# Kanso® 2 Sound Processor

User Guide

CP1150

Hear now. And always

Cochlear®

# About this guide

This guide is intended for cochlear implant recipients and their carers who use the Cochlear™ Kanso® 2 Sound Processor (model number: CP1150).

The processor works with your implant to transfer sound to your ear. The Kanso 2 contains a processing unit, microphones, coil, magnet and internal battery.

You can control your processor by using the Nucleus® Smart App ('app') or a Cochlear CR310 Remote Control ('remote'). For more information on using the app or remote please refer to their user guides.

NOTES

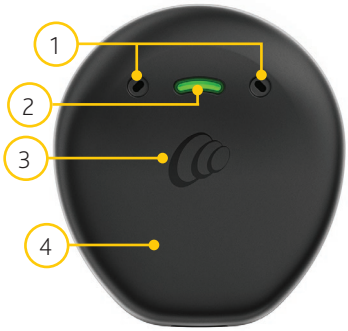
- See the Cautions and Warnings sections for safety advice relating to the use of the Kanso 2 Sound Processor, accessories and components.
- Please also refer to your *Important Information* document for essential advice that applies to Cochlear implant systems.

## Symbols used in this guide

| | |
|---|---|
|  | NOTE<br>Important information or advice. |
|  | TIP<br>Time-saving hint. |
|  | CAUTION (no harm)<br>Special care to be taken to ensure safety and effectiveness. Could cause damage to equipment. |
|  | WARNING (harmful)<br>Potential safety hazards and serious adverse reactions. Could cause harm to person. |

# Kanso® 2 Sound Processor

## *Front*




1 Microphone ports
2 Indicator light
3 Cochlear logo
4 Cover

## *Back*


1 Magnet
2 Socket cover

# Contents

## Power



## Use



## Wear



## Care

# Notes

# Charge your processor

Your processor has an internal battery that needs regular charging.

Please charge your sound processor as soon as you receive it.

To recharge your processor's internal battery you can:

- place it in the **Home Charger** or
- attach it to the **Portable Charger**.

Refer to the *Cochlear Chargers User Guide* for details.

**WARNING**

To charge your processor:

- Use Cochlear equipment only.
- Do not use non-Cochlear equipment.

# Pair with remote devices

Before using your processor with a compatible Apple® or Android™ device, or the Cochlear Remote Control, you need to pair your processor with the remote device.

Please refer to the app or remote user guides for details.

**WARNING**

Consider security when connecting your sound processor to devices such as smartphones or tablets. Only connect to devices that are protected, e.g. password or PIN access control. Do not connect to devices that have had their operating system altered.

## Made for iPhone

Your Kanso 2 Sound Processor is a Made for iPhone® / iPod® hearing device. This allows you to use the control and audio streaming functions of compatible Apple devices.

If you wear a sound processor on one ear and a compatible MFi hearing aid on the other, you may be able to simultaneously control them and stream audio using a compatible iOS device. Your clinician can check compatibility and set this up for you.

## Android

Your Kanso 2 Sound Processor is compatible with the ASHA (Audio Streaming for Hearing Aid) protocol. This allows you to use the audio streaming functions of compatible Android devices.

**NOTE**

Pairing your sound processor with your device does not enable the functionality of the Nucleus Smart App. If you want to use the app, you need to download it from Google Play® or the App Store®.

# Nucleus Smart App

With a compatible Apple or Android device, you can use the Nucleus Smart App to control and monitor your sound processor. Please refer to your app user guide for details.

# Control options

The table below compares the three ways you can control your sound processor.

**NOTE**
Some functions are only available if enabled by your clinician.

| FUNCTION | TAP PROCESSOR | REMOTE CONTROL | NUCLEUS SMART APP |
|---|---|---|---|
| Turn ON/OFF | X | | |
| Program | | X | X |
| Volume | | X | X |
| Sensitivity | | X | X |
| Audio Source | | X | X |
| Master Volume Limit | | | X |
| Bass / Treble | | | X |
| ForwardFocus | | | X |

**NOTE**
Volume and Sensitivity can only be changed using the Remote Control or Nucleus Smart App.

# Tapping

You can tap on your processor to turn the processor **on** and **off**.

## How to tap

- Tap on the **Cochlear logo**.
- Use **quick, firm taps** – don't press.

**TIP**
You can tap your processor while it is on or off your implant.

| CONTROL | NUMBER OF TAPS |
|---|---|
| Turn ON | Double-tap – 2 taps |
| Turn OFF | Triple-tap – 3 taps |

# Turn on and off

## Turn on

To turn your processor **on**:

- **Auto-on** – place processor on your head (if enabled by your clinician)

  or

- **Double-tap** (2 taps – quick and firm).

As the processor turns on, the light flashes green.

'Turn off' – next page ...

## Turn off

To turn your processor **off**:

- **Auto-off** – remove it from your head and wait two minutes (if enabled by your clinician)

  or

- **Triple-tap** (3 taps – quick and firm).

As the processor turns off, the light changes to steady orange.

| INDICATOR LIGHTS | WHAT IT MEANS |
| --- | --- |
|  Green flashes | Turning on processor.<br>The number of flashes indicates the number of the current program. |
|  Quick green flashes | Processor flashes while receiving sound from microphones (Child mode only). |
|  Orange flashes | Processor is off the implant. |
|  Long flash of orange | Processor is turning off. |

# Change program

You can select different programs to change how your processor deals with sound, for example in noisy or quiet places.

To switch between **programs** use your app or remote.

Please refer to your app or remote user guide for details.

NOTE
You need to pair your sound processor with your app or remote first. Refer to their user guides for details.

As the program changes, the light flashes green.

| INDICATOR LIGHT | WHAT IT MEANS |
| --- | --- |
|  Green flashes | Changing the program.<br>The number of flashes indicates the number of the selected program. |

NOTES
- Your clinician will set up 1, 2, 3 or 4 programs.
- If your clinician has enabled SCAN, your sound processor can automatically select the best program for you.

# Change volume and sensitivity

If set up by your clinician, you can control volume or sensitivity levels (if available) using your app or remote.

Please refer to your app or remote user guide for details.

NOTE

You need to pair your sound processor with your app or remote first. Refer to their user guides for details.

# Stream audio

Your processor can stream sound from external audio sources.

## Wireless accessories

Cochlear True Wireless™ Accessories can wirelessly stream sound to your processor:

- The **Mini Microphone** or **TV Streamer** are controlled from your processor
- You use the **Phone Clip** controls for phone calls.

