



Passive Splitters User Handbook

- CM-AESX3** 3 Way Passive Digital AES3 Splitter, with XLR connections.
- CM-AESB3** 3 Way Passive Digital AES3ID Splitter, with BNC connections.
- CM-MS3** Single 3 Way Passive Microphone Splitter.



CM-AESX3, CM-AESB3 & CM-MS3 PASSIVE DIGITAL SPLITTERS USER HANDBOOK



CM-AESX3, CM-AESB3 & CM-MS3 PASSIVE DIGITAL SPLITTERS USER HANDBOOK

This handbook is for use with the following product:

Passive Digital Splitters:

CM-AESX3 3 Way Passive Digital AES3 Splitter, with XLR connections.

CM-AESB3 3 Way Passive Digital AES3ID Splitter, with BNC connections.

CM-MS3 Single 3 Way Passive Microphone Splitter.

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Warranty

Warranty and Liability

Important: the purchaser is advised to read this clause

- (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 12 months of the date of despatch 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);



WARRANTY



WARRANTY



WARRANTY

- (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 the Passive Splitters

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

Item	Quantity Passive Digital Splitters
Passive Splitters	1
Handbook and warranty card	1

Fig A: Packing List

Each Passive Splitter is shipped in protective packaging and should be inspected for damage before use. Where an item is found to have transit damage, 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.

Returning the Warranty Card

In order to register the date of purchase so that we can keep you informed of any design improvements or modifications, it is important to complete the warranty registration document that is enclosed and return it to Sonifex Ltd in the UK, or register online at www.sonifex.co.uk/register

For your own records you should write down the serial number (which can be found on the rear of the Passive Splitters).

Serial Number
---------------	-------



WARRANTY

WEEE & ROHS DIRECTIVE

Installation Information

Atmosphere

The units should be installed in an area that is not subject to excessive temperature variation ($<0^{\circ}\text{C}$, $>50^{\circ}\text{C}$), moisture, dust or vibration.

WEEE & RoHS Directives - Sonifex Statement



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. It applies to a huge spectrum of products. It encourages and sets criteria for the collection, treatment, recycling and recovery of waste electrical and electronic equipment. All products manufactured by Sonifex Ltd have the WEEE directive label placed on the case. It gives a contact for individuals who are unsure about the correct procedure when the product has reached its "end of use".

Sonifex Ltd will be happy to give you information about local organisations that can reprocess the products, or alternatively all products that have reached "end of use" can be returned to Sonifex and will be reprocessed correctly free of charge.

Sonifex Ltd has phased out the use of certain hazardous substances identified in the European Union's **Restriction of Hazardous Substances (RoHS)** directive. The RoHS directive limits the use of certain hazardous substances currently used in EEE manufacture, including lead, mercury, cadmium, hexavalent chromium, and halide-containing compounds PBB (polybrominated biphenyl) and PBDE (polybrominated diphenyl ether). Elimination of these substances will result in more environmentally friendly recycling of electronic equipment. For the products which Sonifex manufacture, the main area where products were affected was in the use of lead for manufacturing and assembling electronics circuit boards.

Sonifex Ltd practices lead-free (LF) manufacturing processes. LF solder is used on the surface-mount PCB manufacturing processes and for hand soldering. The printed circuit boards (PCBs) used are either gold plated, or immersion tin plated, both of which use no lead. Historically the PCBs were hot air solder levelled (HASL) PCBs which used tin/lead based solder.

The manufacturing processes include the assembly of purchased components from various sources. Product is offered as RoHS compliant, or LF, only after sufficient evidence is received from the component manufacturers that their components are RoHS compliant. Sonifex Ltd relies solely on the distributor, or manufacturer, of the components for identification of RoHS compliance. Thus whilst every effort is made to ensure compliance, Sonifex Ltd makes no warranty, or certification, or declaration of compliance concerning said components.

Sonifex Ltd defines "Lead Free" as pertaining to any product, which has been manufactured by Sonifex Ltd using components which have been declared by the manufacturers as "Lead Free". All statements by Sonifex Ltd of RoHS compliance are based on component manufacturer documentation.

