MAGIC TH2 *plus* V2
MAGIC TH2 *plus*
MAGIC TH2 *plus* RM

ISDN, POTS & VoIP Telephone Hybrids

Hardware Manual

AVT Audio Video Technologies

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INTRODUCTION

MAGIC TH2plus V2 is identical to MAGIC TH2plus, but without ISDN interfaces.

The ***MAGIC TH2plus*** system allows the forwarding of telephone calls to analogue and digital Audio interfaces.

The connection to the telephone network can be established either via two analogue POTS interfaces or an ISDN interface or optionally via a LAN interface for Voice-over-IP.

To optimise the caller signal each caller line has implemented its own digital ***Echo Canceller*** (approx. up to 100 msec), ***AGC*** (Automatic Gain Control) and ***Expander***.

The configuration of the system can be made via the ***MAGIC TH2plus Windows PC Software*** included in delivery or via the front keypad of the unit. Optionally, up to two ***MAGIC TH2plus Keypads*** can be connected to operate the telephone hybrid without a PC. ***MAGIC TH2plus*** also provides four ***TTL inputs/outputs*** and two ***Relays*** for external control.

With additional ***MAGIC TH2plus PC Software Licences*** up to three PC workstations can be implemented, e.g. for Screener - Presenter applications.

MAGIC TH2plus is available as 1/2 x 19“x 1RU system with external 12V power supply or as full 19“x 1RU system with integrated 230V power supply. ***MAGIC TH2plus RM*** (19“ version) has additionally a coloured front keypad for an even more user-friendly operation.

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 TH2plus*** are implemented in a single unit. The system is designed for mounting in a half 19" rack (1 U).

Optionally, a dual mounting kit is available (***MAGIC TH2plus DUAL 19" Mounting Kit*** ID: 802002) for installing two ***MAGIC TH2plus*** systems next to each other.

FIG. 1 FRONT VIEW: MAGIC TH2PLUS TELEPHONE HYBRID

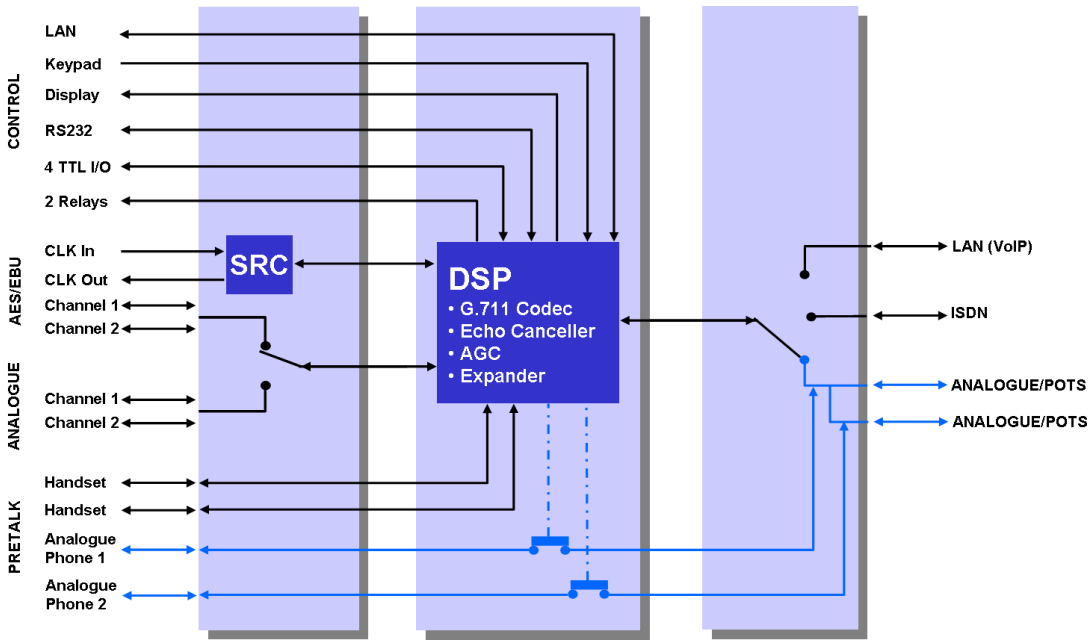
MAGIC TH2plus RM has full 19" design (1 U) with an integrated power supply and provides a coloured keypad.

FIG. 2 FRONT VIEW MAGIC TH2PLUS RM TELEPHONE HYBRID

2 SYSTEM DESCRIPTION

The functional elements of the system are pictured in Fig. 3.

FIG. 3 FUNCTIONAL ELEMENTS OF MAGIC TH2PLUS



2.1 Functionality

The ***MAGIC TH2plus s***ystem incorporates two ***POTS*** interfaces, an ***ISDN*** interface and a ***LAN*** interface. The operating mode can be set with the help of the Windows PC Software or the front keypad and display. In each operating mode two independent telephone hybrids are available within one system (channel 1 and channel 2).

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

- G.711 Audio encoding and decoding
- two independent ***Echo Cancellers*** for each line
- two independent ***AGC***s (Automatic Gain Control)
- two independent ***Expanders*** (to suppress spurious signals)
- control of the complete system (Keypad, Display, Relay, TTL, RS232, LAN)

As ***ON AIR*** Audio inputs/outputs two independent analogue or digital Audio interfaces (digital: one AES/EBU interface) are available. If the AES/EBU interface is selected, both channels are multiplexed together (right/left chan-

nel). The inputs have separate digital Sample Rate Converters (SRC). For synchronisation with an external clock a clock input and a clock output are available.

Two separate ***PRETALK*** interfaces are available in all three operating modes. Two ***Telephone Handset***s or ***Headsets*** (Options: ID: 802003/802004) can be connected for Pretalk. In the POTS operating mode you can connect two standard ***POTS Telephones*** for dialling and Pretalk.
The advantage of a handset/headset over a POTS Telephone is the possibility to switch between ***ON AIR*** and ***PRETALK*** anytime. With a telephone connected to the hybrid, it is only possible after the caller has been switched to ***ON AIR*** and if the telephone has not been hung up.

MAGIC TH2plus can be operated primarily via the ***front keypad*** and the illuminated ***display***.
The configuration and operation is especially comfortable via the ***MAGIC TH2plus Software*** (see CHAPTER 5) included in delivery, which communicates with the system via the LAN interface. You can install up to three PC workplaces (additional ***MAGIC TH2plus Software Licences*** required, ID: 430396).
Most basic operating functions like accepting a call, dropping a connection and establishing a connection with a pre-programmed number can be carried out via four programmable ***TTL contacts***. Two ***relays*** are available for status indication.
Additionally, the operation can be carried out via up to two ***MAGIC TH2 Keypads*** (see CHAPTER 7) which can be connected to the RS232 interface.

3 PUTTING THE SYSTEM INTO OPERATION

3.1 Mounting

With its dimensions (W × H × D) of 220 mm × 44,5 mm (1 U) × 220 mm the ***MAGIC TH2plus*** system can be either used as desktop device or mounted in a 19 inch rack. Corresponding 19“ mounting brackets are included in delivery. Optionally, a mounting kit (ID: 802002) is available to implement two ***MAGIC TH2plus*** next to each other[1].

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 TH2plus*** 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* (see CHAPTER A1.5, Page 111))

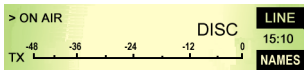
During operation air humidity must range between 5% and 85%.

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 (***MAGIC TH2plus***) or using the ON/OFF switch (***MAGIC TH2plus RM***), the unit boots in a few seconds. In standby mode the level meter/status display is shown on the display.

[1] In this way, you can also combine the MAGIC TH2plus with the products MAGIC DC7 XIP and MAGIC AC1 XIP.

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 accepting/dropping calls 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.

The operation is similar to standard mobile phones.