The **Mini Microphone 2+** has extra connectivity options including a built-in **Telecoil** to provide audio from an induction loop system.

NOTES

- You first need to pair your wireless accessories with your sound processor. Please refer to accessory user guides for details.
- Use your app or remote to select the Mini Microphone and TV Streamer. Please refer to the app and remote user guides for details.

To switch between audio sources use your app or remote.

Please refer to your app or remote user guide for details:



NOTE

You need to pair your sound processor with your app or remote first. Refer to their user guides for details.

As the audio source changes, the light flashes blue.

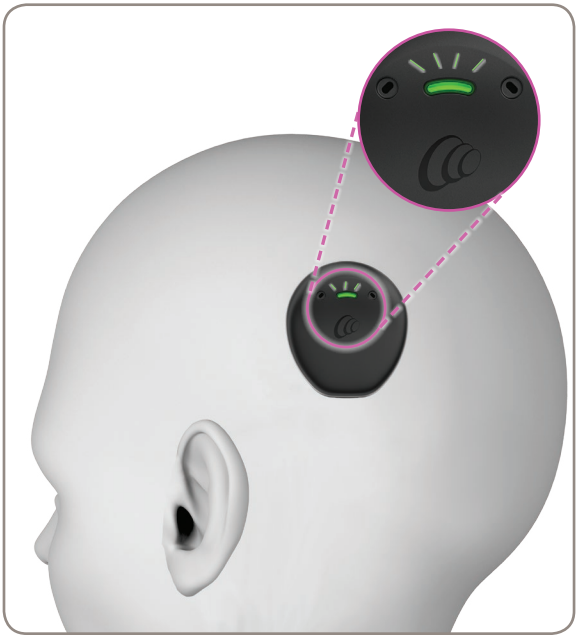
## Wear your processor

Place the processor on your implant with the:

- Cochlear logo, light and microphone ports facing up
- straight edge facing down.

**CAUTION**

Make sure you position your processor correctly to get the best performance, and so it does not fall off the implant.



| INDICATOR LIGHTS | WHAT IT MEANS |
| --- | --- |
| Flash of orange every second | Processor is off your head (or connected to the wrong implant). |

## People with two implants

Ask your clinician to give you coloured stickers (red for right, blue for left) to make identifying left and right processors easier.

**CAUTION**

If you have two implants, you must use the correct processor for each implant.

## People with CI600 Series implants

If you have a CI600 Series implant, avoid sliding your processor sideways onto your implant. This could cause the processor magnet to misalign with your implant. Always place the processor down onto your implant.

To place the processor on your head:

1. Hold the processor slightly above the implant location on your head.
2. Rotate the processor slightly in both directions (clockwise and anti-clockwise).

3. When you feel a strong pull, place the processor on the implant.
4. Rotate the processor so that the microphones are facing up.

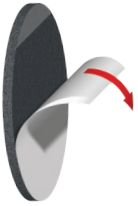
# Notes

# Attach a SoftWear pad

The Cochlear SoftWear™ pad is optional. If you experience discomfort when wearing your processor, you can attach this adhesive pad to the back.

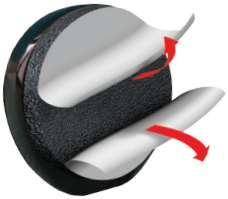
**NOTE**
You may need to use a stronger magnet after attaching a SoftWear pad.

1. **Peel off** the single backing strip on the adhesive side of the pad.



2. **Attach** the pad to the back of the processor – **press down** firmly.

3. **Peel off** the two semicircle backing covers on the cushion side of the pad.



4. **Place** your processor on your implant as usual.

NOTE
If you notice any change in your processor's performance after attaching a SoftWear pad, contact your clinician.

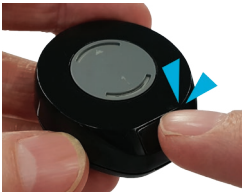
# Use the Socket Cover

The Kanso 2 Socket Cover is an optional accessory that can prevent dust and other material from entering the processor socket.

## Insert the Socket Cover

1. **Place** the Socket Cover in the processor socket.

2. **Press** until it clicks into place.



## Remove the Socket Cover

Place your thumbnail in the slot at the base and **lift**.

**WARNING**

Socket covers can be lost or may be a choking hazard. Keep out of reach of children.

# Attach a Safety Line

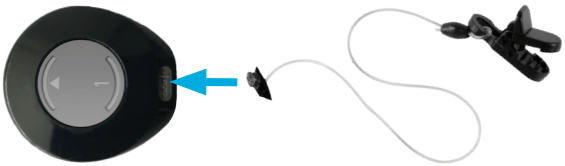
To reduce the risk of losing your processor, you can attach a Kanso 2 Safety Line and clip it onto your clothing.

There are three Safety Lines for Kanso 2:

- Short – for children
- Long – for adults
- Short loop – for use with Cochlear Hair Clip (see page 26).

**WARNING**

Retention lines longer than the Safety Line short length are not recommended for use by children under 3 years as they may present a risk of strangulation.



When using the **Aqua+ for Kanso 2** you need a Nucleus Safety Line, which has a loop to connect to Aqua+.

For details on how to use a Safety Line with your Aqua+ refer to the *Aqua+ for Kanso 2 User Guide*.

To attach a long or short safety line to the processor:

1. If the socket cover is in place on the back of the processor, **remove** the socket cover.

2. Put the safety line connector in the socket and **press** until it clicks into place.

3. **Attach** the clip to clothing:

   Long safety line (adults)

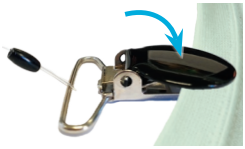
   a. **Lift** the lever to **open** the clip.

   b. Place the clip on clothing and press **down** on the lever to **close**.

### Short safety line (children)

a. **Lift** the round cover to **open** the clip.

b. Place the clip on clothing and press **down** on the round cover to **close**.



4. **Place** the processor on the implant.

## Safety Line – short loop

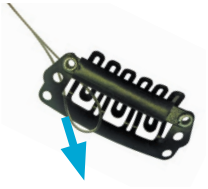
To reduce the risk of losing your processor, you can attach a Safety Line that clips into your hair.

1. **Pinch** the loop end of the line between your finger and thumb.

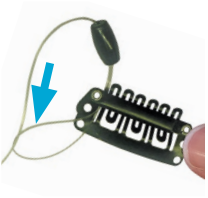
2. **Pass** the loop through the attachment hole in the hair clip.