1 Passive Splitters Introduction

The Passive Splitters are a range of small form units, for splitting AES3/AES3ID/microphone audio from a single source to up to 3 destinations.

There are three Passive Splitter products:

CM-AESX3 3 Way Passive Digital AES3 Splitter, with XLR connections.

CM-AESB3 3 Way Passive Digital AES3ID Splitter, with BNC connections.

CM-MS3 Single 3 Way Passive Microphone Splitter.

2 CM-AESX3 3 Way Passive Digital AES3 Splitter, with XLR

The CM-AESX3 is a passive digital splitter, designed to split a single AES3 source to up to three destinations, using Neutrik XLR connectors. 110Ω termination can be applied, if desired to unconnected outputs. The CM-AESX3 is a single “one-to-three” splitter housed in a small form box, and utilises a locking XLR socket for the input connector.

Block Diagram

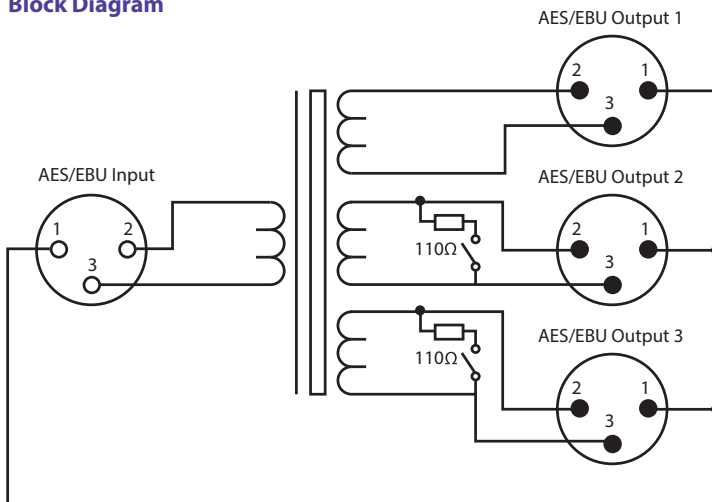


Fig 2-1: CM-AESX3 Block Diagram

2 CM-AESX3 3 WAY PASSIVE DIGITAL AES3 SPLITTER WITH XLR

Controls & Connectors



Fig 2-2: CM-AESX3 Front and Rear Panels

AES/EBU input(s)

The single digital audio input is via a female XLR connector with the following pin assignment:

Pin 1: 0V Common

Pin 2: Phase

Pin 3: Non Phase

AES/EBU outputs 1-3

The digital audio outputs are via male XLR connectors with the following pin assignment:

Pin 1: 0V Common

Pin 2: Phase

Pin 3: Non Phase

Termination switches

It is possible to terminate Output 2 and Output 3 with 110Ω in the event that they are not connected to a destination device. It may be necessary to remove termination from an unused output if a used output is connected to a destination via a long cable run, in order to increase the level of the AES3 carrier signal.

CM-AESX3 Technical Specification

CM-AESX3: Cable drive capability

The table below sets out the minimum signal amplitude required to drive 100m (cumulative) of 110Ω twisted pair cable, based on the sample rate of the digital audio:

Sample Rate	Minimum Signal Amplitude
32kHz	*2Vpk-pk
44.1kHz	*2Vpk-pk
48kHz	*2Vpk-pk
88.2kHz	5Vpk-pk
96kHz	5Vpk-pk

* Minimum of 2Vpk-pk is defined by the AES3 format specification.

The table below sets out the minimum signal amplitude required to drive 30m (cumulative) of 110Ω twisted pair cable, based on the sample rate of the digital audio:

Sample Rate	Minimum Signal Amplitude
176.4kHz	3Vpk-pk
192kHz	3Vpk-pk

Equipment Type

CM-AESX3 3 Way Passive Digital AES3 Splitter with XLR connections.

