PRODUCT DATA

Surface Microphone — Types 4948 and 4948 B

USES
- Measurement of sound pressure on surfaces
- Acoustic-fatigue testing of airplanes
- Wind-tunnel measurements
- Medium- to high-level measurements
- Measurement in confined spaces

FEATURES
- Sensitivity: 1.4 mV/Pa
- Frequency Range: 5 to 20000 Hz
- Dynamic Range: 55 to 160 dB
- Temperature: –55 to 100°C (–67 to 212°F)
- Optimised for pressure-field measurements
- Built-in DeltaTron® preamplifier
- Simple mechanical interface
- Supports TEDS standard – IEEE P1451.4
- Input for CIC verification (Type 4948 B)
- Patent pending
- Flush mounting

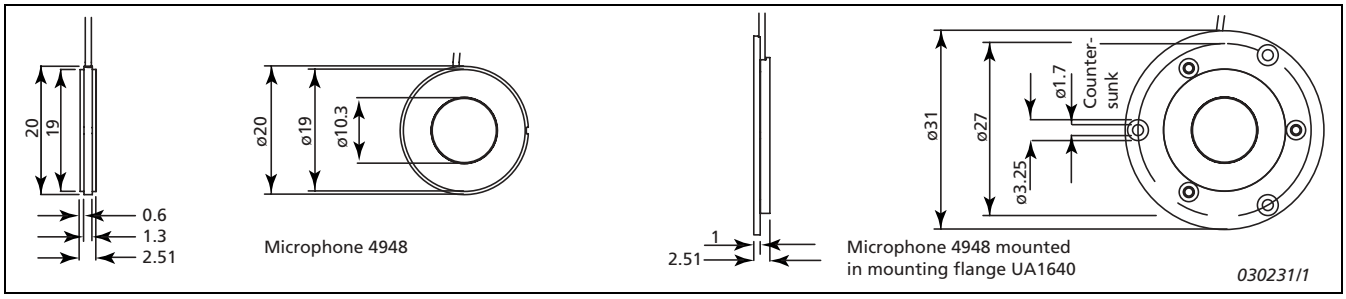
Designed for use on airplane surfaces during in-flight testing, as well as in wind-tunnel testing and other, similar applications, Surface Microphone Type 4948 is a rugged and stable measurement microphone. The microphone housing and the metallic parts of the diaphragm-backplate arrangement are all titanium, ensuring uniquely high resistance to corrosion.

Surface Microphone Type 4948 has a built-in DeltaTron preamplifier for connection to CCLD inputs. The microphone sensitivity is adjusted so as to allow measurements at high levels without clipping. All versions of Type 4948 support TEDS (Transducer Electronic Data Sheet). TEDS enables remote transducer identification and reading of calibration data. Type 4948 B also supports Brüel & Kjær's proprietary Charge Injection Calibration (CIC) for remote verification of the complete, calibrated measurement channel.

The microphone offers high mounting flexibility and its diaphragm is flush with the microphone housing in order to minimise the microphone's wind-generated noise. The microphone's pressure-equalisation vent is placed just next to the diaphragm on the front of the microphone; this is important as static pressure can vary rapidly with position in the applications for which the microphone is designed.

Surface Microphone Type 4948 is the first product based on Brüel & Kjær's new, patent-pending, microphone-manufacturing technology. With this technology, it is possible to obtain the same high stability and uniformity as those of the traditional and well-known Brüel & Kjær microphones and preamplifiers, even with Type 4948's flat, compact design.