**TIP**

Use the left hole for a left side processor and the right hole for a right side processor.



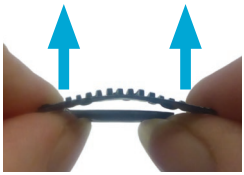
3. **Pass** the other end of the line through the loop and **pull** the line tight.



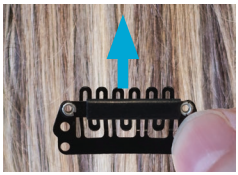
4. If the socket cover is in place on the back of your processor, **remove** the socket cover.

5. Put the safety line connector in the socket and **press** until it clicks into place.

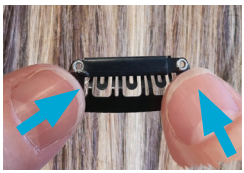
6. **Press up** on the ends to open the clip.



7. With the teeth facing up and against your hair, **push** the clip up into your hair.



8. **Press down** on the ends to close the clip.



9. **Place** your processor on your implant.

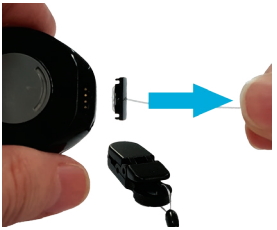
## Remove a Safety Line

To remove a safety line from your processor:

place your thumbnail in the slot at the base and **lift**

or

hold the line close to the socket and **pull**.



# Wear the headband

The Cochlear Kanso 2 Headband is an optional accessory that holds the processor in place during physical activities.

## Headband sizing

To choose a headband, measure your head circumference:

| SIZE | CIRCUMFERENCE | SIZE | CIRCUMFERENCE |
|---|---|---|---|
| XS | 40–48 cm | M | 48–58 cm |
| S | 45–53 cm | L | 53–63 cm |

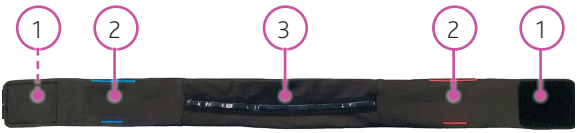
NOTES

- The headband may affect your sound processor's performance. If you notice any change, contact your clinician.
- It is recommended to remove the headband at least once daily while sleeping. If worn continuously, the headband should not be worn without removal for more than 30 days.

## Fitting the headband

To fit the headband, follow these steps.

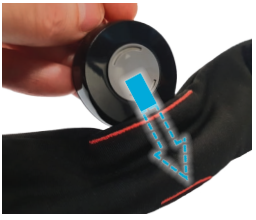
1. **Open** the headband and lay it flat, with the anti-slip section facing you and the longer pocket lines at the top.




1 Hook and loop fastener
2 Pocket for processor
3 Anti-slip section for forehead

2. **Open** the correct **pocket** for your processor.
   - left-side pocket (blue) for left processor
   - right-side pocket (red) for right processor.

3. **Insert** your processor into the pocket, making sure that:
   - the back of the processor (with magnet) is facing towards you
   - the bottom of the processor (straight edge) goes in first.



4. If you have **two** processors, place your second processor in the other pocket.

5. **Place** the headband on your head, making sure that:
   - the anti-slip section is against your forehead
   - your processor is over your implant
   - the headband fits firmly
   - the hook and loop fastener join is secure (press firmly).

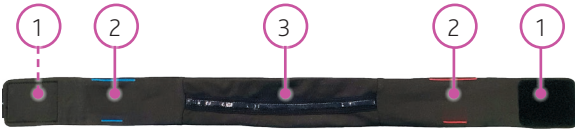
## Fitting the headband with Portable Charger

You can charge your processor while it's in the headband using the Cochlear Portable Charger. At the base of each headband pocket there is an opening for the charger cable.

For more information on the charger, refer to the *Cochlear Chargers User Guide*.

To fit the headband with charger, follow these steps.

1. Open the headband and lay it flat, with the anti-slip section facing you and the longer pocket lines at the top.



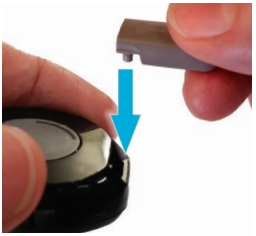

1 Hook and loop fastener
2 Pocket for processor
3 Anti-slip section for forehead

2. **Open** the **base** of the correct **pocket** for your processor:
   - left-side pocket (blue) for left processor
   - right-side pocket (red) for right processor.

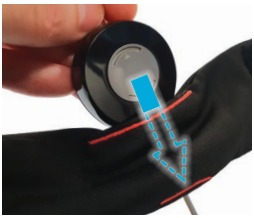
3. **Feed** the Portable Charger connector and cable through the pocket's bottom opening and out through the top opening.

4. If the socket cover is in place on the back of your processor, **remove** the socket cover.

5. **Attach** your Portable Charger connector to the processor.



6. **Insert** your processor into the pocket, making sure that the back of the processor (with magnet) is facing towards you.



7. **Attach** the Portable Charger to your clothing.

   For more information on the Portable Charger, refer to the *Cochlear Chargers User Guide*.

8. **Place** the headband on your head, making sure that:
   - the anti-slip section is against your forehead
   - your processor is over your implant
   - the headband fits firmly
   - the hook and loop fastener join is secure (press firmly).

## Change the magnet

Use the Kanso 2 Magnet Tool to change your magnet.

If the Kanso 2 Magnet is too weak your processor may fall off. If the magnet is too strong it may cause discomfort.

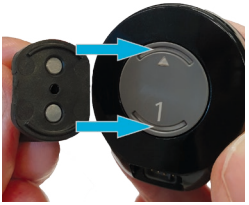
Magnet strength ranges from **½** (weakest) to **6** (strongest) for standard magnets and **½(I)** (weakest) to **5(I)** (strongest) for '**(I)**' magnets.

NOTE
If your clinician has given you a Kanso 2 Magnet Reverse Polarity, use it as described here for a standard magnet.

### Remove the magnet

To remove the magnet from your processor:

1. **Place** the tool on the magnet. Insert the tool ridges into the magnet grooves.

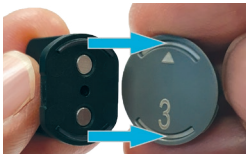


2. **Turn** the tool **anti-clockwise** and **pull** the magnet out.

