MAGIC AE1 DAB+ *Go*

DAB+ Audio Encoder

Hardware Manual

Audio Video Technologies

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Content

INTRODUCTION

The system ***MAGIC AE1 DAB+ Go*** is implemented as DAB+ Audio Encoder and has analogue and digital AES/EBU audio inputs.

The ***MPEG-4 HE-AAC-V2 DAB+*** audio encoder is an implementation of the FhG (Fraunhofer Gesellschaft) in Erlangen. The configuration of the system can be carried out via the Windows application included in delivery or via the front keypad and display of the unit.

MAGIC AE1 DAB+ Go is available as 1/2 x 19“x 1 U system with external 12V power supply.

SAFETY

Introduction

The unit described has been designed to the latest technical parameters and complies with all current national and international safety requirements. It operates on a high level of reliability because of long-term experience in development and constant and strict quality control in our company.

In case of normal operation the unit is safe.

However, some potential sources of danger for person, material and optimal operation remain - especially if daily routine and technical errors coincide.

This manual therefore contains basic safety instructions that must be observed during configuration and operation. It is essential that the user reads this manual before the system is used and that a current version of the manual is always kept close to the equipment.

General Safety Requirements

To keep the technically unavoidable residual risk as low as possible, it is absolutely necessary to observe the following rules:

- Transport, storage and operation of the unit must be under the permissible conditions only.
- Installation, configuration and disassembly must be carried out only by trained personnel on the basis of the respective documentation.
- The unit must be operated by competent and authorised users only.
- The unit must be operated in good working order only.
- Any conversions or alterations to the unit or to parts of the unit (including software) must be carried out by trained personnel authorised by the manufacturer.
  Any conversions or alterations carried out by other persons lead to a complete exemption of liability.
- Only qualified personnel is authorised to remove or override safety measures and to carry out the maintenance of the system.
- External software is used at one's one risk. Use of external software can affect the operation of the system.
- Use only tested and virus-free data carriers.

Conventions

In this manual, the following conventions are used as text markers:

Emphasis: Product names or important terms

LCD Text: Labelling on the front display of the system

PC Text: Labelling in the PC software

TIP The symbol **TIP** labels information which facilitates the operation of the system in its daily use.

NOTE The symbol **NOTE** labels general notes to observe.

ATTENTION The symbol **ATTENTION** labels very important advice that is absolutely to observe. In case of non-observance disfunctions and even system errors are possible.

1 CONSTRUCTION

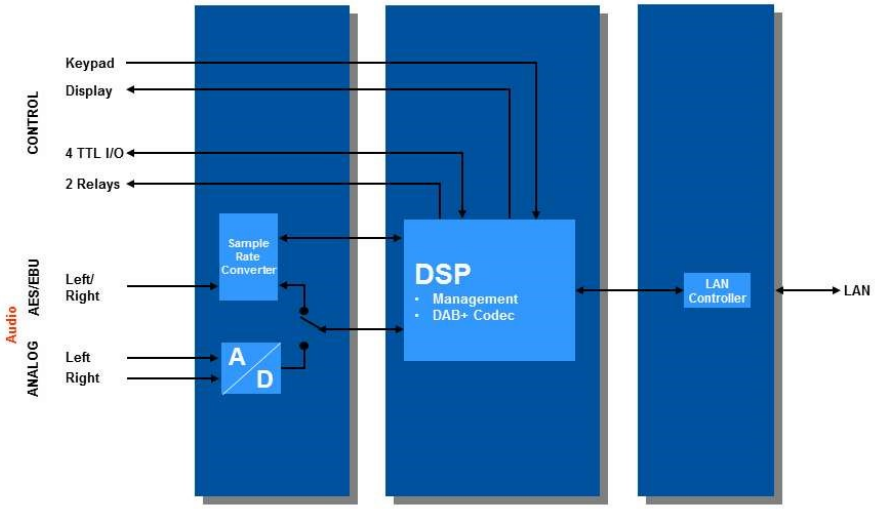
The functions of the ***MAGIC AE1 DAB+ Go*** are implemented in a single unit. The system is designed for mounting in a 19" rack (1 U).

FIG. 1 MAGIC AE1 DAB+ GO TELEPHONE HYBRID

2 SYSTEM DESCRIPTION

The functional elements of the system are pictured in Fig. 2.

