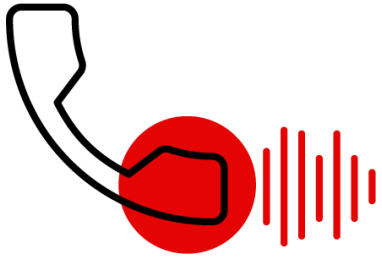
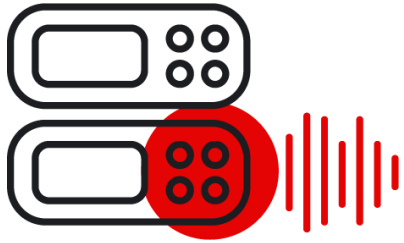
Audio
Video
Technologies





MAGIC TH2plus

Configuration Guide

Version: 4.050 (23. January 2026)

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Content

Additional Documents

- Get further information in the following documents which are available in the Download section of our website at www.avt-nbg.de.
- Quick Guides:
  - Audio over IP (AES67-DANTE-RAVENNA-LIVEWIRE)
  - Signalling and Control with DHD SetLogic
  - Signalling and Control with Ember+
  - Ember+ Consumer Extension
  - MAGIC PhonerSet Provisioning Guide
  - SQL Server 2012 Installation
- Documentations:
  - MAGIC PhonerSet
  - MAGIC TH2plus Hardware

MAGIC TH2plus

Overview

- Hardware
- Basic Features
- Optional Features
- Accessories

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TH2plus V1 – Front

- Illuminated graphic display with 160 x 32 pixels & front keypad.
  - Basic settings
  - Control of telephone lines 1 and 2
  - Internal phone book
- Housing 19” x 1 U, ½ width

TH2plus V1 – Rear

- Port for external +12V DC power supply
- RS232 port for 2 external keypads (discontinued)
- Programmable GPIO interface
  - 4 TTL in-/output
  - 2 relays (NO)
- 2 POTS line interfaces
- 2 External pretalk telephones
- 1 ISDN port
- 2 Handset ports
- 1 Ethernet port
  - Up to three VLANs
- Audio interface switchable between analogue and digital (XLR male/female)
  - Analogue: 2 x mono in-/outputs
  - Digital: 1 x stereo in-/output, 1 x Clock in-/output
  - 2 x AES3/EBU stereo audio in-/outputs (Digital AES

TH2plus V2 – Front

- Illuminated graphic display with 160 x 32 pixels & front keypad.
  - Basic settings
  - Control of telephone lines 1 and 2
  - Internal phone book
- Housing 19” x 1 U, ½ width

TH2plus V2 – Rear

- Port for external +12V DC power supply
- RS232 port for 2 external keypads (discontinued)
- Programmable GPIO interface
  - 4 TTL in-/output
  - 2 relays (NO)
- 2 POTS line interfaces
- 2 External pretalk telephones
- 2 Handset ports
- 1 Ethernet port
  - Up to three VLANs
- Audio interface switchable between analogue and digital (XLR male/female)
  - Analogue: 2 x mono in-/outputs
  - Digital: 1 x stereo in-/output, 1 x Clock in-/output
  - 2 x AES3/EBU stereo audio in-/outputs (Digital AES

TH2plus RM (discontinued) – Front

- Illuminated graphic display with 160 x 32 pixels & front keypad.
  - Basic settings
  - Control of telephone lines 1 and 2
  - Internal phone book
  - Coloured keys to indicate shortcuts for Pretalk, Hold, On Air and Drop (shortcuts must be activated in the configuration).
- Housing 19” x 1 U, Full width

TH2plus RM (discontinued) – Rear

- Internal power supply (100 V – 230 V AC)
- RS232 port for 2 external keypads (discontinued)
- Programmable GPIO interface
  - 4 TTL in-/output
  - 2 relays (NO)
- 2 POTS line interfaces
- 2 External pretalk telephones
- 1 ISDN port
- 2 Handset ports
- 1 Ethernet port
  - Up to three VLANs
- Audio interface switchable between analogue and digital (XLR male/female)
  - Analogue: 2 x mono in-/outputs
  - Digital: 1 x stereo in-/output, 1 x Clock in-/output
  - 2 x AES3/EBU stereo audio in-/outputs (Digital AES

Basic Features (1)

- Housing 19” x 1 U
- No fan for noiseless operation
  - Leave ½ U space below and above the unit for cooling.
- Low power consumption of typically 15W
- 2 POTS lines (analogue telephone)
- 4 Audio lines
  - 2 x analogue / digital in-/outputs
  - 2 x handsets/headsets or external phone
- Digital signal processing for each channel
  - Echo Canceller with up to 120 ms echo tail time
  - AGC Automatic Gain Control
  - Expander for noise reduction
  - Voice Disguise (VD) function
- Conferencing for PRETALK and ON AIR
- Internal recorded HOLD signals with up to 16 seconds
- Use any audio line as External HOLD input
- DTMF generator for transmission of DTMF tones
- Integrated SIP Monitor and Logging
- Audio test panel with signal generator

Basic Features (2)

- Programmable GPIOs for control and signalling
- DHD SetLogic Support
  - 64 GPIOs, each configurable as input or output
  - Predefined GPIOs for a dialling keypad
- Ember+ Provider
  - Connect up to 8 Ember+ Consumers
  - 64 GPIO inputs
  - 64 GPIO outputs
  - Predefined GPIOs for 1 dialling keypad
  - Caller number, caller name, Functions
- Ember+ Consumer Support
  - Connect to up to 2 Ember+ Providers
  - 10 function slots per Ember+ Consumer
  - For screening information, Numbers to dial, …

- MAGIC TH2plus Software
  - Touch optimized Windows PC software for
    - Call control
    - Maintenance
    - Configuration
  - Single user licence
  - Up to 8 clients per unit (1 licence included)
- MS Access database for phone book and call history.

Optional Features (1)

- Up to 8 PC clients (1 licence is included)
- VoIP + HD-Voice Option
  - For 2 channels
  - HD-Voice (G.722)
    - High quality speech codec in VoIP operating mode
    - Doubling the audio bandwidth compared to the standard ISDN codec.
    - Automatic selection of the best codec for VoIP calls.
- Pretalk Streaming via IP
  - Stream pretalk audio signals between up to 3 PCs and the TH2plus.
  - Use any audio interface of the PC (e.g., a USB headset)
  - Supports convenient recording at the PC.
  - Single licence per Pretalk Stream
- DTMF Analyser
  - Game Show and Event Mode
- Intercom
  - Separate software for intercom applications.
- SQL Server support
  - For phone book and call history.
  - Share the phone book with other AVT telephone hybrids.
- MAGIC System Manager
  - Access the MAGIC TH2plus from AVT's central management software which supports all AVT telephone hybrids and audio codecs.
  - Comfortable overview of system health, full configuration and Preset management.
  - Windows PC software

Optional Features (2)

- AES67
  - Audio over IP networking software upgrade.
  - Output: 4 audio channels (1 stream).
  - Input: 4 audio channels (1 stream).
  - Announcement and auto discovery of streams.
  - SDP stream description import and export
- Remote Reporting
  - Dial In to go On Air
  - No local control required
  - Protected via a PIN code

- Ember+ Consumer Extension
  - Connect 1 or 2 third party workplaces using Ember+ and DHD SetLogic.
  - Full call control and display of caller information and audio level.
  - Single licence per workplace.
- Ember+ Dial Pad Extension
  - 1 or 2 pre-configured Ember+ Dial Pad GPIOs in the Ember+ tree of the built-in provider.
- PhonerSet
  - Control 1 or 2 lines via a touchscreen-equipped Grandstream Android phone.
  - Use the phone's handset for Pretalk.
  - Single licence per PhonerSet (Up to 2).

Optional Features (3)

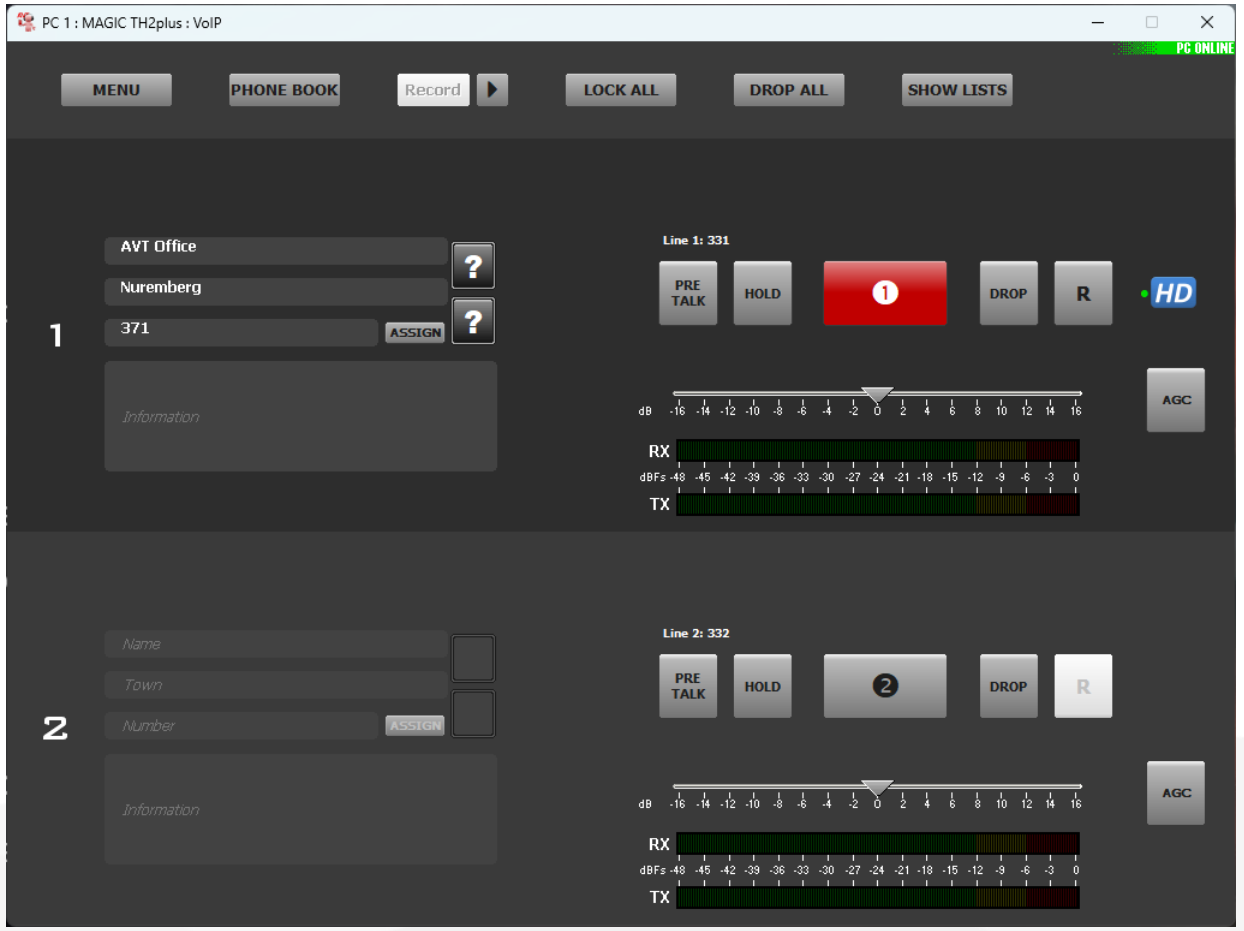
- Collaboration Services
  - Run on a local server using the Microsoft IIS platform
  - A server can connect multiple telephone hybrids.
  - Adds Microsoft Teams and WebRTC connectivity to regular telephone lines
  - Integrated with the phone book
  - High audio quality (outperforms HD-Voice)
- Collaboration Services BASIC Licence
  - Enables WebRTC
  - Additional licences for each Collaboration Services channel required.
  - Channel licences for audio only or audio and video available.
- Collaboration Services PROFESSIONAL Licence
  - Enables WebRTC and Microsoft Teams
  - Additional licences for each Collaboration Services channel required.
  - Channel licences for audio only or audio and video available.

Accessories

- MAGIC PhonerSet
- MAGIC TH2plus Handset
- MAGIC TH2plus Headset
- USB Headset
  - For Pretalk Audio Streaming
- USB Handset
  - For Pretalk Audio Streaming

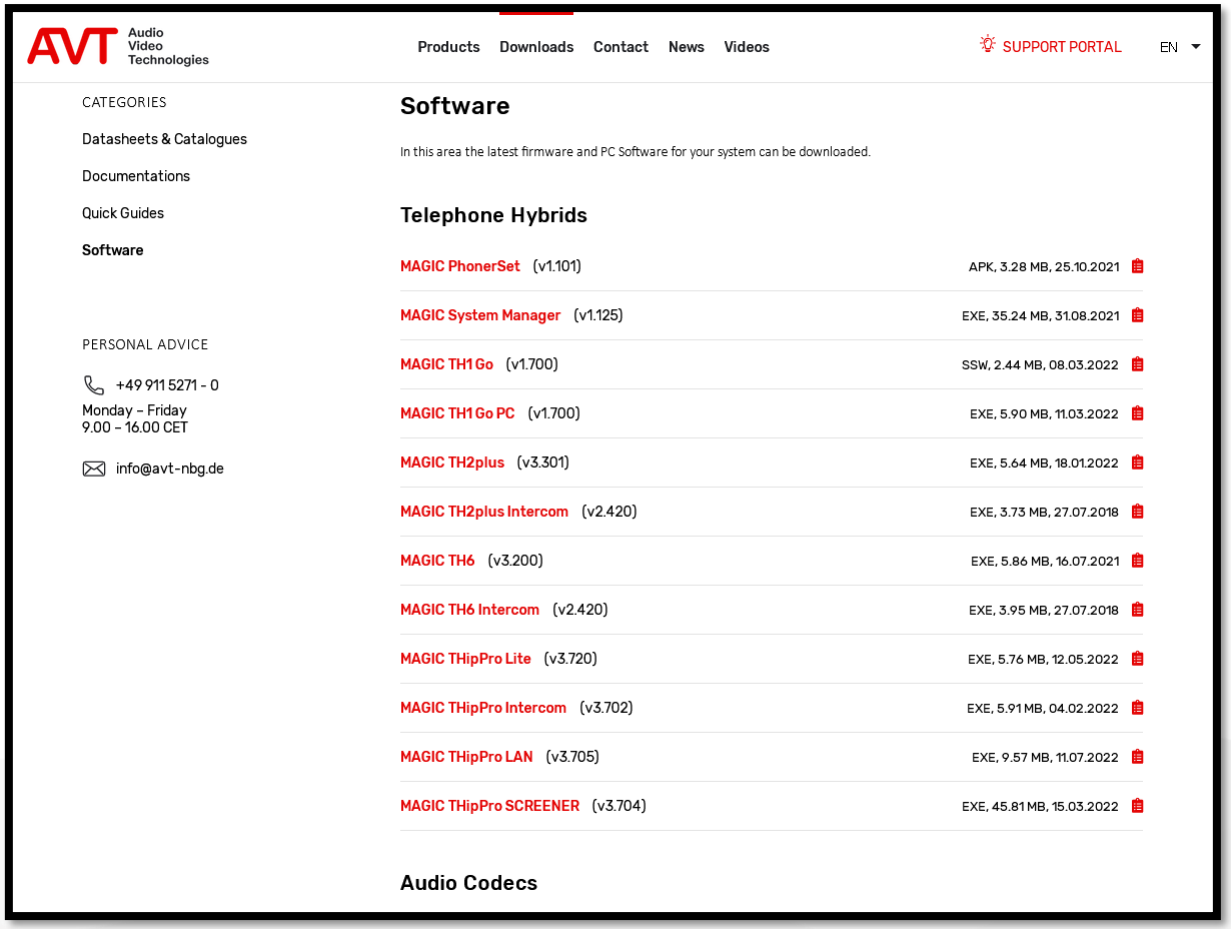
PC Software

- MAGIC TH2plus
  - Touch optimised Windows PC software
  - Single-user licence
  - Supporting window sizes between 900 x 280 px and 8000 x 6000 px.
  - Automatic scaling for high-DPI screens.
  - Up to 8 clients can access the system simultaneously.
  - Optional MS SQL Server backend database
  - Each client directly connects to the MAGIC TH2plus Lite unit.



Resources

- The latest version of the MAGIC TH2plus software is freely available in the download section of our website http://www.avt-nbg.de.
- The installer contains the MAGIC TH2plus PC software and the matching firmware.
- Also check the DOCUMENTS and QUICK GUIDES sections on the website for further information.



MAGIC TH2plus

Initial Setup

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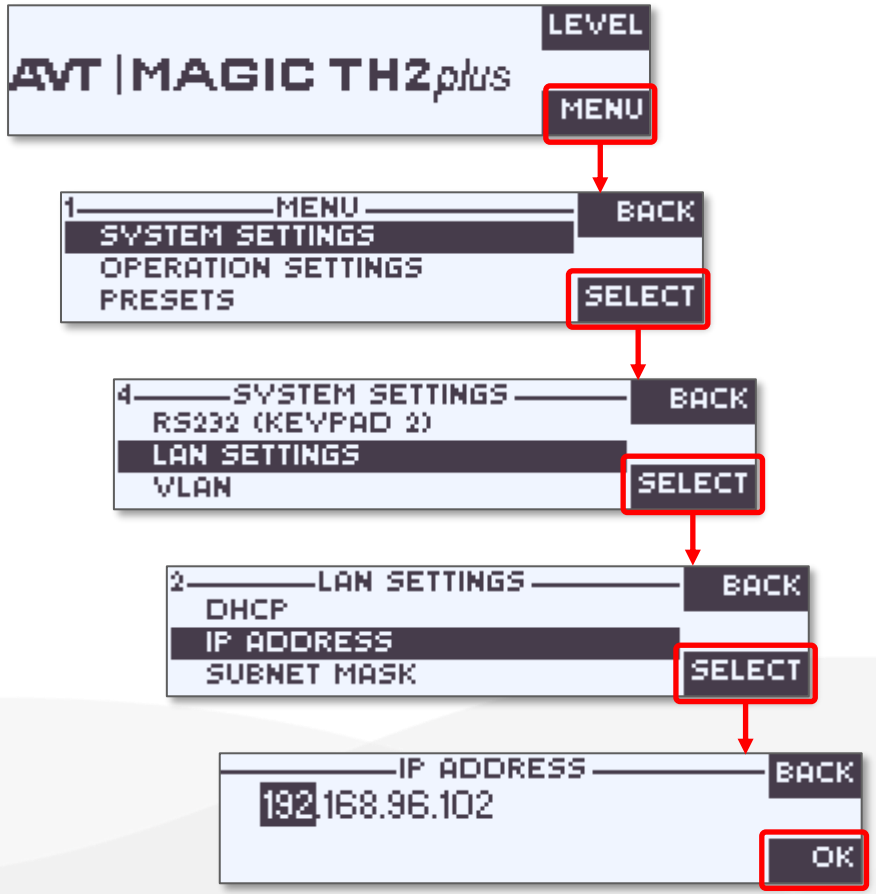
Initial Setup

- Connect the MAGIC TH2plus to the mains.
- Configure the IP address of the LAN interface via the front display as shown on the right.
- Subsequently also configure SUBNET MASK and DEFAULT GATEWAY of LAN interface 1.
- Connect the device to the Ethernet network and connect the PC software as described in the next chapter.
- It is recommended to do all further configurations using the PC software.



MAGIC TH2plus

Connecting the software

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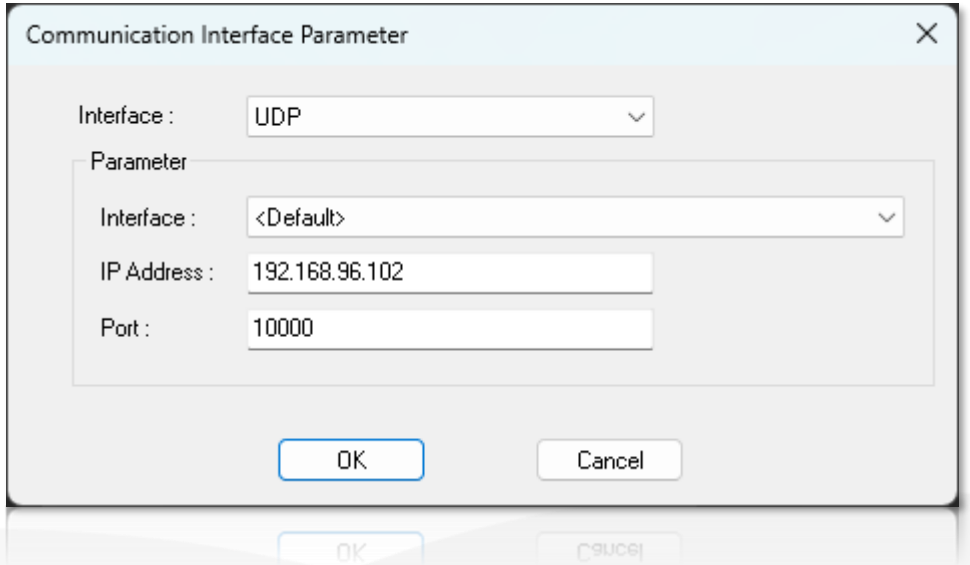
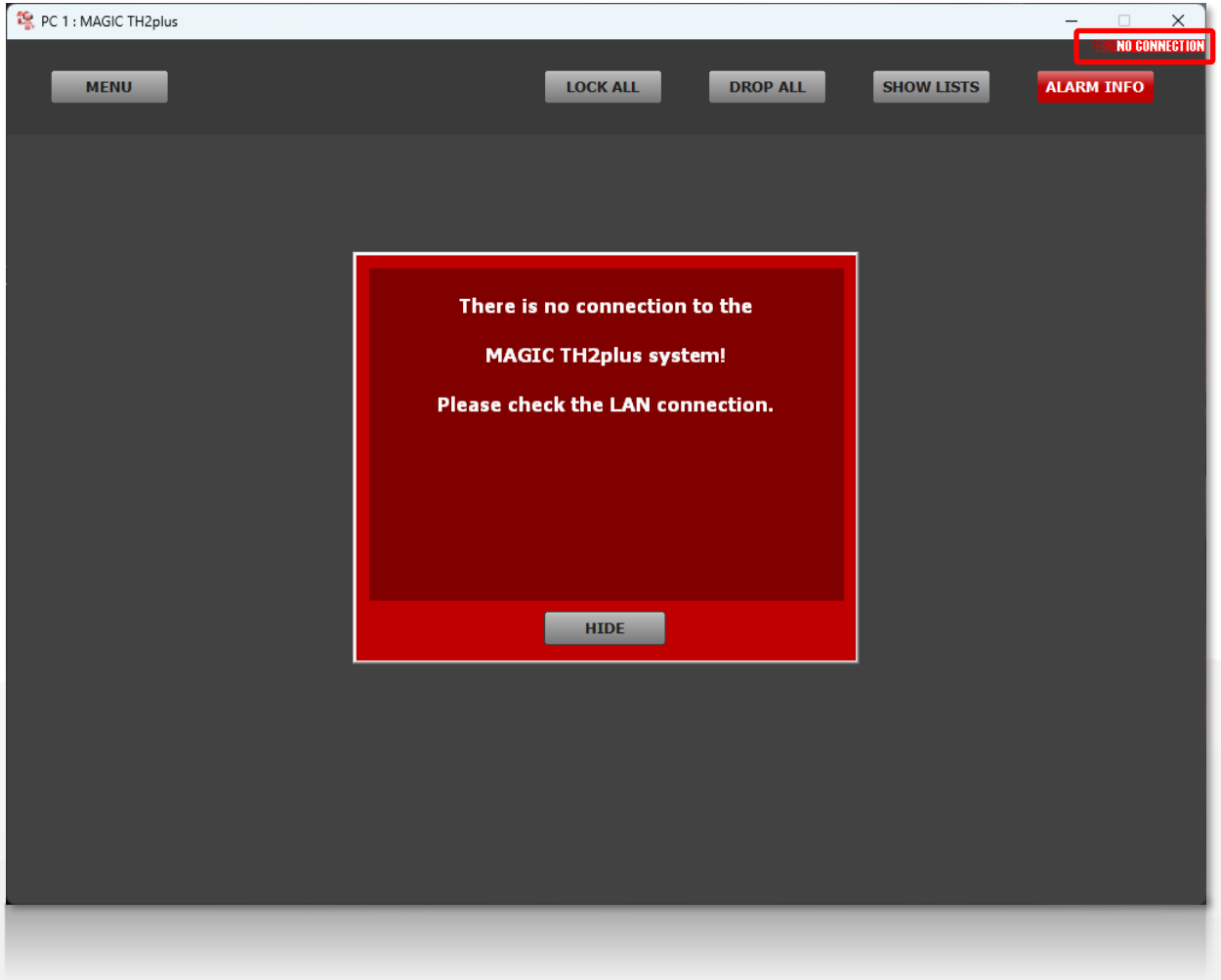
MAGIC TH2plus PC software (1)

- Run the MAGIC TH2plus setup.exe to install the software.
- Run the software as administrator.
  - Right click the MAGIC TH2plus icon on the desktop and select Run as administrator.
- Make sure to have the MAGIC TH2plus connected to the local network.
- In the MAGIC TH2plus software open **Menu > Configuration > Control Interface**.
  - INTERFACE: Select UDP.
  - PARAMETER – INTERFACE: Select the network interface of the PC which has access to the unit.
  - PARAMETER – IP-ADDRESS: Enter the IP address of the MAGIC TH2plus (default: 192.168.96.102). Get the current IP address from the MAGIC TH2plus's front display by pressing the HANG UP button (to the right of the OK button) repeatedly.
  - PARAMETER – PORT: Enter the control port of the MAGIC TH2plus (default: 10000).



MAGIC TH2plus PC software (2)

- If the PC software doesn't get an answer from the MAGIC TH2plus it will show NO CONNECTION in the upper right corner.
- A red alarm window will also show that there is no connection to the device.
  - This window can be hidden using the HIDE button.



MAGIC TH2plus

First Steps

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First steps (2)

- Go to the **Line Interface** configuration page.
  - Select the **Line Mode** (VoIP / ISDN / POTS)
- If VoIP is selected, go to the VoIP (LAN/SIP) configuration page.
  - Enter the VoIP account information you received from the VoIP provider for each line.
- Open the **Mode & Audio Line** configuration page.
  - Select an **Operation Mode**.
  - In the **Audio Assignment** table, assign **Audio Interfaces** to all **Audio Line** that shall be used.
- Find more information on the following pages.

MAGIC TH2plus

Possible Applications

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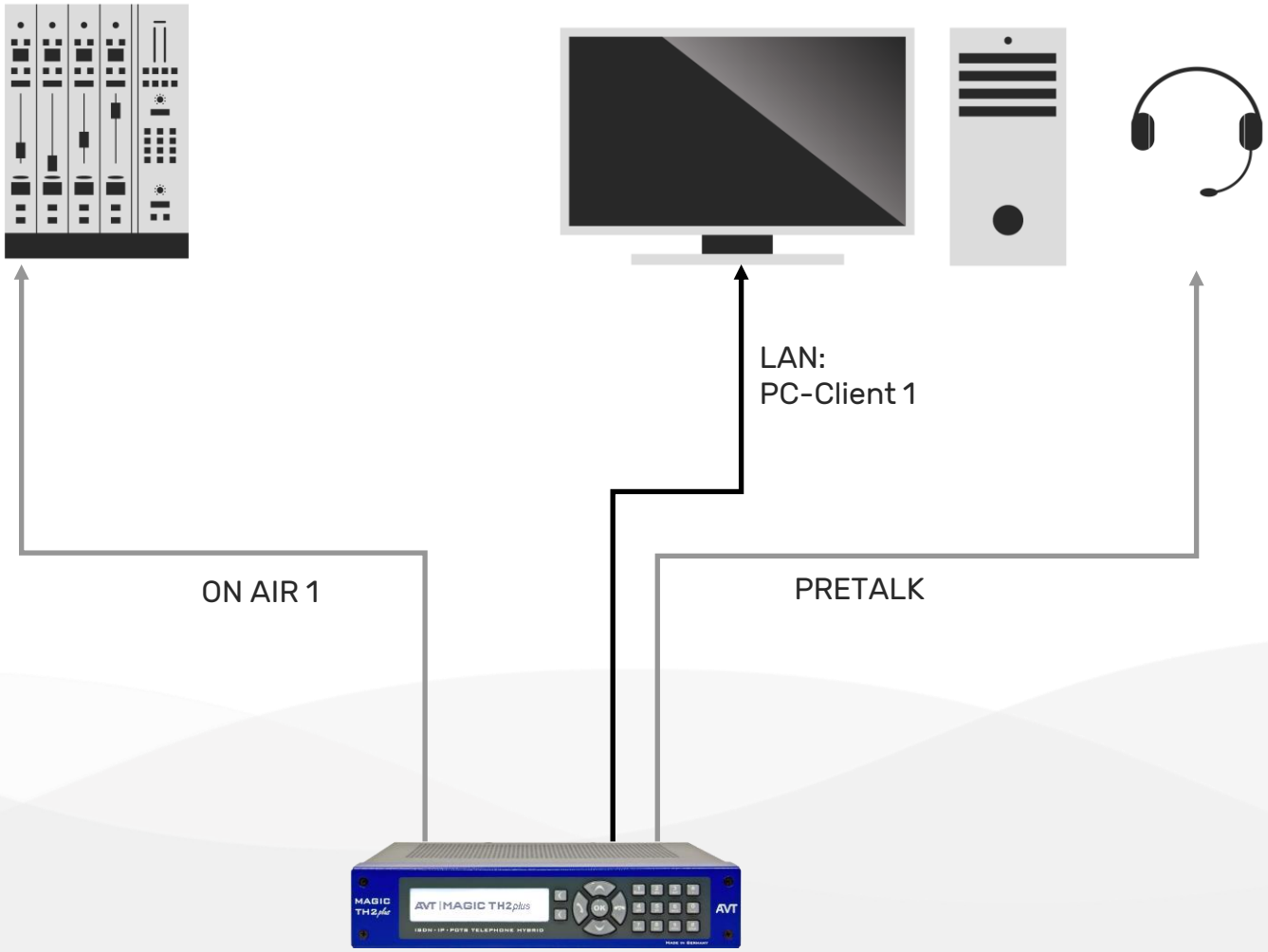
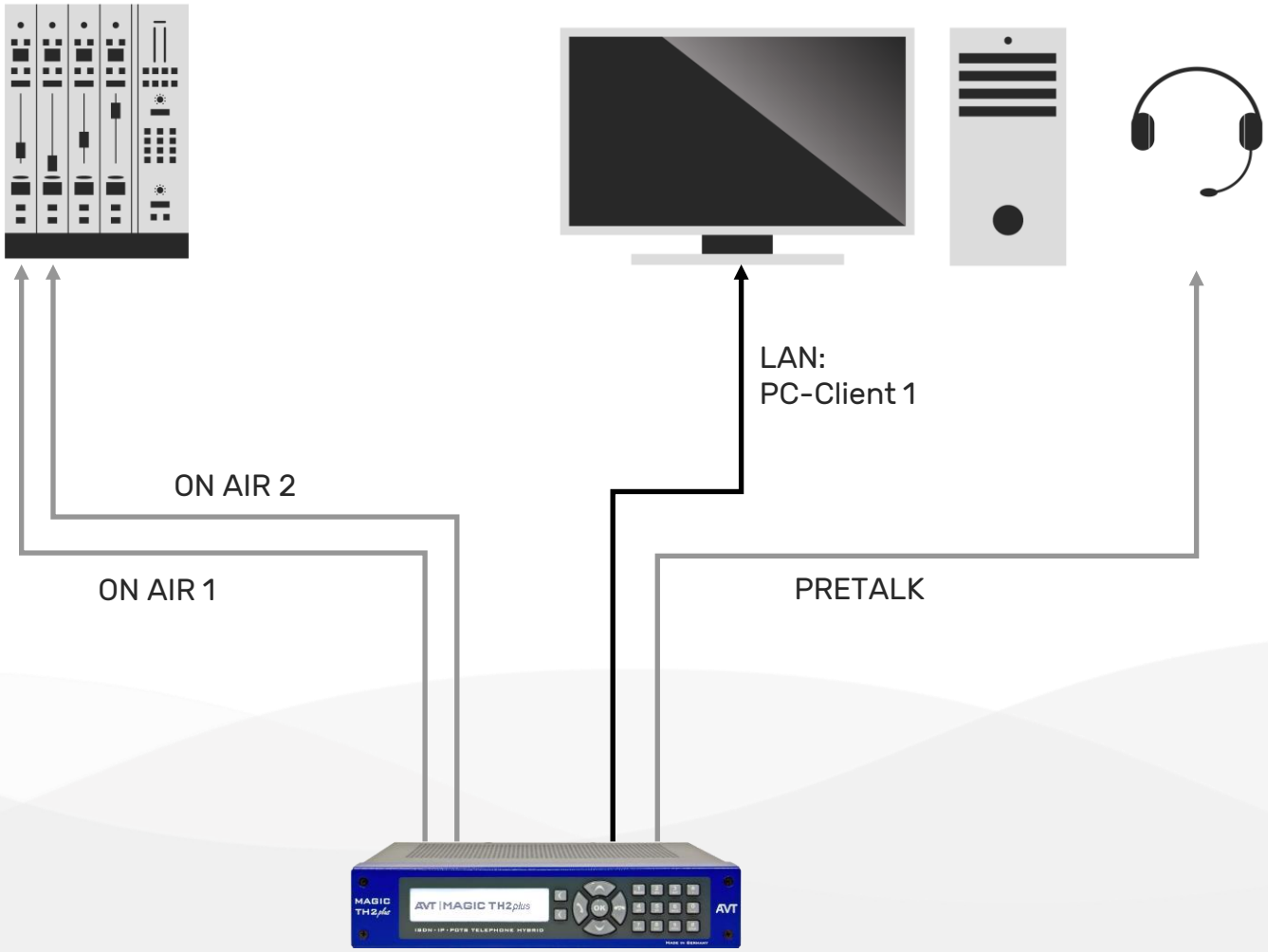
One Fader



