Lost Audio GmbH

&

Sumatronic AG

M-DAB-51/10

DAB+ Tuner Module

suitable for

ReVox M51/M10

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DAB+ Tuner

DAB and DAB+ is the new generation of broadcasting technologies in which the radio signal is transmitted completely digitally. Even with difficult reception, you can hear your favorite stations without any noise.

The M-DAB-51/10 has been designed with sophisticated filter technologies to be largely resistant to any interference that occurs in today's everyday life. This means you can listen to the radio without interference, even when reception is difficult.

The tuner receives DAB and DAB+ in frequency band III from 174 - 240 MHz. Programming is fully automatic, the stations are automatically detected, stored and given the correct name. Up to 250 stations can be stored.

The tuner supports the Multiroom capability of the Revox M51 and the M10 system with the Mutiroom modules MRT-2 and MRT-3 from software version 2.0 and above. The high-precision time, which is also contained in the radio signal, can be used for automatic time correction of the Multiroom module.

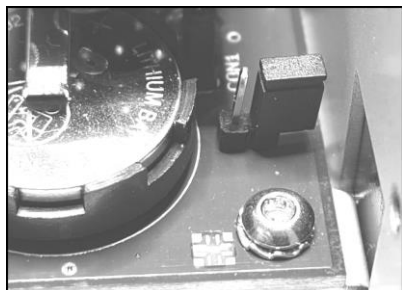Enjoy the new way of listening to the radio.

If you own a Revox M10 device, the information for the M51 device applies analogously.

Installation

The module is equipped with sensitive electronics, touch the module only at the edges or at the sheet metal. Do not touch the components on the board.

The module can be plugged into slots 1,2,4,5 or 6 of the M51 (Mk1 and Mk2) or slots 1-8 in the M10. For best performance it is used instead of the FM tuner. The FM tuner module is usually not needed after that, so we recommend not to use it anymore. However, if you do need it, some compatibility restrictions cannot be excluded. The best slot for the DAB module is the outermost one with the number 1, as it is best shielded there.

Find out whether you are using an active or passive antenna for DAB+ reception. If you use an active antenna, which must be supplied with 5V voltage, this can be supplied by the DAB+ module up to a maximum of approx. 30mA. If you want to switch on this power supply, you have to close the jumper on the board by loosening it and pushing it over both pins. This is only needed with an active antenna and should only be activated then.

On the picture you can see the jumper in open position -> without supply voltage for the antenna.
(On later produced tuners the battery holder is no longer soldered on)

Now first switch off your Revox M51 or M10 completely and disconnect the unit from the 230V power supply by pulling out the mains cable completely.

Then loosen the two screws of the current FM tuner or, if there is none, the two screws of an empty covered module slot. Pull out the FM tuner and slide the DAB+ tuner carefully and accurately into the two guide rails until it is fully engaged.

If the module gets wedged or jammed, repeat the procedure. Finally, replace the two screws and tighten them.

To connect the antenna, use the F-socket, which is designed for 50 and 75 Ohm antennas. The F-connector of your antenna has to be put on and the screw has to be tightened by hand (WITHOUT tools).

If you receive DAB+Cable via your cable network, you can convert this

signal with the sumaDAB DAB+Cable adapter into normal DAB+ signals and receive them with the DAB module. In this case, the antenna is unnecessary.

Cable reception is usually simple and trouble-free.

Currently, UPC (Switzerland) and their partners offer DAB+Cable with about 90 radio programs on their cable networks.
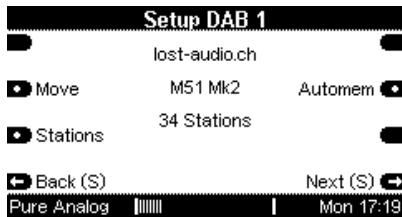
Now you can reconnect the device and switch it on.

Store stations

When the DAB+ tuner is delivered, no stations are stored on it. The M51 is switched on with the POWER button. Now select the new source, which is recognizable as "DAB+". The tuner switches independently to setup mode because no stations are stored yet. If you want to switch to this mode later with stored stations, press SETUP for two seconds and then select SOURCE with the soft keys.

