iPAM400

Intelligent 400W PA Amplifier Mainframe with Loudspeaker Line Monitoring

- Ideal for VoIP Long Line Public Address (LLPA)
- RJ45 Ethernet IP connectivity
- Live Speech VoIP (Voice over IP)
- Optional Text to Speech Engine (TTS)
- Recorded DVA Messages and PC/DVA
- Modular amplifier units allow flexible output power configuration
- DC and AC Loudspeaker line monitoring
- Dual microphone/analogue audio inputs
- Expansion option for four audio inputs
- 230V AC and/or 24V DC power supplies
- 2U enclosure

The iPAM400 Public Address Amplifier Mainframe is a 2U rack mount unit which combines amplification, routing, and Ethernet connectivity, together with loudspeaker line monitoring. The Mainframes can be used as self-contained intelligent monitored PA systems, or can be used as part of an IP networked system.

Two multifunction audio input and serial I/O ports enable the connection of BMB01 Remote I/O Units and ASL paging microphones, or other audio sources. The BMB01 units in turn enable the connection of ASL Ambient Noise Sensors, and also provide flexible general purpose analogue and digital I/O. The ASL microphones can be configured for live speech paging and for DVA message broadcast locally at the host iPAM400, or anywhere else over the IP network. Thus a microphone can broadcast at an adjacent unmanned station in the case of Long Line PA systems. Two extra audio inputs plus four audio outputs are provided by an optional XIO01 Audio I/O module. The optional Acapela Text-to-Speech module can be used in place of or as well as live speech and DVA message recordings if desired.

The iPAM400 can be remotely controlled using ASL MPS IP microphones, or by an ASL or other compatible third party PA workstation, a typical application of such a system being at a Line Control Centre on a Long Line PA System. The iPAM400 connectivity, control, and monitoring functions also enable it to drive RS485 PIS displays, and to be used as a SCADA RTU to monitor and control third party equipment.

ASL's Voice over IP and Digital Voice announcement solution plus the optional Acapela Text-to-Speech module allows the use of both high and low bandwidth codecs or text-only IP interfacing, as appropriate to the network capacity and application.

The iPAM400 can be fitted with one or more amplifier modules in any combination of up to: 4x100W, 2x200W, 1x400W, or 1x200W + 2x100W. Each amplifier feeds four outputs, of A, B, C, and D circuits. Relay-switched routing can provide cost reduced multiple PA zone solutions which only use a single amplifier module if desired. Loudspeaker line monitoring is provided using either AC or DC Line Surveillance.

The iPAM400 operates with dual power supplies, a 230V AC mains supply and/or a 24V DC supply

IMPLEMENTATION OPTIONS
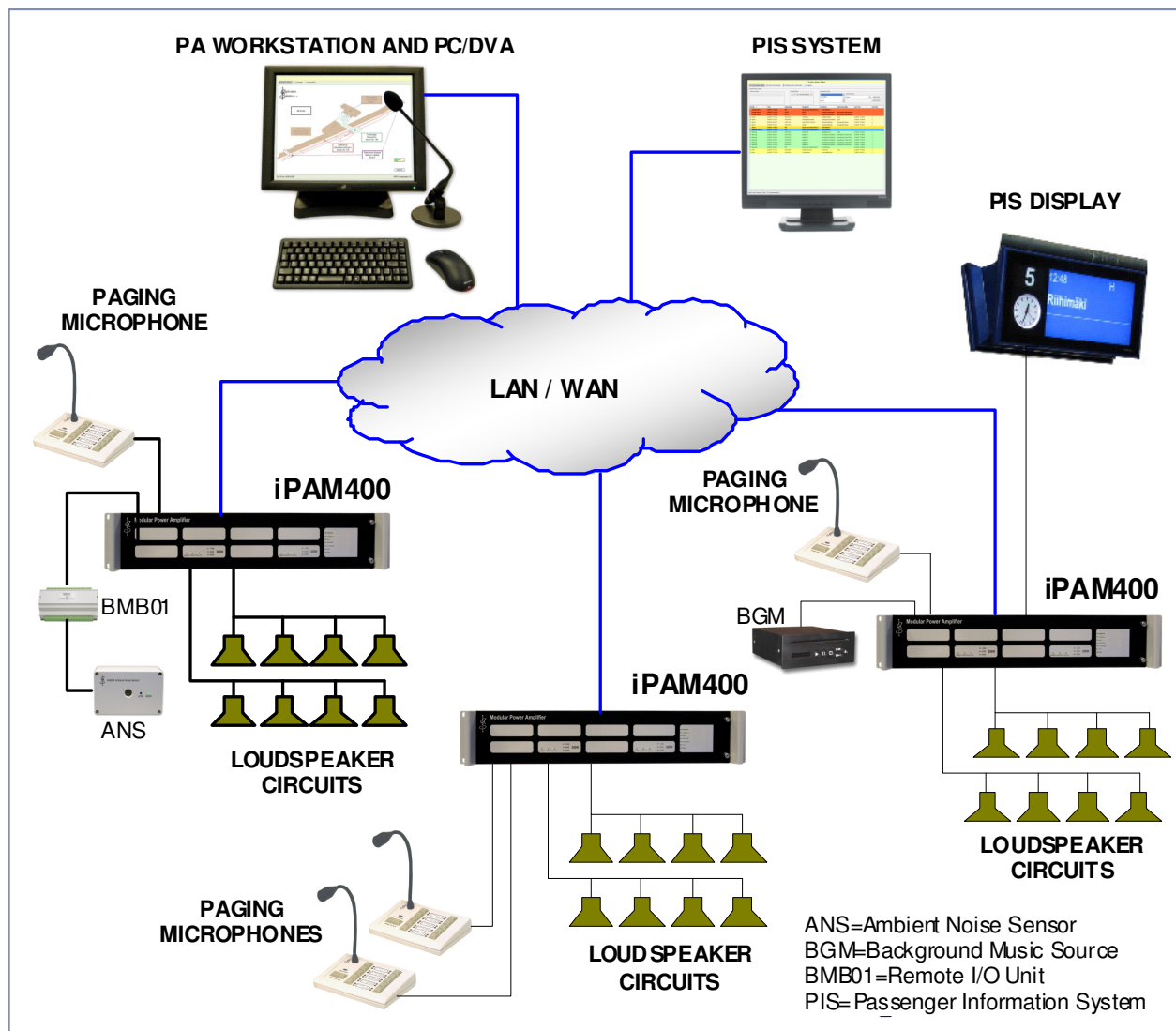
Typical Networked iPAM400 System