FIG. 4 OPERATING ELEMENTS ON THE MAGIC TH2PLUS FRONT SIDE

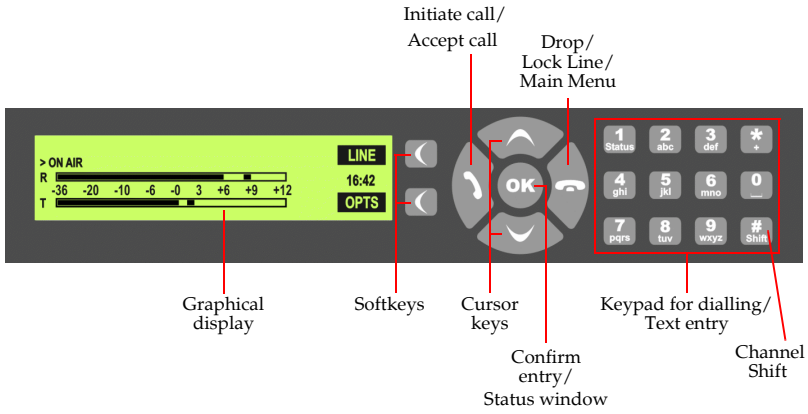
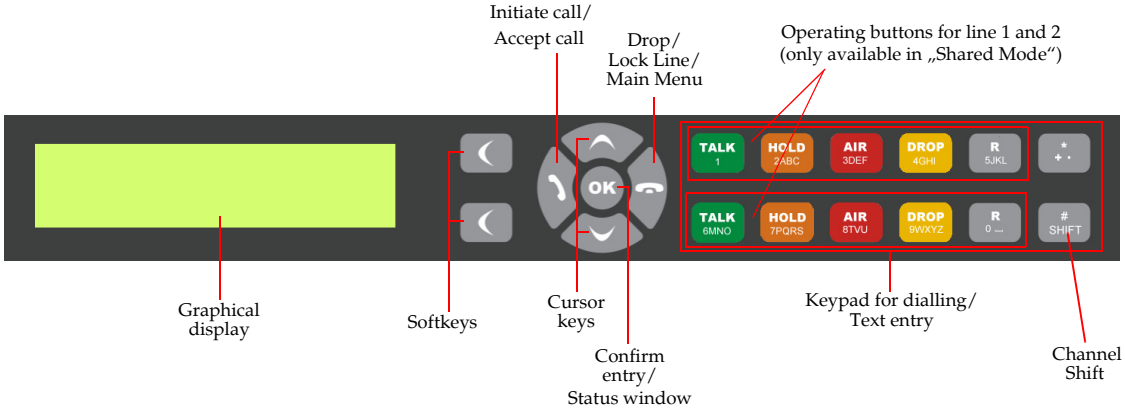


FIG. 5 OPERATING ELEMENTS ON THE MAGIC TH2PLUS RM FRONT SIDE



3.5 Operating modes of the system

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

3.5.1 POTS operating mode

ATTENTION **Earthing**

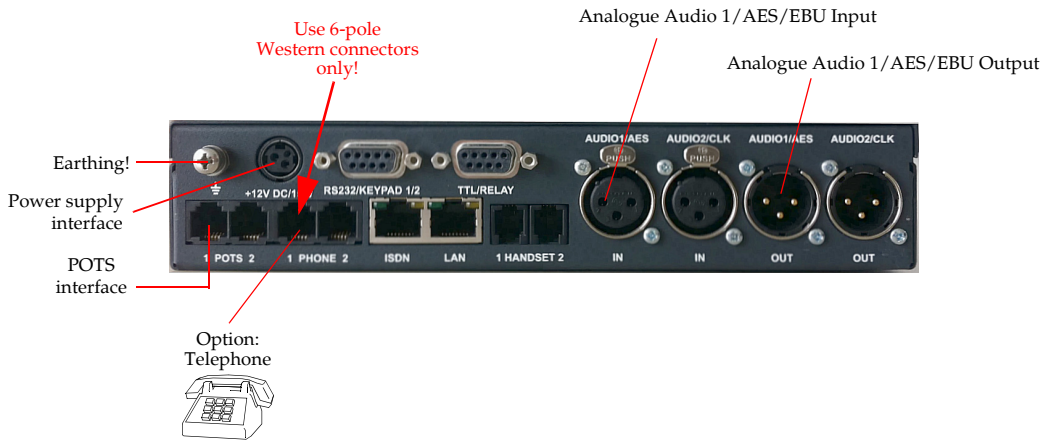
If the POTS interfaces are in operation, the system must be earthed via earthing screw for EMC reasons. If the earthing is not carried out, the Audio signal can be faulty on the caller's side (humming).

The minimal wiring for the operation with an analogue telephone line is pictured in Fig. 6. Via the PHONE Interfaces up to two POTS telephones can be connected for PRETALK if required.

ATTENTION **Connection of a POTS Telephone**

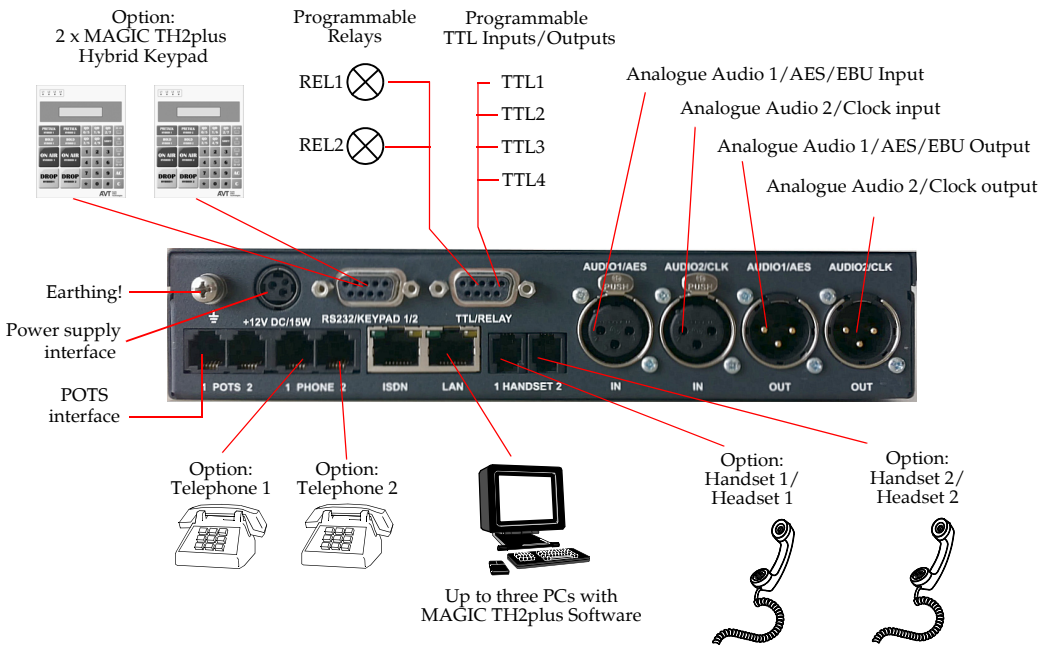
Please note that the ***PHONE*** interfaces are implemented as **6-pole** Western sockets. Standard telephones with 4-pole Western connectors must **not** be used because otherwise the contacts in the socket will be destroyed.

FIG. 6 MINIMUM WIRING IN POTS OPERATING MODE



The maximum wiring with all options is shown in Fig. 7. The LAN interface allows the connection with a PC with ***MAGIC TH2plus Software.*** In total, three PCs with ***MAGIC TH2plus Software*** can access the system. Via the RS232 interface you can connect two ***MAGIC TH2plus Keypads***.

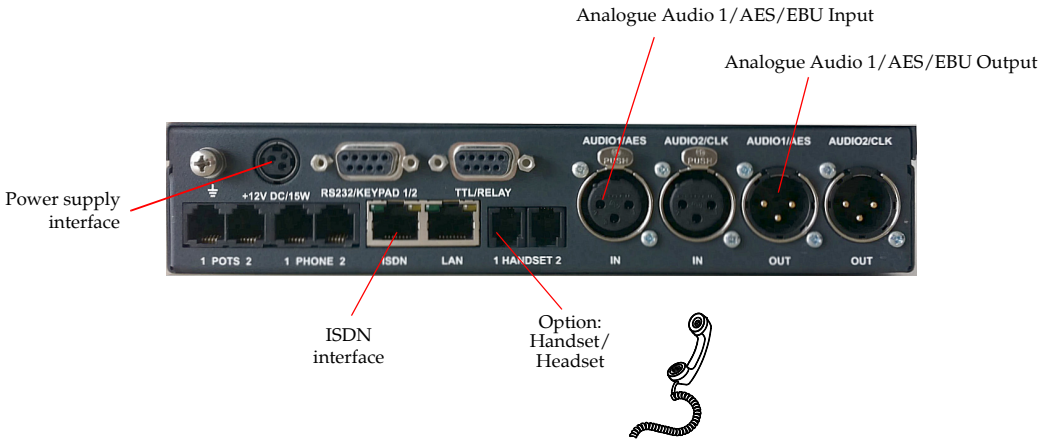
FIG. 7 MAXIMUM WIRING IN POTS OPERATING MODE