Two Faders



MAGIC TH2plus

System Settings

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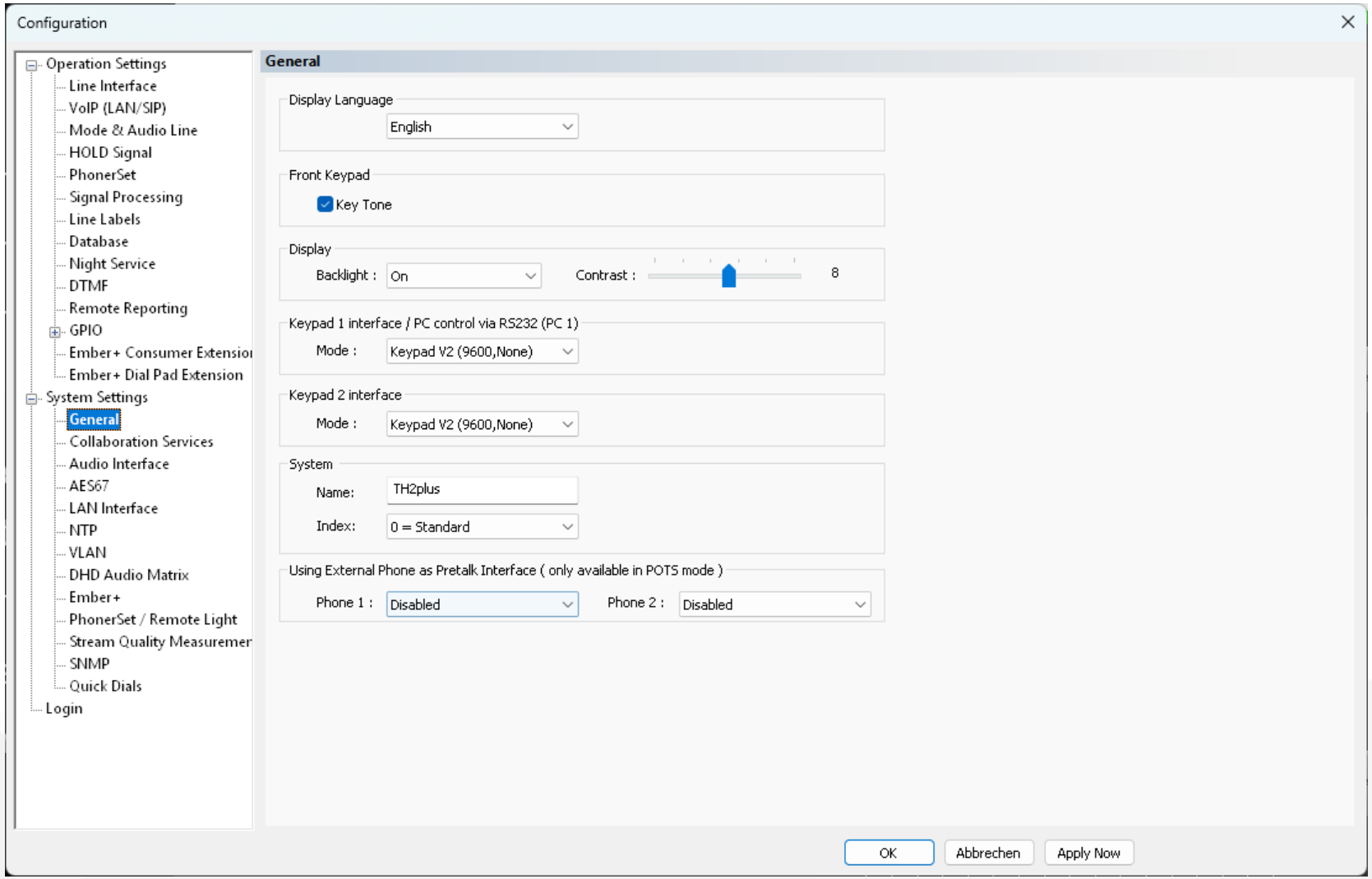
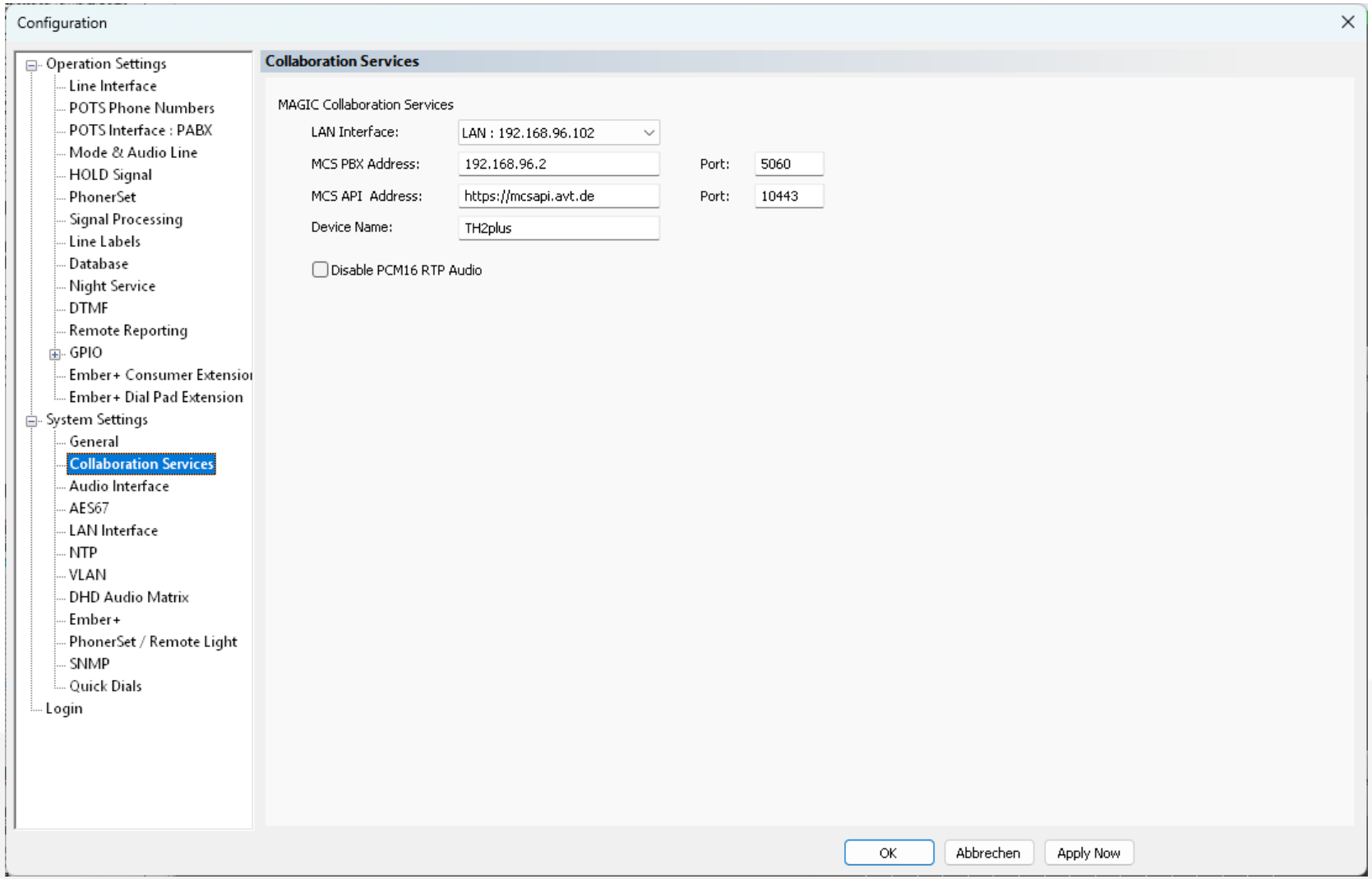

Configuration
Operation Settings
Line Interface
VoIP (LAN/SIP)
Mode & Audio Line
HOLD Signal
PhonerSet
Signal Processing
Line Labels
Database
Night Service
DTMF
Remote Reporting
GPIO
Ember+ Consumer Extensio
Ember+ Dial Pad Extension
System Settings
General
Collaboration Services
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
General
Display Language
English
Front Keypad
Key Tone
Display
Backlight :
On
Contrast :
8
Keypad 1 interface / PC control via RS232 (PC 1)
Mode :
Keypad V2 (9600,None)
Keypad 2 interface
Mode :
Keypad V2 (9600,None)
System
Name:
TH2plus
Index:
0 = Standard
Using External Phone as Pretalk Interface (only available in POTS mode)
Phone 1 :
Disabled
Phone 2 :
Disabled
OK
Abbrechen
Apply Now

General (1)

- Configure the basic system parameters on the GENERAL page.
- DISPLAY LANGUAGE: The front display of the MAGIC TH2plus supports two languages:
  - ENGLISH
  - GERMAN
- FRONT KEYPAD – KEY TONE: Enable the key click.
- DISPLAY: Set the parameters of the front display:
  - BACKLIGHT:
    - AUTO: Turns on when a key is pressed and turns off after a few seconds.
    - ON: Permanently on.
  - CONTRAST: Adjust the contrast to improve the clarity of the front display.
- SYSTEM
  - NAME: Enter a system name. It is used:
    - to identify the device in the optional MAGIC SYSTEM MANAGER.
    - to address the device in the CONTROL INTERFACE configuration.
    - as the SIP display name.
    - when requesting an IP address via DHCP.
    - to identify the system via the front display.
  - INDEX: The system index is only used if multiple MAGIC TH2plus systems use the same SQL database for the phonebook. All systems connected to a common phonebook database will show the same phonebook entries. But call history entries are filtered using the system index.
    - MAGIC TH2plus systems with different indexes will not show each others call history.
    - MAGIC TH2plus systems using the same index will show the same call history.
- USING EXTERNAL PHONE AS PRETALK INTERFACE
  - External phones can only be used in POTS mode.
  - When enabled, the external phone is used for pretalk instead of the handset.
  - In MODE & AUDIO LINE, set the audio line to the respective Handset.

General (2)

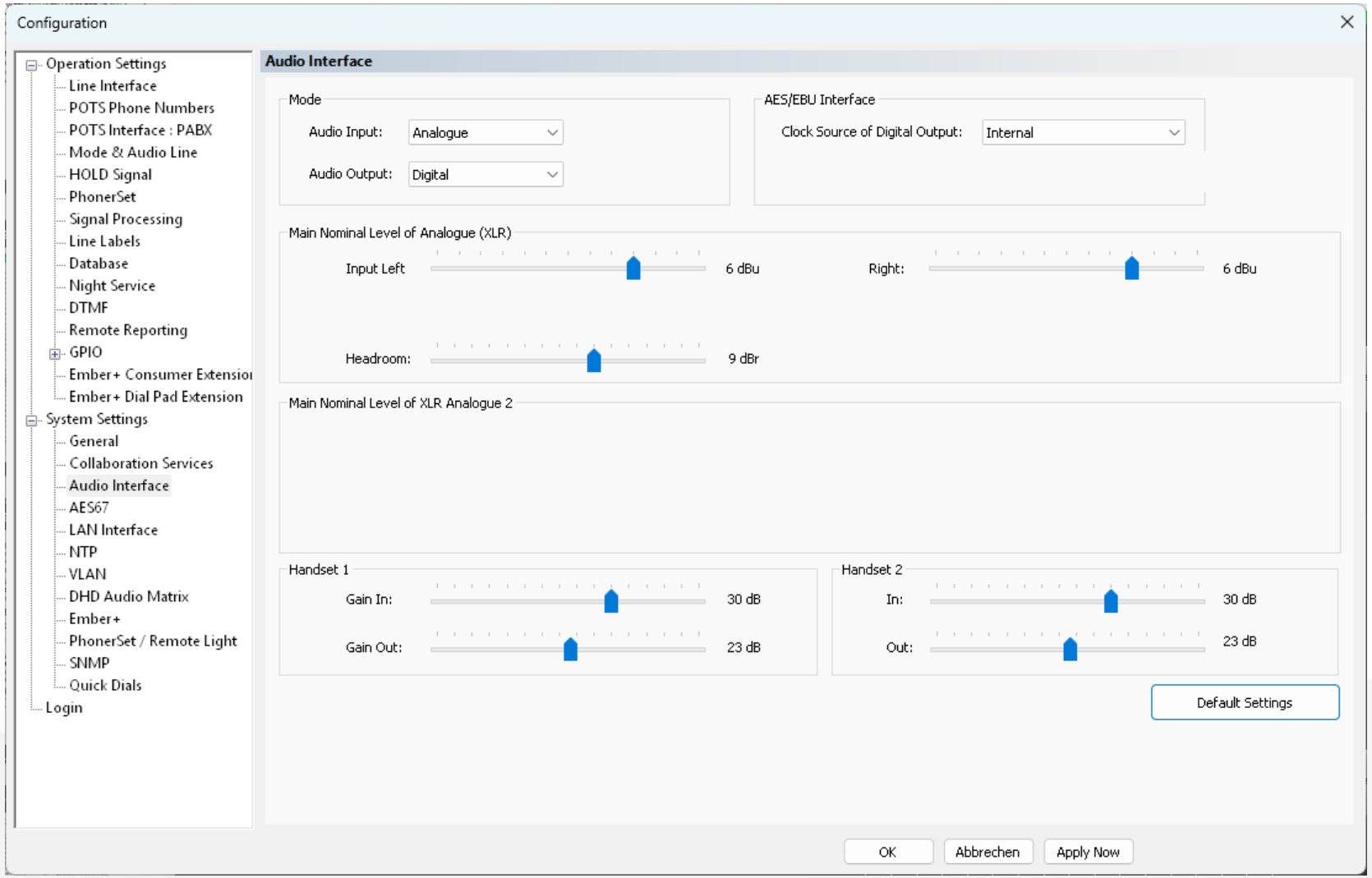


Collaboration Services (1)

- The MAGIC Collaboration Services (MCS) are a server application developed by AVT. They enable the MAGIC TH2plus to make audio and video calls via WebRTC and Microsoft Teams.
- On the COLLABORATION SERVICES configuration page, the connection between the TH2plus and the server application is configured.
- Define the telephone lines which should operate as WebRTC or MS Teams lines in parallel to VoIP on the LINE INTERFACE configuration page.
- The connection to the collaboration services consists of two parts:
  - PBX: The audio transmission and call control between the server and the TH2plus
  - API: The management of MS Teams contacts and meetings for the TH2plus clients.

- LAN INTERFACE: Select the LAN interface of the MAGIC TH2plus which should be used to connect to the collaboration services.
- MCS PBX ADDRESS and PORT: Enter the IP address and port of the PBX channel of the collaboration services.
- MCS API ADDRESS and PORT: Enter IP address and port of the API channel of the collaboration services.
- DEVICE NAME: Account name for the TH2plus at the collaboration services management application.
- DISABLE PCM16 RTP AUDIO: The audio data of WebRTC and Microsoft Teams calls is routed via the MCS server. By default, the stream is in uncompressed PCM / 16-bit format. Check this option to use audio compression. The audio quality is lower in this mode.

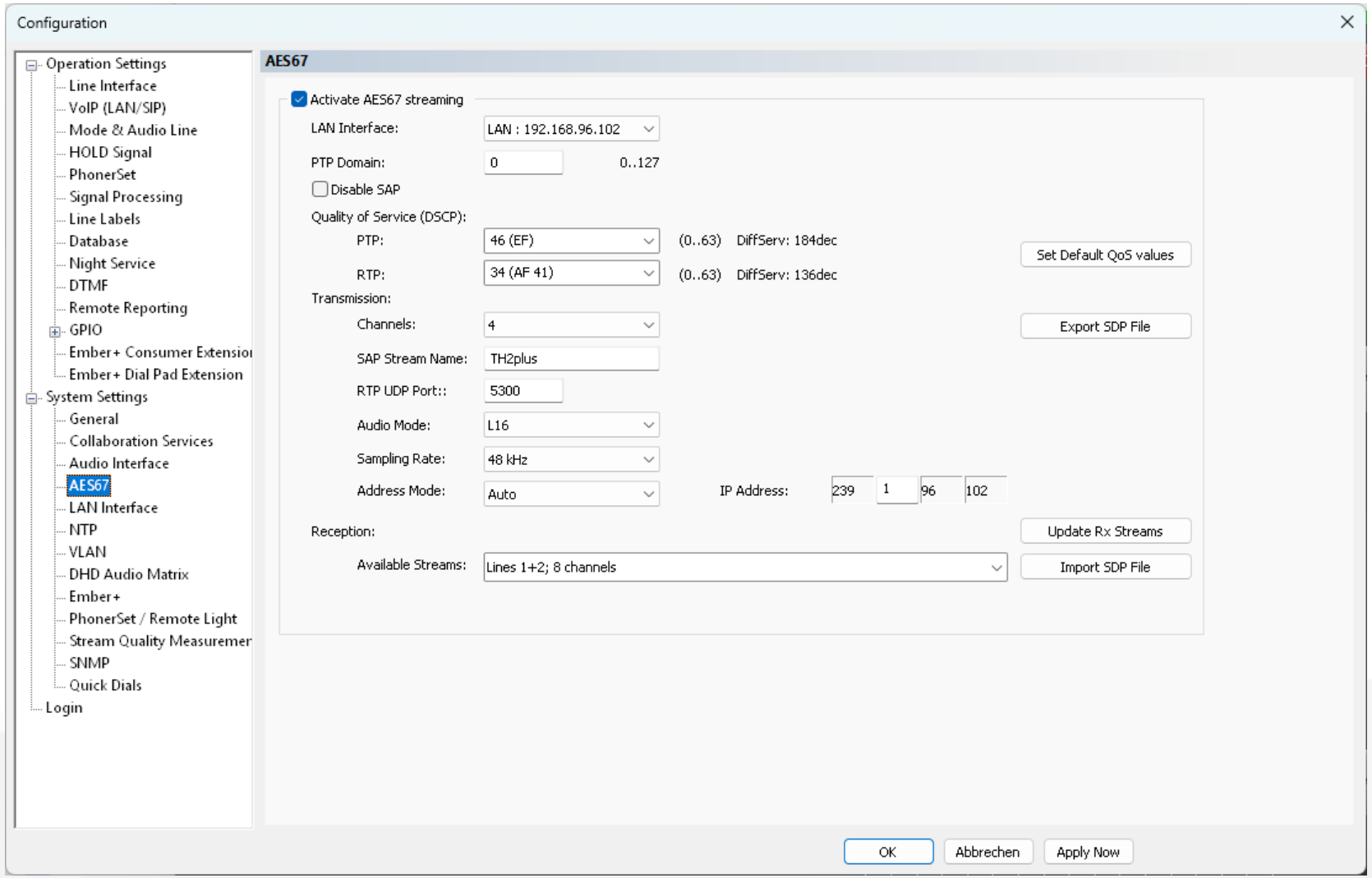
General (2)



Audio Interface (1)

- Set the parameters of the analogue and digital audio interfaces on the AUDIO INTERFACE page.
- MODE: XLR audio input and output can be switched to ANALOGUE or DIGITAL individually.
- AES/EBU INTERFACE - CLOCK SOURCE OF DIGITAL OUTPUT: The MAGIC TH2plus has sample rate converters only on the AES/EBU inputs. The AES/EBU outputs run on the system's audio clock. Systems connected to the MAGIC TH2plus via AES/EBU may be required to have sample rate converters on their inputs. This setting specifies the clock to which the system's audio clock is synchronized. Some of the options may be unavailable depending on modules equipped, line mode or audio over IP settings.
  - INTERNAL: Synchronized to the internal clock. In ISDN mode, ISDN clock is used.
  - EXTERNAL: Synchronized to the external clock supplied through the CLK port.
  - RECOVERED: Synchronize to the clock of the audio signal supplied through the AES/EBU input.
- MAIN NOMINAL LEVEL OF ANALOG (XLR): Use these parameters to adjust the level of analogue audio signals to match the level of the digital audio inputs and outputs.
  - INPUT LEFT / RIGHT: Sets the sensitivity of the audio inputs. Decreasing the value increases the audio level and vice versa. (default: 6dBu)
  - OUTPUT LEFT / RIGHT: Sets the gain of the audio outputs. Decreasing the value decreases the audio level and vice versa. (default: 6dBu)
  - HEADROOM: Increasing the headroom decreases the analogue audio levels of the inputs to create a safety zone for internal audio mixing. Prevents the audio signal from clipping in the internal mixer. The analogue output signal is amplified by the headroom. (default: 9 dBr)
- HANDSET 1/2: Audio levels of the handsets.
  - GAIN IN: Input gain for the microphone
  - GAIN OUT: Output gain for the loudspeaker.
- DEFAULT SETTINGS: Sets all levels to the default values.

Audio Interface (2)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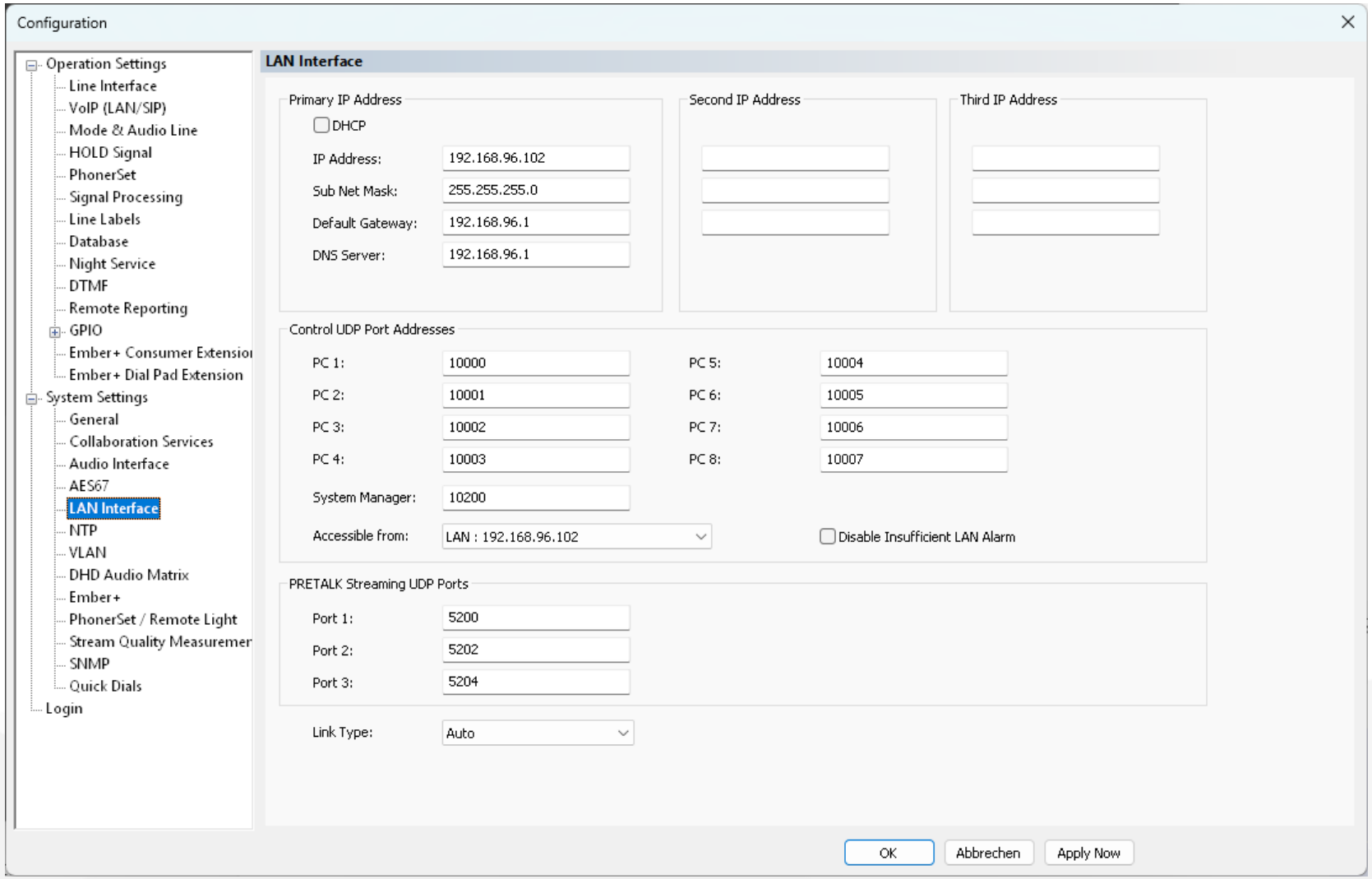
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
AES67
Activate AES67 streaming
LAN Interface:
LAN : 192.168.96.102
PTP Domain:
0
0..127
Disable SAP
Quality of Service (DSCP):
PTP:
46 (EF)
(0..63) DiffServ: 184dec
RTP:
34 (AF 41)
(0..63) DiffServ: 136dec
Set Default QoS values
Transmission:
Channels:
4
Export SDP File
SAP Stream Name:
TH2plus
RTP UDP Port::
5300
Audio Mode:
L16
Sampling Rate:
48 kHz
Address Mode:
Auto
IP Address:
239
1
96
102
Reception:
Update Rx Streams
Available Streams:
Lines 1+2; 8 channels
Import SDP File
OK
Abbrechen
Apply Now

AES67 (1)

- The technical parameters of AES67 audio over IP are configured on the AES67 page.
  - Find the details in the **Audio over IP (AES67-DANTE-RAVENNA-LIVEWIRE)** document available in the download section of our website.

AES67 (2)



LAN Interface (1)

- Configure the basic parameters for connecting to IP networks on the LAN INTERFACE page.
- The MAGIC TH2plus has one Ethernet interface.
- There are three IP addresses available for each LAN interface.
  - You must use the PRIMARY IP ADDRESS to connect to a SIP server when using the VoIP (LAN/SIP) line mode.
  - The second and third IP addresses may be used if VLANs (virtual networks) are enabled.
  - PCs may connect to each IP address of the MAGIC TH2plus.
- When using VLANs:
  - Assign a service (Ember+, DHD, SNMP, PC control, ...) to a VLAN on the VLAN configuration page.
  - Assign the service to an IP address on the corresponding configuration page of the service.

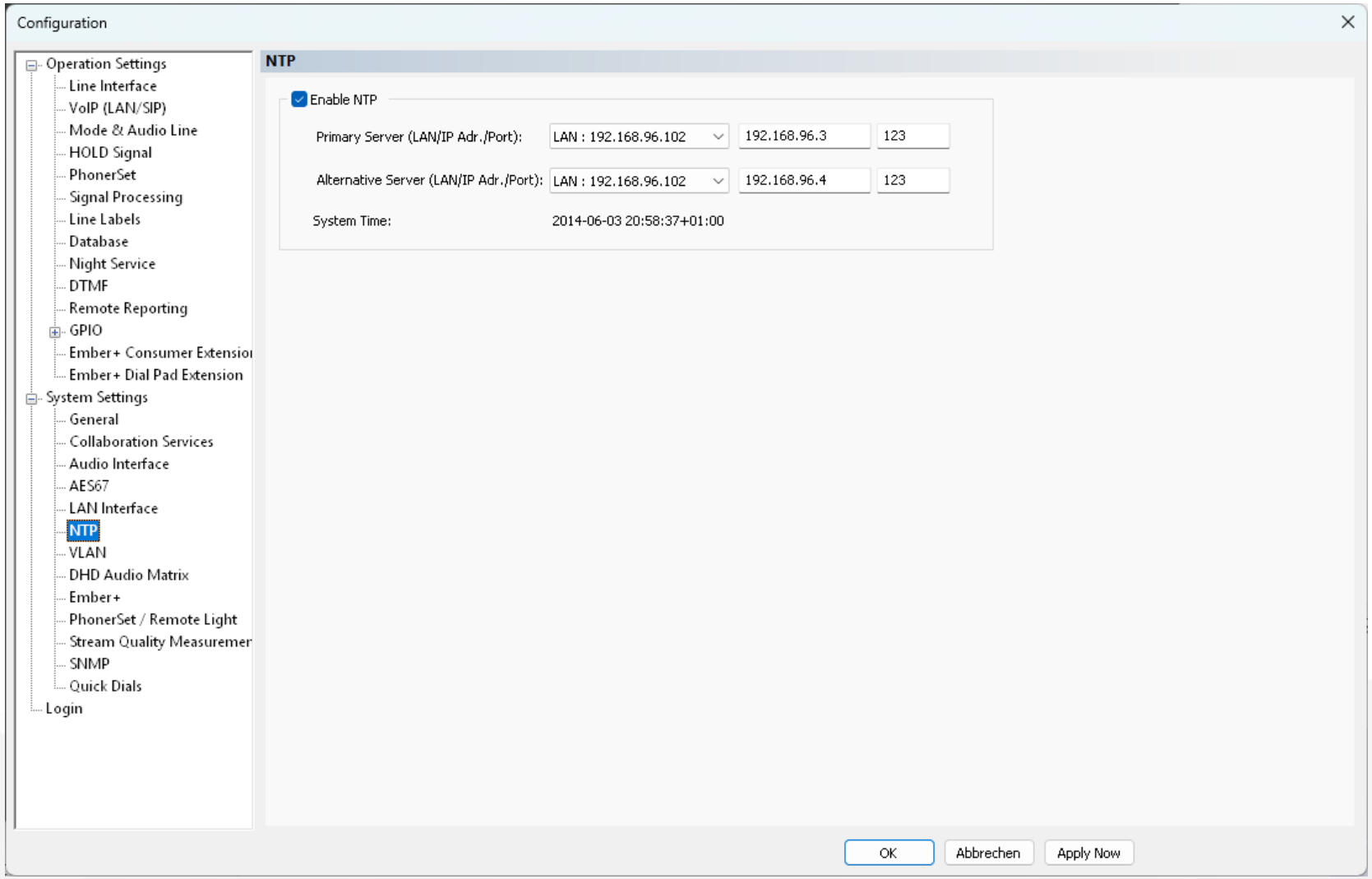
- IP address parameters
  - DHCP: Retrieve an IP address automatically from a DHCP server. (Only available on the Primary IP Address.)
  - IP ADDRESS: Enter a unique IP address. (Default: 192.168.96.102)
  - SUBNET MASK: Enter the bitmask describing the subnet. (Default: 255.255.255.0)
  - DEFAULT GATEWAY: IP address of the router in the local network. (Default: 192.168.96.1)
  - DNS SERVER: Only used in VoIP mode for SIP server, SIP proxy and STUN server. (Only available on the Primary IP Address.)

LAN Interface (2)

- CONTROL UDP PORT ADDRESSES
  - PC1 – PC8: UDP ports for the PC software clients. Each client PC must use a unique UDP port to connect to the TH2plus. That assigns a Client ID to the PC which is used under MODE & AUDIO LINE to identify the clients.
  - SYSTEM MANAGER: Control connection for the AVT System Manager (Optional software).
  - ACCESSIBLE FROM: Limits PC software access to the specified IP address.
    - In factory settings PC software clients can access all LAN interfaces.
    - It is recommended to select a specific interface to prevent unauthorized access.
  - DISABLE INSUFFICIENT LAN ALARM: Disables the application alarm that occurs when the Ethernet connection does not provide 100 Mbit/s, full duplex operation.
    - 100 Mbit/s / full duplex is required for audio transmission.

- PRETALK STREAMING UDP PORTS: Configure the local UPD ports for the audio streams. (default: 5200, 5202, 5204)
- LINK TYPE: Sets the mode for crossover cable detection. (default: auto)

LAN Interface (3)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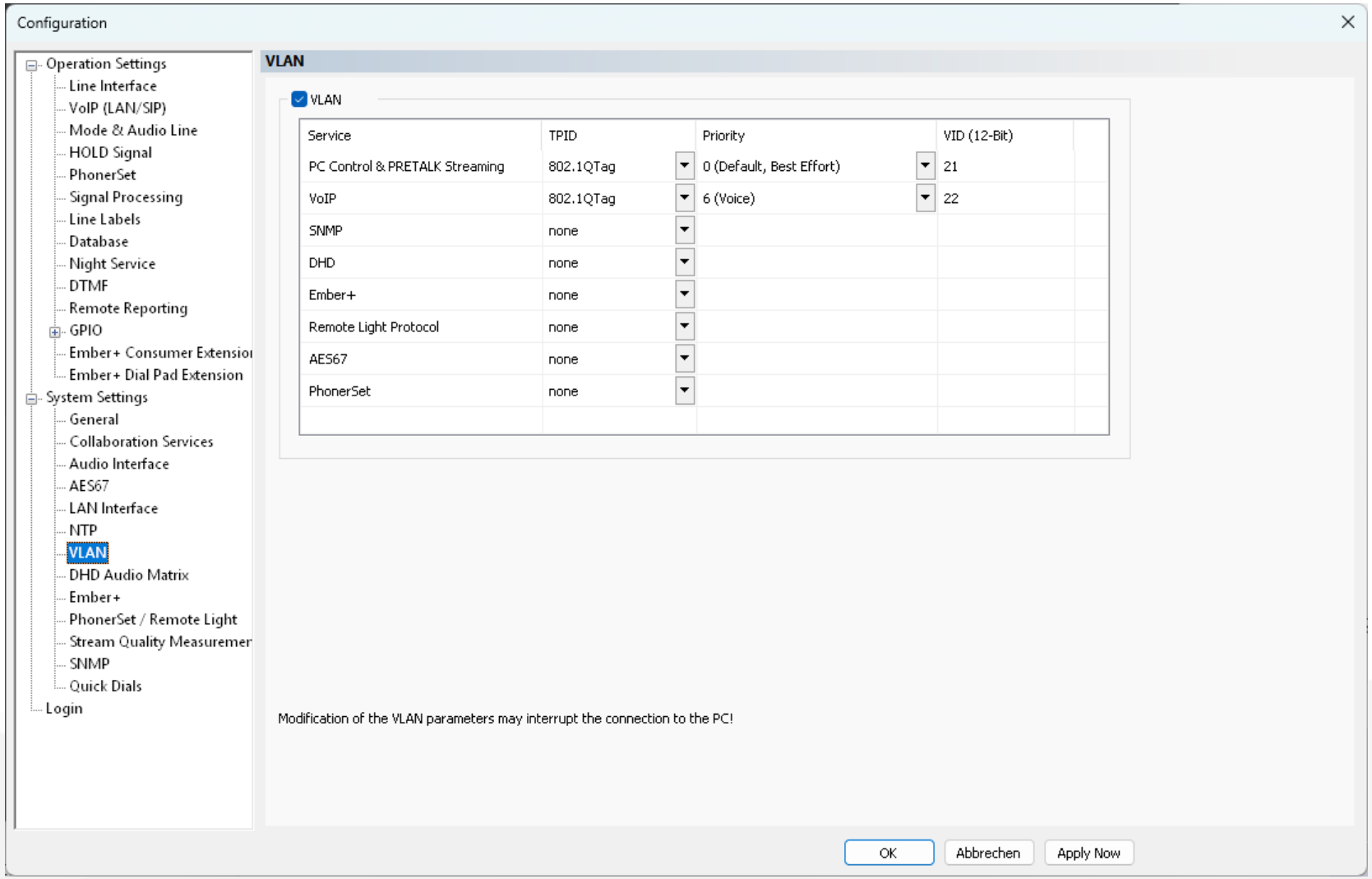
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
NTP
Enable NTP
Primary Server (LAN/IP Adr./Port):
LAN : 192.168.96.102
192.168.96.3
123
Alternative Server (LAN/IP Adr./Port):
LAN : 192.168.96.102
192.168.96.4
123
System Time:
2014-06-03 20:58:37+01:00
OK
Abbrechen
Apply Now

NTP (1)

- Configure the parameters for Network Time Protocol on the NTP configuration page.
- The MAGIC TH2plus can synchronise its system time to coordinated universal time (UTC) via NTP.
- The MAGIC TH2plus always tries to connect to the PRIMARY SERVER. If that server is not available, it will try to retrieve the time information from the ALTERNATIVE SERVER.
  - LAN: Select the LAN interface of the TH2plus which has access to the NTP server.
  - IP ADDR: Enter the IP address of the NTP server. The TH2plus does not resolve host names of NTP servers.
  - PORT: Enter the server port. NTP normally uses the UDP protocol on port 123.
  - SYSTEM TIME: Displays the current time of the TH2plus.

