IEPE EMULATOR I - Testing tool for IEPE front-ends

IEPE EMULATOR I is designed as a tool for testing IEPE amplifiers (Device Under Test). Areas of application are the cases in which no calibrated test stand (shaker) is available or the test is to be carried out with a sensor-independent signal source.

**Connections**

**Power:**
- Power supply ±15 VDC, new: 15 VAC, ca. 0.3W

**Input:**
- Signal input ±10 VAC max., Ri = 20 kOhm (e.g., function generator)

**Output:**
- Signal output ±10 VAC with offset approx. 12VDC (with correct mA-selection on the rotary switch)
- BNC - inner terminal = positive IEPE-port, BNC-GND = negative IEPE-port
- Banana jack - red = positive IEPE-port, black = negative IEPE-port

Output BNC and banana jacks are connected in parallel.

**Note:**
- The negative output (BNC-GND / black banana jack) is not identical to the input BNC-GND. These two ports must not be connected together!

**Rotary switch**

The rotary switch is set to the same value [mA] at which the IEPE amp (DUT) supplies the IEPE sensors. The sensor replacement resistors - selected by the rotary switch - provide an offset voltage of approx. +12 VDC (half of the nominal IEPE excitation voltage of 24 VDC). This results in a dynamic range of at least ±10 VAC.

Excitation current of IEPE-amp (DUT)

- 0.5 mA: R = 24 kOhm
- 1 mA: R = 12 kOhm
- 2 mA: R = 6 kOhm
- 4 mA: R = 3 kOhm
- 8 mA: R = 1.5 kOhm
- 12 mA: R = 1 kOhm
- 16 mA: R = 750 Ohm
- 20 mA: R = 600 Ohm

Example: Rotary switch selection 4mA - the sensor replacement resistor is 3kOhm: 3k * 4mA = 12 VDC offset.

**Operation**

To test the IEPE amp (DUT) please follow these instructions:

- Select the suitable excitation current [mA]
- Connect the DUT to the output connectors (BNC or banana jacks)
- Connect the supplied power supply (230 VAC / 15 VAC) to the 2-pin. power socket
- Connect a symmetrical AC test signal (e.g., sine or triangle from function generator) to the input BNC
- Optional: Connect a scope to the output BNC for monitoring the effective input signal of the DUT

**Bandwidth**

The input signal of the IEPE EMULATOR I is symmetrically coupled to the DUT by large capacities. The result is a bandwidth of

- lower cut-off frequency (-3dB) approx. 0.3 Hz
- upper cut-off frequency (-3dB) approx. 25 kHz

**Important note**

IEPE EMULATOR I and the supplied plug or desktop power supply are designed for laboratory or office use and not in humid and / or dusty environment or operate at temperatures higher than 70°C.