3.5.2 ISDN operating mode

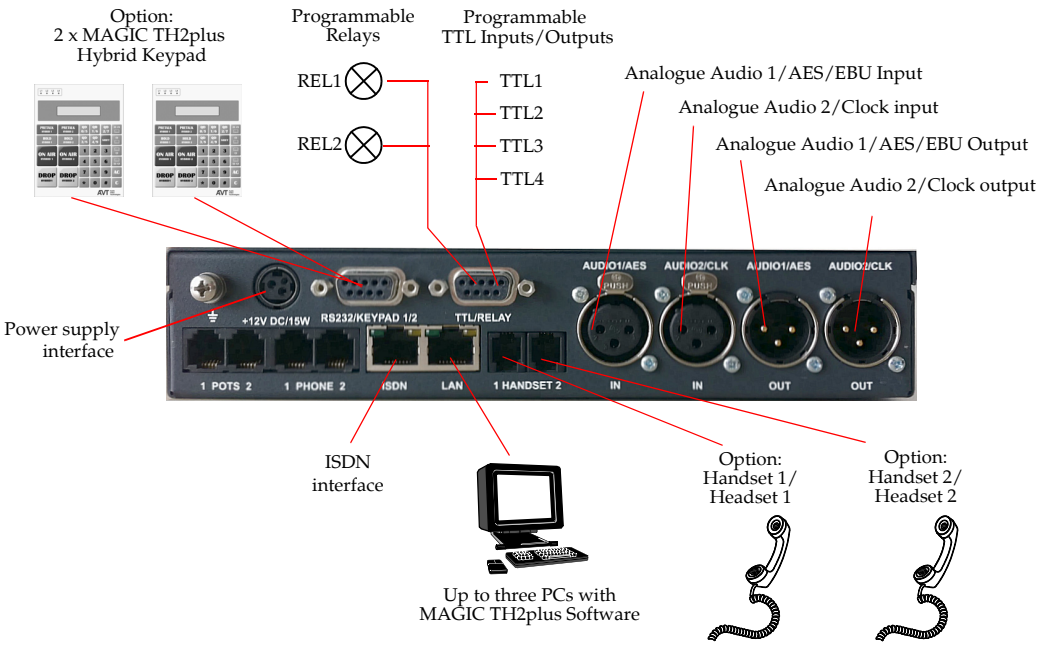
In the ISDN operating mode, up to two handsets or headsets can be connected for PRETALK. The use of a POTS Telephone is not possible in this operating mode.

FIG. 8 MINIMUM WIRING IN ISDN OPERATING MODE



The maximum wiring with all options is shown in Fig. 9. Instead of the operation via the front keypad, the system can also be operated with the use of up to three PC with ***MAGIC TH2plus Software*** and up to two ***MAGIC TH2plus Keypads*** connected to the RS232 interface.

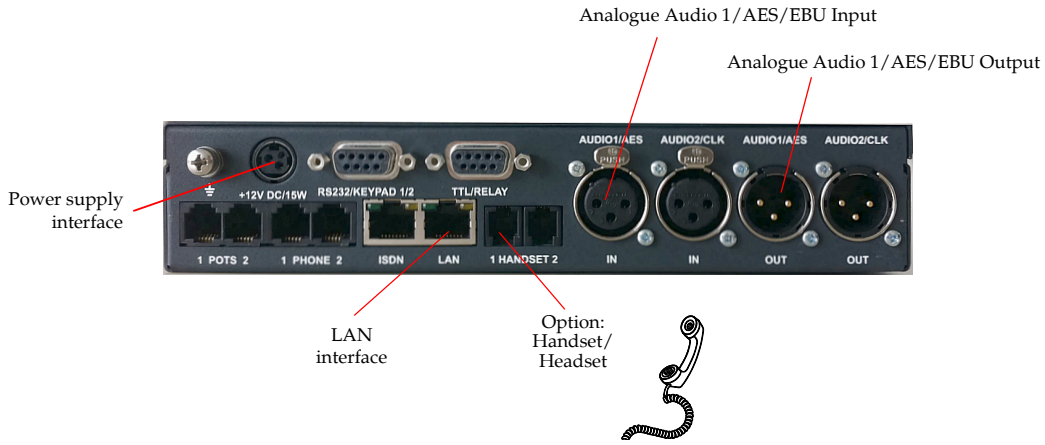
FIG. 9 MAXIMUM WIRING IN ISDN OPERATING MODE



3.5.3 LAN operating mode (VoIP option required)

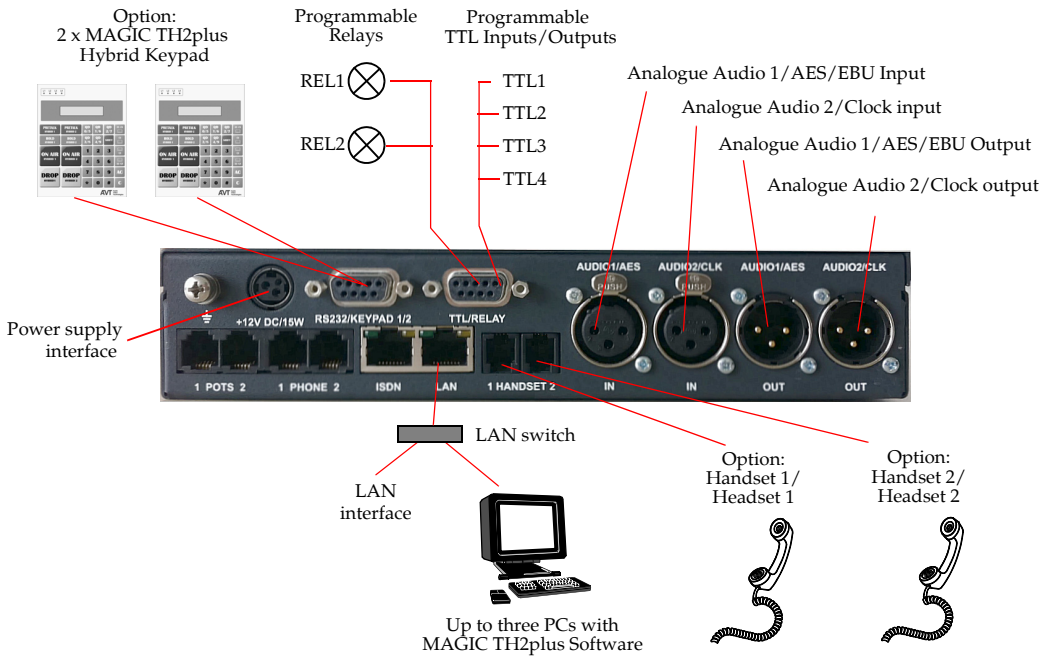
With the Software Option ***Extension for Voice over IP*** (ID: 430399) the system can be used as Voice-over-IP Telephone Hybrid for two callers using the LAN interface. Up to two handsets or headsets can be connected for PRETALK. The use of a POTS Telephone is not possible in this operating mode.

FIG. 10 MINIMUM WIRING IN LAN OPERATING MODE



The maximum wiring with all options is shown in Fig. 9. Instead of the operation via the front keypad, the system can also be operated with the use of up to three PC with ***MAGIC TH2plus Software*** and up to two ***MAGIC TH2plus Keypads*** connected to the RS232 interface.

FIG. 11 MAXIMUM WIRING IN ISDN OPERATING MODE



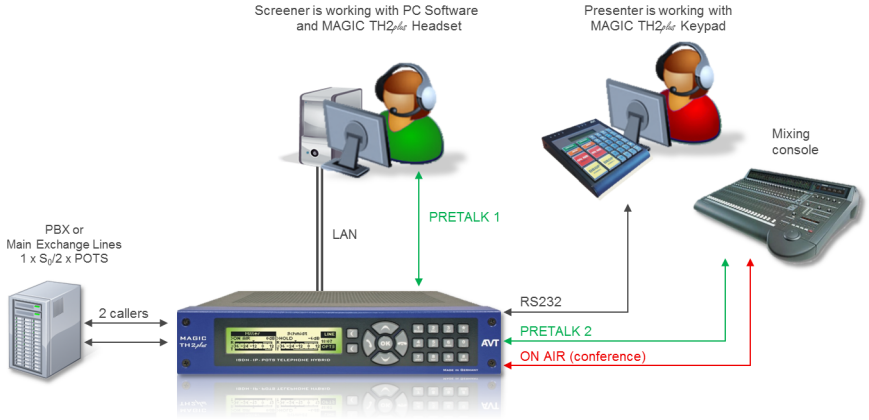
3.6 Applications

Below you will find some example applications with ***MAGIC TH2plus***.

3.6.1 MAGIC TH2plus with PC and Keypad control

In the following drawing you can see ***MAGIC TH2plus*** controlled with a PC connected via LAN and the MAGIC TH2*plus* PC Software. A second workplace can access the system via a ***MAGIC TH2plus*** Keypad that is directly connected to the telephone hybrid. Both users have their own Pretalk lines. The Screener uses a headset that is directly connected to the ***MAGIC TH2plus***. The Presenter's Pretalk line is implemented via the mixing console. In the conference mode the ON AIR caller signals are available at the Audio output as mixed signal. A recorded Audio signal or the On Air input Audio signal can be used as Hold Signal.