SPECIFICATION

General

Real Time Clock .... Built In
   (Synchronised via NTP and the ASL iVENCS Control System)

Power Supplies

AC Supply Voltage ..230V +/–10% RMS 50Hz AC / IEC320 inlet
   European standard
AC Inrush Current ....24.2A (Worst case)
AC Power Consumption .... 745VA (Max.)
   (iPAM400 fully configured and all amplifier modules delivering
   a 100V 1kHz sine wave into their rated resistive load)
DC Supply Voltage ....21 to 27.6V
   (From nominal 24V lead acid battery pack)
Quiescent DC Current (no amplifiers, @ 24V supply) 450mA
Maximum DC Current Consumption ....6.25A per 1 x MX100
   12.5A per 1 x MX200
   25A per 1 x MX400
   (21V supply, modules delivering a 100V 1kHz sine wave
   into their rated resistive load)
Auxiliary DC Supply Output ....21V to 38V[1]

Analogue Audio Outputs and Amplification[2]

Audio Outputs .... 4 channels
Audio I/O Expansion Module (optional)
   Audio Outputs.............................4 x 0dBu low level outputs
Amplification ....Up to 4 100V amplifiers
Amplifier Outputs ..... A, B, C, and D outputs from each Amplifier
Standard Configurations[3] ..... 1 x MX400 400W Amplifier Module
   2 x MX200 200W Amplifier Module
   4 x MX100 100W Amplifier Module
   1 x 200W + 2 x 100W Amplifier Modules
Standby Amplification ....Internal
   (Available for 100W and 200W amplifier modules)[4]

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[2] ASL amplifiers on 230 V mains power can produce full output, with normal programme material, into loads 25% greater than those specified. In these conditions, a MX100 will deliver full output with 125 W of load connected, a MX200 will deliver full output with 250 W of load connected, and a MX400 will deliver full output with 500 W of load connected.

[3] The mainframe is fully populated in the standard configurations. However the mainframe does not need to be fully populated with amplifiers, for example three MX100 amplifiers could be fitted, or a single MX200 amplifier.

[4] Internal standby amplifier must be fitted into slot 3 and can only swap in for a working amplifier fitted into slot 1.

[1] Depending on AC or DC supply, and battery conditions.

