
UDAPS® *All you need between the input and the speaker !*

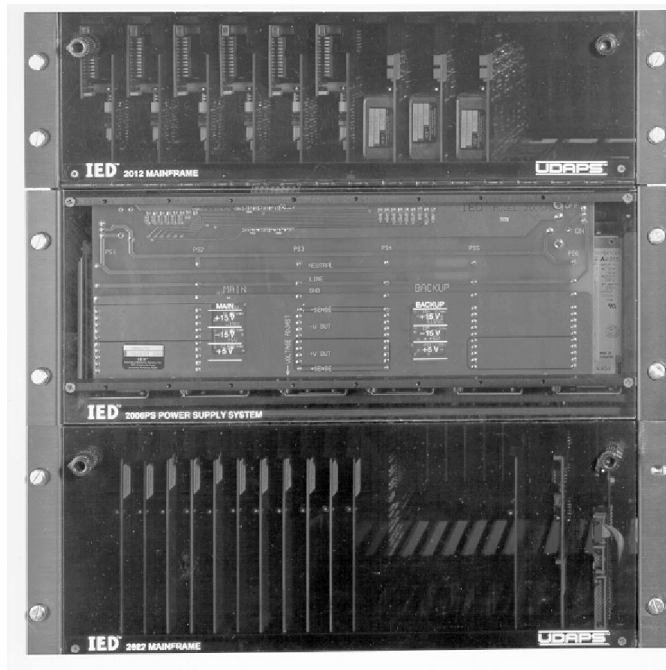
VERSATILITY ... FLEXIBILITY ... ECONOMY

The IED **UNIVERSAL DIGITAL AUDIO PROCESSING SYSTEM (UDAPS®)** is the **ONLY** total system that provides the user with the flexibility and versatility to perform virtually **ALL** the sophisticated functions required of any sound system – in one single package!

This is accomplished by utilizing IED's **DIGITAL DOMAIN PROCESSING (DDP™)**.

UDAPS® is designed with economics as a prime consideration. It bridges all applications from the small to the very complex.

The **IED UDAPS®** is a modular, rack mountable system with plug-in cards. This gives the professional the flexibility to design and construct a total system properly integrated for



each application. The total integral architecture (TIA) of **UDAPS®** eliminates the wiring among devices. Only the input and output connections of the audio and controls are necessary, eliminating the problems of ground loops, hum, and EMI.



IED UDAPS® 2000 SERIES SYSTEM

FEATURES

- Modular construction with expansion capability designed and built-in
- Large number of inputs, up to 640 in increments of 8
- Large number of outputs, up to 640 in increments of 8
- Minimal space requirements
- 508 simultaneous internal audio paths
- Cost effective for large or small systems
- Programmable and dynamic software control of system building blocks
- Professional audio quality
- Self diagnostics
- EIA 19" rack mountable
- Universal power compatibility

CAPABILITIES

- Routing/Switching
- Mixing
- Level Control
- Multiple Signal Path Delay
- Equalization/Crossover/Filtering
- Announcement Distribution
- Power Amplification

TYPICAL EXAMPLE

- 128 inputs
- 160 outputs, each with 5 to 1 mix
- 160 9 band parametric equalizer channels
- 160 channels of signal delay
- Redundant power supplies
- Internal level control of all output mixes
- REQUIRES ONLY 17 EIA RACK SPACES (29.75")**

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ORGANIZATION

The **IED UDAPS®** system consists of three separate rack frame units:

- Analog Interface
- Digital Processing and Control
- DC Power Supply and Cooling

The analog interface cards are housed in one or more 2012 Mainframes. The digital processing and control cards are housed in one 2022 Mainframe. The Power Supply System provides DC power and coolant air to the **UDAPS®**.

UDAPS® ANALOG INTERFACE FUNCTIONS

Analog interface cards housed in the **2012 Mainframe(s)** are:

- 2008AD Audio to Digital Card
- 2008DA Digital to Audio Card
- 2008EQ Equalization Card (mounts on the 2008AD and/or 2008DA)
- 2008RY Multi-function Relay Card
- 2016PLC 112PLC Interface Card
- 2008C Microphone Station Control Card
- 2000E Extender Card

The 2012 has 12 slots for plug-in cards. These slots may be configured to accept many combinations of the cards listed above, with the appropriate connections made to the rear of the mainframe for the audio and control. Multiple 2012 Mainframes may be used to provide the necessary complement of inputs and outputs to implement the appropriate **UDAPS®** configuration to meet the system requirements.

2012 MAINFRAME

- Holds up to 12 cards
- All Cards can be used in multiples
- Multiple Mainframes can be used

2008AD AUDIO TO DIGITAL CARD

- Eight balanced line level audio input channels per card
- Audio level detection on each channel
- Integrated audio & control test function
- Expansion capabilities for signal conditioning of each input (2008EQ add-on card)



2008C MICROPHONE STATION CONTROL CARD

- Interfaces with IED Model 500 and/or 508 Series Microphone Stations
- Eight microphone station control interface inputs per card
- Provides +30 VDC phantom powering for microphone stations
- Provides one PA422 interface per card
- On-board microcontroller

2008DA DIGITAL TO AUDIO CARD

- Eight balanced, floating line level audio output channels per card
- Optional power amplifier output (8 W into 8 Ω , unbalanced)
- Integrated audio and control test function
- Expansion capabilities for signal conditioning of each output (2008EQ add-on card)

