

CMR3

Calibrated Measuring Receiver

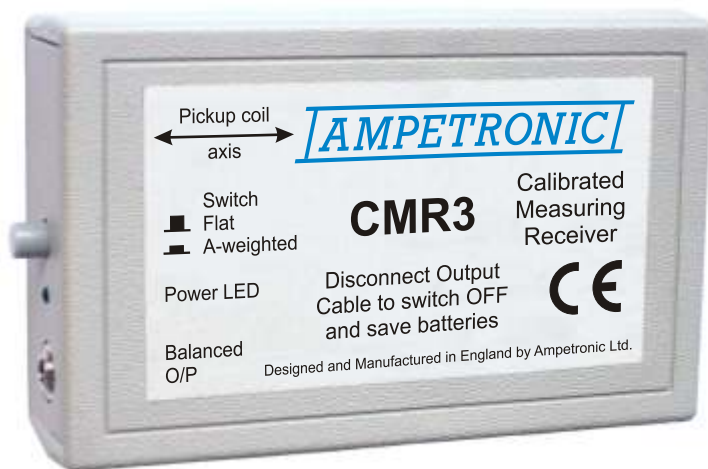


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AMPETRONIC
The Complete System Capability

1 Introduction

The CMR3 Calibrated Measuring Receiver is designed for measuring the performance of audio frequency induction loop systems in accordance with the requirements of the international defining standard EN 60118-4.

This standard establishes the target field strength and frequency response of the induction loop system within the usable area. Tolerances are established for the various parameters. The standard also defines an acceptable level for the interfering background noise, which must be measured.

This receiver is intended to be used as a calibrated probe with audio analysers and measuring equipment, including software based audio analysers running on portable or fixed computers.

When used with a suitable signal source and analyser the magnetic field strength, background noise, frequency response and field distribution can be measured accurately. Loop system performance and losses due to the presence of metal in building construction can therefore be assessed, and the equipment can be set up to satisfy the requirements.

1.1 Warranty Information

This product carries a 5 year parts and labour warranty which could be invalidated if these instructions are not followed correctly, or if the unit is tampered with in any way, or damaged by mishandling.

The 5 year warranty is dated from the time the equipment leaves Ampetronic.

1.2 Warnings

In order to avoid any problems during the operation of the unit read these instructions carefully before you operate the unit for the first time.

- Use the unit for the intended purpose only.
 - Do not tamper with the unit.
 - Never use the unit in a damp environment.
 - Do not rotate/roll the batteries when inserted into the unit, as this may cause a battery short circuit.
 - The CMR3 should only be connected to measurement inputs of a suitable audio analysis tool.
 - Under no conditions must a 2-pole (mono) plug be used, as this will cause malfunction of the unit & inaccurate readings.
- See section 2.2 Output Connection

1.3 Batteries

The unit is powered by two AA size cells, preferably alkaline. The battery compartment is at the lower rear of the unit. Open the battery cover by pressing gently (using thumb pressure) and sliding the cover off the case.

Ensure that the batteries are inserted the correct way round as indicated inside the compartment. Incorrect battery polarity could damage the CMR3.

If the unit is not used for an extended period, then the batteries should be removed. This reduces the risk of damage to the unit if the batteries leak.

1.4 Re-Calibration

Recommended 1 year from the time the equipment leaves Ampetronic. This can be revised to 1.5 / 2 years if no adjustments are necessary.

2 Operation

The CMR3 is battery powered, and offers a balanced line-level output which can be fed to any audio analyser or measuring system. Because the output is electronically balanced, grounding one side of the signal is not permitted.

See 2.2 Output Connection for details.

Connect this output to suitable audio measuring equipment, and use established procedures such as spectral analysis of pink noise for plotting frequency response.

A magnetic field of 400mA/m RMS 1kHz sinewave will produce a 0 dBu output signal from the balanced output.

An A-weighted filter is provided to permit correct measurement of the background noise level.

2.1 Power ON/OFF

The CMR3 is switched on by inserting the jack plug of the supplied output cable into the Balanced O/P socket of the unit. The LED should illuminate, indicating that the unit is ready for use.

2.2 Output Connection

The 3.5mm jack socket is also used as the power switch as discussed in 2.1

2.2.1 *Balanced connection*

Use cable supplied with suitable balanced XLR cable extension as required.