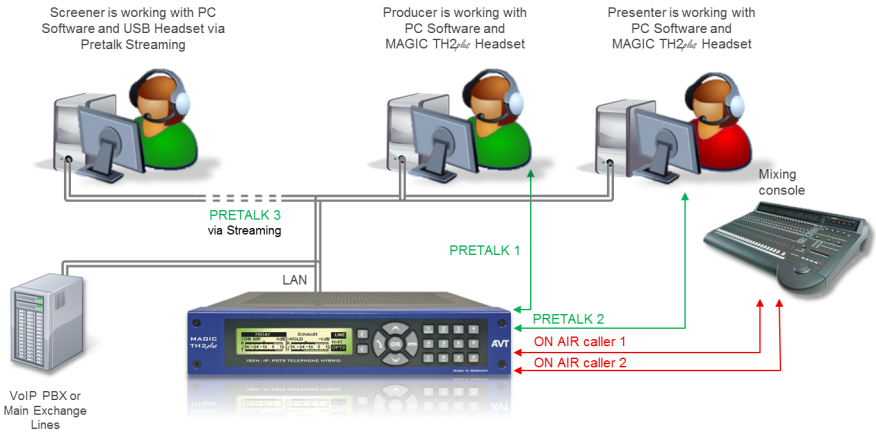
FIG. 12 APPLICATION: PC AND KEYPAD CONTROL



3.6.2 MAGIC TH2plus with three PC workstations

In the picture below ***MAGIC TH2plus*** is controlled via three PC workstations which are connected via LAN with the telephone hybrid. A caller line is automatically locked for the other users if one user works with that line. A caller in Hold status is available to all users. Each workplace has its own Pretalk line. Two Pretalk lines are implemented by connecting two headsets - one for the Producer and one for the Presenter - to the ***MAGIC TH2plus*** Telephone Hybrid. The Screener receives the Audio signals via Pretalk Streaming and uses a USB headset. The On Air caller signals are available at two different On Air Audio lines (Two-Faders operating mode). Both a recorded Audio signal or the On Air 1 Audio input signal can be configured as Hold Signal.

FIG. 13 APPLICATION: THREE PC WORKSTATIONS



A 1 MENU STRUCTURE

On the following pages you will find the complete menu structure if you select *ENGLISH* as your menu language.

From the main menu you reach the phone book directly via the softkey *NAMES*. If you use the softkey *MENU* you go to the configuration of the system.

The configuration menu again is divided into five submenus:

- *SYSTEM SETTINGS*
- *OPERATION SETTINGS*
- *PRESETS*
- *STATUS INFORMATION*
- *LOGIN*

NOTE

Please notice that some menu items may not be displayed depending on the selected operating mode.

If you use an Administrator and/or a User Password, the display looks as it is described below:

(1) Only **Administrator Password** configured: The password must be entered for changes to the *SYSTEM SETTINGS* and *OPERATION SETTINGS* only. Immediately available menus:

- *PRESETS*
- *STATUS INFORMATION*
- *LOGIN*

(2) Only **User Password** configured (instead of *MENU*, *LOGIN* is displayed): The password must always be entered. Subsequently, all menus are available.

(3) **Administrator** and **User Password** configured (instead of *MENU*, *LOGIN* is displayed):

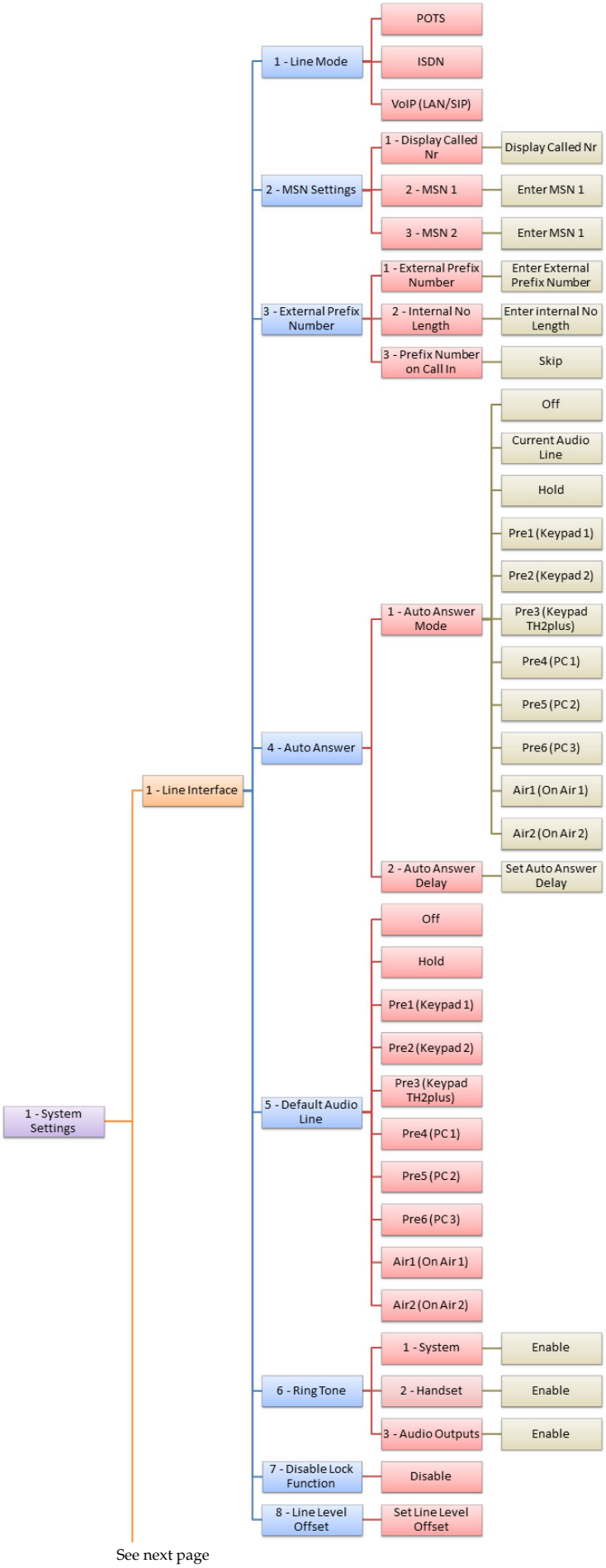
– **User Password** is entered: The menus *PRESETS*, *STATUS INFORMATION* and *LOGIN* are available

– **Administrator Password** is entered: All menus are available.

NOTICE

There is no differentiation between upper and lower case for the password entry.

