Maxi

Personal amplifier

$C\epsilon$

For use in all EU countries

Hereby, Bellman & Symfon Group AB, declares that this BE2020 is in compliance with the essential requirements and other relevant provisions of : EMC directives: 2014/30/EU. MDD directives: 93/42/EEC. RoHS directive: 2015/863/EU. EN 60601-1-2, Class B Passed.

Correct use and disposal of batteries:

Replace only with the same or equivalent type recommended by the manufacturer. Please dispose of old, defective batteries in an environmentally friendly manner in accordance with the relevant legislation.

Bellman® Audio Maxi Digital Communication Aid, BE2020

Thank you for choosing products from Bellman & Symfon.

Bellman Audio is an assistive listening system. The system consists of a number of units which facilitate listening under different circumstances. Bellman Audio products make everyday life easier for many people and give them the freedom to freely pursue their interests.

Read through the entire user manual first before starting to use the product.

Refer to the diagram showing the accessories and connection options on the inside of the cover.

Getting started
Unpacking, installing and testing the unit

1. Open the battery cover (17) by pressing the battery cover lock (16) in the direction of the arrow. Fit the batteries and make sure they have been inserted the right way round. Follow the markings in the battery compartment (14). Only use AA alkaline type batteries. Do not use force to press down the batteries. Close the battery cover (17) and check that the lock (16) locks with a click.

2. Connect BE9122 Bellman Headphones, BE9128 Bellman Neck Loop, BE9403 Bellman Stetoclip, BE9124 Bellman Ear Phones or another product recommended by Bellman & Symfon to the green headphone output (12) on the right-hand side.

3. Give one short press on the On/Off button ⊙ (5) to start Maxi. The LEDs (3 and 4) above the Microphone selection button ⓜ (6) and the Telecoil selection button ⓣ (7) will blink while Maxi starts.

Maxi always starts with the internal microphone (2) selected as a sound source. In addition, the volume control is always set to low volume to avoid unpleasant sound levels.

Use the volume control ⊖⊕ (9) to control the sound level. ⊕ increases and ⊖ reduces the volume. The Volume and Tone LED Indicator (8) shows the sound level. The more LEDs that are lit the higher the volume. The LED indicator goes out 3 seconds after the sound volume has been set.

Use the tone control (10) to adjust the sound quality. increases and reduces the treble. The Volume and Tone LED Indicator (8) shows the tone setting. The LED indicator goes out 3 seconds after the sound quality has been set.

When you have finished, you can switch off Maxi by giving a short press on the On/Off button ⊙ (5).

Please note: The BE2020 Bellman® Audio Maxi digital communication aid is not a hearing instrument. Bellman & Symfon Group AB recommend that anyone who is experiencing hearing loss should consult a doctor.

Warning! The BE2020 Bellman® Audio Maxi digital communication aid has a very powerful amplifier and the sound level can cause discomfort or, in serious cases, endanger hearing if the product is used carelessly. Always turn the volume down to a low level before putting on the headphones!

Warning! If the BE2020 Bellman® Audio Maxi digital communication aid is used together with a neck loop, e.g. BE9128 (accessory), the inductive loop (T position) should not be selected as a

signal source, because this can cause powerful inductive feedback. Feedback together with a high sound level can cause discomfort or, in serious cases, endanger your hearing.

Warning! The Bellman® Audio Maxi digital communication aid uses AA alkaline type batteries. Do not expose batteries to fire or direct sunlight.

Function
The BE2020 Bellman® Audio Maxi Digital Communication Aid is a digital amplifier which has been specifically developed to provide an exceptional sound experience even in demanding situations. Maxi works extremely well for speech and music with the built-in microphone, with an external microphone (accessory) or with other external sound sources.

Built-in microphone
The built-in microphone (2) is located under the rubber cap on the top of the front panel.

The microphone is an omnidirectional one.

Telecoil
The built-in telecoil is angled at 45 degrees in order to catch inductive signals from an inductive loop in both the horizontal position (in the hand or on a table) and vertical position (on a clip or neck strap).

The T position can be used in premises where an inductive loop (or hearing loop) has been fitted. Look for the inductive loop symbol or ask staff whether there is an inductive loop if you are unsure.

Selecting the signal source
It is easy to select the sound source.

• The user can manually choose between the internal microphone (M position) or built-in telecoil (T position) by pressing the buttons ⓜ (6) and ⓣ (7) on the front. When switching between these, the volume control will be set to a low level to avoid unpleasant sound levels.

• If something is connected to the external sound source input, Maxi automatically selects this. When you remove it, Maxi is automatically connected to the internal microphone (M position).

