

Beltpack CM-BH4W & CM-BH4WX

Belt-Pack 4-Wire Headphone Amp



Manufacturers of Audio Products for AV,
Installed Sound, Broadcast Radio & Broadcast TV

SONIFEX

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This handbook is for use with the following product:
CM-BH4W Beltpack Belt-Pack 4-Wire Headphone Amp.
Stock Code: 30-292

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Made in the UK by **SONIFEX**

Register Online for an Extended 2 Year Warranty

Product: _____
Serial No: _____

www.sonifex.co.uk/register

Product Warranty - 2 Year Extended

As standard, Sonifex products are supplied with a 1 year back to base warranty. In order to register the date of purchase and so that we can keep you informed of any product design improvements or modifications, it is important to complete the warranty registration online. Additionally, if you register the product on the Sonifex website, you can increase your product warranty to 2 years. Go to the Sonifex website at: www.sonifex.co.uk/register to apply for your 2 year warranty.

Sonifex Warranty & Liability Terms & Conditions

1. Definitions

'the Company' means Sonifex Ltd and where relevant includes companies within the same group of companies as Sonifex Limited.

'the Goods' means the goods or any part thereof supplied by the Company and where relevant includes: work carried out by the Company on items supplied by the Purchaser; services supplied by the Company; and software supplied by the Company.

'the Purchaser' means the person or organisation who buys or has agreed to buy the Goods.

'the Price' means the Price of the Goods and any other charges incurred by the Company in the supply of the Goods.

'the Warranty Term' is the length of the product warranty which is usually 12 months from the date of despatch; except when the product has been registered at the Sonifex website when the Warranty Term is 24 months from the date of despatch.

'the Contract' means the quotation, these Conditions of Sale and any other document incorporated in a contract between the Company and the Purchaser.

This is the entire Contract between the parties relating to the subject matter hereof and may not be changed or terminated except in writing in accordance with the provisions of this Contract. A reference to the consent, acknowledgement, authority or agreement of the Company means in writing and only by a director of the Company.

2. Warranty

- a. The Company agrees to repair or (at its discretion) replace Goods which are found to be defective (fair wear and tear excepted) and which are returned to the Company within the Warranty Term provided that each of the following are satisfied:
 - i. notification of any defect is given to the Company immediately upon its becoming apparent to the Purchaser;
 - ii. the Goods have only been operated under normal operating conditions and have only been subject to normal use (and in particular the Goods must have been correctly connected and must not have been subject to high voltage or to ionising radiation and must not have been used contrary to the Company's technical recommendations);
 - iii. the Goods are returned to the Company's premises at the Purchaser's expense;

- iv. any Goods or parts of Goods replaced shall become the property of the Company;
 - v. no work whatsoever (other than normal and proper maintenance) has been carried out to the Goods or any part of the Goods without the Company's prior written consent;
 - vi. the defect has not arisen from a design made, furnished or specified by the Purchaser;
 - vii. the Goods have been assembled or incorporated into other goods only in accordance with any instructions issued by the Company;
 - viii. the defect has not arisen from a design modified by the Purchaser;
 - ix. the defect has not arisen from an item manufactured by a person other than the Company. In respect of any item manufactured by a person other than the Company, the Purchaser shall only be entitled to the benefit of any warranty or guarantee provided by such manufacturer to the Company.
- b. In respect of computer software supplied by the Company the Company does not warrant that the use of the software will be uninterrupted or error free.
 - c. The Company accepts liability:
 - (i) for death or personal injury to the extent that it results from the negligence of the Company, its employees (whilst in the course of their employment) or its agents (in the course of the agency);
 - (ii) for any breach by the Company of any statutory undertaking as to title, quiet possession and freedom from encumbrance.
 - d. Subject to conditions (a) and (c) from the time of despatch of the Goods from the Company's premises the Purchaser shall be responsible for any defect in the Goods or loss, damage, nuisance or interference whatsoever consequential economic or otherwise or wastage of material resulting from or caused by or to the Goods. In particular the Company shall not be liable for any loss of profits or other economic losses. The Company accordingly excludes all liability for the same.
 - e. At the request and expense of the Purchaser the Company will test the Goods to ascertain performance levels and provide a report of the results of that test. The report will be accurate at the time of the test, to the best of the belief and knowledge of the Company, and the Company accepts no liability in respect of its accuracy beyond that set out in Condition (a).
 - f. Subject to Condition (e) no representation, condition, warranty or other term, express or implied (by statute or otherwise) is given by the Company that the Goods are of any particular quality or standard or will enable the Purchaser to attain any particular performance or result, or will be suitable for any particular purpose or use under specific conditions or will provide any particular capacity, notwithstanding that the requirement for such performance, result or capacity or that such particular purpose or conditions may have been known (or ought to have been known) to the Company, its employees or agents.
 - g.
 - (i) To the extent that the Company is held legally liable to the Purchaser for any single breach of contract, tort, representation or other act or default, the Company's liability for the same shall not exceed the price of the Goods.
 - (ii) The restriction of liability in Condition (g)(i) shall not apply to any liability accepted by the Seller in Condition (c).

