

MAGIC Telephone Hybrids

Signalling and Control with



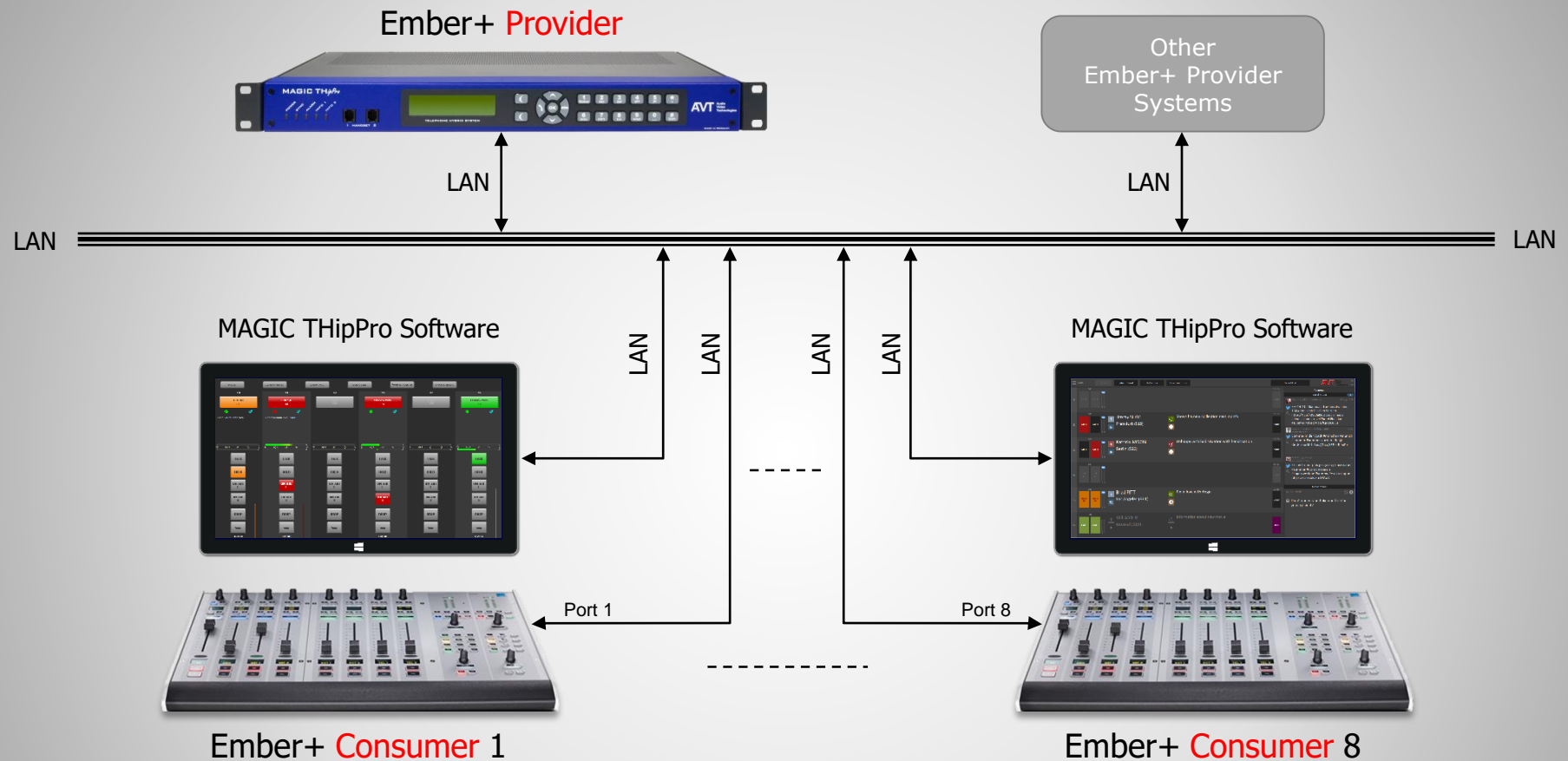
Configuration Guide

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- Ember+ Consumer: Configuration
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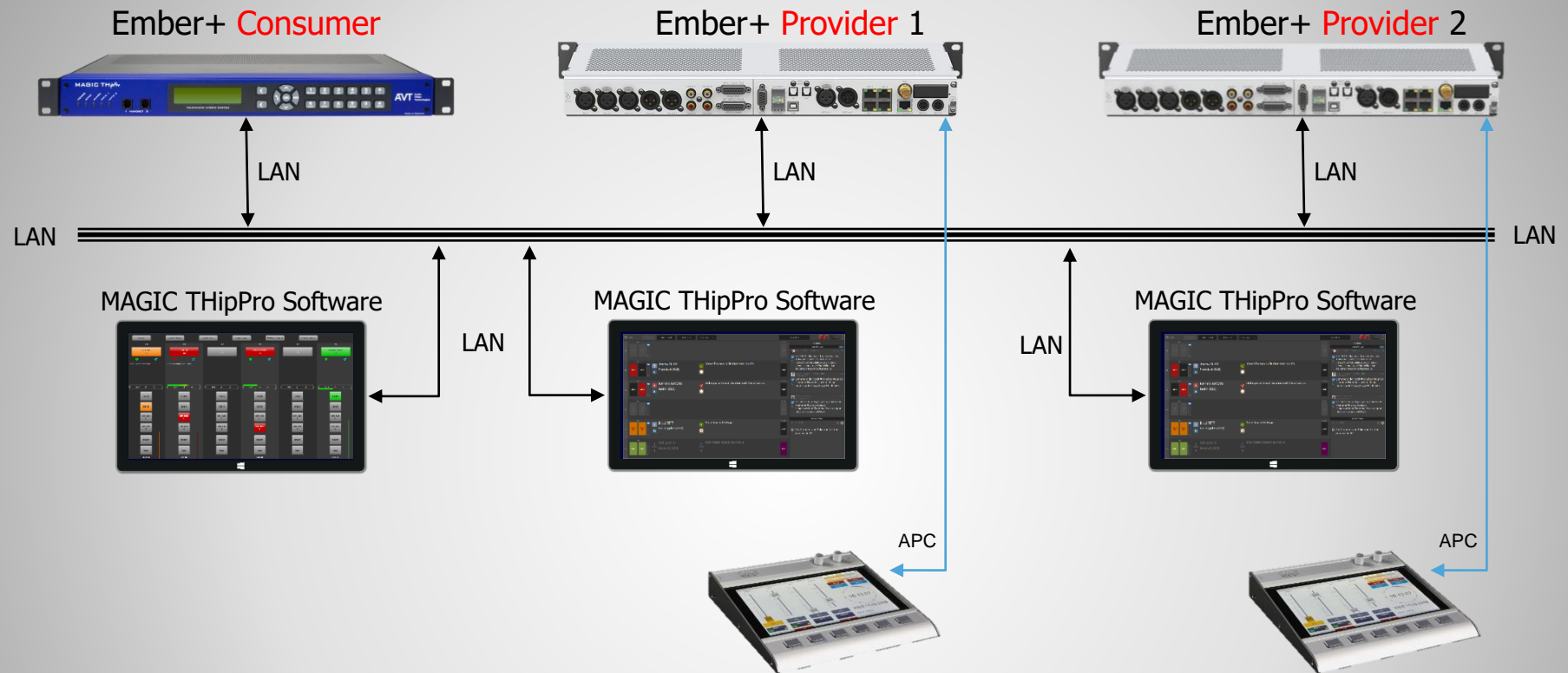
Content

- Ember+ is a powerful control protocol and implemented as open standard.
- Created by an initiative of the LAWO group and L-S-B (since 2016 integrated in LAWO).
- Seamless connection to modern IP infrastructures.
- Avoiding proprietary interfaces and protocols.
- Increasingly supported in Video matrixes, mixing consoles etc.
- Freely available under <https://github.com/Lawo/ember-plus>.
- A system (or also software) supporting Ember+ can act as Provider or as Consumer.
 - A Provider publishes functions and parameters as parameter tree.
 - A Consumer acts as Client and can trigger provided function, read out status information and change parameter values, which are immediately visible as status changes at the Provider.
 - Via GPIO structures classic functions can be triggered and status information can be displayed at the Provider as well as at the Consumer.

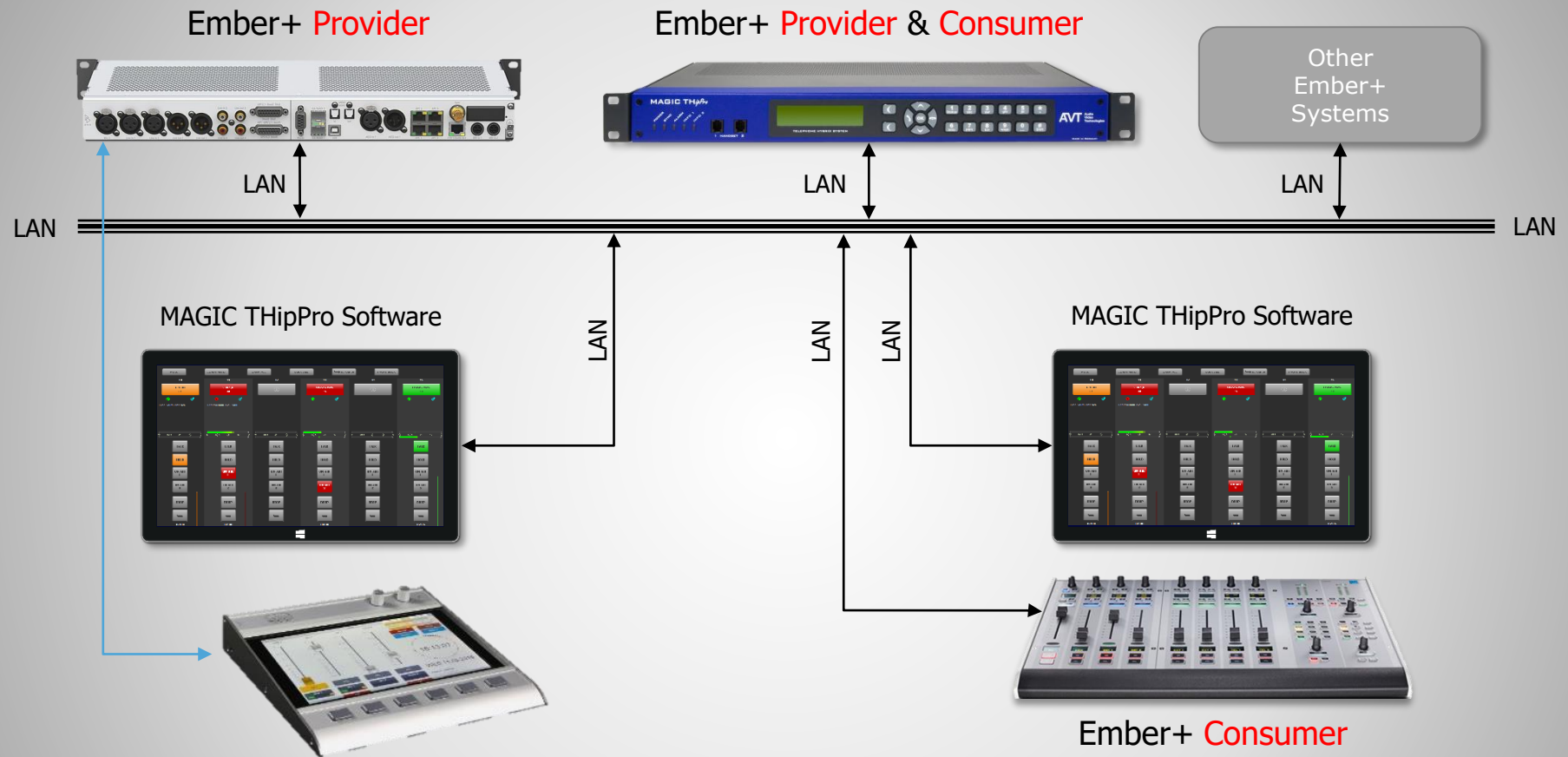
What is **EMBER+** ?



Concept **EMBER+** Provider



Concept **EMBER+** Consumer



Combined Provider & Consumer Concept

Example 1:

THipPro as Ember+ provider in combination with a LAWO crystal mixer.

On a LAWO crystal console, caller information (phone number / name) should be displayed above each fader. The call number is entered using the numeric keypad shown on the multifunction keys of the console. The phone number entered is displayed in the THipPro PC interface.

- The Ember+ functionality is available in the MAGIC THipPro by default from Release 2.300.
- Select page SYSTEM SETTINGS → EMBER+ PROVIDER.
- Activate the function with ACTIVATE EMBER+ PROVIDER.
- Select the LAN INTERFACE (❶) via which the communication is to be transmitted.
- Enter PORT 1 ... PORT 8 (❷) corresponding to the Consumer configuration.
 - A maximum of eight consumers are supported.
- Under OPERATION SETTINGS the page EMBER+ is displayed.

The screenshot shows the 'Configuration' window for the MAGIC THipPro. The left sidebar lists various settings categories, with 'System Settings' expanded and 'Ember+ Provider' selected. The main area is titled 'Ember+ Provider' and contains the following settings:

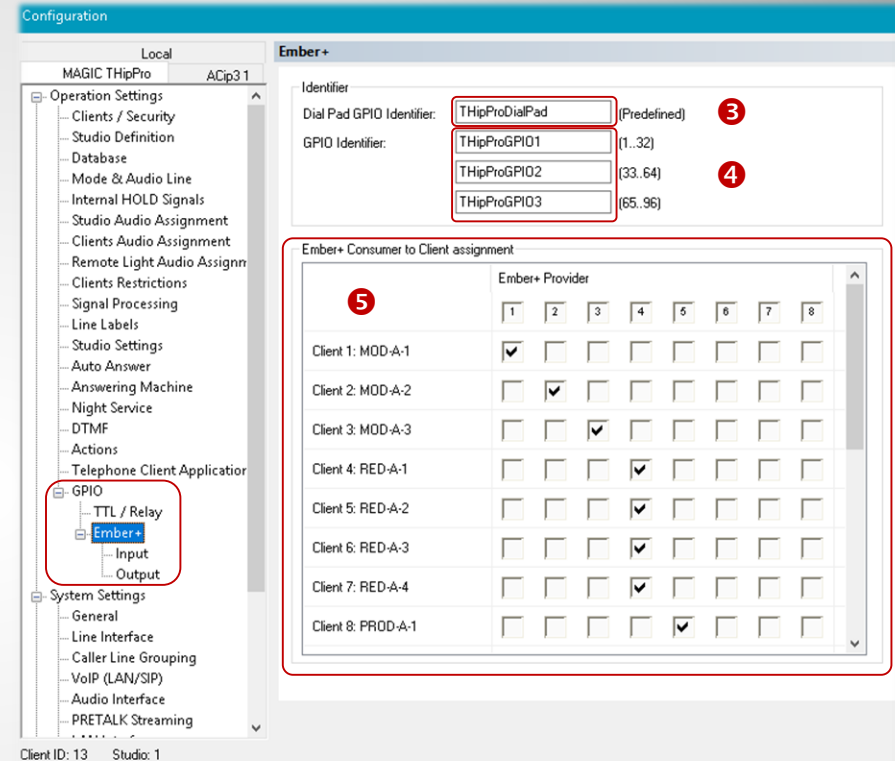
- ☒ Activate Ember+ Provider
- Ember+ Connection Parameters:
 - LAN Interface: LAN 1 : 172.20.30.30 (marked with ❶)
- Port configuration table:

Port	Consumer	Port	Consumer
Port 1	Consumer 1: 9000 (marked with ❷)	Port 4	Consumer 4: 9004
Port 2	Consumer 2: 9002	Port 5	Consumer 5: 9005
Port 3	Consumer 3: 9003	Port 6	Consumer 6: 9006
		Port 7	Consumer 7: 9007
		Port 8	Consumer 8: 9008
- Predefined GPIO Identifier: THipProDialPad
- GPIO Identifier: THipProGPIO1
- Ember+ Input Functions
- Ember+ Output Functions

At the bottom, there are 'OK' and 'Abbrechen' buttons, and a status bar showing 'Client ID: 13' and 'Studio: 1'.