NTP (2)

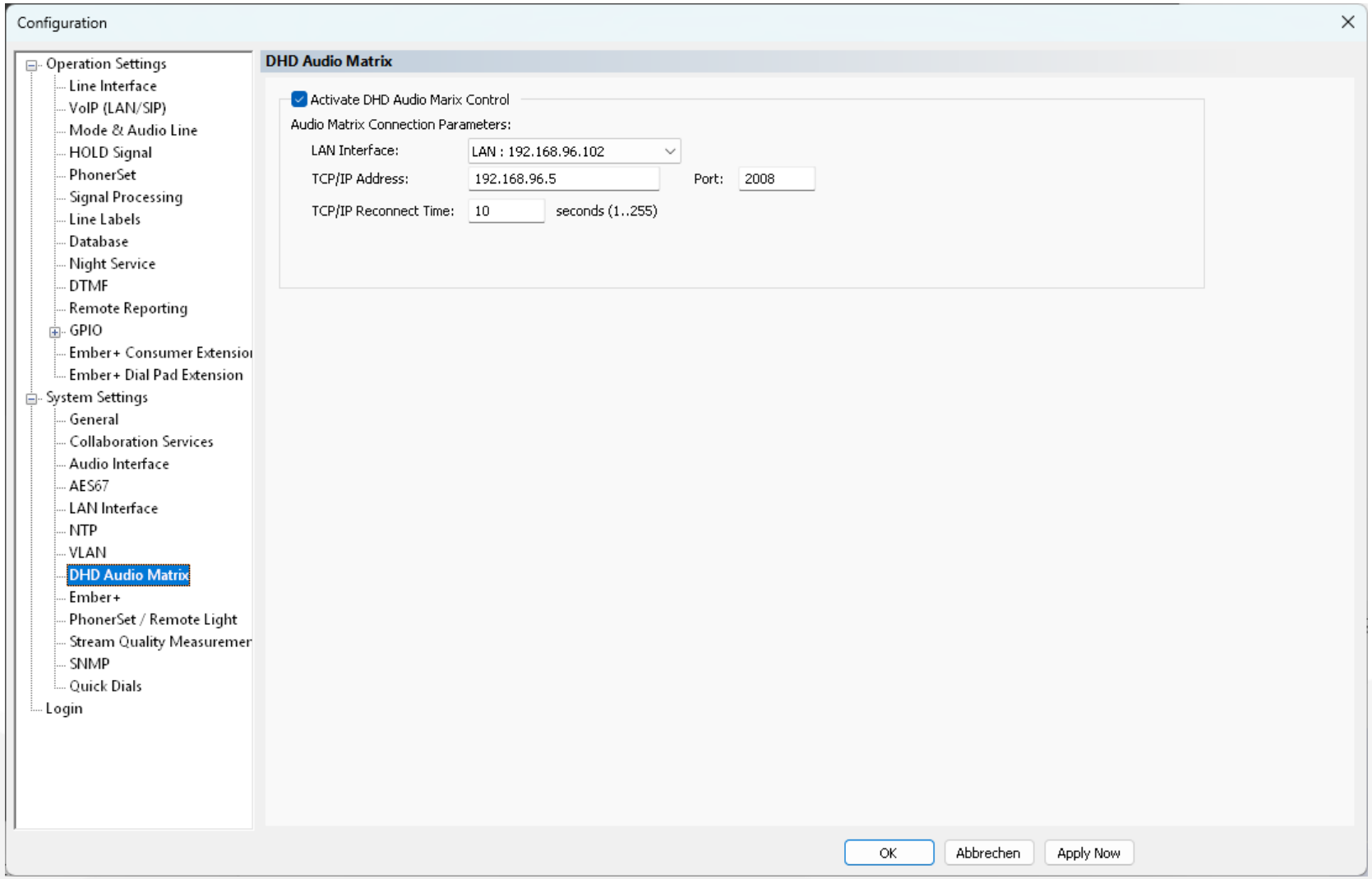

Configuration
Operation Settings
Line Interface
VoIP (LAN/SIP)
Mode & Audio Line
HOLD Signal
PhonerSet
Signal Processing
Line Labels
Database
Night Service
DTMF
Remote Reporting
GPIO
Ember+ Consumer Extensio
Ember+ Dial Pad Extension
System Settings
General
Collaboration Services
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
VLAN
VLAN
Service
TPID
Priority
VID (12-Bit)
PC Control & PRETALK Streaming
802.1QTag
0 (Default, Best Effort)
21
VoIP
802.1QTag
6 (Voice)
22
SNMP
none
DHD
none
Ember+
none
Remote Light Protocol
none
AES67
none
PhonerSet
none
Modification of the VLAN parameters may interrupt the connection to the PC!
OK
Abbrechen
Apply Now

VLAN (1)

- Configure the basic parameters for virtual local area networks on the VLAN page.
  Set up IP addresses for the VLANs on the LAN INTERFACE configuration page. These IP addresses are assigned to a service (AES67, Ember+, …) on the respective configuration page.
  - VLAN: Enable or disable virtual networks globally.
    - SERVICE: All services provided by the MAGIC TH2plus which support VLANs are listed here.
    - TPID: Enable or disable VLAN for the specific service:
      - NONE: The service will not carry a VLAN ID and therefor is not part of a VLAN.
      - 802.1QTag: The service will carry a VLAN ID specified in VID and therefore becomes part of that virtual local area network.
    - PRIORITY: Sets a quality-of-service classification for the service ranging from 0 = lowest priority to 7 = highest priority. It is recommended to set the priority to 6 for services transmitting audio (Pretalk Streaming, VoIP, AES67 and PhonerSet).
    - VID (12-Bit): Sets the VLAN identifier specifying to which VLAN the service belongs. The range is 1-4094.

- Note: Changing the VLAN configuration requires to reconfigure the network switches and routers accordingly. If not done correctly the PC software will lose connection the MAGIC TH2plus.
  - VLANs may be enabled or disabled globally on the front display of the TH2plus under **Menu > System Settings > VLAN**.

VLAN (2)

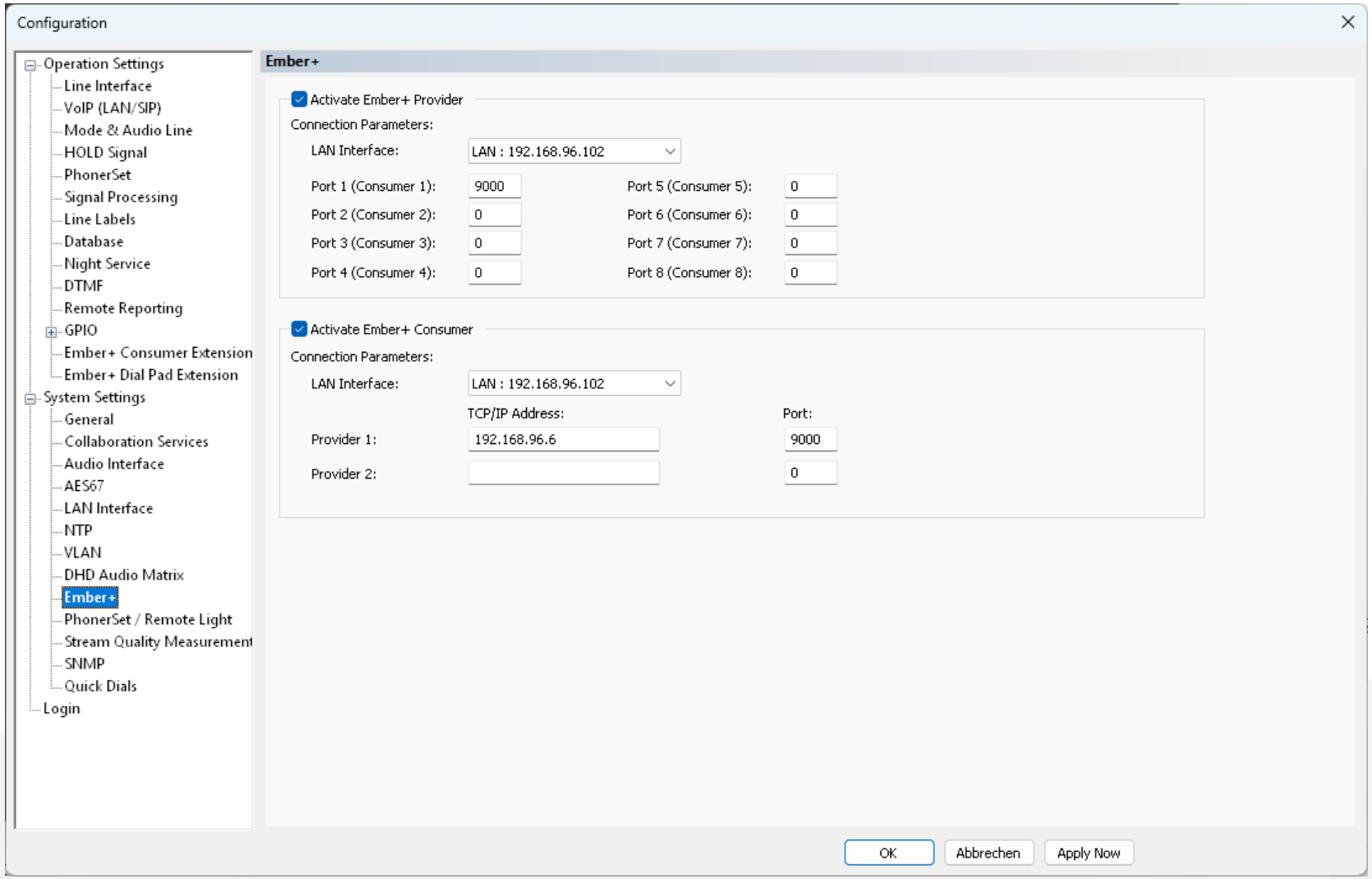


DHD AUDIO MATRIX (1)

- Configure the parameters for connecting the MAGIC TH2plus to a DHD core on the DHD AUDIO MATRIX page.
- The MAGIC TH2plus supports the DHD-ECP (External Control Protocol) to interact with DHD mixing consoles by sending and receiving commands and status information via DHD SetLogic.
- ACTIVATE DHD AUDIO MATRIX CONTROL: Enable the DHD communication protocol.
- LAN INTERFACE: Select the LAN interface of the MAGIC TH2plus which connects to the DHD cores.
- TCP/IP ADDRESS: IP address of the DHD core.
- TCP/IP PORT: Enter the port of the DHD-ECP (External Control Protocol) of the DHD core.
- TCP/IP RECONNECT TIME: Specifies the time interval between TCP connection requests to a DHD core in seconds. The range is 1 – 255 seconds. (default: 10 seconds)

- Find more details about controlling the MAGIC TH2plus via DHD SetLogic in the Signalling and Control with DHD SetLogic document available in the download section of our website.

DHD AUDIO MATRIX (2)

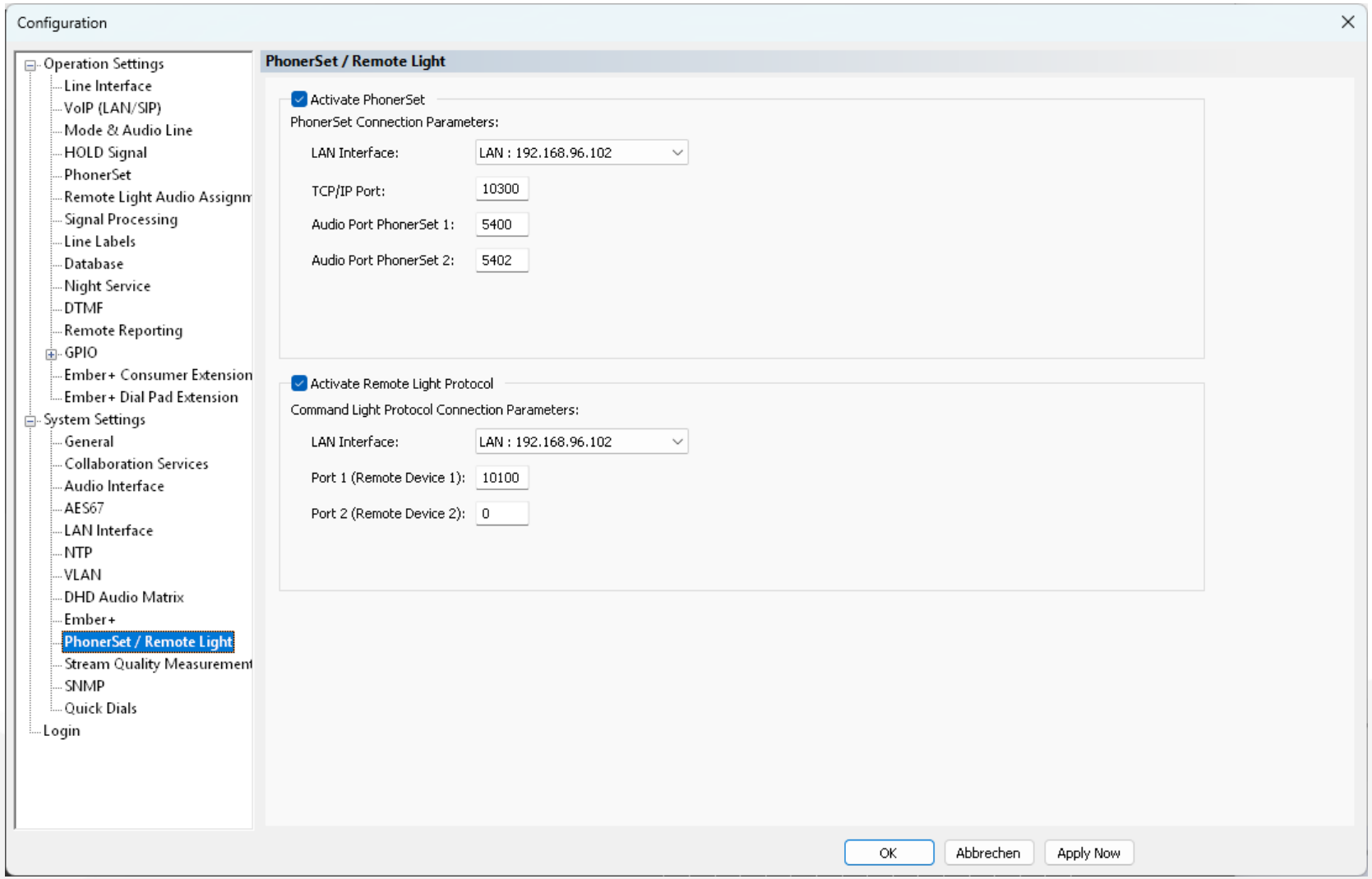

Configuration
Operation Settings
Line Interface
VoIP (LAN/SIP)
Mode & Audio Line
HOLD Signal
PhonerSet
Signal Processing
Line Labels
Database
Night Service
DTMF
Remote Reporting
GPIO
Ember+ Consumer Extension
Ember+ Dial Pad Extension
System Settings
General
Collaboration Services
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measurement
SNMP
Quick Dials
Login
Ember+
Activate Ember+ Provider
Connection Parameters:
LAN Interface:
LAN : 192.168.96.102
Port 1 (Consumer 1):
9000
Port 2 (Consumer 2):
0
Port 3 (Consumer 3):
0
Port 4 (Consumer 4):
0
Port 5 (Consumer 5):
0
Port 6 (Consumer 6):
0
Port 7 (Consumer 7):
0
Port 8 (Consumer 8):
0
Activate Ember+ Consumer
Connection Parameters:
LAN Interface:
LAN : 192.168.96.102
TCP/IP Address:
Port:
Provider 1:
192.168.96.6
9000
Provider 2:
0
OK
Abbrechen
Apply Now

Ember+ (1)

- Configure the parameters for connecting the MAGIC TH2plus to studio equipment supporting Ember+ on the EMBER+ page.
- The MAGIC TH2plus supports the Ember+ provider role and the Ember+ consumer role.
- The Ember+ protocol provides ways to send and receive commands and status information.
- ACTIVATE EMBER+ PROVIDER to let up to 8 Ember+ consumers connect to the MAGIC TH2plus.
  - LAN INTERFACE: Select the LAN interface of the MAGIC TH2plus to which the Ember+ consumers connect.
  - PORT N (CONSUMER N): Enter a port for each consumer. (Default: 9000). Set to 0 if the connection is not in use.

- ACTIVATE EMBER+ CONSUMER to connect the MAGIC TH2plus to one or two Ember+ providers.
  - Enabling the Ember+ consumer is also required for the Ember+ Consumer Extension.
  - LAN INTERFACE: Select the LAN interface of the MAGIC TH2plus used to connect to Ember+ providers.
  - TCP/IP ADDRESS: Enter the IP address of the provider.
  - PORT: Enter a port for each provider the MAGIC TH2plus should connect to. (Default: 9000). Set to 0 if the connection is not in use.
- Find more information in the Signalling and Control with EmBER+ document available in the download section of our website.

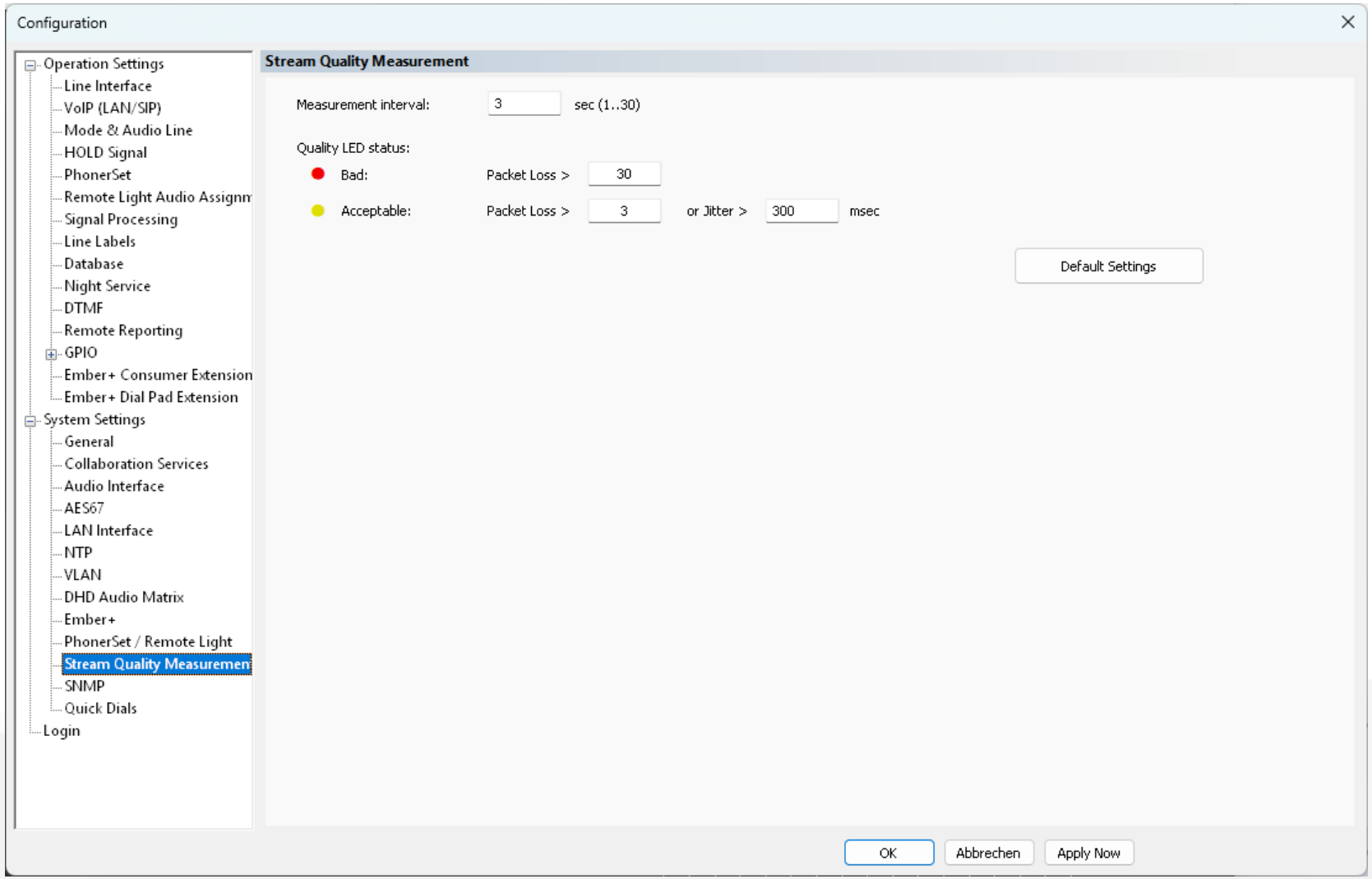
Ember+ (2)



PhonerSet / Remote Light (1)

- Configure the parameters for connecting PhonerSet or Remote Light controllers to the MAGIC TH2plus on the PHONERSET / REMOTE LIGHT page.
- ACTIVATE PHONERSET: Enables the PhonerSet module.
  - PhonerSet is an app for the touchscreen equipped Grandstream desk phone series GXV33xx and GXV34xx. The phones can be used for pretalk and for putting calls in HOLD or ON AIR.
  - The PhonerSet app can control 1 or 2 telephone lines.
  - 1 or 2 PhonerSets may be connected to MAGIC TH2plus.
  - LAN INTERFACE: Select the LAN interface of the MAGIC TH2plus to which the PhonerSet phones connect.
  - TCP/IP PORT: Enter the local port to which the PhonerSet phones connect. (Default: 10300)
  - AUDIO PORT: Each PhonerSet phone establishes an audio stream to the MAGIC TH2plus for pretalk. Enter a unique port for each PhonerSet phone. (Default: 5400, 5402)
  - Find more information in the MAGIC PhonerSet document available in the download section of our website.
- ACTIVATE REMOTE LIGHT PROTOCOL: Enables the Remote Light protocol module.
  - Remote Light is a very simple IP based protocol to control the telephone lines of a MAGIC TH2plus. Contact us for the Remote Light Protocol specification.
  - LAN INTERFACE: Select the LAN interface of the MAGIC TH2plus to which the Remote Light Clients connect.
  - TCP/IP PORT: Enter a local port for each Remote Light Client which should connect to the MAGIC TH2plus. (Default: 10100, 101001)

PhonerSet / Remote Light (2)

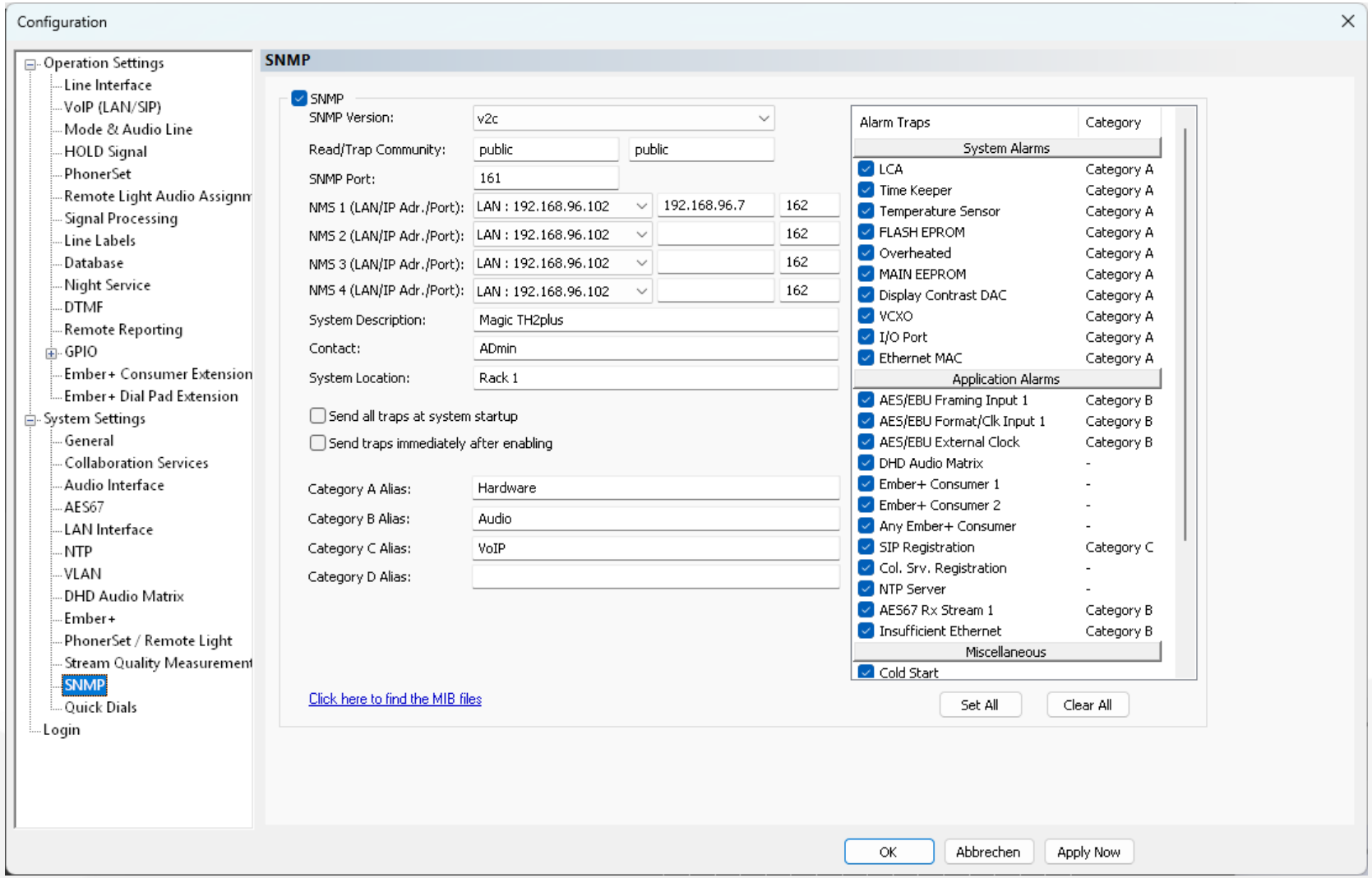


Stream Quality Measurement (1)

- Configure the parameters for the stream quality indication on the PC software clients on the STREAM QUALITY MEASUREMENT configuration page.
- The stream quality of a received audio stream during a telephone connection is displayed by a little LED next to the level meters in the PC software.
  - Green (●): The stream quality is good
  - Orange (●): The stream quality is acceptable
  - Red (●): The stream quality is bad
- MEASUREMENT INTERVAL: The MAGIC TH2plus counts the number of lost packet and stores the maximum jitter that appeared within that time interval. The first indication of stream quality after a call is established can be displayed when the first measurement interval is over. A short interval leads to faster results.

- The thresholds for the status LEDs can be configured under QUALITY LED STATUS.
  - PACKET LOSS >: Define the number of packet losses within the measurement interval that will make the LED switch to the respective quality level.
  - JITTER >: Define the maximum jitter within the measurement interval that will make the LED switch to the respective quality level.

Stream Quality Measurement (2)


Configuration
Operation Settings
Line Interface
VoIP (LAN/SIP)
Mode & Audio Line
HOLD Signal
PhonerSet
Remote Light Audio Assignm
Signal Processing
Line Labels
Database
Night Service
DTMF
Remote Reporting
GPIO
Ember+ Consumer Extension
Ember+ Dial Pad Extension
System Settings
General
Collaboration Services
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measurement
SNMP
Quick Dials
Login
SNMP
SNMP
SNMP Version: v2c
Read/Trap Community: public public
SNMP Port: 161
NMS 1 (LAN/IP Adr./Port): LAN : 192.168.96.102 192.168.96.7 162
NMS 2 (LAN/IP Adr./Port): LAN : 192.168.96.102 162
NMS 3 (LAN/IP Adr./Port): LAN : 192.168.96.102 162
NMS 4 (LAN/IP Adr./Port): LAN : 192.168.96.102 162
System Description: Magic TH2plus
Contact: ADmin
System Location: Rack 1
Send all traps at system startup
Send traps immediately after enabling
Category A Alias: Hardware
Category B Alias: Audio
Category C Alias: VoIP
Category D Alias:
Click here to find the MIB files
Alarm Traps Category
System Alarms
LCA Category A
Time Keeper Category A
Temperature Sensor Category A
FLASH EPROM Category A
Overheated Category A
MAIN EEPROM Category A
Display Contrast DAC Category A
VCXO Category A
I/O Port Category A
Ethernet MAC Category A
Application Alarms
AES/EBU Framing Input 1 Category B
AES/EBU Format/Clk Input 1 Category B
AES/EBU External Clock Category B
DHD Audio Matrix -
Ember+ Consumer 1 -
Ember+ Consumer 2 -
Any Ember+ Consumer -
SIP Registration Category C
Col. Srv. Registration -
NTP Server -
AES67 Rx Stream 1 Category B
Insufficient Ethernet Category B
Miscellaneous
Cold Start
Set All
Clear All
OK
Abbrechen
Apply Now

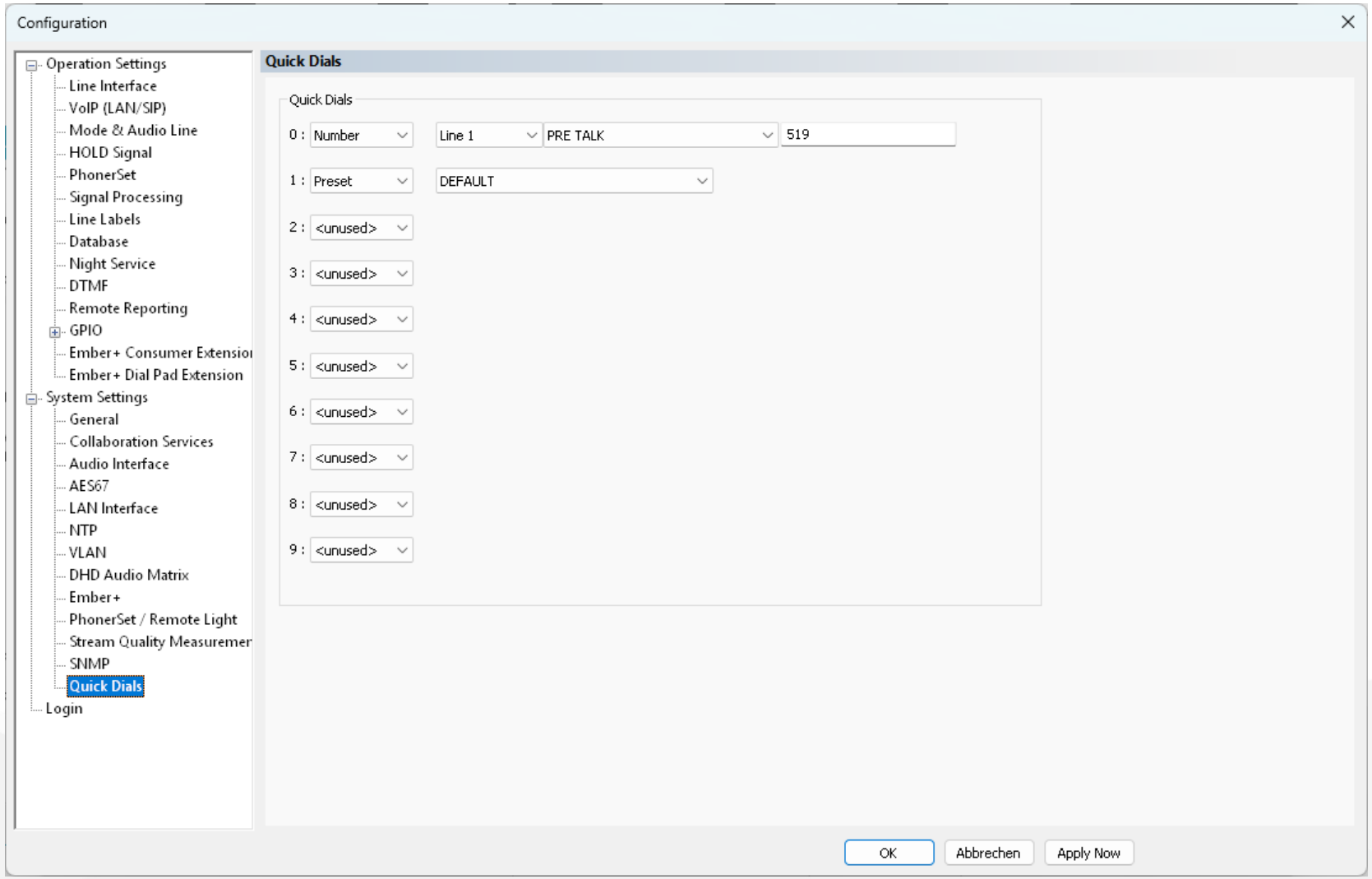
SNMP (1)

- Configure the parameters for connecting the MAGIC TH2plus to a network management system on the SNMP configuration page.
- MAGIC TH2plus parameters exposed through SNMP are read-only.
- The MAGIC TH2plus responds to Get-requests and sends traps.
- SNMP VERSION: Select the SNMP version. MAGIC TH2plus supports SNMPv1 and SNMPv2c.
- READ / TRAP COMMUNITY: Enter a string for the READ community and a string for the TRAP community. Communities are used to authenticate the device with the network management system.
- SNMP PORT: Specify the local UDP port for receiving SNMP requests and sending SNMP responses. The remote port is derived from received SNMP requests. (default: 161)
- NMS 1-4: Specify up to four network management stations to receive traps.
  - LAN: Select the LAN interface of the MAGIC TH2plus which is used to send SNMP traps.
  - IP ADDR: Specify the IP address of the network management station.
  - PORT: Specify the UDP port of the Trap receiver of the network management station. (default: 162)
- SYSTEM DESCRIPTION: Enter a string describing this particular MAGIC TH2plus. This string is part of the standard MIB.
- CONTACT: Enter a string with information about who is responsible for the MAGIC TH2plus. This string is part of the standard MIB.
- SYSTEM LOCATION: Enter a string describing where the MAGIC TH2plus is located. This string is part of the standard MIB.

SNMP (2)

- SEND ALL TRAPS AT SYSTEM STARTUP: Enable this option to send all traps when the MAGIC TH2plus has finished booting.
- SEND TRAPS IMMEDIATELY AFTER ENABLING: Enable to send a trap immediately after it was enabled in the configuration.
- CATEGORY A-D ALIAS: Each Trap may be assigned to a category. Enter strings to describe the categories. The strings can be read by the network management station.
- ALARM TRAPS: All available traps are listed in this table.
  - Select all traps which should be sent to the network management station.
  - Click into the CATEGORY column to assign a trap to a category.
  - There are four categories. To decrease the number of traps to send, assign several alarms to a category and select only the category trap at the end of the list.
  - Find more information about the alarms in the SYSTEM MONITOR section of this document.
  - Additional Traps:
    - AUTHENTICATION FAILURE: A request used an unknown community string.
    - COLD START: The SNMP agent is reinitialising.
- Note: Find the MIB files in the MIB folder inside the installation directory of the MAGIC TH2plus PC software.

SNMP (3)



Quick Dials (1)

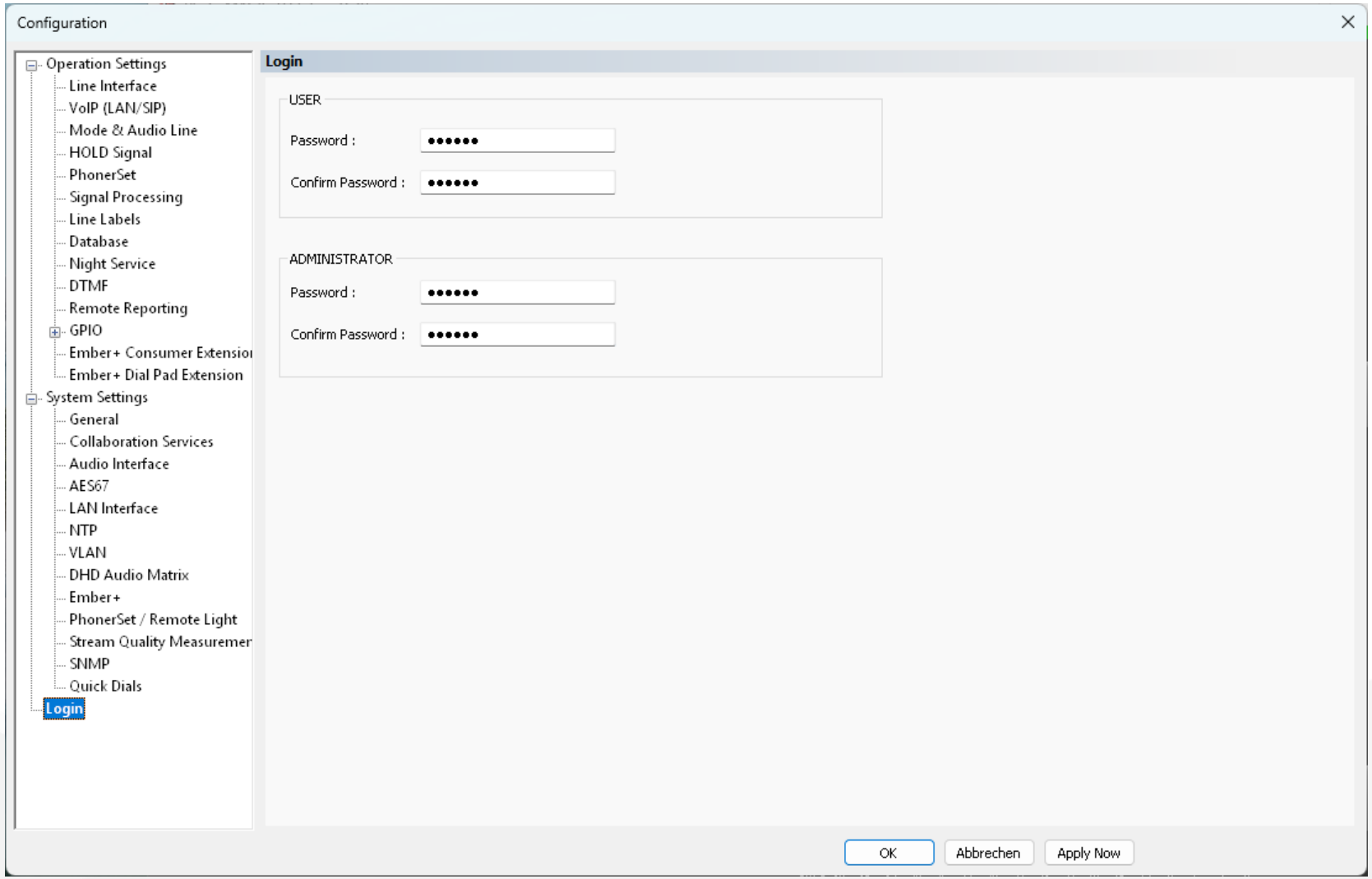
- Configure quick dials for loading presets on the QUICK DIALS configuration page.
- Quick dials are activated by long-pressing a key on the front keypad of the TH2plus.
- Quick dials can be used to
  - Activate a PRESET
  - Dial a NUMBER

Quick Dials (2)

MAGIC TH2plus

Login

info@avt-nbg.de
www.avt-nbg.de


Configuration
Operation Settings
Line Interface
VoIP (LAN/SIP)
Mode & Audio Line
HOLD Signal
PhonerSet
Signal Processing
Line Labels
Database
Night Service
DTMF
Remote Reporting
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Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
Login
USER
Password :
Confirm Password :
ADMINISTRATOR
Password :
Confirm Password :
OK
Abbrechen
Apply Now

Login (1)

- Protect the configuration of the MAGIC TH2plus from unauthorized access via passwords. Configure the passwords on the LOGIN configuration page.
- There are two levels of privileges:
  - ADMINISTRATOR: Specify an administrator password to restrict
    - displaying and changing the configuration.
    - importing configurations.
    - managing presets.
    - opening the system panel.
    - accessing the file system.
    - updating the firmware.
    - resetting to factory settings.
  - USER: Specify a user password to restrict loading presets.

