



CS HA

Magnetic field Detector

rel. 1.5.1

1 – Generals

Magnetic induction systems incorporated in telephones handsets generate an alternating magnetic field detectable by Hearing-Aids equipped with induction pick-up coils.

CS-HA Detector allows evaluating the axial strength of that magnetic field.

The **CS-HA** device, connected to **CS8014** "Automatic F.F.T. Telephone Tester", is the best compromise to meet either CCITT-P37 Recommendations or CEI 103.5 1990 for production test in Automatic Test Systems.

CS-HA is constituted of two parts, detector and amplifier.

The detector is made of ferrous material able to concentrate the field produced by telephone handset on particular coil.

The amplifier return the input signal proportional to the magnetic field strength; an inside high pass filter reduce the effect of the harmonics of the 50Hz power supply. The amplifier gain is adjustable, by P1, for a transfer constant of $2660\text{mV}/(\text{At}/\text{m})^1$. The last stage of the amplifier matches the output impedance to 600 Ohm.

Power is supplied from **CS8014** (or from **AC-3005**²) to which it is normally connected to realize a Measurement System

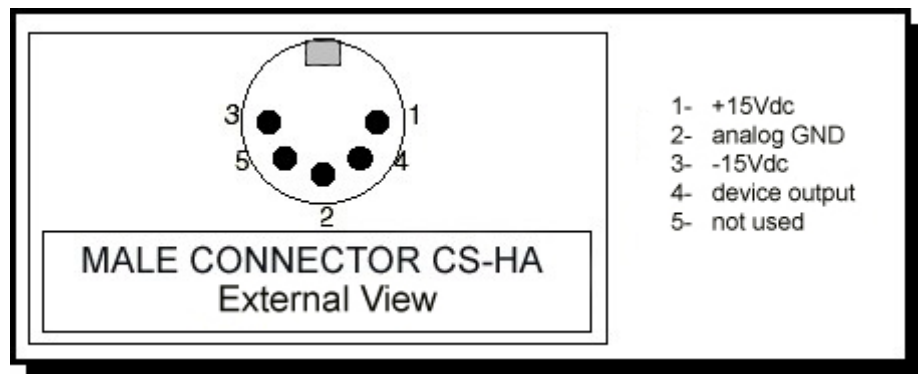


fig.1.1

¹ At/m = Ampere * turn/meter - Quantity for magnetic field

² See Artificial Head AC-3 for use with **CS-HA**.

2 – Connections

Use of **CS-HA** needs some elementary assembly operations:

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|---|
| <ul style="list-style-type: none">• Remove the adapter ring from AC-3 and at its place assemble the HA detector with coil external. Take with care for do not damage the shielded cable. Over the HA detector assemble the adapter ring lowered of 8 mm at the rear. |
| <ul style="list-style-type: none">• Fix the HA Amplifier over the left side of AC-3 by the two <i>velcro</i> buttons. |
| <ul style="list-style-type: none">• Connect the cable of the HA detector to the connector of the HA amplifier. Connect the outgoing cable from HA amplifier to the connector <i>aux</i> of AC-3005. |
| <ul style="list-style-type: none">• Program CS8014 with an <i>Hearing Aids</i> test and check the system by a telephone set of which the response curve is known. |

Attention!

The adapter ring FLNG should not be metallic because it will be a magnetic keeper, changing the flux linkage with the **CS-HA** detector and consequently changing the measures.

3 – Use

The Detector for magnetic field **CS-HA** is an accessory that allows absolute measures of magnetic field strength in a frequency range from 300Hz to 4000Hz if only it will be used correctly.

For the measurement it is enough to fit the handset into the adapter ring on the Artificial Head and to give a start for test.

The test procedure does:

- feed the telephone under test
- a 1000Hz line signal regulated for a fixed acoustical pressure into the Artificial Ear (typical 80dBspl or -10dBpa)
- analysis of each components of the restituted signal from the **CS-HA**

But Attention!

For correct measures it needs a surrounding environment without electromagnetic noise otherwise it is detected as that produced from the telephone under test doing not repeatable the measurements.

For this purpose it is necessary to have these cautions:

<ul style="list-style-type: none"> Keep the Artificial Head with CS-HA, far from the test equipment CS 8014 and any other transformer operating at least 80cm. Reduce the magnetic coupling positioning the AC-3 awry as regards to the local magnetic disturbance.
<ul style="list-style-type: none"> Avoid line cord and high level signal near CS-HA detector E.
<ul style="list-style-type: none"> Without handset on the Artificial Head, during a test with attribute "display", for a correct test results it needs that <u>every</u> frequency of the spectrum had a level less than -40 dB(dB re At/m).
<ul style="list-style-type: none"> Measurements are corrects if the axe of the coil incorporated in the handset coincides with the axe of Artificial Ear. Moreover this coil must be parallel to the CS-HA detector and its distance be less than 5 mm.

4 – Characteristics

Dimensions	
Detector ring	Ø ext = 96 mm Ø int = 42.5 mm
Thickness	8 mm
Weight	400 gr
Power Supply	
voltage	± 15 Vcc
current	± 18 mA
Sensitivity	+8.5 dBv/At/m (2660 mV/At/m)
tolerance	± 10%
response	300Hz ÷ 4000Hz
non-linearity vs typ. value	± 1 dB
Output	
impedance	600 Ohm
max.level	0 dB re At/m