External sound source
If the user connects an audio cable (accessory BE9126) between the red 2.5 mm tele jack and a sound source (TV, hi-fi equipment, MP3 player etc.), this sound source is selected instead. The input sensitivity is automatically adjusted to adjust the signal strength to these sound sources. The internal microphone (2) is switched off in this position.
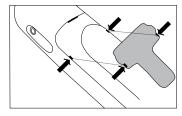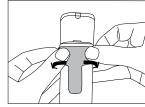
Combined signal sources
When you have connected a sound source to the External sound source input (1), this sound source can be combined with the sound that the internal microphone (2) receives. This is done by holding down the ⓜ button (6).
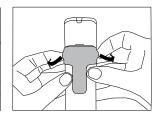
The sound from the sound source connected to the External sound source input (1) is reduced and the internal microphone is connected so that you can, for example, perceive sound or converse with somebody else. The Microphone LED (3) blinks while the button is held down.

When you want to return to listening to the signal source connected to the External sound source input (1), release the ⓜ button (6). The internal microphone is then disconnected and the external sound source returns to normal volume again.

Clip

Place the clip against the battery cover and press firmly so that it locks on.

Remove the clip by using the small round handles and pressing out from the sides.

Indicators and settings

Volume and Tone LED Indicator

The Volume and Tone LED Indicator (8) is used as an indicator for the volume and tone controls.

The Volume and Tone LED Indicator goes out after about 3 seconds to save power.

Low battery LED

The Low battery LED (11) is normally off, but comes on when the battery level falls below about 10 hours' remaining operating time. This time depends, of course, on the sound volume and type of listening accessories used.

When the Low battery LED (11) blinks every seven seconds, the batteries should be replaced with new ones. Only use AA alkaline type batteries.

Volume control

Maxi has a digital volume control ⊟⋈ (9), which means that you can increase or reduce the volume with the pushbuttons ⊟⋈ (9). Each press results in an increase or reduction in volume by one increment.

If you hold one of the volume buttons down for more than 1 second, the volume will increase or reduce by one increment per second as long as the button is held down or until the minimum or maximum position is reached.

By pressing the ⋈ button (9), the volume is increased by one increment at a time until the maximum volume is reached. At full volume all the LEDs of the Volume and Tone LED Indicator (8) are illuminated.

By pressing the ⊟ button (9), the volume is reduced by one increment at a time until the minimum volume is reached, although Maxi never becomes totally silent. At minimum volume only the left LED of the Volume and Tone LED Indicator (8) is illuminated.

Tone control

BE2020 has a digital tone control ⓧⓨ (10), which means that you can increase or reduce the treble with the pushbuttons ⓧⓨ (10). Each press results in an increase or reduction in treble by one increment.

If you hold one of the tone buttons down for more than 1 second, the treble will increase or reduce by one increment per second as long as the button is held down or until the minimum or maximum position is reached.

By pressing the ⓨ button (10), the treble is increased by one increment at a time until maximum treble is reached. At maximum treble, the LED at the far right of the Volume and Tone LED Indicator (8) is illuminated.

By pressing the ⓧ button (10), the treble is reduced by one increment at a time until minimum treble is reached. At minimum treble, the LED at the far left of the Volume and Tone LED Indicator (8) is illuminated.

When the centre LED of the Volume and Tone LED Indicator (8) is illuminated, treble is deactivated.

Troubleshooting in brief

Symptom	Solution
Nothing happens when you try to start Maxi using the On/Off button.	• Change the batteries. Only use AA alkaline type batteries.
No sound can be heard in the headphones when Maxi is switched on.	• Check that the correct signal source has been selected, e.g. internal microphone (M position).

For further information about the product in English, refer to the Appendix.

1. External sound source input 2.5 mm tele jack
2. Internal microphone
3. Microphone LED
4. Telecoil LED
5. On/Off button ⓞ
6. Microphone Selection Button ⓜ
7. Telecoil Selection Button ⓣ
8. Volume and Tone LED Indicator
9. Volume control ⊟⋈

10. Tone control ⓧⓨ
11. Low battery LED
12. Headphone output 3.5 mm tele jack
13. Neck strap attachment
14. Battery compartment
15. Setting button
16. Battery cover lock
17. Battery cover
18. Clip

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Appendix

Connection

Normally when you use Bellman Audio Maxi digital communication aid, you place it on a table, hold it in your hand, hang it round your neck using a neck strap (accessory) or attach it to an article of clothing with the clip supplied (18).

You can connect BE9122 Bellman Audio Headphones, BE9128 Bellman Audio Neck Loop, BE9403 Bellman Audio Stetoclips, BE9124 Bellman Audio Ear Phones or another product recommended by Bellman & Symfon to the Headphone Output (12).

You can connect a BE9126 Bellman Audio Cable Kit to the External Sound Source Input (1), which you can connect to the required sound source or a BE9127 Bellman Audio External Microphone. It has a 5 metre long cable so that it can, for example, be positioned next to the TV or someone who is speaking.

