

# SM1P/B

**MANUAL**

**ENGLISH**

DOC00084 Rev.16



## INTRODUCTION

The SM1P/B is a state-of-the-art hearing protection (i.e., protects against harmful noise) communication system that allows you to retain situational awareness whilst remaining in full contact with your team via Short-Range technology, as well as two-way radio or cellular device via Bluetooth® or wired connection.

There are Intrinsically Safe variants of the product (“IS” and “Ex”) that meet international standards for use in explosive gas, dust, and mining environments. Please see ratings on page 37 and 38.

Situational awareness is provided by **SENS**® processing technology and environmental microphones mounted within the headset.

Contact through two-way radios is enabled by the SRCK6xxx02 cable or the intrinsically safe SRCK6xxxCx02 cable assemblies (available separately). Cable part numbers vary depending on the two-way radio model connector. Please consult Sensear’s website or your two-way radio supplier for the appropriate cable.

For language translated manuals and further information, please refer to Sensear’s website.

## MAINTENANCE AND SAFETY INSTRUCTIONS

The SM1P/B IS/Ex have been designed such that minimal user maintenance is required. Only those parts listed on page 21 of this instruction manual are user replaceable.

**SPECIFIC CONDITIONS OF USE** Potential Electrostatic hazard, clean with damp cloth only.

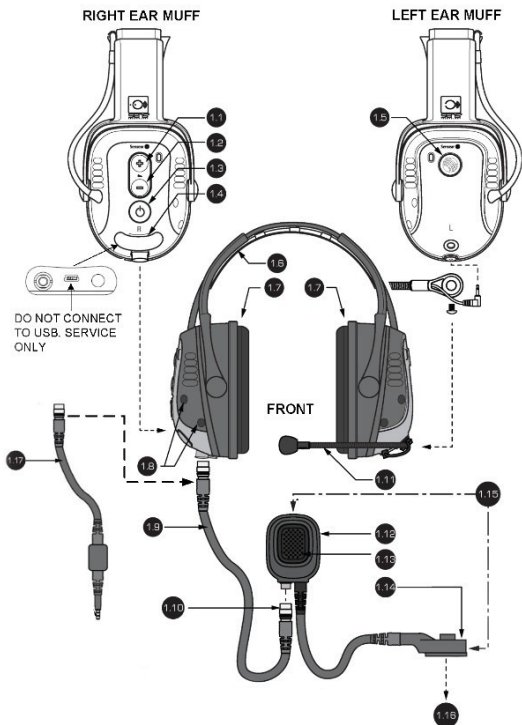
**WARNING** The IS/Ex headset must not be disassembled. In the event of a malfunction the unit should be switched off and returned to Sensear Pty Ltd. The battery is not user replaceable; the IS/Ex headset must be returned to Sensear for battery replacement. Substitution of components may impair Intrinsic Safety.

**WARNING** Connection to the USB Connector located in the connector compartment of the right-hand ear-cup is not permitted. The USB is for service only.

**WARNING** The IS/Ex headset must not be charged in a hazardous area. The battery shall only be charged when the equipment is in a safe area using the class II charging supply via the jack socket on the left-hand ear cup; the maximum permitted voltage at this charging input is  $U_m = 6V$ .

**WARNING** Connection to the multi-pin Hirose connector of the IS/Ex headset (wired version) shall only be done via an SRCK6xxxxx02 IS/Ex headset Intrinsically Safe interface cable. No direct connection to the multi-pin Hirose connector is permitted.

# HEADSET ANATOMY



**FIGURE 1**

#	Description
<b>1.1</b>	Volume up button
<b>1.2</b>	Volume down button
<b>1.3</b>	Power button
<b>1.4</b>	Hatch cover, for programming and charging
<b>1.5</b>	Multi-function button (MFB)
<b>1.6</b>	Headband*
<b>1.7</b>	Ear cushions
<b>1.8</b>	<b>SENS</b> <sup>®</sup> Microphones
<b>1.9</b>	Headset cable
<b>1.10</b>	Headset connector
<b>1.11</b>	Boom microphone mount– M5 Hex screw Connector - 2.5mm Audio jack
<b>1.12</b>	Inline PTT
<b>1.13</b>	Inline PTT button
<b>1.14</b>	Two-way radio connector(Note: these will vary depending on your two-way radio)
<b>1.15</b>	SRCK6xxx02 or SRCK6xxxCx02 cable assemblies
<b>1.16</b>	To the two-way radio
<b>1.17</b>	SRCK62xx02 or SRCK62xxCC02 cable assemblies

## WEARING THE HEADSET

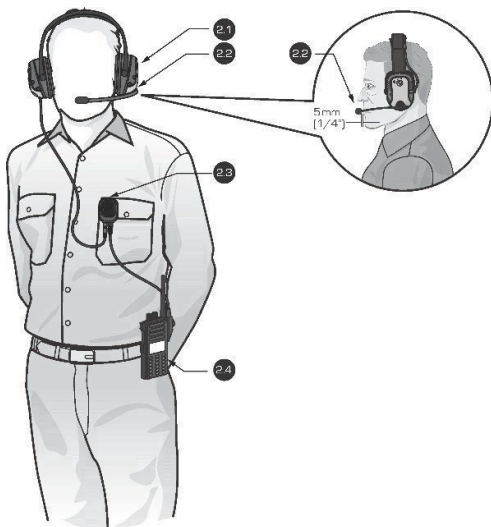


FIGURE 2

#	Description
2.1	Headset
2.2	Boom microphone
2.3	Inline PTT
2.4	Two-way radio

The SM1P/B headset is designed to be worn with the headset sealing around the ears. Specific examples of how to fit the headset around the ears are covered in the next three pages. The fit does alter slightly depending on what style of brace is used - headband, Behind-the-Neck or mounted to a helmet directly.

The boom microphone should be placed approximately 5mm (1/4") in front of the mouth. Check to ensure the white dot or microphone label is facing towards you. The orientation is essential as the microphone is directional. If the microphone faces a different direction, this may lead to a reduction in transmission quality.

The inline PTT has a rotatable clip behind it to allow it to attach to the shirt/upper garment. The inline PTT must be connected to the two-way radio using the multi-pin connector.

