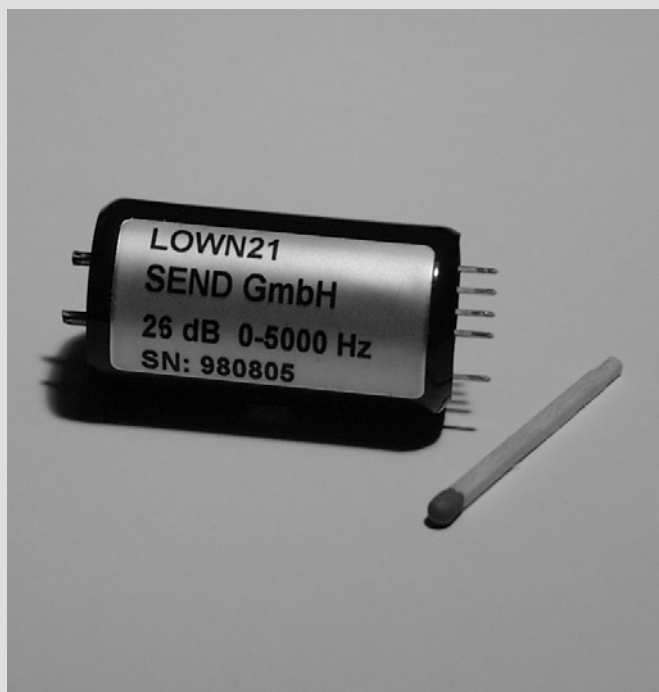


Low-Noise Preamplifier for Hydrophones

Description

The seismocorders METHUSALEM-MBS and GEOLON-MLS maximise precision in data acquisition when used with the well adapted preamplifiers of the LOWN2x - series, which are necessary for preamplifying the very high impedance hydrophone signals.

Data from several hundreds of OBS surveys were used to optimise the LOWN2x - series. Three different types of amplifiers are available, each specialised for a particular range of seismic experiments, such as passive seismology and refraction seismics, reflection seismics, or high frequency seismics.



Applications

- 0 - 200 sps LOWN20*, LOWN22
- 0 - 500 sps LOWN23
- 10,000 sps LOWN21

* Due to its greater Rin LOWN22 is applicable to lower frequencies compared with LOWN20; therefore production of LOWN20 has been discontinued.

LOWN2x preamplifiers single-ended high impedance hydrophone signals to match the requirements of a typical datalogger analogue input. As a self-contained, brass shielded module, LOWN2x should be mounted right next to the hydrophone input connector to minimise noise pickup. It is connected to the datalogger's analogue input via a cable which also carries the power supply wires. The Shield-pin is connected to the case but not to the GND-pin to allow application specific, loop-free grounding.



LOWN2x

Technical Data

Connecting Hydrophones:

Hydrophones present themselves as a capacitance to an amplifier input. Therefore, the input impedance of the amplifier forms a 1st-order low-pass filter with this capacitance. Its -3dB roll-off frequency is:

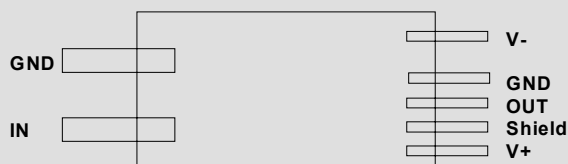
$$f_{-3dB} = 1 / (2\pi R_{in} C_{hydrophone})$$

For some applications, LOWN2x's R_{in} of 33 MOhm / 100MOhm is too high, and in these cases an additional resistor has to be connected across the input pins, in parallel with the hydrophone.

Physical Dimensions:

Case diameter	22 mm
Case length	42 mm
Standard Cable length	500 mm

Pin Connections:

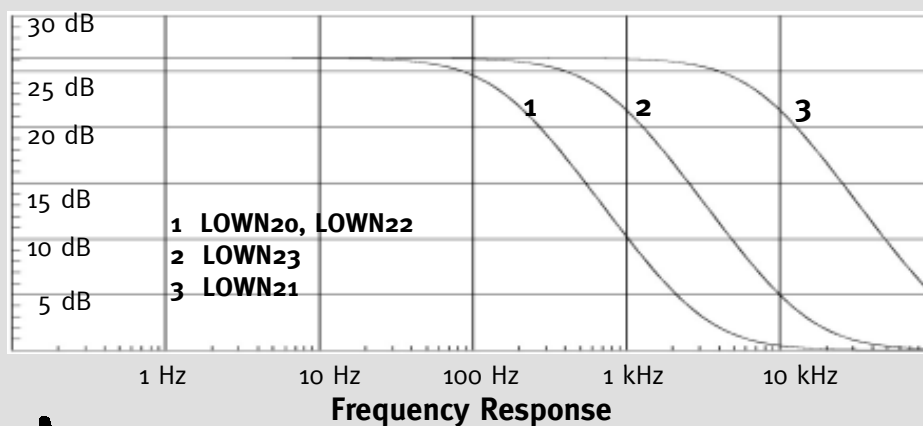


Cable Connections:

V-	white
GND	brown
OUT	green
Shield	shield
V+	yellow

Technical Details:

Input Impedance	
LOWN20, -21, -23	33 MOhm
LOWN22	100 MOhm
Gain	26 dB
Frequency Response (-1 dB)	
LOWN20, LOWN22	0 ... 76 Hz
LOWN23	0 ... 365 Hz
LOWN21	0 ... 3.6 kHz
Min. load Impedance	
LOWN20, LOWN22	2 kOhm 500 nF
LOWN23	2 kOhm 200 nF
LOWN21	2 kOhm 15 nF
Input voltage noise	
LOWN20	@ 0.3 - 50Hz 203 nV
	@ 3 - 50Hz 90 nV
LOWN21	@ 0.3 - 50Hz 203 nV
	@ 3 - 3000Hz 553 nV
LOWN22	@ 0.03 - 50Hz 531 nV
	@ 0.3 - 50Hz 203 nV
LOWN23	@ 0.3 - 50Hz 203 nV
	@ 3 - 500Hz 231 nV
Power Supply (V+,V-)	sym. +/- 5 ... 15 V
Power Consumption	1.5 mA
Output Voltage Swing	VN+2.5V; VP-2.5V



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