beyertone® multiLAN

Announcement and Music-on-hold system with LAN interface

Installation guide

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- ***What's included:***

  - **beyertone® multiLAN appliance**
  - 2x RJ12 to RJ12 cable (for Announcement and MOH-LINE connection to analogue ports)
  - RJ11 to phone plug cable (alternative for MOH 3,5mm jack sockets)
  - 3,5mm jack to RCA (Cinch) adapter (for MOH RCA ports)
  - RJ45-RJ45 LAN cable (grey)
  - LAN crossover cable (coloured, for direct configuration without switch or hub)
  - 6 volt mains adapter

- ***Safety precautions:***

  Set up the appliance in a dry location, never in damp or wet rooms.
  The ambient temperature must not fall below 5°C or exceed 45°C.

  To power the appliance, use only the mains adapter provided.

  BEYERTONE provides no warranty for any damage to the appliance, or outages of PBX and IT systems connected to it, arising from improper operation, incorrect connection or the use of non-specified data.

  When passing the appliance to a third party, always include full documentation.

  The systems supplied are under constant development and improvement. Please note, therefore, that the programming interface on the appliance may exhibit changes compared with the information provided in this document. Such changes represent an improvement in functionality and do not constitute grounds for complaint.

- ***CE declaration of conformity:***

  The beyertone® multiLAN complies with the EU directives 2004/108/EC and 2006/95/EC by fulfilling the requirements of the relevant provisions of EN 55022 / EN 55024 and EN 60950 (power supply).

- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications not expressly approved by the manufacturer could void the user's authority to operated the equipment under FCC rules.

Contents

1. Functions

The **beyertone® multiLAN** is a wear-free digital appliance for adding high-quality announcements and music on hold to telephone systems that can easily and reliably be updated via the integrated LAN interface using a web browser or by automatic http download from a server.

‘Announcement before answering’ (ABA) is the name we give to a facility enabling callers to be greeted automatically by a friendly welcome message. Callers are then forwarded to the switchboard or an alternative telephone set. This helps to avoid lost calls and gives your company a professional audio image.

Optionally, the beyertone® multiLAN can be upgraded by licence codes with features like ‘Auto Attendant’ and ’Mailbox’. The Auto Attendant feature allows callers to connect themselves to the extension or department desired by entering DTMF digits. Moreover, additional announcements can be played or other options offered, if the target is busy. The Mailbox function can make a central answering machine of the unit. Up to three lines can record callers‘ messages simultaneously. Retrieving messages can be done via dial-in menu, via email forwarding as mp3 files as well as via the comfortable web interface, which also allows playing and saving the messages as mp3 files.

Time-controlled automatic or manual switchover between four available operating modes (Day/ Break / Night / Holiday) guarantees, that also outside normal business hours callers will hear appropriate messages, e.g. telling opening hours etc. Beyond that, an extended holiday calendar allows pre-programming of special announcements for certain occasions.

The music-on-hold function (MOH) enables an on-hold loop to be added to the telephone system for callers to listen to during the call-routing process (e.g. call hold / forwarding). This takes the form of asynchronous audio and is heard simultaneously by all callers on hold at any one time.

In basic configuration, the beyertone® multiLAN provides one MOH- and one ABA-port. By simply plugging in an optional extension module, two more ABA-ports can be added, which results in 3 announcement ports being provided by the appliance.

The beyertone® multiLAN can be connected to any PBX with an audio port for external music on hold (MOH, audio-in or analogue port) and analogue ports or E&M-ports (e.g. TIEL, TMOM, TMEW2) for the connection of announcements. In addition, connection to PA equipment is possible.

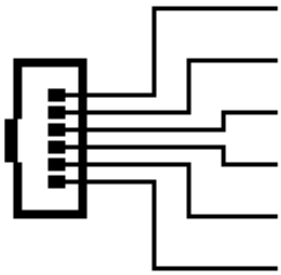
For adding audio files the beyertone® multiLAN makes use of the widely known and accepted mp3 audio format. Alternatively, own announcements can be recorded by dialling in via telephone

2. Installation

The beyertone® multiLAN should be installed by authorised telephone system service only. Proceed as follows:

2.1 MoH port

- Set up the external port for music on hold on the PBX. Connect the PBX's MOH port to the MOH port on the beyertone® multiLAN using one of the cables supplied. The pin assignment on the beyertone® appliance is as follows:



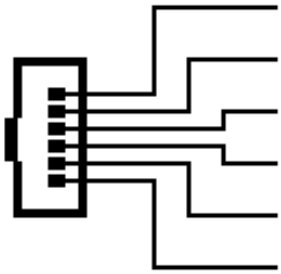
UAE 6/6 RJ 11/12	UAE 8/8 RJ 45	a/b or audio			function
1	2	-			a-wire HIC *
2	3	-			
3	**4**	**a**			**a-wire / audio**
4	**5**	**b**			**b-wire / audio**
5	6	-			
6	7	-			b-wire HIC *

* HIC = connection MoH to HiPath 4000 / Hicom 300 („SSC“-port)

  The MOH input on the PBX can either be a voltage-free audio input (jack/RCA) or an analogue a/b port (with feed). Both options can be catered for by the beyertone® multiLAN without the need to switch.
- When connecting the music on hold to a HiPath 4000 (Hicom 300), please note the different pin configuration (see table). Depending on the sensitivity of the system's MOH port, it may also be necessary to switch the wires.
- *Never* use the RJ11 cable to connect the PHONE output on the beyertone® multi-LAN to an a/b port. BEYERTONE accepts *no* liability for any damage caused to the appliance as a result!
- You can also connect headphones to the PHONE port to check the music playback. Unlike the RJ output, however, the PHONE output is *not* galvanically isolated!
- On power up, after booting (approx. 10 seconds) MOH playback starts automatically as long as the appliance contains valid mp3 audio files. The appliance is shipped with a royalty-free default track. The yellow 'MOH' LED flashes evenly on playback of music. You should then check the music playback using the call hold function of the telephone system.
- To set the volume level of the music on hold, load own music files and make all other settings, you have to use a browser via LAN (see Section 3, 4.1 and 5.1).

2.2 Announcement ports

- For each announcement port set up one port on the PBX as analogue port or E&M port (e.g. TIEL, TMOM or TMEW2). Connect these ports with each one LINE port of the beyertone® multiLAN using a RJ12/RJ12 cable supplied. Plug this cable into a RJ12 socket - the pin assignment will be as follows:



6-way RJ 11/12	8-way RJ 45	a/b	TIEL	TMEW2	TMOM	function
1	2	-	SG	SG	C	stop-signal*
2	3	-	E	E	D	stop-signal*
3	**4**	**a**	**a**	**a**	**a**	**a-wire**
4	**5**	**b**	**b**	**b**	**b**	**b-wire**
5	6	-	Earth (= SG)	SB	P	start-signal*
6	7	-	M	M	Earth	start-signal*

* start-/stop-contacs only with E&M ports or PA mode

- When connecting announcement ports of the beyertone® multiLAN to E&M ports (like TIEL, TMOM or TMEW2), one must check if the start contact from the PBX will be given by a voltage-pulse or via a dry contact. According to the following table, for each corresponding announcement port of the appliance an internal setting of a pair of jumpers may have to be carried out.

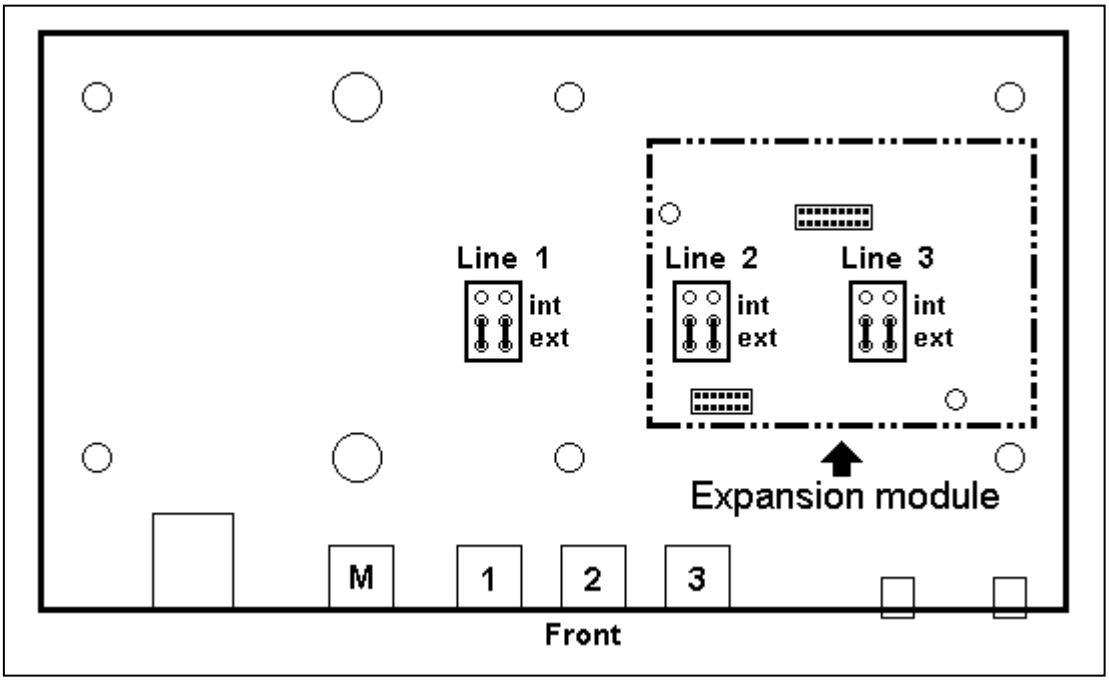
Port interface	**Jumper**
Settings on delivery	*ext.*
analogue port	(ext.) [1]
E&M / PA, start by voltage pulse (e.g. TIEL [2])	ext.
E&M / PA, start by dry contact (e.g. TMEW2/TMOM)	int.

[1] Setting doesn't matter
[2] Setting applies to TIEL connection „Type 1A"

NOTE: When connecting the announcement ports of the beyertone® multiLAN to analogue ports, jumper settings may be disregarded.

- Before installing the port expansion module, switch off power and remove all connections from the device. Open the unit and plug in the module on the main board, securing it by two locking pins. After that, close the device completely again before reconnecting cables and power. The module will be recognised automatically when the unit is turned on.
- If the beyertone® multiLAN is equipped with an expansion module, a different type of port interface may be selected for each announcement port (LINE 1 to LINE 3), e.g. LINE 1 for connection to TMOM, LINE 2 and 3 for analogue ports. The MoH port however can not be configured other than for music-on-hold.

The following drawing shows the position of the module and the jumpers:

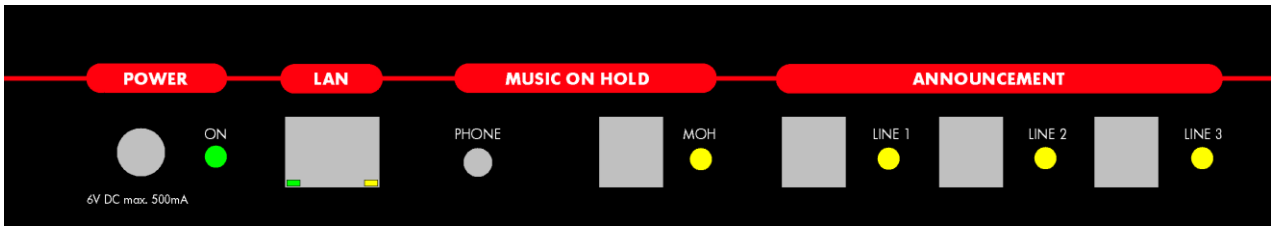


- The ports of the PBX have to be programmed correctly to obtain the desired announcement functions.
- To set the volume level of the announcements, load announcement files and make all other settings e.g. the call transfer numbers, you have to use a browser via LAN (see Section 3, 4.1 / 4.2 and 5.2 / 5.3).