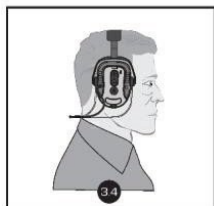
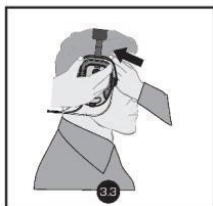
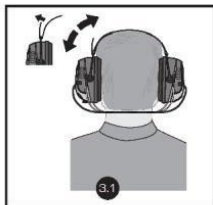
## **FITTING THE HEADSET**

It is recommended that the wearer should ensure that.

- The earmuffs are fitted, adjusted, and maintained in accordance with the manufacturer's instructions
- The earmuffs are always worn in high noise conditions

If the above recommendations are not adhered to, the protection afforded by the earmuffs will be severely impaired.





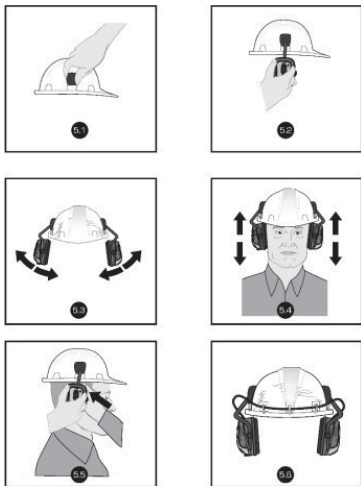
## BEHIND-THE-NECK MOUNT FITTING INSTRUCTIONS

#	Description
<b>3.1</b>	Adjust Velcro strap so that the ear cups completely enclose the ears
<b>3.2</b>	The ear cushions should seal firmly against the head
<b>3.3</b>	For best results, remove all hair from under the ear cushion
<b>3.4</b>	Noise reduction will be adversely affected by anything that breaks the seal of the ear cushions



## HEADBAND MOUNT FITTING INSTRUCTIONS

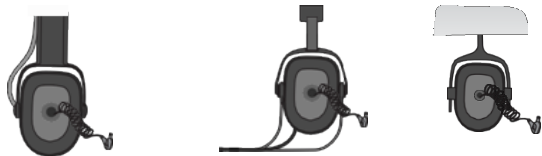
#	Description
4.1	Adjust the headband by pulling the center band out equally on both sides
4.2	Ensure no hair is inside the ear cushions
4.3	Fit the earmuffs over the ears, ensuring a tight fit around the ears
4.4	Ensure the muff surrounds the ears
4.5	Press down on the headband to obtain a snug and comfortable fit



## HELMET MOUNT FITTING INSTRUCTIONS

#	Description
5.1	Attach the adaptors to each side of the helmet by sliding them into the slots
5.2	Attach the earmuffs by sliding into the adaptors
5.3	Ensure the earmuff is firmly attached by lifting the arm up and down
5.4	Place the helmet on the head and adjust by sliding the earmuffs up and down
5.5	Earmuffs should seal firmly against the head. For best results, remove hair from under the earmuffs.
5.6	Three adhesive mounts and ties are included to secure the earmuff cable to the helmet. The mounts should be evenly spaced around the rear outside of the helmet. Fit the tie through the mount. The cable should feed through each tie and secured in place.

## DUAL PROTECTION FITTING INSTRUCTIONS



Locate the ear buds inside the ear cup.

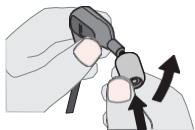


Place earmuff away from the ears while fitting the ear buds. Insert ear tips following the ear tip fitting instructions on next page.

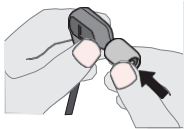


Place the earmuff back over the ears. Ensure the retractable, coiled cable is fully located within the ear cup. Noise reduction will be adversely affected by anything that breaks the seal of the earmuff cushions.

## FOAM EAR TIP FITTING INSTRUCTIONS



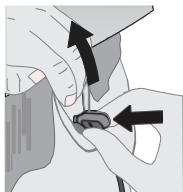
Ensure hands and foam tip are clean before insertion. Place foam tip at an angle to plastic canal.



Push the earpiece firmly over the plastic canal.



Compress the foam to form a cylindrical shape being careful not to crease the foam.



Gently pull your ear up and backwards with one hand while inserting the ear plug into the ear. Foam ear tips should be inserted within 5 seconds of compressing the foam. Make sure the plug seals well into the ear canal. The ear tip should not protrude out of the ear canal. If using foam ear tips hold the plug in place for 20 seconds or until the foam has fully expanded.

## OPERATING THE HEADSET

### POWER ON:

1. Press and release the “Power” button shown in Figure 1.
2. All the LEDs will turn on briefly, & an audible sound will be heard through the headset.
3. The Green LED will flash at a normal rate as described below.

### POWER OFF:

1. Press and hold the “Power” button for 2 seconds.
2. All the LEDs will turn on briefly and an audible sound will be heard through the headset as the headset powers off.

### SENS<sup>®</sup> MODE:

When the headset is powered up, the unit is set into ‘SENS<sup>®</sup> mode’\*\*. By pressing the power button, this toggles ‘SENS<sup>®</sup> mode’. ‘SENS<sup>®</sup> mode’ allows full situational awareness of your surroundings in addition to two-way radio, Bluetooth<sup>®</sup>, Short-Range, or face-to-face communications.

- The power button toggles between Quiet mode and SENS<sup>®</sup> mode
- The volume control buttons can be used to raise or lower the audio level of the SENS<sup>®</sup> mode
- \*\*The default mode on power up can be programmed using the Sensear Programming Tablet

**QUIET MODE:**

By pressing the power button, this toggles 'Quiet mode'. Quiet mode only allows audio from communication devices to pass through the headset.

<b>SENS</b> mode	Green LED, blink twice every 4 seconds
Quiet mode	Green LED, blink once every 4 seconds

**SETUP MODE:**

Setup mode enables a limited number of settings to be changed directly via the headset. This mode is separate from the normal headset operating mode. Some options will not be available if the product model does not support a feature or headset programming has removed the setup mode option. For further setup, a programming tablet will be required.