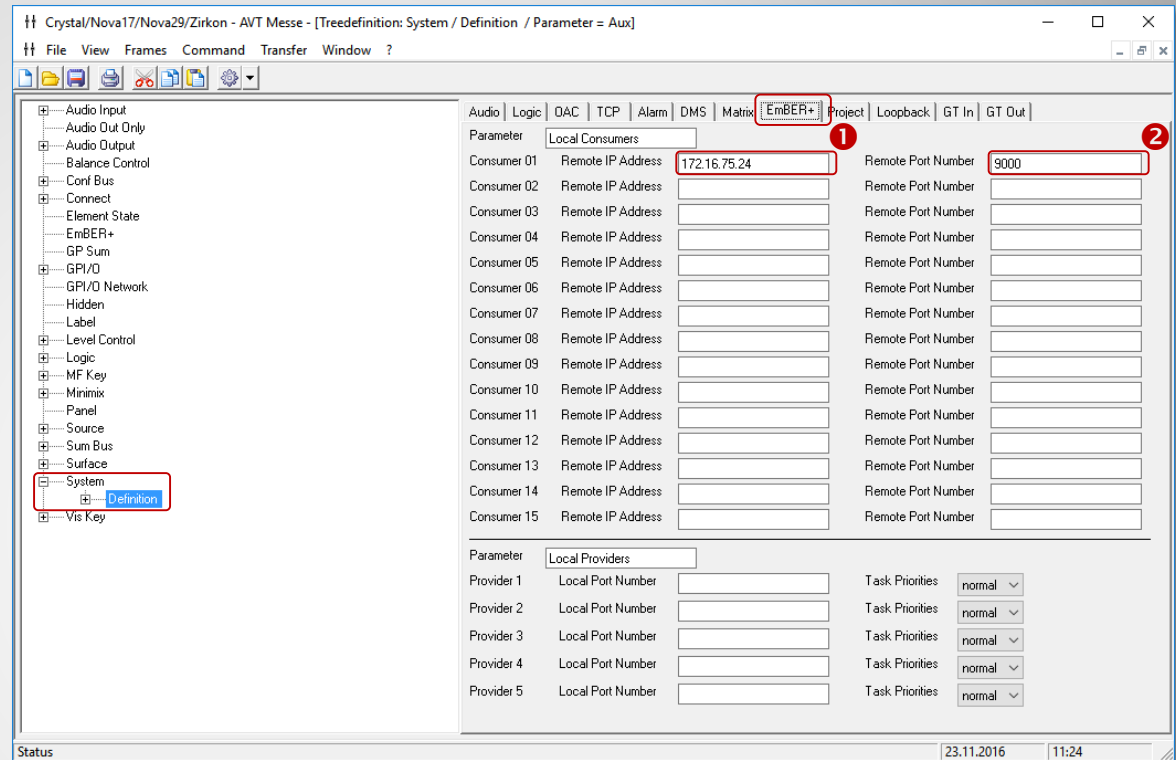
Basic configuration MAGIC THipPro (1)

- Select the page *EMBER+*.
- If an external dial pad is to be used via Ember+, a *DIAL PAD GPIO IDENTIFIER* (❸) must be defined.
 - The necessary functions to implement a dial pad are already pre-defined and do not have to be created.
 - The individual dial buttons are also implemented as GPI functions.
- There are 3 Blocks, each with 32 programmable GPIO functions. Every Block needs an identifier (❹).
- The Identifier names that are used, must be entered identically at the Ember+ Consumer in the next step.
- To logically connect one or several Client PCs with one or several Ember+ Providers (e.g. to display the entry of a phone number), the desired combination must be selected under *EMBER+ CONSUMER TO CLIENT ASSIGNMENT* (❺).



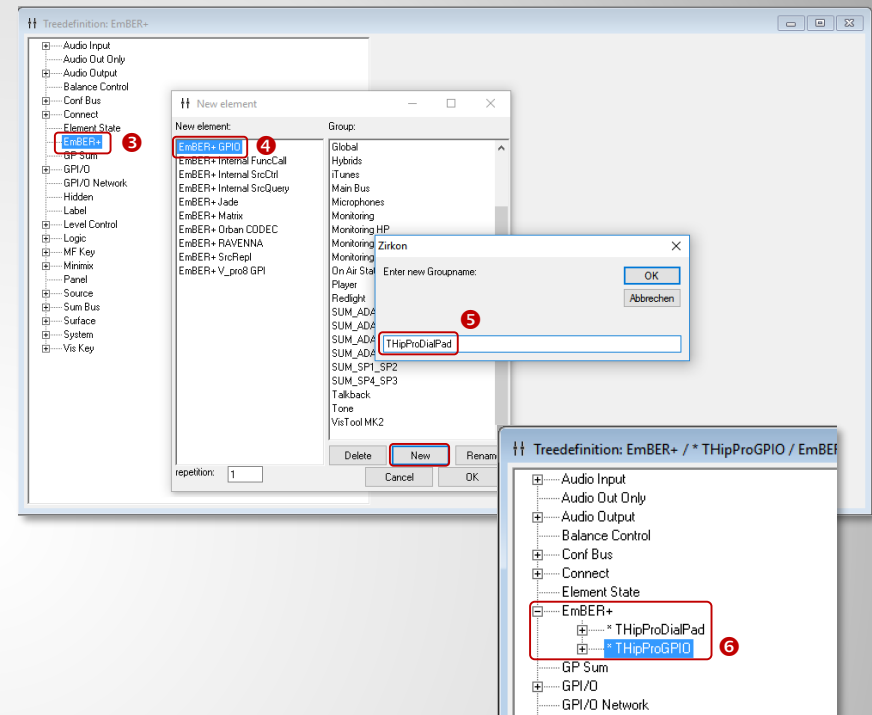
Basic configuration MAGIC THipPro (2)

- The LAWO crystal console is configured via the ZIRKON Software (from V5.0.0.2).
 - The following description takes a basic knowledge how to configure the LAWO console for granted.
- Select the page *EMBER+ under SYSTEM → DEFINITION*.
- Enter the IP address of the MAGIC THipPro under *CONSUMER 01 ... 15 – REMOTE IP ADDRESS (1)*.
- Now select the identical Port under *REMOTE PORT NUMBER* as entered in the MAGIC THipPro (2).



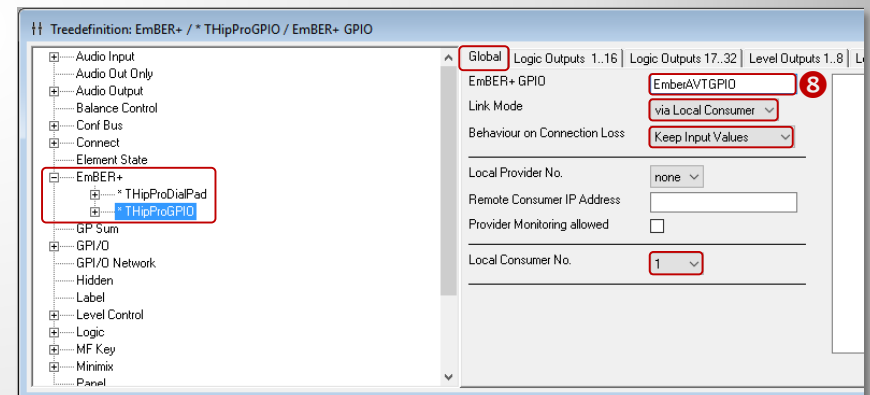
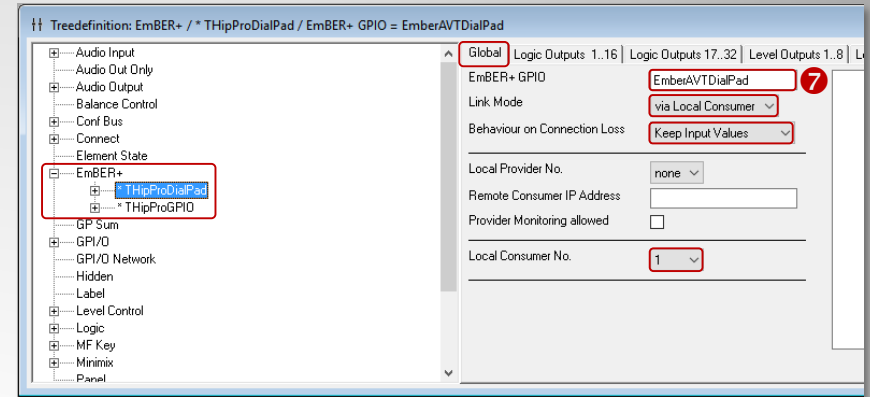
Basic configuration LAWO crystal console (1)

- Select the page *EMBER+* (❸) and open the context menu with the right mouse key.
- Click on *INSERT ELEMENT*.
- Select *EMBER+ GPIO* on the left side (❹).
 - In this way 32 virtual GPIOs and 32 virtual GPOs are created.
- Create a new Group on the right side with *NEW*.
- Enter as group name for the dial pad "THipProDialPad" for example (❺).
- Now insert the new element with *OK*.
- Create a further element – as described before.
 - Use as group name „THipProGPIO" for example (❻).
- Both elements are visible in the Ember+ tree afterwards.



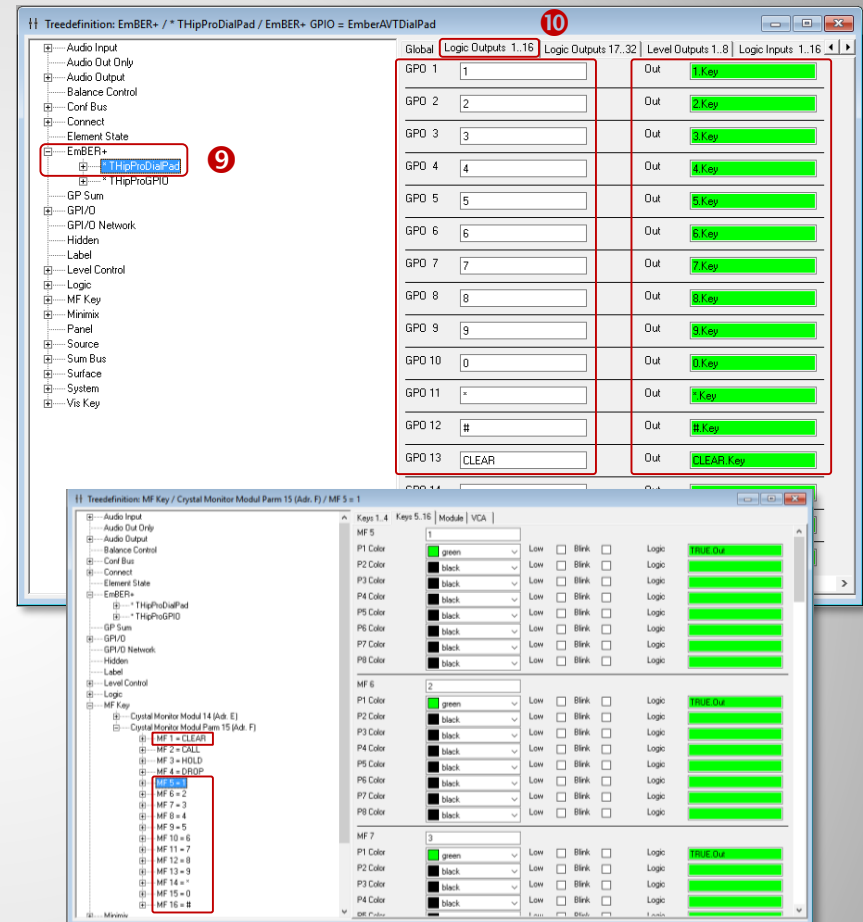
Basic configuration LAWO crystal console (2)

- Select the element *THipProDialPad*.
- Enter the identical reference name on the page *GLOBAL* under *EMBER+ GPIO* as in the MAGIC THipPro (7, [Basic configuration MAGIC THipPro](#)).
- Select the Option *VIA LOCAL CONSUMER* as *LINK MODE*.
 - The console consumes the information from the MAGIC THipPro.
- Select *KEEP INPUT VALUES* under *BEHAVIOUR ON CONNECTION LOSS*.
- Use the corresponding ID 1 ... 15 as *LOCAL CONSUMER NO.* (see [System Definition](#)).
- Now repeat all steps for the element *THipProGPIO*
 - Enter the corresponding reference name on the page *GLOBAL* under *EMBER+ GPIO* as in the MAGIC THipPro (8, [Basic configuration MAGIC THipPro](#)).



Basic configuration LAWO crystal console (3)

- The dial pad function is already programmed in a fixed way in the MAGIC THipPro, so that this structure must be taken over at the Ember+ Consumer.
- The assignment in MAGIC THipPro is as follows:
 - GPI 1: **1** ... GPI 9: **9** and GPI 10: **0**
 - GPI 11: ***** GPI 12: **#**
 - GPI 13: **CLEAR**
 - To delete the entered phone number.
 - Select the element EMBER+ → <reference name> (in the example = *THipProDialPad*) in the ZIRKON Software (9) and program the parameters *GPO 1 ... GPO 13* under *LOGIC OUTPUTS 1...16* (10).
 - The labels 0...9 etc. can be selected freely.
 - The desired buttons of the crystal console which are to supposed to trigger the actions are entered as example under *OUT*.
 - It is taken for granted that the user knows how to program the *MF Keys* of the crystal console.



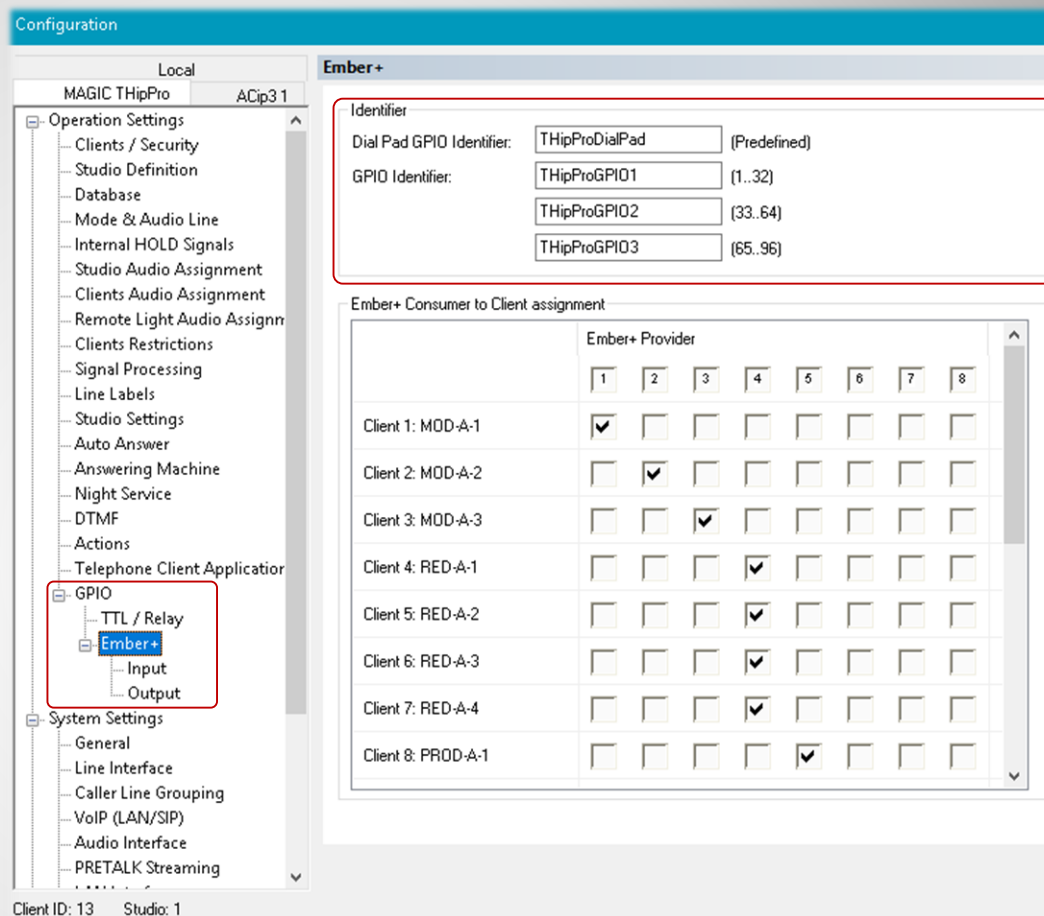
Setup dial pad at the crystal console (1)

- After the configuration has been transmitted to the console, the phone number entered at the crystal console is displayed at the Client PC connected with the Ember+ Provider.
- With the CLEAR function the last phone number entry can be deleted.
- The next step is the configuration for dialling the entered phone number or for accepting an incoming call.



