 Vac, 300 W output	355 W
Efficiency at 120 Vac	84.6%
Idle Power (15 V test tone) at 120/230 Vac	12 W
Standby Power at 120/230 Vac	7 W
Sleep Power (Software enabled)	2.8 W

Table 18 Power Requirements per Amplifier Card (DC Model)

48 Vdc Supply Input	40–56 Vdc
Power Consumption at 48 Vdc, 300 W output	325 W
Idle Power (15 V test tone)	7.5 W
Standby Power at 120/230 Vac	4 W
Sleep Power (Software enabled)	1.3 W
Efficiency at 48 Vdc	92.25%

2.6 Amplifier Front Panel

The Amplifier Front Panel contains four sets of power buttons and status LEDs, one for each amplifier module. (See Figure 14.) They have the following functions.

Fields	Description
Power Button	If enabled by software, turns off power to its amplifier module when pressed and held for three seconds. Another press for half a second, restores the power.
Normal	Indicates current status of the Amplifier card in the respective slot. Status indications include the following: • Steady Green, indicates that the module is working, and all the parameters of the latest test are normal. • Blinking, indicates that the module has power, but one or more parameters are out of the normal range, although the audio output is still present at a reduced or distorted level. • Steady Off, while one or more other lights are on, indicates that the module has power, but is not capable of producing an output audio signal at this time.
Selected	Steady Blue, indicates that the audio power output relay is activated and the 100 V audio output is connected to the output header.
Control Comms	Blinking Blue, indicates that the module is communicating with the Controller.
Stand By	Steady Yellow, indicates that the speakers connected to this Amplifier card have been rerouted to a standby audio output cable, receiving audio output power from a Standby Amplifier module.
Overload	Yellow, indicates that current in the output stage of the module is temporarily in a higher than normal level and the current limiter is being brought into use.

Fields	Description
High Temperature	Yellow, indicates that the temperature of the internal temperature sensor has exceeded 80°C. The module may stop operation if the temperature continues to rise and reaches a cut-out temperature level.
Load Fault	Yellow, indicates that the latest self-diagnostic test indicated the output speaker impedance is out of its calibration range, or that the Earth fault was detected.
Cut Out	Yellow, indicates that the module is in a short term cut out mode, due to abnormal operating conditions. It tries to return to normal operation after 2 seconds. This cut-out mode also takes place during the initial power up sequence of the amplifier.
0 dB to -24 dB LED	Green, indicates the level of the voltage being delivered into the load/ speaker system in 3 dB intervals.

Figure 14 Amplifier Front Panel
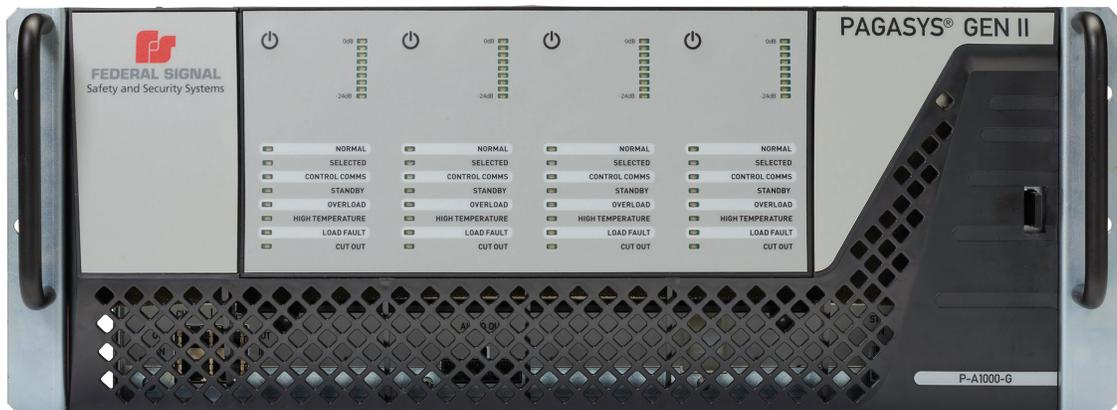
2.6.1 Amplifier Front Chassis

The Amplifier Front Chassis is visible when the front cover of the Amplifier Chassis is removed. (See Figure 15.) The front chassis contains the connections needed for control communications with the System Controller, to provide amplification and output of input audio signals, and to support Standby Amplifier operations.

The Amplifier Front Chassis has four RJ45 ports that support input/output of low level audio and bi-directional RS485 control communications. The input ports are the two lower ports, and the output ports are the two top ports.

The Amplifier Chassis provides amplified audio through the Amplified Audio Out interface. More information on the pin-out for this cable is provided in the PAGASYS GEN II P-A1000-G Technical Information Guide.

Standby Amplifier operation with other Amplifier Chassis in the PAGASYS GEN II system is supported through the Standby Amplifier Bus interfaces on the Amplifier Front Chassis. All chassis that are part of a Standby Amplifier group must be interconnected through these interfaces. The left port is the input for the Standby Amplifier Bus interface, the right port is the output.

Each Amplifier position has a cooling fan that is controlled by the Amplifier in the Chassis slot. See PAGASYS GEN II System Manager User Manual for more information

on amplifier fan cooling operation.

Figure 15 Amplifier Front Chassis

OUT   OUT

IN

6 Channels of low-level
audio and 2 channels of
RS485 data

Amplified
Audio Out

IN OUT

Standby
Amp Bus
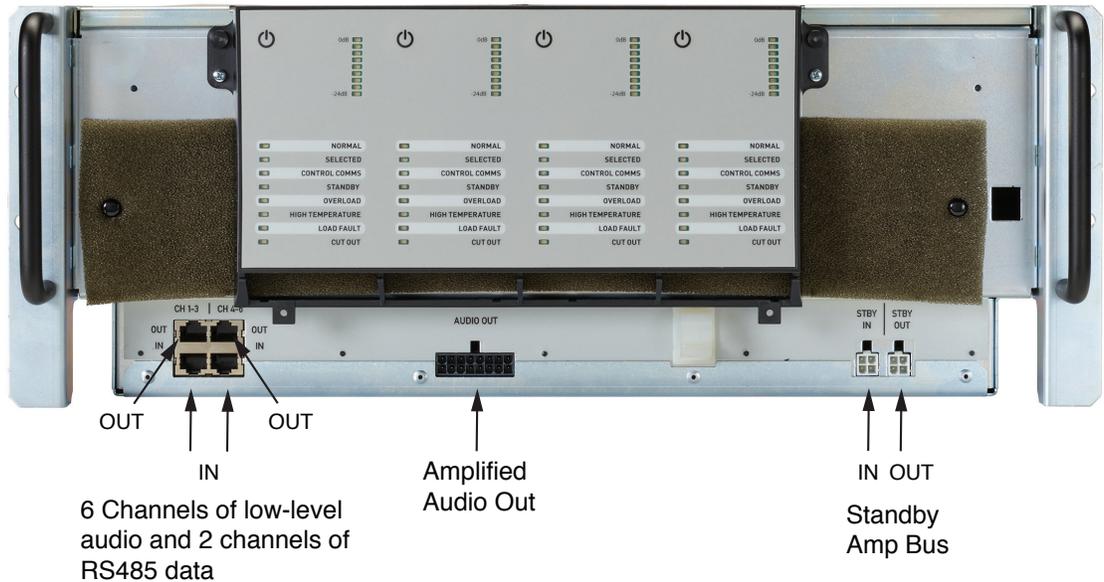
2.6.2 Amplifier Signal Backplane (20000154)

The Amplifier Signal Backplane (20000154) provides control interfaces for the Amplifier Chassis. (See Figure 16.)

The Amplifier Signal Backplane is located in the front bottom of the Amplifier Chassis. It has four sets of white and black headers labeled SLOT 1 to SLOT 4 that serve as connections for the four amplifier cards. The white 16-pin headers are for audio power outputs, while the 24-pin black headers are for audio inputs and communications. A fifth white header on the right side is for an optional ISMT module card. The connections on the bottom are visible on the front of the chassis and are described with the Amplifier Chassis.

NOTE: The service model for the Amplifier Signal Backplane is K20000154.

Figure 16 Amplifier Signal Backplane (20000154)

Table 19 Environmental and Physical for the Amplifier Signal Backplane (20000154)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
20000154 Dimensions (H x W x L)	30 mm x 389 mm x 138 mm
Weight	0.26 kg/0.58 lb

2.6.3 Amplifier Power Backplane (20000155)

The Amplifier Power Backplane (20000155), provides power interfaces for the Amplifier Chassis. (See Figure 17.).

The Amplifier Power Backplane is located in the rear bottom of the Amplifier Chassis.

It has three power lugs for connecting AC power:

- AC LINE

- AC NEUTRAL

- CHASSIS GND

It has four power lugs for connecting DC power:

- +48 V A

- +48 V B

- GND BAT A

- GND BAT B

AC and DC power options are mutually exclusive (cannot be used at the same time).

The Amplifier Power Backplane has four 24-pin headers labeled SLOT 1 to SLOT 4, which are connections for the four amplifier cards. The Amplifier Power Backplane has a red module with five micro switches in the upper left corner that serves for configuring the Amplifier Chassis address/identification number.

NOTE: The service model for the Amplifier Power Backplane is K20000155.

Figure 17 Amplifier Power Backplane (20000155)
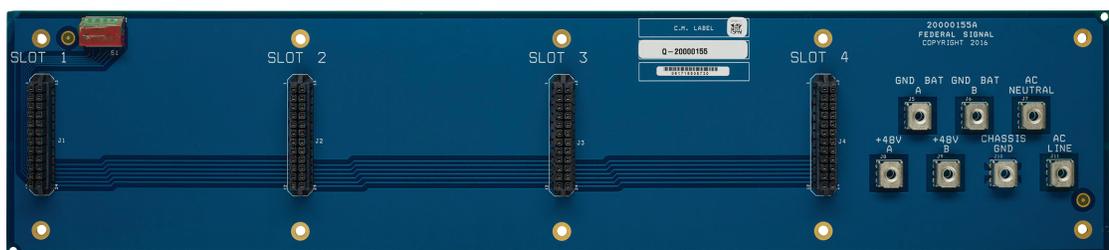
Table 20 Environmental and Physical for the Amplifier Power Backplane (20000155)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
20000155 Dimensions (H x W x L)	18 mm x 389 mm x 87 mm
Weight	0.19 kg/0.42 lb

2.6.4 Amplifier Card (20000150)

The Amplifier Card (20000150), shown in Figure 18, provides 70 V or 100 V audio signaling output at a max power level of 300 W. Up to four Amplifier Cards may be installed in an Amplifier Chassis.

The Amplifier Cards have vertical positioning and plug into connector headers in both the Amplifier Signal and Amplifier Power Backplanes. The SLOT number 1 to 4 on the motherboards determines the amplifier number in the chassis.

You can designate an Amplifier Card as a Standby Amplifier. Install the Standby Amplifier in physical slot 4 of an Amplifier Chassis. The Standby Amplifier can support standby operations at the Chassis level (up to three other Amplifiers in the current Chassis), or it can support additional Amplifiers in a PAGASYS GEN II system (up to 127 amplifiers). To support amplifiers outside of the Standby Amplifier Chassis, the amplifiers must share an audio path, and all Chassis in the Standby group must have interconnected Standby Bus connections. Many configurations of Standby groups are possible. These are determined by the interconnections between the Standby Bus and the system configuration.

The 100 V version of the Amplifier Card requires a 100 W output transformer, model K12000775. The 70 V version of the Amplifier Card is similar to the 100 V Amplifier Card, but has a different model number 20000150-70 and requires a 70 W output transformer, model K12001655.

NOTE: The service models for the Amplifier Cards are K20000150 (100 V) and K20000150-70 (70 V). The service models for the output transformers are K12000775 (100 V) and K12001655 (70 V).

The picture below shows the 100 V Amplifier Card 20000150.

Figure 18 Amplifier Card (20000150)
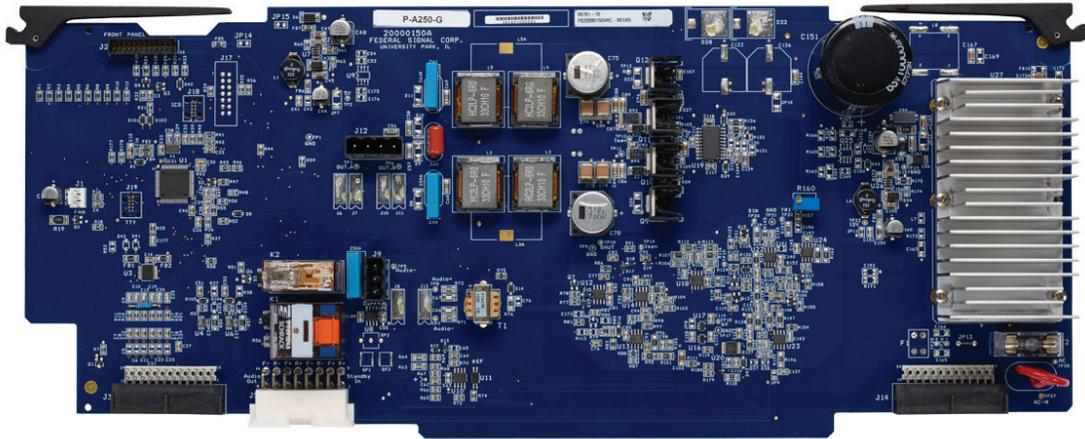
Table 21 Environmental and Physical for the Amplifier Card (20000150)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
20000150 Dimensions (H x W x L)	65 mm x 410 mm x 169 mm
Weight	0.75 kg/1.65 lb

2.6.5 ISMT Card (P-ISMT-G)

The ISMT card (P-ISMT-G) provides Intelligent Speaker Monitoring and Tapping functionality for the Amplifier Chassis when used with ISMT capable speakers. (See Figure 19.) The ISMT card uses special communication commands sent over the speaker lines to communicate with the ISMT capable speakers. Using this communication link, each ISMT loudspeaker can be instructed to change its transformer tapping, recalibrate itself, and return status information back to the ISMT card.

The ISMT card, when needed, is inserted into the Amplifier Signal Backplane in the fifth white connector on the right side of the card. (See Figure 20.)

One ISMT card can monitor the speaker circuits connected to all four Amplifier cards in the local Amplifier Chassis and the speaker circuits connected to other Amplifier cards in other chassis when they are connected via the standby bus cable. See "5.3.10 Installing the ISMT Card (Optional)" on page 73.

NOTE: The service model for the ISMT card is K-P-ISMT-G.

Configuring for non-ISMT

To configure a group of Amplifier Chassis sharing a common Standby Amplifier Bus for non-ISMT Amplifier Standby routing:

- You may configure only one Amplifier Chassis in the Amplifier group to contain a Standby Amplifier.

- In the Chassis containing the Standby Amplifier, fit the four jumpers on the front motherboard on the left side. (See Figure 20.)

- Completely remove or move the four jumpers on the front motherboard of every other Chassis in the group to the right side in all Chassis other than the Chassis with the Standby Amplifier.

Configuring for ISMT

To configure a group of Amplifier Chassis sharing a common Standby Amplifier Bus for ISMT Amplifier Standby routing:

- You may configure only one Amplifier Chassis in the group to contain a Standby Amplifier.

- In the Chassis containing the Standby Amplifier, only one ISMT card may be installed in the group of Chassis.

- Completely remove or move the four jumpers on the front motherboard of every Chassis in the group to the right side in all Chassis.

- When inserting an ISMT card into a Chassis, the ISMT card red module with five micro switches must be configured to match the address of the host Amplifier Chassis.

Figure 19 ISMT Card (P-ISMT-G)
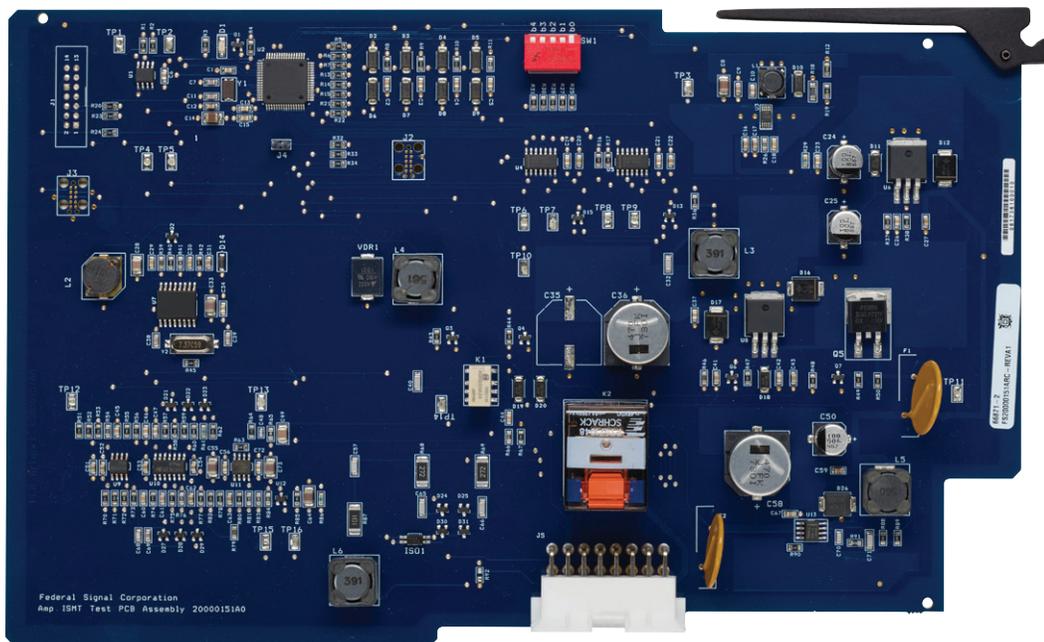
Figure 20 ISMT Connector on the Amplifier Signal Backplane
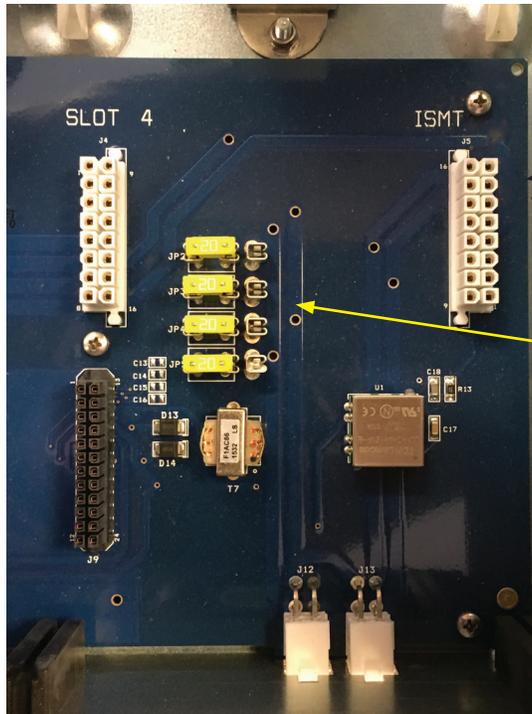
ISMT connector

If the amplifier in slot 4 is to be the Standby Amplifier, fit the four jumpers on the left side.

NOTICE: If an ISMT card is installed in the ISMT slot, remove the jumpers from the board to avoid damaging the ISMT board.

Table 22 Environmental and Physical for ISMT Card Specifications (P-ISMT-G)

Operating Temperature	-10 to +55°C
Humidity	0-98% non-condensing
P-ISMT-G Dimensions (H x W x L)	20.4 mm x 269 mm x 169 mm
Weight	0.24 kg/0.53 lb

3.0 I/O and Terminal Block Cards

The I/O and Terminal Block cards for wire terminations are mounted in an easy access front entry area at the bottom of the Cabinet. (See Table 23.)

Table 23 I/O and Terminal Block Models

Model	Description	Card Type	Location	Included with Standard Model or Optional
P-APIC-G	Access Panel Aggregator I/O Card GEN II	I/O Card	Rear I/O Panel	Optional
P-16DIN-G	Digital Input I/O Card GEN II	I/O Card	Rear I/O Panel	Standard
P-BK-MON-G	Beacon Monitoring I/O GEN II	I/O Card	Power I/O Panel	Standard
P-SPDT-G	Relay Output I/O Card GEN II	I/O Card	Rear I/O Panel	Standard
P-FCMC-G	Fan Control and Monitoring I/O Card GEN II	I/O Card	Top I/O Panel	Standard
P-MONIC-G	Monitored Input I/O Card GEN II	I/O Card	Rear I/O Panel	Optional
P-PTBC-G	Passive Terminal Block Card	Terminal Block	Rear I/O Panel	Standard
P-CPIC-G	Cable Power Injector I/O Card	Terminal Block	Power I/O Panel	Optional
P-AADC1-G	Amplifier Audio Distribution Card 1:1	Terminal Block	Audio I/O Panel	Optional
P-AADC2-G	Amplifier Audio Distribution Card 1:2	Terminal Block	Audio I/O Panel	Standard
P-AADC4-G	Amplifier Audio Distribution Card 1:4	Terminal Block	Audio I/O Panel	Optional
P-AADC8-G	Amplifier Audio Distribution Card 1:8	Terminal Block	Audio I/O Panel	Optional
P-FWTC-G	Fan Wiring Termination Card	Terminal Block	Door/Roof	Standard
P-IS-BARRIER-G	IS Barrier Board	Terminal Block	Rear I/O Panel	Optional

3.1 Access Panel Aggregator I/O Cards (P-APIC-G)

The Access Panel Aggregator I/O card, available in three models, is one of several I/O boards designed specifically for integration into the PAGASYS GEN II system. (See Figure 21.) These I/O boards use a standard control interface, which greatly simplifies the internal wiring of the cabinets.

The Access Panel Aggregator I/O card provides termination points for Access Panels. See list of models with attributes below.

Table 24 Termination Points

Model	Number of Access panels supported	AP Field Connection Type
P-APIC-G	4	Cage clamp terminal block
P-APIC-G-01	4	Screw terminal block
P-APIC-G-02	8	RJ45

The P-APIC-G is a microcontroller-based card assembly that acts as a communication hub with its connected Access Panel, continually gathering and collating the status of each Access Panel keypad button and conveying the required state of each Access Panel keypad LED to the Access Panel's on-board microcontroller.

The System Controller receives the collated Access Panel keypad button status data from P-APIC-G(s) and defines the required state of each Access Panel LED to the P-APIC-G card.

How the PAGASYS GEN II system reacts to an Access Panel button press is solely controlled by the PAGASYS GEN II System Controller and is dependent on the overall system configuration and priorities.

NOTE: The service model for the standard Access Panel Aggregator I/O card is K-P-APIC-G.

Figure 21 Access Panel Aggregator I/O Card, RJ45 Connector (P-APIC-G)

	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
LED Reg	4052	4058	405E	4064	406A	4070	4076	407C
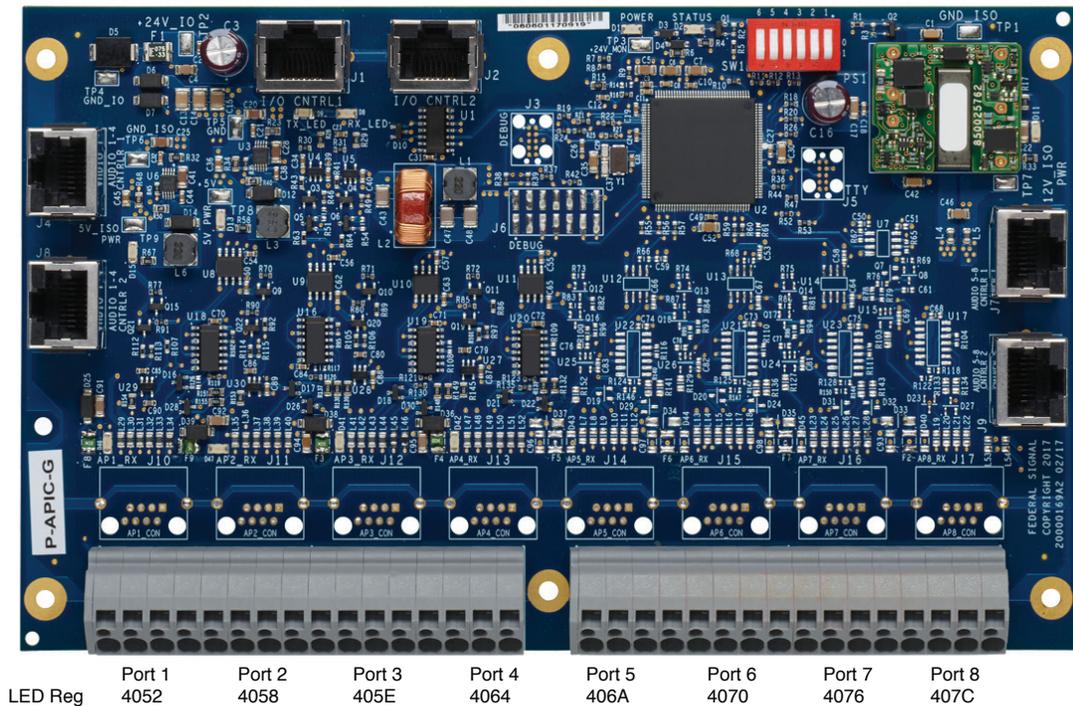
Table 25 Environmental and Physical for the Access Panel Aggregator Card (P-APIC-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-APIC-G Dimensions (H x W x L)	30 mm x 200 mm x 122 mm
Weight	0.18 kg/0.40 lb

3.2 Digital Input I/O Card (P-16DIN-G)

The Digital Input card (P-16DIN-G) is one of several I/O boards designed specifically for integration into the PAGASYS GEN II system. (See Figure 22.) These I/O boards use a standard control interface that greatly simplifies the internal wiring of the cabinets.

The Digital Input card provides 16 individual digital inputs that you can individually configure to support dry contact mode or 24 V PLC mode. Also, the card provides status LEDs for each input that, when illuminated, indicates when the input is activated. The inputs are monitored by the Controller.

Figure 22 Digital Input I/O Card (P-16DIN-G)
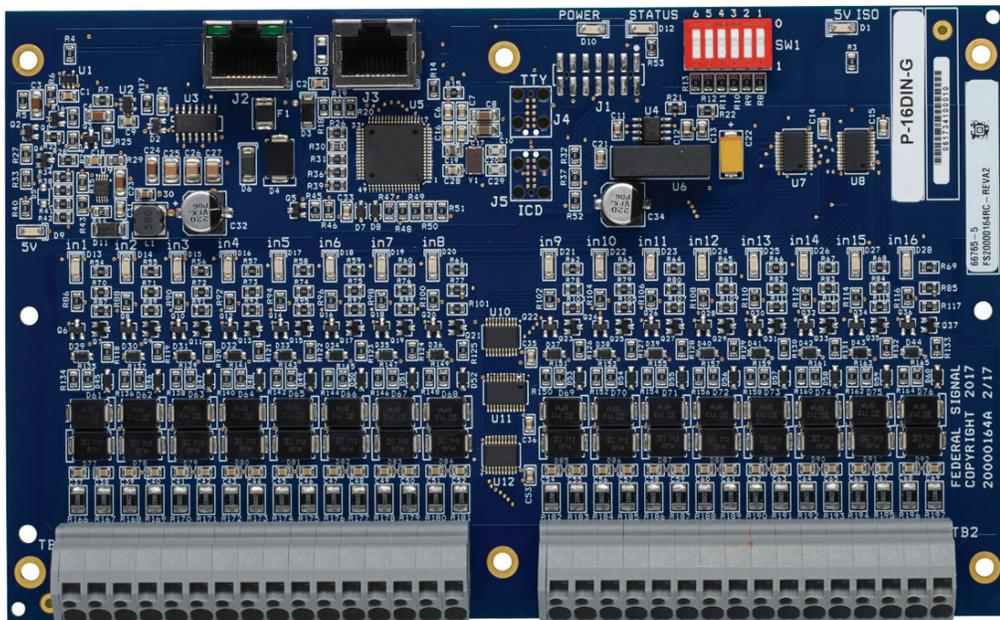
In dry contact mode, the input senses a short between the plus and minus pins to activate the input; an open circuit between the plus and minus pins deactivates the input.

In 24 V PLC input mode, the input senses 24 V applied across the plus and minus pins to activate the input. Removal of the applied 24 V deactivates the input.

NOTE: The service model for the Digital Input I/O card is K-P-16DIN-G.