The options (with fully available feature set) are:



1. Short-Range – region
2. Short-Range – channel frequencies
3. FM Radio – enable/disable
4. VOX – feature assignment
5. VOX – trigger level

A short press and release of the power button will cycle through these options when in setup mode.


**Enter/Exit Setup Mode:**

1. Headset is powered off
2. Hold Volume Up button
3. While holding Volume Up, Press & release Power button
4. Will hear "system setup." Release Volume Up button

The headset needs to be powered down before it can be powered up into its normal operating mode. Changes will be saved upon powering off the headset from setup mode.

 (short)	Cycle down through system setup options
 (long)	Power off the headset.



**Changing Short-Range Region:** Ensure you hear "Short-Range FM region".

 (short)	Increment/decrement through regions 1, 2 or 3.
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Region	EIRP (uW)	Standards	FM frequency range (MHz)
1	8.02	AS/NZS 4268	88.1 – 107.9
2	0.048	EN301357-1	88.1 – 107.9
3	0.012	FCC-15.239/ IC RSS-210	88.1 – 97.0




**Changing Short-Range Frequencies:** Ensure you hear “Short-Range FM frequency”.

 (short)	<b>Change frequency:</b> up = increment 0.1MHz, down=decrement 0.1MHz
 (long)	<b>Change bank:</b> up = increment bank, down=decrement bank


Note, frequency range is 88.1MHz to 107.9MHz (97.0 MHz for region 3).

The frequency/bank last selected in the setup mode will be the frequency/bank used when Short-Range is turned on in normal operating mode.


**Changing FM Radio Enable:** Ensure you hear “FM radio”.

 (short)	Toggle between “enable” and “disable”.
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**Changing VOX Assignment:** Ensure you hear “VOX setup”.

 (short)	Toggle between “disable” and “Short-Range”
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**Changing VOX Trigger Level:** Ensure you hear “VOX level”.

 (short)	cycle through “low,” “medium,” and “high” trigger levels
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“low” is the most sensitive/easiest to trigger VOX, and “high” is the least sensitive/hardest to trigger VOX.

## COMMUNICATING

### COMMUNICATING OVER TWO-WAY RADIO:

#### To Transmit Over the Two-Way Radio:

- Press and hold the button located on the inline PTT.
- Release the inline PTT button to cease transmission.
- To change the volume of the two-way radio communications, use the two-way radio’s volume controls

#### NOTE:

- When the headset is powered off (and disconnected from the inline PTT), the inline PTT button may not activate the two-way radio. The PTT located on the two-way radio should be used.
- When the headset is powered on, the two-way radio PTT may not activate the two-way radio
- Audio will revert to radio when the headset connector is disconnected (dependent on radio type and compatible SRCK radio cable)

**Two-Way Radio VOX:** VOX can be used on VOX-enabled two-way radios. Refer to the two-way radio documentation for the setup and use of the VOX feature. To disable VOX, you can either turn VOX off on the two-way radio or press the headset PTT once, depending on which two-way radio model you use.

**COMMUNICATING OVER SHORT-RANGE:**

(short press) together to toggle Short-Range on/off.

When on:

A circular icon containing a microphone with diagonal lines through it, representing Push-to-Talk (PTT).	Short-Range PTT
Two inverted triangles, one with a plus sign (+) and one with a minus sign (-), separated by a forward slash (/). To the right of the minus sign is the text "(long)".	Increment/decrement preset frequency bank

When the headset is powered off it remembers the last selected frequency bank and the Short-Range on/off state.

**Short-Range VOX:** [See Operating the Headset - Setup Mode section for VOX setup information]

If VOX is assigned to Short-Range, when Short-Range turns on, you will hear the Short-Range frequency announcement and then “VOX on”. VOX can be toggled on and off:

An inverted triangle with a minus sign (-) on the left, a plus sign (+) in the middle, and a circular icon with a microphone on the right. Below the plus sign is the text "(short)".	Toggle VOX on and off (while Short-Range is turned on)
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VOX does not trigger while there is an active signal on the Short-Range frequency. A VOX transmission can be interrupted by pressing and releasing the Short-Range PTT (i.e., MFB).

VOX will also not trigger when two-way is transmitting, Bluetooth® is in a phone call or when connected to a Bluetooth® radio.

#### LISTENING TO FM RADIO:



+ (short press) together to toggle FM radio on/off. Note: FM radio cannot be turned on while Short-Range is turned on and vice versa.

When on:

	Scan up/down to the next FM radio.
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When a Bluetooth® phone call is entered, FM radio audio is muted. It will return when the call ends.

When the headset is powered off it remembers the last tuned FM radio frequency and the FM radio on/off state.

## COMMUNICATING OVER BLUETOOTH®:

**First Time Pairing:** Press and hold the multi-function button (MFB) to put the headset into pairing mode. “Bluetooth® discoverable” when pairing mode is entered. Will hear a connection tone if connection successful. Pairing mode times out after 2 minutes.

**NOTE:** If Short-Range is turned on, you must first turn it off to use the MFB for Bluetooth® pairing (see Short-Range section). After the headset is in Bluetooth® pairing mode, Short-Range can be turned back on.

**Reconnect:** When powered on the headset will try to reconnect to the last paired device. Alternatively, if the headset is not currently paired to another device, prompt the reconnection from a device (e.g., mobile phone that has the headset stored in its device list).

Incoming call	<p>Answer call:</p> <ul style="list-style-type: none"> <li>a From handset</li> <li>b Press and release MFB</li> </ul> <p>Reject call:</p> <ul style="list-style-type: none"> <li>a From handset</li> <li>b Press and hold multi-function button</li> </ul>
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During call	<p>End call:</p> <ul style="list-style-type: none"> <li>a From handset</li> <li>b Press and hold multi-function button</li> <li>c Call hung up on the far end</li> </ul>
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**Two-Way Radio Bluetooth®:** To transmit, use the radio's PTT. For some select devices, MFB will perform as a Bluetooth® PTT (if Short-Range is off).

Contact a Sensear representative for compatible devices.