2.3 Network and power supply

- *First* connect the LAN port of the beyertone® multiLAN to a free 10/100 Mbps port in the network that will be used to access the appliance and download audio updates. The green LAN socket LED means "connected", the yellow LED "data".
- Configuration and transfer/download of audio files is done exclusively via the LAN interface. When taking the appliance into operation you can assign a static IP address or you can have the network parameters (IP address, gateway address, plus, if applicable, DNS and NTP address) assigned automatically via DHCP (factory setting).
- *Then* connect the mains adapter to the POWER socket on the appliance and then plug the mains adapter into a socket outlet. The (green) 'POWER' LED lights up, indicating that the appliance is ready for use. Use only the mains adapter supplied. Alternatively the unit can be powered by PoE.
- For information on the status indications via the LEDs on the front panel - e.g. regarding the network status -, please refer to Section 9.5.

Front view left part **beyertone® multiLAN**



Front view right part **beyertone® multiLAN**

3. Basic Setup

The beyertone® multiLAN is set up using a web browser on a PC with access to the network to which the multiLAN appliance is attached. This is done by entering the IP address or the device name of the beyertone® multiLAN in the address bar of a suitable internet browser in order to access the device configuration and mp3 upload pages. DHCP is activated by default on shipment. If no DHCP server is found on power up (e.g. if the appliance is being configured straight from a PC/laptop using a LAN crossover cable), after a delay of about ten seconds the appliance will use a default IP address and subnet mask (see Section 10). The DHCP function remains active, however, and continues to make DHCP requests. **Please see Section 9.1 for additional access options, e.g. via fixed default service ip.**

NOTE: The **default password** for entering the web configuration menu is '**multilan**'. Unless a custom device name has been entered, the **default device name** (required for entering the menu if an IP address was assigned automatically by DHCP and a DNS is available) is the same as the appliance **device id** (‘Ser.-No.’), which is to be found on the rear of the appliance, e.g. '2014-1802-10001'.

3.1 General

On entering the correct password for administration in the browser login screen, you will be taken to the main configuration screen. Here you can access the various configuration sections for the beyertone® multiLAN via the left-hand menu bar.

The main appliance data and settings, e.g. the device id, the device name (relevant for DHCP), the firmware and hardware versions, any optional licences that have been activated, and the current network settings, are listed under the menu item 'System / Info'. The ‘System / Status‘ section shows the current operation mode of the unit, which ports are active at the time and the status of the network and result of the latest download.

NOTE: In general, settings are being stored by clicking the disk symbol (‘save’) in the corresponding headline.

3.2 Network

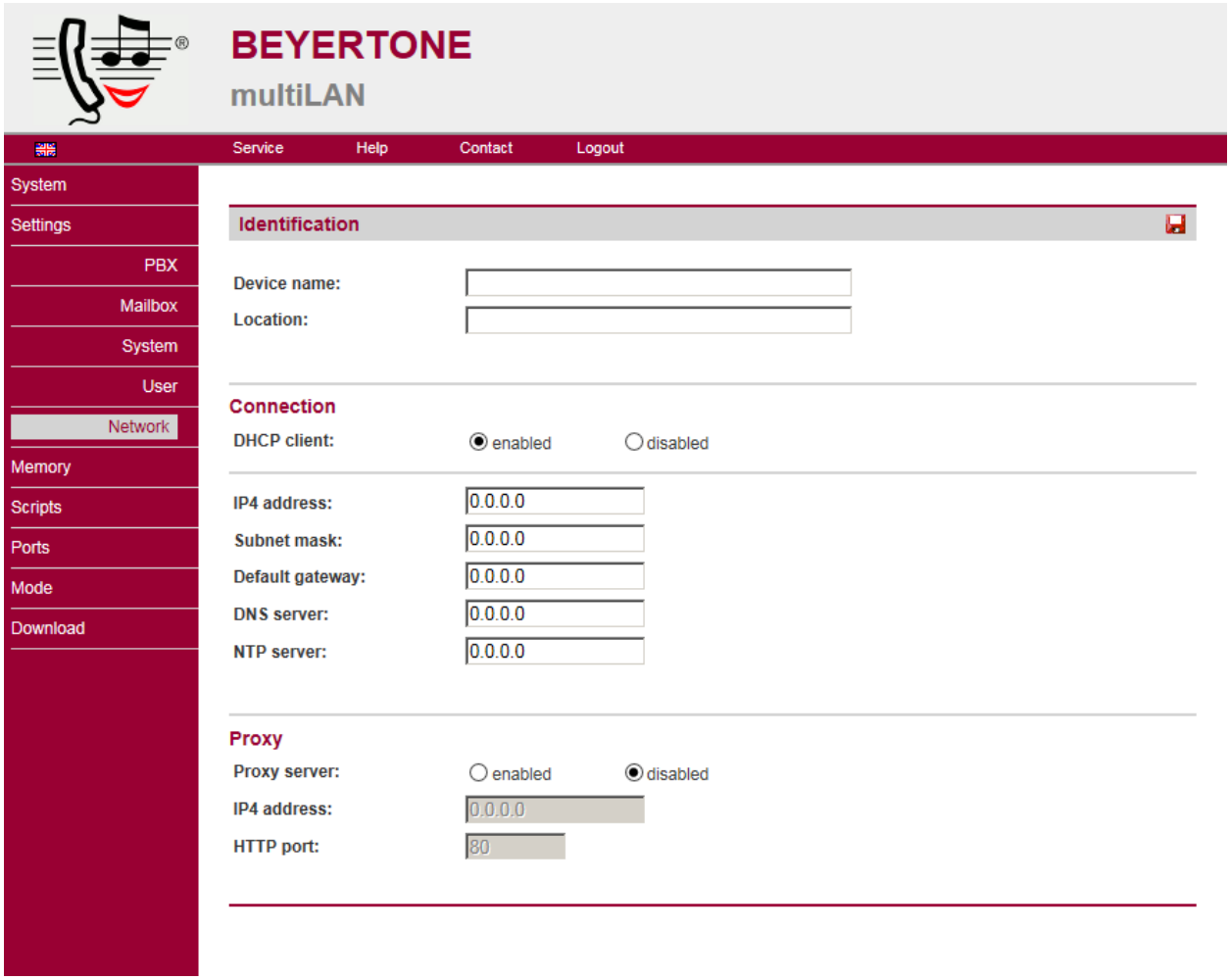
In the 'Settings / Network' section (see screenshot on following page), you can edit the IP addresses to be used by the appliance, the name of the appliance, and its location. The name of the appliance is used for the DHCP function, if this is active. If no name has been allocated (empty field), the device id indicated on the 'System / Info' screen is used for DHCP.

The entry of a DNS server (and optionally a proxy server) is required in order to access the URL entered in the 'Download' settings for the server to be used for downloading audio data. The use of an NTP server also permits automatic setting of the appliance's internal clock, which is e.g. used to perform automatic switching of operation modes. Activating the NTP function or alternatively setting the internal clock manually is done in the 'Settings / System' section.

IMPORTANT: Changes made to settings in the 'Network' section do not become effective until the system has been rebooted. To do so, use the menu item 'System / Restart' and then log in again, using a different IP address if necessary.

NOTE: Network settings for the optional email forwarding of mailbox messages are done in the ‘mailbox‘ section– see also chapter 6.1.

Settings / Network configuration screen



3.3 Settings

In the 'Settings' menu you can enter various settings for the appliance, such as the flash time and busytone recognition on LINE ports when connected to analogue PBX ports, the internal clock time and date setting or the activation of the NTP functionality, a new password for the browser configuration, the language of the browser configuration and dial-in menus, and the time after which an automatic logout from the browser configuration is performed without the need for further user intervention.

IMPORTANT: Please note that changes to settings do not become effective until the save symbol for the relevant item has been clicked.

- PBX (see screenshot on next page)

  For the connection of LINE ports to analogue PBX extensions you can configure here, through which codes call transfer and taking a call back from busy shall be initiated. The following commands are allowed:

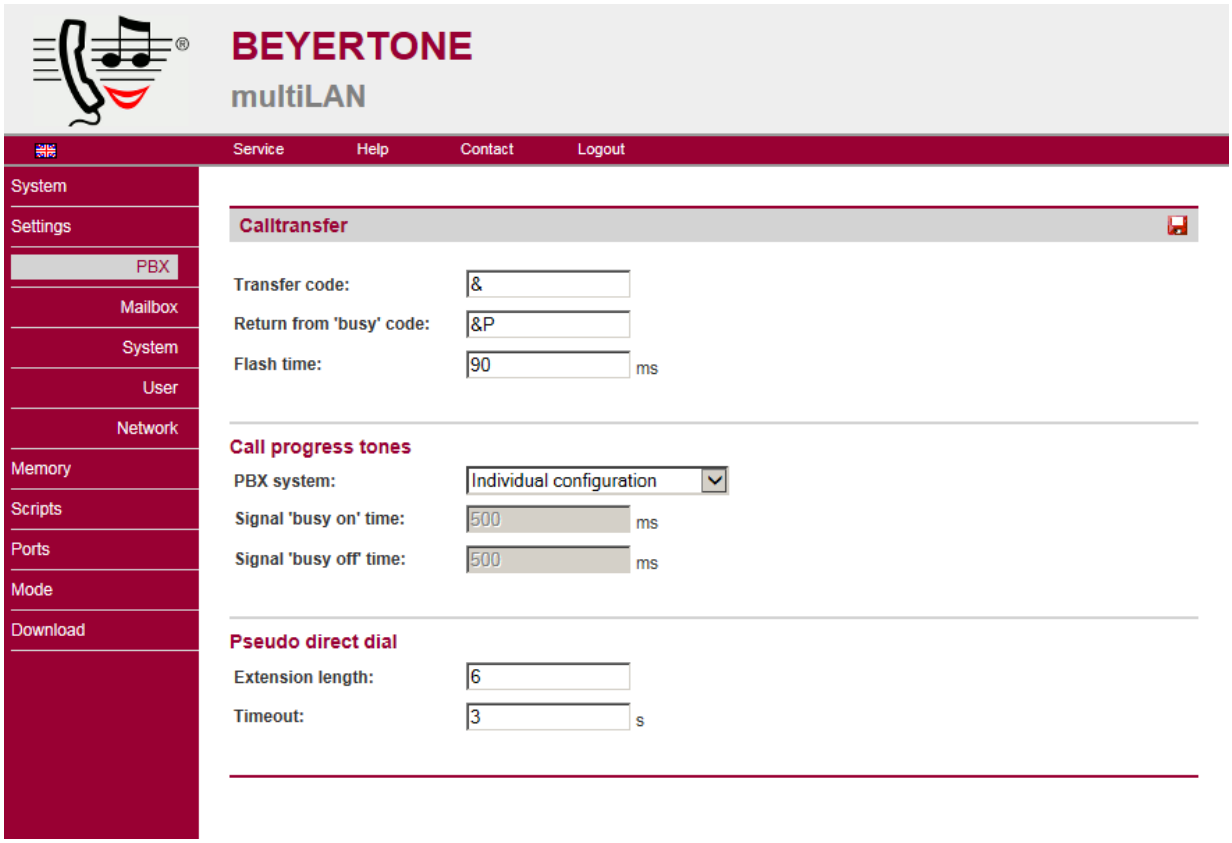
Code	Meaning
&	Flash pulse (duration can be set under ‘Flash time’)
P	Pause approx. 2 seconds (for each ‘P’)
H	On-hook approx. 3 seconds
0,1,2, ... 9,∗,#	corresponding DTMF-signal

  NOTE: The default setting for call transfer is ‘&’, and for taking back on busy ‘&P’.

