

USER MANUAL R-SERIES 2000

MP 2000 R Mk II



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Welcome.

We are delighted that you have decided to purchase a **T**_{*}**A** product. With your new **MP 2000** R you have acquired a top-quality piece of equipment which has been designed and developed with the wishes of the audiophile music lover as absolute top priority.

This system represents our very best efforts at designing practical electronic equipment incorporating solid quality, userfriendly operation and a specification and performance which leaves nothing to be desired.

All these factors contribute to a piece of equipment which will satisfy your highest demands and your most searching requirements for a period of many years. All the components we use meet the German and European safety norms and standards which are currently valid. All the materials we use are subject to painstaking quality monitoring.

At all stages of production we avoid the use of substances which are environmentally unsound or potentially hazardous to health, such as chlorine-based cleaning agents and CFCs.

We also aim to avoid the use of plastics in general, and PVC in particular, in the design of our products. Instead we rely upon metals and other non-hazardous materials; metal components are ideal for recycling, and also provide effective electrical screening.

Our robust all-metal cases exclude any possibility of external sources of interference affecting the quality of reproduction. From the opposite point of view our products' electro-magnetic radiation (electro-smog) is reduced to an absolute minimum by the outstandingly effective screening provided by the metal case.

We would like to take this opportunity to thank you for the faith you have shown in our company by purchasing this product, and wish you many hours of enjoyment and sheer listening pleasure with your **MP 2000 R**.

T+A elektroakustik GmbH & Co KG

About these instructions

All the controls and functions of the **MP 2000 R** which are frequently used are described in the first section of these operating instructions.

The second part 'Basic settings, Installation, Using the system for the first time' covers connections and settings which are very seldom required; they are generally required only when the machine is set up and used for the first time. Here you will also find a detailed description of the network settings required for connecting the MP 2000 R to your home network.

Symbols used in these instructions

Caution!

Text passages marked with this symbol contain important information which must be observed if the machine is to operate safely and without problems.



This symbol marks text passages which provide supplementary notes and background information; they are intended to help the user understand how to get the best out of the machine.

italic Technical terms printed in italics are explained in detail at the end of the instructions.

Notes on software updates

Many features of the **MP 2000 R** are software based. Updates and new features will be made available from time to time. The update process takes only a few minutes. See the chapter entitled "Software update" for how to update your device via the internet connection.

We recommend you to check for updates before using your **MP 2000 R** for the first time. To keep your device up to date you should check for updates from time to time.

IMPORTANT! CAUTION!

This product contains a laser diode of higher class than 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to gualified personnel.

The following caution labels appear on your device: Rear Panel:

CLASS 1 LASER PRODUCT



The operation instructions, the connection guidance and the safety notes are for your own good - please read them carefully and observe them at all times. The operating instructions are an integral part of this device. If you ever transfer the product to a new owner please be sure to pass them on to the purchaser to guard against incorrect operation and possible hazards.

CE

All the components we use meet the German and European safety norms and standards which are currently valid. This product complies with the EU directives. The declaration of conformity can be downloaded from www.ta-hifi.com/DoC.

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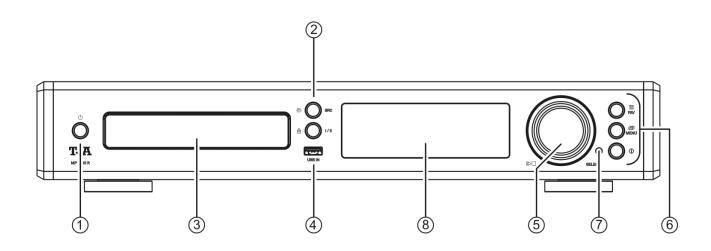
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Introduction

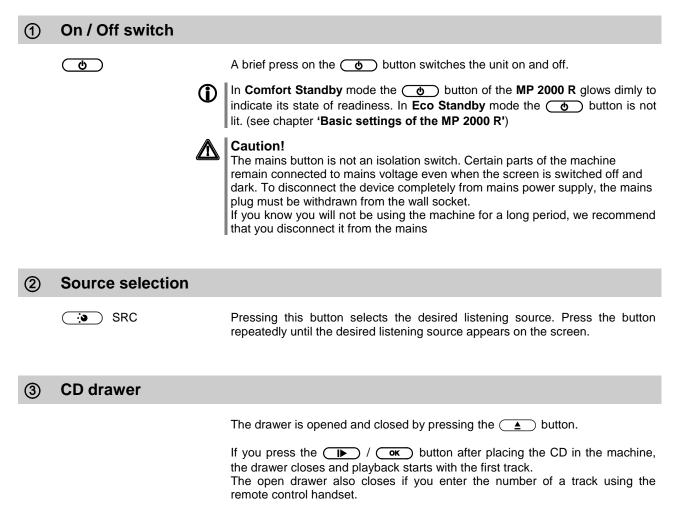
PCM and DSD	Two competing formats are available in the form of PCM and DSD, both of which are used to store audio signals at very high resolution and quality. Each of these formats has its own specific advantages. A vast amount has been written about the relative merits of these two formats, and we have no intention of participating in the dispute, much of which is less than objective in nature. Instead we consider it our task to develop equipment which reproduces both formats as effectively as possible, and exploits the strengths of each system to the full. Our many years of experience with both systems have clearly shown that PCM and DSD cannot just be lumped together; it is essential to treat each format separately, and take their specific requirements into account. This applies both at the digital and analogue level.
	For this reason the MP 2000 R employs two separate digital sections and two D/A converter sections - each optimised for one format.
MP 2000 R and DSD	By its nature the DSD format involves a noise floor which rises above the range of human hearing as frequency rises. Although this noise floor is not directly audible, it does subject the treble units in the loudspeakers to a significant load. It is also possible for the high-frequency noise to cause distortion in many low-bandwidth amplifiers. The lower the DSD sampling rate, the more severe the inherent noise, and it cannot be disregarded, especially with the DSD64 format - as used on the SACD. As the DSD sampling rate rises, the high-frequency noise becomes increasingly insignificant, and with DSD256 it is virtually irrelevant. In the past it has been standard practice to apply digital and analogue filtering processes in an attempt to reduce DSD noise, but such solutions are never entirely without side-effects on sound quality. For the MP 2000 R we have developed two special techniques designed to eliminate the sonic disadvantages: 1.) The T+A True-DSD technique, consisting of a direct digital signal path without filtering and noise-shaping, plus our True 1-bit DSD D/A converter 2.) Analogue reconstruction filter with automatic bandwidth selection.
MP 2000 R and PCM	The PCM process makes extremely high-resolution sampling values available: up to 32 bits. However, the sampling rate of PCM is significantly lower than that of DSD, and the spacing in terms of time between the sampling values is greater. This means that it is extremely important with PCM to employ maximum possible precision when converting the high resolution into analogue signals. Here at T+A our answer was to develop quadruple D/A converters which provide a four-fold improvement in accuracy over conventional converters. A further very important aspect of PCM reproduction is to reconstruct the curve of the original analogue signal between the sampling points with great accuracy, since these points are much more widely spaced in comparison with DSD. To this end the MP 2000 R employs a polynomial interpolation process (Bezier- Spline interpolation) developed in-house at T+A , which in mathematical terms delivers the smoothest curve for a given number of reference points (sampling points). The output signal generated by Bezier interpolation exhibits a very "natural" shape, devoid of the digital artefacts - such as pre- and post- oscillation - which are usually produced by the standard oversampling process. More detailed information on this can be found in the chapter " Technical description, oversampling / up-sampling "

Front panel controls



All the important functions of the **MP 2000 R** can be controlled using the buttons and the rotary knob on the front panel. Direct-acting buttons are provided for fundamental functions such as source select. Functions which are needed less frequently are controlled using a menu which is called up by pressing the **MENU** button.

All information relating to the machine's state, the current track and the associated transmitting station are displayed on the integral screen. The following section explains the functions of the buttons on the machine, and the information provided on the screen.



Socket for a USB memory stick or an external hard disc.

The storage medium can be formatted with the FAT16, FAT32, NTFS, ext2, ext3 or ext4 file system.

The USB storage medium can be powered via the USB socket provided that its current drain meets the USB norm (< 500 mA). Normalised 2.5" USB hard discs can be connected directly to this socket, i.e. they require no mains PSU.

(5) Navigation / Control

SELECT knobRotating this control selects a track for playback; the selected track then
appears on the screen. As soon as the desired track number lights up, the
track can be started by pressing the incremental control.

As well as selecting tracks, the SELECT knob is used for functions such as navigating within lists, controlling menus, and creating playback programs. (see chapter 'Basic settings of the MP 2000 R')

6	Operating buttons		
		Brief press: displays the Favourites list stored on the MP 2000 R (see chapter ' Operating the radio, Favourites list ' and ' Operating the Streaming Client, accessing media content via the Favourites list ') In the list a Favourite can be selected using the SELECT knob; a brief press on the same knob then plays it. Closing the list A long press on the SELECT knob closes the Favourites list without switching to a Favourite.	
	MENU	Brief press: (see chapter 'B a	Opens the 'System Configuration' menu asic settings of the MP 2000 R')
		Long press:	Opens the Source Configuration menu (Radio only).
		Brief press:	Toggle switch between display of current music track and list navigation / switches the CD Text on and off.
		Long press:	Switches between different screen displays

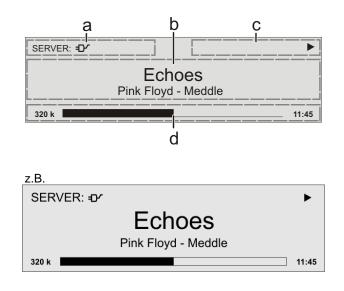
(7) Fernbedienungsempfänger

When using the remote control system please point the **SRC1** handset in the direction of the receiver.

The line of sight between the **SRC1** and the remote control receiver in the **SRC1** must not be interrupted by any obstacles. Installing the **SRC1** behind the glass doors of a cabinet will also adversely affect the remote control system. It is essential to prevent potentially interfering light (from fluorescent lamps and energy-saving bulbs) falling directly on the receiver, as this may markedly reduce the effective range of the remote control system.

The graphic screen of the **MP 2000 R** displays all information regarding the status of the machine, the music track currently being played and the radio station currently tuned. The display is context-sensitive and varies according to the capabilities and facilities of the service or medium to which you are currently listening.

The most important information is highlighted on the screen in a contextsensitive manner. Supplementary information is displayed above and below the main text, or by means of symbols. The symbols used are listed and explained in the table below.



The displays and symbols which appear on the screen vary according to the currently active function.

The basic areas of the screen:

- Display field (a) shows the currently active source.
- Display field (b) shows information relating to the piece of music being played. The essential information is displayed enlarged in the main line.
- Display field (c) shows information relating to the device and playback.
- The bottom line (d) displays supplementary context-sensitive information (e.g. sampling frequency, elapsed time)

The **MP 2000 R** provides different screen displays for the Streaming Client and the radio.

- Large-format display: Enlarged display of the most important information, clearly legible even from a distance
- Detail display: Small-text display showing a large number of additional information points, e.g. bit-rate etc.

A long press on the ① button on the remote control handset or the front panel of the device is used to switch between the display modes.

Screen symbols and their meaning

•	Making connection (Wait / Busy) The rotating symbol indicates that the MP 2000 R is currently processing a command, or is attempting to connect to a service. These processes may take some time to complete depending on the speed of your network and the load upon it. During such periods the MP 2000 R may be muted, and may not respond to the controls. Please wait until the symbol disappears, then try again.
5	Indicates a music track which can be played , or a playlist.
	Indicates a folder which conceals further folders or lists.
±D∕	Indicates that a source is being reproduced via a cable connection.
	Indicates that a source is being reproduced via a radio connection.
•	Indicates that the MP 2000 R is reproducing a station or playing back a music track.
11	Pause indicator
128 k	Buffer display (fullness indicator, memory display) and data rate indicator (if available): The higher the data rate, the better the quality of reproduction.
1:20	Display of the elapsed playback time. This information is not available for all services.
<i>←</i>	Indicates that the to switch to a higher menu or select level.
0/0	Position indicator in select lists. The first number shows the current position in the list, the second number the total number of list entries (length of list).
<	Indicates that the selected menu item or list point can be activated by pressing the button.
ABC or 123 or abc	Display of the symbol input modes
رآ» درا	Indicates the field strength of the radio signal.
₩	If the 🏠 symbol appears while playing back from a digital input - the MP 2000 R has switched over to its internal precision oscillator (local oscillator). This eliminates jitter effects, but is only possible if the clock quality of the connected signal is adequate.

Remote control

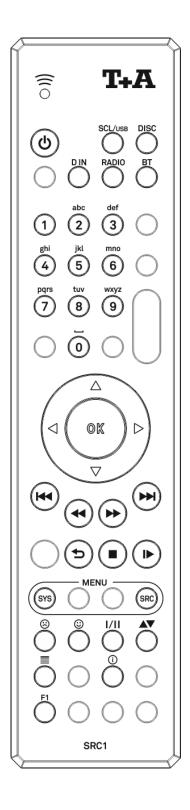
General Information

In general terms the remote control buttons have the same function as the corresponding buttons on the **MP 2000 R's** front panel.



The buttons not required to operate the **MP 2000 R** are not shown in the illustration of the **SRC1**.

When the **MP 2000 R** is used within a system which includes a **PA 2x00 R** connected using **R2Link**, the method of source selection differs to the following description. For details please see chapter entitled **"Selecting sources in an integrated system".**



b	Switches the MP 2000 R on and off
	Source select buttons
(SCL/USB)	Selects the SCL function (e.g. access to music servers, streaming services or similar) or the USB DAC function (playback from a connected computer), or selects the USB Media function (connected USB memory media) of the streaming client.
	Press this button repeatedly until the desired source appears on the screen.
DISC	MP 2000 R's CD function
DIN	A brief press on this button selects the digital input you wish to use. Press the button repeatedly until the desired input is displayed on the screen.
RADIO	Selects FM, DAB, or Internet radio as source. Press this button repeatedly until the desired source appears on the screen.
BT	Selects Bluetooth as source.
	Alpha-numeric input
1	Alpha-numeric input Direct alpha-numeric input, e.g. track number, fast station select, radio station.
1 2 abc	Direct alpha-numeric input, e.g. track number, fast station
2	Direct alpha-numeric input, e.g. track number, fast station select, radio station. The and buttons are also used for non-standard
2 abc	Direct alpha-numeric input, e.g. track number, fast station select, radio station. The and buttons are also used for non-standard characters. During text input you can switch between numeric and alpha-numeric input, and between capitals and lower case by pressing
2 abc 9	Direct alpha-numeric input, e.g. track number, fast station select, radio station. The and buttons are also used for non-standard characters. During text input you can switch between numeric and alpha-numeric input, and between capitals and lower case by pressing
abc 9 wxyz	Direct alpha-numeric input, e.g. track number, fast station select, radio station. The and buttons are also used for non-standard characters. During text input you can switch between numeric and alpha-numeric input, and between capitals and lower case by pressing
2 abc 9 wxyz 0	Direct alpha-numeric input, e.g. track number, fast station select, radio station. The and buttons are also used for non-standard characters. During text input you can switch between numeric and alpha-numeric input, and between capitals and lower case by pressing the button.
2 abc 9 wxyz 0	Direct alpha-numeric input, e.g. track number, fast station select, radio station. The and buttons are also used for non-standard characters. During text input you can switch between numeric and alpha-numeric input, and between capitals and lower case by pressing the button.