Now the setup menu appears in the display. (If no stations are stored yet, the Internet address of the manufacturer appears in the middle, otherwise this area is empty).

The setup menu contains four pages. You are currently on page one. Only the first page of the setup menu is required to save the stations.

```
┌─────────────────────────────────┐
│         Setup DAB 1             │
│ ▪          lost-audio.ch      ▪ │
│ ▪ Move        M51 Mk2   Automem▪│
│                34 Stations      │
│ ▪ Stations                    ▪ │
│ ▪ Back (S)            Next (S) ▪ │
│ Pure Analog ‖‖‖‖‖‖     │ Mon 17:19│
└─────────────────────────────────┘
```

Now you can execute the automatic station search by pressing the AUTOMEM soft key for two seconds. The tuner does not have a manual tuning function, as this is not necessary with DAB+. DAB+ works differently from FM, where a single radio station is transmitted on each frequency. With DAB+, multiple radio stations are bundled into one package (called an ensemble) and transmitted on a single broadcast frequency. Therefore, direct tuning and thus the input of a station is not possible. Since each radio station has a predefined name, it is not necessary to name radio stations yourself.

The AUTOMEM function searches all 40 channels in band III and finds all available radio stations. It also finds stations that cannot be played because reception is too weak. These can be deleted later. A manual tuning is therefore not necessary.

The channels are automatically counted from 0 to 40. The display is updated at fixed intervals. This can therefore mean that not every single channel is displayed. However, all channels are always searched, even if they are not displayed.

At the end all found radio stations are stored. It is also checked whether these are not merely data services. The latter are not radio stations, ergo do not transmit music and are therefore automatically deleted during the saving process. Therefore, it can happen that more stations are displayed during the saving process than are saved at the end.

On setup page one you can always see how many stations are currently stored.

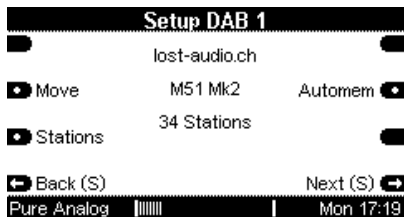In the following pictures you can see the steps of the auto-tuning process one after the other.

All 40 channels are searched.

```
┌─────────────────────────────────┐
│         Setup DAB 1             │
│ ▪                             ▪ │
│ ▪          Searching...       ▪ │
│              Channel: 11        │
│             7D 194.064 MHz      │
│ ▪                             ▪ │
│ Pure Analog ‖‖‖‖‖‖     │ Sun 15:58│
└─────────────────────────────────┘
```

All found radio stations are saved.

```
┌─────────────────────────────────┐
│         Setup DAB 1             │
│ ▪                             ▪ │
│ ▪         Storing Data        ▪ │
│              [11/36]            │
│ ▪                             ▪ │
│ Pure Analog ‖‖‖‖‖‖     │ Mon 17:28│
└─────────────────────────────────┘
```

At the end, the number of stored radio stations is displayed. Here, 2 data services were filtered out of the 36 stations, so there are still 34 radio stations.

```
┌──────────────────────────────────┐
│          Setup DAB 1             │
│  ▮                          ▮    │
│           lost-audio.ch          │
│ ▰ Move      M51 Mk2    Automem ▰ │
│            34 Stations           │
│ ▰ Stations                   ▮   │
│                                  │
│ ▰ Back (S)            Next (S) ▰ │
│ Pure Analog  ‖‖‖‖‖       |  Mon 17:19│
└──────────────────────────────────┘
```

Browse, listen and delete stations

To browse through all the stored radio stations, you can now press the "STATIONS" soft key.

```
┌──────────────────────────────────┐
│          Setup DAB S             │
│ ▰ Station      47       Station ▰│
│              SRF 3+              │
│              SRF 3+              │
│          12C 227.360 MHz         │
│ ▮          SRG SSR D01   Tune ◉  │
│                                  │
│ ▮                       Delete ▰ │
│ ▰ Back S                     ▮   │
│ Pure Analog  ‖‖‖‖‖       |  Sun 16:13│
└──────────────────────────────────┘
```

Each station is displayed individually with all its data:

1. Memory location of the radio station
2. Short display name of the radio station
3. Long display name of the radio station. Depending on the length, it may not be possible to show the full name on the display. (Reason: The display was designed for FM station names and not for the long DAB+ names.)
4. Channel and frequency on which the whole station package is transmitted.
5. Each station package also has a name, this is the so-called ensemble name.