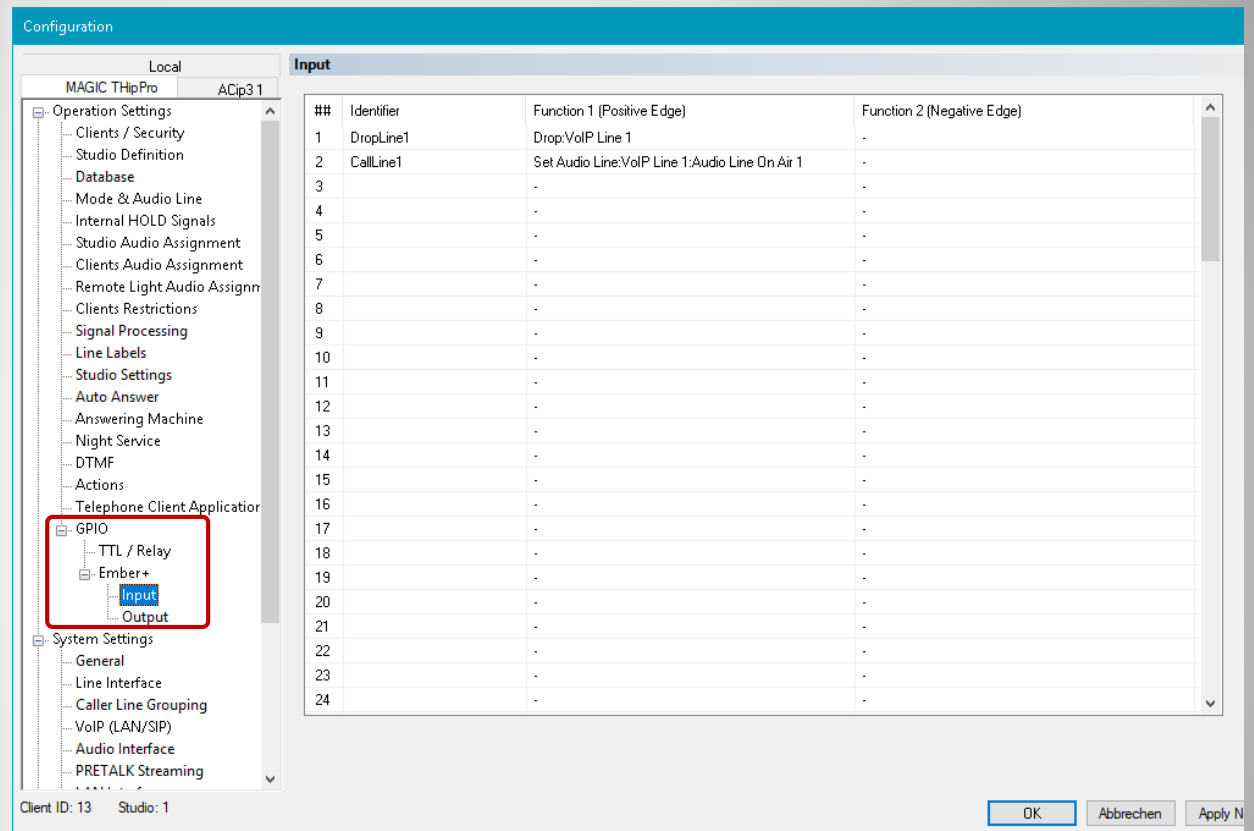
Setup dial pad at the crystal console (2)

- The referencing between Ember+ Provider and Consumer is done via the previously configured GPIO IDENTIFIER.
 - Dial Pad GPIO Identifier: Pre defined set of dial pad functions.
 - GPIO Identifier: 32 functions per identifier. Up to 96 GPIO functions in 3 Nodes.



Assignment of virtual GPIOs (1)

- Select OPERATION SETTINGS → GPIO → EMBER+ → Input or Output.
- The table lists all configured functions.
- Double click an entry to edit the function.
- Please note that a GPI at the crystal console is always assigned to a GPO at the MAGIC THipPro and vice versa.



Assignment of virtual GPIOs (2)

- Identifier: Can be chosen freely.
- Function Code: Select from a list of pre defined functions.
- There are several parameters to adjust, dependent on the function.
- For a list of functions see:
 - Inputs: [GPI functions](#).
 - Outputs: [GPO functions](#).

Ember+ Input THipProGPIO1 1

Identifier: DropLine1

Positive edge

Function Code: Set Audio Line

VoIP Line: 1

Audio Line: On Air 1

Negative edge

Function Code: Set Audio Line

VoIP Line: 1

Audio Line: HOLD (Studio 1)

OK Cancel

Configuration of virtual GPIOs

- After the phone number has been entered via the external dial pad, the corresponding command to establish the connection via Ember+ must be sent to the MAGIC THipPro.
- As first step the function is defined in the MAGIC THipPro.
- Double click the desired ID on page *OPERATION SETTINGS* → *EMBER+* → *GPI*.
- Enter a reasonable name for the *INPUT IDENTIFIER* to simplify the identification of the functions at the crystal console later on.
 - The Identifier has just informative meaning and is not used for any other purposes.
- Select the function *EMBER+ CALL AT LINE GROUP* under *FUNCTION CODE*.
- Under *LINE GROUP* select the desired line group (or *UNASSIGNED*), in which the call is to be established.
- Now define the desired *AUDIO LINE* which is to be activated when the remote side answers the call.

Ember+ Input THipProGPIO1 1

Identifier:

Positive edge

Function Code:

Line Group:

Audio Line:

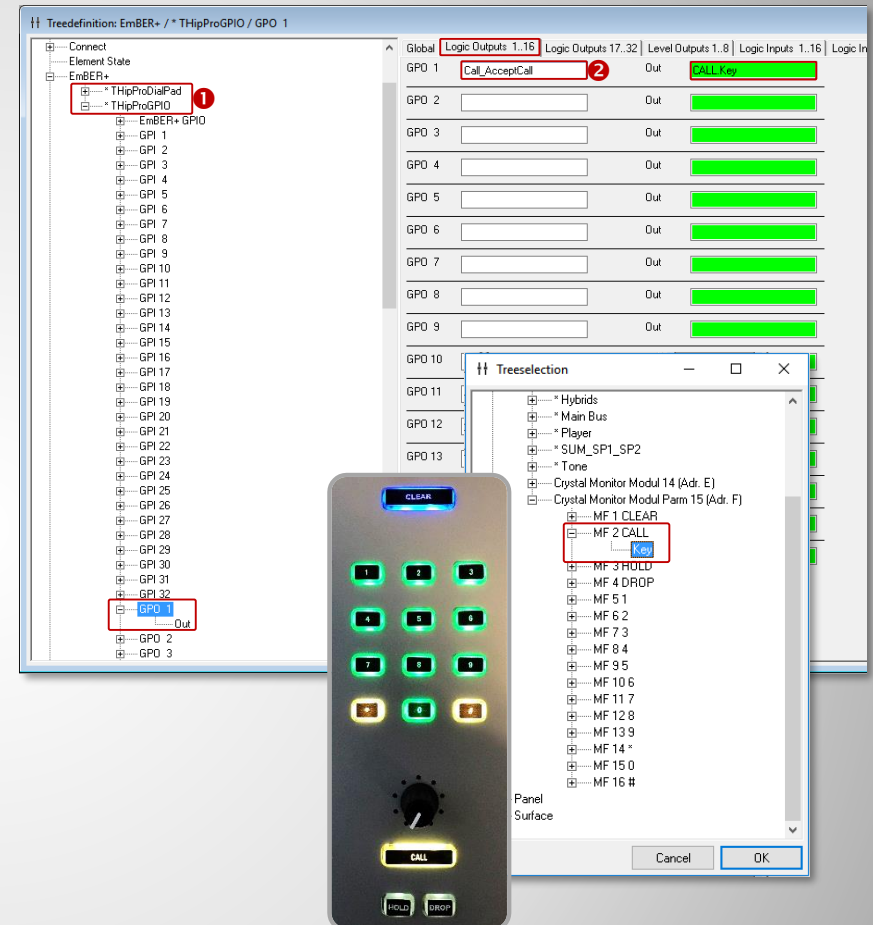
Negative edge

Function Code:

OK Cancel

Example: Dial phone number (1)

- As final step a freely selectable key at the LAWO crystal console must be configured to trigger the dialling or to accept a call.
- Select the element *EMBER+* → *<reference name>* (in the example = *THipProGPIO*) in the ZIRKON Software (④) and program the parameter *GPO 1* under *LOGIC OUTPUT 1...16*.
 - The label *Call_AcceptCall* (⑦) can be selected freely and does not have to be identical with the *Input Identifier* at the MAGIC THipPro. However, the maintenance later on is much easier this way.
- The desired key of the crystal console to trigger the action has been entered as example under *OUT*.
 - It is taken for granted that the user knows how to program the *MF Keys* of the crystal console.
- After the configuration is transmitted, it is possible to call any phone number and to accept incoming calls via the crystal console.



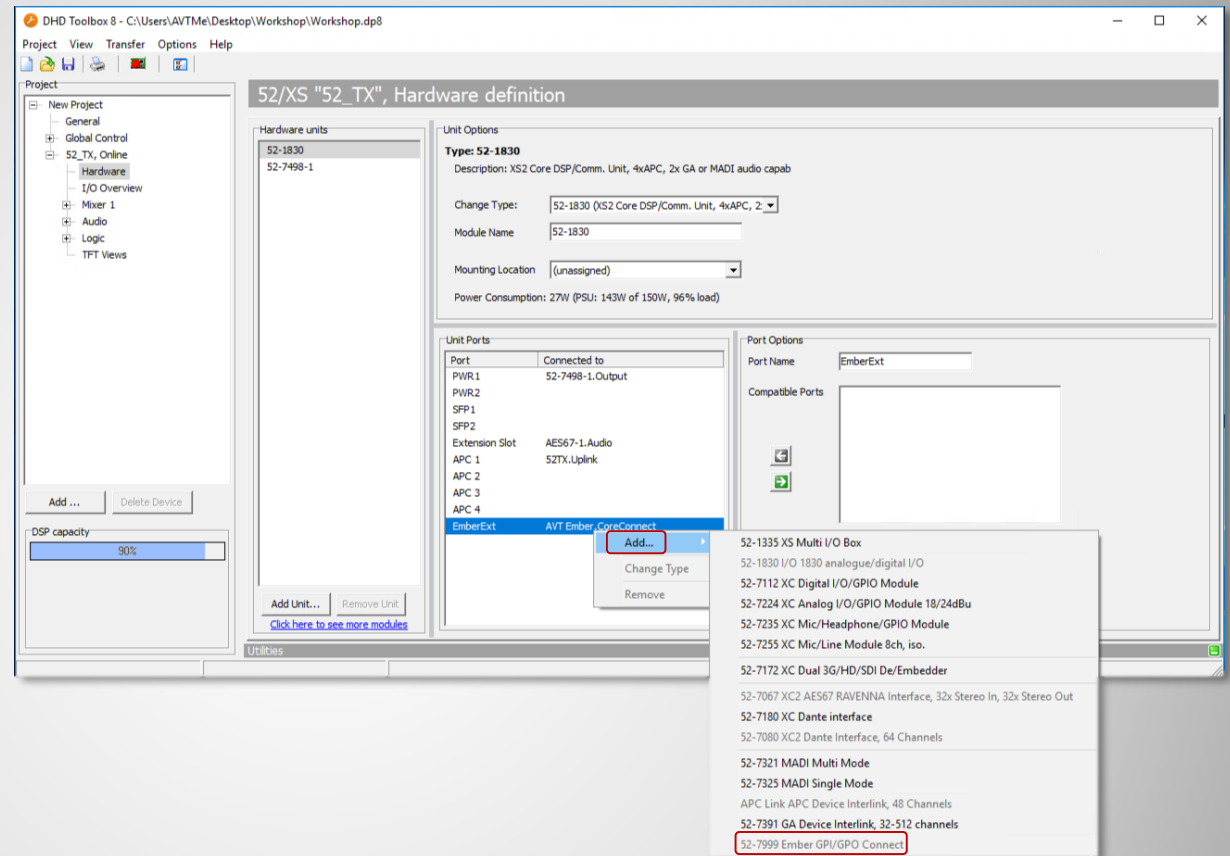
Example: Dial phone number (2)

Example 2:

THipPro as Ember+ Consumer - Display of caller information on a DHD 52/TX mixer.

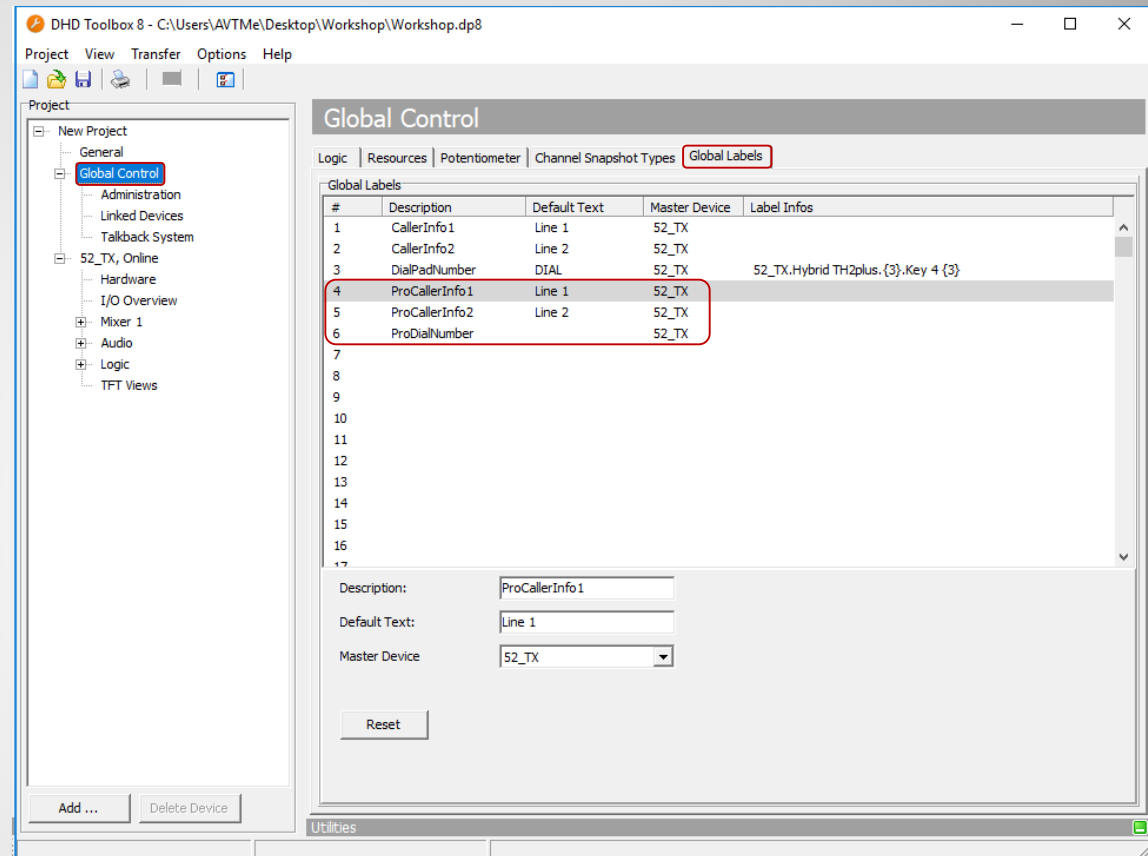
On a DHD Multitouch Mixer, caller information (phone number/name) and the currently entered phone number should be displayed above each fader.

- First the configuration for the DHD console has to be created via the DHD Toolbox.
- Activate Ember+ functionality.
 - The standard port for Ember+ communication is "9000" with DHD.



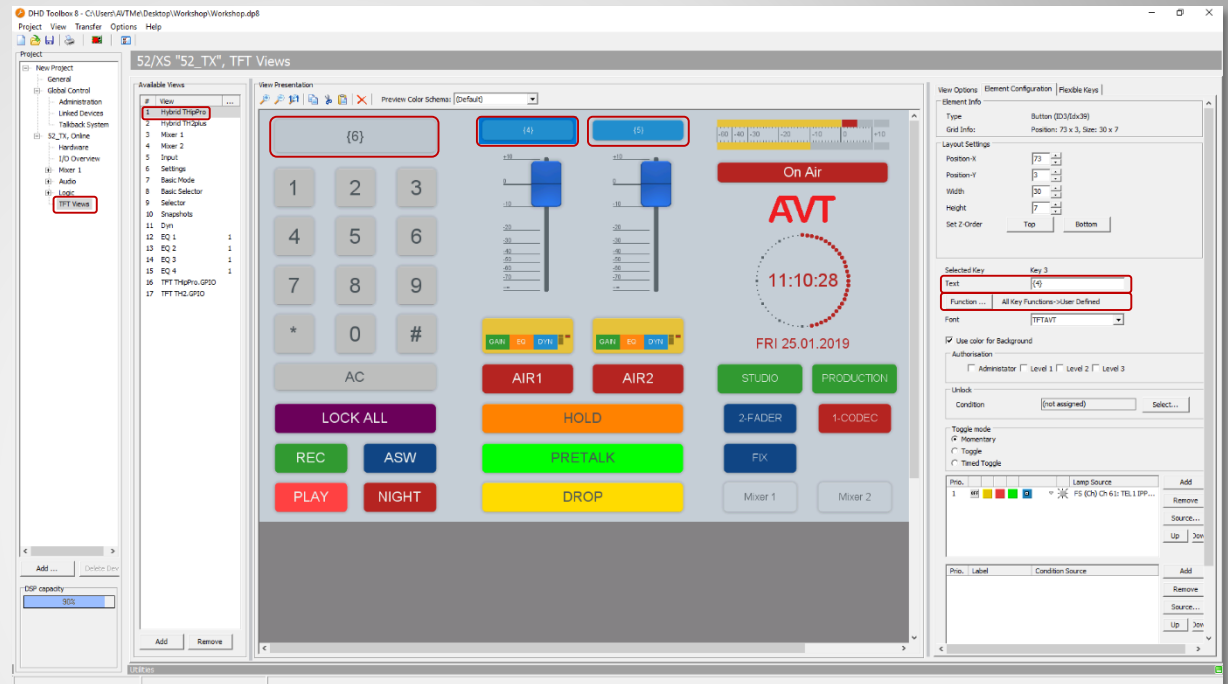
Activate Ember+ with DHD

- Then define the desired functions on page GLOBAL CONTROL → GLOBAL LABELS.
- For the example with MAGIC THipPro three labels are required.
 - ProCallerInfo1 and ProCallerInfo2 to display caller information for both faders.
 - ProDialNumber to display the currently entered phone number.
 - The label number is decisive for subsequent referencing (here: 4, 5, 6).