	Navigation
	Returns to the previous point / change button
	Confirms the input / change button
	Selects the next point within a list / select button
	Selects the previous point within a list / select button
ОК	Confirmation button during input procedures
	Playback functions
	Starts playback (Play function) During playback: halts (Pause) or resumes playback
	Stops playback. Long press while disc is stopped opens and closes the disc drawer.
	During menu navigation : a brief press takes you back (higher) by one menu level or aborts the current input process; the change is then abandoned.
	Selects the previous track during playback.
	Selects the next track during playback.
	Rewind to search for a particular passage. FM Radio: Manual station search
	Fast-forward to search for a particular passage. FM Radio: Manual station search
5	Repeat functions (not possible with all media) Brief press: Repeat Track, Repeat ALL, 'Normal' Long press: <i>Mix</i> -Mode (Shuffle) ON / OFF Brief button presses in MIX mode: Mix, Repeat Track, Repeat Mix
0	Adds a favourite to the Favourites list. CD - player: Activates playback programming Adds a <i>track</i> to the <i>playback program</i> during playback programming
8	Long press: Removes a favourite from the Favourites list. CD - player: A Long press erases the <i>playback program.</i>
<u> </u>	Button for switching between Stereo and Mono reception (only FM Radio) The Stereo setting is constantly displayed in the screen window by a O symbol. The Mono setting is constantly displayed in the screen window by a Symbol.
	Switches between numeric and alpha-numeric input, and between capitals and lower case when pressed (repeatedly)
	Calls up the search function for SCL, USB-Media, Internetradio, Podcasts and Music services. Activates the sort function within a Favourites list.
	Displays the Favourites list created on the MP 2000 R
Θ	Switches the display from the track list / station list navigation to the ,Now Playing' view. Switches the Radiotext / CD-text function ON/OFF. A long press toggles between different screen displays.
F1	Opens the D/A mode selection menu.

Controling app

The MP 1000 E can be controlled by the T+A App too. For Apple (iOS)





Basic settings of the MP 2000 R

System Settings (System Configuration menu)

In the System Configuration menu general device settings are adjusted. This menu is described in detail in the following chapter.

Calling up and operating the menu

- Briefly press the **MENU** button on the front panel or **SYS** button on the remote control handset to call up the menu.
- When you open the menu, the following Select points appear on the screen:

	Adjustment facilit	ty		
Sources names	Configuration			
Display brightness	1		7	
Display mode	Always on	Temporary	Always off	
Language	Deutsch	English	Francaise	further languages
Device name	MP 2000 R			
Energy saver	On	Off		
Network	Configuration			
Music services	Configuration	7		
Bandwidth limit	No limit	2000 kbps	500 kbps	
FD 100 pairing*	Start			
Device info	Display			

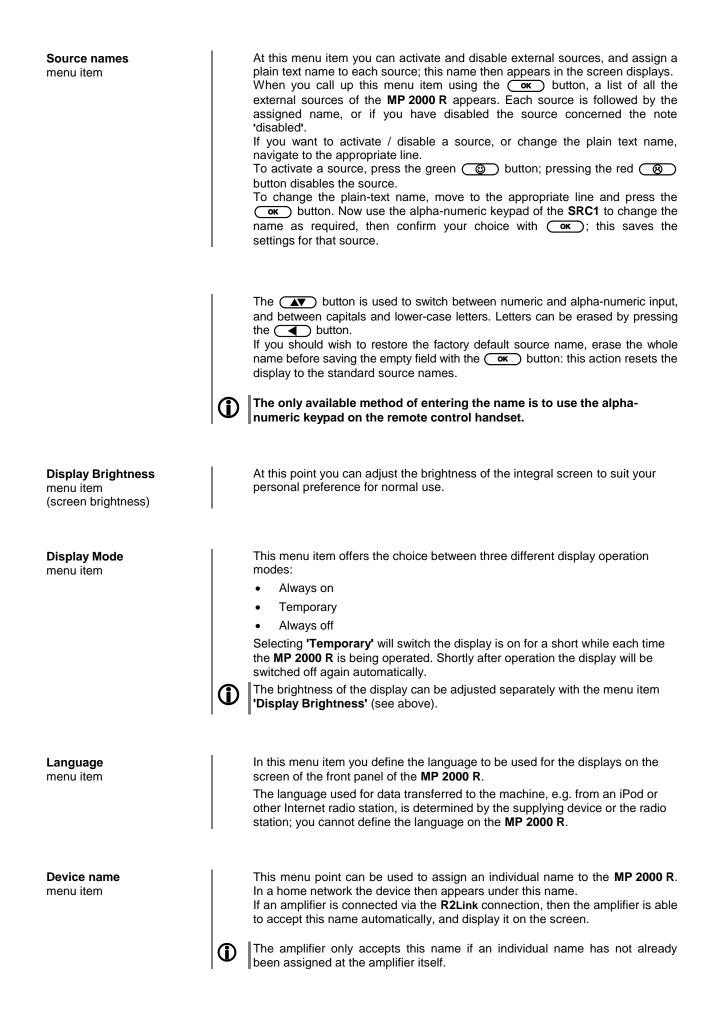
* only visible with installed gateway module.

Using the front-panel controls:

- The SELECT knob is used to select any item within the menu system.
- To change a selected menu item, press the SELECT knob to confirm your choice, then adjust the value by rotating the knob.
- After making the adjustment, press the SELECT knob again to adopt the new setting.
- You can interrupt the process at any time by touching the MENU button; in this case any changes you have made are discarded.
- Holding the SELECT knob pressed in takes you one level further down in the menu system.
- Touch the MENU button again to quit the menu.

Using the remote control handset:

- Use the () / () buttons to select an item in the menu.
- If you wish to change a selected menu item, first press the ok button, and then use the
 / buttons to alter it.
- After making the change, press the <u>ok</u> button again to accept the new setting.
- You can press the button at any time to interrupt the process; the change is then abandoned.
- Press the sys button again to leave the menu.



The **MP 2000 R** features two stand-by modes: ECO Standby with reduced stand-by current drain, and Comfort Standby with additional functions, but slightly higher current drain. You can select your preferred stand-by mode in this menu point:

On (ECO standby):

Active functions in ECO standby mode:

• Power-on at the device itself, or by remote control.

Automatic power-down after ninety minutes without signal (only possible with certain sources).

Off (Comfort standby):

The following expanded functions are available:

- On / Off button illuminated in stand-by mode.
- Unit can be switched on using the app.
- Can be switched on using the **FD100** radio remote control handset (the **FD100** is an optional accessory)
- The automatic power-down function is disabled in Comfort standby mode.

All network settings can be carried out at this menu point. For a detailed

Network menu item

Music services menu item

	description on setting up a LAN or WLAN connection please also refer to the section entitled " Network configuration " on page 48.
	At this point you can enter the access data for the music streaming services Qobuz and Deezer. TIDAL uses a special procedure for entering the access data. For this reason, the data must be entered via the T+A Music Navigator app (please see next page for details). If necessary, you can delete them later under this menu item. Calling up this menu point by pressing the or button displays a list of the supported music services. Select the service you wish to use, then confirm your choice with the or button. Now use the alpha-numeric keypad of the SRC1 to enter the access data which you have received from your service provider in the lines "User" and "Passphrase". Use the or button to switch between numeric and alpha-numeric input, and between capitals and lower-case letters. Press the or button to erase any letter.
	In each case confirm your input of user name and password by pressing the ok button. To conclude the procedure and save the data, select the menu entry " Store and exit? " and confirm by pressing the ok button.
1	If access data for the selected music service has already been stored, the new data will overwrite them. To use the new access data you must first perform a "Logout" for the service in question, then switch the MP 2000 R off and on again.
1	The music streaming services supported by the MP 2000 R require a subscription to the appropriate service provider.
1	TIDAL credentials (since firmware version2.70) To enter the TIDAL credentials, open the T+A Music Navigator App and select the TIDAL source. Are no credentials stored, an internet browser with the TIDAL log-in window will open automatically. Enter your credentials here and confirm the entry. As soon as the login has been successfully completed, you can close the Internet browser and return to the T+A app. Your data is now automatically saved and TIDAL is available.
	We recommend that you enter your TIDAL credentials via our app. If no mobile device is available, the procedure can alternatively be carried out via the Internet browser of your PC. For this, call up the TIDAL source on the MP 2000 R and press the i button on the remote control or on the device. An Internet address and an activation code are displayed on the MP 2000 R . Enter the address in the browser and open the page. Enter the activation and confirm. You will be automatically redirected to the TIDAL log-in page. Log in here with your credentials. The device is now logged in to TIDAL.

Bandwidth limit menu item	 This menu point can be used to adjust the link speed of the Internet connection. The bitrate of the Internet radio stations and streaming services is adjusted automatically to match your chosen setting. If you select "no limit" for bandwidth limit, the highest available quality is always selected automatically. If you do not know the exact bandwidth of the internet connection, we recommend that you select the setting at which no drop-outs occur during playback.
FD 100 pairing menu item	The MP 2000 R can be controlled remotely using the FD 100 bi-directional radio remote control handset if a Gateway module is installed; this is available as an optional extra. When you call up this menu point, the MP 2000 R attempts to create a connection with the FD 100 radio remote control.
Device Info menu item	At this menu point you will find information on the status of the installed software and the factory reset.
Sub-point Update package	This point displays the currently installed software package.
Sub-point Control	Display of the control software version
Sub-point Client	Display of the Streaming Client software version
Sub-point DAB / FM	Display of the tuner software version.
Sub-point Decoder	Display of the CD mechanism decoder software
Sub-point Bluetooth	Display of the Bluetooth module software
Sub-point Bluetooth pairings	Calling up and confirming this menu point erases all stored Bluetooth pairings.
Sub-point Update	At this point it is possible to initiate a firmware update. The update can be accessed from a USB stick or an Internet connection.
Sub-point Default settings	Calling up and confirming this menu point erases all personal settings, and restores the machine to the state as delivered (factory defaults).
Sub-point Legal information	Information on accessing the legal information and license notices.
	For further information, see the chapter entitled "Legal Information".

D/A Converter Settings

A number of special settings are available for the **MP 2000 R** D/A converter; they are designed to fine-tune the characteristics of your amplifier to suit your listening preferences.

The following settings can only be called up if PCM-encoded audio is being played.

Briefly press the <u>F1</u> button on the remote control handset in order to call up the D/A converter set-up options. This action opens a set-up window in which the various options are displayed.

- Now use the () / () buttons to select a set-up option.
- In each case the displayed option can be altered using the
 /
 buttons.
- Press the F1 button again to leave the menu.

DSP set-up option Oversampling (OVS)

Calling up and operating the D/A converter options

DSP set-up option Output phase The **MP 2000 R** can exploit four different filter types offering different tonal characters:

- Oversampling **FIR long** is a classic FIR filter with an extremely linear frequency response.
- Oversampling FIR short is a FIR filter with improved peak handling.
- Oversampling **Bezier / FIR** is a Bezier interpolator combined with a IIR filter. This process produces a result very similar to an analogue system.
- Oversampling Bezier is a pure Bezier interpolator offering perfect "timing" and dynamics.

Please refer to the Chapter 'Technical description - Digital filters /
 Oversampling' for an explanation of the different filter types.

With particular instruments or voices the human ear is certainly capable of detecting whether absolute phase is correct or not. However, absolute phase is not always correctly recorded.

In this menu item the phase of the signal can be changed from normal to inverse phase and back.

The correction is carried out at the digital level, and has absolutely no adverse effect on sound quality.

Operation with the FM2000 in an integrated system

MP 2000 R in a system with the PA 2x00

If the **MP 2000 R** is part of a system which includes a **PA 2x00 R** and is controlled via the **FM2000**, the **MP 2000 R** sources are not selected directly using the FM1000's (handset supplied in the set) source select buttons but by repeatedly pressing the (MT/MP) button on the **FM2000** remote control handset supplied with the PA 2x00 R, or using the source select menu, instead of.

This is the procedure for selecting the sources of the $\ensuremath{\mathsf{MP}}\xspace2000\ensuremath{\,\mathsf{R}}\xspace$ using the Source Select menu:

- A long press on the **FM2000's** (M17MP) button calls up the Source Select menu: a list appears on the screen of the **MP 2000 R** showing the currently active source.
- Your chosen source can be selected using the ▲ / ▼ buttons, then confirmed by pressing the or button.
- The source list closes, and the system plays the source you have selected.

The **FM2000**'s source select buttons are furthermore used to select the **PA 2x00's** sources when it is part of a system.

Operating the sources in detail

Operation with the SRC1 remote control	The operation of the source devices is described in the following chapters using the SRC1 remote control because only with this remote control all functions of this device can be operated (e.g. adding favourites).
Operation of the MP 2000 R with controls on the front panel of the device	The front panel controls can be used to operate the basic functions of the MP 2000 R . The Navigation/Control rotary control (SELECT knob) can be used to navigate through lists and menus or to control the CD player in the same way as the cursor and OK buttons of the SRC1 remote.
	 In Lists While playback: Rotating the SELECT knob returns to the list. Choose a list or menu item by turning the SELECT knob. By pressing the SELECT knob you can select an item or start playback of a title or station. A long press on the the SELECT knob leaves a submenu or navigates to the parent menu level (BACK).
	 Playback control Turning the SELECT knob lets you select a track. When the desired track lights up on the display this track can be started by pressing the SELECT knob.

Favourites lists

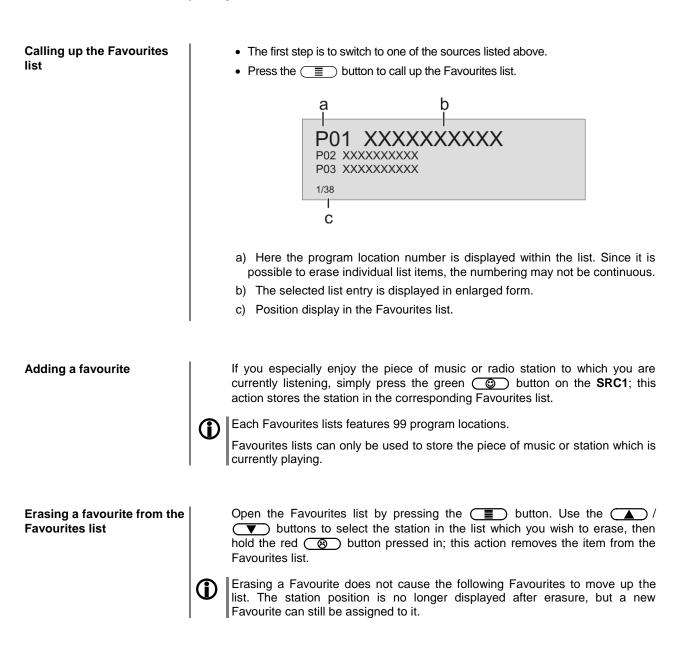
General information

The **MP 2000 R** includes the facility to create Favourites lists. The purpose of these lists is to store radio stations and podcasts, so that they can be accessed swiftly.