A1.1 System Settings - ISDN



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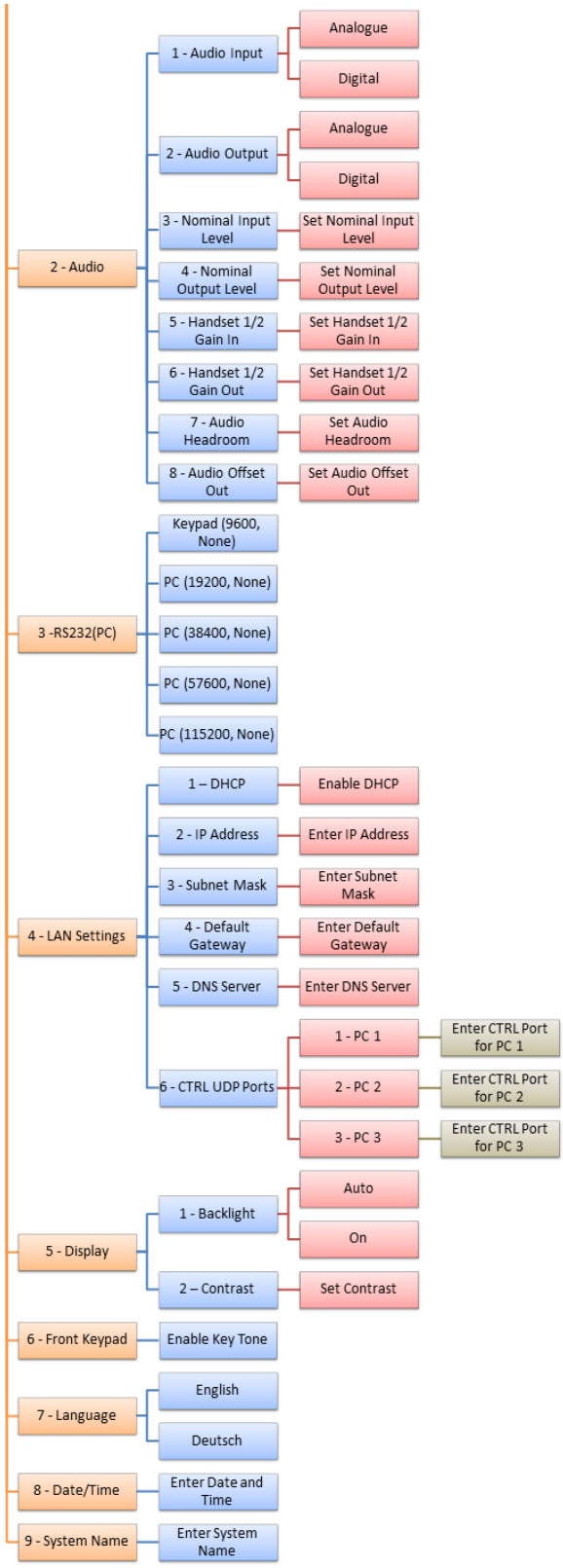
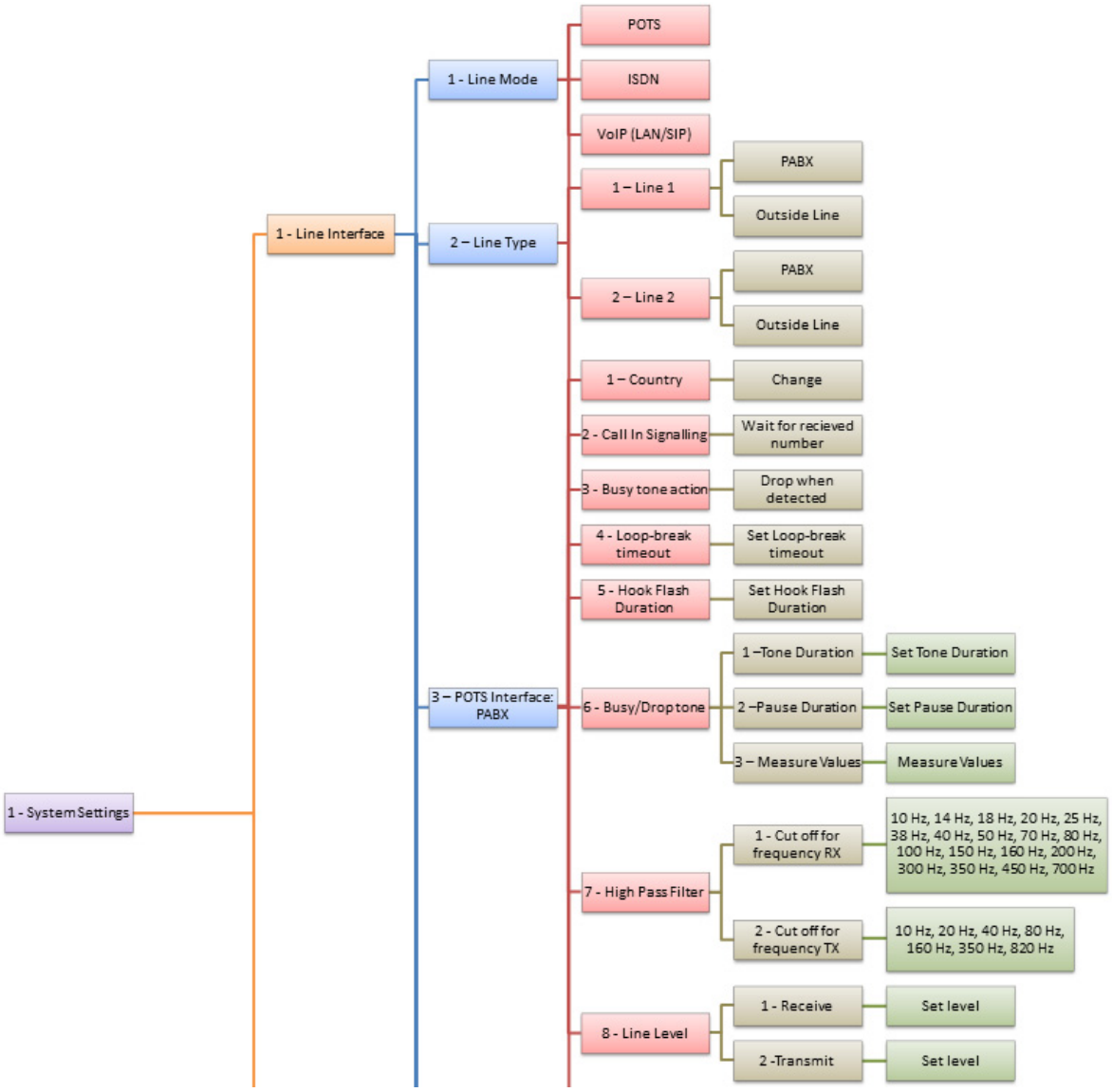

2 - Audio
1 - Audio Input
Analogue
Digital
2 - Audio Output
Analogue
Digital
3 - Nominal Input Level
Set Nominal Input Level
4 - Nominal Output Level
Set Nominal Output Level
5 - Handset 1/2 Gain In
Set Handset 1/2 Gain In
6 - Handset 1/2 Gain Out
Set Handset 1/2 Gain Out
7 - Audio Headroom
Set Audio Headroom
8 - Audio Offset Out
Set Audio Offset Out
3 -RS232(PC)
Keypad (9600, None)
PC (19200, None)
PC (38400, None)
PC (57600, None)
PC (115200, None)
4 - LAN Settings
1 – DHCP
Enable DHCP
2 - IP Address
Enter IP Address
3 - Subnet Mask
Enter Subnet Mask
4 - Default Gateway
Enter Default Gateway
5 - DNS Server
Enter DNS Server
6 - CTRL UDP Ports
1 - PC 1
Enter CTRL Port for PC 1
2 - PC 2
Enter CTRL Port for PC 2
3 - PC 3
Enter CTRL Port for PC 3
5 - Display
1 - Backlight
Auto
On
2 – Contrast
Set Contrast
6 - Front Keypad
Enable Key Tone
7 - Language
English
Deutsch
8 - Date/Time
Enter Date and Time
9 - System Name
Enter System Name

A1.2 System Settings - POTS



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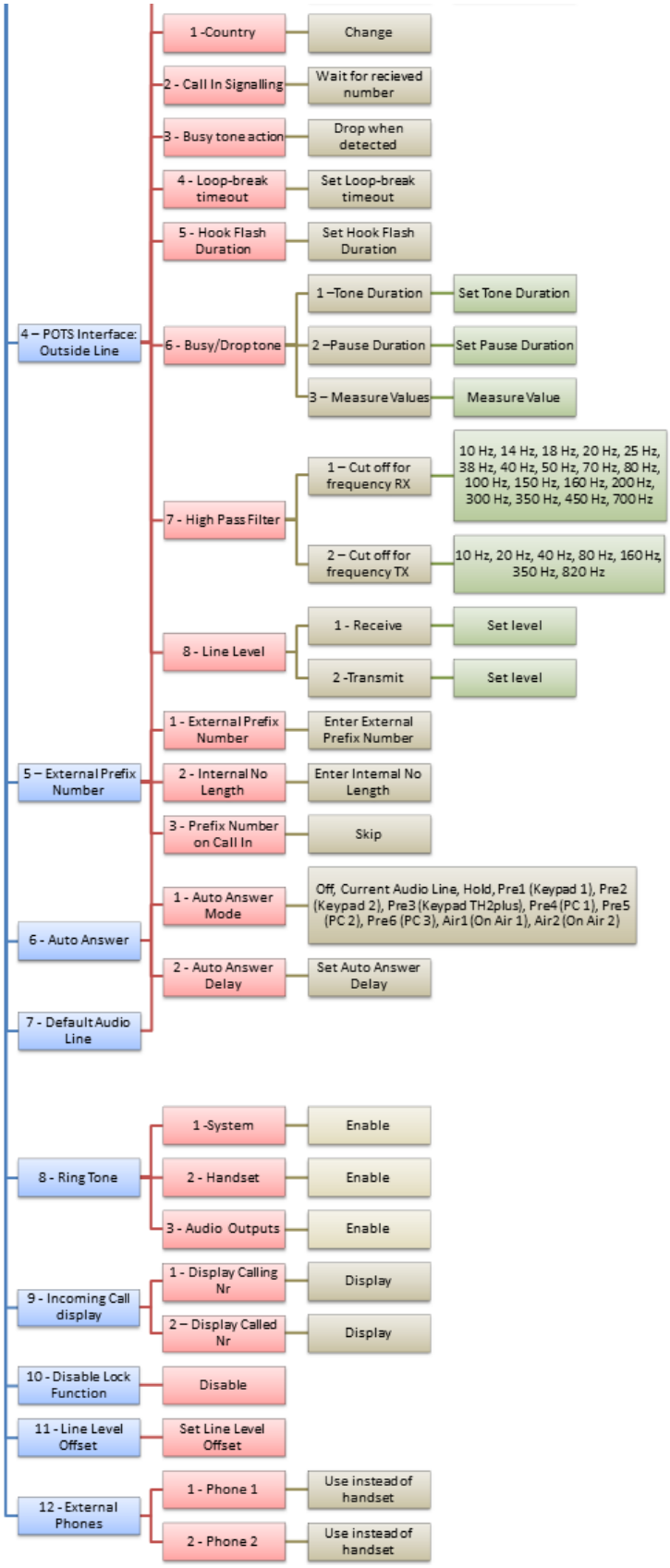