Details of connections:

XLR(Male) to plug(3.5mm)

Pin 1 (X) ⇒ Sleeve

Pin 2 (L) ⇒ Tip

Pin 3 (R) ⇒ Ring

2.2.2 *Unbalanced connection*

If an Unbalanced (or single-ended) signal is required (e.g. for connection to a PC), then use one signal line (Tip or Ring) and the cable shield (Sleeve). The output signal level will then be 6dB lower than normal.

Do **not** use a 2-pole plug.

Do **not** connect the unused pin (Ring or Tip) to ground.

Unbalanced connections should not be longer than 3m.

2.3 Switch position

This selects the overall frequency response of the receiver. Most measurements will require a flat frequency response. The A-weighting filter will only be needed for special conditions, such as measuring background noise. Ensure that the CMR3 is switched to the correct position, otherwise measurements may be invalidated.

Switch position OUT:  Flat response

Switch position IN:  A-weighted response

2.4 Orientation

For most installations, the vertical magnetic vector is of interest, as specified in IEC 60118-4. As a result, the CMR3 must also be vertical in order to measure the correct component of the magnetic field. The coil position & axis is indicated on the CMR3 to help with accurate positioning of the receiver.

Special situations may exist where the vector of interest is not vertical, and hence the CMR3 should be orientated in accordance with this. These situations may be encountered in many locations such as in places of worship, hospitals and recovery areas, where people may not be in an upright position.

2.5 Location

The CMR3 should be positioned at ear or listening level. This is typically 1.2m whilst seated, or 1.6m when standing.

Avoid positioning the unit on or near metal while taking measurements as this may affect the magnetic field pattern, and hence yield incorrect results. For more information on the effects of metal on magnetic fields contact Ampetronic, or see our website:

www.ampetronic.com

3 Trouble Shooting

LED not illuminated

Check batteries. Power LED will begin to turn off below 1.9V total battery voltage indicating that the batteries are near end of life. Try replacing with new batteries.

Ensure jack plug is fully inserted into socket.

No Output

Check power LED is illuminated. If not, see above.

Is the cable connected & of correct type.

4 **Accessories:**

Output cable, 3.5mm 3-pole jack plug to XLR plug. Balanced connection.
Cable length 1.5m.

5 **Technical Specification:**

Sensitivity: Calibrated to 0dBu output for 400 mA/m RMS magnetic field at 1kHz.
Headroom 6dB before clipping (at minimum battery voltage)

Frequency response: Flat: ± 0.25 dB, 50 Hz to 8 kHz, -3 dB at 30 Hz and 14 kHz.
A-weighted: -3 dB at 470Hz and 14 kHz as per EN61672-1:2003 sound level meters

Gain stability: Measured at 1kHz.

Change due to battery voltage < 0.1dB

Change due to output loading < 0.1dB

Change due to temperature < 0.25dB

Overall gain change < 0.5dB

Output connector: 3.5 mm 3-pole (stereo) jack socket.

Active balanced output. Do not use 2-pole (mono) connector, or short ring to ground.

Load impedance: 600 Ω .

Power: 2 x AA (LR6) cells, preferably alkaline (1.8V to 3.2V total supply voltage)

Battery life is about 200 hours with good quality alkaline cells.

Integral LED acts as battery condition monitor. Batteries not supplied.

Operating Temperature: -20°C to +40°C

Dimensions:

Width:	62 mm
Depth:	26 mm
Height:	112 mm
Weight:	84 g

Construction: Moulded case grey

Accessories: Output cable, 3.5mm plug to XLR, balanced, 1.5m long.

6. **Declaration of Conformity**

Manufacturer: Ampetronic Ltd.
Address: Northern Road, Newark,
Nottinghamshire, NG24 2ET
United Kingdom.

Declares that the product:

Description: Calibrated Measuring Receiver

Type Name: CMR3

Is designed and manufactured in England by Ampetronic Ltd.

Conforms to the following Directive(s) and Norm(s):

Directive 89/336/EEC and its amending directives

EMC: EN55103-1 (1997)

EN55103-2 (1997)

Directive 73/23/EEC and its amending directives

Safety: EN60065 (2002)

Date Jan. 2004

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