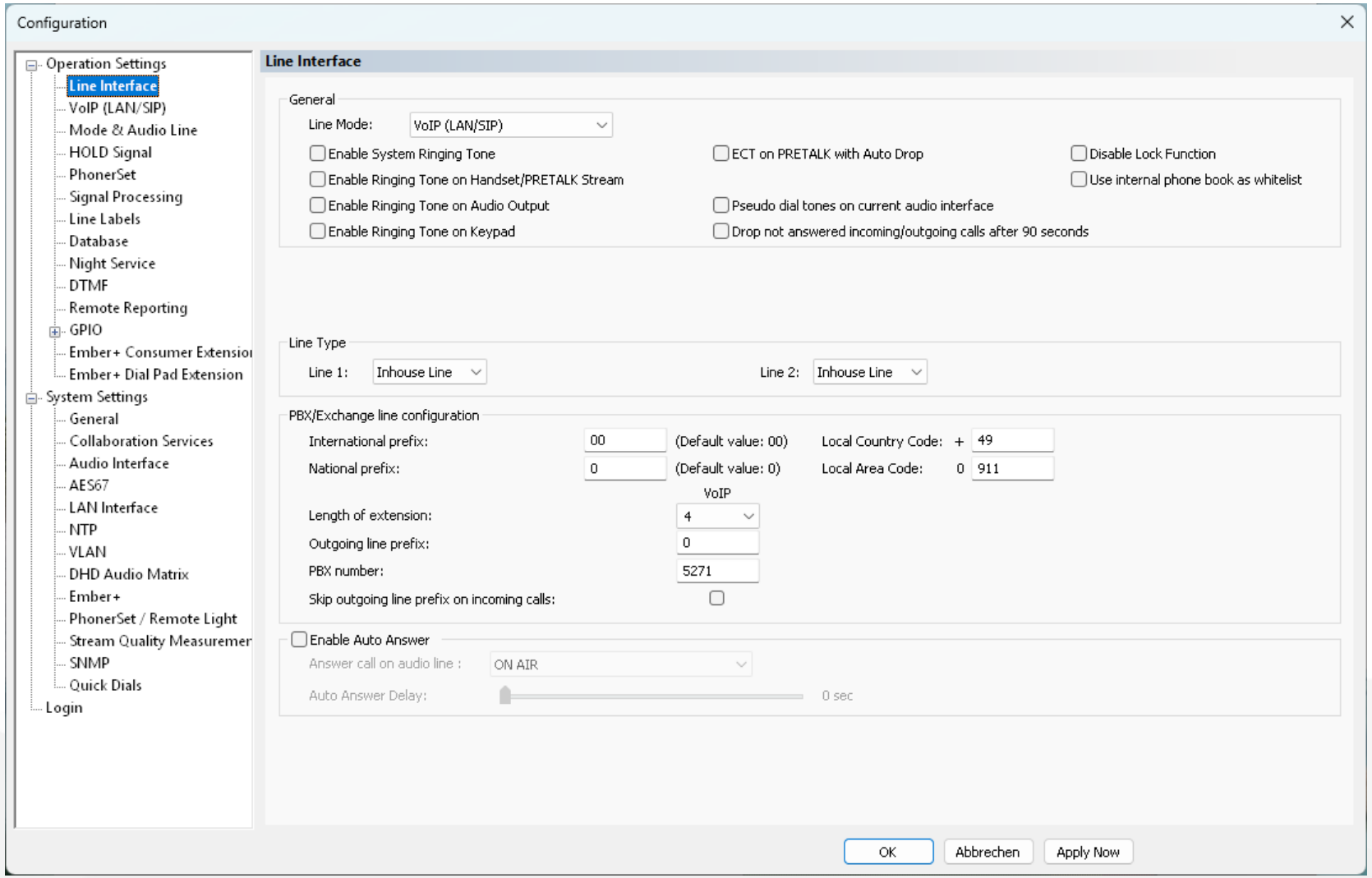
- Note: If you forgot your password, you need to reset the MAGIC TH2plus to factory settings.
- Note: The local configuration on the PC is protected via operating system privileges. See SETTINGS LOCATION in the Local Configuration.

Login (2)

MAGIC TH2plus

Operation Settings

info@avt-nbg.de
www.avt-nbg.de



Line Interface (1)

- Configure the basic parameters for connecting to the telephone network on the LINE INTERFACE page.
- LINE MODE: Specifies the type of telephone network the MAGIC TH2plus is connected to.
  - VOIP (LAN/SIP): Voice over IP provides digital audio transmission over IP networks. The audio quality is automatically negotiated at call setup. The MAGIC TH2plus supports two algorithms:
    - G.711 (3.4 kHz audio bandwidth)
    - G.722 (HD-Voice, 7 kHz audio bandwidth with HD-Voice software upgrade).
    - For incoming calls, the MAGIC TH2plus always uses the best algorithm that is supported by the calling station.
  - NTT NGN: VoIP mode for Japan. Enforces DHCP on the LAN Interface.
  - POTS: Plain Old Telephone Service provides analogue audio transmission with 3.1 kHz audio bandwidth.
  - ISDN: Integrated Services Digital Network provides digital audio transmission.
- ENABLE SYSTEM RINGING TONE: The device has a built-in beeper to signal incoming calls.
- ENABLE RINGING TONE ON HANDSET / PRETALK STREAM: Plays an audio signal on the handset or the Pretalk Stream to signal incoming calls.
- ENABLE RINGING TONE ON AUDIO OUTPUT: Plays an audio signal on the analogue or digital audio output to signal incoming calls.
- ENABLE RINGING TONE ON KEYPAD: The external keypad has a built-in beeper to signal incoming calls.
- ECT ON PRETALK WITH AUTO DROP: Call forwarding uses ECT. The PBX or provider will connect the calls. By default, the user can talk to the recipient before completing the call transfer. If this is enabled, the call transfer will be completed right away.

Line Interface (2)

- PERMANENT ACTIVATION OF ISDN LAYER 2: The TH2plus will hold the connection to the ISDN PBX. That is only required when there a problems with the connection.
- PSEUDO DIAL TONES ON CURRENT AUDIO INTERFACE: Enable to hear the dialling of numbers on the current audio line (Pretalk, On Air, PhonerSet, …). The tones do not correspond to the actual number dialled to protect the privacy of the called party.
- DROP NOT ANSWERED INCOMING/OUTGOING CALLS AFTER 90 SECONDS: The TH2plus automatically ends unanswered calls after 90 seconds.
- DISABLE LOCK FUNCTION: By default, pressing the DROP button on an idle telephone line locks the line. When locked, incoming calls are automatically rejected. To avoid locking the line by accident, the lock function can be deactivated.
- USE INTERNAL PHONE BOOK AS WHITELIST: Only numbers that are stored on the internal phone book are allowed to call in. All other calls are rejected automatically.
  The internal phone book of the TH2plus is available via the front display or the external keypad. It can be edited via the PC software under MENU > FILE > INTERNAL PHONE BOOK.
- ENABLE ISDN HD CALLS: When dialling out, there will be a second button to use HD-Voice over ISDN. Requires a data connection to the remote side. Normal telephones do not support data connections.

Line Interface (3)

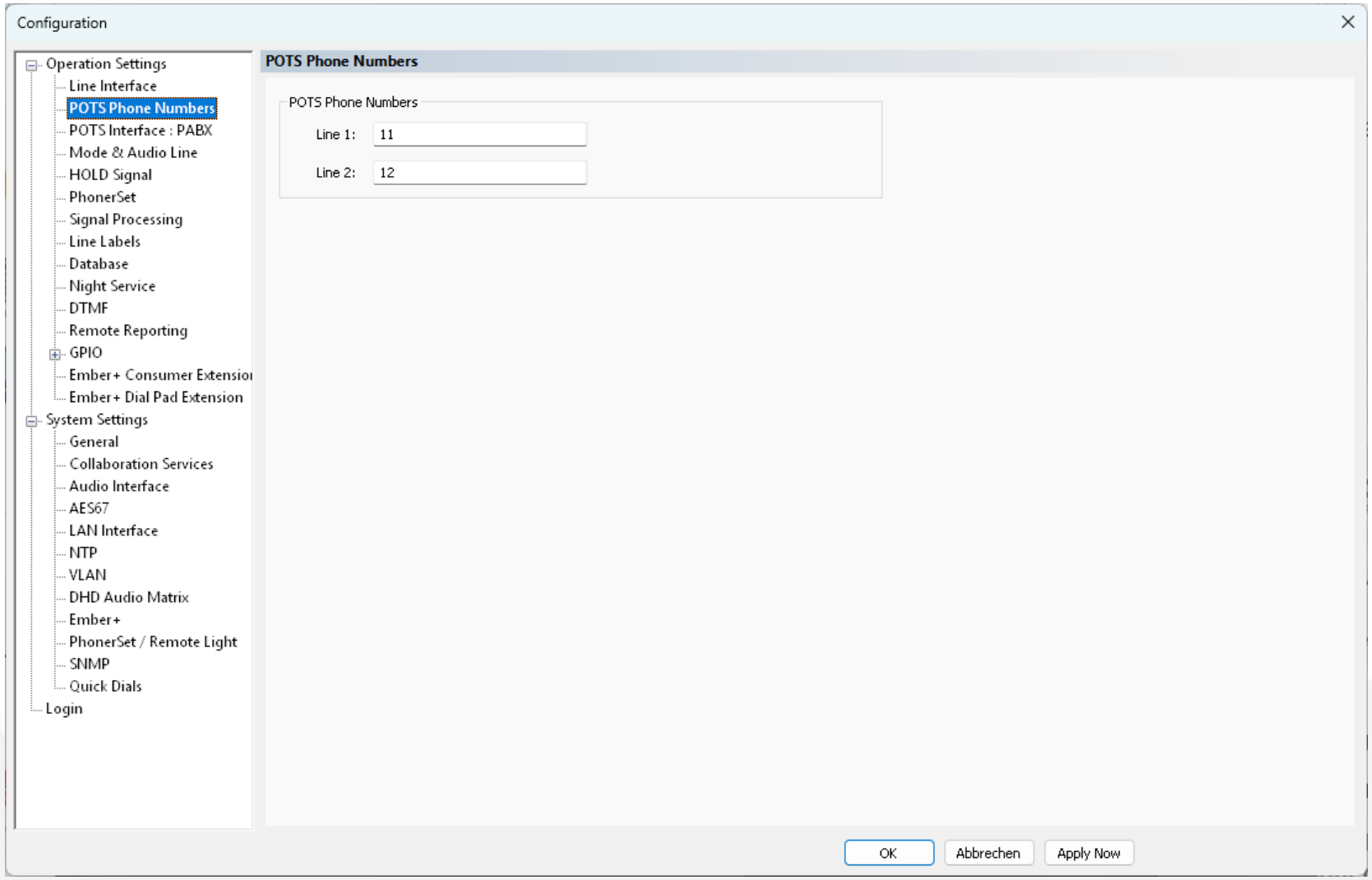
- LINE TYPE
  - OUTSIDE LINE: For lines connected directly to the public network.
  - INHOUSE LINE: For lines connected to a PBX. Required to distinguish between internal and external calls. Prefix digits for dialling external telephone numbers may automatically be inserted when configured under PBX / EXCHANGE LINE CONFIGURATION.
  - E.164: When the PBX of the provider mandates that numbers are always dialled in the internationally unique format according to ITU-T recommendation E.164. (E.g., +49 911 5271 110). It is required to configure INTERNATIONAL PREFIX, NATIONAL PREFIX, LOCAL COUNTRY CODE AND LOCAL AREA CODE for autocomplete to work. The device will detect and fill in missing parts when dialling out.

- PBX / EXCHANGE LINE CONFIGURATION: Specifies the format of internal numbers and the numbers to connect to the outside world. These settings apply to channels marked as IN-HOUSE LINES or E.164.
  - INTERNATIONAL PREFIX: Prefix digits for dialling international telephone numbers. (default: “00”, don’t set to “+”)
  - NATIONAL PREFIX: Prefix digits for dialling long distance telephone numbers. (default: “0”)
  - LOCAL COUNTRY CODE: Required for E.164 mode. The TH2plus adds the country code automatically to telephone numbers on outgoing calls if it is not provided by the user.
  - LOCAL AREA CODE: Required for E.164 mode. The TH2plus adds the area code automatically to telephone numbers on outgoing calls if it is not provided by the user.

Line Interface (4)

- LENGTH OF EXTENSION: Number of digits of internal phone numbers.
- OUTGOING LINE PREFIX: Prefix digit inserted before the number to dial external phone numbers.
- PBX NUMBER: The office / trunk number. It is used in two scenarios:
  - The Magic TH2plus uses one or more outside lines and the Magic TH2plus, or the building also has inhouse lines via a PBX: If the user dials an extension of the PBX on an outside line, the Magic TH2plus needs to prefix the PBX number since the call must go through the public telephone network.
  - The Magic TH2plus uses one or more E.164 lines: On E.164 lines every number dialled must be in the FQTN (Fully Qualified Telephone Number) format, e.g. +49 911 5271 110). If a user dials an inhouse extension like 110, the Magic TH2plus automatically prefixes the country code, the area code and the PBX number.
- SKIP OUTGOING LINE PREFIX ON INCOMING CALLS: Some PBXs signal the calling party's number including the prefix digits, some don't. Set this option so, that the number of incoming calls is displayed without the prefix digits in the PC software.
- ENABLE AUTO ANSWER: The TH2plus can automatically accept incoming calls.
  - ANSWER CALL ON AUDIO LINE: Answer the call on PRETALK, HOLD, ON AIR or on the current audio line. The current audio line is displayed on the front display of the TH2plus.
  - AUTO ANSWER DELAY: The TH2plus can wait between 0 and 31 seconds before accepting the call.

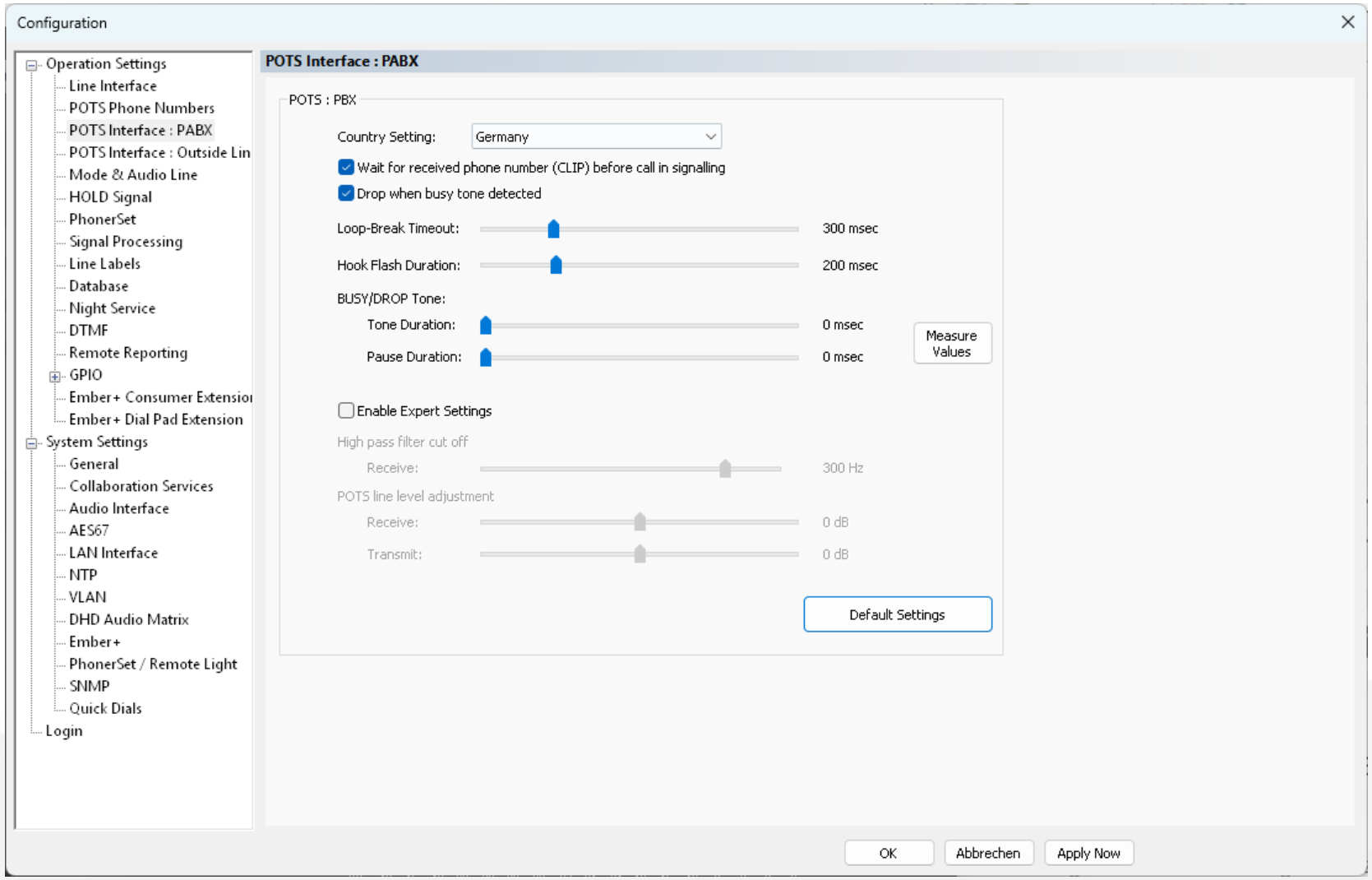
Line Interface (5)



POTS Phone Numbers (1)

- The POTS PHONE NUMBERS page is displayed only if there are POTS channels configured on the LINE INTERFACE page.
- There is no technical necessity to specify the POTS phone numbers.
- Enter the POTS phone numbers if you like to display them in the line labels. On the LINE LABELS page, use the {lineid} wildcard to display the POTS phone number.

POTS Phone Numbers (2)



POTS Interface: PABX / Outside Line (1)

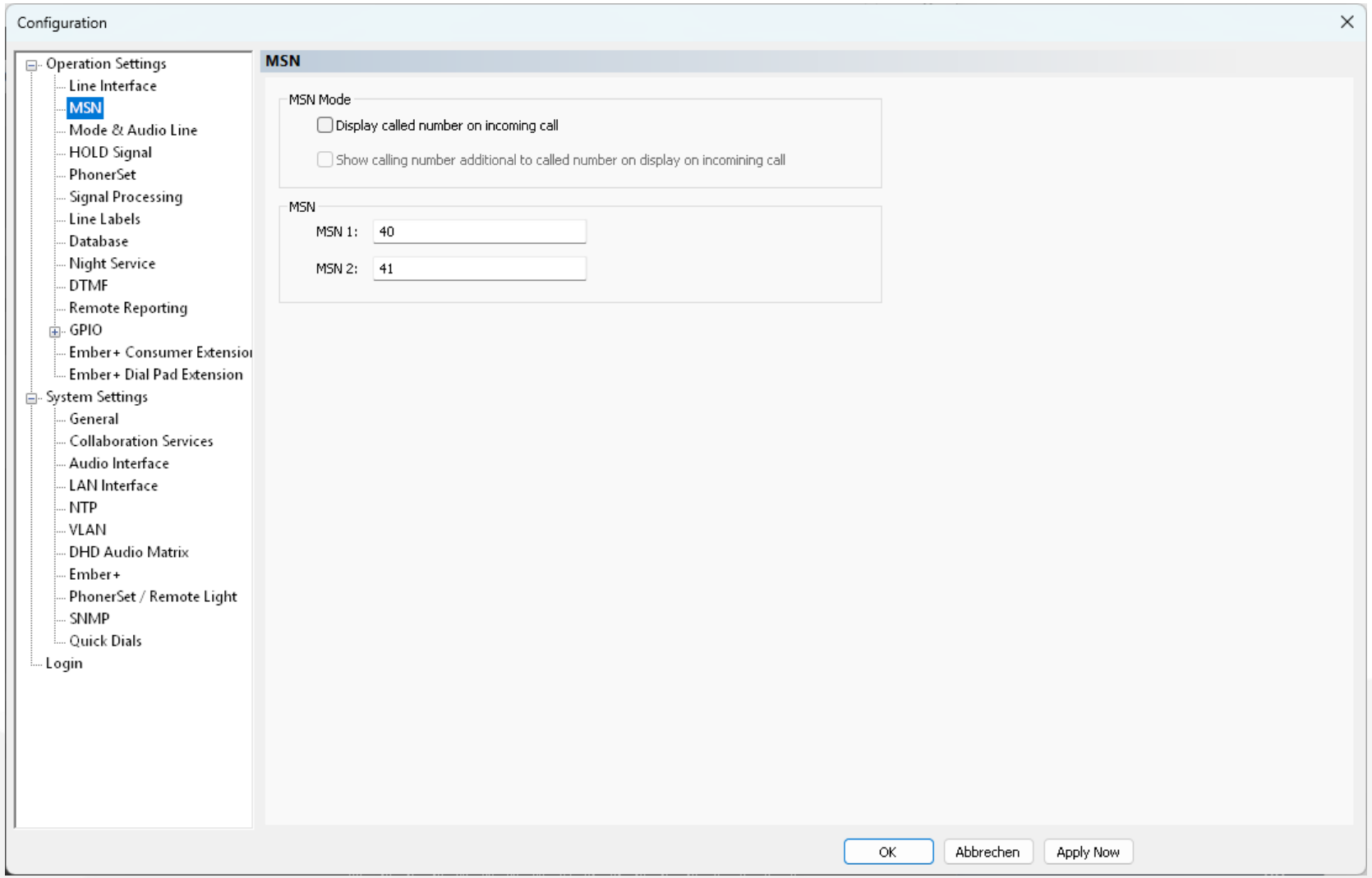
- The POTS INTERFACE pages are displayed only if there are POTS channels configured on the LINE INTERFACE page.
- The POTS interface parameters for channels connected to a PABX are configured on the POTS INTERFACE: PABX page.
- The POTS interface parameters for channels connected directly to the public telephone network are configured on the POTS INTERFACE: OUTSIDE LINES page.
- The parameters are the same for both variants:
  - COUNTRY SETTING: Defines the POTS interface's impedance. Finding the correct setting is crucial to minimize echo. Set the country of your location or use the country of manufacture of the PBX as a guideline.
  - WAIT FOR RECEIVED PHONE NUMBER (CLIP) BEFORE CALL IN SIGNALLING: The calling party's phone number is signalled between the first and the second ringing. Enable this setting the incoming call should be ignored until the second ringing. The call will be visible from the second ringing even if no phone number is detected.
  - DROP WHEN BUSY TONE DETECTED: Enable if the system should drop the call automatically when the disconnected tone (busy tone) is heard on the telephone line. You may define a custom tone or measure the tone in the BUSY / DROP TONE section.
  - LOOP-BREAK TIMEOUT: Defines the minimum time the loop current of the telephone line must be interrupted for the MAGIC TH2plus to drop the call. Short interrupts are used to signal events in the network (e.g., initiate call forwarding). Longer interrupts indicate a problem in the network. When the timeout is set too low, accidental disconnects may happen. (default: 300ms)
  - HOOK FLASH DURATION: A hook flash signals the network that a device wants to forward a call. Adjust the hook flash duration if there are problems forwarding calls.

POTS Interface: PBX / Outside Line (2)

- BUSY / DROP TONE: The MAGIC TH2plus can detect if the remote station has hung up. It is monitoring the audio signal for a sequence of tones and pauses with defined duration. The sequence might be different for every PBX or provider.
  - TONE DURATION: Specify a custom tone duration.
  - PAUSE DURATION: Specify a custom pause duration.
  - MEASURE VALUES: Click the button to measure the actual sequence and set it as custom tone and pause duration. To measure the values correctly make sure the drop tone can be heard on the first telephone line connected to the PBX or to the public network, respectively.

- ENABLE EXPERT SETTINGS: Help to improve the audio signal on telephone lines with difficult line characteristics.
  - HIGH PASS FILTER CUT-OFF > RECEIVE: Sounds below this frequency are filtered out (e.g., low frequency hum).
  - POTS LINE LEVEL ADJUSTMENT
    - RECEIVE: Increase the value to amplify the audio signal coming in from the telephone line. Decrease the value if the audio is distorted.
    - TRANSMIT: Increase the value to send a louder signal. Decrease the value if the audio signal sounds distorted at the remote station.
- DEFAULT SETTINGS: Resets all values on the page to factory settings.

POTS Interface: PBX / Outside Line (3)


Configuration
Operation Settings
Line Interface
MSN
Mode & Audio Line
HOLD Signal
PhonerSet
Signal Processing
Line Labels
Database
Night Service
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Ember+
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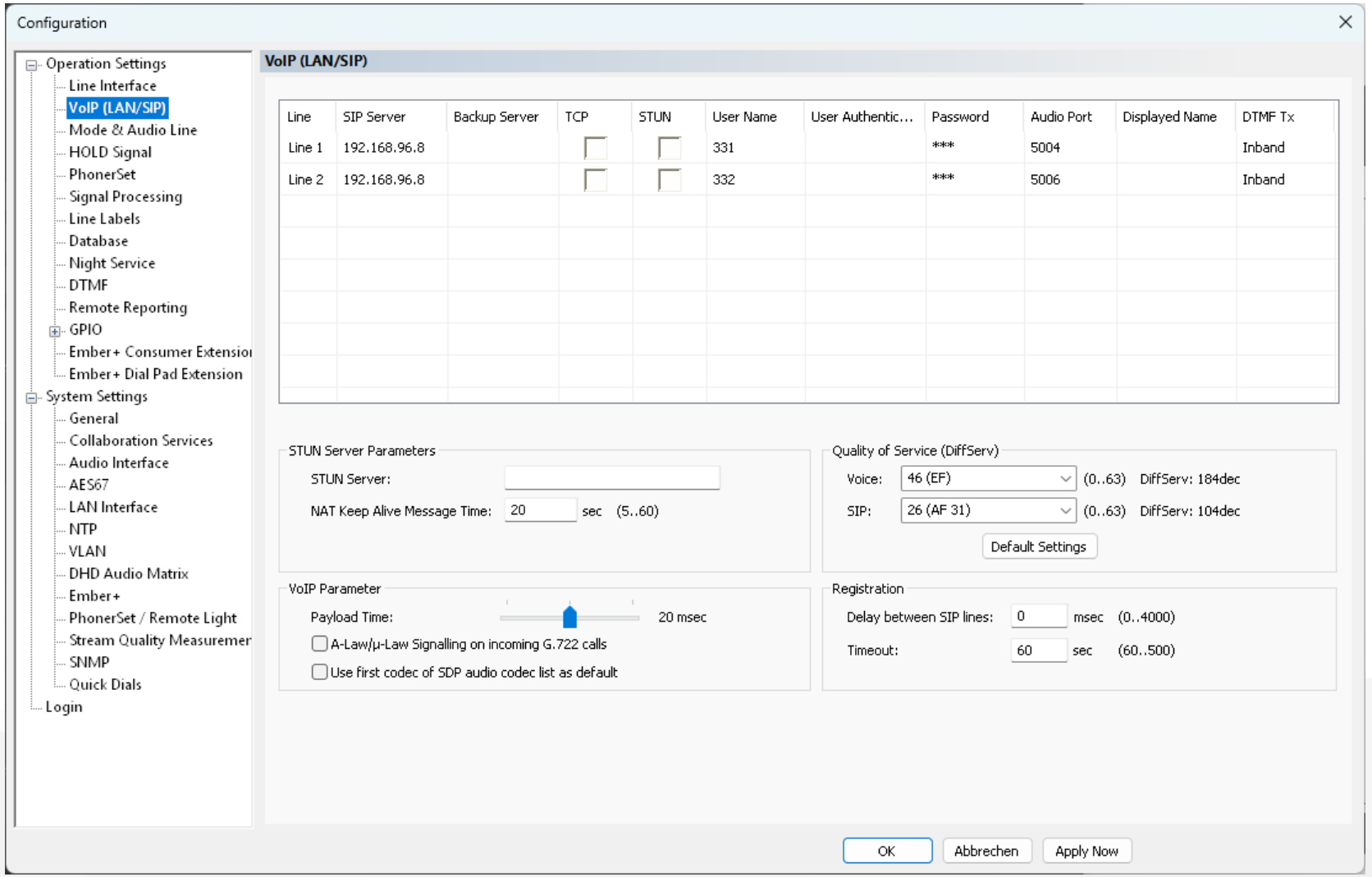
SNMP
Quick Dials
Login
MSN
MSN Mode
Display called number on incoming call
Show calling number additional to called number on display on incomining call
MSN
MSN 1: 40
MSN 2: 41
OK
Abbrechen
Apply Now

MSN (1)

- The MSN page is displayed only if the ISDN mode is enabled on the LINE INTERFACE page.
- MSN MODE: Special modes when there is no MSN assigned to the TH2plus.
  - DISPLAY CALLED NUMBER ON INCOMING CALL: The TH2plus accepts incoming calls to any MSN and displays the called number.
  - SHOW CALLING NUMBER ADDITIONAL TO CALLED NUMBER ON DISPLAY ON INCOMING CALL: The number of the caller is displayed additionally to the called number.
- Enter an MSN (Multiple Subscriber Number) for each ISDN channel.
  - The MSN sometimes is the internal telephone number (extension). For more information, refer to the PBX manual or the provider's documentation

- .

MSN (2)



VoIP (LAN/SIP) / VoIP (NTT NGN) (1)

- Enter the SIP credentials for each telephone line as well as SIP protocol parameters on the VOIP (LAN/SIP) or VOIP (NTT NGN) page.
- The VoIP channels are completely independent from each other. The MAGIC TH2plus always uses the Primary IP address for VoIP. The parameters must be defined for each VoIP line:
  - LINE: Shows the number of the telephone line.
  - SIP SERVER: Primary SIP server. May consist of three parts. Only SIP-Server is mandatory: proxy@SIP-Server:port
    - PROXY: IP address or host name of the proxy server.
    - SIP-SERVER: Also referred to as REALM or REGISTRAR. IP address or host name.
    - PORT: Server port of the SIP protocol. May be omitted if the default port 5060 is used.
  - BACKUP SERVER: The MAGIC TH2plus monitors constantly if the primary SIP server is available. If not, it switches to the backup SIP server. When the primary SIP server becomes available again, the MAGIC TH2plus switches back to the primary SIP server.
  - TCP: Enable to use TCP to connect to the SIP server. Otherwise UDP is used.
  - STUN: Enable if STUN is required by the SIP server.
  - USER NAME: Identifies the SIP account. Usually, the username is the phone number of the extension or the public phone number.
  - USER AUTHENTICATION: Identifies the user account if a password is needed to access a SIP server. When the user authentication field is left blank, the device will use the username for authentication.
  - PASSWORD: The password for the SIP account.
  - AUDIO PORT (UDP): Local UDP port for the audio transmission of this VoIP channel. It is recommended to use only straight numbers. (default: 5004,5006, 5008, ...)
    - SET DEFAULT AUDIO PORTS: Sets the audio ports (UDP) to their default values)
  - DISPLAYED NAME: Text entered here will be displayed on the telephones of the callers. Note that PBXs or providers may override the displayed name.

VoIP (LAN/SIP) / VoIP (NTT NGN) (2)

- DTMF TX: DTMF tones are used to transmit digits such as pin codes via a telephone system. With VoIP, there are several ways to transmit DTMF tones. The MAGIC TH2plus supports the transmission via INBAND audio signal or via RFC2833. Change this setting if receivers such as conference systems do not accept the code.