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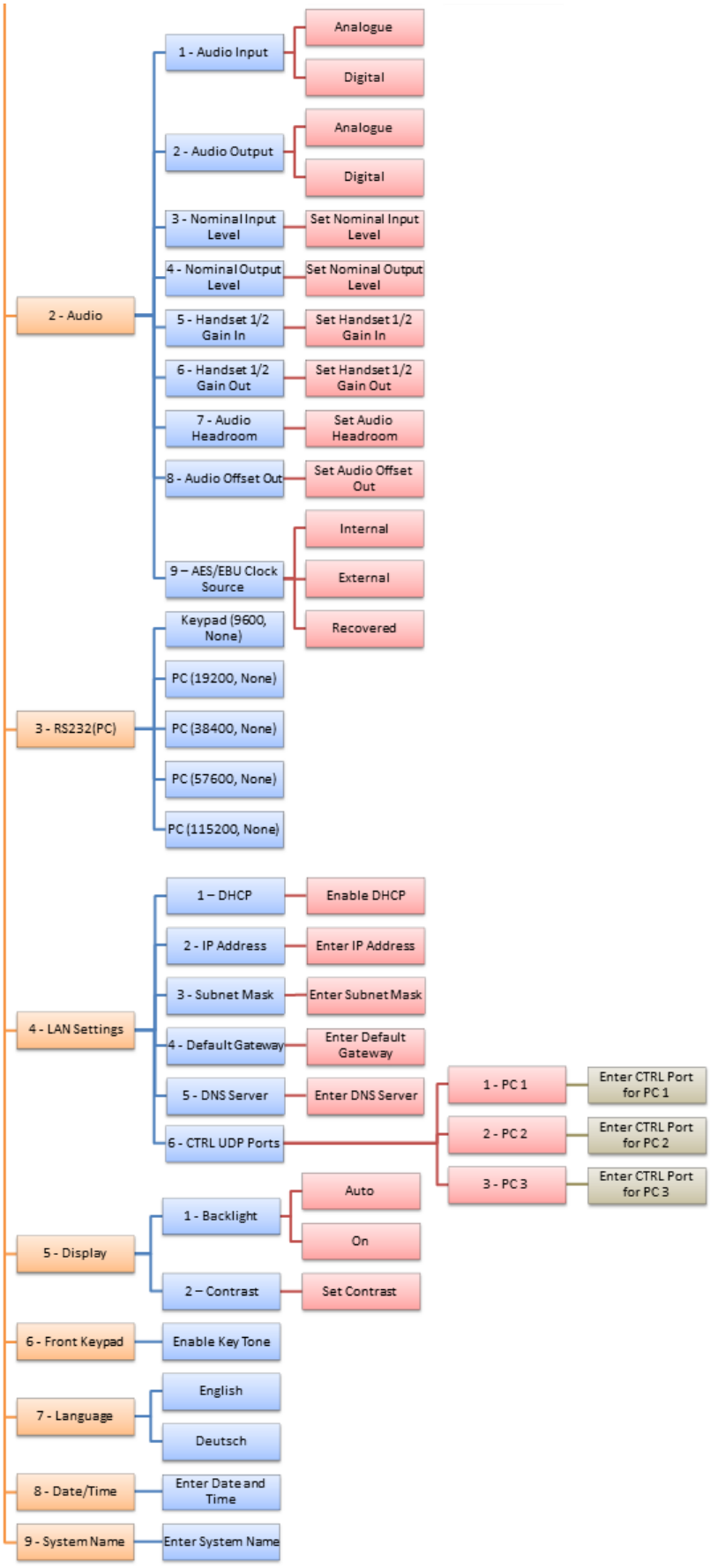
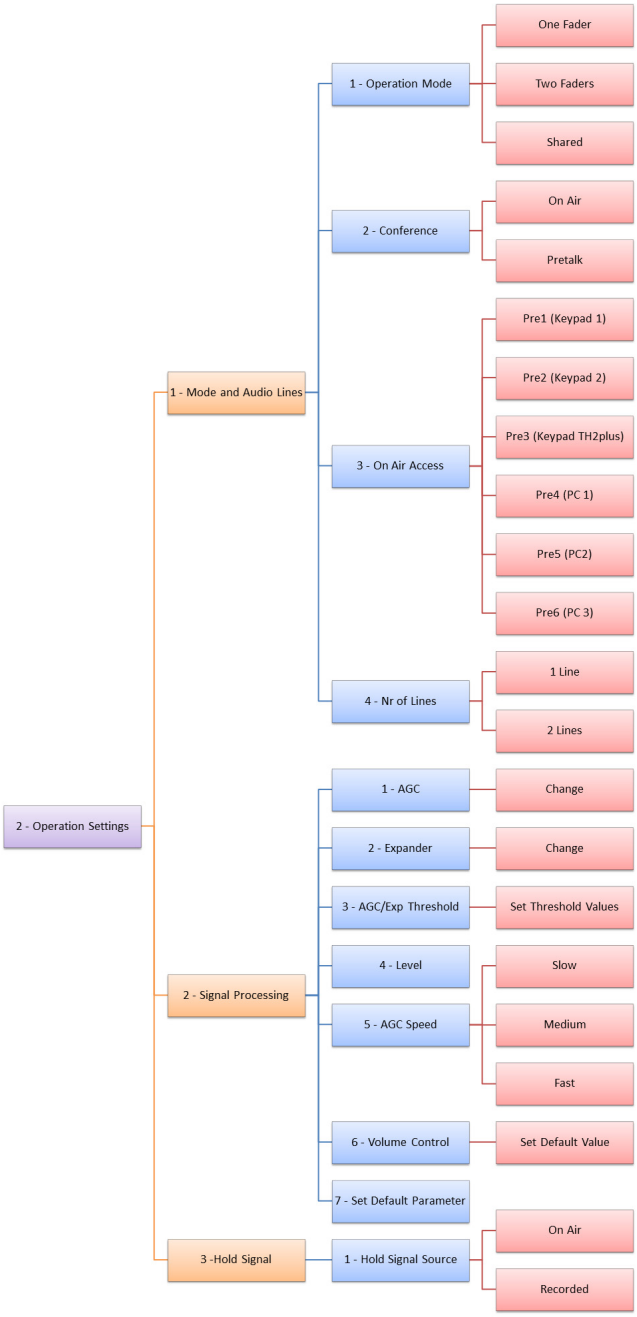
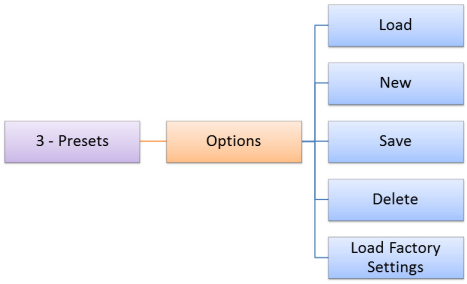

2 - Audio
1 - Audio Input
Analogue
Digital
2 - Audio Output
Analogue
Digital
3 - Nominal Input Level
Set Nominal Input Level
4 - Nominal Output Level
Set Nominal Output Level
5 - Handset 1/2 Gain In
Set Handset 1/2 Gain In
6 - Handset 1/2 Gain Out
Set Handset 1/2 Gain Out
7 - Audio Headroom
Set Audio Headroom
8 - Audio Offset Out
Set Audio Offset Out
9 – AES/EBU Clock Source
Internal
External
Recovered
3 - RS232(PC)
Keypad (9600, None)
PC (19200, None)
PC (38400, None)
PC (57600, None)
PC (115200, None)
4 - LAN Settings
1 – DHCP
Enable DHCP
2 - IP Address
Enter IP Address
3 - Subnet Mask
Enter Subnet Mask
4 - Default Gateway
Enter Default Gateway
5 - DNS Server
Enter DNS Server
6 - CTRL UDP Ports
1 - PC 1
Enter CTRL Port for PC 1
2 - PC 2
Enter CTRL Port for PC 2
3 - PC 3
Enter CTRL Port for PC 3
5 - Display
1 - Backlight
Auto
On
2 – Contrast
Set Contrast
6 - Front Keypad
Enable Key Tone
7 - Language
English
Deutsch
8 - Date/Time
Enter Date and Time
9 - System Name
Enter System Name