3.2.1 Digital Input Card Specifications (P-16DIN-G)

Table 26 Environmental and Physical for the Digital Input Card (P-16DIN-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
Amplifier Chassis Dimensions (H x W x L)	23 mm x 200 mm x 122 mm
Weight	0.18 kg/0.40 lb

Table 27 Dry Contact Mode for the Digital Input Card (P-16DIN-G)

Maximum Output Voltage – Open Circuit	5.5 V
Maximum Output Current – Short Circuit	5 mA

Table 28 24 V PLC Contact Mode for the Digital Input Card (P-16DIN-G)

Maximum Input Voltage	30 V
Minimum Input Voltage to Activate	5 V
Input Current – 24 V Applied	5 mA

3.3 Beacon Monitored Output Module (P-BK-MON-G)

The Beacon Monitored Output module (P-BK-MON-G) is one of several I/O modules designed specifically for integration into the PAGASYS GEN II system. (See Figure 23.) These I/O modules use a standard control interface that greatly simplifies the internal wiring of the cabinets.

The Beacon Monitored Output module provides two independent beacon control and monitoring channels. Each beacon control and monitoring channel can operate in two modes:

- Beacon circuit energized mode: The beacon's electrical supply is applied to the beacon circuit, causing the beacons to operate.

- Beacon circuit cable monitoring mode: The beacon monitoring and control interface circuit checks the integrity of the beacon circuit cable. This requires an End of Line Resistor (ELR) at the end of each radial beacon circuit.

Typically beacon circuits are arranged in loop or radial configuration, or sometimes in a combination of both. Up to nine radial circuits, each terminated with an ELR, can be successfully monitored for by each beacon monitoring and control channel.

NOTE: The service model for the Beacon Monitored Output module is K-P-BK-MON-G.

Figure 23 Beacon Monitored Output Module (P-BK-MON-G)
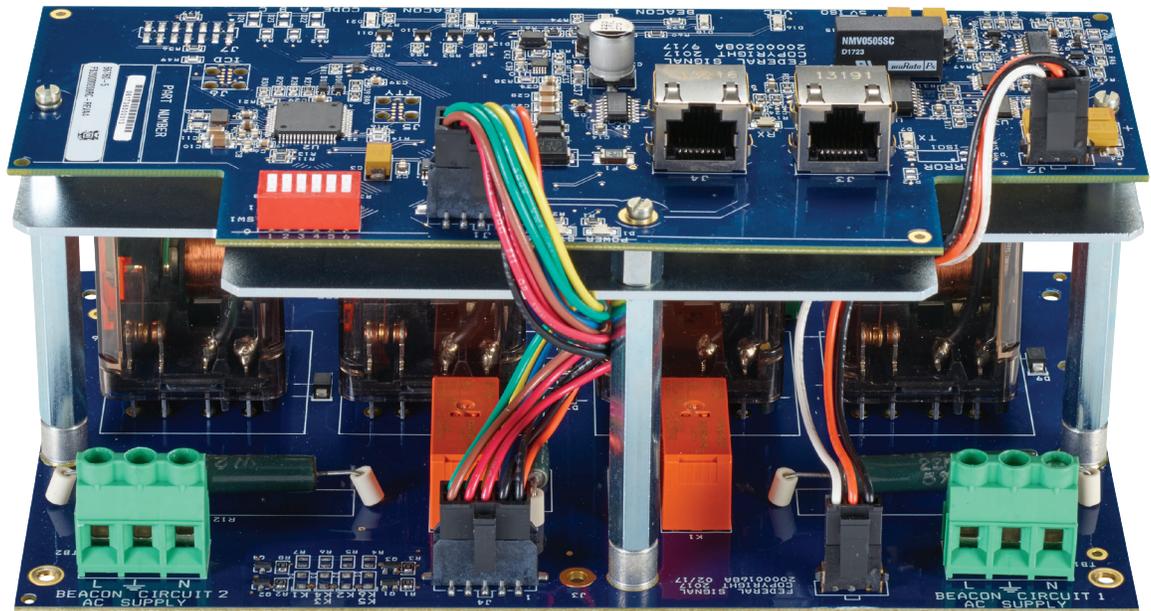
3.3.1 Beacon Monitored Module Specifications (P-BK-MON-G)

Table 29 Environmental and Physical for the Beacon Monitored Module (P-BK-MON-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-BK-MON-G Dimensions (H x W x L)	94 mm x 200 mm x 122 mm
Weight	0.91 kg/2.00 lb

3.4 Relay Output Card (P-SPDT-G)

The Relay Output card (P-SPDT-G) is one of several I/O boards designed specifically for integration into the PAGASYS GEN II system. (See Figure 24.) These I/O boards use a standard control interface, which greatly simplifies the internal wiring of the cabinets.

The Relay Output card provides 12 single-pole, double-throw (SPDT) voltage-free relay contacts for connection to external equipment or for use within the local cabinet such as speaker circuit muting.

The Relay Output card provides status LEDs for the following:

*   A green Power LED to indicate that the I/O Bus 24 Vdc supply is being applied to the card.

*   A green 5 V LED to indicate that on board +5 Vdc switching supply is energized.

*   An onboard local microprocessor-controlled status LED to indicate the following.

State	Meaning
Off	Microprocessor failure
On	Microprocessor failure

State	Meaning
Pulsed On	Microprocessor is sane and executing code
Pulsed Off	Processor is sane, executing code, and has been addressed by the Controller in the last 30 seconds
Fast Blink	Node identification mode, Response to PcP command visual node identification

- A green status LED for each output relay, which, when illuminated, indicates that the relay coil has been energized.

NOTE: The service model for the Relay Output card is K-P-SPDT-G.

Figure 24 Relay Output Card (P-SPDT-G)
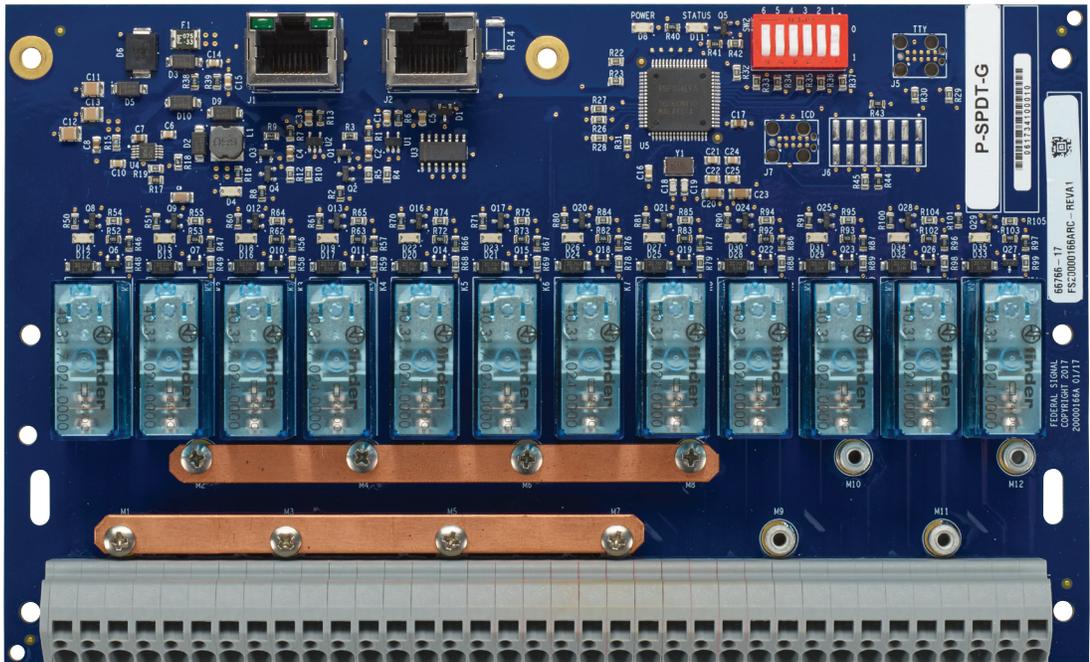
3.4.1 Relay Output Card Specifications (P-SPDT-G)

Table 30 Environmental and Physical for the Relay Output Card (P-SPDT-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-SPDT-G Dimensions (H x W x L)	30 mm x 200 mm x 122 mm
Weight	0.40 kg/0.88 lb

3.5 Fan Control and Monitoring Card (P-FCMC-G)

The Fan Control and Monitoring card is one of several I/O boards designed specifically for integration into the PAGASYS GEN II system. These I/O boards use a standard control interface, which greatly simplifies the internal wiring of the cabinets. (See Figure 25.)

The P-FCMC-G provides the following functions:

- Duplicated wide-input range fan power supply circuits

- External fan DC power supply

- Fan power supply failure detection

- Air temperature measurement

- Automatic fan control based on air temperature

- PAGASYS GEN II Controller remote fan control

- Individual fan failure detection

- Programmable temperature setpoints and hysteresis

- Fail-safe operation

The Fan Control and Monitoring card provides fan control and monitoring for the PAGASYS GEN II system. Two power supply circuits on the card are used to power the cabinet cooling fans. The output from two power supplies circuits are combined through diodes, to provide a 1+N redundancy scheme, such that a failure in one power supply circuit does not result in loss of fan operation.

The Fan Control and Monitoring card supports autonomous fan control using air temperature measurements from a local temperature sensor mounted on the fan power distribution board. It uses this measured temperature to turn on/off fans based on temperature set points, which are programmable through the fan monitor card configuration page in the PAGASYS GEN II System Manager software. You can override the autonomous fan control on the Fan Monitor diagnostics page in the System Manager software for a period up to 300 seconds.

The Fan Control and Monitoring card can detect and report individual fan failures. In the event of failure of the Fan Control and Monitoring card, fans are, by default, turned on.

NOTE: The service model for the Fan Control and Monitoring card is K-P-FCMC-G.

Figure 25 Fan Control and Monitoring Card (P-FCMC-G)
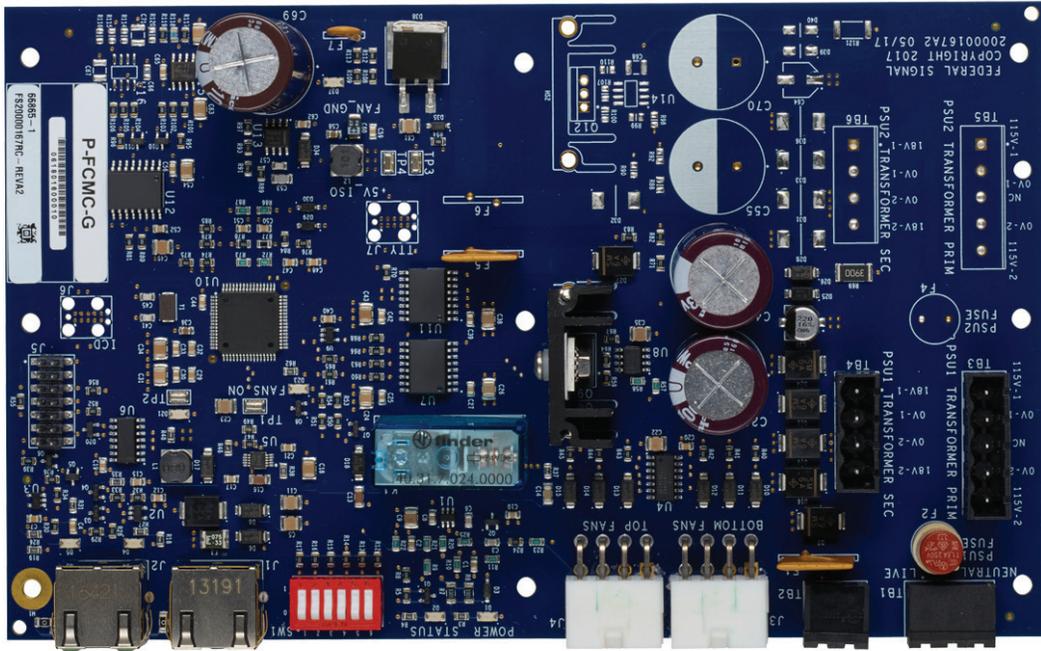
3.5.1 Fan Control and Monitoring Card Specifications (P-FCMC-G)

Table 31 Environmental and Physical for the Fan Control and Monitoring Card (P-FCMC-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-FCMC-G Dimensions (H x W x L)	44 mm x 200 mm x 124 mm
Weight	0.20 kg/0.43 lb

Table 32 Temperature Measurement

Measurement range	-30 to +100°C
Measurement Circuit Accuracy	±1°C
Temperature sensor Tolerance at 25°C	±1%

Table 33 Fan Power Supply

Fan AC supply input voltage range	85–264 Vac
Input current with 110 V supply	< 600 mA AC
Input current with 230 supply	< 400 mA AC
Fan AC input fuse rating	1.6 A
Fan DC supply output range	24-55 V DC
Typical Fan current at 48 Vdc	1.2 A
Card Fan fuse hold current	1.85 A
Fan control Relay contacts ratings	10 A

3.6 Monitored Input Module (P-MONIC-G)

The Monitored Input module is one of several I/O modules designed specifically for integration into the PAGASYS GEN II system. (See Figure 26.) These I/O modules use a standard control interface, which greatly simplifies the internal wiring of the cabinets.

The Monitored Input module provides 16 electrically isolated (voltage-free contacts fitted with biasing resistors) monitored inputs for the PAGASYS GEN II system. Typical examples of equipment having voltage-free contacts that require monitoring are an oil platform's fire and gas interface or remote microphone station PTT switch.

The P-MONIC-G provides the following functions:

- 16 independently configurable monitored inputs

- 16 green input status indicator LEDs

- 16 yellow input fault indicator LEDs

- PAGASYS GEN II I/O Bus interface

- 6-bit I/O Bus-address allocating dip switch

- In-circuit programming

- TTY serial port

Table 34 Monitored Input Circuits

Detect closed remote switches	Circuit terminated with 1 K
Detect open remote switches	Circuit terminated with 2 K
Detect circuit fault: open circuit	Circuit resistance > 3.82 K
Detect circuit fault: shorted circuit	Circuit resistance < 470 R

The circuits also provide an alarm status LED and a fault status LED for each monitored input channel. The alarm status LEDs for each input is illuminated when the associated remote switch is closed. The fault status LEDs for each input is illuminated when a fault is detected on its associated external switch circuit.

NOTE: The service model for the Monitored Input module is K-P-MONIC-G.

Figure 26 Monitored Input Module (P-MONIC-G)
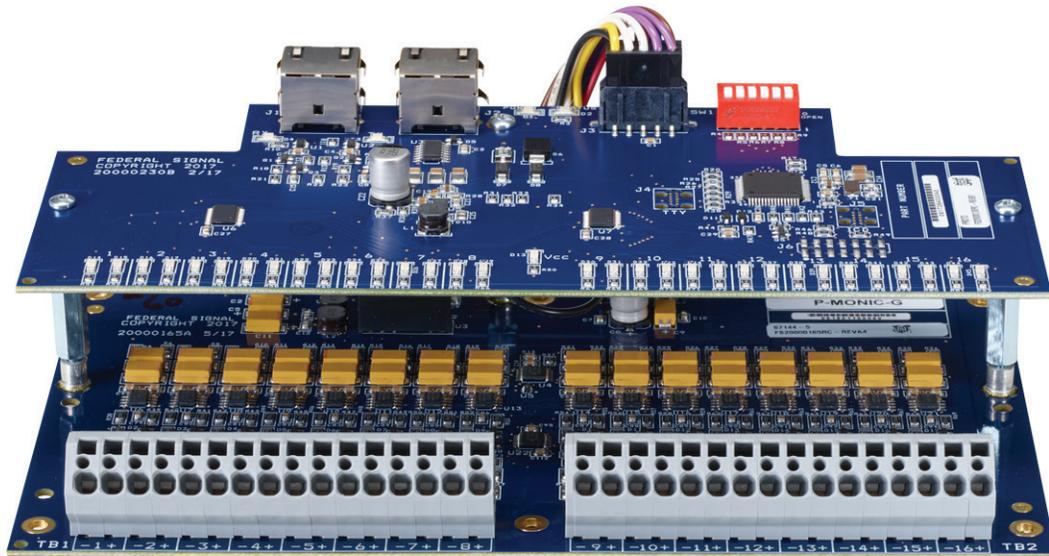
3.6.1 Monitored Input Module Specifications (P-MONIC-G)

Table 35 Environmental and Physical for the Monitored Input Module (P-MONIC-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-MONIC-G Dimensions (H x W x L)	60 mm x 200 mm x 122 mm
Weight (with 2000165 daughter card)	0.17 kg/0.38 lb

3.7 Passive Terminal Block Card (P-PTBC-G)

The Passive Terminal Block card (P-PTBC-G) is a passive card that provides four RJ45 to terminal block interfaces. (See Figure 27.) The P-PTBC-G card is primarily intended to provide the Cabinet with terminal block type field termination for connection to remote safe area access panels. The PAGASYS GEN II System Controller itself uses RJ45 connectors for its access panel control interfaces, the P-PTBC-G card converts the RJ45 interface to terminal block terminals. Use the P-PTBC-G card wherever there is a requirement to interface between RJ45 cables and terminals blocks.

The Passive Terminal Block card has two models that vary in the type of terminal block contact styles.

NOTE: The service model for the Passive Terminal Block card is K-P-PTBC-G.

Table 36 Passive Terminal Block Card Models

Model	Number of Access panels supported	Access Panel Field connection Style
P-PTBC-G	4	Cage clamp terminal block
P-PTBC-G-01	4	Screw terminal block

Figure 27 Passive Terminal Block Card (P-PTBC-G)
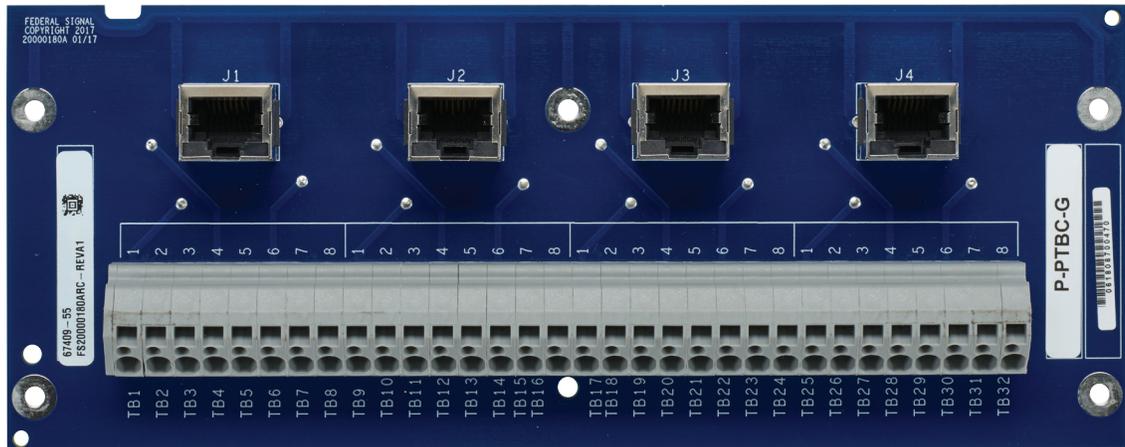
3.7.1 Passive Terminal Block Card Specifications (P-PTBC-G)

Table 37 Environmental and Physical for the Passive Terminal Block Card (P-PTBC-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-PTBC-G Dimensions (H x W x L)	30 mm x 200 mm x 79.8 mm
Weight	0.35 kg/0.77 lb

3.8 Cable Power Injector I/O Card (P-CPIC-G)

The Cable Power Injector I/O card (P-CPIC-G) is primarily used to boost the number and type of I/O cards that can be connected to an I/O Bus. (See Figure 28.) This is achieved by connecting up to four radial circuits to an I/O Bus, which are powered from an alternative 24 Vdc supply.

Each PAGASYS GEN II System Controller I/O Bus has a practical limit on the number and type of I/O cards that can be powered from the Bus. This practical limit is determined by the current rating of CAT 5/6 cable and the maximum DC current that the PAGASYS GEN II System Controller can provide for each of its four I/O Buses. Given the limits of the system, the current supplied to all the I/O cards connected to a single I/O Bus should not exceed 0.5 A. To increase the number and type of I/O cards that can be connected to an I/O Bus, the Cable Power Injector I/O card can connect up to four radial circuits to an I/O Bus, which are powered from an alternative 24 Vdc supply. The current rating of each of these 4-radial circuit is 1 A.

NOTE: The service model for the Cable Power Injector I/O card is K-P-CPIC-G.

Figure 28 Cable Power Injector I/O Card (P-CPIC-G)

3.8.1 Cable Power Injector I/O Card Specifications (P-CPIC-G)

Table 38 Environmental and Physical for the Cable Power Injector I/O Card (P-CPIC-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-CPIC-G Dimensions (H x W x L)	20 mm x 200 mm x 79.8 mm
Weight	0.096 kg/ 0.21 lb

3.9 Amplifier Audio Distribution Terminal Block (P-AADCx-G)

The Amplifier Audio Distribution Terminal Block cards (P-AADCx-G) are a range of passive card assemblies that provide terminal block field terminations for the PAGSYS GEN II amplifier's 100 V audio output signals. (See Figures 29-32.)

Amplifier Audio Distribution cards have eight models that vary in the number of amplifiers supported, the number of speaker loop circuit provided per amplifier and the type of terminal block contact styles.

Table 39 Amplifier Audio Distribution Cards

Model	Number of amplifier circuits supported	Speaker loop circuit per amplifier	Terminal block style
P-AADC1-G	8	1	Cage clamp terminal block
P-AADC1-G-01	8	1	Screw terminal block
P-AADC2-G	4	2	Cage clamp terminal block
P-AADC2-G-01	4	2	Screw terminal block
P-AADC4-G	2	4	Cage clamp terminal block
P-AADC4-G-01	2	4	Screw terminal block
P-AADC8-G	1	8	Cage clamp terminal block
P-AADC8-G-01	1	8	Screw terminal block

The PAGSYS GEN II Amplifier Chassis provides a 16-pin audio power connector for its four, 100 V audio output signals. Each 100 V audio output signal is provided with four connector pins within this audio power connector, which enables the Amplifier Chassis to monitor the integrity of the connected external speaker closed loop circuit.

The P-AADCx-G cards are connected to the Amplifier Chassis audio power connectors through amplifier audio out cable assemblies. There are several versions of the amplifier audio out cable assemblies, which vary in cable length to accommodate the differing Amplifier Chassis mounting location within the Cabinet. These cable assemblies have a 16-pin connector receptacle at one end for connection to Amplifier Chassis audio power connectors and two, 8-pin connector receptacles at the other end for connection to a P-AADCx-G card. Each 8-pin receptacle connector carries the 100 V audio output signals of two amplifiers.

NOTE: The service models for the Amplifier Audio Distribution cards are K-P-AADCx-G, where x represents the number of speaker loop circuits per amplifier.

Figure 29 P-AADC1-G and P-AADC1-G-01 Cards
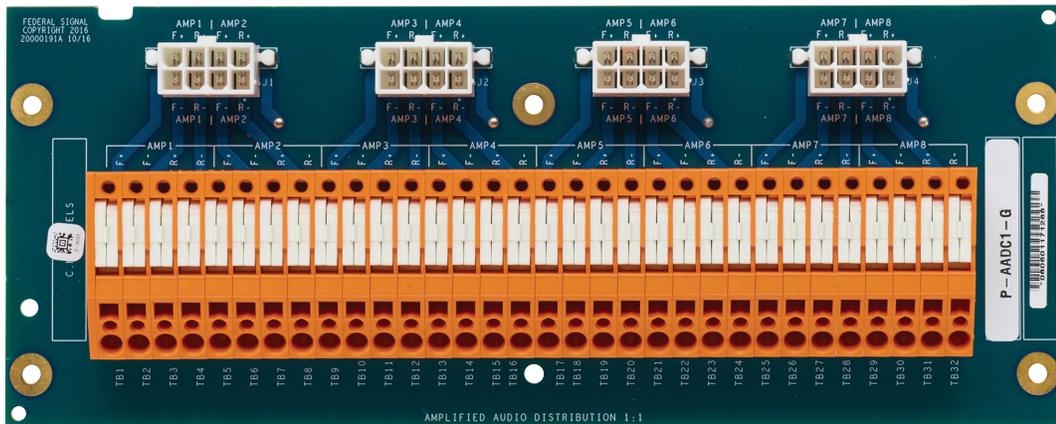
Figure 30 P-AADC2-G and P-AADC2-G-01 Cards
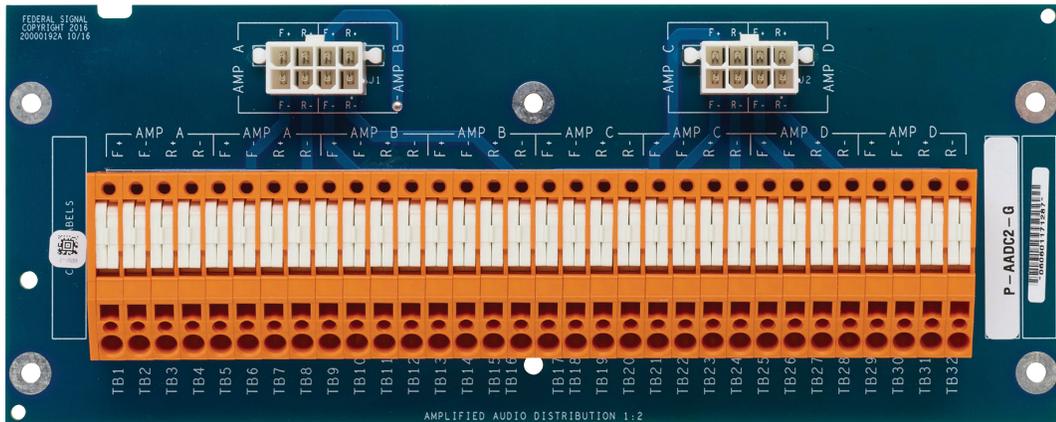
Figure 31 P-AADC4-G and P-AADC4-G-01 Cards
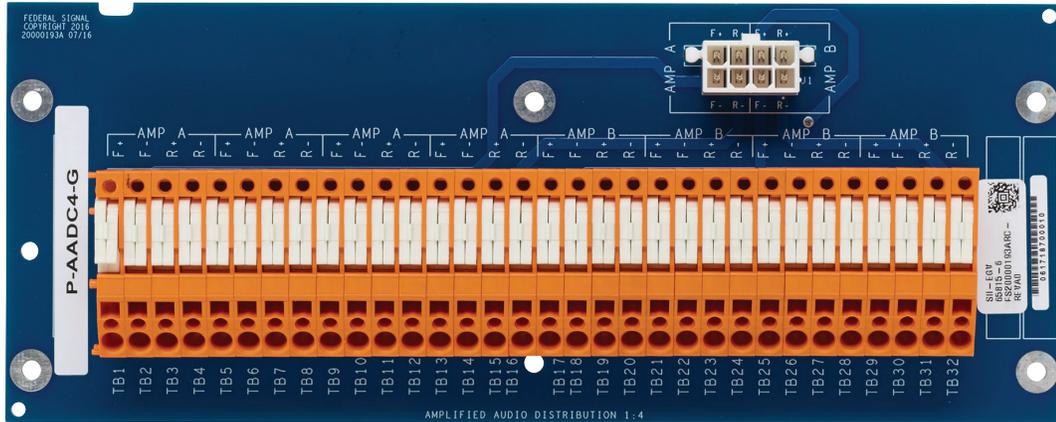
Figure 32 P-AADC8-G and P-AADC8-G-01 Cards
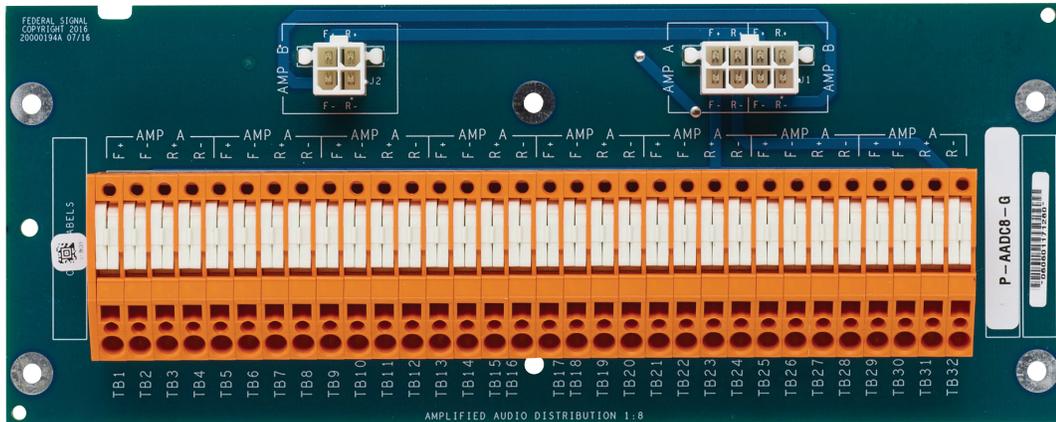
3.9.1 Amplifier Audio Distribution Terminal Block Specifications (P-AADCx-G)

Table 40 Environmental and Physical for the Amplifier Audio Distribution Terminal Block Cards (P-AADCx-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-AADCx-G Dimensions (H x W x L)	28 mm x 200 mm x 79.8 mm
Weight (P-AADC1-G)	0.20 kg/0.45 lb
Weight (P-AADC2-G)	0.19 kg/0.42 lb
Weight (P-AADC4-G)	0.18 kg/0.40 lb
Weight (P-AADC8-G)	0.20 kg/0.44 lb

3.10 Fan Wiring Termination Card (P-FWTC-G)

The Fan Wiring Termination card (P-FWTC-G) is a passive card that provides a termination point for cabinet cooling fans. (See Figure 33.) Two cards are needed in a standard rack: one for the door mounted cooling fans and one for the roof mounted fans.