- STUN SERVER PARAMETERS: Using a STUN server may be mandatory by the VoIP (SIP) provider. Only one STUN server is required even if different SIP servers are used.
  - STUN SERVER: Enter the IP address or the host name of the STUN server specified by the VoIP provider.
  - NAT KEEP ALIVE INTERVAL: Set the time interval at which the MAGIC TH2plus sends periodic Keep-Alive packets to the SIP Server. Thus, routers and firewalls keep the SIP communication ports open. This allows the SIP server to notify the device about incoming calls. Keep-Alive packets are only sent if STUN is enabled for the respective SIP account. (default: 20 seconds)

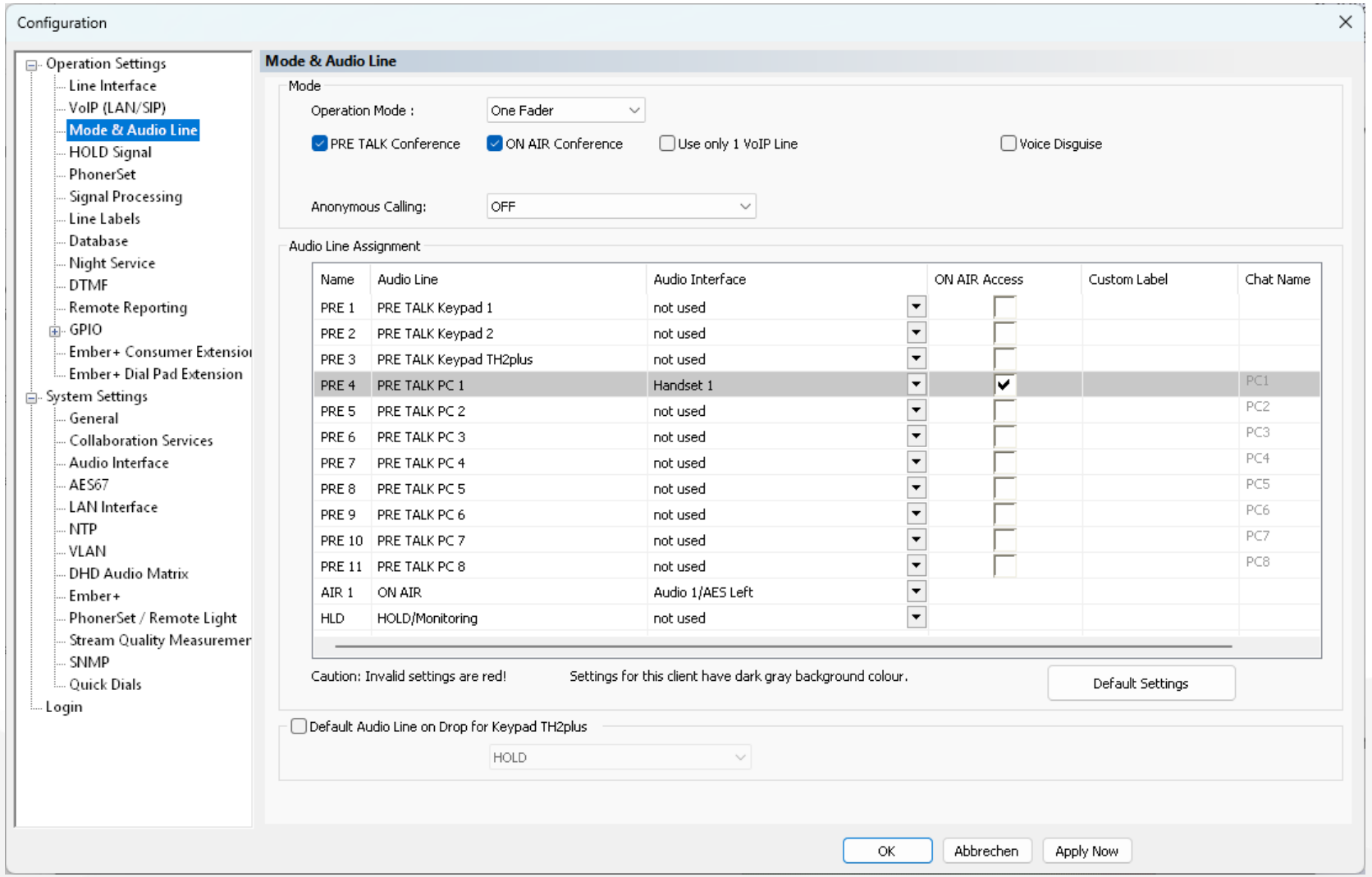
- QUALITY OF SERVICE (DIFFSERV): End-to-end Quality-of-Service is only possible when it is supported by all network elements.
  - RFC2474 defines Differentiated Services (DiffServ), a mechanism to classify network traffic.
  - The 8-bit Differentiated Services Field (DS-Field) is part of the IPv4 header. It contains:
    - DSCP: The 6-bit Differentiated Services Code Point is used to classify the payload of the IPv4 packet.
    - ECN: The remaining 2 Bits are reserved for flow control which is not supported by MAGIC TH2plus. (default value = 0)
  - Typical values used for VoIP are:
    - Voice (RTP)
      - DiffServ = 184dec
      - Corresponds to: DSCP = 46dec
    - SIP
      - DiffServ = 104dec
      - Corresponds to: DSCP = 26dec
  - DEFAULT SETTINGS: Set the Quality-of-Service parameters back to factory settings.

VoIP (LAN/SIP) / VoIP (NTT NGN) (3)

- VOIP PARAMETER:
  - PAYLOAD TIME: Set the size of transmitted audio packets. Use 20 ms for best compatibility with public telecommunication providers.
  - A-LAW/µ-LAW SIGNALLING ON INCOMING G.722 CALLS: Enable this settings if audio is missing or broken when forwarding calls or when receiving forwarded calls. This problem might occur when one of the participants is not capable of HD-Voice (G.722) and the PBX is not aware of that.
  - USE FIRST CODEC OF THE SDP AUDIO CODEC LIST AS DEFAULT: Enable this settings if phones call which announce a list of supported audio codecs but only work when the MAGIC TH2plus selects the first algorithm from the list.

- REGISTRATION: These settings control the SIP registration process at the SIP server.
  - DELAY BETWEEN SIP LINES: During start-up MAGIC TH2plus simultaneously sends a SIP registration telegram for each VoIP channel to the SIP server. If this is overwhelming the SIP server this setting introduces a delay between the VoIP channels.
  - TIMEOUT: The MAGIC TH2plus renews the SIP registration every 60 seconds by default to check if the SIP server is still available. Increase the interval if the SIP server rejects the registration telegrams as too soon.

VoIP (LAN/SIP) / VoIP (NTT NGN) (4)



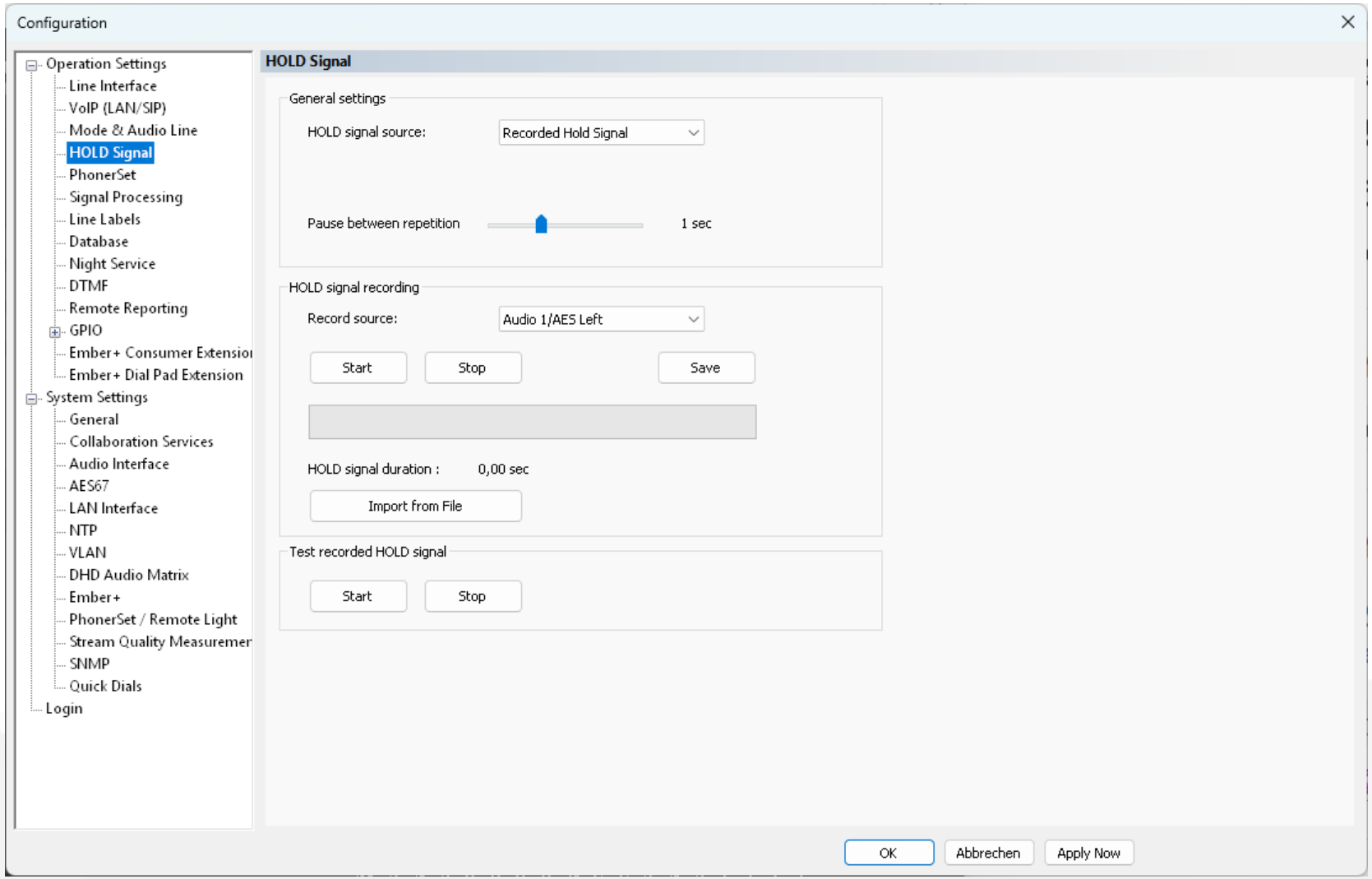
Mode & Audio Line (1)

- Set the operation mode and assign audio interfaces to PC clients on the MODE & AUDIO LINE page.
- All audio interfaces are mono.
- Input and output of an audio interface cannot be separated.
- OPERATION MODE: Set the number of ON AIR faders available on the mixing consoles.
  - ONE FADER: There is only one fader for both telephone lines on the mixing console. If two calls are ON AIR, they are mixed in the MAGIC TH2plus.
  - TWO FADERS: There is a separate fader for each telephone line on the mixing console.
  - SHARED: Compatibility mode with MAGIC TH2. All clients share the same pretalk audio interface.
- PRETALK CONFERENCE: Enables the user to put multiple callers in Pretalk simultaneously. The audio signals are mixed in the MAGIC TH2plus.
- USE ONLY 1 VOIP LINE: Only line 1 is displayed on the clients.
- ON AIR CONFERENCE: Enables the user to put multiple callers On Air on the same fader simultaneously. The audio signals are mixed in the MAGIC TH2plus.
- VOICE DISGUISE: If enabled, the voices of all callers are disguised. The strength of that effect can be configured on the SIGNAL PROCESSING configuration page.
- ANONYMOUS CALLING: When enabled, the TH2plus does not send its own phone number.
  - NOTE: Some VoIP providers / SIP servers block devices that hide their identity. Whenever possible, this should rather be configured in the PBX or on the provider's side.
  - Two formats are available. They define how the own number is transmitted to the SIP server.
    - sip:anonymous@anonymous.invalid
    - sip:anonymous@<registrar>
      (where <registrar> is the SIP server entered for that line on the VoIP (LAN/SIP) configuration page)

Mode & Audio Line (2)

- AUDIO LINE ASSIGNMENT: Define which audio interfaces are used for PRETALK, ON AIR and HOLD. As well as client or audio interface specific settings.
  - NAME: Short name of the audio line as displayed on the front display of the MAGIC TH2plus.
  - AUDIO LINE: Name of the audio line.
    - PRETALK <client>: The PRETALK audio line of the <client>.
    - ON AIR N: An ON-AIR audio line which is usually connected to a fader of the mixing console.
    - HOLD / MONITORING:
      - The input audio signal can be used as the HOLD signal for all lines of the studio. Further configuration is necessary on the HOLD SIGNAL configuration page.
      - The output audio signal can be used to monitor audio signals of the MAGIC TH2plus. Further configuration is necessary on the MONITORING SOURCE configuration page.
  - AUDIO INTERFACE: Assign an audio interface to each required audio line.
  - NO INPUT ALARM: The MAGIC TH2plus can detect if a signal is present on the AES3/EBU input. If not, an alarm is displayed in the PC software. The alarm can be deactivated here.
  - ON AIR ACCESS: Enable, if the client is allowed to put a call ON AIR.
  - CUSTOM LABEL: Define a custom label for the PRETALK, HOLD and ON AIR buttons on the PC client software. The font settings of the HOLD button also apply to the DROP button.
  - CHAT NAME: Custom name of the client for the built-in chat of the PC software.
- DEFAULT AUDIO LINE ON DROP FOR KEYPAD TH2PLUS: If enabled, the audio line will be set to the specified value when a call is disconnected. Otherwise, the audio line last used will remain selected. Only useful when the front display is used for handling calls.

Mode & Audio Line (3)

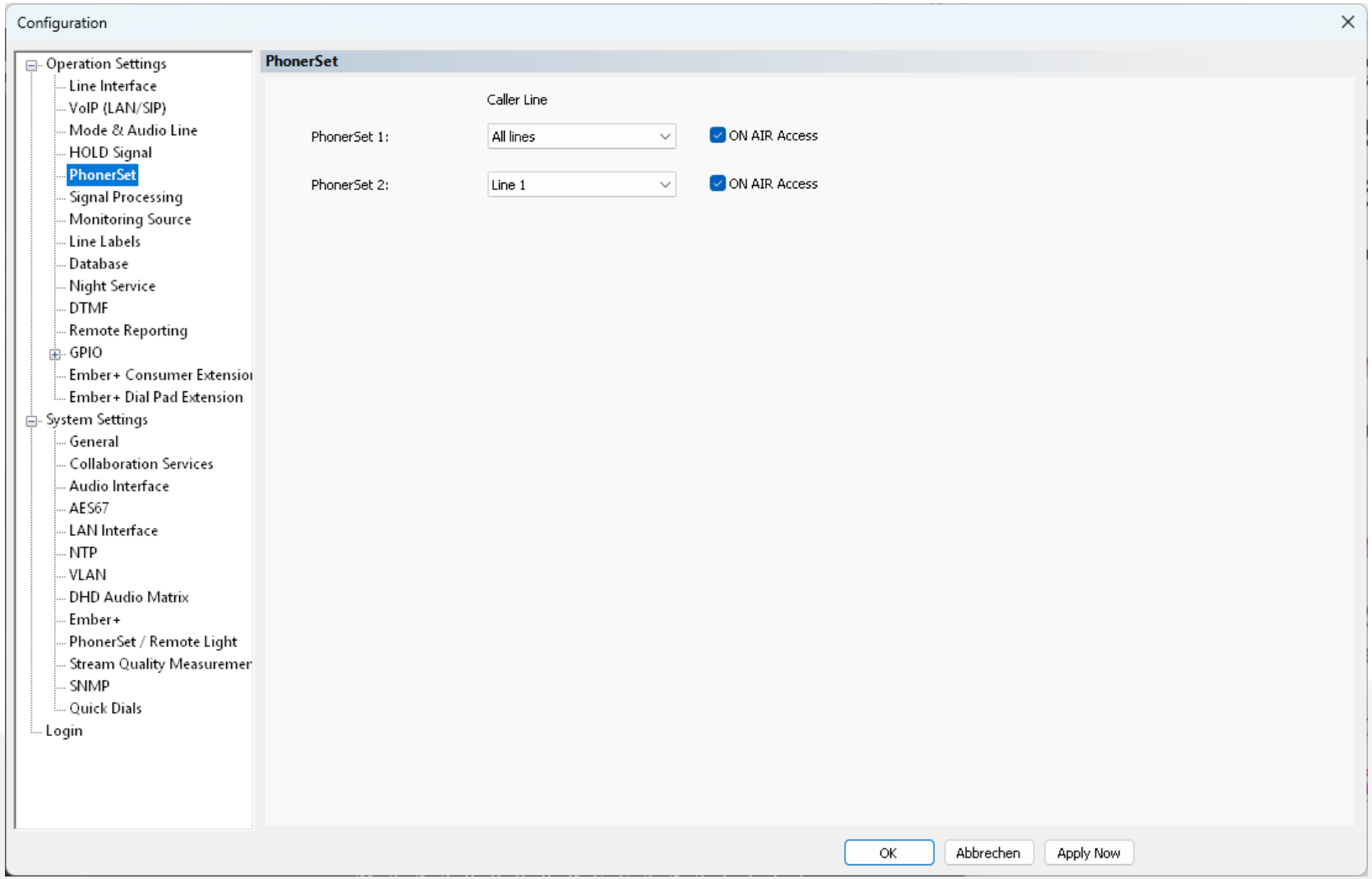


HOLD Signal (1)

- The HOLD signal is configured on the HOLD SIGNALS page.
- The HOLD signal is transmitted to the caller when the HOLD button on the main panel of the PC software is pressed.
- Three types of HOLD signals are available:
  - ON AIR: The audio signal of the audio input assigned to On Air on the MODE & AUDIO LINE page is used.
  - AUDIO INTERFACE: The audio signal of the audio input which is assigned to HOLD / MONITORING on the MODE & AUDIO LINE configuration page is used.
  - RECORDED HOLD SIGNAL: An audio signal stored in the internal memory of the MAGIC TH2plus is used. (Max. 16 seconds)
- PAUSE BETWEEN REPETITION: Pause between repetitions of the recorded Hold signal during playback.

- HOLD SIGNAL RECORDING
  - RECORD SOURCE: Any of the physical audio interfaces of can be used.
  - START: Starts recording.
  - STOP: Stops recording
  - SAVE: Stores the file on the MAGIC TH2plus.
  - PROGRESS BAR: Shows the length of the Hold signal being recorded.
  - HOLD SIGNAL DURATION: Shows the length of the current Hold signal file.
  - IMPORT FROM FILE: Only the first 16 seconds of the audio file are imported. The import module supports WAVE and MP3 audio files. They are automatically converted to a mono file with 16 kHz sampling rate.
- TEST RECORDED HOLD SIGNAL: Plays back the Hold signal on the audio interface selected under RECORD SOURCE.
  - START: Plays back the Hold signal.
  - STOP: Stops playback of the Hold signal

HOLD Signal (2)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Ember+ Dial Pad Extension
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Collaboration Services
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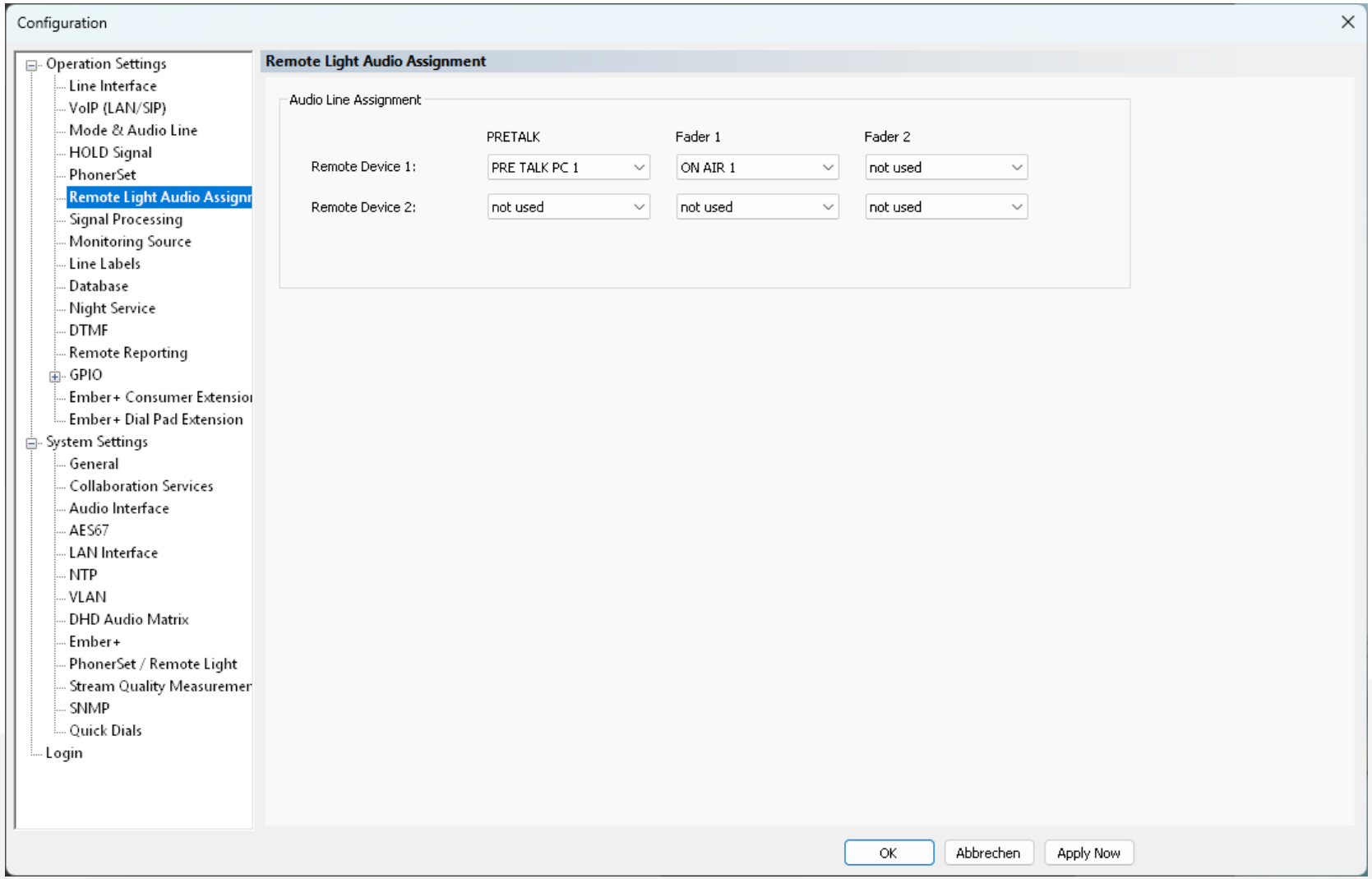
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
PhonerSet
Caller Line
PhonerSet 1:
All lines
ON AIR Access
PhonerSet 2:
Line 1
ON AIR Access
OK
Abbrechen
Apply Now

PhonerSet (1)

- Define which audio lines are available to the PhonerSet workplaces on the PHONERSET page.
- PHONERSET N: Define which channels are displayed in the PhonerSet app for each workplace.
  - ALL LINES: All channels are available on the PhonerSet.
  - LINE N: Only the specified channel is available on the PhonerSet.

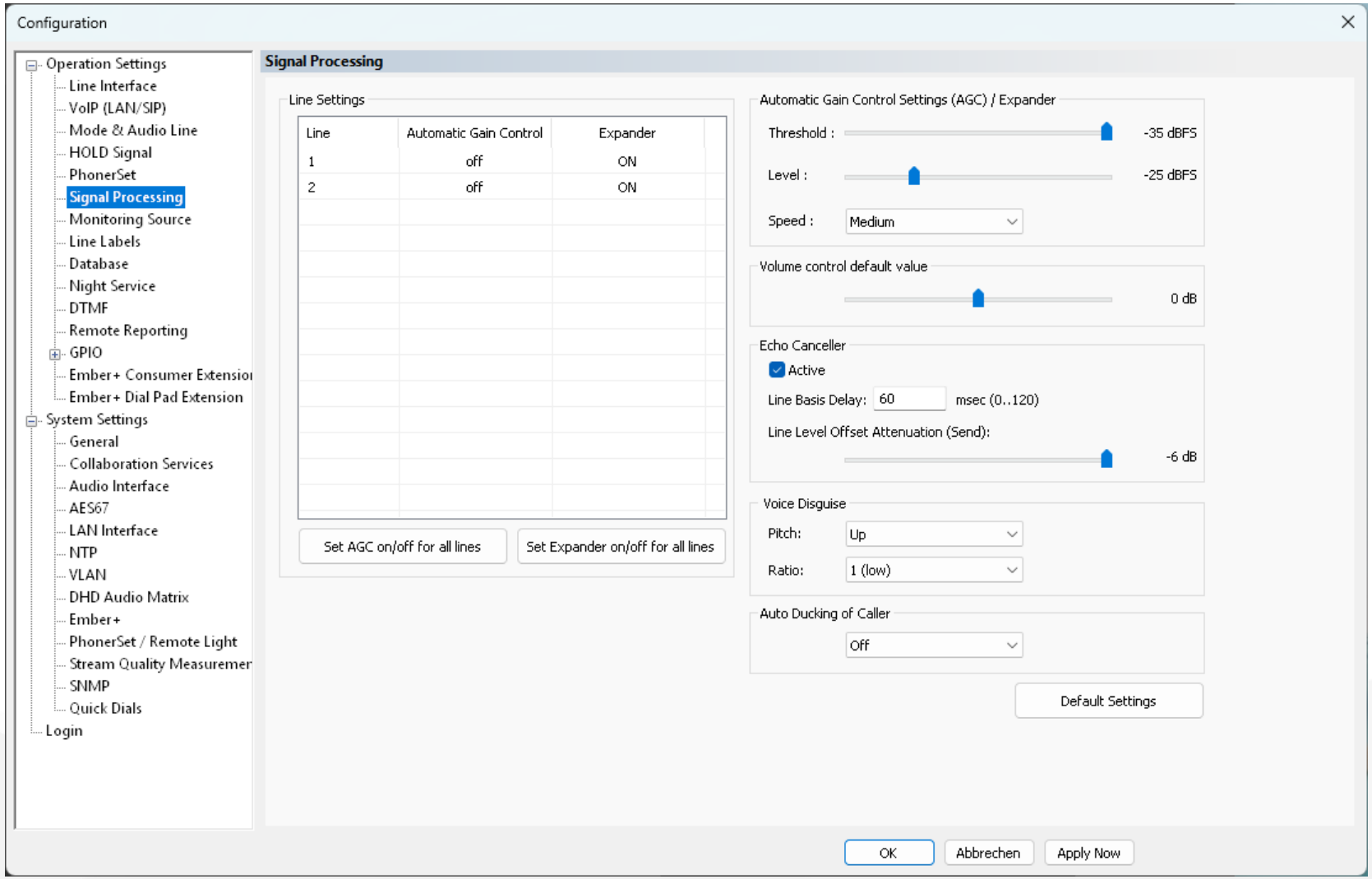
PhonerSet (2)



Remote Light Audio Assignment (1)

- Define which audio lines are used by the clients which control the MAGIC TH2plus via the Remote Light Protocol.
- Only audio interfaces which are assigned to audio lines on the MODE & AUDIO LINE configuration page are available.
- For each Remote Light client, the following functions are available:
  - PRETALK
  - FADER 1: On Air 1
  - FADER 2: On Air 2

Remote Light Audio Assignment (2)



Signal Processing (1)

- Define the signal processing parameters on the SIGNAL PROCESSING page.
- LINE SETTINGS:
  - AUTOMATIC GAIN CONTROL: The AGC controls the amplifier which processes the audio signal of the caller. Enable the AGC to maintain a certain audio level despite variations in the caller's voice or differences between callers. The AGC parameters can be modified under AUTOMATIC GAIN CONTROL SETTINGS (AGC) / EXPANDER.
    The user can enable or disable the AGC for each call individually by clicking on the level meter on the main panel of the PC software.
  - EXPANDER: There are expander filters for all telephone channel inputs and outputs. The expander of the telephone channel input can be switched on or off. They lower the level of quiet audio signals even more to reduce noise. The threshold under AUTOMATIC GAIN CONTROL SETTINGS (AGC) / EXPANDER is used for AGC and the expander for received audio signals. The threshold for transmitted audio signals is -52 dBFS.
- AUTOMATIC GAIN CONTROL SETTINGS (AGC) / EXPANDER: Define the filter parameters for AGC and expander.
  - THRESHOLD: The AGC is only applied to audio signals above this level. The expander is only applied to audio signals below this level.
  - LEVEL: Define the target level for the AGC. The AGC tries to maintain this level for the audio signal from the caller. By default, the amplifier has a range of 32 dB. Which means it can lower the signal by 16 dB and amplify the signal by 16 dB. If the target level is set higher than -20 dBFS the range of 32 dB remains but splits differently. The higher the target level the more amplification is possible at the cost of lowered possible attenuation.
  - SPEED: Define how fast the AGC should adjust to changes in the audio signal coming from the caller. (SLOW, MEDIUM, FAST, VERY FAST)

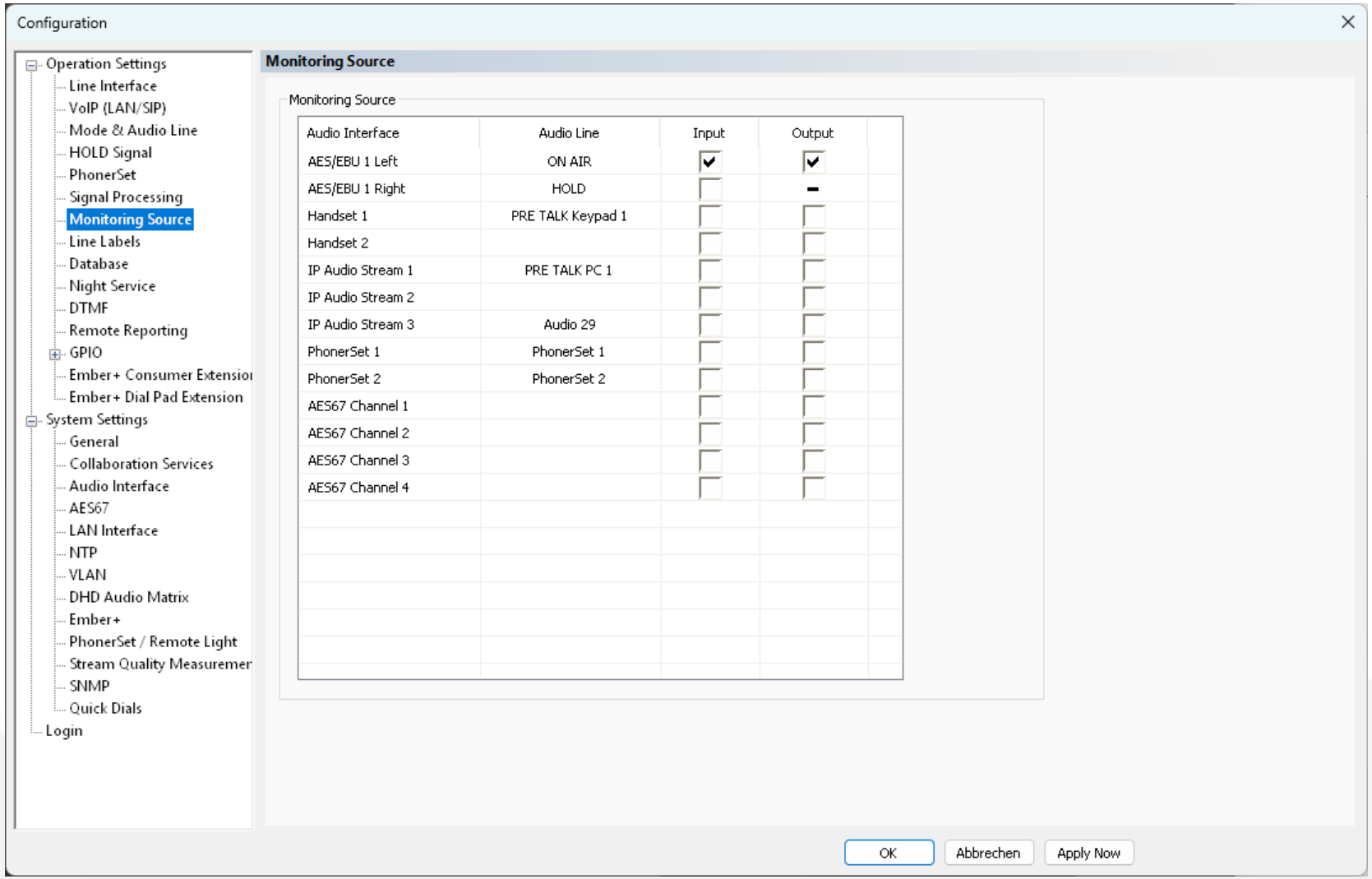
Signal Processing (2)

- VOLUME CONTROL DEFAULT VALUE: The level of the audio signal coming from the caller can be adjusted manually in the PC software if AGC is disabled. Define the default amplification here. It is set each time a call is disconnected, so that the next call starts with the default value.
- ECHO CANCELLER: The echo canceller eliminates echo coming back from the caller. It is not used for HD-Voice calls. There is a dedicated echo canceller for each telephone channel.
  It is recommended to adjust the audio levels so that the TX level displayed on the main panel of the PC software is between -18 dBFS and -12 dBFS.
  - ACTIVE: Enables the echo cancellers. Especially analogue telephones can cause strong echoes.
- LINE BASIS DELAY: The echo canceller can detect and eliminate echoes with a delay of up to 120 ms. Each telephone network has an individual minimum round-trip time for echo signals. This timespan can be ignored by the echo canceller. The defined line basis delay moves the 120 ms range of the echo canceller.
  A value of e.g. 60 ms enables the hybrid to eliminate echoes which occur within 60 ms to 180 ms.
- Recommended values:
  - POTS: 0 ms
  - POTS with PBX: 40 ms
  - ISDN: 20 ms
  - VoIP: 60 ms
- LINE LEVEL OFFSET ATTENUATION (SEND): Define how much the level of the audio signal being sent over the telephone channel to the caller is attenuated. Decrease the value if the returned echo signal is too strong to be eliminated by the echo canceller.

Signal Processing (3)

- VOICE DISGUISE: Defines the parameters for Voice Disguise. Voice Disguise can be enabled on the MODE & AUDIO LINE configuration page.
  - PITCH: UP shifts the voice to higher notes. DOWN shifts the voice to lower notes.
  - RATIO: Define how strong the effect is. Range: 1 (low) …. 4 (high)
- AUTO DUCKING OF CALLER: Defines how much the caller's voice is attenuated when an audio signal is sent to the caller e.g. when the presenter speaks.
  Range: Off, -6 dB … -42 dB
- DEFAULT SETTINGS: Sets the parameters on this page to factory default.

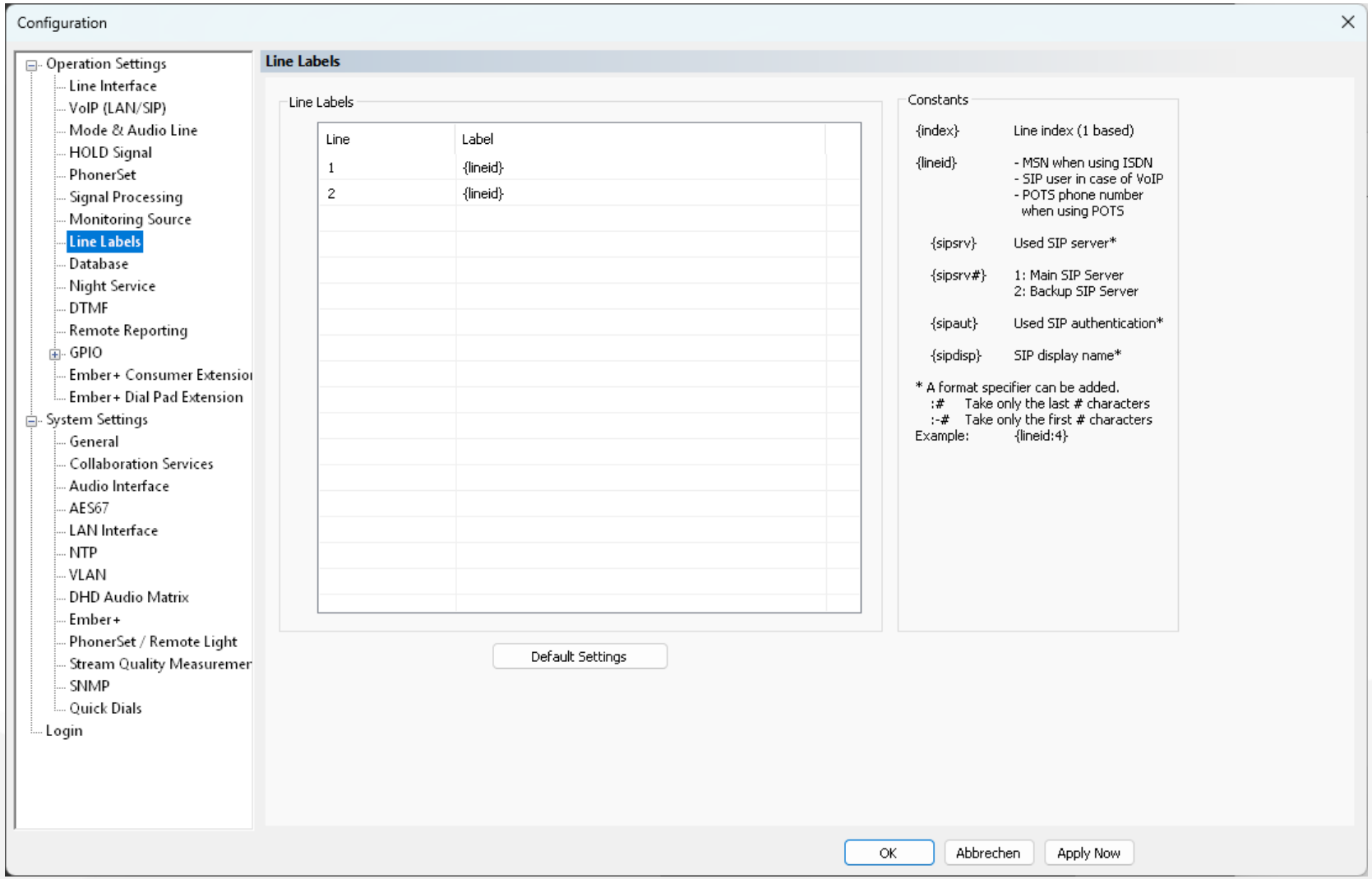
Signal Processing (4)



Monitoring Source (1)

- Define audio monitoring parameters on the MONITORING SOURCE page.
- The monitoring audio signal is output on the audio interface assigned to HOLD / MONITORING on the MODE & AUDIO LINE configuration page.
- Select the audio signals to monitor in the table:
  - AUDIO INTERFACE: Name of the audio interface.
  - AUDIO LINE: The audio line assigned to the audio interface on the MODE & AUDIO LINE configuration page.
  - INPUT: Enable the input to monitor the audio signal coming in on that audio interface.
  - OUTPUT: Enable the output to monitor the audio signal going out on that audio interface.

