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APS-9000

Controller

○ POWER ON	○ READY	○ INDICATOR TEST
○ FAULT	○ POWER FAULT	○ FAULT RESET
○ SYSTEM FAULT	○ 100 V AUDIO FAULT	○ SILENCE BUZZER

APS-9000 | APS®-AUDIO PROCESSOR SYSTEM

Front view

1	Main switch On / Standby (0 / I)	4	Freely programmable buttons and LED
2	LED indicators according to EN 54-16	5	Buzzer
3	Buttons according to EN 54-16	6	Model code

APS-9000 | APS®-AUDIO PROCESSOR SYSTEM
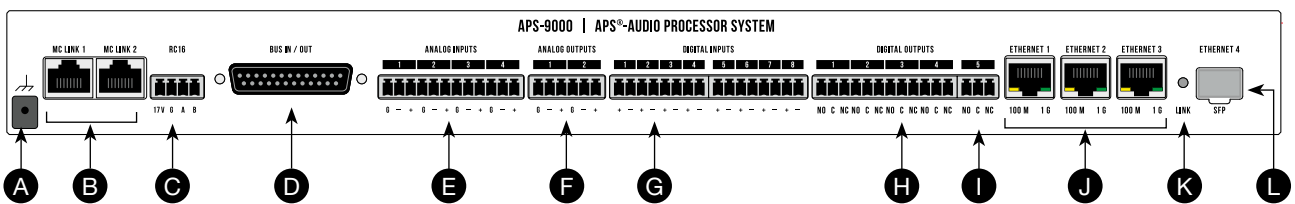
Rear view

A	Functional earth	G	Connector blocks for digital inputs
B	Socket MC LINK (RJ45)	H	Connector blocks for digital outputs
C	Connector block for remote control (RC16)	I	Connector block for fault contact
D	APS bus (D-SUB-25)	J	Network sockets (RJ45)
E	Connector block for analogue audio inputs	K	Connection indicator SFP port
F	Connector block for analogue audio outputs	L	SFP Port

Description

The APS-9000 controls, monitors and processes the audio signals of an APS-APROSYS system according to the system-specific programming.

Inputs and outputs
- 2 Inputs for microphone consoles
- 4 Inputs for analogue audio signals (2 monitored)
- 2 Outputs for analogue audio signals
- 8 Digital inputs for monitored contacts
- 4 Digital outputs for floating contacts
- Switch for network connections and SFP port

Tasks
- Storage of programming and corresponding controlling of the system (APS engine)
- Processing of programmable keys
- Playback of MP3 files on 4 independent channels
- Audio and control data transfer between systems via local network
- Processing of audio signals with digital signal processor
- HW firewall for separating fire protection (VA) and professional sound reinforcement (PA)

Approvals
Certifications: EN 54-16, EN 54-4
User standards: VDE-833-4, NEN 2575, EN 50849
Conformity: Europe CPR/ CE, UAE Coc, UAE Coc

Settings on the unit
None

Intended use
- Fire protection
- Audio equipment for professional use

General Information

LED indicators (2)
- POWER ON: Lights up green when the unit is supplied with power. The indicator flashes during the start-up process of the application controller
- FAULT: Lights up yellow when the voice alarm unit is in the fault warning condition. At the same time, the buzzer is active
- SYSTEM FAULT: Lights up yellow when there is a system fault
- READY: Lights up green when the voice alarm unit is in the quiescent condition. The indicator flashes during calibration
- POWER FAULT: Lights up yellow if there is a power supply fault (mains supply / battery supply)
- 100 V AUDIO FAULT: Lights up yellow if there is a 100 V audio fault (amplifier, line monitoring)

Buttons (3)
- INDICATOR TEST: Checking the indicators as well as the buzzer
- FAULT RESET: Resetting of fault indicators
- SILENCE BUZZER: Muting of the buzzer

Note
Buttons and LEDs (RGB) are freely programmable in APS®-APROSYS.
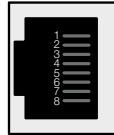
Operating instructions

- Commissioning, operation and maintenance may only be carried out by trained personnel according to EN 54-16.
- The unit is suitable for indoor use only. Protect it against humidity and heat
- Do not operate the appliance if:
  - There is visible damage to the unit
  - If a defect might have occurred
  - If malfunctions occur
- For cleaning only use a dry, soft cloth, by no means liquids!
- Device may only be opened by authorized specialists. This device is not suitable for use in places where children may be present

Connections

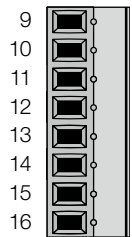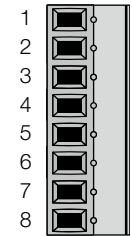### Connection diagram for socket MCLINK (RJ45) (B)

