

Environmental Microphone Type 41AL

Product Data and Specifications

Typical applications

- **Outdoor-noise measurements**
- **Traffic-noise monitoring**
- **IEC 60651 Sound Level Meter measurements**
- **Environmental surveillance**

Each version of the Environmental Microphone System Type 41AL (Fig. 1) is a precision microphone unit for outdoor measurements and can withstand continuous rain and operate over wide temperature ranges. They are for short-term outdoor acoustic measurements and noise monitoring covering periods from a few days to several weeks. They are a low-cost alternative to the G.R.A.S. Outdoor Microphone Systems Types 41AM and 41CN (see separate data sheets) which are for permanent outdoor use, e.g. in airport noise monitoring systems.

The special ½-inch condenser microphone in each Type 41AL is optimized to comply with *IEC 651 Type 1* and *ANSI S1.4 1983 Type 1* requirements with the foam windscreen, anti-bird-spikes and rain protection cap fitted; whereas standard microphones such as the G.R.A.S. Type 40AF are optimized for measurements with only the standard protection grid fitted.

In order for the rain protection cap and foam windscreen to protect the microphone properly, the microphone's diaphragm must be kept horizontal. Therefore, the orientation of the Type 41AL relative to the sound source cannot be adjusted as required by many standards. However, the Type 41AL is available in versions for both 0° incidence and 90° incidence (see Fig. 2). The 0° -version is for aircraft fly-over noise measurements and other applications where the microphone's reference direction points upwards. The 90° version is for measuring community noise, traffic noise, vehicle pass-by noise etc.,



Fig. 1 Environmental Microphone Type 41AL and other applications where the microphone's reference direction points horizontally.

As a stand-alone unit, the Type 41AL fulfils the IEC 651 requirements for a Type 1 Sound Level Meter. This means that its specifications have to be better than the IEC 651 requirements so that when connected to an analyzer or sound level meter, also subject to similar stringent requirements, the measuring system as a whole still fulfils the IEC 651 requirements. For example, IEC 651 specifies a frequency response within ± 1 dB from 100 Hz to 4 kHz for a Type 1 Sound Level Meter. To allow for additional tolerances in the connected instrumentation, the Type 41AL is specified to be within ± 0.7 dB from 100 Hz to 4 kHz.

A desiccator unit is available if the Type 41AL is to be placed outdoors for extended periods. The desiccator screws directly onto the base of the Type 41AL and removes moisture from the air entering the unit.

Four versions are available (see also Fig. 2):

- Type 41AL-S (community noise)
With externally-polarized microphone and 90° incidence

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Environmental Microphone Type 41AL

- Type 41AL-1 (airport noise)
With externally-polarized microphone and 0° incidence

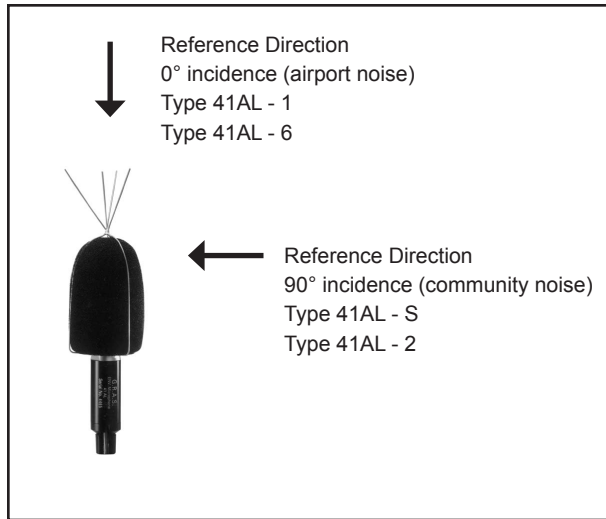


Fig. 2 Type 41AL reference directions

- Type 41AL-2 (community noise)
With prepolarized microphone and 90° incidence
- Type 41AL-6 (airport noise)
With prepolarized microphone and 0° incidence

All versions are also available with SysCheck.

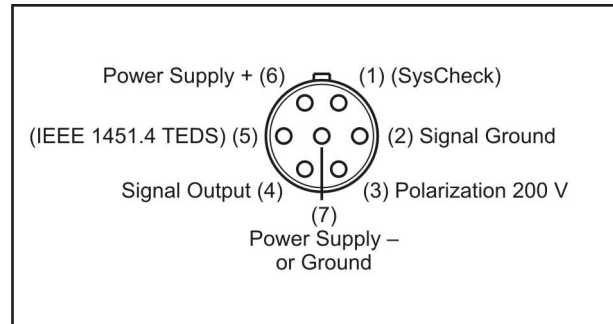


Fig. 3 7-pin LEMO plug 1B male (ext. view) at base of Type 41AL

Specifications

Sensitivity: 50 mV/Pa nominal (individually calibrated)	Polarization voltage: 200 V (not applicable for prepolarized microphones)
Frequency response: IEC 651 Type 1 and ANSI S1.4-1983 Type 1 re. reference direction (see Fig. 2) and 1000 Hz 3.15 Hz - 12.5 Hz: ±2.0 dB 12.5 Hz - 80 Hz: ±1.0 dB 80 Hz - 4 kHz: ±0.7 dB 4 kHz - 8 kHz: ±1 dB 8 kHz - 12.5 kHz: +2 dB, -3 dB 12.5 kHz - 20 kHz: +3 dB, -∞ dB	Power consumption: 2.3 mA at ±60 V 0.7 mA at ±14 V
Dynamic Range (upper limit): > 156 dB re. 20 μPa	Operating-temperature range: -40 °C to +60 °C
Total system-noise level: A-weighted: <17 dB re. 20 μPa Lin. 22.5 Hz - 22.5 kHz: <20 dB re. 20 μPa	Dimensions: Casing (ext. dia.): 29 mm (1.14 in) Length: 280 mm (11.0 in) Weight: 200 gm (0.440 lbs) Pole-adapter thread: 50 mm (1.97 in) x G 1½ in (ISO 228/1)
Output impedance: 55 Ω (typical)	Accessories included: Complete windscreen: AM0052 3-meter cable LEMO 1B: AA0008 Other cable lengths may be specified
Output current: > 1 mA (for 120 V supply voltage)	Accessories available: Pistonphone adapter: RA0010 Dessicator unit: AL0001 Foam windscreens (5 items): AM0009 Pole adapter: AM0029
Power supply: Single: 28 V to 120 V Dual: ±14 V to ±60 V	

G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice

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