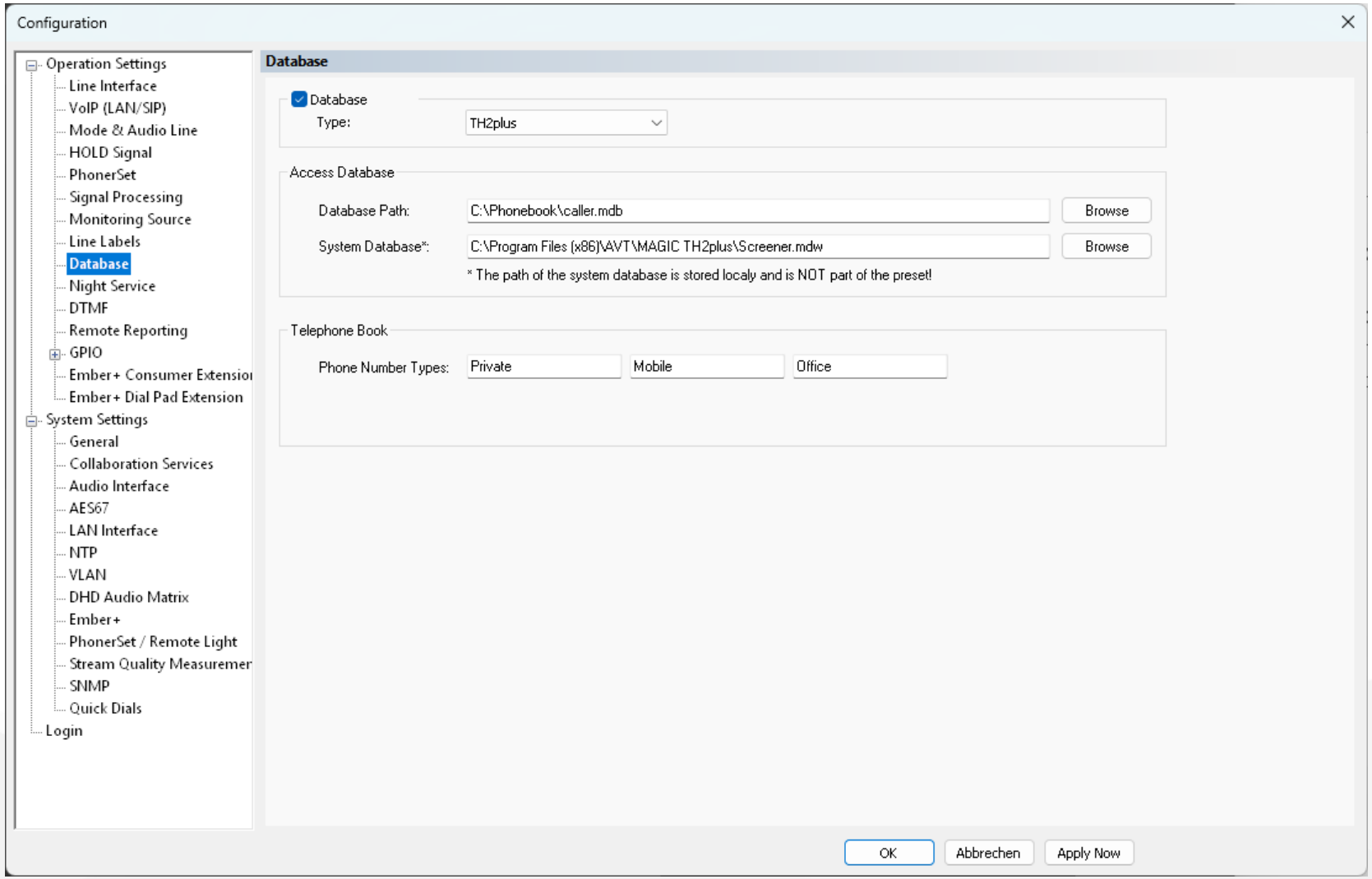
Monitoring Source (2)



Line Labels (1)

- Define the labels of all telephone channels displayed on the main panel of the PC software on the LINE LABELS page.
- LINE: Shows the line numbers of the telephone channels available in the system.
- LABEL: Enter any text. You may also mix text with the supported variables:
  - {index}: Line index
  - **{lineid}**: telephone number derived from the line interface settings.
    - VoIP: SIP User as defined on the VoIP (LAN / SIP) configuration page.
    - ISDN: MSN as defined on the MSN configuration page.
    - POTS: Phone number as defined on the POTS Phone Numbers configuration page.
  - **{sipsrv}**: Only in VoIP mode. SIP server name / address currently used.
  - {sipsrv#}: Only in VoIP mode. 1 if the main SIP server is currently used. 2 if the backup SIP server is currently used.
  - **{sipaut}**: Only in VoIP mode. SIP authentication as defined on the VoIP (LAN / SIP) configuration page.
  - **{sipdisp}**: Only in VoIP mode. SIP display name as defined on the VoIP (LAN / SIP) configuration page.
  - The output of variables in **bold** can be modified:
    - {...:#}: Use only the last # characters. (e.g. {lineid:4})
    - {...:-#}: Use only the first # characters.

Line Labels (2)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AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
Database
Database
Type:
TH2plus
Access Database
Database Path:
C:\Phonebook\caller.mdb
Browse
System Database*:
C:\Program Files (x86)\AVT\MAGIC TH2plus\Screener.mdw
Browse
* The path of the system database is stored localy and is NOT part of the preset!
Telephone Book
Phone Number Types:
Private
Mobile
Office
OK
Abbrechen
Apply Now

Database (1)

- Configure the phone book databases on the DATABASE page.
- The MAGIC TH2plus uses a Microsoft Access database to store caller information and call history.
- The optional SQL upgrade enables the MAGIC TH2plus system to use the SQL database of a full MAGIC THipPro system.
- DATABASE: Enable this option to store caller information in a database. When disabled, caller information can still be entered in the PC software. This information is also distributed to the other clients. But it can not be stored for later use.

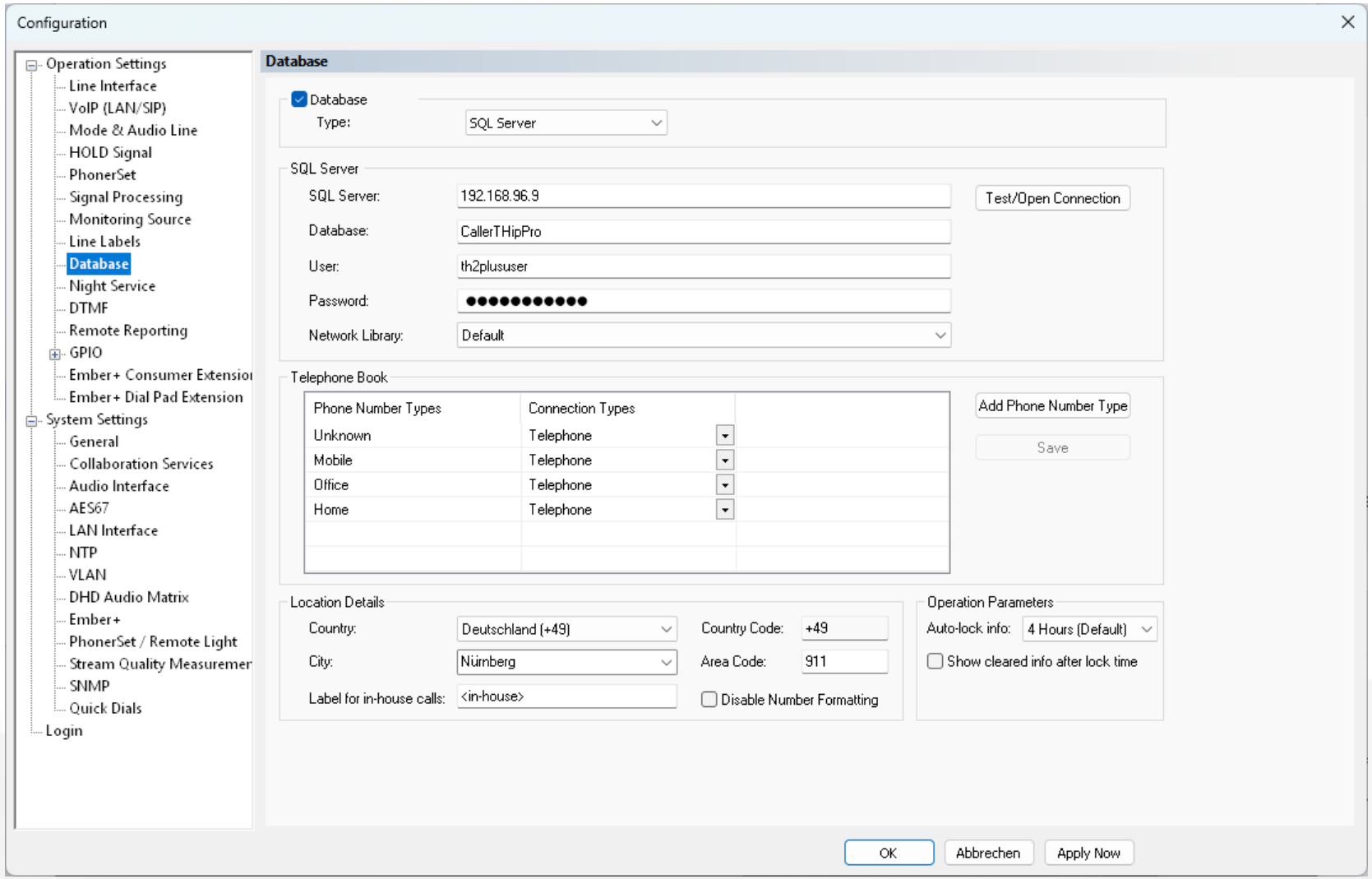
- TYPE: Select a database type:
  - MAGIC TOUCH: This is a Microsoft Access database using the format of the discontinued MAGIC Touch telephone hybrid system.
  - MAGIC TH2plus: This is a Microsoft Access database using a new format for the MAGIC TH2plus.
  - SQL SERVER: This is a Microsoft SQL (Express) database using the same format as the MAGIC THipPro.

Database (2)

- ACCESS DATABASE:
  - DATABASE PATH: Enter the path and filename of the Microsoft Access database file. This file contains phone book and call history. It must be available to all clients for read and write access. Find the database file “Caller.mdb” in the installation directory of the MAGIC TH2plus PC software. Copy the file to a location where all clients have permission to read the file and write to the file.
  - SYSTEM DATABASE: Enter the path and filename of the Microsoft Access system database file. This file contains the parameters for the clients to access the phone book. Find the system database file “Screener.mdw” in the installation directory of the MAGIC TH2plus PC software.

- PHONE NUMBER TYPES: Each phone number stored in the database can be assigned to one of three phone number types. The label for these types may be defined here.
  By default, these types are:
  - Private
  - Mobile
  - Office

Database (3)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Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
Database
Database
Type:
SQL Server
SQL Server
SQL Server:
192.168.96.9
Test/Open Connection
Database:
CallerTHipPro
User:
th2plususer
Password:
Network Library:
Default
Telephone Book
Phone Number Types
Connection Types
Unknown
Telephone
Mobile
Telephone
Office
Telephone
Home
Telephone
Add Phone Number Type
Save
Location Details
Country:
Deutschland (+49)
Country Code:
+49
City:
Nürnberg
Area Code:
911
Label for in-house calls:
<in-house>
Disable Number Formatting
Operation Parameters
Auto-lock info:
4 Hours (Default)
Show cleared info after lock time
OK
Abbrechen
Apply Now

Database (4)

- SQL SERVER:
  - Find the SQL SERVER 2012 INSTALLATION document in the download section of our website. It describes:
    - How to install the Microsoft SQL Express server.
    - How to configure the Microsoft SQL server.
    - How to install the MAGIC THipPro phone book database on a Microsoft SQL server.
    - The manual also applies to newer versions of the Microsoft SQL server.
  - SQL SERVER: Network address of the Microsoft SQL server followed by the database instance separated by a backslash '\'). Depending on the SQL server configuration the database instance might be omitted.
  - DATABASE: The SQL database name.
  - USER: The username of the SQL account.
  - PASSWORD: The password of the SQL account.
- NETWORK LIBRARY: Chose a network library which uses a protocol which is supported by the specified SQL server:
  - DEFAULT: The driver on the Client PC choses the network library automatically.
  - NAMED PIPES
  - TCP/IP
- TEST/OPEN CONNECTION: Establish a connection to the SQL server. If the connection fails, additional information about the error is displayed.

Database (5)

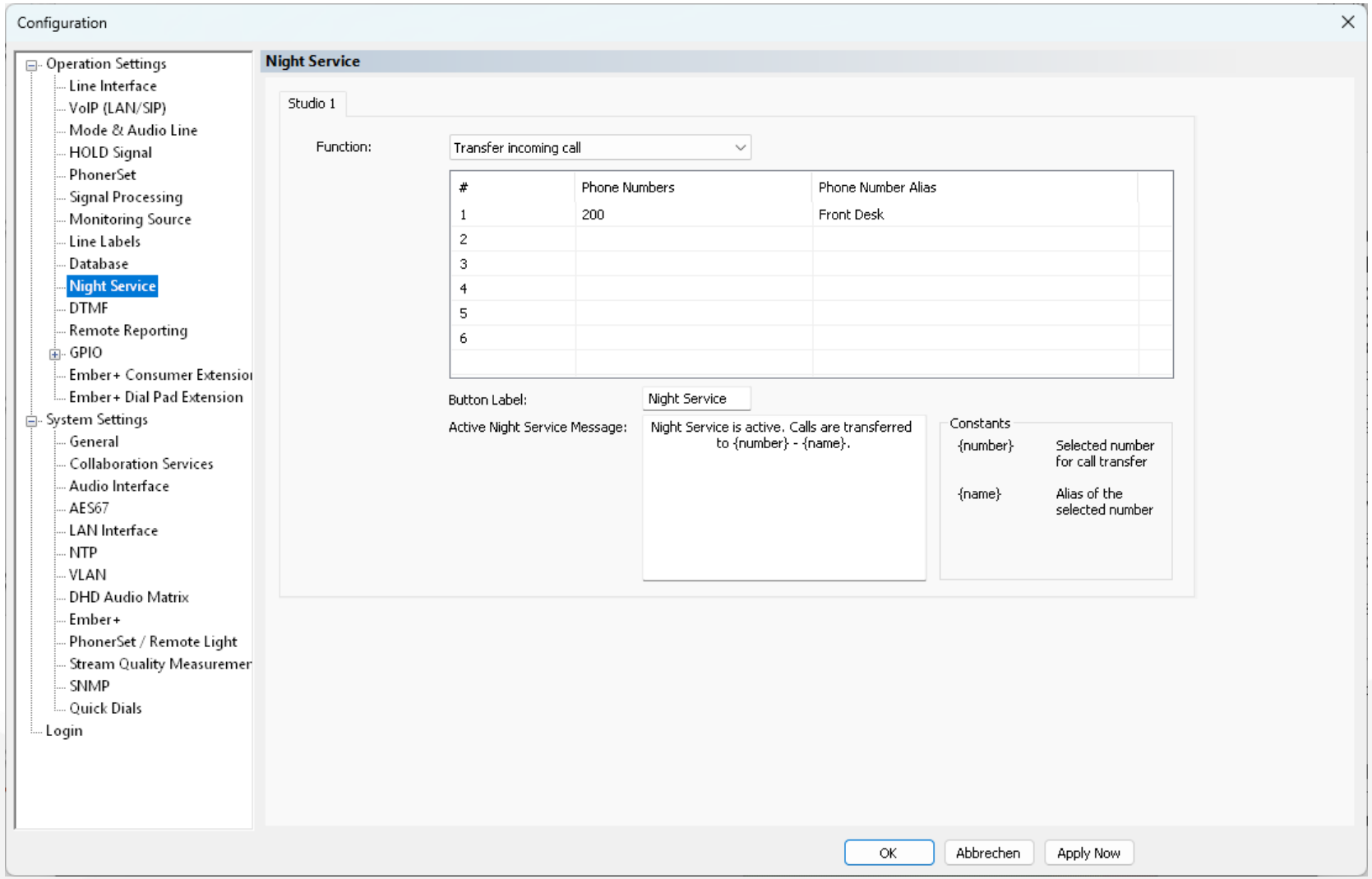
- TELEPHONE BOOK
  - Each phone number stored in the database can be assigned a phone number type.
  - Four phone number types are available by default:
    - Unknown
    - Mobile
    - Office
    - Home
  - PHONE NUMBER TYPES: Click on a phone number type to edit the name. Erase the name to delete the phone number type. Default phone number types cannot be deleted.
  - CONNECTION TYPES: Chose a connection type:
    - TELEPHONE: For telephone numbers used on MAGIC TH2plus channels.
  - ADD PHONE NUMBER TYPE: Click to add a phone number type to the list. Edit the parameters directly in the list.
  - SAVE: Press to save the changes in the database.

- LOCATION DETAILS: With these parameters the MAGIC TH2plus can distinguish between local, long-distance and international calls. They are also necessary to store the telephone numbers in a standardized format.
  - COUNTRY: Select the country from the list in which the MAGIC TH2plus is located. This automatically sets the COUNTRY CODE. If the desired country cannot be found, set the country code by hand.
  - COUNTRY CODE: The international dialling code of the country in which the MAGIC TH2plus is located.
  - CITY: Select the city from the list in which the MAGIC TH2plus is locate. This automatically sets the AREA CODE. If the desired city cannot be found, set the area code by hand.
  - AREA CODE: The national telephone number prefix for the city in which the MAGIC TH2plus is located.
  - LABEL FOR INHOUSE CALLS: This label is displayed instead of the caller's city when a call is identified as coming from an internal extension.
  - DISABLE NUMBER FORMATTING: Enable to store and display telephone numbers of incoming calls as they are signalled by the telephone network.

Database (6)

- OPERATION PARAMETERS: Manage access to database content.
  - AUTO-LOCK INFO: Information about each call may be stored by the user in the info record. Set the timeout when the system locks the info record after the last editing. If an info record is locked, the user must use a new info record for entering call information. The locked dataset remains in the database to display the history of the caller.
  - SHOW CLEARED INFO AFTER LOCK TIME: Enable to automatically create a new record when the current info record was locked by the AUTO-LOCK.

Database (7)



Night Service (1)

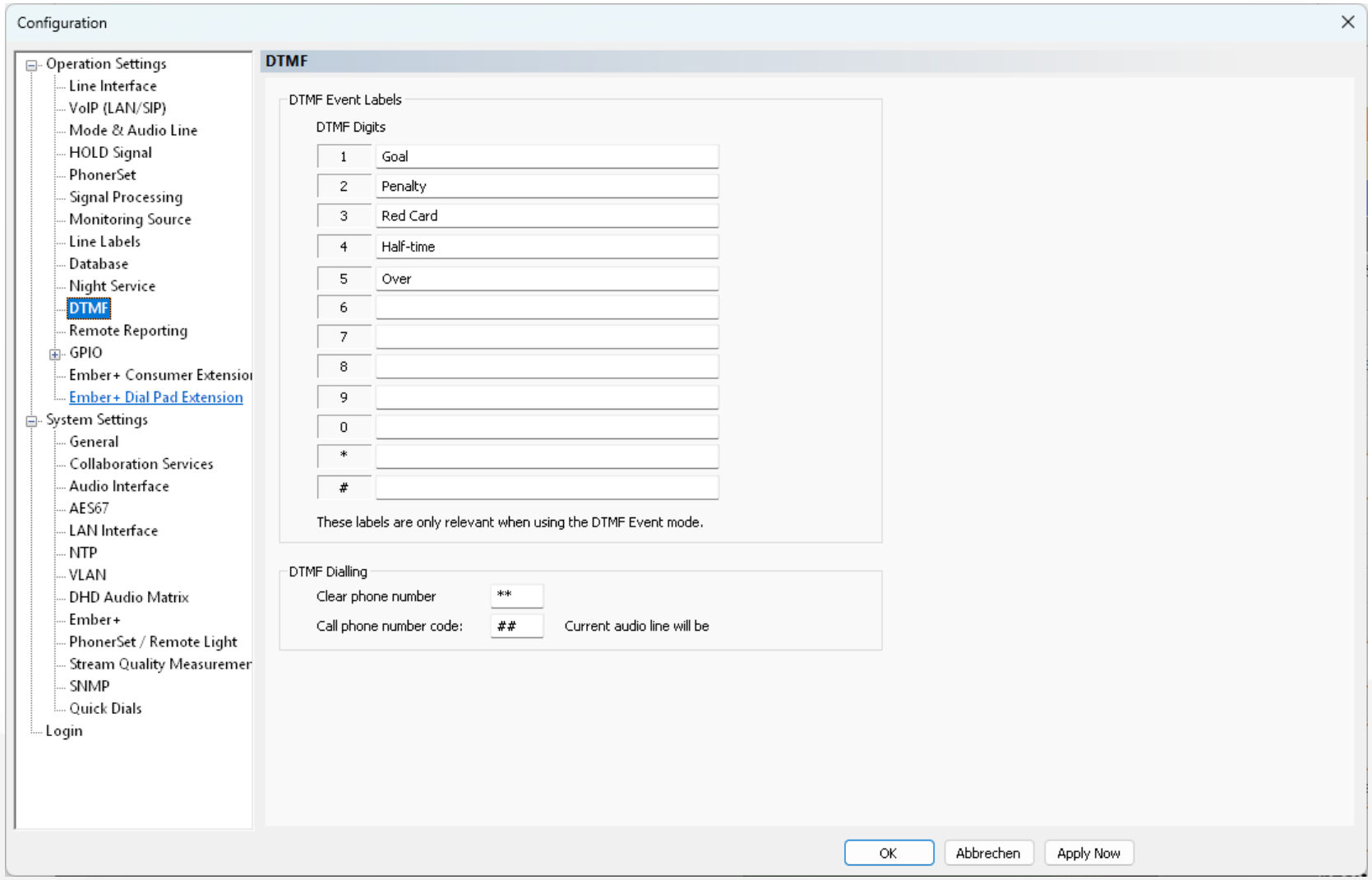
- Configure the Night Service mode and parameters on the NIGHT SERVICE page.
- When night service is activated, all incoming calls are forwarded to another telephone.
- Up to six different call forwarding destinations can be defined.
- Activate the night service via the action bar at the top of the PC software's main panel. If several forwarding destinations are configured the user must select a number when activating the night service.
- When the night service is activated, the telephone channels on the main panel of the PC software are disabled, and the configured message is displayed.

- FUNCTION: Select a mode:
  - NO NIGHT SERVICE OPERATION: Night service is not available to the user.
  - TRANSFER INCOMING CALL: Every incoming call is transferred using ECT (Call forwarding by the PBX or the provider, which is widely supported).

Night Service (2)

- TRANSFER INCOMING CALL parameters:
  - #: Six different call forwarding destinations can be defined.
  - PHONE NUMBERS: Define the call forwarding destinations.
  - PHONE NUMBER ALIAS: Enter a short text describing the destination. It will be presented to the user when selecting a destination and can be used in the night service message.
- GENERAL parameters:
  - ACTIVATION BUTTON LABEL: Define the label of the button in the line group menu of the PC software's action bar.
  - ACTIVE NIGHT SERVICE MESSAGE: Define the message that is displayed on the main panel of the PC software when the night service is active. Enter any text. You may include the supported variables:
    - {number}: The destination phone number.
    - {name}: The phone number alias of the destination.

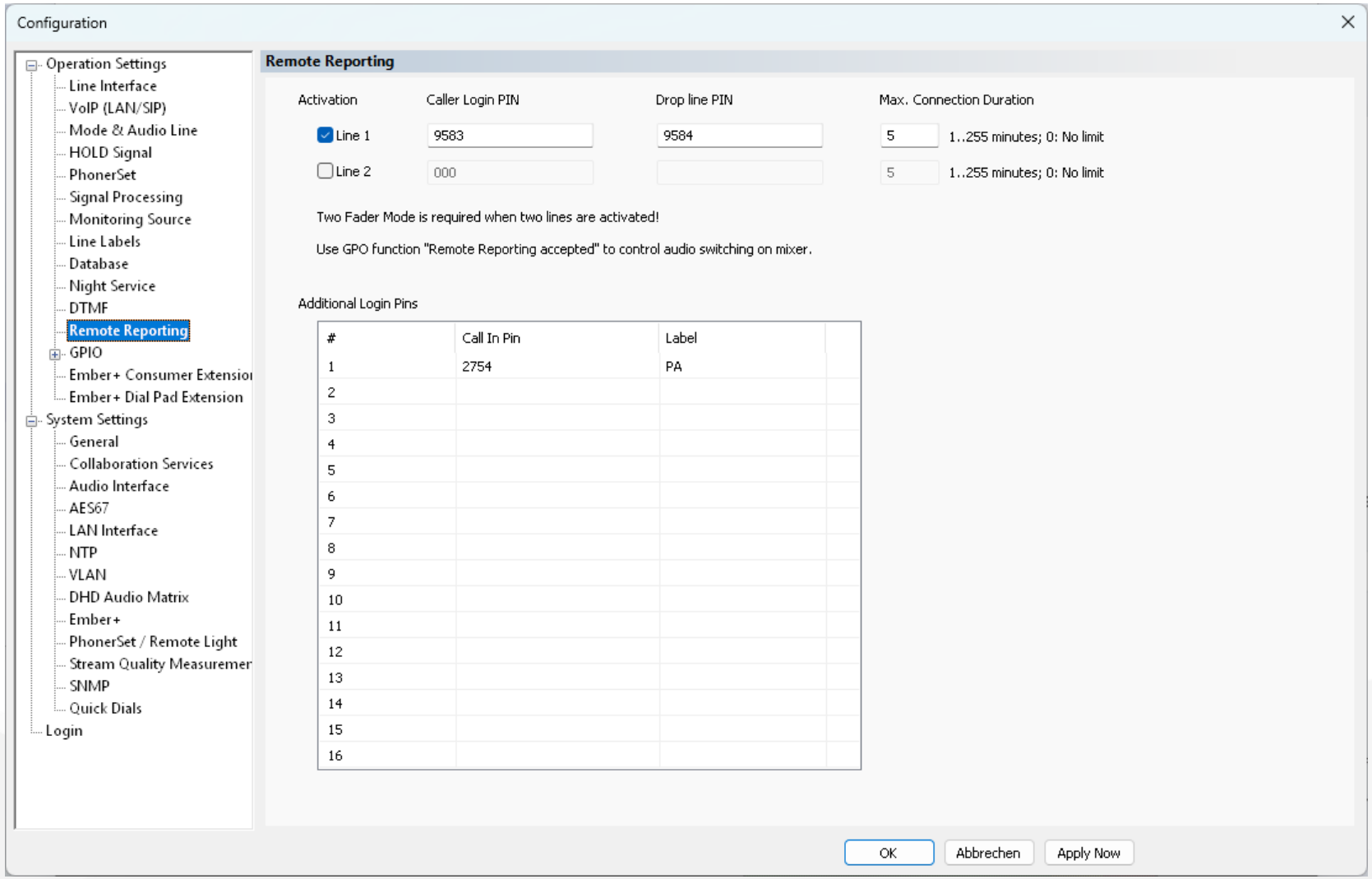
Night Service (3)


Configuration
Operation Settings
Line Interface
VoIP (LAN/SIP)
Mode & Audio Line
HOLD Signal
PhonerSet
Signal Processing
Monitoring Source
Line Labels
Database
Night Service
DTMF
Remote Reporting
GPIO
Ember+ Consumer Extensio
Ember+ Dial Pad Extension
System Settings
General
Collaboration Services
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Light
Stream Quality Measuremer
SNMP
Quick Dials
Login
DTMF
DTMF Event Labels
DTMF Digits
1 Goal
2 Penalty
3 Red Card
4 Half-time
5 Over
6
7
8
9
0
*
#
These labels are only relevant when using the DTMF Event mode.
DTMF Dialling
Clear phone number **
Call phone number code: ##
Current audio line will be
OK
Abbrechen
Apply Now

DTMF (1)

- Configure the labels for the DTMF event mode as well as the DTMF dialling codes on the DTMF page.
- DTMF (Dual-tone multi-frequency) tones are sent when a caller presses a button (0-9, *,#) on his or her phone. The information can be decoded by the MAGIC TH2plus.
- The MAGIC TH2plus can decode signals which are transmitted as an audio signal or via RFC2833 in VoIP mode.
- The DTMF mode may be selected by the user of the PC software under **Menu > Configuration > DTMF Settings > Mode**.
- If the DTMF Event Mode is active, a text can be assigned to each DTMF code. When a DTMF tone is received the PC software displays the text instead of the digit. The text is displayed for five seconds.
- DTMF DIGITS: Specify a label for each digit.
- DTMF DIALLING: The MAGIC TH2plus detects DTMF tones coming in on the analogue or digital XLR audio interfaces and stores them as a telephone number.
  - CLEAR PHONE NUMBER: When this code is detected, the stored number is deleted. (Default: **)
  - CALL PHONE NUMBER CODE: When this code is detected, the stored telephone number is called on the line the audio interface is assigned to. (Default: ##)

DTMF (2)

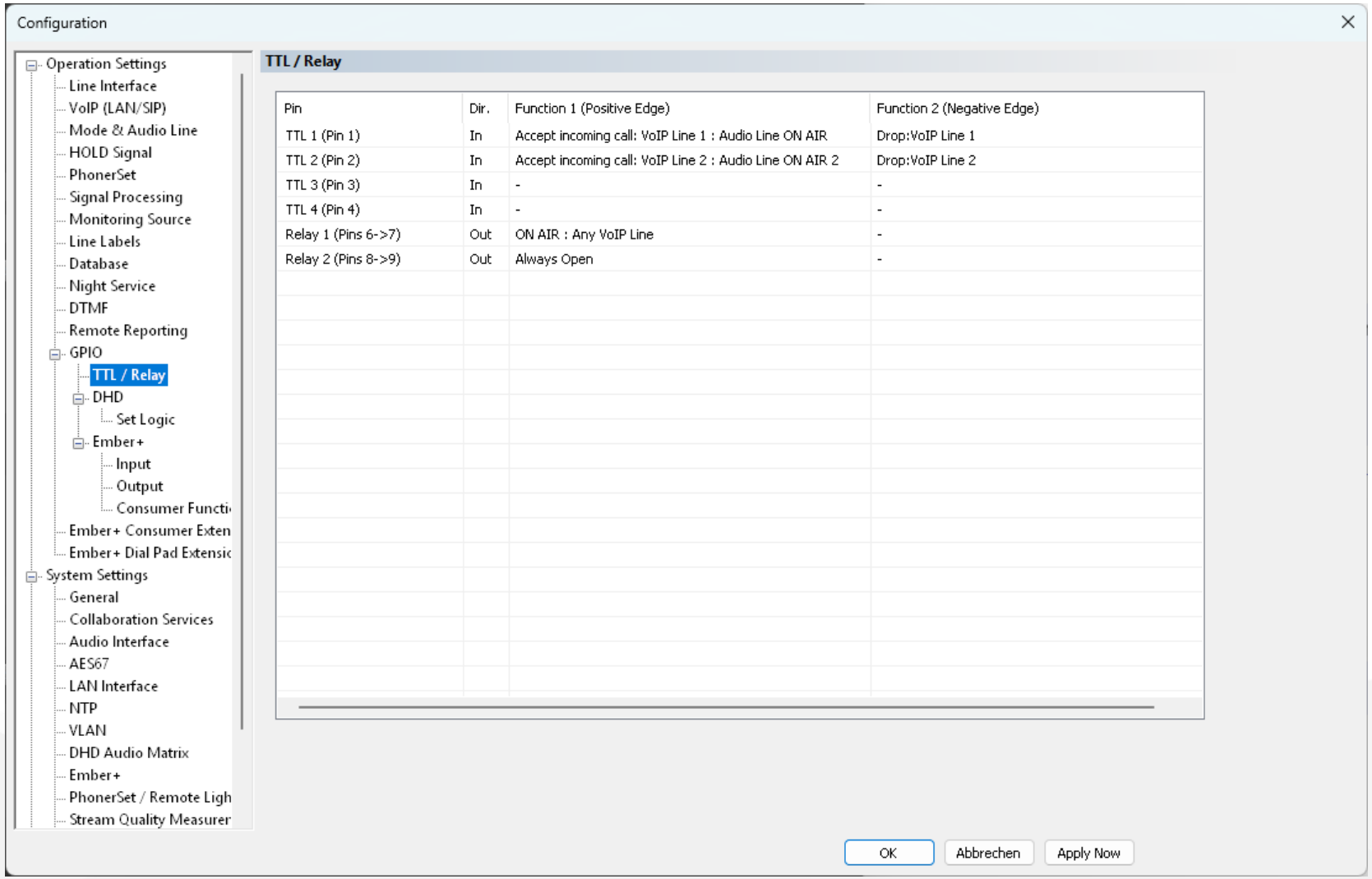


Remote Reporting (1)

- Remote Reporting lets a caller go On Air without a user controlling the MAGIC TH2plus.
- A caller calls the phone number of the MAGIC TH2plus.
- Calls are automatically answered by the device.
- The audio output is muted until the correct PIN was entered.
- The caller hears a continuous tone indicating that the device is ready to accept the Login PIN.
- A tone signals whether the PIN was accepted or not.
- If the PIN was accepted the audio output of the MAGIC TH2plus is unmuted.
- Any GPIO output can be programmed to signal that a certain PIN code was accepted.
- This can be used by emergency services or disaster control authorities to make announcements.

- Another use case is to trigger a Phone Break-In in the EWB & EWS/ASA Manager of AVT DAB products.
- ACTIVATION: Remote Reporting is activated individually for line 1 and line 2.
- CALLER LOGIN PIN: The caller must enter that PIN with the keypad of their phone.
- DROP LINE PIN: When the MAGIC TH2plus detects this PIN code, the line is disconnected. That is not required. The caller can just hang up as well.
- MAX CONNECTION DURATION: Limits the duration of the phone call in case the caller forgets to hang up.
- ADDITIONAL LOGIN PINS: Each login PIN can trigger a different GPIO output.