## Insert a magnet

To insert a magnet into your processor:

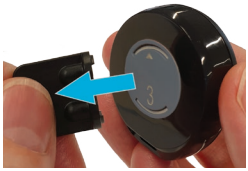
1. **Place** the tool on the magnet. Insert the tool ridges into the magnet grooves.



2. **Insert** the magnet into the processor.

3. **Turn** the tool **clockwise** until until the magnet **clicks** into place.

4. **Remove** the tool from the magnet and store in a safe place.



**WARNING**

Magnet Tools can be lost or may be a choking hazard. Keep out of reach of children.

# Sport and exercise

NOTE
If you want to use your processor while bathing, swimming or showering, ask your clinician about the Cochlear Aqua+ for Kanso 2.

1. Use accessories such as the Safety Line or Kanso 2 Headband to help hold your processor in place when you play sport or exercise.
2. After exercise, wipe your processor with a soft cloth to remove sweat or grime.
3. Check your microphone protectors for dirt.
   See *Change the microphone cover* on page 42.

# Travel

NOTE

Visit *www.cochlear.com/clinic-finder* to find the nearest clinic in places you are travelling.

- Take a printout from your clinician of your most recent program in case you need help with your processor.
- If you have a backup sound processor, check that it is programmed correctly and take it with you.
- It's okay to move through metal detectors and full body scanners with your sound processor on.
- Ask your clinician for a Patient Identification Card. In the unlikely event that your implant sets off a metal detector the ID card will help explain that you have an implanted medical device.
- If you need to remove your sound processor as you move through airport security, place it in a case in your hand luggage.
- Your sound processor transmits high frequency radio waves when switched on, and may need to be placed in a flight-safe mode during take-off and landing (see *Use flight mode* on page 38). Check with airline staff before flying if you are unsure.
- If you use a remote control for your processor, switch it off before take-off as it transmits high frequency radio waves when switched on.

## Use flight mode

To switch your processor to flight mode:

1. **Remove** the procesor from your head.
2. **Quadruple-tap** (4 taps, quick and firm) on the Cochlear logo.
3. Within **5 seconds**, place the processor back on your head.

| INDICATOR LIGHT | WHAT IT MEANS |
|---|---|
| Steady green | Sound processor enters flight mode.<br>Green light stays on until the processor is placed on the implant. |

To switch flight mode **off**, turn your processor off and on again. See ***Turn on and off*** on page 9.

# Notes

# Regular care

**CAUTION**

- Do not use cleaning agents or alcohol to clean your processor.
- Turn your processor off before cleaning or performing maintenance.

## Every day

- ✓ Check all parts and accessories (e.g. SoftWear pad, Safety Line) for dirt and moisture. Wipe the processor with a soft dry cloth.
- ✓ Keep your processor free from moisture by drying it every night in the Home Charger.
- ✓ Check the microphone protectors for signs of dirt or grime. Replace as needed. See *Change the microphone cover* on page 42.

## Every month

- ✓ Replace a used SoftWear pad that is worn or damaged, or has accumulated dirt or moisture that cannot be wiped off. See *Attach a SoftWear pad* on page 20.
  If you have a comfort problem that is not helped by changing the SoftWear pad, contact your clinician.
- ✓ Check used Safety Lines for signs of wear. Replace as needed. See *Attach a Safety Line* on page 23.

## Every three months

- ✓ Replace the microphone protectors – this is very important for the quality of sound. See *Change the microphone cover* on page 42.

## Every six months

- ✓ Charge the processor to ensure the internal battery does not deteriorate.

# Headband

**CAUTION**

Before cleaning your headband, remove the processor.

If the headband is dirty:

- Wash in cold water (machine or hand wash)
- Do not bleach
- Do not tumble dry
- Iron on medium heat.

# Storage

## Home Charger

Store your processor at night in the Home Charger provided by Cochlear.

Store the fully assembled processor overnight for optimal drying effect.


Refer to the *Cochlear Chargers User Guide*.

# Change the microphone cover

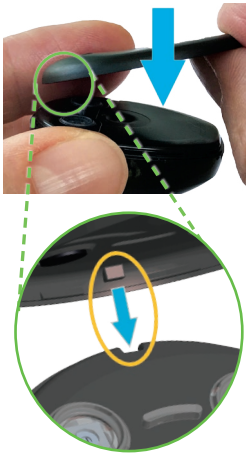
Replace your Kanso 2 Microphone Cover every three months, or if the microphone protectors look dirty or your sound quality degrades.

Microphone protectors are attached to the underside of your processor's cover:


## Replace the microphone cover

1. **Remove** the cover from your processor.

2. **Place** the new cover on your processor.



3. **Press** around the edge with your thumbs to make sure the cover is sealed.

**CAUTION**

When the cover is removed, sensitive microphone filters are exposed. Do not touch the microphone filters - this could cause damage to your processor.

# Water, sand and dirt

Your processor is protected against failure from dust penetration and temporary immersion in fresh water.

With the Portable Charger attached, your processor is protected from dust penetration and fresh water splashing.

| PARTS | RATING |
|---|---|
| Kanso 2 Sound Processor only | IP68 |
| Kanso 2 Sound Processor with Portable Charger attached | IP54 |

However, it is still a precision electronic device so please take the following precautions.

## Water

If your processor gets **wet**:

1. Dry it with a soft cloth.
2. Replace the microphone protectors. See *Replace the microphone cover* on page 42.
3. Place your processor in the Home Charger to dry. Refer to the *Chargers User Guide*.

## Sand and dirt

If **sand** or **dirt** enter the processor, carefully brush all indents and holes in the processor's casing.

# Lights

Your clinician can set up your processor to show some or all of the following light indications.

## Turning on and off

| LIGHT | WHAT IT MEANS |
|---|---|
|  Quick green flashes | Processor flashes while receiving sound from microphones (Child mode only). |
|  Quick green flashes | Turning on and changing programs. Number of flashes indicates the number of the current program. |
|  Long flash of orange | Turning off processor. |

## Alerts

| LIGHT | WHAT IT MEANS |
|---|---|
|  Flash of orange every second | Processor flashes while it is off your head (or connected to the wrong implant). |
|  Orange flashes | Processor batteries are low. Change batteries. |
|  Steady orange | Fault. Contact your clinician. Stays on until the issue is resolved. |

## Audio sources

| LIGHT | WHAT IT MEANS |
|---|---|
|  Quick blue flash | Processor flashes when pairing to wireless accessory is successful. |
|  Quick blue flashes | Processor flashes while receiving audio from an audio source (Child mode only). |
|  Steady blue | Sound Check function in Nucleus Smart App is recording sound from your processor. |

## ForwardFocus *

| LIGHT | WHAT IT MEANS |
|---|---|
|  Quick green flash | Turning ForwardFocus on/off (Child mode only). |

* If available, Nucleus Smart App only

# Beeps

Your clinician can set up your processor so you can hear the following beeps. The beeps are only audible to the recipient.