Compatible with RJ45 standard cable

1   LF Input balanced +
2   LF Input balanced –
3   Serial data
4   Power supply voltage +17 VDC
    for the microphone consoles (max. 400 mA)
5   Power supply voltage +17 VDC
    for the microphone consoles (max. 400 mA)
6   Ground
7   Ground
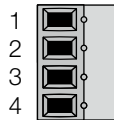8   Ground

Connection diagramm for the connector block RC16 (C)

1   Remote control supply 17 V
2   Remote control supply Ground
3   Data line RC16 A
4   Data line RC16 B

Socket D-SUB-25 (BUS In / Out) (D)
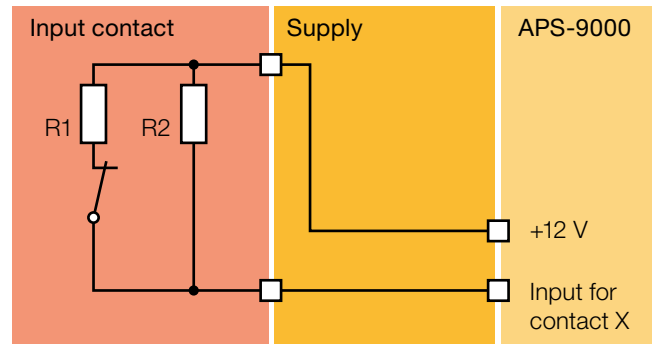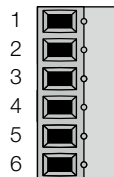
For bus connection with other
APS systems

Connection diagramm for the connector block analogue audio inputs (E)

1   Input 1 ground / shield
2   LF Input 1, balanced –, monitored
3   LF Input 1, balanced +, monitored
4   Input 2 ground / shield
5   LF Input 2, balanced –, monitored
6   LF Input 2, balanced +, monitored
7   Input 3 ground / shield
8   LF Input 3, balanced –
9   LF Input 3, balanced +
10 Input 4, balanced +
11 LF Input 4, balanced –
12 LF Input 4, balanced +

Connection diagramm for the connector block analogue audio outputs (F)

1   Output 1, ground / shield
2   LF Output 1, balanced –
3   LF Output 1, balanced +
4   Output 2, ground / shield
5   LF Output 2, balanced –
6   LF Output 1, balanced +

Connection diagramm for the connector block digital inputs (G)

1   Output 12 V, contact 1
2   Input contact 1
3   Output 12 V, contact 2
4   Input contact 2
5   Output 12 V, contact 3
6   Input contact 3
7   Output 12 V, contact 4
8   Input contact 4
9   Output 12 V, contact 5
10 Input contact 5
11 Output 12 V, contact 6
12 Input contact 6
13 Output 12 V, contact 7
14 Input contact 7
15 Output 12 V, contact 8
16 Input contact 8

Connection diagramm for the connector block digital ouputs (H)

1   NO Contact 1
2   COM Contact 1
3   NC Contact 1
4   NO Contact 2
5   COM Contact 2
6   NC Contact 2
7   NO Contact 3
8   COM Contact 3
9   NC Contact 3
10 NO Contact 4
11 COM Contact 4
12 NC Contact 4
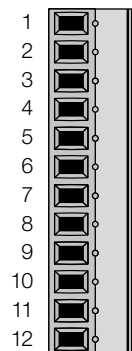
Connection diagramm for the connector block fault contact (I)

1   Closer collective fault message
2   Changeover collective fault message
3   Opener collective fault message
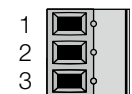
Connection diagramm for socket LAN (J)

Yellow LED: 100 Mbit/s
Green LED: 1 Gbit/s

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Technical specifications

Sampling frequency | 48 kHz / 24Bit

Signal delay

Input	Output	Signal delay
Analogue 0 dBu	Analogue 0 dBu	< 0.5 ms
Analogue 0 dBu	BF-Bus	< 0.5 ms
MC LINK	Analogue 0 dBu	< 0.5 ms
MC LINK	BF-Bus	< 0.5 ms
M-Bus	Analogue 0 dBu	< 0.5 ms
M-Bus	BF-Bus	< 0.5 ms

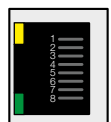Distortion factor

Input	Output	Distortion factor	Frequency response
Analogue 0 dBu	Analogue 0 dBu	< 0.1 %	20–20'000 Hz
Analogue 0 dBu	BF-Bus	< 0.1 %	20–20'000 Hz
MC LINK	Analogue 0 dBu	< 0.1 %	20–20'000 Hz
MC LINK	BF-Bus	< 0.1 %	20–20'000 Hz
M-Bus	Analogue 0 dBu	< 0.1 %	20–20'000 Hz
M-Bus	BF-Bus	< 0.1 %	20–20'000 Hz

Signal-to-noise ratio

- 129 dBu typ., analogue input, equivalent input noise, input gain = 60 dB
- 96 dBu(A), BF bus noise, BF bus out off –90 dBu(A), analogue output noise, analogue output off

Dynamic range

Input	Output
M-Bus to BF-Bus	113 dB typ.
M-Bus to analogue output 0 dBu	113 dB typ.
Analogue, amplification 0 dB	117 dB typ.
Analogue, amplification 60 dB	96 dB typ.
MC LINK	118 dB typ.