Remote Reporting (2)


Configuration
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Line Labels
Database
Night Service
DTMF
Remote Reporting
GPIO
TTL / Relay
DHD
Set Logic
Ember+
Input
Output
Consumer Functi
Ember+ Consumer Exten
Ember+ Dial Pad Extensic
System Settings
General
Collaboration Services
Audio Interface
AES67
LAN Interface
NTP
VLAN
DHD Audio Matrix
Ember+
PhonerSet / Remote Ligh
Stream Quality Measurer
TTL / Relay
Pin | Dir. | Function 1 (Positive Edge) | Function 2 (Negative Edge)
TTL 1 (Pin 1) | In | Accept incoming call: VoIP Line 1 : Audio Line ON AIR | Drop:VoIP Line 1
TTL 2 (Pin 2) | In | Accept incoming call: VoIP Line 2 : Audio Line ON AIR 2 | Drop:VoIP Line 2
TTL 3 (Pin 3) | In | - | -
TTL 4 (Pin 4) | In | - | -
Relay 1 (Pins 6->7) | Out | ON AIR : Any VoIP Line | -
Relay 2 (Pins 8->9) | Out | Always Open | -
OK
Abbrechen
Apply Now

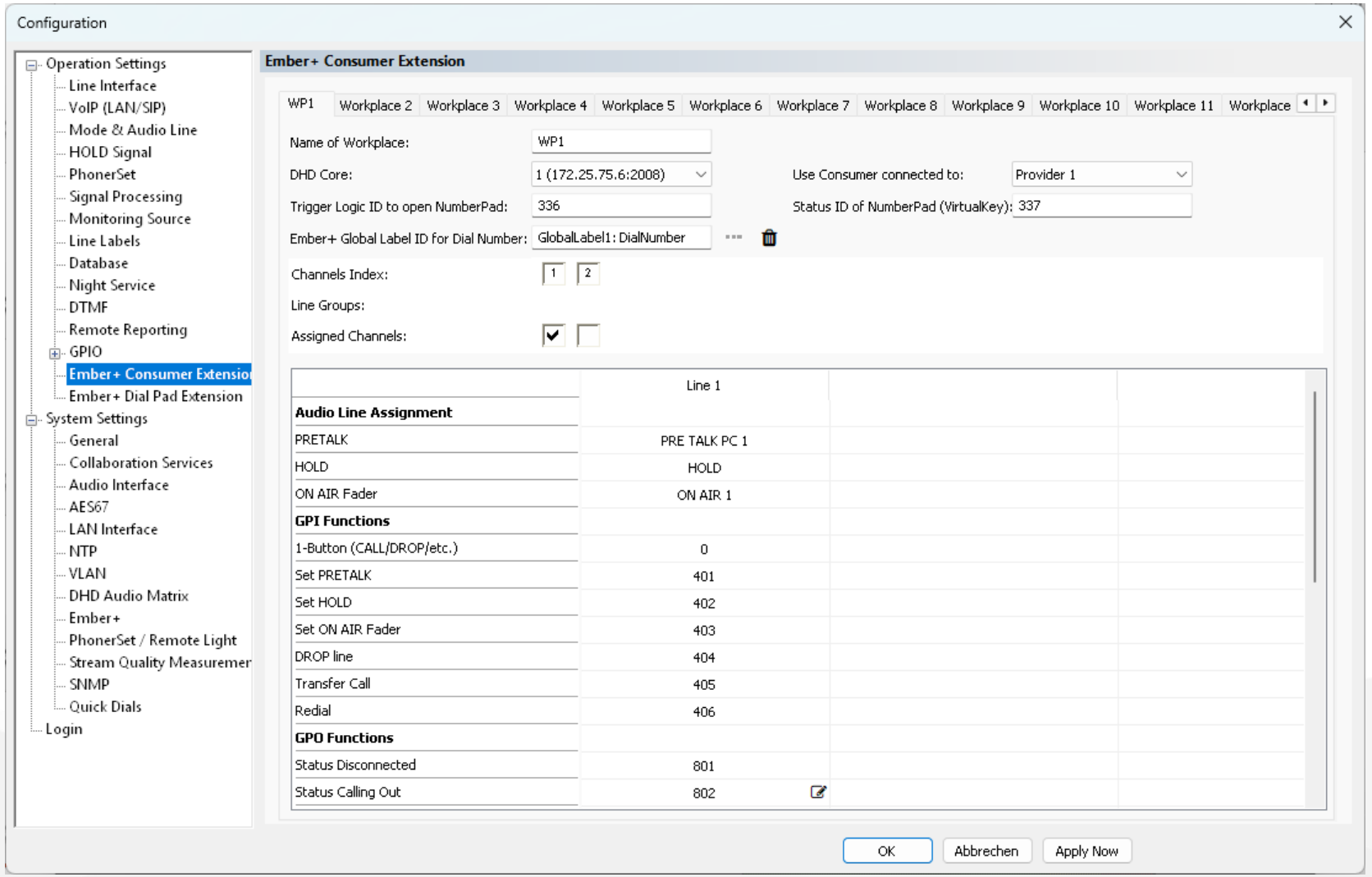
GPIO (1)

- Configure GPIOs (General Purpose Input / Output) on the GPIO pages.
- The MAGIC TH2plus provides 4 hardware TTLs through its GPIO connector at the back.
  - Each TTL GPIO can be configured individually as input or output.
  - In the "high" position, a TTL output supplies a voltage of 3.3 V and a maximum current of 10 mA.
  - When used as an input:
    - Each pin has an internal pull up resistor. An open pin has therefore the logic state “high”.
    - Use for example an external relay to short the pin to device ground which is also available through the GPIO connector.
- The MAGIC TH2plus provides 2 hardware Relays through its GPIO connector at the back.
  - A relay can be loaded with maximum 200 mA and 48 V.
- Double-click a list entry to configure the TTL or Relay function.
  - Find the details on the available functions in the **Signalling and Control with EmBER+** document available in the download section of our website.
- If DHD AUDIO MATRIX is enabled, up to 64 GPIOs are available under GPIO – DHD – SET LOGIC.
  - Each GPIO can be configured individually as input or output.
  - Find the details on the available functions in the **Signalling and Control with DHD SetLogic** document available in the download section of our website.

GPIO (2)

- If EMBER+ PROVIDER is enabled, up to 64 inputs and 64 outputs are available under GPIO – EMBER+ – INPUT/OUTPUT.
  - Find the details on the available functions in the **Signalling and Control with EmBER+** document available in the download section of our website.
- If EMBER+ CONSUMER is enabled, up to 20 functions are available for each consumer under GPIO – EMBER+ – CONSUMER FUNCTIONS.
  - Find the details on the available functions in the **Signalling and Control with EmBER+** document available in the download section of our website.

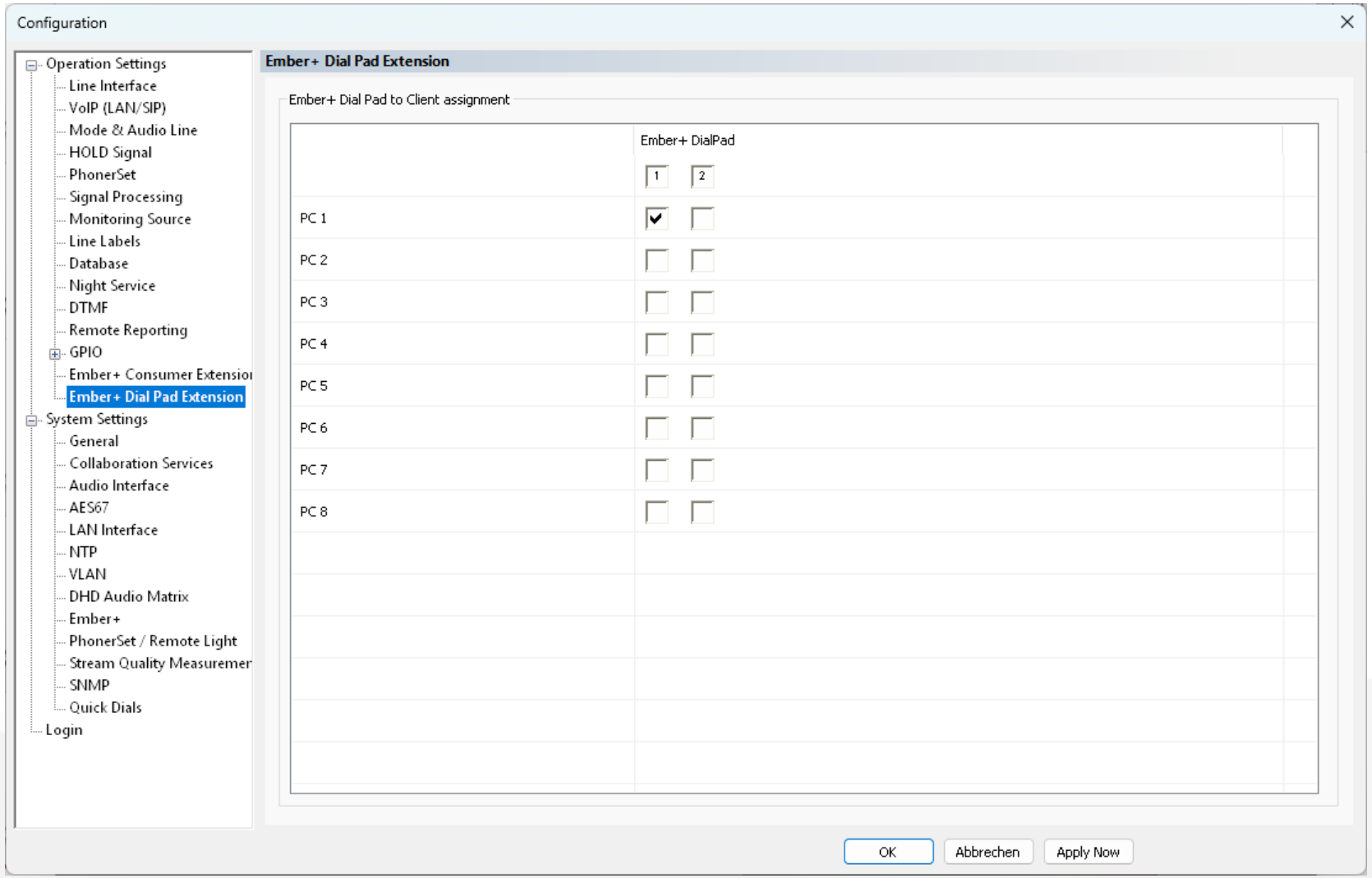
GPIO (3)



Ember+ Consumer Extension (1)

- The EMBER+ CONSUMER EXTENSION makes it easy to control telephone lines of the MAGIC TH2plus from a mixing console without using the PC software.
- The mixing console must act as Ember+ provider and support DHD SetLogic.
- Configure the workplaces on the EMBER+ CONSUMER EXTENSION configuration page.
  - Find the complete configuration guide with examples in the **Ember+ Consumer Extension** document available in the download section of our website.

Ember+ Consumer Extension (2)



Ember+ Dial Pad Extension (1)

- Define which PC clients display the number entered on the respective Ember+ Dial Pad on the EMBER+ DIAL PAD EXTENSION configuration page.
- 2 pre-defined Dial Pads can be provided by the MAGIC TH2plus Ember+ Provider.
- Find the dial pads in the Ember+ tree of the MAGIC TH2plus under:
  AVT MAGIC TH2plus > GPIOs > Dial Pad N
- Find the number entered via a dial pad in the Ember+ tree of the MAGIC TH2plus under:
  AVT MAGIC TH2plus > Operation > Dial Pad Numbers > Dial Pad Number N

Ember+ Dial Pad Extension (2)

MAGIC TH2plus

Local Settings

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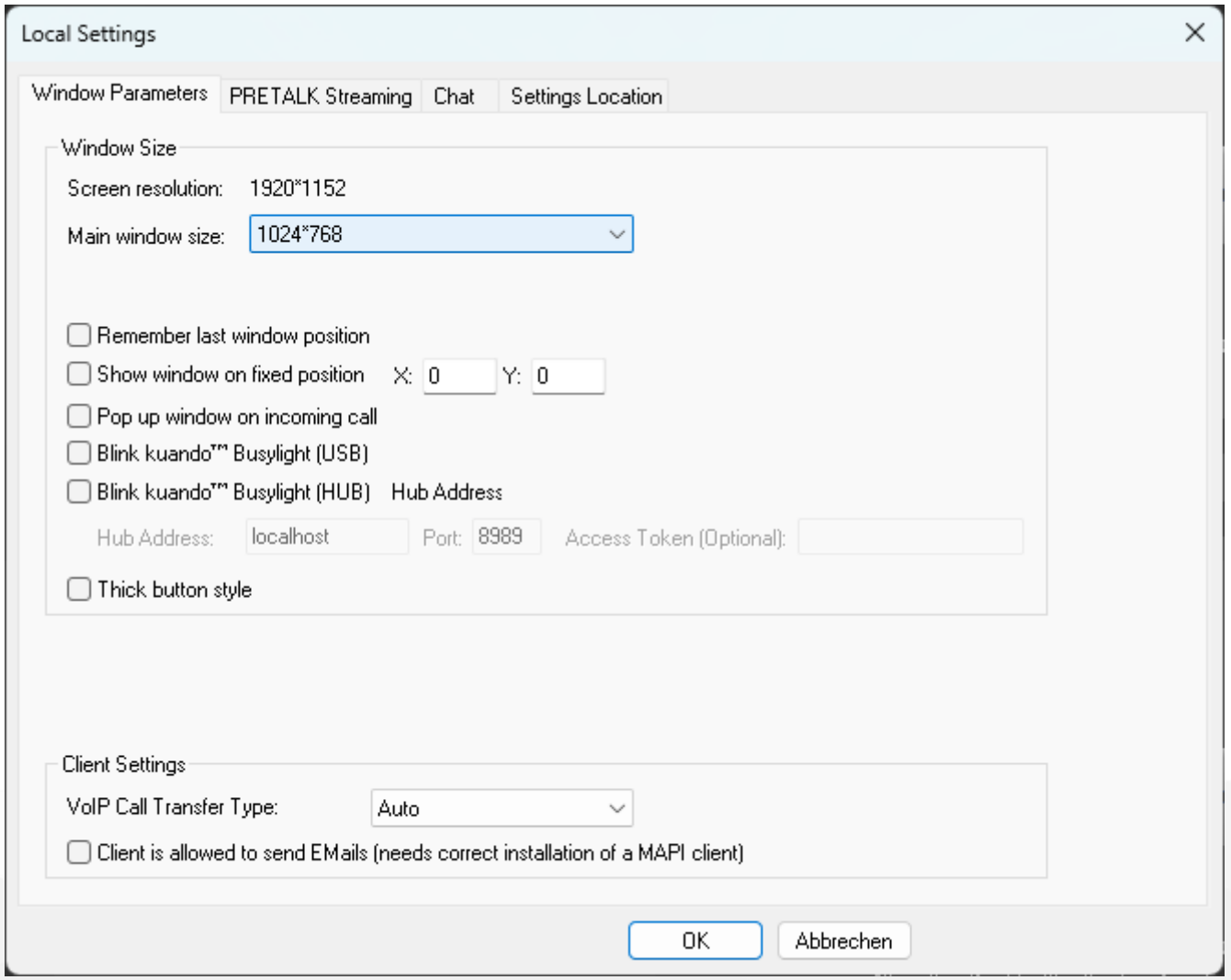


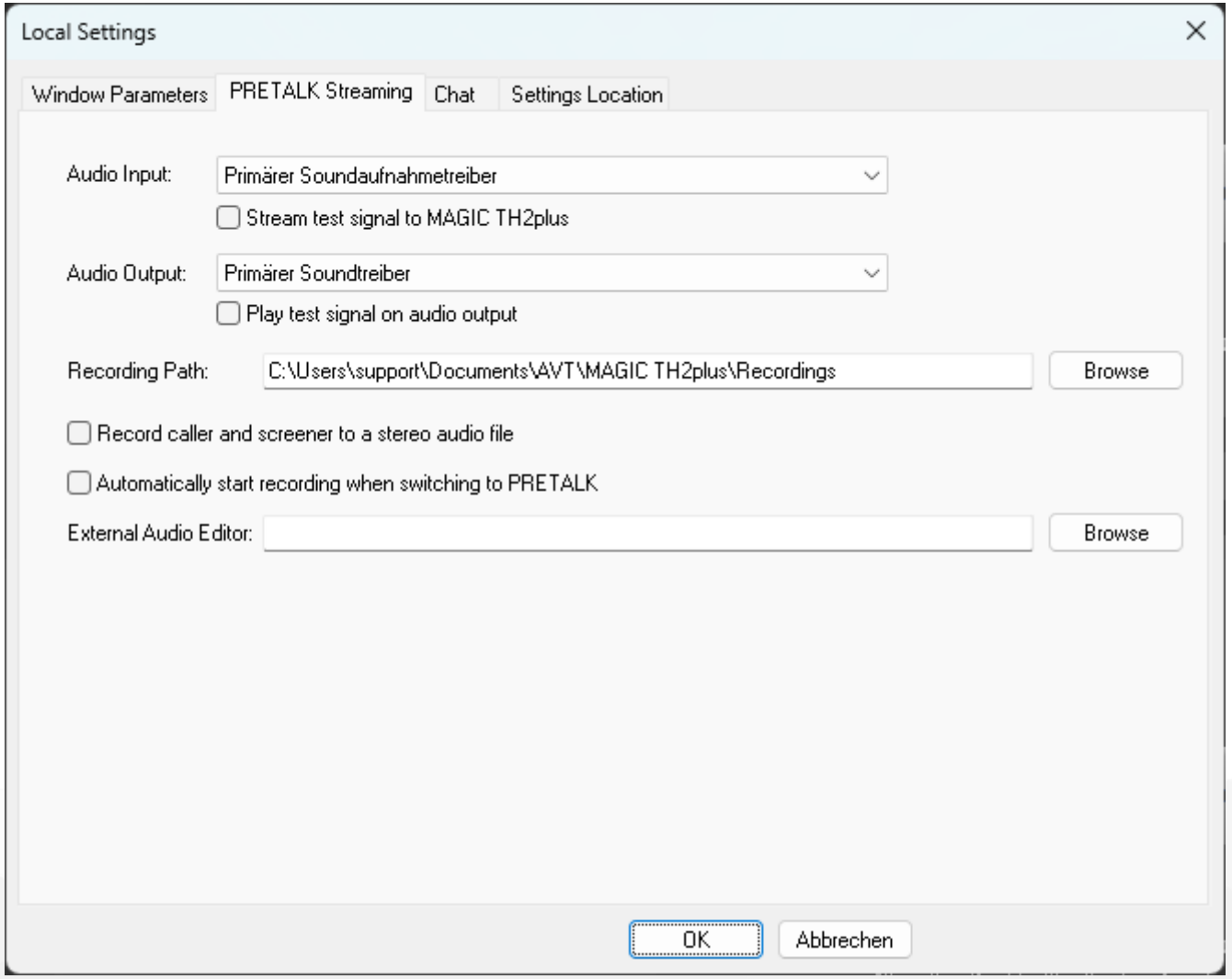
Window Parameters (1)

- Define the appearance of the PC software on the WINDOW PARAMETERS configuration page.
- SCREEN RESOLUTION: Displays the screen resolution of the monitor the application is displayed on as it is provided by the operating system. This may be different from the resolution defined in the graphic card driver due to the high DPI scaling feature of the operating system.
- MAIN WINDOW SIZE: Define the size of the main panel. Several options are available:
  - AUTO: The window will automatically take up the full screen without covering the taskbar. The window size is determined when the application starts. If the screen resolution changes or the taskbar changes, the application needs to be restarted.
  - CUSTOM: Set a custom windows size in pixels. The supported range is:
    - Width: 900 – 8000 pixels
    - Height: 280 – 6000 pixels
  - Predefined sizes: A selection of predefined windows sizes.
- REMEMBER LAST WINDOW POSITION: The last window position of the main window is stored when closing the app. The next time the app is started, the window is displayed in the same place if this option is enabled. Otherwise, it is displayed in the top left corner of the main screen.
- SHOW WINDOW ON FIXED POSITION: Define the position of the top left corner of the application window on the screen when the application starts. The top left corner of the main screen has the coordinates X=0, Y=0.

Window Parameters (2)

- POP UP ON INCOMING CALL: Enable to bring the main panel to the foreground when a call comes in. Windows can prevent the window from coming to the foreground.
- KUANDO BUSYLIGHT: Lets a kuando Busylight blink via USB or the HUB when a call comes in.
  - When using the kuando HUB, IP address, port (and Access Token) of the HUB must be specified.
- THICK BUTTON STYLE: Buttons get a wider edge.
- VOIP CALL TRANSFER TYPE:
  - ATTENDED CALL TRANSFER: The MAGIC TH2plus waits until the phone is picked up on the other phone giving the possibility to talk in Pretalk. In Hold or On Air, the MAGIC TH2plus hangs up as soon as the call transfer destination answers the call.
    - Note: Talking to the call transfer destination only works if **ECT on Pretalk with Auto Drop** on the **Line Interface** configuration page is disabled.
  - BLIND CALL TRANSFER: The MAGIC TH2plus sends a request to the PBX to transfer the call and hangs up. There is no chance to talk to the call transfer destination. If the transfer call is not answered, the original call cannot be retrieved.
  - AUTO: Uses Attended Call Transfer in Pretalk, otherwise Blind Call Transfer is used.
- CLIENT IS ALLOWED TO SEND EMAILS (NEEDS CORRECT INSTALLATION OF A MAPI CLIENT): Allows the client to send invitation emails for WebRTC calls. Requires Magic Collaboration Server.

Window Parameters (2)



PRETALK Streaming (1)

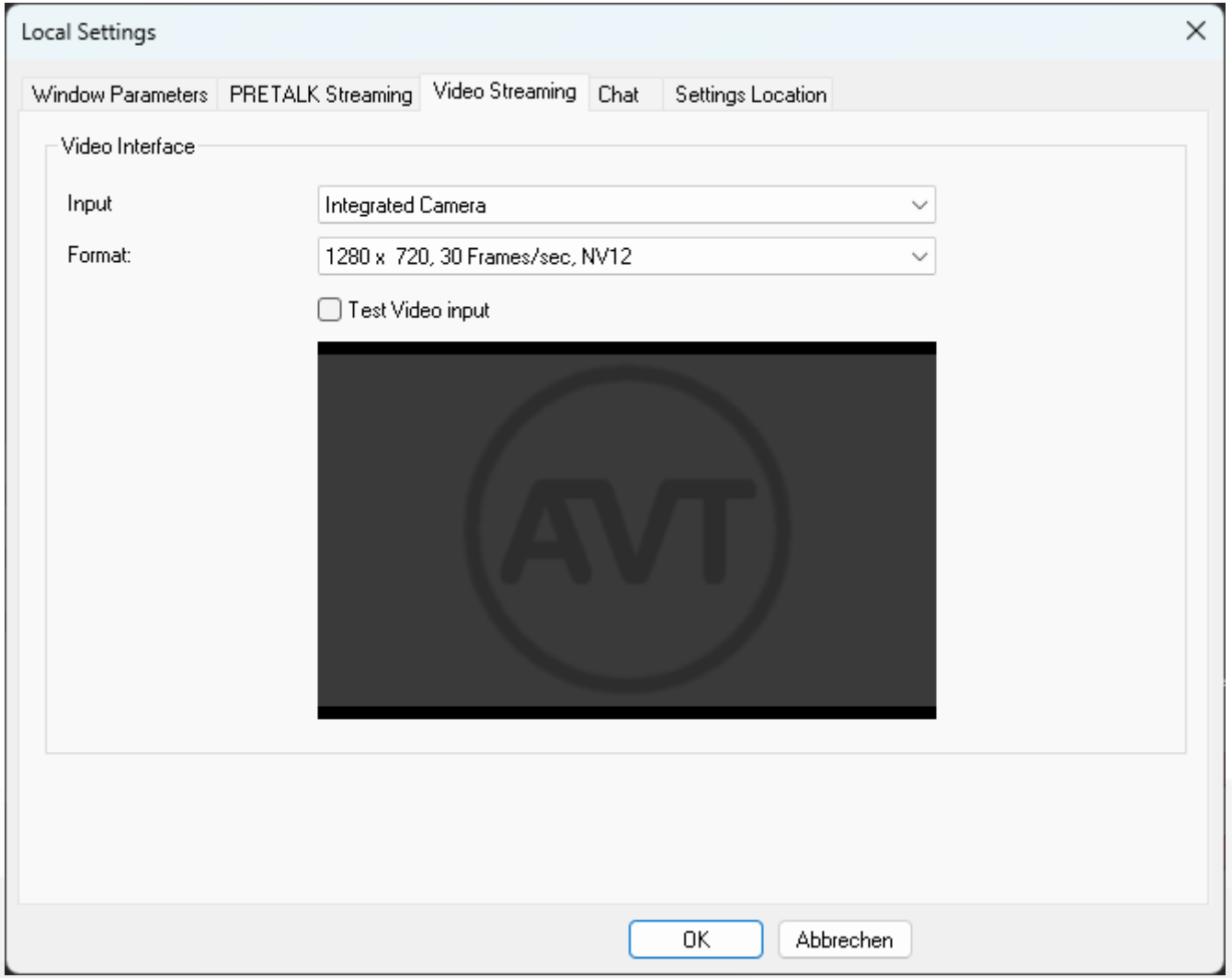
- PRETALK STREAMING
  - The audio signal of an audio input of the PC is streamed to the MAGIC TH2plus by the PC software.
  - The MAGIC TH2plus streams the audio signal of the caller to the PC.
  - The PC software outputs the audio signal of the caller to an audio interface of the PC.
  - A Pretalk stream is either fixed, where there is a permanent stream between the PC and the MAGIC TH2plus, or dynamic, where the PC software requests a stream from the MAGIC TH2plus when needed.
  - The audio signals of the caller and the user can also be recorded by the PC software.
  - The RECORD button on the PC software is only available when at least one call is in Pretalk und the client uses Pretalk Streaming.

- AUDIO INPUT: All available audio inputs are listed here. Select an audio input, the Primary Sound Capture Driver or the Default Communication Device. (Check the sound settings of the operating system to see which audio interfaces are set as Primary Sound Capture Driver and Default Communication Device.)
- STREAM TEST SIGNAL TO MAGIC TH2PLUS: If enabled, the PC software uses the clock provided by the audio interface to generate an audio signal which is streamed to the MAGIC TH2plus. There must be a telephone line in pretalk to hear the audio signal at the caller's end.

PRETALK Streaming (2)

- AUDIO OUTPUT: All available audio outputs are listed here. Select an audio output, the Primary Sound Driver or the Default Communication Device. (Check the sound settings of the operating system to see which audio interfaces are set as Primary Sound Driver and Default Communication Device.)
- PLAY TEST SIGNAL ON AUDIO OUTPUT: If enabled the PC software generates an audio signal and plays it on the audio output if the Pretalk stream from the MAGIC TH2plus is received.
- RECORDING PATH: Folder on the PC or on the network to store the recordings.
- RECORD CALLER AND SCREENER TO A STEREO AUDIO FILE: Enable this option to record the audio signals of the caller and the user of the PC software to separate channels of a stereo audio file.
  If disabled, only the audio signal of the caller is recorded to a mono audio file.
- AUTOMATICALLY START RECORDING WHEN SWITCHING TO PRETALK: Enable this option to automatically record any caller in Pretalk. Recording stops automatically when a call is switched to Hold or On Air or when the call is dropped.
- EXTERNAL AUDIO EDITOR: Define an external audio editor.
  To open a recording in the audio editor, display the Recordings list, click on a recording with the right mouse button and click EDIT

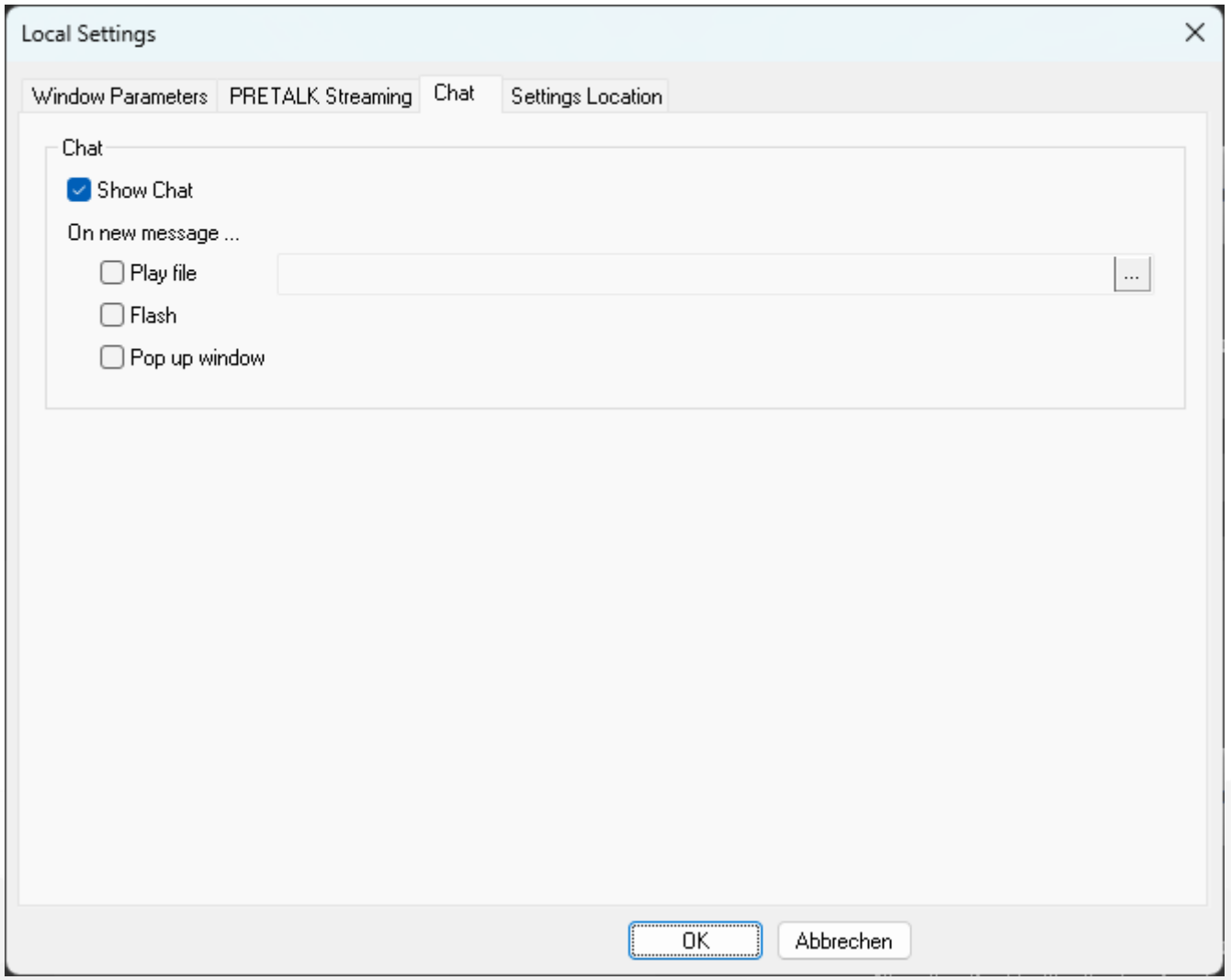
PRETALK Streaming (3)



Video Streaming (1)

- Configure local video or webcam input for Video transmission via the optional Magic Collaboration Services.
- VIDEO INTERFACE
  - INPUT: Select one of the video inputs available on the PC.
  - FORMAT: Select one of the video formats supported by the selected input.
  - TEST VIDEO INPUT: Displays the live video from the selected input in the video window below.

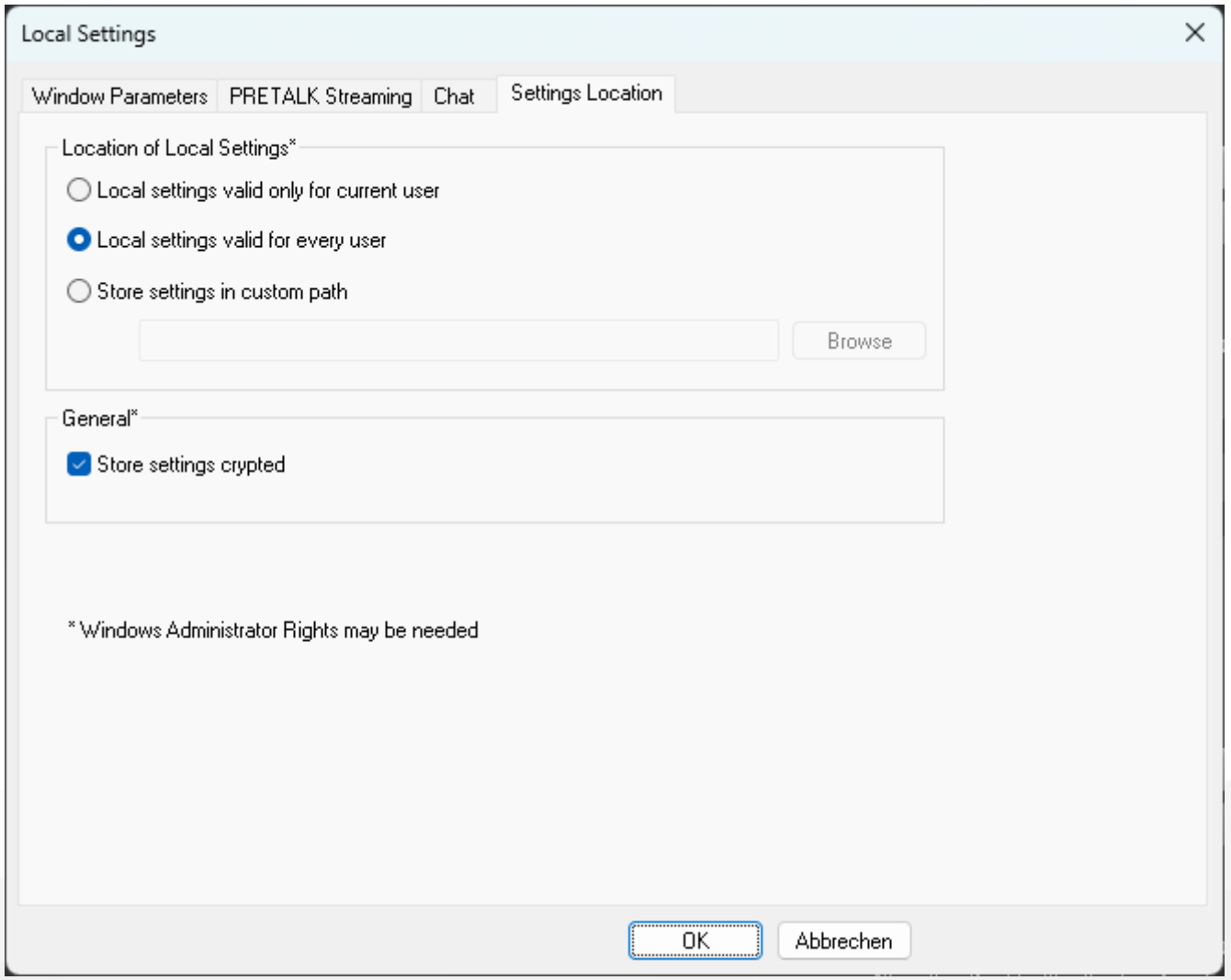
Video Streaming (2)


Local Settings
Window Parameters
PRETALK Streaming
Chat
Settings Location
Chat
Show Chat
On new message ...
Play file
...
Flash
Pop up window
OK
Abbrechen

Chat (1)

- Define the parameters for the PC software chat on the CHAT page.
- The PC clients have an integrated chat function. A chat window is displayed when clicking the SHOW LISTS button in the top action bar of the main panel.
- SHOW CHAT: Enables the chat window on this client.
- ON NEW MESSAGE: Define how a new message is indicated.
  - PLAY FILE: Enable this option to play the specified audio file.
  - FLASH: Enable this option to make the frame of the chat feed flash.
  - POP UP WINDOW: Enable this option to bring the application window to the foreground.

Chat (2)



Settings Location (1)

- Define the storage location of the local settings on the SETTINGS LOCATION page.
- Local settings include all settings in the LOCAL SETTINGS window as well as the settings under MENU > CONFIGURATION > CONTROL INTERFACE.
- The selected storage location determines which Windows user rights are required to change the local settings.
- Changing these settings may require administrator rights.
- Select a settings location:
  - LOCAL SETTINGS VALID ONLY FOR CURRENT USER: The settings are saved in the user directory of the logged-in Windows account. User rights are sufficient to change the local settings. (%APPDATA%\LOCAL\AVT\MAGIC TH2plus.data)
  - FOR ALL USERS: All users of the PC use the same settings. Windows Administrator rights are required to change the local settings. (%PROGRAMDATA%\AVT\MAGIC TH2plus.data)
  - STORE SETTINGS IN CUSTOM PATH: The settings are saved in an adjustable folder path. The required user rights are determined by the file's properties. The path is saved in the settings.ini file in the installation directory.
- STORE SETTINGS ENCRYPTED: Enable to encrypt the content of the local settings file.