FIG. 2 FUNCTIONAL ELEMENTS OF MAGIC AE1 DAB+ GO



2.1 Functionality

The ***MAGIC AE1 DAB+ Go s***ystem incorporates a ***LAN*** interface. via which it can be connected to a DAB/DAB+ system.

The complete signal processing is taken over by a digital ***signal processor***. In this way the following functions are carried out:

- ***MPEG-4 HE-AAC V2*** (FhG Licence) coding
- PAD over LAN
- control of the complete system (Display, Relay, TTL, LAN)

Via the main audio channel the high quality Stereo or Mono audio signal is inserted analogue or digitally. If the digital AES/EBU audio input is used, a Sample Rate Converter is available for automatic clock synchronisation between network and audio source.

The configuration and operation can be primarily carried out via the ***front keypad*** and the illuminated ***display***.

Configuration and control is especially comfortable with the ***MAGIC AE1 DAB+ Windows PC Software*** which is included in delivery and which communicates with the system via the *LAN* interface.

Four programmable ***TTL contacts*** can be used for external signalling. Two ***relays*** are available for status indication.

3 PUTTING THE SYSTEM INTO OPERATION

3.1 Mounting

With its dimensions (W x H x D) of 220 mm x 44,5 mm (1 U) x 220 mm the ***MAGIC AE1 DAB+ Go*** system can be either used as desktop device or mounted in a 19 inch rack. Corresponding 19“ mounting brackets are included in delivery.

When mounting the unit please keep in mind that the bending radius of the cables is always greater than the minimum allowed value.

When the ***MAGIC AE1 DAB+ Go*** Telephone Hybrid is installed, please make sure that there is sufficient air ventilation: It is recommended to keep a spacing of ca. 3 cm from the openings. In general, the ambient temperature of the system should be within the range of +5 °C and +45 °C. These limits are especially to observe if the system is inserted in a rack. The systems works without ventilation.

TIP

The system temperature can be indicated on the display (*MENU STATUS INFORMATION*)

During operation air humidity must range between 5% and 85%.

ATTENTION

Incorrect ambient temperature and humidity can cause functional deficiencies.
Operation outside the threshold values indicated above leads to a loss of warranty claim.

3.2 Connection to the mains voltage

The system can be operated with mains voltage in the range of 90 V and 253 V via the external power supply adapter included in delivery. The mains frequency can range from 45 Hz to 65 Hz. The maximum power consumption is 15W. The rack must be earthed according to the VDE Regulations. This can be carried out via the earthing screw on the back side of the unit.

After plugging in the external power supply adapter the unit boots in a few seconds. In standby mode the level meter/status display is shown on the display.

3.3 Earthing of the system

For EMC reasons an earthing via the earthing screw of the system must be carried out in either case.

ATTENTION **Earthing**

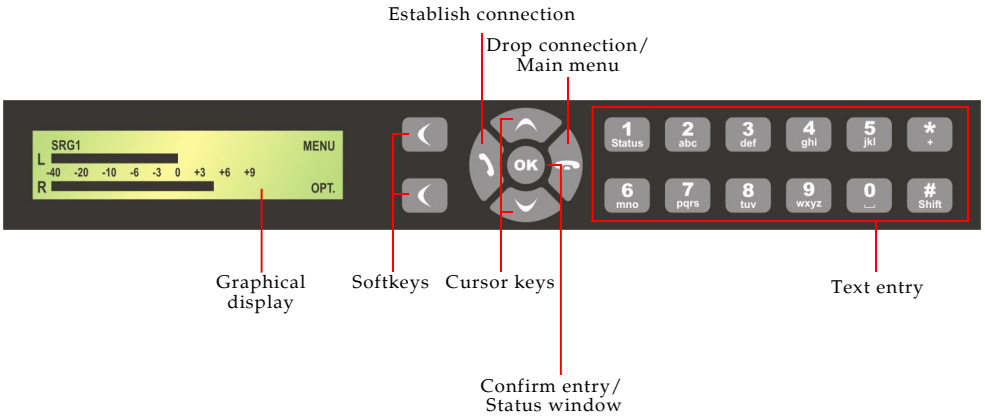
A lacking earthing can cause functional deficiencies within the unit.

3.4 Operating elements on the front side

The system has an illuminated graphical display with a resolution of 160 x 32 Pixels and 21 operating buttons.