With the upper two arrow soft keys you can navigate through all radio stations.

A short press on the TUNE soft key lets you listen to the station directly. If the reception is too weak, it may not be possible to play it. In difficult reception conditions, it may take a long time for the tuner to adjust to the reception. In this case, wait at least twenty seconds.

Often the station can still be heard perfectly afterwards.

If the name or other data of the station are not completely displayed, the reason for this is probably the incorrect reading of the data due to reception problems. By pressing the TUNE key for at least 2 seconds, the corresponding data is read in again and stored.

If you want to delete the radio station, press the DELETE soft key for two seconds. The deletion process is visible immediately, but is not saved until you exit this station menu by pressing BACK S. (S stands for the English verb "store").

Move station

The stations are basically stored alphabetically. However, you can also define your own sequence. To do this, press the MOVE soft key.
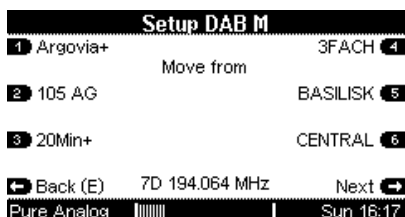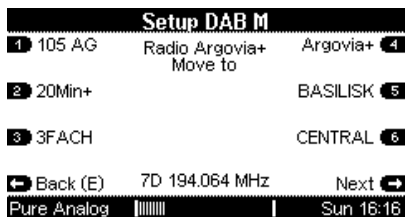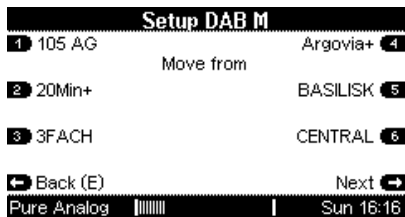
Now you are in the menu where you can move the radio stations according to your wishes and thus arrange them.

As soon as the display shows "Move from", select the radio station you want to move: Use the bottom two buttons to navigate forward and backward. When you have found the radio station you want to move, select it by briefly pressing the corresponding soft key.

Now select the position where you want to put the radio station before and select it by briefly pressing the corresponding soft key. The shift is immediately visible. You can now repeat this process as often as you like until everything is ranked as you would like it to be.

If a station has to be moved to the very end, select the last radio station as the destination. Now the moved station is in the second last position. Now move the last station to the second last position and the originally desired radio station is at the end.

See now the moving process in pictures. The radio station "Argovia+" is moved from the position 4 to the position 1.

Setup DAB M

1 105 AG		Argovia+ 4
	Move from	
2 20Min+		BASILISK 5
3 3FACH		CENTRAL 6
⬅ Back (E)		Next ➡
Pure Analog ‖‖‖‖‖‖ ‖		Sun 16:16

Setup DAB M

1 105 AG	Radio Argovia+	Argovia+ 4
	Move to	
2 20Min+		BASILISK 5
3 3FACH		CENTRAL 6
⬅ Back (E)	7D 194.064 MHz	Next ➡
Pure Analog ‖‖‖‖‖‖ ‖		Sun 16:16

Setup DAB M

1 Argovia+		3FACH 4
	Move from	
2 105 AG		BASILISK 5
3 20Min+		CENTRAL 6
⬅ Back (E)	7D 194.064 MHz	Next ➡
Pure Analog ‖‖‖‖‖‖ ‖		Sun 16:17

The new sequence is not saved until you now press BACK (E) for two seconds. The E in brackets means "Exit", and causes that with a long press on the key all is saved.
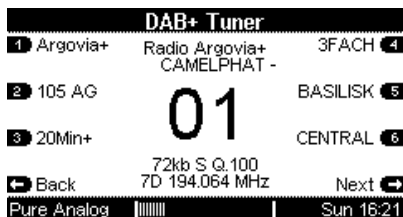
ATTENTION:

The new station order must be saved permanently after the changes by pressing the "Back (E)" key for 2 seconds.