Power consumption

Product	Current consumption mA			Power consumption W		
	17VI	17VA	15V	17VI	17VA	15V
APS-9000 Basis	20	280.0	400	0.34	4.76	6
APS-9000 DI*	96			1.63		
APS-9000 DO**	44			0.75		
APS-9000-SW-NP1***			200			3

* 8 mA per short-circuited digital input

** 11 mA per active digital output

*** 50 mA per active Ethernet or SFP port

Typical power consumption for SAA / ENS system

- APS-9000 | 700 mA
- APS-9000-SW-NP1 | 100 mA

Power supply:

- For APS systems via APS bus
- For standalone applications via optional plug-in power supply

Weight : | 3.1 kg

Ambient temperature: | –5°C to 40°C
Humidity: | 15–90%, non condensing
Dimensions (W × H × D): | 422 × 44 (1U) × 330 mm
Impedance: | Analogue audio inputs 10 kΩ
 | Analogue audio outputs 100 Ω
Rated switching capacity: | Digital outputs = 2 A 30V DC, 0.5 A 125 V AC (resistive load)

Accessories

The following accessories can be ordered as an option:

Article number	Name	Description
63-6112427-01-01	MC-41-A-SET	19" rack mounting kit, 1U Pair of brackets with screws and bus cable for APS-9000 aluminium enclosure
63-6112225-01-01	APS-9000-AC-PS1	APS-9000 plug-in power supply 230 VAC adapter / DSub25pm 1.5 m for standalone applications not EN certified
63-6112361-01-01	APS-9000-AC-KS1	19" panel 1U with key switch for APS-9000
63-6112416-01-01	APS-9000-AC-KS2	19" panel 1U with key switch, RJ45 and XLR 3-pin socket for APS-9000

Software packages

The following software packages are available for the APS-9000:

Article number	Name	Description
63-6112427-01-01	APS-9000-SW-NP1	AES67 network package Dynamic 4 x 4 audio matrix 512 network functions
63-6112424-01-01	APS-9000-SW-VP1	VoIP-package APS-9000

Licensing

Software packages can be unlocked on each APS-9000 by purchasing a corresponding licence. The procedure for purchasing and activating a software package can be found in the APS-9000 installation and commissioning manual, chapter 5.2.2.

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APS-9000-SW-NP1

Description

This software package was created for the transmission of audio and control data.

Use of the software package
AES67 audio transmission between systems, and data communication of APS network functions via an Ethernet network.

Function of the software package

According to the programming of the APS-9000 control unit

Operating instructions

- The LAN connection indicators are located on the rear wall of the APS-9000.
- Further operation of the software package is made via the APS®-APROSYS software.

IMPORTANT: The operation must match the programming!

Technical data

Network connection:	RJ45- and / or SFP port of the APS-9000
Audio transmission:	AES67, multicast
Number of audio channels :	
Receive 1 AES67 stream (contains 4 audio channels)	
Send 1 AES67 stream (contains 4 audio channels)	
Required bandwidth per audio stream:	6.3 Mbit/s
Data transmission:	UDP, multicast
The following multicast addresses are entered statically for the transmission:	
	224.0.0.251 (mDNS)
	224.0.1.129 (PTP)
	239.255.255.255 (SAP)
	239.239.2.51 (Steuerdaten NWF)
	239.1.xxx.xxx (RTP Stream AES67)
Cable connection:	CAT-5e up to 100 m

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APS-9000-SW-VP1

Description

VoIP interface module for the connection of a loudspeaker system to the telephone installation.

Use of the software package
The following functions are possible:
- Selective announcements from the telephone to the loudspeaker system
- Selective function selection with the telephone keypad according to audible menu navigation
- Listening to the active program

Function of the software package

According to the programming of the APS-9000 control unit

Operating instructions

- The LAN connection indicators are located on the rear wall of the APS-9000.
- Further operation of the software package is made via the APS®-APROSYS software.

IMPORTANT: The operation must match the programming!

Technical data

Network connection:	RJ45 and/or SFP port of the APS-9000
Cable connection:	CAT-5e up to 100 m
Codec:	G.711 and G.722
Format for menu texts:	WAV, MP3
Connection protocol:	SIP
Frequency selection:	DTMF via RTP
Frequency response:	G.711: 300 Hz to 4 kHz
	G.722: 50 Hz to 7 kHz