On the right next to the display there are two softkeys whose current functions are indicated on the display. In the middle there are two buttons for navigation (selection upwards/downwards), two buttons for establishing/disconnecting connections as well as an **OK** button. The numerical pad supports in addition to the numericals **0...9** also the '*'and '**#**'button. For entering text the numerical pad can also be used as a normal keypad.

FIG. 3 OPERATING ELEMENTS ON THE MAGIC AE1 DAB+ GO FRONT SIDE



3.5 Wiring diagramm

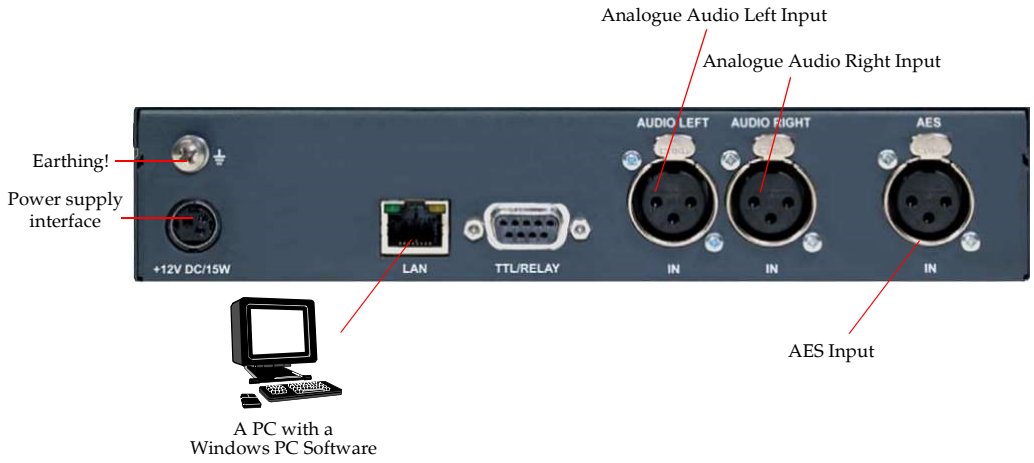
The following figures show the system in the different operating modes and their respective cablings.

ATTENTION **Earthing**

The system must be earthed via earthing screw for EMC reasons. If the earthing is not carried out, the Audio signal can be faulty (humming).

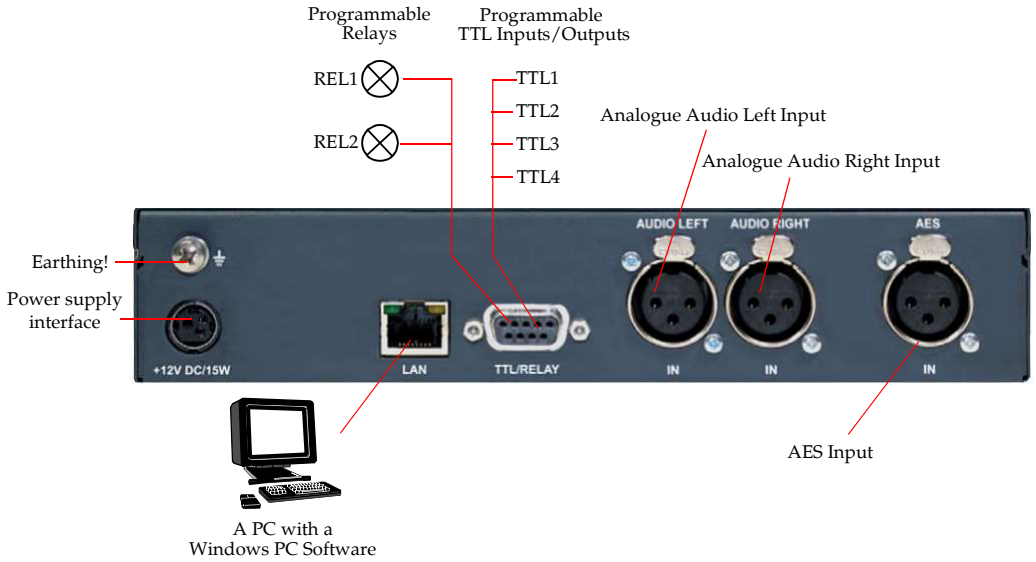
The minimal wiring for the operation is pictured in Fig. 4.