NOTE: The service model for the Fan Wiring Termination card is K-P-FWTC-G.

Figure 33 Fan Wiring Termination Card (P-FWTC-G)
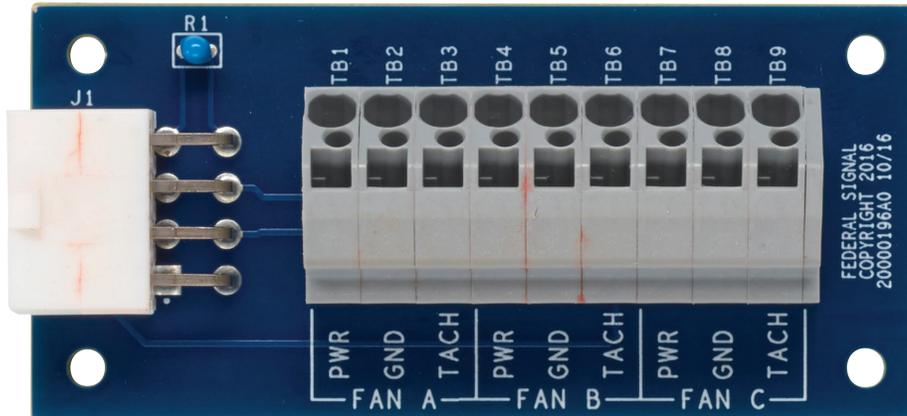
3.10.1 Fan Wiring Termination Card Specifications (P-FWTC-G)

Table 41 Environmental and Physical for the Fan Wiring Termination Card (P-FWTC-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-FWTC-G Dimensions (H x W x L)	23 mm x 81.3 mm x 38.1 mm
Weight	0.04 kg/0.08 lb

3.11 IS Barrier Board (P-IS-BARRIER-G)

The IS Barrier Board (P-IS-BARRIER-G) provides an Intrinsically Safe barrier between Access Panels that are mounted in a hazardous area and the PAGASYS GEN II Cabinet. (See Figure 34.) The IS Barrier Board provides two sets (A and B) of diode safety barrier circuits, each consisting of seven independent diode safety barriers.

A diode safety barrier is designed to limit the amount of energy that can appear at its output terminals. Each diode safety barrier consists of the following:

• An output resistor to limit the current

• Redundant or parallel Zener diode chains to limit the voltage

• Fuses to protect the barrier components

Each set of diode safety barriers is connected to the PAGASYS GEN II System Controller by an RJ45 socket (connectors J1 and J2) and is connected to the PAGASYS GEN II IS access panel or microphone station by an eight-way terminal block (connectors TB2 and TB3). Connector TB1 allows the Barrier Board to be grounded to an IS grounding termination bar.

NOTE: The service model for the IS Barrier Board card is K-P-IS-BARRIER-G.

The following tables list the TB2, TB3, and J1, and J2 Connector Signals.

Table 42 TB2 Connector Signals (P-AP-IS-BARRIER-G)

TB2 Pin #	PAGASYS GEN II Access Panel IS BARRIER Signal Name	PAGASYS GEN II Access Panel IS BARRIER signal Function
1	HAUDIO-A	AP Audio -
2	HAUDIO+A	AP Audio +
3	IS Barrier GND	AP 0V
4	H+12VA	AP +12V
5	HTX+A	AP RS422 TX+
6	HTX-A	AP RS422 TX-
7	HRX-A	AP RS422 RX-
8	HRX+A	AP RS422 RX+

Table 43 TB3 Connector Signals (P-AP-IS-BARRIER-G)

TB3 Pin #	PAGASYS GEN II Access Panel IS BARRIER Signal Name	PAGASYS GEN II Access Panel IS BARRIER signal Function
1	HAUDIO-B	AP Audio -
2	HAUDIO+B	AP Audio +
3	IS Barrier GND	AP 0V
4	H+12VB	AP +12V
5	HTX+B	AP RS422 TX+
6	HTX-B	AP RS422 TX-
7	HRX-B	AP RS422 RX-
8	HRX+B	AP RS422 RX+

Table 44 J1 Connector Signals (P-AP-IS-BARRIER-G)

RJ45 socket J1 Pin #	PAGASYS GEN II Access Panel IS BARRIER Signal Name	PAGASYS GEN II Access Panel IS BARRIER Signal Function
1	RX+A	AP RS422 RX+
2	RX-A	AP RS422 RX-
3	TX-A	AP RS422 TX-
4	AUDIO+A	AP Audio +
5	AUDIO-A	AP Audio -
6	TX+A	AP RS422 TX+
7	IS Barrier GND	AP 0V
8	+12VA	AP +12V

Table 45 J2 Connector Signals (P-AP-IS-BARRIER-G)

RJ45 socket J2 Pin #	PAGASYS GEN II Access Panel IS BARRIER Signal Name	PAGASYS GEN II Access Panel IS BARRIER Signal Function
1	RX+B	AP RS422 RX+
2	RX-B	AP RS422 RX-
3	TX-B	AP RS422 TX-
4	AUDIO+B	AP Audio +
5	AUDIO-B	AP Audio -
6	TX+b	AP RS422 TX+
7	IS Barrier GND	AP 0V
8	+12VB	AP +12V

Figure 34 IS Barrier Board (P-IS-BARRIER-G)

J2 to PAGASYS Gen 2 Controller Access Panel MUX interface circuit B

J1 to PAGASYS Gen 2 Controller Access Panel MUX interface circuit A

TB1 to PAGASYS Gen 2 Cabint IS GND BUS BAR connection

TB3 to IS Access Panel B   TB2 to IS Access Panel A
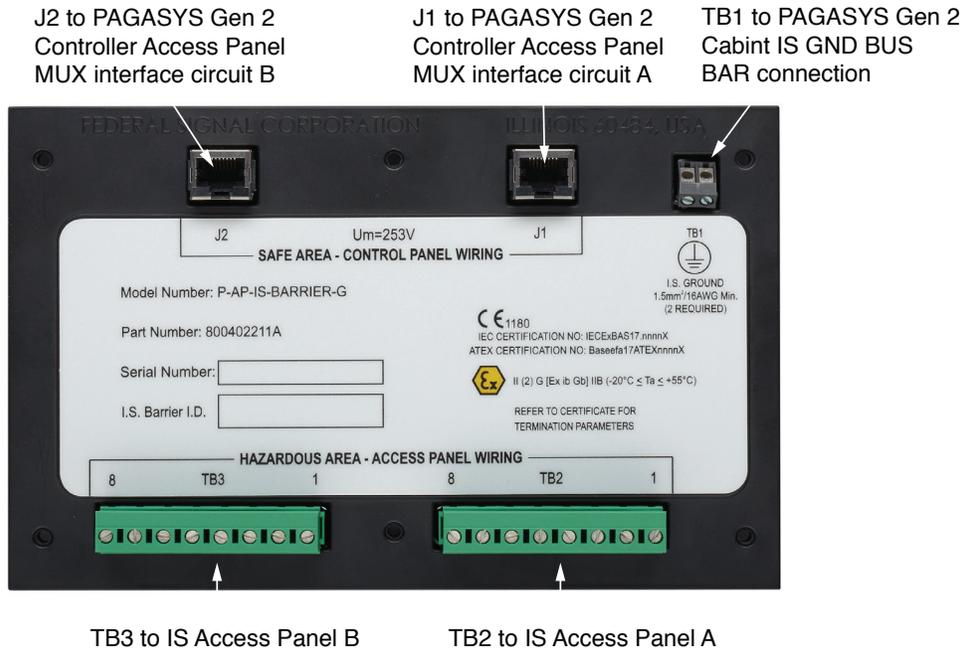
3.11.1 IS Barrier Board Specifications (P-IS-BARRIER-G)

Table 46 Environmental and Physical for the IS Barrier Board (P-IS-BARRIER-G)

Operating Temperature	-25 to +55°C
Humidity	0-98% non-condensing
P-IS-BARRIER-G Dimensions (H x W x L)	39.2 mm x 200 mm x 79.8 mm
Weight	0.51 kg/1.12 lb

4.0 Access Panels

The PAGASYS GEN II system uses new low-profile Access Panels and microphone stations for Intrinsically Safe (IS) and safe area. Each Access Panel provides independent circuitry to support redundant A/B systems and offers a common microphone for the redundant systems.

Figure 35 Picture of Desktop Access Panel

Table 47 Access Panel and Microphone Station Models

Model	Description
P-AP-EXDM-G	Access Panel IS Desk Mount GEN II. Requires separate purchase of IS Barrier Boards in cabinet. (Model P-IS-BARRIER-G)
P-AP-SADM-G	Access Panel Safe Area Desk Mount GEN II.
P-AP-EXWM-G	Access Panel IS Wall Mount GEN II. Requires separate purchase of IS Barrier Boards in cabinet. (Model P-IS-BARRIER-G)
P-AP-SAWM-G	Access Panel Safe Area Wall Mount GEN II.
P-AP-EX19-G	Access Panel IS Rack Mount GEN II. Requires separate purchase of IS Barrier Boards in cabinet. (Model P-IS-BARRIER-G)
P-AP-SA19-G	Access Panel Safe Area Rack Mount GEN II
P-MIC-EXWM1-316-G	PAGASYS GEN II Mic Station. Intrinsically safe (requires a separate purchase of two IS Barrier Boards in cabinet, (model P-IS-BARRIER-G), wall mount, IP66, SS316 enclosure, one pushbutton, stubby microphone.

The PAGASYS GEN II Access Panels and microphone stations provide the following functions:

- Monitoring of access panel keypad switches

- Control of an access panel visual and audio indicators

- RS422 Data communication with PAGASYS GEN II System Controller through an Internal AP MUX card or an external AP Aggregator card.

- Local microphone preamplifier and audio line driver

- A 20 kHz monitoring tone, which is used to confirm the audio signal path between microphone station to the PAGASYS GEN II System Controller

5.0 Removing and Installing the Controller Chassis

5.1 Removing the Controller Chassis

5.1.1 Removing the front cover

To remove the front cover, press a latch near the right handle and remove the front cover to expose the dust filter and cable connections.

5.1.2 Removing Power from the Controller Chassis

To remove power from the Controller Chassis, place the breaker switch in the off (that is, the down) position.

Figure 36 Breaker Switches
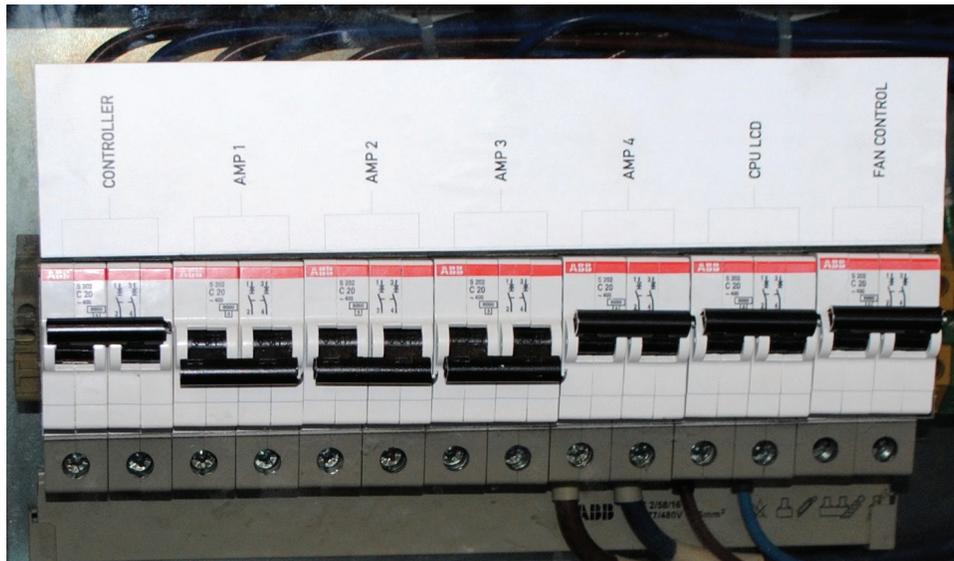
5.1.3 Disconnecting the Controller Chassis cables from the Chassis

To disconnect the Controller Chassis cable from the chassis:

1. Write down or photograph the labels and connector positions of all the cables exposed by the removed front cover.

2. Unplug the cables from the top and bottom RJ45 jack sockets located on the Amplifier Audio Mux.

3. Unplug the cables from the top and bottom RJ45 jack sockets located on the card installed in the AP Mux slot 1.

4. Unplug the cables from the top and bottom RJ45 jack sockets located on the card installed in the AP Mux slot 2.

5. Unplug the cables from the RJ45 jack sockets located on the Processor card.

6. Unplug the USB cables from the USB A and USB B cable jack sockets located on the Processor card.

7. Unplug the RS232 cable from the 9-way D socket located on the Processor card.

8. Unplug the cables from the RJ45 jack sockets located on the Miscellaneous I/O card.

9. Unplug the cables from the RJ11 jack sockets located on the Miscellaneous I/O card.

10. Unplug the RS232 cable from the 9-way D socket located on the Miscellaneous I/O card.

11. Unplug the cables from the RJ45 jack sockets located on the I/O Interface card.

12. Move the cables out of the way to enable removal of the chassis.

13. Undo the front captive retaining screws under left and right handles.

14. Carefully and slowly slide the Controller Chassis out of the Cabinet. Be ready to hold its weight once it slides all the way out.

5.1.4 Removing the Internal Cards

CMOS circuitry is incorporated within this equipment.

⚠ CAUTION

Observe Electro-Static Discharge precautions when removing, installing, and servicing the Controller Chassis.

Do not connect power or any cables to the internal circuit boards removed from the cabinet.

To remove the internal cards:

1. Remove the Controller Chassis from the Cabinet.

2. Undo the top cover retaining screws on the upper right, rear and left edges of the Controller Chassis.

3. Carefully lift the metal top cover. The internal cards are now visible.

4. Select the required internal card to remove.

   To remove the card, grip the selected internal card at each end of its top edge and pull the card vertically upwards to release the card from the Chassis.

⚠ CAUTION

Do not pull the card from one end only, because this may result in damage to the cards connector(s) or the Chassis Backplane connectors.

5.1.5 Removing the Controller Backplane

After the Controller Chassis is removed from the Cabinet and the controller cards are removed from the backplane, you then have access to the controller backplane.

To remove the Controller Backplane:

1. Once the chassis has been removed from the cabinet, undo the top cover retaining screws on the upper right, rear and left edges of the Controller Chassis.

2. Carefully lift the metal top cover. The internal cards are now visible.

3. Remove the internal cards as per the procedure above.

4. Make a note of all wire labels, colors, positions connected to the backplane.

5. Remove the 5 screws from the backplane's 4-mm card mount terminal lugs J10 through to J14.

6. Disconnect the 5 wires from the screws and refit screws to terminal lugs.

7. Remove the 12 backplane fixing screws and store for future use.

8. Lift the backplane out of the Chassis.

5.2 Installing the Controller Chassis

5.2.1 Installing the Controller Backplane

To install the Controller Backplane:

1. Place the backplane into the Chassis with the DIN connector facing up. The daughter board DIN connectors should be toward the front of the chassis and 5 x 4 mm card mount terminal lugs J10 through to J14 toward the rear of the chassis.

2. Align the backplane with its mounting post and fit the fixing screws

3. Connect the 5 wires to the backplane terminal lugs.

4. Fit all controller daughter boards and modules for internal card installation into Chassis. Refer to Installing the Internal Cards below.

5.2.2 Installing the Internal Cards

To install the internal cards:

1. Position the internal card to be installed so that its rear edge is located in the appropriate card guides punched into the rear of the Controller Chassis and that its faceplate is located in the appropriate slot in the floor of the Controller Chassis. The internal card to be installed is now located just above its backplane connectors.

Figure 37 Card Guides in Controller Chassis
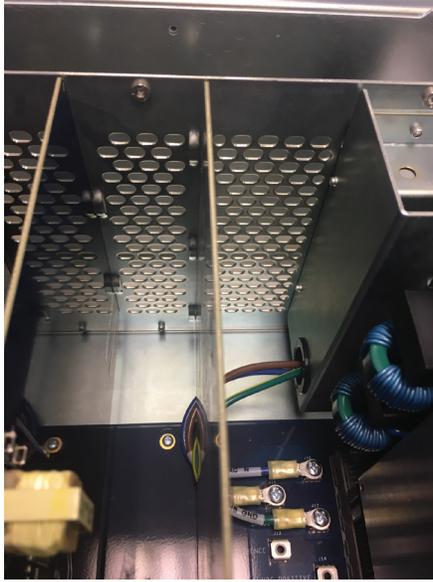
2. Carefully press the internal card in vertically downward to mate it with its backplane connectors.

3. Once all internal cards have been installed in their correct locations, refit the Controller Chassis top cover and refit the top cover retaining screws.

5.2.3 Installing the Controller Chassis

To install the Controller Chassis:

1. Temporarily secure all cables out of the way to allow the Controller Chassis to slide into its vacant cabinet position.

2. Carefully slide the Controller Chassis into the Cabinet ensuring that no cables are pinched in the process.

3. Tighten the front retaining screws.

4. Plug all the cables into their correct positions. (See the next section, Installing the Controller Chassis cables.)

5. Attach the front cover, using three slots on the left side as hinges and carefully closing like a door on the right side, until the latch clicks in position.

5.2.4 Installing the Controller Chassis Cables

See the PAGASYS GEN II System Controller Technical Installation Guide for detailed specifications on Controller card wiring connections.

To connect the Controller Chassis cables to the Chassis:

1. After the Controller Chassis is installed in the cabinet (see prior section, Installing the Controller Chassis), and before the front cover is attached, install the cables.

2. Plug the following cables into the RJ45 jack sockets located on the I/O Interface card.

- I/O port 1, yellow cable, coming from P-16DIN-G serial port

- I/O port 2, orange cable, coming from P-FCMC-G serial port

- I/O port 3, green cable, coming from P-SPDT-G serial port

- I/O port 4, blue cable, coming from P-BK-MON-G serial port

Figure 38 Cables Connected into RJ45 Jack Socket

I/O Interface Card
4 x RJ45 Cables (RS485 Serial)

4. Plug the RS232 cable into the 9-way D socket located on the Miscellaneous I/O card.

5. Plug the microphone cable into the RJ11 jack sockets located on the Miscellaneous I/O card.

6. Plug the auxiliary audio cables into the RJ45 jack sockets located on the Miscellaneous I/O card.

Figure 39 Cables Connected on the Miscellaneous I/O Card
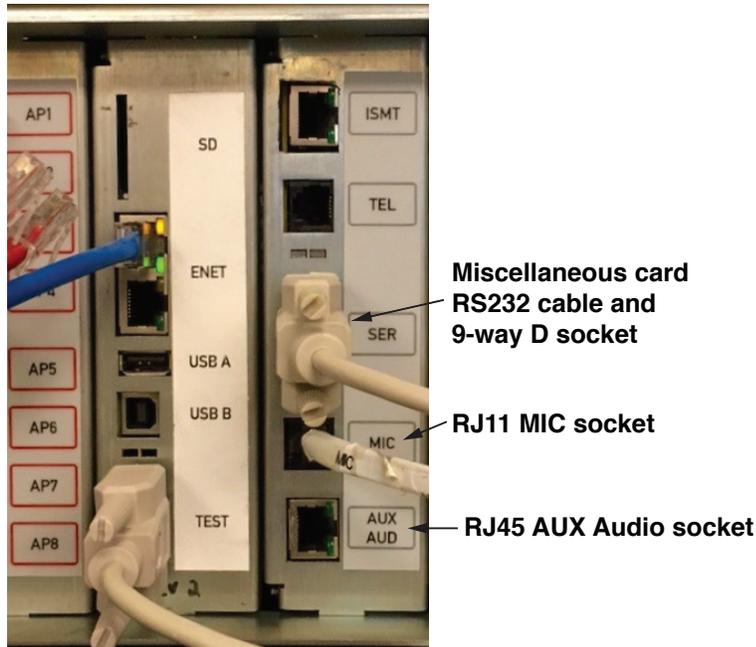
7. Plug the RS232 cable into the 9-way D socket located on the Processor card.

8. Plug any USB cables into the USB A and USB B cable jack sockets located on the Processor card.

9. Plug the Ethernet cables from the System Manager server into the RJ45 jack sockets located on the Processor card.

Figure 40 Cable Connections on the Processor Card
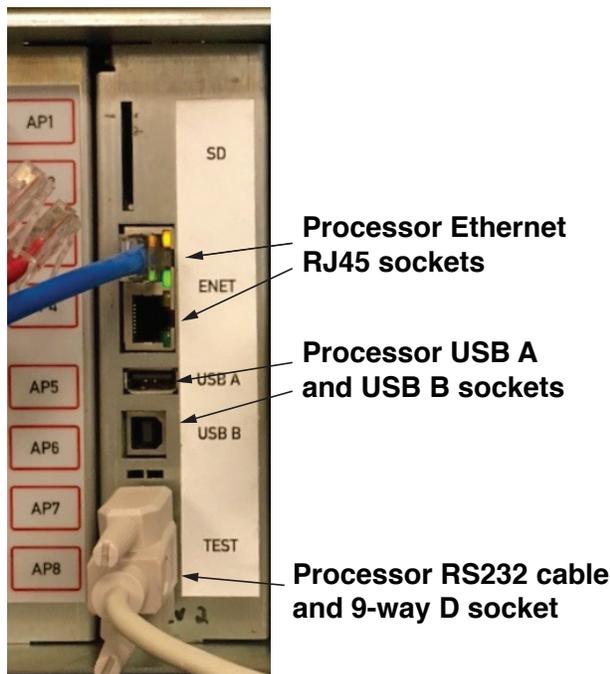
Cable wiring for the AP Mux slot 1 and 2 is differentiated by the type of AP Mux card inserted in the slot:

- If the Internal AP Mux card (P-IAMC-G) is present, insert the RJ45 cables from the Access Panels into the (8) RJ45 sockets on the front of the card.

- If the External AP Mux card (P-EAMC-G) is present in the slot, insert the RJ45 cables from the Access Panel Aggregator card into the (4) RJ45 sockets on the top of the card.

Figure 41 Internal AP Mux Card Connections

Figure 42 External AP Mux Card Connections

10. Plug the cables from the Access Panels or Access Panel Aggregator card into the RJ45 jack sockets located on the card installed in the AP Mux slot 2.

11. Plug the cables from the Access Panels or Access Panel Aggregator card into the RJ45 jack sockets located on the card installed in the AP Mux slot 1.

12. Plug the RJ45 cables from the amplifiers into the input/output RJ45 jack sockets located on the top of the Amplifier Audio Mux.

13. Plug the fireman's microphone into the fireman's microphone socket, if available.

Figure 43 Connections

14. Write down or photograph the labels and connector positions of all the cables exposed by the removed front cover.

5.3 Removing and Installing the Amplifier Chassis (From Cabinet)

5.3.1 Safety Instructions

⚠ **WARNING**

This equipment is part of a Voice Alarm System and there is the possibility of dangerous voltages being present in the main equipment rack.

Internal servicing must be performed by a competent, qualified engineer.

5.3.2 Recommendation for the Equipment Location

Avoid locating the equipment:

- Near heat sources

- In direct sunlight

- Where it is exposed to high humidity or dust levels

5.3.3 Preparing Amplifier Installation and Removal

CMOS circuitry is incorporated within this equipment. Observe Electro-Static Discharge precautions when removing, installing, and servicing amplifiers.

> ⚠ **CAUTION**
>
> ***Before removing or installing an amplifier, turn off the circuit breaker supplying power to the unit. Do not use the power buttons on the front panel.***

5.3.4 Removing the Amplifier Chassis

To remove the Amplifier Chassis:

1. Press a latch near the right handle and remove the front cover to expose the dust filter and cable connections. (See Figure 15.)

2. Write down or photograph the labels and positions of all the cables exposed by the removed front cover.

3. Unplug four audio/control signal cables on the bottom left. Unplug one large 100 V audio output cable in the bottom center. Unplug two standby cables on the bottom right.

4. Move the cables out of the way of the Chassis.

5. Undo the front captive retaining screws under left and right handles.

6. Carefully and slowly slide the Amplifier Chassis out. Be ready to hold its weight once it slides all the way out.

5.3.5 Installing the Amplifier Chassis

To install the Amplifier Chassis:

1. Temporarily secure the cables out of the way of the Amplifier Chassis to be placed in the empty chassis position.

2. Carefully slide the Amplifier Chassis into its mainframe position ensuring that no cables are pinched in the process.

3. Tighten the front retaining screws.

4. Plug all the cables into their former positions as previously recorded.

5. Attach the front cover, using three slots on the left side as hinges and carefully closing like a door on the right side, until the latch clicks in position.

5.3.6 Replacing the Internal Cards

> ⚠ **CAUTION**
>
> ***CMOS circuitry is incorporated within this equipment. Observe Electro-Static Discharge precautions when removing, installing, and servicing amplifiers.***
>
> ***Do not connect power or any cables to the amplifier removed from the cabinet.***

5.3.7 Removing the Amplifier Card

After the Amplifier Chassis is removed from the Cabinet and all cables are disconnected, you then have access to the Amplifier Chassis.

To remove the Amplifier Card:

1. Undo the top cover retaining screws on the upper right and left edges of the Chassis.

2. Carefully lift the metal top cover. Four vertical amplifier cards (modules) are now visible.

   NOTE: To remove an amplifier card, disconnect all its internal cables:

3. Unplug the front panel cable on the top edge.

   Figure 44 Front Panel Cable

4. Unplug the fan cable near the front fan.

   Figure 45 Fan Cable

5. Unplug the upper transformer plug.

6. Unplug the lower transformer plug.

5.3.8 Installing the Amplifier Card

To install the amplifier card:

1. Temporarily secure the cables out of the way of the amplifier card to be placed in the empty position.

2. Observe the rear holding rail formed by metal notches on the back wall. Keep the board between these notches as it slides down.

3. Place the amplifier card in the top portion of the front plastic rail and between the first two notches of the back rail.

Figure 46 Amplifier Card in the Top Portion of the Front Plastic Rail
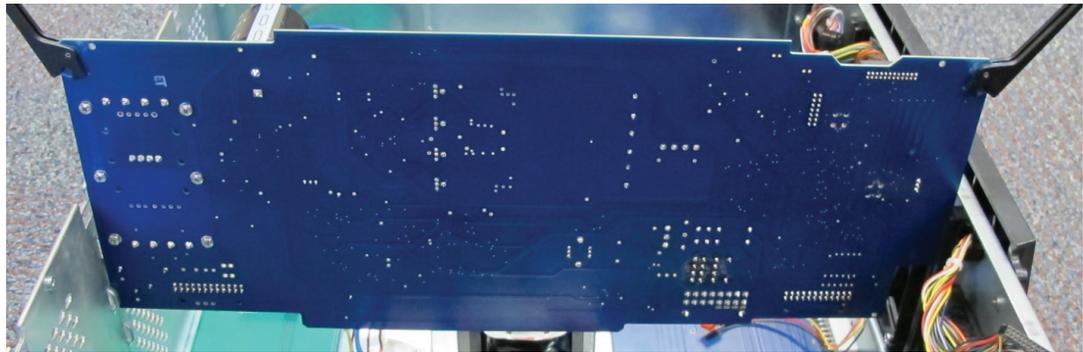
4. Slowly slide the card down while observing that no wire gets under the board.