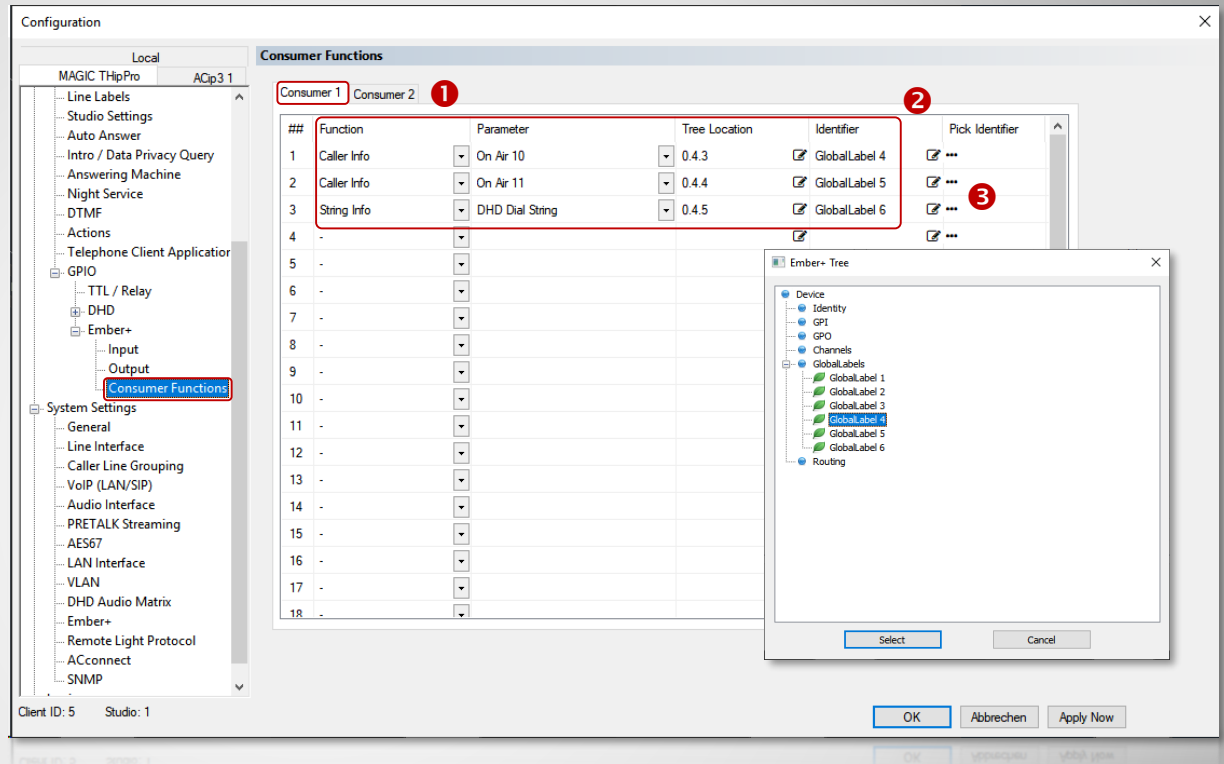
Define Global Label for Ember+

- Now on the page TFT VIEWS
→ HYBRID THIPPRO create three BUTTONS as desired.
- According to the previously created GLOBAL LABELS, the appropriate label numbers must now be assigned to each TEXT field.
 - The label numbers must be within braces, e.g. {4}.
- Finally, USER DEFINED must be selected under FUNCTION.
- The configuration can now be saved and transferred.

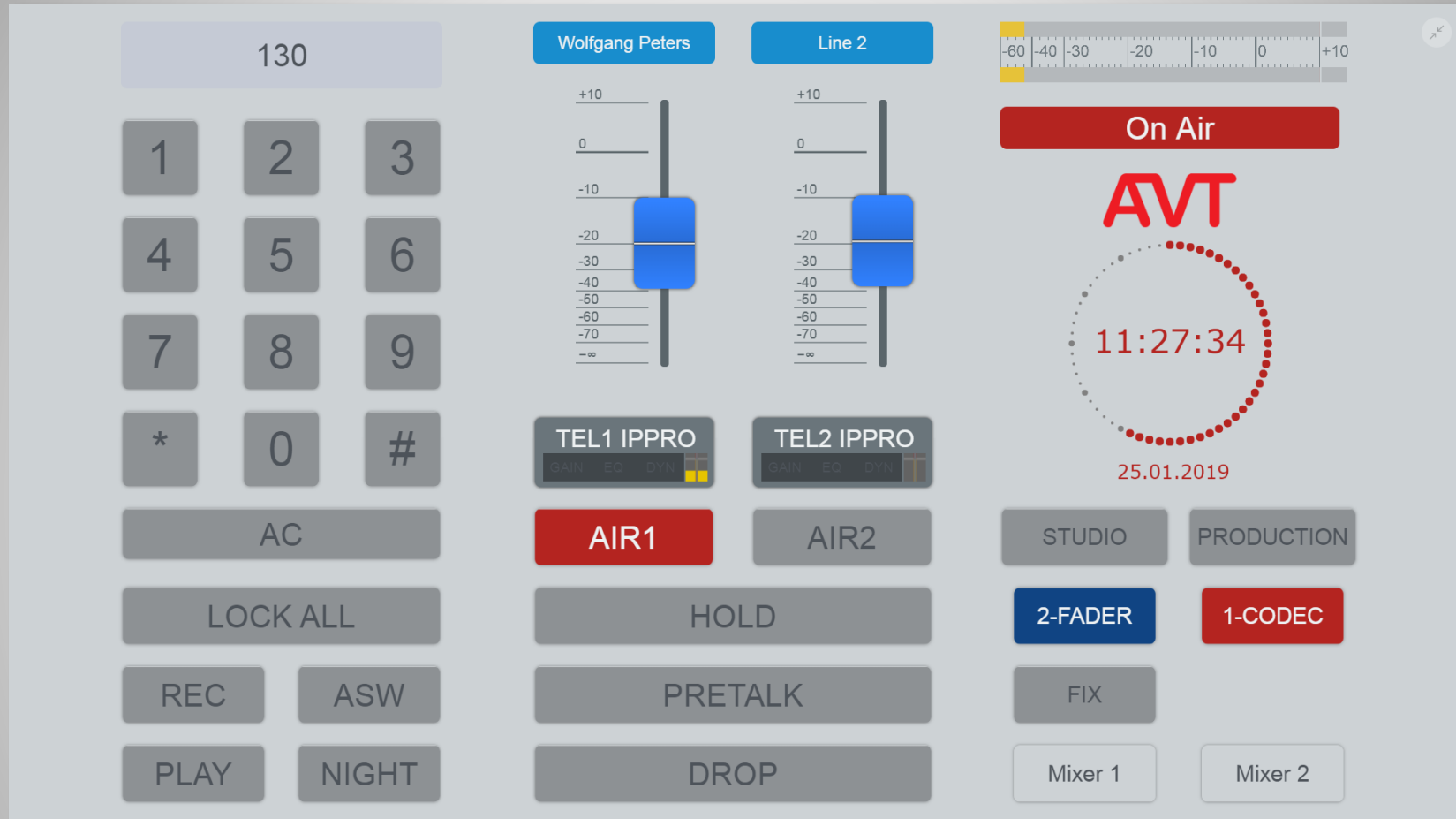


Link DHD TFT view to Global Labels

- The page OPERATION SETTINGS → GPIO → EMBER+ CONSUMER FUNCTIONS can be used to create up to 20 functions per CONSUMER (❶).
- The following functions are currently available (❷):
 - Transfer of caller information:
 - Name, phone number, city, etc.
 - Transfer of preset names.
 - Transferring the call number via the DHD dialling keypad.
- Finally, the link to the Ember+ Consumer is established via the EMBER+ TREE IDENTIFIER, which can be conveniently transferred with PICK IDENTIFIER (❸).



Configuring Ember+ Consumer Functions



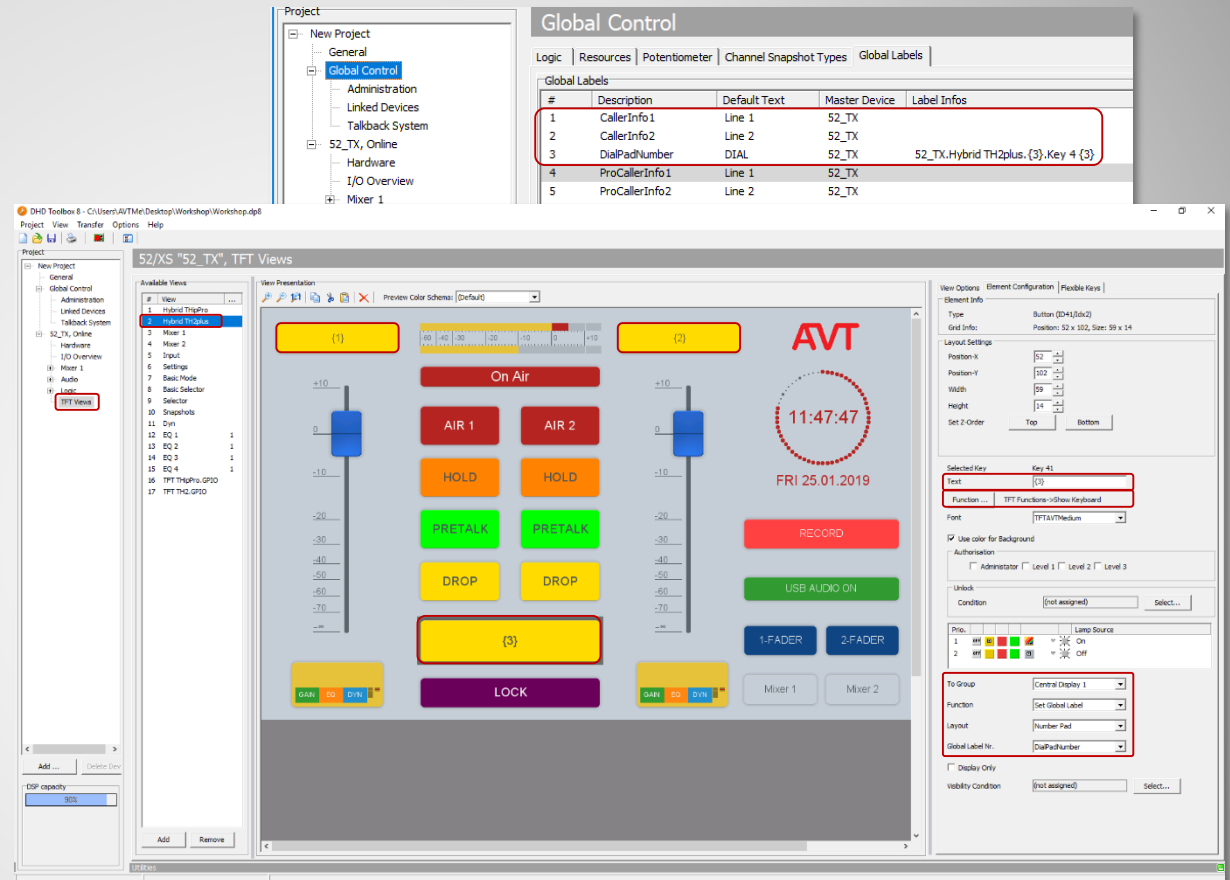
Representation on a 52/TX display

Example 3:

TH2plus as Ember+ Consumer – Entering phone numbers via the keypad of a DHD 52/TX mixer.

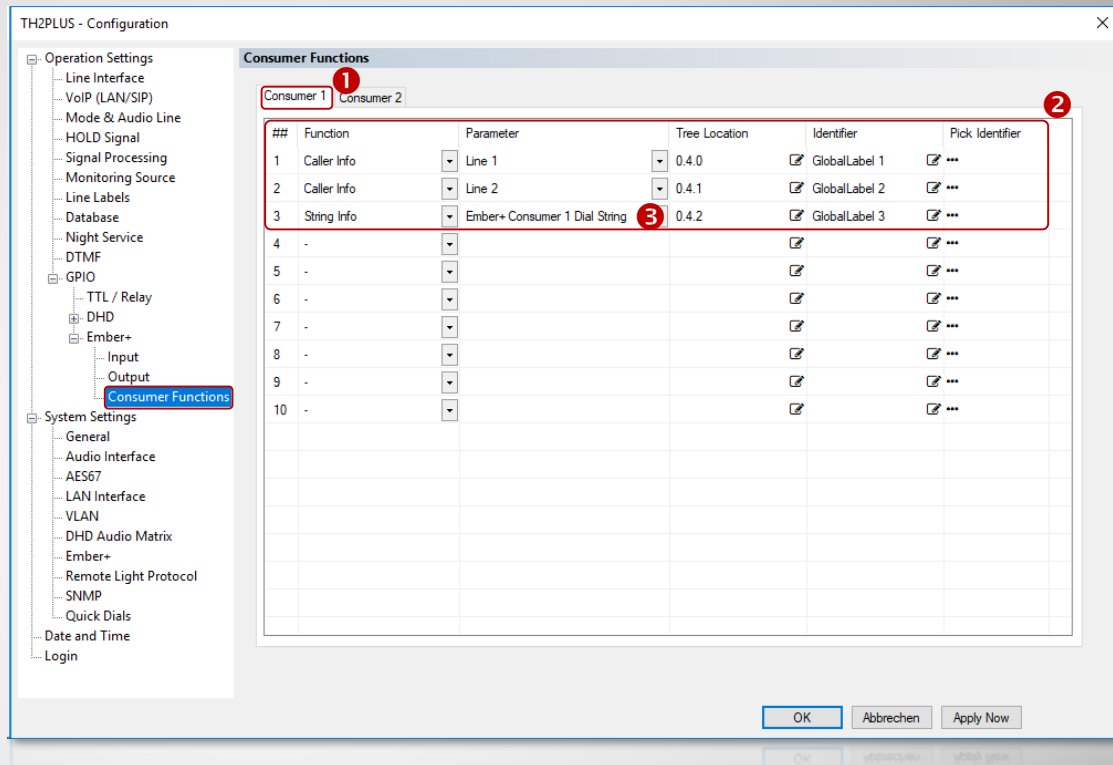
On a DHD Multitouch Mixer, caller information (phone number/name) should be displayed above each fader. The integrated DHD keypad is to be used for entering call numbers.

- The basic programming is almost identical to example 2.
- For BUTTON 3 (= dial key) the function TFT FUNCTIONS -> SHOW KEYBOARD must now be selected, which opens up new configuration options:
 - First select the desired display (TO GROUP).
 - Select the SET GLOBAL LABEL function.
 - Then select NUMBER PAD under LAYOUT.
 - Finally select the correct GLOBAL LABEL NO. (here: DIALPADNUMBER)
- The configuration can now be saved and transferred.