- h. Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Purchaser are not affected by these Conditions of Sale.

Unpacking Your Product

Each product is shipped in protective packaging and should be inspected for damage before use. If there is any transit damage take pictures of the product packaging and notify the carrier immediately with all the relevant details of the shipment. Packing materials should be kept for inspection and also for if the product needs to be returned.

The product is shipped with the following equipment so please check to ensure that you have all of the items below. If anything is missing, please contact the supplier of your equipment immediately.

Item	Quantity
Product unit	1
A3 Folded Handbook	1

Repairs & Returns

Please contact Sonifex or your supplier if you have any problems with your Sonifex product. Email technical.support@sonifex.co.uk for the repair/upgrade/returns procedure, or for support & questions regarding the product operation.

CE Conformity

The products in this manual comply with the essential requirements of the relevant European health, safety and environmental protection legislation.

The technical justification file for this product is available at Sonifex Ltd.

The declaration of conformity can be found at:
<https://www.sonifex.co.uk/declarations>

WEEE Directive



The Waste Electrical and Electronic Equipment (WEEE) Directive was agreed on 13 February 2003, along with the related Directive 2002/95/EC on Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment

(RoHS). The Waste Electrical and Electronic Equipment Directive (WEEE) aims to minimise the impacts of electrical and electronic equipment on the environment during their life times and when they become waste. All products manufactured by Sonifex Ltd have the WEEE directive label placed on the case. Sonifex Ltd will be happy to give you information about local organisations that can reprocess the product when it reaches its "end of use", or alternatively all products that have reached "end of use" can be returned to Sonifex and will be reprocessed correctly free of charge.

Atmosphere/Environment

This apparatus should be installed in an area that is not subject to excessive temperature variation (<0°C, >50°C), moisture, dust or vibration.

This apparatus shall not be exposed to dripping or splashing, and no objects filled with water, such as vases shall be placed on the apparatus. ►

1. CM-BH4W Belt Pack 4 Wire Headphone Amplifier

Introduction



Fig 1-1: CM-BH4W Belt Pack Headphone Amplifier 4 Wire

The CM-BH4W is a portable, battery powered 4 wire belt pack for use in talkback and IFB applications, providing two-way communication with a wide range of studio equipment, including the Sonifex CM-TB8.

The built in automatic gain control (AGC) ensures a constant line output level is maintained for a wide range of headset microphones, and in IFB mode the input audio is passively switched to the output when the talk button is not pressed, giving a fail-safe audio path through the unit.

A low battery warning LED flashes when the 9V PP3 battery has depleted to 6V, giving plenty of notice to swap the battery. The low power circuitry of the CM-BH4W gives up to 150 hours use from a single alkaline 9V PP3 battery, and removing the jack plug from the headset socket switches the unit off to conserve battery life.