Each of the sources **FM radio**, **DAB radio**, and **Internetradio** features its own Favourites list.

Once stored, the favourites can either be selected from the Favourites list, or called up directly by entering the program location number. The option of selecting using the location number is particularly useful when you wish to call up favourites when the screen is not in view (e.g. from an adjacent room) or using a house control system.

Favourites lists for the various music services (TIDAL etc.) are not supported. Instead it is usually possible to add Favourites and Playlists on-line via the provider's account. These can then be called up and played via the **MP 2000 R**.



Selecting a favourite from the list	 Press the button to call up the Favourites list. Use the / buttons to select a stored item from the Favourites list. The selected favourite is displayed in enlarged form. Select the favourite to be played by pressing the or or button. You can return to the station to which you are currently listening (quit) by pressing the button.
Directly selecting a favourite	In addition to the option of selecting favourites using the Favourites list, it is possible to access the desired favourite directly by entering the program location number. To select a stored favourite directly during playback, enter the two-digit program location number of the new favourite using the numeric buttons ((• to •)) on the remote control handset. After you have pressed the numeric buttons, playback switches to the favourite you have just selected.
Sorting Favourites lists	 The sequence of items in the Favourites list you have created can be altered in any way you wish. This is the procedure for changing the order of the list: The first step is to call up the Favourites list by briefly pressing the Use the / buttons to select the favourite whose position you wish to change. The selected Favourite is displayed in enlarged form. Pressing the button activates the Sort function for the selected favourite. The favourite is highlighted on the screen.
	 PO1 - 1LIVE P02 - HERFORD P03 - WDR 5 1/38 Now move the activated favourite to your preferred position in the Favourites list. A further press on the button de-activates the Sort function, and the favourite is stored at the new position. Briefly press the button again to close the Favourites list. If you have previously erased a number of favourites, you may well find that some program locations in the Favourites list are missing (empty). Nevertheless, the favourites can still be moved to any location in the list!

Operating the radio

The **MP 2000 R** features an **FM Tuner** (VHF radio) with HD Radio[™] technology*, a **DAB / DAB+** reception section (digital radio) and also includes the facility to stream **Internet radio**. The following section describes in detail how to operate the individual radio sources.

HD Radio technology enables radio stations to transmit analogue and digital programmes on the same frequency simultaneously.

The integral DAB+ receiving section is backwards-compatible with DAB, to ensure that you have access to a wide range of stations.

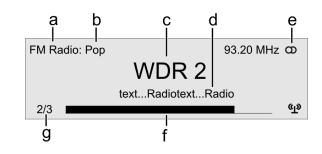
* HD Radio[™] technology only available in US-version.

FM – Radio

Selecting FM radio

Briefly tap the is button on the front panel of the **MP 2000 R** or the **RADIO** button on the **SRC1** remote control handset, repeatedly if necessary, until the source "**FM Radio**" is displayed on the screen.

Display



- a) Displays the type of reception currently in use.
- b) Hear the music type or style is displayed, e.g. Pop Music. This information is only displayed if the transmitting station broadcasts it as part of the *RDS* system. If you are listening to a station which does not support the *RDS* system, or only supports it in part, these information fields remain empty.
- c) The frequency and / or the station name is displayed in enlarged form. If a station name is displayed, its frequency is shown in area 'e'.
- d) These lines display information which is broadcast by the station (e.g. Radiotext).
- e) Display of Stereo 'O' / Mono '
- f) The *field strength* (p) and therefore the reception quality to be expected from the set transmitting station can be assessed from the field strength.
- g) **FM Radio**: when receiving an HD Radio broadcast, the screen displays the currently selected programme from the total number of programmes available, e.g. programme 2 of total 3 available.

Manual station search Holding one of the (+) buttons pressed in initiates a station search for FM tuner in the upward or downward direction. The station search stops automatically at the next station. A frequency can be selected directly by pressing the (+) buttons on the SRC1, repeatedly. Briefly pressing the (+) buttons on the SRC1, repeatedly if necessary, enables you to select a particular frequency.

As soon as the station is audible, you can add it to your Favourites list by pressing the () button.

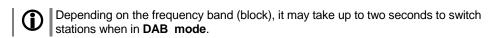
Searching for an HD Radio station	analogue FM station search. programme, playback automa	r an HD Radio station is the same as for an As soon as you select a station with a HD Radio tically switches to the digital programme. s playing an HD Radio broadcast, the display of
		(see illustration: FM Radio display) switches to a "g" shows the number of available stations, e.g. me selected from 4 available).
	You can switch between th	e available HD Radio programmes using the
		a frequency directly, by rotating the knob on the ssing the SELECT knob, repeatedly if necessary,
	Display indicator	Function
	Fav	Selects a favourite from the list
	HD	HD Radio programme selection (if available)
	Freq	Manual frequency selection
	No display (standard setting)	Selects a station from the complete station list
Automatic station search	 SRC1 calls up the Station list Station list → Sort stations by Add new station Create new list If you wish to create a new confirm your choice with C 	The station list, select the item " Create new list " and OK . and automatically searches for all radio stations

- ٠
- which the machine is able to pick up. If you wish to update an existing list, select the item "**Add new stations**". The menu item "**Sorting by** ..." allows you to sort the stored list by any of several criteria. •

Selecting a station from the Station list	 Pressing the / buttons on the SRC1 or rotating the SELECT knob on the front panel opens the list of all stored stations. 		
	a XXXXXXXXXXXX XXXXXXXXXXX 1/38 b		
	 a) Use the / buttons to select one of the stored stations. The station you choose is now displayed in enlarged form. Press the or or button to select the enlarged station for playing. Pressing the button returns you to the station to which you are currently listening (quit). b) Position indicator in the Favourites list. Stations to which you often listen can be stored in a Favourites list; this makes it easier to select them (see the section entitled "Favourites list").		
RDS functions	 If the station being received is broadcasting relevant RDS data, the following information will be displayed on the screen: Station name Radiotext Program Service Data (PSD)* For stations that do not support the RDS system or only partially or with weak reception, no information will be displayed. * Only possible when receiving HD Radio transmissions. 		
Switching Radio Text on and off	 The Radio text function can be switched on and off by briefly pressing the		
Mono / Stereo (only FM – Radio)	You can toggle the radio of the MP 2000 R between stereo and mono reception by briefly pressing the <u>VII</u> button on the SRC1 or by a long press on the <u>VII</u> button on the front panel of the MP 2000 R . The reception mode is shown on the screen by the following symbols: If the station you wish to listen to is very weak or very distant, and can only be picked up with severe background noise, you should always switch to MONO mode as this reduces the unwanted hiss significantly.		
	The Mono and Stereo symbols are only shown in the detailed screen display.		

Selecting DAB radio

Briefly tap the *in button on the front panel of the MP 2000 R or the RADIO* button on the SRC1 remote control handset, repeatedly if necessary, until the source "DAB Radio" is displayed on the screen.



b Display а d е DAB Radio: Pop ω WDR 2 text...Radiotext...Radio സ്ത 192 kbps f g a) Displays the type of reception currently in use. b) Hear the music type or style is displayed, e.g. Pop Music. This information is only displayed if the transmitting station broadcasts it as part of the RDS system. If you are listening to a station which does not support the RDS system, or only supports it in part, these information fields remain empty. c) The frequency and / or the station name is displayed in enlarged form. If a station name is displayed, its frequency is shown in area 'e'. These lines display information which is broadcast by the station (e.g. d) Radiotext). e) Display of Stereo 'O'. The *field strength* (g) and therefore the reception guality to be expected f) from the set transmitting station can be assessed from the field strength. g) Bit-rate of the broadcasting station when listening to DAB radio. * The higher the bit-rate, the better the station's sound quality. Automatic station search A long press on the (MENU) button on the front panel or on the (SRC) on the **SRC1** calls up the Station list menu. The following Select points are available: Station list Sort stations by Block Add new stations Start Create new list Start If you wish to create a new station list, select the item "Create new list" and confirm your choice with **ok**. The station search begins, and automatically searches for all radio stations which the machine is able to pick up.

- If you wish to update an existing list, select the item "Add new stations".
- The menu item "**Sorting by** ..." allows you to sort the stored list by any of several criteria.

Selecting a station from the Station list	 Pressing the / buttons on the SRC1 or rotating the SELECT knob on the front panel opens the list of all stored stations. 	
	a XXXXXXXXXXX XXXXXXXXXX XXXXXXXXXXX 1/38 b	
	 a) Use the / buttons to select one of the stored stations. The station you choose is now displayed in enlarged form. Press the or v v button to select the enlarged station for playing. Pressing the button returns you to the station to which you are currently listening (quit). b) Position indicator in the Favourites list. 	
	Stations to which you often listen can be stored in a Favourites list; this makes it easier to select them (see the section entitled " Favourites list ").	
RDS functions	 If the station being received is broadcasting relevant RDS data, the following information will be displayed on the screen: Station name Radiotext Program type (genre) 	

For stations that do not support the RDS system or only partially or with weak reception, no information will be displayed.

Internet-Radio

Selecting Internet Radio as source

Selecting podcasts

Briefly tap the <u>is</u> button on the front panel of the **MP 2000 R** or the **RADIO** button on the **SRC1** remote control handset, repeatedly if necessary, until the source "**Internet Radio**" is displayed on the screen.

Select the "Podcasts" entry instead of the "Radios" entry from the list.

The method of operating music services is described separately in the section entitled "**Operating music services**".

The music content to be played is selected with the help of Select lists. These lists are controlled using the navigation buttons (cursor buttons) on the remote control handset or by the SELECT knob on the machine's front panel.
--

	a
	XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
	1/38
	b
	 a) Use the / buttons to select the desired entry from the list. A brief press selects the previous / next entry within the list. The scrolling speed can be increased by holding the button pressed.
	The list entry you choose is now displayed in enlarged form.
	Press the row or row button to open or start the list entry shown in enlarged form.
	Pressing the button returns you to the previous folder level.
	b) Indicates the currently selected point within the opened list.
	Starting playback Press the → button on the remote control handset or the machine's front panel to start playback.
	Stopping playback Pressing the Dutton halts playback.
	Stations and podcasts to which you often listen can be stored in a Favourites list; this makes it easier to select them (see the section entitled " Favourites list ").
Front panel display	While playing back the MP 2000 R can be switched to either of two different screen displays with a long press on the D button:
	Large-format display: Enlarged display of the most important information, clearly legible even from a distance
	Detail display: Small-text display showing a large number of additional information points, e.g. bit-rate etc.
Search function	 The Search function provides a means of locating Internet radio stations swiftly. This is the procedure for searching for a particular Internet radio station: Locate the Select list for the entry "Radio", then use the / / buttons to select the "Search" item, and confirm your choice by pressing the or button or while navigating within lists alternatively call up the search function by pressing the blue v button.
	 You will now see a window in which you can enter the keyword using the remote control handset's alpha-numeric keypad.
	 Press the button to erase any letter.
	• Briefly press the or button to start the search.
	After a short delay you will see a list of the search results.
	Search strings can consist of up to ten characters. It is also possible to enter multiple keywords separated by a space character, e.g. "BBC RADIO".
	To search for a podcast, select the "Search" entry under "Podcasts".

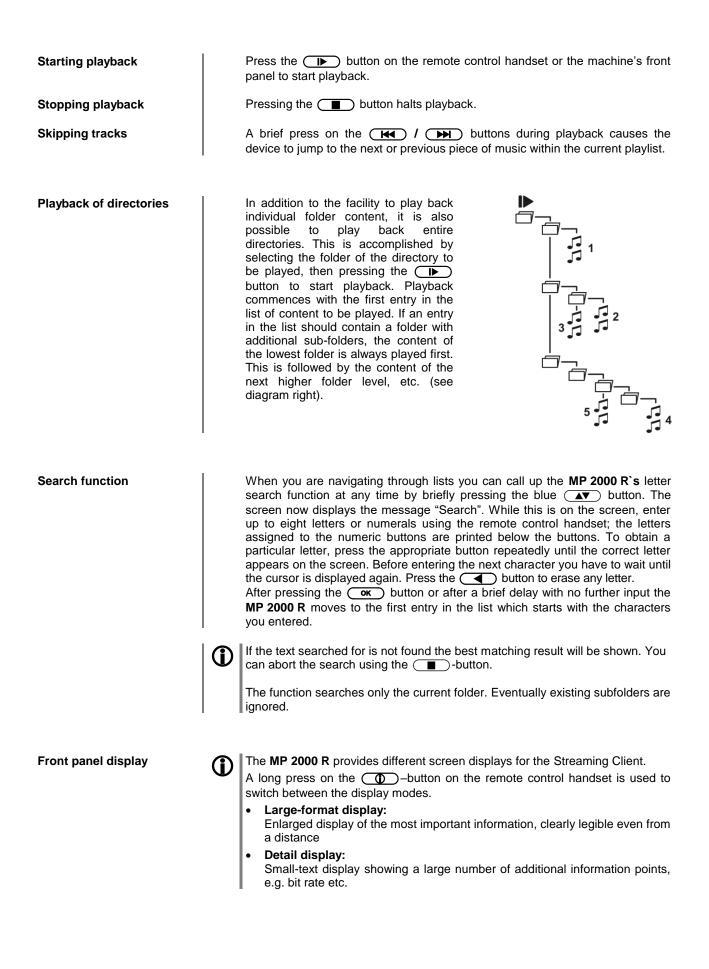
Operating music services

General information	The MP 2000 R supports playback of music services such as TIDAL. To make use of music services you may need to take out a paid subscription with the appropriate provider.
	Use of music services requires the input of access data (username and password. These access data can be stored separately for each provider in the "Music services" menu within the System Configuration menu (see the section entitled " Basic settings of the MP 2000 R ").
	Future music services and others which are not currently supported may be added subsequently by updates to the firmware of the MP 2000 R .
Selecting the music service	Press the GEL/USB button on the SRC1 or the front panel of the MP 2000 R , repeatedly if necessary, to select the desired music service.
Playback	The music content to be played is selected with the help of Select lists. These lists are controlled using the navigation buttons (cursor buttons) on the remote control handset or by the SELECT knob on the machine's front panel.
	a
	1/38 I b
	 a) Use the A / buttons to select the desired entry from the list. A brief press selects the previous / next entry within the list. The scrolling speed can be increased by holding the button pressed. The list entry you choose is now displayed in enlarged form. Press the or w button to open or start the list entry shown in enlarged form.
	Pressing the button returns you to the previous folder level.b) Indicates the currently selected point within the opened list.