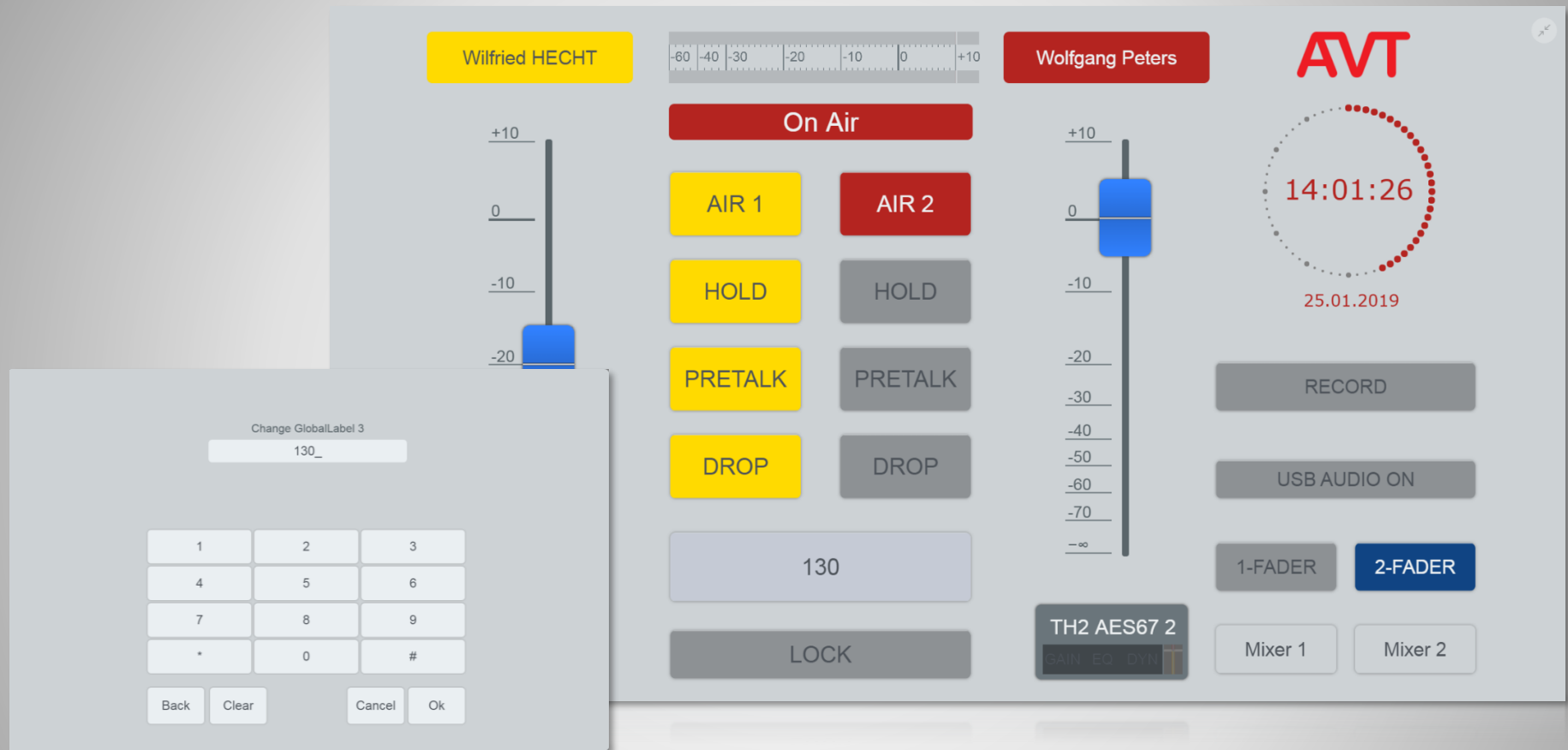


Linking the DHD keypad

- On the page OPERATION SETTINGS → GPIO → EMBER+ CONSUMER FUNCTIONS, the MAGIC TH2plus can create up to 10 functions per CONSUMER (❶).
- The offered functions (❷) are identical to example 1, as well as the assignment of the GLOBAL LABEL IDENTIFIER.
- To connect the DHD keypad, select EMBER+ CONSUMER 1 DIAL STRING (❸) as the parameter.



Configuring Ember+ Consumer Functions

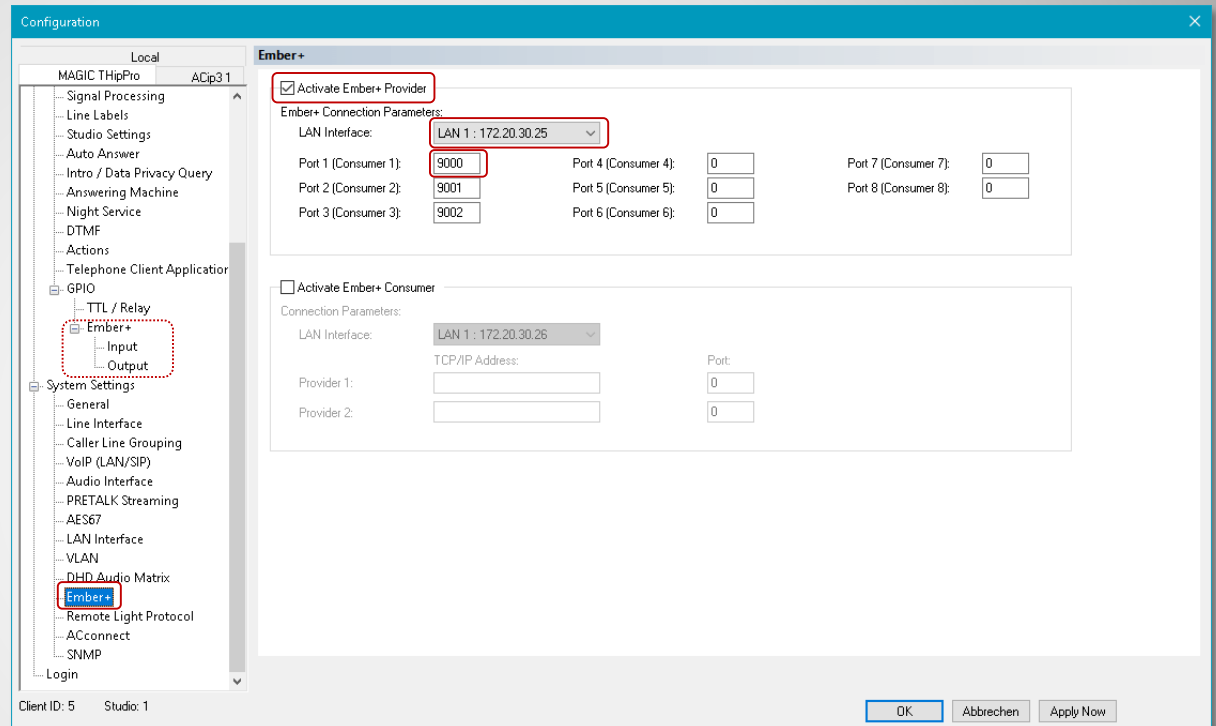


Representation on a 52/TX display

Ember+ Provider

Configuration

- On the EMBER+ page the network parameters for Ember+ control and signalling are configured.
- ACTIVATE EMBER+ PROVIDER activates the Ember+ provider:
 - LAN INTERFACE: LAN interface via which Ember+ consumers can establish a connection to the device.
 - PORT: TCP ports for up to eight Ember+ consumers. (Standard ports: 9000 - 9007)
Unused ports should be deactivated by entering a 0.
 - The functions and signals are configured on the GPIO → EMBER+ → INPUT / OUTPUT page.
 - The Ember+ parameter tree also provides functions that can be called directly by consumers.



Basic Configuration (1)

- If an external keypad is to be used via Ember+, a corresponding DIAL PAD GPIO IDENTIFIER must be defined.
 - The functions required to implement a keypad are already predefined and do not have to be created individually.
 - The individual dial keys are also implemented as GPI functions.
- For further GPIO functions, three GPIO blocks with 32 input and 32 output functions each are available, for which the corresponding GPIO IDENTIFIER must be defined.
- EMBER+ CONSUMER TO CLIENT ASSIGNMENT: Assign client PCs to a provider to display a phone number entered via Ember+ in the PC software.

Configuration

Local
MAGIC THipPro ACip3 1

Operation Settings
 Clients / Security
 Studio Definition
 Database
 Mode & Audio Line
 Internal HOLD Signals
 Studio Audio Assignment
 Clients Audio Assignment
 Remote Light Audio Assignn
 Clients Restrictions
 Signal Processing
 Line Labels
 Studio Settings
 Auto Answer
 Answering Machine
 Night Service
 DTMF
 Actions
 Telephone Client Application

GPIO
 TTL / Relay
Ember+
 Input
 Output

System Settings
 General
 Line Interface
 Caller Line Grouping
 VoIP (LAN/SIP)
 Audio Interface
 PRETALK Streaming

Client ID: 13 Studio: 1

Ember+

Identifier
 Dial Pad GPIO Identifier: THipProDialPad (Predefined)
 GPIO Identifier: THipProGPIO1 (1..32)
 THipProGPIO2 (33..64)
 THipProGPIO3 (65..96)

Ember+ Consumer to Client assignment

	Ember+ Provider							
	1	2	3	4	5	6	7	8
Client 1: MOD-A-1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 2: MOD-A-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 3: MOD-A-3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 4: RED-A-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 5: RED-A-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 6: RED-A-3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 7: RED-A-4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client 8: PROD-A-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basic Configuration (2)

- On page OPERATION SETTINGS → GPIO → EMBER+ → select INPUT or OUTPUT.
- The table shows an overview of all configured functions.
- A double click on a row opens the configuration of this function.

The screenshot shows the 'Configuration' window with a tree view on the left and a table on the right. The tree view is expanded to 'GPIO' > 'TTL / Relay' > 'Ember+' > 'Input'. The table on the right is titled 'Input' and contains the following data:

##	Identifier	Function 1 (Positive Edge)	Function 2 (Negative Edge)
1	DropLine1	Drop/VoIP Line 1	-
2	CallLine1	Set Audio Line:VoIP Line 1:Audio Line On Air 1	-
3		-	-
4		-	-
5		-	-
6		-	-
7		-	-
8		-	-
9		-	-
10		-	-
11		-	-
12		-	-
13		-	-
14		-	-
15		-	-
16		-	-
17		-	-
18		-	-
19		-	-
20		-	-
21		-	-
22		-	-
23		-	-
24		-	-

At the bottom of the window, there are buttons for 'OK', 'Abbrechen', and 'Apply N'. The status bar at the bottom left shows 'Client ID: 13' and 'Studio: 1'.

GPIOs

- IDENTIFIER: The identifier can be freely selected.
- Under FUNCTION CODE you can select from a list of predefined functions.
- Depending on the function, various parameters must be set.
- For a list of functions, see:
 - Inputs: [GPI Functions](#)
 - Outputs: [GPO Functions](#)

Ember+ Input THipProGPIO1 1

Identifier: DropLine1

Positive edge

Function Code: Set Audio Line

VoIP Line: 1

Audio Line: On Air 1

Negative edge

Function Code: Set Audio Line

VoIP Line: 1

Audio Line: HOLD (Studio 1)

OK Cancel

Configuration of a virtual GPIO

Ember+ Provider

GPI Functions (Input)

Remark:

Please note that some functions described here are not available for MAGIC TH2_{plus} and MAGIC TH6. This applies in particular to the line group functions.

Function	Parameter	Description
Call Out / Accept Call In / Drop	Line: LI: 1...16 Audio Line: AI: HOLD – PRETALK - ON AIR Number: #: <phone number>	Dials a phone number # on caller line LI and sets the Audio line to AI. Accepts a call on caller line LI and sets the Audio line to AI. Drops the connection on caller line LI.
Accept Call In	Line: LI: 1...16 Audio Line: AI: HOLD – PRETALK – ON AIR	Accept an incoming call on caller line LI and set the audio line to AI.
Set Audio Line / Accept Call In	Line: LI: 1...16 Audio Line: AI: HOLD – PRETALK – ON AIR	Set audio line AI of line LI. Accept an incoming call if there is one.
Call preallocated number	Line: LI: 1...16 Audio Line: AI: Clear Preallocation: CP: yes/no	Dial the preallocated number on caller line LI and set the audio line to AI. Set CP to yes to clear the preallocated number, set it to no to keep it.

GPI Functions (1)

Function	Parameter	Description
Transfer Call	Command: CM: Start Transfer Finish Transfer Retrieve Connection Line: LI: 1...16 Audio Line: AI: HOLD – PRETALK – ON AIR Number: #: <phone number>	Call forwarding (ECT). Start Transfer: Set caller line LI to audio line AI and forward the call to the phone number #. Finish Transfer: Terminate call forwarding on caller line LI. (= Drop line LI on the telephone hybrid). Retrieve Connection: Retrieve forwarded call on caller line LI and set it to audio line AI.
Drop	Line: LI: 1...16	Drops the connection on caller line LI.

GPI Functions (2)

Function	Parameter	Description
Set Audio Line	Line: LI: 1...16 Audio Line: AI: HOLD – PRETALK - ON AIR	Sets the caller line LI to Audio line AI.
Load Preset	Preset: #: <Preset/Super Preset Name>	Loads the Preset (Operation Settings) with the name #. Loads the Super Preset (Operation & System Settings) with the name #.
Set Information Base Entry	Entry ID: #1 Value: #2	Special developer function.
String Command	Command: #1	Special developer function.

GPI Functions (3)

Function	Parameter	Description
Start Recording of HOLD Signal	Signal: IH: Internal HOLD Signal 1 ...4 Audio Interface: AI: Audio Interface Show Info Window: ID: No, ClientID	Records the internal HOLD Signal IH via the audio interface AI with visual display on the PC with the selected ID.
Stop Recording of HOLD Signal	Signal: IH: Internal HOLD Signal 1 ...4	Stops recording of the internal HOLD Signal IH.
Start Test Recorded HOLD Signal	Signal: IH: Internal HOLD Signal 1 ...4 Audio Interface: AI: Audio Interface	Plays back the internal HOLD Signals IH via the audio interface AI.
Stop Test Recorded HOLD Signal	Signal: IH: Internal HOLD Signal 1 ...4	Stops play-back of the internal HOLD Signal IH.

GPI Functions (4)

Function	Parameter	Description
Set Control Interface on Client	Client: ID: Client-PC Application: AN: LAN Client, Screener, LAN Client and Screener IP Address: IP: IP Address Port: PT: Port Number Network Interface: NI: Local IP address of the PCs network interface	The application AN, which runs on the client PC with the selected ID, connects to the device which has the IP address IP. For this it uses the network interface NI and the port PT. The NI network interface of the client PC must be specified using its local IP address.
Select Studio (enabled by Operation Restriction)	Studio: ST: Studio 1 ... 6	Switches all Client PCs to Studio ST for which the Operation Restriction Flag „Select Studio“ is enabled.
Select Studio on Client	Studio: ST: Studio 1 ... 6 Client: ID: Client-PC	Switches the Client PC with the selected ID to the Studio ST.
Import System Configuration File	File Path: #: <Path>\<File>	Imports and activates the complete system configuration from the file #.

GPI Functions (5)

Function	Parameter	Description
Execute External Program on Client	Client: ID: Client-PC Show Command: OP: Hide/Show/Show Active/Show Min. Command: #1: <Program Name> #2: <Parameter>	Executes any external program #1 (or any batch file) with the optional parameter #2 on the Client PC with the selected ID in the display mode OP.
Trigger Action on Client	Action: AC: „NEXT“ action (see ACTIONS) Client: ID: Client-PC	Triggers an action defined under ACTIONS on the Client PC with the selected ID. Only ACTIONS of the type „Set NEXT line at Line Group“ are available for selection.
Disable ON AIR Button	Available ON AIR Lines: AI: Configured ON AIR Audio Line	Disables the selected ON AIR Audio lines on all Client PCs (ON AIR buttons are displayed greyed out).
Disable Line Group on Client	Line Group: GR: Configured Line Group Client: ID: All Clients, Client-PC	Deactivates the telephone lines of the selected line group GR on the client PC with the selected ID, or all client PCs. (All telephone line buttons are greyed out)

GPI Functions (6)

Function	Parameter	Description
As soon as a line-group-related PRETALK and/or ON AIR Function has been programmed, the callers which are the longest time in the system are automatically highlighted as "Next PRETLAK" (green text colour) or as "Next ON AIR" (red text colour)		
Toggle Night Service / Answering Machine On/Off	Line Group: GR: Configured Line Group Mode: M: <ol style="list-style-type: none"> 1. Night Service: Transfer incoming call 2. Night Service: Call Forwarding incoming call 3. Night Service: Call Forwarding (Provider) 4. Answering Machine: Auto Message and DROP 5. Answering Machine: Record Caller Number: #: <Night Service number>	Toggle night service or answering machine mode on line group GR: <ol style="list-style-type: none"> 1. Forward call per ECT to #. 2. Forward call per hybrids CF line to #. 3. Program call forwarding of PBX. 4. Play a message and drop. 5. Record a message. Only modes configured under ANSWERING MACHINE or NIGHT SERVICE for the corresponding line group are available.
Accept Next Incoming Call	Line Group: GR: Configured Line Group Audio Line: AI: HOLD (Studio), PRETALK, ON AIR	Accepts the next caller within the line group GR and sets the Audio line to AI.