**Bluetooth® Phone Call:** During a Bluetooth® phone call, if two-way radio or Short-Range are transmitting, outgoing Bluetooth® is muted while incoming audio is still heard. Once two-way and Short-Range stop transmitting, outgoing Bluetooth® is restored.

**Bluetooth® Audio Streaming:** Audio streaming can **only** be used in **Quiet mode**. Streamed audio will be mute in **SENS®** mode. This is often used for streaming music, but industrial use cases include Bluetooth® machine health analyzers.

**Blue LED Indicator:**

Solid	Paring mode
Blinking slowly	Paired
Blinking fast	Incoming phone call

## USER MAINTENANCE AND STORAGE

This product may be adversely affected by certain chemical substances. Further information should be sought from the manufacturer.

The headset contains replaceable cushions (Part #: SMHK0006 or SMHK0005). Cushions are recommended to be replaced every 3-6 months to maintain the appropriate hearing protection that the product is certified to. Cushions should be inspected regularly for signs of damage or wear. Cushions can be removed simply by gripping the cushion and pulling firmly to unclip from the baseplate. Replacement cushions may be pushed into the clips around the baseplate.

The headset should be stored at room temperature (between 15°C/59°F and 25°C/77°F).

## ACCESSORIES AND SPARE PARTS

The following accessories and spare parts may be ordered separately:

SRCK6xxx02	Various models, two-way radio interface cables for most popular two-way radios
SRCK6xxxCx02	Various models, <b>Intrinsically Safe</b> two-way radio interface cables for most popular two-way radios. Check with a representative to ensure IS and Ex model compatibility.
SMHK0006	Earmuff Hygiene Kits
SMHK0005	Dual Protection Hygiene Kits
SMBE0000	Behind-the-Neck Replacement Band
SMBB0000	Headband Replacement Band
SMMK0002	Smart Muff Helmet Mount Replacement
SMHA0000	SM1 Helmet Adaptor – 3718
SMHA0001	SM1 Helmet Adaptor – 3713
SMHA0002	SM1 Helmet Adaptor – 3714
SMBM0001	Non-IS/Ex Replacement Boom Microphone
SMBM0003	IS/Ex Replacement Boom Microphone
SMBM0002	Replacement Throat Microphone
SMAP0000	Cooling Pads
MFP00062B	Dual Protection Replacement Earpiece Pair
SMWS0001	Smart Muff Wind Protector Kit
SMBMHK01	Smart Muff Boom Microphone Wind Sock x5
SMPW0001	Wall Charger 5.5V 1.0A
PRGTAB01	Programming Tablet

Further information may be obtained from your Sensear representative, via the Sensear website, or by emailing or writing to the address on this User Manual.



## CHARGING

The headset is supplied with an AC adapter that operates globally when fitted with the appropriate electrical regional adapter. Charging must only be performed in the safe area.

To charge the headset, follow the steps below:

1. Plug the Sensear AC adapter into an appropriate power outlet.
2. Insert the cable end of the Sensear AC adapter into the DC power socket on the SM1P headset (located on the right-hand-side of the unit). For intrinsically safe headsets, the DC pocket is on the left-hand-side of the headset.
3. The LEDs will flash as indicated below:

Red LED (RHS) blink twice every 5 seconds	Battery low (<1 hour left)
Red LED solid*	Charging
Green LED solid*	Charge complete

\*For intrinsically safe headsets, these LEDs are located on the LHS of the headset.

Note, when the DC plug is inserted into an IS/Ex headset, the headset will be in a charge-only state. Other operating features will not be useable.

## SENSEAR STANDARD WARRANTY TERMS & CONDITIONS

Sensear Pty Ltd (“SENSEAR”) warrants the SENSEAR manufactured HEARING PROTECTION products (“Product”) listed below to be free from defects in material and workmanship under normal use and service for a period of 12 months from the original date of purchase.

SENSEAR will at its absolute discretion repair or replace the Product where a defect in material or workmanship occurs, at no charge to the end user for parts or labor. SENSEAR reserves the right to replace the Product with the same or equivalent part or Product rather than repair it. Where a part or Product is replaced, the part or Product becomes the property of SENSEAR. SENSEAR reserves the right to use refurbished parts or Product for repair or replacement.

SENSEAR is not responsible for any damage caused to or by accessory or ancillary equipment connected or attached to the Product that is not provided by SENSEAR and is not expressly designed to operate in conjunction with the Product.

This warranty is not assignable or transferable to any other party, this warranty is extended to the original purchaser of the Product only.

This warranty is in addition to your statutory rights provided under the Trade Practices Act, or relevant legislation in your state or territory.

SENSEAR reserves the right to limit its liability to the repair, replacement, or refund of the purchase price of a Product. Under no event shall SENSEAR be liable for damages more than the original purchase price of the Product, for any loss of use, loss of time, inconvenience, loss of profits or savings, loss of revenue, commercial loss, or any other incidental, special or consequential loss to the full extent such may be disclaimed by the law.

This warranty does not cover:

- Defect or damage resulting from use of the Product in other than its normal or intended manner.
- Defects or damage occurring from misuse, abuse, accident, corrosion, fire, liquid intrusion, or neglect, including during transportation.
- Defects or damage occurred from improper or unauthorized testing, operation, maintenance, service, repair, alteration, modification, or adjustment.
- Freight costs to the place of repair.
- Product that has been subjected to unauthorized or illegal alteration of the firmware or software in the Product.
- Cosmetic damage to the Product that does not interfere with the intended operation of the Product.
- Normal wear and tear.
- Product where the serial number has been removed or altered.
- Any batteries rechargeable or otherwise either shipped with or internal to the Product.
- Any consumable items, for example replaceable ear-tips or ear-cup pads.
- Warranty claims made outside of the warranty period.
- Warranty claims made without appropriate proof of purchase bearing both the original purchase price and date.
- All other warranties, conditions, terms, representations, and undertakings whether express or implied.

