Environmental Microphone Type 41AL

Product Data

Typical Applications

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

Four Versions

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

- Type 41AL-S (community noise) - with externally-polarized microphone and 90º incidence
- Type 41AL-1 (airport noise) - with externally-polarized microphone and 0º incidence
- Type 41AL-2 (community noise) - with prepolarized microphone and 90º incidence
- Type 41AL-6 (airport noise) - with prepolarized microphone and 0º incidence.

All versions are also available with SysCheck* via the LEMO plug (Fig. 3).

Description

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″ 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.

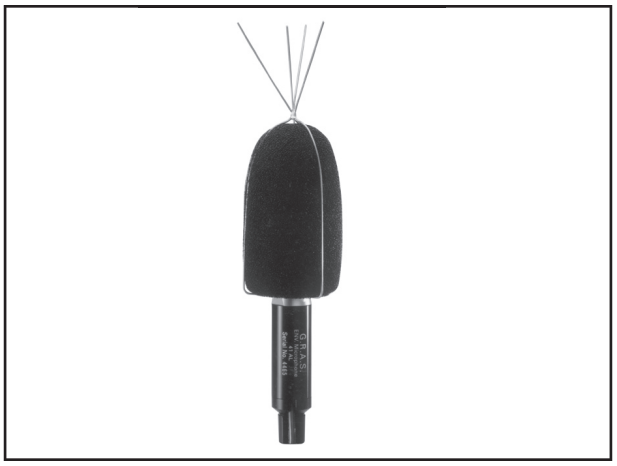

Fig. 1 Environmental Microphone Type 41AL

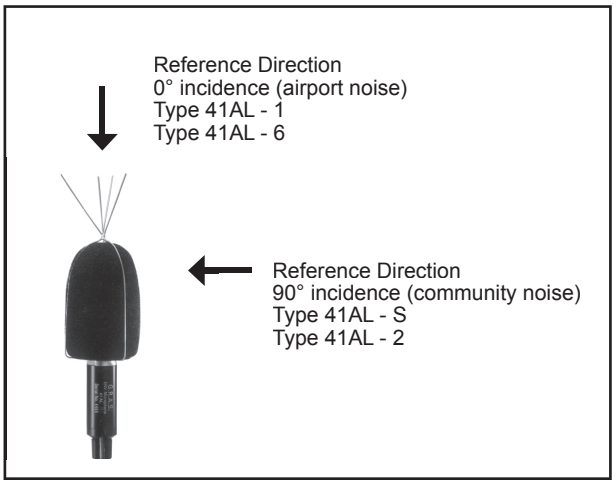

Fig. 2 Reference directions for the four versions of Type 41AL

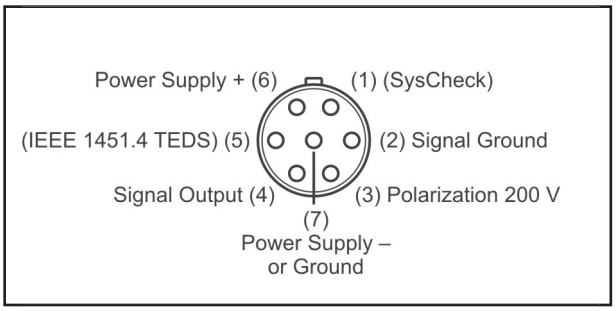

Fig. 3 7-pin LEMO plug 1B male (ext. view) at base of Type 41AL. SysCheck (pin 1) is optional.

* SysCheck: provides a simple means of checking the system's performance by applying a 1000 Hz signal (via pin 1, see Fig 3) which simulates a response to a sound level of 94 dB and detecting if any drift in sensitivity has occurred.

Vers. 18.05.2009

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In order for the rain protection cap and foam windscreen to protect the microphone properly, the microphone's diaphragm must be kept horizontal; i.e., the orientation of the Type 41AL relative to the sound source cannot be adjusted. To meet the relevant standards, which prescribe both 0º incidence and 90º incidence, we therefore offer versions of both angles of incidence. The 0º-version is for aircraft fly-over noise measurements and other applications where the microphone's reference direction points upwards. The 90º-version is for measuring community noise, traffic noise, vehicle pass-by noise etc., 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.

Specifications

Sensitivity:
50 mV/Pa nominal (individually calibrated)

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

Dynamic Range (upper limit):
> 156 dB re. 20 µPa

Total system-noise level:
A-weighted:. . . . . < 17 dB re. 20 µPa
Lin. 22.5 Hz - 22.5 kHz:. . . . . < 20 dB re. 20 µPa

Output impedance:
55 Ω (typical)

Output current:
> 1 mA (for 120 V supply voltage)

Power supply:
Single: . . . . . 28 V to 120 V
Dual: . . . . . ±14 V to ±60 V

Polarization voltage:
200 V
(not applicable for prepolarized microphones)

Power consumption:
2.3 mA at ±60 V
0.7 mA at ±14 V

Operating-temperature range:
-40 °C to +60 °C

Dimensions:
Casing (ext. dia.): 29 mm (1.14″)
Length: . . . . . 280 mm (11.0″)
Weight: . . . . . 200 gm (0.440 lbs)
Pole-adapter thread:. . . . . 50 mm (1.97″) x G 1½ ″ (ISO 228/1)

What to Order

Included Accessories
Complete windscreen: AM0145
Tripod Adapter:. AL0004
3-meter cable LEMO 1B: AA0008
Other cable lengths may be specified

Optional Accessories
Pistonphone adapter: RA0010
Dessicator unit:. AL0001
Foam windscreens (5 items): AM0009
Pole adapter: AM0029
10-meter extension cable LEMO 1B: AA0009

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