GPI Functions (7)

Function	Parameter	Description
As soon as a line-group-related PRETALK and/or ON AIR Function has been programmed, the callers which are the longest time in the system are automatically highlighted as "Next PRETLAK" (green text colour) or as "Next ON AIR" (red text colour)		
Set PRETALK at Line Group	Line Group: GR: Configured Line Group Audio Line: AI: Configured PRETALK Audio Line HT: -, HOLD Toggle Mode Post State: PO: HOLD READY (Studio), DROP	<p>Switches the next caller within the line group GR to Audio line AI. The selection depends on the state of the callers in ascending order: HOLD, incoming, "HOLD was ON AIR", HOLD READY (Do various callers have the same priority, the longest waiting wins.)</p> <p>If HOLD Toggle Mode is enabled and a caller is in AI, he will be set to HOLD READY without setting the next one to AI. Only with the subsequent signal the next caller is set to AI.</p> <p>If a caller within the line group GR is in PRETALK already, it is switched to the Post-Status PO.</p>

GPI Functions (8)

Function	Parameter	Description
As soon as a line-group-related PRETALK and/or ON AIR Function has been programmed, the callers which are the longest time in the system are automatically highlighted as "Next PRETLAK" (green text colour) or as "Next ON AIR" (red text colour)		
Set ON AIR at Line Group	Line Group: GR: Configured Line Group Audio Line: AI: Configured ON AIR Audio Line HT: -, HOLD Toggle Mode Post State: PO: HOLD (Studio), DROP	<p>Switches the next caller within the line group GR to Audio line AI. The selection depends on the state of the callers in ascending order: HOLD READY, "HOLD was ON AIR", PRETALK, incoming (Do various callers have the same priority, the longest waiting wins.)</p> <p>If HOLD Toggle Mode is enabled and a caller is in AI, he will be set to "HOLD was ON AIR" without setting the next one to AI. Only with the subsequent signal the next caller is set to AI.</p> <p>If a caller within the line group GR is in ON AIR already, it is switched to the Post-Status PO.</p>

GPI Functions (9)

Function	Parameter	Description
As soon as a line-group-related PRETALK and/or ON AIR Function has been programmed, the callers which are the longest time in the system are automatically highlighted as "Next PRETLAK" (green text colour) or as "Next ON AIR" (red text colour)		
Set ON AIR at Line Group (from HOLD READY only)	Line Group: GR: Configured Line Group Audio Line: AI: Configured ON AIR Audio Line HT: -, HOLD Toggle Mode Post State: PO: HOLD (Studio), DROP	<p>Switches the next caller within the line group GR to ON AIR Audio line AI but only if the caller is in the status HOLD READY.</p> <p>If HOLD Toggle Mode is enabled and a caller is in AI, he will be set to "HOLD was ON AIR" without setting the next one to AI. Only with the subsequent signal the next caller is set to AI.</p> <p>If a caller within the line group GR is in ON AIR already, he is switched to the Post-Status PO.</p>
Set Audio Line at Line Group	Line Group: GR: Configured Line Group Pre State: PR: HOLD, PRETALK, ON AIR Audio Line: AI: HOLD, PRETALK, ON AIR	Switches a caller (or also several callers) to audio line AI within the line group GR, if he is in the Pre-Status PR (PRETALK and/or ON AIR).

GPI Functions (10)

Function	Parameter	Description
(PC): Functions marked with (PC) in the function name require at least one client to be connected to the system.		
DROP at Line Group	Line Group: GR: Configured Line Group Audio Line: AI: None, Audio line type Or: SI: None, inbound / outbound calls	Drops one or several connections within the line group GR, if they are in the Audio line status AI or were established in direction SI.
LOCK Lines at Line Group	Line Group: GR: Configured Line Group Command: SI: LOCK, UNLOCK	Sets the line status SI within the line group GR.
Toggle LOCK state of lines at Line Group	Line Group: GR: Configured Line Group, Any	Toggle line lock of line group GR.
Toggle Recording (PC)	Client: ID: Client-PC	Start and stop pretalk stream recording of a client PC.
Ember+ Call at Line Group	Line Group: GR: Configured Line Group Audio Line: AI: HOLD (Studio), PRETALK, ON AIR	Dials the phone number which has been entered via Ember+ within line group GR and sets the Audio line to AI as soon as the called partner answers the call. Stops the dialling.

GPI Functions (11)

Funktion	Parameter	Beschreibung
Ember+ Redial last CALL at Line Group	Line Group: GR: Configured Line Group Audio Line: AI: HOLD (Studio), PRETALK, ON AIR Dial Number Source: NS: Ember+ Provider Ember+ Consumer 1 Ember+ Consumer 2	Redial the last number dialed via NS on line group GR. If the connection is established, the audio line AI is set. End dialing.

GPI Functions (12)

Ember+ Provider

GPO Functions (Output)

Remark:

Please note that some functions described here are not available for MAGIC TH2_{plus} and MAGIC TH6. This applies in particular to the line group functions.

Function	Parameter	Description
Fixed Low	-	Sets static „0“. (Relay open)
Fixed High	-	Sets static „1“. (Relay closed)
Connection Status	Line: LI: 1...16, AC1, AC2, Any Connection State: SI: Disconnect, Calling, Incoming Call, Connect	Activated if the connection status on caller line LI (Any: on at least one caller line) corresponds to the status SI.
Connection Status at Line Group	Line Group: GR: Configured Line Group Connection State: SI: Disconnect, Calling, Incoming Call, Connect	Activated if the connection status on at least on one caller line within the line group GR corresponds to the status SI.
Audio Line	Line: LI: 1...16, AC1, AC2, Any Audio Line: AI: HOLD (Studio), PRETALK, ON AIR	Activated if the Audio line status on caller line LI (Any: on at least one caller line) corresponds to the status AI.
Audio Line at Line Group	Line Group: GR: Configured Line Group Audio Line: AI: HOLD, PRETALK, ON AIR	Activated if the Audio line status on at least one caller line within the line group GR corresponds to the status AI.

GPO Functions (1)

Function	Parameter	Description
ON AIR	Line: LI: 1...16, AC1, AC2, Any	Activated if the Audio line status on caller line LI (Any: on at least one caller line) is ON AIR.
PRETALK	Line: LI: 1...16, AC1, AC2, Any	Activated if the Audio line status on caller line LI (Any: on at least one caller line) is PRETALK.
Ringing State Connected State	Line: LI: 1...16, AC1, AC2, Any	Activated if the connection status on caller line LI (Any: on at least one caller line) is RINGING or CONNECTED.
Ringing / ON AIR	Line: LI: 1...16, AC1, AC2, Any	Activated if the connection status In caller line LI (Any: on at least on caller line) is INCOMING CALL or ON AIR.

GPO Functions (2)

Function	Parameter	Description
LOCK State of Caller Line	Line: LI: 1...16, AC1, AC2, Any	Activated if the caller line LI (Any: at least one caller line) is locked.
LOCK State of Line Group	Line Group: GR: Configured Line Group	Activated if line group LI is locked.
Information Base Entry	Entry ID: #1 Value: #2	Special developer function.
Any System Alarm Pending	-	Activated if at least one System Alarm (see System Monitor) is active.
Application Alarm Pending	Application Alarms: AA: Configured application alarms	Activated if at least one of the selected Application Alarms (see System Monitor) is active.

GPO Functions (3)

Function	Parameter	Description
(PC): Functions marked with (PC) in the function name require at least one client to be connected to the system.		
DTMF Digit Received	-	Activated if a DTMF tone has been received.
Recording or Test of HOLD Signal Active	Int. HOLD Signal: ICH:Internal HOLD Signal 1 ...4, Any	Activated if an internal HOLD Signal IH is recorded via the function Start Recording of HOLD Signal or played back via the function Start Test Recorded HOLD Signal .
Audio Interface used for HOLD Signal Recording	Audio Interface: PI: Audio Interface	Activated if the audio interface PI is being used for the HOLD Signal Recording.
Connection Status in Studio (PC)	Studio: ST: Studio 1 ... 6 Connection State: SI: Disconnect, Calling, Incoming Call, Connect	Activated if the connection status on at least one caller line in studio ST corresponds to the status SI.

GPO Functions (4)

Function	Parameter	Description
(PC): Functions marked with (PC) in the function name require at least one client to be connected to the system.		
ON AIR in Studio (PC)	Studio: ST: Studio 1 ... 6 ON AIR Line: AI: all configured ON AIR Audio Lines, Any	Activated if the Audio line status on at least one caller line in the studio ST corresponds to the ON AIR status AI.
PRETALK in Studio (PC)	Studio: ST: Studio 1 ... 6 PRETALK Line: AI: all configured PRETALK Audio Lines, Any	Activated if the Audio line status on at least one caller line in the studio ST corresponds to the PRETALK status AI.

GPO Functions (5)

Funktion	Parameter	Beschreibung
(PC): Functions marked with (PC) in the function name require at least one client to be connected to the system.		
Night Service or Answering Machine at Line Group	Line Group: GR: Configured Line Group Mode: M: <ol style="list-style-type: none"> Any Night Service or Answering Machine No Night Service or Answering Machine Night Service: Transfer incoming call Night Service: Call Forwarding incoming call Night Service: Call Forwarding (Provider) Answering Machine: Auto Message and DROP Answering Machine: Record Caller 	Activated if mode M matches state of Line Group GR: <ol style="list-style-type: none"> Night Service or Answer Machine is active. Neither Night Service nor Answering Machine is active. Forward call per ECT is active. Forward call per hybrids CF line is active. Call forwarding in PBX is programmed. Play a message and drop is active. Recording messages is active.
Set Output by Action (PC)	-	Makes this output available for the SET GPO action, which can be created on the ACTIONS configuration page.

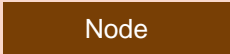
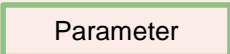
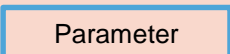
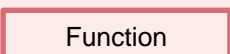
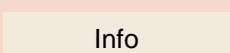


GPO Functions (6)

Funktion	Parameter	Beschreibung
(PC): Functions marked with (PC) in the function name require at least one client to be connected to the system.		
Client is Recording (PC)	Client: ID: Client-PC	Activated if the client PC with the selected ID is currently recording a call.
Recordings Playback active on Client (PC)	Client: ID: Client-PC	Activated when a recording of a call is played back on the client PC with the selected ID.

GPO Functions (7)

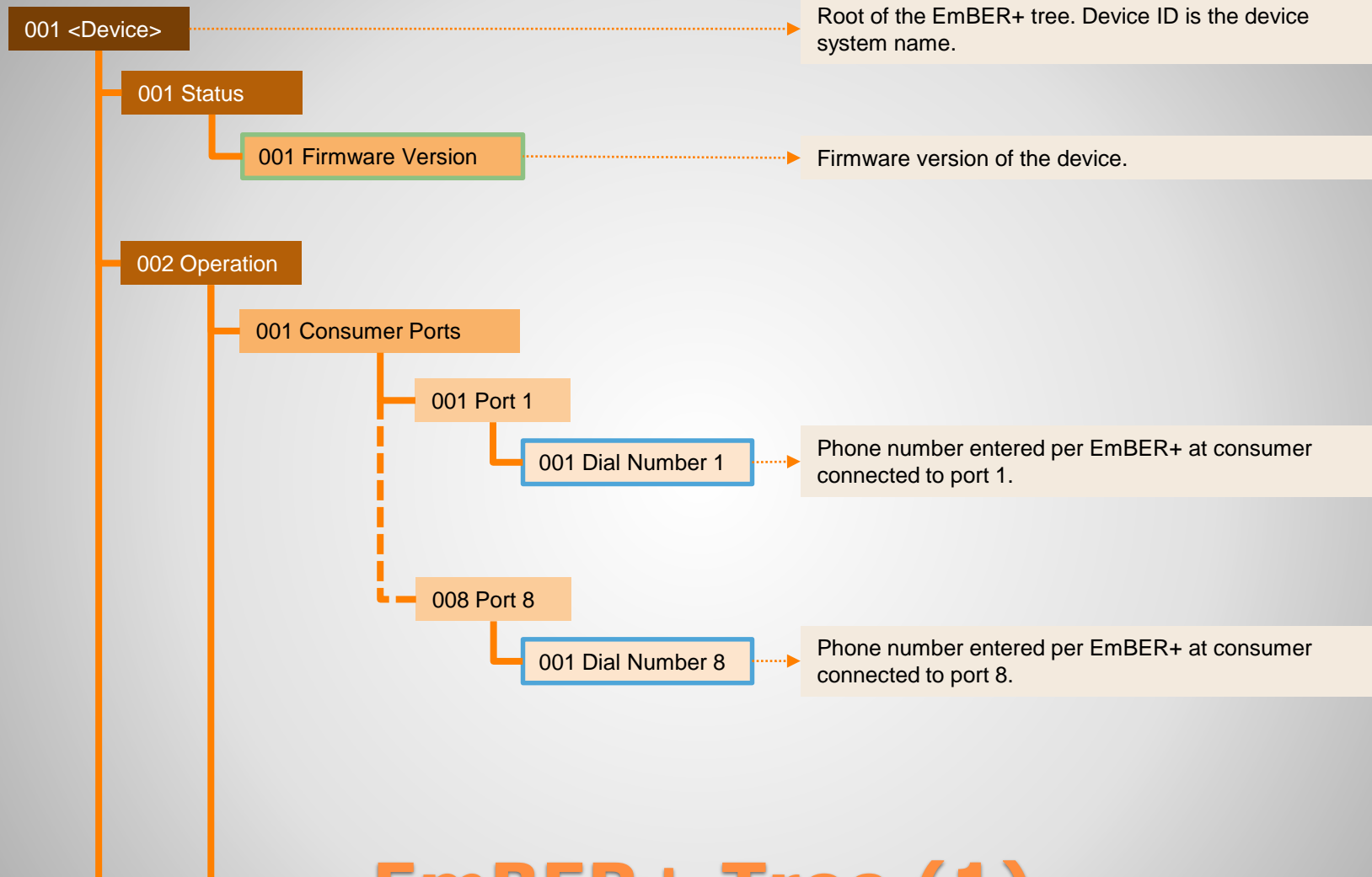
Ember+ Provider

Parameter Tree

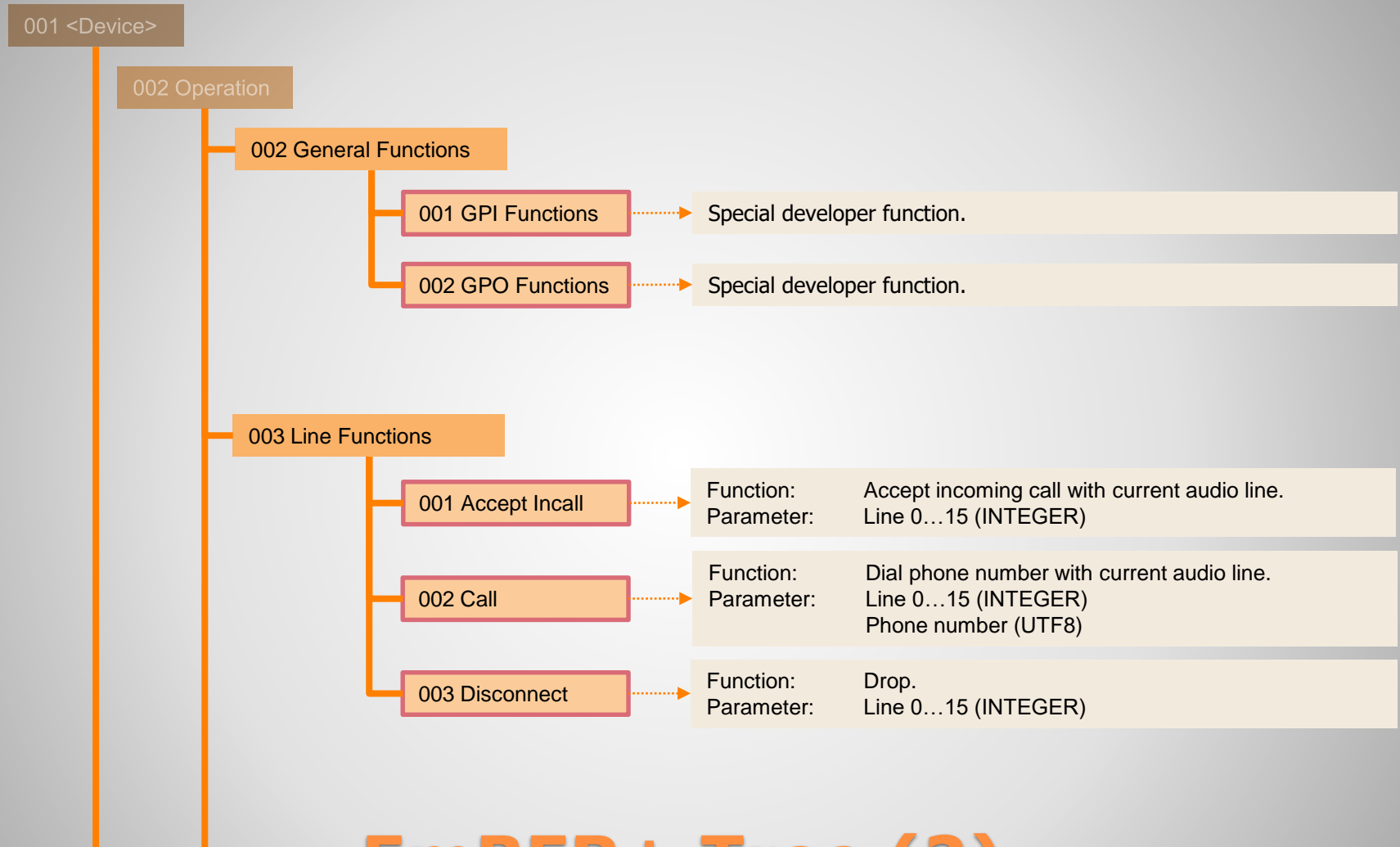
Element	Description
	Background colour indicates the position of the node in the tree hierarchy.
	The value of the node can only be read.
	The value of the node can be changed.
	Function call executed by the telephone hybrid
	Description of a node.
	Connects nodes.
	Links to a description of a node.