## Turning on and off

| BEEP | WHAT IT MEANS |
|---|---|
|  Short high beeps | Changing the program. The number of beeps indicates the number of the selected program. |
|  Short high beep | Changing volume or sensitivity level (if available). |
|  Short high then short low beep | When changing volume or sensitivity, indicates upper or lower limit of volume/ sensitivity reached. |

## Wireless accessories

| BEEP | WHAT IT MEANS |
|---|---|
|  3-tone chime | Connecting with wireless accessory to begin streaming audio. |
|  Short beep | When stopping streaming. |

## Alerts

| BEEP | WHAT IT MEANS |
|---|---|
|  2 Short low beeps | Battery is low. Recharge your processor. |
|  Short low beeps for 4 seconds | Battery is empty and processor is turning off. Recharge your processor. |
|  4 long low beeps over 4 seconds | General fault or if Portable Charger attached, charging error. Consult your clinician. |

## Adjusting bass and treble *

| BEEP | WHAT IT MEANS |
|---|---|
|  Loud medium beep | Adjusting master volume level. |
|  Loud long high beep | Adjusting treble level. |
|  Loud long low beep | Adjusting bass level. |

* If available, app and remote only

## ForwardFocus *

| BEEP | WHAT IT MEANS |
|---|---|
| ● Short high beep | Turning ForwardFocus on/off. |

* If available, Nucleus Smart App only

## Sound Check *

| BEEP | WHAT IT MEANS |
|---|---|
| ♪♪♪♪♪ 5-tone chime | Begin recording. |
| ■ Short beep | End recording. |

* App function to record processor sound

# Notes

# Troubleshoot

Contact your clinician if you have any concerns regarding the operation or safety of your sound processor.

| PROBLEM | RESOLUTION |
|---|---|
| **Processor will not turn on** | 1. Try turning the processor on again. See *Turn on and off* on page 9.<br>2. If you have two implants, check that you are wearing the correct sound processor on each implant.<br>3. If the problem continues, contact your clinician. |
| **The processor switches off** | This is normal operation, as the processor automatically switches off when not connected to the implant for more than two minutes (if enabled by your clincian). |
| **You want to perform a regular check on your processor** | See *Regular care* on page 40. |
| **Processor does not attach as strongly as usual** | Make sure the processor is oriented properly on your head. See *Wear your processor* on page 16. |

| PROBLEM | RESOLUTION |
|---|---|
| **You are not sure what processor beeps or light flashes mean** | See *Lights* on page 46 and *Beeps* on page 48. |
| **You want to confirm your processor is receiving sound** | 1. Check the light on the top of the processor (if enabled). See *Lights* on page 46.<br>2. If you have the Nucleus Smart App, use the Status screen to check the processor is receiving sound.<br>3. If you have the Nucleus Smart App, use Sound Check to record sound received by your processor. A hearing person can listen to the recording to check sound received by the processor. Refer to your app user guide for details.<br>4. If the problem continues, contact your clinician. |
| **The processor becomes hot** | Remove the processor from your head immediately and contact your clinician. |

| PROBLEM | RESOLUTION |
|---|---|
| **You experience tightness, discomfort or develop a skin irritation at your implant site** | 1. Try using an adhesive SoftWear pad. See *Attach a SoftWear pad* on page 20.<br>2. If you are using a retention aid, such as a headband, this may be placing pressure on your processor. Adjust your retention aid, or try a different aid.<br>3. Your processor magnet may be too strong. Ask your clinician to change to a weaker magnet and use a retention aid such as the Safety Line if required. See *Change the magnet* on page 34.<br>4. If the problem continues, contact your clinician. |
| **You do not hear sound or sound is intermittent** | 1. Try a different program. See *Change program* on page 12.<br>2. Make sure you are using the correct magnet for your implant. If unsure, contact your clinician.<br>3. If you use the Remote Control, turn up the volume.<br>4. If you have the Nucleus Smart App, turn up the volume or sensitivity.<br>5. Make sure the sound processor is properly oriented on your head. See *Wear your processor* on page 16.<br>6. If the problem continues, contact your clinician. |

| PROBLEM | RESOLUTION |
|---|---|
| **You do not hear sound from a wireless accessory** | 1. Interference from nearby electrical devices can sometimes disrupt streaming from a wireless accessory. Try moving away from any device that might be causing this interference.<br>2. Check that the wireless accessory is charged and turned on.<br>3. Check that the wireless accessory is paired with your processor.<br>4. Check the volume of the wireless accessory.<br>5. If you have the Nucleus Smart App, use the Status screen to check the processor is receiving sound from the accessory.<br>6. If you have the Nucleus Smart App, check and adjust the accessory/microphone volume.<br>7. If available, try a different processor.<br>8. For more troubleshooting, refer to the *True Wireless Accessories User Guide*. |

| PROBLEM | RESOLUTION |
|---|---|
| **You hear intermittent sound, a buzzing sound or distorted speech** | 1. Check for sources of interference such as radio and TV transmission towers (within approximately 1.6 km or 1 mile), shopping centre or airport security systems, and mobile phones.<br>2. Try moving away from any source of magnetic or electronic interference.<br>3. If the problem continues, contact your clinician. |
| **Sound is too loud or uncomfortable** | 1. Try a different program. See *Change program* on page 12.<br>2. If you use a Remote Control, turn down the volume.<br>3. If you have the Nucleus Smart App, turn down the volume or sensitivity.<br>4. If you have two sound processors (one for each side), ensure you have them on the correct side.<br>5. If the problem continues, remove your external equipment immediately (sound processor, etc) and contact your clinician. |

| PROBLEM | RESOLUTION |
|---|---|
| **Sound is too quiet or muffled** | 1. Try a different program. See *Change program* on page 12.<br>2. If you use a Remote Control, turn up the volume.<br>3. If you have the Nucleus Smart App, turn up the volume or sensitivity.<br>4. Try changing the microphone protectors. See *Change the microphone cover* on page 42.<br>5. If the problem continues, contact your clinician. |
| **The processor gets wet** | Dry the processor with a soft cloth, change the microphone protectors and place it in the Home Charger provided by Cochlear to dry. See *Water, sand and dirt* on page 45. |
| **Battery does not last as long as usual** | 1. If you are using a non-recommended retention aid that covers your sound processor, replace it with an aid recommended by Cochlear.<br>2. Make sure you are using the correct magnet for your implant. If unsure, contact your clinician.<br>3. Make sure the sound processor is properly oriented on your head. See *Wear your processor* on page 16.<br>4. If the problem continues, contact your clinician. |