Starting playback	Press the I button on the remote control handset or the machine's front panel to start playback.
Stopping playback	Pressing the Dutton halts playback.
Skipping tracks	A brief press on the (I) buttons during playback causes the device to jump to the next or previous piece of music within the current playlist.
	The exact form of the displayed list and the preparation of the content depend to a large extent on the music service provider. You may therefore find that in some cases not all the functions described in these instructions can be used.
Search function	 In order to find quickly what you want in the wide range of services on offer, it is possible to search for specific items in the content available from music service providers. The first step in the procedure is to open the Select list of the appropriate music service. Navigate to the "Search" entry, and confirm by pressing the or button. As an alternative it is possible to call up the search function by pressing the buton. As an alternative it is possible to call up the search function by pressing the buton. As an alternative it is possible to call up the search function by pressing the but on while navigating in lists. A window now opens in which the keyword can be entered using the remote control handset's alpha-numeric keypad. Press the button to erase any letter. Start the search by briefly pressing the or button. After a short delay a list appears showing the search results. The results list varies from one music service to another. Many services allow you to filter the search results by artiste, album or track once the search has been completed. Image: A search function can be called up from every point within the lists by pressing the blue but on. The search strings can consist of up to eight characters. It is also possible to enter multiple keywords separated by a space character, e.g. "The Beatles".
Playlists and favourites	Most music services offer the facility to register on the provider's website with the user data, create dedicated playlists, and manage the lists conveniently. Once created, the playlists appear in the Select list of the corresponding music service, where they can be called up and played via the MP 2000 R . The location within the select list at which the playlists can be accessed varies from one music service to another. Often these folders are named "My music", "Library", "Favourites" or similar.
Front panel display	 While playing back the MP 2000 R can be switched to either of two different screen displays with a long press on the button: Large-format display: Enlarged display of the most important information, clearly legible even from a distance Detail display: Small-text display showing a large number of additional information points, e.g. bit-rate etc.

Operating the UPnP / DLNA source (Streaming Client)

General information on the streaming client	The MP 2000 R features what is know as a 'streaming client'. This facility makes it possible to play music files stored on PCs or servers (NAS) within the network. The media content formats which the MP 2000 R can reproduce are very wide-ranging, and extend from compressed formats such as MP3, AAC and OGG Vorbis to high-quality non-compressed data formats such as FLAC, ALAC, AIFF and WAV, which are thoroughly audiophile in nature. A full listing of all possible data and playlist formats is included in the Specification, which you will find in the Appendix to these instructions. Since virtually no read or data errors occur when electronic memory media are accessed, the potential reproduction quality is even higher than that of CD. The quality level may even exceed that of SACD and DVD-Audio.
Selecting the UPnP / DLNA source	Briefly tap the : button on the front panel of the MP 2000 R or the scruss button on the SRC1 remote control handset, repeatedly if necessary, until the source " UPnP / DLNA " is displayed on the screen.
Playback	 The music content to be played is selected with the help of Select lists. These lists are controlled using the navigation buttons (cursor buttons) on the remote control handset or by the SELECT knob on the machine's front panel. a) Use the/ buttons to select the desired entry (Server / Folder / Track) from the list. A brief press selects the previous / next entry within the list. The scrolling speed can be increased by holding the button pressed. The list entry you choose is now displayed in enlarged form. Press the or button to open or start the list entry shown in enlarged form. Pressing the button returns you to the previous folder level. b) Indicates the currently selected point within the opened list. () The exact form of the displayed list and the preparation of the content also depend to a large extent on the capabilities of the server, i.e. the full facilities of the MP 2000 R cannot be exploited with all servers or media. You may therefore find that in many cases not all the functions described in these instructions can be used.

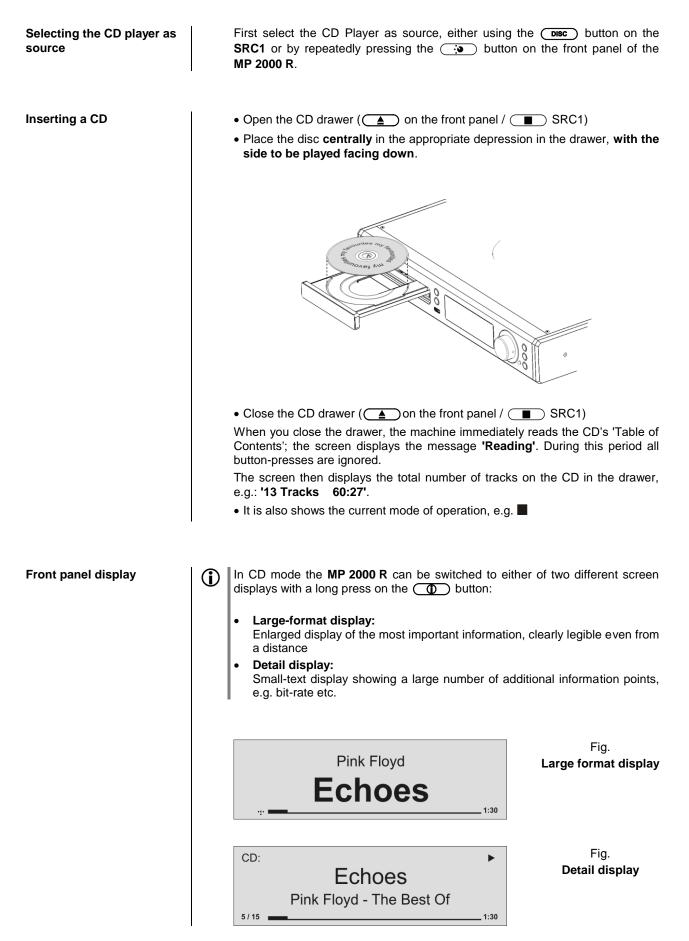


Playing USB memory media (USB Media source)

General information	 The MP 2000 R is capable of playing music files stored on USB memory media, and features two USB sockets for this purpose: USB IN on the machine's front panel, and SCL USB on the back panel. The memory medium can be formatted with any of the following file systems: FAT16, FAT32, NTFS, ext2, ext3 or ext4. It is also possible to power the USB memory medium via the USB socket, provided that the unit's current drain accords with the USB norm. Normed 2.5 inch USB hard discs can be connected to the socket directly, without requiring their own mains PSU.
Selecting USB Media as source	Briefly tap the <u>button</u> button on the front panel of the MP 2000 R or the <u>scr.russ</u> button on the SRC1 remote control handset, repeatedly if necessary, until the source USB MEDIA is displayed on the screen. All USB memory media connected to the machine are now displayed. If no USB memory medium is found, the screen displays the message " No USB media available ".
Playback	The music content to be played is selected with the help of Select lists. These lists are controlled using the navigation buttons (cursor buttons) on the remote control handset or by the SELECT knob on the machine's front panel.
Starting playback	Press the b button on the remote control handset or the machine's front panel to start playback.
Stopping playback	Pressing the Dutton halts playback.
Skipping tracks	A brief press on the (H) / (H) buttons during playback causes the device to jump to the next or previous piece of music within the current playlist.

Playback of directories		In addition to the facility to play back individual folder content, it is also possible to play back entire directories. This is accomplished by selecting the folder of the directory to be played, then pressing the button to start playback. Playback commences with the first entry in the list of content to be played. If an entry in the list should contain a folder with additional sub-folders, the content of the lowest folder is always played first. This is followed by the content of the next higher folder level, etc. (see diagram right).
Search function		When you are navigating through lists you can call up the MP 2000 R 's letter search function at any time by briefly pressing the blue v button. The screen now displays the message "Search". While this is on the screen, enter up to eight letters or numerals using the remote control handset; the letters assigned to the numeric buttons are printed below the buttons. To obtain a particular letter, press the appropriate button repeatedly until the correct letter appears on the screen. Before entering the next character you have to wait until the cursor is displayed again. Press the v button to erase any letter. After pressing the v button or after a brief delay with no further input the MP 2000 R moves to the first entry in the list which starts with the characters you entered.
		can abort the search using the <i>search</i> -button. The function searches only the current folder. Eventually existing subfolders are ignored.
Front panel display	1	 While playing USB memory media the MP 2000 R can be switched to either of two different screen displays with a long press on the button: Large-format display: Enlarged display of the most important information, clearly legible even from a distance Detail display: Small-text display showing a large number of additional information points, e.g. bit-rate etc.

Operating the CD player



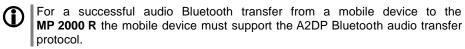
Playing a CD	 Press the rotary knob on the front panel or the → button SRC1 remote control handset to begin the playback process. Playback starts, and the screen shows the mode of operation (▶) and the number of the track currently being played: 'Track 1'. The CD stops after the final track, and the screen again displays the total number of CD tracks and the overall running time. 		
Variations	If you press the		
Track Select During playback	number of the track Releasing the butto is played. You can also enter	or button on the SRC1 repeatedly until the a you want to hear appears on the integral screen. In interrupts playback briefly, and after this the desired track or the number of the desired track directly using the numeric ote control handset.	
Playback mode	The CD player in	the MP 2000 R features various playback modes. During	
Panaat	playback the current playback mode is shown on the screen. Brief press:		
Repeat	Repeatedly pressing the <u>button</u> button causes the machine to cycle through different playback modes.		
	• •	The tracks of the CD or a <i>playback program</i> are continuously repeated in the preset sequence .	
	'Repeat Track'	The track of the CD or a <i>playback program</i> which has just been played is continuously repeated.	
	'Normal' / 'Program'	Normal playback of the whole disc, or normal program playback.	
Mix mode	Long press: Holding the S second long press) button pressed in switches the machine to Mix mode. A ends Mix mode.	
	'Mix' / 'Mix Program'	The tracks of the CD or of a <i>playback program</i> are played in a random sequence .	
	•	Repeat function can be called up with a brief press of the	
	'Repeat Mix' / 'Rpt Mix Program'	The tracks of the CD or of a <i>playback program</i> are continuously repeated in a random sequence .	
Fast Search	 Fast forward sear 	ch (hold the >> button pressed in)	
	 Fast reverse sear 	(hold the dutton pressed in)	
		pressed in for a long period increases the rate (speed) of search process the screen displays the current track running	

Playback Program

Explanation:		
A playback program consists of up to thirty tracks of a CD stored in any order you like. This can be useful, for example, when you are preparing a cassette recording. A playback program can only be created for the CD currently in the disc drawer of the MP 2000 R . The program remains stored until it is erased again, or until the CD drawer is opened.		
Operation:		
When you place the CD in the drawer, the screen displays the total number of tracks on the disc, e.g.: '13 Tracks 60:27' . For creating a playback program the disc must be stopped.		
Activating playback programming mode.		
Press the 🔘 button		
The screen displays the message 'Add Track 1 to Program' and '0 Tracks / 0:00 Program time'.		
 Repeatedly press the end or button briefly until the number of the desired track appears on the screen after 'Track'. 		
 Now store the track in the playback program by briefly pressing the button. 		
The screen shows the number of tracks and the total playing time of the play- back program. Select all the remaining tracks of the program in the same manner, and store them by briefly pressing the O button.		
It is also possible to enter the track directly using the numeric buttons, instead of using the Internet / Internet buttons. After you enter the number, press the store button briefly to store the track, as described above.		
If you store thirty tracks, the screen displays the message 'Program full'.		
The playback programming process is concluded when all the desired tracks have been stored.		
End the playback programming process.		
Hold the Obstraction button pressed in for about one second		
The playback program can now be played.		
Start the playback process.		
Playback starts with the first track of the playback program. The screen displays the message 'Program' while a playback program is playing.		
The (IMA) and (IMA) buttons select the previous or next track, but only within the playback program.		
Briefly pressing button in STOP mode opens the CD drawer, and thereby erases the playback program. A playback program can also be erased without opening the CD drawer:		
Erase the playback program.		
Hold the () button pressed in again for about one second The playback program is now erased.		

Operating the Bluetooth source

The **MP 2000 R**'s integral Bluetooth interface provides a means of transferring music wirelessly from devices such as smart-phones, tablet PCs, etc. to the **MP 2000 R**.



Selecting the Bluetooth Audio source	Briefly tap the button on the front panel of the MP 2000 R , repeatedly if necessary, or the button on the SRC1 remote control handset until the source BLUETOOTH is displayed on the screen.
Setting up audio transfer	Before music from a Bluetooth-capable device can be played through the MP 2000 R , the external device must first be registered to the MP 2000 R . As long as the MP 2000 R is switched on and no device is connected, it is always ready to receive. In this state the screen displays the message 'not connected'.
	This is the procedure for establishing a connection:
	• Start a search for Bluetooth equipment on your mobile device.
	• When it finds the MP 2000 R , make the connection to your mobile device.
	Once the connection is successfully established, the message on the MP 2000 R 's screen switches to 'connected to <i>YOUR DEVICE</i> .
	If your device requests a PIN code, this is always '0000'.
	The procedure for establishing a connection can only be made if the Bluetooth source is activated (see chapter "Basic settings of the MP 2000 R").
	Due to the large number of different equipment on the market, we are only able to provide a general description for setting up the radio connection. For detailed information please refer to the operating instructions supplied with your device.
Playback functions	Information on the piece of music currently being played is displayed on the screen of the MP 2000 R if this function is supported by the device connected to the unit.
	The behaviour and method of operating the connected mobile device are determined by the device itself. In general terms the function of the buttons of the MP 2000 R or the SRC1 remote control handset are as follows:
Start and pause playback	The IND / IND buttons on the remote control handset or the front panel are used to start and pause playback (PLAY / PAUSE function).
Stop playback	Pressing the I button halts playback.
Skipping tracks	A brief press on the (I) buttons during playback causes the device to jump to the next or previous piece of music within the current playlist.
	Please note that many AVRCP-capable mobile devices do not support the controlling through the MP 2000 R . In case of doubt, please ask the manufacturer of your mobile device.



(i)

Please note that many AVRCP-capable mobile devices do not support all the **MP 2000 R**'s control functions. In case of doubt, please ask the manufacturer of your mobile device.

The **MP 2000 R** can also be controlled from the mobile device (Start/Stop, Pause, Volume, etc.). To control the **MP 2000 R** the mobile device must

conform to the Bluetooth AVRCP protocol.

NOTES

The **MP 2000 R** has been tested with a large number of Bluetooth-capable mobile devices. However, we are unable to guarantee general compatibility with all devices available commercially since the range of equipment is so wide, and the various implementations of the Bluetooth standard differ widely in some cases. If you encounter a problem with Bluetooth transfer, please contact the manufacturer of the mobile device.

The maximum range of a Bluetooth audio transfer is normally about 3 to 5 metres, but the effective range may be affected by a number of factors. To achieve good range and interference-free reception there should be no obstacles or persons between the **MP 2000 R** and the mobile device.

Bluetooth audio transfers take place in what is known as the "everyman frequency band", in which many different radio transmitters operate - including WLAN, garage door openers, baby intercoms, weather stations, etc. Radio interference caused by these other services may cause brief dropouts or - in rare cases - even failure of the connection, and such problems cannot be excluded. If problems of this kind occur frequently in your environment, we recommend that you use the Streaming Client or the USB input of the **MP 2000 R** instead of Bluetooth.

By their nature, Bluetooth transmissions always involve data reduction, and the attainable sound quality varies according to the mobile device in use, and the format of the music to be played. As a basic rule the maximum quality of music which is already stored in a data-reduced format, such as MP3, AAC, WMA or OGG-Vorbis, is worse than with uncompressed formats such as WAV or FLAC. For the highest reproduction quality we always recommend the use of the Streaming Client or the USB input of the **MP 2000 R** instead of Bluetooth.