5. Check the alignment of the back side of the card between the metal notches.

6. The front plastic rail has a step, on which the card may stop, when it is 80% of the way down. In such a case, grab the card by only the back handle, and lift it slightly (by 2 mm or 0.1 in) so that the front clears the step of the plastic rail. The card then easily slides the rest of the way down, gently resting on the connection headers.

    NOTE: Prepare the card for the final step of insertion into the connection headers.

7. Ensure that all three headers on the bottom are aligned.

8. Ensure that the metal handles are in the 20 degree and 60 degree angle up from horizontal, with the front handle short end under the metal ridge and the rear handle short end in the slot of the back wall.

Figure 47 Metal Handles in the 20 degree and 60 degree Angle
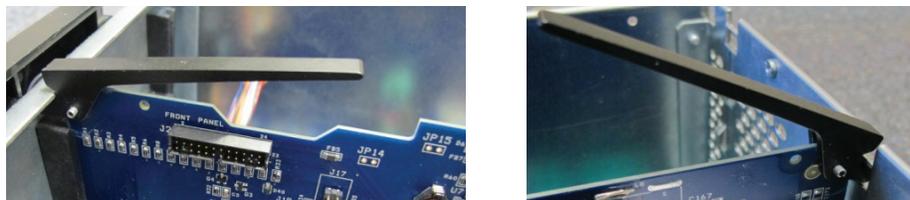
9. Push both handles down to their horizontal position. This inserts the card plugs into their headers.

10. Reconnect all cable connectors into their proper locations:

- Insert the lower transformer plug into its header while observing its polarity.

- Insert the upper transformer plug into its header while observing its polarity.

- Insert the fan connector into its header while observing its polarity.

- Insert the front panel connector on the top edge while observing its polarity.

Figure 48 Lower Transformer Plug
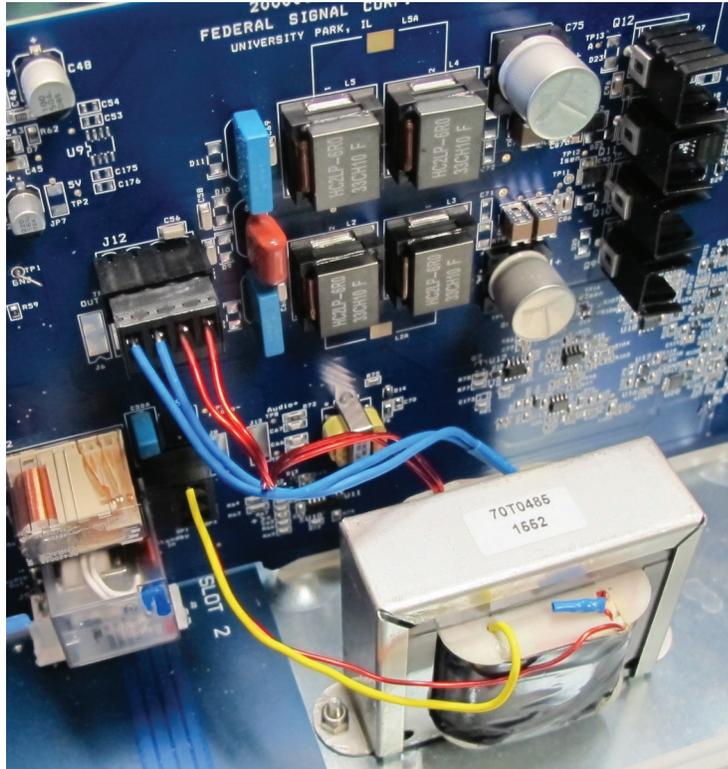
7. The amplifier card has two black metal handles. Lift both handles at the same time and open them up, turning by an angle greater than 90 degrees.

Figure 49 Two Black Handles on Amplifier Card

8. Holding by the open handles, carefully slide the card out of the chassis.

5.3.9 Removing the ISMT Card (Optional)

After the Amplifier Chassis is removed from the Cabinet and all the cables are disconnected, you then have access to the internal cards.

To remove the ISMT card:

1. Undo the top cover retaining screws on the upper right and left edges of the Chassis.

2. The optional vertical ISMT card is located on the right side. This card is shorter than the amplifier cards.

3. To remove the optional ISMT card, lift the black metal handle in the front top corner, turning it up by more than 90° and then carefully slide the card up the holding rails.

Figure 50 Removing the ISMT Card
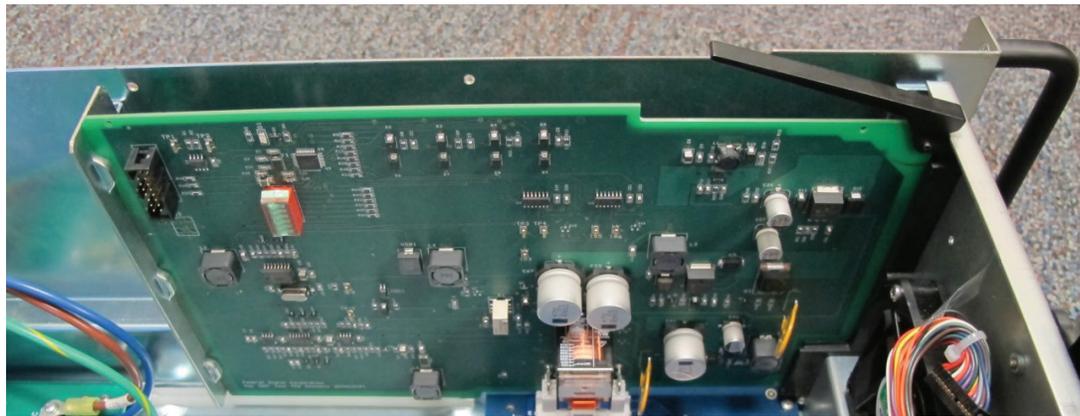
5.3.10 Installing the ISMT Card (Optional)

To install the ISMT card:

1. Observe the rear holding rail formed by metal notches on the back wall. Keep the card between these notches as it slides down.

2. Place the ISMT card in the top portion of the front plastic rail and between the first two notches of the back rail.

3. Carefully slide the card down, until its plug gently rests on the header of the motherboard.

4. Check the alignment of the back side of the card between the metal notches.

5. Ensure that the metal handle is in the 30° and 60° angle up from horizontal, with the end under the metal ridge.

6. Fully insert the card into its header, pushing the handle into horizontal position, while also applying pressure on the other end of the card (without handle).

To configure the Amplifier Chassis for ISMT after installing the ISMT card, see "9.0 Configuring the Amplifier Chassis" on page 95.

6.0 Installing and Configuring the I/O Cards

6.1 Main Distribution Frame (MDF)

The PAGASYS GEN II system has been designed to incorporate the Main Distribution Frame (MDF) in the same cabinet as the control and amplification equipment. This area of the cabinet is used to mount system cards that receive terminations from field equipment such as power equipment, beacons, speakers, access panels, and any other terminations to be handled by the system.

Figure 51 Main Distribution Frame (MDF)

The MDF contains three areas for mounting terminating equipment: left panel, right panel, and back panel. The left panel is used to mount amplifier audio distribution terminal cards for loudspeaker terminations. The right panel is used for power terminations and mounting the Beacon Monitored Output card. The back panel is used to mount any of the system I/O cards.

Figure 52 Areas for Mounting Terminating Equipment

SECTION A-A
PLATE 'A'

100V/70V AUDIO
FIELD LOUDSPEAKER TERMINATION

A4
A5 (AMP 4)
A6 (AMP 3)
A3
A2 (AMP 2)
A1 (AMP 1)
I.E. BUSSBAR
P-AADC2-G

INTERNAL FRONT VIEW
PLATE 'C'

EXTERNAL FIELD CONTROL INPUTS/OUTPUTS
ACCESS UNIT AND SPEAKER MUTE TERMINATIONS

C4 (F&G/EXT. CONTROL INPUTS 1-16)
C5 (CONTROL RELAY OUTPUTS/LOCAL AP SPEAKER MUTES 1-12)
C6 (CONTROL RELAY OUTPUTS/LOCAL AP SPEAKER MUTES 13-24)
I.E. BUSSBAR
C3
C2 (ACCESS PANELS 1-4)
C1 (ACCESS PANEL 5, 'A'-'B' LINK, PABX I/F)
P-16DIN-G
P-SPDT-G
P-PTBC-G

(STANDARD CARD CONFIGURATION SHOWN WITH TERMINATION REFERENCE INFO SHOWN IN PARENTHESIS)

SECTION B-B
PLATE 'B'

120V/240VAC UTILITY SUPPY
AND FIELD STROBE TERMINATION

B4
120/240VAC BEACON MCB/DIST
120/240VAC UTILITY SUPPLY INPUT/MCB/ISOLATOR
PE BUSSBAR/FIELD P3 BONDING POINT
B3
B2
B1
FIELD BEACON TERM
P-BK-MON-G

6.2 Digital Input Card (P-16DIN-G)

6.2.1 Removing the Digital Input Card

To remove the Digital Input Card (P-16DIN-G):

1. Before removing the P-16DIN-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Referencing the cabinet wiring drawings and the Technical Installation Guide, disconnect the P-16DIN-G connectors to the system cables in the following manner:

    •   Disconnect the I/O Bus CAT 5 cables from card mount RJ45 sockets J2 and J3.

    •   Disconnect the digital input wires from TB1 and TB2.

3. While supporting the P-16DIN-G, remove the screws that hold the P-16DIN-G on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-16DIN-G from its mounting pillars.

6.2.2 Installing and Configuring the Digital Input Card (P-16DIN-G)

The Digital Input card is a panel mount card assembly that is mounted on the Rear I/O panel in the lower part of the front access cabinet. After installation, the digital input card must have its I/O Bus address set. See the PAGASYS GEN II Digital Input Technical Installation Guide for more information on configuring the I/O Bus address.

To install and configure the Digital Input Card (P-16DIN-G):

1. Before installing the P-16DIN-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Place the P-16DIN-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. Referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-16DIN-G connectors to the system cables in the following manner:

    •   Connect the digital input wires to TB1 and TB2.

    •   Connect the I/O Bus CAT 5 cables to card mount RJ45 sockets J2 and J3.

See the PAGASYS GEN II System Manager Software User Manual for more information on configuring the digital input card and its inputs.

6.3 Beacon Monitored Card (P-BK-MON-G)

6.3.1 Removing the Beacon Monitored Card (P-BK-MON-G)

To remove the Beacon Monitored card (P-BK-MON-G):

1. Before removing the P-BK-MON-G card, ensure that all AC and DC power supplies serving the Cabinet are turned off and isolated.

2. While referencing the cabinet wiring drawings and the Technical Installation Guide, disconnect the P-BK-MON-G connectors to the system cables in the following manner:

- Disconnect the I/O Bus CAT 5 cables from the top card RJ45 sockets J3 and J4.

- Disconnect and make safe the Beacon circuit 1 AC supply wires from the bottom card Terminal block TB1.

- Disconnect and make safe the Beacon circuit 2 AC supply wires from the bottom card terminal block TB2.

- Disconnect the Beacon circuit 1 AC Load Out wires from the bottom card terminal block TB3.

- Disconnect the Beacon circuit 1 AC Load In wires from the bottom card terminal block TB4.

- Disconnect the Beacon circuit 2 AC Load Out wires from the bottom card terminal block TB5.

- Disconnect the Beacon circuit 2 AC Load wires from the bottom card in terminal block TB6.

3. While supporting the P-BK-MON-G card, remove the screws that hold the P-BK-MON-G card on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-BK-MON-G card from its mounting pillars.

6.3.2 Installing and Configuring the Beacon Monitored Card (P-BK-MON-G)

The Beacon Monitored card is a panel mount card assembly that is mounted on the Power I/O panel in the lower part of the front access cabinet. After installation, the Beacon Monitored card must have its I/O Bus address set. See the PAGASYS GEN II Beacon Monitored Technical Installation Guide for more information on configuring the I/O Bus address.

The P-BK-MON-G module assembly contains two cards separated by spacers, and a metal shield and connected by two cable looms. The lower card provides the Beacon Circuit Field Terminal blocks and relay switching circuitry for two independent beacon circuits. The upper card provides an on-board microprocessor, which coordinates the operation of the card, including the relays mounted on the lower card.

To install and configure the Beacon Monitored card (P-BK-MON-G):

1. Before removing or installing the P-BK-MON-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Place the P-BK-MON-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. Referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-BK-MON-G card connectors to the system cables in the following manner:

- Connect the Beacon circuit 1 AC Load Out wires from the bottom card terminal block TB3.

- Connect the Beacon circuit 1 AC Load In wires from the bottom card terminal block TB4.

- Connect the Beacon circuit 2 AC Load Out wires from the bottom card terminal block TB5.

- Connect the Beacon circuit 2 AC Load wires from the bottom card in terminal block TB6.

- Connect and make safe the Beacon circuit 1 AC supply wires from the bottom card Terminal block TB1.

- Connect and make safe the Beacon circuit 2 AC supply wires from the bottom card terminal block TB2.

- Connect the I/O Bus CAT 5 cables from the top card RJ45 sockets J3 and J4.

6.4 Relay Output Card (P-SPDT-G)

6.4.1 Removing the Relay Output Card (P-SPDT-G)

External equipment connected to the P-SPDT-G relay contacts may still continue to provide live voltages to its terminals. Before disconnecting wires from terminals, which are connected to external equipment, ensure that the external equipment is shut down or the wires are made safe at the external equipment.

To remove the Relay Output card (P-SPDT-G):

1. Before removing the P-SPDT-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. While referencing the cabinet wiring drawings and the Technical Installation Guide, disconnect the P-SPDT-G connectors to the system cables in the following manner:

   - Disconnect the I/O Bus CAT 5 cables from the card mount RJ45 sockets J1 and J2.

   - Disconnect the wires from TB1 pins 1 to 36.

3. While supporting the P-SPDT-G card, remove the screws that hold the P-SPDT-G on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-SPDT-G card from its mounting pillars.

6.4.2 Installing and Configuring the Relay Output Card (P-SPDT-G)

The Relay Output card is a panel mount card assembly that is mounted on the Rear I/O panel in the lower part of the front access cabinet. After installation, the Relay Output card must have its I/O Bus address set. See the PAGASYS GEN II Relay Output Card Technical Installation Guide for more information on configuring the I/O Bus address.

To install and configure the Relay Output card (P-SPDT-G):

1. Before removing or installing the P-SPDT-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Place the P-SPDT-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. Referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-BK-MON-G connectors to the system cables in the following manner:

    •   Connect the wires to TB1 pins 1 to 36

    •   Connect the I/O Bus CAT 5 cables to the card mount RJ45 sockets J1 and J3.

6.5 Fan Control and Monitoring Card (P-FCMC-G)

6.5.1 Removing the Fan Control and Monitoring Card (P-FCMC-G)

To remove the Fan Control and Monitoring card (P-FCMC-G):

1. Before removing the P-FCMC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Remove the fixing screws from the P-FCMC-G Perspex finger guard and remove the Perspex finger guard. Store the Perspex finger guard and fixing screws in a safe place, because they must be refitted before the PAGASYS GEN II system is placed back into operation.

3. While referencing the rack wiring drawings, disconnect the P-FCMC-G connectors to the system cables in the following manner:

    •   Disconnect the AC supply cable loom assembly From TB1.

    •   Disconnect the I/O Bus CAT 5 cables from card mount RJ45 sockets J1 and J2.

    •   Disconnect transformer number 2 secondary cable assembly from TB6.

    •   Disconnect transformer number 1 secondary cable assembly from TB4.

    •   Disconnect transformer number 2 primary cable assembly from TB5.

    •   Disconnect transformer number 1 primary cable assembly from TB3.

    •   Disconnect the AC supply cable loom assembly from TB1.

    •   Disconnect the External DC supply cable from TB2.

    •   Disconnect the bottom fan cable assembly socket from card mount Molex minifit connectors J3.

    •   Disconnect the Top fan cable assembly socket from card mount Molex minifit connectors J4.

4. While supporting the P-FCMC-G card, remove the fixing screws and threaded mounting pillars that hold the P-FCMC-G card on its mounting pillars. Store the fixing screws and threaded mounting pillars in a safe place for reuse.

5. Remove the P-FCMC-G card from its mounting pillars.

6.5.2 Installing and Configuring the Fan Control and Monitoring Card (P-FCMC-G)

The P-FCMC-G card is a panel mount card assembly, connected to two off-board toroidal mains transformers. After installation, the Fan Control and Monitoring card must have its I/O Bus address set. See the PAGASYS GEN II Fan Control and Monitoring Card Technical Installation Guide for more information on configuring the I/O Bus address.

⚠ WARNING

The Fan Control and Monitoring card is provided with a Perspex finger guard to prevent operator and service personnel from coming in to contact with hazardous voltage present on this card. This guard must always be in place when the unit is energized.

The external transformers provide 3000 V of electrical isolation between primary and secondary windings and provides a secondary terminal voltage of 36 Vac or 18 Vac from an applied primary voltage 230 Vac or 115 Vac respectively.

To install and configure the Fan Control and Monitoring card (P-FCMC-G):

1. Before removing or installing the P-FCMC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Place the P-FCMC-G card on to its housing mounting pillars and fasten to the pillars using the fixing screws and threaded mounting pillars supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-FCMC-G connectors to the system cables in the following manner:

    • Connect the top fan cable assembly socket to card mount Molex minifit connectors J4.

    • Connect the bottom fan cable assembly socket to card mount Molex minifit connectors J3.

    • Typical, not required, but if specified in cabinet wiring drawings and the Technical Installation Guide, connect the External DC supply cable to TB2.

    • Connect transformer number 1 primary cable assembly in to TB3.

    • Connect transformer number 2 primary cable assembly in to TB5.

    • Connect transformer number 1 secondary cable assembly in to TB4.

    • Connect transformer number 2 secondary cable assembly in to TB6.

    • Connect the I/O Bus CAT 5 cables to card mount RJ45 sockets J1 and J2.

    • Connect the AC supply cable loom assembly in to TB1.

4. Place the P-FCMC-G Perspex finger guard on to its mounting pillars and fasten to the mounting pillars using the fixing screws supplied or previously removed.

⚠ WARNING

The Perspex finger guard must be fitted to protect operators and service personnel from coming into contact with hazardous voltages. Removal of the finger guard renders the PAGASYS GEN II equipment unsafe and therefore must not be operated with it removed.

6.6 Monitored Input Card (P-MONIC-G)

6.6.1 Removing the Monitored Input Card (P-MONIC-G)

To remove the Monitored Input card (P-MONIC-G):

1. Before removing the P-MONIC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. While referencing the cabinet wiring drawings and the Technical Installation Guide, disconnect the P-MONIC-G connectors to the system cables in the following manner:

    •   Disconnect the I/O Bus CAT 5 cables from card mount RJ45 sockets J1 and J2.

    •   Disconnect the monitored input wires from TB1 and TB2.

3. While supporting the P-MONIC-G card, remove the screws that hold the P-MONIC-G card on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P- P-MONIC-G card from its mounting pillars.

6.6.2 Installing and Configuring the Monitored Input Card (P-MONIC-G)

The Monitored Input card is a panel mount card assembly that is mounted on the Rear I/O panel in the lower part of the front access cabinet. After installation, the Monitored Input card must have its I/O Bus address set. See the PAGASYS GEN II Monitored Input Module Technical Installation Guide for more information on configuring the I/O Bus address.

The P-MONIC-G module assembly contains two cards separated by spacers that are connected through a cable loom. The lower card provides the field terminals and the 16 monitored input measurement circuits. The upper card provides a microprocessor which coordinates the scanning of 16 monitored input circuits and reports the status of the monitored inputs to the Controller.

To install and configure the Monitored Input card (P-MONIC-G):

1. Before removing or installing the P-MONIC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

2. Place the P-MONIC-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-MONIC-G connectors to the system cables in the following manner.

    •   Connect the digital input wires to TB1 and TB2.

- Connect the I/O Bus CAT 5 cables to card mount RJ45 sockets J1 and J2.

6.7 Passive Terminal Block Card (P-PTBC-G)

6.7.1 Removing the Passive Terminal Block Card (P-PTBC-G)

To remove the Passive Terminal Block card (P-PTBC-G):

1. Before removing or installing the P-PTBC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated. This should remove any live voltages generated with the cabinet from the terminal blocks of the P-PTBC-G card.

2. While referencing the rack wiring drawings and the Technical Installation Guide, disconnect the P-PTBC-G connectors to the system cables in the following manner.

    - Disconnect the cables from RJ45 connectors J1 through J4

    - Disconnect the Access Panel wires from TB1 pins 1 through 33.

3. While supporting the P-PTBC-G card, remove the screws that hold the P-PTBC-G card on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-PTBC-G card from its mounting pillars.

6.7.2 Installing and Configuring the Passive Terminal Block Card (P-PTBC-G)

Avoid locating the equipment near heat sources, in direct sunlight, and where it is exposed to high humidity or dust levels.

Before removing or installing the P-PTBC-G card, ensure that all AC and DC power supplies serving the Cabinet are turned off and isolated.

> **⚠ CAUTION**
>
> ***AUTOMATIC EQUIPMENT WARNING: This equipment is part of an automated system. When installing or servicing this equipment or any other part of the warning system, you must be aware that the system could energize circuits and signals at any time. Use extreme caution to protect yourself from electric shock, loud sounds, and bright light that could be generated by the system. To avoid these hazards, always disconnect power to all of the system and its components, including battery backup power supplies when installing or servicing any part of the warning system.***

To install and configure the Passive Terminal Block card (P-PTBC-G):

1. Ensure that the AC or DC power supplies serving the P-PTBC-G card and all other connected equipment are turned off and isolated.

2. Place the P-PTBC-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-PTBC-G connectors to the system cables in the following manner.

    - Connect the Access Panel wires from TB1 pins 1 through 32.

    - Connect the cables from RJ45 connectors J1 through J4.

6.8 Cable Power Injector I/O Card (P-CPIC-G)

6.8.1 Removing the Cable Power Injector I/O Card (P-CPIC-G)

To remove the Cable Power Injector I/O card (P-CPIC-G):

1. Before removing or installing the P-CPIC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated. This should remove any live voltages generated with the cabinet from the terminal blocks of the P-CPIC-G card.

2. While referencing the rack wiring drawings, disconnect the P-CPIC-G connectors to the system cables in the following manner.

   - Disconnect the cables from RJ45 connectors J1 and J2.

   - Disconnect the cables from RJ45 connectors J8 and J9.

   - Disconnect the cables from card header J3 and J10.

   - Disconnect the cables from RJ45 connectors J4 through to J7.

   - Disconnect the cables from RJ45 connectors J11 through to J14.

3. While supporting the P-CPIC-G card, remove the screws that hold the P-CPIC-G on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-CPIC-G card from its mounting pillars.

6.8.2 Installing and Configuring the Cable Power Injector I/O Card (P-CPIC-G)

Avoid locating the equipment near heat sources, in direct sunlight, and where it is exposed to high humidity or dust levels.

Before removing or installing the P-CPIC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

⚠ CAUTION

AUTOMATIC EQUIPMENT WARNING: This equipment is part of an automated system. When installing or servicing this equipment or any other part of the warning system, you must be aware that the system could energize circuits and signals at any time. Use extreme caution to protect yourself from electric shock, loud sounds, and bright light that could be generated by the system. To avoid these hazards, always disconnect power to all of the system and its components, including battery backup power supplies when installing or servicing any part of the warning system.

To install and configure the Cable Power Injector I/O card (P-CPIC-G):

1. Ensure that the AC or DC power supplies serving the P-CPIC-G card and all other connected equipment are turned off and isolated.

2. Place the P-CPIC-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-CPIC-G connectors to the system cables in the following manner.

- Connect the cables to RJ45 connectors J11 through to J14.

- Connect the cables to RJ45 connectors J4 through to J7.

- Connect the cables to card header J3 and J10.

- Connect the cables to RJ45 connectors J8 and J9.

- Connect the cables to RJ45 connectors J1 and J2.

6.9 Amplifier Audio Distribution Cards (P-AADCx-G)

6.9.1 Removing the Amplifier Audio Distribution Card (P-AADCx-G)

To remove the Amplifier Audio Distribution card (P-AADCx-G):

1. Before removing or installing the P-AADCx-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated. This should remove any live voltages generated with the cabinet from the terminal blocks of the P-AADCx-G.

2. While referencing the rack wiring drawings, disconnect the P-AADCx-G connectors to the system cables in the following manner.

- Disconnect the cables from card headers J1 through J4 as applicable.

- Disconnect the Speaker Circuit wires from TB1 pins 1 through TB32.

3. While supporting the P-AADCx-G card, remove the screws that hold the P-AADCx-G card on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-AADCx-G card from its mounting pillars.

6.9.2 Installing and Configuring the Amplifier Audio Distribution Cards (P-AADCx-G)

Avoid locating the equipment near heat sources, in direct sunlight, and where it is exposed to high humidity or dust levels.

Before removing or installing the P-AADCx-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

NOTE: The x stands for P-AADC1-G, P-AADC2-G, P-AADC4-G, or P-AADC8-G.

⚠ **CAUTION**

AUTOMATIC EQUIPMENT WARNING: This equipment is part of an automated system. When installing or servicing this equipment or any other part of the warning system, you must be aware that the system could energize circuits and signals at any time. Use extreme caution to protect yourself from electric shock, loud sounds, and bright light that could be generated by the system. To avoid these hazards, always disconnect power to all of the system and its components, including battery backup power supplies when installing or servicing any part of the warning system.

To install and configure the Amplifier Audio Distribution cards (P-AADCx-G):

1. Ensure that the AC or DC power supplies serving the P-AADCx-G card and all other connected equipment are turned off and isolated.

2. Place the P-AADCx-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-AADCx-G connectors to the system cables in the following manner.

    •   Connect the speaker circuit wires from TB1 pins 1 through TB32.

    •   Connect the cables from RJ45 connectors J1 through J4.

6.10 Fan Wiring Termination Card (P-FWTC-G)

6.10.1 Removing the Fan Wiring Termination Card (P-FWTC-G)

To remove the Fan Wiring Termination card (P-FWTC-G):

1. Before removing or installing the P-FWTC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated. This should remove any live voltages generated with the cabinet from the terminal blocks of the P-FWTC-G card.

2. While referencing the rack wiring drawings, disconnect the P-FWTC-G connectors to the system fan wiring.

3. While supporting the P-FWTC-G card, remove the screws that hold the P-FWTC-G card on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-FWTC-G card from its mounting pillars.

6.10.2 Installing and Configuring the Fan Wiring Termination Card

Avoid locating the equipment near heat sources, in direct sunlight, and where it is exposed to high humidity or dust levels.

Before removing or installing the P-FWTC-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

> ⚠ CAUTION
>
> *AUTOMATIC EQUIPMENT WARNING: This equipment is part of an automated system. When installing or servicing this equipment or any other part of the warning system, you must be aware that the system could energize circuits and signals at any time. Use extreme caution to protect yourself from electric shock, loud sounds, and bright light that could be generated by the system. To avoid these hazards, always disconnect power to all of the system and its components, including battery backup power supplies when installing or servicing any part of the warning system.*

To install and configure the Fan Wiring Termination card (P-FWTC-G):

1. Ensure that the AC or DC power supplies serving the P-FWTC-G card and all other connected equipment are turned off and isolated.

2. Place the P-FWTC-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-FWTC-G connectors to the system fan wiring.

6.11 IS Barrier Board (P-IS-BARRIER-G)

6.11.1 Removing the IS Barrier Board (P-IS-BARRIER-G)

To remove the IS Barrier Board (P-IS-BARRIER-G):

1. Before removing or installing the P-IS-BARRIER-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated. This should remove any live voltages generated with the cabinet from the terminal blocks of the P-IS-BARRIER-G.

2. Referencing the rack wiring drawings disconnect the P-IS-BARRIER-G connectors to the Access Panel wiring.

3. While supporting the P-IS-BARRIER-G card, remove the screws that hold the P-IS-BARRIER-G on its mounting pillars. Store the screws in a safe place for reuse.