Press on the On/Off button ⊙ (5) to start Maxi. While Maxi is starting up, the Microphone LED (3) and the Telecoil LED (4) blinks. When the Microphone LED (3) comes on, Maxi is ready to use and you will hear sound from the internal microphone in the headphones.

Settings

Bellman Audio Maxi has more setting options than those found on the front. You can adjust and adapt Maxi to your individual requirements using the Setting button (15).

Balance

The balance between the right and left channels can be set, e.g. for headphones. This setting can be used to compensate for a hearing loss in one ear.

The standard setting is centred balance.

All settings are carried out in sequence, see below under Adjusting settings.

Basic attenuation

The basic attenuation can be set, for example, for different headphones. What you actually set is the attenuation you require at the maximum power output you want to have (which is therefore 0 dB attenuation). This setting is useful when you want to adjust the maximum volume for a pair of headphones or in-ear phones with a higher sensitivity than the BE9122 Bellman Audio Headphones.

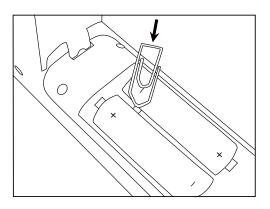The standard setting is 0 dB attenuation.

All settings are carried out in sequence, see below under Adjusting settings.

Blocking the T position

The Telecoil Selection Button can be blocked if you know that the T position will not be used. This setting is for those who will never use the Telecoil and want to avoid selecting this position by mistake.

The standard setting is for blocking of the T position not to be activated.

All settings are carried out in sequence, see below under Adjusting settings.

Adjusting settings

It is easy to adjust settings.

- Open the battery cover (17) by pressing the battery cover lock (16) in the direction of the arrow.

- Press the Setting button (15) for about 5 seconds. It is easiest to do this with a paper clip, see figure. One of the LEDs in the Volume and Tone LED Indicator (8) now starts to blink

- Adjust the balance between the right and left channels using the volume control ⊖⊕ (9). ⊕ moves the sound towards the right channel and ⊖ moves the sound towards the left channel. The current setting is indicated by a flashing dot on the Volume and Tone LED Indicator (8) which moves towards the right or left.

When the desired value has been set, give a short press on the Setting button (15) and Maxi will move on to setting the maximum volume.

- Adjust the maximum volume using the volume control ⊖⊕ (9). ⊕ increases the maximum volume and ⊖ reduces the maximum volume. The current attenuation setting relative to the maximum volume is displayed via the Volume and Tone LED Indicator (8). No attenuation is shown by only one LED being visible at the right. The greater the attenuation the more LEDs come on from right to left. Each increment and hence each lit LED corresponds to a reduction of 3 dB.
  When the desired value has been set, give a short press on the Setting button (15) and Maxi will move on to the setting for locking the T position.

- Now set the use of the telecoil to locked or unlocked using the volume control ⊖⊕ (9). ⊕ enables use of the telecoil and ⊖ blocks use of the telecoil. When the telecoil is activated, the Telecoil LED (4) blinks and when the function is blocked the Telecoil LED (4) is off.

- When the desired value has been set, there are three options:

  o To start again: give a short press on the Setting button (15) and Maxi starts again with setting the balance above.

  o To save: press the Setting button (15) for about 5 seconds and Maxi saves the settings that have been adjusted and returns to normal mode.

  o To change your mind: press the On/Off button ⊙ (5) and Maxi will disregard all the settings that have been adjusted and return to normal mode.

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Tone control lock

To prevent that the tone control is accidentally changed by the user it is possible to lock the tone control.

1. While the Maxi is off press and hold the ⏷ button (10). Switch on the Maxi, by pressing the On/Off button ⊙ (5). Keep the ⏷ button held down until the Maxi's lights (3, 4) have stopped flashing.
2. One of the LED in the Volume and Tone LED Indicator (8) will be flashing, this will be the set tone level. Adjust the preset tone level by using the Tone control ⏶⏷ (10).
    If all the LED's on the Volume and Tone LED Indicator (8), except the blinking one, are lit at the same time, it means that the Tone control is activated while if the rest of the LED's are off the Tone control is deactivated.

3. Press the ⏶ button to activate the Tone control or press the ⊟ button to deactivate the Tone control.

4. Switch the Maxi off using the On/Off button ⊙ (5) to save these settings.

Testing

It is easy to test the Bellman Audio Maxi digital communication aid for yourself. If Maxi is not working as described below, you can carry out further troubleshooting as instructed in the section Troubleshooting/Troubleshooting guide.

How to test

The internal microphone and telecoil can be tested by connecting BE9122 Bellman Audio Headphones to the Headphone output (12) and then selecting the Internal microphone (2) using the Microphone Selection Button ⓜ (6) or the Telecoil Selection Button ⓣ (7).