### **How to Get Warranty Service**

To register your product visit: [sensear.com/support/headset-registration](https://sensear.com/support/headset-registration)

If you require warranty service visit: [sensear.com/support/returns-repairs-new](https://sensear.com/support/returns-repairs-new)

## TROUBLESHOOTING

1. If Bluetooth® is not pairing to your device, first check to see if Short-Range is turned on. You must first turn it off to use the MFB for Bluetooth® pairing (see Short-Range section). After the headset is in Bluetooth® pairing mode, Short-Range can be turned back on.
2. If the two-way radio audio is not clear or distorted, or the headset cuts out:
  - Adjust the two-way radio volume at the two-way radio controls. Setting a volume level of 50% is a good starting point.
  - Check that the battery in the two-way radio is charged.
3. If you cannot hear any of the surrounding environment:
  - The headset may be in 'Quiet mode,' or power is not present to the headset. Press the power button on the headset to toggle between Quiet mode and **SENS** mode
4. If the receiver cannot hear your voice and you can only hear the background noise:
  - Refer to the 'Wearing the headset' chapter of the manual. Ensure that your boom microphone is set up appropriately.

# SM1P/B

## TECHNICAL INFORMATION

**Rev: 7/31/23**

For most recent technical information, visit  
[sensear.com/support/technical-information](https://sensear.com/support/technical-information)

## FORWARD

Product Safety and RF Exposure Compliance:

This product is designed to be used in isolation or in conjunction with a two-way radio. Before using this product with a two-way radio, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with the two-way radio.

## FCC COMPLIANCE STATEMENT

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

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

FCC ID: XKS-SM1xSR

IC: 8376A-SM1XSR

FCC ID: QQQWT32I

IC:5123A BGTWT32I

# DECLARATION OF CONFORMITY



## DECLARATION OF CONFORMITY

Manufacturer's Name: Sensear Pty Ltd.  
 Manufacturer's Address: 4 Hehir Street, Belmont, Western Australia, 6104 Australia

This declaration of conformity is issued under the sole responsibility of the manufacturer and herewith declares that the products SM1 series Smart Muff Headsets.

Conforms to the following directives:

2011/65/EU (L174/88-110)	RoHS Directive
(EU)2016/425 (L81/51-98)	PPE Directive
2014/53/EU (L153/62-106)	Radio Equipment Directive

As attested by conformity with harmonized standards

RoHS:

RoHS 2 Directive 2011/65/EU

EMC and EMF Specifications:

Electromagnetic Compatibility	EN301 489-1: V2.1.1 (2017-02)
Electromagnetic Compatibility	EN301 489-17: V3.1.1 (2017-02)
Electromagnetic Compatibility	EN301 357: V2.1.1 (2017-06)
Electromagnetic Compatibility	EN300 328: V2.2.2 (2019-07)
Electromagnetic Compatibility	EN61000-6-2 Ed 3.0
Electromagnetic Compatibility	EN61000-6-3 Ed 2.1
Electromagnetic Fields	EN62479:2010

Safety Specifications:

IT Equipment EN62368-1: 2014 +AC:2015

PPE Specifications:

PPE Conformance: Finnish Institute of Occupational Health, Topeliuksenkatu, 41b, FI-00250 Helsinki, Finland, Notified Body: 0403 performed the EU Type Examination (Module B) and issued the EU type-examination certificate numbers 29223RGS02 and 10409GDS01.

This product is Category III and is subject to Module D conformity to type based on quality assurance of the production process and is under the surveillance of BSI Group ANZ Pty Ltd (Notified Body 2797). Certification Number: CE 717133

Single protection:

EN 352-1:2020 Hearing protectors. General requirements Part 1: Ear-muffs

EN 352-3:2020 Hearing protectors. General requirements Part 3: Ear-muffs attached to an industrial safety helmet

EN 352-4:2020 Hearing protectors. General requirements Part 4: Level-dependent ear-muffs

EN 352-6:2020 Hearing protectors. General requirements Part 6: Ear-muffs with electrical audio input

Dual protection:

EN 352-6:2020 Hearing protectors. General requirements Part 6: Ear-muffs with electrical audio input

EN 352-7:2020 Hearing protectors. General requirements Part 7: Level-dependent ear-plugs

Sensear PTY Ltd: Hehir Street, Belmont, Perth, Western Australia Date: 27 July 2023

*William Choo*

**William Choo**

Engineering & Operations Director

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DOC00096 SM1 Series Declaration of Conformity Rev.3

For most recent Declaration of Conformity, please visit  
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## TECHNICAL SPECIFICATIONS

	<b>Headband</b>	<b>Behind-the-Neck</b>	<b>Helmet Mount</b>
Weight	495g (17.46 oz.)	428g (15.09 oz.)	480g (16.93 oz.)
Operating Temperature	-20°C to +60°C (-4°F to 140°F)		
Charging Temperature	0°C to +40°C (32°F to 104°F)		
	<b>Non-Intrinsically Safe</b>	<b>Intrinsically Safe</b>	
Battery Type	2650 mAh Lithium Polymer, rechargeable	2250 mAh Lithium-ion, rechargeable	
Battery Charge Time	7 hours	4 hours	
Operating Time	24 hours	18-24 hours	
Housing Material	PP, ABS + TPE		
RoHS Compliant	Yes		



## NRR AND SLC80

The SM1P/B has been certified to international hearing protection standards including AS/NZS 1270:2002, ANSI S3.19-1974, ANSI S12.6-2008, EN352-1, EN352-3, EN352-4, and EN352-6.

The following passive attenuation ratings were observed:

### PASSIVE ATTENUATION (ANSI S3.19-1974)

SM1P/B measured in accordance with ANSI S3.19 -1974.

#### Headband mount - SM1PBXXX & SM1BBXXX

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000	NRR
Mean attenuation (dB)	22.1	24.4	31.1	35.1	35.8	37.0	39.9	40.7	40.7	27dB
Standard deviation (dB)	3.1	2.4	2.0	2.5	3.2	3.0	3.3	2.7	2.9	

#### Behind-the-Neck mount - SM1PEXXX & SM1BEXXX

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000	NRR
Mean attenuation (dB)	18.9	22.4	28.6	33.6	33.5	35.3	37.3	38.8	37.4	24dB
Standard deviation (dB)	3.5	3.4	2.6	2.8	2.3	3.5	4.0	2.9	3.4	

#### Helmet mount - SM1PHXXX & SM1BHXXX

Frequency (Hz)	125	250	500	1000	2000	3150	4000	6300	8000	NRR
Mean attenuation (dB)	18.6	20.8	27.3	33.6	37.1	35.5	35.3	37.1	35.0	23dB
Standard deviation (dB)	3.2	2.7	3.1	3.9	2.3	3.1	3.8	3.8	3.4	

**PASSIVE ATTENUATION (ANSI S12.6 – 2008)**

SM1P/B measured in accordance with ANSI S12.6 - 2008.