  IMPORTANT: To ensure that LINE ports on analogue PBX extensions are being released, when the caller hangs up early during an announcement, and that the busytone is detected on supervised transfers, the parameters of the busytone recognition have to be set correctly corresponding to the PBX type. Under ‘Call progress tones’ you can either select one of the templates, or you can apply individual values for both on- and off-time of the busytone cadence to be detected.

  The ‘Pseudo direct dial’ settings are being used for the corresponding function of the Auto Attendant feature within the Script programming, see chapter 5.3.

Settings / PBX configuration screen



- Mailbox

  In this menu, settings for the message recording, playback and forwarding of the Mailbox feature can be done. For details, please refer to chapter 6.1.

- System

  Here you can set the system's date and time. If a valid NTP server is given in the network settings, time synchronization can be carried out automatically every 24 hours at the point of time given. Please note that the unit is equipped with a power reserve of 24 hours for the internal clock in case of a power failure.

  In the 'Memory' section you can specify, how much memory capacity shall be reserved for audio files (announcements and music). This means, that the reserved memory will not be used by the system for recording messages when operating the mailbox function. Settings under 'Recording' will affect callers' messages as well as own announcement recordings (see chapter 4.2). For details, please refer to chapter 6.1.

  Moreover, the system's language can be changed here. This setting affects the web interface as well as the system prompts used in the dial-in menus for administration und messages retrieving.

- User

  Here, the password for the browser configuration and the PIN code for the dial-in menu can be set separately for each the administration and messages area. The PIN code may consist of four up to eight digits from ‘0’ to ‘9’.

  In addition, the timeout for the automatic logout from the browser configuration can be changed. You can also log out manually at any time using the 'Logout' link in the top menu bar.

  Please note, that for the messages area the password and PIN can only be reset to the default settings (see chapter 10) here. To do so, tick the corresponding check-box and click on the save symbol.

  An individual password and PIN for the messages area can only be set via the browser configuration of the messages area itself (see chapter 6.3).

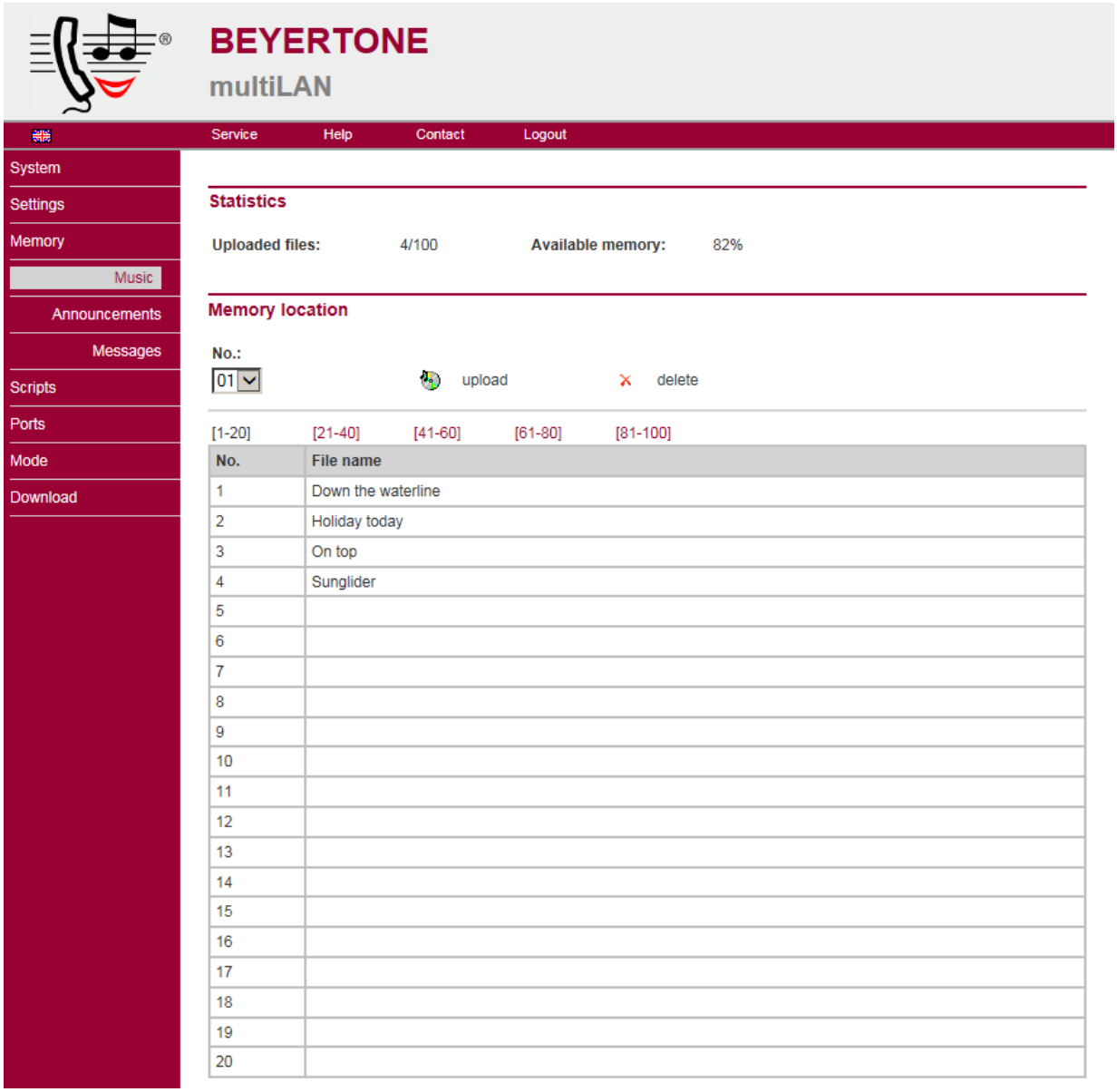
4. Managing audio memory

4.1 Loading mp3 audio data

Once you have entered the basic configuration settings, you can start loading your own mp3 audio files for music and announcements into the system. This can be done straight from a browser or via automatic download from a URL (from a subfolder on a web server, see Section 8).

Audio data upload using a browser is done via the 'Memory / Music' respectively 'Memory / Announcements' menu (see screenshot for ‘Music’).

Memory Music configuration screen (Announcements similar)



Of its total capacity the appliance has 100 memory locations that can be used for music on hold and another 100 memory locations for announcements. Twenty memory locations are displayed per configuration screen. Files that have been loaded onto the appliance can also be disabled and then reactivated later. For details regarding music configuration see Section 5.1, for announcement configuration see 5.2 and 5.3.

To upload an audio file, select the number of the memory location to be used and then transfer the desired mp3 file. On completion of the transfer the current memory location list is redisplayed automatically. To delete a memory location, select the number of the relevant location first.

NOTE: The appliance supports mp3 data rates from 96 to 192 Kbps, stereo or mono, at sampling rates up to 44.1 kHz. For optimum playback quality we recommend a data rate of 128 or 160 Kbps.

The beyertone® multiLAN can also play back encoded audio files with the extension 'mpm' or 'MPM'. These may be created only by authorised service providers. mpm files are transferred to the appliance in the same way as mp3 files (see description above).

NOTE: Should you add any non-royalty-free tracks of your own, please note any charges that may apply.

4.2 Recording personal announcements

With this beyertone® multiLAN device, announcement memory locations can be self-recorded by telephone dial-in, if at least one LINE port is connected to an analogue extension of the PBX. Please proceed as follows:

1. Call the device by dialing the number of the corresponding extension.
2. When the announcement starts to play, first press the ’#’ and then the ‘∗’ key. If the announcement doesn’t stop, try again by repeating the entry. Please take care, that the telephone used is able to send out DTMF tones (dial tones) during the connection.
3. When the announcement has stopped, enter the PIN code without any additional confirmation and wait, until the main menu starts to be read out.
4. Now you can enter the required commands as listed in the table below. The entries will be confirmed by voice prompts.
5. After all settings and recordings have been done, close the menu by pressing the ‘∗‘ and then the ‘#’ key (the device will go on-hook and terminate the call).

NOTES:

The menu can be called up by dialing in to any of the LINE ports set up for analogue connection, however only via one port at the same time.

The **default** PIN code on delivery is '**1234**'. Via the web configuration, a new PIN code can be set (see chapter 3.3 / 'User').

The following table gives an overview of possible commands of the administration menu for recording of personal announcements. Using this menu, the announcement memory locations of the multiLAN can be played back, deleted and recorded.

Entry	Function
# ∗ + PIN	Enters the menu (PIN = 4 to 8 digits, default '1234')
∗ 3 + nnn	Records memory location nnn, end recording by pressing '#'
∗ 4 + nnn	Plays back memory location nnn
∗ 5 + nnn	Deletes memory location nnn
∗ #	Closes the menu (call will be terminated)

IMPORTANT: Please note, that the number for the memory location has to be entered as a 3-digit number ('nnn') The numbering of the announcement memory locations is given from 101 to 200 in the menu, e.g. you have to enter '101' for announcement memory location 1 etc.

- Playback

Enter '∗ 4 nnn' to listen to memory location nnn. Playback ends prematurely, when another command is started by the '∗' key.

- Delete

Enter '∗ 5 nnn' to delete memory location nnn. When deletion has finished, an appropriate voice prompt is played for confirmation. If the memory location is already empty, an error message will be played.

- Recording

Enter '∗ 3 nnn' to record an announcement via telephone on memory location nnn. After the command, a voice prompt and a signal tone will be heard. Recording begins after the signal tone and has to be terminated by pressing the '#' key.

NOTE: The memory location must be empty before recording. If not, an error message can be heard. In this case, delete the memory location by entering '∗ 5 nnn'.

Recording should be done from a quiet and damped room. Speak in a normal volume directly into the mouthpiece of the handset.

5. Configuring music and announcements

After recording the memory locations of the system with announcements and music, you have to configure the playback as described below.

Doing so, you can independently set up a music programme for the MOH port and operation mode dependant announcements for each announcement (“LINE”) port.

5.1 Configuring music playback (MOH port)

In the top area of the „Ports / MOH“ screen (see screenshot below) you can set the playback volume level of the MOH port. In addition, you can take notes about the name you give to this port and to which analogue port extension number of the PBX (if so) it is being connected. Name and number are only for your information.

In the list on the bottom part of this screen you finally can determine, if the max. 100 mp3 files uploaded to the music memory locations of the beyertone multiLAN shall run permanently in a loop or shall only be played back at certain dates and times. By this, you can e.g. set up a basic music programme and additionally have special music programs only running at certain times.

