

# PRODUCT DATA

## Omnidirectional Volume Velocity Source with OmniSource™ Sound Source — Type 4295 and Volume Velocity Adaptor — Type 4299

### USES

- Measurement of acoustic volume velocity
- Measurement of reciprocal noise transfer functions (P/F) and acoustic transfer functions (P/Q)
- Structure-borne and airborne source path contribution analysis

### FEATURES

- Wideband omnidirectional acoustic radiation for assessment of both structure-borne and airborne generated phenomena
- Accurate in situ measurement of the output volume velocity using phase-matched microphone pair
- High output levels for measurement on vehicles with high transmission loss
- Measurement of transfer functions at vehicle source systems (engine bay, exhaust, intake, etc.) with the use of 3 m Extension Tube UA-1684



### OmniSource Sound Source Type 4295

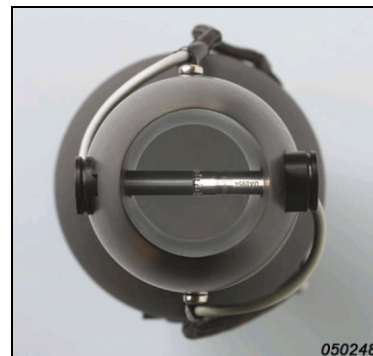
OmniSource Sound Source Type 4295 covers the most relevant frequency range for vehicle noise applications, that is, from 50 Hz to around 6.3 kHz. The patented principle of the OmniSource uses a single high-power loudspeaker, radiating through a conical coupler to a circular orifice. The size of the orifice and the shape of the OmniSource have been carefully engineered to radiate sound evenly in all directions.

### Volume Velocity Adaptor Type 4299

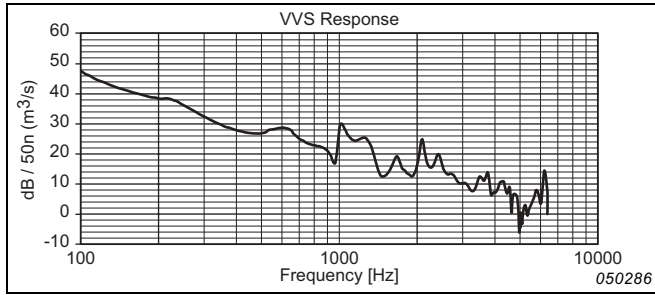
Volume velocity sources are used as ‘acoustical shakers’ to measure acoustic transfer functions, typically in connection with noise source contribution analysis. As transfer function measurements require accurate measurement of the applied excitation signal, Volume Velocity Adaptor Type 4299, with two phase-matched microphones, has been added to the acoustic output of Type 4295 to measure the direct output volume velocity. Within the operating frequency range of Type 4295, high order modes in the adaptor’s tube (with non-zero pressure on the axis) are not contributory.

The output volume velocity can be automatically calculated using Volume Velocity Measurement Type 7784 software, which estimates the volume velocity based on the sound pressure levels measured in the adaptor (using a plane wave model). A source to response FRF is then calculated using the measured response signal and the estimated volume velocity.

*Fig. 1 Left: Top-view of Volume Velocity Adaptor showing phase-matched microphone arrangement. Right: Side-view of adaptor*



**Fig. 2** Frequency response curve for the Omnidirectional Volume Velocity Source



**Fig. 3** VVS Tube Assembly UA-1684 with 3 m Extension Hose



## Specifications – OmniSource™ Sound Source Type 4295 and Volume Velocity Adaptor Type 4299

### COMPLIANCE WITH STANDARDS

**CE** Complies with EMC and Low Voltage Directive

### Temperature:

- IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing. Cold and Dry Heat  
Operating Temperature: +5 to +40°C (+41 to +104°F)  
Storage Temperature: -25 to +70°C (-13 to +158°F)
- IEC 60068-2-14: Change of Temperature: -10 to +40°C (2 cycles, 1°C/min.)