4. Remove the P-IS-BARRIER-G card from its mounting pillars.

6.11.2 Installing and Configuring the IS Barrier Board

Avoid locating the equipment near heat sources, in direct sunlight, and where it is exposed to high humidity or dust levels.

Before removing or installing the P-IS-BARRIER-G card, ensure that all AC and DC power supplies serving the cabinet are turned off and isolated.

⚠ CAUTION

AUTOMATIC EQUIPMENT WARNING: This equipment is part of an automated system. When installing or servicing this equipment or any other part of the warning system, you must be aware that the system could energize circuits and signals at any time. Use extreme caution to protect yourself from electric shock, loud sounds, and bright light that could be generated by the system. To avoid these hazards, always disconnect power to all of the system and its components, including battery backup power supplies when installing or servicing any part of the warning system.

To install and configure the IS Barrier board (P-IS-BARRIER-G):

1. Ensure that the AC or DC power supplies serving the P-IS-BARRIER-G card and all other connected equipment are turned off and isolated.

2. Place the P-IS-BARRIER-G card on to its housing mounting pillars and fasten to the pillars using the screws supplied or previously removed.

3. While referencing the cabinet wiring drawings and the Technical Installation Guide, connect the P-IS-BARRIER-G card connectors to the Access Panel wiring.

7.0 PAGASYS GEN II Controller Firmware

The PAGASYS GEN II system uses the System Manager software to configure and manage the system operation, however the System Controller is the central point of control for Public Address and General Alarm operations:

- The System Controller manages all system I/O, selects and routes audio to system amplifiers, and manages communications within the PAGASYS system.

- If the System Manager stops communicating, the PAGASYS GEN II controller will continue to operate normally.

7.1 Updating PAGASYS GEN II Controller

When updating the System Manager software, it is important to maintain controller firmware compatibility for the following reasons:

- Database fields may have changed since initial release of the product.

- Messaging between System Manager and the controller may have changed.

- Features may have been added.

- Improvements for issues discovered during testing and deployment of customer systems.

7.2 Upgrading the Controller Firmware

Perform the following procedure when the controller needs an update to match the System Manager's version.

To update the controller firmware using the automated installer, you need the following:

- Laptop or server with a serial port connection (or USB to serial cable). If your computer does not have a serial port, you will need a USB-to-serial adapter.

- SD card

- SD card reader

- Serial cable

- Terminal emulator software (preferably PuTTY)

- Copy of the controller firmware files with install script.

To update the controller firmware using the automated installer:

1. Connect the serial port cable to the controller shelf using the TEST port DB-9 connector on the front of the controller shelf.

2. To access the TEST port, remove the plastic front cover from the shelf by pressing the tab on the far right of the cover to the left while pulling.

**Figure 53 Back of Controller Shelf**
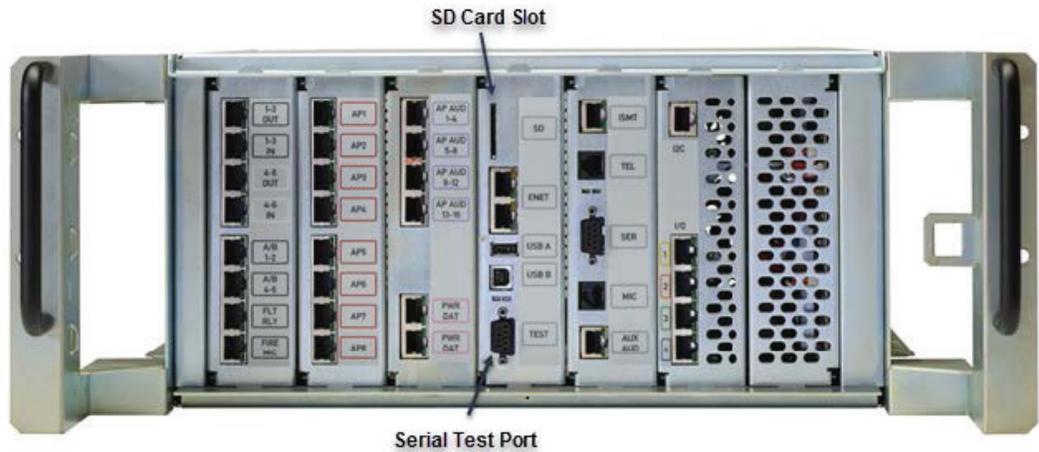
3. To upgrade the controller software, execute a command that upgrades the controller using the serial port address connected to the controller test port. To find out which port is being used by the server, either check the device manager for the port marked as "USB to serial bridge" or use the terminal emulator software to evaluate which port is being used by the system.

4. To find the USB to serial bridge port, access the device manager and view the ports for one marked as USB to serial bridge. See example below.

Figure 54 View the Ports
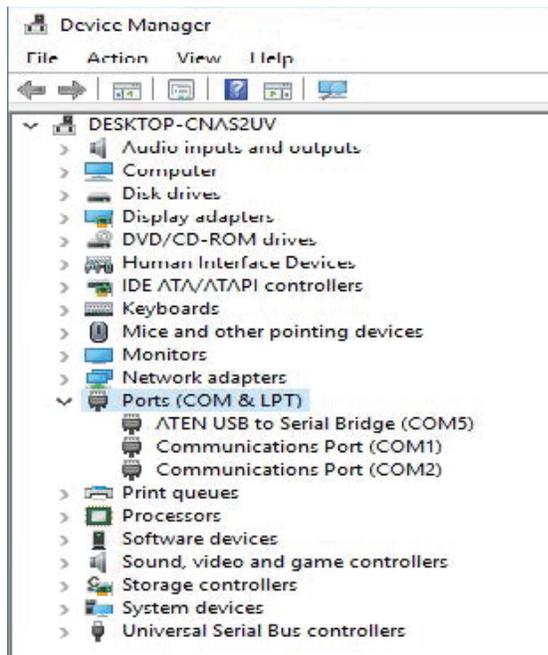
5. To use the emulator software to find the serial port connected to the controller, start the terminal software. The terminal emulator software needs to be configured as 115200 baud-rate, 8 data bits, no parity bits and 1 stop bit. See Figure 55.

6. Change serial ports in the emulation software, COM1, COM2, etc., until the port is found that responds with the Pagasys prompt.

7. Once the COM port connected to the controller is known, exit the terminal emulator software and continue the upgrade.

Figure 55 PuTTY Example
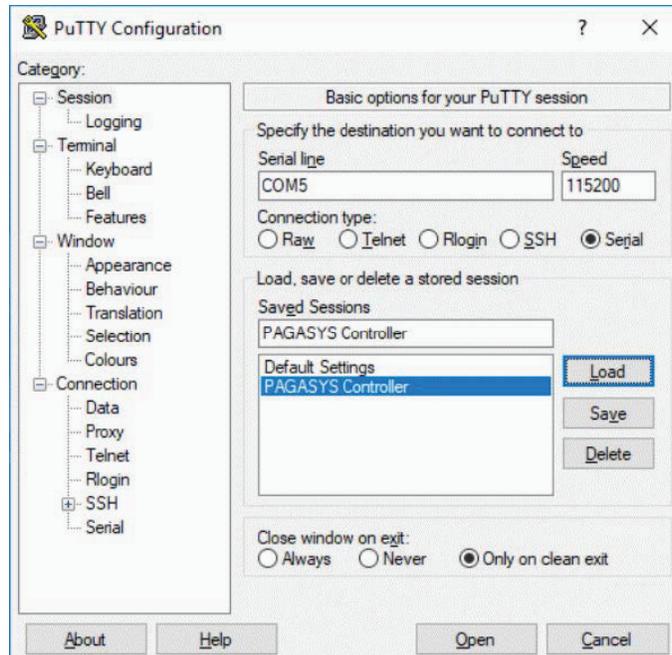
8. Once you have the computer connected to the controller, and know which serial port connects to the controller, copy the controller firmware folder to the desktop of the host computer.

9. Open the firmware folder on the host computer.

Figure 56 Open the Firmware Folder
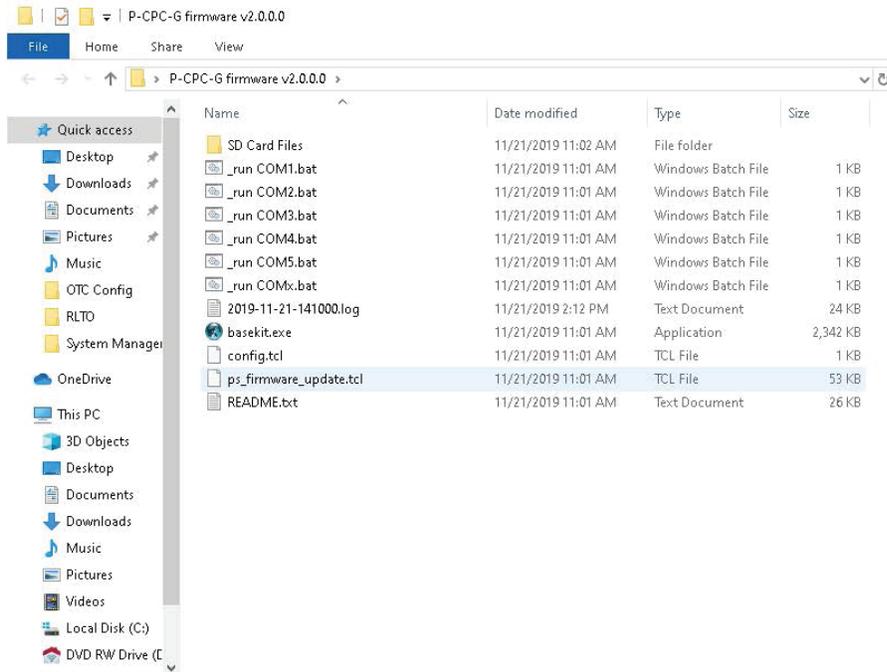
10. Using the computer and a local SD card reader, place all the controller binary and CRC files in the root directory of the SD card.

Figure 57 Place all Controller Binary and CRC Files in Root Directory
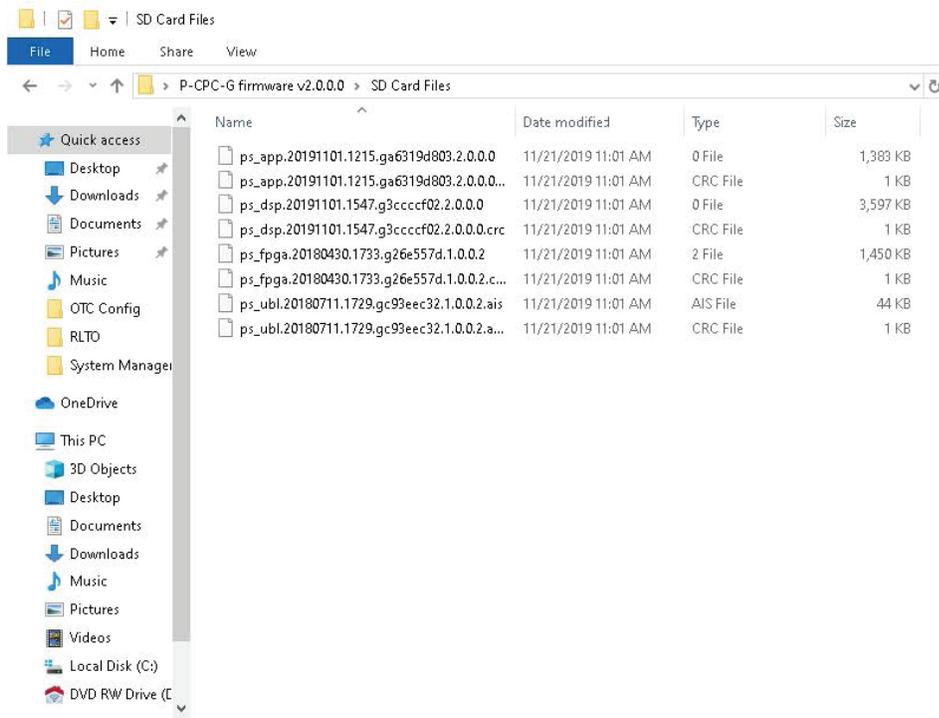
11. To initiate the upgrade, insert the SD card into the controller shelf SD card slot.

12. On the connected computer, open a command window on the computer.

13. Change to the desktop folder that contains the install files.

14. Run the install application by entering the following on the command line:

    ```
    basekit ps_firmware_update.tcl
    ```

    Figure 58 Run the Install Application

15. After entering the command, the application asks which port to use for the upgrade. Use the port connected to the controller discovered in the last step. The application should execute to completion, ending with the message to restart the controller. If you see a different message, note the message you received and contact Federal Signal Support.

    IMPORTANT: Do not power down the controller as there is a chance that the controller will be left unusable and a much more difficult recovery procedure will be needed.

Figure 59 Message Now reboot the controller

16. After you receive the upgrade Success message, reboot the controller firmware. This can be done by rebooting the controller using the File menu item on System Manager.

17. Wait for the firmware to finishing rebooting, indicated by the message "NOTICE All memory allocation is now locked" on the script execution window.

18. After the successful reboot, the controller firmware upgrade is complete.

Figure 60 Firmware Upgrade is Complete

8.0 Controller Chassis Operations

8.1 Configuration

Standard Controller Chassis configuration is included in the PAGASYS GEN II System Manager User Manual.

8.2 Controller Card Real-Time Clock Maintenance

The Controller card includes a 3 V Lithium CR16xx coin battery cell, which supports the processor card real-time clock when power is removed from the Controller Chassis.

Lithium CR batteries have a long shelf life, since they have a low self-discharge rate, so a controller card can be in storage for a significant amount of time with the Mylar tab inserted between the battery and the battery cell holder contacts and the battery will still be usable. Follow manufacturer recommendations regarding shelf life of the battery. If manufacturer recommendations are not available, replace the battery if stored for more than two years.

To enable the battery for operation: The Mylar tab should be extending out of the controller PCB SD card port, pull this Mylar tab to enable the coin battery on the controller PCB. Once the Mylar tab is removed, the real-time clock should maintain date/time value when system power is removed from the Controller card (set system date and time initially after installing the controller card.

During regular maintenance of the system, replace the controller card lithium CR battery cell if it has been in use for more than two years, and the card has been removed from power for any significant amount of time during that period. If the PAGASYS GEN II System Manager reports that the controller battery cell needs replacement, or if the date/time resets when power is removed from the controller card, replace the battery cell.

8.3 Replacing the Controller Card Lithium CR Battery

To replace the controller card lithium CR battery:

1. Use the "5.0 Removing and Installing the Controller Chassis" on page 61 to remove the controller card from the Controller Chassis.

2. Remove the Lithium CR battery cell from the battery holder.

3. Insert a new Lithium CR battery cell into the holder.

4. Use the "5.0 Removing and Installing the Controller Chassis" on page 61 to re-install the controller card in the Controller Chassis and bring the Controller Chassis back into service.

5. Reset system date and time after re-installing the Controller Chassis.

9.0 Configuring the Amplifier Chassis

To configure the Amplifier Chassis:

- The four amplifier cards have to be of uniform type: either DC or AC models. Each module has a separate power fuse.

- Each amplifier chassis needs to have its address set using the mini dip switches, which are visible on the back of the amplifier chassis. Set switches to reflect the desired amplifier number in the PAGASYS GEN II System Manager Software.

9.1 Setting the Dip Switches

Set the dip switches using a reverse binary logic, with the switch in an up position representing 0, and in a down position representing 1.

For example,

- For amplifier 1, set the dip switches to down-up-up-up-up to represent 10000.

- For amplifier 2, set the dip switches to up-down-up-up-up to represent 01000, and so on.

- Number the amplifiers starting at one in the cabinet bottom amplifier position, and then increasing by one moving up.

- In a 4 kW system, set the amplifier dip switches for the amplifier at the top of the cabinet to up-up-down-up-up to represent 00100 (represents amplifier four). See picture below.

Figure 61 Setting Mini Dip Switches
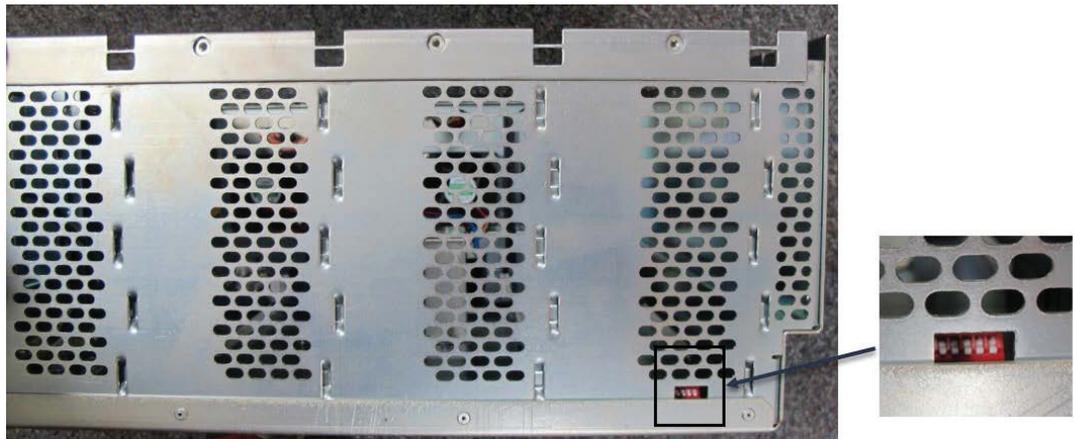
- Amplifier Chassis housed in an auxiliary cabinet should have dip switches continue numbering from the Amplifier Chassis in the connected controller cabinet.

- Jumpers on the Amplifier Signal Backplane do not function as fuses, but are connections to configure the chassis to have a Standby Amplifier. If ISMT support is needed in the Amplifier Chassis, you must remove all four jumpers to avoid damaging the ISMT card.

- You can designate an Amplifier Card as a Standby Amplifier. Install the Standby Amplifier in physical slot 4 of an Amplifier Chassis.

- Each module/card can communicate with a System Controller through two RS485 communication channels, for redundancy. In absence of a System Controller, the amplifier defaults to a standalone operation.

- Each amplifier card may be configured to a different audio input channel or they can share channels.

- Each amplifier card has a separate output wire pair within the output cable, but two output pairs can be externally bridged to produce a 600 W output.

- Each amplifier card has a Standby relay, which can reroute its output speakers to a standby Bus. This relay is powered and controlled by the adjacent amplifier card, so that a faulty amplifier card can be rerouted.

- Each amplifier card has its own indicator LED lights and a power button.

9.2 Powering up/Powering down

To power up the Amplifier Chassis:

- The amplifier, all four cards (modules), powers up automatically upon connection of power.

To power down the Amplifier Chassis:

- Power down an amplifier card by pressing the power button and holding it for three seconds. Another half second press of the power button restores the power. The power button must be enabled by the System Manager, as it is disabled by default on the System Controller.

- You can put an amplifier card, or the whole amplifier, to sleep by a system command. This condition stops the output bridge working and puts the amplifier into a low-current consumption mode.

9.3 Normal Operations

The amplifier card has a self-test capability that checks its own performance.

LEDs	Description
Green NORMAL LED	Indicates all parameters are normal.
Yellow LED lights	Failures are reported by communications channels.
Green NORMAL LED, steady on	Indicates that the amplifier card is capable of delivering audio output power. Blinking LED indicates that the card is capable of delivering output, but a self-diagnostic detected a value out of calibration, such as a mild overload or load impedance out of calibration.
NORMAL LED turning off	Indicates a severe abnormality.

LEDs	Description
Nine green dB LEDs	Show the level of output, as referenced to 100 V_{rms}. A line level audio signal input must be connected to the selected input channel.
Blue SELECTED LED	Indicates that the output of an amplifier card is connected to the output header. Connect the speaker system/load to the 100 V_{rms} line connections.

9.4 Standby Amplifier Operations and Routing

In a PAGASYS GEN II system, amplifier-module redundancy should be provided by the use of Standby Amplifiers. A Standby Amplifier can provide redundancy for an Amplifier Chassis, or for any Amplifier Chassis that is connected to the chassis containing the Standby Amplifier by connecting the chassis using a standby cable. If a Standby Amplifier is needed, the Standby Amplifier must be positioned in slot four of the Standby Amplifier Chassis, and the jumpers on the Amplifier Signal Backplane for this chassis must be configured to standby chassis configuration. See Figure 51 for a view of the jumpers configured to support Standby Amplifier. If a chassis is not going to support a Standby Amplifier, or the chassis is being configured to support ISMT, the jumpers should be removed from the Amplifier Signal Backplane.

Figure 62 Jumpers configured to support a Standby Amplifier
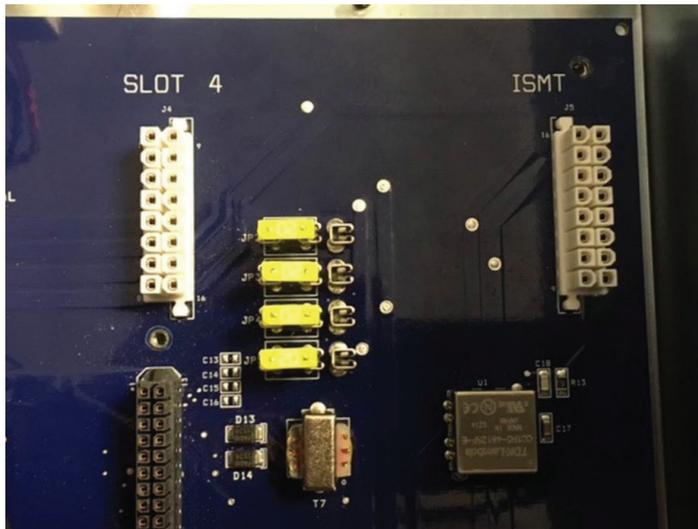
9.5 Test Features

Test Tone

Use a 20 kHz test tone to check the integrity of the audio system connections. The System Controller may generate this tone to test the connection from the audio source to each of the amplifier inputs. The tone may be generated by the amplifier card itself, to test the impedance of the load speakers. The tone may be generated by the optional ISMT card.

Impedance Calibration

Use the impedance calibration procedure to capture and store the impedance of speakers connected to an amplifier card, when ISMT card is not used. Ensure that the system is not transmitting audio signals prior to initiating the procedure. Initiate impedance testing on the amplifier from the System Manager in the amplifier Field Diagnostics menu. The amplifier card generates a test tone and measure its speaker impedance, and then store the result as a new calibrated value.

NOTE: Only do calibrations when it has been verified that all speakers are working without faults and all the tapping adjustment are completed. Any change of the loudspeaker circuit requires recalibration.

Automatic Testing of Impedance

Each amplifier card periodically tests the impedance of its speakers and compare the result with the stored calibrated value. All impedance tests are initiated by the System Controller. If the result is out of tolerance, a load fault is reported on the RS485 communication line and a yellow LOAD FAULT LED turns on.

Earth Fault Detection System

Audio output lines are isolated from earth ground. Earth fault detection system continuously checks for current leaks, and reports a failure to the System Controller, when out of tolerance. A LOAD FAULT LED also turns on.

Automatic Monitoring Temperature

Each amplifier card monitors its own temperature and reports to the System Controller. It turns on its fan when necessary and monitors the fan operation. If the temperature exceeds 80°C, HIGH TEMPERATURE LED turns on. If the temperature continues to rise, the amplifier card may shut down.

Cut-out Condition

A cut-out condition, indicated by a yellow CUT OUT LED, means that the Class D amplifier bridge is disabled. It occurs at every power up, during a normal initial ramp up; however, a severe overload or other malfunction may extend this condition beyond the initial ramp up. The condition is reported to the System Controller. The module attempts to restart the bridge every few seconds.

9.6 ISMT Operations (Optional)

Intelligent Speaker Monitoring and Tapping (ISMT) requires special ISMT capable speakers and a P-ISMT-G card in the Amplifier Chassis.

Remove the four jumpers on the right side of the front motherboard of the chassis containing the ISMT card. Jumpers in all other shelves must be either on the right side or removed altogether.

One ISMT card not only supports all four amplifier cards of its own chassis, but also all other chassis sharing the standby cable connections.

It is a method of monitoring remote speaker status, using special communication commands sent over the speaker lines. Through this communication link, you can instruct each ISMT loudspeaker to change its tapping, recalibrate itself, and return status information back to the ISMT card.

The ISMT card performs the monitoring procedure, when amplifier cards are idle, and the system has allocated the time for the procedure.

During that time, ISMT card provides 24 Vdc power over the speaker lines for the speaker monitoring circuits.

In one part of the procedure, a 20 kHz test tone is generated by the ISMT card, while each ISMT speaker measures the current through its speaker coil.

10.0 Setting up a Standby Amplifier

10.1 Defining an Amplifier Chassis 1 as the Standby Amplifier

Amplifier Chassis are numbered from bottom to top in a control cabinet. Auxiliary Cabinets are numbered from one to five. The PAGASYS GEN II system allows one amplifier card in an amplifier group to be the Standby Amplifier, and any amplifier chassis in the system can contain the Standby Amplifier.

- Any Amplifier Chassis in the system can contain the Standby Amplifier

- The Amplifier Chassis containing the Standby Amplifier must be configured as the Standby Amplifier Chassis in the System Manager software application

- The Standby Amplifier must be in the fourth amplifier slot in the Standby Amplifier Chassis

- All amplifier chassis that use the Standby Amplifier must be interconnected through the standby amp bus ports on the amplifier chassis

- The Standby Amplifier is configured using the System Manager software application

Figure 63 Defining an Amplifier Chassis
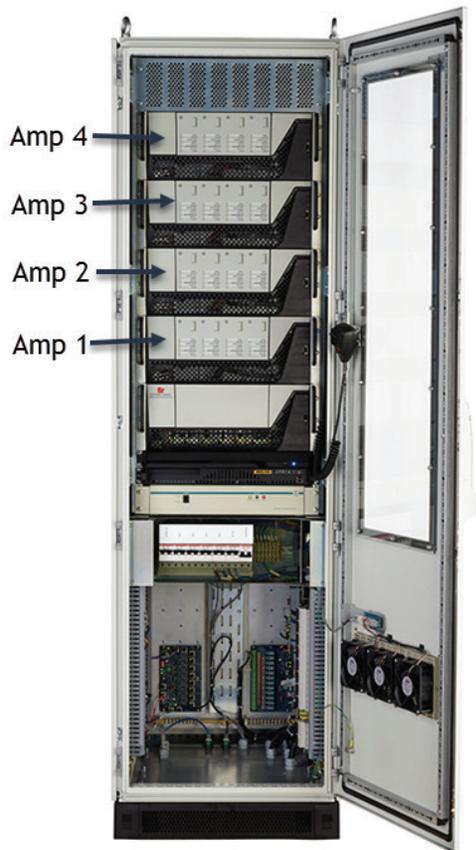
To define an Amplifier Chassis 1 as the Standby Amplifier:

1. Remove the Standby Amplifier chassis from the cabinet by removing the chassis mounting screws (that is, two sets of screws, left and right).