# Cautions

- Young children who are developing motor skills are at greater risk of an impact to the head from a hard object (e.g. table or chair). Impact to the sound processor may cause damage to the processor or its parts. Impact to the head in the area of the Cochlear implant could damage it and result in its failure.
- Avoid placing metallic or magnetic objects near your processor while it is on your implant or in the Home Charger. This could affect sound levels (while wearing) or damage your Home Charger.
- Most patients can benefit from electrical stimulation levels that are considered safe, based on animal experimental data. The long-term effects of such stimulation in humans are unknown.

# Notes

# Warnings

## For parents and carers

- Removable parts of the system (e.g. socket cover, magnets, SoftWear pad, Safety Line) can be lost or may be a choking or strangulation hazard. Keep out of reach of children.
- Unsupervised use of cables or the headband may present a risk of strangulation.
- Carers must routinely check devices that are worn on the body for signs of overheating (e.g. processor, Portable Charger). Remove the device immediately if it becomes hot and contact your clinician.
- Carers must routinely check for signs of discomfort or skin irritation at the implant site. Remove the processor immediately if there is any discomfort or pain (e.g. if sound is uncomfortably loud) and contact your clinician.
- Carers must monitor for signs of discomfort or skin irritation if a retention aid (e.g. headband) is used that applies pressure to the sound processor. Remove the aid immediately if there is any discomfort or pain and contact your clinician.

## Processors and parts

- Each processor is programmed specifically for each implant. Never wear another person's processor or lend yours to another person.
- Use your Cochlear implant system only with approved devices and accessories.
- If you experience a significant change in performance, remove your processor and contact your clinician.
- Your processor and other parts of the system contain complex electronic parts. These parts are durable but must be treated with care.
- No modification of this equipment is allowed. Warranty will be void if modified.
- If you experience tightness or pain at the implant site, or develop significant skin irritation, stop using your sound processor and contact your clinician.
- Do not apply continued pressure to the processor when in contact with the skin (e.g. sleeping while lying on processor, or using tight fitting headwear).
- Do not push the volume too high for comfort in case a loud noise occurs nearby.
- If you need to adjust the volume often, or if adjusting volume ever causes discomfort, contact your clinician.

- Do not place the processor or parts in any household devices (e.g. microwave oven, dryer).
- Do not expose the processor or parts to heat (e.g. never leave them in sunlight, behind a window or in a car).
- Do not use a dry aid kit that has an Ultra Violet C (UVC) lamp (e.g. do not use the Freedom® Dry and Store).
- The magnetic attachment of your sound processor to your implant may be affected by other magnetic sources.
- Store spare magnets safely and away from cards that may have a magnetic strip (e.g. credit cards, bus tickets).
- Your device contains magnets that should be kept away from life supporting devices (e.g. cardiac pacemakers and ICDs (implantable cardioverter defibrillators) and magnetic ventricular shunts), as the magnets may affect the function of these devices. Keep your processor at least 15 cm (6 in) from such devices. Contact the manufacturer of the specific device to find out more.
- Your sound processor and remote control radiate electromagnetic energy that may interfere with life supporting devices (e.g. cardiac pacemakers and ICDs). Keep your processor and remote control at least 15 cm (6 in) from such devices. Contact the manufacturer of the specific device to find out more.
- Do not place the device or accessories inside any part of your body (e.g. nose, mouth).

- Seek medical advice before entering any environment that may adversely affect the operation of your Cochlear implant, including areas protected by a warning notice preventing entry by patients fitted with a pacemaker.
- Some types of digital mobile telephones (e.g. Global System for Mobile communications (GSM) as used in some countries), may interfere with the operation of your external equipment. You may hear distorted sound when close, 1-4 m (~3-12 ft), to a digital mobile telephone in use.
- For Cochlear Nucleus cochlear implant recipients only, the maximum diving depth is 40 m (~131 ft). Seek medical advice before diving to ensure you do not have any conditions that might make diving contraindicated (e.g. middle ear infection). When wearing a mask, avoid pressure over the implant site.
- Before activities that create electrostatic discharge (e.g. playing on plastic slides), remove your processor. In rare cases, discharge of static electricity can damage your Cochlear implant's electrical components or corrupt the processor's program. If static electricity is present (e.g. when putting on clothes over your head, or getting out of a car), before the Cochlear implant system touches any object or person, you should touch something conductive such as a metal door handle.

# Medical treatments

## Magnetic resonance imaging (MRI)


The Kanso 2 Sound Processor, remote and related accessories (such as the Wireless Programming Pod) are MR Unsafe.

Full MRI safety information is available at *www.cochlear.com/warnings* or by calling your regional Cochlear office (contact numbers available at the end of this document).

### Medical treatments generating induced currents, heat and vibration

Having a cochlear implant means extra care must be taken when receiving some medical treatments. Before starting medical treatment, the information in this section should be discussed with the recipient's physician.

The sound processor must be removed before starting any of the medical treatments listed in this section.

Some medical treatments generate induced currents that may cause tissue damage or permanent damage to the implant. Before initiating any of the following treatments deactivate the device.