**Headband mount - SM1PBXXX & SM1BBXXX**

<b>Frequency (Hz)</b>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>8000</b>	<b>NRR(SF)</b>
Meanattenuation (dB)	21.4	21.9	29.8	33.7	35.8	37.2	38.5	27dB
Standard deviation(dB)	3.0	2.1	1.7	2.8	1.5	1.9	2.8	
APV80	18.9	20.1	28.4	31.3	34.5	35.6	36.1	

**Behind-the-Neck mount- SM1PEXXX & SM1BEXXX**

<b>Frequency (Hz)</b>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>8000</b>	<b>NRR(SF)</b>
Meanattenuation (dB)	18.7	19.9	28.0	34.1	31.5	35.6	35.3	24.3dB
Standard deviation(dB)	3.0	2.5	2.2	1.7	3.2	3.4	4.1	
APV80	16.2	17.8	26.2	32.7	28.8	32.7	31.9	

**Helmet mount - SM1PHXXX & SM1BHXXX**

<b>Frequency (Hz)</b>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>8000</b>	<b>NRR(SF)</b>
Meanattenuation (dB)	15.0	17.7	25.2	30.4	33.9	34.5	33.8	19.1dB
Standard deviation(dB)	6.5	6.7	6.6	4.0	3.3	5.9	5.1	
APV80	9.5	12.1	19.7	27.0	31.1	29.5	29.5	

**PASSIVE ATTENUATION (AS/NZS 1270:2002)**

SM1P/B measured in accordance with AS/NZS 1270:2002.

**Headband mount - SM1PBXXX & SM1BBXXX**

<i>Frequency (Hz)</i>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>8000</b>	<b>SLC (80)</b>
Mean attenuation(dB)	20.3	21.7	30.3	33.2	35.2	36.6	37.3	31dB, Class 5
Standard deviation(dB)	4.3	3.1	2.7	3.0	2.7	2.5	3.3	
Mean atten. – Standard dev. (dB)	16.0	18.6	27.6	30.2	32.5	34.1	34.0	

**Behind-the-Neck mount - SM1PEXXX & SM1BEXXX**

<i>Frequency (Hz)</i>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>8000</b>	<b>SLC (80)</b>
Mean attenuation(dB)	19.3	20.0	27.0	33.7	30.5	33.9	33.0	27dB, Class 5
Standard deviation(dB)	5.1	4.1	3.7	2.4	4.5	3.8	5.2	
Mean atten. – Standard dev. (dB)	14.2	15.9	23.3	31.3	26.0	30.1	27.8	

**Helmet mount - SM1PHXXX & SM1BHXXX**

<i>Frequency(Hz)</i>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>8000</b>	<b>SLC (80)</b>
Mean attenuation(dB)	15.6	19.1	24.7	29.7	34.0	34.5	33.4	26dB, Class 5
Standard deviation(dB)	5.7	5.5	5.2	3.9	3.0	5.5	5.0	
Mean atten. – Standard dev. (dB)	9.9	13.6	19.5	25.8	31.0	29.0	28.4	

**PASSIVE ATTENUATION (EN352-1 AND EN352-3)**

SM1P/B measured in accordance with EN352-1 and EN352-3.

**Headband mount- SM1PBXXX & SM1BBXXX (EN352-1)**

<i>Frequency (Hz)</i>	125	250	500	1000	2000	4000	8000	H	M	L	SNR
								<i>(dB)</i>			
Mean attenuation (dB)	22.5	24.5	31.5	34.9	35.8	38.0	39.8	35	30	24	33
Standard deviation(dB)	4.8	2.6	2.3	3.1	2.5	2.1	2.7				
Mean attenuation – Standard deviation(dB)	17.7	21.9	29.2	31.8	33.3	35.9	37.1				

**Behind-the-Neck mount - SM1PEXXX & SM1BEXXX (EN352-1)**

<i>Frequency (Hz)</i>	125	250	500	1000	2000	4000	8000	H	M	L	SNR
								<i>(dB)</i>			
Mean attenuation (dB)	20.7	21.3	27.7	34.0	33.3	35.3	36.1	32	27	21	30
Standard deviation(dB)	5.1	3.3	3.1	2.5	2.9	2.3	2.6				
Mean attenuation – Standard deviation(dB)	15.6	18.0	24.6	31.5	30.4	33.0	33.5				

**Helmet mount- SM1PHXXX & SM1BHXXX (EN352-3)**

<i>Frequency (Hz)</i>	125	250	500	1000	2000	4000	8000	H	M	L	SNR
								<i>(dB)</i>			
Mean attenuation (dB)	20.4	22.2	28.2	33.5	36.9	38.0	37.5	34	28	22	31
Standard deviation(dB)	3.6	3.3	3.3	3.6	2.3	3.9	3.0				
Mean attenuation – Standard deviation(dB)	16.9	18.8	24.9	29.8	34.6	34.1	34.6				

The SM1P/B has level dependent facilities and the criterion levels as defined in EN352-4 are displayed below:

Model	H	M	L
	dB(A)		
SM1P/B	108.6	104.6	103.4

### EARMUFFS WITH ELECTRICAL AUDIO INPUT (EN352-6)

	NRR ANSI S3.19-1974 US	SLC [80] AS/NZS 1270:2002 Australia	SNR EN352-1 and EN352-3 EU	NRR(SF) ANSI S12.6-2008 US & Canada
	Foam	Foam	Foam	Foam
Headband	30dB	32dB, Class 5	37dB	33dB
Behind-the-Neck	31dB	33dB, Class 5	38dB	33dB
Helmet	29dB	30dB, Class 5	38dB	31dB

### EARMUFFS WITH ELECTRICAL AUDIO INPUT (EN352-6)

The electrical input level for which the mean plus one standard deviation is A-weighted diffused-field related sound pressure level is equal to 82 dB(A) is an RMS voltage  $U = 108\text{mV}$ .