Figure 64 Removing the chassis mounting screws

2. Remove the (12) screws holding the cover on the chassis (that is, four each, left, right, and back) and remove the cover.
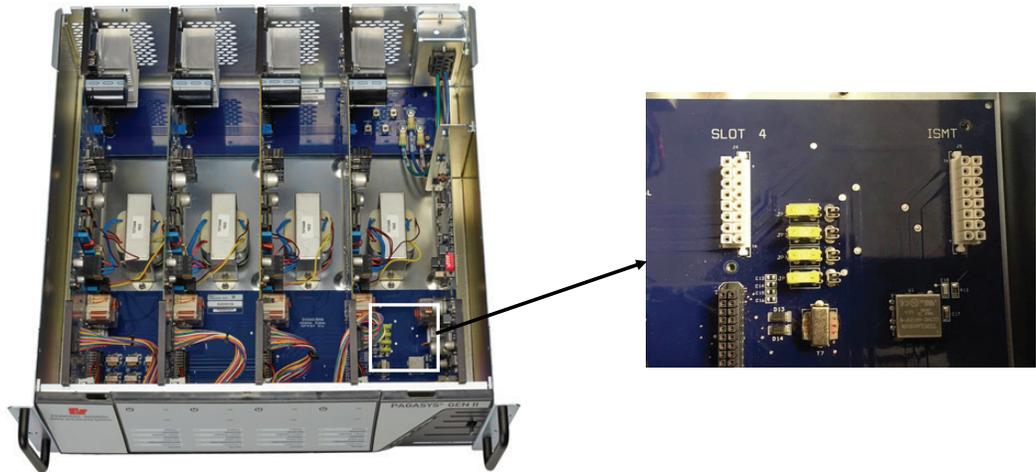
Figure 65 Removing the cover screws
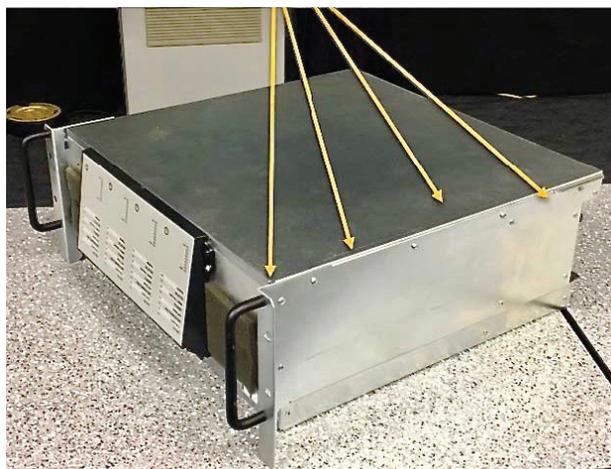
3. Configure the Standby Amplifier Chassis by inserting the four jumpers on the signal mother board in the left-most position.
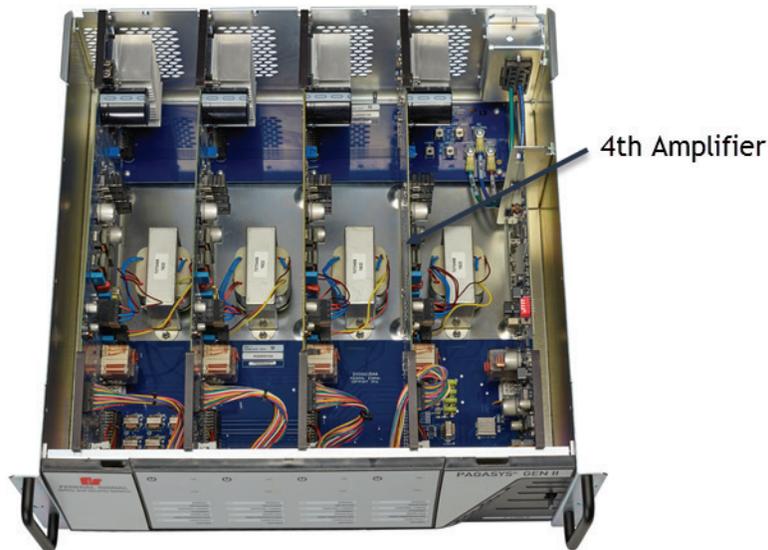
   NOTE: Do not place the jumpers in left-most position if the Amplifier Chassis is populated with an ISMT card.

   **Figure 66 Inserting four jumpers in the left-most position**

4. The Standby Amplifier must be in the fourth amplifier slot in the Standby Amplifier Chassis.

   **Figure 67 Fourth amplifier slot**

5. Interconnect all Amplifier Chassis that use the Standby Amplifier through the standby amp bus ports on the Amplifier Chassis.

Figure 68 Standby amp bus ports on the Amplifier Chassis
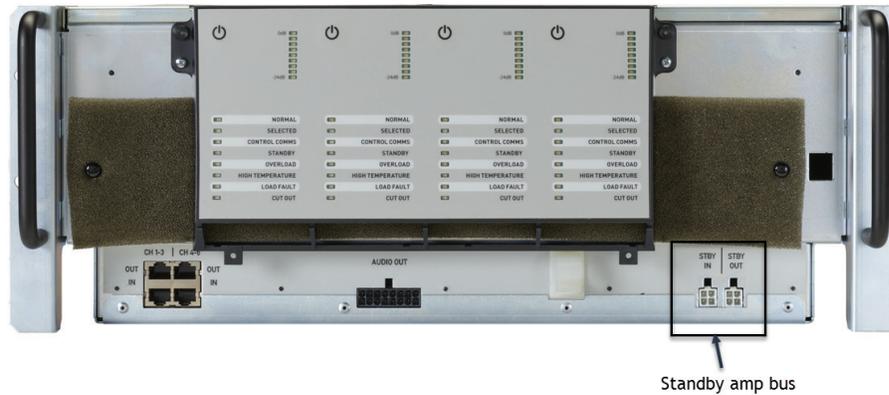
Standby amp bus

6. Configure the Standby Amplifier using the System Manager software application.

    • Select Configuration > Equipment

    • From the list, scroll to Amplifiers, select the fourth slot of the standby amp chassis

    • From the Options section, in the Monitoring list, click None.

    • From the Options section, in the Zone Standby list, click Standby (no zone)
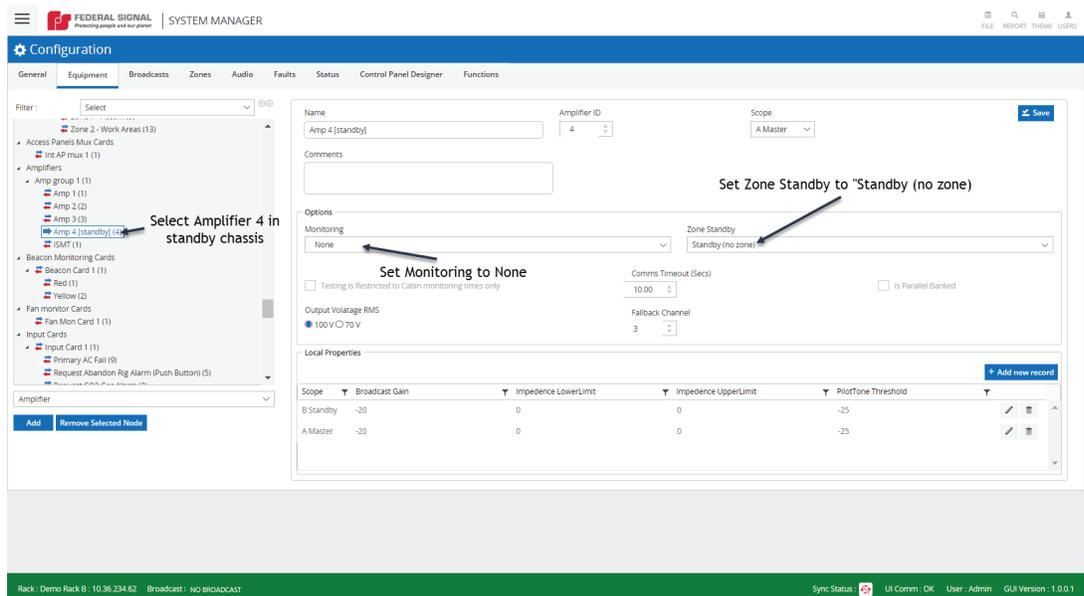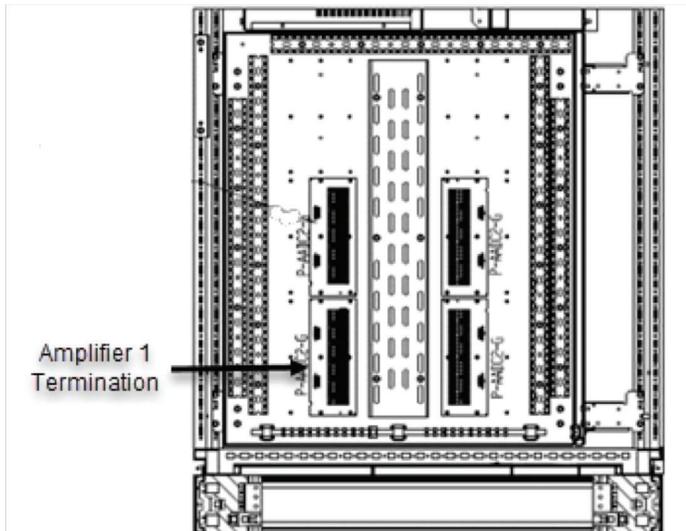
11.0 Terminating Speakers to MDF

11.1 Terminating a speaker to Amplifier Chassis 1, Amplifier 1

The PAGASYS GEN II system comes standard with one amplified audio distribution card, P-AADC2-G, for each Amplifier Chassis in the cabinet. With a four Amplifier Chassis system, four P-AADC2-G cards are provided.

The amplifier output signal is wired to the P-AADC2-G card using a amplifier audio out cable assembly that terminates on the P-AADC2-G card 8-pin connector receptacles (two per card). The speakers are terminated on the spring terminal block connectors on these cards. Each card supports up to two speaker loop circuits per amplifier PCB in the chassis.

In the following drawing, Amplifier Chassis 1 is already terminated to the 8-pin connectors on the amplified audio distribution card in slot 1 on the audio (left) panel assembly in the MDF area.
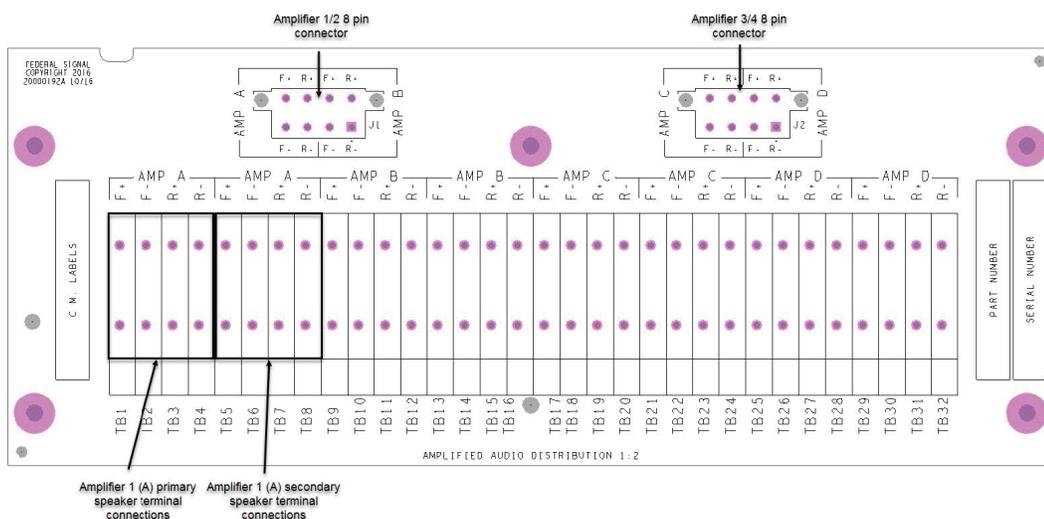
Figure 69 Left (Audio) MDF Panel

To terminate speakers to MDF:

- On the target amplified audio distribution card, terminate +/- speaker wires to primary Amp A forward + (F+) and forward – (F-) spring terminal block

- If a speaker loop is needed, connect return speaker wire to reverse + (R+) and reverse – (R-) spring terminal block

- This version of the amplifier audio distribution card (P-AADC2-G) allows the amplifier to be connected to up to two speaker runs. If a second speaker run is needed, wire the second speaker wire set to the secondary set of terminal blocks

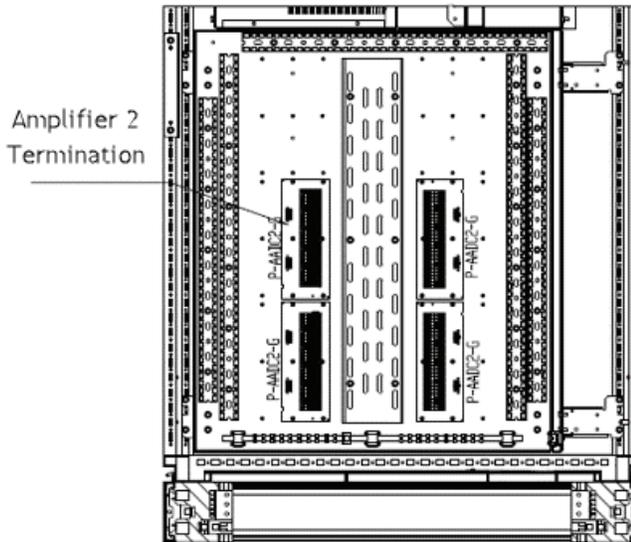**Figure 70 Target amplified audio distribution card (Amp A)**

11.2 Terminating a speaker to Amplifier Chassis 2, Amplifier 2

Assuming the use of a standard amplified audio distribution card, P-AADC2-G, with spring terminal block connectors for speakers.

Amplifier Chassis 2 will already be terminated to the 8-pin connector on the amplified audio distribution card in slot 2 on the audio (left) panel assembly in the MDF area.

Figure 71 Amplifier 2 Termination

To terminate a speaker to Amplifier Chassis 2, amplifier 2:

- On the target amplified audio distribution card, terminate +/- speaker wires to primary Amp B forward + (F+) and forward – (F-) spring terminal block

- If a speaker loop is needed, connect return speaker wire to reverse + (R+) and reverse – (R-) spring terminal block

- This version of the amplifier audio distribution card (P-AADC2-G) allows the amplifier to be connected to up to two speaker runs. If a second speaker run is needed, wire the second speaker wire set to the secondary set of terminal blocks
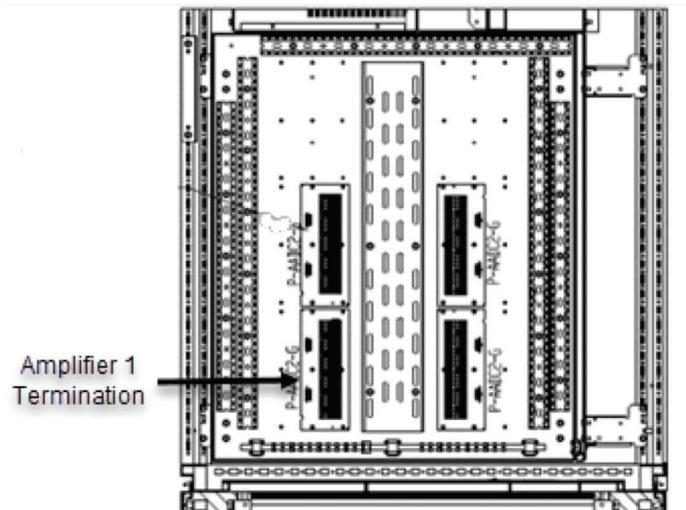
Figure 72 Target amplified audio distribution card
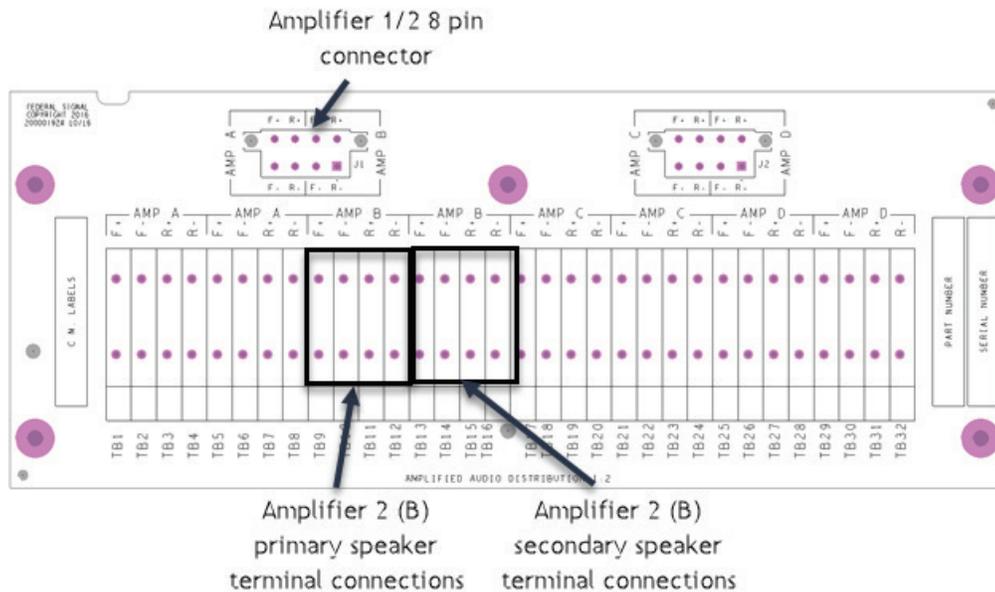
12.0 Terminating ISMT Speakers to MDF

12.1 Terminate an ISMT speaker to Amplifier Chassis 1, Amplifier 2

- Amplifier Chassis 1 should already be terminated to the 8-pin connector on the amplified audio distribution card in slot 1 on the audio (left) panel assembly in the MDF area.

Figure 73 Left (Audio) MDF Panel

- Using a standard amplified audio distribution card, P-AADC2-G, with spring terminal block connectors for speakers

- Amplifier Chassis 1 is set up with an ISMT card installed

- Amplifiers are installed in slots 2 and 4

- Configure the Standby Amplifier Chassis by inserting the four jumpers on the signal motherboard in the right-most position, or remove jumpers from the chassis.

- The Standby Amplifier is configured using the System Manager software application.

- ISMT speakers are discovered using amplifier diagnostics

- With the chassis configured for ISMT, the amplifier in slot four defaults to standby

Figure 74 Amplifiers are installed in slots 2 and 4
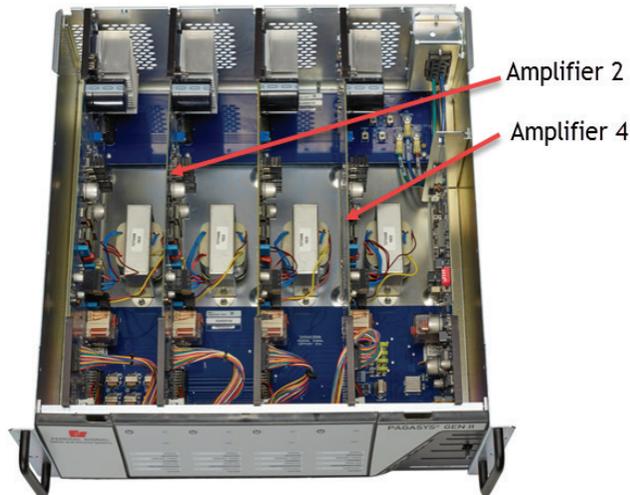
To terminate an ISMT speaker to Amplifier Chassis 1, Amplifier 2:

1. Configure the ISMT Amplifier Chassis by inserting the four jumpers on the signal motherboard in the right-most position, or remove jumpers from the chassis.

    NOTE: Do not place the jumpers in left-most position if the amplifier chassis is populated with an ISMT card.

Figure 75 Inserting four jumpers in the right-most position
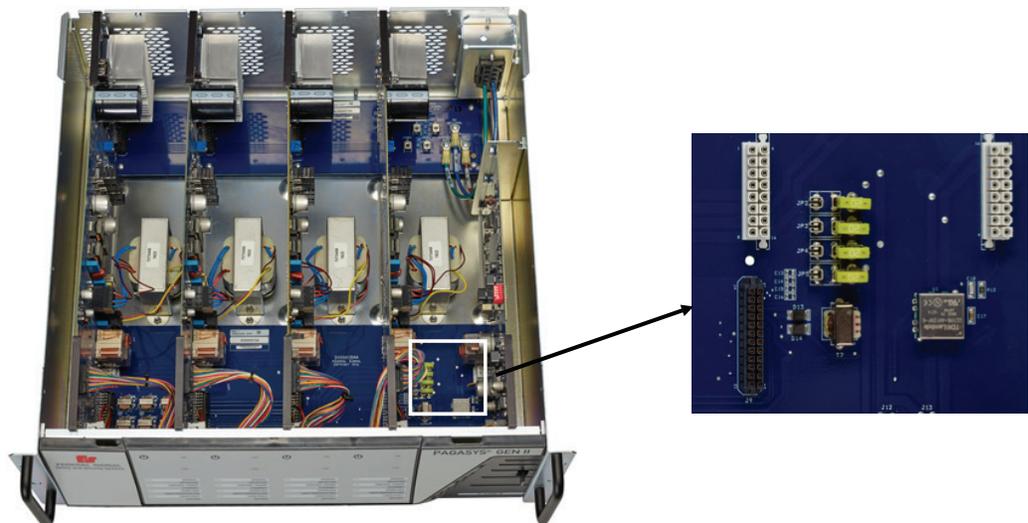
2. Set the ISMT card dip switches to match the dip switch settings on the target amplifier chassis.

3. Insert the ISMT card in the slot on far right side of the amplifier chassis.

4. Configure the Standby Amplifier using the System Manager software application.

    •   Select Configuration > Equipment.

    •   From the list, scroll to Amplifiers, select the amplifier in second slot of amp chassis 1

    •   From the Options section, in the Monitoring list, click ISMT Spur Monitoring (or ISMT Loop Monitoring, if ISMT speaker is being wired as loop).

    •   From the Options section, in the Zone Standby list, click desired zone
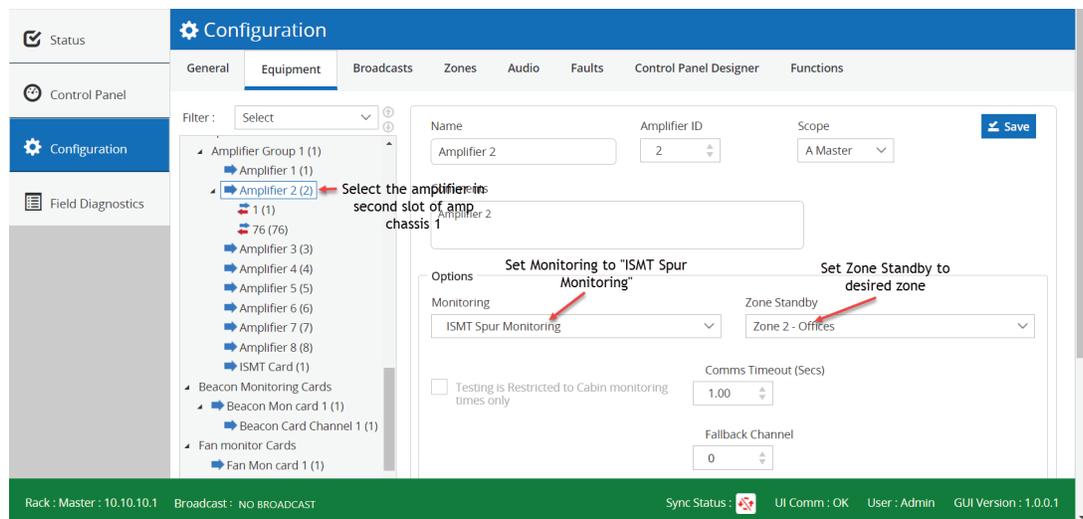
To terminate an ISMT speaker to Amplifier Chassis 1, Amplifier 2:

- On the target amplified audio distribution card, terminate +/- speaker wires to primary Amp B forward + (F+) and forward – (F-) spring terminal block (ensure wires are terminated correctly, as an ISMT speaker will not communicate when wires are crossed)

- If a speaker loop is needed, connect return speaker wire to reverse + (R+) and reverse – (R-) spring terminal block

- This version of the amplifier audio distribution card (P-AADC2-G) allows the amplifier to be connected to up to two speaker runs. If a second speaker run is needed, wire the second speaker wire set to the secondary set of terminal blocks

Figure 76 Target amplified audio distribution card
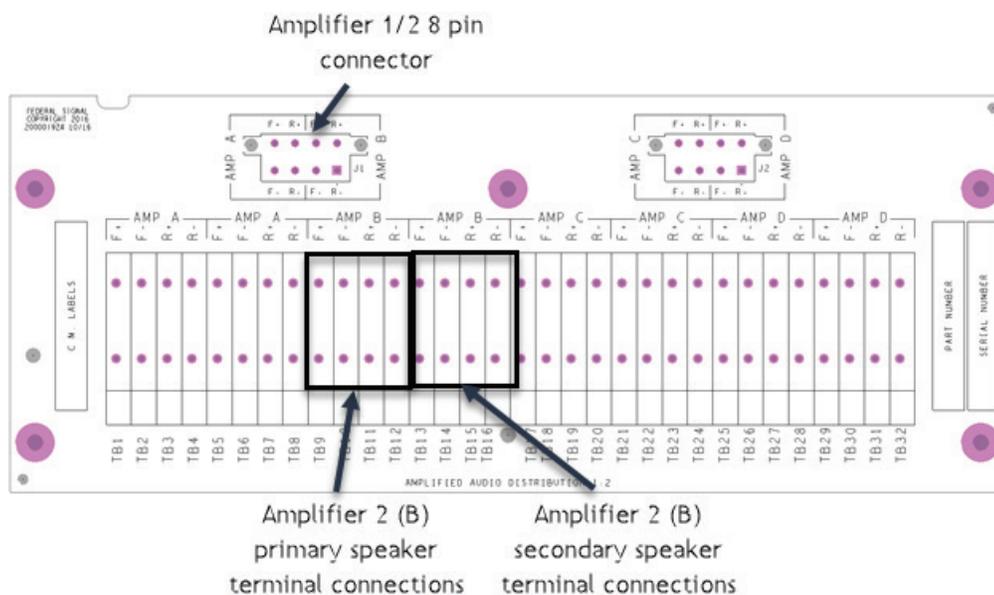
12.1.1 Discovering ISMT speakers using amplifier diagnostics

Discover ISMT speakers using the System Manager software application.

- Select Field Diagnostics > Equipment

- From the list, scroll to Amplifiers, select the amplifier in second slot of amp chassis 1

- From Speakers section, click the Find All button to have the amplifier discover any ISMT speakers connected to the amplifier

- When ISMT speakers are discovered, click the Copy All To Config button to add the speakers to the system configuration

13.0 Terminating Beacons to MDF

13.1 Terminate a beacon to the beacon monitored output module

The P-BK-MON-G module consists of two connected PCBs, and provides two independent beacon control and monitoring channels. The P-BK-MON-G module is a standard I/O module with the PAGASYS GEN II system, and will be installed on the beacon I/O (right) panel assembly in the MDF area of the cabinet.

Figure 77 Beacon monitored output module
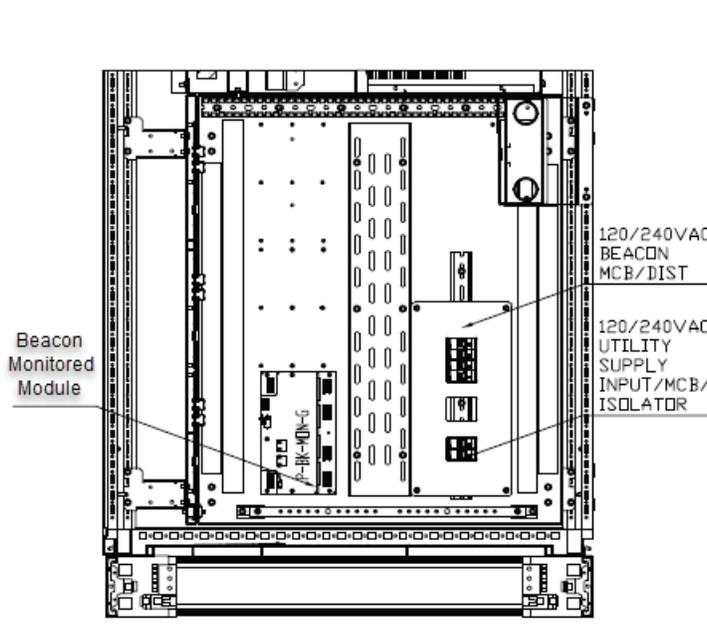
The controller chassis will already have I/O terminations to the beacon monitored output module beacon I/O (right) panel assembly in the MDF area of the cabinet, see RJ45 J3/J4 connections on the upper PCB in the following figure. (Both J3/J4 ports are interconnected, and the second port is used to chain additional I/O cards when needed on this I/O bus.) This view also shows the AC input connectors for the beacon monitored output module from the AC source on the lower PCB, and the mini-switch used to set the modules bus address

Figure 78 P-BK-MON-G with RJ45 J3/J4 Connections
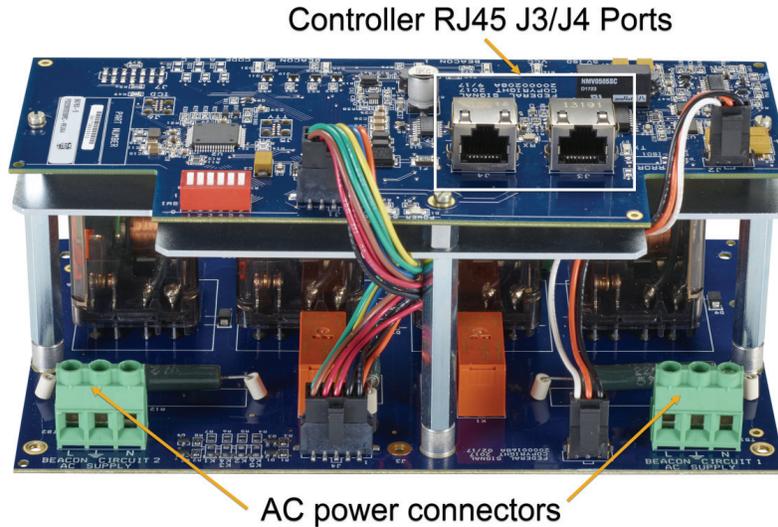
On the reverse side, the P-BK-MON-G provides four beacon channel connectors to connect the two beacon runs. The output connectors route the power to energize the beacons on the channels, the input connectors are used to terminate the beacon channel wire runs to complete the beacon loop. Each channel is designed to support 16 A of power output, so it is recommended that the number of beacons on a beacon channel not exceed this rating when active.