Settings Location (2)

MAGIC TH2plus

Setting Factory Settings

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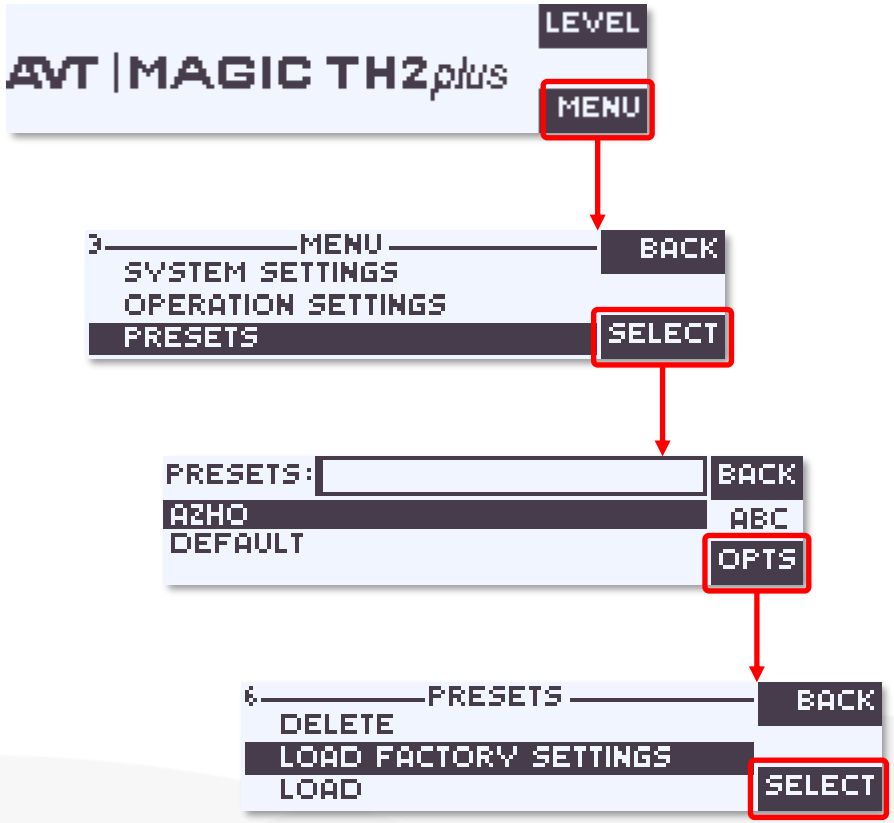
www.avt-nbg.de

- The MAGIC TH2plus can be reset to factory settings via Front Display.
- The configuration of the device is reset.
- All files stored on the device are preserved.
- The Local Settings of all clients are preserved.
- If there is no password configured, the device can be reset via front display as shown on the right.
  - Logo Screen > Menu > Presets > Opts > Load Factory Settings

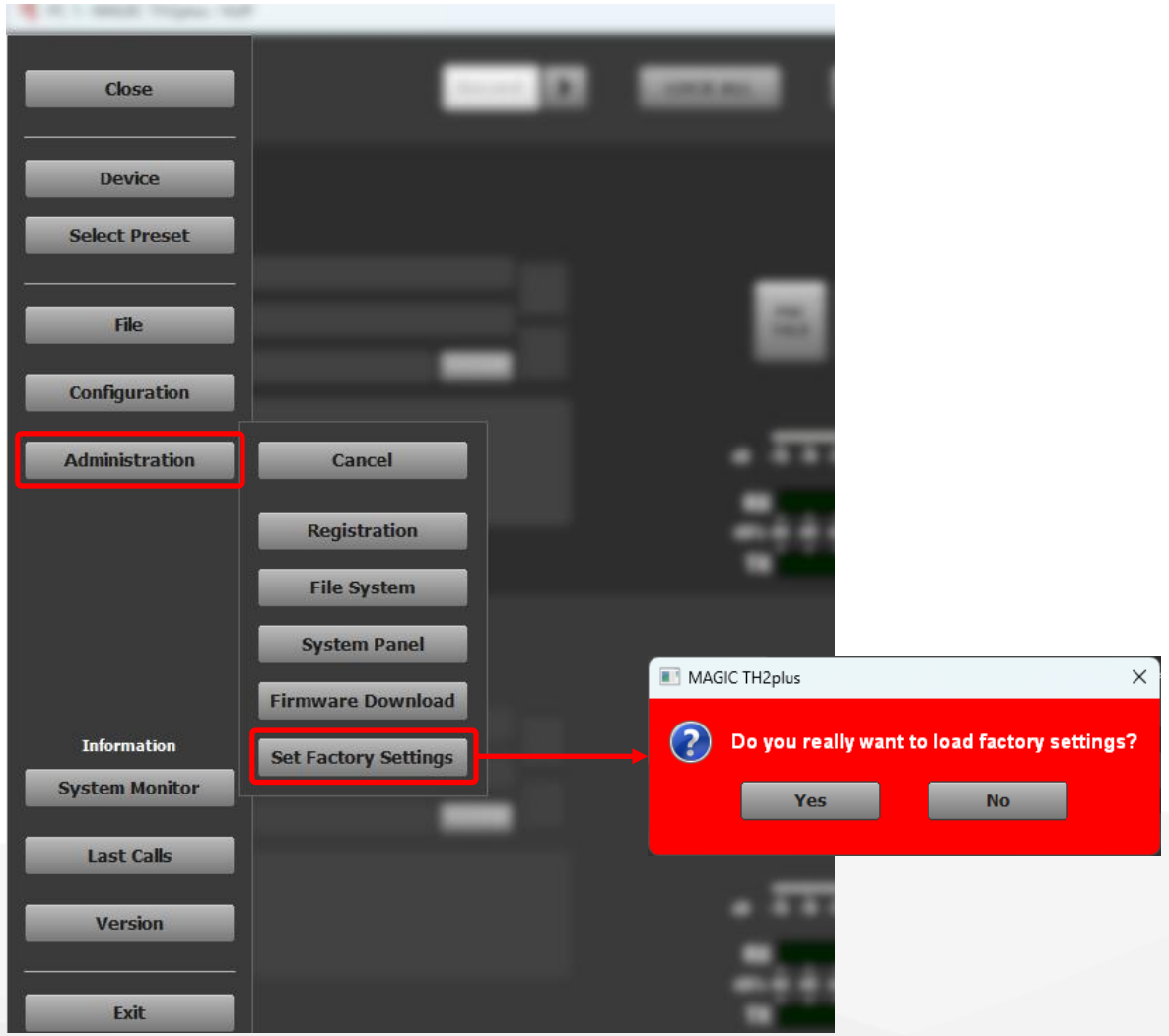


Set Factory Settings (1)

- If there is a password configured but the password is not known, the device can only be reset via front display as shown on the right.
  - Logo Screen > Login > Factory

Set Factory Settings (2)

- The MAGIC TH2plus can also be reset to factory settings via the PC software.
- Go to MENU – ADMINISTRATION – SET FACTORY SETTINGS.



Set Factory Settings (3)

MAGIC TH2plus

Maintenance

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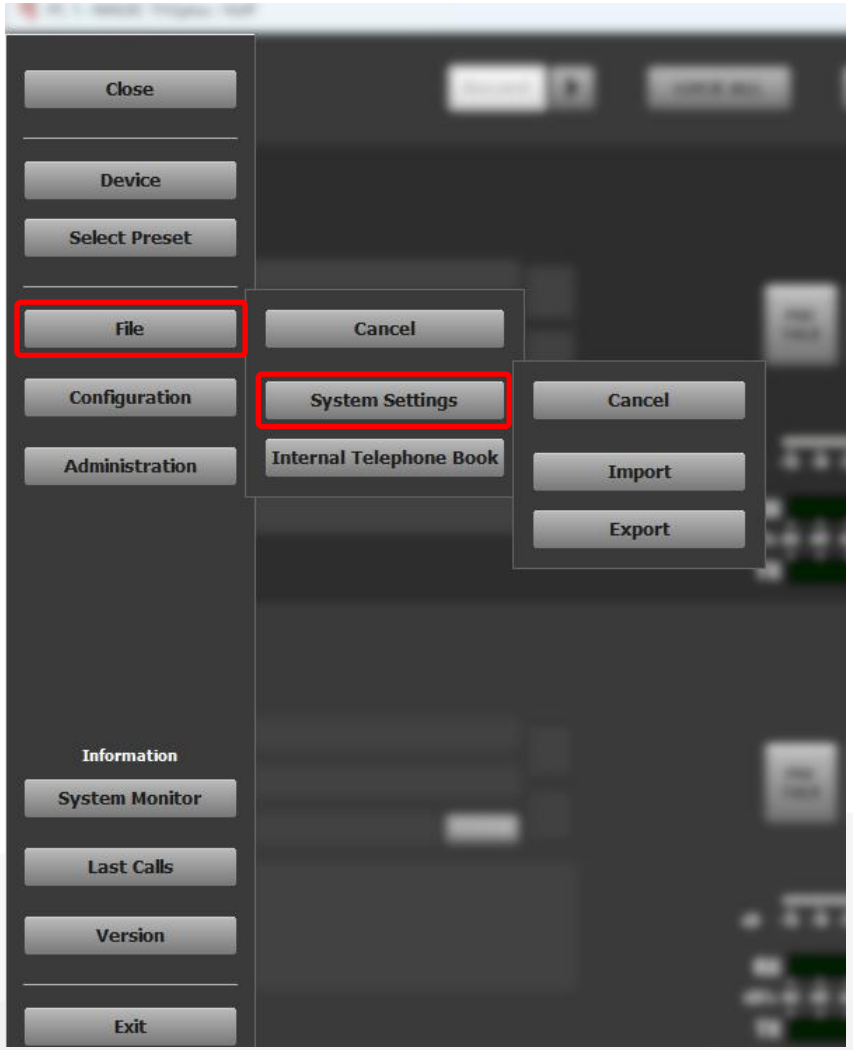
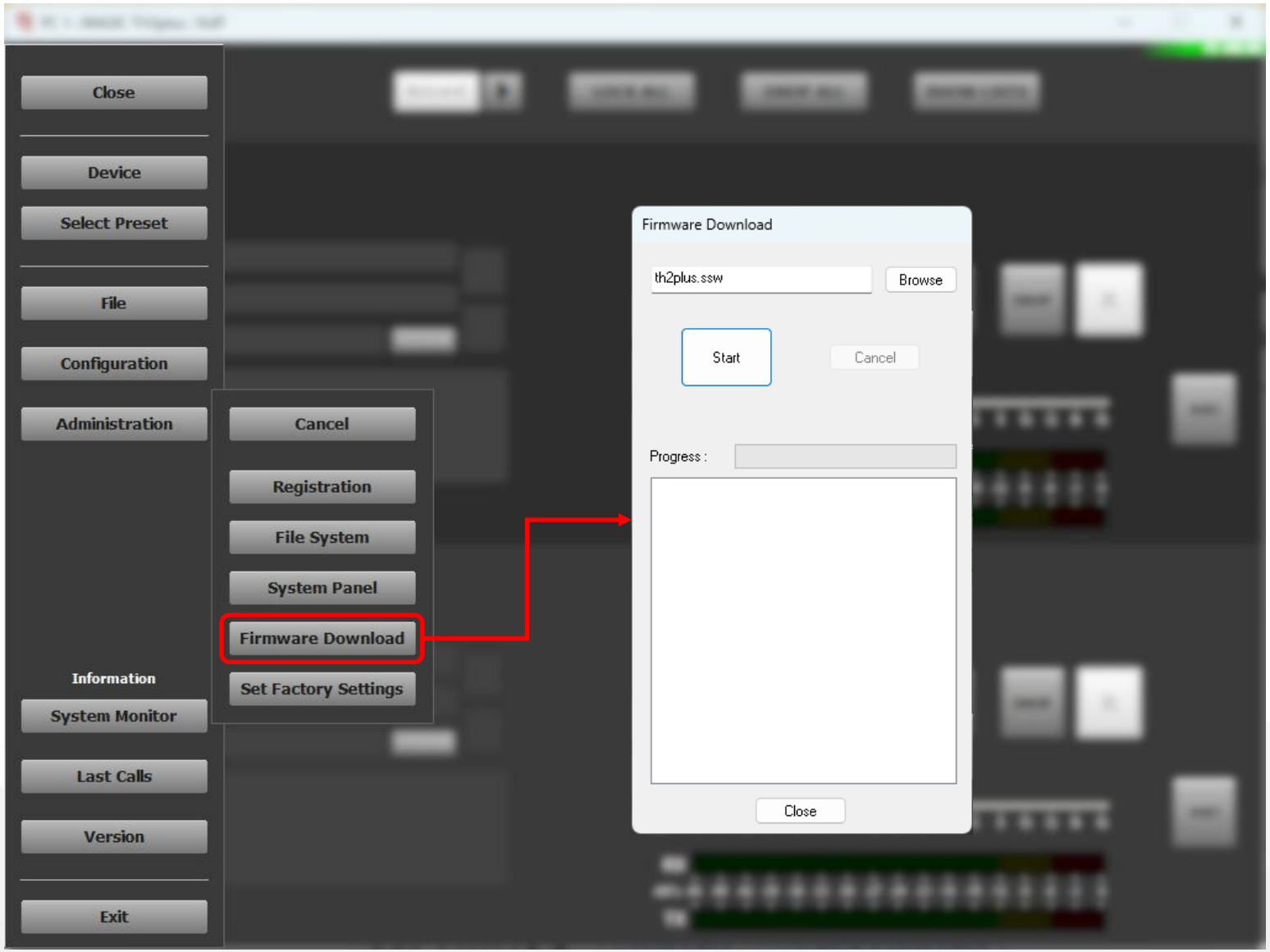
- The system configuration can be saved to a PC via MENU > FILE > SYSTEM SETTINGS > EXPORT
- The backup file contains:
  - The current configuration of the MAGIC TH2plus
  - Presets
  - Recorded Hold signals
- To restore a configuration, open MENU > FILE > SYSTEM SETTINGS > IMPORT.



Backup / Restore (1)

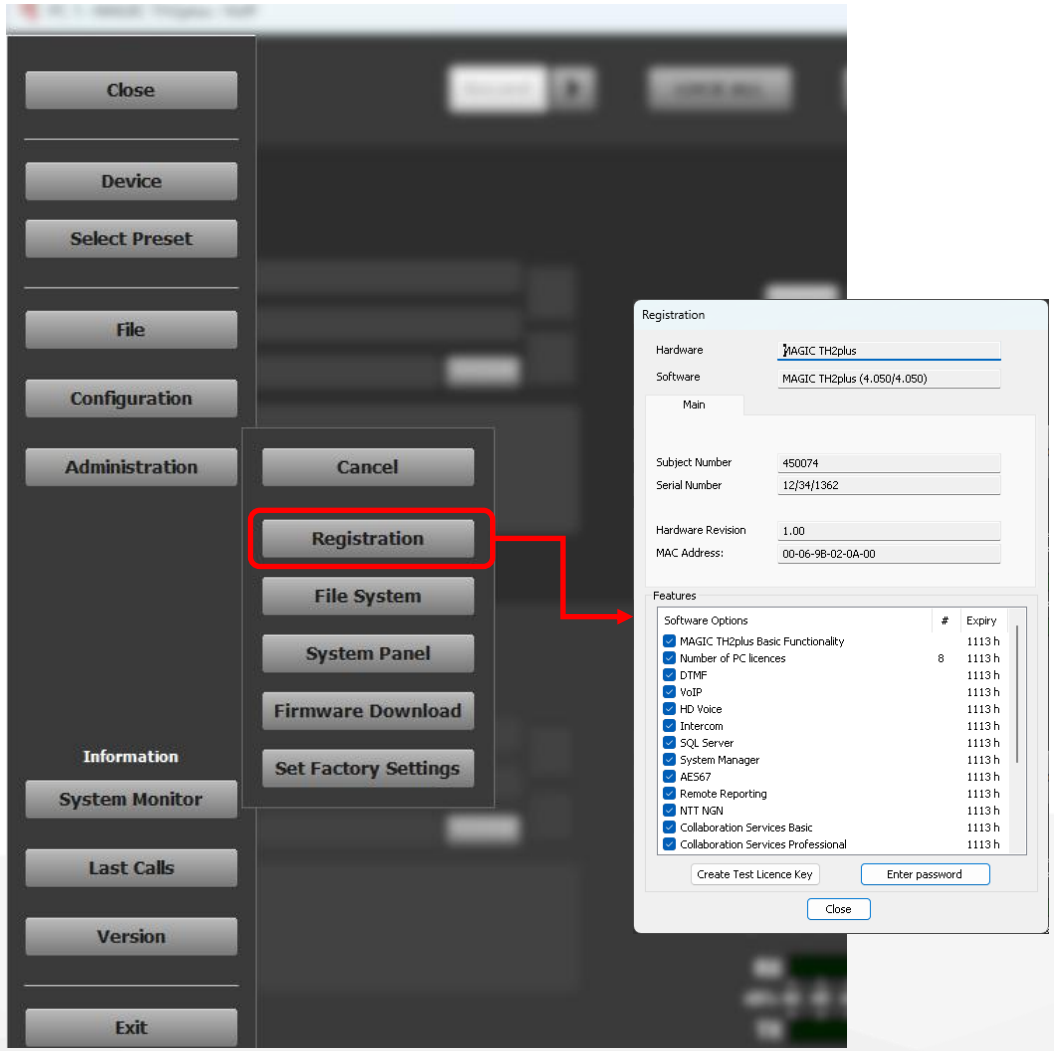


Update and Firmware Download (1)

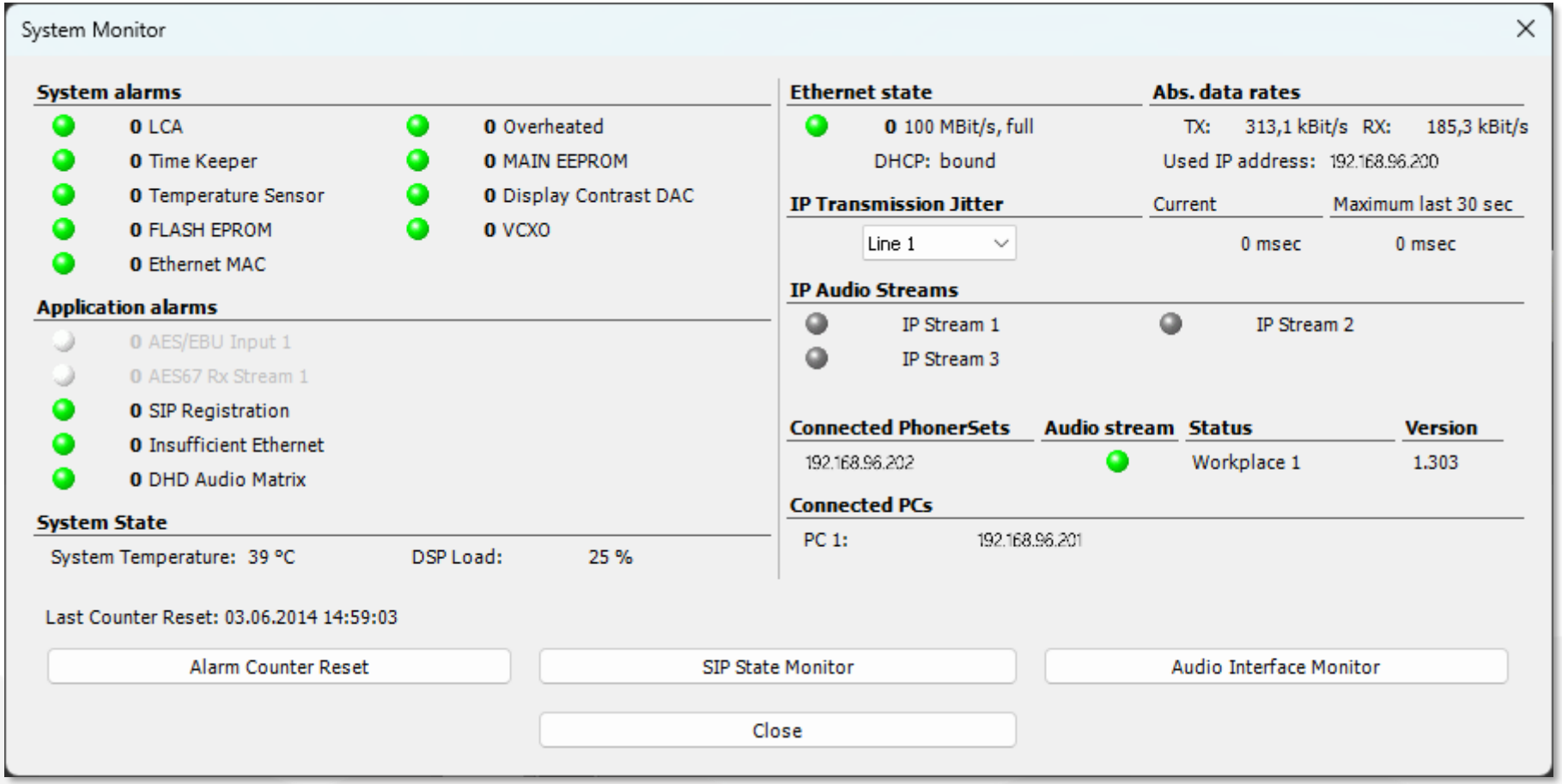
- Find updates to the MAGIC TH2plus software on our website avt-nbg.de in the DOWNLOADS section under SOFTWARE.
- A new release includes a new version of the TH2plus PC software as well as the matching firmware version.
- The firmware file is included in the PC software downloads.
- Update the system by installing the PC software on one client.
- After starting the new version, the user is prompted to update the firmware.
  - Confirm to update the firmware.
  - When the update is finished, the unit will restart.
- It is also possible to update the firmware manually via MENU → ADMINISTRATION → FIRMWARE DOWNLOAD.
  - The firmware file included in the PC software is automatically loaded.
  - Click on BROWSE if you are advised to load a different firmware by AVT support.
- When the TH2plus has restarted, the new PC software must be installed on all clients connected to the system.

Update and Firmware Download (2)

- Open ADMINISTRATION → REGISTRATION to check which SOFTWARE options are available in your system.
- ENTER PASSWORD: Adding new licences is done by entering a licence password.
- Contact us if you like to purchase a licence.
  - Attach the FACTORY NUMBER of your unit which is displayed in the REGISTRATION window.
- CREATE TEST LICENCE KEY: If you like to test a feature before buying it, create a test licence key and send it to us along with the factory number of the unit.
  - The test licence will work for a limited time.
  - The timer only counts when the unit is running.
  - The test licence enables all available features.
  - The remaining runtime of the test licence is displayed in the Expiry column.



Registration (1)



System Monitor (1)

- Open MENU – SYSTEM MONITOR to get an overview of the system status.
- The status is displayed as text as well as LEDs:
  - Red (🔴) : Alarm is active. There is an error.
  - Orange (🟠) : Alarm is active but not relevant for the current configuration.
  - Green (🟢): Status is OK.
- Find alarm counters next to the LEDs which indicate how often the alarm occurred since the Alarm Counter was reset.

- The information is organised in sections:
  - SYSTEM ALARMS: These alarms show the status of the MAGIC TH2plus hardware.
  - APPLICATION ALARMS: These alarms show the status of the basic functionality of the MAGIC TH2plus:
    - AES/EBU Input: The system can detect if there is a valid digital audio signal at the AES inputs. Find more information on the alarm in the right column.
    - AES67 RX STREAM: The built-in AES67 software module cannot receive all configured streams. The status of the DANTE module is not included here.
    - SIP REGISTRATION: At least one of the VoIP lines couldn't register with the SIP server.
    - INSUFFICIENT ETHERNET LAN X: The specified LAN interface could not connect to the switch with 100 Mbit/s, full duplex.
    - DHD AUDIO MATRIX: The MAGIC TH2plus couldn't connect to a configured DHD core.
    - EMBER+ CONSUMER: The MAGIC TH2plus couldn't connect to a configured Ember+ Provider.

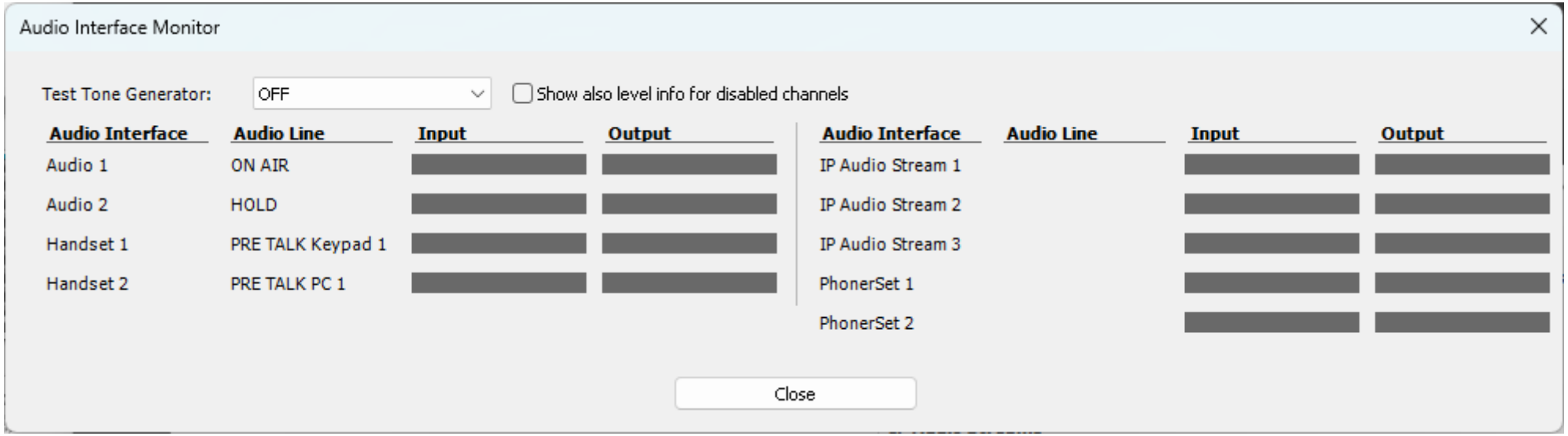
System Monitor (2)

- SYSTEM STATE: Displays the general system health:
  - SYSTEM TEMPERATURE: Displays the temperature on the main board in °C. It is recommended to keep the temperature below 50°C through suitable cooling. Leave at least ½ unit of space below and above the unit for ventilation. The MAGIC TH2plus will raise the TEMPERATURE ALARM when 57 °C are reached. A higher temperature can lead to an undefined operation of the device.
  - DSP LOAD: Displays an estimate of the main DSP utilisation.
- ETHERNET STATE: Displays information of the LAN interface:
  - LED: Displays whether the physical connection to the network could be established.
  - SPEED: Displays speed and duplex mode of the network connection. (100MBit/s, full is required)
  - TX/RX: Gross data rates of the interface in send and receive direction. The MAGIC TH2plus can handle up to 25 Mbit/s in RX direction. If the data rate is higher, check for broadcast or multicast traffic that is reaching the Magic TH2plus unintentionally.
- IP TRANSMISSION JITTER: Displays the jitter statistics of a selected VoIP audio stream.
  - LINE: Select a telephone line to monitor it.
  - CURRENT: Displays the current jitter value.
  - MAX LAST 60 SECONDS: Shows the highest jitter value which occurred during the last 60 seconds.
- AES67 RX STREAMS: Displays the status of the built-in AES67 software module.
  - STREAM NAME
  - PACKET LOSS: Number of audio packets lost in the received streams.
  - PTP STATE: Precision Time Protocol. The MAGIC TH2plus can only work as SLAVE.
  - PTP MASTER: IP address of the PTP master in the audio network.
  - PATH DELAY: Current delay to the PTP master.

System Monitor (3)

- IP AUDIO STREAMS: Displays the status of the optional Pretalk Streams.
  - LED: Displays whether the MAGIC TH2plus receives a pretalk stream from a PC software client.
  - NAME: Name of the PC software client to which the stream is currently assigned.
- CONNECTED EMBER+ CONSUMER: Shows which Ember+ Consumers are connected to the MAGIC TH2plus's Ember+ Provider module.
- CONNECTED REMOTE LIGHT PROTOCOL DEVICES: Shows which devices are to the MAGIC TH2plus via the AVT Remote Light Protocol.
- DHD CORE CONNECTIONS: Show the status of the connections to the configured DHD cores.
- CONNECTED PHONERSETS: Shows the status of connected PhonerSet phones:
  - IP ADDRESS of the PhonerSet.
  - AUDIO STREAM: Status of the audio stream for pretalk.
  - WORKPLACE: The workplace configured in the PhonerSet app.
  - VERSION: Version number of the PhonerSet app installed on the telephone.
- CONNECTED PCS: Displays the PC clients connected to the MAGIC TH2plus.
  - PC X: Control port used by the PC client.
  - IP address of the client
- MAGIC COLLABORATION SERVICES: Status of the collaboration services module:
  - API ACCESS: Status of the connection from the PC client to the MCS API address.
  - MS TEAMS ACCESS: Status of the connection from the Magic Collaboration Server to Microsoft's Teams API.
  - VIDEO RECEIVER: Status of the video receiver software module of the PC software.
  - RECEIVING VIDEO: Shows if the PC software is receiving video from the Magic Collaboration Server.
  - NDI STREAMING: Shows if the Magic Collaboration Server is streaming video via NDI to the local network.

System Monitor (4)

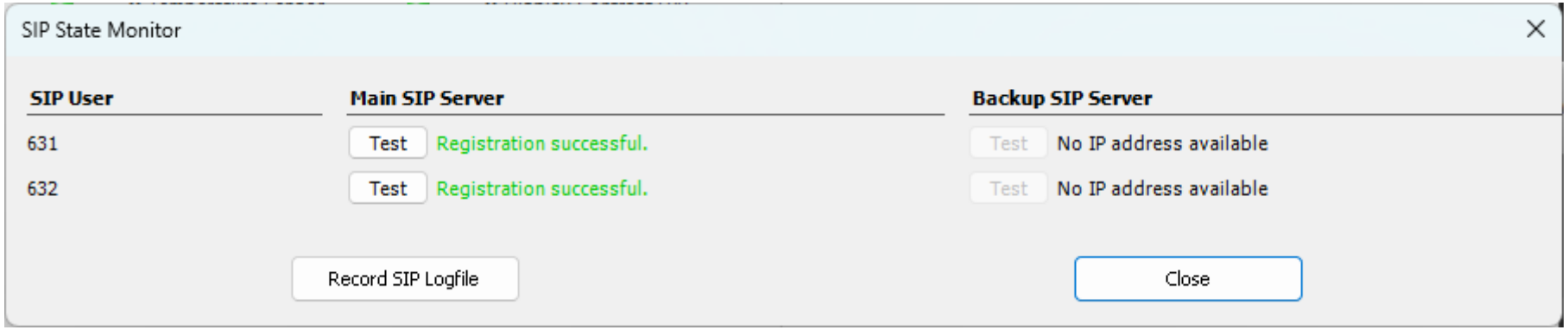


Audio Interface Monitor (1)

- Open MENU – SYSTEM MONITOR – AUDIO INTERFACE MONITOR to get an overview of the audio interfaces.
- TEST TONE GENERATOR: Select an audio interface from the drop-down box to generate a sine test signal on the respective audio output.
- SHOW ALSO LEVEL INFO FOR DISABLED CHANNELS: By default, only levels of audio channels that are in use are transmitted to the PC software. Enable to see all audio levels.
- SHOW AUDIO LINES: Enable to also show the audio lines which are assigned to the audio interfaces.

- Each audio channel of the device is displayed:
  - AUDIO INTERFACE: Name of the audio channel.
    - AES/EBU: Digital audio interfaces at the back of the device.
    - AUDIO: Analogue audio interfaces at the back of the device.
    - HANDSET: Handset audio interfaces at the front of the device.
    - IP AUDIO STREAM: Pretalk streams over IP.
    - PHONERSET: PhonerSet audio streams over IP.
    - AES67: AES67 audio channels of the AES67 software module.
  - INPUT: Audio level of the signal fed to the device.
  - OUTPUT: Audio level of the signal emitted by the device.

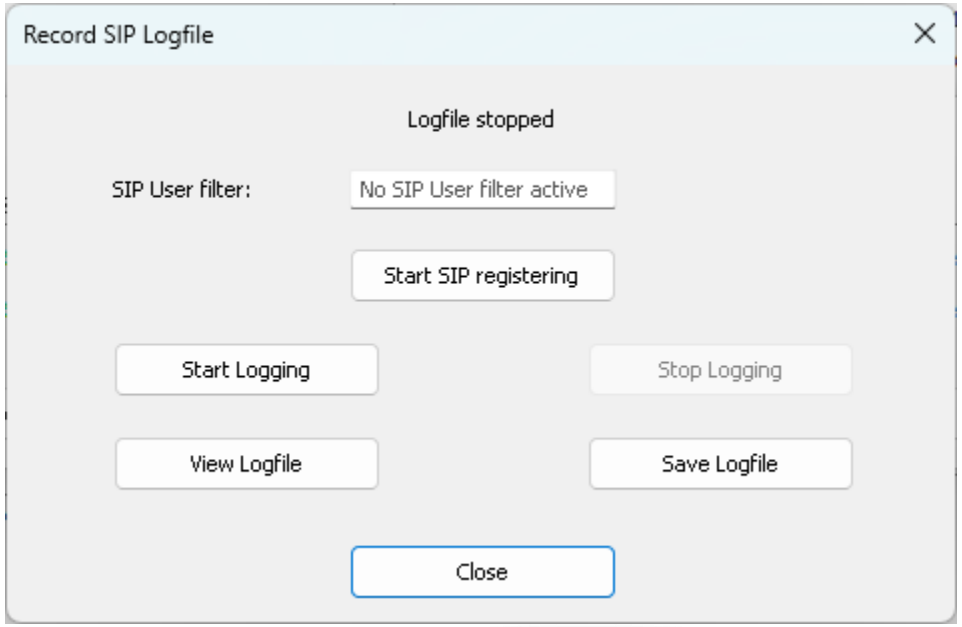
Audio Interface Monitor (2)



SIP / Line State Monitor (1)

- Open MENU – SYSTEM MONITOR – SIP / LINE STATE MONITOR to get an overview of the VoIP telephone lines.
- Each telephone line is displayed in a line of the screen:
  - SIP USER: SIP username as configured.
  - MAIN SIP SERVER: State of registration at the main SIP server.
    - TEST: Click to start registration. The result is displayed next to the button. The test may take up to 2 minutes.
    - STATE: State of the registration process in plain text.
  - BACKUP SIP SERVER: State of registration at the backup SIP server.
    - TEST: Click to start registration. The result is displayed next to the button. The test may take up to 2 minutes.
    - STATE: State of the registration process in plain text.
  - COLLABORATION SERVICES: State of registration at the Magic Collaboration Server.
    - TEST: Click to start registration. The result is displayed next to the button. The test may take up to 2 minutes.
    - STATE: State of the registration process in plain text.

SIP / Line State Monitor (2)



Record SIP Logfile (1)

- Open MENU – SYSTEM MONITOR – SIP / LINE STATE MONITOR – RECORD SIP LOGFILE to save the SIP communication of the MAGIC TH2plus to a file.
- The logfile is stored in the internal flash memory of the device. Since the memory space is limited, the logging should not be active for more than one hour.
- SIP USER FILTER: Optionally, enter a SIP username to filter the messages written to the logfile.
- START LOGGING: Click to start recording the SIP messages.
- START SIP REGISTERING: This can be used if you like to record the SIP registration process. Click while the logging is active.
- STOP LOGGING: Click to stop recording the SIP messages.
- VIEW LOGFILE: Open the logfile in a text editor on the PC. Available once the logging is stopped.
- SAVE LOGFILE: Click to save the logfile on the PC. Available once the logging is stopped.

Record SIP Logfile (2)

Audio
Video
Technologies

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