6

Listen to stations

As soon as you select the DAB+ source on your M100 / M51, the last selected radio station is played again.

To do this, press the SOURCE button on the M100 / M51 as usual and then select the DAB+ source with the soft key.

As you know from the FM tuner, you can navigate through all stations with the lower two buttons and, as soon as you have found your desired radio station, select it with the corresponding soft button.

If the station does not play immediately, please wait at least 20 seconds. In difficult reception conditions, it can take a long time for the tuner to adjust to the reception. Often the station can still be heard perfectly afterwards.

The key number is always displayed in the margin. However, the display of the M51 is only designed up to 50. As a result, stations that exceed the maximum mark of 50 cannot be displayed numerically.

The large display of the radio station number on the M51 is designed up to 99. As a result, stations that exceed the maximum mark of 99 are displayed with a smaller, centered number.

It can also happen that very long radio station names are occasionally cut off, because the display is not designed for such long names.

The information from top to bottom has the following meanings:

1. Long radio station name
2. Radio text, scrolls from right to the left
3. Station number as big number (above 99 as small number).
4. Data rate of the radio station, Mono/Stereo/JointStereo/Dual and the reception quality from Q.0 to Q.100
5. Channel and frequency of the station package of this radio station.

Reception quality in words:

0-20: Music plays only fragments
21-30: Music plays with interruptions
31-70: Music can be played, data can usually be reconstructed. Small transmission interruptions are likely.
71-99: Music plays nearly normally
100: Bit error rate is 0. Perfect

Tuning by quickselection

Since many stations are received with DAB+, searching by scrolling is a test of patience. Therefore, there is still a quick selection function. To do this, press the NEXT soft key for two seconds:

Now you are in the radio station quick selection. The currently playing radio station is still displayed in the center. The number and name of the radio station to be selected are displayed above. Turn the large rotary knob in the center of the M51 and search for your radio station. Once you have found the desired station, press the SELECT soft key and the radio station is selected.
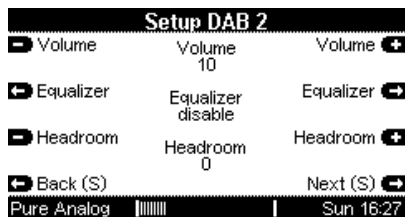
Settings

Various settings can be made on the DAB+ tuner. You can access these if you have DAB+ active as a source and press the SETUP key for two seconds and then briefly press the SOURCE soft key.

The setup menu has five pages, the first of them you already know from the first setup. To access the other ones, press the left or right arrow key.

All changes are definitely saved only after pressing one or the other arrow key for two seconds. Otherwise, the corresponding setting is active only until the device is switched off.

Setup page 2

Volume

You can use the upper two soft keys to adjust the basic volume of the DAB+ tuner so that it matches all other sources perfectly. This setting applies to all radio stations together.
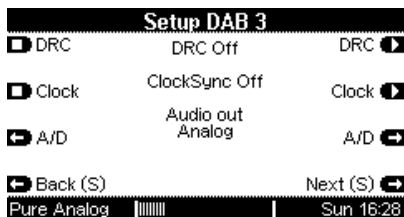
Equalizer

With the two second uppermost soft keys you can select one of the pre-defined equalizer settings that apply to all radio stations.

• disable (switched off)
• Bass boost
• Jazz
• Live
• Vocal
• Acoustic

Headroom

With the headroom setting, experts can set the headroom for the tuner. Usually, no changes are needed here, and 0 should usually fit. However, if radio stations are transmitted unusually loud, the expert can readjust this setting here.

Setup page 3

```
            Setup DAB 3
▣ DRC          DRC Off             DRC ◨
▣ Clock      ClockSync Off       Clock ◨
                Audio out
◧ A/D            Analog           A/D ◨

◧ Back (S)                      Next (S) ◨
Pure Analog  |||||||||        |      Sun 16:28
```

DRC

DRC means Dynamic Range Control and is only used by a few radio stations. This setting affects the dynamic range of the broadcast radio signal.