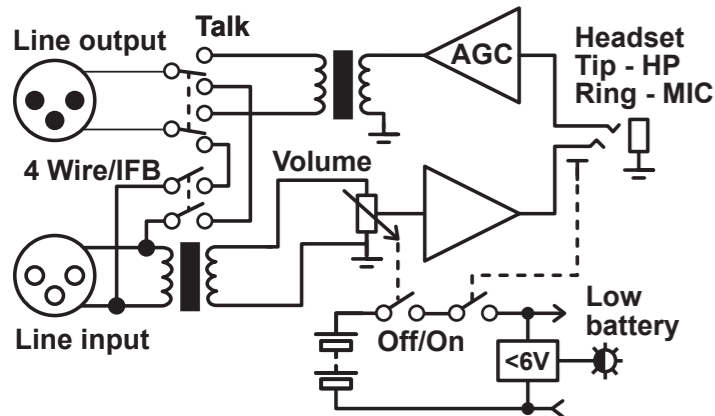


Fig 1-2: CM-BH4W Block Diagram

2. Controls & Indicators

Top Panel Controls & Indicators



Fig 2-1: Top Panel View of CM-BH4W

Headset Socket

The headset connector is a 1/4" jack socket that provides an unbalanced microphone input alongside an unbalanced, mono headphone output. The socket has the following connections:

- Tip: Headphone Output
- Ring: Microphone Input
- Screen: Headphone/Microphone Common
- Volume Control

The volume control modifies the headphone output volume, giving up to 10dB of gain for low level line inputs. The control also acts as a power switch, turning the unit off when fully anticlockwise.

Low Battery Indicator

Should the battery voltage fall below 6V, the 3mm red low battery indicator will flash, warning you that the battery should be changed as soon as possible to prevent failure.

TALK Pushbutton

The TALK button routes the microphone audio via an automatic gain control (AGC) circuit to the line output. The AGC maintains the output level at +2dBu for a wide range of microphone input levels. The TALK switch can be set as a momentary or latching switch by inserting/removing an internal pin (set as momentary by default). Contact Sonifex for more information on this.

Side Panel Controls

4 Wire/IFB Mode Switch

The mode of operation is set using the 4 wire/IFB mode switch.

- In 4 wire mode, the line output remains silent until the TALK button is pressed.
- In IFB mode, the line input is routed to the line output until the TALK button is pressed, after which it is interrupted by the microphone audio.



Fig 2-2: Side Panel View of CM-BH4W

Bottom Panel Connections



Fig 2-3: Bottom Panel View of CM-BH4W

The audio connections are found on the bottom panel, and both have the following connections:

- Pin 1: Ground
- Pin 2: Phase
- Pin 3: Non-phase

Line Input

The line input is a transformer balanced audio input with >10kΩ input impedance. The line input can accept input levels of up to +24dBu.

Line Output

The line output is either a direct connection to the line input (if IFB mode is set and talk is not pressed) or is a transformer balanced audio output containing the post AGC microphone audio.

CM-BH4WX Belt-Pack 4-Wire Headphone Amp With 4 Pin XLR Headset Connector

This is a version of the CM-BH4W with a 4 pin XLR headset connection instead of a stereo jack connector. In all other respects it is the same as the CM-BH4W.



Fig 2-4: Top Panel View of CM-BH4WX

The XLR connections are:

- Pin 1: Microphone non-phase (-)
- Pin 2: Microphone phase (+)
- Pin 3: Headphone non-phase (-)
- Pin 4: Headphone phase (+)

3. Technical Specification CM-BH4W/X Belt Pack

Mic In to Line Out

Mic Input Impedance:	1k5Ω Unbalanced for 200Ω dynamic microphone
Limiter Input Threshold:	-60dBu
Line Output Level:	+2dBu
Line Output Impedance:	150Ω Transformer balanced

Line In to Headphone Out

Line Input Impedance:	>10kΩ Transformer balanced
Input Gain/Volume:	Adjustable off to +10dB
Maximum Input Level:	+24dBu
Maximum HP Output Level:	+7dBu (ref 9V battery voltage, <1% THD, 100Ω load)
Minimum HP Impedance:	100Ω