Moreover, this list view shows how the memory locations are currently being configured, which memory locations are being in the actual playlist and which memory location is running right now:

Symbol	Meaning
● green	memory location in actual playlist
● yellow	memory location playing right now
● red	playback scheduled for future point of time
● grey	playback scheduled in the past / disabled
⏸ / ▶	interrupt current playback yes / no
1x / ↻	playback single / as long as interval valid
(none)	memory location empty

To configure the memory locations, please select the location number first and then click on “edit“. You now have the following options for each of the memory locations:

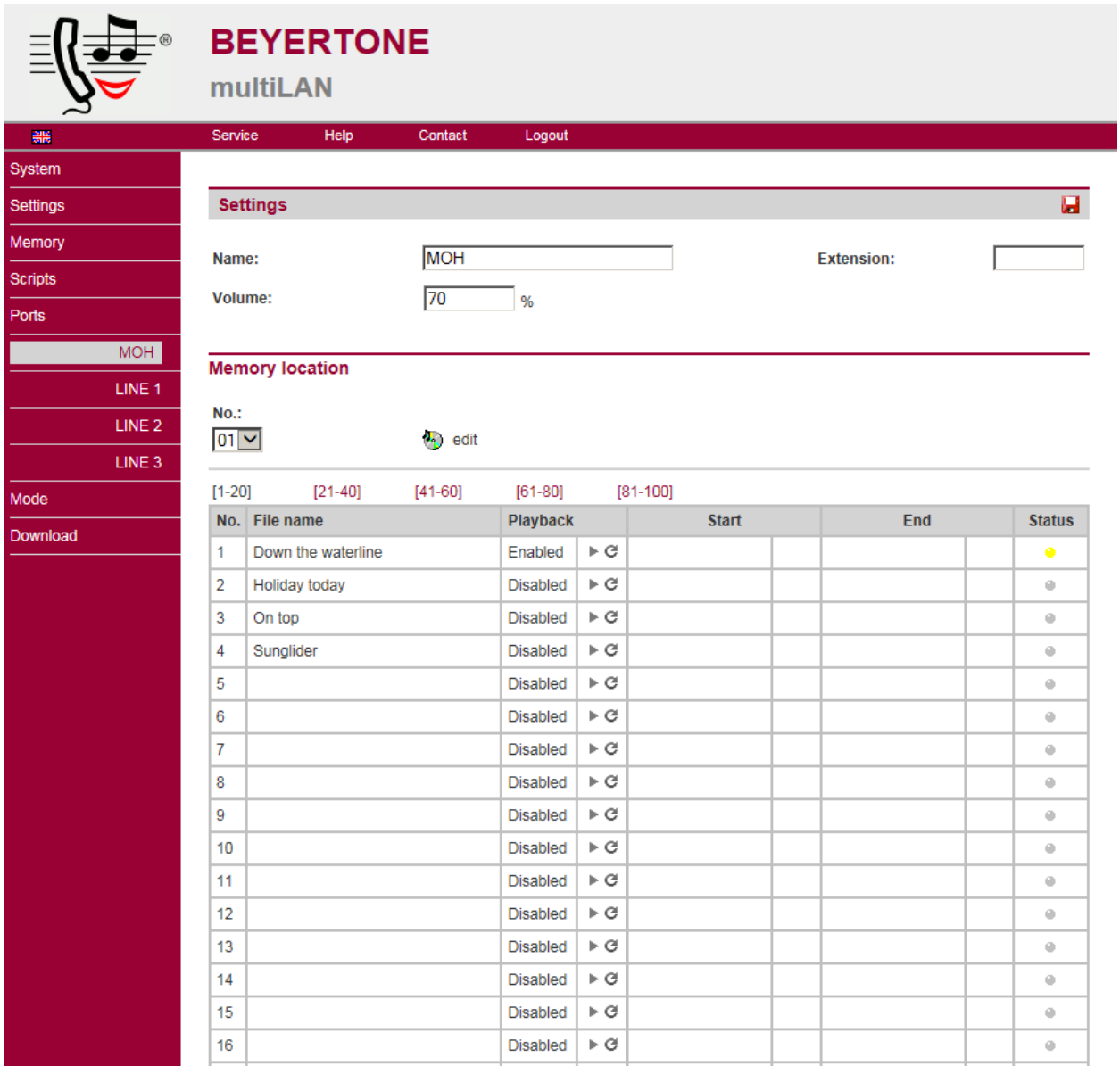
- mode „deactivated“ ► this memory location will not be played back (but the mp3 data is being kept in the device)
- mode „activated“ ► this memory location will be played back as long as no other memory location being in the “interval” mode is currently active
- mode „interval“ ► this memory location will only be played back at certain times:

  - determine, if you wish to playback this memory location on certain weekdays or at a certain date or range of dates

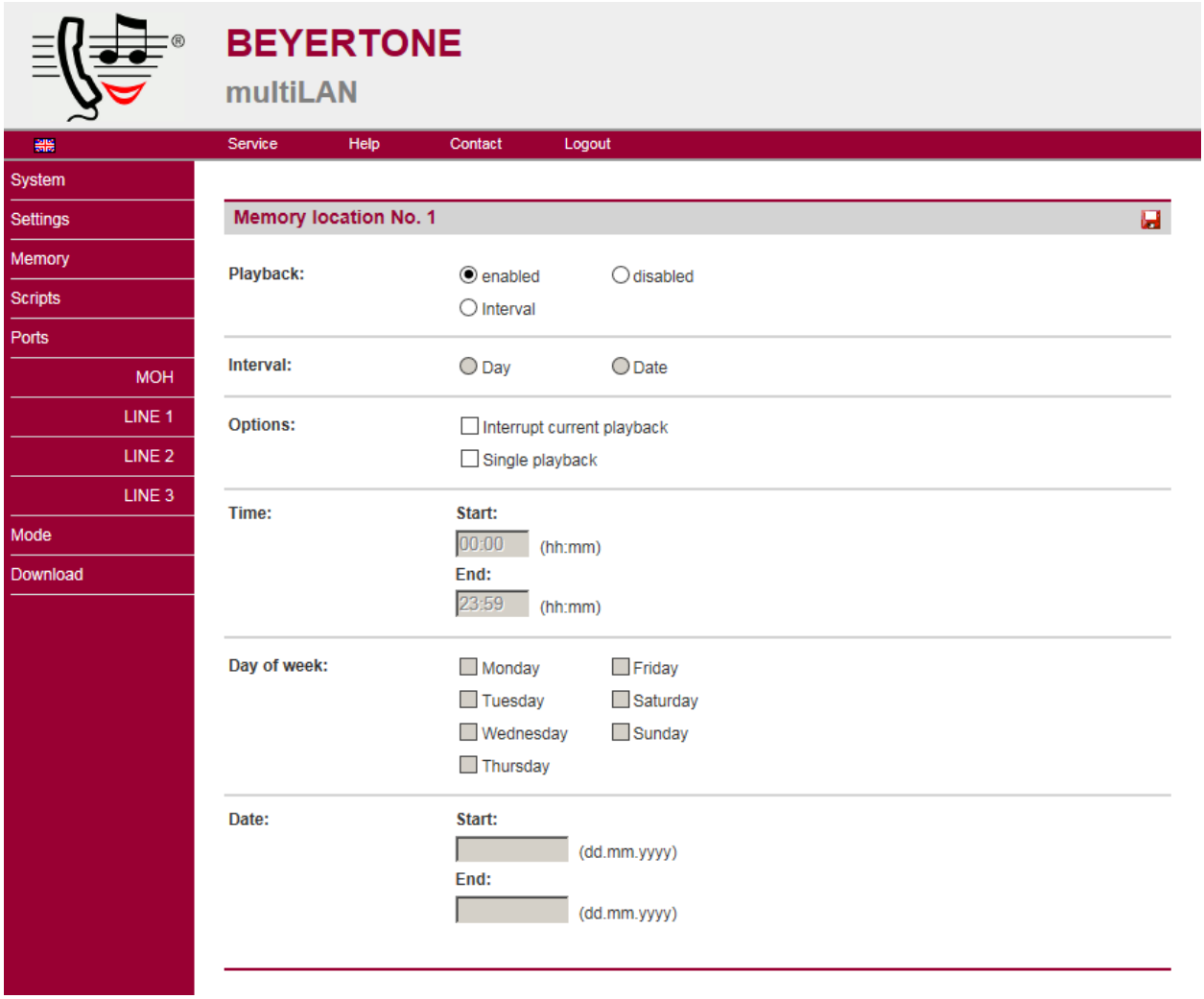
- in addition, select options and determine the start/end time
- you can omit either start or end date/time, if you wish to playback this memory location from a certain or until a certain point of time
- determine, if you wish to playback this memory location only once at the certain point of time and if it shall stop other memories immediately from playing then

After saving the settings you will automatically be taken back to the memory configuration list.

Configuration Ports MOH screen



Configuration Memory Location MOH screen



NOTE: The playback works as follows: As soon as there's at least one memory location in "interval" mode and the interval is currently active, only memory locations set to the "interval" mode and their interval being valid at this time will be played back. All other "activated" memory locations will not be played back for this time. If no interval is programmed or valid any longer, all "activated" memory locations will be played again.

By this, you can define a standard music programme and at the same time pre-configure a different programme e.g. for holidays, campaigns etc., which will be running automatically in the determined time range and replace the standard programme for this time range.

When loading mp3 audio data to the music memory locations (see Section 4.1), the mode of the locations will be set to "activated" by default.

5.2 Configuring LINE ports (announcements)

Via the screens „Ports / LINE1“ (and „LINE2“ / „LINE3“ - if extension module is installed) the announcement ports of the beyertone multiLAN are being configured (see also screenshot below).

In the top area of the screens first select the interface function which shall be operated on the regarding ports. Please also note the different port connections as described in section 2.2. After that, adjust the desired playback volume of each announcement port. When running the port as analogue interface, also determine, after how many rings signals of the PABX the incoming call shall be answered with the announcement by the multiLAN unit.

In addition, you can take notes about the name you give to each announcement port and to which analogue port number of the PBX (if so) it is being connected. Name and number are only for your information.

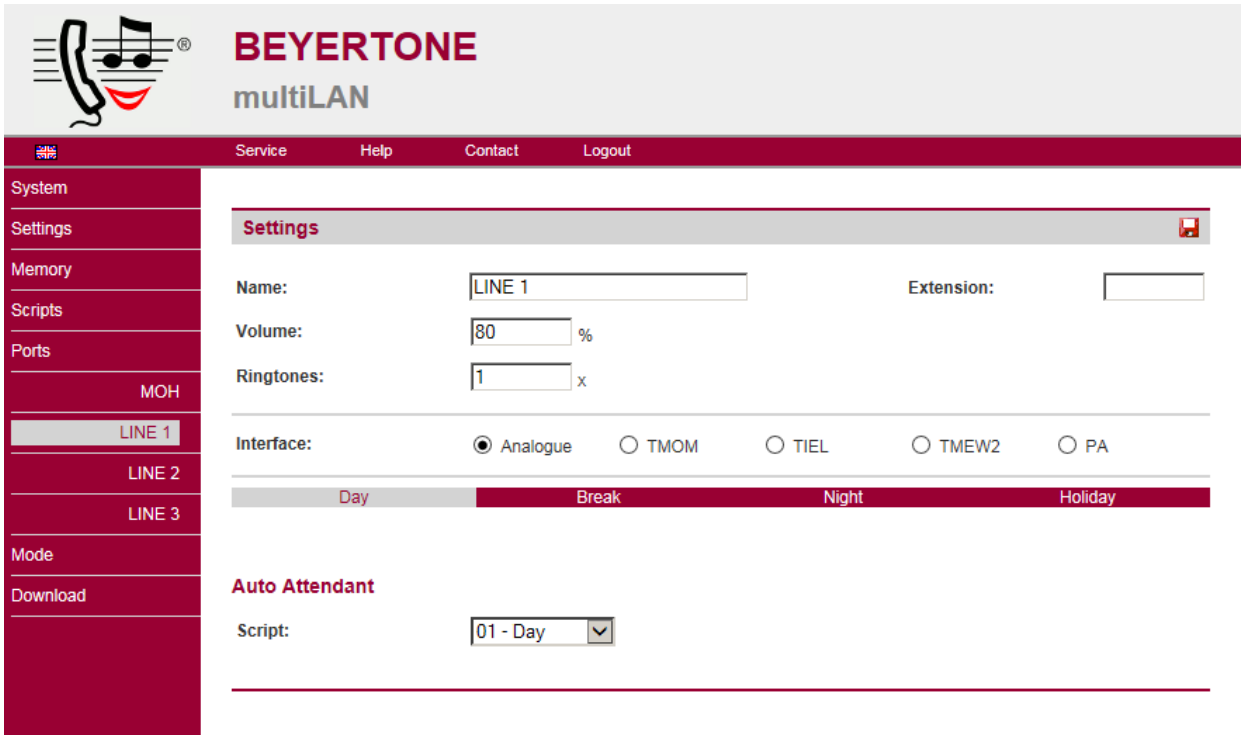
In the bottom part of these screens you can - independently for each announcement port - define a list of announcement files that will be played back for each operating mode of the unit (see Section 7). When analogue interface is selected, you can define, which script will be opened when a call comes on this LINE (see chapter 5.3).