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The MP 2000 R as D/A Converter

General Information on D/A Converter Operation	The T-A MP 2000 R can be used as a high-quality D/A converter for other devices such as computers, streamer, digital radios etc. which are fitted with poor-quality converters or no converter at all. The MP 2000 R features two optical and two electrical S/P-DIF digital inputs on the back panel to allow this usage. A USB-DAC input on the back panel permits to use the MP 2000 R as D/A converter for computers.
0	You can connect devices with electrical co-axial or optical light-pipe output to the digital inputs of the MP 2000 R . At the optical inputs Digital In 3 and Digital In 4 the MP 2000 R accepts digital stereo signals conforming to the S/P-DIF norm, with sampling rates of 32 to 96 kHz. At the electrical co-axial inputs Digital In 1 and Digital In 2 the range of sampling rates is from 32 to 192 kHz.
	At the USB DAC IN input the MP 2000 R accepts digital PCM-encoded stereo signals with sampling rates of 44.1 to 384 kHz (32-bit) and DSD data with sampling rates of DSD64, DSD128 and DSD256.
	If you wish the MP 2000 R to convert audio files from a Windows PC connected to it, you must first install driver software on the computer (see the chapter entitled 'USB DAC operation in detail'). If you are using a computer running Mac OS X 10.6 or higher no drivers are necessary.
D/A Converter Operation	
Selecting a	Select the MP 2000 R as listening source on your amplifier.
D/A Converter Source	Choose the digital input to which you have already connected the source device which is to be played by pressing the source button $($ $)$ on the front panel or the DN button or the (CL/USB) button (for the USB DAC IN) on the SRC1 (repeatedly if necessary).
	As soon as the source device delivers digital music data, the MP 2000 R automatically adjusts itself to the format and sampling rate of the signal, and you will hear the music.

Screen Display

During D/A converter operations the **MP 2000 R** integral screen displays the characteristics of the digital input signal.

USB DAC operation in detail

System-requirements	1	 Intel Core i3 or higher or a comparable AMD Processor. 4 GB RAM USB 2.0 Interface Microsoft Windows 10, 8.1, 8, 7, Windows Vista oder Windows XP MAC OS X 10.6.+ * Linux operating systems (with 5 series kernel) * The playback from Linux operating systems on the MP 2000 R mkll is possible with serial number 3030 3305 11147 or higher. The serial number of your device can be found on the label on the back of the device or on the control certificate supplied with the device.
Installing drivers	1	If the device is to be operated in conjunction with one of the stated Windows operating systems, a dedicated driver must first be installed. With the driver installed, it is possible to play DSD streams up to DSD512 and PCM streams up to 384 kHz. The MP 2000 R can be operated on the listed MAC and Linux operating systems without installed drivers. With MAC operating systems the playback of DSD streams up to DSD128 and PCM streams up to 384 kHz is possible. With Linux operating systems the playback of DSD streams up to DSD512 and PCM streams up to 384 kHz is possible. Please check the serial number of your device before installing the Windows driver. Devices with serial number of your device before installing the Windows driver. Devices with serial number 3030 3305 11 147 and higher require a different driver version. The serial number of your device can be found on the label on the back of the device or on the control certificate supplied with the device. The required driver, together with detailed installation instructions including information on audio playback via USB, are available for downloading from our website at http://www.ta-hifi.com/support
Settings		A number of system settings have to be altered if you wish to operate MP 2000 R with your computer. These changes must be made regardless of the operating system. The installation instructions provide detailed information on how and where the settings are to be changed.
Notes on software	1	By default, the operating systems listed above do not support 'native' music playback. This means that the PC always converts the data stream to a fixed sample rate, regardless of the sample rate of the file to be played. Separate software is available - e.g. J. River Media Center or Foobar - which prevents the operating system converting the sample rate. The installation instructions included in the driver package contain further information on audio playback via USB.
Notes on operation	٦	 To prevent fail functions and system crashes of your computer and the playback program, please note the following: For Windows OS: Install the driver before you use the MP 2000 R for the first time. Use only drivers, streaming methods (e.g. WASAPI, Directsound) and playback software which are compatible to your operating system and between each other. Never connect or disconnect the USB connection while the system is running.
Notes on setting up	1	Do not set up the MP 2000 R on or immediately adjacent to the computer to which it is connected, otherwise the device could be affected by interference radiated by the computer.

Playback with ∩OO∩

 General information
 The MP 2000 R supports playback via Roon. Roon is a fee required software solution that manages and organizes your music stored on a server. Furthermore the streaming service TIDAL can be integrated.

 Playback
 The operation is exclusively done via the Roon-App. The MP 2000 R is recognized as a playback device (client) and can be selected for playback in the app. As soon as Roon is used for playback, "Roon" appears on the MP 2000 R display as source.

 Image: Comparison of the playback device (client) and can be found at: https://roonlabs.com

Installation, Using the system for the first time, Safety notes

This section describes all those matters which are of fundamental importance when setting up and first using the equipment. This information is not relevant in daily use, but you should nevertheless read and note it before using the equipment for the first time.

Back panel connections

Image: Construction of the construc			
ANALOG OUT	BALANCED	The symmetrical XLR output delivers analogue stereo signals with a fixed level. It can be connected to the CD-input (line input) of any stereo pre-amplifier, integrated amplifier or receiver.	
		If both types of connection are present on the connected amplifier, we recommend the symmetrical option to obtain the best possible sound quality.	
	UN- BALANCED	The unbalanced RCA output of the MP 2000 R delivers analogue stereo signals with a fixed level. It can be connected to the CD-input (line input) of any stereo pre-amplifier, integrated amplifier or receiver.	
FM ANT (aerial input for Radio)	FM and DAB	The MP 2000 R features a 75 Ω aerial input FM ANT , which is suitable both for a normal domestic aerial and a cable connection. For first-class reception quality a high-performance, professionally installed aerial system is indispensable.	
REMOTE		The socket for the aerial of the optional radio remote control module can be installed here. This is required for communication with the T+A FD 100 radio remote control handset, which is available as an optional accessory .	
DIGITAL O	UT	Digital co-axial output for connection to an external recorder with an co-axial cable.	
It is not always possi		It is not always possible to produce a digital version for all media, as in some cases the original contains copy protection measures which prevent this.	
DIGITAL IN		Inputs for digital source devices with optical or coaxial (RCA) outputs.	
At its optical digital inputs the MP 2000 R accepts digital DIF signals) with sampling rates from 32kHz up to 96 kHz.		At the coaxial digital inputs sampling rates in the range 32 to 192 kHz are	
USB DAC I	N	Socket for connecting a PC or MAC computer. At this input the MP 2000 R accepts digital PCM stereo signals with sampling rates in the range 44.1 to 384 kSps , and digital DSD stereo signals from DSD64 to DSD256*.	
		* DSD256 only with a Windows PC.	
		If you wish the MP 2000 R to convert audio files from a Windows PC connected to it, you must first install the appropriate drivers on the computer. No drivers are required if you are using a Linux or MAC computer (see the chapter 'USB DAC operation in detail').	

LAN	Socket for connection to a wired LAN (Ethernet) home network. If a LAN cable is connected this will have priority over wireless WLAN networks. The WLAN module of the MP 2000 R will automatically be disabled.		
WLAN	Input socket for WLAN antenna * The aerial can also be set up free-standing using the magnetic base supplied in the set; this ensures maximum possible range.		
1	Automatic Activation of the WLAN Module After powering on the MP 2000 R detects if it is connected to a wired LAN Network. If no wired LAN connection is found, the MP 2000 R will automatically activate its WLAN module and it will try to get access to your WLAN network.		
SCL USB	Socket for a USB memory stick or external hard discs Files from a medium connected to this socket are reproduced via the source USB MEDIA . The storage medium can be formatted with the FAT16, FAT32, NTFS, ext2, ext3 or ext4 file system. The USB storage medium can be powered directly via the USB port provided that its current drain is in accordance with the USB norm. Normalised 2.5" USB hard discs can be connected directly, i.e. without a separate mains PSU.		
R2LINK	Control input / output for T+A R2 LINK – systems: Both sockets are equivalent – one is used as input, the other one serves as output towards other R2 LINK devices.		
Mains in	The mains cable is plugged into this socket. For correct connections refer to the sections 'Installation and wiring' and 'Safety notes' .		

Installation and wiring

Carefully unpack the unit and store the original packing material carefully. The carton and packing are specially designed for this unit and will be needed again if you wish to move the equipment at any time.

If you have to transport the device, it must always be carried or sent in its original packaging in order to prevent damage and defects.

If the unit gets very cold (e. g. when being transported), condensation may form inside it. Please do not switch it on until it has had plenty of time to warm up to room temperature, so that any condensation evaporates completely.

If the device has been in storage, or has not been used for a protracted period (> two years), it is essential to have it checked by a specialist technician before re-use.

Before placing the unit on sensitive laquer or wood surfaces please check the compatibility of the surface and the unit's feet on a non visible point and if necessary use an underlay. We recommend a surface of stone, glass, metal or the like.

The unit should be placed on a rigid, level base (See also chapter "**Safety notes**"). When placing the unit on resonance absorbers or anti-resonant components make sure that the stability of the unit is not reduced.

The unit should be set up in a well ventilated dry site, out of direct sunlight and away from radiators.

The unit must not be located close to heat-producing objects or devices, or anything which is heat-sensitive or highly flammable.

Mains and loudspeaker cables, and also remote control leads must be kept as far away as possible from signal leads and antenna cables. Never run them over or under the unit.



Notes on connections:

A complete connection diagram is shown in 'Appendix A'.

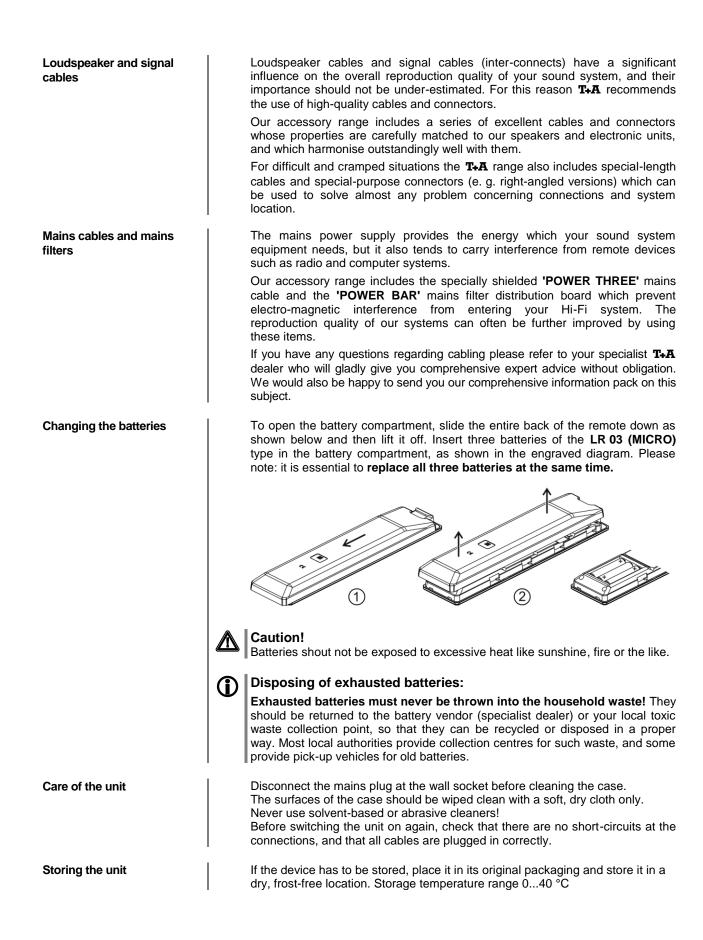
- Be sure to push all plugs firmly into their sockets. Loose connections can cause hum and other unwanted noises.
- When you connect the output sockets of the **MP 2000 R** to the input sockets of the amplifier, always connect like to like, i. e. **'R'** to **'R'** and **'L'** to **'L'**. If you fail to heed this then the stereo channels will be reversed.
- The device is intended to be connected to mains outlet with protective earth connector. Please connect it only with the mains cable supplied to a properly installed mains outlet with protective earth connector.
- To achieve maximum possible interference rejection the mains plug should be connected to the mains socket in such a way that phase is connected to the mains socket contact marked with a dot (●). The phase of the mains socket can be determined using a special meter. If you are not sure about this, please ask your specialist dealer.

We recommend the use of the **T+A 'POWER THREE'** ready-to-use mains lead in conjunction with the **'POWER BAR'** mains distribution panel, which is fitted with a phase indicator as standard.

When you have completed the wiring of the system please set the volume control to a very low level before switching the system on.

The screen on the $MP\ 2000\ R$ should now light up, and the unit should respond to the controls.

If you encounter problems when setting up and using the amplifier for the first time please remember that the cause is often simple, and equally simple to eliminate. Please refer to the section of these instructions entitled **'Trouble shooting'**.



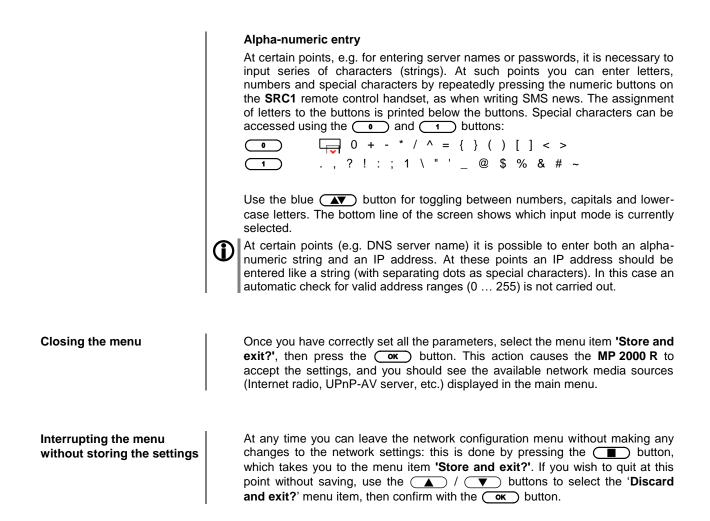
Safety notes

	For your own safety please consider it essential to read these operating instructions right through, and observe in particular the notes regarding setting up, operation and safety.
Installation	 Please consider the weight of the device. Never place the device on an unstable surface; the machine could fall off, causing serious or even fatal injury. Many injuries, especially to children, can be avoided if the following simple safety precautions are observed: Use only such items of furniture which can safely bear the weight of the device. Ensure that the device does not project beyond the edges of the supporting furniture. Do not place the device on tall furniture (e.g. bookshelves) without securely anchoring both items, i.e. furniture and device. Explain to children the hazards involved in climbing on furniture to reach the device or its controls.
	When installing the unit on a shelf or in a cupboard it is essential to provide an adequate flow of cooling air, to ensure that the heat produced by the unit is dissipated effectively. Any heat build-up will shorten the life of the unit and could be a source of danger. Be sure to leave free space of 10 cm around the unit for ventilation. If the system components are to be stacked then the amplifier must be the top unit. Do not place any object on the top cover.
	The unit must be set up in such a way that none of the connections can be touched directly (especially by children). Be sure to observe the notes and information in the section 'Installation and Wiring' .
Connection	The terminals (marked with the A-symbol) can carry high voltages. Always avoid touching terminals and sockets and the conductors of cables connected to them. Unless ready-made cables are used, all cables connected to these terminals and sockets must always be deployed by a trained person.
Power supply	The device is intended to be connected to mains outlet with protective earth connector. Please connect it only with the mains cable supplied to a properly installed mains outlet with protective earth connector. The power supply required for this unit is printed on the mains supply socket. The unit must never be connected to a power supply which does not meet these specifications. If the unit is not to be used for a long period disconnect it from the mains supply at the wall socket.
Mains leads / Mains plug	Mains leads must be deployed in such a way that there is no danger of damage to them (e. g. through persons treading on them or from furniture). Take particular care with plugs, distribution panels and connections at the device. Unplugging the mains plug will disconnect the device from the mains for service and repair. Please make sure that the mains plug is easily accessible.
Enclosure openings	Liquid or particles must never be allowed to get inside the unit through the ventilation slots. Mains voltage is present inside the unit, and any electric shock could cause serious injury or death. Never exert undue force on mains connectors. Protect the unit from drips and splashes of water; never place flower vases or fluid containers on the unit. Do not place naked flame sources, such as candle lights on the device.
Supervision of device operation	Like any other electrical appliance this device should never be used without proper supervision. Take care to keep the unit out of the reach of small children.
Service, Damage	The case should only be opened by a qualified specialist technician. Repairs and fuse replacements should be entrusted to an authorised T+A specialist workshop. With the exception of the connections and measures described in these instructions, no work of any kind may be carried out on the device by unqualified persons. If the unit is damaged, or if you suspect that it is not functioning correctly, immediately disconnect the mains plug at the wall socket, and ask an authorised T+A specialist workshop to check it.