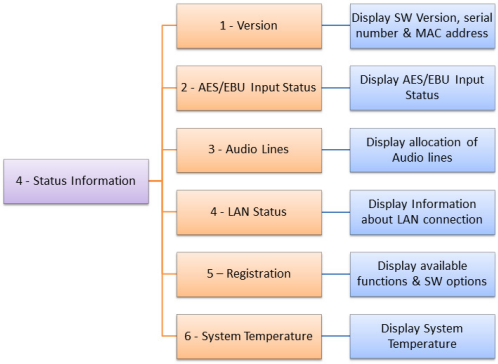
A1.3 Operation Settings



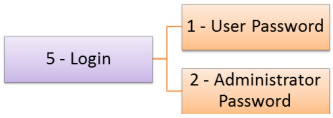
A1.4 Presets


3 - Presets
Options
Load
New
Save
Delete
Load Factory Settings

A1.5 Status information



A1.6 Login



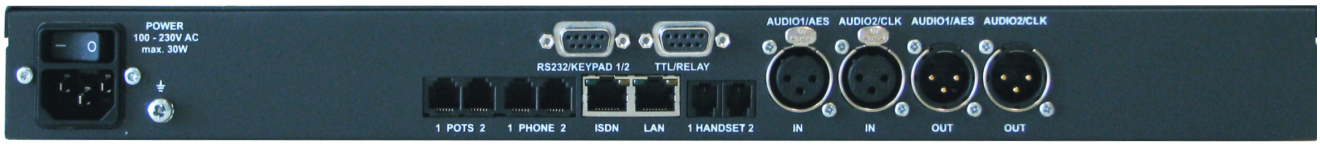
A 2 INTERFACES

MAGIC TH2plus V2 is identical to MAGIC TH2plus, but without ISDN interfaces.

The interfaces of the systems are pictured in Fig. 81.

FIG. 81 REAR VIEW OF THE MAGIC TH2PLUS TELEPHONE HYBRID

FIG. 82 REAR VIEW OF THE MAGIC TH2PLUS RM TELEPHONE HYBRID

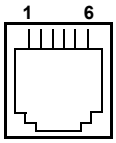


All interfaces are described below.

A2.1 POTS, ISDN and LAN interfaces

A2.1.1 POTS 1 & 2 interfaces

These interfaces are used to connect the system to analogue telephone lines.



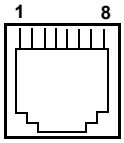
TAB. 4 PIN ASSIGNMENT: POTS TELEPHONE INTERFACE (LINE POTS)

Socket: Western (6 pin) RJ12

Pin	Signal	Electrical characteristics	
1	not used	Typical characteristics:	
2	not used	Bandwidth:	300 - 3.3 kHz
3	TEL LINE a	Signal to noise ratio:	45 dB
4	TEL LINE b	Average level:	-9 dBm (275 mV)
5	not used	Impedance:	600 ohms
6	not used	DC voltage:	48 V (±6 V typ)
		DC current:	20-26 mA (typ)
		Ringing voltage	90 Vrms
		Ringing frequency:	20 Hz (2 sec on, 4 sec off)

A2.1.2 S_0 interface

This interface supports two B channels in ISDN networks with the EURO ISDN (DSS-1), the US National-1 or the Japanese ISDN Protocol.



TAB. 5 PIN ASSIGNMENT: S_0 INTERFACE (LINE ISDN)

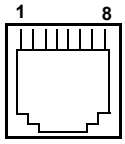
Socket: Western (8 pin) RJ45

Pin	Signal		Electrical characteristics	
1	not used		Recommendation:	I.430
2	not used		Data rate:	B channel: 2x64 kbit/s D channel: 16 kbit/s
3	TX a	Data out a		
4	RX a	Data in a		
5	RX b	Data in b		
6	TX b	Data out b		
7	not used			
8	not used			

MAGIC TH2plus V2 is identical to MAGIC TH2plus, but without ISDN interfaces.

A2.1.3 LAN interface

Via this interface you can control the system via a PC. If the fee-based software option ***Extension for Voice over IP (ID: 430399)*** is enabled, you can connect your system to a LAN network for VoIP.



TAB. 6 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			

A2.2 PRETALK interfaces

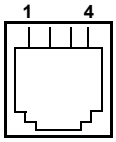
A2.2.1 HANDSET 1 & 2 interfaces

To these interfaces you can connect a telephone handset/headset for the PRETALK.

ATTENTION **Pin assignment not standardised**

Please note that the Pin assignment of the telephone receivers is not standardised. Additionally, it is important to consider the correct polarity of the Phantom Power.

MAGIC TH2plus Telephone Handsets and ***MAGIC TH2plus Telephone Headsets*** are optionally available.



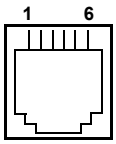
TAB. 7 PIN ASSIGNMENT: HANDSET/HEADSET INTERFACE (HANDSET)

Socket: Western (4 pin) RJ10

Pin	Signal	Electrical characteristics
1	HANDSET IN a/+5V phantom power	Microphone: Impedance: ~ 2 kOhm Sensitivity: ~ -60 dB @ 1-kHz Telephone receiver: Impedance: ~150 Ohm Sensitivity: ~ 97dB @ 1-kHz
2	HANDSET OUT b (GND)	
3	HANDSET OUT a	
4	HANDSET IN b	

A2.2.2 PHONE 1 & 2 interfaces

In the POTS operating mode, you can connect a POTS Telephone for PRETALK and dialling to these interfaces.



TAB. 8 PIN ASSIGNMENT: POTS TELEPHONE INTERFACE (PHONE)

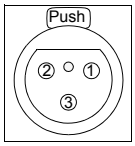
Socket: Western (6 pin) RJ12

Pin	Signal	Electrical characteristics
1	not used	
2	not used	
3	TEL LINE a	
4	TEL LINE b	
5	not used	
6	not used	

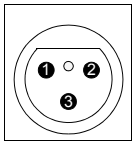
A2.3 Audio interfaces

The system incorporates analogue and digital AES/EBU Audio interfaces. The interfaces can be configured via the front display and keypad or via the PC software.

A2.3.1 Analogue Audio interface



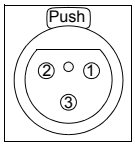
TAB. 9 PIN ASSIGNMENT: ANALOGUE INPUT (AUDIO 1/2 IN)		
Socket: XLR		
Pin	**Signal**	**Electrical characteristics**
1	Analogue GND	Incoming level: adjustable -3 .... +9 dBu
2	AUDIO IN a	Impedance: > 25 kΩ
3	AUDIO IN b	Head room: 6 dB



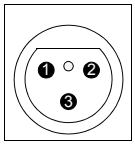
TAB. 10 PIN ASSIGNMENT: ANALOGUE OUTPUT (AUDIO 1/2 OUT)		
Connector: XLR		
Pin	**Signal**	**Electrical characteristics**
1	Analogue GND	Outgoing level: adjustable -3 .... +9 dBu
2	AUDIO OUT a	Impedance: 50 Ω
3	AUDIO OUT b	Head room: 6 dB

A2.3.2 Digital AES/EBU Audio interface

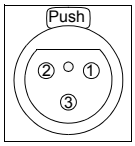
The ***MAGIC TH2plus*** Telephone Hybrid incorporates two digital Inputs/Outputs which are physically one AES/EBU interface. The input has a digital sample rate converter providing that a digital source with 32, 44.1 or 48-kHz can be connected directly. For external clocking (48-kHz only) the word clock input or output may be used.



TAB. 11 PIN ASSIGNMENT: DIGITAL INPUT (AES IN)		
Socket: XLR		
Pin	**Signal**	**Electrical characteristics**
1	Analogue GND	IEC-958
2	AUDIO IN a	
3	AUDIO IN b	



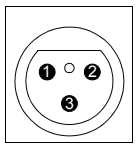
TAB. 12 PIN ASSIGNMENT: DIGITAL OUTPUT (AES OUT)		
Connector: XLR		
Pin	**Signal**	**Electrical characteristics**
1	Analogue GND	IEC-958
2	AUDIO OUT a	
3	AUDIO OUT b	



TAB. 13 PIN ASSIGNMENT: CLOCK INPUT (CLK IN)

Socket: XLR

Pin	Signal	Electrical characteristics
1	Analogue GND	TTL
2	CLOCK IN	
3	not used	



TAB. 14 PIN ASSIGNMENT: CLOCK OUTPUT (CLK OUT)

Connector: XLR

Pin	Signal	Electrical characteristics
1	Analogue GND	TTL
2	CLOCK OUT	
3	not used	

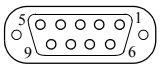
A2.4 Control Interface

A2.4.1 LAN interface

Please see A2.1.3, Page 115.