Figure 79 P-BK-MON-G with Four Beacon Channels

Beacon channel 1 output connector   Beacon channel 1 input connector   Beacon channel 2 output connector   Beacon channel 2 input connector
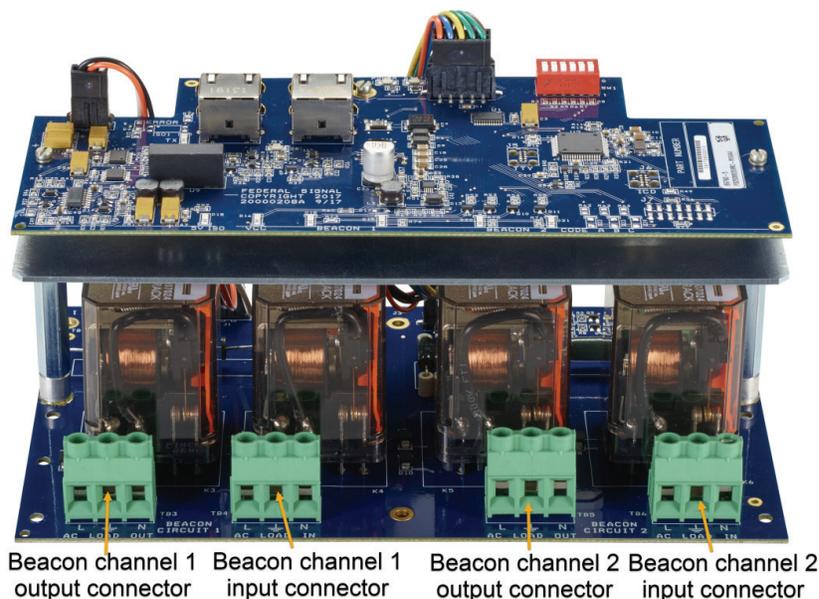
To support beacons, the beacon monitored card and channels must be configured using the System Manager software, if not already present.

- Configuration > Equipment.

- From the list, scroll to Beacon Monitoring Cards, select the primary controller.

- Select monitoring card in the node list and select the Add button.

- Configure the beacon monitoring card and configure to be consistent with I/O Bus ID and beacon monitoring card configured Node ID.

- Select the newly added beacon monitoring card and add a beacon monitoring card channel where the beacon has been installed.
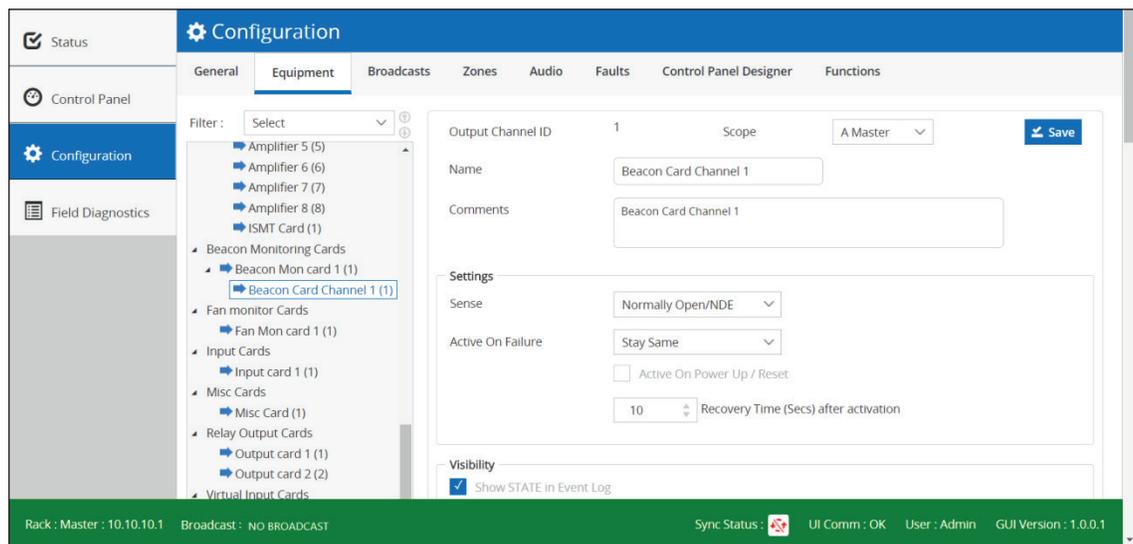
Beacons must be configured for output function, selecting the function desired for the beacon, and selecting broadcasts and zones that the beacons on the selected channel will activate.

14.0 Control Panel Designer

14.1 Adding a new button and LED to a control panel to use a new broadcast

The new button and LED will be created on the default Access Panel 33 using the System Manager software application.

- Select Configuration > Equipment.

- If Access Panel 33 does not already exist in the equipment tree list under Access Panels > Soft Panel:

    - From the equipment tree list, select Access Panels

    - Click the down arrow and select Access Panel

    - Click the Add button

- Once Access Panel 33 is available, select the panel on the equipment tree and create and configure a new Access Panel Button and Access Panel Indicator on soft Access Panel 33. (See next section.)
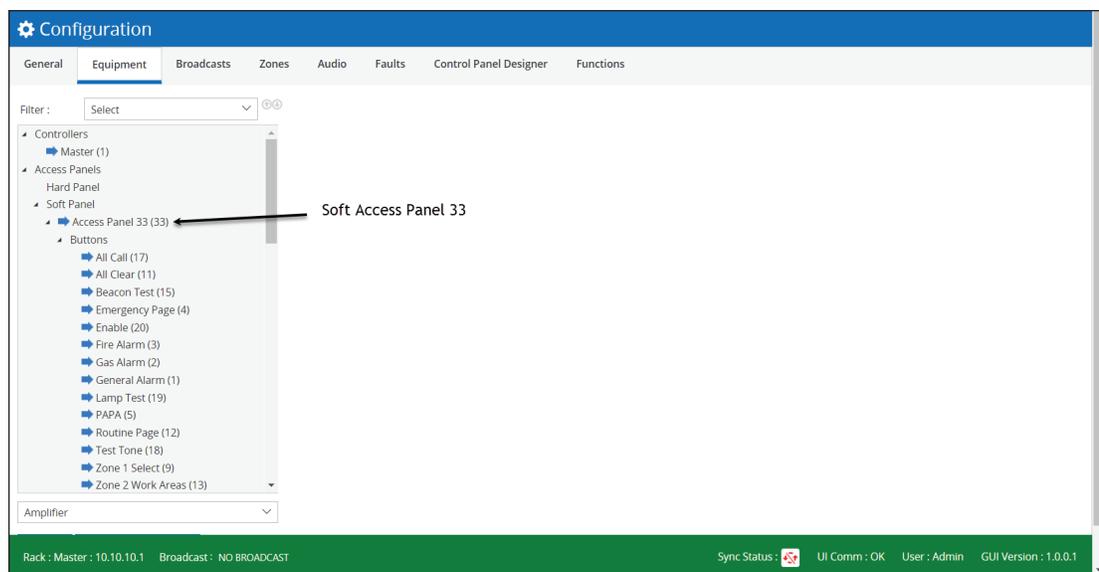
After Access Panel 33 is created, add a new button object in Configuration > Equipment list to use an existing or newly created broadcast.

To add a new button and LED to a control panel:

- Select Configuration > Equipment.

- From the equipment tree list, select the Soft Panel > Access Panel 33. With the access panel selected, add a new Access Panel button.

14.1.1 Configuring a new Access Panel Button

To configure a new Access Panel button:

1. Go to the item select list under equipment tree, select Access Panel Button, and select Add to add the new Access Panel Button.

2. Select the new Access Panel Button and configure an available Button ID.

3. In the Name box, type a name.

4. In the Comments box, type a comment.

5. From the Settings section, click the Sense arrow: typically Normally Open/NDE.

6. From the Settings section, click the Mode arrow: typically Toggled.

7. From the Visibility section, set Visibility desired.

8. From the Input-Function section, set the Function values. Function for a typical alarm broadcast button are input_channel_bcast_req_fixed_zones or input_channel_ bcast_req_variable_zones, which differ in how output zones are selected.

9. In the Parameters section, under the Broadcast ID tab, in the Broadcast box, select the broadcast (use the ID for the new broadcast).

10. In the Parameters section, under the Zone List tab, in the Broadcast box, select the zone.

14.1.2 Creating the new Access Indicator for the Access Panel Button

To create a new Access Panel Indicator for the Access Panel Button that was created using the System Manager software:

1. Select Configuration > Equipment.

2. From the list, scroll to Soft Panel/Access Panel 33. With the access panel selected, Add a new Access Panel Indicator.

    *   Go to the item select list under equipment tree, select Access Panel Indicator, and select the Add button to add the new Access Panel Indicator

    *   Select the new Access Panel Indicator and configure an Indicator ID that matches the Button ID for the new Access Panel Button. Give the indicator a Name, Scope, and set Output-Function to indicator_simple.

3. Access the Access Panel Button associated with this indicator, and add a connection under Connection-Output to drive the Access Panel Indicator under the State tab.

4. If a Lamp Test option is available on the system, access the Lamp Test button on the soft access panel, and add this new Access Panel Indicator to the list of Connection- Outputs

14.1.3 Adding the new button an indicator in the Control Panel Designer

After the new button and indicator objects are created in the Equipment list, add the new button and indicator in the Control Panel Designer using the System Manager software:

1. Select Configuration > Control Panel Designer.

2. Copy an existing access panel button and indicator.

3. Paste and move new button and indicator to desired location.

4. Select the new button, open Properties on the right edit window and edit any attributes that need changes and select the Controller ID# of the new Access Panel button created in Equipment under Access Panel 33.

5. Select the new indicator, open Properties on the right edit window and edit any attributes that need changes and select the Indicator ID# of the new Access Panel indicator created in Equipment under Access Panel 33.

6. Once the button and the indicator have been set up as needed, changes can be locked out for these objects by clicking the lock icon on the top of the properties window (open lock changes to locked).

7. Click Save.

15.0 Configuring a Broadcast

15.1 Creating a new broadcast for PAGASYS GEN II

Creating a new broadcast in the PAGASYS GEN II System Manager software starts with new audio to support the broadcast.

1. Click Configurations > Audio > Recorded Messages tab.
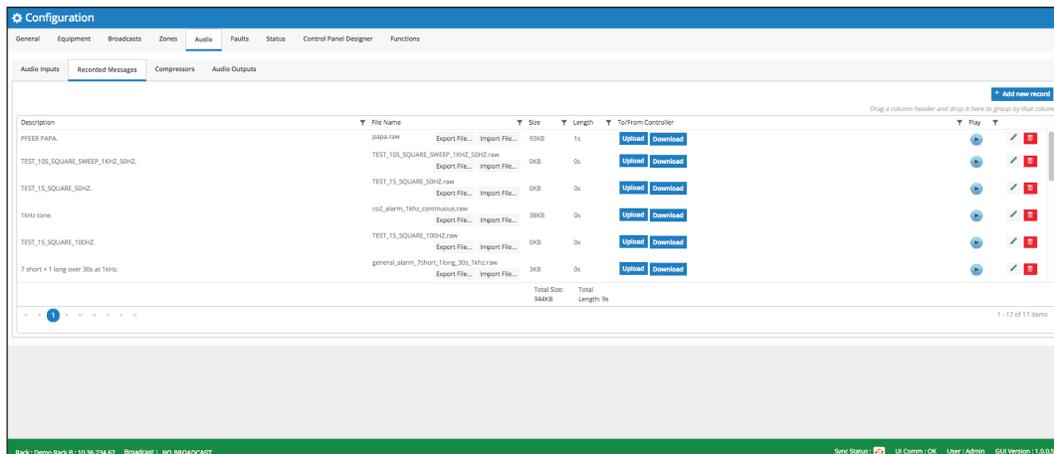
2. Click the + Add new record button to add a new audio file to recorded messages. The New Message dialog box appears.

3. Give new audio a name and description, and select an audio file using the File Name/ Browse button. (Audio files must be 16 bit, 48 kHz.) The system will calculate the File CRC for the audio file. After the file loads successfully, click the Update button to return to the audio list. Ensure that you select Upload next to the new audio to upload it to the controller.

15.2 Adding a new button and LED to a control panel

After creating a new recorded message (or using an existing message) create a Broadcast using the audio with the System Manager software.

1. Configuration > Broadcast.
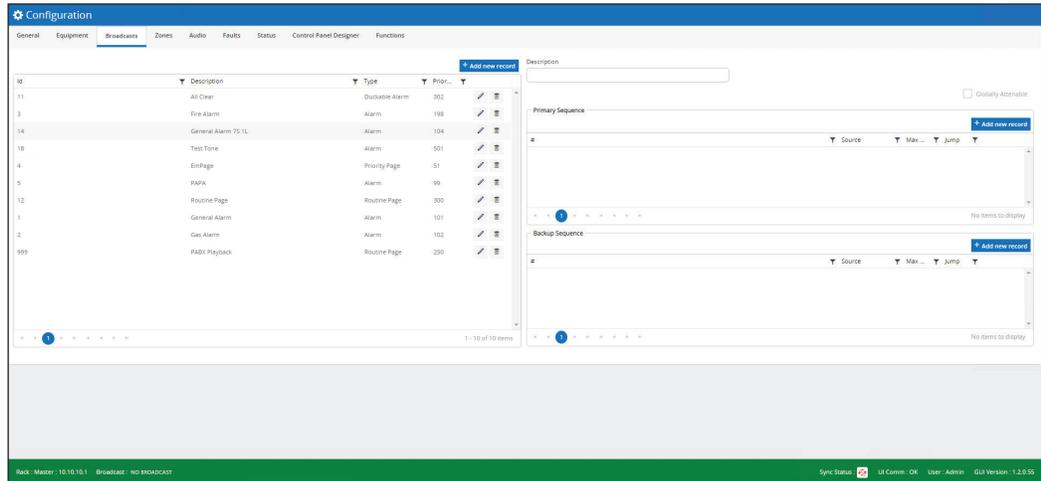
The following dialog box shows the Ducking Attenuation field.

---

2. Click the + Add new record button to add a new broadcast. The New Broadcast dialog box appears.
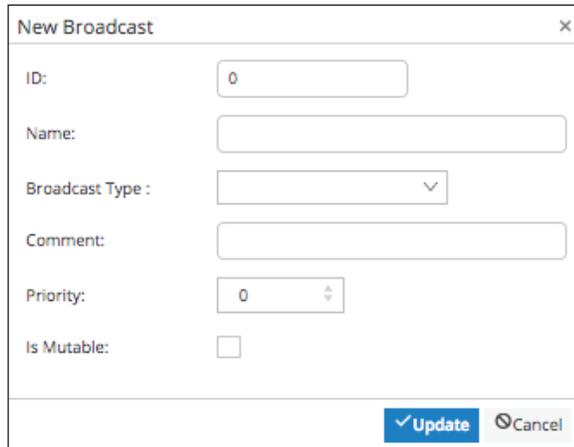
New Broadcast	×
ID:	0
Name:	
Broadcast Type :	∨
Comment:	
Priority:	0 ⇕
Is Mutable:	☐
	✓Update ⊘Cancel

3. Give the new broadcast an ID, Name, select a Broadcast Type, add a comment, and set priority. Lower priority value takes precedence over higher values.

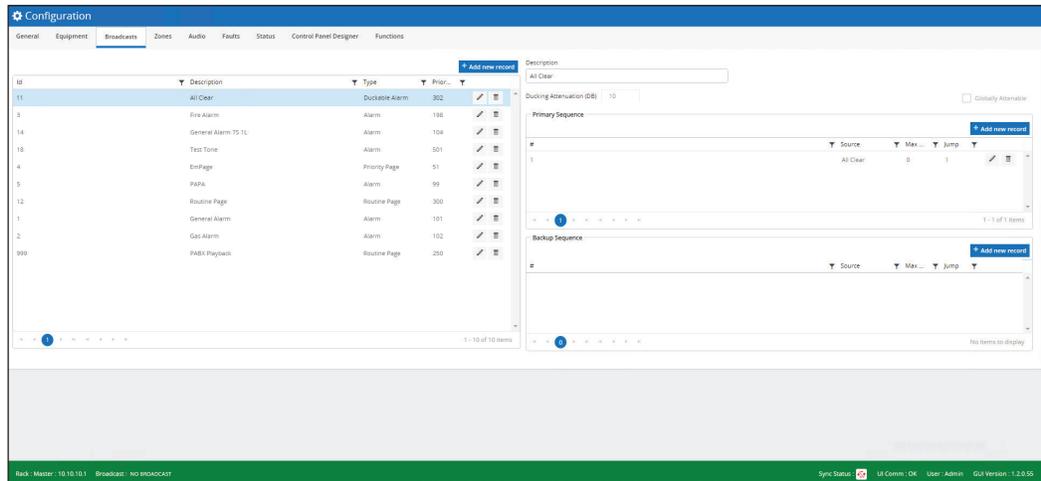   **NOTE**: The ducking attenuation is only needed when the broadcast type is Duckable alarm.

4. Click Update to save the new broadcast under the Name.

5. Select the new broadcast in the list, then select the + Add new record button under Primary Sequence section. The New Primary Sequence dialog box appears.
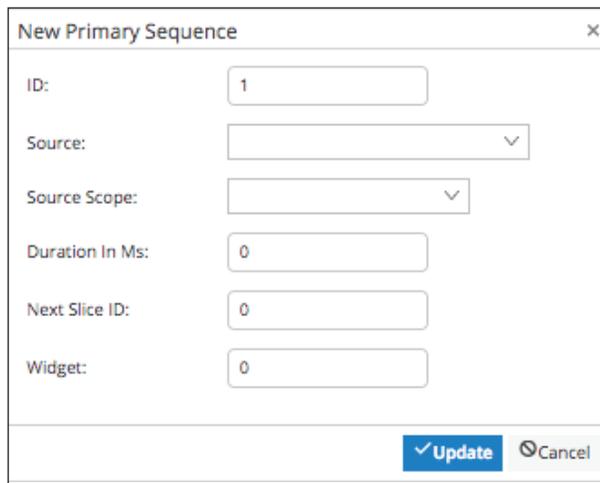
New Primary Sequence	×
ID:	1
Source:	∨
Source Scope:	∨
Duration In Ms:	0
Next Slice ID:	0
Widget:	0
	✓Update ⊘Cancel

6. Select an audio source, such as the new audio you added, set Source Scope, select Next Slice ID to generate a continuous alarm. Select 1 to continuously play single audio, or select next audio in sequence to play more than one audio in sequence.

16.0 Programming PABX Interface

16.1 Configuring the Miscellaneous Card

To configure the Miscellaneous card to create a PABX playback broadcast, first create a PABX Playback Broadcast to drive the playback message after dialing into the PABX interface and leaving a message using the System Manage software.

1. Select Configuration > Broadcasts.

2. Click the + Add new record button to add a new broadcast. The New Broadcast dialog box appears.

3. Create new PABX Playback Broadcast.

   • Set ID to desired value.

   • Set name to desired value. In this case, we are using PABX Playback.

   • Click the down arrow to set Broadcast Type to Routine Page.

   • Add a Comment if needed.

   • Select the Priority to appropriate value for your system.

   • Leave Is Mutable unchecked.

- Click Update to save the broadcast.

4. Select the new broadcast you created, and then click the + Add new record button under the Primary Sequence section to select a source for the broadcast. The New Primary Sequence dialog box appears.

5. Select source Pabx Recording, with appropriate scope. Set Duration in Ms, Next Slice ID, and set Widget to same value as Broadcast ID.

6. Click Update to save Primary Sequence #1.

16.2 Configuring the Miscellaneous Card

To configure the Miscellaneous card to enable connection to PABX system, including programming telephone and answering settings using the System Manager software.

1. Select Configuration > Equipment > Misc Card.

2. Configure Telephone Settings.

   - Set line mode, typically Analog Extension. (See the next section.)

   - Set Welcome Prompt to an available broadcast message.

   - Set Message Broadcast to an available broadcast message.

   - Set Maximum Page Duration, Max Playback Waiting Periods, and Trim Message Ending to desired values (for example, 60/120/100 seconds).

3. Configure Detect Caller Hang Up values. If the On DTMF Key check box is selected, enter the DTMF key desired.

4. Configure Abort Call. If the On DTMF Key check box is selected, enter the DTMF key desired.

5. Set option to Skip Welcome. If the On DTMF Key check box is selected, enter the DTMF key desired.

6. From the Zone Selection section, select zones for available PABX broadcasts.

16.3 Analog Extension Mode

The call is set up by the PABX sending a ringing signal, and the PAGASYS interface responding to that by seizing the line.

Depending on the PABX, the call may be terminated using one of the following methods:

• Line reversal/line break (also known as K/P reversal)

• Call progress tone
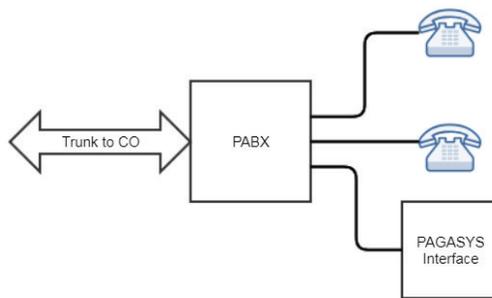
16.4 Loop Start Mode

The PAGASYS interface puts a voltage on the line, but initially no current flows.

The call is set up by the PABX going off-hook, which causes current to flow in the line. The PAGASYS interface detects this with a current sensor.

The call is terminated by the PABX going on-hook, which causes the current flow to stop.
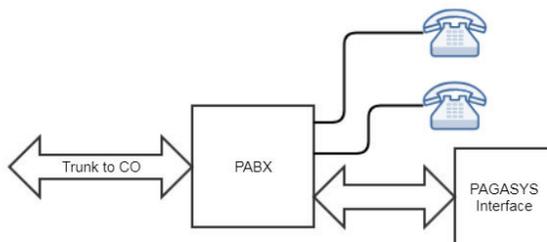
17.0 Configuring local speaker mute

17.1 Configuring local speaker mute to avoid feedback

When making a live page from the local microphone in a zone, feedback can be prevented by muting the local speaker. The following procedure shows how to mute a speaker using the Relay Output Module. As an example, we assume that Amplifier Chassis 1 is already terminated to the 8-pin connector on the amplifier audio distribution card in slot 1 on the audio (left) panel assembly in the MDF area, and the relay output module, P-SPDT-G, is already installed on the rear MDF I/O panel, on the right side.

To mute a speaker using the Relay Output Module:

1. On amplified audio distribution card 1, terminate wires to the primary amp a forward+ (F+) and forward- (F-) spring terminal block.

Figure 80 Target amplified audio distribution card
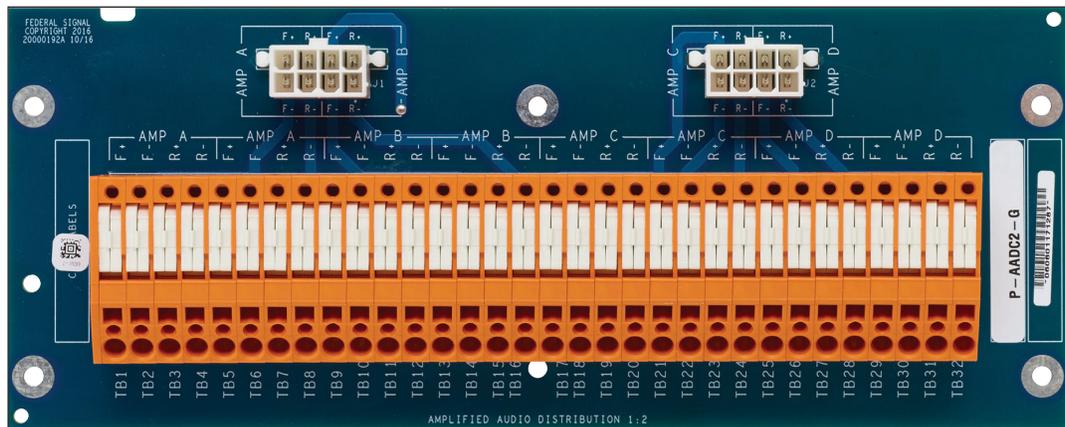
2. Terminate the other end of the wire on the relay output board, F+ to TB1 pin 3 (1 COM) and F- to TB1 pin 6 (2 COM).

3. Connect the speakers to be muted to pin 1 (F+ to 1 NC) and pin 4 (F- to 2 NC). This will allow the speakers to operate normally until the relay output board is changed to normally open.

Figure 81 Target amplified relay output board
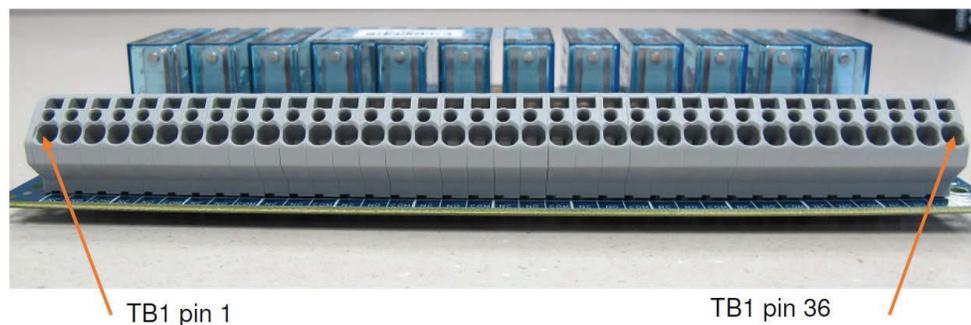
TB1 pin 1

TB1 pin 36

Table 48 Relay output board terminal block pinout for speaker muting

Terminal Block	TB1 Pin #	Relay contact Relay
1	1 NC	RL1
2	1 NO	RL1
3	1 COM	RL1
4	2 NC	RL2
5	2 NO	RL2
6	2 COM	RL2

4. Configure Relay Output card using the System Manager software.

    •   Make sure the Relay Output card is already in the configuration equipment tree. If not, add the card.

    •   Select the Relay Output card (should be card 1), and then add two relay output card channels: one for the F+ relay and one for the F- relay. Ensure the configuration matches the physical location of the speaker wiring from the prior step.