### SIZE RANGES

**WARNING** Earmuffs complying with EN352-1 are of ‘small size range’, ‘Medium size range’ or ‘large size range’. ‘Medium size range’ earmuffs will fit most wearers. ‘Small size range’ or ‘large size range’ earmuffs are designed to fit wearers for whom ‘medium size range’ earmuffs are not suitable. The SM1P/B headband, SM1P/B behind-the-neck and SM1P/B helmet adapters may be adjusted for small, medium, or large size.

## MAINTENANCE AND CLEANING

The headset is an active hearing protector that allows audible contact with your surroundings while providing protection from harmful noise.

It is recommended that the headset is fitted, adjusted, and maintained in accordance with these instructions. This headset should always be worn in noisy surroundings. The headset should be regularly inspected for serviceability.

### WARNING:

- If these instructions are not followed the protection of the headset will be severely impaired.
- Noise reduction will be adversely affected by anything that impairs the seal of the earmuff cushions against the head, such as thick spectacle frames and balaclavas
- The reported attenuation will be obtained only if the headset is in good condition and worn as directed (Refer to AS/NZS 1269.3 for guidance).
- This product should not be used where there is a risk that the connecting cord could be caught up during use.
- This product is provided with level-dependent in-ear audio playback. The wearer should check correct operation before use. If distortion, or failure is detected. The wearer should refer to the manufacturer's advice for maintenance and/or replacement.

### WARNING:

- Performance may deteriorate with battery usage. The typical period of continuous use that can be expected from the headset will depend on the two-way radio battery.
- The output of the level-dependent circuit of this hearing protector may exceed the daily limit sound level. This limit can be adjusted with a Sensear programming tablet.
- This headset has been tested and approved according to the methods described in the EN352 series of standards.

## CLAMPING FORCE

The clamping force of the SM1P/B has been measured in accordance with AS/NZS 1270

Model	Part #	Units	Initial measurements			Post-flex measurements		
			A	B	C	A	B	C
SM1P/B – Headband mount	SM1PBXXX & SM1BBXXX	Newton (N)	11.6	11.1	11.1	11.1	10.7	11.1
		Pounds (lbs)	2.6	2.5	2.5	2.5	2.4	2.5
SM1P/B – Behind-the- Neck mount	SM1PEXXX & SM1BEXXX	N	14.2	14.7	14.2	14.2	14.7	14.2
		lbs	3.2	3.3	3.2	3.2	3.3	3.2
SM1P/B– Helmet mount	SM1PHXXX & SM1BHXXX	N	9.3	9.3	9.3	9.3	8.9	9.3

## INTRINSICALLY SAFE CERTIFICATION – IS MODEL

The SM1P-IS & SM1B-IS meet the following international standards for use in explosive gas environments:

- TIA-4950-A Rev. May 13, 2014

Requirements For Battery-Powered, Portable Land Mobile Radio Applications in Class I, II, III, Division 1, Hazardous (Classified) Locations

- CSA C22.2 No. 157-92 (R2012) +UPD1 +UPD2

Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations

- UL913 5th Ed. February 21, 1997

Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, III, Division 1, Hazardous (Classified) Locations

### MARKINGS

The SM1P-IS & SM1B-IS contain the following markings:

Manufacturer's name, Hazardous location class and group and temperature class

**SM1P** CAN/CSA - C22.2 No.157-92  
TIA-4950, UL 913 5th ed.  
Intrinsic Safety / Sécurité Intrinsèque  
Class I, II, III, Div 1 & 2, Grp A-G  
T4, Ta = -20°C to +40°C  
T3C, Ta = -20°C to +50°C  
SGS  
710402  
Control Dwg SGSCUS004

**SM1B** CAN/CSA - C22.2 No.157-92  
TIA-4950, UL 913 5th ed.  
Intrinsic Safety / Sécurité Intrinsèque  
Class I, II, III, Div 1 & 2, Grp A-G  
T4, Ta = -20°C to +40°C  
T3C, Ta = -20°C to +50°C  
SGS  
710402  
Control Dwg SGSCUS004



## INTRINSICALLY SAFE CERTIFICATION – Ex MODEL



The SM1P-Ex meets the following international standards for use in explosive gas environments:

II 2G Ex ib IIC T4Gb (-20°C ≤ Ta ≤ +40°C)  
 II 2D Ex ib IIIC T155°C Db (-20°C ≤ Ta ≤ +40°C)  
 I M2 Ex ib I Mb (-20°C ≤ Ta ≤ +60°C)  
 CI I, Div 1 Grp A-D, T4 (-20°C ≤ Ta ≤ +40°C)  
 CI I, Zn 1, AEx ib IIC T4Gb (-20°C ≤ Ta ≤ +40°C)  
 CI II, Zn 21, AEx ib IIIC T155°C Db (-20°C ≤ Ta ≤ +40°C)

### MARKINGS

The SM1P-Ex contains the following markings:

Hazardous location class and group and temperature class

II 2G Ex ib IIC T4 Gb II 2D Ex ib IIIC T155°C Db I M2 Ex ib I Mb IECEx BAS 18.0035X Baseefa18ATEX0049X BAS23UKEX0020X		Sensear 4 Hehir Street Belmont WA 6104 CE 0598 2797 UK CA 1180
SGSNA/19/SUW/00190X Intrinsic Safety / Sécurité Intrinsèque CI I, Div 1 Grp A-D, T4 CI I, Zn 1, AEx ib IIC T4 Gb CI I, Zn 21, AEx ib IIIC T155°C Db		Dwg SGSCUS005

Where “XXXX” is the number of the ATEX Notified Body responsible for the ATEX QAN.

### ENTITY PARAMETERS

The following entity parameters are for when SM1P Ex is used with SRCK61xxCCxx or SRCK62xxCCxx at the radio or intrinsically safe device end of the interface cable.