FIG. 4 MINIMUM WIRING



The maximum wiring with all options is shown in Fig. 5. The LAN interface allows the connection with a PC with a ***Windows PC Software.***

FIG. 5 MAXIMUM WIRING



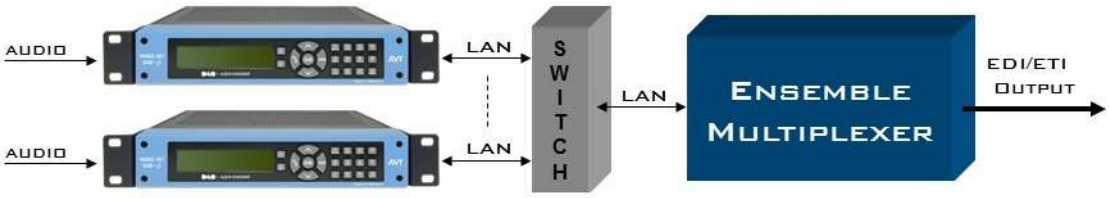
3.6 Applications

Below you will find some example applications with ***MAGIC AE1 DAB+ Go***.

3.6.1 MAGIC AE1 DAB+ Go connected to Ensemble Multiplexer

In the following drawing you can see ***MAGIC AE1 DAB+ Go*** connected to an Ensemble MUX.

FIG. 6 APPLICATION: CONNECTED TO A ENSEMBLE MULTIPLEXER



A1 INTERFACES

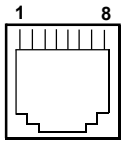
The interfaces of the systems are pictured in Fig. 7.

FIG. 7 REAR VIEW OF THE MAGIC AE1 DAB+ GO

All interfaces are described below.

A1.1 LAN interface

Via this interface you can control the system via a PC and the DAB+ Data can be transmitted to an Ensemble Multiplexer.



TAB. 1 PIN ASSIGNMENT: LAN INTERFACE (CONTROL + VOIP)

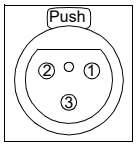
Socket: Western (8 pin) RJ45

Pin	Signal		Electrical characteristics	
1	TX+	Data out +	Recommendation:	IEEE 802.3/Ethernet
2	TX-	Data out -	Data rate (automatic):	10BaseT (10 Mbit/s) 100BaseTX (100 MBit/s)
3	RX+	Data in +		
4	not used		Recommended cable:	CAT5
5	not used		Maximum cable length:	100m
6	RX-	Data in -		
7	not used			
8	not used			

A1.2 Audio inputs

The system incorporates an analogue Audio input and a digital AES/EBU input. The inputs can be configured via the front display and keypad or via the Windows PC Software.

A1.2.1 Analogue Audio input



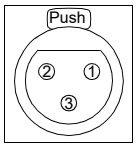
TAB. 2 PIN ASSIGNMENT: ANALOGUE INPUT (AUDIO IN)

Socket: XLR

Pin	Signal	Electrical characteristics
1	Analogue GND	Incoming level: adjustable -3 .... +9 dBu
2	AUDIO IN a	Impedance: > 25 kΩ
3	AUDIO IN b	Head room: 6 dB

A1.2.2 Digital AES/EBU Audio input

The *MAGIC AE1 DAB+ Go* system incorporates a digital AES/EBU input. The input has its own sample rate converter providing that a digital source with 32, 44.1 or 48-kHz can be connected directly.



TAB. 3 PIN ASSIGNMENT: DIGITAL INPUT (AES IN)

Socket: 3-pole XLR

Pin	Signal	Electrical characteristics
1	GND	IEC-958
2	AUDIO IN (A)	
3	AUDIO IN (B)	

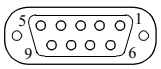
A1.3 Control Interface

A1.3.1 LAN interface

Please see A1.1.1, Page 22.

A1.3.2 TTL/RELAY interface

Via this interface external control signals can be used.



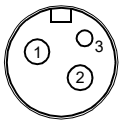
TAB. 4 PIN ASSIGNMENT: TTL/RELAY INTERFACE (TTL/RELAY)

Socket: SUB-D (9 pin)

Pin	Signal	Electrical characteristics
1	TTL 1 IN/OUT	
2	TTL 2 IN/OUT	Capacity of the TTL inputs/outputs: Maximum voltage: 3.3 V
3	TTL 3 IN/OUT	Maximum current: 10mA
4	TTL 4IN/OUT	
5	GND	
6	Relay 1a	Capacity of the relays: Maximum voltage: 48V
7	Relay 1b	Maximum current: 200mA
8	Relay 2a	
9	Relay 2b	

A1.4 Power supply interface

The power supply is connected via an external power supply adapter.



