

# PRODUCT DATA

## 10 kHz Array Microphone — Type 4957

### Uses

- Measurements using STSF, NAH and Beamforming
- Array measurements
- Simultaneous recording of time signals in medium to large microphone arrays, for example, simulated pass-by measurements
- Cost-effective in-car measurements

### Features

- Sensitivity: 11.2 mV/Pa (–39 dB re 1 V/Pa)
- Frequency range: 50 – 10000 Hz
- Dynamic Range: 32 – 134 dB
- Built-in DeltaTron® preamplifier with TEDS – IEEE 1451.4 V.1.0
- Specified phase-matching
- Clips directly into existing Brüel & Kjær array systems



- Detachable cable with SMB coaxial plug
- Dimensions: 34 mm long, 7 mm diameter
- Temperature: –10 to +55°C (+14 to +131°F)

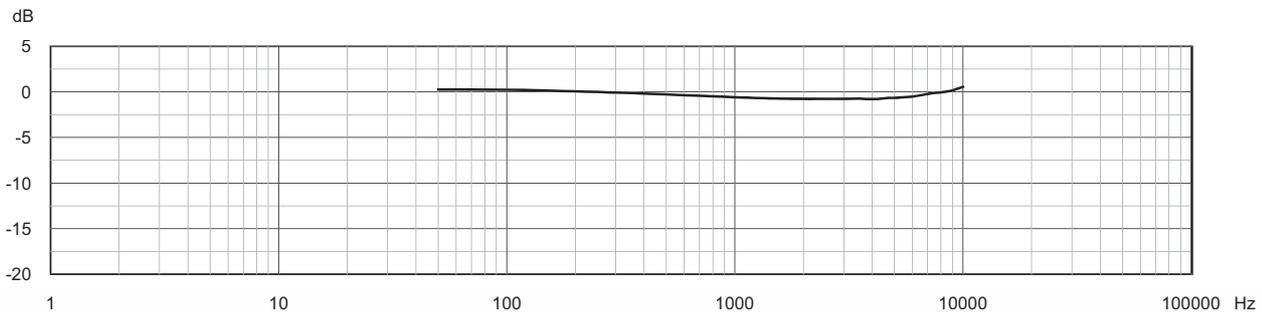
### Description

Array Microphone Type 4957 is a ¼-inch prepolarized microphone suited for use in systems requiring a large number of microphones, for example, beamforming arrays, STSF measurements, and non-stationary STSF measurements. These microphones have specified and stable phase-matching over wide ranges of temperature and humidity.

The microphone preamplifier is of the industry standard DeltaTron (constant current line drive) type allowing the use of only one cheap coaxial cable for signal, power supply, and TEDS.

A rugged protection grid provides an integrated heat shield. The microphone is front-vented for pressure equalization.

**Fig. 1** Typical free-field response



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## Specifications – Type 4957

| Specifications                                    | Value   |
|---|---|
| <b>Guaranteed Specifications*</b>                 |   |
| Sensitivity                                       | -39 dB re 1 V/Pa ±3 dB,<br>11.2 mV/Pa (@ 250 Hz)                          |
| Free-field Frequency Response<br>(re 250 Hz)      | ±2 dB, 100 Hz to 5 kHz<br>±3 dB, 50 Hz to 10 kHz                          |
| Inherent Noise                                    | <32 dB SPL (A-weighted)   |
| Upper Limit of Dynamic Range                      | 134 dB (THD <3%)  |
| Phase-matching<br>relative to a factory reference | <±5°: 100 Hz to 3 kHz<br><±10°: 3 kHz to 10 kHz                           |
| <b>General Specifications†</b>                    |   |
| Inherent Noise (A-weighted)                       | 32 dB (-10 to +40°C, +14 to 104°F)<br>37 dB (-10 to +55°C, +14 to 131°F)  |
| Output Impedance                                  | <150 Ω  |
| Output Voltage:<br>Voltage Swing<br>DC Bias       | >5 V <sub>pp</sub><br>12 V ± 4 V  |
| Max. Load: 5 kHz, 134 dB                          | 30 nF corresponding to 300 m cable  |
| Output Socket                                     | SMB coaxial plug  |
| Polarization Voltage                              | Prepolarized  |
| TEDS  | IEEE 1451.4 V.1.0 Template I27-0-0-0U                                     |
| <b>Environmental</b>                              |   |
| Operating Temperature Range                       | -10 to +55°C (+14 to 131°F)   |
| Storage Temperature                               | -25 to +70°C (-13 to +158°F)  |
| Operating Humidity Range                          | 0% – 90% RH without condensation  |
| Vibration Sensitivity (20 to 1000 Hz)             | Approx. 50 dB equivalent SPL for 1 m/s <sup>2</sup><br>axial acceleration |
| Magnetic Field Sensitivity                        | 40 dB SPL for 80 A/m, 50 Hz field   |
| <b>Physical</b>                                   |   |
| Diameter  | 7 mm (-1/4")  |
| Length  | 34 mm (1.33")   |
| Weight  | 3.8 g (0.11 oz.)  |

\* **Note:** Guaranteed specifications are measured at 23°C (73.4°F). All uncertainty values are specified at 2σ (that is, expanded uncertainty using a coverage factor of 2). Measured with 4.5 mA current generator with an open loop voltage of 28 V

† **Note:** General specifications are typical values

## Ordering Information

Type 4957 10 kHz Array Microphone is supplied in a rugged box. 1 to 6 microphones come in a standard microphone box. 7 or more microphones come in a multi-microphone mini suitcase.

| <b>Optional Accessories*</b> |  |
|------------------------------|--|
| AO-0563-Y-ZZZ                | Cable, SMB to SMB, right-angled                    |
| AO-0564-Y-ZZZ                | Cable, BNC to SMB, right-angled                    |
| AO-0587-Y-ZZZ                | Cable, BNC to SMB, straight                        |
| <b>Arrays</b>                |  |
| WA-0806                      | Integral Connection Array                          |
| WA-0807                      | Flexible Connection Array                          |
| WA-0808                      | Vertical In-line Array                             |
| WA-0890                      | Spoked Wheel Array for Beamforming                 |
| WA-1536                      | Hand-held Array for NS-STSF, 64 pos./30 mm spacing |
| WA-1558                      | Sector Wheel Array for Beamforming                 |
| WA-1565                      | Spherical Array                                    |
| KE-4321                      | Suitcase for up to 48 Microphones                  |
| KE-4322                      | Suitcase for up to 128 Microphones                 |
| <b>Calibration</b>           |  |
| Type 4228                    | Pistonphone  |
| DP-0775                      | 1/4" Adaptor                                       |
| WA-0728                      | 6-microphone Adaptor for Pistonphone Type 4228     |
| 4957-CFF                     | Recalibration                                      |

\* Cables are available in different lengths. The ordering system follows a simple yet flexible structure. Up to 99.9 m, the cable length can be specified in tenths of a metre (decimetre) and from 100 m in steps of 1 m. Generally the order number is AO-XXXX-Y-ZZZ, where AO-XXXX is the basic cable number Y = D (decimetres) or M (metres) ZZZ is the length value



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



Compliance with EMC Requirements of Australia and New Zealand

Safety EN / IEC 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

EMC Immunity: EN/IEC 61000-6-2: Generic standards – Immunity for industrial environments.

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HEADQUARTERS: Brüel & Kjær Sound & Vibration Measurement A/S · DK-2850 Nærum · Denmark  
Telephone: +45 7741 2000 · Fax: +45 4580 1405 · www.bksv.com · info@bksv.com

Local representatives and service organisations worldwide

**Brüel & Kjær**