- All interfaces except ‘analogue’: Per port and per operation mode (Day / Break / Night / Holiday - see Section 7) up to 5 announcement memory locations can be selected, which will be played back in sequence.
  To do so, first select the announcement position number, then click ‘edit’. Now you can select each one of the announcement memory locations from the list. After that, you will be taken back to the announcements configuration page.
  To delete a memory location from the list, click ‘delete’ after selecting the number. The memory location itself will not deleted, however.
- Interface ‘analogue’: Define here per port and per operation mode (Day / Break / Night / Holiday - see Section 7), which script shall be started. Before that, program the scripts needed including memory locations and functions (like call forwarding) as described in chapter 5.3.

Technical information about the different interface types:

Interface	**Start Criteria ► Acknowledgement**
a/b (default)	*Start by ring voltage ► Loop current during announcement*
TMOM	Start by permanent contact ► Open pulses at announcement’s begin/end
TMEW2	Start by permanent contact ► Close pulses at announcement’s begin/end
TIEL	Start by pulse contact ► Close pulses at announcement’s begin/end
PA	Start by pulse contact ► Permanent contact during announcement

Configuration Ports LINE screen



NOTE: By programming holiday dates you can also determine each one individual announcement memory location per holiday and port to be played back (see Section 7.3). These will be handled with priority towards holiday announcements programmed according to this section.

5.3 Script programming

Via the ‘Scripts‘ screen up to 100 different scripts can be programmed, by which the call handling for LINE ports with interface ‘analogue’ can be determined. As a next step, these scripts can be assigned to the LINE ports for each operating mode as described in chapter 5.2. In the simplest case a script determines, which announcement memory location shall be played back and to which number the call shall be transferred after the announcement.

NOTE: The scope of functions of the scripts is determined by the activated licences in the unit. Without any optional licence, only ‘Call transfer‘ at the end of the announcement (‘EOM‘) can be operated to get a typical ABA functionality. Regarding the activation of optional features by licence codes, please also see chapter 9.4.

By default, some scripts are pre-programmed when the unit is shipped. Of course, you can change these programming as per your needs. To configure a script, select the desired script number and click ‘configure‘. Depending on the licences activated, you can now program the script functions as follows (see also the screenshot on the next but one page):

- Name: Here you can specify a name for the script, which e.g. makes it easier to select the right script when assigning scripts to the LINE ports.

- In the ‘Audio’ area you can select up to 5 announcement memory locations, which shall be played in sequence when the script is invoked. In addition, you can set how often the playback list shall be repeated and how long the timeout shall be when playback has finished.

- The function selected under ‘End of message‘ will be executed, when the playback of the selected memory locations has ended:

  Without any optional licences, here the functions ‘Disconnect‘ and ‘Call transfer’ to the number given as ‘parameter’ are available. The number can consist of up to 20 digits, where ‘0...9‘ are allowed as well as ‘∗‘ and ‘#’.The character ‘P’ may be used to obtain a pause of approx. 2 seconds, if necessary.

  With the licence ‘Auto Attendant’ activated, additionally the functions ‘Run script‘ and ‘Dial string‘ can be selected. Moreover, the licence ‘Mailbox‘ allows to set up the ‘Leave message’ function (see below for details).

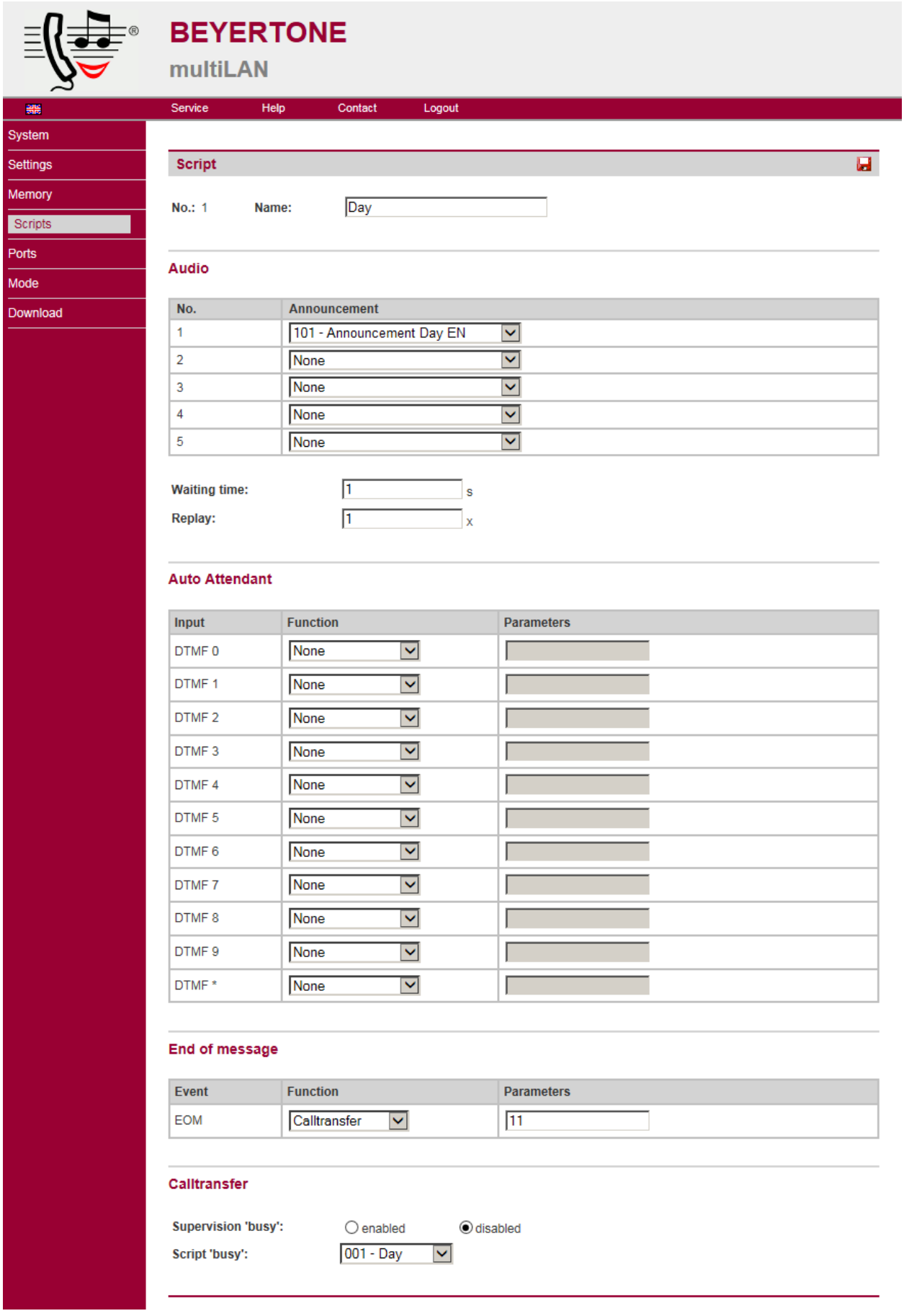
- In the „Auto Attendant“ area you can set up additional features, if the licence ‘Auto Attendant’ is activated:

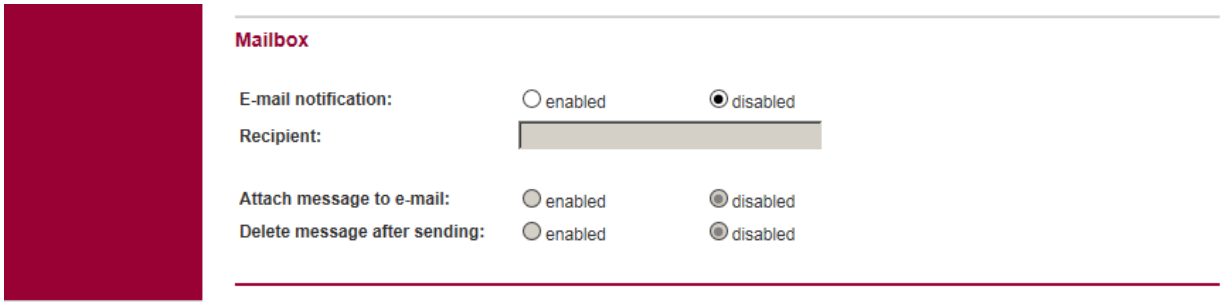
  Under DTMF 0-9 and „∗“ functions can be set up, which shall be executed, if the caller dials the respective digit during playback of the announcements. Possible functions are: ‘Call transfer‘ to the number given under ‘Parameter‘, ‘Run script’, ‘Dial string’ and ‘Pseudo direct dial’. If also the ‘Mailbox‘ licence is activated, additionally ‘Leave message‘ can be selected (for details see below).
  If ‘None’ is selected as function, the multiLAN will not respond to the regarding DTMF entry at all, and the announcement playback will continue. However, valid DTMF entries stop the playback, and the programmed function will be invoked immediately.

  Under ‘Call transfer‘ the transfer of calls can be supervised on a busy target, if the licence ‘Auto Attendant’ is activated. If the unit detects a busy tone after the call destination number has been dialed, the call will be taken back and the script specified as ‘Script busy’ will be invoked. If the call destination is not busy, a blind transfer will be executed by going on-hook after a short supervision time (approx. 5 seconds). A supervision on ‘no answer’ cannot be operated by the multiLAN.

  NOTE: The blind transfer can be initiated immediately by the called party by entering any DTMF digit within the supervision time.

Configuration Script screen





More information about licence depending script functions:

- Run script (requires licence ‘Auto Attendant‘):
  When this function is invoked, the actual announcement playback will be stopped and the script number given under ‘Parameter’ will be started. This allows to branch out to other scripts by entries of the caller.
  You should avoid to call the actual script itself at the end of the announcement, as this can cause a circular reference. Use a suitable value for the parameter ‘Playback‘ instead.
- ‘Pseudo direct dial’ (requires licence ‘Auto Attendant‘):
  Using this function, the caller can directly enter the extension number he wants to be connected with.
  Please note, that the DMTF entry, which calls the function, is already the first digit of the number to dial. By this means, the caller can enter the desired number directly in one stroke. To speed up the interpretation of the caller’s input, you can set two parameters under ‘Settings / PBX‘ in the area „Pseudo direct dialing“: ‘Extension length‘ specifies, how many digits are being accepted maximum as an input, and ‘Timeout’ is the time, after which the input is being considered as completed and will be dialed by the unit, even if the maximum number of digits is not reached yet.
  You should activate the pseudo direct dial function only for those DTMF inputs, which belong to extension numbers, that are allowed to be reached via this functionality. Especially, avoid setting up this function for the digit that enables an outside line, unless you really want this to be enabled. Also restricting the maximum extension length helps to avoid abuse of this function.
- Dial string (requires licence ‘Auto Attendant ‘):
  When this function is invoked, the multiLAN will first terminate the call, and then again seize the line and dial the digits given under ‘Parameter’. As parameter are allowed up to 20 digits including 0...9 and the DTMF signs ‘∗‘ and ‘#’, as well as the character ‘P’ for a pause of approx. 2 seconds each or ‘H’ to make the LINE go on-hook for approx. 3 seconds (the latter enables performing two different notifications in sequence, if needed). By the ‘Dial string’ function e.g. internal features of the PBX system can be activated like call forwarding or switching between day and night operation.
- Leave message (requires licence „Mailbox“):
  As soon as the corresponding digit for this function is entered, the caller will hear a signal tone and the recording of a message begins. For the optional message forwarding via email you can enter an individual mail address and individual settings per script. Details regarding the set up and operation of the mailbox functionality can be found in chapter 6.