Physical Specification

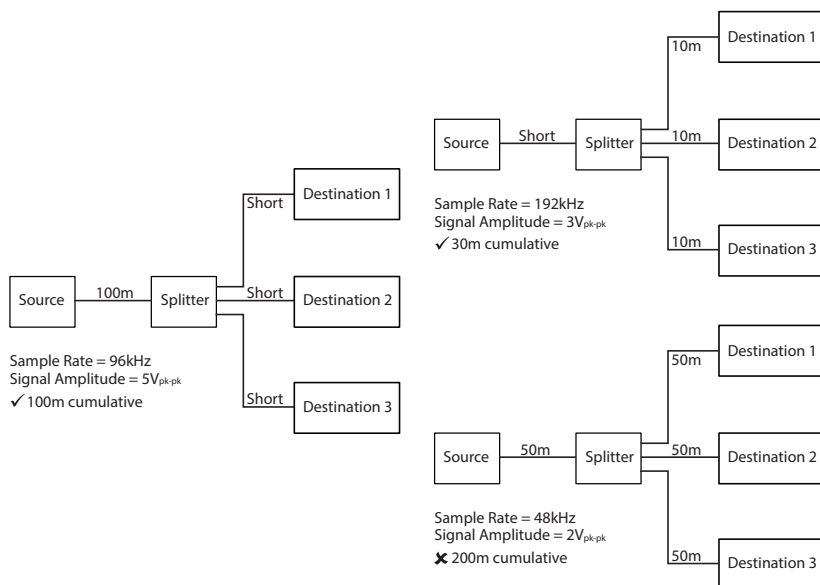
Dimensions: 7.7cm (W) x 8.3cm (D) x 4.2cm (H)
3.0" (W) x 3.3" (D) x 1.7" (H)

Weight: Nett: 0.22kg Gross: 0.33kg
Nett: 0.49lbs Gross: 0.73lbs

CM-AESX3 3 WAY PASSIVE DIGITAL AES3 SPLITTER WITH XLR



Examples of use of cumulative cabling:



3 CM-AESB3 3 Way Passive Digital AES3ID Splitter, with BNC

The CM-AESB3 is a passive digital splitter, designed to split a single AES3ID source to up to three destinations, using BNC connectors. 75Ω termination can be applied, if desired to unconnected outputs. The CM-AESB3 is a single “one-to-three” splitter housed in a small form box.

Block Diagram

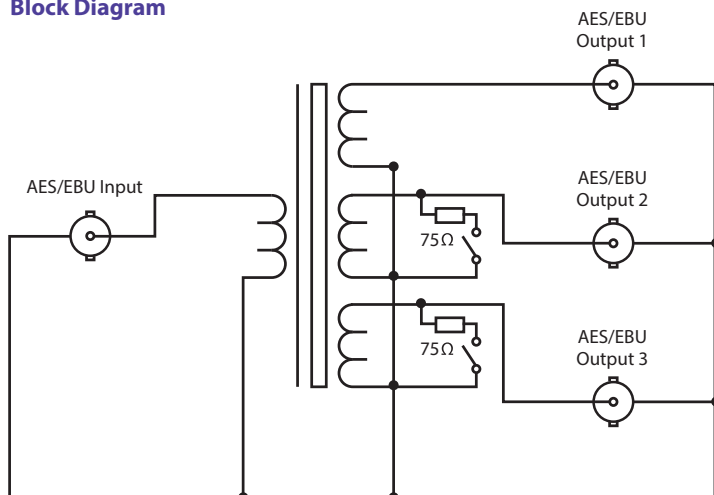


Fig 3-1: CM-AESB3 Block Diagram

Controls & Connectors



Fig 3-2: CM-AESB3 Front and Rear Panels

CM-AESB3 3 WAY PASSIVE DIGITAL AES3ID SPLITTER WITH BNC

CM-AESB3 3 WAY PASSIVE DIGITAL AES3ID SPLITTER WITH BNC

AES/EBU input(s)

The single digital audio input is via a female BNC connector with the following pin assignment:

Tip: Signal

Screen: 0V Common

AES/EBU outputs 1-3

The digital audio outputs are via a female BNC connectors with the following pin assignment:

Tip: Signal

Screen: 0V Common

Termination switches

It is possible to terminate Output 2 and Output 3 with 75Ω in the event that they are not connected to a destination device. It may be necessary to remove termination from an unused output if a used output is connected to a destination via a long cable run, in order to increase the level of the AES3ID carrier signal.