Over voltage	The unit may be damaged by excess voltage in the power supply, the mains circuit or in aerial systems, as may occur during thunderstorms (lightning strikes) or due to static discharges. Special power supply units and excess voltage protectors such as the T-A 'Power Bar' mains distribution panel offer some degree of protection from damage to equipment due to the hazards described above. However, if you require absolute security from damage due to excess voltage, the only solution is to disconnect the unit from the mains power supply and any aerial systems. To avoid the risk of damage by overvoltages we recommend to disconnect all cables from this device and your HiFi system during thunderstorms. All mains power supply and aerial systems to which the unit is connected must meet all applicable safety regulations and must be installed by an approved electrical installer.
Approved usage	The device is designed to operate in a temperate climate and altitudes up to
	2000 m above sea level. The range of permissible operating temperatures is +10 +35°C. This device is designed exclusively for reproducing sound and/or pictures in the domestic environment. It is to be used in a dry indoor room which meets all the recommendations stated in these instructions. Where the equipment is to be used for other purposes, especially in the medical field or any field in which safety is an issue, it is essential to establish the unit's suitability for this purpose with the manufacturer, and to obtain prior written approval for this usage.
Approval and conformity with EC directives	In its original condition the unit meets all currently valid European regulations. It is approved for use as stipulated within the EC. By attaching the CE symbol to the unit T+A declares its conformity the EC directives and the national laws based on those directives. The declaration of conformity can be downloaded from www.ta-hifi.com/DoC . The original, unaltered factory serial number must be present on the outside of the unit and must be clearly legible! The serial number is a constituent part of our conformity declaration and therefore of the approval for operation of the device. The serial numbers on the unit and in the original T-A documentation supplied with it (in particular the inspection and guarantee certificates), must not be removed or modified, and must correspond. Infringing any of these conditions invalidates T-A conformity and approval, and the unit may not be operated within the EC. Improper use of the equipment makes the user liable to penalty under current EC and national laws. Any modifications or repairs to the unit, or any other intervention by a workshop or other third party not authorised by T-A , invalidates the approval and operational permit for the equipment. Only genuine T-A accessories may be connected to the unit, or such auxiliary devices which are themselves approved and fulfil all currently valid legal requirements. When used in conjunction with auxiliary devices or as part of a system this unit may only be used for the purposes stated in the section 'Approved usage' .
Disposing of this product	The only permissible method of disposing of this product is to take it to your local collection centre for electrical waste.
FCC Information to the user	Class B digital device – instructions:
Tested To Comply With FCC Standards FOR HOME OR OFFICE USE (for use in the United States of America only)	 Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment into an outlet on a circuit different form that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.

Network Configuration

General Information	The MP 2000 R can be operated in wired LAN networks (<i>Ethernet LAN</i> or <i>Powerline LAN</i>) or in wireless networks (<i>WLAN</i>).		
	If you wish to use your MP 2000 R in your home network, you must first enter the necessary network settings on the MP 2000 R . This includes entering the network parameters such as the IP address etc. both for wired and wireless operation. If you wish to use a wireless connection, a number of additional settings for the WLAN network also have to be entered.		
	Please refer to the Chapter 'Glossary / Additional Information' and 'Network Terms' for additional explanations of terminology relating to network technology.		
	In the following sections we assume that a working home network (cable network of WLAN network) with router and (DSL) Internet access is present. If you are unclear about some aspect of installing, setting up and configuring your network, please address your queries to your network administrator or a network specialist.		
Compatible hardware and UPnP servers	The marketplace offers a vast number of routers, NAS devices and USB hard discs made by a very wide range of manufacturers. T+A equipment is generally compatible with other makes of machine which bear the UPnP label.		
Network settings menu	All network settings are entered in the Network Configuration menu. This menu will vary slightly in appearance depending on the type of your network, i.e. whether you have a wired (LAN) or wireless (WLAN) network.		
	If in the Network Configuration Menu the entry 'Network IF Mode' is set to 'auto', the MP 2000 R will check automatically if a LAN connection to a network is present. If a LAN connection is found, the machine will assume that this is to be used, and displays the network configuration menu for LAN networks. If no LAN network is connected, the MP 2000 R activates its WLAN module and displays the WLAN configuration menu when you call up the configuration menu. The menu for a WLAN network includes a number of additional menu points. The following sections explain how to use the menu, and the meaning of the individual menu points.		
Opening the network settings menu	Open the System Configuration menu by pressing the sys button on the remote control handset or the MENU button on the front panel of the MP 2000 R . Use the () () () buttons to select the "Network " menu item, then confirm by pressing the () () button.		
Operating the nenu, changing and storing IP addresses	Use the A / V buttons in the menu to select the network parameter to be changed, and activate the entry with the v button. You can now change the setting using the following buttons, depending on the type of setting:		
	Image: Numeric button Numeric buttons Image: button button button button buttons for simple selection (ON / OFF) for entering IP addresses for entering text Alpha-numeric input When the setting process is complete, or when you have entered the complete for when you have entered the complete		
	address, press the or button to confirm your action.		



The Configuration for a Wired Ethernet LAN or Power-Line LAN connection

Setting the Parameters for a Wired Network	 Connect the MP 2000 R to an operational network or Power-Line modem using the LAN socket on the back panel. Switch the MP 2000 R on, Open the System Configuration menu by pressing the sve button on the remote control handset or the MENU button on the front panel of the MP 2000 R. Use the A / V buttons to select the menu point "Network", then confirm your choice with the or button. You should now see the menu reproduced below, displaying the network parameters. In the title line the message 'LAN' should appear, indicating that the machine is connected to a wired LAN. If you see 'WLAN' at this point instead, please check your network connection, and ensure that the network is switched on and operational. You can now select the individual menu points and adjust them to match your network conditions. The illustration below shows the possible button inputs after each menu item. 		
	Possible entries		
	Network settings menu		
	MAC 00:0e:9b:cc:a4:35 none Connection state LAN none DHCP Off ✓ / ► IP 192.168.0.10 (0 9) Subnet mask 255.255.255.0 (0 9) Gateway 192.168.0.1 (0 9) DNS 192.168.0.1 (0 9) Store and exit? apply ∞ Discard and exit? apply ∞		
	 Switching ON / OFF Numeric input, separating dots are automatically generated; input limited to valid addresses (09, AZ): Alpha-numeric input and special characters. IP - separating dots must be entered as special characters. The parameters illustrated above are only typical values. Addresses and settings may require different values for your network. 		
Menu Point	Description		
MAC	The MAC address is a hardware address which uniquely identifies your machine. The address displayed is determined by the manufacturer, and cannot be altered.		
Connection state	Shows the connection state: WLAN, LAN or not connected.		
DHCP	ON If your network includes a DHCP server, please select the ON setting at this point. In this mode an IP address is automatically assigned to the MP 2000 R by the router. The screen shows only the MAC address and the message DHCP state ON. In this case the address input fields shown in the illustration do not appear in the menu.		
	OFF If your network does not include a DHCP server, please select the OFF setting. In this mode you must configure the following network settings manually. Please ask your network administrator for the addresses to be entered for your network.		
IP	IP address of the MP 2000 R		
Subnet mask	Network mask		
Gateway	IP address of the router		
DNS	Name / IP of the name server (optional)		
Store and exit?	Stores the network parameters, and restarts the MP 2000 R with the new settings.		
Discard and exit?	Closes the menu: data already entered is discarded.		

The Configuration for a WLAN connection

Setting the parameters for a wireless network	Check that there is no cable connected to the LAN socket of the MP 2000 R.		
	 Switch the MP 2000 R on, open the System Corthe system the system Corthe the system control handset front panel of the MP 2000 R. Use the / buttons to select the confirm your choice with the system button. The following menu now opens: 	or the MENU button on the	
	Network settings menuMAC00:0e:9b:cc:a4:35Connection statenot connectedInterfaceWLAN→WPS AutoconnectapplyScan for WLANapplyWLAN Access PointapplyDHCPOffIP192.168.0.10Subnet mask255.255.255.0Gateway192.168.0.1DNS192.168.0.1Store and exit?applyDiscard and exit?apply	none none	

Selecting and connecting a WLAN by hand

Searching for and Selecting the Network	 First select the menu point "Scan for WLANS", and activate it by pressing the or button. A list of the WLANs found is displayed on the screen. Use the
Entering the Password (for encoded networks)	If the network is encoded, the window shown below will appear once the WLAN is selected. • At this point please enter the network passphrase and confirm your input by pressing OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • OK. • Select the "Store and exit?" point, and confirm your choice with OK. • Select the "Store and exit?" point, and confirm your choice with OK. • OK. • Select the "Store and exit?"
Storing Network Settings and Restarting	Finally select the " Store and exit ?" menu point and press the or button to accept the settings. If a WEP code is used, the password must be entered as a hexadecimal code (0 - 9, A - F).

Connecting to WLAN via the WPS-function

WPS-function	The MP 2000 R supports WPS for WLAN setup. WPS (Wi-Fi Protected Setup) an easy process for establishing a secure WLAN connection. WPS can be used to connect the MP 2000 R with your router in a quick and convenient way. For that usage most modern routers have implemented the WPS function.
Connecting WLAN automatically via the WPS function	 First activate the WPS-function of the Router or Repeater to which you wish the MP 2000 R to be connected. For details please refer the manual of the device in question. Start the WPS-Autoconnect function of the MP 2000 R within 2 minutes. Use the A / buttons to select the menu point "WPS-Autoconnect", then confirm your choice with the button. After the connection is established, the line "Status" shows the connected WLAN network. Finally select the "Store and exit?" menu point and press the K
Selecting the WLAN manually and conneting via WPS	 If the WPS function connects the MP 2000 R to the wrong WLAN, the preferred WLAN can be also selected manually and only the authentication can be done by the WPS function. The procedure is described in the following: First activate the WPS-function of the Router or Repeater to which you wish the MP 2000 R to be connected. For details please refer the manual of the device in question. First select the menu point "Scan for WLANs", and activate it by pressing the button. A list of the WLANs found is displayed on the screen. Use the / buttons to select the WLAN to which you wish the MP 2000 R to be connected, and confirm your choice with the or button The window shown below will appear once the WLAN is selected: Network settings menu SSID:

WLAN setup via access point

The **MP 2000 R** supports setting up the WLAN connection via an access point. This means that the **MP 2000 R** provides its own WLAN for the duration of the configuration of the WLAN settings. As soon as the configuration is complete, this WLAN is deactivated again. The **MP 2000 R** restarts and connects to the WLAN configured via the app.

- Turn on the MP 2000 R and open the system configuration menu by pressing the sys button on the remote control or the sys button on the front of the MP 2000 R.
- Use the ▲ / ▼ buttons to select the menu point "Network", then confirm your choice with the oκ button.
- Use the ▲ / ▼ buttons to select the menu point "Access
 Point", then confirm your choice with the or button.
- The MP 2000 R activates the WLAN access point..
- The following steps must be performed within approximately 5 minutes. After this time, the **MP 2000 R** will exit Access point mode automatically.
- Connect the smartphone or Tablet PC on which the **T+A**-App is installed to the WLAN access point. The network name (SSID) is "**T+A AP MP 2000 R** " and the passphrase is "01234567".
- Start the **T+A** -App for operation.
- The app recognizes the access point and starts automatically with the setup wizard.
- To set up the WLAN, go through the individual steps of the app's setup wizard.
- Quit the app, then connect your phone or tablet to your previously set up wireless LAN.
- After restarting the app the MP 2000 R will be detected automatically.
- Once the MP 2000 R is detected, it can be selected for playback.

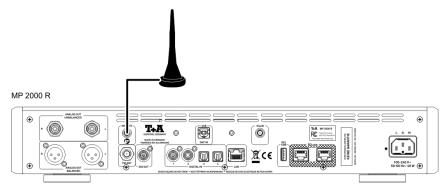
FD 100 Radio Remote Control (optional)

The **MP 2000 R** can be controlled remotely using the **FD 100** bi-directional radio remote control handset if a Gateway module is installed; this is available as an optional extra. The **FD 100** features an integral full-colour screen which provides a convenient means of controlling virtually all the MP 2000 R's functions, even when there is no direct line-of-sight contact with it. The handset can also display information relating to the selected source or the medium currently playing.

Connecting the radio aerial

MP 2000 R. This is connected the socket on the **MP 2000 R** marked 'Remote'. The aerial should be free-standing in order to obtain maximum effective range.

Since the FD 100 operates by a radio link, an aerial must be connected to the



Pairing the FD 100

Before the **MP 2000 R** can be controlled using the FD 100, the remote control handset must first be registered to the **MP 2000 R**. This process is known as pairing, and only has to be carried out once. The procedure is as follows:

- Press the MENU button on the MP 2000 R to call up the Configuration menu.
- Rotate the SELECT knob on the front panel to select the "FD 100 pairing" menu item, and confirm your selection by pressing the SELECT knob.
- To confirm the pairing process of the FD 100, press the SELECT knob until the menu entry changes to 'waiting for FD 100'. (the function remains active for thirty seconds).
- Locate the MENU button on the FD 100 and hold it pressed in to open the FD 100's System Settings menu.
- Now select the 'Start pairing' point, and press the OK button: the remote control handset automatically seeks the MP 2000 R.
- Once the device is found, you will see in the display header the onscreen message 'Pairing successful'. At the same time changes the menu entry of the **MP 2000 R** to 'Done'. If you wish, you can change the name of the device at this point (eg. 'Living room' if more than one device is available).
- Confirm the name with the OK button.
- For faster access the **MP 2000 R** can also be assigned to a Hotkey; this is the next step (see **FD 100** operating instructions).
- Select one or optionally none of the 'F' buttons, and confirm your choice by pressing the <u>οκ</u> button.
- The FD 100 is now paired with the MP 2000 R, and is ready for use.