TAB. 5 PIN ASSIGNMENT: POWER SUPPLY

Socket: KYCO KPJ-S3

Pin	Signal	Electrical characteristics	
1	GND	Voltage:	+12V
2	+12V	Power:	max. 15W
3	not used		

A2 TECHNICAL DATA MAGIC AE1 DAB+ GO

CODING ALGORITHMS

- MPEG-4 HE-AAC V2 (FhG Licence)
  ETSI TS 102 563

CODING MODES

- Mono, Mono+SRB[1]
- Stereo, Stereo+SBR, Stereo+SBR+PS[2]

SAMPLING FREQUENCIES

- 24, 48-kHz
- 16, 32-kHz

DATA RATES

- 8-kbit/s ... 192-kbit/s

AUDIO INTERFACES ENCODER

- XLR, analogue, electronically balanced
  Digital AES/EBU with integrated smaple rate converter

AUDIO LEVEL

- –3 ... +9 dBu

LINE INTERFACE

- LAN (EDI(ETI), FhG Muxnc Protocoll)
- VLAN support
- Unicast, simulcast (2 streams), multicast

[1] SBR = Spectral Band Replication

[2] PS = Parametric Stereo

Headroom

- adjustable

Data interfaces

– PAD	LAN
– Data rates	up to 115200 Baud

Control interfaces

– LAN	10/100 Mbit/s
– GPIO	4 x TTL 2 x Relays

Power supply

- 12 V DC

Power consumption

- 12 W

Dimensions

- 1/2 x 19“ x 1 U

A 3 GENERAL

A3.1 Order numbers

MAGIC AE1 DAB+ Go Audio Encoder	804100

Software Options

EDI Go Upgrade	804101
FhG MUXENC Go Upgrade	804102

A3.2 Scope of delivery

- MAGIC AE1 DAB+ Go Audio Encoder
  - External Power Supply Adapter

    Input: 100–240 V/24 W, 50–60 Hz

    Output: 12 V
  - Self adhesive feet
  - 19'' Mounting brackets
  - Manual
  - Windows PC Software

A3.3 Declaration of conformity

The declaration of conformity you will find at the end of this manual.

A 4 SERVICE INFORMATION

A4.1 Software Updates

On our homepage you can download software updates for free. Go to

http://www.avt-nbg.de

and select **Download - Software**.

A4.2 Support

You can contact our Support Hotline during the normal office hours between 09.00h - 17.00h (GMT+1) under the following telephone number:

+49 911 5271 160

or via E-Mail under

support@avt-nbg.de

To deal with your problem efficiently please note the factory number of the unit as well as the software version that you use.

A4.3 Repairs

If, contrary to expectations, your unit is defective please fill in the attached status report and send the unit to the following address:

AVT Audio Video Technologies GmbH
- Repairs -
Nordostpark 12
D-90411 Nuernberg
Germany

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Audio Video Technologies

CE-Konformität

DECLARATION OF CONFORMITY

Name des Anbieters:
Supplier's name:
AVT Audio Video Technologies GmbH

Anschrift des Anbieters:
Supplier's address
Nordostpark 91
D-90411 Nürnberg

erklärt, daß das Produkt
declares, that the product

Produktname(n):
Product name(s):
MAGIC AE1 DAB+ Go Audio Encoder 804100

mit den Vorschriften folgender Europäischer Richtlinien übereinstimmt:
conforms to the standards of the following European directives:

Nummer/Text:
Number/title:
EN 60950 A4 Gerätesicherheit

Die Übereinstimmung wird nachgewiesen durch vollständige Einhaltung folgender Normen:
The conformity is evidenced by strictly meeting the following standards:

Harmonisierte Normen:
Harmonized Standards:
EN 55022, EN 55024,
EN 300386,
FCC Part 15 B

Ort, Datum:
Place, date:
Nürnberg, 01.05.2014

Name(n):
Name:
Wilfried Hecht

Rechtsverbindliche Unterschrift(en):
Legally binding signatures:

Telefon:
Phone:
+49 911 5271-0

Diese Erklärung beinhaltet keine Zusicherung von Eigenschaften.
This declaration includes no warranty of properties.

Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
The safety instructions specified in the product documentation delivered must be observed.

Declaration of Conformity