



PRODUCT DATA

1/2" Microphone Preamplifier Nor1209

Applications

- Sound level meters
- General purpose
- Laboratory and field measurements

Features

- Low noise
- High input impedance
- Wide dynamic range
- Wide frequency range
- Low output impedance
- System Check facility
- Large supply voltage range
- Detachable preamplifier cable

The Nor1209 Microphone Preamplifier is designed for general use with most 1/2" condenser microphones of type WS2 or LS2, in accordance with IEC 61094-4: Measurement Microphones – Part 4: Specifications for Working Standard Microphones.

The microphones may be either pre-polarized or require an external polarization voltage of up to 200 V. With the use of adaptors, the preamplifier can also be used with other microphone sizes. The frequency response extends from below 1 Hz to above 200 kHz.

The Nor1209 can be mounted directly on a sound level meter such as the Nor140, or connected to the instrument via a suitable cable.



The preamplifier is equipped with the system check facility. By applying a test signal to one of the terminals, both the microphone capacitance and the complete signal chain—from the microphone cartridge to the sound level meter indication—can be verified.

The voltage gain of the preamplifier is close to unity (0 dB). With an input impedance of 10 GΩ, attenuation caused by source loading is kept to a minimum and primarily determined by the low input capacitance.

Cables

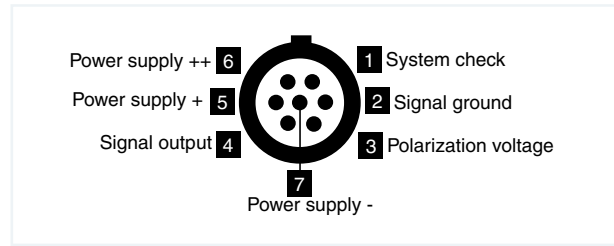
Long cables have a capacitance that may limit the slew-rate of the output signal. This will reduce the upper frequency response for signals with large voltage swings. Such limitation will be a non-linear process and may therefore also disturb the low-frequency content of the signal. The table shows the maximum frequency in kHz for linear operation as function of the cable length and level.

**Supply voltage ±15 V; Mic sens 50 mV/Pa;
Cable 120 pF/m**

	10 m	20 m	50 m	100 m
136 dB	15	8	5	2
130 dB	40	23	12	7
120 dB	>100	70	33	16
110 dB	>100	>100	>100	25
100 dB	>100	>100	>100	>100

Supply

For +120 V or ±60 V supply, connect the positive power supply to pin 6. For +28 V or ±15 V supply, connect the positive power supply to pin 5 as this will increase the driving capabilities of the preamplifier.

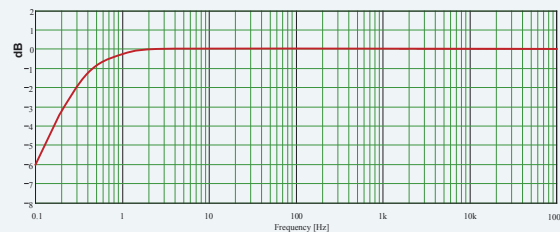


Technical specifications

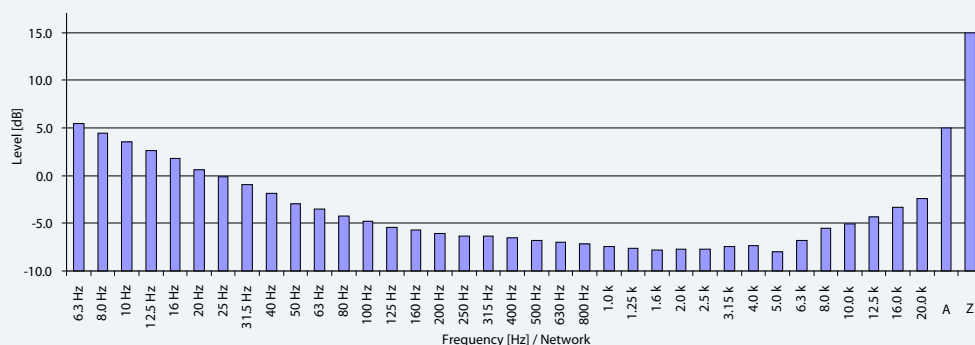
(Data given with 3mA supply current)

The preamplifier has to be supplied by a constant current in the range 3 – 20 mA. The output voltage will be a fixed DC (about 10 volt) plus the AC-coupled input voltage. Output AC-voltage swing is minimum +/-5 volt if not limited by the voltage for the current source.

Frequency response (18 pF/small signal) 20 Hz– 20 kHz: ±0.1 dB



Gain	Typ -0,1 dB (-0.2 with 20 pF)
Input impedance	10 GΩ, 1.4 pF
Output impedance	50 ohm typical
Noise (20 pF dummy mic.)	A-weighted < 2.2μV (typ 1.8μV), Lin (20 Hz – 20kHz) <6 μV (typ 3.8 μV)
Power supply	Single: 28 V (1mA) to 120 V (2.8mA) / Dual: ±14 V(1 mA) to ± 60 V (2.8 mA)
Maximum signal output voltage (peak)	±10 to ±50 V (dep. on supply)
Temperature	-25°C to +70°C (operation)
Relative humidity	0 – 90% RH
Dimensions/Weight	Length: 83 mm Diameter: Body: 12.7 mm, Ring: 14 mm Weight: 36 g



Noise considerations

The figure above shows the typical frequency spectrum of the inherent noise of the preamplifier Nor1209 in one-third octave bands for transducer impedance of 20 pF. The A- and Z-weighted levels are also shown. 0 dB corresponds to 1 μV or to the sound pressure level when the microphone has the sensitivity 50 mV/Pa. Note that a real microphone with resistive impedances will have a higher noise level than a dummy microphone with similar capacitance.