2016PLC 112PLC INTERFACE CARD

- Provides interface for up to sixteen 112PLC Pushbutton Level Controls per card
- Provides remote control of **UDAPS**[®] signal levels
- 112PLCs can be grouped in any combination
- Integrated Test Function

2008RY MULTI-FUNCTION RELAY CARD

- Available in one of four standard options:
 - A. Balanced audio 8 by 1 routing
 - B. Eight dry contact closures
 - C. Eight complementary logic outputs
 - D. Eight logic inputs and eight logic outputs

2008EQ EQUALIZATION CARD

- Mounts on 2008AD and 2008DA cards
- Available in one of two options
 - A. Eight channels of 9 band equalization
 - B. Eight channels of 2 band equalization (sufficient for crossovers)
- Types of digital equalization available for each band
 - A. Parametric
 - B. High Pass
 - C. Low Pass
 - D. High Shelving
 - E. Low Shelving
 - F. High Q Notch

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UDAPS® DIGITAL PROCESSING AND CONTROL FUNCTIONS

The digital processing and control cards housed in the **2022 Mainframe** are:

- 2000CPU UDAPS® Controlling Processor Card
- 2032SP Serial to Parallel Card
- 2032PS Parallel to Serial Card
- 2000DSP Digital Signal Processor Card
- 2000DL Digital Delay Card

The 2022 has 22 slots for plug-in cards. Slot 22 is reserved for the 2000CPU Controlling Processor Card. The remaining 21 slots may be configured to accept any of the other cards, with the appropriate connections made to the rear of the mainframe for interfacing with the 2012 Mainframe(s).

The **UDAPS®** is managed and controlled by software operating in the 2000CPU. This software is modular and programmable, allowing tailoring to specific and variable application needs. The 2000CPU interfaces with the IED 590 Microcomputer System which provides the information to establish the appropriate **UDAPS®** configuration for the specific application.

2022 MAINFRAME

- Holds up to 22 of the cards listed above
- All cards can be used in multiples except 2000CPU
- Only 1 2022 mainframe required per UDAPS® system

2000CPU UDAPS® CONTROLLING PROCESSOR CARD

- Controls the operation of all **UDAPS®** cards
- Monitors the status of all **UDAPS®** cards
- Generation and distribution of timing signals
- System sampling rate of 44.1 kHz or optional 48 kHz
- Controls all signal distribution
- Interfaces with the 590 Microcomputer System for command & control information
- Reports system status to the 590 Microcomputer System

2032SP SERIAL TO PARALLEL CARD

- Interfaces with four 2008AD cards
- Converts 32 channels of digital audio from serial to parallel format

2032PS PARALLEL TO SERIAL CARD

- Interfaces with four 2008DA cards
- Converts 32 channels of digital audio from parallel to serial format



2000DSP DIGITAL SIGNAL PROCESSOR CARD

- Provides mixing and level control
 - A. Typical mixing capabilities per card:
 - 42 channels mixed to 21 channels
 - 162 channels mixed to 2 channels
 - Various combinations in between
 - B. Level control is fully programmable from both 590 Microcomputer and 112PLC Pushbutton Level Control

2000DL DIGITAL DELAY CARD

- 2 to 126 channels of delay
- 11.9 sec to 95.1 sec total signal delay, depending on option selected
- Delay available in increments of 0.726 milliseconds
- Typical capabilities
 - A. 2 delay channels, 126 outputs each, maximum delay of 5.9 sec/channel
 - B. 24 delay channels, 9 outputs each, maximum delay of 495 msec/channel
 - C. 126 delay channels, 1 output each, maximum delay of 754.8 msec/channel (with maximum memory option)

UDAPS® DC POWER SUPPLY AND COOLING

The DC power supply and cooling assembly of the **UDAPS®** is housed in the power supply mainframe. All power supplies are UL recognized. The supplies may be configured to operate from 120 VAC or 240 VAC over a frequency range of 47 Hz to 400 Hz. The cooling assembly consists of three DC powered fans which provide airflow to assist in cooling the DC power supplies and the cards in the 2012 and 2022 Mainframes.

2002PS POWER SUPPLY SYSTEM

- A main set of +15 VDC and -15 VDC power supplies

2003PS POWER SUPPLY SYSTEM

- A main set of +15 VDC, -15 VDC, and +5 VDC power supplies

2004PS POWER SUPPLY SYSTEM

- Main and backup sets of +15 VDC and -15 VDC power supplies

2006PS POWER SUPPLY SYSTEM

- Main and backup sets of +15 VDC, -15 VDC, and +5 VDC power supplies

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UDAPS® SYSTEM SPECIFICATIONS

Number of audio Inputs (Note 1)	640 max, increments of 8
Input Impedance	>100 kΩ
Maximum Input Level	+24 dBu
Input Conversion	16 bit Delta Sigma A/D, 64X oversampling
Number of Audio Outputs (Note 1)	640 max, increments of 8
Output Impedance	<0.5 Ω
Maximum Output	+24 dBu Output
Output Conversion	16 bit PCM, 8X oversampling
Frequency Response, 20 Hz-20 kHz	± 0.2 dB
System Sampling Rate	44.1 kHz or 48 kHz
Signal to Noise Ratio, 20 Hz-20 kHz	>90 dB
Total Harmonic Distortion (THD), 20 Hz-20 kHz	<0.01

Note 1: The maximum number of Audio Inputs and Outputs, when added together, is 672. They may be apportioned in any desired combination, in groups of 32.



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