For detailed information on using the **FD 100** please refer to the operating instructions supplied with the remote control handset.

Firmware update

General information	For updating the firmware of the MP 2000 R there is a convenient method which requires an existing Internet connection If you are operating the MP 2000 R in conjunction with a PA 2x00 R , the machine can also be updated via the R2Link connection.
	The wiring diagram for the machine is shown in 'Appendix A' .
	The following section describes the exact method of updating the firmware in detail.
Updating via the Internet	Updating the firmware via the MP 2000 R's Internet connection
	• The basic requirement is a functioning network with router and access to a broadband Internet connection; the system must be operating.
	Switch the machine on.
	• Call up the System menu by pressing the MENU button on the front panel.
	• Rotate the SELECT knob on the front panel to select the " Device info " menu point, and confirm your selection by pressing the SELECT knob.
	• If the MP 2000 R is connected to a PA 2x00 R via the R2Link connection, the Select Device menu appears at this point. In this case select the device to be updated by turning the SELECT knob, then press the SELECT knob to confirm your choice.
	(If the MP 2000 R is not connected to a PA 2x00 R , the Software Update menu of the MP 2000 R appears directly.)
	• Select the " Update " menu point by rotating the SELECT knob, then press the SELECT knob to confirm your choice.
	• The Select option " WEB " should now be active (highlighted).
	• The firmware update can now be started by pressing the SELECT knob.
	The screen displays the current state of progress of the update.
	 Once the update has been completed (duration around ten minutes) the device automatically switches itself off and restarts.
	When the machine has restarted, the update is complete.
	• To ensure that the update was successful, access the "Device Info" menu point mentioned above, and check the new firmware status.
	It is also possible to carry out the update process using the SRC1 remote control handset, as an alternative to operating the machine directly. The method of operating the menu using the handset is described in the chapter entitled "Basic settings of the MP 2000 R" (Using the remote control handset).
	As an option the update can be completed via a LAN or WLAN connection. Detailed information on setting up Internet access can be found in the chapter on page 42 entitled " <u>Network configuration</u> ".
	It is also possible to carry out the update process using the SRC1 remote control handset, as an alternative to operating the machine directly. The method of operating the menu using the handset is described in the chapter entitled "Basic settings of the MP 2000 R" (Using the remote control handset).

Legal Information

General	This product contains software in form of object code that is partially based on free software under different licenses. Details of the licenses used can be viewed on the device website using an Internet browser.
Show licenses	To access the device website, enter the IP address of the device and"/licensens/" in the address line of the browser you are using. For example http://192.168.178.100/licenses/ You can display the exact address as follows: • Call up the system configuration menu by pressing the sys button.
	 Then navigate to the "Device Info" menu item. Open it by pressing the OK -button. Navigate to the menu item "Legal information" and open it with the OK -button. The pop-up window that now opens shows the address of your device.
	 The address is only displayed in the pop-up window if the device has a correctly configured network connection. For details on network configuration, see the "Network Configuration" section. To view the web page of the T+A device, the device on which the Internet browser is started must be connected to the same network as the T+A device.

-) → C' û (i) 19	2.168.13.93/licenses/				•••	0	쇼	liil\	
ndex of /licenses/									
Name	Last Modified	Size	Туре						
Parent Directory/		100	Directory						
acl/	2018-Jul-13 12:44:45	1	Directory						
alsa-lib/	2018-Jul-13 12:38:35	-	Directory						
alsa-state/	2018-Jul-13 12:34:12	-	Directory						
alsa-utils/	2018-Jul-13 13:00:11		Directory						
attr/	2018-Jul-13 12:42:36	121	Directory						
base-files/	2018-Jul-13 12:11:58	-	Directory						
base-files-main/	2018-Jul-13 13:09:25	-	Directory						
base-passwd/	2018-Jul-13 12:41:05	-	Directory						
bash/	2018-Jul-13 12:48:37	1221	Directory						
bcm2835-bootfiles-config-main/	2018-Jul-13 13:21:29	-	Directory						
bzip2/	2018-Jul-13 12:37:23	-	Directory						
ca-certificates/	2018-Jul-13 12:12:30	100	Directory						
cairo/	2018-Jul-13 12:46:46	3 <u>0</u> 2	Directory						
connman/	2018-Jul-13 13:09:18	-	Directory						
coreutils/	2018-Jul-13 13:09:33		Directory						
curl/	2018-Jul-13 12:47:26	-	Directory						
curlpp/	2018-Jul-13 12:58:56	-	Directory						
dbus/	2018-Jul-13 12:44:28	-	Directory	R.					
dbusdl/	2018-Jul-13 13:09:12	-	Directory	.0					
depd/	2018-Jul-13 13:01:59	-	Directory						
dcpspi/	2018-Jul-13 13:02:17		Directory						
diffutils/	2018-Jul-13 13:09:09	1.00	Directory						
distro-feed-configs/	2018-Jul-13 13:09:27	-	Directory						
dleyna-linux/	2018-Jul-13 13:05:32	-	Directory						
dosfstools/	2018-Jul-13 13:03:33	123	Directory						
drcpd/	2018-Jul-13 13:09:16	1.77	Directory						
dropbear/	2018-Jul-13 13:03:30	-	Directory						
e2fsprogs/	2018-Jul-13 12:45:59	-	Directory						
ethtool/	2018-Jul-13 13:09:18	100	Directory						
expat/	2018-Jul-13 12:34:51	100	Directory						
faad2/	2018-Jul-13 12:56:28	-	Directory						
fftw/	2018-Jul-13 12:54:26	-	Directory						
findutils/	2018-Jul-13 13:09:20	-	Directory						
flac/	2018-Jul-13 12:45:55	-	Directory						
IIAC/									

Oversampling

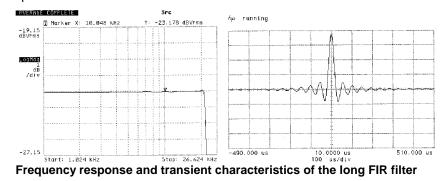
Technical description Digital filters / Oversampling

The audio data on for example CDs is stored at a sampling rate of 44.1 - i.e. for each second of music 44.100 sampled values are available for each channel. In the MP 2000 R the audio data read from the CD is "multiplied" to a higher sampling rate (352,8 kHz) before it is converted back into analogueue music signals. This process delivers a very much better, more finely graduated signal to the converter, which can then be converted with correspondingly higher precision. The raised sampling rate is a calculating process for which there are many different mathematical methods. In almost all digital audio devices which exploit the advantages of increased digital sampling rate a process known as a FIR filter is employed for this purpose. At T+A we have been carrying out research for more than ten years, aimed at improving the oversampling process, because the standard FIR method has one drawback to set against its indisputable advantages: it adds small pre- and post-echoes to the music signals. At **T+A** we have developed mathematical processes (known as Bezier polynomial interpolators) which do not share this disadvantage. For this reason they should sound better and more natural than the usual standard process. Since the calculating procedure employed by us is considerably more complex than the standard method, the MP 2000 R features a highperformance digital signal processor (DSP) which carries out the over-sampling process with immense precision (56 bit) using special algorithms developed by T+A.

The freely programmable DSP which we use is capable of carrying out the oversampling process using any method of calculation. For this reason we have implemented a slightly modified Bezier process (filter 3) in the **MP 2000 R** in addition to the pure Bezier process (filter 4), together with two variants of the standard process (filter 1 and filter 2). For more information on the different processes please refer to the next section. You can switch between the various algorithms, then decide for yourself which of the filters gives the results you prefer.

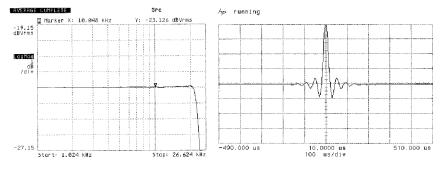
Oversampling 1 (Standard FIR Filter)

The long FIR filter is the standard oversampling process in digital technology, offering extremely linear frequency response, very high damping, linear phase characteristics and constant group delays. The disadvantage is the pre- and post-echoes which are added to the signal. These "time range errors" tend to affect the music signal's dynamics, precision and naturalness, and reduce spatial orientation.



Oversampling 2 (Impulse optimised filter)

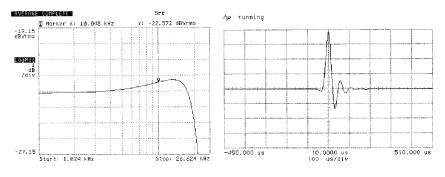
Shortening the filter (lower coefficient) reduces the time range errors, albeit combined with a slight loss of linearity in the frequency range and damping performance.



Frequency response and transient characteristics of the short FIR filter

Oversampling 3 (Bezier-interpolator plus IIR-filter)

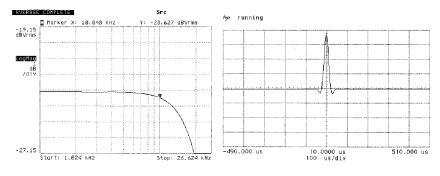
In this process an ideal Bezier interpolator is combined with what is known as an IIR filter. This eliminates the problematic pre-echo of the FIR method. This process produces highly "analogueue" system characteristics, with a sound quality and measured performance similar to those of good analogueue record players.



Frequency response and transient characteristics of the Bezier interpolator plus IIR filter

Oversampling 4 (pure **Bezier** interpolator)

This process delivers a perfect reconstruction of the original music signal. It exhibits no pre- or post-echoes of any kind, and does not add coloration or timing errors to the original signal. In sonic terms this method offers an impressive blend of naturalness, good dynamics and accuracy.



Frequency response and transient characteristics of the Bezier interpolator

Network Terminology

General information	The Switch ensures that the individual components within a network are connected correctly. This is only possible if it can identify each device within the network unambiguously; this is the reason why every component is assigned a form of "house number" (IP address). The IP address consists of four number blocks each containing three digits separated by dots (e.g. 192.168.1.1).
	Each of the individual number blocks may contain values between 1 and 254 (the values 0 and 255 are reserved for certain special functions, and should therefore not be used). However, if the network is to operate reliably, the network owner should only select addresses designed for home network use - i.e.: the first two number blocks should always be 192.168.xxx.xxx; the third block can be selected without restriction within the above limits (but should be the same for all devices on the network), and the fourth block must distinguish each device uniquely (e.g.: MP 2000 R 192.168.001.001, NAS: 192.186.001.002, PC: 192.168.001.003,).
	If this local network is to include Internet music sources (Internet radio) as well as physical devices, then the T+A MP 2000 R must have access to the Internet. This facility is provided by a device such as a router with connection to the DSL network. This router is also a constituent part of the network, and is assigned its own IP address. The T+A MP 2000 R must also be informed of the address of the router (Gateway) to enable it to gain access to the outside world.
Û	Please ensure that the first three blocks of the Device IP, Gateway IP and DNS 1 share the same address space (e.g. 192.168.0.xxx). The fourth block assigns a unique address (house number) to the components in the local network. This number must not be present more than once in the local network. The Device IP mask should always be assigned the address 255.255.255.0.
DNS	The Domain Name System (DNS) is one of the most important services on the Internet. Its primary task is to convert "Internet addresses", such as www.taelektroakustik.de, into the associated IP address. In most home networks the router carries out the DNS function. If you decide to configure your network manually (without DHCP), then simply enter the address of your router as the DNS address when configuring the network.
Ethernet-LAN	Wired network. Interference-free network technology, with the drawback of having to deploy a network cable.
Gateway	The computer or router in your network which is responsible for managing data traffic between your home network and the outside world (i.e. the Internet).
Client	Network device which obtains data from the network, decodes it and converts it into, for example, analogueue music signals which can then be reproduced via an amplifier and loudspeakers. Streaming Clients also contain functions for displaying media content, and for navigating on the Internet or servers.
DHCP	DHCP is an abbreviation of D ynamic H ost C onfiguration P rotocol. The primary purpose of DHCP is to enable Clients to obtain your network configuration automatically from a server or router.
IP-Adress	Network address. Each device in the network requires an IP address at which it can be accessed, and by which it is unambiguously identifiable. No individual network address may be present more than once. This is important if you are entering network addresses manually. If the addresses in your network are assigned by DHCP, you do not need to worry about IP addresses at all, as the DHCP server manages the addresses automatically without your intervention.

NAS (Network Attached Storage)	Network storage facility. This is generally a very large-capacity (> 200 GB) storage device to which other devices have access. If the NAS server includes a UPnP-AV server service, then the MP 2000 R has access to media files stored on the NAS, and can play them back.
Powerline-LAN	In a Power-Line LAN data is transferred via the existing mains power cabling. Devices known as "Power-Line modems" are required at the transmitting and receiving end. In most cases Power-Line offers relatively problem-free data transfer with adequate data rates for audio streaming. We recommend Power-Line modems with bit rates of 85 or 200 Mbit/s.
Proxy server	A Proxy or Proxy server is a computer in the network which is capable of carrying out data transfers faster and more efficiently, and can increase security through the use of access control mechanisms. Most home networks do not include a proxy server. In this case there is no need to enter a Proxy address when configuring the MP 2000 R network.
Router	Central network device which creates and manages the connections between the network devices. In most networks the router also assumes the function of Gateway to the outside world.
Server	Network device which provides data and services for other devices in the network. For example, a UPnP-AV server typically stores audio / video data, and makes it available to other devices (the Streaming Clients). Many UPnP-AV servers also offer functions such as cataloguing, and easy identification of media content using criteria such as artiste, album name, genre, etc.
UPnP-AV	Network protocol that makes media files available on the home network.
	On PCs and NAS storage devices a UPnP-AV server software must be installed to enable the MP 2000 R to access media files stored on these devices.
	Examples for UPnP-AV server software compatible with the MP 2000 R :
	<u>Windows</u> :
	Twonky Media Server http://www.twonkyvision.de/
	Windows Media Player 11 http://www.microsoft.com/windows/windowsmedia/de/default.aspx
	Linux: • Mediatomb http://mediatomb.cc/
	 GmediaServer http://www.gnu.org/software/gmediaserver/
WLAN (also W-LAN, Wireless LAN)	Radio network. The network is connected by means of radio waves operating in the 2.4 GHz frequency band. Radio networks are easy to install as no cables have to be deployed, but they are often problematic and unreliable - especially when the transmission distances are substantial. Power-Line networks, which can also be installed without separate cabling, are a better choice in many situations. In every case the deployment of a network cable is the most reliable and problem-free technology for data transfer.
Compatible hardware and UPnP servers	The marketplace offers a vast number of routers, NAS devices and USB hard discs made by a very wide range of manufacturers. T+A equipment is generally compatible with other makes of machine which bear the UPnP label. A list of devices which T+A has checked for compatibility can be found on the Internet at: <i>http://www.ta-hifi.de/fileadmin/software/e-serie/MP_HW_KOMP.pdf</i>

Trouble shooting

Many problems have a simple cause and a correspondingly simple solution. The following section describes a few difficulties you may encounter, and the measures you need to take to cure them. If you find it impossible to solve a problem with the help of these notes please disconnect the unit from the mains and ask your authorised **T+A** specialist dealer for advice.