Warnings for specific treatments are provided below.

| CONDITION | WARNING |
|---|---|
| Diathermy | Do not use therapeutic or medical diathermy (thermopenetration) using electromagnetic radiation (magnetic induction coils or microwave). High currents induced into the electrode lead can cause tissue damage to the cochlea/brainstem or permanent damage to the implant. Medical diathermy using ultrasound may be used below the head and neck. |
| Electroconvulsive therapy | Do not use electroconvulsive therapy on an implant patient under any circumstances. Electroconvulsive therapy can cause tissue damage or damage to the implant. |

| CONDITION | WARNING |
|---|---|
| Electrosurgery | Electrosurgical instruments can induce radio frequency currents that could flow through the electrode.<br><br>Monopolar electrosurgical instruments must not be used on the head or neck of an implant patient as induced currents could cause damage to cochlear/neural tissues or permanent damage to the implant.<br><br>When using bipolar electrosurgical instruments on the head and neck of a patient, the cautery electrodes must not contact the implant and should be kept more than 1 cm (½ in.) from the electrodes. |
| Ionising radiation therapy | Do not use ionizing radiation therapy directly over the implant. It may cause damage to the implant. |
| Neurostimulation | Do not use neurostimulation directly over the implant. High currents induced into the electrode lead can cause tissue damage to the cochlea/ brainstem or permanent damage to the implant. |
| Therapeutic ultrasound | Do not use therapeutic levels of ultrasound energy directly over the implant. It may inadvertently concentrate the ultrasound field and cause tissue damage or damage to the implant. |

# Notes

# Specifications

The Kanso 2 sound processor comprises:

- Two omni-directional microphones for receiving sound.
- Custom analogue and digital integrated circuits with digital signal processing (DSP) and bi-directional wireless communication capabilities.
- Tri-colour visual indication of processor function or problem.
- Tap interface allowing the user to turn the processor on and off.

The internal battery provides power to the processor, which transfers energy and data to the implant.

| MATERIALS | |
|---|---|
| Processing unit | Polyamide |
| Magnet casing | Acrylonitrile butadiene styrene (ABS) |

| DIMENSIONS | LENGTH | WIDTH | DEPTH |
|---|---|---|---|
| Processing unit (typical values) | 38 mm | 34 mm | 12.5 mm |

| WEIGHT | WEIGHT |
|---|---|
| Processing unit and magnet | 14.2 g |

| OPERATING CHARACTERISTICS | VALUE/RANGE |
|---|---|
| Sound input frequency range | 100 Hz to 8 kHz |
| RF frequency | 2.4 GHz |
| Input operating voltage | 4.75 V to 5.35 V |
| Power consumption | 20 mW to 100 mW |
| Charge cycles | ≥ 80% capacity after 2000 charge/discharge cycles at room temperature |
| Battery type | Lithium ion |
| Battery capacity | 650 mWh |
| Tap functions | Turn processor on and off |

| COIL CHARACTERISTIC | VALUE/RANGE |
|---|---|
| Technology | Inductive power and data transfer using coupled resonant coils |
| Operating voltage | 2.33 V |
| Data rate | 1.25 Mbps (4 CPC), 1 Mbps (5 CPC) |
| Protocols | Cochlear's proprietary embedded protocol employing a series of 4 or 5 consecutive pulses at 5 MHz |
| Separation between coil and implant | 1–10 mm |

## Sound processor to implant inductive link

The inductive link between the sound processor coil and the implant performs two functions: it transfers power from the sound processor to the implant and provides a bi-directional data communication link. Both power and data are transferred in the reactive near H-field. The link uses a Cochlear proprietary embedded protocol employing a series of 4 or 5 consecutive pulses clocked at 5 MHz and operates over a distance of 1-10 mm. Data validity and parity checking is used to ensure correct data transfer. In the presence of interference, the sound processor triggers a 'coil-off' orange light indication and the Nucleus Smart App provides a visual indication that the coil is decoupled from the implant.

# Wireless technology

| CHARACTERISTIC | VALUE/RANGE |
|---|---|
| Technology | Proprietary low power bi-directional wireless link<br>Published commercial wireless protocol (Bluetooth Low Energy) |
| Power output | 1 mW (0 dBm) |
| RF frequency | 2.4 GHz (range 2.40 – 2.83 GHz) |
| Radiated power | +0.55 dBm |
| Channel spacing | 1 MHz |
| Maximum data rate | 2 Mbps |
| Modulation | GFSK |
| Protocols | NXP2 protocol: Proprietary wireless protocol based on GN ReSound's low power bi-directional wireless link (Proximity 2 protocol).<br>Bluetooth Smart: Commercially available low energy wireless protocol. |
| Wireless transmission range | • At least 2 m (remote control)<br>• At least 3 m (Phone Clip)<br>• At least 7 m (Mini Microphone, TV Streamer)<br>• At least 2 m (Made for iPhone control)<br>• At least 7 m (Made for iPhone streaming)<br>• At least 7 m (Android streaming*)<br>* available only on compatible Android devices |

## Wireless communication link

The wireless communication link operates in the 2.4 GHz ISM band using GFSK (Gaussian frequency-shift keying), and a proprietary bidirectional communication protocol. It continuously switches between channels to avoid interference on any specific channel.

- The remote control operates over 4 channels, over a distance of at least 2 metres from the processor. It indicates via its display when the processor is out of operating distance (or switched off) or when the link is interrupted due to broad spectrum interference (see remote's user guide for more information).
- The True Wireless accessories operate over 16 channels, over a distance of at least 3 metres for the Phone Clip, and 7 metres for the Mini Microphone and TV Streamer.

Bluetooth® Smart also operates in the 2.4 GHz ISM band, using frequency hopping over 37 channels to combat interference. Operating range is at least 7 metres, and the app indicates when the processor is out of operating distance (or switched off) or when the link is interrupted due to broad spectrum interference.

| ENVIRONMENTAL CONDITIONS | MINIMUM | MAXIMUM |
|---|---|---|
| Storage and transport temperature | -10° C (14° F) | +55° C (131° F) |
| Storage and transport humidity | 0% RH | 90% RH |
| Operating temperature | +5° C (41° F) | +40° C (104° F) |
| Operating relative humidity | 0% RH | 90% RH |
| Operating pressure | 700 hPa | 1060 hPa |

## Headband specifications

| HEADBAND MATERIALS | |
|---|---|
| Fabric | 83% polyester, 17% elastane |
| Thread | 100% polyester |
| Silicone strip, non-slip | Silicone rubber |
| Silicone strip backing tape | 90% polyester, 10% spandex |
| Hook and loop fastener | 40% nylon, 60% polyester |

# Other information

## Electromagnetic compatiblity (EMC)

### Guidance and manufacturer's declaration – electromagnetic emissions

The Kanso 2 Sound Processor is intended for use in the electromagnetic environment specified below. The customer or the user of the Kanso 2 Sound Processor should assure that it is used in such an environment.