Entity Parameter	Value
$U_i/V_{max}$	9V
$C_i$	0.09μF
$L_i$	0μH
$I_i$	2.22A
$P_i$	1.3W

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## Waste (Disposal) of your Electronic and Electric Equipment

EN

### European Union (EU) Waste of Electrical and Electronic Equipment (WEEE) directive

The European Union's WEEE directive requires that products sold into EU countries must have the crossed-out trash bin label on the product (or the package in some cases). As defined by the WEEE directive, this cross-out trash bin label means that customers and end-users in EU countries should not dispose of electronic and electrical equipment or accessories in household waste. Customers or end-users in EU countries should contact their local equipment supplier representative or service center for information about the waste collection system in their country.

FR

### Directive de l'Union Européenne (UE) sur l'Élimination des Équipements Électriques et Électroniques (DEEE)

La directive DEEE de l'Union Européenne impose que les produits vendus dans les pays de l'UE portent la marque (éventuellement sur l'emballage) d'une poubelle sur roues barrée d'une croix. Comme la directive DEEE explicite, cette marque composée d'une poubelle sur roues barrée d'une croix signifie que les clients et les utilisateurs des pays de l'UE ne devraient pas inclure leurs équipements électriques et électroniques ou accessoires ou outils dans leurs déchets ménagers. Les clients ou utilisateurs des pays de l'UE devraient contacter le représentant local de leur fournisseur d'équipement ou un centre de service pour s'informer sur le système de collection de déchets dans leur pays.

NL

### De richtlijn inzake afgedankte elektrische en elektronische apparatuur (AEEA) van de Europese Unie (EU)

De richtlijn AEEA van de Europese Unie vereist dat product en die in de landen van de EU worden verkocht (of in sommige gevallen de verpakking daarvan), moeten zijn voorzien van het etiket met een doorgekruiste vuilnisbak. Zoals bepaald door de richtlijn AEEA, betekent dit etiket met de doorgekruiste vuilnisbak dat klanten en eindgebruikers in landen van de EU elektrische en elektronische apparatuur of toebehoren niet met het huisvuil mogen wegwerpen. Klanten en eindgebruikers binnen de EU moeten contact opnemen met hun plaatselijke leverancier of onderhoudscentrum voor informatie over het afvalinzamelsysteem in hun land.

DE

### Richtlinie über Elektro- und Elektronik-Altgeräte (WEEE) der Europäischen Union (EU)

Produkte, die in EU Ländern auf den Markt gebracht werden, müssen mit einer durchgestrichenen Abfalltonne gekennzeichnet sein (oder in einzelnen Fällen die Verpackung). Die WEEE Richtlinie definiert, dass Kunden und Endnutzer in Ländern der Europäischen Union (EU) elektronische und elektrische Geräte sowie elektronisches oder elektrisches Zubehör nicht in den Hausmüll entsorgen dürfen. Innerhalb der EU setzen Sie sich bitte mit dem örtlichen Vertreter oder Kundendienst Ihres Geräteherstellers in Verbindung, der Ihnen Auskunft zur Altgeräteentsorgung/Abholung geben kann.

IT

**La direttiva de la Unione Europea (EU) sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)**  
La direttiva RAEE della Unione Europea richiede che i prodotti venduti nei paesi della UE devono essere marcati con il simbolo di un contenitore di spazzatura mobile barrato sul prodotto (o in casi eccezionali sull'imballaggio). Il simbolo di un contenitore di spazzatura mobile barrato, conforme alla direttiva RAEE, significa che i clienti detentori finali nei paesi dell'UE, non dovrebbero smaltire gli apparecchi e gli accessori elettronici ed elettrici nei rifiuti domestici. I clienti detentori finali nei paesi della UE dovrebbe rivolgersi al fornitore, rappresentante o centro di riparazione locale per ottenere informazioni sui sistemi predisposti nel proprio paese per la raccolta di tali apparecchi usati.

PT

Directiva da União Europeia (UE) relativa aos Resíduos de Equipamentos Eléctricos e Electrónicos (REEE) A Directiva REEE União Europeia exige quais os produtos vendidos em países UE tenham etiqueta como símbolo do conteúdo do lixo barrado com uma cruz no próprio produto (ou, em determinados casos, na embalagem). Tal como definido pela Directiva REEE, este conteúdo do lixo barrado com uma cruz significa que os clientes utilizadores finais nos países da UE não devem eliminar equipamentos eléctricos e electrónicos ou acessórios junto com o lixo doméstico. Os clientes ou utilizadores finais dos países UE devem contactar o representante local do fornecedor do equipamento ou o centro de assistência para obter informações relativas ao sistema de recolha de lixo no país onde vivem.

RU

**Директива Европейского Союза (ЕС) об утилизации электрического и электронного оборудования («УЭЭО»).**

Директива «УЭЭО» Европейского Союза требует, чтобы изделия, продаваемые в странах ЕС (в отдельных случаях на их упаковке), были нанесены маркировка в виде перечёркнутого мусорного контейнера. Как установлено в директиве «УЭЭО», такая маркировка в виде перечёркнутого мусорного контейнера означает, что покупатели и конечные пользователи не должны выбрасывать электронное и электрическое оборудование или приборы бытового мусора. Покупателям и конечным пользователям в странах ЕС следует обращаться к местным представителям поставщиков оборудования или к сервисным центрам для получения информации о системе сбора отходов в их стране.

ES

**La directiva de la Unión Europea (EU) sobre Residuos de Aparatos Eléctricos y Electrónicos (RAEE)**

La directiva RAEE de la Unión Europea requiere que los productos vendidos en los países de la UE sean rotulados mediante el símbolo de un contenedor de basura tachado sobre el producto (en algunos casos sobre envase). Conforme con la directiva RAEE, el símbolo del contenedor de basura tachado significa que los clientes usuarios finales en los países de la UE no deberían disponer los aparatos eléctricos electrónicos ni ninguno de sus componentes junto a la basura doméstica. Clientes Usuarios Finales En Los Países de la UE debe entrar en contacto con el centro del servicio proveedores del equipo para obtener información acerca del sistema de recolección en su país.



Printed in Australia