6. Mailbox function

With the optional licence „Mailbox“ the beyertone® multiLAN can additionally be operated as a centralised answering machine. Recorded messages – e.g. out of office hours – are being stored in a central memory of the unit and can be listened back by telephone call-in or through a separate login via the web configuration. Here, the messages can also be downloaded as mp3-files. Regarding the activation of optional features, please also see chapter 9.4.

6.1 Setting up the mailbox

Via the web configuration, first make some settings for the mailbox function in the area ‘Mailbox‘ on the ‘Settings‘ screen:

- ‘Maximum recording time’:
  Here you can specify, how long each message will be recorded maximum. When the maximum time is reached upon recording, the caller will hear an appropriate announcement.
- ‘Replace messages‘:
  Activating this feature will let the system overwrite the oldest messages each time the overall memory capacity is reached. Thus there is always enough capacity for the recording of new messages. If this feature is not activated, no more messages can be recorded when the memory is full, and the caller will hear an appropriate announcement. In this case, some messages will have to be deleted manually, before new messages can be recorded again.
- ‘Sorting‘:
  Here you can set, if the playback of the recordings via the dial-in menu and the presentation on the web configuration goes from oldest to newest (‘ascending‘) or vice versa (‘descending’).
- ‘Notification‘:
  The multiLAN can perform a notification via the PBX after each recording of a message. This can be done by a call (ringing), or e.g. by switching on a message lamp, if the PBX offers such a feature (regarding the DTMF string needed please see the documentation of the PBX). The ‘DTMF string‘ can consist of up to 20 digits 0...9 and the DTMF signs ∗ and #, as well as the letter ‘P’ for a pause of approx. 2 seconds each or ‘H’ to make the LINE go on-hook for approx. 3 seconds. The latter enables performing two different notifications in sequence, if needed. Notification will be done on the same LINE via which the message has been recorded and is performed right after the recording has finished. If there’s no DTMF string entered, the notification function will not be performed.
- ‘Email’:
  For the optional email forwarding of messages, you can enter the data for the mail server to be used and configure the text part of the message here. In the field ‘SMTP server’ use either the DNS name or the IP address.

On the ‘Settings‘ screen, you can additionally make the following settings in the area ‘System/Memory‘, which will affect message recording:

- Recording quality and gain:
  Reducing the recording quality to ‘low‘ will double the overall memory capacity of the multiLAN for recording messages.
  Increasing the recording gain to +6 or +12 dB should be done, when recordings are regularly at a too low volume. However, when recordings are being distorted, the gain setting should be decreased.
  Only change these settings, if the default settings (high quality, gain 0 dB) do not allow a satisfactory operation of the mailbox function.

By programming scripts you can now determine, when messages shall be recorded at incoming calls. To do so, set the ‘Leave message’ option as function e.g. at the end of the announcement playback. More information about script programming can be found in chapter 5.3. Please note that messages can only be recorded through LINE ports set to the interface ‘analogue’.

6.2 Listen to messages by dial-in

Callers’ messages recorded by the multiLAN can be listened to and deleted by dialing in to the unit simply via telephone. To be able to do so, at least one extension number of a LINE port of the multiLAN must be known. This number can be obtained from the PBX service e.g. To listen to the messages, proceed as follows:

1. Call the device by dialing the number of the corresponding extension.
2. When the announcement starts to play, first press the ’#’ key and then ‘9’. If the announcement doesn’t stop, try again by repeating the entry. Please take care, that the telephone used is able to send out DTMF tones (dial tones) during the connection.
3. When the announcement has stopped, enter the PIN code without any additional confirmation and wait, until the message menu starts to be read out. If there are no recordings, an appropriate announcement will be heard, and the call is terminated by the unit.
4. Now you can enter the required commands as listed in the table below. The entries will be confirmed by voice prompts.
5. After listening to and/or deleting the messages, close the menu by pressing the ‘∗‘ and then the ‘#’ key (the device will go on-hook and terminate the call).

NOTES:

The menu can be called up by dialing in to any of the LINE ports set up for analogue connection, however only via one port at the same time.

The **default** PIN code on delivery is represented by the **last five digits of the device id**, which can be read from the admin web configuration or from the sticker on the device. Via the message area of the web configuration a new PIN code can be set (see chapter 6.3). Resetting of the PIN code to the delivery default can only be done by the administrator.

The following table gives an overview of possible commands of the messages menu. Through this menu, the callers' messages can be listened to, and they can be deleted individually or globally.

Entry	Function
# 9 + PIN	Enters the menu (PIN = 4 to 8 digits, default see above)
1	Retrieve messages
8	Delete all messages
∗ #	Closes the menu (call will be terminated)

- Retrieve messages

By entering ‘1‘ in the main menu recorded messages will be played back. The order of the playback can be set to ‘oldest first‘ or ‘latest first‘ – see chapter 6.1.

During playback of a message the following commands are possible:

Entry	Function
1	Repeat current message or – at the beginning of a message – jump to previous message
3	Jump to next message
5	Delete current message (executed without further confirmation)
∗ #	Closes the menu (call will be terminated)

Playback ends prematurely, when the ‘∗‘ key is pressed to initiate leaving the menu. If you just want to return to the main menu, wait after ‘∗‘ until the menu is read out again.

- Delete all messages

By entering ‘8‘ in the main menu a global deletion of all messages will be initiated. Deleting will be executed, when the menu is closed by entering ‘∗ #’. If you don’t want to delete all messages though, press ‘8‘ again in the main menu.

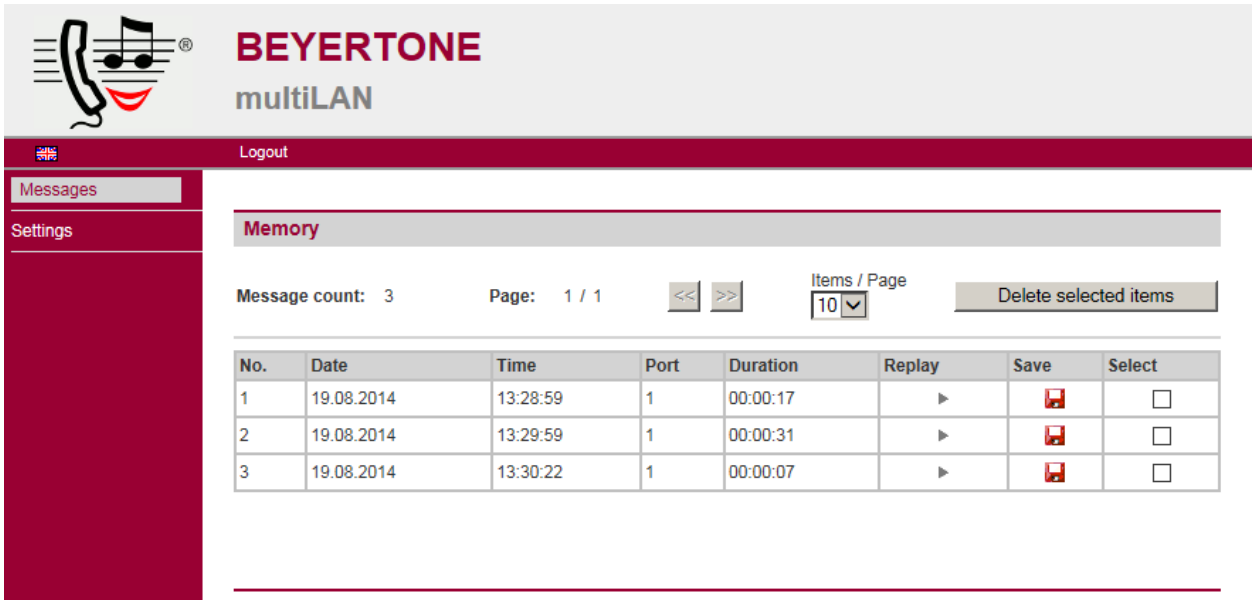
6.3 Retrieve messages by via web page

Recorded messages can also be retrieved by the messages login to the web configuration. On the messages web page, a table will be displayed showing all information about recorded messages like date and time, duration of each recording and the LINE port number, through which the message was recorded. Messages can be played via the web browser and also saved as mp3 files on the PC by a click on the corresponding symbol. Moreover, selected messages can be deleted via the web page.

The login to the messages web page is done by opening a web browser and using the link to the device as described in Section 3. On the login page, choose ‘Messages‘ in the top menu bar. The **default** password on delivery is represented by the **last five digits of the device id**, which can be read from the admin web configuration or from the sticker on the device.

On the ‘Settings‘ page, a new password for the messages web login as well as a new PIN for the messages dial-in menu can be set (see chapter 6.2). Resetting of password and PIN to the default values can only be done by the administrator (see chapter 3.3).

Messages screen



7. Operating modes and time control

To control playback of different announcements on the ‘LINE’ ports, the beyertone multiLAN provides four operating modes: Day, Break, Night, Holiday. Switching of operating modes can be done manually and/or automatically by schedule. The configuration of the corresponding announcements is described in sections 5.2 and 5.3.

7.1 Manual switching

Switching the operating modes can be done manually on the device by pressing the ‘MODE’ button. The modes will be selected successively at each short push on the button, and a long push (approx.. 3 seconds) will activate or deactivate automatic switching by schedule:

MODE-LEDs	Operating mode
green	Day
green + red	Break
red	Night
yellow	Holiday
as above, but LED flashing	Automatic (schedule)

NOTE: The mode switching by ‘MODE’-Button can be deactivated by configuration.

Via the top area of the „Mode“ screen (screenshot see next page) manual switching of operation modes can also be done by the web configuration. The change will take effect on saving the settings. Below that, the MODE button can be deactivated.

Another way to switch operating modes is by telephone call via the administration menu, if at least one LINE port is connected to an analogue extension of the PBX. Please see chapter 4.2 on how to dial in to the menu. Switching between modes can be done through the commands given in the following table:

Entry	Function
∗ 8 + 1 / 2 / 3 / 4	Switch operating mode to Day / Night / Break / Holiday
∗ 8 + 0	Activate or deactivate automatic mode
∗ 8	Read out current operating mode (announced after approx. 3 s)