Connections

Line Input:	1 x XLR 3 pin female socket (balanced)
Line Output:	1 x XLR 3 pin male plug (balanced)
Headset (CM-BH4W):	1 x 1/4" (6.35mm) mono unbalanced jack socket
Headset (CM-BH4WX):	1 x XLR 4 pin male plug (balanced)

Equipment Type

CM-BH4W:	Belt-pack 4-wire headphone amplifier
CM-BH4WX:	Belt-pack 4-wire headphone amplifier with 4 pin XLR headset connector

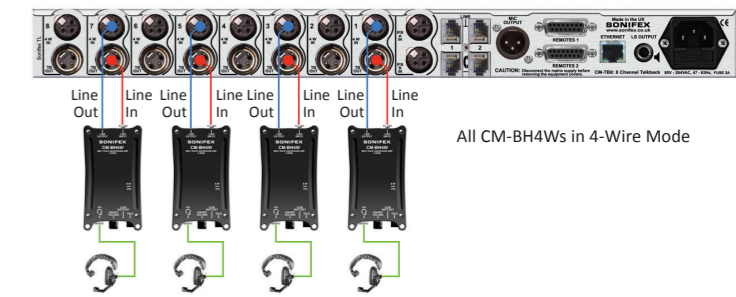
Physical Specification

Dimensions (Raw):	12.5cm (W) x 6.7cm (D) x 4.8cm (H) 4.9" (W) x 2.6" (D) x 1.9" (H)
Dimensions (Boxed):	23cm (W) x 13cm (D) x 8cm (H) 9.1" (W) x 5.1" (D) x 3.1" (H)
Weight:	Nett: 0.3kg Gross: 0.4kg Nett: 0.6lbs Gross: 1.0lbs

4. Applications

Basic 4 Wire Star Network

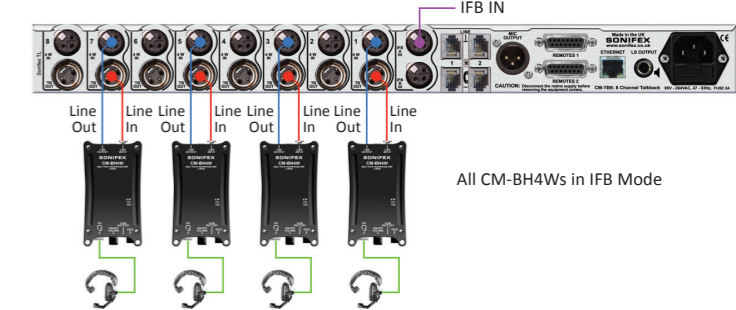
CM-TB8 Channels 1, 3, 5 & 7 in IFB Mode with IFBA sent



All CM-BH4Ws in 4-Wire Mode

IFB Star Network

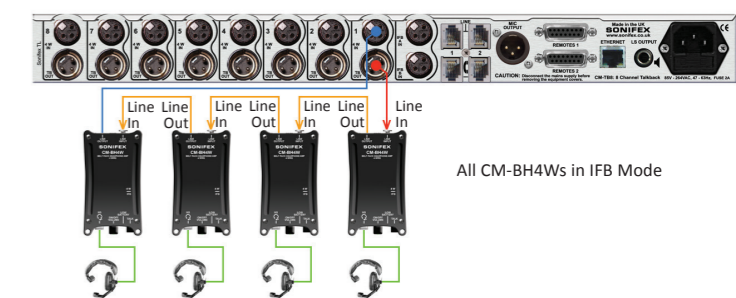
CM-TB8 Channels 1, 3, 5 & 7 in 4-Wire Mode



All CM-BH4Ws in IFB Mode

"Ring" Network Using a Single CM-TB8 Channel

CM-TB8 Channel 1 in 4-Wire Mode



All CM-BH4Ws in IFB Mode

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