### Humidity:

- IEC 60068-2-3: Damp Heat: 93% RH (non-condensing at 40°C (104°F))

### Mechanical: Non-operating:

- IEC 60068-2-6: Vibration: 0.3 mm, 20 m/s<sup>2</sup>, 10–500 Hz

- IEC 60068-2-27: Shock: 1000 m/s<sup>2</sup>
- IEC 60068-2-29: Bump: 1000 bumps at 250 m/s<sup>2</sup>

### OPERATING FREQUENCY RANGE:

50–6300 HZ

### NOMINAL IMPEDANCE: 6 Ω

### POWER HANDLING

50 W continuous  
Accepts full power from Power Amplifier Type 2716, one channel, 80–6300 Hz pink noise

### SOUND POWER LEVEL

(with Power Amplifier Type 2716, one channel, 80–6300 Hz pink noise signal)

### Broadband: 105 dB re 1 pW

**Spectral:** Min. 85 dB re 1 pW in each 1/3-octave band

**CONNECTION:** Four-pin Neutrik® Speakon® socket, pins 1+ and 1–

### TRIPOD THREADS (LARGE TYPE)

One at rear end, one below centre of gravity

### MECHANICAL SPECIFICATIONS

**Material:** Dense polyurethane plastic, painted black

### Max. Diameter:

Sound Source: Ø 145 mm (Ø 5.7 in)  
Adaptor: Ø 70 mm (Ø 2.76 in)

### Length:

Sound Source: 560 mm (22 in)  
Adaptor: 150 mm (5.9 in)

Extension Hose: 3 m (9.8 ft)

**Weight:** Sound Source: 3.5 kg (7.7 lb.)

## Ordering Information

Omnidirectional Volume Velocity Source comprises:

**Type 4295** OmniSource Sound Source

**Type 4299** Volume Velocity Adaptor

**Including the following accessories:**

2 × Type 2670-W-003

1/4" Microphone Preamplifier, integral 2 m cable with 7-pin Lemo plug (cable includes protection circuitry)

Type 4178 1/4" Sound Intensity Microphone pair

UA-1682 Volume Velocity Adaptor Assembly (to be fixed on Type 4295)

UA-1683 VVS Mounting Kit (for UA-1682 and UA-1684)

UA-1684 VVS Tube Assembly (3 m extension hose)

### OPTIONAL ACCESSORIES

- Type 7784-F: Volume Velocity Measurement (software to calculate volume velocity output and source to response FRF in PULSE) (Floating license)

- Type 7784-N: Volume Velocity measurement, Node-locked license
- KE-0392: Carrying Case for Type 4295
- UA-0801: Lightweight Tripod
- 2670-CTF: 1/4" Microphone Preamplifier Traceable Calibration
- 4178-CFF: 1/4" Sound Intensity Microphone Recalibration of microphone pair
- 4295-EW 1: OmniSource Sound Source Extended Warranty, one year extension
- 2670-EW 1: 1/4" Microphone Preamplifier Extended Warranty, one year extension

### TRADEMARKS

Neutrik and Speakon are registered trademarks of Neutrik AG

Brüel & Kjær reserves the right to change specifications and accessories without notice

**HEADQUARTERS:** DK-2850 Nærum · Denmark · Telephone: +45 4580 0500  
Fax: +45 4580 1405 · www.bksv.com · info@bksv.com

Australia (+61) 2 9889-8888 · Austria (+43) 1 865 74 00 · Brazil (+55) 11 5188-8161  
Canada (+1) 514 695-8225 · China (+86) 10 680 29906 · Czech Republic (+420) 2 6702 1100  
Finland (+358) 9-755 950 · France (+33) 1 69 90 71 00 · Germany (+49) 421 17 87 0  
Hong Kong (+852) 2548 7486 · Hungary (+36) 1 215 83 05 · Ireland (+353) 1 807 4083  
Italy (+39) 0257 68061 · Japan (+81) 3 5715 1612 · Republic of Korea (+82) 2 3473 0605  
Netherlands (+31) 318 55 9290 · Norway (+47) 66 77 11 55 · Poland (+48) 22 816 75 56  
Portugal (+351) 21 4169 040 · Singapore (+65) 6377 4512 · Slovak Republic (+421) 25 443 0701  
Spain (+34) 91 659 0820 · Sweden (+46) 33 225 622 · Switzerland (+41) 44 8807 035  
Taiwan (+886) 2 2502 7255 · United Kingdom (+44) 14 38 739 000 · USA (+1) 800 332 2040

Local representatives and service organisations worldwide

**Brüel & Kjær** 