Loudspeaker Line Surveillance

Loudspeaker Line Surveillance..........AC or DC line surveillance
    DC line surveillance[5] .... 10K Resistors
    AC line surveillance[6] ....Active End of Line Units

Analogue Audio Inputs and Serial I/O

Microphone/Audio/Data Port[7] .... 2 ports
    Audio Input....... balanced 0dBu/10K -20dBu max. sensitivity
    Auxiliary DC Supply Output .... 18-36V (500mA max)[8]
    Serial Interface...RS485
      For ASL microphones and BMB01 remote I/O units[9]
      Can also provide RS485 PIS Display Drive
Audio I/O Expansion Module (optional)
    Audio Inputs.........2 x balanced 0 dBu / 14 kΩ impedance [10]

Noise Control Features

Sample and Hold Ambient Noise Sensors ....ANS
    Connection using BMB01 Remote I/O Units
Night Volume Control .... All outputs

Communication Interfaces

IP Network Connectivity .... 1 100baseT Ethernet RJ45 Port
USB Port .... 2 USB 2.0 (USB type A socket)
    DVA and Software Download & Configuration Port
RS232 Serial Port[11] 1
VGA Video Port...1
    Used with USB Keyboard for Bootstrap Operation and Config
Audio-CAN Port... 1 (Unused)

Environmental

Temperature Range
    Storage .... −5℃ to +50℃
    Operating .... −5℃ to +50℃
Humidity Range...............................0% to 93% non-condensing
Ingress Protection IP20
Vibration / Impact .... EN60068-2-6 / EN60068-2-75

Dimensions and Weight

Dimensions (H x W x D) .... 86mm x 439mm x 425mm
    (Excluding handles) / 2U height, 19" rack mount
Weight
    iPAM400 Mainframe only 12kg
    Max. Mainframe fitted with 4 x MX100....................... 18.4kg

MX100

Output Power...100W @ 100V RMS
Output Voltage and Input Sensitivity .... 100V RMS
    Into 100R load for 0dBu 1kHz input signal
Regulation .... Better than 1.5dB
    (No load to full load)
Efficiency 80%
Quiescent Current .... (@ 24V supply)
    No signal 70mA
    With one or two AEL units connected ....110mA (nominal)
    With continuous surveillance signal ....140mA (nominal)
Full Power Current.. 6.25A
    (Worst case 21V battery supply)
Frequency Response.............................. 100Hz – 18kHz, ±3dB
THD (@ 100V RMS output, full load) ....<0.5% @ 1kHz
Residual Noise......................Better than 80dB below full output
    (A-weighted)
Dimensions (H x W x D)......................79mm x 79mm x 273mm
    (Including connectors)
Weight 1.6kg

MX200

Output Power...200W @ 100V RMS
Output Voltage and Input Sensitivity .... 100V RMS
    Into 50R load for 0dBu 1kHz input signal
Regulation .... Better than 1.5dB
    (No load to full load)
Efficiency 80%
Quiescent Current .... (@ 24V supply)
    No signal 70mA
    With one or two AEL units connected ....110mA (nominal)
    With continuous surveillance signal ....140mA (nominal)
Full Power Current.. 12.5A
    (Worst case 21V battery supply)
Frequency Response.............................. 100Hz – 18kHz, ±3dB
THD (@ 100 V RMS output, full load) ....<0.5% @ 1kHz
Residual Noise......................Better than 80dB below full output
    (A-weighted)
Dimensions (H x W x D).....................79mm x 159mm x 273mm
    (Including connectors)
Weight 2.7kg