Find information about audio line assignments following the EmBER+ tree description.

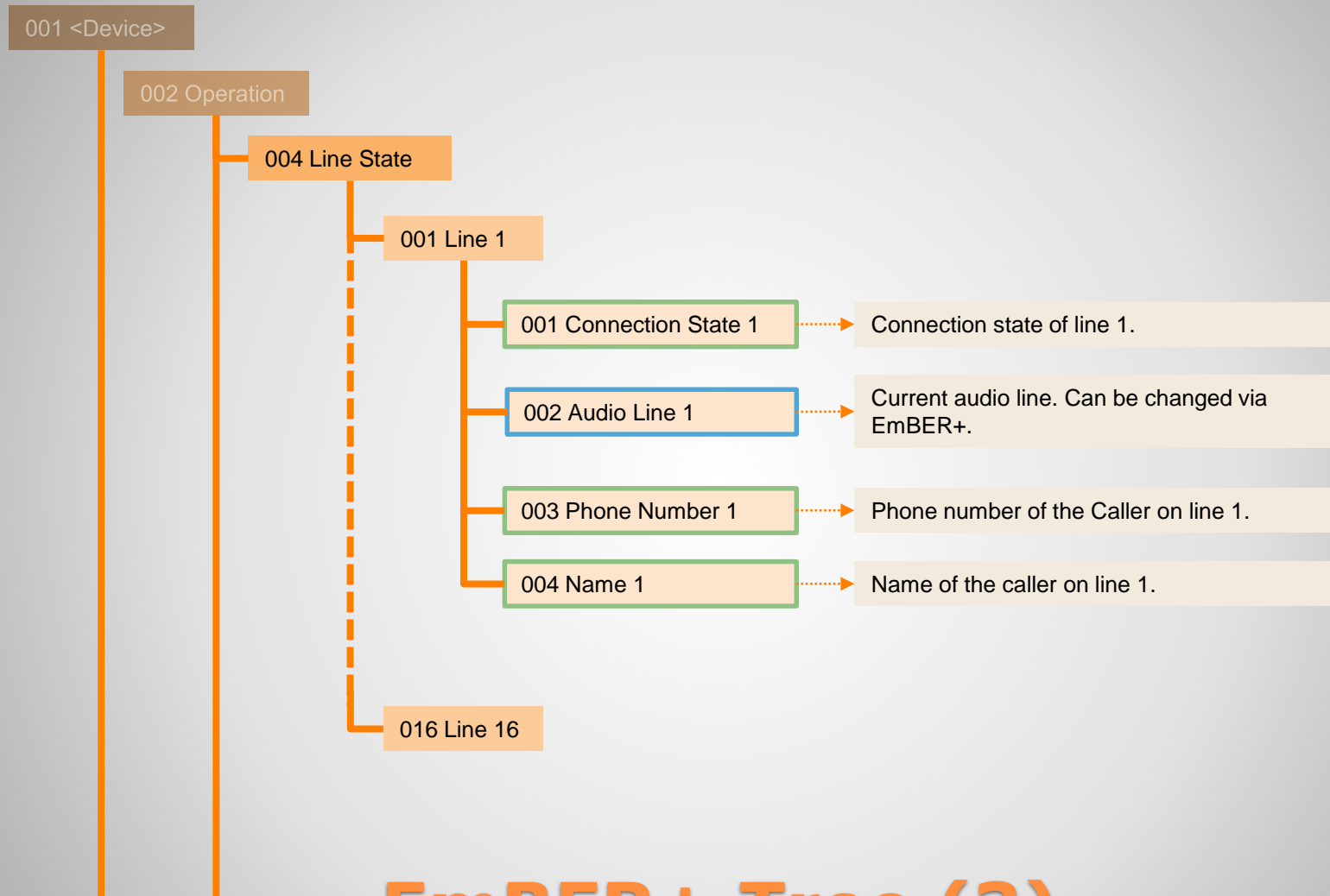
EmBER+ Tree - Key



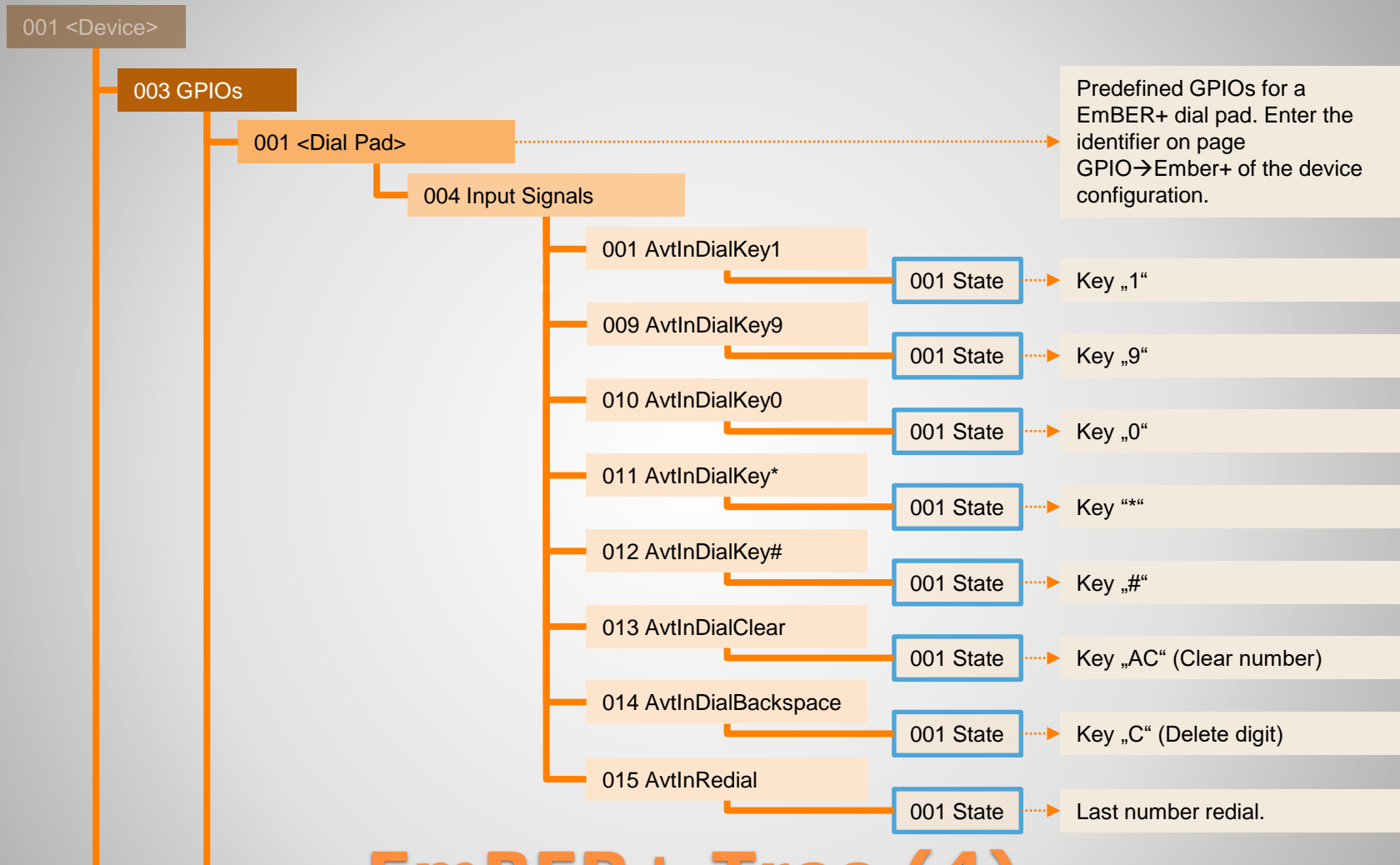
EmBER+ Tree (1)



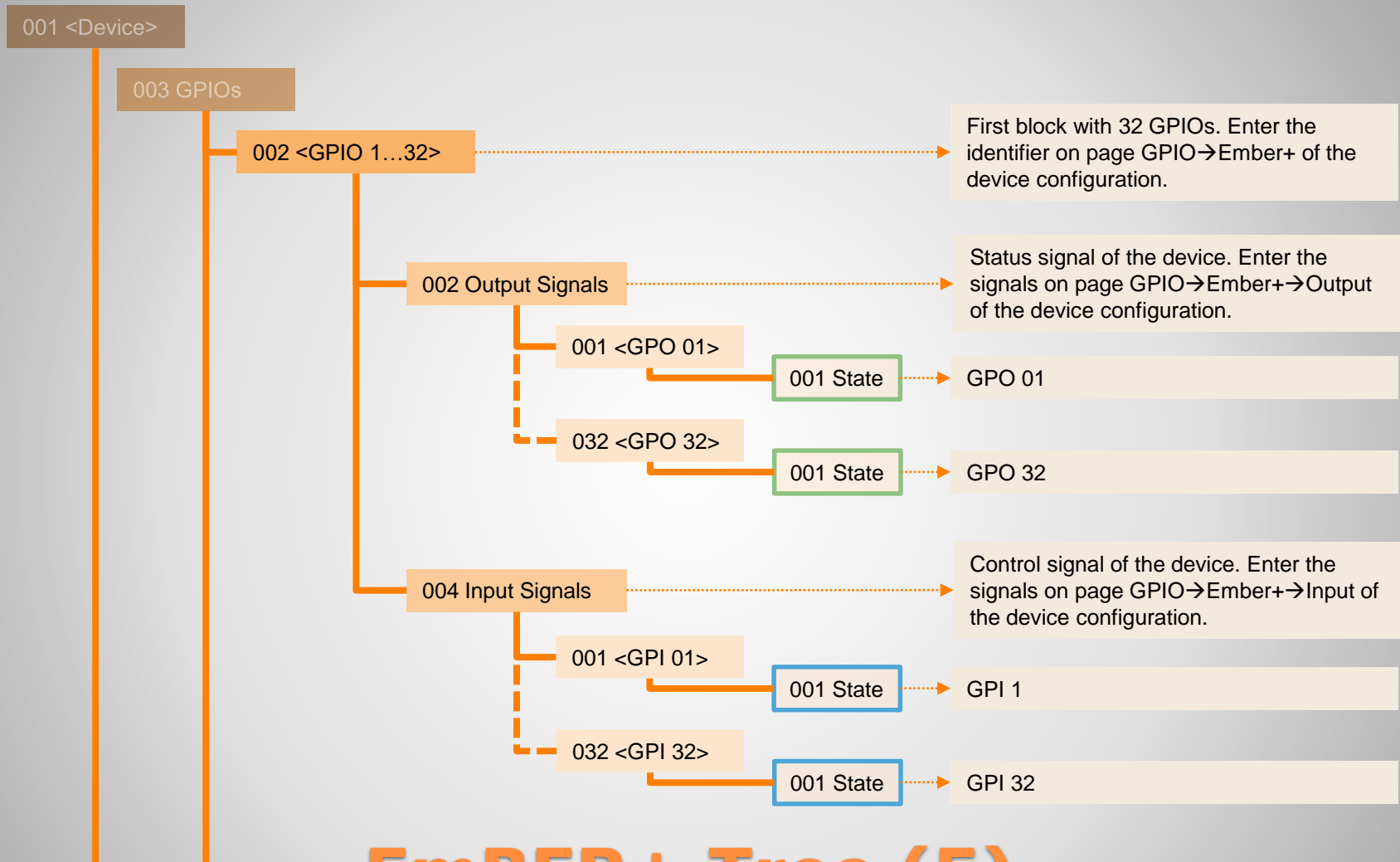
EmBER+ Tree (2)



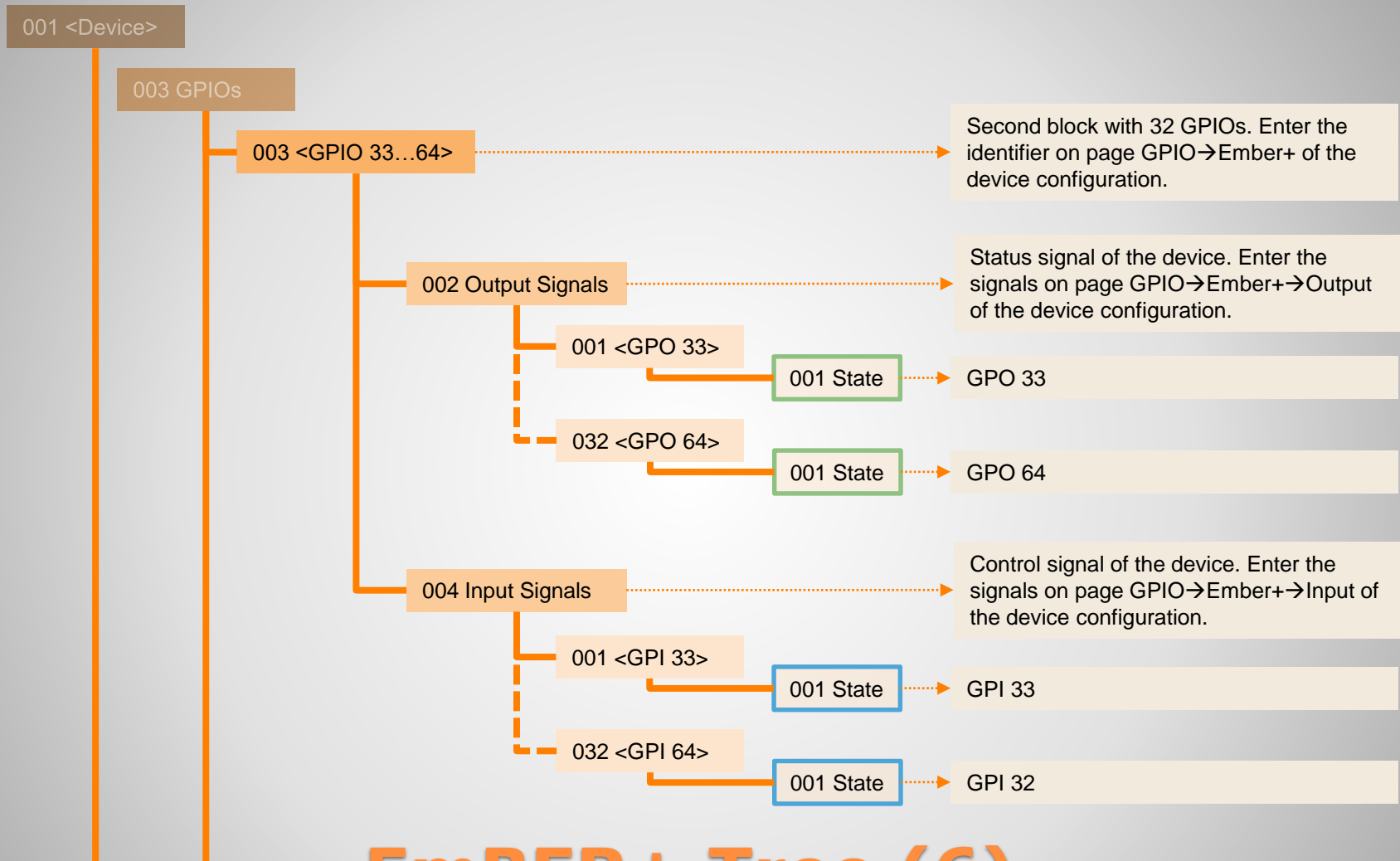
EmBER+ Tree (3)