CM-AESB3 Technical Specification

CM-AESB3: Cable drive capability

Cumulative cable drive capability of 100m of 75Ω coaxial cable at sample rates up to and including 96kHz.

Equipment Type

CM-AESB3 3 Way Passive Digital AES3ID Splitter with BNC.

Physical Specification

Dimensions (Raw): 7.7cm (W) x 8.3cm (D) x 4.2cm (H)
3.0" (W) x 3.3" (D) x 1.7" (H)

Weight: Nett: 0.22kg Gross: 0.33kg
Nett: 0.49lbs Gross: 0.73lbs

4 CM-MS3 Single 3 Way Passive Microphone Splitter



Fig 4-1: CM-MS3 Front and Rear Panels

The CM-MS3 is a passive microphone splitter, designed to split the signal from a single mic or line source, to up to 3 destinations, whilst allowing the operator to pass phantom power back from mic preamplifier inputs, or apply +48VDC power directly from the unit. Pin 1 "ground" lifts are provided to eliminate ground loop problems.

Block Diagram

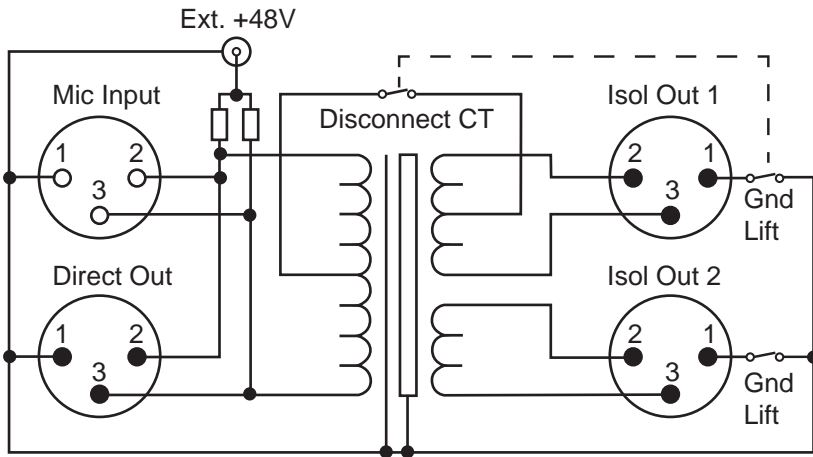


Fig 4-2: CM-MS3 Block Diagram

4 CM-MS3 SINGLE 3 WAY PASSIVE MICROPHONE SPLITTER

Controls & Connectors Front Panel



Fig 4-3: CM-MS3 Front Panel Connections

Input

The XLR 3 pin input socket is transformer balanced and is capable of accepting a dynamic or phantom powered microphone, or a line level signal up to +18dBu (without the 30dB pad applied). The input socket has the following connections:

- Pin 1: Screen
- Pin 2: Phase
- Pin 3: Non Phase

Output 1 (Direct)

The XLR 3 pin plug is a parallel connection of the input. It is therefore possible to supply phantom power to the splitter input by connecting output 1 to a phantom powered microphone preamplifier. The output 1 plug has the following connections:

- Pin 1: Screen
- Pin 2: Phase
- Pin 3: Non Phase

External +48VDC Phantom Power

External phantom power (+48V) can be applied to the input by connecting a supply to the DC power connector (2.5mm pin). The pinout is as follows:



Phantom Powering Guidance

It is possible to pass phantom power to the splitter input by three different methods:

- Via the external +48V DC connector.
- From a mic pre-amp connected to direct output (output 1).
- From a mic pre-amp connected to output 2 (provided phantom loopback is enabled).