    •   Configure the relay output card channels as follows:

        •   Sense = Normally Open/NDE

        •   Active on Failure = Stay Same

        •   Function = output_channel_bcast_active_any

        •   Broadcast List = Priority Page and Routine Page (or existing live broadcasts you wish to mute)

        •   Zone List = local zone correlating to the amplifier wiring from the prior step

        •   Save changes, upload to controller, and restart controller to ensure changes are permanent.
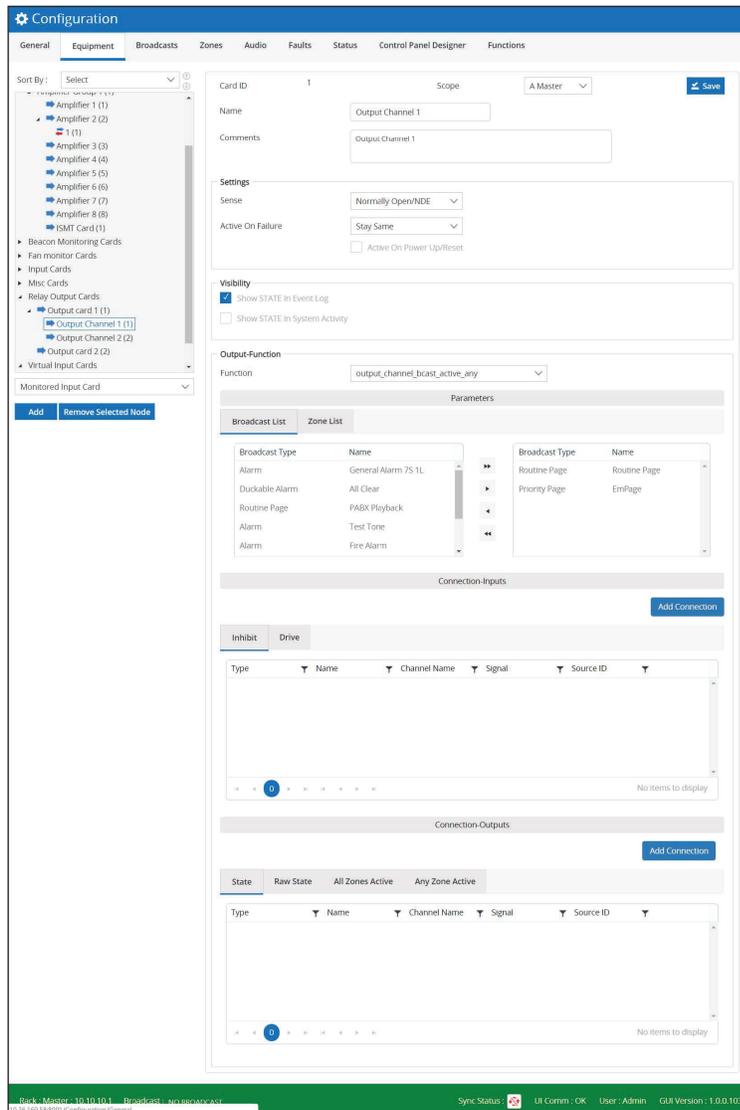
5. Make a live broadcast for one of the broadcasts configured and ensure that it does not play on speakers that are in the muted zone, and it does play on speakers outside of the muted zone.

18.0 Configuring an Amplifier

18.1 Creating a new amplifier entity in the equipment tree

When an amplifier is not configured in the System Manager GUI, but physically present in the Amplifier Chassis, the system controller will not communicate with it, and the status LED on the amplifier will flash.

To initiate communication between the amplifier and controller, the amplifier must be configured in the System Manager equipment tree.

1. Ensure the amplifier PCB is installed in an Amplifier Chassis. Amplifier number will relate to chassis number and location in the chassis. Amplifier Chassis one will have amplifiers 1-4, Amplifier Chassis two will have amplifiers 5-8, and so on.

2. Select Configuration > Equipment.

3. If no amplifier group exists, one must be created before adding an amplifier.

    •   Select the Amplifiers object in the equipment tree and Add an Amplifier Group using the item select list under the equipment tree.

4. When a target Amplifier Group exists, select the Amplifier Group and Add an Amplifier on the equipment tree using the item select list under the equipment tree.

5. See the next section on how to configure the new Amplifier.

Amplifier Chassis one will have amplifiers 1-4, based on slot, starting from left. Additional chassis will start numbering where prior chassis left off, chassis two will have amplifiers 5-8, and so on.

Figure 82 Amplifier Chassis

Figure 83 Defining an Amplifier Chassis
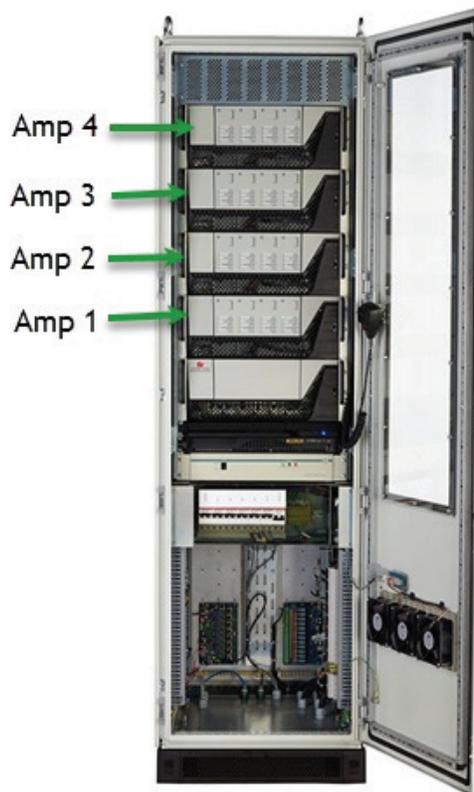
18.2 Configuring a new amplifier entity in the equipment tree

After the amplifier is added to the equipment tree, configure the amplifier using the System Manager software:

1. Select Configuration > Equipment and select the amplifier created in the prior section.

2. Give the new amplifier a name, comment, an amplifier ID that is consistent with its chassis and slot location (see prior section), select scope (A Master for standalone system, Duplicated for A/B system).

3. Select Monitoring Option (typically Impedance Monitoring unless the amplifier is standby or supports ISMT), select a Zone Standby, and other options if needed.

4. Add Local Properties by selecting + Add new record. The New Local Properties dialog box appears.

New Local Properties	✕
Scope:	A Master ⌄
Broadcase Gain :	-20 ⬍
Impedence Lower Limit:	15 ⬍
Impedence Upper Limit:	4000 ⬍
Pilot Tone Threshold	-25.0 ⬍
	✓Update ⃠Cancel

- Set Broadcast Gain between -30 and 0

- Set initial Impedance Lower Limit and Upper Limit and Pilot Tone Threshold. (These values can be changed in Field Diagnostics after evaluating measured Critical Path (Pilot Tone) Monitoring and Impedance Monitoring)

- Click Update.

19.0 Installing Hardware Access Panel

19.1 Connect Hard Access Panel to the PAGASYS GEN II System

PAGASYS GEN II systems can be configured with soft or hard access panels to initiate broadcasts or live messages. The soft access panel is embedded in the System Manager, referred to as the control panel.

The hard access panel is an external device that is connected to the PAGASYS GEN II system via a four-wire interface. The four-wire interface is either un-terminated or terminated with an RJ45 interface. If the hard access panel has an un-terminated four-wire interface (typical), the cable may be terminated onto one of the passive terminal block cards (P-PTBC-G) in the MDF area at the bottom of the cabinet.

The standard configuration for the PAGASYS GEN II system includes two of these boards on the rear left-side MDF panel, and the eight ports from the access panel Mux 1 card are terminated to these cards RJ45 ports by default. The four-pair wires from the access panel should be attached to the terminal block on these cards corresponding to the desired access panel number. If terminated with an RJ45 interface, the cable may be terminated directly into one of the access panel ports on the Controller Chassis access panel Mux 1 card.

Figure 84 Passive Terminal Block Card (P-PTBC-G)

Installing Hardware Access Panel
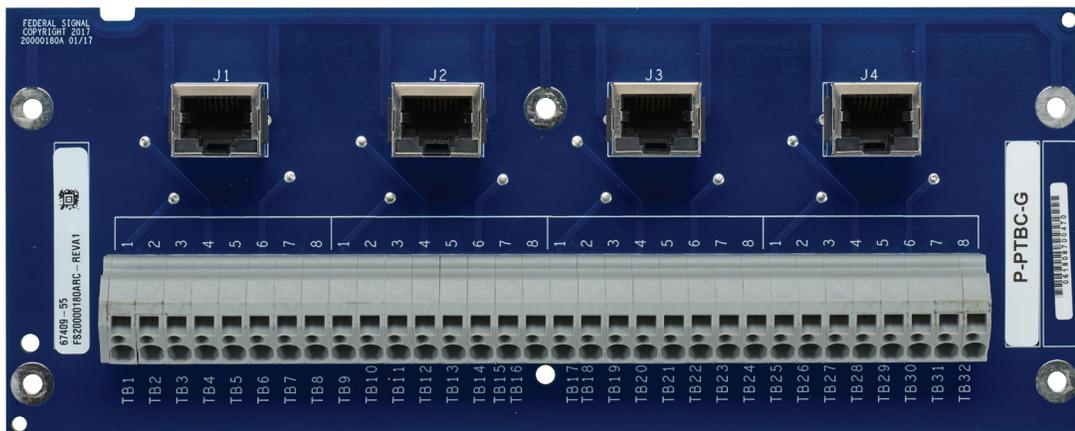
19.2 Configure the panel in System Manager

Once the hard access panel is connected to the PAGASYS GEN II system, configure the panel using the System Manager software. If a soft access panel is already created with similar functions to what is needed on the hard access panel, clone the soft access panel.

To clone the soft access panel:

1. Select Configuration > Equipment > Access Panel.
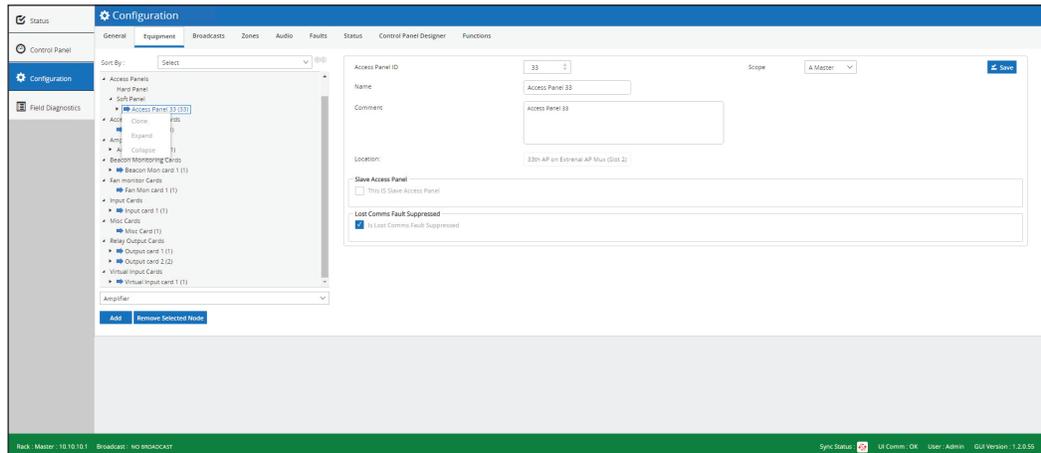
2. Right-click the existing soft access panel (Access Panel 33, most likely) and select Clone. The Select Access Panel dialog box appears.
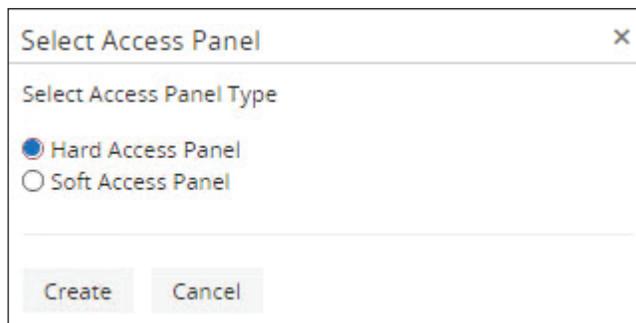
3. Click Hard Access Panel.
4. Click Create.

When the hard access panel is cloned from another panel, the buttons and indicators for the new access panel are available on the System Manager equipment tree. In this example, hard access panel 1. The user will need to configure the Buttons and Indicators attributes (Function, Broadcasts, Zone selections, and Input/Output Connections) to use the access panel.

To configure the new hard access panel:

1. Select Configuration > Equipment > Hard Panel. Select the new Access Panel just created.

2. See the General Alarm example that follows is fully configured. Use the existing soft access panel attributes to define new access panel configuration.
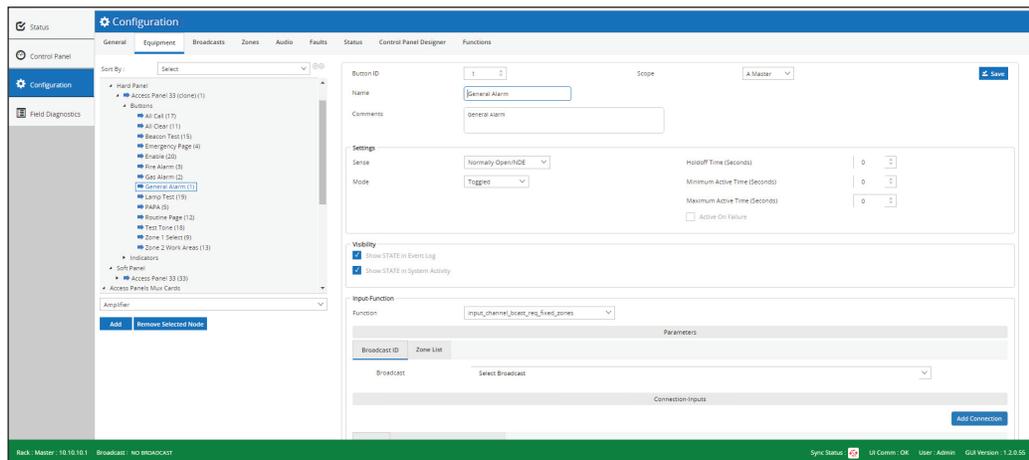
3. File > Upload Config to Controller to upload the access panel to the system controller.

4. File > Restart Controller to restart the system controller to implement the new configuration.

20.0 Ordering PAGASYS GEN II Systems

20.1 Ordering Standard Cabinets and Accessories

The PAGASYS GEN II system is offered in standard configurations to simplify ordering of the system. Every system starts with a standard cabinet configuration. The standard cabinets are wired for either 2, 4, or 5 Amplifier Chassis.

The 2 and 4 Amplifier Chassis are control cabinets that include a fully populated controller chassis and standard I/O cards. Amplifier Chassis are ordered separately to meet customer need. A system manager server and a transfer switch can be ordered as optional accessories.

The standard control cabinet models are shown in the following table.

Table 49 Standard Control Cabinet Models

Model	Description
P-SYS-G-CNTL-2KW-240	Cabinet wired for 2 amplifier chassis, 240 Vac
P-SYS-G-CNTL-2KW-120	Cabinet wired for 2 amplifier chassis, 120 Vac
P-SYS-G-CNTL-4KW-240	Cabinet wired for 4 amplifier chassis, 240 Vac
P-SYS-G-CNTL-4KW-120	Cabinet wired for 4 amplifier chassis, 120 Vac

The 5-amplifier auxiliary cabinet supports up to 5 amplifiers, but no control chassis is included. This auxiliary expansion cabinet must be wired to a control cabinet to operate the amplifiers. **NOTE**: Amplifier Chassis are ordered separately to meet customer need.

The auxiliary cabinet models are shown in the following table.

Table 50 Standard Auxiliary Cabinet Models

Model	Description
P-SYS-G-AMPS-5-CH-240	Cabinet wired for 5 amplifier chassis, includes Amp audio distribution cards (1 per amp), 240 Vac
P-SYS-G-AMPS-3-CH-120	Cabinet wired for 3 amplifier chassis, includes Amp audio distribution cards (1 per amp), 120 Vac

The Amplifier Chassis must be ordered separately from the cabinets, as the chassis may be configured with 1 to 4, 300-W amplifiers. These chassis include the power and signal backplane cards, the specified number of amplifier PCBs, and the transformers needed to operate the amplifiers selected. Amplifier PCBs and transformers operate in either 100 V or 70 V output. ISMT cards, if desired, must be ordered separately.
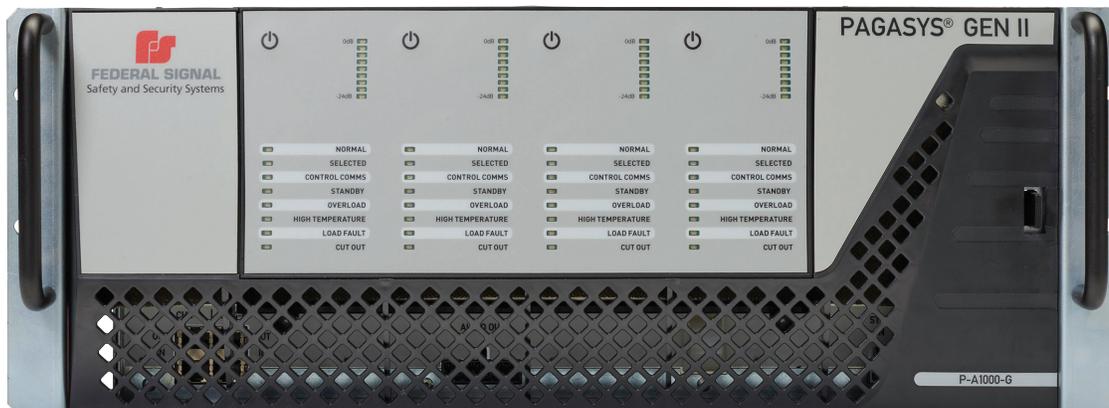
The amplifier chassis models are shown in the following table.

Table 51 Amplifier Chassis Models

Model	Description
P-A250-G	Amplifier chassis with backplane cards, one 100 V amplifier PCB
P-A500-G	Amplifier chassis with backplane cards, two 100 V amplifier PCBs
P-A750-G	Amplifier chassis with backplane cards, three 100 V amplifier PCBs
P-A1000-G	Amplifier chassis with backplane cards, four 100 V amplifier PCBs
P-A250-G-70	Amplifier chassis with backplane cards, one 70 V amplifier PCB with transformers, no ISMT
P-A500-G-70	Amplifier chassis with backplane cards, two 70 V amplifier PCBs with transformers, no ISMT
P-A750-G-70	Amplifier chassis with backplane cards, three 70 V amplifier PCBs with transformers, no ISMT
P-A1000-G-70	Amplifier chassis with backplane cards, four 70 V amplifier PCBs with transformers, no ISMT
P-ISMT-G	ISMT line card

The PAGASYS GEN II cabinets include the standard I/O and terminal block cards. Standard I/O cards for the control cabinet models include:

- 1 input card (P-16DIN-G)

- 1 beacon monitoring card (P-BK-MON-G)

- 2 relay output cards (P-SPDT-G)

- 1 fan control and monitoring card (P-FCMC-G)

- 1 amplifier audio distribution card (P-AADC2-G) for each amplifier that can be included with the cabinet (2 or 4)

- 2 passive terminal block cards (P-PTBC-G)

- 1 fan wiring termination card (P-FWTC-G).

Auxiliary cabinet models include the amplifier audio I/O cards needed to support five amplifiers and one fan control and monitoring card.

If additional I/O or terminal block cards are needed when building a system, they may be purchased separately. The I/O and terminal block models are shown in the following table.

Table 52 I/O and Terminal Block Models

Model	Description
P-APIC-G	Access Panel Aggregator I/O Card
P-16DIN-G	Digital Input I/O Card
P-BK-MON-G	Beacon Monitoring I/O Module
P-SPDT-G	Relay Output I/O Card
P-FCMC-G	Fan Control/Monitoring I/O Card
P-MONIC-G	Monitored Input I/O Module
P-PTBC-G	Passive Terminal Block Card, Spring
P-CPIC-G	Cable Power Injector I/O Card
P-AADC1-G	Amplifier Audio Distribution Card 1:1, Spring
P-AADC2-G	Amplifier Audio Distribution Card 1:2, Spring
P-AADC4-G	Amplifier Audio Distribution Card 1:4, Spring
P-AADC8-G	Amplifier Audio Distribution Card 1:8, Spring
P-FWTC-G	Fan Wiring Termination Card

The following accessories may be ordered to be installed on a system before shipment. The P-SERV-P model includes the PAGASYS GEN II System Manager software needed to interface with the PAGASYS GEN II system. If not ordering the P-SERV-P model, the System Manager software (P-SYSMGR-G) must be ordered separately.

Table 53 PAGASYS GEN II Optional Accessory Models

Model	Description
P-SERV-G	1U Server with monitor and keyboard
P-SERV-G-TS	1U Server with touchscreen monitor and keyboard
P-TRANS-SW-G-120	Transfer Switch with bracket, 120 Vac
P-TRANS-SW-G-240	Transfer Switch with bracket, 240 Vac
P-SYS-LEFTDOOR-G	Front cabinet door with left hinge
P-SYS-REARDOOR-G	Rear cabinet door
P-SYSMGR-G	System Manager Software
RACK-LIGHT-ML-10	Magnetic Rack Light
P-BLANKS-G	PAGA Blank module KIT
P-GLOBALIZATION-G	PAGASYS GEN II Globalization License (Adds multi-language support to PAGASYS GEN II System Manager application).

The PAGASYS GEN II access panels are offered in desktop, wall mount, or rack mount configuration. They are offered as safe area or intrinsically safe. Intrinsically safe access panels and microphone stations require connection to a barrier card. Each barrier card can support up to two access panels or microphone stations.

Table 54 PAGASYS GEN II Access Panel and IS Barrier Models

Model	Description
P-IS-BARRIER-G	PAGASYS GEN II IS Barrier Board GEN II, supports two AP or Mic stations
P-AP-EXDM-G	PAGASYS GEN II Access Panel IS Desk Mount GEN II. Requires separate purchase of IS barrier boards in rack, model P-IS-BARRIER-G.
P-AP-SADM-G	PAGASYS GEN II Access Panel Safe Area Desk Mount GEN II.
P-AP-EXWM-G	PAGASYS GEN II Access Panel IS Wall Mount GEN II. Requires separate purchase of IS barrier boards in rack, model P-IS-BARRIER-G.
P-AP-SAWM-G	PAGASYS GEN II Access Panel Safe Area Wall Mount GEN II.
P-AP-EX19-G	PAGASYS GEN II Access Panel IS Rack Mount GEN II. Requires separate purchase of IS barrier boards in rack, model P-IS-BARRIER-G.
P-AP-SA19-G	PAGASYS GEN II Access Panel Safe Area Rack Mount GEN II.
P-MIC-EXWM1-316-G	PAGASYS GEN II Mic Station. Intrinsically safe (requires separate purchase IS barrier boards in rack, model P-IS-BARRIER-G), wall mount, IP65, SS316 enclosure, 1 pushbutton, stubby microphone.

8.2 Ordering PAGASYS GEN II Kits

PAGASYS GEN II kits are offered in the same configurations as cabinets (2- or 4-Amplifier Chassis control kits, or 5-amplifiers auxiliary kits) for wiring, metalwork, and IO card kits, a controller chassis kit, and amplifier kits for both 70 V_{RMS} and 100 V_{RMS} output. Please contact your Federal Signal sales representative for additional information and pricing on engineering, crating, and FAT (Factory Acceptance Test) for PAGASYS GEN II kits.

Table 55 Standard Control Cabinet Models

Model	Description
P-SYS-G-MW-KIT-2KW	PAGASYS GEN II Metalwork kit 2 kW
P-SYS-G-MW-KIT-4KW	PAGASYS GEN II Metalwork kit 4 kW
P-SYS-G-MW-KIT-5-CH	PAGASYS GEN II Metalwork kit 5 Chassis
P-SYS-G-WIRE-KIT-5-CH	PAGASYS GEN II Wiring kit 5 Chassis
P-SYS-G-WIRE-KIT-2KW	PAGASYS GEN II Wiring kit 2 kW
P-SYS-G-WIRE-KIT-4KW	PAGASYS GEN II Wiring kit 4 kW
PK-NET-G	Controller chassis with standard controller PCB cards
PK-A250-G	Amplifier Chassis with backplane cards, one 100 V amplifier PCB, no ISMT
PK-A500-G	Amplifier Chassis with backplane cards, two 100 V amplifier PCBs with transformers, no ISMT
PK-A750-G	Amplifier Chassis with backplane cards, three 100 V amplifier PCBs with transformers, no ISMT
PK-A1000-G	Amplifier Chassis with backplane cards, four 100 V amplifier PCBs with transformers, no ISMT
PK-A250-G-70	Amplifier Chassis with backplane cards, one 70 V amplifier PCB with transformers, no ISMT
PK-A500-G-70	Amplifier Chassis with backplane cards, two 70 V amplifier PCBs with transformers
PK-A750-G-70	Amplifier Chassis with backplane cards, three 70 V amplifier PCBs with transformers, no ISMT
PK-A1000-G-70	Amplifier Chassis with backplane cards, four 70 V amplifier PCBs with transformers, no ISMT
PK-ISMT-G	ISMT line card
PK-IOCARD-G-2KW	Kit that contains standard I/O cards for a two Amplifier Chassis system, 1 input card (P-16DIN-G), 1 beacon monitoring card (P-BK-MON-G), 2 relay output cards (P-SPDT-G), 2 fan control and monitoring card (P-FCMC-G), 2 amplifier audio distribution cards (P-AADC2-G), 2 passive terminal block cards (P-PTBC-G), and a fan wiring termination card (P-FWTC-G).

Model	Description
PK-IOCARD-G-4KW	Kit that contains standard I/O cards for a four Amplifier Chassis system, 1 input card (P-16DIN-G), 1 beacon monitoring card (P-BK-MON-G), 2 relay output cards (P-SPDT-G), 1 fan control and monitoring card (P-FCMC-G), 4 amplifier audio distribution cards (P-AADC2-G), 2 passive terminal block cards (P-PTBC-G), and 2 fan wiring termination card (P-FWTC-G).
PK-IOCARD-G-5KW	Kit that contains standard I/O cards for a five Amplifier Chassis system (no controller chassis), 1 fan control and monitoring card (P-FCMC-G), 5 amplifier audio distribution cards (P-AADC2-G), 2 passive terminal block cards (P-PTBC-G), and 2 fan wiring termination card (P-FWTC-G).
K-P-SERV-G	1U Server with Monitor and Keyboard, service part
PK-FAN-G	PAGASYS GEN II Fan Kit
P-SYS-G-DEMO-KIT	PAGASYS GEN II Demo System

20.2 Ordering PAGASYS GEN II Service Parts

PAGASYS GEN II controller service parts are available for spares or replacement of all PCBs that are included with the standard controller chassis.

Table 56 PAGASYS GEN II Controller Service Parts

Model	Description
K-P-NET-G	Controller Chassis Service Model
K20000170	Controller Backplane Service Model
K-P-IAMC-G	Internal AP MUX Card GEN II Service Model
K-P-AAMC-G	Amplifier Audio MUX Card GEN II Service Model
K-P-CPC-G	Processor Card GEN II Service Model
K-P-CMC-G	Miscellaneous Card GEN II Service Model
K-P-IOIC-G	I/O Interface Card GEN II Service Model
K-P-ADPS-G	120/240 Vac Power Supply GEN II Service Model
K-P-EAMC-G	External AP MUX Card GEN II Service Model

PAGASYS GEN II controller service parts are available for spares or replacement of all PCBs that are included with the standard controller chassis.

Table 57 PAGASYS GEN II Amplifier Service Parts

Model	Description
K20000154	Single backplane signal PCB card service part
K20000155	Single backplane power PCB card service part
K-P-ISMT-G	Single ISMT line card service part
K20000150	Single amplifier PCB card 100 V service part without Transformer
K12000775	Transformer 300 W, 100 V Audio service part
K20000150-70	Single amplifier PCB card 70 V service part without Transformer
K12001655	Transformer 300 W, 70 V Audio service part

PAGASYS GEN II controller service parts are available for spares or replacement of all PCBs that are included with the standard controller chassis.

Table 58 PAGASYS GEN II I/O and Terminal Block Service Parts

Model	Description
K-P-APIC-G	Access Panel Aggregator I/O Card GEN II, Service Model
K-P-16DIN-G	Digital Input I/O Card GEN II, Service Model
K-P-BK-MON-G	Beacon Monitoring I/O GEN II, Service Model
K-P-SPDT-G	Relay Output I/O Card GEN II, Service Model
K-P-FCMC-G	Fan Control/Monitoring I/O Card GEN II, Service Model
K-P-MONIC-G	Monitored Input I/O Card GEN II, Service Model
K-P-PTBC-G	Passive Terminal Block Card, Spring, Service Model
K-P-CPIC-G	Cable Power Injector I/O Card, Service Model
K-P-AADC1-G	Amplifier Audio Distribution Card 1:1, Spring, Service Model
K-P-AADC2-G	Amplifier Audio Distribution Card 1:2, Spring, Service Model
K-P-AADC4-G	Amplifier Audio Distribution Card 1:4, Spring, Service Model
K-P-AADC8-G	Amplifier Audio Distribution Card 1:8, Spring, Service Model
K-P-FWTC-G	Fan Wiring Termination Card, Service Model
K-P-IS-BARRIER-G	IS Barrier Board Service Model

21.0 Getting Service

If you are experiencing any difficulties, contact Federal Signal Technical Support at 800-524-3021 or through e-mail at techsupport@fedsig.com. For instruction manuals and information on related products, visit http://www.fedsig.com/

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