MX400

Output Power...400W @ 100V RMS
Output Voltage and Input Sensitivity .... 100V RMS
    Into 25R load for 0dBu 1 kHz input signal
Regulation .... Better than 1.5dB
    (No load to full load)
Efficiency 80%
Quiescent Current .... (@ 24V supply)
    No signal 90mA
    With one or two AEL units connected ....125mA (nominal)
    With continuous surveillance signal ....150mA (nominal)
Full Power Current.. 25A
    (Worst case 21V battery supply)
Frequency Response.............................. 100Hz – 18kHz, ±3dB
THD (@ 100V RMS output, full load) ....<0.5% @ 1kHz
Residual Noise......................Better than 80dB below full output
    (A-weighted)
Dimensions (H x W x D).....................79mm x 316mm x 273mm
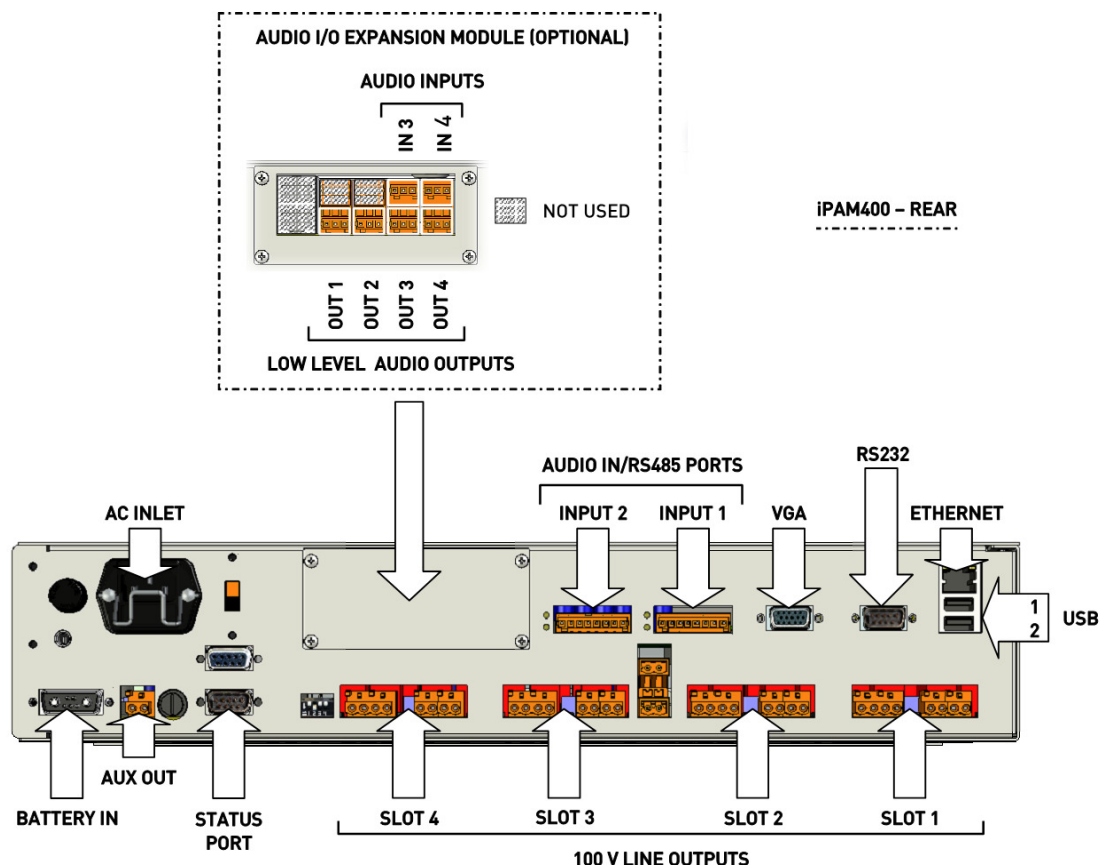   (Including connectors)
Weight 4.9kg

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[5] DC line surveillance is BS EN5839 Part 8 compliant and can be used with up to ten loudspeaker circuit spurs per amplifier slot, with one EOL10K End of Line Resistor used per spur.

[6] AC line surveillance is BS EN5839 Part 8 compliant and can be used with up to two loudspeaker circuits per amplifier, with one AEL01 or AEL02 Active End of Line Device used per circuit. Loudspeakers do not require to be fitted with DC blocking capacitors.

[7] Each port can support either an ASL microphone, or a BMB01 unit, or another audio source, or a BMB01 unit and another audio source. Note that one port cannot support an ASL microphone and a BMB01 unit at the same time.

[8] Depending on AC or DC supply, and battery conditions.

[9] Up to nine BMB01 units can be configured on each port. ANS sensors can be configured on different BMB01 units provided that the BMB01 units are connected to the same input port of the iPAM400. Up to twelve ANS sensors can be configured on each BMB01 unit. Any number of ANS sensors configured on the iPAM400 can be assigned for each amplifier.

[10] One of the audio inputs is not available when the Listen-in function is configured.

[11] The RS232 port is duplicated on the front of the iPAM400 behind the removable front panel.

REAR PANEL CONNECTIONS

PRODUCT PART NUMBERS

iPAM400..Intelligent Amplifier Mainframe with Loudspeaker Line Monitoring
FPANEL-iPAM400 .... iPAM400 Front Panel
iPA400.. Intelligent Amplifier Mainframe (without Line Monitoring)
FPANEL-iPAM400 .... iPA400 Front Panel
MX100..100W 100V Amplifier Module (125W using a 230V AC Mains Power Supply)
MX200..200W 100V Amplifier Module (250W using a 230V AC Mains Power Supply)
MX400..400W 100V Amplifier Module (500W using a 230V AC Mains Power Supply)
EOL10K..10K Resistive DC End Of Line units
AEL01 .... IP40 AC End Of Line unit
AEL02 .... IP65 AC End Of Line unit

OPTION PART NUMBERS

XIO01... Analogue Audio Expansion Input / Output Module (Factory Fit Option)
VIPA-TSS.................................Acapela Text To Speech Software Module (Factory Fit Option – with Specified Language)

Note: Acapela® is a registered trademark of the Acapela Group.

CE

This equipment is designed and manufactured to conform to the following EC standards:
EMC: EN55103-1/E1, EN55103-2/E5, EN50121-4, ENV50204
Safety: EN60065