Machine does not switch on (Display does not light up).	Cause 1: Mains leads not plugged in correctly. Remedy: Check connection, push connector in firmly.				
Tuner					
Whistling or whispering noises from the speakers.	Cause: The antenna lead is routed too close to a mains, remote control or audio signal cable.				
	Remedy: Move the leads so that they are spaced well apart. Use the domestic (loft or outside) antenna or a cable connection.				
The RDS station name does	Cause 1:				
not appear in the display.	The station is not broadcasting RDS information.				
	Cause 2: Reception is poor, interference is severe, or the <i>field strength</i> (signal strength) is low.				
	Remedy: Select only those stations which can be received with a strong signal: hiss-free and without interference.				
The unit can be operated	Cause:				
normally, but very few stations or none at all can	The antenna system or antenna cable is faulty.				
be picked up.	Remedy: Check the antenna lead for good contact at the antenna socket (at the wall) and in the back of the tuner. As a test, try using the system with a trailing antenna. If you can now receive stations reasonably well, we recommend that you call out an expert antenna technician to check your antenna system.				

The screen displays the message 'No Disc' when you close the CD drawer.	Cause 1: CD not inserted correctly. Remedy: Place CD centrally in the drawer, printed face up.				
	Cause 2: CD dirty. Remedy: Clean disc and insert again.				
	Cause 3: CD damaged in the Table of Contents (<i>TOC</i>) area. Remedy: No remedy; the CD is unusable.				
	Cause 4: The CD player has become very cold (e. g. in transit) and condensation has formed on the laser sensor optics. Remedy: Allow the unit to warm up for about an hour in a warm, well ventilated location.				
CD playback stops or 'jumps'.	Cause 1: CD damaged or dirty. Remedy: Clean CD. A damaged CD cannot be repaired!				
	Cause 2: The CD uses a copy protection system which does not conform to the CD- Audio standard (Red Book Standard) Remedy: Take back the CD to the dealer and ask for a proper CD according to the general CD standard.				
Loud humming noise from the loudspeakers.	Cause: Poor contact between the Cinch plugs and sockets, or a faulty Cinch cable. Remedy: Please check all connections and cables thoroughly.				
Disc drawer does not open.	Cause: Mechanical blockage, jammed disc, faulty disc mechanism. Remedy: Open the disc drawer manually. First switch the machine off (disconnect the mains plug). You will find an opening in the bottom through which you can disengage the disc drawer by pushing the white disengagement slider fully to the left using a suitable screw- driver. This will cause the drawer to open by a few millimetres, and you can then extend it fully by hand.				

Streaming Client

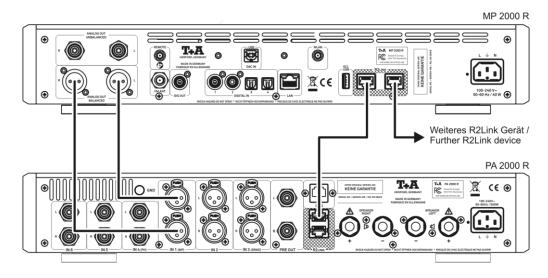
The streaming client cannot connect to a network. On the display the indication	Cause 1 (cable LAN): Network cable not properly connected Remedy: Connect network cable, check connection to router
Cannot connect to network' is displayed.	Cause 2 (wireless LAN): WLAN antenna not connected or placed in a location with bad reception quality Remedy: Connect WLAN antenna properly and find a location with good reception quality. Set the transmission power output of your WLAN router to maximum.
	Try to establish a network connection first in a location close to the WLAN router. If this succeeded try to connect to WLAN from a more remote location. Experiment with antenna position and try to find a location with better reception quality.
	Cause 3 (wireless LAN): WLAN reception quality bad (low field strength). Possibly too much attenuated by walls/ceilings on the transmission path. Remedy: Optimize location of receiver and transmitter antennas.
	Alternative: If transmission problems persist a so called ,Power Line' network might be good alternative to establish a good and stable network connection.
	The best, safest and most secure network however will always be a cable LAN network.
	Cause 4: Network parameters not properly configured. Remedy:
	Configure the network parameters correctly (see chapter 'Network configuration').
	 Cause 5 (operation without network connection): For proper operation the MP 2000 R needs at least one properly connected network device. This can be a LAN or WLAN network or a USB storage device. Remedy: If the MP 2000 R shall be operated without network (LAN / WLAN) please connect at least a USB stick.
The message 'No Data Available' is displayed	Cause: The music file on the storage device or on the music server was deleted or the internet radio station is not available at the moment. Remedy: Choose another music title or radio station. If the station or title is not available
	any more it should be deleted from the Favourites List (if stored there).
The message 'network problems – restarting'	Cause: Network problems in your home network or on the internet occurred; the connection was interrupted.
is displayed	Remedy: When encountering a network problem or interruption the MP 2000 R will re- start the network communication. After re-start please choose a music title or internet radio station and start playback.

Transmission interruptions occur when listening to internet radio stations.	Cause 1: The capacity of the internet radio station's server is at its limit. Remedy: Choose a different station.				
	Cause 2: Network problems occurred. Remedy: Check your network (see above).				
Some internet radio stations cannot be received	Cause: The internet radio station has been switched off, it transmits only at certain hours of the day or it has changed its internet address. Remedy: Try to get information from the website of the station regarding transmission hours and internet address (URL). Try to establish a connection to the station at a later time.				
Bad sound quality at certain internet radio stations	Cause: The station transmits with a low audio bandwidth (low bitrate). Remedy: Use stations transmitting at least at 128 kBit/s. This is the lowest recommended bitrate for adequate sound quality. For good sound quality we recommend high bitrates like 320 kBit/s				
USB Storage device is not recognised	Cause 1: The storage device (especially USB hard discs without separate power supply) draws more electrical current from the USB interface than is permitted by the USB standard. Remedy: Only use USB storage devices that conform to the USB standard or use standard or use				
	 storage devices with own power supplies. Cause 2: The storage device is not formatted with an appropriate file system. Remedy: The MP 2000 R accepts storage devices with FAT16 or FAT32, NTFS, Ext2, Ext3, Ext3 file systems. Note: For big music archives we recommend to use a NAS (network attached storage) device with a UPnP-AV server to which the MP 2000 R will connect via your home network. 				
Problems occur with high- resolution audio formats (HD audio) (FLAC and WAV).	Cause: The MP 2000 R is receiving audio data via a WLAN connection. WLAN connections do not provide reliable quality, and in most cases are not adequate for HD audio. Remedy: If you want to play back HD audio formats via a network connection, please use a LAN cable network.				

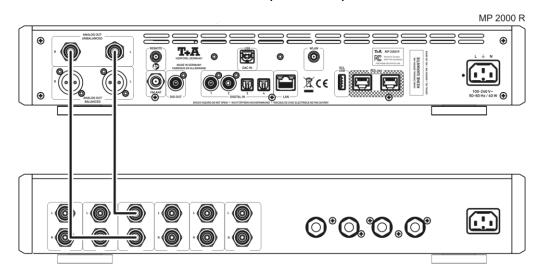
Appendix A

Wiring diagram

balanced (XLR)

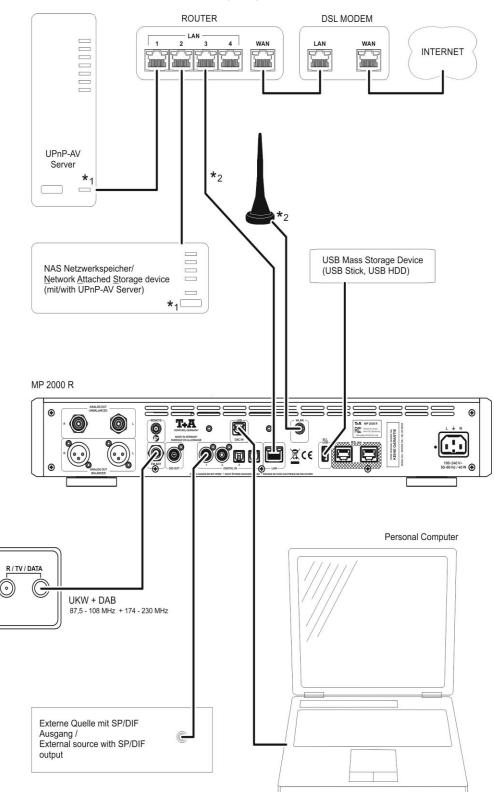


unbalanced (Cinch / RCA)



69

Wiring diagram





Attention!

A properly set up home network with router must be installed and in operation to use the **MP 2000 R**.

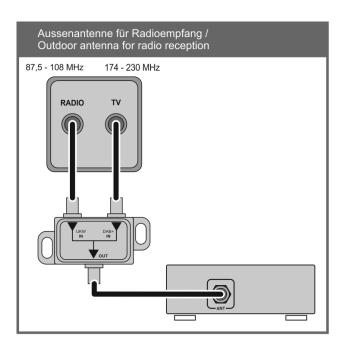
For the use of internet radio a DSL access to the internet is needed. For questions regarding setting up your network and internet connection please ask your system administrator or any network specialist.

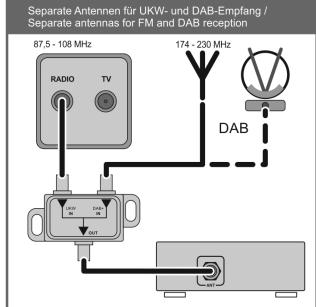
- *1 Music Server with UPnP-AV server software installed
- *2 Connection either via Cable-LAN or Wireless-LAN

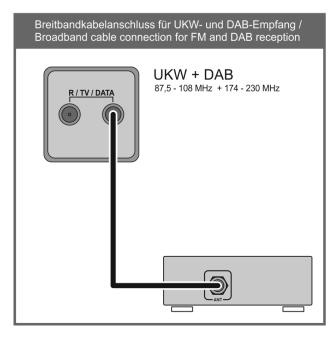
Wiring diagram

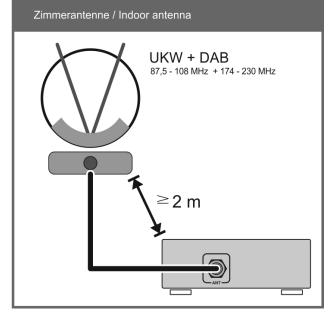
Note!

Please note that the digital radio DAB+ and the analogue FM radio transmitting in different frequency ranges. Depending on the existing antenna configuration, it may therefore be necessary to combine the two ranges with a DAB+/UKW feed-in crossover. When using an indoor antenna, do not place it in close proximity to sources of interference such as cordless telephones, WLAN routers or LED lights.









Appendix B

Specification

CD-Player

CD-Player				
Formats	CD/DA, CD-R, CD-RW, CD-Text			
Frequency response and dynamic	2 Hz – 20 kHz / 100 dB			
Streaming Client				
	MP3, WMA, AAC, FLAC, OGG-Vorbis, FLAC, AIFF, ALAC, WAV			
Formats	PCM 32 … 192 kHz, 16/24 Bit; MP3 up to 320 kBit			
Supported Media server	UPnP 1.1, UPnP-AV and DLNA compatible Server, Microsoft Windows Media Connect Server (WMDRM10), DLNA compatible Server			
Features	Auto Network Config., Internet Radio Station database (automatic updates)			
	LAN: Fast Ethernet 10/100 Base-T,			
Interfaces	WLAN: 2,4 GHz, +20 dBm (100 mW), IEEE 802.11 b/g/n (via USB Dongle)			
Tuner (FM)				
Frequency range	FM Radio 87,5 – 108 MHz (Europa / US)			
	76 – 90 MHz (Japan Version))			
Sensitivity	Mono (26dB S/N) 0,9 μV, Stereo (46 dB S/N) 40 μV			
Overload margin	103 dB μV,			
Stereo channel separation	50dB			
RDS functions	Stationname, Radiotext			
Tuner (DAB)				
Reception standard	DAB, DAB+			
Frequency range	168 – 240 MHz (Band III)			
Overload margin	103 dB μV,			
Sensitivity (BER = 10 – 4)	2,5 µV			
Bluetooth				
Bluetooth standards	Bluetooth standard BT 4.2			
Profiles	A2DP 1.2 (Advanced Audio Distribution Profile), AVRCP 1.5 (Audio Video Remote Control Profile) / aptX ® , MP3, SBC, AAC.			
Frequency band	2,4 GHz			
Max. transmit power	+4dBm (2,5 mW)			

2,2 V _{eff} / 50 Ohm	
2,2 V _{eff} / 50 Ohm	
4,4 V _{eff} / 50 Ohm	
1x coax, IEC 60958 (LPCM)	
4x S/P-DIF: 2x standard coax (192 kS Link (96 kSps /24 bit)	Sps /24 bit) and 2x optical TOS-
1x USB: Device-Mode - up to 384 kS supports asynchronous data transfer.	
2x USB master-mode for USB-mass = VFAT formatted harddisc)	storage devices (USB stick or
* DSD256 and DSD512 only with a Windo installed.	ows PC with appropriate driver
Double-Differential-Quadruple-Conve channel, 32-Bit Sigma Delta, 352,8 k	
Programmable Digital Signal Processor with 4 selectable oversampling algorithms: FIR short, FIR long, Bezier/IIR, Bezier	
T+A True-1Bit DSD D/A-Converter native bitstream	
Phase-linear Bessel filter 3 rd order, sv (according to sample rate)	witchable 60…120 kHz
PCM 44.1 kSps: 2 Hz - 20 kHz	
-	DSD 64: 2 Hz - 44 kHz
•	DSD 128: 2 Hz - 60 kHz
-	DSD 256: 2 Hz - 80 kHz
	DSD 512: 2 Hz - 100 kH
110 dB	
100 240 1/ 50 50 1/-	
Statiuby < 0,3 W	
8,2 x 46 x 40 cm (H x W x D)	
Infrared remote control SRC1, W-LAN power cord, R2-Link-Cable, user mar	
	4x S/P-DIF: 2x standard coax (192 kS Link (96 kSps /24 bit) 1x USB: Device-Mode - up to 384 kS supports asynchronous data transfer. 2x USB master-mode for USB-mass VFAT formatted harddisc) * DSD256 and DSD512 only with a Windo installed. Double-Differential-Quadruple-Convections channel, 32-Bit Sigma Delta, 352,8 k Programmable Digital Signal Process oversampling algorithms: FIR short, F T+A True-1Bit DSD D/A-Converter na Phase-linear Bessel filter 3 rd order, stress (according to sample rate) PCM 44.1 kSps: 2 Hz - 20 kHz PCM 48 kSps: 2 Hz - 20 kHz PCM 96 kSps: 2 Hz - 40 kHz PCM 192 kSps: 2 Hz - 80 kHz PCM 192 kSps: 2 Hz - 100 kHz < 0.001 %

We reserve the right to alter specifications.



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