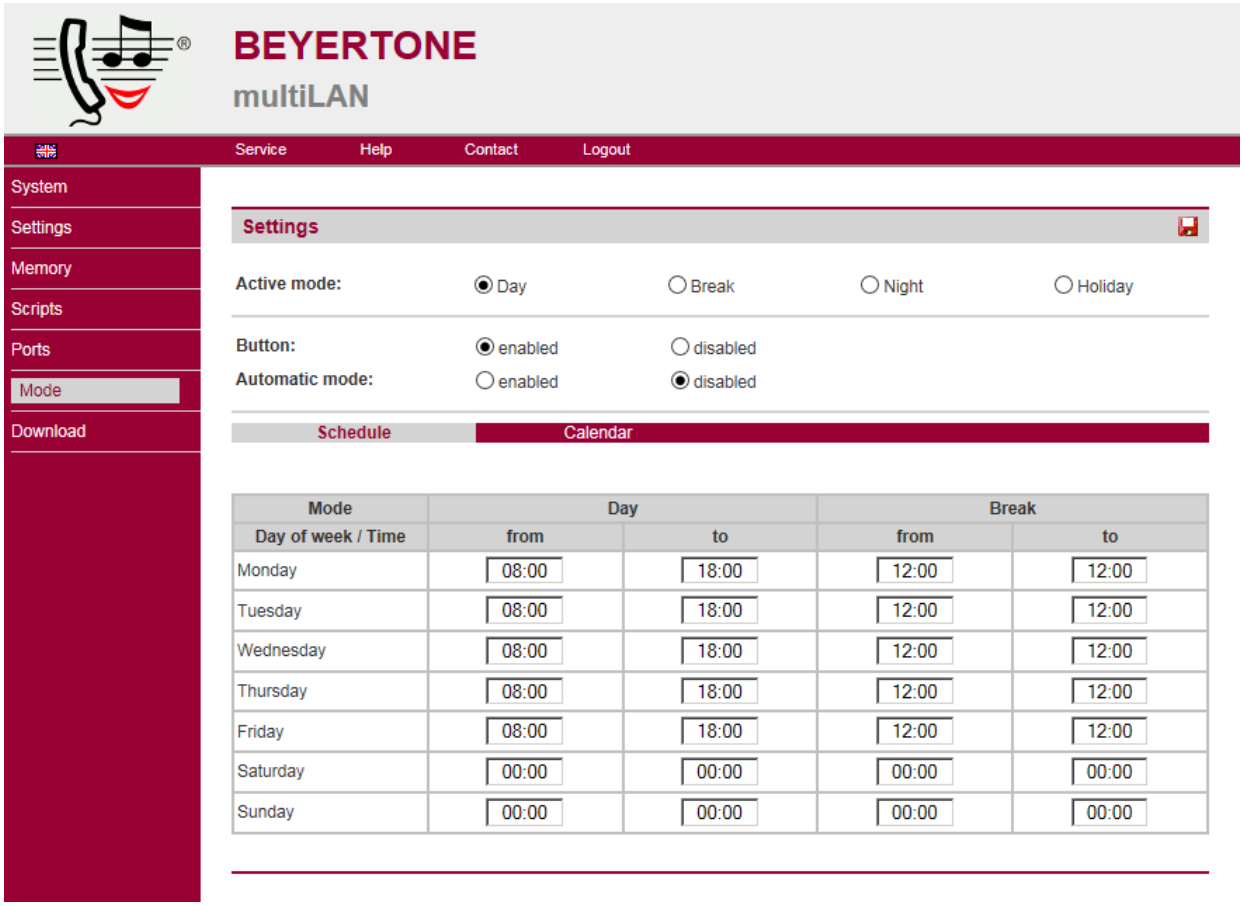
7.2 Time schedule control

The beyertone multiLAN allows automatic switching of operating modes by time schedule. Via the web configuration you can determine in the ‘Schedule’ area for each day of the week the time, from when until when the device shall work in Day mode and which part of the day shall be Break mode. The rest of the day will be run in Night mode.

If no Break mode shall be effective, just set start and end time to the same value. The same can be done with the daytime settings for days without Day mode.

NOTE: If a time schedule is programmed and activated, additional manual switching of the operating mode can be done by the MODE button or the dial-in menu. In this case the manually set mode will only be valid until the next automatic switching according to the schedule. The automatic mode can also be activated or deactivated by the button and the menu as described above.

Configuration Mode screen



7.3 Holiday calendar

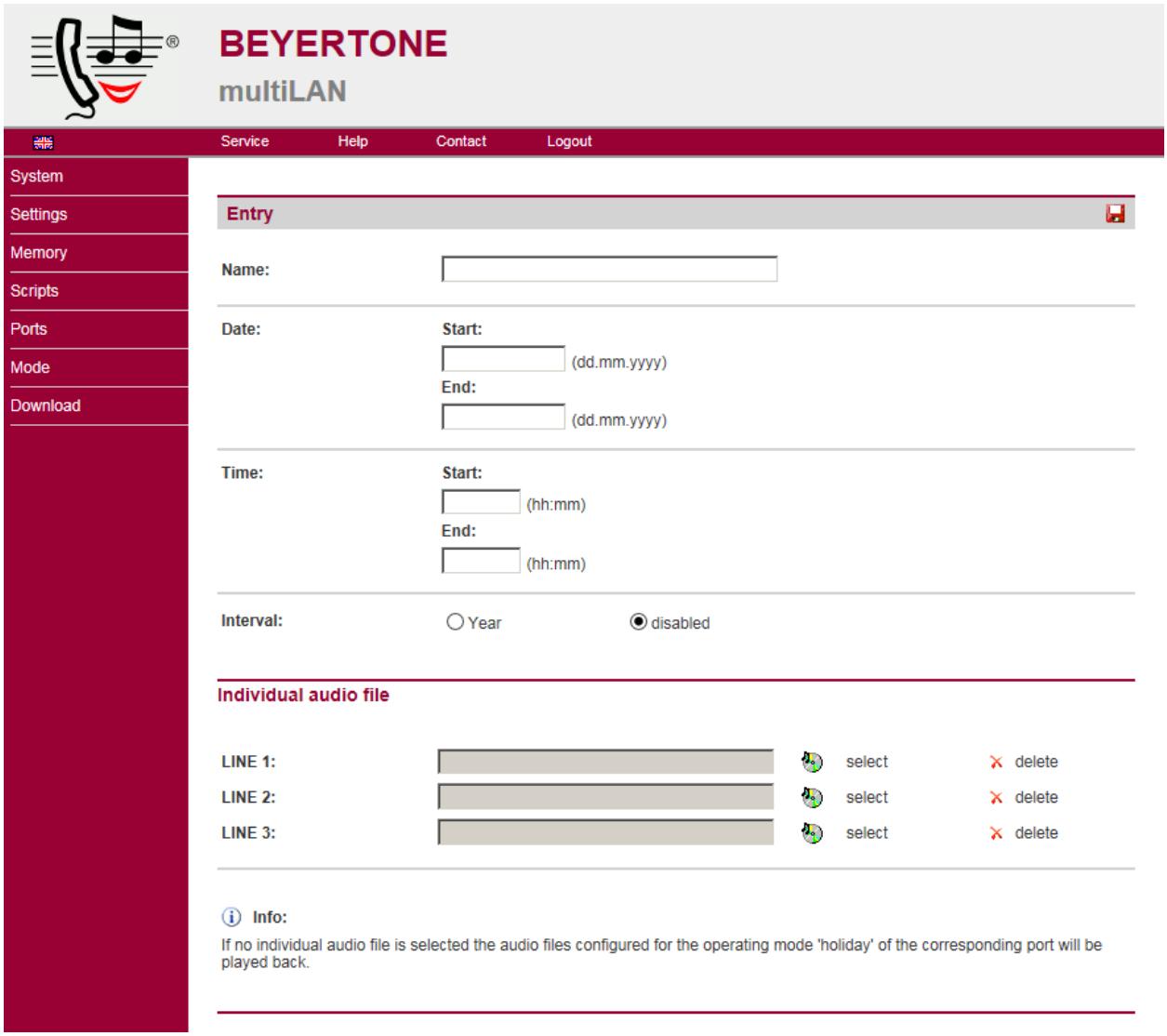
By selecting the area ‘Calendar’ on the ‘Mode’ configuration screen, additional periods can be defined with date and time, during which the device shall run in Holiday mode.

To set a holiday entry, first select a number of the holiday list and then click ‘edit’. To delete a list entry, also first select the list entry number.

For each of the up to 50 holiday entries you can give a name and set the start and end date as well as a start and end time. By the option ‘Interval’ you can define, if this date will take effect every year or only in the year specified. Finally, for each holiday entry you can optionally define separately for each announcement port of the device a specific announcement memory location to be played back. After saving the settings you will be taken back to the holiday list.

NOTE: If you don’t select individual announcement files with a holiday date, the predefined announcements according to the announcement port programming as described in Section 5.2 and 5.3 will take effect for the port. You can also use the individual programming only for some of the holiday dates and use the settings made by the port programming for all other holiday dates and additionally for manual activations of the Holiday mode.

Configuration Holiday screen



8. musiweb download

The beyertone® multiLAN has an integrated download function which the system uses to download current audio files from a web server, either manually at the push of a button on the front panel or automatically according to a schedule entered by the user. To this end, the audio files (mp3 and/or mpm, see 'NOTE' at the end of Section 4.1) must be made available in a named folder on a web server. They will be downloaded as specified via http protocol. If the same music and announcement selection is to be transferred to more than one appliance, the same folder on the web server can be specified on all these appliances. Otherwise create different folders on the web server for different selections.

IMPORTANT: On the Download configuration screen you can select separately for announcement and music, if on a successful download of at least each one new file all files stored before in the announcement resp. music memory locations shall be deleted. In case of deleting, after successful download the content of the memory locations will be identically with the folder content of the web server. Otherwise, down-loaded files with pre-determined memory location numbers (see Section 8.1) will replace existing files on the same locations or - without number prescription - they will be stored in the next free locations.

NOTE: Downloaded files are not deleted from the web server.

Download settings can be entered in the 'Download' menu (see screenshot on following page). Start by entering the 'URL' corresponding to the folder on the web server from which audio files are to be downloaded (e.g. www.myserver.com/fol-der). Then select, if all music or announcement memory locations shall be deleted on a successful download of new files (see also remark above).

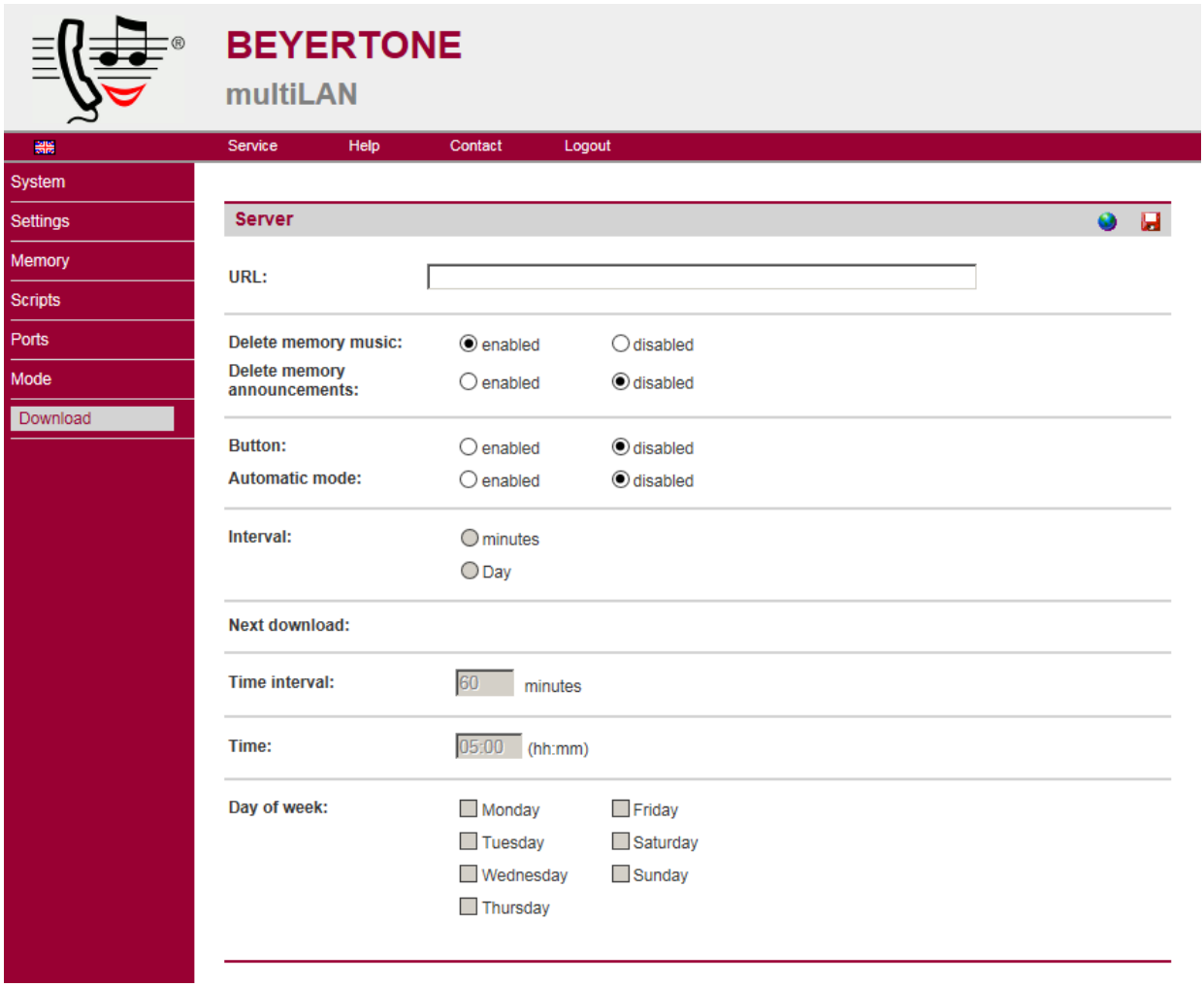
Next, specify how the download is to be started: manually via the 'UPDATE' button on the front panel of the appliance (is otherwise locked) and/or automatically according to a set schedule.