It is therefore possible to concurrently power the microphone using any two of the above methods (for power redundancy) without causing signal degradation. It is important the output connectors are grounded (and not lifted) should the external phantom power be connected, to prevent hum/hiss caused by ground loop currents.

Important: A maximum of two phantom powering methods can be used concurrently.

Rear Panel



Fig 4-4: CM-MS3 Rear Panel Connections

Output 2 (+48V PL Phantom Loopback)

The XLR 3 pin plug is a transformer isolated output. A switchable centre tap connection makes it possible to supply phantom power to the splitter input by connecting output 2 to a phantom powered microphone preamplifier, and setting the adjacent push switch to the "PL ON" position. The output 2 plug has the following connections:

- Pin 1: Screen (Can be grounded or lifted by adjacent push switch)
- Pin 2: Phase
- Pin 3: Non Phase

Output 3

The XLR 3 pin plug is a transformer isolated output and has the following connections:

- Pin 1: Screen (Can be grounded or lifted by adjacent push switch)
- Pin 2: Phase
- Pin 3: Non Phase



CM-MS3 Technical Specification

Test	Conditions	Result
Frequency Response	<ul style="list-style-type: none"> • Ref. -6dBu, 1kHz • Source Impedance = 150Ω • Load Impedance = 10kΩ 	10Hz - 30kHz \pm 0.5dB
Total Harmonic Distortion	<ul style="list-style-type: none"> • Ref. +3dBu, 50Hz • Source Impedance = 150Ω • Load Impedance = 10kΩ 	0.02%
Total Harmonic Distortion 0.1%	<ul style="list-style-type: none"> • Ref. 0.1%THD+N, 50Hz • Source Impedance = 150Ω • Load Impedance = 10kΩ 	+13dBu
Total Harmonic Distortion 1%	<ul style="list-style-type: none"> • Ref. 1%THD+N, 50Hz • Source Impedance = 150Ω • Load Impedance = 10kΩ 	+18dBu
Common Mode Rejection Ratio	<ul style="list-style-type: none"> • Ref. 20kHz • Source Impedance = 600Ω • Load Impedance = 10kΩ 	>60dB

Equipment Type

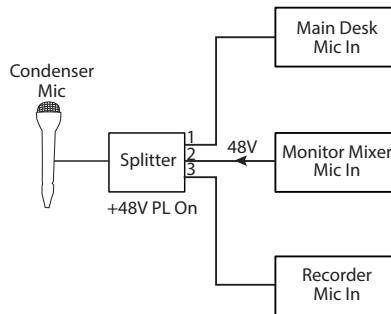
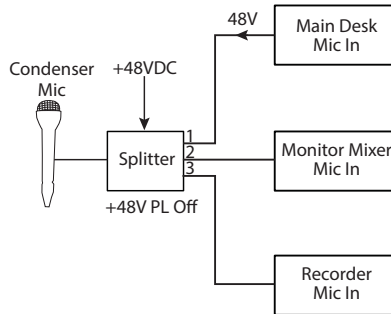
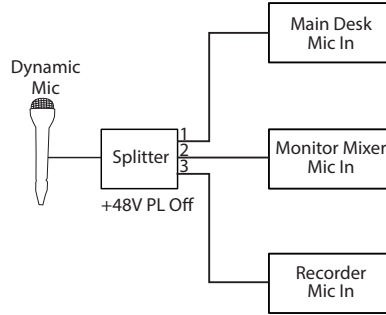
CM-MS3 Single 3 Way Passive Microphone Splitter.

Physical Specification

Dimensions (Raw): 7.7cm (W) x 8.3cm (D) x 4.2cm (H)
3.0" (W) x 3.3" (D) x 1.7" (H)

Weight: Nett: 0.30kg Gross: 0.40kg
Nett: 0.66lbs Gross: 0.88lbs

Examples of usage:



CM-MS3 SINGLE 3 WAY PASSIVE MICROPHONE SPLITTER

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