Fig. 1 *Surface microphone dimensions (in mm)*



Specifications – Surface Microphone Types 4948 and 4948 B

COMPLIANCE WITH STANDARDS

CE Compliance with EMC Directive and Low Voltage Directive of the European Community

Compliance with EMC requirements of Australia and New Zealand

Detailed EMC Specifications are given in the technical manual

The data below are valid at 23°C, 101.325 kPa and 50% RH unless otherwise specified. The values are valid with the cable configuration as delivered from the factory. If no tolerances are stated, the values are typical

Sensitivity at 250 Hz*:
–57 dB $^{+2}_{-3}$ dB re 1 V/Pa, 1.4 mV/Pa
Frequency Response (pressure field)*:
- 10 Hz to 10 kHz ±1 dB re 250 Hz
- 5 Hz to 20 kHz ±3 dB re 250 Hz

Lower Limiting Frequency (– 3 dB):
1 Hz to 5 Hz
Pressure Equalization Vent:
Front-vented (at edge of diaphragm)

* Individually calibrated

Diaphragm Resonance Frequency: 24 kHz, typical (90° phase shift)
Equivalent Air Volume:
6.8 mm^3 ± 0.8 mm^3 (2σ)
Pistonphone Type 4228 Correction with DP 0977 or DP 0979: 0.00 dB
Inherent Noise:
<30 µV, linear 22.4 Hz – 22.4 kHz
Typical Values:
15 µV, A-weighted, 55 dB equivalent SPL at nominal sensitivity;
23 µV, linear 22.4 Hz – 22.4 kHz, 58 dB equivalent SPL at nominal sensitivity
Upper Limit of Dynamic Range:
>160 dB SPL (500 Hz, 3% distortion)
Clipping Limit:
>165 dB re 20 µPa peak (7 V peak at maximum sensitivity)
Constant Current Supply:
DeltaTron supply 2 mA to 20 mA, nominally 4 mA
Supply Voltage (unloaded):
+22 V to +30 V DC
Minimum 18 V with reduced specifications
Bias Voltage: 12.7 V ±1.3 V
Maximum Output Voltage: >7 V peak
Maximum Output Current:
Peak value 1 mA below supply current
Output Impedance:
<50 Ω at 1 kHz, typically 22 Ω || 430 pF

Expected Long-term Stability:
- <0.001 dB/year at 20°C and < 50% RH
- <0.025 dB/year at 20°C and <90% RH
- <0.5 dB/month at 100°C in dry air

Environmental

Operating Temperature Range:
–55 to 100°C (–67 to 212°F)
Storage Temperature:
–30 to 70°C (–22 to 158°F)
Temperature Coefficient (250 Hz):
+0.013 dB/°C
Pressure Coefficient (250 Hz):
–0.007 dB/kPa
Operating Humidity Range:
0 – 100% RH without condensation
Influence of Humidity:
<0.1 dB in the absence of condensation
Influence of Vibration:
Typically 65 dB equivalent SPL for 1 m/s^2

Dimensions

MICROPHONE UNIT
Diameter: 20 mm (0.79″)
Height: 2.5 mm (0.1″)
Weight:
2.3 g (0.08 oz.) without Mounting Flange
5.3 g (0.19 oz.) with Mounting Flange UA 1640

Ordering Information

Type 4948	Surface Microphone with 1.2 m miniature coaxial cable (∅ 1 mm) mounted with 10 – 32 UNF coaxial connector
Type 4948 B	Surface Microphone with CIC input and two 1.2 m miniature coaxial cables (∅ 1 mm each) mounted with 10 – 32 UNF coaxial connectors

ACCESSORIES INCLUDED

UA 1640	Mounting Flange
KE 0444	Carrying Box Calibration Chart

OPTIONAL ACCESSORIES

DP 0977	Pistonphone Adaptor for Unflanged Microphone
DP 0979	Pistonphone Adaptor for Flush-mounted Microphone
UA 1639	Electrostatic Actuator
ZG 0328	DeltaTron Power Supply (for B & K 7-pin sockets)
4948 CAI	Accredited Initial Calibration
4948 CAF	Accredited Calibration
4948 EW1	Extended Warranty

The calibration products include factory calibration and accredited sensitivity calibration.

Customer-specified mounting devices may be delivered on request

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