For the schedule, you can either specify an interval in minutes for your automatic downloads or select specific weekdays for a download, which then takes place at the time set under 'Time'.

Another way to initiate a musiweb download is by telephone call via the administration menu, if at least one LINE port is connected to an analogue extension of the PBX. Please see chapter 4.2 on how to dial in to the menu. Starting the download can be done through the command given in the following table:

Entry	Function
∗ 9 9	starts a musiweb download

Download configuration screen



The green/red 'STATUS' LED on the front panel of the appliance indicates the current download and the status of the network connection (essential for downloading):

STATUS LED	Meaning
● Green	Last download OK
● Red	Last download not OK
● / ● Flashing	Downloading
LED flashes	Network connection not OK / no IP address, With DHCP: obtaining IP address
LED off	No network

8.1 Download details

Please note the following additional **INFORMATION** on using the download function:

- When downloading audio files you can, if you wish, assign files to a particular memory location simply by starting the name of the mp3 files to be downloaded with a three-digit number followed by an underscore, e.g. '005_music.mp3' for music memory location No 5 or '103_Announcement.mp3' for announcement memory location No 3; all other files will then be assigned to free or unused music memory locations in sequence

  - announcement files must be provided with leading memory location number
  - for music memory locations 1 to 100 use name prefix '001_' ... '100_', and for announcement memory locations 1 to 100 use name prefix '101_' ... '200_'
  - the filename prefixes as described above will be truncated from the filename when storing the filenames in the memory location lists after the download

- To download files, the beyertone® multiLAN makes exclusive use of the hypertext transfer protocol (HTTP) commonly used for displaying websites; no FTP access is required, i.e. no data is used for user login, etc.
- The beyertone® multiLAN downloads files only from the URL entered in the download settings (e.g. 'www.myserver.com/folder'); it will *not* access any other addresses nor, in particular, will it transfer any files from the appliance to the URL or delete files under the URL.
- For the download function to work the web server used must be able to perform a directory listing on request, at least for the directory entered under 'URL'. Please check these web server settings. A simple way of activating this function is to create a file called '.htaccess' (with nothing in front of the dot!) in this folder and using a text editor add a line containing the text 'Options +Indexes'.
- The download function of the beyertone® multiLAN can be used to transfer not only audio files but also updates for the appliance, e.g. *.bin files for updating the firmware on the appliance (files of this type and information on their availability can be obtained on the website indicated in Section 12) or *.cfg- and *.tpl files for global preconfiguration of the units. Please note that for updates where several files are made available as a zip archive, for example, this archive must first be unzipped and the files it contains then made available for download under the URL. (Note: after downloading updates the unit will restart automatically to install the updates.)
- Please note that apart from the '.htaccess' file, the folder specified under 'URL' may contain only mp3 or mpm files plus any update files made available by BEYERTONE. In particular, the folder may *not* contain any files with the names 'index.htm', 'start.htm' or 'default.htm', etc.

9. Service functions

9.1 Default IP

To gain access to the multiLAN web configuration menu, in particular if an unknown static IP address has been assigned, switch off the appliance and hold down the 'UPDATE' button for approx. 5 seconds when you switch it back on (until the LEDs ‘STATUS’ and ‘MOH’ flash once). The appliance will then be reachable under the default IP specified in Section 10 and *no* DHCP requests will be sent for the time being, even if 'DHCP' is active. Once the appliance has been switched off and back on again (without holding down the button), the specified IP address and DHCP (if active) will be back in use. Always connect the network first, before powering up the unit.

9.2 Help and Log file

If questions or problems should occur when installing the unit, you may as a first step make use of the integrated help features:

- via the web configuration ‘Help’ screen (to which the link is in the top navigation bar) you get a link to the complete installation manual as PDF file (downloading the file from the device may take approx. 1 minute)
- via the ‘Service’ screen you can activate writing a log file, which can be displayed afterwards via the corresponding link on the same screen
- additionally, the ‘Service’ screen provides links to the main configuration files of the device, which can be used to show the files

NOTE: If you are being asked by the BEYERTONE support to send the configuration and/or log files (after writing), please use the links mentioned above and save the files e.g. by right clicking with the mouse on the links and using the ‘Save as...’ menu.

9.3 System reset

If necessary, the appliance can be rebooted via the 'System / Restart' menu. Here, you have the choice between rebooting the appliance using the current configuration data or resetting it to the default factory settings (see Section 10). On restarting, the appliance will be reachable again under the entered IP address after approx. ten seconds. You will then have to log back into the browser configuration menu.

You can also reset the appliance to the factory settings (see Section 10) without using a browser by first switching it off and then back on, holding down the 'UPDATE' button on the front panel for approx. 15 seconds as you do so (until the LEDs ‘STATUS’ and ‘MOH’ flash once and then three times). The LEDs on the front panel flashing three times indicate a successful reset.

NOTE: If you change the network parameters, you have to reboot the appliance for the new settings to become effective. To access the appliance via a browser after rebooting, you will, of course, have to use the new IP address, where this has changed. If you choose to reset all your settings when rebooting, the appliance will return to the factory settings (see Section 10).

NOTE: When resetting the appliance to the factory settings, the date/time settings, the user password and any licence codes stored will NOT be reset. The contents of the memory also remain intact. You should therefore erase the memory locations in use separately, if necessary.

9.4 Updates and licence code

You can load new firmware on the appliance from the 'System / Update' menu. Please use only files released by BEYERTONE for the beyertone® multiLAN. Where updates are provided in the form of several files in a zip archive, please be sure to unzip the archive and then transfer the files to the appliance one by one. In special cases, also CFG and/or TPL files provided from the BEYERTONE support can be transferred via this firmware upload dialogue.

An update of the firmware can also be done via download. To do this, start the update directly from the ‘Server’ area of the ‘Update’ page or - if enabled here - by pressing the 'UPDATE‘ button for 10 seconds during normal operation of the device. Information on the availability of updates can be found in Section 12.

Some optional appliance functions may not be available as standard and need to be enabled via a licence code. If you have purchased or received such a licence code, you can enter and activate it on the 'Update' page. The appliance and all its basic functions are operational without a licence code.

9.5 LED status indications

The LEDs ‘STATUS’ and ‘MOH’ on the front panel of the beyertone® multiLAN indicate the following statuses (see Section 8 for details with respect to downloads):

LED indications	Meaning
MOH LED is flashing	MoH audio playback is in progress
STATUS LED is lit	Network connection OK
STATUS LED is flashing	Network connection not OK / no IP address
STATUS LED is off	No network
LEDs flash once alternately	Appliance is reachable under default IP (below)
LEDs flash three times alt.	Appliance has been reset to factory status
LEDs flash simultaneously	Internal device error

10. Factory settings

The beyertone® multiLAN is shipped with the following basic settings:

Password admin.:	"multilan"
Passw. messages:	= last 5 digits of device id (e.g. „...-10001“)
PIN Admin.:	1234
PIN messages:	= last 5 digits of device id (e.g. „...-10001 “)
Device name:	- blank -
DHCP name:	= device id (e.g. "2014-1802-10001")
DHCP:	enabled (see *)
IP address:	* DHCP (otherwise **default: 192.168.1.3**)
Subnet mask:	* DHCP (otherwise default: 255.255.255.0)
Standard gateway:	* DHCP (default: - blank -)
DNS server:	* DHCP (default: - blank -)
Proxy:	disabled
Proxy server:	- blank -
Proxy port:	80
NTP:	enabled
NTP server:	* DHCP (default: - blank -)
SMTP-Server:	- blank -
Time zone:	CET (GMT + 01:00), automatic daylight saving enabled
Volume MoH:	70 %
Volume Announc.:	80 %
Interface Ann.:	analogue (a/b)
Flash time:	90 ms
Transfer No. Day:	11
Pseudo-Dir. Dial:	Extension Length 6, Timeout 3 secs.
Operation mode:	day / manual
Download:	disabled / no URL entered

11. Troubleshooting and support

If the appliance shows signs of a malfunction, please check the LED indication (see Section 9.5) and run through the following points:

- Has everything been connected according to the installation instructions?
- Have the ports on the PBX been set up correctly?
- Is the MOH / LINE port pin assignment correct?
- Is the volume on the appliance set high enough?
- Are the interface and operation mode settings correct?
- Have valid mp3 audio files been loaded on the appliance (see Sect. 4.1)?
- Have valid IP addresses been entered/is DHCP supported?
- Have you tried to connect to the LAN using the default IP address (see Sect. 9.1)?
- Is Java-script activated in the browser used for configuration?

Should you require any technical assistance when taking your beyertone® multiLAN into operation, please contact the BEYERTONE customer service hotline:

Customer service hotline: +49 (0)2103 24 80 20

or **support@beyertone.com**

www.beyertone.com/support_en

12. Updates and royalty-free music files

BEYERTONE have a selection of royalty-free music tracks available for the beyertone® multiLAN. You can also download installation guides in various languages and software updates, where available. To do so, please go to the following website:

www.beyertone.com/multilan

NOTE: Should you add any non-royalty-free tracks of your own, please note any charges that may apply.

13. Specifications

- Appliance

Operating voltage	DC 6.0 V, alternatively supply via PoE (Class 0)
Power consumption	max. 500 mA (max. 3 W with PoE)
Internal fuse	500 mA (self-clearing)
MOH output	Impedance 600 ohms, galvanically isolated nominal level - 6dBm at 300 - 3400 Hz
PHONE output	3.5mm stereo jack socket, for headphones from 30 ohms
Control input E&M / PA	6V (1,5 mA) - 60V (15 mA) with ext. voltage pulse 3V (1 mA) with internal contact supply
Control output E&M / PA	isolated semiconductor switch, max. 60V / 50 mA
Memory capacity	max. 5 hours announcements/music (mp3 at 128 Kbps) max. 20 hours messages (‘Mailbox’ function)
mp3 data formats	MPEG 2-Layer 3 compression (files with no additional header data only) 96 to 192 Kbps, stereo/mono, up to 44.1 kHz
LAN port	Ethernet 10/100 Mbps
Supported protocols	DHCP, DNS, HTTP, NTP, PoE (IEEE 802.3af Mode A & B)
Power reserve of int. clock	24 hours
Ambient temperature	5° to 45°C (no condensation)
Dimensions	436 (480) x 210 x 44 mm
Weight	Approx. 1200 g

- Mains adapter

Input voltage	100-240V AC, 50/60 Hz
Output voltage	5.9/6.0 V DC / max. 800 mA
Weight	Approx. 120 g

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