Clock synchronization

A very precise time signal is supplied with the DAB+ transmission. When you switch on this function, the DAB+ tuner compares the clock of the Multiroom module with the DAB+ time every time it is switched on and adjusts it if it deviates from the DAB time more than 5 seconds.

The time synchronization works from software version 2.05 without battery. If your DAB+ tuner still has a battery holder, you can remove this battery from it. The newer DAB+ tuners no longer have a battery holder, but are otherwise absolutely identical in construction.

The time adjustment only works with Multiroom modules of the newer generation MRT-2 and MRT-3 with RJ45 sockets and software version from 2.0 and above.
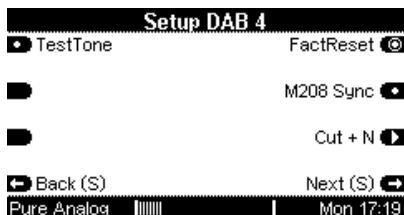
Analog or S/PDIF

The output signal of the DAB+ tuner can be selected with the A/D setting. This feeds the analog balanced or digital S/PDIF signal into the M51. Depending on your preference, this can be selected here. All three generations of the ACC module support analog in every and digital S/PDIF in almost every software version. Currently known is that the ACC-3 with software 2.0 does not work with S/PDIF. However, once it is updated to software 2.01, it will work fine.

The digital feed is used when you have digitally controlled loudspeakers connected to the M51. In this case, twice signal conversion is prevented in this way.

After this change, do not forget to save the settings and switch the unit to standby mode for 30 seconds.

Setup page 4

```
        Setup DAB 4
■ TestTone          FactReset ◉
■                   M208 Sync ◼
■                    Cut + N ◀▶
◀ Back (S)            Next (S) ➡
Pure Analog |||||||         |  Mon 17:19
```

TestTone

You can use this key to select between different test tones. Each press of the button takes you to the next variant.

- Noise on both channels
- Sine 1kHz left channel
- Sine 1kHz right channel
- Sine 1kHz both channels
- Test signals switched off
-

Cut +

Many stations mark their radio station names with a + at the end, for example SRF3+. In this way, radio stations encoded with DAB+ can be distinguished from those with DAB.

Since almost all stations have a + at the end of the name, this information is rather useless than helpful. With this option, the + at the end of the name can be suppressed. This option also has an effect when synchronizing with the M208.

"Cut + Y" = switched on

"Cut + N" = switched off

FactoryReset

To reprogram the DAB+ tuner from scratch, the entire memory contents can be erased. To do this, press the FactoryReset button for two seconds. After this reset, the entire system should be completely switched off and switched on again.
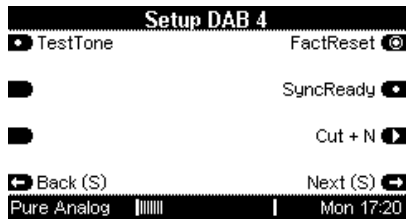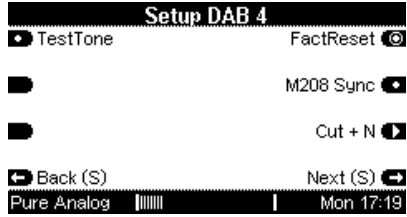
M208 Sync

The **synchronization** of the M208 with the DAB+ tuner is explained in the next section.

Synchronization M208

The M208 remote control can transfer the FM tuner's station list to itself with the M208-Link adapter and is limited to a maximum of 63 radio stations.

The DAB+ tuner also offers this function, but it requires an option that must be switched on briefly. During synchronization, there should not be an FM tuner in the M51 for this!

First connect the remote control via USB cable to the M208 link adapter. This must now be connected to the M-Link of the M51 with the corresponding cable. Now go back to the setup menu on the M51 and select the fourth page, where you will find "M208 Sync". Now prepare the M208 by setting it to Tuner Mode (press Tuner). Then click on SETUP on the remote control as usual and put the cursor on the sync function, but wait with OK. Now press the soft key "M208 Sync" briefly. Now you have about 10 seconds to trigger the synchronization on the M208. Attention: Only as long as SyncReady is on this soft key, synchronization is possible. After that you have to press it again.