| EMISSIONS TEST | COMPLIANCE | ELECTROMAGNETIC ENVIRONMENT – GUIDANCE |
|---|---|---|
| RF emissions CISPR 11 | Group 1 | The Kanso 2 Sound Processor uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| | Class B | (Normal Mode, Wireless Programming Mode, Wired Programming Mode)<br><br>The Kanso 2 Sound Processor is suitable for use in all establishments, including domestic and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.<br><br>The Kanso 2 Sound Processor is suitable for use in clinics and hospitals. |
| Harmonic emissions IEC 61000-3-2 | Not applicable | Not applicable |
| Voltage fluctuations/ flicker emissions IEC 61000-3-3 | Not applicable | Not applicable |

Guidance and manufacturer's declaration – electromagnetic immunity

The Kanso 2 Sound Processor is intended for use in the electromagnetic environment specified below. The customer or the user of the Kanso 2 Sound Processor should assure that it is used in such an environment.

| IMMUNITY TEST | COMPLIANCE LEVEL | ELECTROMAGNETIC ENVIRONMENT – GUIDANCE |
|---|---|---|
| Electrostatic discharge (ESD) IEC 61000-4-2 | ± 8 kV contact<br>± 15 kV air | Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%. |
| Electrical fast transient/burst IEC 61000-4-4 | Not applicable | Not applicable |
| Surge IEC 61000-4-5 | Not applicable | Not applicable |
| Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | Not applicable | Not applicable |
| Power frequency (50/60 Hz) magnetic field IEC 61000-4-8 | 30 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |

## Guidance and manufacturer's declaration – electromagnetic immunity

The Kanso 2 Sound Processor is intended for use in the electromagnetic environment specified below. The customer or the user of the Kanso 2 Sound Processor should assure that it is used in such an environment.

| ELECTROMAGNETIC ENVIRONMENT – GUIDANCE |
| --- |
| Portable and mobile RF communications equipment should be used no closer to any part of the Kanso 2 Sound Processor, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. |
| **IMMUNITY TEST:** Radiated RF IEC 61000-4-3 |
| **COMPLIANCE LEVEL:** 10 V/m 80 MHz to 2.7 GHz |
| $d=0.35\sqrt{P}$ 80 MHz to 800 MHz |
| $d=0.70\sqrt{P}$ 800 MHz to 2.7 GHz |
| where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). |
| Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. |
| Interference may occur in the vicinity of equipment marked with the following symbol:  |

| ELECTROMAGNETIC ENVIRONMENT – GUIDANCE |
|---|
| **IMMUNITY TEST:** Proximity fields from RF wireless communications equipment IEC 61000-4-3 |
| **COMPLIANCE LEVEL:** 385 MHz (27 V/m); 450, 810, 870, 930, 1720, 1845, 1970, 2450 MHz (28 V/m); 710, 745, 780, 5240, 5500, 5785 MHz (9 V/m) |

**WARNING**
Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 in.) to any part of your Kanso 2 Sound Processor, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

NOTE 3: If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Kanso 2 Sound Processor.

### Radio Frequency Identification (RFID)

RFID uses electromagnetic fields to automatically identify and track tags attached to objects. Interference may occur in the vicinity of equipment that uses RFID, such as shop security and card scanners.

## FCC (Federal Communications Commission) compliance

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The Kanso 2 (CP1150) device complies with part 15 of the FCC Rules, including part 15B for equipment classes with Unintentional Radiators. 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.

### RF exposure safety

This device complies with the FCC RF exposure limits and has been evaluated in compliance with portable exposure condition.

There is no limitation as to which distance can be used from the human body.

### Class B device notice

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.

FCC ID: WTO-CP1150

### Supplier's declaration of conformity

47 CFR § 2.1077 Compliance Information

| | |
|---|---|
| Unique identifier: | CP1150 |
| Responsible party: | Cochlear Americas<br>10350 Park Meadows Drive<br>Lone Tree, CO 80124, USA<br>Toll free: +1 800 483 3123<br>Telephone: +1 303 790 9010<br>https://www.cochlear.com/us |

Cochlear Ltd warrants that each unit marketed under this Supplier's Declaration of Conformity will be identical to the unit tested and found acceptable with the standards.

The devices will continue to comply within the variation that can be expected due to quantity production and testing on statistical basis.

The records maintained by the responsible party will continue to reflect the devices being produced under the Supplier's Declaration of Conformity.

## ISED compliance

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with ISED license-exempt RSS(s). 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.

### RF exposure safety

This device complies with the ISED RF exposure limits and has been evaluated in compliance with **portable** exposure condition.

There is no limitation as to which distance can be used from the human body.

### CAN ICES-003 (B)

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

IC: 8039A-CP1150

## Equipment classification

Your sound processor is internally powered equipment Type B applied part as described in the international standard IEC 60601-1:2005/A1:2012, Medical Electrical Equipment – Part 1: General Requirements for Basic Safety and Essential Performance.

## Cochlear implant compatibility

The Kanso 2 Sound Processor is compatible with the following Nucleus Cochlear Implants:

- CI24M, CI24M Double Array and ABI24M
- CI24R (CA), CI24R (ST) and CI24R (CS)
- CI24RE Series: CI24RE (CA), CI24RE (ST), CI24RE Hybrid L24 and CI422
- CI500 Series: CI512, CI513, CI522, CI532 and ABI541
- CI600 Series: CI612, CI622, CI624, CI632.

## Labelling symbols

The following symbols may appear on your processor or remote components and/or packaging:

| | |
|---|---|
|  | Refer to instruction manual |
|  | Specific warnings or precautions associated with the device, which are not otherwise found on the label |
|  | Manufacturer |
| M/N | Model number |
|  | Authorised representative in the European Community |
|  | Catalogue number |
|  | Serial number |
|  | Batch code |
|  | Date of manufacture |
|  | Use by date |
|  | Temperature limits |
|  | CE registration mark |
|  | Radio compliance certification for Australia and New Zealand |
|  | Radio compliance certification for Japan |

Radio compliance certification for Korea

Rx Only

By prescription

Recyclable material

Dispose of electrical components in accordance with your local regulations

Type B applied part

IP68

Ingress Protection Rating

- Protected against dust penetration
- Protected against failure from immersion in water

MD

Medical device

## Privacy and the collection of personal information

During the process of receiving a Cochlear device, personal information about the user/recipient or their parent, guardian, carer and hearing health professional will be collected for use by Cochlear and others involved in care with regard to the device.

For more information please read Cochlear's Privacy Policy on *www.cochlear.com* or request a copy from Cochlear at the address nearest you.

## Legal statement

The statements made in this guide are believed to be true and correct as of the date of publication. However, specifications are subject to change without notice.

*Hear now. And always*

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