A2.4.2 Keypad 1,2 interface

To this interface you can connect an external ***MAGIC TH2plus Keypad*** to control the system. If you want to connect two Keypads simultaneously, you need an adapter cable. Alternatively, if you don't want to use the LAN interface to connect a PC to ***MAGIC TH2plus***, you can also use the RS232 interface. To connect a PC you need a 1:1 connecting cable, in which Pin 2 and Pin 3 are ***not*** crossed. Additionally, Pin 5 GND must be connected. The remaining Pins are not used.



TAB. 15 PIN ASSIGNMENT: KEYPAD INTERFACE (RS232)

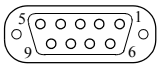
Socket: SUB-D (9 pin)

Pin	Signal		Electrical characteristics	
1		not used	Type:	DCE[a]
			Level:	V.24
2	TXD Keypad 1	OUT	Data rate:	38400 Baud
			Range:	max. 15 m
3	RXD Keypad 1	IN	Protocol:	1 Start bit
				8 Data bits
4		not used		1 Stop bit
5	GND	Earth		
6		not used		
7	RXD Keypad 2	IN		
8	TXD Keypad 2	OUT		
9		not used		

a DCE = Data Communication Equipment: to connect a PC a 1:1 cable is required

A2.4.3 TTL/RELAY interface

Via this interface external control signals can be used.



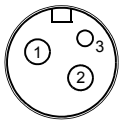
TAB. 16 PIN ASSIGNMENT: TTL/RELAY INTERFACE (TTL/RELAY)

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	

A2.5 Power supply interface

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



TAB. 17 PIN ASSIGNMENT: POWER SUPPLY

Socket: KYCO KPJ-S3

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

A 3 TECHNICAL DATA MAGIC TH2PLUS

CODING ALGORITHMS

- G.711 A-Law 3,1-kHz (Telephone algorithm)
- G.722 (optional with HD Voice Upgrade in VoIP mode)

LINE INTERFACES:

- ISDN
  - 1 x S_0 I.430 RJ45
  - Protocol DSS-1, NI-1, Japanese ISDN
- POTS
  - 2 x POTS RJ12
- LAN
  - 1 x LAN RJ45

PRETALK INTERFACES

- Handset/Headset interface
  - 2 x HANDSET RJ10
- Telephone interface
  - 2 x PHONE RJ12

CONTROL INTERFACES

- LAN RJ45
- RS232 V.24 9 pin SUB-D socket
- TTL/RELAY 9 pin SUB-D socket
  - 2 x Relay function can be programmed
    Capacity 48V/200mA
  - 4x TTL Input/Output function can be programmed
    Capacity 3.3V/10mA

AUDIO INTERFACES

Analogue Audio 1/2:

– Electronically balanced input		XLR female
– Electronically balanced input		XLR male
– Nominal level	-3 ... +9 dBu	(can be programmed)
– Head room	0 ... 15 dBr	(can be programmed)
– Impedance	Input: Output:	> 25 kΩ 50 Ω
– Frequency response	50 Hz ... 3400 Hz	
– Signal to Noise Ratio	> 80 dB	
– Noise	- 92 dB	

Digital Audio AES/EBU:

– Format	IEC-958	AES/EBU Professional
– Balanced input		XLR female
– Balanced output		XLR male
– Impedance	Input: Output:	110 Ω 110 Ω
– Clock input	TTL/75 Ω	XLR female
– Clock output	TTL/75 Ω	XLR male

– Separate Sample Rate Converter for Inputs

Handset/Headset:

– Electronically balanced input		RJ10 socket
– Electronically balanced output		RJ10 socket
– Input amplifier	~ 10 dB	
– Gain In	0 ... +45 dB	(can be programmed)
– Gain Out	0 ... +45 dB	(can be programmed)
– Impedance	Input: Output:	> 25 kΩ < 50 Ω

SIGNAL PROCESSING

– AGC per channel, configurable

– Level adjustment control during connection: -16 dB ... +16 dB

- Echo Canceller per channel (100 msec echo cancelling time)
- Expander per channel, configurable

Display

- graphical resolution 160 x 32 Pixel

- illuminated (can be switched off)

Power supply via External Adapter

Direct Voltage (DC)

- + 12 V

Power Consumption

- max. 15 W

Dimensions

H x W x D

- 44 x 220 x 220 mm

Weight

- ca. 1,7 kg

Additional Information

EMC

- EN 55103

Electric safety

- EN 60950

Temperature Range

- +5 °C to 45 °C

Relative humidity

- 5% is 85%

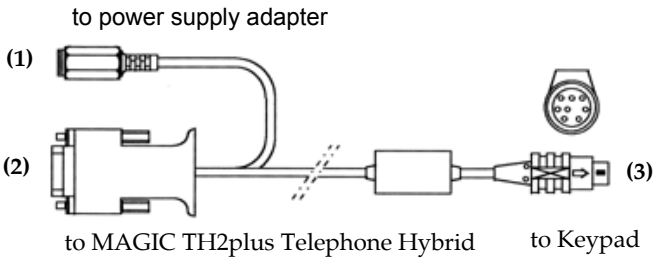
A 4 TECHNICAL DATA MAGIC TH2PLUS KEYPAD

A4.1 Keypad

Matrix: 8 x 6

(32 keys 4 quad keys, 4 double keys,
24 single keys)

FIG. 83 CONNECTING CABLE MAGIC SYSTEM - KEYPAD

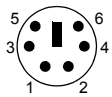


Protocol:

9600 Baud
no parity

Connection to external power supply adapter (1):

6-pol. Mini-DIN connector

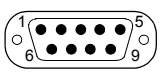


Assignment:

Pin 3:	GND (Ground)
Pin 4:	+5V

Connection to MAGIC TH2plus (2):

9-pol. SUB-D connector



Assignment:

Pin 2	RXD
Pin 3	TXD
Pin 5	GND (Ground)

Connection to keypad (3):

8-pol. MINI DIN connector

Assignment:

Pin 2:	clock
Pin 3:	+5V
Pin 4:	Data
Pin 5:	GND (Ground)

A4.2 LCD Display

2 x 20 characters

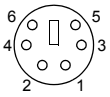
illuminated

A4.3 Power supply:

5V, max. 500 mA

Connection:

6-pol. Mini-DIN socket



Assignment:

Pin 3:	GND (Ground)
Pin 4:	+5V

A 5 GENERAL

A5.1 Order numbers

MAGIC TH2plus Telephone Hybrid	802000

Accessories

MAGIC TH2plus Hybrid Keypad	802001
MAGIC TH2plus DUAL 19“ Mounting Kit	802002
MAGIC TH2plus Telephone Handset with Handset Rest	802003
MAGIC TH2plus Telephone Headset	802004
POTS Telephone with Display [1]	490101
GSM Adapter [1]	490135
Portable Case	490152

Software Options

Extension for Voice over IP	430399
MAGIC TH2plus Software Licence (one is included in delivery, 3 max.)	430396
DTMF Generator & Analyser Plug-In	430200
HD Voice Upgrade	430465

[1] can only be used in POTS operating mode

A5.2 Scope of delivery

- MAGIC TH2plus Telephone Hybrid
  - CD Windows PC Software
  - External Power Supply Adapter

    Input: 100 - 240V/24W, 50 - 60 Hz

    Output: 12V
  - Self adhesive feet
  - 19'' Mounting brackets
  - Manual
  - 1 x S_0 cable
  - 2 x POTS telephone cable

A5.3 Declaration of conformity

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

A 6 SERVICE INFORMATION

A6.1 Software Updates

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

https://www.avt-nbg.de

and select **Download - Software**.

A6.2 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 110

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.

A6.3 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 91
D-90411 Nuernberg
Germany

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 TH2plus Telefonhybrid 802000
MAGIC TH2plus RM Telefonhybrid 802005
MAGIC TH2plus Telephone Hybrid 802000
MAGIC TH2plus RM Telephone Hybrid802005

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, 07.12.2010

Name(n):
Name:
Wilfried Hecht

Rechtsverbindliche Unterschrift(en):
Legally binding signatures:

Telefon:
Phone:
+49 911 5271-120

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