The M208 indicates whether the transmission was successful or not. However, it always thinks that it has communicated with an FM tuner.
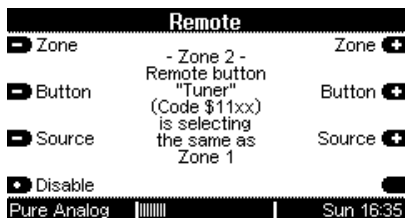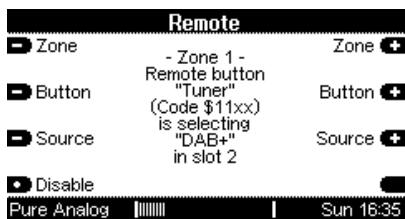
Remote settings for remote controls

In order for the commands from the infrared remote controls and from wall remote controls to the DAB+ tuner to work, this must be configured in the M51. (Otherwise the commands go to a possible FM tuner).

To do this, press the SETUP key for two seconds and then select the REMOTE soft key.

Now first select the remote button TUNER in zone 1. The two soft keys in the second row from the top let you change the "button". Then use the third row to select the source and set it to DAB+. Now be sure to press the STORE soft key to save this setting.

If you have additional zones in use, you must also do this for the additional zones if desired. The other zones can be explicitly set to DAB+ for the tuner button, or to "the same as Zone 1". Again, please do not forget to save the settings for each zone.

Only after this setting is it possible to switch to the DAB+ tuner with the Tuner button on the remote control or wall remote control.

	Remote	
➡ Zone	- Zone 1 -	Zone ➕
➡ Button	Remote button "Tuner" (Code $11xx)	Button ➕
➡ Source	is selecting "DAB+" in slot 2	Source ➕
⏺ Disable		▬
Pure Analog	‖‖‖‖‖‖ ‖	Sun 16:35

	Remote	
➡ Zone	- Zone 2 -	Zone ➕
➡ Button	Remote button "Tuner" (Code $11xx)	Button ➕
➡ Source	is selecting the same as Zone 1	Source ➕
⏺ Disable		▬
Pure Analog	‖‖‖‖‖‖ ‖	Sun 16:35

Antenna

Connect a suitable antenna to the F socket on the back of the tuner. Please screw it only by hand!

If you use an active antenna, which requires a 5V supply, it can be supplied directly from the DAB+ tuner with the required voltage of 5V maximum approx. 30mA. Use the jumper on the card for this. To activate the supply, the jumper must be placed over the two pins so that they are short-circuited. If you do not need power supply, leave the jumper on only one pin!

On the picture you can see the jumper in closed position. This is how the active antenna is supplied with power.

(Later produced tuners do not have the battery holder soldered on)

Troubleshooting

No reception with active antenna

My M51 cannot receive radio stations with an active DAB antenna.

Solution

An active antenna has an integrated signal amplifier. This requires power in order to function. Active antennas that require 5V and max. 30mA can be powered directly by the DAB+ tuner module by setting the jumper correctly. Check if your antenna is designed for 5V max. 30mA and if the jumper is plugged correctly over both pins.

Technical data

Frequency range:	174 - 240 MHz
Frequency band:	III
Channels:	5A – 13F
Sensitivity:	-99dBm
Broadcast type:	DAB and DAB+
Antenna connection:	F-Socket for 50 or 75 Ohm
Phantom power antenna:	5V ±10%, max. 30mA

Warranty

The warranty is 24 months from the date of purchase.

Your contact person in case of service is first your specialist dealer.

If he cannot help you, please contact the sales partner.

Support & Questions

On the Internet site www.M-DAB.ch you will find many helpful answers and contact details.

Manual version 1.2
suitable for firmware: 2.05
suitable for hardware: 1.4 + 1.4.1
September 2023

General

When disposing the board, the local laws on the disposal of electronics must be observed.

Declaration of conformity:

Please find here:
www.M-DAB.ch