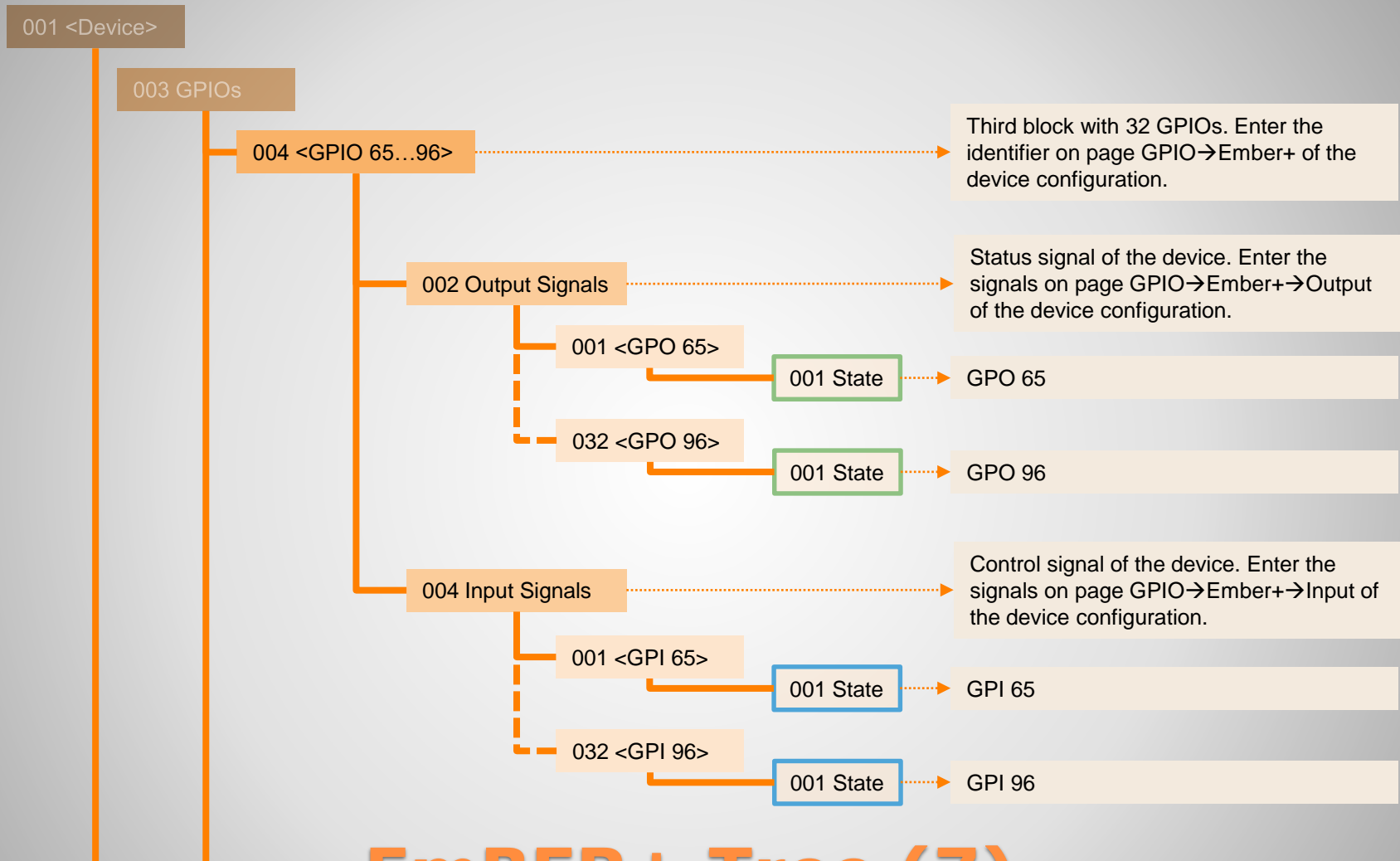
EmBER+ Tree (4)



EmBER+ Tree (5)



EmBER+ Tree (6)



EmBER+ Tree (7)

Nr.	Audio line	Remarks
3 – 34	ON AIR 1 – ON AIR 32	-
35 - 54	PRETALK 1 – PRETALK 20	Pretalk of clients 1 – 20
57 - 66	Dynamic PRETALK	Can not be assigned to individual clients.
67 - 86	HOLD 1 – HOLD 20	HOLD-Signal of clients 1 – 20
87	HOLD News Desk Clients	Mutual HOLD-Signal of all News Desk clients.
89-92	HOLD Night Service / Answering Machine	HOLD-Signals for night service and answering machine.
93 - 98	HOLD Studio 6 – HOLD Studio 1	HOLD-Signals of studios 1-6 in descending order.
99 - 104	HOLD Remote Light 6 – HOLD Remote Light 1	HOLD-Signals of Remote Light clients 1 – 6 in descending order.
192 - 197	Off Conference 1 – Off Conference 6	Off Conference of studios 1 – 6.

Audio Lines Assignment

Ember+ Consumer

Configuration

- Activate the Ember+ Consumer function on the SYSTEM SETTINGS → EMBER+ page.
- Under LAN INTERFACE, select the network interface of the telephone hybrid via which the connection to the Ember+ provider is to be established.
- The device can connect to two Ember+ providers.
 - TCP/IP ADDRESS: IP address of the Ember+ provider.
 - PORT: TCP/IP port of the Ember+ provider

Configuration

Local

MAGIC THipPro ACip3 1

Studio Audio Assignment
Clients Audio Assignment
Remote Light Audio Assignn
Clients Restrictions
Signal Processing
Line Labels
Studio Settings
Auto Answer
Intro / Data Privacy Query
Answering Machine
Night Service
DTMF
Actions
Telephone Client Application
GPIO
System Settings
General
Line Interface
Caller Line Grouping
VoIP (LAN/SIP)
Audio Interface
PRETALK Streaming
AES67
LAN Interface
VLAN
DHD Audio Matrix
Ember+
Remote Light Protocol
ACconnect
SNMP
Login

Ember+

☒ Activate Ember+ Provider

Ember+ Connection Parameters:

LAN Interface: LAN 1 : 172.20.30.25

Port 1 (Consumer 1): 9000 Port 4 (Consumer 4): 0 Port 7 (Consumer 7): 0
Port 2 (Consumer 2): 9001 Port 5 (Consumer 5): 0 Port 8 (Consumer 8): 0
Port 3 (Consumer 3): 9002 Port 6 (Consumer 6): 0

☒ Activate Ember+ Consumer

Connection Parameters:

LAN Interface: LAN 1 : 172.20.30.26

TCP/IP Address: Port:

Provider 1: 172.20.30.15 9010
Provider 2: 172.20.30.16 9011

Client ID: 5 Studio: 1

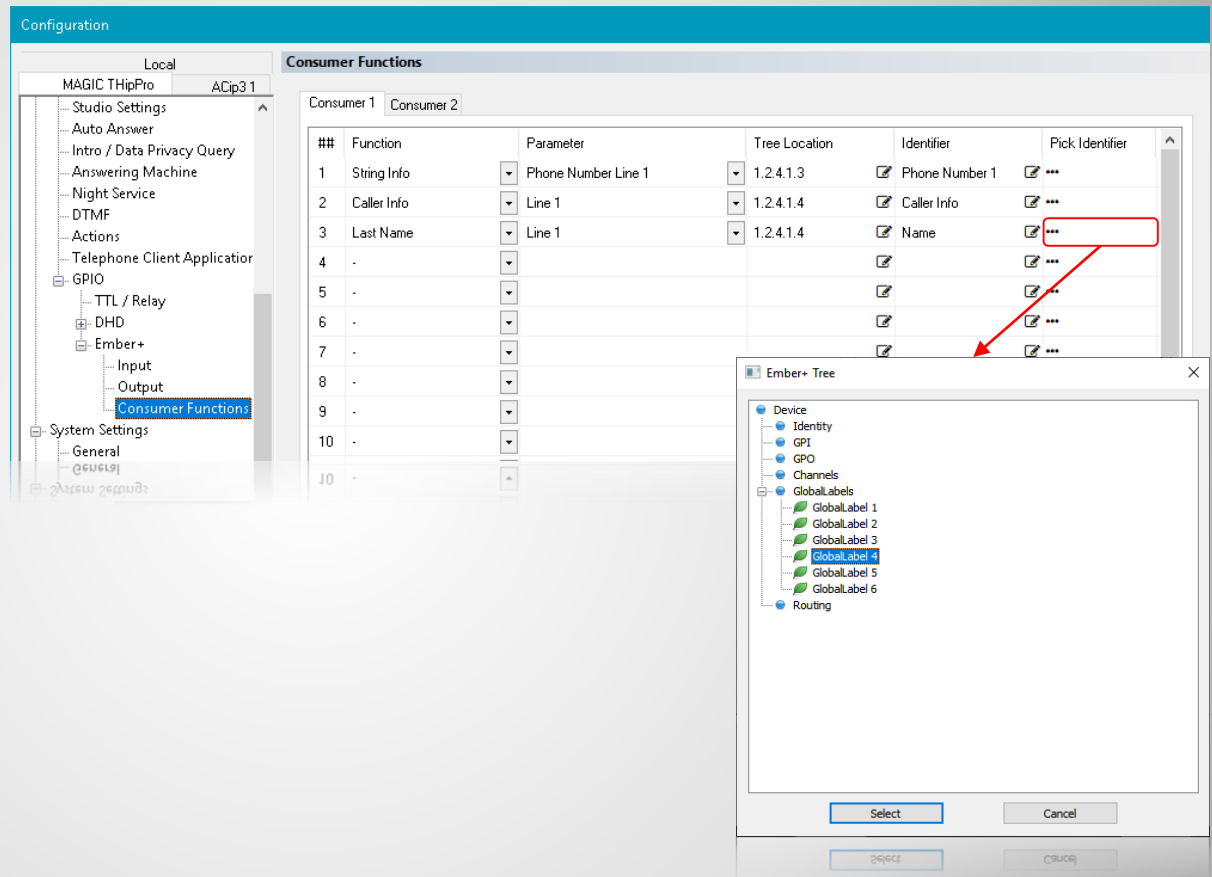
OK Abbrechen Apply Now

Client ID: 2 Studio: 1

OK Abbrechen Apply Now

Ember+ Consumer – Configuration (1)

- Up to 20 functions can be defined on the GPIO → EMBER+ → CONSUMER FUNCTIONS page.
- Select a device's data field in the FUNCTION column.
- The data field is specified in more detail under PARAMETER.
- Now an element from the Ember+ tree of the provider must be linked with this data field. This is possible in two ways:
 - Via PICK IDENTIFIER an entry from the provider's Ember+ tree can be selected. TREE LOCATION and IDENTIFIER are set automatically.
 - It is also possible to specify TREE LOCATION and IDENTIFIER directly.



Ember+ Consumer – Configuration (2)

Ember+ Consumer

Functions

Remark:

Please note that some functions described here are not available for MAGIC TH2_{plus} and MAGIC TH6. This applies in particular to the extended screening information (like age and rating).

Function	Parameter	Description
None	-	No data field is selected.
String Info	<ol style="list-style-type: none"> Active Preset Name Phone Number Line 1...16 SIP Display Name 1...16 Ember+ Consumer 1 Dial String Ember+ Consumer 2 Dial String Ember+ Provider Dial String 1...8 DHD Dial String Custom Value 	<p>The telephone hybrid exchanges information in text form with the Ember+ provider:</p> <ol style="list-style-type: none"> Name of the active preset on the telephone hybrid. (W) Telephone number of the subscriber on line 1...16 (W) Received SIP Display Name of subscriber on line 1...16 (W) Telephone number that can be used for dialling via Ember+ Input or DHD Set Logic. Should be set by the provider to whom the Ember+ Consumer 1 is connected. The telephone hybrid deletes the number after the call has been established. (RW) Telephone number that can be used for dialling via Ember+ Input or DHD Set Logic. Should be set by the provider to whom the Ember+ Consumer 2 is connected. The telephone hybrid deletes the number after the call has been established. (RW) Telephone number that can be used for dialling via Ember+ Input or DHD Set Logic. One entry per Ember+ provider. This entry is also filled via the predefined Ember+ GPI keypad. (RW) Telephone number that can be used for dialling via Ember+ Input or DHD Set Logic. This entry is also filled via the predefined DHD Set Logic GPI keypad. (RW) Special developer function. <p>(W): Value is set but not evaluated by the device. (RW): Value is set and evaluated by the device.</p>

Consumer Functions (1)

Function	Parameter	Description
<u>Screening info in general:</u> All entries from the database's screening information have these parameters:	1. Line 1...16 2. HOLD Studio 1...6 3. HOLD Client 1...20 4. PRETALK 1...32 5. ON AIR 1....32	The telephone hybrid sets the entry with the respective information from the caller database. The subscriber is selected based on the parameter: 1. Subscriber on a telephone line. 2. Subscriber in HOLD of a Studio. 3. Subscriber in HOLD of a Client PC. 4. Subscriber in selected PRETALK. 5. Subscriber in selected ON AIR.
Caller Info	See screening info in general.	The telephone hybrid sets this entry with a combination of call number, first name and surname of the caller depending on the availability of information.
Mood as String	See screening info in general.	The telephone hybrid sets this entry with the mood of the subscriber as a string. Values: "Unknown", "Happy", "Neutral", "Sad".
Mood as Integer	See screening info in general.	The telephone hybrid sets this entry with the mood of the subscriber as a numerical value. Values: 0,1,2,3 0 = unknown 1 = happy 2 = neutral 3 = sad

Consumer Functions (2)

Function	Parameter	Description
Rating as String	See screening info in general.	The telephone hybrid sets this entry with the rating of the subscriber as a String. Values: „0“, „1“, „2“, „3“, „4“, „5“, „6“ „0“ = not rated yet.
Rating as Integer	See screening info in general.	The telephone hybrid sets this entry with the rating of the subscriber as a numerical value. Values: 0, 1, 2, 3, 4, 5, 6 0 = not rated yet.
Gender as String	See screening info in general.	The telephone hybrid sets this entry with the gender of the subscriber as a string. Values: „Unknown“, „Male“, „Female“, „Audio Codec“
Gender as Integer	See screening info in general.	The telephone hybrid sets this entry with the gender of the subscriber as a numerical value. Values: 0, 1, 2, 3 0 = unknown 1 = male 2 = female 3 = Audio Codec

Consumer Functions (3)

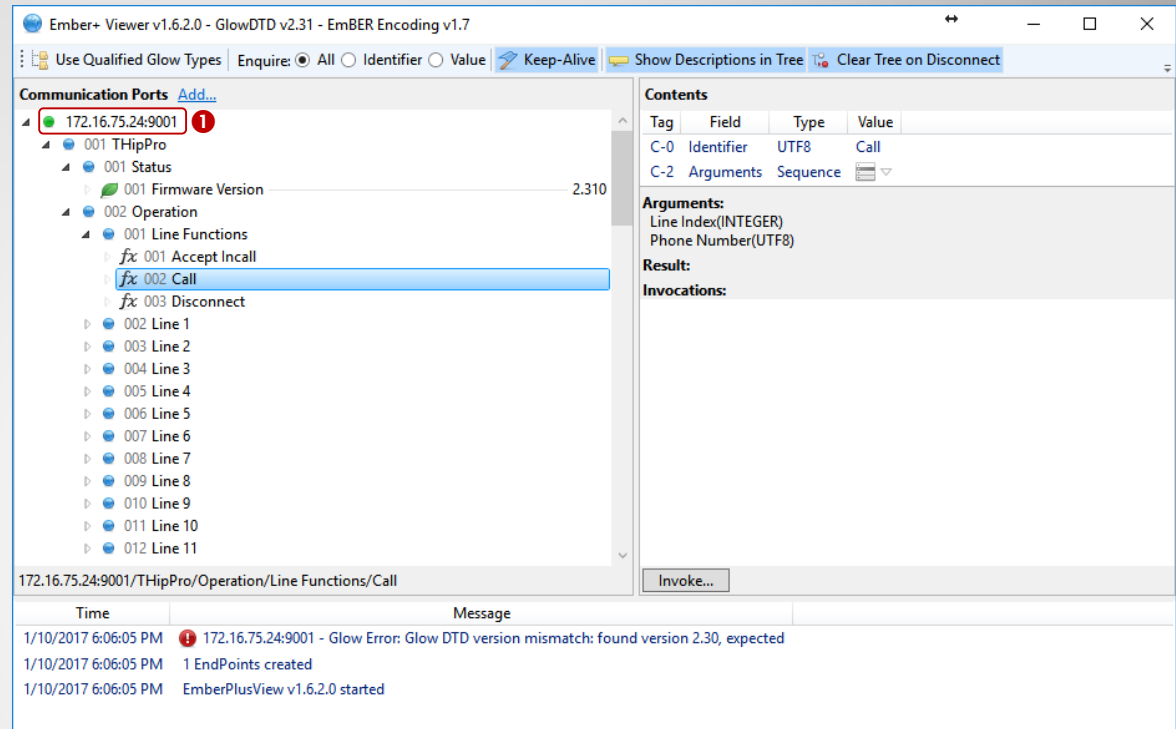
Function	Parameter	Description
Age as String	See screening info in general.	The telephone hybrid sets this entry with the age of the subscriber as a string.
Age as Integer	See screening info in general.	The telephone hybrid sets this entry with the age of the subscriber as a numerical value.
Phone Number	See screening info in general.	The telephone hybrid sets this entry with the phone number of the subscriber as a string.
Last Name	See screening info in general.	The telephone hybrid sets this entry with the last name of the subscriber as a string.
First Name	See screening info in general.	The telephone hybrid sets this entry with the first name of the subscriber as a string.
Town	See screening info in general.	The telephone hybrid sets this entry with the town of the subscriber as a string.
Info	See screening info in general.	The telephone hybrid sets this entry with the content of the information field of the subscriber as a string.

Consumer Functions (4)

Appendix

Ember+ Viewer
Support

- With the *Ember+ Viewer* Software the complete Ember+ tree of a Provider can be displayed.
- Via the Viewer you can also change the available parameters for testing and read out the available information.
- To use the Viewer, an additional Port must be enabled in the telephone hybrid.
 - Page *SYSTEM SETTINGS* → *EMBER+ PROVIDER*.
 - Select free port from *PORT 1* ... *PORT 8* and enter e.g. 9001.
 - Enter this port in the Ember+ Viewer correspondingly (❶).



Ember+ Viewer

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E-mail: support@avt-nbg.de

Phone: +49 911 5271-110

Support