The External sound source input (1) can be tested by connecting a CD player or a radio to the input via an audio cable. Switching to the External signal source input (1) takes place automatically when the connector is connected to the External sound source input (1) on Maxi.

Troubleshooting

You can carry out a number of checks yourself before sending a product for repair.

Troubleshooting guide

Symptom	Solution
Nothing happens when you try to start Maxi using the On/Off button.	• Check that the batteries have been inserted the right way round. • Change the batteries. Only use AA alkaline type batteries.
No sound can be heard in the headphones when Maxi is switched on.	• Check that the correct signal source has been selected, e.g. internal microphone (M position). • Check that the headphone plug is securely inserted in the headphone output. • Connect the headphones to another sound source (with a 3.5 mm headphone output) to test the headphones.
A high-pitched noise is heard in the headphones.	• Lower the volume or increase the distance between Maxi and the headphones. • Direct the microphone away from you.

Technical information

Power supply

Battery power:	Two 1.5 V AA alkaline type batteries
Operating time:	100 - 150 hours depending on the load and sound pressure
Power consumption:	17 mA (120 mA max)

Input signals

Microphone:	Built-in microphone (omnidirectional)
Telecoil:	Built-in telecoil (angled at 45°)
Ext. sound source input:	2.5 mm stereo jack plug
Ext. in sensitivity (max input lvl.):	+6 dBV

Output signals

Headphone socket:	3.5 mm stereo jack plug
Output level with BE9122:	117.67 dB @ 1 kHz (SPL90)
	119.52 dB (HF Ave. SPL90),
Full-on gain:	37.01 dB
Ref. test gain:	29.21 dB (SPL70)
Output level with BE9403:	148.7 dB @ 1 kHz (SPL90)
	52.6 dB (HF Ave. SPL90)
Ref. test gain:	71 dB (SPL70)
Distortion:	0.559% THD (electrical)
SNR:	82 dB
Frequency range:	40 Hz – 10 kHz
Output power:	Max 125 mW @ 16 ohms

Features

Volume control:	9 steps (5 dB/step)
Maximum volume settings:	0-21 dB programmable attenuation (in settings mode only and in steps of 3 dB)
R/L-channel balance setting:	0-20 dB programmable attenuation (in steps of 5 dB)
Tone control:	+/- 10 dB (5 pre-set steps, push-buttons)
	Tone, high: +10dB@3.15 kHz
	-6dB@250Hz
	Tone, mid: flat
	Tone, low: -10dB@3.15 kHz
	No bass boost
Power switch:	on-off toggle button
Mic and T-mode:	Separate mode select buttons
Ext. mic / Aux in accessories:	Automatically selects Aux in or ext. mic. when plugged in
MicroSet™ accessory:	Automatically selects MicroSet™ accessory when plugged in
Dynamic compressor:	10 channels
	Dynamic gain range: 0-35 dB
	Compression: 3:1
	Expansion: 1:1.5
	Attack time: 25 ms
	Release time: 250 ms

Dynamic noise reduction:	10 channels Adaptive frequency domain noise reduction
Feedback cancellation:	Adaptive time domain feedback cancellation
Digital signal processing:	19.948 kHz sampling frequency 16-bit resolution in stereo

Additional information

For indoor use only.

Dimensions WxHxD:	45 x 140 x 27 mm
Weight (without clip):	With battery: 133 g Without battery: 83 g
Colour:	Grey with white front panel and grey buttons.
Operating temperature:	0°– 35° C, 32°– 95° F.
Transport and storage temperature:	-10°– 50° C.
Relative humidity:	15% – 90% (non condensing).

Regulatory requirements

FCC SDoC: FCC Part 15 Subpart B, CE, RoHS, WEEE, RCM

Accessories

BE9122	Bellman Audio Headphones
BE9128	Bellman Audio Neck Loop
BE9403	Bellman Audio Stetoclips
BE9124	Bellman Audio Ear Phones
BE9126	Bellman Audio Cable Kit
BE9127	Bellman Audio External Microphone

Measurements

Frequency response (acoustical):

ACOUSTIC INPUT LEVEL

- - - - - - - - - - - - - = 90 dB SPL

────────────── = 80 dB SPL

– – – – – – – = 70 dB SPL

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FCC compliance statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠ **Warning:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

💡 **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 from that to which the receiver is connected.

* Consult the dealer or an experienced radio/TV technician for help.

Statement for Industry Canada

Le fonctionnement de cet équipement est soumis aux conditions suivantes:

💡 (1) l'équipement concerné ne doit pas causer d'interférences, et (2) il doit accepter toute interférence reçue, y compris les interférences risquant d'engendrer un fonctionnement indésirable.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This Class B digital apparatus complies with Canadian ICES-003.